

CURRICULUM VITAE

Anne Ingeborg Myhr

Current position: Director at GenØk-Centre for Biosafety, Tromsø, Norway

Education

2002 Dr. scient. Department of Microbiology and Virology, IMB, UiT, Tromsø, Norway

1990 Master of Science. Department of Biotechnology, NTNU, Trondheim, Norway

Work experience

01.01.13 Director at GenØk -Centre for Biosafety

01.09.12 Deputy Director at GenØk -Centre for Biosafety

11.06.12 Scientific Director at GenØk -Centre for Biosafety

01.11.09 Department manager at GenØk -Centre for Biosafety

01.08.09 Associate professor 20% position, Faculty of Health Sciences, UiT

01.01.03 Scientist at GenØk -Centre for Biosafety, Tromsø

01.08.02 Scientist, Department of Pharmacy, UiT

01.01.96 Research fellow, Dept. of Microbiology and Virology, IMB, UiT

01.01.95 Qualifying fellowship, Department of Virology, IMB, UiT

01.03.91 Scientist, Norwegian Institute of Fisheries and Aquaculture, Tromsø

Main research fields

I started with experimental research within molecular biology as master student and as a scientist, before expanding research in 1995 into philosophy of science and applied ethics. After defending thesis on risk governance of GMOs my engagement has continued to be in integrated projects combining experimental with theoretical approaches (ELSA and RRI) with focus on biotechnologies.

Current research projects

2019 CRISPRsalmon: Genome editing - a game-changer in aquaculture: Conditions for social and moral acceptance (partner, funded by the RCN) (NTNU is project owner)

2018 ReWrite: New knowledge to navigate the rewriting of human/nature relations through genome editing in the search for sustainable food (projectleader, funded by the RCN)

2017 Marsynth- Marine DNA modifying enzymes for synthetic biology (partner, funded by the RCN) (UiT is project owner)

2009 GMOs and sustainable development (funded by GenØk)

Former research projects

2013 Sterile salmon by targeting factors involved in germ cell survival: novel vaccination strategies for sustainable fish farming (partner, funded by the RCN) (IMR was project owner)

2012 GM potato with late blight resistance - Deliberate examination of sustainability, ethical and social aspects (projectleader, funded by RCN)

2011 Exploring Legal Conditions and Framework for Marine-based Bioprospecting and Innovation (partner, funded by RCN) (FNI was project owner)

2010 Genetically modified organisms, information relevant to sustainable development labeling schemes (funded by Nordic Ecolabel (Miljømerking))

2009 Stimulating sustainable innovations in aquaculture (funded by RCN) (FNI was project owner)

- 2009 Designed to get away. Emerging deliberation and governance on autonomously disseminating technologies (projectleader, funded by RCN in 2009, by Genøk 2010-2012)
- 2009 Nanoethos –Novel changes for ELSA (partner, funded by RCN) (in collaboration with NTNU)
- 2009 RiskBrigde project (EU-FP6 funded) (associated scientist)
- 2007 Nanotrust – Ethical conditions for a socially robust use of nanobiotechnology in aquaculture (partner, funded by RCN) (NTNU was project owner)
- 2006 Genetic engineering in aquaculture: Perspectives on management and sustainability (projectleader, funded by RCN)
- 2003 Introduction of genetic engineering in aquaculture, ethical and ecological implications for science and governance (funded by RCN) (post.doc)
- 1996 Precaution, Context and Sustainability (funded by RCN) (PhD project)

Committee appointments

- Member of the Research Council of Norway -BIONÆR program board (2017-present)
- Member of the National Commission for the Investigation of Research Misconduct (2017-present)
- Member of the Norwegian Board of Technology (2016-present)
- Deputy member of the Preimplantation Genetic Testing Committee (2014-present)
- Member of the ELSA-Network steering committee (2013 – 2018)
- Member of the Biosafety capacity building course committee at Genøk (2003-2017)
- Member of the Nordic Committee on Bioethics (2008-2015) (Chair in 2014)
- Member of the RCN NANOMAT program board (2008-2012)
- Member of the Nordic Network for Food and Agriculture Ethics (2007-2010)
- Member of the National Ethical Committee on Patents (2004-2010)
- Member of the Norwegian Scientific Committee for Food Safety (VKM) (2007-2010)
- Member of the Committee for Research Ethics in Science and Technology (2003-2009)
- Member of EUs Monitoring working group under Directive 2001/18 EC (2005-2008)

Publications

International journals (2010 -)

- Agapito-Tenfen, S., Okoli, A.S., Bernstein, M., Wikmark, O.-G. and Myhr, A.I. (2018) Revisiting risk governance of GM plants: The need to consider new and emerging gene-editing techniques, *Frontiers in Plant Science* | doi: 10.3389/fpls.2018.01874.
- Catacora-Vargas, G., Binimelis, R., Myhr, A.I. and Wynne, B. (2018) Socio-economic research on genetically modified crops: a study of the literature, *Agriculture and Human Values*, 35, 489-513
- Myhr, A.I. (2016) DNA Vaccines: Regulatory Considerations and Safety Aspects, *Current Issues in Molecular Biology*, Oct 5:22, 79-88
- Seternes, T., Tonheim, T.C., Myhr, A.I., Dalmo, R.A. (2016) A plant 35S CaMV promoter induces long-term expression of luciferase in Atlantic salmon. *Scientific Reports* 6, Article number: 25096.
- Iversen, M., Myhr, A.I., Wargelius, A. (2016) Approaches for delaying sexual maturation in salmon and their possible ecological and ethical implications, *Journal of Applied Aquaculture*, 28, 330-369
- Rosendal, K., Myhr, A.I., Tvedt, M.W. (2016) Access and Benefit Sharing Legislation for Marine Bioprospecting: Lessons From Australia for the Role of Marbank in Norway, *The Journal of World Intellectual Property*, 19, 86-98
- Gillund, F. et al. (2016) Stakeholder views on issues to consider when assessing the sustainability of genetically modified potato. *International Journal of Agricultural Sustainability*, 14, 375-376.
- Binimelis, R., Myhr, A.I. (2016) Inclusion and implementation of socio-economic considerations in GMO regulations: Needs and recommendations. *Sustainability*, 8, 62
- Nydal, R., Myhr A.I., Myskja, B. (2015) From ethics of restriction to ethics of construction: ELSA research in Norway. *Nordic Journal of Science and Technology Studies* 3, 34-45

- Hølvold, L.B., Myhr, A.I., Dalmo, R.A. (2014) Strategies and hurdles using DNA vaccines to fish. *Veterinary Research* 45:21
- Myskja, B., Nydal, R., Myhr A.I. (2014) We have never been ELSA-researchers – there is no need for a post-ELSI shift. *Life Sciences, Society and Policy* 10:9
- Hofmann, B., Myhr, A.I., Holm, S. (2013) Scientific dishonesty- a nationwide survey of doctoral students in Norway. *BMC Medical Ethics* 14:3
- Jacobson, K., Myhr, A.I. (2013) GM crops and smallholders: Biosafety and local practice. *Journal of Environment & Development* 22, 104-124
- Aslaksen, I, Glomsrød, S., Myhr, A.I. (2013) Post normal science and ecological economics; strategies for precautionary approaches and sustainable development. *International Journal of Sustainable development* 16, 107-126
- Aslaksen, I, Glomsrød, S., Myhr, A.I. (2012) "Late lessons from early warnings" - Uncertainty and precaution in policy approaches to Arctic climate change impacts. *Polar Geography* 35 (2), 135-153
- Graef, F., et al. (2012) Framework for a European Network for a systematic environmental impact assessment of genetically modified organisms (GMO). *Biorisk*, 7, 73-79
- Myhr, A.I., Myskja, B.K. (2011) Precaution or Integrated Responsibility Approach to Nanovaccines in Fish Farming? A Critical Appraisal of the UNESCO Precautionary Principle. *Nanoethics* 5, 73–86
- Nielsen, K.N., Fredriksen, B.N., Myhr, A.I. (2011) Mapping Uncertainties in the Upstream: The case of PLGA nanoparticles in salmon vaccines. *NanoEthics* 5, 57-71
- Olesen, I., Myhr, A.I., Rosendal, K. (2010) Sustainable aquaculture: are we getting there? Ethical perspectives on salmon farming. *Journal of Agricultural and Environmental Ethics* 24, 381-408
- Gillund, F., Myhr, A.I. (2010) Perspectives on salmon feed: A deliberative assessment of several alternative feed resources. *Journal of Agricultural and Environmental Ethics* 23, 527-550
- Myhr, A.I. (2010) The challenge of scientific uncertainty and disunity in risk assessment and management of GM crops. *Environmental Values* 19, 7-23
- Myhr, A.I. (2010) A precautionary approach to genetically modified organisms: Challenges and implications for policy and science. *Journal of Agricultural and Environmental Ethics* 23, 501-525

Book chapters (2011-)

- Myhr, A. I., Myskja, B. K. (2018) Gene-edited organisms should be assessed for sustainability, ethics and societal impacts, in: Springer, S., Grimm, H. (eds.) *Professionals in food chain*. Wageningen Academic Publishers, pp. 99-103
- Binimelis, R., Myhr, A.I. (2015) Socio-economic considerations in GMO Regulations: opportunities and challenges, in: Dumitras, et al. (eds) *Know your food. Food ethics and innovation*. Wageningen Academic Publishers, pp. 61-67
- Gillund, F., Myhr, A.I., Hilbeck, A. (2015) Stakeholder perception on sustainability of genetically modified potato, in: Dumitras, et al. (eds) Wageningen Academic Publishers, pp. 55-61.
- Grimsrud, E.S. et al. (2015) Genetic commons and codified commodities: exploring the role of intellectual property rights on genetic resources, in Norwegian biotechnology innovation systems, in: Dumitras, et al. (eds.) *Know your food. Food ethics and innovation*. Wageningen Academic Publishers
- Gillund, F., Myhr, A.I., Utskarpen, A. (2015) Bærekraft ved dyrking av genmodifisert potet med tørråteresistens, *Fokus* Vol 10 (2)
- Grønsberg, I.M. et al. (2015) Miljørisiko ved soppresistent genmodifisert raps, *Fokus* Vol 10 (2).
- Myhr, A.I., Myskja, B.K. (2014) From protection to restoration: A matter of responsible precaution, in: Oksanen, M., Siipi, H. (eds.) *The ethics of animal re-creation and modification*. Palgrave Maximillian.
- Nordgaard, L. et al. (2013) GM food, nutrition, safety and health, in: Thompson P., Kaplan D.M. (eds.) *Encyclopedia of Food and Agricultural Ethics*: (www.springerreference.com). Springer-Verlag Berlin
- Myhr, A.I., Myskja, B.M. (2013) Nanotechnology in agriculture, in: Thompson, P.B., Kaplan, D.M. (eds.) *Encyclopedia of Food and Agricultural Ethics*, Springer-Verlag Berlin Heidelberg

Quist, D. et al. (2012). Hungry for innovation in a world of food: Pathways from GM crops to agroecology. in: *Late Lessons from Early Warnings Vol.2*. European Environment Agency, Denmark

Myaskja, B.K., Myhr, A.I. (2012) Changing an iconic species by biotechnology: the case of Norwegian salmon, in: Potthast, T., Meisch, S. (eds.) *Climate change and sustainable development, Ethical perspectives on land use and food production*, Wageningen Academic Publishers, p. 315-321

Myhr, A.I. (2012, 2015) Bioteknologi og genteknologi. I Forskningsetisk bibliotek.
<http://www.etikkom.no/no/FBIB/Temaer/Forskning-og-miljo/Bioteknologi-og-genteknologi/>

Myhr, A.I., Rosendal, G.K., Olesen, I. (2012) New developments in biotechnology and IPR in aquaculture –Are they sustainable? In: *Aquaculture / Book 1*, InTech publishers, 26 pp.

Myhr, A.I., Traavik, T. (2012). Genetically Engineered Virus Vaccine Vectors: Environmental Risk Management Challenges. in: *Genetic Engineering*, InTech publishers, 20 pages

Traavik, T., Myhr, A.I., Aslaksen, I. (2011) Genmodifiserade eller omodifiserade organismer – så gott som lika eller väsensskilda?" in: Förare, J. (ed.) *Genteknik som tar skruv*, Forskningsrådet Formas

Myhr, A.I., Nielsen, K.M. (2011) Kvalitet og dannelse innen naturvitenskapen, in: Ognjevoic, G., Hagtvat, B. (eds) *Tenkning, modning, refleksjon*, Dreyers forlag, Oslo, pp. 488-499

Reports (2014-)

Wikmark, et al. (2016) *Synthetic biology- biosafety and contribution to addressing societal challenges*, GenØk Biosafety Report 02/16.

Gillund, F., Myhr, A.I. (2016) *Important Considerations for Sustainability, Social utility and Ethical Assessment of Late Blight Resistant GM Potato*, GenØk Biosafety Report 01/16, 21 p.

Gillund, F. et al. (2015) *Examining the social and ethical issues raised by possible cultivation of genetically modified potato with late blight resistance in Norway*. GenØk Biosafety Report 2015/04

Nordgård, L. et al. (2015) *Uncertainty and knowledge gaps related to Environmental risk assessment of GMOs*. GenØk Biosafety report 03/15, 167 p.

Grønsberg, I.M. et al. (2015) *Environmental Risks of Fungus Resistant Oilseed Rape*. GenØk biosafety report 2015/01, 65p

Co-author (2014) *Legislation on biotechnology in the Nordic countries –an overview 2014*. Nordforsk.

Gillund, F. et al. (2014) *Bærekraft ved dyrking av GM-potet med tørråteresistens*. GenØk biosafety report 2014/03, 30 p.

Media (2014-)

Wikmark, O.-G., Myhr, A.I. (2018) Genredigering reguleres som GMO, *Nationen* 27.07.18

Wikmark, O.G., Wickson, F., MYHR, A.I. (2018) Genteknologiloven og genredigering: Ja takk, begge deler, *Nationen*, 03.01.18

Myhr, A.I. (2017) Biosikkerhet og bærekraft ved bruk av genredigering, *Nationen*, 17.10.17

Myhr, A.I., Myaskja, B. K. (2016) Genredigering og matnyttig etikk, *Nationen* 16.11.16

Myhr, A.I. (2016) Bioteknologi kan løse mange av de utfordringene vi står overfor i dag, *Dagbladet* 12.10.2016.

Rosendal, K., Tvedt, M.W., Myhr, A.I. (2016) Dra til Australia, Per Sandberg! *Dagens Næringsliv*, 30.09.16.

Myhr, A.I., Grønsberg, I.M., Wikmark O.-G. (2016) Si nei til genmodifisert mais, *NRK Ytring*, 28.09.16

Myhr, A.I., Dalmo R. (2016) Plantevirus kan redde laksen. 13.06.16 *Forskning.no*

Gillund, F., Myhr, A.I. (2016) Dobbelt GMO-moral. *Klassekampen* 16.04.16.

Myhr, A. I., Olsvik Ø. (2016) Genmodifisert mygg kan bekjempe zika viruset, *Forskning.no* 24.02.16

Myhr, A.I., Nordgård, L., Olsvik, Ø. (2015) Mat og antibiotikaresistens, *Nationen* 06.08.15

Myhr, A.I. et al. (2014) La norsk laks forbli fri for antibiotika, *Aftenposten* 11.08.14

Myhr, A.I. (2014) Styrk GMO forskningen, *Nationen* 02.07.14