MSc Biomedical Engineering

ETH zürich

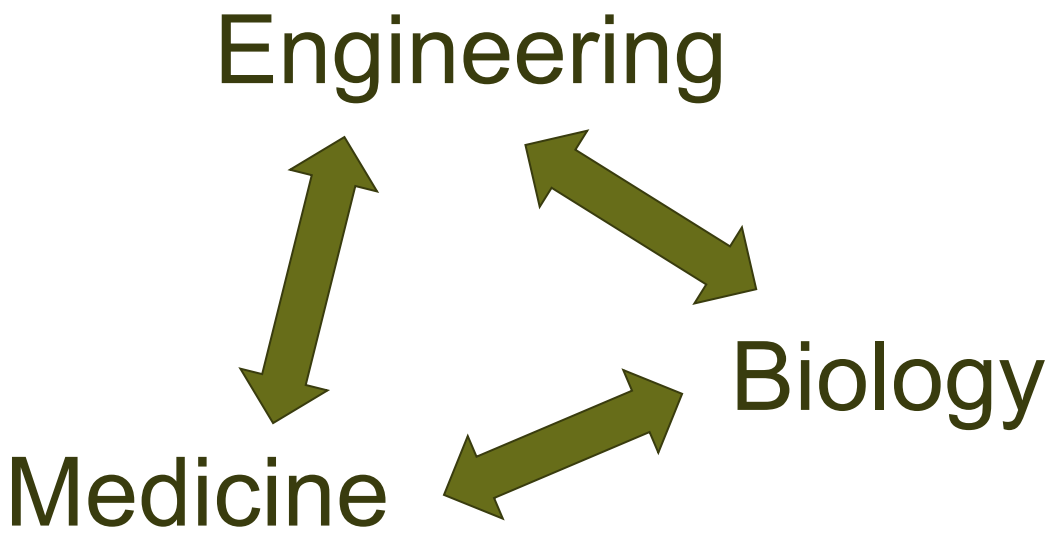
BIOMEDICAL ENGINEERING

MSc Biomedical Engineering

- Coordinator

Christian Frei

MSc BME: Research and Education at the Interface of Engineering Sciences, Medicine and Biology



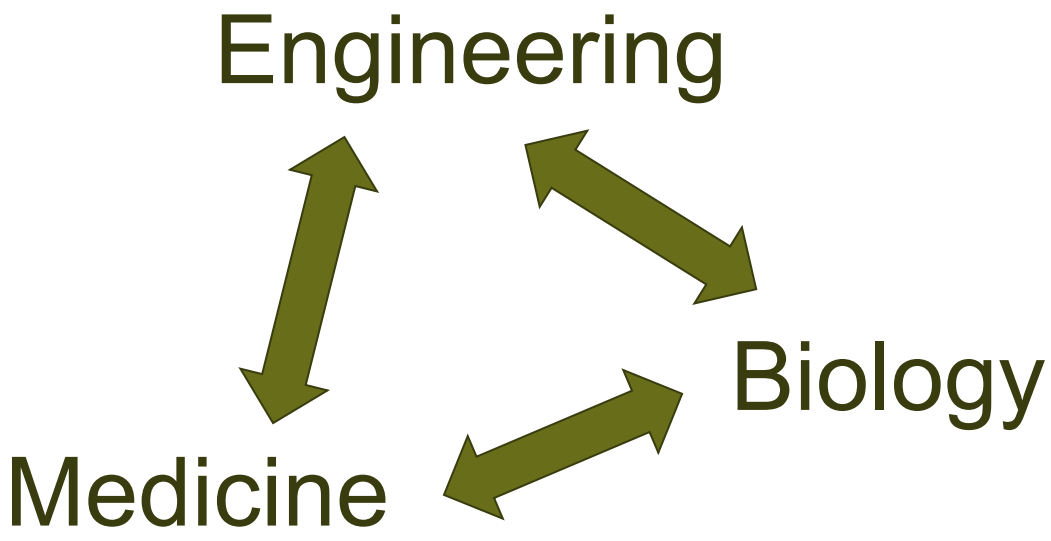
Five tracks:

- Bioelectronics
- Bioimaging
- Biomechanics
- Medical Physics
- Mol. Bioengineering

Four departments:

- D-ITET (leading house)
- D-HEST
- D-MAVT
- D-PHYS

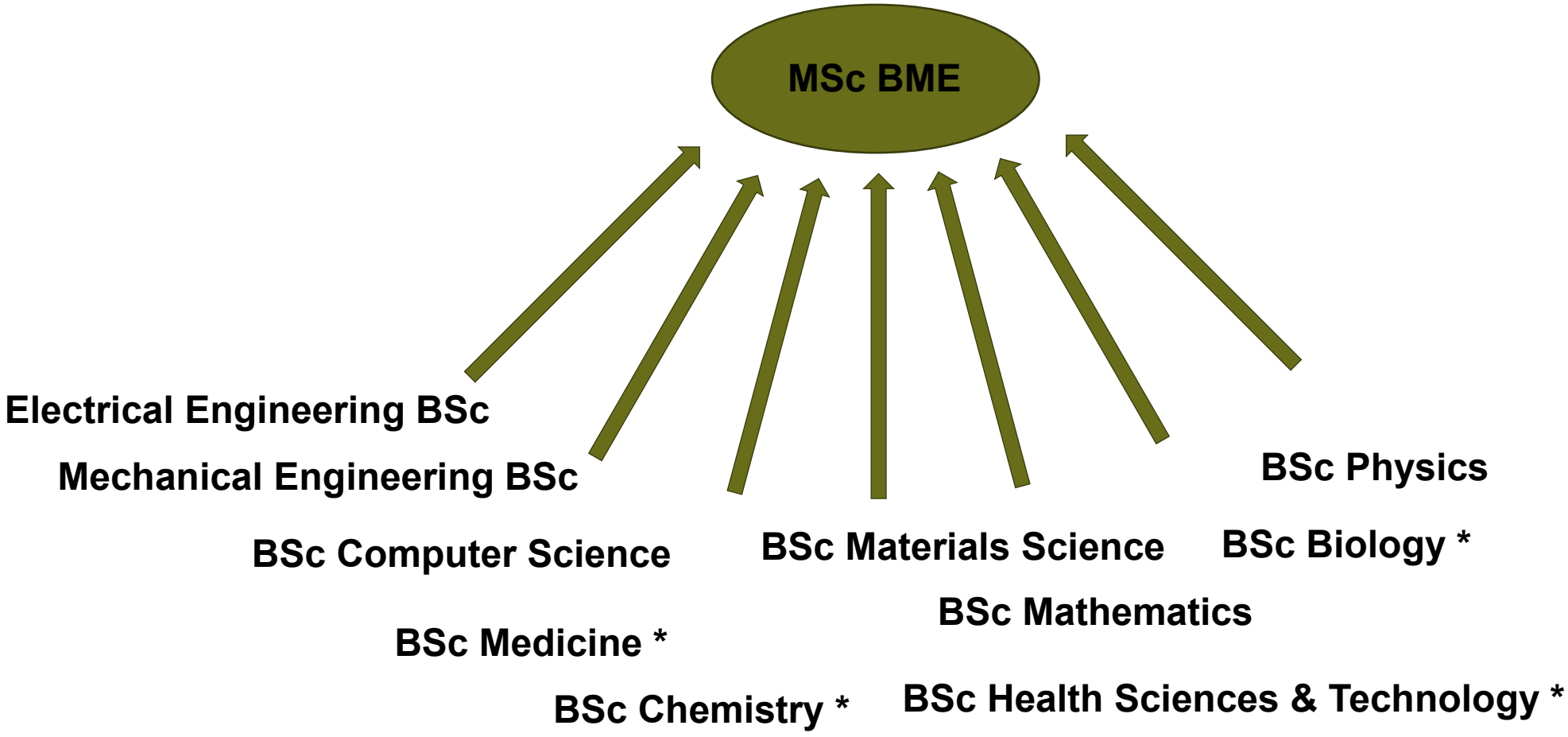
MSc BME: Research and Education at the Interface of Engineering Sciences, Medicine and Biology



International program:

- Ø 2013-2020: 42 new students/year
- Ø 2013-2020: 50.7% CH-Bachelors

MSc BME: Qualifying BSc Degrees



***: does not qualify for all tracks**

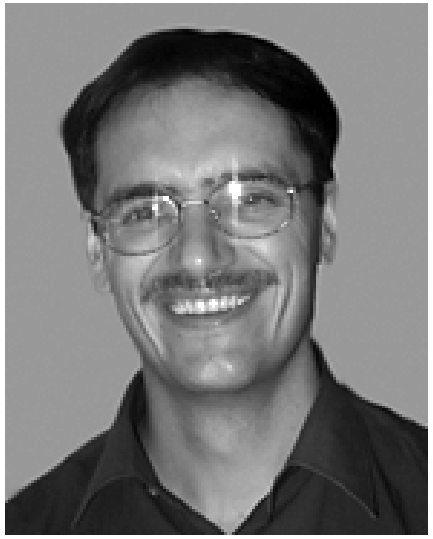
MSc Biomedical Engineering is a 120 CP Master

- **Track Courses** **min. 52 credits**
  - Core courses of specialization (min. 12 cp)
  - Elective courses of specialization (-- cp)
  - Biology courses (-- cp)
- **Semester Project** **12 credits**
- **Additional Research Projects and/or Track Courses** **min. 24 credits**
  - Semester project (min. 12 cp)
  - Group- and Research projects (up to 24 cp)
  - Internship in industry (12 cp)
- **Science in Perspective (D-GESS)** **min. 2 credits**
- **Master Thesis** **30 credits**

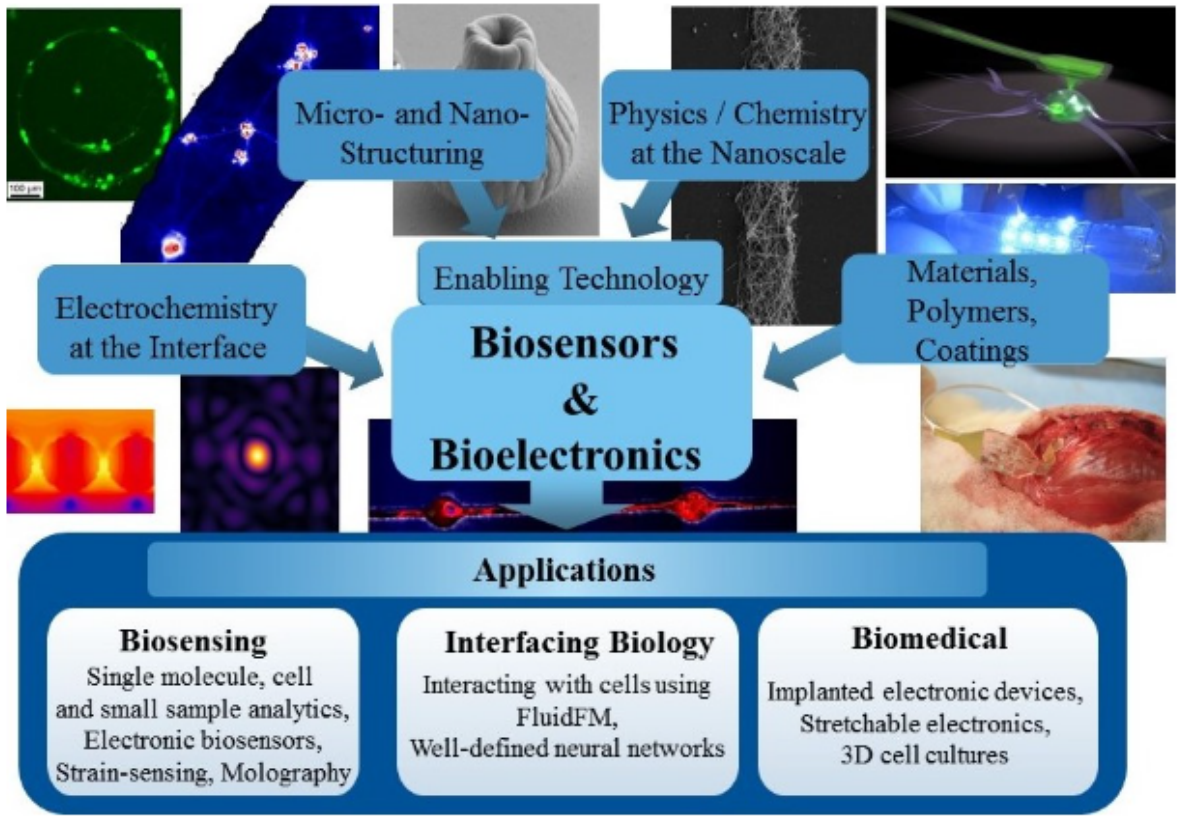
Track Bioelectronics

- Track advisor

Prof. Janos Vörös



We conduct interdisciplinary research at the interface between engineering, nanotechnology, materials science, medicine, and biology. We are interested in answering basic research questions that are related to molecular and cellular processes at electrified interfaces and to **neural networks** →.
We apply our knowledge for developing new nanoscale tools (e.g. the **FluidFM**) and methods for **biosensing, diagnostics** →, and **interfacing biology** →.
We also develop new **biomedical devices** →using stretchable electronics.

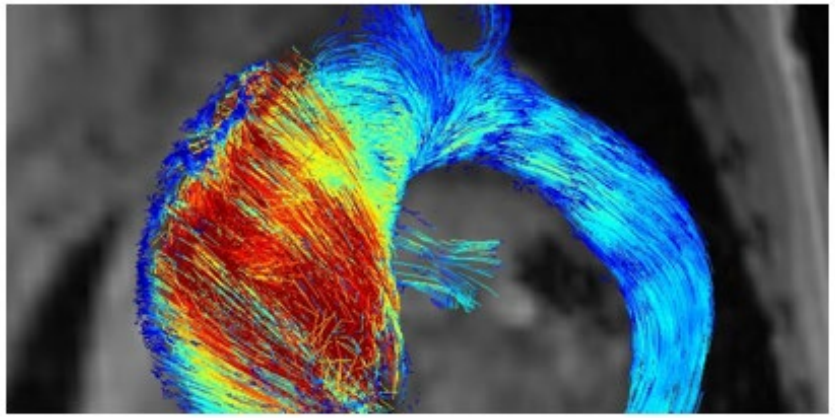


Track Bioimaging

- Track advisor

Prof. Klaas Prüssmann

Blood flow in the aorta



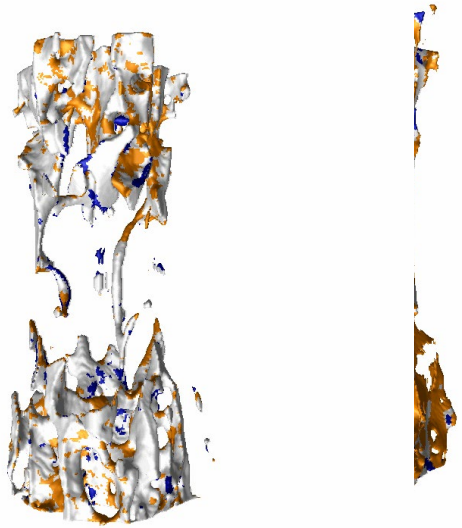
MRI technology

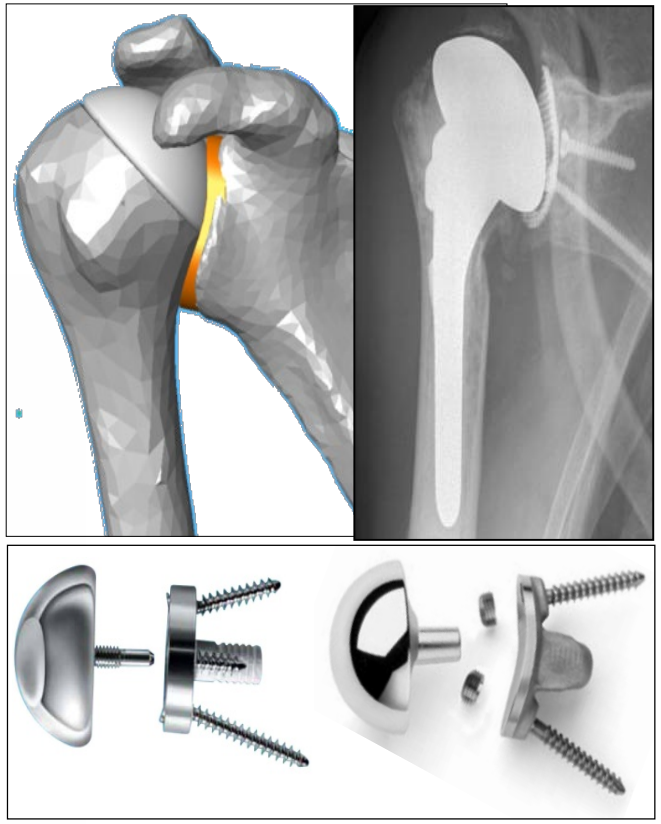
Connectivity in the brain

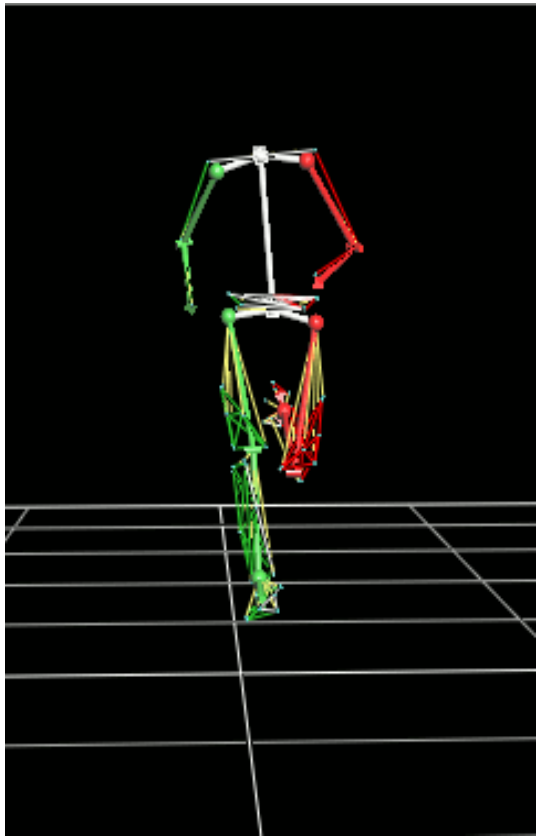
Track Biomechanics

- Track advisor

Prof. Ralph Müller







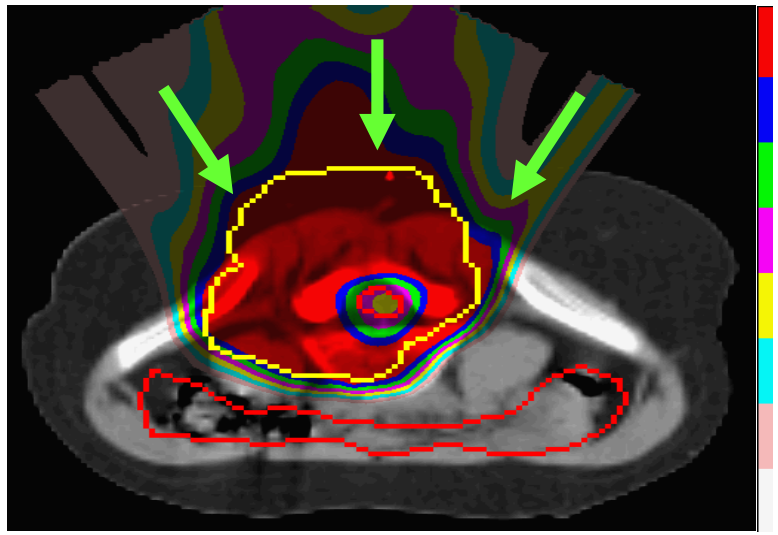
Track Medical Physics

- Track advisors

Prof. Tony Lomax

Prof. Marco Stampanoni

Paul Scherrer Institute, Villigen



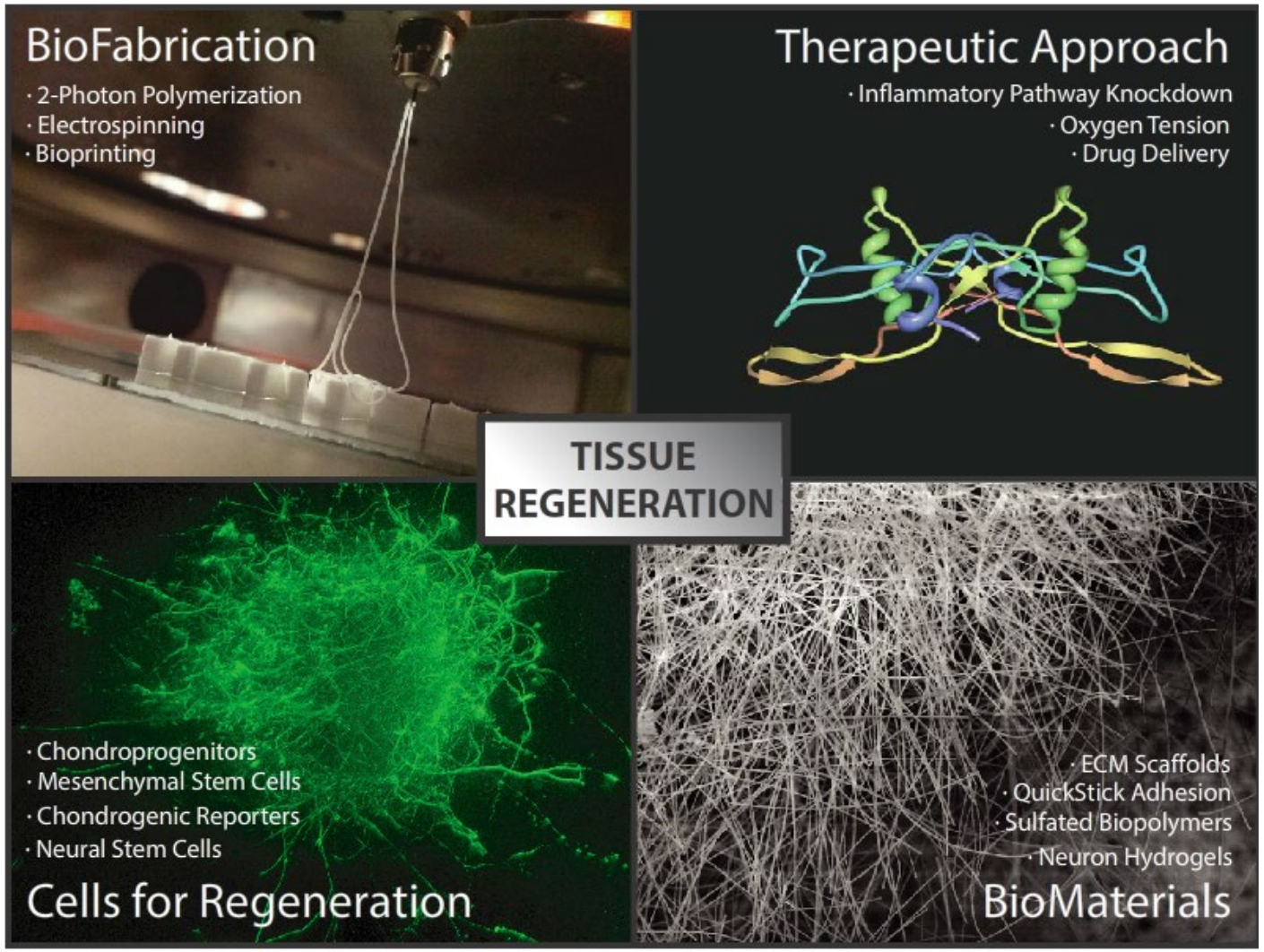
The MSc runs in parallel with the MAS (Master of advanced studies) in Medical Physics

Fachanerkennung *Schweizerische Gesellschaft für Strahlenbiologie und Medizinische Physik* (SGSMP)

Track Molecular Bioengineering

- Track advisor

Prof. Marcy Zenobi



How to enter our program

- Application through the Rectorate (Admission's office)
- November 15 - December 15, or March 1 - March 31
- Start of the MSc: Autumn semester

- Documents required:
- Bachelor degree (the same rules apply as in your consecutive BSc)
- Transcripts (Pdf of «Leistungsübersicht» from mystudies)
- Motivation letter, CV, GRE (Graduate Record Examinations; suggested) and two letters of reference (ETH/EPFL-Bachelors are exempt)
- Holders of a Swiss matriculation certificate (Matura) and/or an ETH Bachelor: No English language certificate required

Qualifying Bachelor degrees

Note: minimal requirements in mathematics/physics

a. For admission to the tracks “Bioelectronics” and “Bioimaging”:

- Electrical Engineering
- Mechanical Engineering
- Physics
- Material Science
- Computer Science
- Mathematics
- Chemical Engineering
- Biotechnology
- Computational Science and Engineering
- Biomedical Engineering

min. 30 cp

b. For admission to the tracks “Biomechanics”:
All disciplines listed in Subpara. a and:

- Health Sciences and Technology
- Human Movement Sciences
- Life Sciences and Technology

min. 22 cp

c. For admission to the tracks “Mol. Bioengineering”:
All disciplines listed in Subpara. a and:

- Biology
- Chemistry
- Health Sciences and Technology
- Human Movement Sciences
- Life Sciences and Technology
- Medicine

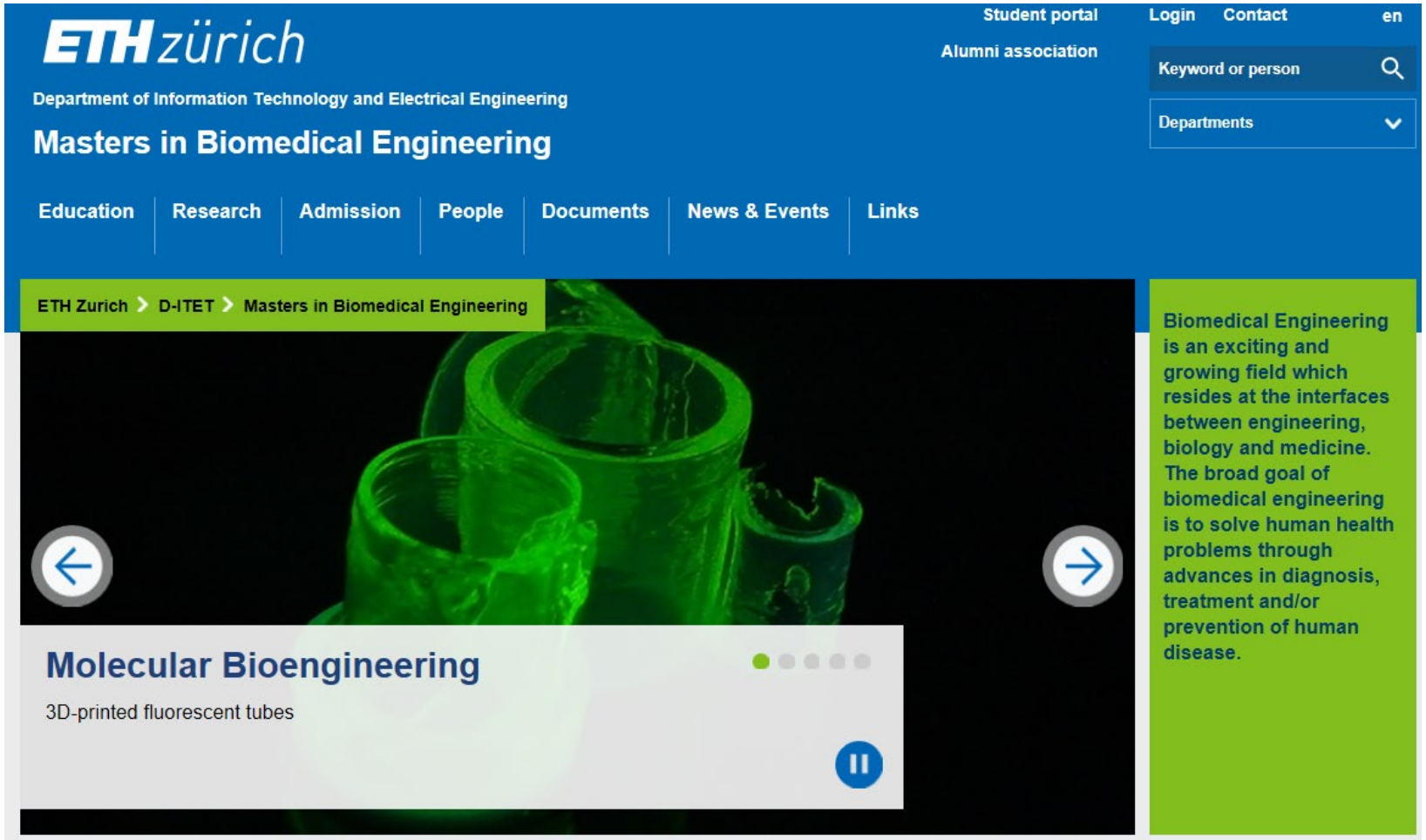
min. 10 cp

d. For admission to the tracks “Medical Physics”:
All disciplines listed in Subpara. a and:

- Biology
- Chemistry
- Health Sciences and Technology
- Life Sciences and Technology
- Medicine

min. 22 cp

www.master-biomed.ethz.ch



BEEZ student's association