IdiPAZ Instituto de Investigación Hospital Universitario La Paz
Hospital Universitario La Paz
Paseo de La Castellana, 261
Edificio Norte, 4ªPlanta
28046 - Madrid

INPhINIT "la Caixa" Fellowship Programme

POSITION

1. Project Title/ Job Position title:

Relevance of the factor H protein family in Complement-associated nephropathies.

2. Area of Knowledge:

Life Sciences

3. Group of disciplines:

Human Biology, Microbiology, Molecular Biology, Genetics, Cellular Biology, Genomics and Proteomics, Biochemistry

4. Research project/ Research Group description

Dysregulation of the Complement Alternative Pathway is a relevant pathogenic mechanism in the rare and severe kidney diseases atypical Haemolytic Uraemic Syndrome (aHUS) and C3 Glomerulopathies (C3G), and it likely contributes to the more prevalent IgA nephropathy (IgAN). Early identification of patients with genetic or acquired Complement defects has diagnostic and prognostic value, allowing implementation of successful therapeutic strategies.

The candidate will join IdiPAZ's research group on "Diagnosis and treatment of diseases associated with abnormalities of the Complement system", a national-wide reference group in the field. Our main objective is to identify and characterize disease-associated genetic variants and protein isoforms of the Complement regulator factor H (FH) and their homologous Factor H-Related Proteins (FHRs), collectively known as "Factor H protein family". We will perform genetic and protein studies in aHUS, C3G and IgAN patients to analyze whether disease-associated variants change protein levels, or whether they give rise to functional changes that modulate the Complement regulatory activity of FH. We will also develop a genetic test for the quick identification of risk variants and haplotypes. For these studies, we have plasma, serum and DNA samples from aHUS, C3G or IgAN patients recruited during the last 15 years, and from unrelated healthy controls. The experimental design includes: 1) Quantitative analysis of FH/FHRs variants by immunological techniques (Western-blot and E.L.I.S.A.). A quantitative SRM-Mass Spectrometry assay will also be done in selected samples. 2) Functional analysis of genetic variants and abnormal protein isoforms. Proteins will be purified from plasma samples by chromatographic techniques, and further characterized in functional Complement assays. 3) Development of a SNapShot assay for genotyping of disease-relevant haplotypes of the FH and FHRs genes.

5. Job position description

Role: The candidate will perform the following experimental tasks: 1) Isolation of plasma, serum and DNA from blood samples from patients and controls. 2) Western blot analysis of FH/FHRs to identify protein deficiencies and abnormal protein isoforms. 3) Quantitation of FH/FHRs by WB and ELISA. 4) Purification of genetic variants or abnormal proteins of pathological relevance from plasma samples. 5) Functional assays. 6) Genotyping of FH/FHRs genetic variants.

Responsibilities

Set up and perform experiments, maintain experimental resources (as cell lines, reagents, etc.) according to protocols, analyze & interpret results and contribute to the development of experimental strategies with accuracy and honesty.

Keep updated the laboratory notebook and properly store and manage the data produced during the project.

Collaborate with colleagues and participate in team activities (such as meetings, seminars, workshops, etc.) across the research group and wider scientific community while keeping up to date with current knowledge and recent advances.

Participate in knowledge exchange with several stakeholders, to promote the value of research in public health and to contribute to the dissemination of his/her research results in the principles of EU's Open Science policy.

Undertake any other duties of equivalent standing as assigned to him/her.

Skills

MSc Degree in Life Sciences: Biology, Medicine or Pharmacy (background in Immunology).

Quantitative WB analysis of plasma proteins, PCR and Sanger sequencing.

Experience in complement research, ELISA assays, chromatographic techniques for protein purification, and MLPA analysis, SPSS software are desirable.

Motivation, critical thinking and problem-solving oriented skills.

Good interpersonal skills, including team working.

Good communication skills, willingness to engage in public presentations and ability to transmit complex concepts in a clear way.

Good time and workload management skills, including both initiative and flexibility.

GROUP LEADER

1. **Title:** Dr.
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4. **Research project/ Research Group website (Url):**
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