Bioinformatician or Statistical Geneticist for Genomics, Systems Biology and mining of Big clinical data in brain disorders: Copenhagen, Denmark

Institute of Biological Psychiatry at Mental Health Services, Copenhagen and University of Copenhagen is building on an inter-national and highly competitive research environment, and is seeking talented and highly motivated bioinformaticians and statistical geneticists for a postdoctoral position to work on the genomics and systems biology of severe mental disorders. The position is initially limited to two years with the possibility for extension.

Institutional research profile
The host institution is the Danish lead in national initiatives and international consortia that over the past years have made hallmark discoveries in schizophrenia genetics, identifying over a hundred genomic loci conferring high- and low-risk for the disorder and explaining up to one fourth of the total heritability of schizophrenia. The power of GWAS to detect low-risk variants of disease has been enhanced considerably through development of enrichments analysis leveraging functional annotations, patterns of comorbidities, and evolutionary hypotheses. More recently, researchers at the institute have developed methods to study genomic risk in the context of the entire population of Denmark, combining methods from survival analysis, the population genealogy, and high-dimensional, temporal clinical trajectories inferred from the nationwide Danish civil and health registers. Text mining has been used to extract clinical information from plain text in clinical case notes, to create high-dimensional clinical profiles of patients, including temporal charac-terizations of drug- and dosage-dependent adverse reactions. Genomic findings have prompted studies that link genetic risk variants of schizophrenia to specific signaling pathways, developmental processes, and anatomical regions of the brain. We have also pioneered translational studies that have modeled human disease mutations in rodents and documented electrophysiological deficits previously reported in general population of schizophrenia patients.

Job profile
Postdoctoral fellows will work within the IPSYCH Research Program to integrate genomic and complementary OMICs data with high-dimensional, temporal clinical register data. The goal will be to link genetic disease risk and lifespan trajectories in order to develop clinical prediction algorithms, capable of stratifying patients into etiological distinct clusters, advancing precision medicine. Postdoctoral fellows will work in close collaboration with colleagues at the Institute while also developing and implementing his or her research ideas and goals. Postdoctoral fellows will work with the institute Lead Scientists and formally report to the Director of the Institute, Professor Thomas Werge.

Qualifications
Necessary qualifications
- Background in genetic bioinformatics or statistical genetics
- A relevant PhD degree or equivalent qualifications
- Computational expertise in analyzing big data, such as GWA or sequence data
- Experience with statistical analysis using packages such as R or MATLAB
- Experience with GWA analysis programs like PLINK, GCTA, or IMPUTE2

Desirable qualifications
- Be familiar with data resources like 1000G, Hapmap, GO, KEGG, REACTOME
- Excellence in genomics, bioinformatics or systems biology
- Experience analyzing multivariate longitudinal and survival data

Personal qualifications:
- Strong drive to obtain established goals
- Excellent collaborative, communication and presentation skills
- Scientifically self-motivated and creative
- Ability to work both independently and in structured groups
- Open-minded and analytical personality

**iPSYCH research program**
The iPSYCH Initiative was established in 2012 through a donation by the Lundbeck Foundation of 121 million DKK for an initial three year period – the largest grant ever to Danish psychiatric research – and recently extended for another three years through an identical grant. The iPSYCH initiative studies five mental disorders: autism, ADHD, schizophrenia, bipolar disorder and depression. It capitalizes on the comprehensive Danish civil and health registers and nationwide biobanks to provide population structure, clinical information and biomaterial for multi-OMICs analysis. Currently, the initiative have generated SNP-array on 80,000 DNA samples and whole exome sequencing data on 7,000 DNA samples to be combined with extensive register-data on environmental exposures and phenotypic data from hospital registers. Ongoing work is aiming to perform metabolomics and possibly transcriptomics on the same neonatal blood spots. In parallel clinical and translational studies are being conduction on patients and transgenic animals. See [www.ipsych.dk](http://www.ipsych.dk) for more information.

**Collaborating institutions**

**iPSYCH partners also include** Mental Health Centre Copenhagen, Capital Region of Denmark, Department of Biomedicine, Aarhus University, Denmark, National Centre for Register-based Research, Aarhus University, Denmark, Department of Clinical Medicine, Aarhus University and Aarhus University Hospital, Risskov

**Danish collaborators** include The Lundbeck Foundation Center of Medical Genomics and The Novo Nordisk Foundation Center For Basic Metabolic Research, University of Copenhagen, Danish Research Centre Magnec Research, Copenhagen University Hospital, Department of Clinical Biochemistry and Immunology, Statens Serum Institute, Denmark, Department of Systems Biology, Technical University of Denmark, Department of Clinical Immunology and the Danish Blood Donors, Rigshospitalet, Department of Biology, University of Copenhagen, Synaptic transmission. H. Lundbeck A/S.

**International collaborator** include deCODE genetics, Oslo University Hospital, Psychiatric Genomics Consortium, BROAD Institute of MIT and Harvard, and Swiss Federal Institute of Technology Zürich.

**We offer**
The appointment will be based on the collective agreement with the Confederation of Professional Associations. The allowance will be agreed with the relevant union. Starting date is preferably August 1st and no later than September 1st. The employment will initially be for a period of two years based on a full-time appointment (37 hours per week) with a possibility of extension. The place of work is at the Institute of Biological Psychiatry at the Mental Health Services at the MHC Sct. Hans located in Roskilde just west of Copenhagen. The institute will be able to provide temporary accommodation at the hospital campus.

**Further information**
Further information may be obtained from Lead Scientist Wesley Thompson at telephone no. (45) 20 32 72 85 or e-mail: wesley.kurt.thompson@regionh.dk, or Lead Scientist Alfonso Buil at telephone no. (45) 20 32 88 31 or e-mail: alfonso.buil.demur@regionh.dk

**Application**
We encourage submission of applications as soon as possible and no later than 12am, May 31,
The application must be submitted as one PDF file and include the following appendices in the order mentioned below. All materials must be in English:
- Cover letter with referring specifically to the job profile
- Curriculum vitae, incl. a specification of work experience with specific –omics data and program languages.
- List of peer reviewed publications
- Diplomas for academic degrees and other relevant documentation

Applications that do not fulfill the requirements will be rejected, without further explanations or notifications. Job interviews will be held as soon as possible after receipt of the application. For residents outside Denmark, initial interviews will be held using SKYPE or similar arrangement. All interested candidates irrespective of age, gender, disability, race, religion or ethnic background are encouraged to apply.

Please submit application by May 31, 2016 to: