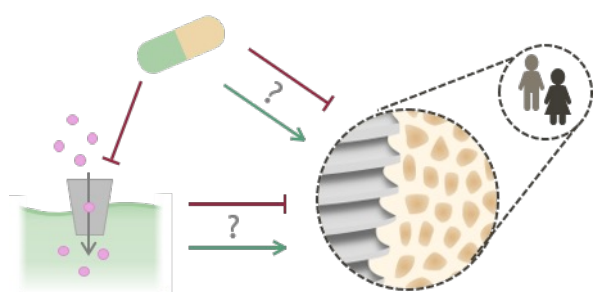


OPEN POSITION – MASTER THESIS IN THE ORAL IMPLANTOLOGY GROUP, UNIVERSITY CENTER FOR DENTAL MEDICINE BASEL UZB

Topic: In vitro investigation of sex-based correlation of antidepressant use and osteogenic potential

Duration: 6 months or more

Starting date: Flexible, earliest starting date is September 2025



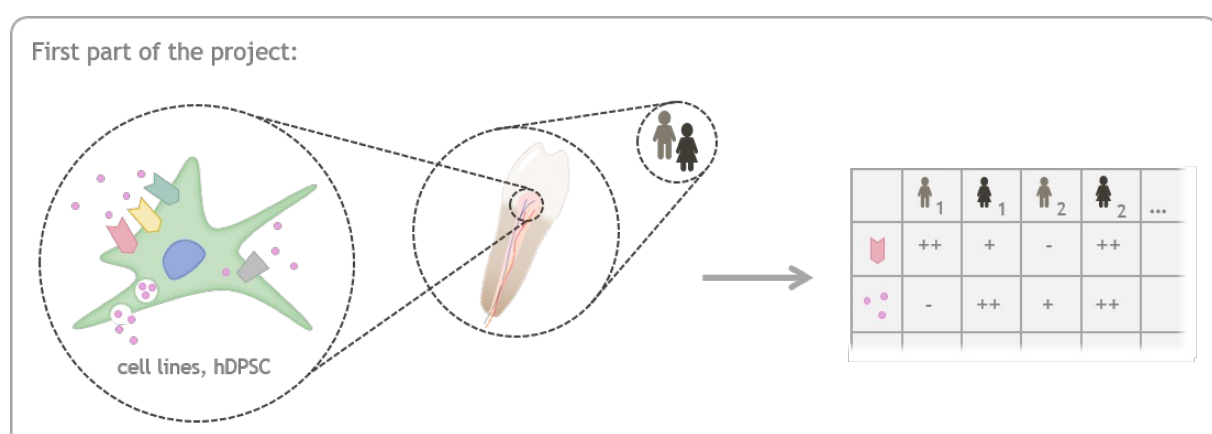
General mission of the Lab

In this lab, we develop predictive in vitro models to gain fundamental knowledge on cell-material interactions, and cell fate decision in response to environmental cues. We use a cell-molecular toolkit of biomaterials and different cell types to engineer 3-dimensional systems. Specifically, we develop fibrous scaffolds based on electrospinning, investigate osteogenesis of different progenitor cells under various outer stimuli, and aim to gain a thorough understanding of bone remodeling and soft tissue adhesion in response to dental implants. We strive to find solutions for clinical challenges in oral implantology with the goal to ultimately improve patient satisfaction and provide long-term solutions. The Oral Implantology Lab is based at the University Center for Dental Medicine Basel, UZB, next to the Rosenthal Campus. Our department comprises three research focus areas, Oral Microbiology, Biomaterials & Technology, and Oral Implantology, that work in tight collaboration and with strong links to the dental clinics.

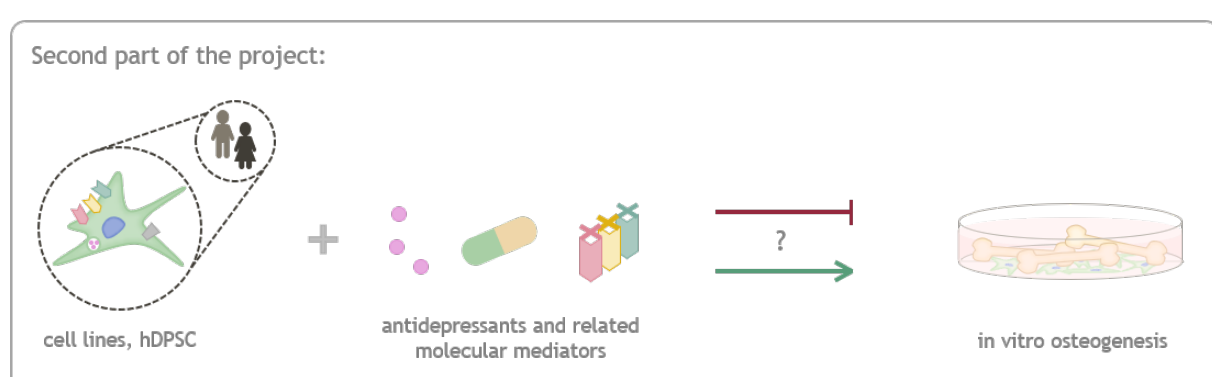
A bit more information on the project

There is an ongoing debate on certain medication correlating with increased fracture risk and dental implant failure rates. Specifically, for antidepressants, in vivo and in vitro studies have yielded contradicting results when trying to elucidate the mechanism of action at the base of the correlation. Integrating findings from independent studies is difficult as a variety of different models, cell sources and assays have been performed. Sex is one of the particular inconsistent parameters that is often overlooked, especially for in vitro-based studies.

In this project, we aim to complement the existing but confusing body of knowledge on the topic with a holistic, unbiased in vitro approach. In the first phase, we will characterize both human cell lines and primary cells isolated from dental pulp (human dental pulp stem cells; hDPSC) for their expression of receptors and mediators claimed to be involved in antidepressant-related pathways.



In a second step, we will functionally assess how manipulating any identified mediators affects the osteogenic potential of these cells. As we will be testing cells from several donors, we will furthermore investigate donor-to-donor variability and observe if any sex-specific trends emerge.



What we expect from you

We are looking for master students interested in supporting this project for a duration of 6 months or more. The precise content of the thesis will depend on how advanced the project will be at the time of starting. Moreover, we have some freedom to tune the content to your background and interests. Previous experience in cell culture, wet lab techniques, microscopy or literature research would be appreciated but is not strictly required if you are dedicated and eager to learn fast. :)

What we offer you

- We will teach you how to work with different cell lines and primary human cells in a well-equipped state-of-the-art BSL 2 cell culture laboratory
- We will teach you or help you complement existing experience with standard laboratory techniques, such as different types of stainings, different types of microscopy, RT-qPCR and more
- We will teach you or help you complement existing experience with scientific literature search, scientific writing, presenting your work in oral presentations and posters
- You will be fully integrated in the team. You will be invited to present during our weekly group meetings and monthly department meetings to profit from feedback from an interdisciplinary audience
- Naturally, you will be invited to partake in any social activities such as summer barbecues, Christmas events and more
- In addition to the main supervision by the group head (Prof. Dr Géraldine Guex), you will be directly supervised by a PostDoc experienced in supervising master students

Have we peaked your interest? Don't hesitate to contact us for a chat or visit of the lab.

We look forward to hearing from you.

Contact information

Please send your application (CV, max. 2 pages and motivation letter telling us more about yourself and why you'd like to join, max 0.5 page) or questions you may have via email to Dr Lisa Krattiger: lisa.krattiger@unibas.ch

<https://www.uzb.ch/fuer-forscher-innen/forschungsschwerpunkte>
<https://biomedizin.unibas.ch/en/research/research-groups/guex-lab/>

