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REF: PhD 14

Systems biology analysis of autoimmune diseases



TITLE: Postdoctoral Research Fellow
HOURS OF WORK: 37.5 hours per week (excluding lunch hours)
ANNUAL LEAVE: 24 days per annum plus statutory days
LOCATION: Villarroel 170, 08036 Barcelona
ACCOUNTABLE TO: Professor Pablo Villoslada. Neuroimmunology group.
CONTRACT: Up to 3 years, by IDIBAPS
SALARY: 38.000 € plus housing facilities



Closing date:
August, 31st 2010

APPLY

Job summary

1. A postdoctoral position is available in Professor Pablo Villoslada laboratory. The position involves working with a team of scientists studying the human immune system, complex diseases (autoimmune diseases including Multiple Sclerosis) and developing a systems biology drug discovery program for autoimmune diseases. The programme is a continuation of work recently published in Palacios et al. PLoS ONE 2007 Nov 21; 2(11):e1222. and Martinez-Forero et al PLoS One. 2010 Jun 3; 5(6):e10823, which has provided a new paradigm for identifying new therapeutic targets for complex diseases based in network theory and for modeling signaling pathways networks.

The purpose of this programme of work will be to study biological networks (gene expression, phosphoprotein, metabolites networks) controlling activation of the immune system in order to find differences at the network level and in the dynamics of immune cell activation in autoimmune diseases. We combine experimental data with computational modeling in order to understand autoimmune diseases and identifying new therapeutic targets.

2. The project is likely to involve some or all of the following techniques:

- Computational / Mathematical modelling: differential equations, boolean networks, bayesian networks, partial least squares models, etc.
- Bioinformatic analysis: cluster, neuronal networks
- Molecular biology and high through-put technologies
- animal and in vitro models of autoimmune diseases

Main Duties

To conduct research investigating autoimmune diseases using systems biology approach. This include performing high through-put assays from patients samples and developing computational models of signaling pathways of the immune system.

Duties and Responsibilities

- To contribute to the design and planning of experiments in relation to this project
- To develop a thorough understanding of the research field and be involved in the intellectual decision making process required for successful completion of the project
- To set up and run experiments in consultation with the Principal Investigator
- To record, analyse and write up the results of experiments and ensure that laboratory notebooks are kept fully up to date as a formal record of the research
- To prepare and present findings of research to the Principal Investigator and other members of the centre
- To prepare progress reports on research
- The post holder may be required to perform some limited teaching and/or supervision of other members of staff and/or students, under the guidance of the Principal Investigator
- Responsible for ensuring that designated equipment is safe and maintained in good working order
- As duties and responsibilities change, the job description will be reviewed and amended in consultation with the post holder
- The post holder will carry out any other duties that are within the scope, spirit and purpose of the job, as requested by the Principal Investigator

Person specification

Knowledge and Qualifications

Essential:

- Undergraduate degree in a life sciences (Bioinformatics), physics, chemistry or mathematics
- PhD in an appropriate fields related with systems biology: bioinformatics, genomics, biochemistry, physics, mathematics

Desirable:

- Basic knowledge of biochemistry, mathematics, physics (non-linear dynamics, control theory), computational skills: Matlab, C+, boolean networks, bayesian networks. Different balances between experimental and computational skills can be considered.
- Publications in high impact factor peer reviewed journals

Skills

Essential:

- Ability to develop ideas logically and design experiments to test hypotheses
- Ability to modify and apply new methods to advance a project
- Ability to analyse and write up data for presentations and publications
- Ability to present complex information effectively to a range of audiences
- Effective written and verbal communication skills
- Ability to meet deadlines
- Record of delivering high quality research

Desirable:

- Research skills in high through-put analysis (e.g. whole genome sequencing, proteomics, metabolomics), bioinformatics, computational modeling
- Expertise in systems biology, computational biology
- Ability to direct junior members of the laboratory in simple laboratory procedures

Experience

Essential:

Experience of working in a research environment

Desirable:

Experience of multi-disciplinary working

Personal Qualities

Essential:

- Commitment to high quality research
- Ability to work effectively as part of the team
- Ability to work independently and to use own initiative when required

APPLY

IDI BAPS

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