Collection of the tools for dialogue with society

Deliverable 7.1

Deliverable description

The purpose of Deliverable 7.1, “Collection of the tools for dialogue with society”, is to present concrete and exportable tools for dialogue with society produced during the ResBios project and developed in mutual learning and other project activities.

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Table of contents

Summary

This deliverable present concrete and exportable tools for dialogue with society produced during the ResBios project and developed in mutual learning and other project activities. In particular, 30 tools are presented, divided into 3 functions or categories: Tools developed for planning and monitoring Grounding Actions (GAs) and their sustainability; Tools used during GAs implementation; Mentoring and mutual learning tools.

For each tool, a form with the following information is provided: title, description, application, reference to RRI keys and dimensions, and project phase. The tools are attached to each form.

The tools have been developed in particular contexts and to respond to specific needs, however, they can be either immediately applicable, or at least can be of inspiration for those wishing to carry out RRI-oriented activities, or for those who apply an approach (open science, citizen science, etc.) characterised by dialogue between the world of research and the rest of society.

Acronyms

Acronyms	Definition
ABI	AgroBioInstitute (BG)
AU	Aarhus University (DK)
CSA	Coordination and Supporting Action
DUTH	Democritus University of Thrace (GR)
EC	European Commission
EUSEA	European Science Engagement Association (AT)
GA	Grounding Action
H2020	Horizon 2020 funding programme
ICM-CSIC	Institute of Marine Sciences of the Spanish National Research Council (ES)
IFNUL	Ivan Franko National University of Lviv (UA)
K&I	Knowledge and Innovation Srls (IT)
ResBios	ResBios Project: **Res**ponsible research and innovation grounding practices in **Bios**ciences
RRI	Responsible Research and Innovation
UBREMEN	University of Bremen (DE)
UG	University of Gdansk (PL)
UNITOV	University of Rome Tor Vergata (IT)
UNIZG-FAZ	University of Zagreb, Faculty of Agriculture (HR)
UP	University of Primorska (SL)

Introduction

1. The institutional framework and the mutual learning approach

This document aims to present concrete and exportable tools for dialogue with society produced during the ResBios project and developed in mutual learning and other project activities.

ResBios is embedding Responsible Research and Innovation (RRI) practices within four research organisations in the field of biosciences, through some Grounding Actions (GAs), to achieve sustainable institutional changes. These organisations are: Consejo Superior de Investigaciones Científicas – Spain (ICM), Democritus University of Thrace, Department of Molecular Biology and Genetics – Greece (DUTH), University of Lviv, Department of Biochemistry – Ukraine (IFNUL), Zagreb University, Faculty of Agriculture – Croatia (UNIZG-FAZ).

The GAs were related to RRI keys (Public Engagement, Gender, Education, Open Access, Eethics) and take into consideration the MoRRI indicators while being aligned with the Sustainable Development Goals. In the ResBios' approach, the four RRI dimensions (Anticipation, Reflexivity, Inclusiveness, Responsiveness) were considered a tool to both support the Grounding Actions and govern the changing science/society relationship.

The GAs have had as their objects: experimenting and establishing informal education activities; promoting lifelong learning programmes; building capacity on RRI for university students and researchers; establishing cooperation and networks with schools; setting up a system of support for ethical principles in the biological investigation; developing open access and open innovation policies; setting up a system for fighting plagiarism and promoting ethical publishing behaviours; redefining research ethics, procedures and codes on biosciences emerging needs; assessing the current situation about gender at the university level; enhancing gender equality commitment within the research organisation; promoting citizens engagement programs and citizen's empowerment in neighbourhoods.

The Grounding Actions were supported by an evaluation (Work Package 7, or WP7 – Aarhus University) and communication (WP8 – EUSEA) activity, as well as a series of support activities (provided by University of Rome – Tor Vergata, and K&I Srls, in WP6 context).

The general framework of these activities was characterised by a mutual learning approach (under WP7), which provided for its specific exchange, reflection, and support actions for the four implementing partners, exercised by some mentors who had already had RRI implementation experiences, in particular: Agrobioinstitute (Bulgaria), University of Bremen (Germany), Univerza na Primorsken – University of the Coast (Slovenia), University of Gdansk (Poland), University of Rome – Tor Vergata (Italy).

In this sense, ResBios has created a *mutual learning (ML) environment* (a set of actors and their formal and informal interactions) to foster a continuous process of "co-creating exchanges" of knowledge, information and experiences, and to elaborate and formalise knowledge and learning useful for implementing the other activities of the project.

Mutual learning has taken place through some types of activities, under WP7 and the coordination of UNITOV:

- Annual workshops, or “Mutual learning Workshops” (MLWs), at the end of each of the three key phases of the project (co-reflexive, pro-active, institutional), to exchange approaches, activities and experiences about institutional change.

- Working groups for each RRI key, linked to the implementation of the GAs, which operated from January 2021 to the end of the project, through a blog (https://resbiosproject.medium.com/) and bi-monthly virtual meetings (bilateral or multilateral) on the themes of the RRI keys, organised by the ResBios mentors (ABI, UG, UBREMEN, UP, UNITOV), with some face-to-face meetings in the final phase of the activities.

- Formative evaluation activities (leader AU).

It was a real “community of practice”, which also included the partners who carry out coordination, support, evaluation and dissemination activities and, gradually, the internal interlocutors of the various research institutions of the ResBios consortium, as well as the external stakeholders (i.e. those of the “Quadruple Helix”).

Based on these actions, 23 “success stories” of institutional change have been collected (see ResBios Deliverable D6.1), a Manifesto, titled “Responsible Biosciences. A Manifesto for the Transformation of Science-Society Relations (https://resbios.eu/wp-content/uploads/2022/12/Final-manifesto.pdf), was also launched, and an International Network for Responsible Biosciences (INRB) has been launched too (see ResBios deliverable D6.2).

Within this framework, this document represents a collection of tools developed during the project, covering the various aspects of dialogue with society, as experienced by the ResBios partners, from the preparation/planning phase to the implementation and sustainability phase and the various support activities.

2. What are the tools and how they have been organised

During the implementation of the project, as already mentioned, the awareness emerged that it was important to adopt a broad interpretation of what a "tool for the dialogue with society" is. In this sense, it was decided to take some typical "functions" for RRI Grounding Actions as a reference (at least in the way these actions have been experienced in ResBios) and to identify and formalise, based on the work carried out, a series of useful tools to implement these functions.

Starting from this, *30 tools* were produced, or adapted from existing dcuments, divided into 3 functions or categories:

- Tools developed for planning and monitoring GAs and their sustainability
- Tools used during GAs implementation
- Mentoring and mutual learning tools.

The first mentioned are tools that have been developed by K&I, for the benefit of the 4 implementing partners involved, to facilitate and harmonise both the planning activities of the GAs and the monitoring activities of the actions aimed at the sustainability of the results of the GAs themselves.

The latter are tools developed by the implementing partners themselves during their activities and include:

- Tools for analysis (e.g., questionnaires about the issues related to a given RRI key)
- Tools to facilitate the stakeholders' involvement (templates for agreements, invitations and acknowledgement, e.g., certifications for different kinds of participants)
- Guidelines and other tools about RRI content
- Communication/dissemination tools.

The third ones are tools elaborated by the mentors to support the work of the implementing partners, e.g., cards with indications to facilitate RRI actions, questionnaires, guides for organising workshops, instructions for organising online events (especially in the context created by the Covid-19 pandemic), etc.

The 30 tools presented here are only a selection of the materials produced by the ResBios partners, trying to offer a fairly representative range of the material produced.

A form has been written for each tool, providing four pieces of information.

a. A title indicating what it is and what it is for (e.g., grid for collecting stakeholders' opinions).

b. Short descriptive text containing the context in which the tool was produced, the motivation behind its production, the main target, its structure and features. In case of re-use or adaptation of an existing tool, a correct quotation is provided.

c. A description of the tool application.

d. Additional information. In particular, albeit in a non-systematic and exhaustive way, information was provided about:

- The authors
- Any sources (in case the tool was already been published during the project or elsewhere)
- The type of RRI keys and/or dimensions (when possible) referred to (for the keys: Public engagement; Gender; Education; Open Access; Ethics; Governance. For the dimension: Anticipation; Reflexivity; Inclusiveness; Responsiveness)
- Its use concerning the project phase (Design; Preparation; Implementation; Sustainability; Evaluation).

An attachment contains the tool itself. The tool can be accessed with a link from the form and, *vice versa*, from the tool one can return to the form again via a link.

The tools reflect the activity carried out by the ResBios partners and have not been precisely programmed from the beginning. In this sense, their equitable distribution according to the categories mentioned above (RRI keys and dimensions, project phase) has not even been planned *a priori*. Nonetheless, the 30 tools presented here, taken together, cover all of these categories without exception, albeit in different ways. For example, the most represented RRI keys are Education and Public Engagement; the most represented RRI dimensions are Inclusiveness and Reflexivity; the most represented project phases are Implementation and Sustainability.

The tools have been developed in particular contexts and to respond to specific needs, also with a lot of creativity and responsiveness with respect to the numerous challenges that have arisen in these 3 years

(including the Covid19 pandemic, the conflict triggered by Russia in Ukraine and other events reported in D6.1).

In principle, however, we believe that these tools can be either immediately applicable (e.g., in the case of some questionnaires or planning and monitoring tools), or at least can be of inspiration for those wishing to carry out RRI-oriented activities, or for those who apply an approach (open science, citizen science, etc.) characterised by dialogue between the world of research and the rest of society.

On the next page, the list of 30 tools organised according to the three sections is presented.

We thank all the authors of the tools presented here for their work, as well as the other ResBios partners for their support and the ResBios advisors, who intervened in the mutual learning activities in various ways, depending on the case (participation in meetings of working groups on RRI keys, participation in Mutual learning Workshops, interviews and interventions for the blog and dissemination activities).

The 30 tools for dialogue with society

Tools for PLANNING and MONITORING Gas and their SUSTAINABILITY
1. Note for drafting Project Ideas of Grounding Actions (GAPI)
2. Note for drafting the Grounding Actions Detailed Document (GADD)
3. Database for networking activities: directions to define the database structure and use
4. Scheme for Monitoring the Implementation of the Sustainability and Support Plans (SSPs)
Tools for IMPLEMENTATION
5. Questionnaire/survey on RRI (Gender and Open Access)
6. Questionnaire for students that receive a talk about gender issues
7. Report about activities done in the framework of the Network of Marine Schools
8. Certificate of Attendance for students and researchers
9. Certificate for the researchers that participate and are involved in RRI actions: training sessions for the Network of Marine Schools
10. Certificate for the researchers involved in RRI actions: actions for gender equality
11. Certificate for the researchers involved in RRI actions: actions for promoting citizen engagement
12. Certificate for the teachers that participate in the pilot test and formative action of the Network of Marine Schools
13. Template for Collaboration Agreement
14. Contract among educational centres and the ICM CSIC for the pilot phase of the Network of marine schools
15. Invitation template
16. Declaration of responsibility template
17. Program of extracurricular activities
18. Guide for adapting the content of talks and activities related to Ocean Literacy to the audience
19. Guide for an inclusive use of language adapted to marine science
20. Declaration on ethical behaviour in research for students
21. Video Blog “Basic Techniques in Biochemistry and Molecular Biology”
22. Support material for ICM researchers for conducting activities during the Awareness Month
23. Document of presentation of the Network of marine schools for engaging teachers
Tools for MENTORING and MUTUAL LEARNING
24. A scheme of seven boundary conditions on how to facilitate implementing gender equality plans in academic organisations
25. ResBios Educational Measures - Methodology and content of workshops for science education
26. ResBiosQ - Questionnaire on attitudes, knowledge and needs for the implementation of RRI at the institutional level
27. Design Thinking Workshop (DTW)
28. Workshops for ethical reflection between senior and young researchers
29. Insights for online engagement and brainstorming
30. ResBios Online Engagement Cheat Sheet

Section One

TOOLS FOR PLANNING AND MONITORING GAS AND THEIR SUSTAINABILITY – FORMS

1. Note for drafting Project Ideas of Grounding Actions (GAPI)

Short description of the tool

The Context

The context of application is the co-design phase of the Grounding Actions (GAs) for institutional change in bioscience research performing organisations. In particular, the context of the application of the Note is the first stage of co-design aimed at defining the project ideas of the action to carry out during the project.

What is it For

The Note (March 2020) proposes a common format for the development of all the Project Ideas of the Grounding Actions (GAPIs) foreseen in the ResBios project. In particular, the Note is aimed at revising and better specifying the Grounding Actions outlines foreseen by the ResBios project, preparing the dialogue with internal and external stakeholders, and providing a basis for the detailed design of the GAs.

The Main Target

The GAPI Note was drafted for the Teams of the Research Performing Organisation in charge of promoting and implementing GAs for defining, through a dialogue with internal and external stakeholders, their project ideas.

Its Structure and Features

The Note is organised into three sections:

1. The first one is devoted to shortly presenting the methodology of the GAs proposed in ResBios i.e. a methodology for promoting Responsible Research and Innovation related institutional change in the involved organizations.
2. The second section focuses on the role of co-design in the overall perspective of the project, summarises the different steps of the co-design activity, and suggests a timeline for coordinating the work of the different implementing organisations.
3. The third section presents a set of tools for supporting the "scoping phase" of the co-design process. The tools are: a template for the GAs Project Ideas; a grid for stakeholders mapping; a team-building checklist.

Tool application

The GAPI Note was used by the four core teams of the implementing organisations to review the content and activities of the Gas already outlined in the project proposal; to identify the internal and external stakeholders to be contacted and involved for each GA; to structure the core group responsible for the promotion and implementation of the GAs; to describe the GAs in a single format. The GAPI Note was used for 2 months (beginning in March 2020). The result of the application of the Note was the first draft of Project ideas for each GA to be used in the next phase of dialogue with stakeholders. In the second phase, each implementing organisation developed the project ideas into detailed plans, through consultation with the most relevant stakeholders within and outside their organization. The collection of the GAs detailed plans is contained in the Deliverable D2.1.
In more general terms, the Note can be used to prepare, in a participatory way, project ideas for actions to promote institutional change in research organisations.

Additional information	
Author	K&I Team
Original source(s), if any	ResBios Deliverable D2.1
RRI Key(s) and/or RRI dimension(s)	All RRI keys; Reflexivity
Prevailing project phase	Design

Go to the tool

2. Note for drafting the Grounding Actions Detailed Document (GADD)

Short description of the tool

The Context

The Note was drafted in the framework of the co-design phase of the Grounding Actions (GAs) foreseen by the ResBios project aimed at promoting institutional change in bioscience research performing organisations. In particular, the Note was used in the framework of Task 2.3 titled "Dialogue with internal and external stakeholders", aimed at discussing with a diverse type of actors the Project Ideas concerning the GAs.

What is it For

This note aims to propose a common format for drafting the detailed design documents of the GAs foreseen in the project, based on the outcomes of the dialogue with internal and external stakeholders. This note is complementary to the GAPI Note, used at the beginning of the co-design phase, and also included in this Deliverable D7.1.

The Main Target

The GADD Note was drafted for the Teams of the Research Performing Organisation in charge of promoting and implementing GAs. It contains, nevertheless, suggestions useful for any organization that is interested in promoting similar activities.

Its Structure and Features

The Note is organised into two sections:

1. The first section focuses on the co-design process – the dialogue stage –, intended as an essential component for designing the GAs. In particular, the section describes the aims and activities of dialogue and detailed design stages of the co-design process.
2. The second section presents the tools for developing the Detailed Design Document of each GA, based on the results obtained in the dialogue stages of the co-design phase. In the annex, there is the template to be used for drafting the Detailed Design Document of each GA.

Tool application

The GADD Note was used by the four core teams of the implementing organisations to carry out dialogue activities and consultations with the most relevant internal and external stakeholders on the Project Ideas document and to make, on the basis of such dialogue exercise, the detailed design of each GA. The GADD Note was used for 5 months beginning in June 2020. The result of the application of the Note was the Detailed Design Document of each GA. The collection of the GAs detailed document is contained in the Deliverable D2.1.

Additional information	
Author	K&I Team
Original source(s), if any	ResBios Deliverable D2.1
RRI Key(s) and/or RRI dimension(s)	All RRI Keys; Reflexivity
Prevailing project phase	Design

3. Database for networking activities: directions to define the database structure and use

Short description of the tool

The Context

The tool consists of two brief texts proposing how to structure a database to be used by IFNUL in the framework of the implementation of their Support and Stability Plan, particularly the Action titled "Promote biology culture in society" aimed at giving continuity to Grounding Action #2. The two texts were sent to the IFNUL team (respectively in February and July 2022) to respond to the needs that emerged during some meetings.

What is it For

A database can be very useful for continuous networking aimed at organizing activities of a different nature: not only the IFNUL Open Days for Schools, but also the Summer School. Both activities require that contacts are kept with many diverse people over time. Sometimes people contacted for activities of one type could be contacted also for other activities. In order to facilitate this cross-utilization of different sets of contacts, particularly through mailing, it is important to store the main contact and tag them with categories that help in retrieving people according to various criteria (e.g., all the schoolteachers; all the University professors, all the people contacted up to a certain date and so on).

The main purpose of the database proposed is to allow a smooth organization of networking activities; in this sense a database fosters efficiency. It is also a way to let different people within a team carry out networking in a more coordinated way so that the flow of information with external stakeholders can be better controlled. Setting up an efficient and updated database of contacts is also a way, for a team, to better reflect on its "social capital" (meant here as a set of meaningful relations that the team has and manages for implementing its own activities) and single out strategies to improve the outreach of relations (e.g., by better covering and reaching out to certain types of stakeholders). It is to stress that the management of a database requires the definition of appropriate organizational routines (e.g., on how to update the database).

The Main Target

The tool contains a proposal of a structure for the database that could be adjusted by the IFNUL team according to its specific needs. It is a structure and it could be used both in the very simple version presented below, and in a more sophisticated way, i.e. adapted to a database management software. Apart from these technical aspects, it is worth stressing that such a tool helps in implementing networking activities. In this framework, through some simple adjustment, it can be used also by any other organization who have the same need to carry out networking activities.

Its Structure and Features

The two texts composing the tool are titled, respectively, "Tentative structure of the Database" and "Some further observations about the database defined by IFNUL". The tool is an output of the assistance given to the IFNUL team by a mixed team of researchers from UNITOV and K&I. The tool contains also two tables that show in practice the structure proposed.

The first text contains a definition of the concept of database structure and a description of the structure proposed (including the meaning of the type of information collected for each person or contact that is recorded in the database). In the text is provided also a discussion of the typology of stakeholders.

The second text composing the tool contains some suggestions that the Team of UNITOV and K&I gave to the IFNUL team after the first period of use of the database. The issues briefly dealt with are the definition of routine for the management of the database and the related ones concerning: compliance with the privacy rules valid at the national level and the decision if adopting or not a database management software. A further issue dealt with in the second text concerns the possible decision to use the database for diverse networking activities, which implies connecting diverse sets of stakeholders.

Tool application

The tool was used by the IFNUL team to carry out activities that requested networking, such as the preparation and implementation of the Open Days. After the first period of use, it emerged that the database could be used also as a networking tool for organizing the Summer School. For this reason, some further observations were provided by the Mixed team in order to apply the same structure through appropriate adjustments.

Although the tool was targeted to the specific needs of the IFNUL team, the simple database structure presented in the tool could be used also in other contexts by introducing appropriate changes.

Additional information	
Author	K&I Team
Original source(s), if any	The tools set up for IFNUL
RRI Key(s) and/or RRI dimension(s)	Public Engagement; Inclusiveness
Prevailing project phase	Implementation, Sustainability

4. Scheme for Monitoring the Implementation of the Sustainability and Support Plans (SSPs)

Short description of the tool

The Context

This tool has been defined as the basis for task T6.2. "Implementation and monitoring of sustainability and support plans (SSPs)". The SSPs were aimed at supporting the achievement of the institutional changes being pursued by the four "Implementing Organizations" (IPs) of the ResBios Project through their Grounding Actions (GAs). Task 6.2 followed the task dedicated to defining the SSPs through a process that included a co-design approach. Once the SSPs have been defined by the IPs, they had to carry out the foreseen actions and, in doing it, it was foreseen that they would have enjoyed the support of the project coordinator and other partners. Such support consisted also in monitoring the activities as a way to steer the SSPs implementation towards the decided goals.

What is it For

The tool is an agile instrument for implementing monitoring. It helps to translate a plan into a discrete set of actions and sub-actions (conventionally called "activities") including information over the period of implementation (deadlines) and the responsible person. By using the scheme, it is possible to follow the flow of actions and control the main aspects of implementation. On this basis is easier to correct possible mistakes in the design phase and, in general, to overcome obstacles. In this way, the scheme also becomes a tool to reflect on the possible opportunities stemming from the implementation of the SSP.

The Main Target

The tool was targeted at IPs that were carrying out the SSPs and finalizing their GAs. The main characteristic of these plans was that they were (relatively) limited, i.e., they were focused on very specific and realistic objectives that implied a contained number of feed-backs and interactions with the surrounding institutional context. The challenge of these plans was to make these types of actions and objectives implementable by people who maintain their current tasks and duties (typically research and teaching) within their organizations. The monitoring scheme, therefore, is a tool thought to let these people implement the planned actions with continuity and without hampering other usual activities, thus making institutional change possible. Without such an approach, the risk would be to implement change actions at an irregular pace and without full control.

The scheme and the related monitoring method could be implemented by any organization which is engaged in the implementation of similarly limited, although ambitious, change plans. The tool also makes it possible to carry out a self-reflection on the change process.

Its Structure and Features

The tool has a very simple structure. It contains a brief explanation of how monitoring should be designed and implemented (a distinction between "transactional" and "qualitative" monitoring is provided) and a Monitoring Scheme to fill in – a matrix – is provided too. The matrix contains various lines, each dedicated to an activity whose implementation has to be controlled. Each activity is described through a brief title and other relevant aspects, such as the status of implementation, the period of implementation (deadline), and the person supervising the implementation.

Tool application

The tool provides brief indications on how to translate - or break down - the contents of the SSPs into a set of specific activities and the related deadlines to meet. During ResBios, this exercise made it possible to keep implementation under control. It was the first important step of the monitoring phase. The SSPs were designed by indicating the actions and activities to carry out in general (and the deadlines to meet), but their actual implementation needed more details (that had to be, of course, consistent with the overall picture indicated in the SSPs).

The translation was a collective and shared work (carried out in January 2022). All the people involved in implementation revised how the SSPs had been broken down into detailed activities and deadlines. In this sense, the shared definition of the content of the monitoring scheme helped to foster a consensus among the people involved about the things to be done, the workloads, etc.

In the ResBios experience, the people who monitored the implementation of the SSPs were external to the IPs (i.e., were ResBios partners). Their role was to ask the implementing team, during a periodic monitoring meeting (online), the implementation status using the activities and deadlines listed in the scheme. In-between two successive meetings, the implementing teams sent the external monitoring persons the scheme with the main updates concerning the implementation of the SSPs. Notwithstanding this, it is perfectly possible that a person internal to the team implementing a certain plan of action (typically, its leader) is charged with this duty.

Additional information	
Author	K&I Team
Original source(s), if any	
RRI Key(s) and/or RRI dimension(s)	All RRI Keys; Reflexivity
Prevailing project phase	Implementation, Sustainability

Go to the tool

Section Two

TOOLS FOR GAS IMPLEMENTATION - FORMS

5. Questionnaire/survey on RRI (Gender and Open Access)

Short description of the tool

THE CONTEXT The questionnaire was developed in the context of assessing the current situation about RRI perceptions with a focus on gender equality and open access issues in the Biosciences field at the University level.
WHAT IS IT FOR The questionnaire is used to access the current situation on gender equality and open access issues in the Biosciences field at DUTH.
THE MAIN TARGET Department and Faculty members, all-level researchers, M.Sc./PhD students, and graduates involved in the Biosciences at DUTH.
ITS STRUCTURE AND FEATURES The questionnaire is divided into four parts; 1. Demographics (questions about gender, age, degree/position, the field of research), 2. Responsible Research and Innovation, 3. Open access, 4. Gender Equality. The questionnaire was created using Google Forms and was distributed via email. The estimated time for completion was 10 minutes.

Tool application

The questionnaire was submitted for approval by the Ethics and Research Integrity Committee of the University. The final approval was given on 09.06.2021 at the 11th meeting of the committee, with reference number "ΔΠΘ/ΕΗΔΕ/54149/572". The questionnaire was created using Google Forms, and was distributed via email to Department and Faculty members, all-level researchers, M.Sc./PhD students, and graduates involved in the Biosciences at DUTH. The questionnaire was open from 10.06 to 20.06.2021. The questionnaire was very well received by the participants; researchers from all age groups and positions responded to the invitation and completed the survey. A total of 104 people participated.

Additional information	
Author	DUTH Team
Original source(s), if any	
RRI Key(s) and/or RRI dimension(s)	Open Access, Gender; Reflexivity
Prevailing project phase	Design, Implementation

6. Questionnaire for students that receive a talk about gender issues

Short description of the tool

THE CONTEXT

Ensure Gender Equality is still one of the main challenges in our societies. The ICM-CSIC organized activities with educational centres to promote gender equality by sharing their own experiences at the institute. After these sessions, the ICM-CSIC shared the link to a questionnaire with the high-school students to compile their feedback and impressions.

WHAT IS IT FOR

This tool is intended to compile the impressions and feedback of the participants after a training session on gender issues. It also contains a free space for sharing any other need or comment suggested.

THE MAIN TARGET

The tool is thought to be used by researchers organizing formative sessions about gender issues that want to gather impressions and feedback from high-school students. It is specially designed for detecting the needs of students.

ITS STRUCTURE AND FEATURES

The tool contains a brief space to contextualize the questionnaire, the use of personal data agreement (should be adapted to each context) and questions related to the quality, contents and suggestions of the training session.

Tool application

The tool can be used in any research institution (university, research centre, laboratory, etc.) that organizes training and formative actions promoting gender equality among high-school students. This tool can be easily modified to be adapted to other contexts and also, to put stress on other specific factors.

Additional information	
Author	ICM-CSIC Team
Original source(s), if any	
RRI Key(s) and/or RRI dimension(s)	Education, Gender; Reflexivity
Prevailing project phase	Evaluation

Go to the tool

7. Report about activities done in the framework of the Network of Marine Schools

Short description of the tool

THE CONTEXT

The ICM-CSIC organized a pilot test of a formative action with teachers to promote the understanding of the different principles and essential concepts of ocean literacy. The formative action consisted of a series of training sessions and then a phase for applying the new concepts and practices learned with their students. To compile the different educational experiences a template was prepared.

WHAT IS IT FOR

This tool is intended to compile in an easy and organized way the different educational experiences of teachers after the formative action is done. It is designed to facilitate the compilation of this feedback and experiences and also to facilitate the production of a report by the teachers.

THE MAIN TARGET

The tool is for both teachers that participated in the formative action and pilot test of the Network of Marine Schools and the scientists that organized it. It is a tool for detecting and compiling feedback and experiences of teachers trained and then applying the concepts and skills learned.

ITS STRUCTURE AND FEATURES

The tool is an easy way to facilitate the production of a report by teachers. It contains information about the teacher in order to provide enough recognition, a description of the group of students, work done with the students, main opportunities and difficulties that emerged, conclusions and future perspectives, photographies and other comments or clarifications needed.

Tool application

The tool can be used in any research institution (university, research centre, laboratory, etc.) that organizes training and formative actions dedicated to formal or non-formal education and needs to compile information about the work done with the participants. It can be easily adapted to other contexts.

Additional information	
Author	ICM-CSIC Team
Original source(s), if any	
RRI Key(s) and/or RRI dimension(s)	Education; Reflexivity
Prevailing project phase	Sustainability

Go to the tool

8. Certificate of Attendance for students and researchers

Short description of the tool

THE CONTEXT

The Certificate was developed in the context of the organisation and promotion of science education activities with schools carried out by DUTH, aimed at secondary schools in Evros Prefecture. These activities require the involvement of many people, including students, PhD students and researchers.

WHAT IS IT FOR

The Certificate is an instrument with which DUTH recognises the voluntary work done by students and researchers in science education activities to promote RRI in the biosciences.

THE MAIN TARGET

The Certificate is intended for undergraduate students in the Department of Molecular Biology and Genetics, PhD students and researchers.

ITS STRUCTURE AND FEATURES

The Certificate contains the student's details, department of origin, and basic information on the activity carried out (date, the title of the activity/seminar attended). The certificate is signed by the head of the DUTH Team. The Certificate contains the logos of DUTH and the ResBios project.

Tool application

The Certificate is given to the student and the researcher who can then include the indicated activity in his or her CV as a supporting document. Participation in the activities covered by the certificate is taken into account in the evaluation of the student/researcher's career.

Go to the tool

Additional information	
Author	DUTH Team
Original source(s), if any	
RRI Key(s) and/or RRI dimension(s)	Education, Governance; Inclusiveness
Prevailing project phase	Implementation, Sustainability

9. Certificate for the researchers that participate and are involved in RRI actions: training sessions for the Network of Marine Schools

Short description of the tool

THE CONTEXT

Activities concerning outreach and education are usually conducted by volunteers at universities and research centres. Ocean Literacy is promoted at the Institut de Ciències del Mar mainly voluntarily. One of the ways to promote the engagement of researchers in those activities is by recognizing those efforts. With a certificate, the researchers can prove their involvement in outreach and education for different promotions and vacancies.

WHAT IS IT FOR

This tool is mainly oriented to promote the engagement of researchers in outreach and scientific education and also it is intended to help researchers prove their involvement in outreach and education activities.

THE MAIN TARGET

The tool applies to all senior and young researchers, regardless of their background, that participates in outreach and science education activities.

ITS STRUCTURE AND FEATURES

This tool consists of personal certificates that are specially designed for ocean literacy and specifically for the staff of the Institut de Ciències del Mar but it can be adapted to different contexts.

Tool application

The tool can be adapted and used in any research institution (university, research centre, laboratory, etc.) to recognize the involvement of the staff in outreach and scientific education. With the last sentence, it is highlighted the value of RRI. It also can be adapted to different contexts.

Go to the tool

Additional information	
Author	ICM-CSIC Team
Original source(s), if any	
RRI Key(s) and/or RRI dimension(s)	Education, Public Engagement; Inclusiveness
Prevailing project phase	Implementation

10. Certificate for the researchers involved in RRI actions: actions for gender equality

Short description of the tool

THE CONTEXT

Activities concerning gender equality are usually conducted by volunteers (mainly women) at universities and research centres. Gender equality is promoted at the Institut de Ciències del Mar mainly on a feminized voluntary basis. One of the ways to promote the engagement of researchers in those activities is by recognizing those efforts. With a certificate, the researchers can prove their involvement in gender equality for different promotions and vacancies.

WHAT IS IT FOR

This tool is mainly oriented to promote the engagement of researchers in gender equality actions and also it is intended to help researchers prove their involvement in gender equality activities.

THE MAIN TARGET

The tool applies to all senior and young researchers, regardless of their background, that participate in gender equality activities.

ITS STRUCTURE AND FEATURES

This tool consists of personal certificates that are specially designed for gender equality and specifically for the staff of the Institut de Ciències del Mar but it can be adapted to different contexts.

Tool application

The tool can be adapted and used in any research institution (university, research centre, laboratory, etc.) to recognize the involvement of the staff in the promotion of gender equality. In the last sentence, it is highlighted the value of RRI. It also can be adapted to different contexts.

Go to the tool

Additional information	
Author	ICM-CSIC Team
Original source(s), if any	
RRI Key(s) and/or RRI dimension(s)	Education, Gender; Inclusiveness
Prevailing project phase	Implementation

11. Certificate for the researchers involved in RRI actions: actions for promoting citizen engagement

Short description of the tool

The Context

Despite its main importance, public engagement activities are scarce and so should be appreciated. Public engagement is promoted at the Institut de Ciències del Mar by specific projects and then mainly voluntarily. On June 8th the ICM-CSIC organizes a public engagement activity to promote "ocean responsibility". One of the ways to promote the engagement of researchers in those activities is by recognizing those efforts. With a certificate, the researchers can prove their involvement in public engagement activities for different promotions and vacancies. It also can be used to recognize the involvement of other civic associations in the activities conducted.

What is it For

This tool is mainly oriented to promote the engagement of researchers in public engagement activities and also it is intended to help researchers prove their involvement in outreach and education activities. It is also used to recognize the involvement of other civic associations in the activities conducted.

The Main Target

The tool applies to all senior and young researchers, regardless of their background, that participates in public engagement activities. Also, civil associations participate in public engagement activities with universities or research centres.

Its Structure and Features

This tool consists of personal certificates that are specially designed for public engagement and specifically for the staff of the Institut de Ciències del Mar or the network of the ICM-CSIC but it can be adapted to different contexts.

Tool application

The tool can be adapted and used in any research institution (university, research centre, laboratory, etc.) to recognize the involvement of the staff in public engagement activities. The last sentence it is highlighted the value of RRI. It also can be adapted to different contexts.

Additional information	
Author	ICM-CSIC Team
Original source(s), if any	
RRI Key(s) and/or RRI dimension(s)	Public Engagement, Education; Inclusiveness
Prevailing project phase	Implementation

Go to the tool

12. Certificate for the teachers that participate in the pilot test and formative action of the Network of Marine Schools

Short description of the tool

THE CONTEXT

To be Ocean literate means to understand the influence of the ocean in our daily lives and the influence of our daily activities on the ocean. The studies about the level of ocean literacy in our societies state a lack of understanding of ocean-related issues. Traditionally, educators tend to use land-based examples as well as the different educational resources are mainly focused on land. The ICM-CSIC organized a pilot test of a formative action with teachers to promote the understanding of the different principles and essential concepts of ocean literacy.

WHAT IS IT FOR

This tool is intended to appreciate the big effort of teachers for participating in a training and pilot test that push them out of their comfort zone. Participating in ocean literacy training and integrating new approaches daily should be enough appreciated.

THE MAIN TARGET

The tool applies to the teachers that participate in training and pilot test of the Network of Marine Schools.

ITS STRUCTURE AND FEATURES

The tool is a show of appreciation for the big effort done by the teachers that participated in the pilot test and formative action of the Network and Marine Schools and so contains their names, the effort done and appreciation of their commitment. It is very appreciated and serves as proof for their applications to gain a position. It can be adapted to other contexts and similar efforts.

Tool application

The tool can be used in any research institution (university, research centre, laboratory, etc.) that organizes training and formative actions with different publics to recognize their effort and ensure its engagement.

Go to the tool

Additional information	
Author	ICM-CSIC Team
Original source(s), if any	
RRI Key(s) and/or RRI dimension(s)	Education; Inclusiveness
Prevailing project phase	Sustainability

13. Template for Collaboration Agreement

Short description of the tool

THE CONTEXT The template for the Collaboration Agreement was developed in the context of the cooperation of the ResBios MBG DUTH Team with external stakeholders/decision makers.
WHAT IS IT FOR The template describes the agreement between DUTH and an external stakeholder about their cooperation on a specific activity of the ResBios project.
THE MAIN TARGET The template for the Collaboration Agreement can be applied to any new agreements developed between DUTH and external stakeholders/decision makers.
ITS STRUCTURE AND FEATURES The template for the Collaboration Agreement contains information about the objectives of the cooperation, the responsibilities of the two partners and other related information. The agreement is signed by the head of the DUTH Team and the representative/head of the external stakeholder and contains the logos of DUTH and the ResBios project, as well as the logo of the collaborated partner.

Tool application

A Collaboration Agreement has been developed based on the above template, for the cooperation between DUTH and the Directorate of the Office of Secondary Education of Evros, involving activities related to teaching interventions to high school students, organization of training seminars for science teachers of Secondary Education and other actions.

Go to the tool

Additional information	
Author	DUTH Team
Original source(s), if any	
RRI Key(s) and/or RRI dimension(s)	Education, Governance; Inclusiveness
Prevailing project phase	Implementation, Sustainability

14. Contract among educational centres and the ICM CSIC for the pilot phase of the Network of marine schools

Short description of the tool

THE CONTEXT

The ICM-CSIC organized a pilot test of a formative action with teachers to promote the understanding of the different principles and essential concepts of ocean literacy. To ensure the commitment and participation of the educational centres, the ICM-CSIC sent a "contract" to each participant explaining their duties and rights and this "contract" was signed by both parties ensuring this participation in the pilot test and formative action of the Network of Marine Schools.

WHAT IS IT FOR

This tool is intended to ensure the participation of teachers in a training and pilot test and explain briefly their commitments and rights.

THE MAIN TARGET

The tool is for both teachers that participated in the formative action and pilot test of the Network of Marine Schools and the trainees that organized it.

ITS STRUCTURE AND FEATURES

The tool is a show of commitment and duties for both the teachers that participate in the pilot test and formative action of the Network and Marine Schools and the trainees. It contains information about the educational centre and both parts (teachers and researchers) and also the commitments and rights of each part.

Tool application

The tool can be used in any research institution (university, research centre, laboratory, etc.) that organizes training and formative actions with different publics to ensure their commitment and compile the information needed for correct organization.

Go to the tool

Additional information	
Author	ICM-CSIC Team
Original source(s), if any	
RRI Key(s) and/or RRI dimension(s)	Education; Inclusiveness
Prevailing project phase	Preparation

15. Invitation template

Short description of the tool

THE CONTEXT The template was developed in the context of the implementation of the activities of the RESBIOS DUTH Team.
WHAT IS IT FOR The template was used for the design of an invitation for the activities (workshops/lectures/seminars) performed by the RESBIOS DUTH team.
THE MAIN TARGET The tool can be applied to the activities (workshops/lectures/seminars) performed by a local RRI team.
ITS STRUCTURE AND FEATURES The template contains information about the activity, including the title of the activity, the place and the date and contains the logos of DUTH and the ResBios project, as well as the logo of the collaborated partner(s).

Tool application

Several invitations have been designed based on the above template, for several activities performed by the RESBIOS DUTH team, including the event entitled: "Travelling in the magical world of Biology" as part of the 2nd annual Bioscience fair day.

Go to the tool

Additional information	
Author	DUTH Team
Original source(s), if any	
RRI Key(s) and/or RRI dimension(s)	Public Engagement; Inclusiveness
Prevailing project phase	Implementation

16. Declaration of responsibility template

Short description of the tool

THE CONTEXT The template was developed in the context of the implementation of the activities of the RESBIOS DUTH Team, involving minor participants.
WHAT IS IT FOR The template is used for the design of a declaration of responsibility form for the activities (workshops/projects/seminars) involving minor participants (school students).
THE MAIN TARGET School students, minor participants.
ITS STRUCTURE AND FEATURES The template contains information about the activity, the RESBIOS project, the head of the DUTH Team and the representative/head of the external stakeholder and it must be completed and signed by the parents or guardians of the participants.

Tool application

The template has been used for the development of a declaration of responsibility form for the activities including school students (minor participants).

Go to the tool

Additional information	
Author	DUTH Team
Original source(s), if any	
RRI Key(s) and/or RRI dimension(s)	Public Engagement, Education; Inclusiveness
Prevailing project phase	Implementation

17. Program of extracurricular activities

Short description of the tool

THE CONTEXT The extracurricular activities program at the Faculty of Agriculture of the University of Zagreb is designed to motivate students to participate in various extracurricular activities that will help them in their future professional life. It is a part of lifelong learning.
WHAT IS IT FOR The extracurricular activities program serves as evidence that students have promoted the RRI concept through extracurricular activities.
THE MAIN TARGET The program is intended for undergraduate and graduate students of the Faculty of Agriculture.
ITS STRUCTURE AND FEATURES The program includes the names of the extracurricular activities, information about the semester and the number of hours, the time of implementation and the students' obligations. The person responsible for the extracurricular activities indicates the key competencies of the students according to the List of key competencies for lifelong learning, which is later added as an appendix to the graduation certificate.

Tool application

The Extracurricular Activities and Key Competencies for Lifelong Learning program can be used by other partners to develop a similar RRI tool. It can be used as an appendix to the graduation certificate.

Go to the tool

Additional information	
Author	UNIZG-FAZ Team
Original source(s), if any	
RRI Key(s) and/or RRI dimension(s)	Education, Ethics, Governance; Responsiveness
Prevailing project phase	Sustainability

18. Guide for adapting the content of talks and activities related to Ocean Literacy to the audience

Short description of the tool

THE CONTEXT

To be Ocean literate means to understand the influence of the ocean in our daily lives and the influence of our daily activities on the ocean. The studies about the level of ocean literacy in our societies state a lack of understanding of ocean-related issues. The ICM-CSIC organizes different outreach and educational activities mainly voluntarily and by researchers that cannot have any experience in education or outreach activities. An easy and simple guide for adapting the contents of talks and activities conducted by the staff of the ICM-CSIC emerged as a detected need.

WHAT IS IT FOR

This guide is intended to facilitate the work done in outreach and scientific education by the staff of the ICM-CSIC and offer tips and resources for adapting the context to different audiences.

THE MAIN TARGET

The guide is mainly thought to be used by researchers but can also be used by any other actor that wants to conduct an outreach or scientific education activity and needs tips or recommendations adapted to the audience.

ITS STRUCTURE AND FEATURES

The guide contains the context of ResBios and the importance of RRI, the importance of outreach and educational activities, as well as the promotion of ocean literacy and tips and recommendations for the different public.

Tool application

The guide is designed for the ICM-CSIC but can be used in any research institution (university, research centre, laboratory, etc.) that organizes outreach scientific education actions with different publics. Also, other individuals want to contribute to promoting scientific literacy. This tool can be easily modified and adapted to put stress on other specific factors.

Go to the tool

Additional information	
Author	ICM-CSIC Team
Original source(s), if any	
RRI Key(s) and/or RRI dimension(s)	Education, Public Engagement; Inclusiveness, Responsiveness, Anticipation
Prevailing project phase	Design

19. Guide for an inclusive use of language adapted to marine science

Short description of the tool

THE CONTEXT Ensuring gender equality is a real challenge for universities and research institutions. One big challenge in some countries is the inclusive use of language. The ICM-CSIC is located in Catalonia and Catalan is one of the common languages used at the institute. To promote an inclusive use of this language a guide was identified as a needed and desired tool.
WHAT IS IT FOR This tool is intended to facilitate inclusive communication at the ICM-CSI.
THE MAIN TARGET The guide is mainly thought to be used by researchers of different positions mainly those related to activities of communication or that communicate in Catalan.
ITS STRUCTURE AND FEATURES The document (in the Catalan language) contains information about the importance of an inclusive use of language and also examples and tools to ensure inclusive communication including verbal, writing and visual communication.

Tool application

The tool can be used in any Catalan research institution (university, research centre, laboratory, etc.). The guide includes examples related to marine sciences but can be easily extrapolated to our contexts.

Go to the tool

Additional information	
Author	ICM-CSIC Team
Original source(s), if any	
RRI Key(s) and/or RRI dimension(s)	Gender; Inclusiveness, Responsiveness
Prevailing project phase	Sustainability

20. Declaration on ethical behaviour in research for students

Short description of the tool

THE CONTEXT

Declaration on ethical behaviour in research was created for students of the Faculty of Biology of the Ivan Franko National University of Lviv. The Declaration contains bioethics standards, codes of behaviour, and rules of academic honesty for students of the Faculty of Biology.

WHAT IS IT FOR

In the frame of the ResBios project, IFNUL Team has created the Code of Conduct for students, PhD students, lecturers and researchers. It will help to improve the quality of scientific master's Thesis and term papers, quote the work of other researchers as well as to perform the experimental work using laboratory objects. After the Code of Conduct familiarization, students will sign Declaration on ethical behaviour for students of the Faculty of Biology. The signed Declaration will certify the acception and accomplishment of bioethics standards, codes of behaviour, and rules of academic honesty.

THE MAIN TARGET

The target groups are students and PhD students of the Faculty of Biology.

ITS STRUCTURE AND FEATURES

The Declaration contains the student's details, department of origin, and three sections on bioethics standards, codes of behaviour, and rules of academic honesty. The Declaration will be signed by the student of the Faculty of Biology. It contain the logos of the Faculty of Biology and the ResBios project.

Tool application

Popularization and clarification of honesty, loyalty and trustworthiness among students and researchers will evolve an academic integrity in Ivan Franko National University of Lviv. Participation of Ivan Franko National University in ResBios helped to develop the culture of academic integrity and supported further implementation of RRI principles. The Code of Conduct collects bioethics standards, codes of behaviour, and rules of academic honesty and Declaration on ethical behaviour in research for students of the Faculty of Biology will confirm acceptance and accomplishment of these rules and standards.

Go to the tool

Additional information	
Author	IFNUL Team
Original source(s), if any	
RRI Key(s) and/or RRI dimension(s)	Education, Ethics; Responsiveness
Prevailing project phase	Preparation, Implementation, Sustainability

21. Video Blog "Basic Techniques in Biochemistry and Molecular Biology"

Short description of the tool

THE CONTEXT

Video Blog "Basic Techniques in Biochemistry and Molecular Biology" was launched for students, PhD students, lecturers and researchers. The Video Blog contains educational videos for students of the Faculty of Biology of the Ivan Franko National University of Lviv, as well as popular science videos for schoolchildren, teachers and other interested persons. The Video Blog is diffused on the YouTube channel "Кафедра біохімії ЛНУ імені Івана Франка / The Department of Biochemistry IFNUL".

WHAT IS IT FOR

Video is one of the interactive methods of learning, which facilitates the perception of information. The Video Blog allows better visualize the lectures. The Video Blog is especially relevant during the COVID-19 pandemic and the war in Ukraine. Video is also a way of popularizing biosciences in society.

THE MAIN TARGET

Target groups are students, PhD students, lecturers, researchers as well as schoolchildren, teachers, and other community members.

ITS STRUCTURE AND FEATURES

The main part of the video blog is represented by educational videos. The IFNUL team plan to create and publish such educational videos. Also, the video blog contains popular science videos. A separate section of the Video Blog contains recordings of seminars that were held within the framework of ResBios activities.

Tool application

Educational videos are used in the teaching of courses "Bioorganic Chemistry" "Biochemistry", and "Molecular Biology" and conducting laboratory work from these courses for students of the Faculty of Biology. Educational and popular science videos are used in the work of the after-class circle "Young Biochemists" of the Junior Academy of Sciences of the Lviv region. IFNUL team shared a video for teachers in local secondary schools. They use videos as supplemental materials for natural science lessons.

Go to the tool

Additional information	
Author	IFNUL Team
Original source(s), if any	
RRI Key(s) and/or RRI dimension(s)	Education, Ethics, Open Access, Public Engagement; Responsiveness
Prevailing project phase	Preparation, Implementation, Sustainability

22. Support material for ICM researchers for conducting activities during the Awareness Month

Short description of the tool

THE CONTEXT

Activities concerning gender equality are usually conducted by volunteers (mainly women) at universities and research centres. Gender Equality is promoted at the Institut de Ciències del Mar mainly on a feminized voluntary basis. The ICM-CSIC organizes during the period 11 February-8 March "Awareness Month", to highlight the importance of women in scientific research. One of the ways to promote the engagement of researchers in those activities is by facilitating tools.

WHAT IS IT FOR

This tool is intended to facilitate the work done in gender equality efforts by the staff of the ICM-CSIC and offer tips and resources.

THE MAIN TARGET

The tool is mainly thought to be used by researchers but can also be used by any other actor that wants to conduct gender equality activities and needs tips or recommendations.

ITS STRUCTURE AND FEATURES

The tool contains information about the ICM-CSIC's Awareness Month, tips, and recommendations for organizing gender-sensitive activities and a template for a presentation to be adapted to each context.

Tool application

The tool can be used in any research institution (university, research centre, laboratory, etc.) that organizes gender equality awareness actions with different publics. Also, by other individuals who want to contribute to promoting gender equality. This tool can be easily modified.

Go to the tool

Additional information	
Author	ICM-CSIC Team
Original source(s), if any	
RRI Key(s) and/or RRI dimension(s)	Education, Gender; Inclusiveness, Anticipation, Responsiveness
Prevailing project phase	Preparation

23. Document of presentation of the Network of marine schools for engaging teachers

Short description of the tool

THE CONTEXT

To be Ocean literate means to understand the influence of the ocean in our daily lives and the influence of our daily activities on the ocean. The studies about the level of ocean literacy in our societies state a lack of understanding of ocean-related issues. Traditionally, educators tend to use land-based examples as well as the different educational resources are mainly focused on land. The ICM-CSIC organized a pilot test of a formative action with teachers to promote the understanding of the different principles and essential concepts of ocean literacy. This formative action was thought of as a preliminary phase for the development of the Network of marine schools at the institute. To ensure the commitment and participation of the educational centres, the ICM-CSIC sent a document presenting the network to each potential educational centre that could participate in the formative action.

WHAT IS IT FOR

This tool is intended to ensure the participation of teachers in a training and pilot test for the Network of Marine Schools. The tool is used to better understand the framework of the Network and also to avoid long calls and long procedures to the trainees in a document easy to be read.

THE MAIN TARGET

The tool is for both teachers that participated in the formative action and pilot test of the Network of Marine Schools and the trainees that organized it.

ITS STRUCTURE AND FEATURES

The tool contains information about the challenges of ocean literacy and also of scientific education and presents the Network of Marine Schools.

Tool application

The tool can be used in any research institution (university, research centre, laboratory, etc.) that organizes training and formative actions with different publics and wants to present it to potential educational centres that could participate in it. It can be adapted to other networks or formative actions and other different contexts.

Go to the tool

Additional information	
Author	ICM-CSIC Team
Original source(s), if any	
RRI Key(s) and/or RRI dimension(s)	Education; Anticipation; Responsiveness; Inclusiveness
Prevailing project phase	Preparation

Section Three

TOOLS FOR MENTORING AND MUTUAL LEARNING - FORMS

24. A scheme of seven boundary conditions on how to facilitate implementing gender equality plans in academic organisations

Short description of the tool

The Context

This scheme/tool came about as a result of bringing about institutional change and opening up the official space for gender equality at the University of Gdańsk. This process has been long and challenging involving lots of individual projects, and undertaking several grassroots activities by many academics and UG staff to raise gender awareness in the academic environment. Among others, one crucial issue was UG involvement in EU-granted projects touching on responsible research and innovation (RRI) aspects. These projects (apart from RESBIOS eg. STARBIOS2, ACTOonGENDER, MINDtheGEPs) led to enabling structural changes in the field of RRI – and one of its fundaments relates to achieving gender equality and raising gender awareness within academic institutions.

What is it For

Based on the assumption that women face several structural barriers that deprive them of using their full potential in the world of science, and not using the full potential of society we are not using enough talents that exist and hence science is missing out. Therefore this tool describes what seven boundary conditions should be met by a university in order not to miss out talents brought by women into the world of academic institutions.

The Main Target

To promote good practice and support academic institutions in bringing up gender equality in academic areas including: raising awareness of gender equality in the academic community, ensuring gender balance in decision-making bodies, recruitment process and in the development of academic careers, gendering research and teaching.

Its Structure and Features

Based on good practices from the University of Gdańsk this tool is structured in the form of seven comprehensive points which if followed should facilitate the developing and implementing gender equality plan at the university level. The scheme encourages taking up action and indicates solutions, suggestions, and practical actions which should be taken to reinforce gender equity in the academic institution. The seven points refer to: counteracting the effects of gender stereotypes in science; measuring inequality in the organization that needs changes; creating an institutional plan for the implementation of gender equality principles; involving the entire academic community, including men; mentoring activities; equality language; sharing good practice outside academia.

Tool application

Referring to all seven boundary conditions in the activities undertaken at the University of Gdańsk is a broad process and is reflected at various levels of academic life including research, teaching, management, administration, work-life balance and many more. A direct effect of following the practices presented in the scheme can be very well shown in the Gender Equality Plan adopted for UG in 2021 which defines five goals necessary to ensure balance in achieving gender equality at UG. The GEP makes the past projects' outcomes last. For 3 years now we conduct courses at all levels (The role of gender in research (RRI) and research careers; Preparation for active work in a diverse team; Responsibility-oriented scientist). The courses will become more diffused and partly obligatory in future years thanks to GEP. Some of the measures identified in GEP for 2022-23 are already being implemented e.g., mentoring sessions for research and administration staff, a family room for UG staff in one of the units, and awards for MA and PhD thesis including gender equality in research content. This scheme was presented and discussed in the ResBios mentoring meetings on gender conducted by UG for ResBios "newcomers" partners; on the webinar entitled Gender equality in research and innovation in June 2021 organised by the Regional Office of the Pomorskie Voivodeship in Brussels https://ug.edu.pl/news/en/1612/gender-equality-universities-sharing-knowledge-region ; on ResBios blog https://resbiosproject.medium.com/good-practices-from-university-of-gda%C5%84sk-46b7360bffa4.

Go to the tool

Additional information	
Author	dr hab. Natasza Kosakowska-Beezecka prof. UG, dr Magdalena Żadkowska
Original source(s), if any	Kosakowska-Berezecka, Żadkowska, Pawlicka. Article in print[1]
RRI Key(s) and/or RRI dimension(s)	Gender; Inclusiveness, Reflexivity;
Prevailing project phase	All phases

[1] Kosakowska-Berezecka, Żadkowska, Pawlicka (in print). "Gender Equality = Common Cause. Gender Equality Measures as an Element of Effective Diversity Management and a Source of Positive Structural Changes at Universities based on the Example of the University of Gdańsk on Seven Boundary Conditions for the Implementation of Equality Measures published" in Miscellanea Anthropologica et Sociologica.

25. ResBios Educational Measures - Methodology and content of workshops for science education

Short description of the tool

The Context

Responsible Research and Innovation (RRI) is an overarching policy strategy to increase the intensity and the quality of the interactions between scientific research and society, so that research and innovation meet the values, needs and expectations of society in the best way possible. Academic education may be a key feature to trigger the process.

The tool ResBios Educational Measures provides concepts, methods and contents for the promotion of RRI key issues in general and science education in particular. The tool is based on broad literature research and former experiences of the STARBIOS2 project. Elements of the ResBios Educational Measures were presented, negotiated and adapted within 10 virtual ResBios mentoring meetings on education which were conducted from February 2021 to July 2022.

What is it For

This tool is intended to provide educational methods, concepts and strategies to promote RRI at the institutional level. RRI covers the keys of Public Engagement, Gender Equality, Science Education, Open Access, Ethics and Governance. It is a broad concept for the critical reflection and development of research and innovation. Adequate educational tools may promote responsible research and the dialogue between science and society.

The Main Target

The target is to provide researchers and research institutions with a series of handsome tools to foster the discussion about RRI issues at the institutional level (students and researchers) and with the public. Based on the experiences of partner UBremen the constructs of RRI are broken down into concrete research contents, and through information, reflective activities and discussions the related RRI dimensions can be analyzed and improved.

Its Structure and Features

The tool includes a series of workshops that can be conducted in person or online. Based on the 5E model by Atkin, the workshops should consist of a series of established steps or phases: Engage, Explore, Explain, Elaborate, and Evaluate.
Engage: The workshops should be opened with a short activating phase, in which the own engagement on the workshop´s theme and its meaning for the own institution is stimulated.
Explore: Then, the "guiding question" should be presented and educational methods, concepts and instruments should be explored and/or presented.
Explain: Good practice examples to explain the learning process regarding RRI should be offered.
Elaborate: It is necessary that the participants (learners) have enough time to elaborate on the new approaches and combine them with their prior knowledge.
Evaluate: At the end, there should be a short reflection phase about the connection of the newly learned to the own institutional frame.
The order of the workshops can be changed according to the requirements.
Workshop 1. Capacity building on RRI at the institutional level
Theme: How to raise the awareness of RRI in research institutions?
Focus: Societal Engagement: How to reach researchers and how to measure success?
Method: Reflective activities in the field of societal engagement and contextualization of research
Workshop 2. Establishing education activities at the university level in the context of ethics
Theme: Which educational activities are suitable to reflect on RRI issues?
Focus: Societal Engagement: How a training of students to promote Health Literacy can be conducted?
Method: Material-based writing

Workshop 3. Establishing educational activities to promote gender sensitiveness at the university level
Theme: Which educational activities are suitable to reflect on RRI issues?
Focus: Gender and diversity in research: How could be conducted training of students to promote openness for gender and diversity issues? Gender and diversity in lecturing: What the good RRI lecturers do.
Method: Reflective cards and a reflective questionnaire
Workshop 4. Science education in schools carried out by researchers
Theme: Which educational activities are suitable for children/adolescents to reflect on RRI issues?
Focus: Societal engagement and the borders of research ethics
Method: Open Campus Event: Molecular Biology

Tool application

The tool can be used in any research institution (university, research centre, laboratory, etc.) to provide
educational methods, concepts, and theories about different RRI issues.

Additional information	
Author	UBremen Team
Original source(s), if any	
RRI Key(s) and/or RRI dimension(s)	Education, Public Engagement, Gender, Ethics; Reflexivity
Prevailing project phase	Implementation

26. ResBiosQ - Questionnaire on attitudes, knowledge and needs for the implementation of RRI at the institutional level

Short description of the tool

The Context

The knowledge and attitudes regarding RRI in research institutions vary greatly depending on the state of the scientific career, status groups, gender, and age. The successful implementation of RRI in research institutions requires detailed information about the interests, attitudes, knowledge and needs of scientists regarding the key issues of RRI, societal engagement, ethics, gender, open access, and science education. Therefore, the conduction of an RRI questionnaire survey is suggested and directed to the different stakeholders of the research institution. The questionnaire ResBiosQ is based on broad literature research and structured interviews with 20 students and researchers of different statuses at University Bremen. The original version was elaborated in the STARBIOS2 project and comprised about 300 items. The questionnaire was represented, adapted and reduced for ResBios based on the experiences and suggestions of Resbios partners.

What is it For

This tool is intended to gather information about the state-of-art of RRI key issues societal engagement, gender, ethics, open access, and science education at the beginning of an RRI implementation phase. The questionnaire consists of five RRI key-issue sections, in each section attitudes, knowledge, and needs are collected. The outcome of the questionnaire analysis shall support research institutions to discuss RRI issues with different target groups and to develop a road map of institutional change.

The Main Target

The tool is addressed to all students and researchers of different status groups (doctoral students, post-doctoral researchers, research group leaders) of research institutions and universities in the field of biosciences.

Its Structure and Features

The tool includes a questionnaire with about 250 mainly closed questions (agree/disagree to a statement or 5-Point-Likert-scales). The questionnaire can be filled in online (e.g. using the software survey monkey) or via paper/pencil within about 40-50 minutes. The questionnaire can be completed individually or in groups. If completing the ResBiosQ in groups, the aim here is to promote the group discussion about RRI issues. The analyses of data should be made by SPSS (Statistical Package for Social Sciences; e.g. simple frequency analyses). The presentation of data should be made in a broader institutional frame to promote the exchange and negotiation of RRI issues in a broader institutional frame.

Tool application

The tool can be used in any research institution which wants to collect a starting point for the implementation of RRI at the institutional level. The questionnaire findings offer the possibility to discuss the strength and needs of the research institution. They build the basis for the set-up of an implementation strategy.

Additional information	
Author	UBremen Team
Original source(s), if any	STARBIOS2 project, adapted for ResBios
RRI Key(s) and/or RRI dimension(s)	Education, Public Engagement, Gender, Ethics, Open Access; Reflexivity
Prevailing project phase	Evaluation

27. Design Thinking Workshop (DTW)

Short description of the tool

The Context

Design Thinking (DT) was first described by John E. Arnold in "Creative Engineering" (1959) and L. Bruce Archer in "Systematic Method for Designers" (1965) and can be applied in different fields and for different purposes. DT is a structured, creative problem-solving process that enables innovation and a positive impact in solving tomorrow's problems. It is a human-centred design process that truly understands and empathizes with the user. The five-step process includes: i) Empathize, learning about the user; ii) Define, constructing the viewpoint based on user needs; iii) Ideate, brainstorming and developing creative solutions; iv) Prototype, creating a representation of the ideas; v) Test, testing the ideas. The core purpose of the process is to allow you to work in a dynamic way to develop and launch innovative ideas.

What is it For

Design thinking can train critical and comprehensive thinking skills from various points of view to sharpen analysis. During a Design Thinking Workshop (DTW), participants/users can be trained to be more sensitive to different topics, including RRI, in a problem-solving perspective, trying to find a solution to an existing problem. Critical and creative thinking can lead to finding the right solution. The reflection process is also needed at the final stage of a DTW to draw lessons from the thinking process, so that it will be better in the future.
A DTW is a tool for identifying solutions to a specific problem, by iterating a solution with a multi-disciplinary team and the system's end-users. A DTW embodies principles of design thinking: empathy, ideation, and prototyping. What you can discover and learn in a single DTW session might require months of meetings and discussions.

The Main Target

The tool applies to all researchers, regardless of their seniority, background, or the type of institution in which they work, public or private. DTW can be applied to students as part of the lecture or to the public as their view of RRI.

Its Structure and Features

The process begins with taking action and understanding the right questions. It involves making simple changes in mindset and approaching problems from a new direction.
The first phase is the problem space phase, where the name of the group, the selection of the angle/perspective of the problem to be addressed (please check the tool for ethical reflection between senior and young researchers as a possible example), and the identification of the group representative to present the problem to one of the other groups are determined. Then, each group conducts in-depth interviews to understand the problem in detail. After completing this phase, the groups present the results of their discussion in the form of a description of the problem and its analysis on an empathy map.
After going through the problem space phase, the next phase of design thinking follows, which is the solution space. Each group is asked to continue the discussion and formulate appropriate solutions to exposed RRI problems.

Tool application

Design thinking has a human-centred core. It encourages institution/organization to construct ideas that are emotionally meaningful as well as functional. The elements of design thinking combine to form an iterative approach – one you can try out and adapt to suit your needs. In employing design thinking, you're pulling together what is the best solution to the problem with what is practically feasible.

Go to the tool

Additional information	
Author	UP Team
Original source(s), if any	
RRI Key(s) and/or RRI dimension(s)	Ethics; Reflexivity
Prevailing project phase	Preparation

28. Workshops for ethical reflection between senior and young researchers

Short description of the tool

The Context

According to the UP experience, academic research is based on knowledge transfer where junior researchers learn the fine skills of the research through the extensive supervision of a senior researcher. Supervisors, project leaders, PhD candidates and all other research team members (technical staff, assistants, students etc.) have a general and comprehensive responsibility for research ethics in projects conducted by their participants. The responsibility for research ethics applies at all stages of a project, from conceptualization to completion, and it includes research ethics in a broad sense – from co-authorship and data sharing to integrity and social responsibility. Institutions must ensure that research, teaching, training, supervision, project leadership, administration, and governance are conducted in accordance with recognized norms of research ethics, but even so, there are sometimes unclear divisions of roles and responsibilities, and this has a particular impact on early career researchers.

What is it For

This tool is intended to help develop GA for ethical judgement and reflection, clarify ethical dilemmas, promote responsible research, and prevent misconduct between senior and junior scientists. The outputs of the workshop can highlight different considerations and obligations between two groups and provide insight into the perceptions of responsibility of older and younger researchers, research institutions, and other research actors.

The Main Target

The tool applies to all senior and young researchers, regardless of their background, or the type of institution in which they work, whether public or private.

Its Structure and Features

The tool includes two workshops that can be conducted in person or online.
Both workshops should be opened with a presentation that introduces the workshop's focus topic, followed by focus groups in which participants are divided into two groups based on their level of seniority (established or early career researchers). After the focus group session, the organizers report on the main findings and moderate the discussion. To encourage interaction between participants, interactive online tools such as MiroApp and Mentimer can be used in case of online implementation, to help organisers to analyse SWOT.

Tool application

The tool can be used in any research institution (university, research centre, laboratory, etc.) to provide ethical reflection and clarify ethical dilemmas connected with Bioethics and OA policy and funding. Workshops can identify the needs of senior and younger researchers in terms of ethical procedures and better identify gaps in research integrity depending on the seniority of the researcher. There may be grey areas between research fields/institutions and/or researchers and other forms of knowledge production, which may have different purposes, levels of independence, quality control systems, and publication routines. Therefore, researchers and research institutions should define precisely what constitutes their research and what constitutes knowledge production and communication also by using this approach.

Additional information	
Author	UP Team
Original source(s), if any	ResBios Deliverble D 4.1
RRI Key(s) and/or RRI dimension(s)	Ethics, Open Access; Reflexivity
Prevailing project phase	Preparation

29. Insights for online engagement and brainstorming

Short description of the tool

THE CONTEXT Problem-solving and generating solutions require the contribution of multiple people and a setting where everyone feels comfortable contributing. However, it is not always possible to have all participants gathered in the same place. During the pandemic this situation was extreme, but this challenge will remain in post-pandemic times. It is thus necessary to have tools suitable for engagement and brainstorming in an online setting as well.
WHAT IS IT FOR This tool is intended to help gather ideas, reach a consensus or identify priorities, and engage participants in the discussion.
THE MAIN TARGET Everyone is involved in decision-making and problem-solving, but the tool can be used during meetings or other contexts as well.
ITS STRUCTURE AND FEATURES The tool includes general instructions on how to use Miro and Mentimer to engage participants in a meeting, gather ideas, and identify challenges or priorities. Specifically, recommendations on how to help participants familiarise themselves with the online applications and links to online resources, the timeline for sending information and suggestions on how to moderate the session are included.

Tool application

The tool can be used in any research institution (university, research centre, laboratory, etc.) to gather suggestions or ideas, identify priorities or challenges, or simply as an icebreaker or engagement activity. The tool can be used to stimulate discussion to reach a consensus and ease decision-making processes.

Additional information	
Author	UP Team
Original source(s), if any	ResBios RRI mentoring meetings - Laura Iacolina
RRI Key(s) and/or RRI dimension(s)	Ethics, Open Access; Reflexivity, Inclusiveness
Prevailing project phase	Preparation

30. ResBios Online Engagement Cheat Sheet

Short description of the tool

THE CONTEXT
Communication Tool: A document listing resources and techniques to help engage an online audience. This resource was created within the ResBios framework as part of the project's efforts to encourage greater public engagement (in line with the RRI keys and dimensions), throughout a time when online events needed to be organized and in person activities were not possible due to the COVID-19 global pandemic and associated public health safeguards.
WHAT IS IT FOR
To help the facilitation of online events and provide methods and resources for engaging audiences during online events and motivate audiences to actively participate in conversations and debates.
THE MAIN TARGET
This tool is a resource for anyone planning an online activity/webinar/workshop, where participation from the audience is a necessity.
ITS STRUCTURE AND FEATURES
This document includes a list of potential techniques, resources and online tools.

Tool application

When organising any event, it is important to consider how your audience is required to participate and to be sure they are engaging with the content being shared. The way you can approach this depends highly on the format and what input you require from your participants, and without careful planning, this can prove to be difficult. This is especially true when it comes to Online events, where an audience may not have many opportunities to interact with either the content, with each other, or with those running the event. Therefore, the team at EUSEA have written up an Online Engagement Cheat Sheet, providing some methodologies, resources and online tools to help facilitate audience interaction and contribution during such online activities. This list is not extensive but should provide some thoughts and ideas on how to promote and run more interactive sessions online.

Additional information	
Author	EUSEA Team
Original source(s), if any	https://www.flipsnack.com/resbios/resbios-online-engagement-cheat-sheet.html
RRI Key(s) and/or RRI dimension(s)	Public Engagement; Responsiveness, Inclusiveness
Prevailing project phase	Implementation

TOOLS for PLANNING and MONITORING Gas and their SUSTAINABILITY

TOOL #1
Note for drafting the Grounding Action Project Ideas (GAPI)

RESponsible research and innovation grounding practices in BIOSciences

WP2 – Co-design of Grounding Actions

Note for drafting the Grounding Action Project Ideas (GAPI)

March 2020

This document has been developed by Knowledge and Innovation (K&I) as part of the co-design activities (WP2) of the Grounding Actions (GA) carried out under the project "RESponsible research and innovation grounding practices in BIOSciences– RESBIOS".

With this Note K&I is proposing a common format for the development of all the Project Ideas of the Grounding Actions (GAPIs) foreseen in the project. The indications contained in this note have not to be intended as mandatory, but only as general suggestions that should be adapted to the specific features and needs of the different implementing organisations.

The project ideas of the Grounding Actions (Task 2.2.) is an important preliminary task for all teams, responding to at least three different needs:

1. **Revising the Grounding Action** outlines as they were envisaged in the Description of Action (DoA) and changing them if necessary.
2. **Preparing the dialogue** with internal and external stakeholder to be held for co-designing the Grounding Action (Task 2.3) and for building **a consensus basis for the GAs** providing for their long-term impact and sustainability
3. Providing **a basis for the detailed design of the Grounding Actions**, as well as for other activities foreseen in the project such as evaluation and mutual learning.

The note is organized into three sections.

The first one is devoted to shortly present the **methodology of the Grounding Actions proposed in RESBIOS** i.e., a methodology for promoting Responsible Research and Innovation related institutional change in the involved organizations. This section can be useful to identify the objectives of the Grounding Actions and to co-design them.

The **second section** focuses on the role of co-design in the overall perspective of the project, summarises the different steps of the co-design activity, and suggests a timeline for coordinating the work of the different implementing organisations.

The **third section** presents a set of tools for supporting the "scoping phase" of the co-design process.

SECTION 1
APPROACHES TO THE GROUNDING ACTIONS

To develop the Grounding Actions, it may be important to keep in mind the main focus of the RESBIOS project: introducing RRI in the involved organisations through the activation of an Institutional Change process. This is why the first section of the note is entirely devoted to a summary of the approaches characterising the RESBIOS project. After a review of the concepts of RRI and Institutional Change, we will focus on describing a methodology to activate an institutional change process in research organisations.

1.1. Responsible Research and Innovation (RRI)

The main aim of RESBIOS project is that of promoting structural change processes oriented to **responsible research and innovation** (RRI) in universities and research institutions.

RRI is an attempt to cope with what EC sees as one of the main risks for European research, i.e., its loose connection with society, or, in other words, its **low degree of socialisation**. We could speak of a limited socialisation of science, i.e., limited capacity of scientific actors to consider societal issues in the research process, to interact with society and to cooperate with stakeholders. This has a wide range of consequence which may make European research:

- **Unable to address the key problems** that European societies are facing and therefore to contribute to "achieving objectives of sustainable development (consisting of economic, social as well as environmental aspects)"
- **Unable to exploit its potential** in terms of innovation and commercial impact and therefore **less competitive** in the global market
- **Socially isolated**, **ethically contested**, and **not supported** by citizens, public authorities and economic players (with negative consequences on available funds, among others).

Five keys of RRI have been identified by EC:

- **Public engagement** → promoting the engagement of all societal actors – including researchers, citizens, policymakers, business and industry – in the research and innovation process
- **Gender** → favouring gender equality within research institutions as a necessary step for modernising them as well as favouring gender in research and innovation content
- **Education** → enhancing the current education process so as to provide future researchers and other societal actors with new capacities in taking responsibility in the research and innovation process and attracting children and youth to science and technology
- **Open Access** → making R&I transparent and accessible through Open Access to scientific products and Open Data
- **Ethics** → making R&I able to respect fundamental rights and ethical standards, to be viewed not as a constraint, but as the main tool for ensuring high-quality research results.

The adoption of this approach does not propose additional constraints to the development of research but **new development opportunities**, also considering that the ways in which research is organized have been changing profoundly in the last years and require new models of management. The practice of RRI can produce significant benefits. In general terms, we could consider the following examples.

- Sharing the results in a cooperative scientific community can enhance the progress of research.
- A transparent relationship with the needs expressed by society (new drugs, therapeutic priorities, new approaches to food safety) can support researchers in the definition of research objectives.
- Gender balance may favour the enhancement of skills overcoming prejudices and ingrained habits.
- The relationship with market, users, institutions, charity organizations, becomes strategic in the new model of development and research funding.
- The exploitation of results and technology transfer play a critical role in the development of research. Therefore, research institutions have to define their own models of relationship with the market and the management of ethical, political and cultural aspects.

1.2. Institutional change as "creation of space"

As stated above, RRI is intended as a perspective for activating "institutional changes" in research institutions. It is therefore pivotal to clarify what institutional change actually means.

From the perspective of RESBIOS, grounding RRI in Research Performing Organisations (RPOs) is intended as a way of increasing their *capacity of response* to the challenges emerging in society. In this respect, RESBIOS moves from the idea that the low degree of socialisation of R&I (see 1.1.) is primarily caused by the lack of effective *institutional spaces* for exchanges between scientific institutions and other societal actors. Accordingly, Grounding Actions will be focused on the **development of permanent institutional spaces** for making the research institutions more porous to the input of society. The institutional change promoted by RESBIOS GAs should be therefore oriented to the creation of spaces of different types.

- *Physical or virtual space*: the opening of permanent spaces for short terms interactions with society (example: blogs, surveys, and other two-way feedback collection mechanisms, conferences, workshops, training courses, etc.) – *type 1*
- *Social space*: characterised by the establishment of long-term relationship among different actors (establishment of partnerships, medium- and long-term collaborations) or by the establishment of specific offices inside the RPOs – *type 2*
- *Normative space*: the establishment of new rules, norms, and obligation that inserts societal aspects in the daily life of the organisation and in research activities – *type 3*
- *Symbolic space*: the establishment of new visions, symbols, mission statements, and shared interpretations about the relationship between science and society and related to open science – *type 4*

1.3. A methodology for opening new "institutional spaces"

The Grounding Action approach is based on the consideration that opening new institutional spaces (or promoting institutional changes) usually is not an easy task. In fact, the success/the failure of this change is inevitably linked to contextual factors, including e.g., national policies and regulations, national and local cultures, organisational values, leadership's attitudes and orientation, history and previous experiences within the organisation, and even specific events. Furthermore, the promotion of new action models and new values may generate reactions, also in terms of conflicts, tensions, and resistances. In order to activate RRI-oriented institutional change processes, it is, therefore, necessary to take into account contextual factors and barriers at the outset as well as to develop strategies, which can adequately exploit these factors or cope with them. On this basis, RESBIOS

methodology is informed by the approaches experimented in previous initiatives in the field of institutional change toward RRI and Gender Equality[2], characterised by a set of key elements presented below.

- **GA team**. In each RPO involved with the implementation of the GAs, the first step comprises the establishment of a core GA team that is a group of people in charge of the GA development and implementation. The GA team is to be seen not only as a team in charge of managing the foreseen activities but also as the source of a new and fundamental orientation to promote responsible research and organisation within the research institution.

- **Context analysis**. One of the first actions for the GA team to carry out is an analysis of the context where the GA is to be developed. Such analysis will be focused on features both internal to the organisation (previous experiences on RRI keys, key internal actors to be involved, existing procedures connected with the 5 RRI keys, etc.) and external to the organisation (key stakeholders to be involved, Quadruple Helix actors, emerging trends at the local level, regional or national policies related to the 5 RRI keys).

- **GA plan**. The GA team develops a GA plan where the actions to be carried out will be described in detail. It is a process, which will involve other actors as well, through a set of possible tools (e.g., meetings, public presentations, data sharing, etc.). In this respect, the development of the GA plan is already part of the process of change and not just a preliminary step for the implementation of the project.

- **Mobilisation of other actors**. Both internally (within the RPOs) and externally (in the local context) there are other important individuals, groups or already oriented or willing to promote RRI or some specific aspects of it (female researchers' networks, researchers involved in science communication activities, education or ethical issues; businesses or civil society associations willing to cooperate with R&I, etc.). The GA team should identify such agents and stakeholders and mobilise them for implementing selected activities.

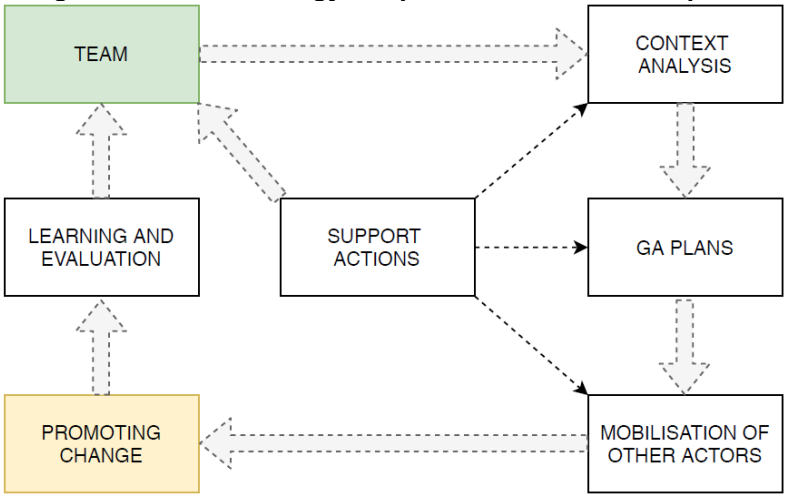
- **Promoting change**. This element is the core of the GA. It is aimed at developing new institutional spaces for establishing a dialogue between science and society. As stated above such spaces may be of different types: a) physical or virtual spaces of dialogue; b) long term partnerships; c) establishment of internal norms, protocols, routines or structures addressing societal issues inside the organisation; d) the diffusion of new symbols, ideas, languages.

- **Support actions**. Since the design phase, a set of support actions are delivered to assist the teams conducting the GA. These activities will be performed by partners experienced in RRI key issues and in institutional change dynamics and obstacles.

- **Evaluation and Mutual Learning**. In relation to the context and conditions described above, the GA team is required to be self-reflective, i.e., be well aware of the objectives, obstacles, timing, opportunities, facilitating factors or risks in place during the whole process from design to implementation. In order to support the GA teams in developing their self-reflexivity skills and orientations, a set of Mutual Learning and Evaluation Activities are foreseen by the project.

[2] See STAGES, TRIGGER projects in Gender in science issue and STARBIOS2 and GRACE projects for RRI

Figure 1: A methodology to open new institutional spaces



The key elements of the methodology are not thought of as separated steps, but rather they interact and overlap with each other and can be cyclically repeated in the different phases of the project.

SECTION 2
CO-DESIGN OBJECTIVES AND ACTIVITIES

The objectives of the co-design phases and the main activities characterising this phase are summarised below.

The *overall aim* of the co-design phase is to activate a reflection on the Grounding Actions that will be developed in the project. This reflection is fed by dialogue with key stakeholders within the research institution as well as with those operating in the territories where the concerned research institutions are based.

This phase should lead to the *practical objective* to develop the **detailed plans** of the different Grounding Actions to be conducted in RESBIOS.

The overall aim and practical objective will be pursued in the stages presented below. At the end of each paragraph, the methodological elements presented in Section 1 are recalled in the brackets [ ].

1. *Preliminary stage* (Jan – Feb 2020). This stage is dedicated to a review the Grounding Actions as they have been sketched in the RESBIOS proposal (as summarised in the Description of Action - DoA) and to start a reflection on how the GA team should be built and managed. [*GA Team*]
2. *Scoping stage* (March – Jun 2020). This stage is devoted to preparing the co-design process by rafting the GAs Project Ideas (GAPIs) and identifying the stakeholders to be involved in the process. Moreover, in this stage, a first contact with the stakeholders will be established. The GAPIs will be presented at the steering committee meeting at a distance of the project. [*GA Team*, *Context Analysis*, *GA Plan*]
3. *Stakeholders dialogue stage* (Jun – Sep 2020). In this stage, the actual dialogue with both internal and external stakeholders previously mapped will be conducted by adopting a set of different tools such as interviews, informal meetings, workshops. The dialogue will aim at generating feedbacks and collect suggestions about the proposed GAs (GAs project ideas) and to make, at the same time, an exercise of context-analysis within the research organisation and in the external context. The dialogue with the external stakeholders in this stage, even though it is not part of the implementation of the Grounding Actions, can be considered as a way for opening and

testing new spaces of interaction to be developed through the GAs [*GA Plan*, *Context Analysis*, and *Promoting Change*].

4. *Detailed design stage* (Sep – Oct 2020). On the basis of the inputs received, a detailed design of the Grounding Actions will be done. The detailed design of the Grounding Actions will be discussed with mentors and supporting partners. The final outcomes will be discussed in the Mutual Learning meeting to be conducted in Barcelona. [*GA Plan*, *Support Actions*, *Learning, and Evaluation*].

SECTION 3

TOOLS FOR THE SCOPING PHASE

In this section three tools - useful for the "scoping phase" - will be suggested and briefly introduced, i.e., i) a template for the Grounding Actions Project Ideas (GAPIs); ii) a grid for stakeholders mapping, and iii) a checklist on team building.

3.1. Template for the Grounding Actions Project Ideas

The suggested template (see Annex 1) is a very simple guide for drafting the Grounding Actions project ideas (GAPIs) of the different GAs. Each GA should have its own project idea. The template suggests the following four fields.

- *GA Background*: It provides a short description of the background or contextual information about the Grounding Action. This may be useful in order to frame the goal of the Grounding Action in the context of the research organisation or of the surrounding territory.
- *Overall Objective and Institutional Change*: It describes the main objective of the Grounding Action. Provide a short description of what kind of "institutional space" can be opened with the Grounding Action.
- *Planned activities:* It provides a short description of the main activities to be conducted for achieving the overall objective of the Grounding Action.
- *Key stakeholders to be involved*: It provides a short description of the key players to be involved and what is their expected role in the Grounding Action.

Since the beginning, the project ideas should be thought of as a tool for dialogue with stakeholders. In this regard, the notes should report the basic elements of the Grounding Actions needed for activating the co-design process.

3.2. Grid for stakeholders mapping

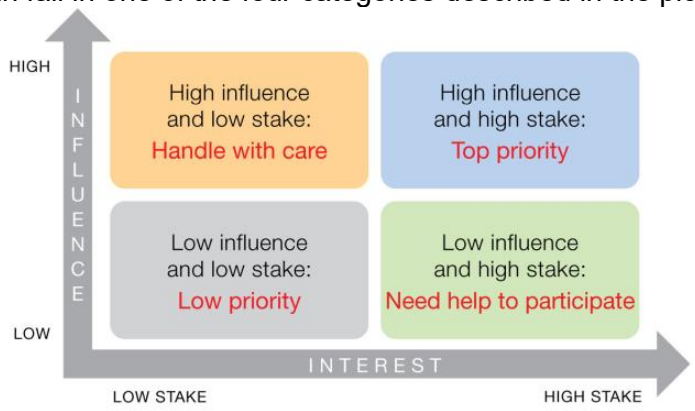
In RESBIOS project, the stakeholder mapping is aimed at identifying the key internal and external stakeholders, i.e., those that might influence the implementation of the GAs, might affect it, or might be involved in the design and implementation of the GAs. Moreover, the stakeholders mapping will have a secondary aim, i.e., the definition of a strategy to contact and approach selected stakeholders (agenda, resources, suggestions on how to contact them, etc.) for the following phase (dialogue).

A grid for stakeholders mapping is suggested (Annex 2) based on the criteria of influence/domain of action and interest of the stakeholders. The suggested grid can be filled in many different ways. A good way to extend the mapping beyond those actors that have been already involved in similar activities is conducting a **stakeholders mapping workshop**. The key elements of the workshop are presented below. Similar elements can be applied and adopted with other methodologies.

Participants. The workshop might involve in addition to the member of the team, two or three participants selected among those that can be easily involved and that can provide useful information for the mapping process. Some examples may be: representatives of the governance body of the organization (example: Head of Department, Dean of Faculty, Vice-Rector, etc.), members of one of the support offices of the organization (management, research support, external activities, university third mission, libraries, etc.), people already engaged with RRI keys (e.g. gender parity commission, public engagement units, etc.

Procedure. The following steps are suggested for conducting the workshop: i) introduction of the workshop, consisting of a presentation of the project, of the aim of the workshop, of the participants, etc.; ii) identification of stakeholders, in which the relevant internal and external stakeholders are identified and listed; iii) stakeholders analysis, dedicated to highlighting the interests/influence of each stakeholder, their possible contribution to the GA, and the ways to access and to dialogue with them; iv) check the list, dedicated to review the work done and make sure there are not important actors missing.

Visualisation. A stakeholder matrix based on influence and interest can be drawn, showing how each mapped stakeholder can fall in one of the four categories described in the picture below.



Other practical information on how to carry out a stakeholder mapping workshop can be furnished on-demand by the co-design team (K&I).

3.3. Team building checklist

Finally, a checklist is provided (Annex 3) with the aim of triggering a self-reflection on the team composition. In the checklist, a distinction within the team is proposed between the core team (i.e., those who are permanently involves in the GAs) and extended team (i.e., individuals that individuals who support the core team on a non-regular basis, serve only some specific functions or implement some specific Grounding Actions). Some aspects to be considered are proposed:

- Core team composition
- Access to relevant leaders and management unit
- Access to relevant expertise
- Access to resources
- Reputation building
- Extended team
- Support

The checklist can be synthetically answered in written form and is part of the scoping exercise to be conducted in this phase. The results of this self-reflection can have as consequences some changes or simple adjustments in the composition or management of the team.

Go back to the form

Annex 1

Grounding Actions Project Ideas (GAPI)

Template

"*Title of the Grounding Action*"

Project Idea

A. Background
Provide a short description of the background or contextual information about the Grounding Action. This may be useful in order to frame the goal of the Grounding Action in the context of the research organisation or of the surrounding territory.
B. Overall Objective and Institutional Change
Describe the main objective of the grounding action. Provide a short description of what kind of "institutional space" can be opened with the Grounding Action, i.e., the new institutional arrangements which are envisaged to make them as far as possible permanent (e.g., creating new institutional structures or functions like new committees, officers, units or tasks; defining new rules, guidelines, procedures or protocols; establishing new agreements or networks; developing new communication tools; etc.).
C. Foreseen actions
Provide a short description of the main activities to be undertaken for achieving the overall objective of the grounding action.
D. Key stakeholders to be involved
Provide a short description of the key players to be involved and what is their foreseen role in the grounding action.

Annex 2

Stakeholders Mapping

Grid

RESBIOS Stakeholder Analysis Grid Matrix[3]: with anonymous example of application

Stakeholder Name	**Contact Person** *Phone, Email, Website, Address*	**What is important to the stakeholder?** *(key issues and stake)*	**Impact** *How much does the GA impact them? (Low, Medium, High)*	**Influence** *How much influence they have over the project? (Low, Medium, High)*	**Interest/motivation on the GA (and possible availability to be involved)** *(Low, Medium, High)*	**How could the stakeholder contribute to the GA?**	**Strategy for engaging the stakeholder**
Academy of Science	*Prof. ...*	*Promoting training for students and researchers*	*Medium*	*High*	*Medium*	*Collaboration in the organization of the Workshop*	*Bi-lateral meeting*
Local School of ……	*Director of the school*	*Advancing teachers scientific knowledge*	*High*	*Medium*	*High*	*Full cooperation in the GA*	*Meetings with director and the Board of the school*

[3] This grid is an adaptation for RESBIOS from the Stakeholder Analysis Matrix template provided by Tools4dev, licensed under a Creative Commons Attribution ShareAlike 3.0 Unported License – www.tools4dev.org

Annex 3

Team Building

Checklist

Core team composition
1. How many people are members of the core team (i.e., the team directly in charge of designing and implementing the grounding actions)? 2. How much part of their work is devoted to the grounding actions? 3. Is this number sufficient to carry out the planned grounding actions? If this is not the case, what measures can be taken? 4. Is the team expected to be enlarged in the future? When and how? 5. Are the staff members secured enough (e.g., they have a contract covering the duration of the entire project; the contract they have includes a sufficient autonomy for implementing the grounding actions, etc.)?
Access to relevant leaders and management units
6. Have the core team access to the organisation's relevant leader(s) and management units (for example, Communication unit, HR department, etc.)? a. If yes, is this access easy and smooth enough to timely take all the decisions and getting the necessary support to conduct the planned actions? If this is not the case, what measures can be taken? b. If not, are there people which could facilitate such access? How to involve them?
Access to relevant expertise
7. Have the core team members the necessary expertise (e.g., knowledge, skills, experience, etc.) to carry out the planned grounding actions? a. If not, which kinds of expertise are lacking? b. If not, which measures can be taken to build or access the lacking expertise? For example, are there in the organisation or outside it people bearing the expertise the team is lacking?
Access to resources
8. Has the team access to the resources needed to implement the grounding actions? Resources may include, e.g., spaces and equipment, travels, funds, technical and administrative support. a. If yes, this access can be reinforced or enlarged if necessary? b. If not, which measures can be taken in this regard?
Reputation building
9. Are the team members recognised as prepared, visible and institutionally legitimate to lead the grounding actions' related activities? Are they authoritative enough to mobilise high-level staff members, researchers or even external actors? a. If yes, which are the sources of their reputation (e.g., institutional recognition, scientific recognition, roles played in the past, etc.)? Can team reputation be increased over time? How? b. If not, are there measures to take for increasing the reputation and recognition of the team? Which are they?
Extended team
10. Apart from the core team, is there an extended team supporting the grounding actions (i.e., individuals who support the team on a non-regular basis, serve only some specific functions or implement some specific grounding actions)? a. If yes, who are the members of the extended team? How the extended team is expected to contribute to the implementation of the grounding actions (e.g., facilitating the implementation of the grounding actions, increasing the visibility and reputation of RESBIOS, providing expertise, favouring the access to external stakeholders, facilitating the involvement of relevant leaders, etc.)? Is the extended team expected to be enlarged in the future? b. If not, is there the possibility to create an extended team? Could it be necessary? In case, how the creation of an extended team can be done?
Support
11. In order to build the team, do you think to need for support by the RESBIOS project? Which kind of support (e.g., exchange with other implementing organisations, support by the expert partners, relevant documents, etc.)?

Go back to the form

TOOL #2
Note for drafting the Grounding Actions Detailed Document (GADD)

ResBios

RESponsible research and innovation grounding practices in BIOSciences

WP2 – Co-design of Grounding Actions

Note for drafting the Grounding Actions Detailed Document (GADD)

June 2020

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Introduction

This document has been developed by Knowledge and Innovation (K&I) as part of the co-design activities (WP2) of the Grounding Actions (GAs) carried out under the project "RESponsible research and innovation grounding practices in BIOSciences– RESBIOS".

The aim of this note is proposing a common format for drafting the detailed design documents of the Grounding Actions foreseen in the project. The indications contained in this note have not to be intended as mandatory, but only as general suggestions that should be adapted to the specific features and needs of the different implementing organisations.

This note is complementary to the GAPI Note, circulated in March 2020 among the partners, in which the basic concepts related to RRI and the general approach adopted in RESBIOS in designing the GAs were presented. It is worth recalling here the concept of RRI adopted by the EC, i.e.:

> *"Responsible research and innovation is an approach that anticipates and assesses potential implications and societal expectations with regard to research and innovation, with the aim to foster the design of inclusive and sustainable research and innovation.*
> ***Responsible Research and Innovation** (RRI) implies that societal actors (researchers, citizens, policy makers, business, third sector organisations, etc.) work together during the whole research and innovation process in order to better align both the process and its outcomes with the values, needs and expectations of society.*
> *In practice, RRI is implemented as a package that includes multi-actor and **public engagement** in research and innovation, enabling **easier access** to scientific results, the take-up of **gender** and **ethics** in the research and innovation content and process, and formal and informal **science education**[4]."*

In the context of ResBios project, and taking into account various experiences of RRI implementation in research performing organisation, we could adopt the following definition of RRI[5]:

> *"by RRI here we mean research and innovation practices that consider the RRI keys and/or that are carried out according to an approach that anticipates and reflects about impacts, includes the relevant actors (within and outside the research organisations), and is responsive to them[6]."*

It is also to recall that five keys of RRI have been identified by EC:

- **Public engagement** → promoting the engagement of all societal actors – including researchers, citizens, policymakers, business and industry – in the research and innovation process
- **Gender** → favouring gender equality within research institutions and research contents as a necessary step for modernising them as well as favouring gender in research and innovation content

[4] http://ec.europa.eu/programmes/horizon2020/en/h2020-section/responsible-research-innovation (accessed on: 05/09/2019).
[5] This Note was particularly inspired by the experience of STARBIOS2 project focused on the implementation of RRI in bioscience research organisations. The experience of the STARBIOS2 project was condensed in the text 'RRI implementation in Bioscience organisations. Guidelines from the STARTBIOS 2 project' of Andrea Declich with the.STARBIOS2 partners. Some of the indications contained in these Guidelines have been used in the drafting of this Note.
[6] Declich, A., [ed.] (2019), RRI implementation in bioscience organisations, Uppsala University, pg. 32.

- **Education** → enhancing the current education process so as to provide future researchers and other societal actors with new capacities in taking responsibility in the research and innovation process and attracting children and youth to science and technology
- **Open Access** → making R&I transparent and accessible through Open Access to scientific products and Open Data
- **Ethics** → making R&I able to respect fundamental rights and ethical standards, to be viewed not as a constraint, but as the main tool for ensuring high-quality research results.

Designing in detail the GAs (Task 2.4.) is an important task for all teams, responding to at least three different needs:

1. Defining the activities composing the GAs envisaged in the Description of Action (DoA) and developed during the Co-design phase
2. Integrating the results of the dialogue carried out with internal and external stakeholders to be held for co-designing the GAs (Task 2.3) and for building a consensus for the GAs providing for their long-term impact and sustainability
3. Providing the necessary basis for the implementation of the GAs, as well as for other activities foreseen in the project such as evaluation and mutual learning.

The note is organized into **two sections**.

The **first section** focuses on the co-design process – the dialogue stage –, intended as essential components for designing the GAs. The implementing partners will use the results obtained in the preceding stages to define the GAs, according to the tools provided in the second section of this Note.

The **second section** presents the tools for developing the Detailed Plans of the GAs.

SECTION 1
THE CO-DESIGN PROCESS

This section is focused on the finalization of the co-design process and, particularly, on the ways in which the tools provided for proceeding to the detailed design of the GAs should be used to summarize the results of the preceding co-design stages and, particularly, of the dialogue with stakeholders.

As stated in the GAPI document, the *overall aim* of the co-design phase is to activate a reflection on the GAs that will be developed in the project. This reflection is fed by dialogue with key stakeholders within the research institution as well as with those operating in the territories where the concerned research institutions are based. The stages foreseen by this process are the following four:

1. *Preliminary stage*
2. *Scoping stage*
3. *Stakeholders dialogue stage*
4. *Detailed design stage*.

The first two stages have been already completed. They had mostly an “inward-looking” character: they have been dedicated to refining the GAs' project ideas and to listing the stakeholders with which conducting the dialogue exercise.

We will focus in this section on the third one, focused on dialogue, which should lead to the *practical objective* to develop the **detailed plans** of the different GAs to be conducted in RESBIOS.

The dialogue stage consists of consulting such stakeholders in order to enhance the project ideas. Moreover, the debate with stakeholders over science-society related issues and/or on implementation of actions focused on RRI keys is in itself an aspect of RRI practice (one of the 4 dimensions of RRI is inclusiveness[7],.

It is dedicated to building a consensus and collecting assessments and advice over various aspects useful for GAs implementation (under many respects, from timing to articulation of the action, etc.). As a general rule, stakeholders dialogue will end up with a collection of suggestions from key stakeholders and with the agreement of various actors to be involved in different ways in the implementation process.

A further important aspect of the dialogue, as indicated in the GAPI document, is that it represents an occasion for collecting on fresh and reliable information and data over the context in which GAs will take place. This aspect is of the utmost importance for well-designed GAs. It is to be stressed that most of the needed information can be collected only through informal and extemporaneous channels, e.g. through “living” information sources and not by resorting to official and standardizes sources (oftentimes, information on very localized context is not collected and stored systematically, therefore is not available or even existing).

The dialogue exercise involves the stakeholders and the core team. Further information and suggestions on how to proceed in this consultation could come from the members of the consortium who have a supporting function, particularly the mentors (as well as the other actors involved in WP2).

In brief, the dialogue stage is pivotal for promoting not only the inclusiveness of GAs, but also a high level of contextualization. These are two important aspects of a change that is aimed to be structural[8]. Anyhow, to make the introduced changes comprehensive of various aspects of the life of an organization and, as long as possible, irreversible, a reflection is needed on various aspects of the actions to be implemented. The results of such a reflection should be translated into the detailed plan of the GAs. Such a reflection is, therefore, part of the detailed design stage.

In this framework, the detailed design stage is not just an exercise aimed at giving a specific and standardized format to the actions, but a way to articulate them according to the results of the dialogue and the need of making them properly contextualised.

This is reflected in the structure of the tools that are being provided in the next section of this document.

[7] On this RRI dimension, see, for example “RRI Implementation in Bioscience organisations. Guidelines from the STARBIOS2 project”, Par. 2.2.

[8] See STARBIOS2 Guidelines, Box #20.

SECTION 2

Tools for supporting the "Detailed design" of the co-design process

This section is dedicated to present a format for drafting the detailed GAs

3.1. Concept of the tools

The tools are two and are based on what has already been experimented in the STARBIOS2 project (see the Guidelines)[9].

An anticipation of this approach is represented by the template used in the second stage of the co-design process to define the GAs project ideas (GAPIs).

The GAPI Template foresaw the following four fields.

- *GA Background*: It provides a short description of the background or contextual information about the GA. This may be useful in order to frame the goal of the GA in the context of the research organisation or of the surrounding territory.

- *Overall Objective and Institutional Change*: It describes the main objective of the GA. Provide a short description of what kind of "institutional space" can be opened with the GA.

- *Planned activities:* It provides a short description of the main activities to be conducted for achieving the overall objective of the GA.

- *Key stakeholders to be involved*: It provides a short description of the key players to be involved and what is their expected role in the GA.

The GAs Detailed Design Tool (GADD Tool) proposed here is an “exploded” version of the GAPI template that contains more fields (11 against 4). Furthermore, each field requires more detailed information and inputs that, as we said in the previous section, have been collected during the Stakeholders dialogue stage. The fields are the following.

- **Code**: Attribute a code to the GA using the code indicated in the DoA. In case of a new GA, the partner responsible for the GA will attribute a new code and will inform the Project Coordinator.
- **Title**: Give a title to the GA (the title will be preferably the one indicated in the DoA; changes are possible but should be communicated to the Project Coordinator).
- **Area**: Specify one of the five RRI keys the GA refers to. In the case of the Management GA, please indicate it here.
- **GA Background**. Background information and assessment are already present within the GAPI. Nevertheless, after the dialogue with stakeholders, it will change more or less strongly. The updated background description will include the collection of novel and fresher

[9] The focus of STARBIOS2 was on the implementation of a comprehensive Action Plan aimed at promoting RRI and all the 5 keys. On the contrary, the scope of the GAs foreseen in RESBIOS project is somehow narrower, being focused on a limited number of actions and RRI keys. The similarity between the two approaches is that the GAs aim at practising RRI within an organization and changing it accordingly. Therefore, with some changes, the STARBIOS2 approach and the related tools can be used.

data, as well as the description of the various possible configurations of the actors, including their possible expectations and assessment concerning the GAs. The GA background description will provide support for justifying the *Overall Objective and Institutional Change* described afterwards.

- **Overall Objective and Institutional Change**: As it was for the GAPI, this field contains a description of the main objective of each GA. A description of the kind of "institutional spaces" (see Section 1.2 of the GAPI note) that can be opened with the GA will be also provided. In general, a justification of the GA will be offered. In this context, the main changes decided after the dialogue vis-a-vis the initially foreseen actions and/or to the GAPI will be also provided.
- **Target groups**: Specify the group of people and/or the organization/s involved with or beneficiary of the GAs. Targets Groups are a sub-set of stakeholders, i.e. those who benefits directly of the actions (e.g. those who receive training).
- **Duration**: Specify the duration of the GAs (starting month and end month). Diverse phases of each GA could be imagined and will be described in the planned activities field (e.g. preparation, implementation, disengagement, etc.). Timing should be broken down in relation to each of the planned activities (see below).
- **Planned Activities**: Provide a list of the planned activities included in the GAs for achieving the stated overall objective of the GA, presenting the ways in which each activity is connected to the objective and with the other activities.

  It is important to describe all the different types of activities aimed at producing institutional change foreseen by the GAs, for example:

  - **Preparatory activities**, such preparation of the materials to be used, operational agreement with the participants, etc;
  - **Communication activities,** such as diffusion of information among beneficiaries and other stakeholders, so that the foreseen activities are well known;
  - **Implementation activities**: These are the main components of the GA, which are of course different for the various types of measures, including the preparation of training sessions, the organization of public events, negotiation processes, publishing activities, disengagement, etc.
  - **Reporting and follow/up activities**: It is convenient to foresee follow-up activities where internal or external communication of results, as well as reporting activities and deliverable preparation can be envisaged. Furthermore, activities oriented to sustainability arrangements for the institutionalization of successful actions need to be foreseen, when possible. What is important is to provide evidence of the implementation of the activities and of reaching the expected results and impacts, especially for what concerns the so-called “SUPERMORRI” and SDG (Sustainable Development Goals) indicators. The collection of such indicators is very difficult to do without any form of ex-ante planning; therefore, the production of relevant data for measuring such indicators should be part of the design stage.
- **Stakeholders Mobilisation**: Indicate people, groups or institutions within and outside the university that may be involved in the implementation of the activities and in their design. It is particularly useful to establish if and how the leadership of the organization can be involved. The stakeholders indicated in this field could be both those consulted in the Dialogue stage and others that could be contacted during the implementation phase. The stakeholders’ maps, as emerged using the GAPI document, therefore, could be up-dated.
- **Coordination mechanisms**: Indicate, if relevant, the interactions of the GA with other GAs, other activities or initiatives already in place in the research institution or other actions developed within the RESBIOS project.

- **Sustainability/Structural and/or Institutional impact**: Indicate how the GA could have an impact beyond the project lifespan (it is an approximate description of the expected or desirable impacts as they can be established at the design stage).

Finally, we suggest **foreseeing specific activities aimed at the management** of the entire set of GAs. Such activities will provide the framework for carrying out the reflection needed to evaluate the GAs results, learning lessons, designing the possible adjustments, promoting negotiations, etc.

The exercise of filling in the fields of the GADD template represents, somehow, a guide for summarizing the results of the stakeholder dialogue stage. The template is complemented with a GANTT scheme through which the timing of the activities envisaged for each GA are presented.

3.2. Detailed GAs plan: a possible table of contents

The work aimed at detailing the design of the Gas will be presented in a dedicated document. The table of contents of this document presenting the detailed GAs could be as follows:

1. Introduction: Institutional framework and summary of the GAs
   This should be brief (1 page, maximum 1,5 page), and its function is, somehow analogous to an article abstract.. Another page should be dedicated to a summary of the main activities carried out for consulting the stakeholders in relation to each GA.

2. GAs presentation
   - GAs Sheet - Each GA will be presented using the GAs sheet that includes the 11 fields presented above. The information should be provided in a concise way but the rationale of the choices proposed (concerning the object of each field) should be presented clearly.
   - GAs GANTT Chart - the timing of the activities composing each GAs should be presented (based on the information given in the “duration” field of the GAs sheet).

Obviously, any further information about the GAs can be inserted according to the needs and preferences of the partners (list of first-year deadlines, flow charts, maps of the actors to be involved, diagrams, etc.).

The Detailed GA will be approved by the tenth month of the project (October 2020). The duration of the GA is assumed to cover the entire duration of the RESBIOS project.

Go back to the form

ANNEX 1 – GAs SHEET (TEMPLATE)

(Code of the GA)

Title of the Grounded Action (GA)

Code	
Title	
Area	
GA Background	
Overall Objective and Institutional Change	
Target groups	
Duration	
Preparatory activities	
Communication activities	
Implementation	
Reporting Follow-up	
Stakeholders Mobilisation	
Coordination mechanism	
Sustainability / Structural and/or impact	

ANNEX 2 – GAs GANTT CHART

Phasing and scheduling (M1 = November 2020) *(lines to be added or deleted as needed)*

	Month of implementation																								
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**
Code of the GA – Title of GA																									
Code of the GA.1 title of activity																									
Code of the GA.2 title of activity																									
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Go back to the form

TOOL #3

Database for networking activities: directions to define the database structure and use

Tentative structure of the Database

The database represents a basic tool for implementing the networking activities foreseen in the framework of Action 4.1. of the SSP titled “Promote biology culture in society”.

It consists of a list of people to keep in contact with to organize the Open Days.

Such a list contains the main information to maintain the contacts over time. In this way it is possible to optimize the efforts: the basic information are all in the same file; they can be updated easily. It is not necessary to define the list every year. It is possible to track the main reactions.

For this reason, the information to be stored should be easily managed by any people who will participate in the actions aimed at organizing the Open Days (also people that were not involved since the beginning in managing the database).

In light of this, we suggest that the structure of the database is very simple.

An example of a tentative Database structure is provided below.

Each line (or row, or “record” as in the database jargon) is related to a specific person, i.e. someone who can be contacted directly.

The information related to each row (“field” in the database jargon) is organized according to categories aimed at facilitating networking activities. Furthermore, for each person, information is collected in a standardized way. The types of information could be many but we suggest that they are not so much, just the basic ones; this is important because the maintenance of the database should be as simple as possible, and the information related to each person should be easy to extract and upload also by people who have not received specific training for doing this.

The fields from 1 to 8 are very simple and are just descriptive and do not need a particular presentation.

The most sensitive field is the 9th: “Stakeholder type”. You should decide the type of people that could be contacted to organize the Open Days. They could be:

a. School teachers, i.e. teacher who could bring their students to the Open Days
b. School managers, i.e. people who are in the management of the school and could provide their consensus to the involvement of teachers in organizing the Open Days
c. Local authorities, i.e. people who supervise a certain school district and could help facilitate the involvement of schools. They should be informed of your activities once they are implemented
d. National Regional authorities, i.e. people who could help to involve other local stakeholders for fostering participation. They could be informed of your activities once they are implemented
e. Representative of local industry system, i.e. entrepreneurs, firm managers, managers of local industrial associations, trade union officers; they could be interested to know that you as an education institution who train also the high skilled workers of the future, is organizing Open Days to recruit new students

f. Researcher: i.e. people who practice research activities both in the public system (national research institutes, Academy of sciences, etc.) and in the private system (e.g. private research institution, research department of private firm, etc.)
g. Civil society organizations: i.e. member of associations, citizen groups, networks, etc. that are active in Ukraine and in the L'viv area
h. International organizations: i.e. International NGO's, international universities, diplomatic bodies (e.g. cultural/scientific attaché), international organizations (European Union representatives, the World Bank, etc.).
i. Other

Of course, the contacts you have with these people change according to their type: with people of the type a. and b. you have exchanges of an operational nature; with people of type c. and d. you will have exchanges of information aimed at creating consensus; people of type e. could be informed of your activities but, maybe, could be invited to some events, and so forth. It depends on the type of activities you are going to run. You could decide also to add other types of stakeholders.

Using these categories, you could decide, for example, to inform the school teachers of an organizational meeting. Therefore, you ask all the email addresses of the stakeholder of type a. Or, once you have carried out the open day, you would like to send to all the people in the database the link of the webpage with a report of the event. And so on.

The typology of stakeholders we suggest is tentative. Maybe you would like to refine it or change it completely. It is up to the kind of use you are going to do with it.

In any case, for your convenience, you could take some (very brief) note over the relations with this people (as in field 10, e.g. a school teacher could tell you that this year s/he cannot participate, but s/he will do it the next year). It is good also to record when each record of the database has been updated the last time (see field 11).

Such a database could also serve other purposes. In this case, the categories to be used could be increased by adding new fields.

Here below, the structure of the database is reported in a word file. Of course, you could translate it in other formats, such as excel or other database manager software you are familiar with.

What is important of the (tentative) typology related to the 9th field is that it is maintained over time. Depending on the format through which you decide to keep the database, you could decide to make it a "closed" field so that the type of stakeholder to choose is given and cannot change depending on the decision of the different people that keep the database updated. Apart from the case of the 9th field, it could be stressed that this implies that different procedures and routines for updating the database should be decided.

List of stakeholders for the SSP - Promote biology culture in society: ORGANIZATION OF THE OPEN DAY

1	2	3	4	5	6	7	8	9	10	11
Name	**Surname**	**Institution**	**Position held**	**City**	**Country**	**Email address**	**Other contact details**	**Stakeholder type**	**Note**	**Updated on**
(…)										

SOME FURTHER OBSERVATIONS ABOUT THE DATABASE DEFINED BY IFNUL

What follows represents a set of observations on the IFNUL Database that emerged during the last monitoring session of 15 of June 2022.

The way in which the Database for the Open Days has been implemented by IFNUL is in line with what was decided and with the need of the team. Basically, it represents a good tool for giving continuity to this activity. It is, indeed, useful for retrieving contacts according to various categories and keeping track of the main exchanges with various actors.

Some improvements are, anyhow, possible.

1. We recommend putting the date of the last update of each record, as implied by the database structure (see the 11th field, below). It helps to understand also if some contacts are still valid if mailing is needed with those with whom exchanges have to be revived and so on.

2. We also recommend filling in the 'Notes' field for each of the actors/stakeholders entered in the database. The Notes field may contain information to be kept in mind when dealing with each actor/stakeholder. For example, you may indicate whether he/she already collaborates with the team, whether s/he has been met, etc. You may also indicate whether there are any precautions to be considered when contacting him/her or involving him/her (e.g., s/he has little time and is very busy; s/he has only recently arrived in that role; it is a good idea to inform the faculty leadership each time you contact him/her; etc.). Each note should have a date and the name of the person who wrote it. Of course, not all the notes should be maintained in the time (e.g. once it is updated, the old one could be cancelled).

3. The database can be used also for facilitating the organization and implementation of other activities, particularly those connected to the Summer School (but potentially all the activities connected to the promotion of RRI). The structure of the database is appropriate to this end and does not need any change. It just needs a further field to mark the new records so that it is clear which activities a certain actor/stakeholder (record) has been involved in. If **a new field for each type of activity** is added to the structure, it is possible to use a unique database for managing the entire set of actors mobilized in the framework of such activities. It is an opportunity since it makes it possible to choose different subsets of actors, according to the different needs, for example:
    a. working with those involved in activities of a certain type, like the Summer School or the Open Days; in this way, records (actor/stakeholder) could also be chosen among those who are involved in both the activities (that participate in the Summer School and in the Open Days), etc.
    b. working on a specific type of actor/stakeholder regardless of the type of activities they have been involved in; one could decide, for example, to select and focus the attention just on the actors/stakeholders in the industry helix

    Adding up new fields could be incremental. Not all the field has to be added at once, but they could be added as long as the database is expanded, based on the organizational needs of the team (e.g. adding new records concerning actors/stakeholders involved in other activities). It is a matter of deciding how to manage the database in the framework of the overall management of the activities for the promotion of RRI. In the Annex below, an example is provided. The database structured by the IFNUL team for supporting the Open Days implementation has been integrated with a new field, related to the Summer School. Some of the existing records could be relevant also for the newly added field (activities). The same could be for the new entries (that could be relevant also to the activities already referred to in the first version of the database). The team could try to fill in the new columns of the database.

Other aspects emerged during the monitoring meeting, concerning how the database should be managed and used. First, it is important to decide the rules and routines for keeping the database updated. In general, some people in the group should be informed about the structure of the database, the meaning of the various fields and how to entry the relevant data, and the purpose of its use. The rules should be few and clear and a routine for the use and maintenance operations should be decided (e.g. a new contact should be registered soon by the same person who gets the relevant information).

Secondly, at the moment the database consists of structured information kept in a file in word format. Such a simple arrangement could be maintained, and the database could serve well its purpose also with this simple arrangement. Nevertheless, the team could decide to adopt a specific software for the management of this information. This is a decision to be taken based on several considerations, such as the availability of people able to design an application for managing the software, the real need for dedicated software, etc.

Finally, keeping a database normally implies compliance with the rules that are relevant at the national level on privacy. It is recommended that the team acquires the relevant knowledge on the matter. In general, it is to stress that complying with national and European rules will be useful for using the database in the framework of EU-funded projects.

ANNEX

List of stakeholders for the SSP - Promote biology culture in society and facilitating the access of young researchers to biology professions

1	2	3	4	5	6	7	8	9	10	11	12	13
Name	Surname	Institution	Position held	City	Country	Email address	Other contact details	Stakeholder type	Note	Updated on	Activity Open Day	Activity Summer school

Go back to the form

TOOL #4

Scheme for Monitoring the Implementation of the Sustainable and Support Plans (SSPs)

RESBIOS

MONITORING SCHEME FOR THE TASK T6.2. "IMPLEMENTATION AND MONITORING OF SUSTAINABLE AND SUPPORT PLANS"

This note concerns the monitoring and support activities for the implementation of the Support and Sustainability Plans (SSP) of the RESBIOS implementing organisations.

1. Monitoring scheme

The Monitoring, which takes place every two months, will have two parts:

- A "transactional" part
- A qualitative part

The transactional part is organised for each SSP into:

- Actions
- Activities foreseen for each action,

For each activity it should be specified: what are the main intermediate steps necessary for its implementation; when the activities will be implemented (the month); if possible, who is responsible for its implementation within the Core Team; the status (if the activity is started, it is on-going; it has been completed); notes (that might contain information, problems, observation, etc.)
The intermediate steps have to be considered as suggestions, that can help the Team in the process of implementation of each activity.

The transactional part will control the implementation of the actions and of the related activities.
The qualitative part (to which the last 20 minutes of each monitoring meeting could be devoted) will instead offer a space to discuss problems, achievements; to ask for specific support and advice; to examine issues related to negotiation and opportunity seeking.

During the first monitoring meeting the different monitoring items will be reviewed/corrected/completed.
The SSP defined and approved during Task 6.1 will be updated and revised in the light of what happens during its implementation before the conclusion of the project. It must also be said that the definition of the monitoring plan, entering into the hearth of the operational and practical issues, may lead to a further and better definition of actions and activities that in the draft version were deliberately left generic and all-encompassing.

A short report of each monitoring session will be drafted by the Task leader.

2. Transactional monitoring

Below are the monitoring schemes of the four implementing organisations, defined on the basis of their draft sustainability plans.

2.1. DUTH Transactional monitoring scheme

ACTIONS	ACTIVITY	MAIN INTERMEDIATE STEP	PERIOD OF IMPLEMENTATION	WHO IS RESPONSIBLE FOR	STATUS (specify the date of the status reported)	NOTES

Go back to the form

TOOLS for IMPLEMENTATION

TOOL #5
Questionnaire/survey on RRI (Gender and Open Access)

ResBios – Responsible Research in Biosciences

We would like to invite you to answer a questionnaire on Responsible Research and Innovation in the context of the European HORIZON 2020-funded project, RESBIOS (RESponsible research and innovation grounding practices in BIOSciences). The aim of RESBIOS is to promote and enhance the implementation of Responsible Research and Innovation (RRI) practices in Biosciences. These practices involve actions on 5 axes; Societal Engagement, Gender Equality, Education, Bioethics and Open Access.

Before you decide whether you will participate in the study, it is important to understand the goal of the present questionnaire. Please, invest some time to carefully read the following information. You are encouraged to discuss with other people, should you be inclined to do so. We urge you to ask us any questions if any information contained in this text is vague or you want further information. Take your time to decide whether you want to participate in this study.

The goal of this questionnaire is to investigate the attitudes of DUTH Bioscientists (postgraduate students, researchers, and research group leaders) towards the 5 axes of Responsible Research and Innovation and to record their needs.

Your participation in this study includes the completion of a questionnaire. The estimated time for completion is less that 10 minutes.

You have been selected to participate in this study because you are active in Biosciences research in DUTH, and thus your opinion about issues of Responsible Research and Innovation is of great importance.

The participation in this research is on voluntarily basis. The survey is completely anonymous and thus your answers cannot and will not be used to identify you. You can recall your consent to participate in the study at any point, without any negative repercussions. However, recall of your consent does not revoke the legality of processing the data you have already submitted. In case of recalling your consent, you are not obliged to provide a reason for doing so.

There are no risks related to the participation in the study. On the contrary, filling out this questionnaire can benefit you long term, as attitudes will be recorded and statistically analyzed. The results will be used to inform the design of future activities and seminars in the context of RESBIOS.

Personal data collected during the study will be strictly confidential. Only completely anonymized information will be accessible to the members of the RESBIOS research team, who will only use them to perform statistical analysis, without having access to your personal data.

According to the legislation about the protection of personal data, we are obliged to inform you that the legislative basis that we use for the processing of personal data is that “the processing of data is necessary to complete a duty that is performed for the common good”. We encourage you to stay informed about the policy of the university

for personal data protection, visiting: https://duth.gr/Πανεπιστήμιο/Προστασία-Δεδομένων-Προσωπικού-Χαρακτήρα-GDPR.

If you have any question or require further information regarding this study you can contact Associate Professor Aglaia Pappa, the project leader for DUTH (tel: 2551035689, 6976602992, email: apappa@mbg.duth.gr).

You can direct complaints concerning the conduction of the study to the Ethics Committee of Democritus University of Thrace (ethics@duth.gr).

Questions regarding personal data protection and your rights, as well as complaints about personal data breach can be directed to the Data Protection Officer of DUTH. These are promptly addressed.

Data Protection Officer –DPO, DUTH
Dimitra Tsimparidou
Tel.: +30 25310 39271
Email: dpo@duth.gr
Address: University campus, 69100 Komotini

Hellenic Data Protection Authority

If you believe that your personal data is being breached, please contact the Data Protection Officer. If your concern is not resolved, you can issue a complaint to the Hellenic Data Protection Authority (www.dpa.gr), which is responsible for the protection of individuals with regard to the processing of personal data.

The questionnaire you are about to complete is approved by the Ethics Committee of DUTH, with reference number "ΔΠΘ/ΕΗΔΕ/54149/572".

1. Demographics

1.1 Gender

- Female
- Male
- Other/ Rather not say

1.2 Age

- 21-30
- 31-40
- 41-50
- 51-60
- >60

1.3 Degree/Position

- Postgraduate student
- PhD candidate
- Postdoctoral researcher
- Laboratory technician staff

- Faculty member
- Other

1.4 Field of research

- Biology/Molecular Biology
- Genetics/Molecular Genetics
- Biochemistry
- Ecology
- Bioinformatics
- Pharmacology
- Bioscience education
- Medicine
- Other (Please specify)

2. Responsible Research and Innovation

2.1 How informed are you about Responsible Research and Innovation?

- Very well informed
- Well informed
- Informed
- Not well informed
- Not at all informed

2.2 To what extent do you agree with the following statement: All social actors (citizens, researchers, businesses, policymakers) should be involved in research and innovation to ensure that research objectives are in line with societal values, needs and expectations.

- Totally agree
- Tend to agree
- Neither agree not disagree
- Tend to disagree
- Totally disagree

2.3 To what extent do you incorporate societal needs to your research?

- To a large extent
- To a moderate extent
- To some extent
- Tend to disagree
- Totally disagree

2.4 What support do you need to engage in Science Communication (Mutliple selection available)?

- Improvement of presentation techniques
- Use of novel methods

- Training workshops on science communication (e.g. educational tools)
- Other (Please specify)

2.5 What kind of support will you seek for the involvement of social actors in your research? (Multiple selection available)

- Networking
- A guideline on how to promote Societal Engagement and Technology Transfer
- Seminars on Popularized Science
- Information events
- Good practice examples
- Other (Please specify)

2.6 How well informed are you about scientific integrity, code of conduct and bioethics in Biosciences?

- Very well informed
- Well informed
- Informed
- Not well informed
- Not at all informed

2.7 To what extent do you agree with the following statement: All Bioscientists must be trained in Bioethics and code of conduct issues (plagiarism, protection of personal data, handling of laboratory animals, etc) during their studies.

- Totally agree
- Tend to agree
- Neither agree not disagree
- Tend to disagree
- Totally disagree

2.8 Academic researchers should develop new skills to attract young students to Biosciences. How important do you find the following statements about Bioscience Education?

2.8.1 Bioscientists should give lectures to school students on their research topics.

- Totally agree
- Tend to agree
- Neither agree not disagree
- Tend to disagree
- Totally disagree

2.8.2 Bioscientists should only focus on doing research

- Totally agree
- Tend to agree
- Neither agree not disagree
- Tend to disagree
- Totally disagree

2.8.3 Bioscientists should inform the public about the progress, the benefits and/or risks of their research.

- Totally agree
- Tend to agree
- Neither agree not disagree
- Tend to disagree
- Totally disagree

3. Open Access

3.1 To what extent do you agree with the statement that the results of public funded research should be made available online free of charge (in compliance with General Data Protection Regulation – GDPR).

- To a large extent
- To a moderate extent
- To some extent
- To a small extent
- Not at all

3.2 Which of the following can better describe Open Access, to your opinion? (Multiple selection is available)

- Impact
- Transparency
- Exposure
- Productivity
- Outreach
- Cost

3.3 What percentage of your research output (research articles, conference proceedings, lectures, books, theses, etc) is Open Access?

- 1-25 %
- 26-50 %
- 51-75 %
- 76-100 %

3.4 Which of the following could be a limiting factor for publishing your research results Open Access (multiple selection is available)?

- Peer reviewing in Open Access journals is not reliable.
- Open Access journal do not sufficiently protect intellectual property.
- Article Processing Charges in Open Access journals are very high.
- Open Access journals have low impact factors.

3.5 How well informed are you about:

3.5.1 The two routes (Green and Golden route) of Open Access publishing?

- Very well informed

- Well informed
- Informed
- Not well informed
- Not at all informed

3.5.2 The European policy on Open Access (e.g Horizon 2020)?
- Very well informed
- Well informed
- Informed
- Not well informed
- Not at all informed

3.5.3 The National policy on Open Access?
- Very well informed
- Well informed
- Informed
- Not well informed
- Not at all informed

3.6 How often do you use:
3.6.1 The National Documentation Center (openarchives.gr) for your research?
- Regularly
- Often
- Sometimes
- Occasionally
- Never

3.6.2 The University's repository (repo.lib.duth.gr) for your research?
- Regularly
- Often
- Sometimes
- Occasionally
- Never

3.7 How important do you find the following actions about the promotion of Open Access to the research community?
3.7.1 Training seminars and informational meetings
- Extremely important
- Very important
- Important
- Rather important
- Not important

3.7.2 Financial support from the University
- Extremely important
- Very important

- Important
- Rather important
- Not important

3.7.3 Open access research infrastructure

- Extremely important
- Very important
- Important
- Rather important
- Not important

3.8 How important do you think policy planning at the University level is for Open Access?

- Extremely important
- Very important
- Important
- Rather important
- Not important

4. Gender Equality

4.1 How important do you think the issue of Gender Equality is in Biosciences?

- Extremely important
- Very important
- Important
- Rather important
- Not important

4.2 To what extent do you think that people with different genders are treated equally in Biosciences?

- To a large extent
- To a moderate extent
- To some extent
- To a small extent
- Not at all

4.3 The equitable treatment of genders in Biosciences can (Multiple selection available):

- Enhance the quality of scientific research
- Create a better workplace
- Create better collaboration and communication circumstances among researchers
- Promote Gender Equality in society in general
- Have a negative impact on productivity and research
- Create rivalry and unhealthy competition between researchers

4.4 How important do you think that the following actions are for the promotion of Gender Equality in Biosciences?

4.4.1 Equal representation in management positions

- Extremely important
- Very important
- Important
- Rather important
- Not important

4.4.2 Equal representation in employment evaluation committees

- Extremely important
- Very important
- Important
- Rather important
- Not important

4.4.3 Establishment of awards and accolades for exceptional women-researchers in Biosciences (e.g. L'OREAL-UNESCO awards)

- Extremely important
- Very important
- Important
- Rather important
- Not important

4.4.4 Organization of training seminars and informational meetings on Gender Equality

- Extremely important
- Very important
- Important
- Rather important
- Not important

4.4.5 The academic curriculum (bachelor and/or master program) should include topics about gender issues in Biosciences.

- Extremely important
- Very important
- Important
- Rather important
- Not important

4.5 How important do you think that taking equally into account women's and men's needs in scientific research is?

- Extremely important
- Very important
- Important

- Rather important
- Not important

4.6 Do you know in what place Greece ranked in the European Gender Equality Index from 2010 to 2020?

- Top
- Slightly above the European average (28 member states)
- Just below the European average (28 member states)
- Bottom

4.7 How important do you think that the following University structures are for the promotion of Gender Equality?

4.7.1 Workplace gender inequality intermediation office.

- Extremely important
- Very important
- Important
- Rather important
- Not important

4.7.2 Workplace daycare

- Extremely important
- Very important
- Important
- Rather important
- Not important

4.7.3 Structures for advisory and psychosocial support

- Extremely important
- Very important
- Important
- Rather important
- Not important

4.8 How important do you think policy planning at the University level is for Gender Equality?

- Extremely important
- Very important
- Important
- Rather important
- Not important

Thank you for participating in this study!

Go back to the form

TOOL #6
Questionnaires for students that receive a Talk about gender issues

Evaluation of the talks "Women and science" to educational centres from the Institut de Ciències del Mar in the framework of 11F-8M Awareness Month

This is an evaluation of the talks about "Women and science" in educational centres, from the Institute of Marine Sciences (ICM-CSIC) in the framework of the european project "ResBios".We would appreciate it if you take a few minutes to give us your opinion, it is very important for us! Thank you so much.

* Mandatory

1. In order to continue with the survey, we need you to agree to provide information for study and research purposes. *

We inform you that your personal data will be processed by a team of the Gender Equality Task Force by the Institut de Ciències del Mar (ICM-CSIC) for the purpose of study and research. Your data may only be used and/or transferred for this purpose and will be kept during the prescription periods established by law. You can exercise your rights of access, rectification, deletion, opposition, portability and limitation of the processing of your data by contacting the "Resbios" core team, with fiscal address at the Institut de Ciències del Mar (Passeig Marítim de la Barceloneta, 37- 49, 08003 Barcelona) or by writing to oceanliteracy@icm.csic.es. In any situation, you have the right to send a claim to the Spanish Data Protection Agency (AEPD). Additional information: https://www.boe.es/buscar/act.php?id=BOE-A-2018-10751

Tick only an option

- ( ) Yes, I confi rm that I agree to provide information for the purpose of study andresearch.
- ( ) No, I do not agree to provide information for study and research purposes.

Opinion about the talks "Women and science" from the ICM

2. 1. Which gender do you identify most with? *

Tick only an option

- ◯ Feminine
- ◯ Masculine
- ◯ I prefer not to say that
- ◯ Non-binary

3. 2. Indicate your level of studies (1st, 2nd, 3rd, 4th high-school...? If it is baccalaureate, indicate please the specialty *

_____

4. 3. How would you in general rate the talk? (1 very bad, 5 very good) *

Tick only an option

1	◯
2	◯
3	◯
4	◯
5	◯

5. 4. And in regards to the contents, have they been suitable for you? *

Tick only an option

- [ ] Yes
- [ ] No

6. 5. Have you learned new things? (1 nothing, 5 a lot) *

Tick only an option

1	◯
2	◯
3	◯
4	◯
5	◯

7. 6. What did you like most about the talk? *

8. 7. What was more surprising to you about the talk? *

9. 8. Before the talk, did you know... *

Tick only an option

	Yes	No	I thought yes but I have realised that I did not know about it really well	Yes, but the talk has helped me to understand it better	Don't know / Don't answer
what is a gender equality plan?	☐	☐	☐	☐	☐
what is the glass ceiling?	☐	☐	☐	☐	☐
what are the scissors' graphs?	☐	☐	☐	☐	☐
that many women in science have historically been "penalized" for having children?	☐	☐	☐	☐	☐
what is gender bias?	☐	☐	☐	☐	☐
examples of measures that can be taken from research centres to	☐	☐	☐	☐	☐

achieve gender equality?

10. 9. Would you recommend this or a similar activity to someone? Who? *

11. 10. And finally, do you think this talk will affect the choice of your post-baccalaureate studies? *

Tick only an option

- ◯ Yes
- ◯ No
- ◯ Don't know / Don't answer

12. If you want to make a comment or suggestion, you can do so here.

Go back to the form

TOOL #7

Report about activities done in the framework of the Network of Marine Schools

This project has received funding from the European Union's Horizon 2020 research and innovation programme under the grant agreement Nº 871146

REPORT OF THE EDUCATIONAL EXPERIENCE IN THE ICM-CSIC "NETWORK OF MARINE SCHOOLS WITHIN THE "RESBIOS" PROJECT (ACADEMIC YEAR 2020-2021)

NAME AND SURNAME (TEACHER)

Name and surname of the teacher involved and his/her ID. We need this information to process credit recognition.

DESCRIPTION OF THE GROUP OF STUDENTS INVOLVED

In this section we are interested in characterizing the group of students that participated in the educational experience. Please refer a brief description of the school and its values and methodologies and in particular those that directly affect the group of students participating in the "marine school network", the number of students (gender-segregated data) and the work done about ocean issues before participating in the "network of marine schools".

WORK CARRIED OUT WITHIN THE TRAINING OF THE "NETWORK OF MARINE SCHOOLS"

Number of sessions, organization, educational contents, skills…

MAIN OPPORTUNITIES AND DIFFICULTIES ARISING DURING THE PROCESS

In this section, an assessment is expected from the teaching staff regarding (if they have arisen), the opportunities that have arisen, as well as the difficulties and how they have been able or not to deal with them.

CONCLUSIONS AND FUTURE PERSPECTIVES

Final conclusions of the experience: Was it a good experience to be repeated later? Would you do it again but with some changes, would you do it again in a completely different way…? Have you considered that the sea perspective will be integrated into your lessons in the future? Has the training of the "network of marine schools" brought about any other change in terms of the presence of marine content in your future training?

PICTURES

We would be grateful if you could include a photograph that illustrates your experience with the group of students.
Please let us know if we can use them or not in the official social media of the ICM-CSIC and in the European project "ResBios".

OTHER COMMENTS OR CLARIFICATIONS NEEDED

If you want to give any comment or suggestion or make any clarification you can do so in this section

Go back to the form

TOOL #8
Certificate of Attendance for students and researchers

ResBios Responsible Research in Biosciences

CERTIFICATE OF ATTENDANCE

DEPARTMENT OF MOLECULAR BIOLOGY & GENETICS DUTH

ΔΗΜΟΚΡΙΤΕΙΟ ΠΑΝΕΠΙΣΤΗΜΙΟ ΘΡΑΚΗΣ | DEMOCRITUS UNIVERSITY OF THRACE

This is to certify that:

[NAME, SURNAME), 4th year student of the Department of Molecular Biology and Genetics (DMBG), DUTH, participated as a speaker in the seminar series organized by the HORIZON 2020 - research project, *«RESBIOS - RESponsible research and innovation grounding practices in BIOSciences»* in collaboration with the Secondary Office of Education of the Prefecture of Evros. The seminars were addressed to 2nd year students of the high schools of the Prefecture of Evros and were held on 14 & 18 of March 2022 at DMBG. The title of the talk was: *''Habitat, Biocommunity, Biodiversity''*.

Aglaia Pappa
Associate Professor
ResBios/MBG/DUTH Team Project Coordinator

This project has received funding from the European Union's Horizon 2020 research and innovation programme under the grant agreement N° 872146

Go back to the form

TOOL #9

Certificate of Attendance for students and researchers

ResBios Responsible Research in Biosciences

Institut de Ciències del Mar

Certificate of participation

The Institut de Ciències del Mar certifies that:

Name and surname

She/he has successfully participated as a workshop facilitator in the training of the ICM's «Network of Marine Schools» during the scholar year 2020-2021 developed in the framework of the european project «ResBios». The ICM appreciates her/his commitment to Ocean Literacy.

.....
Name and Surname
Marine Science Literacy
Deputy Director
at the ICM

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Go back to the form

TOOL #10
Certificate of Attendance for students and researchers

ResBios Responsible Research in Biosciences

Institut de Ciències del Mar

Certificate of participation

The Institut de Ciències del Mar certifies that:

Name and surname

She/he has successfully participated as a workshop facilitator in the activities organized by the Institut de Ciències del Mar (ICM) in the framework of the Awareness Month celebrated between the February 11th and March 8th 2021. The ICM appreciates her/his commitment to Gender Equality.

.....
Name and Surname
Marine Science Literacy
Deputy Director
At the ICM

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Go back to the form

TOOL #11
Certificate of Attendance for students and researchers

ResBios Responsible Research in Biosciences

Institut de Ciències del Mar

EXCELENCIA SEVERO OCHOA

CSIC

Certificate of participation

OCEÀ BARCELONETA

The Institut de Ciències del Mar certifies that:

Name and surname

She/he has successfully participated as a workshop facilitator in the Gymkhana «Oceà Barceloneta» coordinated by the Institut de Ciències del Mar (ICM) and the civil associations from the «Espai Mediterrani», framed in the World Ocean's Day, celebrated on June 8, 2022. The ICM appreciates her/his commitment to Ocean Literacy.

Name and Surname
Marine Science Literacy
Deputy Director
at the ICM

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Go back to the form

TOOL #12
Certificate of Attendance for students and researchers

ResBios Responsible Research in Biosciences

Escoles Marines

Institut de Ciències del Mar

Certificate of participation

The Institut de Ciències del Mar certifies that:

Name and surname

She/he has successfully participated in the training of the pilot phase of the ICM's «Network of Marine Schools», developed in the framework of the european project «ResBios» during the scholar year 2020-2021. The ICM appreciates her/his commitment to Ocean Literacy.

.....
Name and Surname
Marine Science Literacy
Deputy Director
at the ICM

This project has received funding from the European Union's Horizon 2020 research and innovation programme under the grant agreement N° 872146

Go back to the form

TOOL #13
Template for Collaboration Agreement

Δράση στα πλαίσια του προγράμματος ResBios
This project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under the Grant Agreement No 872146

COLLABORATION AGREEMENT

Today, (date), the following signatories:
1. (Surname), Director of the Office of Secondary Education of the Prefecture of Evros
2. (Surname), DUTH, Scientific Coordinator of the research project "RESponsible research and innovation grounding practices in BIOSciences" (Acronym: RESBIOS) funded by the European Union - HORIZON 2020, conclude a collaboration agreement for the implementation of actions related to education, during the academic year 2020-2021.

The objectives of this collaboration are to familiarize the students of the General High Schools of Evros with the Department of Molecular Biology and Genetics, as well as to educate and familiarize them with issues related to Biosciences.

To achieve these objectives the two partners will seek:
1. Teaching interventions to all students of the 2nd grade of the General High Schools of Alexandroupolis on topics related to the values of Responsible Research and Innovation in Biosciences and at the same time with their participation in projects working on a voluntary basis.
2. Familiarization of the Department of Molecular Biology and Genetics by 3rd grade students (Life and Health Science direction) of the General High Schools of Evros and their participation in laboratory activities, relevant to the subject matter taught.
3. Organization of training seminars for science teachers of Secondary Education to enhance their teaching development.

Each body will have a coordinator. Prof. (Surname) from The Department of Molecular Biology and Genetics, and (Surname) Head of the Educational Activities of the Office of Secondary Education of the Prefecture of Evros, will cooperate with the following responsibilities:

- to organize and ensure the implementation of the above actions.
- to elaborate ideas and proposals for their improvement.
- to disseminate good practices.
- to comply strictly with the guidelines of the Ministry of Health and the National Health Service on protection against COVID-19.

THE PARTNERS

Surname
Director
Directorate of the Office of Secondary Education

Surname
Professor
Department of Molecular Biology and Genetics, DUTH, Scientific Coordinator of RESBIOS project

Go back to the form

TOOL #14

Contract among educational centres and the ICM CSIC for the pilot phase of the Network of marine schools

COMMITMENT TO PARTICIPATE IN THE "NETWORK OF MARINE SCHOOLS" EDUCATIONAL ACTION OF THE ICM-CSIC RESBIOS PROJECT

The educational centre (Name of the educational centre)_____

Expresses its willingness to participate in the educational action of the ICM-CSIC in the ResBios project, and, for these purposes, is responsible for:

1) Keep updated about the operation of the "Network of Marine Schools" training activity
2) Actively participate in the emerging proposals of the training action
3) Be part of the mutual learning community of the "Network of Marine Schools", showing a willingness to share information and good practices among community members
4) Attend 5 trainings proposed by the training action
5) Facilitate a short report-summary of the results of the experience in the classroom

From the other side, the ICM-CSIC from the "ResBios" Project is committed to:

1) Provide the necessary information for the correct development of the training in (Name of the educational centre)
2) Coordinate the educational action of the "Network of Marine Schools" and provide the necessary resources for the correct adaptation to the classroom at (Name of the educational centre)
3) To be the link between the educational community and researchers or other agents of interest for the development of the educational action of the "Network of Marine Schools".
4) Organize 5 training sessions as part of the training action of the "Network of Marine Schools"

In Barcelona, on September 15, 2020

From (Name of the educational centre)

Mr. /Ms. XXXXXX (Chief of studies/Director of the educational centre… POSITION)

From "ResBios" – ICM-CSIC

Mr./Ms. Name and surname (Coordinator of the "ResBios" project at the ICM-CSIC)

Mr./Ms. Name and surname (Educational support to the "ResBios"project at the ICM-CSIC)

****Information from** (Name of the educational centre)

Name of the school: (XXXX)

Responsible person: (XXXXX)

Contact email: (XXXX)

Contact phone: (XXXX)

Social media from the educational centre:

Facebook: (XXXX)

Twitter: (XXXX)

Other (specify): (XXXX)

Logo from the educational centre (attach in .png)

(XXXX)

Go back to the form

TOOL #15
Invitation template

ΔΙΕΥΘΥΝΣΗ ΔΕΥΤΕΡΟΒΑΘΜΙΑΣ ΕΚΠΑΙΔΕΥΣΗΣ
Ν. ΕΒΡΟΥ

DEPARTMENT OF MOLECULAR BIOLOGY & GENETICS DUTH

INVITATION

The Directorate of the Office of Secondary Education of the Prefecture of Evros and the Department of Molecular Biology & Genetics of the Democritus University of Thrace

Participating high schools		
1st Alexandroupolis	2nd Alexandroupolis	3nd Alexandroupolis
Tychero	Feres	Soufli
Lavara	N. Visa	2nd N. Orestiada

ΠΕΡΙΦΕΡΕΙΑ ΑΝΑΤΟΛΙΚΗΣ ΜΑΚΕΔΟΝΙΑΣ ΚΑΙ ΘΡΑΚΗΣ

Η εκδήλωση τελεί υπό την αιγίδα της Περιφέρειας Ανατολικής

ResBios Responsible Research in Biosciences

Δράση στο πλαίσιο του προγράμματος ResBios
This project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under the Grant Agreement No 872146

Go back to the form

TOOL #16
Declaration of responsibility template

DECLARATION OF RESPONSIBILITY

To the Director of .....(school name)

.....(full name), parent (or guardian) of the student ....., (full name) of the second grade of the General High School.....(name of the school), authorize my son/daughter to participate in a project related to Biosciences.

For the declaration of his/her participation in the project, I have received an informative document from the Directorate of Secondary Education of Evros in the framework of the cooperation between the Directorate of Secondary Education of Evros with the coordinator [Surname], Head of School Activities, and the Department of Molecular Biology and Genetics of the Democritus University of Thrace with the coordinator Prof (Surname), Scientific Coordinator of the research project "RESponsible research and innovation grounding practices in BIOSciences" (Acronym: RESBIOS) funded by the European Union - HORIZON 2020.

I am aware that:
- Student participation is voluntary during out-of-school hours.

- Meetings with Professors and members of the Research Group of the Department of Molecular Biology and Genetics are held online.

- Students will prepare an oral presentation and a poster, including their name and school, on the topic of their choice and will be trained in techniques for searching and evaluating information, as well as planning and presenting the topic.

- The presentation of their work will take place at the end of the school year online or at an open event with all the measures to prevent the spread of Covid-19 and will be made public.

Go back to the form

TOOL #17
Program of extracurricular activities

PROGRAM OF EXTRACURRICULAR ACTIVITIES

Name of extracurricular activities	
Semester and number of hours per semester	
Implementation time	
Student commitments	
COMPETENCIES TO BE ENROLLED IN THE SUPPLEMENTARY PART OF DIPLOMA	
Key competencies for lifelong learning (according to the List of key competencies for lifelong learning)	
Other competencies that a student may acquire in activities not included in the list of key competencies	
Name and surname, title and contact of the person responsible for extracurricular activities (e-mail, contact phone)	

KEY COMPETENCIES FOR LIFELONG LEARNING

COMMUNICATION SKILLS	appropriate expression of words, thoughts, opinions and feelings, clear expression, understanding of others' ideas, expression and interpretation of abstract concepts, written communication; very clear, well-organised and concise oral communication
COMMUNICATION IN A FOREIGN LANGUAGE	communication in a foreign language in oral and written form; understanding of others who speak/write in a foreign language; development of skills for intercultural communication and understanding, etc.
SOCIAL AND CIVIC COMPETENCE	promotion of social engagement, creating new social contacts and friendships, dealing with new situations related to work in the organisation, resolving conflicts when appropriate, understanding of social behaviour and codes of different environments, taking initiative related to social and civic topics, effective and constructive participation in social and business life, participation in civic life, commitment to active and civic participation, knowledge of institutions and politics important for a democratic society, etc.
METODIC-DIDACTIC COMPETENCE	reflecting on personal learning style; defining and achieving learning objectives; finding, evaluating and processing new information and knowledge; time management in the learning process; asking for help and assistance in the learning process; the ability to implement the new knowledge into practice, etc.
ORGANISATIONAL COMPETENCE AT WORK AND TEAMWORK	transforming ideas into action, creativity and innovativeness, willingness to take risks to achieve quality, ability to plan and manage projects, awareness of ethical values and good management, networking and creating contacts, Initiator; seeking additional work, an excellent team worker; contributing to group relationships and effectiveness, doing an outstanding job in planning and organising work and time, etc.
BASIC COMPETENCIES IN SCIENCEAND TECHNOLOGY	solving everyday problems related to projects using logical thinkingand logical conclusions, using charts, models and formulas etc. in presentations, developing a draft of the project budget, the use of technical equipment, drawing conclusions based onevidence, questioning scientific ideas and RRI concepts, etc.
DIGITAL COMPETENCE	using new media, programs for technical equipment, communication and exchange of information through online communication and networks, developing critical thinking about IT,etc.

Go back to the form

TOOL #18

Guide for adapting the content of talks and activities related to Ocean Literacy to the audience

GUIDE TO ADAPT THE CONTENT OF OUTREACH AND EDUCATIONAL ACTIVITIES TO THE AUDIENCE

CONTEXT

First of all, thank you very much for reading this guide because it shows your interest in contributing to the improvement of the outreach and educational activities at the ICM-CSIC.

The ICM-CSIC is one of the partners of the european projecte “RESponsible research an innovation grounding practices in BIOSciencies” (ResBios) that looks for to embed the framework “Responsible Research and Innovation” (RRI) in different universities and research centres. This framework is composed by 5 key issues: Gender Equality, Scientific Education, Public Engagement, Open Access and Ethics. Specifically, the ICM-CSIC in the framework of the ResBios project has been working on grounding actions related to Gender Equality, Scientific Education and Public Engagement. This guide is one of the support materials developed in order to help the staff ot the ICM-CSIC to adapt to the audience the outreach and educational activities that they carry out.

Fig.1: The 5 RRI key issues. Source: resbios.eu

THE IMPORTANCE OF PROMOTING OCEAN LITERACY

The **Ocean** is the final frontier on Planet Earth, understood as the definint physical feature of our planet, which covers more than 70% of our planet. Despite its paramount role in the planet, its

exploration has been very limited, mainly because it is an environment very different than our air-terrestrial environment in terms of the physicochemical conditions. It is not surprising that, historically, the education sector has mainly used terrestrial examples (closer and well known) for the acquisition of knowledge and also for working on skills with students. However, in the Ocean we also find examples of many of the processes that take place in our environment and it is vital that little by little they also arrive to the classrooms for helping to break little by little the existing barrier between the two environments. The Ocean-atmosphere system, the use of marine resources, the maritime transport, the origin of life... all of them show us that the two environments are very connected and that we should know well the Ocean and make it closer to us if we want this relationship to last sustainably over time. This happens through the construction of knowledge and working on the connection with this environment.

Through knowledge, we want to study the relationship of the Ocean with us and of us with the Ocean, the basis of "**Ocean literacy**" (which we often find translated in catalan as "cultura oceànica"). Specifically, ICM's outreach and education efforts are mainly focused on the promotion of ocean scientific literacy. However, through different collaborations and coordinated activities with different actors and other institutions from other sectors ocean literacy is also promoted with wider and complementary approaches, for example through art. In this guide, we will put particular emphasis on how to approach and adapt marine science to the audience.

OBJECTIVE

Amb aquesta guia es pretèn donar eines i pautes senzilles per ajudar a adaptar els continguts del dia a dia científic a l'ICM-CSIC segons l'audiència.
Per a aprofundir més podeu consultar el Manual de referència "Cultura oceánica para todos: kit pedagógico" de l'Organització de les Nacions Unides per a l'Educació, la Ciència i la Cultura (UNESCO).

RECOMANACIONS GENERALS*

1) Passar-t'ho molt bé!: La ciència és divertida i emocionant i científics i científiques són apassionats de la seva feina. Si gaudeixes de la oportunitat de descobrir la ciència a altres públics transmetràs fàcilment l'emoció i aconseguiràs l'atenció del teu públic. Ja tindràs bona part de la feina feta.
2) Conèixer a la teva audiència: Sempre que puguis pregunta sobre la teva audiència a la organització de l'esdeveniment. Adaptar els continguts i dedicar algun comentari especial a cada públic els farà sentir-se partícips del que els hagis d'explicar.
3) Identificar els objectius de la comunicació: Cada situació comunicativa persegueix uns objectius. Si has d'atendre un periodista necessitarà segurament que siguis breu i concís per poder destacar missatges conrets (recorda, pregunta sempre que puguis abans). En canvi, si la teva activitat és estar a una fira de la ciència on apareixen persones molt diverses, a vegades et preguntaran sobre detalls d'algun fet remot que hagin llegit, és important pensar en per a què servirà la teva activitat, a quin públic va dirigit etc. i mantenir-se ferm amb aquests objectius.
4) Concentrar-se en la informació més rellevant. Aquesta és una recomanació general. Sempre és millor donar poca informació important i que l'audiència la copsi bé que intentar explicar conceptes massa concrets o que puguin portar a concepcions errònies per no poder-se desenvolupar correctament. Concentra't en la informació més important i el missatge que vols

transmetre i assegura't que s'entén bé fent preguntes o demanant sempre la revisió de materials si han de ser publicats a qualsevol mitjà.

5) Evitar massa tecnicismes. Segons l'audiència, si és tècnica per exemple, es poden utilitzar, però evita utilitzar-ne a audiències com ara públic infantil i reserva'n pocs per públic adolescent i adult o pots aconseguir que l'audiència perdi el fil de la teva explicació, no entengui bé el que els hi expliquis o inclús es porti mala imatge de l'activitat.
6) Fes ús d'analogies, comparacions, etc. Fer servir exemples propers i quotidians ajuda a comprendre processos complexos. Per exemple, comparant diferències de mides entre organismes marins amb alguns de terrestres. Una cerca prèvia i disposar d'uns pocs exemples serà molt agraït pel públic.
7) Recolza't en material visual. Sempre que puguis procura tenir alguna imatge o video ja que aconseguiràs recolzar les explicacions i que el públic entengui millor el que els estàs explicant i aconseguiràs una presentació d'idees més atractiva.
8) Prioritza informació: No més de 3 conceptes clau. Si no disposes de molt temps una bona recomanació és seleccionar no més de 3 idees clau i assegurar-te que l'audiència les entén bé. Especialment recomanable per entrevistes i interaccions amb mitjans de comunicació.
9) Aprofita per posar en valor el mètode científic: La ciència i el mètode científic conviuen a un món on abunden les "fake news". Sempre que puguis recorda el valor de la ciència i la construcció del coneixement a través del mètode científic. No és perfecte però és la millor eina que disposem per construir coneixement.
10) Relaciona el contingut amb grans reptes de la societat: Si aconsegueixes trobar relacions amb reptes del dia a dia i temes que s'escolten sovint als mitjans de comunicació donaràs un toc d'actualitat i realitat a les teves explicacions que ajudaran a que no es rebin com a quelcom massa allunyat.
11) Recolza't de professionals de diferents sectors: No intentis abastar tot. Hi ha molts professionals que t'ajudaran a donar un gran salt de qualitat amb les teves activitats. Il·lustradors, programadors, community manager... si pots, compta amb els seus serveis!
12) Forma't: Si pots, participa en cursos, congressos, taules rodones... sobre divulgació i educació científica i comparteix més bones pràctiques i experiències amb els participants. No et cansis mai d'aprendre com millorar les teves activitats, tenen més impacte del que imagines!

**Inspirades en els "10 tips for Effective Science Communication" de la Northeastern University*

RECOMANACIONS CONCRETES PER A PÚBLIC INFANTIL

Amb públic de **primària**, recomanem fer les xerrades i activitats dinàmiques i el més interactives possibles, fent ús de molt material visual i portar material "toca-toca" sempre que es pugui. Animeu-los fent-los preguntes en que puguin parlar de les seves experiències prèvies per tal de conèixer el punt de partida i a partir d'aquí poder anar construint un discurs adequat al que ja coneixen (o desconeixen). Sol ser un públic molt més animat a participar que el de secundària pel qual és bo fer-los protagonistes de l'activitat, presentant-la com una aventura per no perdre la seva emoció i fer que la seva experiència i els conceptes apresos sigui inoblidable.

Un dels recursos que millor solen funcionar amb aquest grup d'edat és el format d'historietes, fent servir per exemple el recurs "**storytelling**" explicant com un conte fets que van permetre fer certs descobriments o presentant a certs protagonistes científics com per exemple si es vol posar en rellevància a les dones científiques. El còmic Oceànicas presenta petites històries molt adaptables a aquest format. En cas de treball amb un o diversos grup-classe, es pot parlar d'aquesta idea amb el professorat i plantejar si al final es pot proposar alguna activitat complementària. Per exemple, la creació del seu propi conte o bé que facin un dibuix. A l'enllaç de dalt accedireu al còmic, on us sorprendrà la varietat de científiques i dades concretes de diferents camps científics acompanyats de meravelloses il·lustracions que podeu afegir a la vostra presentació.

Per treball a llarg plaç podeu consultar per inspirar-vos la pàgina de la Experiència Magnet entre ICM-CSIC i l'Escola Tanit.

RECOMANACIONS CONCRETES PER A PÚBLIC ADOLESCENT

A partir dels **primers cursos de secundària** i en endavant**,** ja es poden començar a introduir conceptes més complexos i també més profunds, posant en rellevància problemàtiques socials i donant més pes a la història i a les científiques que han fet grans contribucions, així com parlar de reptes de la societat. Als darrers cursos de secundària en que els adolescents han de triar sortides professionals agrairan si podeu explicar què suposa ser científic o científica i inclús si compartiu experiències professionals úniques i també si us animeu personals sobre com concilieu la vida personal i professional (sacrificis, reptes…).

RECOMANACIONS CONCRETES PER A PÚBLIC ADULT

Aquest públic pot implicar necessitats molt diferents pel qual una bona recomanació és preparar unes preguntes a l'inici per conèixer el punt de partida i anar construint l'explicació i amb això el seu coneixement a partir de coneixements previs i si cal, reconstruir a partir de concepcions errònies.
En general, el públic adult que assisteix a aquestes activitats, si no és per acompanyar a algú altre (fill/a, grup-classe...), és perquè te un alt interès en la nostra activitat ja que és un grup que sol tenir molts quefers. Alhora, existeix una por generalitzada a expressar-se a activitats grupals sobre temes davant d'altres adults pel qual sovint al final de les activitats voldran apropar-se al científic o científica per resoldre dubtes. Com això no sempre és possible, en general recomanem que durant l'activitat es convidi més a la participació, recordant que no passa res si hi ha errors, que s'està aprenent i compartint coneixement. Per tal de poder canalitzar més efectivament l'interès i fer una jornada més participativa i engrescadora per al grup també es poden recollir impressions a través de diferents formats. Recomanem especialment si és possible els debats, i si no oferir algun material tipus qüestionari anònim al principi i/o final de l'activitat que convidi a la reflexió. Aquest grup d'edat agrairà molt que se li ofereixin eines i recursos per seguir aprenent més enllà de l'activitat pel qual és molt positiu comptar amb un llistat de webs i/o llibres d'interès.

RECOMANACIONS CONCRETES PER A PÚBLIC TÈCNIC

A diferència del públic anterior, aquest grup a part de l'interès té ja un alt domini de la matèria abordada a l'activitat o bé concreta o bé del marc més genèric en el qual s'engloba. Buscarà expressar la seva veu pel qual és imprescindible comptar amb un bon espai d'intercanvi d'opinions. Recomanem especialment una part d'exposició de noves idees i una part de debat. Agrairà molt que se li ofereixin eines i recursos per aprofundir més als temes tractats i sovint altres participants aportaran també nous recursos dels quals l'audiència voldrà disposar pel qual és molt important poder compartir la

compilació de recursos generats i les conclusions si n'hi ha a les que s'arriba a la jornada i compartir-les amb l'audiència. Poden aparèixer moltes oportunitats de col·laboracions més enllà de l'activitat pel qual és recomanable pensar-hi en aquestes possibilitats i comptar amb respostes possibles al respecte, per exemple què podria oferir el grup/projecte presentat en qüestió amb una col·laboració o noves passes que es voldrien donar per continuar construint el coneixement en una certa qüestió presentada a l'activitat.

RECOMANACIONS CONCRETES PER A ALTRES PÚBLICS

ALTRES RECOMANACIONS

L'ICM-CSIC organitza anualment cicles com per exemple entre l'11 de Febrer (Dia internacional de la dona i la nena a la ciència) i el 8 de Març (Dia internacional de la dona) l'"Awareness Month". Si durant aquest mes fas alguna activitat de divulgació i/o educació científica, et convidem a posar especial èmfasi en el rol de les dones a la ciència i participar de la iniciativa i a comunicar-ho al Grup de Treball d'Igualtat i a Comunicació del Centre per tal de poder mesurar l'impacte de la iniciativa. A l'ICM, es va crear el hashtag #ICMforequality que acompanya a les diferents activitats, projectes i iniciatives relacionades amb el compromís de l'ICM cap a la igualtat. Si participes en alguna activitat relacionada, utilitza el hashtag a les xarxes socials!

VOLEM ESCOLTAR-TE

T'agrairiem si un cop realitzada l'activitat ens contestes al següent formulari, ens ajudarà a portar un seguiment i seguir posant en valor aquestes activitats i també detectar necessitats, mancances i oportunitats, moltes gràcies!

https://forms.gle/fGiwQcpXMEnrQm2t8

Tens alguna idea per millorar la Guia o algun dubte? Qualsevol dubte, suggeriment, comentari, … el pots fer arribar a:

oceanliteracy@icm.csic.es

Go back to the form

TOOL #19

Guide for an inclusive use of language adapted to marine science

Go to the document Click Here

Go back to the form

TOOL #20
Declaration on ethical behaviour in research for students

Declaration of students of the Faculty of Biology on ethical behavior in the scientific activity

The Declaration of students of the Faculty of Biology was formed according to human values in order harmonize spiritual, moral, nationally minded development of the student's personality, as well as to raise personal responsibility for their behavior; it is aimed at promoting justice, goodness, humanism, and freedom.

The Declaration of students of the Faculty of Biology was developed according to the Constitution of Ukraine, the Laws of Ukraine "On Education", "On Higher Education", "On Protection of Public Morality", "On Prevention of Corruption", "Code of ethics of a scientist of Ukraine", regulatory documents determining the ethical standards of student behavior at the Ivan Franko National University of Lviv, and the "Code of academic integrity of Ivan Franko National University of Lviv", and "Ethical Code of undergraduate, graduate and PhD students of the Faculty of Biology of Ivan Franko National University of Lviv".

The aim of the Declaration of students of the Faculty of Biology is to develop a system of democratic relationships in the University of a high ethical dignity among students, teachers, staff and administration, as well as the development of scientific and corporate culture among the university community.

1. Code of ethics for the life sciences

1.1. Goal of science:

The biological and biomedical sciences have the ultimate goal of advancing human health and welfare of all human beings. Scientists and the scientific community accept the responsibility to act on behalf of the interests of all people, and will guide society in the development of safeguards necessary to judiciously anticipate and minimize harms

1.2. Principles for the practice:	*1.3. Virtues:*
• Objectivity - honest assessment and minimization of the biases inherent in science, i.e. cultural and other influences on the experimental design, techniques and interpretation of the data; • Questioning certitude - questioning current authoritative view or dogma in order to continue the process of advancing new knowledge; Research freedom - allowing ideas to flourish within the scientific community because wrong or true concepts will eventually be proven as such; • Research reproducibility - quality scientific research can be reproven and is openly available to all qualified scientists to move knowledge forward; • Respect for subjects - the highest ethical standards are upheld to respect all living things, with profound respect granted to human life and dignity; • Scientific community - the scientific community is the guardian for the integrity of science by proving the veracity of individual findings through peer review and reproducing experimental results, and by training and accrediting future scientists.	• Duty - scientists are committed to serve and guard humanity and seek to advance scientific understanding and respect for the truth; • Integrity - scientists strive to be objective, fair, truthful, and accurate; • Accountability - scientists are accountable to their profession and society; • Altruism - scientists' primary focus is the best interests of humanity and not selfinterest, commercial interests, or the promotion of the industry of science; Excellence - scientists are committed to a lifestyle of learning and transmitting knowledge and skills; • Respect for colleagues - scientists treat associates and trainees with respect and credit their contributions.

General Rights and Responsibilities of Students

*2.1. Students of a higher education institution (HEI) have the **right to**:*	*2.2. Students of a higher education institution (HEI) have the following **responsibilities**:*
• be free from discrimination based on race, religion, ethnicity, political affiliation, age, sex, disability or any other matter of personal preference; • have freedom of expression, freedom of assembly and association, with a condition that these freedoms do not hinder the effective conduct of classes, comply with the policies of higher education institution, other principles of ethical behavior such as respect for the rights of others, as well as Ukrainian laws; • fair evaluation and the right to be properly informed about the grading criteria in accordance with the HEI relevant policies; • appeal in accordance with the HEI appeal policies; • be free from harassment by any member of the HEI community; • be heard in case when a decision is to be taken against him/herself; • be notified on a timely manner on disciplinary proceedings or actions; • report any alleged non-compliance with the legislation in force or the ethical principles to the relevant authority in confidence without adverse personal consequences.	• become familiar with the provisions of this Declaration and all the other policies of the HEI; • in relation to any person or group within or external to the institution, must not offer or accept any bribe or other unlawful financial consideration, or seek or accept any other personal favor, which may influence them in their studies, or influence others in their work; • must immediately report any attempt to seek bribes or personal favors to the relevant authority defined in the regulatory documents; • must not misuse the resources of the institution, or personal or commercial information held by it, including intellectual property, for personal gain or that of any other person or group; • must behave towards the governing board, managers, academic and support staff and fellow students in a respectful way, upholding the general principles of ethical conduct, and contribute positively and constructively to the academic work of the institution; • when participating in study or research activities, must not engage in plagiarism as defined in the regulatory documents, fail to cite or attribute the work of others, pass off others' work as their own work, or falsify results, and must abide by ethical principles in relation to protection of personal data, and other specific principles in defined subject areas according to the regulatory documents (for example in medical and veterinary sciences, and sociological research); • when participating in an examination or other form of assessment, must not cheat, copy others' work, either individually or as part of a group, or attempt to gain any advantage by offering any form of inducement, or knowingly permitting any other person to offer any form of inducement on their behalf.

2. Observance of academic integrity by students:

- independent performance of educational tasks, tasks of current and final control of learning results;
- references to sources of information in the case of using ideas, developments, statements, information;
- compliance with the legislation on copyright and related rights;
- provision of reliable information about the results of one's own educational (scientific, creative) activities, used research methods and sources of information.

STUDENT AGREEMENT

I, _____ (first and last name), have read and understand the Declaration of students of the Faculty of Biology on ethical behavior in the scientific activity set forth above.

Go back to the form

_____ _____

Signature *Date*

TOOL #21

Video Blog "Basic Techniques in Biochemistry and Molecular Biology"

Go to the video Click Here

Go back to the form

TOOL #22

Support material for ICM researchers for conducting activities during the Awareness Month

This project has received funding from the European Union's Horizon 2020 research and innovation programme under the grant agreement Nº 871146

INITIATIVE "TALKS IN EDUCATIONAL CENTRES FOR THE 11F"

An initiative from the Institut de Ciències del Mar with the support of the European project Responsible Research in Biosciences (ResBios). The main objective: to highlight the important role of Women in Science and especially in marine science and empower girls in science.

VOLS PARTICIPAR?

If you are an educational centre or group interested in inviting a women marine researcher to your centre, write to us at oceanliteracy@icm.csic.es indicating the name of the centre, the level of the public that will attend the talk and the dates and times you would prefer, from February 11 to March 8, 2021.

THE INSTITUT DE CIÈNCIES DEL MAR

The Institut de Ciències del Mar (ICM-CSIC) is the largest marine research centre in Spain and one of the most important in the western Mediterranean basin. The centre has more than 300 people devoted to building and generating knowledge about the planet's seas and oceans. Most of this staff are women, who do essential tasks at the centre. The ICM-CSIC is very committed to equality and proof of this is its Equality Task Force and the participation of the institute in two European projects: ResBios and LetsGEPs (Leading Towards Sustainable Gender Equality Plans in research institutions). In addition, it is one of the members of the community of practice of the European project ACT Life Science Community of Practice (LifeSciCoP). Through these spaces and initiatives, the centre highlights its will and commitment to gender equality.

THE 11F INITIATIVE

February 11 is the International Day of Women and Girls, declared by the United Nations General Assembly. Despite recent advances in gender equality, there are still many gender biases and stereotypes that cause, among others, many girls to not end up choosing STEM careers. At the ICM-CSIC we adhere to the 11F initiative along with more activities within Awareness Month, until March 8. From the ICM-CSIC we encourage educational centres to invite women marine researchers from the ICM-CSIC to give a talk, round table or participate in any other similar activity. So, you will help to increase the visibility of women in marine science and also you will be able to answer questions about marine research. Despite the recommended age for the public being 16-19 years, we encourage the other levels as well to ask us for the participation of women scientists.

#ICMforequality #11F #WomeninScience

This project has received funding from the European Union's Horizon 2020 research and innovation programme under the grant agreement Nº 871146

INITIATIVE "TALKS IN EDUCATIONAL CENTRES FOR THE 11F"

Thank you very much for your participation in the initiative **"Talks in educational centres for the 11F"** highlighting the important role of women in science and especially in marine science.

This initiative is framed on the International Day of Women and Girls in Science, declared by the United Nations General Assembly to achieve full equal access to science for women and girls and to contribute to gender equality and empowerment of women and girls.

At the ICM-CSIC it was created the hashtag #ICMforequality for showing the ICM-CSIC's commitment towards gender equality. The dissemination of the ICM-CSIC's 11F activities on social media will be accompanied by this hashtag.

Below, we would like to give you some tips and recommendations for your talks and activities in educational centres:

1) First of all, **enjoy** your talk, your public is not used to interacting with a woman marine researcher and will appreciate very much your presence!

2) When you are organizing your talk remember that there is no ideal formula and that something exciting for a group may be another group not like it. So, it is recommended **contact** to the educational centre and **ask** directly what they expect from the activity. It can be helpful if you can suggest some topics/activities, they will probably ask you what you can offer.

3) There have been a lot of important women in marine research and oceanography, there is also currently a lot of them. We recommend you highlight scientists that are **near** to you because they have made important contributions to your field or because they have lived in your city or they work at the same research centre as you. Probably you will show admiration and recognition towards them, one of the main objectives of the initiative.

4) We recommend using **images**, **videos**… In the ICM-CSIC's 11F folder of resources, you will find a lot of pictures that you can use and you can also use photos from your work. Remember that "an image is more worthy than one thousand words".

5) With **primary students**, we recommend using the resource "**storytelling**", explaining a tale about the life of women researchers.

6) For **high school,** you can talk about the challenges of being a woman researcher, daily struggles, gender biases, etc. You can talk about deeper aspects.

7) Based on previous experiences here there are some of the common questions asked at these events that can help you for preparing your talk or activity:

- How is your day at your work?
- Which tools or instruments do you use? Can you show us?
- Do you remember some funny story at your work that you can tell us?

This project has received funding from the European Union's Horizon 2020 research and innovation programme under the grant agreement Nº 871146

- Have you experienced gender bias?
- Any of your relatives is also a scientist? Who was your role model?
- Why did you become a scientist?

8) You can also add to your presentation images, or you can talk about activities from your personal life to show that scientists do more than science and are also "normal" people with hobbies like any other person.

9) You can also explain how were you at the age of the students and even show photos or visual content.

10) You can prepare a short version of your presentation, dedicate time to talk with the students and prepare some extra slides just in case there are not many questions. Some groups are very active and participate a lot and other groups could need a bit of help thinking about questions. You can also ask them questions like for example their opinion about science.

11) Your talks are also important for highlighting the importance of science and the scientific method. We are continuously surrounded by pseudoscience and "fake news" and it is very important to explain the importance of science in knowledge building.

12) You can also explain the importance of working in a group and the importance of multidisciplinarity and the equal recognition and distribution of duties… ways towards reaching equality!

13) Once the activity is over, you can ask for the number of participants in the session, and the sex ratio and also ask the teachers to keep you informed about any feedback received. Take a photo if possible (ask for permits if needed) and send it to oceanliteracy@icm.csic.es. Thank you very much!

14) And if you want to send any other doubts, suggestions or comments please don't hesitate to contact oceanliteracy@icm.csic.es. Thank you very much!

#ICMforequality #11F #WomeninScience

Go back to the form

TOOL #23

Document of presentation of the Network of marine schools for engaging teachers

The Network of Marine Schools

An initiative from the Institut de Ciències del Mar in the framework of the European project ResBios, counting on support from sociologists and educators. The main objective: to develop a network to bring the Ocean to the classrooms and bring the classrooms to the Ocean.

The "Network of Marine Schools" emerges as a response to recent societal challenges, which can be worked together from both the **marine research** and **education** sectors. Dealing effectively with and reversing current trends concerning the climate crisis, the overexploitation of resources and environmental pollution are just some examples of the objectives of the current and future societies.

The **Ocean** is the final frontier on Planet Earth, understood as the defining physical feature of our planet, which covers more than 70% of our planet. Despite its paramount role in the planet, its exploration has been very limited, mainly because it is an environment very different from our air-terrestrial environment in terms of physicochemical conditions. It is not surprising that, historically, the education sector has mainly used terrestrial examples (closer and well known) for the acquisition of knowledge and also for working on skills with students. However, in the Ocean we also find examples of many of the processes that take place in our environment and it is vital that little by little they also arrive in the classrooms for helping to break little by little the existing barrier between the two environments. The Ocean-atmosphere system, the use of marine resources, the maritime transport, the origin of life... all of them show us that the two environments are very connected and that we should know them well the Ocean and make it closer to us if we want this relationship to last sustainably over time. This happens through the construction of knowledge and working on the connection with this environment. Through knowledge, we want to study the relationship of the Ocean with us and of us with the Ocean, the basis of "Ocean literacy"[1] (which we often find translated in Catalan as "cultura oceànica").

It is very important to ensure that the knowledge and skills needed to face the challenges of the future reach the different sectors of society. In the same way, it is essential that society was able to express its concerns to the marine research sector and that they could be considered to find answers to social demands. Education appears as the fundamental pillar to work on for ensuring that the citizens of tomorrow could make informed decisions based on the best knowledge and with the best training. This can be achieved by observing and understanding **knowledge building** in marine sciences and we suggest doing this from a marine research centre: the Institut de Ciències del Mar (ICM-CSIC). In addition, we believe that it is very important that schools and research centres jointly promote ocean literacy in society so that the learning that is developed in both areas also reaches families and societies in general.

The Institut de Ciències del Mar (ICM-CSIC) is the largest marine research centre in Spain and one of the most important research centres of the western Mediterranean basin. The research centre counts more than 300 people devoted to building and generating knowledge about the oceans and seas of the planet, from different disciplines (**physics**, **chemistry**, **biology**, etc.). In addition, the ICM-CSIC and the Marine Technology Unit (UTM-CSIC, another research centre)

This project has received funding from the European Union's Horizon 2020 research and innovation programme under the grant agreement N° 872146

are located in the same building. The two research centres collaborate for developing ocean surveys and projects in an interdisciplinary way. In an oceanographic survey, for example, researchers from different disciplines come together, creating work environments where the acronym STEM (Science, Technology, Engineer, Maths) become a natural and common way of working together.

The "Network of Marine Schools" is framed in the European project "**ResBios"**, where the ICM-CSIC participates as a partner counting on the help and assessment of professionals from both the fields of knowledge of education and sociology. The ICM-CSIC counts with broad experience participating and working in different initiatives and educational projects. With the Network of Marine schools, the ICM-CSIC would like also, to consolidate these previous experiences. Also, the ICM-CSIC would like to learn from the education sector how to improve and adequate its talks, workshops and other educational resources to better align with the curricular programs.

The way we conduct science and the way we learn are both two aspects that are continuously evolving. It is very important that the education sector and marine research sector find a common space for sharing different ways of doing and learning. Traditionally, despite its paramount role in the planet and our daily lives, ocean knowledge is not enough present in the classrooms. We would like to improve the **presence of the Ocean in the classrooms** with the "Network of Marine Schools". We want to achieve that by putting together concerns and wonderings from both the educational community and the scientific community from a marine research centre. Our main objective is to gain a real, integrated and global vision of the planet where the ocean, the land and the atmosphere belonging to the same System. We believe in diversifying the educational resources including marine examples also for helping the teachers to also make more attractive their lessons offering support from a marine research centre.

Thanks to the "Network of Marine Schools", in the scholar year 2020-2021, 1st-year High-School teachers and the marine scientific community from the ICM-CSIC will meet in common spaces for learning and exchange purposes and will be able to discuss how the knowledge about the ocean is built and also about the challenges of the future. The training will consist of **5 common training sessions** and then a reflexive and pro-active phase for each educational centre. In the common sessions, teachers and researchers will be able to exchange concerns and different ways to achieve, little by little, that 71% of the surface of our planet arrives in the classrooms and that also the educational community could find a way to the marine ecosystems.

If this pilot phase works well, in the near future we expect to wide the network towards other levels of education and other territories, building a mutual learning community around ocean literacy.

Go back to the form

This project has received funding from the European Union's Horizon 2020 research and innovation programme under the grant agreement N° 872146

TOOLS for MENTORING

TOOL #24

A scheme of seven boundary conditions on how to facilitate implementing gender equality plans in academic organisations

A scheme of seven boundary conditions on how to facilitate implementing gender equality plans in the academic organisations based on good practices from the University of Gdańsk

Dr hab Natasza Kosakowska – Berezecka, University of Gdańsk
Dr Magdalena Żadkowska, University of Gdańsk

From the beginning of this exciting endeavour to bring about institutional change the most important thing was to open up the official space for gender equality at the University of Gdańsk.

For the past 15 years we all have been busy with individual projects and several grassroots activities undertaken by many academics and UG staff that raised awareness for gender awareness. Coordinating and partnering many EU grants have definitely helped in engaging more and more individuals and units in making equality one of the main focuses of university. Our activities gained momentum when, thanks to the STARBIOS2 project (with subsequent developments in ResBios), we were able to trigger within institutional cooperation with specific goals and an adequate budget. Within STARBIOS2 the University of Gdańsk together with 11 partners from Europe, USA and Brazil we worked on the concept of taking into account social and ethical consequences of research (Responsible Research and Innovation, RRI). The idea of the project was to develop and implement individual action plans in selected scientific institutions conducting research in the broadly defined biological, chemical and biotechnological sciences. Our goal was to enable structural changes in the field of responsible research and innovation – and one of its fundaments pertains to achieving gender equality and raising gender awareness within academic institutions. The action plan for the University of Gdańskwas implemented at the Intercollegiate Faculty of Biotechnology University of Gdańsk and Medical University of Gdańsk (IFB). The cooperation of the aforementioned Faculty with the Faculty of Social Sciences of UG enabled the implementation of the results of expertise and the involvement of female researchers from the Faculty of Social Sciences of UG.

The reasons for the unequal distribution of power in the academic research careers are related to the different social roles expected from women and men in the society. When addressing the topic of the gender of the researcher, the category of "missed opportunities" is often mentioned in the literature (Ceci & Williams, 2011). Women face several structural barriers that deprive them of using their full potential in the world of science. Not using the full potential of the society, we are not using enough talents that exist, and hence science is missing out.

Through active participation in the implementation of equality projects financed by the European Union, as well as through conducting courses on: managing diversity in organisations, counteracting gender stereotypes, designing scientific careers or working in diverse teams, we have managed to develop **seven boundary conditions** for a university that need to be met, in order not to miss out talents brought by women into the world of academic institutions.

First, counteract the effects of gender stereotypes in science - ideally with training for the academic community on how to counteract biases and acquire the skills and tools to manage teams in an inclusive way. In the 1960s and 1970s, a study was conducted in the United States in which children and adolescents between the ages of 5 and 18 were asked to draw a scientist - only 1% of the drawings depicted women. When this study was repeated 5 decades later, in 2016, the percentage of drawings depicting women increased from 1% to 34% (Miller et al., 2018). Such research has not been conducted in Poland, probably the result would be similar. Nevertheless, another kind of research (Makarova et al. 2019) indicates that the queen of textbooks of both primary and secondary education in Poland (and not only) is Maria Skłodowska Curie, whose contribution to the development of science has a measurable effect in the

perception of the world of science by Polish girls. The "Beautiful Minds" survey created by the Program for Women and Science in 2016 confirmed the thesis that "science has a gender". To the question "Who do you think is a scientist?" only 31% answered that "a woman", when asked about the role model of a scientist, however, male and female respondents indicated Maria Skłodowska-Curie in second place (27% of responses, after Albert Einstein: 40% indications and before Isaac Newton: 15% indications).

Second, **it is important to measure inequality in the organization in which** you want to make changes. An example of this is the report that the University of Gdansk, as the first university in Poland, managed to create "Women in science. Diversity management and gender equality in social responsibility of University of Gdańsk.". As Prof. Ewa Łojkowska states:
"*The report has the ambition to set a new trend of looking at talent and science management in Poland, paying attention to the potential hidden in the diversity of gender, age, background and, very importantly, scientific diversity. Coexistence and cooperation of women and men, representatives of different scientific disciplines is an opportunity for Polish science. Summary of university resources in the form of such reports helps to plan university development strategies for the coming years*" .
The findings of the report provide an insight into gender inequalities and show the potential of male and female researchers. Monitoring gender equality indicators is necessary to measure to what extent the activities carried out have a certain impact and are reflected in the quality and comfort of work in the research units (Ovseiko et al. 2019).

Third, it **is important to create a detailed institutional plan for the implementation of gender equality principles** with well-defined goals and outcomes, and to embody a mechanism for systematic and transparent monitoring of the implementation of the established plan and its effectiveness at all levels of the scientific career. Such a Gender Equality Plan in now being created at the University of Gdańsk. Its aim, as well as the aim of similar plans at other universities, is to create a whole system of activities, starting from educational activities counteracting stereotypes, through building clear career paths, to monitoring gender equality indicators which is necessary for the diversity management system to actually bring the expected results - scientific progress. Announcing that gender equality is important to the institution is an important action, but it is part of the university's strategy, and so must be followed by specific goals and actions taken to achieve them.

Fourth, it **is necessary to involve the entire academic community, including, and perhaps especially, men, in** supporting this type of change. Worldwide, greater equality for women means progress and benefits for all - but it can also mean new challenges in mobilizing men for gender equality - an important area of action for the education and science sector.
The global, organizational, family, and individual benefits of gender equality affect both women and men (Holter, 2014). Despite growing awareness of the benefits of gender equality (Holter, 2014), women have been and continue to be the main drivers of gender equality strategies and movements - including at the institutional level. In contrast, men - who hold higher status positions and roles in most organisations - are less likely to think of gender equality as something beneficial to themselves (Greig et al., 2000). Gender equality programs and campaigns mostly refer to men implicitly, as a group that has more power than women, rather than explicitly involving them in the process of implementing them and benefiting from gender equality achievements. This may be related, among other things, to the fact that men do not see the gender equality movements as benefiting them. Moreover, the increasing presence of women in power structures may be perceived to be at the expense of men - the more power women gain, the more power is lost by the men in whose hands the power used to be. This way of viewing social relations is called "belief in a zero-sum game" - the more women have access to power and money - the less men have it (cf. Kosakowska-Berezecka et al., 2020; Ruthig et al.

2017). This type of perception focuses on competition for resources and makes it difficult to develop win-win solutions. Without the involvement of both women and men in gender equality efforts, gender equality will not be achieved and thus diversity management will not be as effective as it could be. One way to involve both women and men in gender equality activities is to jointly build strategies to do so - including through the implementation of gender equality plans.

Fifth, it is important to educate young people and organize support from mentors and mentees. As a result of the STARBIOS2 project, three subjects have been permanently included in the curriculum of the Biotechnology course: "The Role of Gender in Research (RRI) and Scientific Careers" (1st level), "Preparation for active work in a diverse team" (2nd level) and "How to become a responsible scientist" (3rd level). There is a lack of awareness in academia that it is not women, but the system of conducting research and managing scientific institutions that is not fully compatible with combining family and professional roles, that is another of the barriers standing in the way of full scientific success.

The world of science gives the impression of a very flexible world for combining family and professional roles, but this is a double-edged weapon - women in science need to be like that 'Super Woman' - like Marie Skłodowska Curie. This is an unmatched role model; all the female Scholars we interviewed had very high standards of work and huge expectations of themselves, while thinking of themselves as 'not a role model'. In addition to systemic solutions that support women, there is a lack of female mentors. There is also a lack of male mentors to show other men their committed fatherhood and balancing of academic and family careers.

Sixth, it is important to "be credible and reliable" at the level of most visible behavior - that is, language. In our view, this manifests itself in communicative consistency. Therefore, we support the use of solutions that influence, for example, the promotion of equality language - in this case, feminized or remembering the feminized version (e.g. in legal acts or university statutes). The greater presence of women in the language - through the use of feminatives so female endings in case of languages that are gender transparent such as Polish, German or Italian, can influence young women's decision to choose such a path of education or career, and women with higher education motivates them to obtain more degrees in their scientific careers. We, as a society, should support the development of women in these fields so that we do not waste opportunities to increase the importance of Polish science in the world.

Seventh, it is important to share good practices and history of our successes outside of academia. As experts involved in university and interuniversity activities, we give interviews in the media, speak at scientific conferences, inspire companies and corporations, and implement new projects related to gender equality awareness in collaboration with NGOs and business partners. One of them is the ResBios project (Responsible Research and Innovation Grounding Practices in Biosciences) funded by the EU Horizon 2020 Framework Programme. It started its activities in January 2020 and was implemented for three years in a consortium formed by 12 partners from 11 countries, coordinated by Tor Vergata University from Rome. The budget of the Project is €1.5 million. The selected partners of the STARBIOS2 project, who have already implemented RRI action plans leading to structural changes in their institutions, as experienced organizations had within ResBios the role of "mentors" for the "newcomer" partners with advice, examples and support.

Go back to the form

TOOL #25

ResBios Educational Measures - Methodology and content of workshops for science education

ResBios Educational Measures: Methodology and content of workshops for science education

Workshops in science education

a. Introduction

Responsible Research and Innovation (RRI) is a new approach to reinforce interactions between science and society. Education is a key feature to trigger the process.

Many of the challenges our societies are currently facing are addressed by science. An insufficient connection between research and society may have a wide range of consequences: From not properly addressing societal challenges to being ethically contested, not supported by public and funders. Responsible Research and Innovation (RRI) is an overarching policy strategy to increase the intensity and the quality of the interactions between scientific research and society, so that research and innovation meet the values, needs and expectations of society in the best way possible.

RRI covers the keys of Public Engagement, Gender Equality, Science Education, Open Access, Ethics and Governance. It is a broad concept for the critical reflection and development of research and innovation and can be used to promote responsible research and a dialogue between science and society.

In the series of educational workshops the constructs of RRI is broken down to concrete research contents, and through information, reflective activities and discussions RRI aspects can be analyzed and improved.

b. Overview of the workshops

Workshop 1. Capacity building on RRI at institutional level

Workshop 2. Establishing educational activities at university level in the context of ethics

Workshop 3. Establishing educational activities to promote gender-sensitiveness at university level

Workshop 4. Science education in schools carried out by researchers

Workshop 1. Capacity building on RRI at institutional level

Theme: How to raise the awareness of RRI in research institutions?

Focus: Societal engagement: How to reach researchers and citizens and how to measure success?

Method: Reflective activity in the field of Societal Engagement and Knowledge Transfer (reflective activity part 1) and Contextualization of Research (reflective activity part 2)

Introduction "Responsible Research and Innovation"

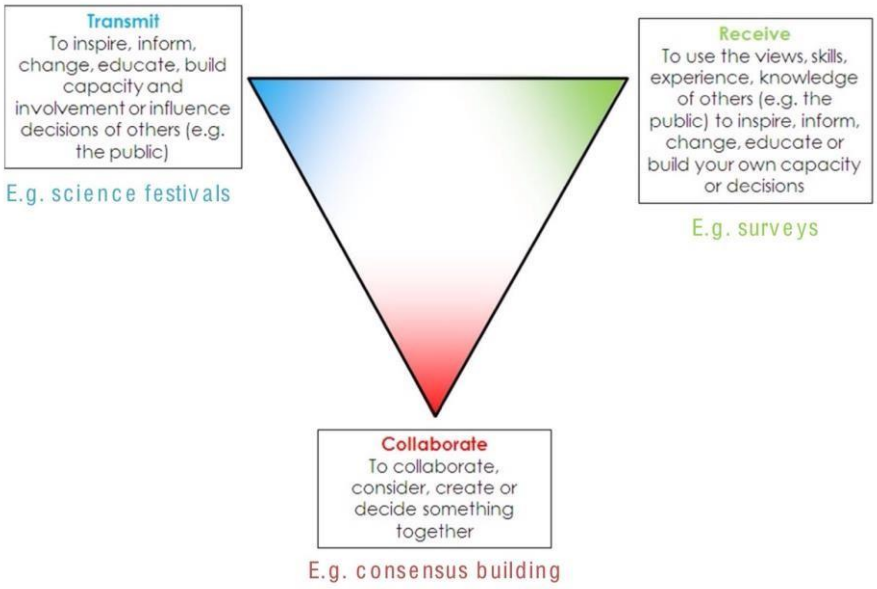
Start with a discussion about the following questions:

- What does RRI mean for research, researchers and society?
- What is societal engagement?

Information:

Give an input about following issues:

- Societal engagement: approach (e.g. Promotion of the engagement of all the societal actors in the research and innovation process. Societal actors: Citizens, Stakeholders, Politicians, NGOs...)
- Activating question: Do you think scientists are obliged to exchange their research with the public?
- Overview about communication between science and society (based on UOX 2010)



- Point out: Science with and for society. "Science is not another culture, alien to society. It should be considered as […] a base from which meanings elaborate and evolve, in turn yielding a coherent vision of our actions and our situation, but also our will to understand, to communicate and to act." (Cheng et al., 2008: 3) It is not "deficient society" that has to be informed adequately to accept "science as it is". Science and society encounter one another as equals, negotiating the problems to address
- Concrete example of RRI implementation (e.g. RRI at the FB02, University of Bremen: Results of the STARBIOS2 questionnaire survey; other Starbios2 implementation results)

Reflective activity: YOUR RESEARCH PROJECT AND SOCIETY

Part 1: Societal Engagement and Knowledge Transfer

- Please form groups of three.
- Then choose one of your research projects to develop a communication strategy.

Task 1: To identify possible target groups for your chosen research project, please answer the following questions:

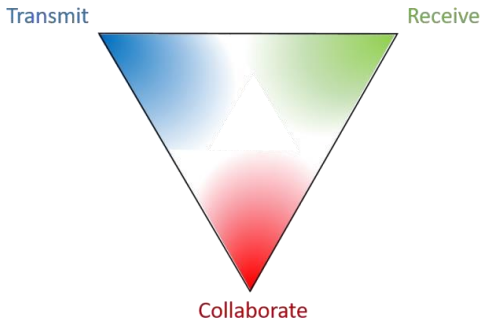
- WHO might be interested in the research issue? Which persons, associations, companies, public domains?
- WHO might want to participate in the research project? WHO might use the outcome?
- WHO should know about the research issue/project? WHO would you like to reach out to?
- How does the project COMMUNICATION work? Do you receive information crucial to the project? Might collaboration be appropriate?

Task 2: Now you can choose fitting communication strategies to reach your target groups and to achieve your engagement goals.

Transmit: to inform, inspire, teach and influence opinions and behaviour; Fair, debate, lecture, advertising campaign; Papers, reports in public media, newsletter, website

Receive: to receive information, gain insights, collect data, bestow responsibility; Survey, focus groups, datamining; Advisory committee, public meeting, consultant workshop

Collaborate: to cooperate, mediate, contract and negotiate; Stakeholder dialogue, consensus workshop; Steering group, partnership mediation, settlement negotiations



The Public Engagement Triangle.
Oxford University (2010). Science for all – Public Engagement Conversational Tool

Reflective activity – Part 2: Research contextualization

Task 3: Please answer the questions about your research project, which will help you to choose a fitting **research contextualization**.

- Is your research connected to a local or global problem? Which problem is it?
- Is it concerned with an explanation, prediction or solution to a problem? Please, describe.
  Might there be an application possibility generating from your research? Please, describe.
- Are there interesting elements from one or more of the below mentioned aspects integrated in your research/ research issue/ project? Please, explain.
  - Ethics, moral
  - Economy
  - Ecology
  - Physical health
  - Scientific innovation
  - Others:

Task 4: Possible contextualization efforts should consider the following **criteria**. Please locate your chosen contextualization on the scale next to each criterion.

Criterion		min.		mid.		max.	
Range of problem/ solution/ consequences	local						global
Number of people affected by problem/ solution/ consequences	one						everyone
Personal proximity of problem, solution, consequences	irrelevant						concerning
Temporal proximity of problem, solution, consequences	distant past/ future						present
Intensity of something happening because of/ before research project outcome or would happen	negligible						intense
Consequences of problem not being solved/ research issue being applied	negligible						dramatic

"Intensity" refers to anything interesting or relevant in your context, that is not a "Consequence".

Presentation:

Please present your results (task 1-4) on a poster.

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Applicability:

Please, reflect if the reflective activity and the workshop content as a whole is applicable for your own institution.

The reflective activity may help to:
Identify target groups
Take into account the needs and questions of specific groups
Consider interests of target groups Teach RRI contents

References:

Trench, B. (2008). Towards an Analytical Framework of Science Communication Models. In: Cheng, D., Claessens, M., Gascoigne, T., Metcalfe, J., Schiele, B. & Shi, S. (Eds.). *Communicating Science in Social Contexts. New Models, new practices* (119-135). Springer: New York.

UOX: University of Oxford (2010). Science for All – Public Engagement Conversational Tool. Version 6

Go back to the form

Workshop 2. Establishing educational activities in the field of ethics and scientific writing at university level

Theme: Which educational activities are suitable to reflect about RRI issues?

Focus: Ethics: How could be conducted a training of students to promote ethical scientific writing?

Method: Reflective cards

Introduction: "RRI lecturing"

Start with a discussion about the following questions:

- What good lecturers in regard to RRI do?
- Which attitudes and competences are important?
- Who in your research institute/university is responsible for lecturing RRI issues?

Information:

Discuss the following issue:

- The scientific community holds on to the idea of "Free Science" to protect scientific research from distortions and dependencies. But to ensure this freedom of science, the scientific community has to act responsible and has to account for the actions to the social actors involved (Trench, 2008). Therefore, it is important for researchers to reflect their behaviour in the light of the scientific ethical code of conduct.
- Activating question: How to promote ethical issues?
- Example: Recommendations to promote ethical issues (University Bremen)

Activity: Ethical reflection on scientific writing scenarios

Aim: The participants become more familiar with ethical implications in the scientific writing process. They may discuss them from different points of view and become more aware of their own ethical values.

Discussion as an introduction

The participants find their attitudes towards ethical aspects of scientific writing and concretize them. Afterwards, a lecture or work phase could follow to deepen the outlined topics.

Discussion as elaboration

After a short presentation on ethical aspects of scientific writing the participants can use the presented contents in the scenario discussions.

Target group: students, doctoral students and researchers

Duration: 2-10 min per scenario, depending on group size and heterogeneity

Process: The scenarios can be discussed in pairs, small groups or even the plenum. The arrangement of participants depends on whether the goal is to control the course of the dialogue (plenum moderation), to bring together students and researchers with different stages of experience (small groups) or to enable intensive discussion (pairs) with less reservations than in a group or plenum discussion.

As a common ground the overarching goal of the discussions should be to find as many different viewpoints as possible. Therefore, it is allowed and even desired to freely express everything that

comes to mind. The reflective activity here is to reflect own experiences and opinions from different viewpoints offered by the other participants or own objectified thought.

Material: Reflective cards

Not so new after all
The paper you worked on very hard is nearly finished. Next week is the deadline of the special edition of a prestigious journal. Your student assistant shows you an article that looks very similar to your own. A model that you present as new in your article has apparently already been published. Luckily, it was published in a lesser known journal.

What do you do?

A
I pretend that I never have read the paper and don't mention it in my article. I hope that the reviewers don't know the paper either.

B
Where my article overlaps with the other article I refer to the other article, thereby risking my paper being rejected due to lack of substantial contribution.

C
I refer to the other article to a very limited extend, so that my paper appears to be original.

D
I drop the paper and focus on another project.

Different results
For your master thesis you have used different methods to test you hypothesis. Three of these methods give significant results, whereas two others do not. Your supervisor wants you to remove the two methods that do not give significant results from the thesis and tells you that without them a paper could be published from the results.

What action do you take?

A
I agree with my supervisor and remove the two methods.

B
I investigate the causes for the different results and threngthen my basis for interpretation.

C
I inform the Ethics Committee about my supervisor and leave the work group.

D
I publish all my results with the risk of rejection due to lack of impact.

Suspicions
A few fellow students tell you that one of your colleagues has manipulated the results of one of the experiments in which they participated. They tell you a rather incoherent story and clearly have no deep methodological knowledge. After a casual talk with the colleague and a look at the results you do nnot see any irregularities. The colleague is otherwise flawless and well-respected.

What do you do?

A
I tell the students that they should stop gossiping and start studying.

B
Having done what I can, I leave it at that.

C
Informally I approach all students who have been part of the experiment and ask if they have experienced irregularities.

D
I inform the contact person for scientific integrity and ask for a formal invetsigation.

Result reproduction
After several runs you have produced interesting results within your Master study and you want to publish them. One of your colleagues wants to work with the same method, with different results. You fail when trying to reproduce your own results.

What do you do?

A
I run my trials repeatedly, as long as it takes, for a clear result.

B
I adhere to my initial results, but I do not publish them.

C
I adhere to my initial results and publish them.

D
I adhere to my initial results, publish them and discuss the method limitations.

A favour
You are attending a seminar together with a good friend. For the grade you have to write a research paper. You have invested very much time and work and now your paper is finished. Unfortunately, your friend could not find the time and asks you to send him your paper as a basis for his own.

What do you do?

A
I send my paper to my friend.

B
I do not give my paper to my friend.

C
I do not give my paper to my friend, but I promise to support her.

Which consequences might the disclosure of your paper have for you, your friend, and others?
Please also think about the careers of the persons involved and the scientific field in general.

Statistical outliers
Some outlier values lead to inconclusive results in your study.

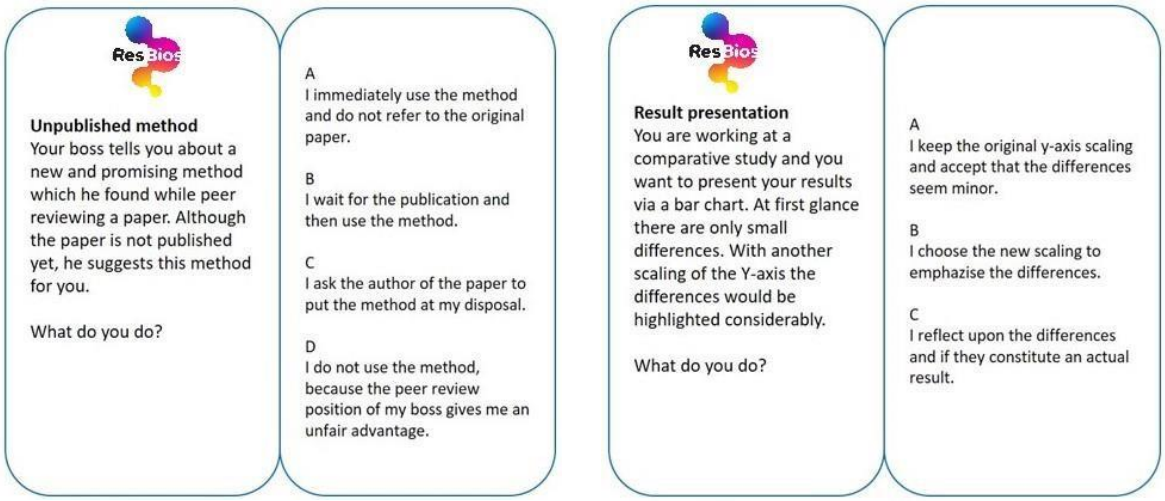
What are your actions?

A
I remove the outlier values from my study results to achieve clear results and mention this strategy in my discussion.

B
I remove the outlier values from my study results to achieve clear results, but I do not mention this strategy in my discussion.

C
I keep the outlier values and accept, that the study does not have clear results.

D
Ich acqire more data to reduce the outlier effects on the result.



Through writing academically oriented texts, bachelor and master theses students are prepared to publish in a scientific context – or are already part of it. To publish papers on newest research is an important duty of scientists: On this way, new methods, hypotheses and results as well as research desiderates are disseminated throughout the scientific community.

Presentation:

Please present your results of your discussions.

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Applicability:

Please, reflect if the reflective cards and the workshop content as a whole is applicable for your own institution.

The reflective activity may help to:

Discuss ethical issues in regard to scientific writing
Take into account the needs and questions of specific groups (e.g. doctoral students)
Stimulate to develop reflective cards in the own institutional contexts
Stimulate to reflect about good lecturers and lecturing of RRI issues

Go back to the form

Literature:

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Workshop 3. Establishing educational activities to promote gendersensitiveness at university level

Theme: Which educational activities are suitable to reflect about RRI issues?

Focus: Gender and diversity in research: How could be conducted a training of students to promote openness for gender and diversity issues? Gender and diversity in lecturing: What the good RRI lecturers do.

Method: Reflective cards and a reflective questionnaire

Introduction: "RRI lecturing"

Start with a discussion about the following questions:

- What good lecturers do in regard to gender and diversity?
- What good researchers do in regard to gender and diversity?
- Who in your research institute/university is responsible for gender and diversity issues in research?

Information:

Discuss the following issues:

Scientist should consider sex and gender in all stages of the research process. Here, gender takes a twin approach: on the one hand the creation of working conditions and a culture that enables the equal participation of men and women in research teams at all levels, and on the other hand, the outlining of the gender dimension in research content to address the reality of both men and women. The Toolkit Gender in EU-funded research is a practical tool and guideline to integrate gender in research content and includes a corresponding checklist.

Toolkit Gender in EU-funded research

An overview is given in the following table:

Research phase	Equal opportunities for men and women in research	Gender in research content
Research idea phase		Generate gender-sensitive ideas for research proposals Make research hypotheses gender sensitive
Research proposal phase	Select a mixed team of men and women Create gender-equal working conditions	Formulate gender-sensitive research questions Choose a gender-sensitive methodology
Research phase	Value the work of women and men equally Manage and monitor men's work equally	Collect gender-sensitive data Analyse data in a gender-sensitive way
Dissemination phase		Report data in a gender-sensitive way Use gender-impartial language Disseminate results in a gender-sensitive way

- Gender equality strategy (GES) is about fostering gender diversity in research institutions. Benefits from GES include: fostering gender balance in research teams and in decision-making processes and removing barriers that generate discrimination against women in scientific careers; and integrating the gender dimension into research and innovation content with the goal to improve the scientific quality and societal relevance of produced knowledge.
- Activating question: How to take aware gender and diversity issues?
- Example: Recommendations to promote gender and diversity issues (University Bremen)

Reflective Activity 1: Gender and Diversity in research

Aim: There are distinct differences between the sexes and genders, which are of great significance in various research fields. Therefore, sex and gender have to be considered when including RRI.

The reflective activity questions raise awareness of areas, in which sex and/or gender might be a significant factor to be considered. Discussion about these areas and collecting more examples from the participants may raise the awareness of sex and gender as a key issue of RRI.

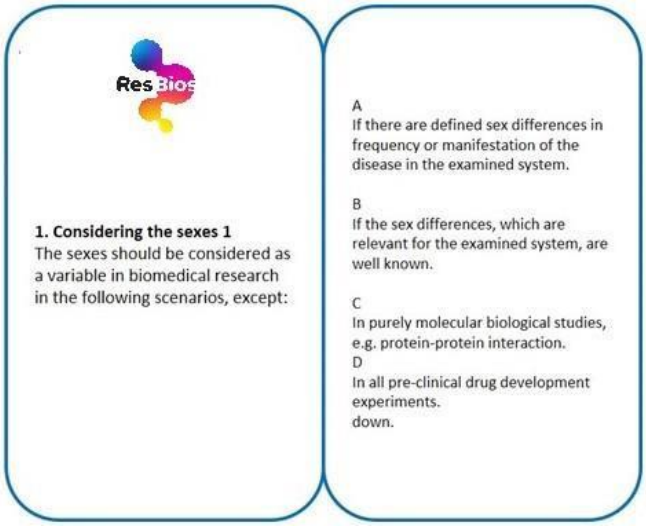
Target group: Young researchers and students, experienced researchers and workgroup leaders

Duration: 60 minutes (discussing gender/sex questions (15 min), answering the questions and explaining the answers (15 min), discussion (15 min), finding more examples and further areas (15 min))

Process: The questions can be answered and explained single, in pairs, small groups or even the plenum. The arrangement of participants depends on whether the goal is to control the course of the dialogue (plenum moderation), to bring together students and researchers with different stages of experience (small groups) or to enable intensive discussion (pairs) with less reservations than in a group or plenum discussion.

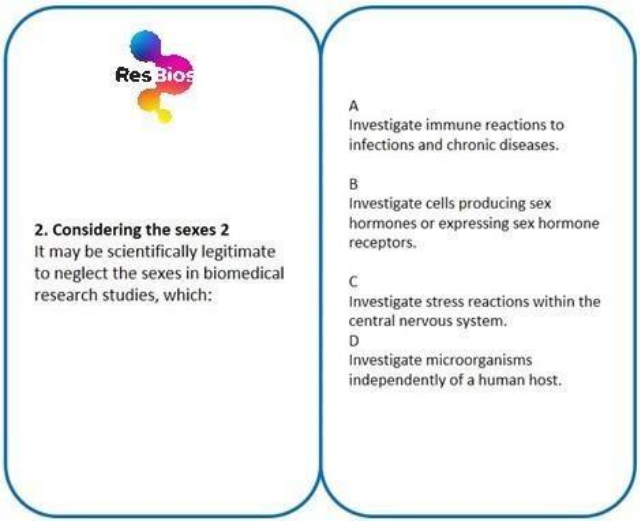
As a common ground the overarching goal of the discussions should be to find as many different viewpoints as possible. Therefore, it is allowed and even desired to freely express everything that comes to mind. The reflective activity here is to reflect upon research issues, methods and results investigating the sex/gender element.

Material:



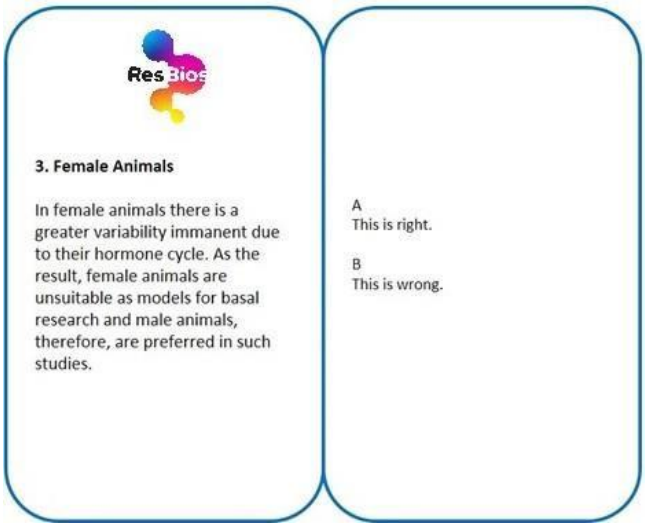
Gender Reflective question 1 "Considering the sexes 1"

Right answer: C; Only if it is scientifically sound to assume, that a system will not be influenced by sex or gender, these variables can be neglected



Gender Reflective question 2 "Considering the sexes 2"

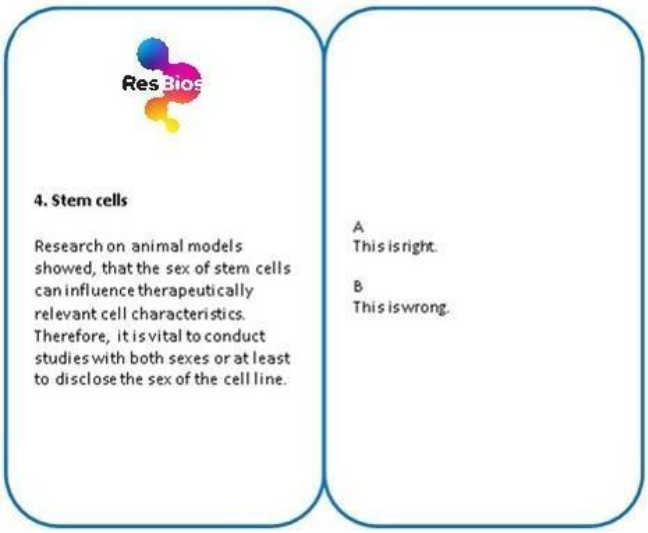
Right answer: D; Immune reactions and reactions regarding the central nervous system (Beery & Zucker, 2011) as well as stress reactions (Hostinar et al., 2014) can be highly sex/gender dependent.



Gender Reflective question 3 "Female animals"

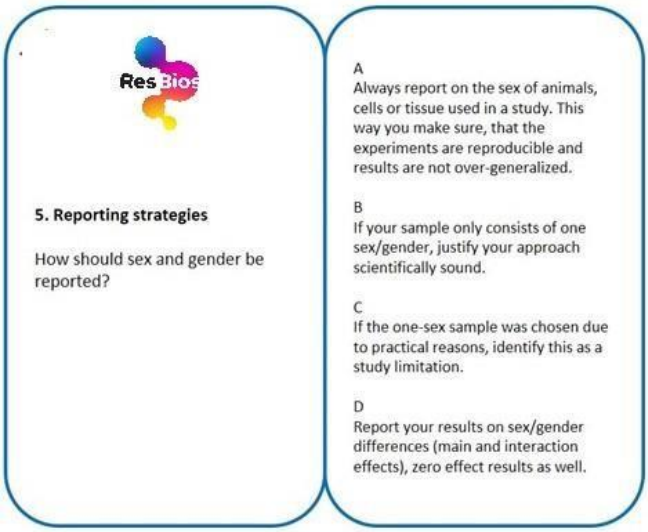
Right answer: B; Due to this prevailing assumption there is a sex/gender bias in basal research (Yoon et al., 2014). Prendergast et al. (2014) found that for the most part there is no significant difference in variability between female and male mice. Instead, a testosterone cycle, causing variability in male mice, was found (Joel &

Yankelevitch-Yahav, 2014)



Gender Reflective question 4 "Stem cells"

Right answer: A; Many studies (e.g. Christosomo et al., 2007) showed, that the sex of stem cells has an influence on cell characteristics



Gender Reflective question 5 "Reporting strategies"

Right answer: all of them

Reflective Activity 2: Gender-sensitive approach in Lecturing

Aim: RRI lecturers should be sensitive and consider sex and gender in their lectures and seminars. To raise the awareness of one´s own behaviour a short questionnaire can be the discussion frame.

Target group: all lecturers and researchers

Duration: 40 minutes (answer the questionnaire (10min), discussing gender/sex questions (20 min), finding more examples and further areas (10 min))

Process: The questionnaire should be filled in individual, the following discussion should be led open. The lecturer should be invited to present own examples of their practice.

Material:

Applying a gender-sensitive approach in lecturing	Res	
Please, answer the following questions:		
a) Do you attract students of both genders to take your course?	0	If yes, how?
b) Are you stimulating students to work in gendermixed groups?	0	
c) Do you prepare your students to be gendersensitive professionals one day?	0	
d) Have you include in your course literature gender-sensitive material?	0	
e) Do you make your students more aware of about gender stereotypes connected to the field you teach?	0	
f) Do you make your students aware about gender inequalities they will face one day as professionals?	0	
g) Do you use gender sensitive language and visual materials while teaching and writing course materials?	0	
h) Do you teach your students gender-sensitive methodology?	0	

Presentation:

Please present your results and give examples from your seminars and lectures.

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Applicability:

Please, reflect if the reflective cards, the questionnaire and the workshop content as a whole is applicable for your own institution.

The reflective activity may help to:

Discuss gender and diversity issues

Take into account the needs and questions of specific groups (e.g. females in the research institution; pregnant women; students with children; ….)

Stimulate to develop reflective cards/questionnaire items for your own institution; highlight good practice

Stimulate to reflect about good lecturers and lecturing of RRI issues in regard to diverse groups

Literature:

Beery, A. & Zucker, I. (2011). Sex Bias in Neuroscience and Biomedical Research. *Neurosci Biobehav Rev*, 35(3): 565–572.

Crisostomo, P., Markel, T., Wang, M., Lahm, T., Lillemoe, K. & Meldrum, D. (2007). In the adult mesenchymal stem cell population, source gender is a biologically relevant aspect of protective power. *Surgery*, 142(2): 215-221.

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Yoon, D., Mansukhani, N., Stubbs, V., Helenowski, I., Woodruff, T. & Kibbe, M. (2014). Sex bias exists in basic science and translational surgical research. *Surgery*, 156(3): 508-516.

Go back to the form

Workshop 4. Science education for schools carried out by researchers

Theme: Which educational activities are suitable to children/adolescents to reflect about RRI issues?

Focus: Societal engagement and the borders of research ethics

Method: Open Campus Event: Molecular Biology

Outreach events like Open Campus Days are inspiring situations to give exciting insights into the work and projects of departments and institutes of the university. As part of this event, the ResBios Partner UBremen invites in the BaSci Outreach Laboratory. According to the motto "Science for you and me", the topic of genetic engineering and its future is focused. For children hands on activities, such as DNA isolation from strawberries and construction of DNA models with pearls, is offered. For other participants (adolescents, citizens) we offer a reflective activity on future topics of genetic engineering.

Activity: Ethical Reflection on Future Scenarios in Regard to Genetic Engineering

Aim: Genetic Engineering is a highly relevant topic for scientists as well as society. The information given and the questions asked promote critical thinking in regard to ethics on current research topics in genetic engineering.

Target group: upper secondary school students, teachers and citizens

Duration: 30 minutes

Process: This reflective activity could be used in different ways and should be adapted to the respective situation. First an entry for the topic is needed. Dependent on the target group this could be a self-designed poster, popular scientific articles or scientific papers. To activate critical thinking about ethical aspects in genetic engineering the guiding questions listed under "Material" could be used. One way is to collect the answers on small cards and attach them to a whiteboard for further discussion.

Material: Example for a poster

For the poster the title "Milestones of Genetic Research" was chosen. It lists the most important milestones of genetic research, whereas the final milestone will be deliberately provoked by the birth of the first CRISPR/Cas-modified babies in 2018.

- 1953 Identification of the double helix structure of DNA
- 1965 Decryption of the genetic code
- 1970 Discovery of restriction enzymes
- 1977 Discovery of a powerful method for DNA sequencing
- 1982 Production of the first genetically engineered drug: insulin
- 1996 First cloned mammal: clone sheep Dolly
- 2001 Completion Human genome project: 3.2 billion base pairs as a blueprint of the human body
- 2012 Discovery of the CRISPR / Cas method
- 2018 The first CRISPR / Cas treated designer babies are born

Afterwards three future scenarios implying genetic engineering are presented:

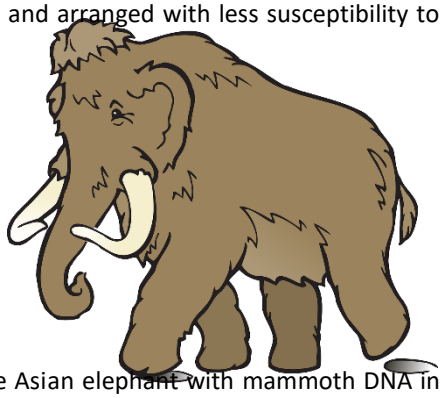
- 2035 Resurrection of the mammoth (material 1)

- Green genetic engineering - the solution for global hunger? (material 2)
- Human beings who do not age ("Forever Young") (material 3) Guiding questions:
- How many animals are justified for this research?
- What problems could this research entail?
- What positive possibilities could this research have for the society and their environment?
- Should and can scientists take responsibility for the consequences of their research?
- What risks can or should be accepted for this research?

Material 1 – Handout "Resurrection of the mammoths"

Resurrection of the mammoths

The woolly mammoth (*Mammuthus primigenius*) was the last representative of its elephant species and died out about 4,000 years ago. Remains of this species with intact genetic material have been increasingly found in Siberian permafrost soils in recent years. In 2008 Miller et al. published the decryption of the major part of the genetic information. By analyzing two woolly mammoths (Palkopoulou et al., 2015), the lives of which were roughly 40,000 years apart, the genome could be completed and arranged with less susceptibility to errors.



But how do you get an extinct animal back?

It is difficult to bring original mammoth egg cells to life, to fertilize them and to implant them in a uterus. The reconstruction of a complete mammoth genome is difficult to implement.

Researchers are therefore working on replacing the genome of the Asian elephant with mammoth DNA in certain areas (Shapiro, 2015). The method CRISPR / Cas is used, which allows to cut out or insert targeted DNA sequences.

With several million genetic differences, however, this is tedious work. Not every difference in the genetic makeup between mammoth and elephant is important, so elementary sections are searched for differences. Because the created mammoth should be more than a very hairy elephant. It is likely that several hundred thousand sections of the genome still have to be changed.

If these changes are successful, the constructed genetic material must get into the fertilized egg cell of an elephant and develop it further in a test tube. The resulting embryo is then planted in the uterus of an elephant cow, which feeds the mammoth calf.

Should the mammoths return?

When trying to raise extinct species, the basic conditions must be met: There must be enough genetic material to sequence and analyze the genome. And closer relatives of the animal species still have to live to deliver the first specimens.

If these conditions are met, the creation of extinct or almost extinct animal and plant species can help to maintain biological and genetic diversity. This could correct previous mistakes and redistribute opportunities. But one also has to ask the question whether the animals would have a chance to assert themselves in the wild on a second attempt.

Finally, it must also be asked whether we really want to have the mammoth or another ice age species like the saber-toothed tiger back, or perhaps invest the money for "resuscitation" rather in the maintenance of significantly more species that are still there.

Literature

Miller, W., Drautz, D., Ratan, A., Pusey, B., Qi, J., Lesk, A., Tomsho, L., Packard, M., Zhao, F., Sher, A.,

Tikhonov, A., Raney, B., Patterson, N., Lindblad-Toh, K., Lander, E., Knight, J., Irzyk, G., Fredrikson, K., Harkins, T., Sheridan, S., Pringle, T. & Schuster, S. (2008). Sequencing the nuclear genome of the extinct woolly mammoth. *Nature* 456, 387-390.

Palkopoulou, E., Mallick, S., Skoglund, P., Enk, J., Rohland, N. Li., H., Omrak, A., Vartanyan, S., Poinar, H., Götherström, A., Reich, D. & Dalèn, L. (2015). Complete Genomes Reveal Signatures of Demographic and Genetic Declines in the Woolly Mammoth. *Current Biology* 25(10), 1395-1400.

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Viering, K. (2017). Gentechnische Reinkarnation: Kommt das Mammut zurück? *Spektrum.de*, 09.05.2017, last access 04.06.2019.

Material 2 – Handout "Green genetic engineering – the solution for global hunger?"

Green genetic engineering - the solution for global hunger?

Around 800 million people worldwide are starving. And the world's population continues to grow. By 2050, the global population is expected to increase to up to ten billion people. According to the UN Food Organization, agricultural production would have to double to ensure food for everyone. However, land and water scarcity, pesticides and monocultures are already a problem today. For many researchers, genetically modified plants are a possible solution, but genetic engineering opponents are fighting bitterly against this idea [1].

But what is green genetic engineering?

Green genetic engineering refers to the use of genetic engineering methods in the field of plant breeding. The result is genetically modified plants, in the genetic material (DNA) of which specific genes have been incorporated or modified. If the introduced genes come from other species, we speak of transgenic plants.
With the help of genetic engineering, plants can be produced whose ingredients are healthier or which can better cope with environmental influences such as heat, drought or pests. In the early days of green genetic engineering, only foreign genes were transmitted, and the positions for the incorporation of these genes cannot be predicted exactly. In the meantime, new genetic engineering methods, such as the CRISPR / Cas system, have been developed that allow specific locations in the genome to be targeted and there to be used to specifically change the plant's own genes. CRISPR / Cas modified plants can no longer be distinguished from those produced by classical breeding [2].

Should green genetic engineering be used to satisfy world hunger?

Acceptance of the use of genetic engineering especially in the food and animal feed sector is very controversial, especially in Germany. In Germany, no genetically modified plants have been cultivated since 2013, not even for experimental purposes. The situation is different in many countries. In total, about 13% of the fields currently contain genetically modified plants - mainly corn, soybeans and cotton. In 2013, the percentage of genetically modified plants in the United States was 44%. But almost every new genetically modified plant brings with it new problems. Large corporations usually have patents for genetically modified food and can thus define the conditions for the use of their products. There are also fears that the genetically modified plants will spread in the environment and pass on their modified genetic material to wild related species. Likewise, it has not been conclusively clarified whether the insecticidal active ingredients from Bt plants do not harm other organisms than just the predators. Some studies also show that the pests develop resistance to the Bt active ingredient. Resistant specimens of the corn rootworm have appeared in the USA in recent years [3].

Literature

[1] Walter Willems (2016): Kann Gentechnik den Kampf gegen den Welthunger gewinnen? Berliner Morgenpost: https://www.morgenpost.de/wirtschaft/article208468255/Kann-Gentechnik-den-Kampfgegen-den-Welthunger-gewinnen.html [last access 06.06.2019]

[2] Redaktion Pflanzenforschung.de (2015): Gentechnisch veränderte Pflanzen der zweiten Generation. https://www.pflanzenforschung.de/de/journal/journalbeitrage/gentechnisch-veraenderte-pflanzen-derzweiten-generatio-10410[last access 06.06.2019]

[3] Pflanzen. Forschung. Ethik (2017): Mögliche Umweltfolgen gentechnisch veränderter Pflanzen. https://www.pflanzen-forschung-ethik.de/kontexte/1580.umweltfolgen-gruene-gentechnik.html[last access 06.06.2019]

Material 3 – Handout “Human beings who do not age / Forever young”

Res

Humans who do not age/ Forever Young

Aging is a process that we know surprisingly little about. You can look at it from different angles. Decisive for genetic engineering trials is biological aging. This is understood as a biological process, an “irreversible, timedependent change in structures and functions of living systems” (Bürger, 1960). Both the genetic disposition and the environment of a person play an important role. The maximum biologically achievable life span of humans, around 120 years, is hardly achieved due to environmental factors.

How can we stop aging?

The function of the organs continues to decrease due to the continuous accumulation of cell damage. The body does not invest enough in maintenance and repair to keep it going forever. The theory of free radicals (Harman, 1992) or the telomer hypothesis (Harley, 1991) show possible genetic mutagenic causes of aging. The theory of inflammation aging (Franceschi & Campisi, 2014) explains aging processes with the body's own immune strategies, which are considered positive at a young age because they quickly identify and destroy germs. In old age, however, these aggressive strategies can be harmful to your own body. From these theories therapeutic approaches were developed, which could be partly confirmed by animal models. However, there are opposite results and difficulties in transferability to humans. Calorie restriction (Fontana et al., 2007) and low-dose lithium (Zarse et al., 2011) have been shown to be particularly effective in animal models. Molecular biologist George Church (Harvard University) founded a genetics company in 2018 with the goal of first reversing dog aging and then making it possible for humans to do so as well. He does not reveal how his gene therapy will work. Animal models have found numerous genes that influence aging. They often intervene in the energy balance or relate to cell repair programs. Many of these genes have also been found in the human genome, but there is probably no "gene of aging".

Do we want to stay young forever?

Research into the causes of aging can show ways in which aging can be stopped. Then older people could continue to take part in working and social life and enrich it. Much would be affected by this, e.g. Family structures, childcare or the educational landscape.

But there is also the question of how we deal with the overpopulation in this case: Would the habitat of the earth be blocked for future generations? Would a maximum age be set by law? And would all people be given anti-aging therapy? Could everyone afford it? Would everybody want it? What if it only affects one sex?

Literature

Bürger, M. (1960). *Altern und Krankheit als Problem der Biomorphose.* 4. Auflage, Leipzig: Thieme.
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Franceschi, C. & Campisi, J. (2014). Chronic Inflammation (Inflammaging) and Its Potential Contribution to Age-Associated Diseases. *The Journals og Gerontology* Series A 69(1), S4-S9.
Harley, C. (1991). Telomere loss: mitotic clock or genetic time bomb? *Mutation Research/DNAging* 256(2-6), 271-282.
Harman, D. (1992). Free radical theory of aging. *Mutation Research* 275, 257-266.
Nagels, P. (2016). Diese Gen-Manipulation soll das Altern verlangsamen. www.welt.de: 11.06.2019.

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Molecular Biology - DNA double helix - a model of pearls

Aim: Under the motto "Science for you and me" this hands on activity should introduce to the structure of DNA. Knowlegde about the structure of DNA with its complementary base pairing is a prerequisite to get an understanding of the topic of genetic engineering.

Target group: adults, children

Duration: 45 minutes

Process: First, the prior knowledge of the participants about the structure of DNA has to be clarified and, if necessary, adjusted. It is important to point out that the DNA consists of different building blocks and that there is always a complementary base pairing, whereas three base pairs code for one of 20 amino acids. The participants should create a DNA model of pearls. Taking into account the genetic code, models can be constructed that code for one's first name. The DNA models can then be taken home.

Material:

First, you need beads for the different building blocks of DNA:

Four different colours of bar-shaped beads for the different bases of DNA (adenine, guanine, thymine and cytosine) and two colours of round beads for the phosphate and sugar.

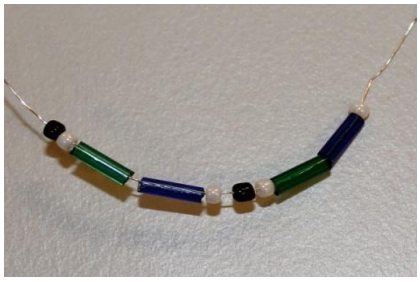
adenine guanine thymine cytosine sugar phosphate

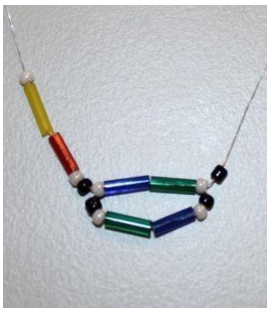
Additionally, a thin wire or fishing line with a length about 85 cm is needed to combine the building blocks. The wire or fishing line should be strong, but thin enough to thread through each bead at least twice. Optionally safety pins or earrings could be provided to fix the DNA model.

With the help of this table you can write your name in the DNA modell:

T	T	T	F	Phenylalanine	T	C	T	S	Serine	T	A	T	Y	Tyrosine	T	G	T	C	Cysteine
T	T	C	F	Phenylalanine	T	C	C	S	Serine	T	A	C	Y	Tyrosine	T	G	C	C	Cysteine
T	T	A	L	Leucine	T	C	A	S	Serine	T	A	A	*	Stopcodon	T	G	A	*	Stopcodon
T	T	G	L	Leucine	T	C	G	S	Serine	T	A	G	*	Stopcodon	T	G	G	W	Tryptophan
C	T	T	L	Leucine	C	C	T	P	Proline	C	A	T	H	Histidine	C	G	T	R	Arginine
C	T	C	L	Leucine	C	C	C	P	Proline	C	A	C	H	Histidine	C	G	C	R	Arginine
C	T	A	L	Leucine	C	C	A	P	Proline	C	A	A	Q	Glutamine	C	G	A	R	Arginine
C	T	G	L	Leucine	C	C	G	P	Proline	C	A	G	Q	Glutamine	C	G	G	R	Arginine
A	T	T	I	Isoleucine	A	C	T	T	Threonine	A	A	T	N	Asparagine	A	G	T	S	Serine
A	T	C	I	Isoleucine	A	C	C	T	Threonine	A	A	C	N	Asparagine	A	G	C	S	Serine
A	T	A	I	Isoleucine	A	C	A	T	Threonine	A	A	A	K	Lysine	A	G	A	R	Arginine
A	T	G	M	Methionine	A	C	G	T	Threonine	A	A	G	K	Lysine	A	G	G	R	Arginine
G	T	T	V	Valine	G	C	T	A	Alanine	G	A	T	D	Aspartic acid	G	G	T	G	Glycine
G	T	C	V	Valine	G	C	C	A	Alanine	G	A	C	D	Aspartic acid	G	G	C	G	Glycine
G	T	A	V	Valine	G	C	A	A	Alanine	G	A	A	E	Glutamine acid	G	G	A	G	Glycine
G	T	G	V	Valine	G	C	G	A	Alanine	G	A	G	E	Glutamine acid	G	G	G	G	Glycine

- Write your name on a piece of paper. For example: ANNA
- Find the corresponding letters in the amino acid alphabet. If a letter is missing, you can use the code of the "stop" codons.
- The codes are coloured. Three colourful letters from the code make up a letter of your name.
- Example ANNA: A = GCT / N = AAT
- Find the right colours for your name

Step 1	Step 2	Step 3
		
- Thread a black pearl (phosphate), a white pearl (sugar), the first basepair (e.g.: guanine and cytosine), a white pearl (sugar), a black pearl (phosphate), a white pearl (sugar), the second basepair (e.g.: cytosine and guanine) and a white pearl (sugar)on the wire. - Push all the beads into the middle of the wire.	- Thread the left wire from the right side through the sugar, the second base pair and the next sugar. - Tighten the wire.	- Thread two phosphates (black pearls) to every end of the wire.

Step 4	Step 5	Result
	 A	
- This is followed by a sugar an the next basepair (e.g.: thymine and adenine) and another sugar.	- Thread the right wire from the left side through the sugar, the second base pair and the next sugar. - Tighten the wire. - Now you have your first 3 base pairs, which code for the amino acid alanine (A).	- Now the individual steps only have to be repeated. - In the end, the DNA should look like the picture. - You can fix the DNA with a safety pin or earring.

Molecular Biology - DNA isolation from strawberries

Aim: Under the motto "Science for you and me" this hands on activity should introduce to basic knowledge about DNA. These basics are important for an understanding of the topic of genetic engineering.

Target group: adults, children

Duration: 15 minutes

Process: Before starting with this hands on activity, the participants have to be provided with some general knowledge about DNA. They should know that every living organism is made up of cells and that these cells contain the DNA, the blueprint of life. The participants can learn how DNA can be isolated and visualized with the simplest means. In the end, the DNA is transformed into small vials and can be taken home.

Material: Strawberries, knife, cutting board, mortar and pestle, beakers, funnel, filter paper, teaspoon, toothpick, table salt, ice cold ethanol, water, detergent and vials.

Steps of execution	What is happening here?
Free a strawberry from its leaves, cut it in half and place the pieces in a mortar. Add a teaspoon of table salt and mortar the strawberry for 2-3 minutes.	Rough mechanical destruction of the tissue or the cell walls. Saline enhances the effect of lysis and increases the solubility of the DNA.
Add 40 ml of water with 3-4 drops of detergent and transfer the mixture to the mortar. Stir well and let stand for 5 min.	Detergent ensures the dissolution of the membranes.
Wet a filter paper with water and place in a funnel in a tall beaker. Filter the contents of the mortar until the filtered solution has collected about 1 cm high in the beaker.	The dissolved DNA passes through the filter and is separated from the cell debris.
Transfer the filtrate to a small beaker and cover gently with ice-cold ethanol. Leave mixture for 1 min.	Ethanol destroys the hydration shell of the DNA, which loses its solubility and precipitates.
Remove the DNA by winding it up using a toothpick.	Precipitated DNA is removed from the solution.
Transfer the DNA to a vial filled with ethanol.	

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Go back to the form

TOOL #26

ResBiosQ - Questionnaire on attitudes, knowledge and needs for the implementation of RRI at the institutional level

1. **Questionnaire about Responsible Research and Innovation (RRI) in Biosciences**

The EU project ResBios funded by the Horizon 2020 Programme, is aimed at activating structural processes at research institutions in the field of biosciences by the enhancement of Responsible Research and Innovation (RRI). RRI comprises five key issues: Societal Engagement, Gender, Science Education, Ethics, and Open Access.

The purpose of this questionnaire is to investigate the attitudes of students and scientists with regard to Responsible Research and Innovation (RRI), their needs in relation to the five key issues and their wish for further supportive measures that should be taken. The survey is based on experiences of the former Starbios2 project.

The information gathered is confidential, and the answers will only be processed as statistical observations. It is important that all target groups - students, doctoral students, researchers, and research group leaders fill in the questionnaire.

We thank you for participating in the ResBios survey.

Responsible for the survey and further information:
Prof. Dr. Doris Elster
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ResBios Questionnaire Universität Bremen

2. Socio-demographic data

1. What is your gender?

male	female	other
○	○	○

2. What is your age?

- ○ 18-25
- ○ 26-30
- ○ 31-40
- ○ 41-50
- ○ 51-65

3. Are you currently a ..... (Multiple selection is possible.)

- ☐ Student (Bachelor study course)
- ☐ Student (Master of Education study course)
- ☐ Student (Master of Science study course)
- ☐ Doctoral student
- ☐ Postdoctoral researcher
- ☐ Lecturer
- ☐ Professor
- ☐ Work group leader
- ☐ Other (please specify)

4. To which field of research (or study) do you allocate yourself? (Please tick the appropriate box. Multiple selection is possible.)

- ☐ Biology
- ☐ Chemistry
- ☐ Biochemistry
- ☐ Other (please specify)
- ☐ Biology Education
- ☐ Chemistry Education

ResBios Questionnaire

Universität Bremen

3. Section 2: Science and Technology

We will now ask you some questions about science and technology. In this questionnaire "science and technology" means biosciences and their application in technology like biotechnology, gene technology, and environmental or medical applications.

5. How informed do you feel about developments in biosciences and their technological applications?

not at all informed	not well informed	informed	well informed	very well informed
○	○	○	○	○

6. How interested are you in developments in biosciences and their technological applications?

not at all interested	not very interested	fairly interested	interested	very interested
○	○	○	○	○

7. Here are some statements about biosciences and their technological applications. Please tick a box for each statement.

	totally disagree	tend to disagree	neither agree nor disagree	tend to agree	totally agree
Science and technology make our lives easier and more comfortable.	○	○	○	○	○
Science and technology make our lives healthier.	○	○	○	○	○
Thanks to science and technology, there will be more opportunities for future generations.	○	○	○	○	○
The applications of science and technology can threaten human rights.	○	○	○	○	○
Scientific and technological developments can have unforseen side-effects that are harmful to human health and the environment.	○	○	○	○	○
If we attach too much importance to risks that are not yet fully understood, we could miss out on technological progress.	○	○	○	○	○

ResBios Questionnaire

Universität Bremen

4. Section 3 - Societal Engagement

Responsible Research and Innovation (RRI) represents a contemporary view of the connection between science and society. Societal Engagement is one of the key issues of RRI. It means the involvement of all social actors in the research and innovation process.

8. **Societal Engagement** in the research process is controversially discussed. Please determine the degree to which you agree with the following statements by ticking a box.

	totally disagree	tend to disagree	neither agree nor disagree	tend to agree	totally agree
Scientists are responsible for the public communication of the risks and benefits of their research findings.	○	○	○	○	○
Scientists and citizens cannot work together because they have different interests.	○	○	○	○	○
The government should determine through financial support which topics are more important than others.	○	○	○	○	○
Scientists alone decide what they want to investigate, they have no responsibility in respect to the public.	○	○	○	○	○
Scientists can decide if they want to report about their research, this is their academic freedom.	○	○	○	○	○
The training of communication skills should become a duty for scientists.	○	○	○	○	○

9. Your university/research institute offers different measures for the promotion of Societal Engagement and Transfer. They are summarized as so-called "Third Mission" tasks of the university (besides the traditional tasks of doing RESEARCH and ACADEMIC LECTURING). How interested are you in information about the Third Mission measures? Please determine the degree to which you are interested by ticking a box for each question.

	not interested	tend to be not interested	neither interested nor uninterested	tend to be interested	very interested
Transfer Strategy of the University of Bremen.	○	○	○	○	○
Financial support of transfer projects.	○	○	○	○	○
Support of citizen science projects.	○	○	○	○	○
Finding project partners for transfer projects (from industry, economy, politics, a.s.o).	○	○	○	○	○
Community services (Open Campus, STEM day, Children Uni, a.s.o.).	○	○	○	○	○
Knowledge transfer - networking at the academic level (e.g. with other universities and research institutes).	○	○	○	○	○
Knowledge transfer - networking at the non-academic level (e.g. with citizens, industry, economy, ...)	○	○	○	○	○
Marketing of academic knowledge ressources	○	○	○	○	○
Promotion of innovations	○	○	○	○	○
Promotion of foundations	○	○	○	○	○

10. How experienced do you feel regarding the integration of social actors in research projects?

- ○ not experienced
- ○ not enough experienced
- ○ experienced
- ○ very experienced
- ○ expert

5.

11. Can you give us a Good Practice Example(s) of a project (or programme) in which research and social actors are linked?

12. Which support do you need to apply Societal Engagement and Transfer? Please tick a box or boxes. (Multiple selection is possible).

- [ ] Workshops
- [ ] Information events
- [ ] Good practice examples
- [ ] Other (please specify)
- [ ] A guideline on how to promote Societal Engagement and Technology Transfer
- [ ] Networking

ResBios Questionnaire Universität Bremen

6. Section 4 - Open Access

The purpose of Open Access is to make research and innovation transparent and accessible.

13. Are you experienced in publishing Open Access?

not experienced	not enough experienced	experienced	very experienced	expert
○	○	○	○	○

7.

14. Statements about **Open Access** in Biosciences. Please tick a box for each statement.

	totally disagree	tend to disagree	neiter agree nor disagree	tend to agree	totally agree
The results of public funded research should be made available online free of charge.	○	○	○	○	○
It is the scientists´duty to make their findings available in an Open Access journal.	○	○	○	○	○
Scientists should be financially supported to make their research findings public in a free and open way.	○	○	○	○	○
A scientist will lose scientific reputation if she/he publishes in a journal with low impact.	○	○	○	○	○
The target group of scientists´publications is always the scientific community.	○	○	○	○	○
Open Access journals are low impact journals.	○	○	○	○	○
Open Access journals are mostly assessed without peer reviewing.	○	○	○	○	○
It is difficult to get financial support for Open Access publications.	○	○	○	○	○

15. Your research institute/university offers support for Open Access publications. How interested are you in information about Open Access? Please tick a box or boxes (Multiple selection is possible).

	not interested	tend to be not interested	neiter interested nor uninterested	tend to be interested	very interested
Contact person at the Library	○	○	○	○	○
Contact person at your faculty	○	○	○	○	○
Information about Open Access journals in my specific research domain	○	○	○	○	○
Advantages and disadvantages of Open Access	○	○	○	○	○
The procedure of Open Access publication	○	○	○	○	○
The financial support for Open Access publication	○	○	○	○	○
The impact factors of Open Access journals	○	○	○	○	○

16. Which support do you need for publishing in Open Access? Please tick a box or boxes (Multiple selection is allowed.)

- ☐ Information about Open Access Journals
- ☐ Financial support
- ☐ Workshop on Open Access
- ☐ Mandatory seminar on Open Access
- ☐ Transparency about the Open Access strategy of your university
- ☐ Other (please specify)

ResBios Questionnaire

Universität Bremen

8. Section 5 - Ethics

The RRI key Ethics ensures high quality research results based on fundamental rights and ethical standards.

17. **Ethics** as a key issue in RRI relates to concerns about values such as privacy, the protection of the health and dignity of persons participating in research, as well as the welfare of animals used in research.
What is your opinion? Should scientists be allowed to violate ethical principles in order to make a new discovery?

Yes, in all cases.	Yes, in certain cases.	No
○	○	○

Why?

18. Are you experienced in the consideration of ethical issues (e.g. Ethics in scientific knowledge communication)?

- ○ not experienced
- ○ not enough experienced
- ○ experienced
- ○ very experienced
- ○ expert

19. Statements about **Ethics** in biosciences research. Please tick a box for each statement.

	totally disagree	tend to disagree	neither agree nor disagree	tend to agree	totally agree
Scientists, governments and non-profit organizations cannot work together as they don´t share the same values.	○	○	○	○	○
Having high ethical standards can help ensure high quality results in research.	○	○	○	○	○
Scientists need not think about the possible risks of their research.	○	○	○	○	○
In order to address ethical risks raised in biotechnologies, political measures should be taken.	○	○	○	○	○
All researchers should receive mandatory training on scientific research ethics (e.g. privacy, animal welfare, etc.)	○	○	○	○	○

20. Your research institute/university offers support in respect to ethical issues. How interested are you in information about the following responsible persons, infrastructures and measures? Please tick a box for each question.

	not interested	tend to be not interested	neiter interested nor uninterested	tend to be interested	very interested
Ethics commission	○	○	○	○	○
Data security officer	○	○	○	○	○
Mentor	○	○	○	○	○
Animal protection officer	○	○	○	○	○
Academic writing course	○	○	○	○	○
Course to avoid plagiarism	○	○	○	○	○
Interpretation of research findings	○	○	○	○	○
Guidelines for quotation	○	○	○	○	○
Scientific writing in English	○	○	○	○	○

21. Which support do you need in regard to ethical issues? Please tick a box or boxes. (multiple selection is allowed.)

- ☐ Workshop about ethics in research
- ☐ General studies on ethical issues
- ☐ Workshop about scientific writing
- ☐ Website with information about ethical issues
- ☐ Guidelines in regard to quotation and to avoid plagiarism
- ☐ Networking
- ☐ More English in lectures and seminars
- ☐ Other (please specify)

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9. Section 6 - Gender

Favouring gender equality within research institutions as well as in a research and innovation context.

22. **Gender** in biosciences research.
How important do you think it is that scientific research takes equally into account women´s and men´s needs?

not important	rather unimportant	important	very important	extremly important
○	○	○	○	○

23. Statements about Gender and ethical issues in biosciences research. Please tick a box for each statement.

	totally disagree	tend to disagree	neither agree nor disagree	tend to agree	totally agree
Women and men should have equal rights and responsibilities in scientific research.	○	○	○	○	○
The social integration within research groups is more important for female scientists than for male scientists.	○	○	○	○	○
Scientists need not balance the number of male and female researchers in their research teams.	○	○	○	○	○
It is fine if a work group leader employs a female student rather than a male student even they have the same qualifications.	○	○	○	○	○
Having a family and a leadership position is not compatible.	○	○	○	○	○
Men get preference in research positions.	○	○	○	○	○
The traditional role distribution hinders the career of women.	○	○	○	○	○
Women´s competences are less accepted in research groups than men´s competences.	○	○	○	○	○
Social aspects hinder the equal distribution of women and men in leading positions.	○	○	○	○	○

24. Why do you think it is important that scientific research takes equally into account women´s and men´s needs? Please tick a box or boxes (Multiple selection is possible.)

- ☐ To improve the quality of scientific research.
- ☐ To make technological innovations better suited to both women and men.
- ☐ To foster more innovations in science and technology.
- ☐ To respect gender equality in general.
- ☐ To have a more pleasant working atmosphere.
- ☐ Gender-specific perspectives are equally taken into account.
- ☐ Communication is easier.
- ☐ Diverse teams are more dynamic and productive.
- ☐ Comments:

25. Your research institute/university may offer a range of supportive measures with respect to gender equality. Are you informed about the following measures? Please tick a box for each measure.

	not informed	not enough informed	informed	well informed	very well informed
Women's quota	○	○	○	○	○
Women's representative	○	○	○	○	○
STEM coaching for women	○	○	○	○	○
Academic mentoring program for women	○	○	○	○	○

26. Please determine the degree of importance for the following already existing or planned measures.

	very unimportant	not important	neither important nor unimportant	important	very important
Improvement to return from maternity protection	○	○	○	○	○
Hide gender in applications.	○	○	○	○	○
Use of wide-ranging job advertisments for all positions.	○	○	○	○	○
Equal gender composition of employment and gender evaluation commitees.	○	○	○	○	○
Introduce systematic talent development and transparent career path.	○	○	○	○	○
More support for child care (kindergarden, rooms, financing ...)	○	○	○	○	○
Equality officer instead of Women´s representatives.	○	○	○	○	○
More transparency about already existing family friendly measures.	○	○	○	○	○
Attractive research environments for men and women.	○	○	○	○	○
Fostering women´s interests early in career.	○	○	○	○	○
Fostering parental leave for men and women.	○	○	○	○	○
Female networks in research.	○	○	○	○	○
Employment selection based on qualification and not on gender.	○	○	○	○	○
Nominate qualified women for posts and awards.	○	○	○	○	○

27. Which support do you need in regard to gender issues? Please tick a box. (multiple selection is allowed.)

- ☐ Workshop about gender in research
- ☐ Information about gender equity and diversity
- ☐ Basic information about psychology
- ☐ Other (please specify)
- ☐ Mediation in conflicts
- ☐ Training of leadership competences

ResBios Questionnaire

Universität Bremen

10. Section 7 - Education

Providing future researchers with new capacities for attracting children and youth to science and technology.

28. Statements about **Education** in biosciences research. Please tick a box for each statement.

	totally disagree	tend to disagree	neither agree nor disagree	tend to agree	totally agree
Scientists should give lectures about their research for school classes.	○	○	○	○	○
Scientists should focus only on doing research.	○	○	○	○	○
Biologists who do research on the risks and benefits of nanotechnology should inform the public about their research progress.	○	○	○	○	○
The academic curriculum (bachelor and/or master program) should include topics about how science solves societal problems.	○	○	○	○	○
The cooperation of natural scientists and social scientists is often a benefit for the promotion of societal issues.	○	○	○	○	○

29. What are your personal needs with respect to science education?

- ☐ A training in science communication (e.g. didactical tools)
- ☐ A training in knowledge transfer (e.g. reduction of complexity)
- ☐ Presentation techniques.
- ☐ Other (please specify)
- ☐ Moderation techniques.
- ☐ Video techniques.
- ☐ Innovative methods.

Thank you for participating in the ResBios survey.

For **information** about the ResBios survey please contact:
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Go back to the form

TOOL #27
Design Thinking Workshop (DTW)

Design Thinking Workshop (DTW)

Design Thinking method (DT WORKSHOP)

a. Proposed topics (as an option for different areas)

Presentation of the Design Thinking method to the group. Select topic for DTW (e.g., how to conduct responsible research; find an appropriate way to incorporate ethics into research). Design a scenario that incorporates the elements of responsible research and ethics. Gather suggestions from the group on how to develop a strategy.

Questions:

- Where and how do you want to use the knowledge of design thinking?
- What is innovation?
- What is RRI and how can be used in your field?

b. RRI tools used, what are possible benefits of using these tools in the research

- The proposed type of interaction in the context of the scenario.
- The use of ethics, development of innovation.
- Are there any prerequisites, formal preparations that are required from a researcher's point of view?
- Benefits that could be obtained after a proposed RRI research.

c. Photos with description of a process, participants engagement activity.

d. The results of the workshop.

- Trigger — Why was the workshop needed?
- Stakeholders — Who participated in the workshop? What was the rationale behind including them?
- Problems — What problems were discussed and explored? Why were they critical?
- Personas — Who had the problems? Did we understand them? Personas can belong to different stakeholder groups, we can address different personas in the empathy phase.

- Solutions — What were the different solutions? Why is one more important than the other?
- Recommendations — What is the takeaway? What is the team proposing? What are the next steps?

Empathy: How To Get Into User's Shoes?

1. Initiate the group brainstorming. Each group should find (write down on a piece of paper) the questions which should be asked to one participant in the workshop with the aim to find out what are the needs important for the topic being addressed.
2. Choose in a group one person/ two people who will be interviewed.
3. Users of services and products are very different, so the target groups should be identified carefully.
4. While creating the brainstorming questions and then interviewing think of not a target group, the specific user.

The diagnosis of needs

Examples of the questions:

What do you value the most in RRI?

What about timing, preparation, activities etc.

What is important for conducting a responsible research?

Find patterns - open-ended, non-suggestive questions.

Users - what is important, what is needed?

Questions for reasons: why? why not? best and worst experience.

Motivation, frustration, delight, habits, demography – features.

DT Card 1 - Brainstorming questions

Brainstorming
Team
Questions
Number of questions

Interviews – structure and roles

One-person (interviewer) asks the questions and listens actively. Introduce yourself and the purpose of the interview. Outline the conversation axis in the script. Underline the goal. Listen 75% time for the user. If the user wants to add anything, it's welcome.

- Select teams.
- Prepare the questions.
- Indicate the person for an interview.
- Make interviews.

Optimally, four people take part in the interview:

1. One (user) tells about his/her experiences.

2. One (interviewer) asks the questions and listens actively.

3. One takes notes on what is said and conveyed with words, and fills in the DT Card 2 - Empathy Map.

4. One takes notes on the emotions being expressed by the interviewed person and their body language.

Says: literal quotes things that come up frequently contradictions	**Thinks** we compare what she/he says with what she/he does and feels
Does: what activities result from the statement what she/he does, chooses what she/he uses	**Feels:** what emotions can be read anger, contentment, joy, bitterness when smiles when concentrates when moves legs/brows when plays with a pen

DT Card 2 - Empathy Map

SAYS	THINKS
DOES	FEELS

Key observations summary discussion

DT Card 3 - Key Observations

1. What contradictions appeared in the Empathy Map?

2. What surprised you?

3. What was interesting?

4. What was new?

5. What was least expected?

6. What topic was the dominant issue?

Generating Ideas, Prototyping & Testing

Generating Ideas, Prototyping and Testing

- You and the group know now what are the needs, now generate as many ideas as possible.
- Choose ideas with the greatest potential.
- Facilitate the transition from idea generation to prototyping.
- Imagine your research, imagine your audience.

Diagnosis of Needs and Generating Ideas - what came from the interview?

- What is the wording of the problem in your opinion?
- Whose problem is it?
- His her? Our? Not ours?

Tips:

- What is the most important thing/aspect for him / her (in the process of empathy)?
- What did he / she talk the most about?
- Where did the emotions go?

While generating the scenarios:

- Describe the problem that concerns you.
- Simple and universal.
- Start with "How could we do it ..."
- E.g., How could we integrate RRI in the research?

Generating ideas - TASK

What is our unique perspective?

What was unique in the persona diagnosis phase?

TASK:

- The question.
- Number of ideas.
- Different personas - different groups.

While generating the scenarios ask the questions

Examples:

- How could we follow RRI when we plan the research?
- How can we help our researchers to understand and incorporate RRI?

What is your experience with RRI

What do you want to implement?

What do you want to avoid?

Traditional brainstorming guidelines

- Write down/ draw write all ideas
- Ideas not concepts
- Ideas on this topic
- Build associations with the previous ones
- Crazy ideas as well
- Do not assess
- Do not block
- We do not care about concrete details at this stage

Affinity map selection of ideas

1. Delightful
2. Rational
3. Team Favourite
4. Long term with Potential

DT Card 4 - Prototype Assessment_IO3

+	-
!	?

DT Card 5 - Prototype Assessment_IO3

Developed idea.
What are you afraid of?
How can you verify it?
What will be the first prototype?

Prototyping & Testing

Prototypes of RRI

Development of selected ideas. Checking their potential. Prototyping allows you to achieve results. Summary in a written form. In this phase you should come up with a structured solution to the problem being addressed, combining all the ideas that were collected in the previous steps to answer the identified needs.

Use these questions in the scenarios.

- What is this?
- Is it the user's problem solving?
- What does it give the user?
- How it works?

Prototype:

- What was checked?
- What was changed?

Testing

In this phase you should “role play” the scenario. After creating the prototype/scenario, it should be presented to the other groups to identify strengths and weaknesses. Objective - to test the potential of selected ideas:

- How is it supposed to work?
- What do we want to check?
- Listen, don't defend our ideas (remember the empathy stage)
- Write down all the answers
- Do not analyse the grades, just listen

DT Card 6 - Prototype Assessment_IO3

Prototype 1 (name)	Prototype 2 (name)
Number of voices	Number of voices
Comments	Comments

Go back to the form

TOOL #28
Workshops for ethical reflection between senior and young researchers

Workshops for ethical reflection

Workshops for developing ethical reflection

a. Introduction

Short presentation of research as a challenge for ethical reflection to the group (no more than 30 minutes).

Divide participants into two groups: seniour and young researchers

Select topic for workhop (e.g., ethics in institution (W1) or open acess policy and founding (W2)).

b. Different approach for interaction (online or in person) between participant and workshop leaders

- The proposed type of interaction in the context of the scenario.
- Reflection on presentation
- Are there any prerequisites, formal preparations that are required from a researcher's point of view?
- Active participation

c. Photos with description of a results, participants engagement activity, disscusion.

d. The results of the workshop and conclusion

- Trigger — Why was the workshop needed?
- Problems — What problems were discussed and explored? Why were they critical?
- Solutions — What were the different solutions? Why is one more important than the other?
- Recommendations — What is the takeaway? What is the team proposing? What are the next steps?

Workshops – structure and roles

- Select teams.
- Prepare the questions.
- Motivate participant to answer

Workshop 1

(Bio)ethics in institutions
Team
Questions for the focus groups SET1 Q1) What do you think will be the best way to disseminate the information about ethics in your institution? Q2) What do you think are the benefits of clear and conscious Ethical policies? Q3) Are the students/researchers aware of current regulations regarding Ethics at your institution? If not, why? SET2 Q1) Do you have, and if yes which kind of, institutional support is available for Code of conduct implementation? How can you find help if needed? Q2) What do you think are the benefits of Code of Conduct for biosciences? Q3) Are the criteria for authorship and order of authors clear? Which criteria do you apply? SET3 Q1) What do you think will be the best way to disseminate the information about ethics in your institution?

Q2) What do you think are the benefits of clear and conscious Ethical policies?

Q3) Are the students/researchers aware of current regulations regarding Ethics at your institution? If not, why?

Workshop 2

Open access policy and funding
Team
Questions for the focus groups SET1 Q1) Some funding bodies require an ethical statement, including use and availability of data, what do you think about that? Q2) Are you familiar with the modalities your funding body requires or recommends for OA archiving of the funded research and for bridging science with society? SET2 Q1) Are you aware of your University's policy on OA? Q2) Is there any regulation on data sharing?

Generating Idea

- You and the group try to answer the questions and you can find many needs
- Now generate as many ideas and scenarios as possible to serve the needs.
- Choose ideas with the greatest potential.
- Imagine your research, imagine your audience.

Diagnosis of Needs and Generating Ideas

- What is the wording of the problem in your opinion?
- Whose problem is it?
- His her? Our? Not ours?

Tips:

- What is the most important for him / her as senior and young researcher
- What did he / she talk the most about?

While generating the scenarios:

- Describe the problem that concerns you.
- Simple and universal.
- Start with "How could we do it ..."
- How could we integrate RRI in the research?

Traditional brainstorming guidelines

- Write down/ draw write all recognized needs/ideas/tips
- We want more
- One session
- Build associations with the previous ones
- Crazy ideas as well
- Do not assess
- Do not block
- We do not care about concreteness details at this stage

We encourage to use the **Designing Thinking Workshop** tool to get better insight into ethical reflection between senior and young researchers.

Go back to the form

TOOL #29

Workshops for ethical reflection between senior and young researchers

Online engagement and brainstorming

Online engagement and brainstorming

a. Before the meeting

Approximately one week to ten days before the meeting, direct link to the platforms and supporting information should be sent to all participants, to ensure they have the time to familiarise with the tools and install the necessary plug-ins or software, if needed. However, it is recommended to choose web browser-based tools, to avoid incompatibilities with the operating system or hardware of the participants. Furthermore, tools that are subscription free, or only require the organiser to pay, should be preferred for a broad an inclusive participation, especially when the meeting involves early career researchers or low-income countries members.

Two platforms are presented in this tool, Miro (https://miro.com/) and Mentimeter (https://www.mentimeter.com/). We herewith present activities that can be performed with the basic, free features offered, however more advanced, and partly overlapping options, are available in both upon subscription. Mentimeter can be used for polls or to create word clouds that can help gathering, anonymously and without registering, participants' agreement with pre-decided statements or identifying aspects that are considered more relevant. Miro offers multiple templates, designed to monitor progress or brainstorm and requires attendants to register. However, here we will focus on the white board template with sticky notes that still allows anonymous posting.

The organiser should be proficient with the platform in order to assist participants as needed, organise the activities to maximise the outcomes and allocate sufficient time in the agenda. Furthermore, the platform should be chosen to meet the requirements of the questions or topics to be addressed, while questions or activities should be concisely and clearly formulated to reduce the discomfort of less IT-proficient attendants and allow a smoother progress.

a.1 Miro

Miro offers tutorials for the organisers on how to plan and set up the board (https://academy.miro.com/), and an introductory video (https://miro.com/online-whiteboard/) to help participants familiarise with the resource. The introductory video, or other video material available on

YouTube (e.g. How to navigate the board https://youtu.be/0olcwCD9-GM; Getting started https://youtu.be/kRdtn8G4tII) should be sent to participants before the meeting. However, it is still advisable to have a short training session before starting the meeting or to have attendees engage in an ice-breaking activity before the meeting (e.g. posting what their expectations for the meeting are, or answering a fun question) to practice interacting with the platform.

Although much more detailed tutorials are available on both the Miro webpage and on YouTube, our suggestion is to have the question/topics pre-posted on the board and colour coded according to the organiser's needs. Additionally, for a more straightforward participation, we recommend arranging empty sticky notes close to the questions ready for users to fill in with their answers. Sticky notes prepared for answers can be organised to create connections among questions or colour coded for the same purpose. It is important to remember that the platform automatically reduces the size of the text to match the size of the sticky note, it is thus important to consider this aspect when choosing the size of the notes. This applies to the notes containing the questions as well, that should be concise, clear and in a readable font.

a.2 Mentimer

Mentimer webpage provides written explanation on how to choose the feature that best matches the organiser's needs (https://www.mentimeter.com/features), but tutorials on how to create word clouds (https://youtu.be/GLRZ_FGDATY) and other options are available on YouTube. With this platform attendees do not need previous training, since they will only need to go the website and enter the code that will be displayed on top of the presenter's screen to contribute. However, it is important to remember that both questions and answers (for polls) have limitations on the number of characters that can entered, so both should be concise and clear. Additionally, if using the world cloud, it is recommended to formulate questions that can be answered with one to three words maximum as this will improve readability.

b. Interaction during the meeting

It is important to have multiple people from the organising team, to moderate the activities. In this way, it will be possible to assist, have parallel discussions (if needed), and provide a more personalised experience for all attendees. Additionally, while the main moderator can engage with the audience to stimulate the discussion and clarify conceptual aspects, assistants can supervise the technical aspects (e.g. moving sticky notes accidentally dragged elsewhere), show participants how to vote for suggestions already written on sticky notes, check if the voting has ended in Mentimeter (matching numbers of attendees and votes). The moderator will need to constantly participate in the discussion to ensure all aspects are addressed, the schedule is respected, and all members have the possibility to interact and contribute. To make the activity as productive as possible, the moderator role should be the same as in person meetings, thus the presence of additional staff to solve the practical aspects is necessary to avoid interruptions of the thought-flow.

c. Results and conclusion

After collecting the opinions of participants, the moderator should summarise the results and key points, eventually perform comparisons or parallelisms with the goals or starting point and allow for attendees to further provide feedback or deepen the discussion.

Enough time should be allocated for this final part, as the visualization of contributions from others can be thought provoking, and new ideas and suggestions might arise during this phase. Additionally, when looking for consensus or decisions, this phase could be used to identify potential stakeholders and feasibility, which might be a time-consuming effort.

d. Cautionary note

Resources provided in this tool are updated at the time of writing (August 2022), it is recommended to check links are still working or for the presence of more recent, or targeted to the planned activity, resources before sending them to the participants.

Go back to the form

TOOL #30

ResBios Online Engagement Cheat Sheet

Go to the document Click Here

Go back to the form