



Heart phantom for non invasive cardiovascular imagery



Background

Over the past few years, non-invasive cardiovascular imagery has become increasingly important in the diagnostic, therapeutic evaluation and prognostic determination of cardiovascular diseases. Recent developments in this field, aim to quantify the myocardial function based on the measure of deformation and displacement of muscle tissue in two or three dimensions. Many tools developed for ultrasounds, sonomicrometry or magnetic resonance imaging (MRI) can be used to perform those measurements. However data acquired by those complex and diverse algorithms and systems need to be compared to real in-vivo or close to-in-vivo data for an objective validation and calibration of the equipment.

Technology

Drs. Tournoux and Saloux have mastered the challenge of data comparison by creating a heart phantom compatible with different imaging modalities. The dynamic phantom comprises a deformable gel exhibiting viscoelastic and acoustic properties similar to as regular heart, a mechanical structure enabling compression, rotation and expansion movements, a remote control and a sealed chamber with acoustic windows. The phantom is non-magnetic, water-tight, presents windows for the use of US probes and can adapt to positioning and volume constrain of MRI system. Thus it can be used as a reference tool for validation, calibration and standardization.

Application

The main applications are foreseen in cardiac imaging data acquisition and reconstruction methods as well as validation and optimization of diagnostic imaging systems in nuclear medicine cardiology. The tool can also be used in OEM production quality control, service, R&D and pre-clinic trials.

Competitive Advantages

- Reference tool compatible with different imaging modalities (MRI, echocardiography etc.)
- Acoustic and viscoelastic properties equivalent to those of the myocardium
- Displacement and deformation of the phantom in the three directions of space
- Modular system and gel of various dimensions and structures

Patent

European pending patent application EP 14814393.6
US pending patent application US 14/898,520

Next Steps

We are looking for a partner to collaborate with the team in order to further develop the technology.

Contact

Audrey Some Project Leader Science and engineering Univalor audrey.some@univalor.ca	Dr. François Tournoux Professor Department of Cardiology Centre Hospitalier de l'Université de Montréal francois.tournoux@umontreal.ca
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