<u>2 PhD positions</u> available in the Regenerative Medicine Technologies (RMT) Lab

- **Bioengineering, Vascular Biology and Aging**
- **Muscle Biofabrication**

Research Environment

The RMT Lab is part of the Laboratories for Translational Research of Ente Ospedaliero Cantonale and Università della Svizzera italiana located in Bellinzona (Switzerland). Strategic research areas of the RMT Lab are: in vitro disease modeling through biofabrication (e.g. age-related diseases, cancer metastases, musculo-skeletal diseases); design of novel technologies for drug screening; personalized medicine applications using human tissue biopsies. To promote the advancement of these research areas, the RMT Lab combines microfluidics and microphysiological systems, 3D (bio)printing and computational simulations. The lab has recently granted funding from two agencies to support two of its strategic areas:

1) The Swiss State Secretariat for Education, Research and Innovation supported an awarded ERC StG transferred to Switzerland. The 5 years project will deal with the identification of the biological mechanisms driving vascular aging through a combination of microphysiological systems, omic analyses and machine learning-based methods. More into detail, the project involves the biofabrication of 3D microvascular networks, their integration with high-throughput culture systems and their analysis through sequencing techniques and high-content screening. The lab has access to cutting-edge facilities (e.g. bulk and single-cell RNAseq; mass spectrometry; confocal, multi-photon and electron microscopy) which are shared with the Institute for Research in Biomedicine and the Institute of Oncology Research within a dynamic, multidisciplinary and collaborative environment. A dedicated high-content imaging system is available
2) The Swiss National Science Foundation supported a Sinergia grant which is focused on the design of a novel biofabrication strategy to develop functional, innervated human muscle tissues through a combination of microphysiological systems, volumetric bioprinting (i.e. xolography) and machine-learning techniques. The lab is equipped with all the necessary microfabrication and biofabrication tools that are required to complete the project including high resolution 3D printers, volumetric bioprinter and laser cutter. A dedicated high-content imaging system as well as shared analytical tools (e.g. microscopy facility, histology lab) to biologically validate the biofabricated tissues are available

Qualifications of the candidates and how to apply

We are looking for **two PhD students** to join our interdisciplinary research team.

<u>What we would like from you (both candidates)</u>:

- **Self-motivation and exceptional commitment to experimental goals and deadlines**
- Strong organizational skills and ability to work independently as well as in a team
- Critical data analysis and troubleshooting
- Effectively communicate experimental data, maintain records and write manuscripts
- Creative thinking

<u>Specific requirements for **PhD position #1 (Vascular biology and aging)**</u>

- Background in molecular and cell biology, priority given to **vascular biology**. Applications from other life science fields including Bioengineering are welcome
- Experience with (or strong commitment to learn): cell culture (preferred if 3D cultures with hydrogels and endothelial cells), imaging (confocal microscopy, preferably with 3D cultures and using high-content screening systems), standard biological techniques (qPCR, western blot, elisa, immunofluorescence), design and microfabrication of microphysiological systems

- Candidates are encouraged to send CV, publication list, cover letter including research interests and career goals (max 1 page), 2 references (reference letters are welcome but not required at this stage)
- Contact: vascularaging.eoc@gmail.com (please use the following subject: **PhD-Aging**)

Specific requirements for **PhD position #2 (Muscle biofabrication)**

- Background in molecular and cell biology, priority given to **muscle biology**. Applications from other life science fields including Bioengineering are welcome
- Experience with (or strong commitment to learn): cell culture (preferred if 3D cultures with hydrogels and skeletal muscle cells), imaging (confocal microscopy, preferably with 3D cultures), standard biological techniques (qPCR, western blot, elisa, immunofluorescence, histology), design and microfabrication of microphysiological systems and novel technologies including 3D (bio)-printing
- Candidates are encouraged to send CV, publication list, cover letter including research interests and career goals (max 1 page), 2 references (reference letters are welcome but not required at this stage)
- Contact: rmtlab@eoc.ch (please use the following subject: **PhD-Muscle**)