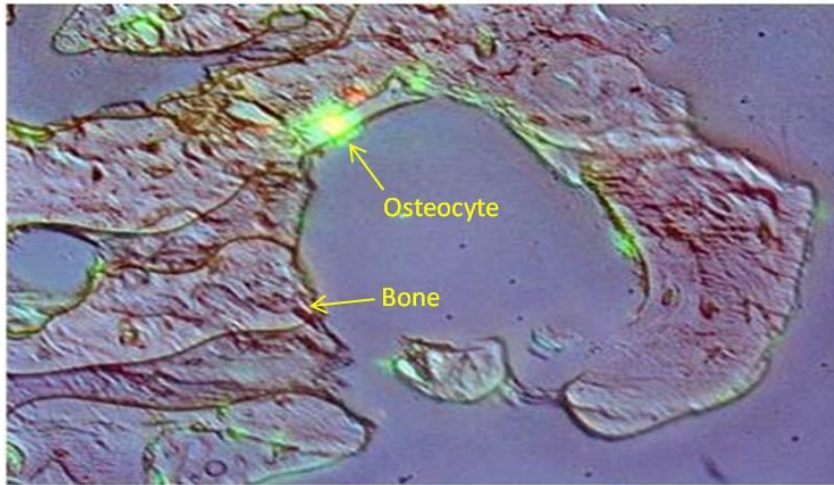
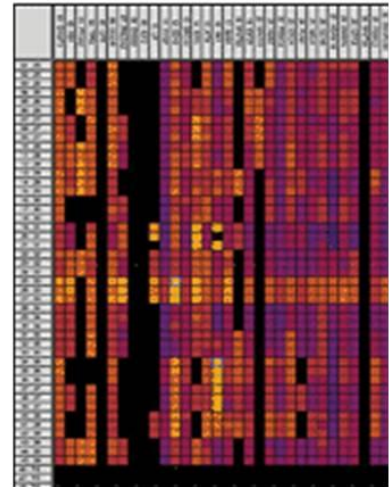


STUDENT RESEARCH PROJECT



Osteocyte in a cryosection of bone



Gene expression array

Gene expression in single osteocytes isolated by laser capture microdissection

Master Thesis / Semester Project / Bachelor Project

Bone cells known as osteocytes have been implicated in a variety of bone diseases including osteoporosis. It is widely hypothesized that these cells transduce mechanical and chemical signals which in turn communicate with cells which resorb old bone and build new bone. Owing to the fact that osteocytes are deeply embedded in hard mineralized tissue they are less accessible compared to other cells types. As a result knowledge of the mechanisms involved in osteocyte function remains limited. Identification and quantification of the genes expressed by osteocytes could therefore lead to the development of treatments for bone diseases such as osteoporosis.

With this in mind we propose a project to develop a robust method for isolating individual osteocytes and quantifying their gene expression. To achieve this, the student will have the latest technology at their disposal. This includes the P.A.L.M laser-capture-microdissection microscope and the Fluidigm® single-cell gene detection system.

This project is part of an ambitious project which if successful could revolutionize the way biological systems are analyzed, ultimately enabling the development of new treatments, not only for bone disease, but also for other diseases such as cancer. Furthermore this project will allow a student to gain valuable experience in the new emerging field of single cell analysis.

A basic knowledge of cell biology and gene expression is required.

Biomedical engineers/Biologists/Chemists/Pharmacists/Chemical Engineers are encouraged to apply.

100% experimental work.

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