Irreversible electroporation is a new tumor ablation technique that is based on the application of multiple high voltage electrical pulses. The pulses are delivered through electrodes that are placed around the tumor under ultrasound or CT-guidance. They disrupt the tumor cell membrane, after which the cell dies due to loss of homeostasis.

Irreversible electroporation is increasingly used in the clinical setting. However, the exact working mechanism and optimal treatment indications and protocols are still largely unexplored.

This thesis describes the search towards improved evidence regarding the working mechanism of irreversible electroporation, and its safety and efficacy for different clinical indications.