Research course for MSc and PhD students, 20-25th June 2016.

Methods and use of genome modifications in research on host and parasites.

The course is a part of CASL, a NRC/SIU funded project for research and educational collaboration between institutions in Norway and Canada.

The course includes theory and methods for generation and use of transgenic animals in research. The course has focus on Atlantic salmon, the salmon parasitic sea lice, and zebrafish as a model organism. The lectures will cover topics such as: new DNA sequencing technology with the focus on the genomes of Atlantic salmon and salmon louse; use of CRISPR/Cas9 as tool in modifying the salmon and zebrafish genome; use of RNAi as method in studies of salmon lice and zebrafish; DNA vaccination in combination with expression library immunization (ELI) as an efficient tool in development of new vaccines in fish; use of sequence databases and tools in computational biology for studies of fish and salmon lice. In addition, lectures will cover ethical questions and regulations on the development and use of transgenic fish. The course includes hands on lab work and demonstrations in the generation and use of transgenic fish and sea lice, and relevant computational biology tools. The course will be completed with an exam on the final day of the course based on literature (provided before beginning of the course) and lectures. In addition, during the course all students will present one scientific paper to the other participants.

Prerequisites:
The course is for Master and PhD students. The course is linked to relevant master and PhD education programs in biology, molecular biology and fish health. Only students from the collaborating institutions in the CASL education project; University of Bergen (including partners in SLRC), Atlantic Veterinary College/University of Prince Edward Island and University of Victoria, Canada can apply. The students should have at least a basic course in molecular biology, MOL100 or equivalent. The course is limited to 14 participants, 7 from Canada and 7 from Norway. Master students will be given priority.

Organizer and main tutors:
Rune Male, professor, University of Bergen/SLRC (rune.male@uib.no)
Sussie Dalvin, researcher, Institute of Marine Research/SLRC (sussie.dalvin@imr.no)

Jason Holland, University of Aberdeen; DNA vaccination
Audun Nerland, University of Bergen; Regulations, ethical questions, DNA vaccination
Anna S Troedsson Wargelius, Institute of Marine Research, CRISPR/Cas9 on salmon
Rolf Edvardsen, Institute of Marine Research; Atlantic salmon genome, transgenics
Christiane Eichner, University of Bergen; Sea lice genome, RNAi
Puja Thiel, University of Bergen; Zebrafish manipulation

- **3 ECTS credits** will be awarded for the course. The course includes 2 weeks of preparation and one week course. The course week includes 12 lectures, 15 hours laboratory exercises/demonstrations and 10 hours literature presentations and discussions.
- **Registration: Salmon Lice biology.**
  https://skjemaker.app.uib.no/view.php?id=1962800

  Registration deadline: May 1. 2016
- **Maximum number of students**: 14; 7 from Canada and 7 from Norway
- **Course fee:** There will be no course fee. Students from the CASL partner institutions in Canada will receive reimbursement of travel costs and accommodation in Bergen according to rates defined in the CASL-project.
- **Course Dates:** Week 25, June 20-25, 2016
- **Course lay-out:** Three weeks ahead of the course the participants will receive literature for preparations to the course. Each day during the course 3-4 students will give a short presentation of selected papers for the rest of the participants. Each course day will start with a lecture session. The afternoon session includes the journal club and practical lab work and demonstrations.
- **Course exam:** Friday afternoon will include a one hour written exam.