

Track 2 - Brave new RRI: challenges for early career researchers and biotech

(Anne Blanchard, UiB/AFINO; Giovanni De Grandis, NTNU/AFINO; Anamika Chatterje, NTNU/DLN)

Wednesday 28th 17:00-18:15 – Session 1 – Early career researchers challenges
Chair: Anne Blanchard & Giovanni De Grandis

Thursday 29th 17:20-18:30 – Session 2 – RRI in biotech
Chair: Anamika Chatterje

Session 1

Chair: Anne Blanchard, University of Bergen, Norway, and Giovanni De Grandis, NTNU, Trondheim, Norway.

Abstracts

Title: Exploring Responsible Research and Innovation (RRI) in Biotechnology: A Systematic Literature Review

Olga Mikhailova, Norwegian University of Life Sciences NMBU, Ås, Norway

Responsible Research and Innovation (RRI) has emerged as a crucial science policy measure aimed at establishing ethical guidelines in scientific endeavors and fostering inclusive and sustainable research and innovation processes. This policy-driven initiative addresses public skepticism towards science, enhances evidence-based policy-making, and strengthens democratic societies in dealing with emerging technologies. RRI, designed as an integrative framework, accommodates diverse initiatives to foster collaboration among societal actors, aligning innovation processes with societal needs, values, and expectations. While the implementation of RRI practices has been evaluated across various contexts, this systematic literature review focuses on the biotechnology sector, with a specific emphasis on genetically modified organisms (GMOs). The controversial nature of genetic modification and its potential transformative impact on society underscore the relevance of exploring how RRI is interpreted and implemented in this field. This study aims to investigate points of reference to the RRI framework within the biotechnology sector, especially concerning genetically modified organisms. The systematic literature review employs key themes, including RRI and Biotechnology, and utilizes search terms expanded with relevant synonyms mentioned in selected articles. The search will be conducted across reputable databases such as Web of Science, Science Direct, and Springer Link. Through a comprehensive examination of existing literature, this review seeks to identify and evaluate examples of RRI policies and practices within the broader biotechnology industry. The study will delve into topics most prominently present in the literature to gain insights into how responsible research is

essential in navigating the complex ethical, safety, and societal challenges associated with manipulating living organisms and genetic material. The outcomes of this systematic literature review will contribute to a better understanding of the dynamics of RRI implementation in the biotechnology sector, providing valuable insights for policymakers, researchers, and industry practitioners. The synthesis of knowledge derived from this review will be presented in a written report, offering a comprehensive overview of the current state of research and debates relevant to RRI in biotechnology and genetically modified organisms.

Public Sector PhD within the Field of Education: Transformations in Research and Practice

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In Norway, the Research Council (RCN) has had a particular focus on the need for greater innovation in the public sector, whilst also highlighting considerable challenges. The challenges include a general climate of risk-aversity, a lack of resources allocated to innovation, ineffective decision-making processes, piecemeal approach to improvements and too great a divide between research and practice. One response to these challenges has been RCN's establishment of a public sector PhD program (OFFPHD), which is comparable to professional doctorates outside of Norway (such as in the UK). Practitioners complete a doctoral research project at an academic institution, whilst maintaining their position of employment within the public sector. The field of education has been afforded a particular attention in OFFPHD and PhD candidates within this field represent the largest doctoral candidate group. A national network for OFFPHD ([NATPRONET](#)) in the field of education provides 'a home' to the community of PhD candidates.

This presentation seeks to challenge the notion of a perceived gap between research and practice through reflections on the potential public sector PhD program within the field of education has for transforming knowledge from research and practice. Such programs have the potential to bring about innovation and co-creation of highly relevant knowledge and practices and can therefore contribute to transformations of university-practicum relationships. As an alternative to one-directional transference of knowledge from universities to practitioners, public sector PhD program provides 'knowledge exchange' in which researchers interact and inquire with stakeholders to bring about new and better understandings. Scientific progress in educational research can thus become a social venture in which people are essential part of designing solutions and enacting change. Arguably, researchers who are situated within the field of practice, such as public sector PhD candidates, are best suited to facilitate and transform educational research and practice.

The presentation discusses the opportunities, dilemmas, challenges, and contradictions of OFFPHD within the field of education and the associated national network, NATPRONET.

Reflecting on fostering reflexivity for crop scientists in an interdisciplinary training centre using journaling

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This paper, to be presented by an early career postdoctoral scholar and a senior researcher, provides a detailed analysis of experience to date of structuring and implementing a responsible research and innovation (RRI) focused training program within a larger research training centre focused on training the next generation of researchers, policymakers, and industry leaders in socially responsible genetic and field technologies such as gene editing and synthetic biology technologies in crop breeding. We focus in particular on the part of our broader research program which involves the development and use of a journaling method to foster greater reflexivity about scientific practices, disciplinary and institutional norms, social reception and ethical considerations, and regulatory processes, and indirectly to promote deeper consideration of the key components of RRI approaches. Although reflective learning journaling has long been used in a range of fields and settings including for educational purposes, there is limited evidence about its use with participants who have lower levels of familiarity with reflecting on and writing about their experiences, especially in scientific settings, or about how such processes can lead to development of skills relating to RRI. We explore how more ritualised or familiar activities such as keeping lab books can be harnessed to allow researchers-in-training opportunities not only to document and consider scientific details, but also to reflect on the complex socio-technical challenges particularly in an emerging field.

We consider some of the problems encountered which have included diversity in types of prior education and pedagogical methods, particularly given our cohort's background which crosses numerous countries, leading to different baseline approaches to writing and engaging; providing accessible yet provocative prompts; and delivering the research using online methodologies which often can be less effective for fostering additional dialogue and reflection. We also provide insights for other researchers who might wish to use similar methods, along with our preliminary findings after one year.