

AUGMENTING CARDIAC FUNCTION WITH DEVICE-BASED APPROACHES

Lecture by *Ellen Roche*

Massachusetts Institute of Technology (MIT)

BIOSKETCH

Ellen Roche is currently an **Associate Professor** at the Institute for Medical Engineering and Science and the Department of Mechanical Engineering at the **Massachusetts Institute of Technology**. She directs the Therapeutic Technology Design and Development Lab. Her research focuses on applying innovative technologies to the development of cardiac devices. She holds 5 issued patents, with ten pending and is the authors of over 40 conference/journal papers and she is the recipient of multiple awards, among which the Fulbright International Science and Technology Award and a Charles H. Hood Award for Excellence in Child Health Research.

ABSTRACT

Future implantable cardiovascular devices should be a multi-targeted, synergistic combination of (i) **structural repair** (ii) **active assistance** and (iii) **biological therapy**.

This seminar will focus on representative implantable cardiac devices addressing these *three areas*. In terms of structural repair devices, dr. Ellen Roche will discuss a minimally invasive delivery system for atraumatic repair of intracardiac defects. Regarding active assist devices she will discuss the modelling and design of a bioinspi-

red soft active material technology that enabled the fabrication of a robotic direct cardiac compression device.

Concerning biological therapy, dr Roche will discuss the use of biomaterials as vehicles for cell delivery and a targeted, refillable bio-implant for increasing retention of therapy in the heart. Fidelity test-beds and computational models and their role will be also described.

BIROBOTICS PHD

*Seminar Cycle on Prostheses
and Artificial Organs*

Date

12/07/2021

Hours

17.00

Place

Istituto di BioRobotica - Scuola
Superiore Sant'Anna

Scan Qr Code to
join meeting

