



EPSRC Centre for Multiscale Soft Tissue Mechanics
– with application to Heart and Cancer

Multidisciplinary

Mathematicians and statisticians, Engineers
Medical specialists, Cancer researchers

with three partner universities, international
collaborators from Austria, China, India, USA

other partners – hospitals, software houses, ...





Aims and Objectives

mathematical modelling of soft tissue mechanics

informed by experimental data

to understand the role of mechanics in the development
of soft tissue pathologies at different length scales:

microscopic (sub-cellular and cell) level

mesoscopic (cell and ECM interaction) level

macroscopic (tissue) level

SoftMech

- **Establish:**
a world leading interdisciplinary Centre for Mathematical Sciences in Healthcare
- **Focus:**
mechanics of soft tissues and with particular reference to applications in the Heart and Cancer
- **Provide:**
general mathematical/mechanical framework applicable, not only to Heart and Cancer tissue, but to other soft tissues
- **To:**
improve understanding of the complex cell–tissue interactions, ultimately to suggest new therapies and guide possible treatments

SoftMech

Interacting projects running in parallel:

1. Whole-cell biomechanical models
2. Mechanobiological models of cell-cell and cell-ECM interactions
3. Upscaling models: micro -> meso -> macro
4. Parameter inference and model selection
5. Multiscale heart modelling – MI
6. Multiscale solid tumour modelling

Partnership engagement ...





The Centre

beyond 4 years of EPSRC support

Seek funding to extend the lifetime of the Centre

and expand its activities





The team

Glasgow:

Ray Ogden, Xiaoyu Luo, Nick Hill, Dirk Husmeier, Radostin Simitev, Peter Stewart, Theo Papamarkou, Hao Gao

Huabing Yin, Colin Berry, Godfrey Smith, Robert Insall, Mike Olson

St Andrews: Mark Chaplain

Heriot-Watt: Steve McDougall

Sheffield: Paul Watton

+ postdocs and PhD students

Centre Managers: Chanel Mcisaac, David Nisbet

