

Propositions

1. Slowing of the dominant cortical rhythm can be a biomarker of specific types of chronic pain. (this thesis)
2. Paresthesia-free spinal cord stimulation modulates medial, lateral and descending pathways, whereas tonic spinal cord stimulation predominantly modulates lateral and descending pathways. (this thesis)
3. Functional neuroimaging research on pain, including studies involving spinal cord stimulation, is complicated by a multitude of confounding factors such as different pain etiologies, varying pain intensities, coping mechanisms, medication use, and psychological factors like anxiety and depression. (this thesis)
4. Studies with a finer stratification between responders and nonresponders are required to advance the knowledge on spinal cord stimulation treatment effects. (this thesis)
5. MEG combined with machine learning can potentially assist in a more objective assessment of pain treatment effect. (this thesis)
6. 'The field of chronic pain and SCS is moving beyond the limited validity of a pain intensity score toward an advanced realistic paradigm of evaluating the holistic response of a treatment option that aligns with the biopsychosocial complexity of the chronic pain condition.' (Levy et al., *Neuromodulation: Technology at the Neural Interface*, 2023)
7. 'Transparency and data sharing are vital to a more efficient and effective approach to biomarker and end point development.' (Davis et al., *Nature Reviews Neurology*, 2020)
8. 'Machine Learning will impact both physicians and hospitals. It will be crucial in developing clinical decision support, illness detection, and personalised treatment approaches to provide the best potential outcomes.' (Javaid et al., *International Journal of Intelligent Networks*, 2022)
9. 'It is suffering, not pain, that brings patients into doctors' offices. (...) Suffering is an emergent property of the human brain and is dependent upon consciousness.' (Loeser, *Clinical Journal of Pain*, 2000)
10. While some headway has been made that offers efficiencies in patient selection, it is unlikely that a single test will encompass the variety of chronic pain phenotypes. (Eldable, *Pain Research and Management*, 2022)
11. If we knew what it was we were doing, it would not be called research, would it? (Albert Einstein)