Patients undergoing an abdominal surgical procedure develop a transient episode of impaired gastrointestinal motility or non-obstructive ileus. Importantly, postoperative ileus is a major determinant of recovery after intestinal surgery and leads to increased morbidity and prolonged hospitalization, which is a great economic burden to health-care systems. The aetiology of postoperative ileus is multifactorial, but activation of a local inflammatory response within the intestinal muscularis externa has become an accepted pathophysiological mechanism.

In this thesis, new insights into the pathogenesis of postoperative ileus were revealed, which has led to the identification of new targets for treatment and novel therapeutic approaches. This includes Syk-inhibitors as novel anti-inflammatory strategy, and the implementation of multimodal postoperative rehabilitation (fast-track care) and minimally invasive surgery. A clear implication of the data presented here is that it is of utmost importance to limit the amount of tissue damage. The identification of exact trigger that initiates the inflammatory response (mast cell activation, tissue damage, bacterial translocation) will aid in the development of therapeutics.