Job advertisement

26 September 2016

Open position for a Master thesis

<table>
<thead>
<tr>
<th>Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title: Analysis of neuronal maturation in induced pluripotent stem cell (iPSC) model for attention-deficit hyperactivity disorder (ADHD)</td>
</tr>
<tr>
<td>Five keywords: Attention-deficit hyperactivity disorder (ADHD); induced pluripotent stem cells (iPSC), neuronal maturation; differentiation</td>
</tr>
<tr>
<td>Short description: Attention-deficit hyperactivity disorder (ADHD), a neurodevelopmental disorder, is one of the most common psychiatric and behavioral disorders in children and adolescents and often persists into adulthood. A delay cerebral cortex maturation (thickness and surface area), in particularly frontal regions important for control of cognitive processes, were reported in children and adolescents with ADHD, linked also to those persisting into adulthood. Moreover, ADHD demonstrate progressive ventral and dorsal striatal surface reduction, implicated in reward processing or executive function and motor planning, respectively. Both neuroimaging studies as well as human peripheral samples are highly valuable studying this neurodevelopmental disorders. Nevertheless, they are not able to elucidate the molecular mechanism underlying the possible etiopathology of ADHD. Furthermore, since biopsy or post mortem set many limitations, as well as the valuable animal models having some pitfalls, points to the need of a model originating from ADHD individuals maintaining their genetic information. Therefore, induced pluripotent stem cells (iPSC) generated from individual patients (skin biopsy or hair follicles) opens a window to study the processes as maturation and connectivity alterations in an in vitro manner. The aim of this study is to generate iPSC from ADHD and control probands non-invasively (hair follicles) in order to compare differentiation and maturation processes hypothesized to be altered in ADHD and to find their molecular mechanism. The successful candidate will learn to use neuronal cell culture methodologies including the innovative iPSC technique. The candidate will have the chance to learn immunostaining, life-cell imaging, multi-electrode array electrophysiology, molecular genetics and biochemical techniques and to interpret scientifically the results obtained.</td>
</tr>
</tbody>
</table>

Links (e.g. to the website of the group):

Necessary skills:
The candidate should have a bachelor degree in Biology/Neuroscience/Medicine/Pharmacology and some basic background in cell culture, molecular genetics, and biochemistry methods.
Experience with office-software and data analysis software will be of benefit.

Financial support for the project available?
No- it is a master thesis

Beginning of the project possible from: At the earliest 01-11-2016 but may start also later.

**Contact:**

<table>
<thead>
<tr>
<th>Name, first name:</th>
<th>Prof. Dr Edna Grünblatt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department, clinic:</td>
<td>Department of Child and Adolescent Psychiatry and</td>
</tr>
<tr>
<td>Address:</td>
<td>Psychotherpay, Psychiatric Hospital, University Zurich</td>
</tr>
<tr>
<td>Phone:</td>
<td>Wagistrasse 12, Schlieren</td>
</tr>
<tr>
<td>E-mail:</td>
<td>043 556 4039 <a href="mailto:edna.gruenblatt@kjpd.uzh.ch">edna.gruenblatt@kjpd.uzh.ch</a></td>
</tr>
</tbody>
</table>

**ZIHP integration**

**Topic**
- [ ] A: Cardiovascular
- [ ] B: Oxygen and Movement
- [ ] C: "Milieu intérieur"/Homeostasis
- [x] D: Central Regulation and Coordination

**Methods**
- [x] Analytics (biochemical, molecular and cell biological methods)
- [ ] Imaging
- [ ] Systemic measurements
- [ ] Telephysiology
- [ ] Models and Simulations
- [x] Others, specify: Establishing and studying neuronal human model (iPSC) of ADHD