

Multi-modality imaging in cardiac resynchronization therapy

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Propositions accompanying the PhD thesis:

**Multi-modality imaging in
Cardiac Resynchronization Therapy**
In silico and in vivo analyses

Vu Uyen Chau Nguyen

Maastricht, 22 November 2023

1. The spatial orientation of the heart with respect to the ECG electrodes can affect selection criteria for CRT. *(this thesis)*
2. The strong relation between vectorcardiographic QRS area and CRT response can be explained by its sensitivity to detect conduction abnormalities and (the absence of) scar. *(this thesis)*
3. Unipolar voltage amplitudes are poor estimates of scar and should be used with caution. *(this thesis)*
4. Accuracy of voltage mapping to detect scar can be improved by integration with MRI or voltage mapping during different pacing modes. *(this thesis)*
5. The septum's behavior during Left Bundle Branch Block (LBBB) remains a mystery.
6. Road mapping in CRT by integration of imaging and electrophysiological modalities is labor intensive but can substantially improve the success of CRT implantation. *(this thesis)*
7. Electrophysiology advancements thrive through teamwork between engineers and physicians, but is impossible without the support of a PhD student.
8. An individual can achieve excellence either as a clinician, excel as an engineer, or master the dynamic interaction between both domains.
9. Images should be considered signals.
10. The harder I work the more luck I seem to have.
Thomas Jefferson (1743 – 1826)
11. Your work is going to fill a large part of your life, and the only way to be truly satisfied is to do what you believe is great work.
Steve Jobs (1971 – 2011)
12. It is nice to be important, but it is more important to be nice.
Hein Wellens (1935 – 2020)