

# Master thesis call

For a joint project of the groups of [Nina Babel](#) and [Sven Geißler](#) at the [Berlin-Brandenburg Center for Regenerative Therapies](#) we are seeking a student with biology, biochemistry, life science, or related background to perform her/his master thesis as part of the research project: **“Bone metabolism and vascular calcification: understanding the immunological regulatory network of the bi-directional interplay”**

## Background:

Atherosclerotic cardiovascular diseases are the leading cause of death worldwide. Late-stage atherosclerosis is associated with calcifications within the vessel wall that resemble bone formation. Furthermore, clinical studies showed that an impaired bone metabolism, as in osteoporosis, increases the risk for vascular calcification, suggesting a direct interplay. Contrasting hypothesis on the positive and negative effects of osteoporotic medication like bisphosphonates, vitamin D and calcium supplementation, on vascular calcification require further investigation. Using a human *in vitro* model for vascular calcification to study the processes involved could extend the current understanding.

## Experimental approaches:

- Cultivation and characterisation of primary vascular smooth muscle cells (SMC) in different culture media
- Osteogenic differentiation of SMC under the influence of osteoporotic medication
- Assessment of the osteogenic differentiation potential by measurement of alkaline phosphatase activity, phosphate assay, alizarin red staining and gene expression analysis

## Requirements:

Applicants should have a strong interest to independently conduct a research project, including practical work and literature research. In addition to a thorough introduction into the outlined methods above, the project offers the opportunity to learn several techniques related to the cultivation and characterisation of primary human cells, like flow cytometry, immunofluorescence staining and quantitative real time PCR. Previous experience in general laboratory work and cell culture techniques would be beneficial. For those interested, who have only limited laboratory experience, an internship period before the Master thesis work is negotiable, and would depend on the experience level of the candidate. Applicants should be fluent in English.

We are looking forward to the support of a dedicated thinker for our team!

## Contact for more information and applications:

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