Four postdoc positions in Biostatistics are offered at the University of Oslo (UiO), Norway. The positions are each three years appointments.

Call: https://www.med.uio.no/english/research/scientia-fellows/apply/
Deadline for submission: 30. April 2020
IMPORTANT! Deadline for contacting the UiO PI: 20 March 2020

SCIENTIA FELLOWS is a transnational research fellowship programme in the field of Health Life Sciences at UiO, funded by the EU Horizon 2020 under the Maria Skłodowska-Curie scheme.

The purpose of the three years postdoc is to produce scientific results of the highest quality, in collaboration with your host at UiO and its other partners. You will also be part of UiO's career development programme designed for researchers at the beginning of their career, including our Health Innovator course which aims to provide researchers with tools and insight into how innovation can be put to work for the benefit of patients, the healthcare system and society. At completion of your three year term, your academic profile will be such that you can successfully apply to the best research positions worldwide.
All four positions will be at the Oslo Center for Biostatistics and Epidemiology (OCBE), UiO (https://www.med.uio.no/imb/english/research/centres/ocbe/), and in collaboration with the Oslo University Hospital.

Eligibility:
*   You possess a PhD degree (at the latest by 1 July 2020) in statistics, biostatistics, mathematics, computer science or other related disciplines with a documented competence in statistics, biostatistics or mathematics.
*   You have not been resident in Norway for more than 12 months in the last 3 years.

You apply for each position separately, for just one or more. Mention clearly which position you are applying for. See descriptions below and in the attachment.

If you are interested in any of these positions, please contact the corresponding UiO PI by sending her/him an email with your CV and links to your papers as early as possible and by March 20th, 2020. You and your UiO host PI will identify common research interests and discuss the concept of your research proposal. While you are responsible for the research proposal, you will discuss your application via Skype and email, and your host will help you to write a good proposal. Finally, in order to apply for the position, you have to submit the research proposal (and other documents as specified in the call) by April 30th, 2020.

A Fellow of the Scientia Fellows programme will be employed at UiO for three years. The place of work is the UiO campus in Oslo. The gross salary of a Fellow will amount to 515 200 NOK/year. UiO will cover full health insurance and pay towards your pension with the Norwegian pension fund. As employee in Norway you have several welfare benefits. In addition UiO will support research costs (laptop, travel, courses etc) with 54 600 NOK per year. For further information related to moving and settling in Norway, please visit the website of the International Staff Mobility Office (https://www.uio.no/english/about/jobs/ismo/), which will also assist incoming fellows and their families with relocation to UiO. For more information, contact the hosts mentioned below.

Detailed information and how to apply can be found here: https://www.med.uio.no/english/research/scientia-fellows/apply

Postdoc positions offered (project descriptions found on separate pages):

1. Statistical learning for personalised cancer therapy
UiO PI Host: Manuela Zucknick (https://www.med.uio.no/imb/english/people/aca/manuelkz/)
Summary: We develop new multivariate (multi-task) methods to improve prediction of drug sensitivity or synergistic effects in drug combinations in large-scale pharmacogenomic screens based on molecular characterization of cancer cell lines and patient samples as well as properties of the drugs. One particular challenge is the integration of multiple heterogeneous data sources, for example via multiple kernel learning.

2. Scalable inference for genomic data integration

UiO PI Hosts: Valeria Vitelli (https://www.med.uio.no/imb/english/people/aca/valeriv/) and David Swanson (https://sojourningnorth.github.io/)
Summary: The project focuses on scalable statistical methods for the integration and analysis of multi-omic data sources. We plan development of horizontal (multi-omic) and vertical (meta-analytic) integrative Bayesian clustering methods during project course with intended application to disease subtyping and signature/biomarker discovery.

3. Biostatistics and/or computational biology in precision medicine and systems pharmacology
UiO PI Hosts: Arnoldo Frigessi (https://www.med.uio.no/imb/english/people/aca/frigessi/) and Kjetil Tasken (https://www.med.uio.no/klinmed/english/people/aca/ktasken/index.html)
Summary: To individually tailor new treatments, we have established a laboratory and computational pipeline to test drugs and drug combinations on blood of individual patients with chronic lymphocytic leukemia and multiple myeloma. This project will develop new statistical and machine learning methodologies, algorithms and computational approaches, to predict the efficacy of drugs and drug combinations, including their synergetic power.

4. Biostatistics and/or bioinformatics in precision medicine for head and neck cancer
Hosts: Arnoldo Frigessi (https://www.med.uio.no/imb/english/people/aca/frigessi/) and Eivind Hovig (https://www.ous-research.no/hovig/)
Summary: This project aims to identify early signals for head and neck cancer, biomarkers for efficacy of treatment, prediction of prognosis of the cancer, at individual level. We will develop new statistical and machine learning methodologies, algorithms and computational approaches, including deep learning based strategies, exploiting one of the largest international collection of data based on clinical trials for this type of cancer, with unique longitudinal follow-up data for survivors.

SCIENTIA FELLOWS

Statistical learning for personalised cancer therapy

Modelling and prediction in pharmacogenomic cell line screens

PI: Manuela Zucknick
Website: https://www.med.uio.no/imb/english/people/aca/manuelkz/
Pubmed: https://www.ncbi.nlm.nih.gov/pubmed/?term=zucknick
Scholar: https://scholar.google.com/citations?user=mHDjEzQAAAAJ&hl=en&oi=ao

This postdoc will develop innovative methods in statistics and machine learning for personalised cancer therapy. This research is part of the lively UiO:LifeScience research environment PERCATHE (https://www.uio.no/english/research/strategic-research-areas/life-science/research/convergence-environments/percathe) with research groups at both the University of Oslo and the Oslo University Hospital. Our collaboration includes the groups of Arnoldo Frigessi (https://www.med.uio.no/imb/english/people/aca/frigessi/), Eivind Hovig (https://ous-research.no/home/hovig), Jorrit Enserink (https://www.ous-research.no/enserink) and Kjetil Tasken (https://www.med.uio.no/klinmed/english/people/aca/ktasken).

Project description:
We are running a large project on drug sensitivity and drug synergy estimation and prediction in *in vitro* pharmacogenomic screens. The aim is to be able to guide the selection of cancer therapy based on the statistical prediction of how drugs will behave for the individual patient, each drug on its own and in combination, by modelling synergistic effects. We develop new multivariate (multi-task) penalized and Bayesian methods to improve prediction of drug sensitivity or synergistic effects in drug combinations in large-scale screening experiments based on molecular characterization of cancer cell lines and patient samples as well as properties of the drugs. One particular challenge is the integration of multiple heterogeneous data sources, for example via multiple kernel learning. The focus of this project could be on one of many different aspects of this problem, including design of experiments (predicting the most promising drug combination experiments based on existing data), feature selection (e.g., in multiple kernel learning, which kernels – and within kernels, which original features – provide most predictive value), or bi-clustering (given a new tumour sample with certain molecular characteristics, to which group of samples in the database is it most similar and which therapy options are most promising for this tumour).

Eligibility:
- A PhD degree (at the latest by 1 July 2020) in statistics, biostatistics, mathematics, computer science or other related disciplines with a documented competence in statistics, biostatistics or mathematics and advanced computational skills.
- You have not been resident in Norway for more than 12 months in the last 3 years.

Benefits: The fellow will be employed at the University of Oslo (UiO) for three years. The gross salary of a Fellow will amount to 515 200 Norwegian kroner/year (approximately 56,000 US Dollars). UiO will cover full health insurance and pay towards your pension with the Norwegian pension fund. As an employee in Norway the fellow has additional welfare benefits. UiO will also support research costs (laptop, travel, courses etc) with 54 600 NOK per year

References:
- Ickstadt K, Schäfer M, Zucknick M (2018). Toward Integrative Bayesian Analysis in Molecular Biology. Annual Review of Statistics and Its Application. 5:141-167.
- Menden MP et al. (2019). Community assessment to advance computational prediction of cancer drug combinations in a pharmacogenomic screen. Nature communications, 10(1), 1-17.

SCIENTIA FELLOWS

Scalable Bayesian Methods for Cancer Subtyping and Biomarker Discovery in Genomic Data Integration

Primary investigator (PI): Valeria Vitelli
IMB website: https://www.med.uio.no/imb/english/people/aca/valeriv/
Pubmed: https://www.ncbi.nlm.nih.gov/pubmed/?term=valeria+vitelli
Scholar: https://scholar.google.no/citations?user=D1YWgzoAAAAJ&hl=en&oi=ao

Co-Primary Investigator (co-PI): David Swanson
Website: https://sojourningnorth.github.io
ORCID: https://orcid.org/0000-0003-3174-1656

Project Description: The project focuses on the development of scalable statistical methods for the analysis of genomic data from different sources. Applications will include cancer subtyping and signature/biomarker discovery. Bayesian methods are a key tool in quantifying variability and incorporating biological understanding in such contexts, and the project aims to leverage a Bayesian framework. Possible project directions include, but are not limited to, building on two existing and complementary Bayesian approaches: first, we propose the generalization of a Bayesian Mallows model for ranks[1], which is intrinsically suited to the purpose of horizontal genomic data integration and handles missing data and uncertainty quantification. Second, we plan incorporation of more flexible prior distributions into a Bayesian two-way latent structure model for integrative clustering[2] in order to better assess genomic heterogeneity within disease subtype clusters. For both approaches, development goals also include variable selection and cluster parsimony tuning.

Eligibility:

- A PhD degree (at the latest by 1 July 2020) in statistics, biostatistics, mathematics, computer science or other related disciplines with a documented competence in statistics, biostatistics or mathematics.
- You have not been resident in Norway for more than 12 months in the last 3 years.

Benefits: The fellow will be employed at the University of Oslo (UiO) for three years. The gross salary of a Fellow will amount to 515 200 Norwegian kroner/year (approximately 56,000 US Dollars). UiO will cover full health insurance and pay towards your pension with the Norwegian pension fund. As an employee in Norway the fellow has additional welfare benefits. UiO will also support research costs (laptop, travel, courses etc) with 54 600 NOK per year

References
1. Vitelli, V., Sørensen, Ø., Crispino, M., Frigessi, A., and Arjas, E., "Probabilistic preference learning with the Mallows rank model", *Journal of Machine Learning Research*, 18(158), 1-49, 2018
2. Swanson, D., Lien, T., Bergholtz, H., Sorlie, T., Frigessi, A., "A Bayesian Two-Way Latent Structure Model for Genomic Data Integration Reveals Few Pan-Genomic Cluster Subtypes in a Breast Cancer Cohort", *Bioinformatics*, May 2019

Biostatistics and/or computational biology in precision medicine and systems pharmacology

Drug Synergy Analysis in Precision Hematology

Joint PI: Arnoldo Frigessi
Website: https://www.med.uio.no/imb/english/people/aca/frigessi/
Pubmed: https://www.ncbi.nlm.nih.gov/pubmed/?term=frigessi
Scholar: https://scholar.google.com/citations?user=1h8UJ0cAAAAJ&hl=en

Joint PI: Kjetil Taskén
Website: https://www.med.uio.no/klinmed/english/people/aca/ktasken/index.html
Website: https://www.ous-research.no/home/kt/Group+members/14789
Pubmed: https://www.ncbi.nlm.nih.gov/pubmed/?term=Task%C3%A9n
Scholar: https://scholar.google.com/citations?user=gMuKpDQAAAAJ&hl=en

Project Description: To individually tailor new treatments for leukemia and other blood cancers, we have established a laboratory and computational pipeline to test drugs and drug combinations on blood of individual patients with chronic lymphocytic leukemia (CLL) and multiple myeloma (MM), for whom other treatment options are exhausted or ineffective. This project will develop new statistical and machine learning methodologies, algorithms and computational approaches, to predict the efficacy of drugs and drug combinations, including their synergetic power. Heterogeneous data integration will be an important aspect. Some recent work is listed below.

Eligibility:
- A PhD degree (at the latest by 1 July 2020) in statistics, biostatistics, mathematics, computer science or other related disciplines with a documented competence in statistics, biostatistics or mathematics and advanced computational skills.
- You have not been resident in Norway for more than 12 months in the last 3 years.

Benefits: The fellow will be employed at the University of Oslo (UiO) for three years. The gross salary of a Fellow will amount to 515 200 Norwegian kroner/year (approximately 56,000 US Dollars). UiO will cover full health insurance and pay towards your pension with the Norwegian pension fund. As an employee in Norway the fellow has additional welfare benefits. UiO will also support research costs (laptop, travel, courses etc) with 54 600 NOK per year

References
1. Cremaschi, A., Frigessi, A., Taskén, K., & Zucknick, M. (2019). A Bayesian approach for the study of synergistic interaction effects in in-vitro drug combination experiments. arXiv preprint arXiv:1904.04901.
2. Skånland, Sigrid Strand, Bendiksen Henrik, Andrea Cremaschi, Deepak Balaji Thimiri Govinda Raj, Ludvig Andre Munthe, Geir Erland Tjønnfjord, and Kjetil Taskén. "Ex Vivo Drug Sensitivity Screens Identify Personalized Treatment Options for CLL Patients." (2019): 5446-5446.

Biostatistics and/or bioinformatics in precision medicine

Personalized treatment in head and neck cancer

Joint PI: Arnoldo Frigessi
Website: https://www.med.uio.no/imb/english/people/aca/frigessi/
Pubmed: https://www.ncbi.nlm.nih.gov/pubmed/?term=frigessi
Scholar: https://scholar.google.com/citations?user=1h8UJ0cAAAAJ&hl=en

Joint PI: Eivind Hovig
Website: https://www.ous-research.no/hovig/
Pubmed: https://www.ncbi.nlm.nih.gov/pubmed/?term=Hovig%20E%5BAuthor%5D&cauthor=true&cauthor_uid=32050665
Scholar: https://scholar.google.com/citations?user=-9F7sXkAAAAJ&hl=en&oi=ao

Project Description: This project aims to identify early signals for head and neck cancer, biomarkers for efficacy of treatment, prediction of prognosis of the cancer, at individual level. For cancer survivors, early prediction of the possible deterioration of the quality of life, is a further important aim. We will develop new statistical and machine learning methodologies, algorithms and computational approaches, including deep learning based strategies, exploiting one of the largest international collection of data based on clinical trials for this type of cancer, with unique longitudinal follow-up data for survivors. Heterogeneous data integration will be an important aspect. Some recent work is listed below.

Eligibility:
- A PhD degree (at the latest by 1 July 2020) in statistics, biostatistics, mathematics, computer science or other related disciplines with a documented competence in statistics, biostatistics or mathematics and advanced computational skills.
- You have not been resident in Norway for more than 12 months in the last 3 years.

Benefits: The fellow will be employed at the University of Oslo (UiO) for three years. The gross salary of a Fellow will amount to 515 200 Norwegian kroner/year (approximately 56,000 US Dollars). UiO will cover full health insurance and pay towards your pension with the Norwegian pension fund. As an employee in Norway the fellow has additional welfare benefits. UiO will also support research costs (laptop, travel, courses etc) with 54 600 NOK per year

References
1. Serafini, Mara S., et al. "Transcriptomics and Epigenomics in head and neck cancer: available repositories and molecular signatures." Cancers of the Head & Neck 5.1 (2020): 2.
2. Kristensen, V. N., Lingjærde, O. C., Russnes, H. G., Vollan, H. K. M., Frigessi, A., & Børresen-Dale, A. L. (2014). Principles and methods of integrative genomic analyses in cancer. Nature Reviews Cancer, 14(5), 299-313.