

## 4 years PhD student position:

### Nanoparticle-Aided Cartilage Regeneration

Department of Radiology, Leiden University Medical Center (LUMC)

**Note: position is only open to CSC applicants**

#### Project

The research group **Nanomedicine and Molecular Imaging** at the Radiology Department of Leiden University Medical Center investigates novel nanotechnologies for molecular imaging in immunology and medicine for *in vitro* and *in vivo* applications. In this context we have one PhD position available for an outstanding young scientist who has an interest to design and develop novel nano-therapeutics for regenerative medicine.

Mobility is very important for human well-being, but is seriously impaired by chronic low back pain and osteoarthritis in many people worldwide. This is due to degeneration of the cartilaginous tissue of the intervertebral disc and joint. To develop a treatment for these diseases, this project aims to combine novel highly advanced drug delivery carriers with dedicated targeting tools, state of the art imaging techniques and expertise in stem cell and joint biology. Regeneration of diseased tissues will be achieved by loading biologically active agents in state-of-the-art nanocarriers. The biologically active agents will stimulate the body's own capacity to regenerate by attracting local stem cells or inhibit degeneration. Targeting will be achieved by A) injection with synthetic or natural hydrogels loaded with the nanocarriers or B) coupling diseased tissue-specific antibodies and specific hyaluronic acid moieties to the nanocarriers. Delivery and retention will be monitored by advanced *in vivo* and molecular imaging techniques to visualize the distribution of the delivered compounds at the tissue level, as well as to detect biological markers of regeneration.

The major objectives are: the application of innovative imaging tools and development of regenerative strategies that aim to fully exploit the body's own regenerative capacities by exclusively targeting the diseased tissues with controlled doses of bio-actives, circumventing the disadvantages of the current shotgun approaches towards regenerative medicine.

#### Requirements

Candidates should have:

- a Master of Science degree on Biomedical sciences or comparable study;
- experience with culturing mammalian cells and molecular biological techniques;
- excellent experimental skills in general;
- knowledge or affinity to small animal handling, molecular imaging, and nano-delivery system is highly desirable;
- the ability to work both as part of a team and independently;
- fluency in English, both written and orally;
- interest in bio-medical research.

#### Organisation

**LUMC**

At the Leiden University Medical Centre (LUMC), we are continually seeking to improve the quality of healthcare. The LUMC aims for excellence in patient care, research, teaching, training and continuing education. Our key strength is medical life-sciences and clinical practice, with an impressive infrastructure comprising state-of-the-art technology platforms and (translational) research facilities. The LUMC is therefore uniquely positioned in the emerging Dutch healthcare infrastructure to play a leading role in the new healthcare paradigm of prediction, prevention and personalised medicine.

### **Department**

The group of Nanomedicine and Molecular Imaging at the Radiology Department is a young and international research team of about 12 people. Major focus of the research interest is to investigate novel nanotechnologies for molecular imaging in immunology and medicine for *in vitro* and *in vivo* applications. The group has excellent laboratory facilities on nanomedicine and molecular imaging. The group has a track record in the development of targeted nanoparticles. The described research will be performed at the Radiotherapy Department of the LUMC within close collaboration between our research group and the groups of orthopaedics in Erasmus University and Utrecht University Medical centers.

### **More information**

This position is ONLY open to the China Scholarship Council– Leiden University Joint Scholarship Programme candidates. Once the candidate is accepted after our research group selection procedure, an acceptance letter will be provided for the candidate's application of scholarship to CSC (application period March, 2018). Please note that your admission to the Graduate School is conditional upon your obtainment of funding through the China Scholarship Council – Leiden University Joint Scholarship Programme.

If you have any questions on the research position, please contact Dr. Y. Li, Department of Radiology, telephone +31 (0)71 526 2549, email [y.li.radi@lumc.nl](mailto:y.li.radi@lumc.nl).

For questions regarding the CSC scholarship, please visit the CSC website <http://www.csc.edu.cn>.

For questions regarding the Leiden University and studying abroad, please visit the university website <https://www.universiteitleiden.nl>.

### **Apply**

If you are interested in this position and you satisfy the requirements, please send in your motivation letter and CV before February 1, 2018 to [y.li.radi@lumc.nl](mailto:y.li.radi@lumc.nl). An online interview and references will be requested following the application assessment.

You may rest assured that your details will be treated with strict confidentiality.