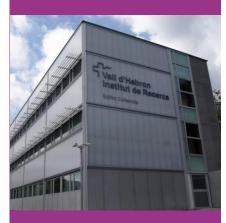# Pre-doctoral position in statistical genetics

Group of Psychiatry, Mental Health and Addictions

The Group of Psychiatry, Mental Health and Addictions is seeking a PhD student to apply for competitive grants with experience in statistical genetics, computational biology or similar field to work on genetic risk and resilience underlying attention deficit and hyperactivity disorder (ADHD).

ADHD is highly heritable, comorbid and has substantial diagnostic overlap with other mental conditions. Genetic studies continue to identify hundreds of genetic associations with mental disorders, however translating these into causal genes or variants, biological mechanisms, and therapeutic targets remains a major challenge.

The objective of the position is to understand the genetic basis of ADHD by (i) dissecting the genetic liability for ADHD that confers risk but also resilience to the disorder through polygenic risk and resilience scores and (ii) investigating to which extent these polygenic scores interact and are influenced by environmental risk factors (demographic, psychosocial stress and lifestyle factors) in different in-house samples. We will focus on genetic variants that promote resilience to disease. This new paradigm will foster the discovery of genetic variants that help unaffected individuals to cope with a relatively large genetic burden of disease-associated variants. Knowing how some people avoid illness despite being at high genetic risk will shed light on novel avenues for early intervention that could not be identified by studying genetic risk variants alone. We will expand our knowledge on the genetic basis of ADHD, which will lead to predictive and preventive strategies and may help to identify mechanisms that can be modulated to divert or reverse disease processes. The PhD researcher will work in an interdisciplinary biomedical environment.

Group publication related with the project:

1. Cabana-Domínguez J, Llonga N, Arribas L, Alemany S, Vilar-Ribó L, Demontis D, Fadeuilhe C, Corrales M, Richarte V, Børglum AD, Ramos-Quiroga JA, Soler Artigas, M, Ribasés M. Transcriptomic risk scores for attention deficit/hyperactivity disorder. Mol Psychiatry. 2023 Aug;28(8):3493-3502.

2. Demontis D, Walters GB, Athanasiadis G, Walters R, et al. Genome-wide analyses of ADHD identify 27 risk loci, refine the genetic architecture and implicate several cognitive domains. Nat Genet. 2023 Feb;55(2):198-208.

3. Rajagopal VM, Duan J, Vilar-Ribó L, Grove J, Zayats T, Ramos-Quiroga JA, Satterstrom FK, Artigas MS, Bybjerg-Grauholm J, Bækvad-Hansen M, Als TD, Rosengren A, Daly MJ, Neale BM, Nordentoft M, Werge T, Mors O, Hougaard DM, Mortensen PB, Ribasés M, Børglum AD, Demontis D. Differences in the genetic architecture of common and rare variants in childhood, persistent and late-diagnosed attention-deficit hyperactivity disorder. Nat Genet. 2022 Aug;54(8):1117-1124.

4: Soler Artigas M, Sánchez-Mora C, Rovira P, Vilar-Ribó L, Ramos-Quiroga JA, Ribasés M. Mendelian randomization analysis for attention deficit/hyperactivity disorder: studying a broad range of exposures and outcomes. Int J Epidemiol. 2023 Apr 19;52(2):386-402.

JOB DESCRIPTION
Education and qualifications:

- Degree in Biological, Health or Basic sciences (Biology, Genetics, Mathematics, etc).
- Master's Degree in Bioinformatics or Biosciences.
- Good academic qualifications (minimum degree record of 7).

Experience and knowledge:

Desired:

- Experience in Statistical Genetics, Biostatistics, Computational Biology, Bioinformatics or similar field.
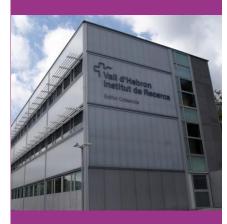- Programming skills (particularly R, Unix/ Linux)

Main responsibilities and duties:

The PhD Fellow will work under the supervision of Dr. Marta Ribasés at the Psychiatric Genetic Unit and Dr. Josep Antoni Ramos-Quiroga, head of the Group of Psychiatry, Mental Health and Addictions at the Vall d'Hebron Research Institute.

Responsibilities will include genetic association analyses of clinical features in ADHD and comorbid mental disorders, application of the novel methods described, manuscript writing, and oral presentations at lab meetings, consortium calls, and scientific conferences. The candidate will also engage in regular collaborative meetings with teams of scientists locally and internationally, including the Psychiatric Genomics Consortium. There will also be training opportunities for subject-specific and generic research skills, aiming to help the candidate to enhance his/her employability.

Labour conditions:

- Full-time position: 40h/week.
- Remuneration will depend on experience and skills. Salary ranges are consistent with our Collective Agreement pay scale
- Contract**:** *permanent linked to project*

What can we offer?

- Incorporation to Vall d'Hebron Research Institute (VHIR), a public sector institution that promotes and develops the biomedical research, innovation and teaching at Vall d'Hebron University Hospital (HUVH), the biggest hospital of Barcelona and the largest of Catalan Institute of Health (ICS).

- A scientific environment of excellence, highly dynamic, where high-end biomedical projects are continuously developed.

- Continuous learning and a wide range of responsibilities within a stimulating work environment.

- Individual training opportunities.

- Flexible working hours.

- 23 days of holidays + 9 personal days.

- Flexible Remuneration Programme (including dining checks, health insurance, transportation and more)

- Corporate Benefits: platform through which you can obtain significant discounts on travel, culture, technology, gastronomy, sports... among many others.

- Healthy Offering: choose from a variety of wellbeing focused activities to be the healthiest you.

How to apply:

Applicants should submit a full Curriculum Vitae and a cover letter with the reference "predoctoral position" to the following email addresses: marta.ribases@vhir.org, raquel.ibarz@vhir.org and seleccio@vhir.org.

Deadline to apply: 27.01.2024