Lowlands Center for Bioelectric Medicine

The Lowlands Center for BioElectric Medicine is the first center focusing on BioElectronic Medicine which encompasses innovative approaches to detect and treat diseases by utilizing bioelectricity.
The presence of a strong experimental translational, clinical and interdisciplinary group consisting of e.g. medical doctors, physicists, biologists, clinical technologists and engineers is crucial to be truly innovative and leading in the field of bioelectrical research on the (inter)national level.

Bioelectricity refers to generation of electrical currents by conversion of chemical energy produced by living organisms. Bioelectrical signals are at the heart of cell-cell communication and therefore essential for organization, morphogenesis, and regeneration of cells. Bioelectrical dysfunction causes dysfunctional organs and hence a variety of challenging diseases e.g. cardiovascular, neuromuscular-, skin- neurological-, auto-immune-, psychiatric-, metabolic- diseases and cancer. Deciphering bioelectricity and subsequently modulating it, revolutionizes prevention, screening, diagnosis and treatment of these diseases. Our ambition is to restore a healthy, bio-electrical function by capturing, analyzing and modulation of an individual's bioelectronic signals. Our main focus is the interplay between cardiac arrhythmias, heart failure and congenital heart diseases**.**

Our overarching goals are to:

1. create organ specific bioelectrical atlas by analyzing bio-electrical signaling governing organ (dys) function in a subset of diseases,
2. develop and test interface (diagnostic) technologies, including electrode-based interfaces interfaces for remotely monitoring bio-electrical function, implantable, shape adaptable electrode-based interfaces for monitoring of bioelectricity function of organs and miniaturized electrode-based interfaces for integrated bioelectronic therapies and to
3. establish therapeutic feasibility.

Our main focus is the interplay between cardiac arrhythmias, heart failure and congenital heart