

Curriculum vitae – Simen Rød Sandve

My research has focussed on understanding how genomes evolve and how genomic variation, especially novel variation generated by whole genome duplications, is linked to adaptation. During my PhD I worked on the genetic mechanisms and evolution of freezing tolerance in grasses. Since then I have been involved in two large international genome sequencing consortiums. First as a Post doc in a Norwegian-funded project within the International Wheat Genome Sequencing Consortium (IWGSC) (lead by Prof. Olsen, NMBU), and subsequently as a research scientist in the group of Prof. Lien (NMBU) who is a leader in the International Consortium to Sequence the Atlantic salmon Genome (ICSASG). My part in these two large international collaborative projects were related to analyses of genome evolution, and has resulted in ground breaking new hypotheses and scientific advances about how wheat evolved, how hybrid genomes subdivide molecular roles among themselves, and how whole genome duplication in vertebrates drive evolutionary innovation - the raw material for adaptation. Participation in these genome projects have provided extensive experience in working in a large international consortiums and facilitated several long term collaborations with strong international research groups. I recently was awarded a large research grant for talented young researchers from the Norwegian Research Council and is currently in the process of transitioning from a research scientist to an independent research leader.

PERSONAL INFORMATION:

Family name, First name: Sandve, Simen Rød

Date of birth: 03.10.1979

Sex: Male

Nationality: Norwegian

EDUCATION:

- **2010:** PhD, Thesis: Genetics of Pooideae freezing tolerance – an evolutionary perspective, Supervisor: Prof. O.A.Rognli, Norwegian University of Life Sciences (NMBU). Approved 22.10.2010.
- **2005:** MSc in Ecology, UMB
- **2003:** Bachelor in Nature Management, UMB

CURRENT AND PREVIOUS POSITIONS:

- *2014-present* Research Scientist, Department of Animal and Aquacultural Sciences, NMBU
- *2011- 2014* Post Doctor Department of Plant and Environmental Sciences, NMBU.
- *2010 - 2011* Research Scientist, Department of Plant and Environmental Sciences, NMBU.

FELLOWSHIPS AND AWARDS:

- *2015 NMBU research talent scholarship (260K NOK, 3 years)*
- *2012* Fulbright Research Fellowship
- *2012* Centennial Chair travel fellowship from UMN and NMBU

TEACHING ACTIVITIES

Lecturer:

- *BIO120 - Introductory Genetics (Bachelor level), NMBU*
- *BIN210 – Introductory Bioinformatics (guest lecturer, bachelor level), NMBU*
- *BIO223 – Molecular Ecology and Evolution (Bachelor level), NMBU*
- *BIO321/421 – Population Genetics and Molecular Evolution (Master level), NMBU*

SUPERVISION OF PhD-STUDENTS:

PhD:

- **2015- Principle supervisor:** NMBU, T. Harvey, Project: Integrating genomics and system biology to improve the capacity for synthesis, transport, and file deposition of EPA/DHA in salmon.
- **2015- Co-supervisor:** NMBU, Gareth Gillard, Project: Integrating genomics and system biology to improve the capacity for synthesis, transport, and file deposition of EPA/DHA in salmon.
- **2015- Co-supervisor:** NMBU, T. D. Mulugeta, Project: ELIXIR Norway.
- **2013- Co-supervisor:** NMBU, L. Grønvold, Project: Why do some grasses succeed in the cold north? A systems biology perspective.
- **2012- Co-supervisor:** NMBU, M. Schubert, Project: Why do some grasses succeed in the cold north? A systems biology perspective.

MOBILITY (more 3 months)

- 2012. Department of Plant Biology, Microbial and Plant Genomics Institute, University of Minnesota, USA

INSTITUTIONAL RESPONSIBILITIES:

- 2015-2017 Board member for NMBU research award for young scientists
- 2008 Board member for UMB award for excellence in research
- 2006-2008: Member in Scientific Board at Department of Plant and Environmental Sciences, UMB.

ORGANIZATION OF SCIENTIFIC MEETINGS:

- 2015-2017 Member of steering group for NBS at NMBU, organizing annual 'winter meeting' in
- 2012 Organization committee for National Plant Biology Conference (PlantBio 2012)

COMMISSIONS OF TRUST:

Reviewer for BMC Genomics, Planta, Genome Biology and Evolution, Bioinformatics, New Phytologist, Journal of Biogeography, Molecular Phylogenetics and Evolution, Plant Molecular Biology Reporter.

RESEARCH GRANTS:

Project leader:

- **2015-2018:** Integrating genomics and system biology to improve the capacity for synthesis, transport, and file deposition of EPA/DHA in salmon (Norwegian Research Council, 10,000,000 NOK, 2015-2018)

Co-applicant:

- **2015-2019:** Towards the Digital Salmon: From a reactive to a pre-emptive research strategy in aquaculture (Norwegian Research Council, 38,000,000 NOK)
- **2014-2017:** Linking the evolution of flowering time in long days with a major niche transition in the grass subfamily Pooideae (Norwegian Research Council, 7,000,000 NOK)
- **2012-2015:** Why do some grasses succeed in the cold north? A systems biology perspective. (NMBU 'Tverrforsk' grant, 300,000 NOK)

MAJOR COLLABORATIONS:

- David Liberles, Topic: Genome evolution in salmonids, Temple University, USA
- Daniel Macqueen, Topic: Genome evolution in salmonids, University of Aberdeen, UK
- David Hazlerigg, Topic: Evolution of anadromy in salmonids, University of Tromsø, Norway
- Torgeir R. Hvidsten, Topic: Evolution of gene expression regulation, Norwegian University of Life Sciences, Norway.
- Siri Fjellheim, Topic: Evolution of flowering time and climate adaptation in grasses, Norwegian University of Life Sciences, Norway.
- Michael Leaver, Topic: Omega-3 metabolism in Atlantic salmon, University of Stirling, UK

EARLY ACHIEVEMENTS TRACK-RECORD

Career and publication highlights: During my PhD and Post Doc I published 15 peer review articles, of which I was the first author and/or lead corresponding author on 11 (5 first, 6 corresponding).

Three of these papers were an outcome of my involvement in the International Bread Wheat Genome Sequencing Consortium (IWGSC); the genome sequence of bread wheat, the genetic control of grain maturation (3rd author), and evolutionary history of the polyploid hybrid wheats (shared first author and corresponding author). I participated actively in the writing and analyses of all three papers which were published in *Science* in 2014.

My potential for research independence and leadership is clearly reflected in my publication record. I have 7 publications as lead/corresponding author and 13 publications without my PhD supervisor as co-author. Moreover, the co-author lists on my lead author publications reveal strong skills in building independent research collaborations with leading international research groups within their fields. This includes collaborations on plant genomics (the Mayer and Mockler labs in Germany and USA), on evolution of freezing tolerance (the Preston and Stockinger labs in USA), and on bioinformatics (the The Genome Analyses Centre, UK).

In 2014 I moved from plant to salmonids (fish), and started to work as research scientist in the group of Prof. Lien. Since then I have received a talented young researcher grant (TOPPFORSKER) on Atlantic salmon genomics from the Norwegian Research Council (2015), and have become a principal supervisor for one PhD-student awarded to me through the NMBU strategic program. I am also part of the NMBU 'talent program', to supports the development of early career researchers.

The most recent career achievement has been to lead, coordinate, and conduct analyses of genome evolution in the International Consortium to Sequence the Atlantic Salmon Genome. This work was recently published in *Nature* (2016).

PEER REVIEW PUBLICATIONS:

I have published **21 peer reviewed publications** with a total of **615 citations** (22. May 2016).

First/shared first authorships: **5**. **Corresponding/lead** authorships: **7**

My **H-index=12** and **I10-index=12**, according to Google Scholar.

Eleven of these articles are independent of my PhD-supervisor (including the five listed below).

See Google scholar for details: <http://scholar.google.no/citations?user=QtceKEwAAAAJ&hl=no>

List of five selected publications (citations excluding self-citations):

1. Lien, Koop, **Sandve**, et al. The Atlantic salmon genome provides insights into rediploidization. *Nature* 533 (2016). **(1 citation)**
Role: Writing and leading, coordinating, and conducting analyses of genome evolution
2. The International Wheat Genome Sequencing Consortium. A chromosome-based draft sequence of the hexaploid bread wheat (*Triticum aestivum*) genome. *Science* 345 (2014). **(203 citations)**
Role: Writing and conducting phylogenomic analyses
3. Pfeifer, Kugler, **Sandve**, et al. Genome interplay in the grain transcriptome of hexaploid bread wheat. *Science* 345 (2014). **(47 citations)**
Role: Writing and involvement in experimental design
4. Marcussen, **Sandve**, et al 2014. Ancient hybridizations among the ancestral genomes of bread wheat. *Science* 345 (2014). **(84 citations)**
Role: Corresponding and shared-first author: writing and analyses
5. **Sandve** and Fjellheim. Did gene family expansions during the Eocene-Oligocene boundary climate cooling play a role in Pooideae adaptation to cool climates? *Mol Ecol*, 19 2075-88. (2010). **(21 citations)**.
Role: Corresponding and first author: writing and phylogenetic analyses

INVITED TALKS AND PEER-REVIEWED CONFERENCE TALKS:

- **2016** “Genome evolution after whole genome duplication – lessons from wheat and Atlantic salmon”. Zoology Department talk, University of Aberdeen, UK.
- **2016** “Genome evolution after whole genome duplication – lessons from Atlantic salmon. Institute talk “– Institute of Aquaculture, University of Stirling, UK.
- **2016** “Genome evolution after whole genome duplication – lessons from Atlantic salmon”. Department of Arctic and Marine Biology, University of Tromsø.
- **2013** “Sequencing the wheat chromosome 7B”. IWGSC workshop, Yokohama, Japan
- **2012** “Molecular adaptation to cooler climates and ecological diversification in Pooideae”. Fargo, North Dakota, USA
- **2010** “Lessons from a decade of frost tolerance research using forage grasses as a model system”. Plant and Animal Genome, San Diego, USA

PROFESSIONAL ACHIEVEMENTS, PRIZES, AND AWARDS:

- 2015 Selected for NMBU’s ‘talent program’ - to develop young talented researchers
- 2015 Acquired 10M NOK grant for ‘young research talents’ (Havbruk-programme, NFR)
- 2012 Awarded Fulbright Research Fellowship
- 2012 Awarded Centennial Chair travel fellowship (from UMN/NMBU)