# **Biotechnology Summer School**

**ABSTRACT BOOK** 

Gdańsk–Sobieszewo, 4<sup>th</sup> – 8<sup>th</sup> September 2018







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#### About Biotechnology Summer School

The **aim of Biotechnology Summer School** is to promote knowledge about the newest biotechnological achievements and building a vast scientific network between students, PhD students and young scientists together with experienced lecturers from the leading institutions from Poland and abroad. We also want to encourage young scientists to improve their skills in the area of science communication.



XXIV BSS is organized within a project called **STARBIOS2** and the topic of the conference is **Responsible Research and Innovation.** This year all lectures and workshops will be focused on introducing this idea to young scientists and showing how RRI can be implemented in our everyday work. We also prepared additional activities for all of the participants: integration field game, ornithological trip to nature reserve on Sobieszewo island and traditional fancy dress party.



XXIV BSS is dedicated to students and young scientists interested in experimental sciences, life sciences, especially in biotechnology. The Summer School will supplement existing knowledge with valuable practical and applied training, and allow to discuss research in depth with the academics who are leading experts in their area. It will prepare and enhance appeal to potential employers and graduate schools. International study will enable to gain a deeper understanding of another culture, make lifelong friends from a wide variety of backgrounds and benefit from globally-renowned academic excellence.



SPEAKER

#### **PARTICIPAN1**

ORGANIZER

GUEST

Please remember to have your ID always on you, especially during the meals. Inside your ID there is a short version of BSS programme.

- Attending the workshops requires signing up for them. The fill-in list will be placed in the hall.
- Please pay attention to the organizers' announcements during whole event.

#### Brief history of Biotechnology Summer Schools

Biotechnology Summer Schools are organized annually since 1994. The idea of Biotechnology Summer School (BSS) came from the late Professor Anna J. Podhajska (1938-2006), who implied that students and young scientists should actively participate in obtaining knowledge and establishing contacts with scientists from all over the world, not only in formal conditions but also outside the University.



That is why the participants of BSS are not only biotechnology students but also students in related biological fields from Poland and from abroad, young scientists and even advanced pupils interested in this topic. The main aim of this event is to provide students with a wide range of courses which are not available in the standard syllabus. We create a relaxed learning environment and give Polish and foreign students a chance to meet highly renowned specialists during lectures as well as in rather informal circumstances. Moreover, Biotechnology Summer Schools give Polish and foreign scientists chance to develop cooperative

relationships and create a forum for integration.

Topics of BSS vary from year to year. Prof. Anna Podhajska gained many people's support over her initiative. The number of sponsors increased every year and thanks to all these companies and institutions the organization of Biotechnology Summer School has been possible. BSS was also supported by big projects like MOBI4Health, which fully financed the XX BSS.



Biotechnology Summer Schools were honored with the presence of many eminent scientists such as professors: Ewa and Ernest Bartnik, Stanisław Bielecki, Charles Cantor, Klaus Halhlbrock, Waleria Hryniewicz, Robert Huber (Nobel Prize winner in Chemistry in 1988), Berndt Jastorf, Adam Jaworski, Roman Kaliszan, Władysław Kunicki Goldfinger, Andrzej Legocki, Janusz Limon, Mirosław Małuszyński, Jerzy Paszkowski, Andrzej Płucienniczak, Richard P. Sinden, Piotr Stępień, Wacław Szybalski, Dan Tawfik, Tomasz Twardowski, Jacques H. Weil, Robert Wells, Paul Williams, Brigitte Wittman - Liebold, Maciej Zenktler, Maciej Żylicz.



No less important than learning is having fun. Many entertaining activities for Summer Schools are always planned. A fancy-dress party, a bonfire with singing, field games, sports, playing on words, integrational workshops are the part of every School. These events are conductive to socializing among the participants. We also organize some visits in local, historical places and regional trips.

We hope that this year's Biotechnology Summer School will be as successful as previous ones and will be an unforgettable experience for all participants.

#### Visit us on the web:



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No	Place	Year	Topic examples
I	Wilga	1994	Miscellaneous
II	Łączyno	1995	Miscellaneous
III	Stegna	1996	Miscellaneous
IV	Stegna	1997	Miscellaneous
V	Gołuń	1998	Plant biotechnology, molecular medicine
VI	Łączyno	1999	Fundamentals for bioprocess engineering
VII	Twardy Dół	2000	Genetic modifications in plants and animals
VIII	Łączyno	2001	Ethical aspects of biotechnology
IX	Sobieszewo	2003	Bioinformatics (molecular evolution and protein structure)
х	Sobieszewo	2004	Biotechnological applications in agriculture
XI	Sobieszewo	2005	Bioprocess engineering
XII	Łapino	2006	Immunotherapy (cancer research), clinical stages
XIII	Łapino	2007	Cancer causes, diagnosis and therapy
XIV	Sobieszewo	2008	Virology, mostly involved with HCV
XV	Gdańsk	2009	Plants as a "green factory"
XVI	Sobieszewo	2010	Viral research - HCV, influenza virus
XVII	Górki Zach. (Gdańsk)	2011	Biochemistry and biotechnology of plant lipids
XVIII	Jurata	2012	Current scientific research and its practical application
XIX	Gdańsk	2013	Molecular evolution
xx	Stegna	2014	Model organisms
XXI	Kadyny	2015	Biotech innovations
XXII	Wielimowo	2016	Biotechnologists love every bit of life
XXIII	Stężyca	2017	Iron metabolism; Biological plant protection

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XXIV Biotechnology Summer School takes place from 4th to 8th of September 2018 in Hotel Orle on Sobieszewo Island which belongs to the city of Gdańsk. The hotel is situated among the woods, by the waters of the Gdańsk Gulf. One of the cleanest and safest beaches in Gdańsk is 100 m away from the hotel. The location and surroundings of the hotel are perfect for holidays beside the sea as well as for professional activities in natural settings.



#### Sobieszewo Island and regional trip



The Sobieszewo Island is a seaside district of Gdańsk located at 15 km from the city centre. It is one of 3 islands located on the Polish coast and the only Polish island which was created by human effort. Since 1994, the Sobieszewo Island enjoys the status of an ecological island, which guarantees that its ecosystem is good for people and satisfies their needs. The Island's natural features such as beautiful and peaceful beaches, wonderful woods

and its microclimate make it an ideal place for holidays.

#### Mewia Łacha Nature Reserve - the trip destination

19 ha of the 150 ha nature reserve is located on Sobieszewo Island (Gdańsk-Świbno). It was set up in 1991 to protect the local bird population. It's one of the most valuable nature reserves along Polish coast, treasured both on a national and European scale. It forms part of the Natura 2000 Special Protection Area.



There are over 100 species of wetland birds living in the reserve; for some of them (sandwich tern) it is the only habitat in Poland, whilst others are pretty rare (common and little tern, ringed plover, oystercatcher). For the local birds, the most important areas are the beach face, swash zone, sandbars, islands and peninsulas, and sand dunes at their initial stage. Between May and September the reserve is protected by the KULING Research Group, a team of volunteers who try to guard the most

valuable part of the area from human interference. Living in the reserve, they watch over the birds and their nests, as well as rare plants and lichen. They also work on marking out tourist tracks so that less people tread on the sand dunes and destroy vegetation that grows there. Sandbars and little offshore islands, favoured by birds and seals, are protected from boats. The KULING team also work on educating tourists and the local community on the importance of nature conservation.

#### Organizing committee



#### Prof. Michał Obuchowski

Vice Dean for Science at Intercollegiate Faculty of Biotechnology UG & MUG. Head of the Laboratory of Molecular Bacteriology.

His research is related to protein phosphorylation and the formation of spores and spore application for the use as carriers of antigens, a research model is *Bacillus subtilis*.

Contact michal.obuchowski@biotech.ug.edu.pl



#### Marta Dziedzic

A member of STARBIOS2 project's team at the University of Gdańsk. She organizes and promotes STARBIOS2 activities aimed at IFB researchers, UG community and public. As a sociologist she is very much interested in the social aspects of the connections between science and society and its mutual relationship. She was involved in the realization of several cultural, arts and social projects for NGOs and education sector.

Contact: marta.dziedzic@ug.edu.pl



#### Izabela Raszczyk

Deputy project leader of the Polish team of the STARBIOS2 project. Heads the administration in the International Centre for Cancer Vaccine Science at the University of Gdańsk. Involved in project management, research funding, and facilitating international collaborations.

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#### Angelika Michalak

For most of the time: plant lover, PhD candidate at Laboratory of Biologically Active Compounds and activist involved in integration of young researchers community by organizing events, meetings and workshops. In the meantime woman of multiple passions: DIY of any kind, climbing, photography. It is hard to catch on what she's involved with right now! From 2013 involved in organization of BSS.

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#### Marta Matuszewska

PhD candidate at Laboratory of Biological Plant Protection. Microbiologist by day, graphic designer by night. Since she started studying at University of Gdańsk, she got involved in organization of various scientific events and festivals. As a BSS enthusiast, she decided to help with its organization. As a result of adapting Italian lifestyle, she drinks lots of coffee and is happy to help anyone who asks her to.

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Elżbieta Moroz

Adrian Gajewski Igor Obuchowski Michał Pierański Kamil Trzebuniak

#### Organizational support



Maria Maja Pega

#### Participants' support

Robert Lasek Patrycja Ogonowska Karolina Rudnicka Agata Woźniak



Patrycja Tucholska

Tomasz Maciąg Izabela Perkowska Barbara Świerczek-Lasek Anna Żywicka

#### Intercollegiate Faculty of Biotechnology UG & MUG

The Intercollegiate Faculty of Biotechnology of the University of Gdansk and Medical University of Gdansk (IFB UG & MUG) has been established in 1993 by the decision of the Senates of both universities. The initiators of the Faculty were Prof. Karol Taylor,



Prof. Anna Podhajska and Prof. Wacław Szybalski.

The idea of the Faculty was based on conviction that close interaction between research and teaching activities of the two universities will form a special, creative academic centre, using innovative methods of education and basing on top-level standards of research. Integration of the local scientific community remains a key element of our mission. Faculty continues tradition of molecular biology introduced in Gdańsk by Prof. Karol Taylor.

The Faculty is a unique institution in Poland created by two universities. This leads to the **interdisciplinary character of the conducted research and teaching by combining biomedical and bio-molecular issues and their applications in biotechnology for health and life quality**. The intercollegiate character of the Faculty allows for the use of infrastructure and expertise provided by two

universities, and therefore combining the best international standards of research with the highest quality of teaching. Our research and teaching is performed in well-equipped modern laboratories at the newly built Institute of Biotechnology and the Tri-City Central Animal Laboratory.



The aim of our Faculty is to provide possibly the highest standard of education based on early integration of students into research activities of the faculty units. Since 1999, the IFB has had the rights to confer the degree of doctor, and since 2010 – the scientific degree of habilitated doctor in the area of biological sciences – discipline of biochemistry.

We are leaders in research at **molecular level** in the area of chaperone proteins, molecular virology, neoplasm growth and metastases, bacterial plant pathogens, and in developing new therapeutic and diagnostic methods.

Both the research and the educational programs at IFB have an interdisciplinary character and are based on international cooperation. Our strategic partners are: the International Institute of Molecular and Cell Biology (Poland) and the association ScanBalt BioRegion. Moreover, IFB cooperates with numerous international and regional research centers like: Karolinska Institut, CIB Madrid, University of Wisconsin, Cornell University, Polish Academy of Sciences.

We have created a unique education system in which students are involved in research and teaching based on international cooperation.



We believe that involvement of the students in the specific projects greatly supports the individualized system of study and facilitates formation of a unique, well-integrated academic community. IFB is a leading research and teaching institution that since 2002 has had the status of the **European Centre of Excellence in Molecular Biomedicine**.



In 2017, in a parametric assessment of the Ministry of Science and Higher Education regarding scientific effectiveness, the Faculty was granted best possible **category A+** status. The quality of teaching at the Faculty is evaluated as the highest in Poland. In 2011, the Polish Accreditation Committee awarded the Faculty with a **distinction for the quality of teaching**, and in 2012 the Ministry of Science and Higher Education granted the specialty of BIOTECHNOLOGY at the IFB the title of **The Best Major**.



IFB staff members are also laureates of prestigious programmes and awards, including awards for young scientists (EMBO YIP, HHMI, Polish national programmes such as: LIDER, InnoDoktorant, TOP 500 Innovators, MISTRZ, START, HOMING PLUS). Publications by IFB staff have received numerous awards and distinctions for the best work conducted in Polish laboratories, granted by the Committee of Microbiology of Polish Academy of Science, Polish Genetic Society or Polish Biochemical Society.



From 2016 Faculty has new premises. This investment has received a 15 million EUR funding from the Operational Programme Infrastructure and Environment within Structural Funding of the EU. The building is a modern research-teaching complex. The usable area is 7900 m2 and covers 5 levels. It includes a specialized core facility zone, an area of research laboratories, seminar rooms, computer rooms, an auditory for 180 people, rooms for our Student Scientific Association, a reading room, a room for the Faculty Council, new technical systems (audio-visual systems, access control systems etc.). The new building is one of the most modern research and teaching buildings, with its core facility laboratories such as: Bioinformatics Laboratory, Laboratory of Biomolecular Analysis, Laboratory of In Vitro Plant Breeding, Phytotron Facilities, Laboratories for work in BSL3 standard, Isotope Laboratory Type III. It also guarantees a modern space for students and PhD students. The new building is situated on the premises of the Gdansk University campus in Gdansk-Oliwa close to the Chemistry and Biology buildings. It contributes to the integration of the university and facilitate the conducting of joint programmes and research work.

#### 25 years of IFB

The Intercollegiate Faculty of Biotechnology (IFB) of the University of Gdańsk (UG) and the Medical University of Gdańsk (MUG) celebrated its 25th anniversary of its foundation on June 6, 2018. During the ceremony at the University of Gdańsk, both rectors – Rector of the UG, prof. Jerzy Gwizdała, and Rector of the MUG, prof. Marcin Gruchała delivered speeches and former deans – prof. Wiesław Makarewicz, prof. Jacek Bigda and prof. Ewa Łojkowska brought back good memories. Present dean, prof. Igor Konieczny spoke about the recent successes of the Faculty and its uniqueness. During the celebration of the Jubilee, prof. Wiesław Makarewicz was awarded the title of Honorary Professor, the Gold Medal of the University of Gdańsk and the medal from the President of the City of Gdańsk.

The employees of the Faculty celebrated the 25th anniversary also in a less formal way, with a barbecue event organized in Sopot. In October 2018 IFB graduates will gather together for a reunion event.



## Intercollegiate Faculty of Biotechnology of UG&MUG



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MWB.UGiGUMed



youtube.com/user/IFBUGandMUG

in linkedin.com/company/intercollegiate-faculty-of-biotechnology





#### Structural transformation to attain responsible BioSciences (2016 - 2020)

STARBIOS2 is a European project that received funding from the Horizon 2020 programme. It aims to implement the Responsible Research and Innovation-RRI approach in research institutions through Action Plans. A model and guidelines will be elaborated based on the Action Plans feedback and experience to facilitate the implementation of RRI in other research institutions.

The institutions involved in STARBIOS2 project are:

- University of Rome Tor Vergata (Italy),
- University of Gdańsk (Poland),
- University of Oxford (UK),
- Agrobioinstitute (Bulgaria),
- University of Primorska (Slovenia),
- University of Bremen (Germany),
- Aarhus University (Denmark),
- Laboratory of Citizenship Sciences (Italy),
- University of Uppsala (Sweden),
- Oswaldo Cruz Foundation (Brazil),
- University System of Maryland (USA),
- The International Centre for Genetic Engineering and Biotechnology (ICGEB).



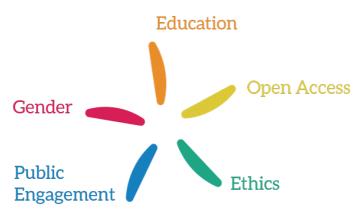
The idea of strengthening connections between science and society through building their effective cooperation derives from a strong believe that science should be fully integrated with broad societal needs. The role of science in the modern society and governance has never been more important than nowadays.

At the same time scientists have an increasing obligation to become involved with policy-makers and the public in finding and implementing solutions or means of adaptation to issues that are both local and world-wide. Knowledge often brings the greatest benefit

if it increases public understanding and awareness. Therefore involving multiple stakeholders in research and innovation will lead to a better connection of the processes and outcomes with the values, needs and expectations of society.

The relation between knowledge and technology on the one hand and politics (a political decision process) on the other acquires significance together with the wide acceptance of the belief that the technological progress – currently in the form of development of technical innovations – is the base of social and economic development.

The above mentioned factors come together in the idea of Responsible Research and Innovation (RRI) which is a priority under the EU Programme Horizon 2020 focused on building capacities and developing innovative ways of connecting science to society. In particular, RRI approach allows all societal actors (researchers, citizens, policy makers, business, third sector organisations etc.) to 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 European society.



In practice, RRI consists of designing and implementing policy that will:

1. engage society more broadly in its research and innovation activities,

- 2. increase access to scientific results,
- 3. ensure gender equality, in both the research process and research content,
- 4. take into account the ethical dimension,
- 5. promote formal and informal science education.

Respecting all of those key elements aim to make science more attractive (mainly to young people but not only), increase society's appetite for innovation, open up further research and innovation activities and raise awareness of responsible science meaning.

#### Societal engagement

Societal engagement in RRI is about co-creating the future with citizens and civil society organisations, and also bringing on board the widest possible diversity of actors that would not normally interact with each other on matters of science and technology. Benefits that come out from the societal engagement include:

- contribution to building a more scientifically literate society able to actively participate in and support democratic processes, and science and technology developments,

- differing perspectives and creativity in research design and results,

- contribution to fostering more societally relevant and desirable research and innovation outcomes to help us tackle societal challenges.

#### **Open Access**

The concept of Open Access strategy is to make research findings available free of charge for readers to improve knowledge circulation and thus innovation. it is widely recognised that making research results more accessible contributes to better and more efficient science, and to innovation in the public and private sectors. The idea of 'Open access' is progressively moving into the broader picture of 'Open science'. Elements of 'Open science' will also gradually feed into the shaping of a policy for Responsible Research and Innovation and contribute to the realisation of the European Research Area and the Innovation Union, the two main flagship initiatives for research and innovation.

#### Gender

Gender equality strategy is about fostering gender balance in research teams and in decision-making process, in order to close the gaps in the participation of women and remove barriers that generate discrimination against women in scientific careers. Integrating the gender dimension in research and innovation content, helps improve the scientific quality and societal relevance of the produced knowledge, technology and/or innovation.

#### Ethics

Ethics is considered as an integral part of the research process and it is only by getting the ethics right that research excellence can be achieved. According to EU priorities ethical research conduct implies the application of fundamental ethical principles and legislation to scientific research in all possible domains of research including biomedical research, nature sciences, social sciences and humanities. Within the Horizon 2020 EU Programme, all research activities must comply with ethical principles and relevant national. Ethical issues whih are most commonly dealt with include: the involvement of children, patients, vulnerable populations; the use of human embryonic stem cells; privacy and data protection issues; research on animals and non-human primates.

#### Education

One of RRI very important goals is to attract young people to science education and careers in in Science, Technology, Engineering and Mathematics (STEM) through improving the level of science and technology literacy in the society. It is crucial to provide innovative science education teaching and learning both formal and informal in order to raise young people awareness of technological and scientific issues in the society. Developing innovative ways of connecting science to society will also increase society's interest in innovation.

#### STARBIOS2 at Intercollegiate Faculty of Biotechnology (University of Gdańsk)



Responsibility for research conducted is of utmost importance for IFB, therefore the Faculty took advantage of the opportunity to exchange views and mobilise actions in this area within a dedicated project. Since May 2016 IFB has been implementing a pilot project STARBIOS2 (Structural Transformation to Attain Responsible BIOsciences) under funding of HORIZON 2020 EU Programme.

The objective of the project's Action Plan is to provide a set of actions for facilitating structural change in the area of RRI at the University of Gdańsk (UG). To achieve this, actions from the 5 key areas of RRI, i.e. societal engagement, gender, education, open access, ethics, have been planned for the time up to April 2020. Sustainability of actions will be based on their impact also beyond the project's lifetime and has been considered in planning as far as possible. The content of the project's Action Plan targets IFB needs, nevertheless, in cases when overall university-wide regulations will be affected, effects of implemented actions are expected to affect also other UG faculties, especially the most related from the topic area of bioscience, i.e. Faculty of Biology (FB) and Faculty of Chemistry and Environmental Protection (FC).

A comprehensive set of actions implemented so far comprise of:

- In-depth state-of-the-art analyses in the areas of Societal Engagement and Gender have been conducted. Their results were summarized in the reports "Towards a Better Understanding of Bioscience" and "Gender Gap in Biotechnology" that will serve as a source of information for further actions at IFB.

- Several events have been organized in order to raise awareness and gain more knowledge about RRI related issues including: seminars (Open Access and Copyrights) Invited lectures with panel discussion (eg. Open Science: Opportunities, Challenges, Directions; IP Valuation in the context of responsible research; Women in Science), workshops for IFB researchers (Diversity management; Autopresentation); knowledge contest for secondary school students on vaccinations.

- Exchange visit to top European TTO (Oxford University Innovations) and resulting hands-on experience in technology transfer which may be implemented at TTO UG.

## Starbios2 at IFB in pictures











## XXIV BSS Programme

		Tuesday, 4th September
16:	00	Departure from Gdańsk
17:00	18:00	Arrival to Gdańsk-Sobieszewo, registration, accommodation
18:30	19:30	Dinner, organizational meeting
20:	:00	Integration - field game

#### Wednesday, 5th September

8:00	9:00	Breakfast	
9:30	9:45	Welcome word, BSS promotion	IFB Dean/BSS Organizing Committeee
9:45	10:00	About STARBIOS2 Project	<b>Prof. Vittorio Colizzi</b> (University of Rome Tor Vergata, Italy)
10:00	10:45	L1: RRI between Europe and Africa	<b>Prof. Vittorio Colizzi</b> (University of Rome Tor Vergata, Italy)
10:45	10:55	Discussion 1	
11:00	11:30	Coffee break	
11:30	12:15	L2: Measuring gender in OxfordDr. Lorna Henderson (NIHR OxfordBiomedical Research Center NHS.Biomedical Research Centre University and Industry measures.University and Industry measures.Hospitals NHS Foundation Trust, UK	
12:15	12:25	Discussion 2	
12:30	13:15	L3: Translational Research and partnerships in England, Introducing the NIHR Oxford Biomedical Research Centre	<b>Dr. Vasiliki Kiparoglou</b> (Oxford University Hospitals, Biomedical Research Centre, UK)
13:15	13:25	Discussion 3	
13:30	14:30	Lunch	
14:45	15:30	<b>L4:</b> Ethical issues in Clinical Trial Design and Data Monitoring	<b>Dr. Phoebe Friesen</b> (Ethox Centre, University of Oxford, UK)
15:30	15:40	Discussion 4	
15:45	17:15	W1: How risky is nanotechnology? A contribution to promote risk literacy in the society/ 30 participants <b>Prof. Doris Elster, Marie Eschweiler</b> (Bremen University, Germany)	W2, gr. A: RRI and ongoing changes in scientific research and innovation field () / 30 participants /Claudia Colonnello (Laboratory of Citizenship Sciences, Italy) Andrea Declich, Daniele Mezzana (University of Rome Tor Vergata, Italy)
19:00	19:30	Dinner	
20:	00	Fancy dress party - theme: scientific inno	ovation

		Thursday, 6th Sep	tember
8:00	9:00	Breakfast	
9:00	9:45	L5: Responsible Research and Innovation Approach: Nutrition and Epigenetics	<b>Ass. Prof. Carla Montesano</b> (University of Rome Tor Vergata, Italy)
9:45	9:55	Discussion 5	
10:00	10:45	L6: Challenges and opportunities of genetic approaches to biological conservation: case studies	<b>Dr. Elena Bužan</b> (University of Primorska, Slovenia)
10:45	10:55	Discussion 6	
11:00	11:30	Coffee break	
11:30	12:15	<b>L7:</b> Enhancing RRI in Biosciences - The vision and the stony path of its implementation at the University of Bremen	<b>Prof. Doris Elster</b> (Bremen University, Germany)
12:15	12:25	Discussion 7	
13:30	14:30	Lunch	
15:00	19:00	Guided trip to Mewia Łacha Nature Rese	erve on Sobieszewo Island
20:	:00	Dinner	

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8:00	9:00	Breakfast	
9:00	12:00	W3, gr. A: Diversity Team Management 30 participants Dr. Magdalena Żadkowska, Dr. Natasza Kosakowska-Berezecka (University of Gdańsk, Poland)	W4, gr. B: Scientist in media - spotlight addict or duty to society? 30 participants Dariusz Aksamit (The Spokesmen of Science, Poland)
12:00	12:30	Coffee break	
12:30	14:00	W5: Societal Engagement and Knowledge Transfer - issues and challenges 30 participants Prof. Doris Elster, Julia Birkholz, Nicklas Müller (Bremen University, Germany)	W2, gr B: RRI and ongoing changes in scientific research and innovation field. Emerging challenges and opportunities for young scientists / 30 participants Claudia Colonnello (Laboratory of Citizenship Sciences, Italy) Andrea Declich, Daniele Mezzana (University of Rome Tor Vergata, Italy)

14:00	15:00	Lunch	
15:10	18:10	W3, gr. B: Diversity Team Management 30 participants Dr. Magdalena Żadkowska, Dr. Natasza Kosakowska-Berezecka (University of Gdańsk, Poland)	W4, gr. A: Scientist in media - spotlight addict or duty to society? 30 participants Dariusz Aksamit (The Spokesmen of Science, Poland)
19:	:00	Dinner barbecue, attendance certificate a	and prizes ceremony

		Saturday, 8th September
8:00	9:00	Breakfast
9:00	9:45	Checking out
10:	00	Departure from Sobieszewo

Glossary:

RRI = Responsible Research and Innovation

L = Lecture

W = Workshop

Please remember to sign your name on a list for workshops participation.

Speakers introduction





Laboratory of Immunology & Molecular Pathology, Department of Biology, Faculty of Sciences, University of Rome Tor Vergata, Italy

Full professor of General Pathology and Immunology. Director of UNESCO Chair in Biotechnology at University of Rome "Tor Vergata". He has a long track record of research in Microbial Immunology and Infectious Diseases (AIDS and Tuberculosis), and a proven commitment in social and administrative field. He published more than 230 scientific publications on international peer review and more

than 10 chapters on books and review articles and several patents. In Cameroon, he is working on several research, teaching, and international cooperation activities. He is involved in the establishment of a Start-up/Start-up Incubator of entreprise of Douala District. He has been Coordinator and Project Director of Projects in Libya, Cote d'Ivoire, Niger, Ghana, Morocco and Sierra Leone.

Read the talk abstract: L1 - page 38

## Dr Lorna Henderson



#### NIHR Oxford Biomedical Research Centre, Oxford University Hospitals NHS Foundation Trust, UK

Dr Lorna Henderson is the Clinical Research Manager for the National Institute for Health Research (NIHR) Oxford Biomedical Research Centre, a partnership between the University of Oxford and Oxford University Hospitals, funded by the UK government (oxfordbrc.nihr.ac.uk/). She is a visiting academic at the Radcliffe Department of Medicine, University of Oxford working with Professor Alastair Buchans group on a high profile European Union

project, called STARBIOS2. She was recently awarded a prestigious International scholarship by the Said Business School, University of Oxford for outstanding women.

Read the talk abstract: L2 - page 40





#### Oxford University Hospitals, Biomedical Research Centre, UK

Dr Vasiliki Kiparoglou is the Head of Clinical Research Operations at the NIHR Oxford Biomedical Research Centre. Vasiliki is a PhD holder in Cardiovascular Physiology and Genetics and is currently studying for an Executive MBA at the Said Business School, Oxford University. **Read the talk abstract: L3** - page 41





Ethox Centre, University of Oxford, UK

Phoebe Friesen works at the Ethox Centre, an interdisciplinary centre for medical ethics, at the University of Oxford. She focuses primarily on issues in research ethics, philosophy of psychiatry, and bioethics. **Read the talk abstract: L4 -** page 42





#### Head of Biodiversity Department, University of Primorska, Slovenia

Dr. Elena Buzan is a molecular biologist and her work involves the application of molecular genetic techniques to a variety of conservation and evolutionary problems, both basic and applied. She applies evolutionary genetics to biogeography and conservation biology, with main focus on the impact of habitat fragmentation and degradation on genetic population structure of small mammals (*Microtus, Mus, Apodemus*) and ungulates (*Rupicapra, Capreolus*)

and some model invertebrate species (*Coenonympha, Aedes*). Recently, she is also involved in population genetics study of sea turtles (*Caretta*) and sharks (*Squalus*) populations at Adriatic Sea. In her work, she also applies evolutionary approaches to clinical genetics, including the study of endurance genes in elite sport athletes and the relationship of the host-pathogens coevolution in zoonosis diseases. She is interested in basic questions about evolution, such as the meaning of "species" and the hybridization studied by next genera-

tion sequencing approach. Since 2016 she is the leader of STARBIOS2 project, founded by ERC Horizon2020 scheme. She was project leader of several international, national and bilateral projects and coordinator of study programme Conservation Biology and Nature Conservation at Faculty of Mathematics, Natural Sciences and Information Technologies at University of Primorska.

Read the talk abstract: L6 - page 45

## Prof. Doris Elster



#### Institute of Science Education, University of Bremen, Germany

E Maile

Doris Elster is a researcher and science educator at the University of Bremen. She is the Head of the Department of Biology Education at the Institute of Science Education. She is a professor for Science Education and responsible for pre-service education of teachers of the primary and secondary level. Her core field of research is about teacher's professional development in communities of practice. Therefore, she investigated the processes of school based reforms

e.g. the implementation of the national educational standards in the science domain in Germany and Austria. In pre-service and in-service biology teacher education she uses inquiry-based methods and evaluates their effects in learning circles. She and her team develops and tests inquiry-based materials and concepts with school partners as well as with out-of-school institutes. Doris Elster was partner in several European projects: Comenius 2.1 CROSSNET (Crossing Boundaries in Science Education), Comenius 2.1 GIMMS (Gender, Innovations, Mentoring in Mathematics and Science), Comenius 2.1 EUDIST (European Development of Integrated Science Teaching) and EUCISE (European Cooperation in Science Education), and EU FW7 Project INQUIRE (Inquiry based teacher training for a sustainable future). In addition she was German/Austrian associated partner of the international ROSE project (The Relevance of Science Education) which investigated the interest in science of young people in more than 40 countries as well as the international IRIS project (Interests and Recruitment in Science) both coordinated by the University Oslo. Doris Elster is and was supervisor of several doctoral theses: mentoring in science teacher education, fostering interest and nature of science in school labs, inquiry-based teacher education, nature contact and environmental identity of adolescents in Germany and South Africa.

Currently Doris Elster is partner of the HORIZON 2020 STARBIOS 2 and is coordinator of the German team at the University of Bremen.

Read the talk/workshop abstract: L7 - page 46, W1 - page 47, W5 - page 52





#### Institute of Science Education, University of Bremen, Germany

Marie is doctoral student at the Institute of Science Education at the University of Bremen. She is a member of the Graduate School NanoCompetence. She obtained Master of Education in biology and geography in 2015 and started with her PhD in 2016. Her research interest is the development and promotion of students' risk literacy regarding nanotechnology in biology education.

Read the workshop abstract: W1 - page 47





#### Institute of Science Education, University of Bremen, Germany

Julia is a biology teacher and doctoral student. Currently, she is working on her PhD-thesis at the University of Bremen (Institute for Science Education, Biology), investigating supportive methods for the outreach lab "Backstage Science" regarding understanding of Nature of Science.

In the STARBIOS2 project she investigates research projects and their potential on technology transfer as well as the advan-

tages of research contextualization. Furthermore, she develops building block activities for societal engagement in research projects.

Read the workshop abstract: W5 - page 52





#### Institute of Science Education, University of Bremen, Germany

Nicklas is a teacher of biology and geography and currently doctoral student at the Institute of Science Education at the University of Bremen. His doctoral research is about the promotion of system competence of teacher candidates in the academic pre-service course INQUIRE - Inquiry-based teacher training for a sustainable future. He has much experience in the development and conduction of simulation games in the context of biodiversity

and climate change within the outreach lab "Backstage Science". In the STARBIOS2 project he is a member of the steering team, the focus group of doctoral students and responsible for the project website.

Read the workshop abstract: W5 - page 52

#### Dr Magdalena Żadkowska



#### University of Gdańsk, Poland

As academic teacher Magdalena works at University of Gdańsk from 2005. She teaches how to manage and implement projects founded by European Social Found. She does Team-Building workshops for sociology students and Diversity Management for psychology students.

Since 2011 she cooperates with East Caroline University working in Global Understanding course - joining over 50 universities all-over the world in on-line conferences, classes and debates.

She led courses at University of Granada, University of Paris Sorbonne IV, University of Genoa, University of Granada and University of Salerno. She took part in international conferences in Barcelona, Lisbon, Vienna, Oslo, Goteborg, San Cristonal de las Casas and St Petersburg. In 2013-2016 Magdalena was leading Work Package devoted to qualitative study on couples going to work in Norway in: Socio-cultural and psychological predictors of gender equality and work-life balance - cross-cultural comparison of Polish and Norwegian families. In 2014-2017 Magdalena was a researcher in the project *So you are staying at home* devoted to the ethnography of telework. Since 2016 she is strongly involved in the City Hall of Gdansk Integration Model for Migrants as an expert and facilitator. Since 2017 she is a team member of STARBIOS 2 dealing with the improvement of women' careers in STEM.

Magdalena strongly believes that empathy is a key to effective communication and understanding other people needs and expectations. She implements empathy attitude in every environment she works, between: students-teachers, employers-employees, youngolder, native-foreigners and migrants-hosting society and men-women relations

#### Read the workshop abstract: W3 - page 50





#### University of Gdańsk, Poland

Work-Life Balance & Diversity expert, motivational speaker, trainer, HR consultant and mediator

and the

Natasza Kosakowska-Berezecka has a PhD in Psychology and works as an Assistant Professor in the Division of Cross-Cultural Psychology and Psychology of Gender at the University of Gdańsk (Poland). Her main area of practice and research is diversity and work-life balance within the area cross-cultural psychology and her special interests are social change and organizational cues fostering social

capital and diversity within organizations and societies across the world. She lectures at

Polish universities but also abroad (University of Brunel, Uxbridge, London; Universidad de Granada; Spain; Delhi University, India).

She also has an expertise on diversity management in organizations. She is an organizational trainer and consultant working with multicultural groups. She authors many training programs related to work-life balance, negotiations, diversity management, teambuilding, effective communication, conflict resolution in multicultural settings. She also works as mediator and coach. As diversity expert she also co-authored the Integrative Model for Migrants for City of Gdańsk.

Her impressive activity as researcher has been acknowledged in 2017 edition of Polish national competition for women in business -category: Women in Science (Sukces Pisany Szminką). She is media expert for Gazeta Wyborcza, Dziennik Bałtycki, Newsweek, Radio Gdańsk, Polish Radio Trójka, TVN.

Read the workshop abstract: W3 - page 50





#### The Spokesmen of Science, Poland

Medical physicist, assistant at the Faculty of Physics, Warsaw University of Technology. Formerly vice-CTO at the Central Laboratory for Radiological Protection, senior research and development officer at the Innovation Management and Technology Transfer Center (WUT), animator at the Copernicus Science Center, President of the Association of Science Advocates, associating scientists and science popularizers, volunteer at the Atomic Forum Foundation. At everyday work he deals with applications of ionizing

radiation in medicine, radiation measurements and radiological protection, collaborating, among others, with from the Oncology Center-Institute and the Institute of Nuclear Chemistry and Technology.

In 2015, he participated in the project of the Ministry of Science and Higher Education "Transformation" under which he took a three-week training at Ivey Business School in Canada. Dariusz Aksamit is a finalist of the first Polish edition of the FameLab competition, organized by the Copernicus Science Center, the Ministry of Science and Higher Education and the British Council.

He spends a lot of time on activities in non-governmental organizations, including scientifically at the Atomic Forum Foundation, the Polish Society of Medical Physics, the Polish Nucleonic Society and the Association of Science Spokesmen. For the rest of his time, he popularizes science with passion.

Read the workshop abstract: W4 - page 51





#### Laboratory of Citizenship Sciences (LSC), Italy

Claudia Colonnello is a social researcher with a long experience in the investigation of contemporary social phenomena from a gender perspective, and the sociological analysis of the relations between security and privacy in the context of surveillance. She is an expert in the planning, implementation and evaluation of training and adult education activities and also has experience in public communication, team management and mobilization of human resources for nonprofit organizations.

She has been collaborating with "LSC-Laboratorio di Scienze della Cittadinanza" since 1993. She is also member of "Knowledge and Innovation (K&I) - School of sociology and interdisciplinary research", based in Rome, founded to contribute to the acquisition of new knowledge on contemporary societies and the transformations taking place within them.

Over the last 15 years she has been working, also as director, in several integrated research, training, technical assistance, public communication and networking projects in both Italy and Europe, as well as in Africa, Latin America and Australia, some of which focusing on gender issues connected to: qualified migration; women and conflict resolution; women and decision-making; work-life balance; gender and enterprise creation; gender and development; women and politics; women, scientific research and technology. Concerning the latter issue, she has been involved in some European projects financed by the European Commission under 6th and 7th Framework Programme: PRAGES, WHIST and TWIST.

More recently, she has been working on Responsible Research and Innovation H2020 Projects. Within the STARBIOS2 Project, focusing on the implementation of structural change towards Responsible Research and Innovation within research organisations in the field of biosciences, she is part of the LSC's technical assistance team. She is also involved in the RiConfigure Project, aimed at enable the diversification of constellations, institutions and actors in research and innovation (R&I) by engaging stakeholders, enhancing conceptual clarity on new constellations, and disseminating best practices to practitioners and policy-makers.

Claudia Colonnello is also interested in studying the relationship among security, surveillance and privacy, with a focus on societal impact assessment and social acceptability of new surveillance technologies for security purposes. As for these issues she has been involved in two FP7 projects: SIIP (Speaker Identification Integrated) and RESPECT (Rules, Expectations & Security through Privacy Enhanced Convenient Technologies).

Read the talk abstract: W2 - page 49





#### University of Rome Tor Vergata, Italy

A socio-economist who has worked as a social researcher with several research and training institutes in programs and projects funded by public and private Italian bodies, international institutions including the European Commission, development banks such as the World Bank and the Inter-American Development bank, as well as UN agencies such as FAO, IFAD, UN-Habitat and WHO.

He has worked in at least 30 European and non-European countries (industrialised and developing). His research and

consulting activities have spanned numerous areas: technological innovation, social aspects of the development of materials, science and research communication, social research methodology, project management, development of small and medium enterprises, corporate social responsibility, evaluation of public policies, civil society, social capital, water supply and sanitation, poverty and social exclusion, empowerment, local development in both urban and rural environments (in industrialized and developing countries), peace processes in conflict ridden societies, migration, migration and enterprise. In the past few years, he has worked as a consultant in the promotion, planning and funding of research, training and technical assistance.

He has evaluated research projects under various EU Research Framework Programmes and scientific articles and papers for scientific journals. He is part of University of Tor Vergata Team in STARBIOS2, a European H2020 project devoted to Structural Change toward RRI in biosciences.

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#### University of Rome Tor Vergata, Italy

Italian researcher in sociology, currently working in the coordination team STARBIOS2 Project for University Tor Vergata (Biology). He has a long experience in basic research carried out in the framework of the School of sociology and interdisciplinary research (Rome) primarily in the fields of epistemological research and general sociological theory. In particular Mezzana basic research focused in the last two decades on the relations between the cognitive and operational aspects of human experience.

In his professional capacity, as a social researcher and educator, he has carried out research (in Europe, Africa, India and Latin America) on themes such as: innovation and relations between science and society, surveillance and privacy, relations between citizens and law

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enforcement, active citizenship and relations between the state and citizens, relations between training needs analysis and training planning, social representations and dynamics of communication, assessment of the quality of health services, evaluation of development projects, corporate social responsibility, dynamics of African societies, religions and modernity, dynamics of social exclusion, cognitive aspects in island studies.

He has a long professional experience with CERFE, Laboratory of Citizenship Sciences and currently with Knowledge&Innovation, and has cooperated with United Nations agencies (UNDP, IOM, WHO, UNESCO and others), the European Union, Italian government and other organizations.

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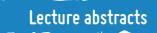
# Department of Biology University of Rome Tor Vergata, Italy

Carla Montesano is an assistant professor of General Pathology and Immunology at University of Rome Tor Vergata. Her research activity is mainly aimed to the study of host-pathogen in infectious diseases such as HIV, Ebola and hepatitis B and their implications for the development of therapeutic strategies, vaccine and diagnostics. She also works on characterization of immune response of HIV-infected paediatric patients under antiretroviral therapy and anti-HIV thera-

peutic vaccination. Her other research interests are: analysis of immunogenetic factors (HLA, KIR and LIR) associated to HIV disease progression, antibody response in Ebola survivors and asymptomatic Ebola exposed persons and characterization of immunomodulatory, anticancer and antiviral activities of plant microRNAs in humans.

In recent years she was a Project Manager Italian Cooperation-MAE Emergency initiative in favor of populations with Ebola virus disease in Sierra Leone and Deputy Director of Molecular Biology and Immunology Laboratory, Holy Spirit Hospital, Makeni, Sierra Leone. She is an author of many publications and patents covering mentioned topics of research. Nowadays she is a member of a STARBIOS2 Project Coordination Team and is responsible for the STARBIOS2 Action Plan of University of Rome Tor Vergata.

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# L1: RRI between Europe and Africa

Vittorio Colizzi/co-authors: Andrea Declich, Carla Montesano, Giulia Cappelli UNESCO Chair of Biotechnology and Bioethics,

#### University of Rome Tor Vergata, Italy

With the term RRI we mean those activities/initiatives that are labelled as such by the European Union, as well as those activities that could be considered as "de-facto" RRI. With the latter term we mean the activities focused on one or more of the 5 keys of RRI (Public Engagement, Gender, Open Access, Education, Ethics) or, more in general, those research and innovation practices based on the involvement in different forms of various actors both within and outside the research organizations. In Africa, two additional words//concepts/activities have to be carried out to reach the 5 RRI: Capacity buildings and Sustainability. Then we prefer to call the 5 RRI European keys and the 7 RRI African keys.

In the last 20 years the UNESCO Chair of Biotechnology and Bioethics of the University of Rome Tor Vergata has carried out different programs on Infectious Diseases, Public Health, Traditional medical plants (HIV/AIDS, TB and Hepatitis. *Moringa oleifera* et microRNA), approaching the 7 keys without formalization of RRI. As scientists working in an a scientific, educational and cultural organization (UNESCO), these 7 concepts were always present, and part of our scientific success in research and innovation are related to follow these keys, additionally to other more scientific and technological keys, that we can discuss during the Summer School.

But, here in Poland, we cannot present our activities in Africa without pay a strong tribute to the polish reporter and writer Ryszard Kapuścinski that in several books, the most known Ebano, reported the first 30 years of post-colonial Africa. He had the capacity to describe, rather than the geographical or landscape continent Africa, the African populations, with all the problems related to the 7 African RRI keys.

AIDS, together with Tuberculosis and Malaria are a poverty-related infections which are playing a major role in the battle between Homo sapiens and the microbial world globally. Hepatitis B and C, and more recently Ebola virus have been also interested by our programs in Africa.

1. The UNESCO Programme Families First Africa has been mainly devoted to research, capacity building and prevention of mother-to-child HIV transmission and partially to Tuberculosis and Hepatitis which are frequent and important HIV co-infections;

2. The Italian Cooperation Program on Ebola virus emergency in Sierra Leone has been a good experience of capacity building of the Immunology and Molecular Biology Laboratory in Makeni for Ebola virus control;

3. The Capacity building for the European Developing Country Partnership Clinical Trial (EDCPT) is actually in progress to ameliorate the anti-retroviral therapies in new-borns HIV infected children in Cameroon;

4. Educational support and EU-UA university mobility & cooperation in Cameroon and in Somalia, with specific emphasis on the molecular approach to characterise the functional activities of African medical plants.

The success/failure of structural change initiatives, including those oriented to RRI, is linked to contextual factors such as national policies and regulations, national and local culture, organizational values, leadership's attitudes and orientation, previous experiences within the organization and even specific events. The UNESCO Chair of Biotechnology and Bioethics has developed a strong diplomatic and negotiation capacity which has facilitate local structural changes in several African countries.


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# L2: Measuring gender in Oxford Biomedical Research Center NHS.

## University and Industry measures

Dr Lorna Henderson

NIHR Oxford Biomedical Research Centre

#### University Hospitals NHS Foundation Trust, UK

In England, the National Institute for Health Research (NIHR) which funds Biomedical Research Centres introduced policy changes to improve gender equity and career advancement for women in biomedical research. For example, NIHR Biomedical Research Centres were not expected to be eligible for future funding 'where the academic partner (generally the Medical School/Faculty of Medicine) had not met the required criteria not achieved at least the Silver Award of the Athena SWAN Charter for Women in Science'. The Athena SWAN Charter supports advancement of gender equality.

#### **Recording Gender Metrics**

Each year the Oxford Biomedical research centre must provide data to their funder the National Institute for Health Research (NIHR) concerning performance. As part of the Starbioss 2 project there is an opportunity to expand and accelerate how we record gender in our metrics.

This informal interactive lecture will present an overview of current and new strategies employed by the Oxford BRC to record gender in new ways. It will also present current drivers within the NHS, University and Industry which set targets for improving representation of women in science.

There will be an opportunity for discussion and mutual learning opportunities.

# L3: Translational Research and partnerships in England.

# Introducing the NIHR Oxford Biomedical Research Centre.

Dr Vasiliki Kiparoglou

NIHR Oxford Biomedical Research Centre

University Hospitals NHS Foundation Trust, UK

The NIHR Oxford Biomedical Research Centre, (Oxford BRC) is a partnership that brings together the research expertise of the University of Oxford and the clinical skills of Oxford University Hospitals NHS Foundation Trust.

It was one of five centres funded by the National Institute for Health Research (NIHR) in 2007 through a competitively awarded grant of L57m over five years. In April 2012, as a recognition for its outstanding contribution to healthcare research it was awarded L95.5m to 2017 and in September 2016 was awarded L113.7m for 2017 to 2022 to support translational research.

Based at Oxford University Hospitals, Oxford BRC is part of the government initiative, run by the NIHR, to reinforce the position of the UK as a global leader in healthcare related research. The aim is to support the translation and innovation of basic scientific developments into clinical benefits for patients.


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# L4: Ethical issues in Clinical Trial Design and Data Monitoring

Dr Phoebe Friesen

Ethox Centre,

University of Oxford, UK

This talk explores the ethics of both design and data monitoring within clinical trials. Through the use of two morally challenging cases, it elicits discussion surrounding questions of when scientific research is ethically permissible, how clinical trial design can achieve a fair risk-benefit ratio, and how consent is complicated during data monitoring in clinical trials.

# L5: Responsible Research and Innovation Approach: Nutrition and Epigenetics

## Ass. Prof. Carla Montesano, co-authors: Antonella Minutolo, Marina Potesta University of Rome Tor Vergata, Italy

Considering that global health is one of the 17 sustainable development goals of the "2030 United Nation Agenda" and the malnutrition is a worldwide problem, the scientific community has focused its attention to study and explain the environment influence (nutrition) on health (exposome concept). Moreover, European Commission is promoting new strategy of Responsible Research and Innovation oriented to involve researchers in society needs and, viceversa, oriented to involve society in science processes.

In light of these information, we are developing an RRI model in biosciences research oriented to study the effects of vegetal substances on human health. The application of RRI model was planned thanks to the sinergy of STARBIOS2 project funded by European Commission and Interdisciplinary UNESCO chair in Biotechnology and Bioethics at University of Rome "Tor Vergata".

All substances are poison and only the use of a correct dose make them as a remedy (Fatima and Nayeem, 2016). Considering the use of vegetal extracts in ethno-botanic medicine and their worldwide use as functional food, nutraceutical and food dietary supplement, the interest of our research group is to in depth study the effect of vegetal extracts and some of their bioactive components on several biological processes. The study of isolate bioactive compounds activities as drug, or the use of the whole plant or part of it as a herbal remedy, is a potential goal for the development of standardized and reproducible methods to process herbal drugs. Particular attention has been provide to study the effects of natural substances and their bioactive compound present in mediterranean diet on human health.

Plant-rich diets have been traditionally considered as healthy diets, and the beneficial effects of Mediterranean diet in the prevention of cardiovascular disease are well known. Several study demonstrated anticancer, antioxidant, antimicrobial and antiviral properties of olive oil correlated with the activity of phenolic and polyphenolic compounds present and in Oleuropein.

Zhang *et al.* demonstrated for the first time that microRNAs contained in vegetal food regulate mRNAs translation in a manner of mammalian functional microRNAs (miRNAs) (Zhang et al., 2012); we have defined such interaction a "cross-kingdom interaction". This concept remains still unclear and for this reason we investigated whether plant microRNAs could contribute with other bioactive compounds to the beneficial effects attributed to plant foods. Recently, we have demonstrated that small RNAs and miRNAs from Olea europaea are able to regulate the expression of human proteins involved in carcinogenesis, epithelial-mesenchimal transition process and in adipogenesis and, on the basis of these evidences, the same scientific and technological approach was transferred to study the use of *Moringa oleifera* in African traditional medicine in compliance with RRI strategy.

One of the first RRI results achieved in the context of collaboration between STARBIOS2 and UNESCO chair, is the preparation of the guideline for *Moringa oleifera* capsule production in a newly created Galenic laboratory in the context of start-up creation in Africa.

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# L6: Challenges and opportunities of genetic approaches to biological conservation:

#### case studies

#### Dr. Elena Bužan

#### University of Primorska, Slovenia

The contribution of genetic diversity to the maintenance of species and habitat diversity, and fundamental ecosystem processes is now widely recognized by the conservation community. Genetic diversity is also appreciated as an essential component of ecosystem resilience and the capacity for species to adapt in changing and challenging environments. Reduced genetic diversity can also diminish evolutionary potential, i.e. the ability of a population to adapt to future changes in biotic and abiotic factors. Genetic analyses/data provide crucial information on population structuring, enable together with some ecological studies a quantitative assessment of the viability of the populations in concern. Understanding how genetic variability and life-history of different keystone species respond to changes in a landscape is possible through the integration of genetic, ecological and spatial data. Recently, we need immediate management actions to ensure that both species and habitats will persist in a fragmented landscape. Ideally, such actions should be based on careful analysis of species requirements and area-specific long-term data. In the proposed talk, I will represent how we can used genetic diversity data for our understanding of the effects of habitat fragmentation on long-term persistence and viability of keystone species in. Presentation will include results of long term study, which have been done on important game subspecies, Northern chamois, in Central Europe and Balkan. I will try to address the issues of the effects of past management on genetic structure and possible hybridization where the subspecies (Rupicapra r. rupicapra and R.r. balcanica) overlap (i.e., contact zone). Processes occurring at different spatial and temporal scales, fragmentation and losing of the populations connectivity have presumably different impacts on wildlife gene flow and consequently also on the main life-history traits. medicine in compliance with RRI strategy.

#### NOTES

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# L7: Enhancing RRI in Biosciences – A vision and the stony path of its implementation at

# the University of Bremen

Prof. Doris Elster

#### Bremen University, Germany

In this lecture the program and process of structural change at the Faculty Biology and Chemistry at the University of Bremen regarding the RRI issues societal engagement, ethics, gender, open access, and science education are reported. Based on a comprehensive state-of-the-art analysis (interviews and questionnaire survey with different status groups) the procedure of raising awareness of RRI issues, the promotion of a RRI mission statement and fostering and hindering factors of structural change are critically reflected.

NOTES



# W1: How risky is nanotechnology? A contribution to promote risk literacy in the society.

#### Marie Eschweiler, Prof. Doris Elster

#### University of Bremen, Germany

NanoCompetence is a Graduate School at the University of Bremen. Doctoral students and researchers of natural sciences and social sciences work together regarding the research, application and communication in respect to nanotechnology (CuO nanoparticles). In the first part of the workshop the project NanoCompetence and its objectives are introduced. In the second part the concept and materials to develop risk literacy can be tested interactively. In the last part steps to promote Societal Engagement based on the Risk Literacy Model (RLM) are discussed.

Nanotechnology is a key technology of the 21st century. Due to the increasing use of nanomaterials in almost all areas of life it becomes more and more important to consider the risks and benefits caused by these nanomaterials regarding to oneself, the society and the environment. The risk-research is lagging behind the production and marketing of nanotechnology. One precondition for a responsible acting regarding nanotechnology is the "risk literacy" of the citizens and interested laymen.

In this workshop the goals of the interdisciplinary Graduate School NanoCompetence at the Centre for Environmental Research and Sustainable Technology (UFT) are presented. The overall objectives of NanoCompetence are 1) Closing knowledge gaps in scientific basics, especially those which are relevant for future regulation of nanomaterials ("Research"); 2) Contribution to risk regulation of nanomaterials ("Application"); 3) Evaluation of potentials for environmental impact and discharge ("Application"), and 4) New forms of knowledge transfer and communication for potentials and risks of nanomaterials ("Communication"). These objectives represent important contributions to legal security as well as to social acceptability of future nanotechnological applications. In NanoCompetence eight doctoral students and their supervisors, natural and social scientists, work closely together. (NanoCompetence website: http://www.nano.uni-bremen.de/)

In the interactive part of the workshop we will focus on "knowledge transfer and communication" of potentials and risks of nanotechnology choosing the example of CuO-nanoparticles. The quality of risk judgement and the degree of risk literacy can be described by the Risk Literacy Model (RLM, figure 1) [1]. The RLM is based on the social psychological Elaboration Likelihood Model and concepts from risk research [2; cf. 5]. The RLM analyses the cognitive processing regarding a risk-dilemma and describes two ways, which lead to a risk judgement. The Central Route shows a high level of cognitive processing, which leads to a high-quality risk judgement. Within the Peripheral Route the cognitive processing is low and leads to a temporary or unstable risk judgement, which cannot be well-weighed or even to no risk judgement. Which route is chosen depends on the Prerequisites of Risk Literacy (attitudes, subject knowledge, willingness of reflection,

and orientation knowledge). If the prerequisites of risk literacy are high developed the likelihood increases that the person pursues the Central Route. Whereas it is more likely that persons choose the Peripheral Route if the prerequisites are on a relatively low level or elements are missing [3].

The RLM could be a suitable model to support scientists in their communication with technology-interested citizens and laymen. In a final discussion we will present first empirical results about the risk literacy of young people investigated within the module "Small particles - big effect?" conducted in our outreach lab.

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# W2: RRI and ongoing changes in scientific research and innovation field.

# Emerging challenges and opportunities for young scientists

Claudia Colonnello - Laboratory of Citizenship Sciences, Italy

Andrea Declich, Daniele Mezzana - University of Rome Tor Vergata, Italy

The workshop will present RRI as an occasion for a problematization of the ongoing changes occurring in scientific and technological research. In fact the different keys of RRI (gender, public engagement, open access, ethics and education) may be interpreted as prominent areas of change ongoing in science. On the basis of questions, experiences and possible solutions developed in the framework of STARBIOS2 project, the workshop will be an occasion for identifying and discussing with the participants how such changes may challenge the scientific and professional itinerary of young bioscientists.

The workshop will be articulated as follows. Firstly, a general introduction on RRI as a critical framework will be carried out by the organisers. Secondly, an active discussion with the participants will be carried out in three parallel groups dedicated respectively to: gender equality, public engagement and open access issues. In each group the participants will discuss and identify the more relevant and significant challenges and opportunity emerging for young bioscientists in that specific area. Thirdly the results of the groups' discussion will be presented in a final section of the workshop.

The workshop will constitute an input in the process of development of the Guidelines and of the Model of RRI for research organizations in the Biosciences sector which is ongoing in the framework of STARBIOS2 project.

# W3: Diversity Team Management

#### dr Magdalena Żadkowska, dr Natasza Kosakowska-Berezecka

#### University of Gdańsk, Poland

How to be effective team member? How to manage diverse teams effectively so we achieve our top performance? How to deal with conflicts in teams?

The goal of our workshop is to equip participants with practical knowledge on how to enhance diversity within teams and how to manage it, if one is team member or leader/PI of a group. Diversity can be related to personality differences, different working style but also is a direct result of gender, age and cultural diversity etc. Innovative teams are the ones that are built on diversity. Nevertheless, there are certain conditions that allow team members to work together in synergy and achieve top performance. During our workshop we will thus, together with participants, analyze their strengths and potential in effective teambuilding and team management and apply best practices in diversity team management to their cases/future plans/careers.

The themes discussed during workshop can be used within:

- Building effective team work while conducting research
- Fostering interpersonal relations with academics
- Planning your academic career
- Managing team work while dealing with intercultural/gender differences
- Communicating about our achievements and goals
- Dissemination of scientific project outcomes we achieve.

# W4: Scientist in media - spotlight addict or duty to society?

#### Dariusz Aksamit

#### The Spokesmen of Science, Poland

There are a number of problems with the scientific communication in the media - we leave our comfort zone and jump into a place that functions completely differently than the academic reality. Nobody prepares us for this, and then there is great surprise that scientists in the media either perform poorly or great, but then they receive a big dose of criticism from fellow scientists for simplifying or because they do not sit in the lab.

This is a serious case – performing in front of the camera, giving a radio interview or writing a polemical article as an answer to some rubbish heard in the media are not skills that we inherit genetically, but skills that need to be acquired through training.

#### I invite you to a little practice :)

Polish association **Rzecznicy Nauki** (eng. The Spokesmen of Science) was brought to life by passionate scientists who love to popularize science. They are not only working every day as scientists, but they also are speaking about those complicated things in simple ways. They believe that science communication is one of the pillars of modern society. Association was founded for two main reasons. One of those was the absence of a platform connecting polish scientific



journalists with popularizing scientists, who are experienced in explaining their science to the public. Another reason was to combine the powers of science popularizing voices in order to obtain higher visibility and stronger influence on the society. *Rzecznicy Nauki* is uniting scientists of many different fields – all of them are present in media trying to prevent science from being misunderstood.

## W5: Societal Engagement and Knowledge Transfer – issues and challenges

#### Prof. Doris Elster, Julia Birkholz, Nicklas Müller

#### University of Bremen, Germany

Communication about scientific research often serves the purpose of transmitting scientific progress, solutions to (scientific) problems, and scientific knowledge. More involving ways of communication with society, however, may be beneficial, e.g. for emerging financing opportunities, to learn about actual societal problems to solve or about societal interesting knowledge gaps to investigate. To effectively communicate with societal and other actors, more collaborating and receiving communication activities are needed, which should take into consideration citizens' interests, needs and knowledge base.

Based on a literature analysis, an analysis of past and current research projects (7 projects) and interviews with researchers and laymen (N=6) we developed a theoretical frame to analyze past and current research projects. The analysis of the contextualization of teaching and learning activities offered at the outreach lab Backstage science (8 master theses in science education about socio-scientific issues) in respect to their interest for the public (schools and teachers) and for researchers led to the development of an analysis tool for knowledge communication and transfer.

The workshop provides for reflective strategies to analyze research projects and issues regarding their possible societal engagement impact as well as communication strategies and their possible benefits. To determine technology transfer possibilities, certain research issue characteristics, e.g. complexity and interdisciplinary or possible legal interest in the issue, and parties/ communication strategies involved need to be examined. For successful research contextualization goals and possible recipients have to be taken into account as well as context possibilities, their advantages and disadvantages. As a workshop result, scientists may have gained a broadened perspective on their research project or issue, found new ways of interpreting the societal value of their research and to transmit knowledge about it into society. The identified stakeholders may fruitfully be involved in further project actions or future endeavors.

XXIV Biotechnology Summer School

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# You are one of a kind! Thank you and good luck!



