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Inflammatory bowel diseases, a collection term for several inflammatory conditions in the gastrointestinal tract, are on the rise globally. Individuals affected by the disease may suffer from abdominal symptoms such as diarrhoeas, abdominal pains as well as malnutrition and substantially impaired quality of life. Life-long medication is often needed, and in some instances even abdominal surgery. The aetiology of the diseases is largely unknown but a hypothesis is that an aberrant immune response in the predisposed individual is triggered by environmental factors. Gastrointestinal bacteria (microbiota) seem to have great importance in the development of the disease. Novel sequencing techniques have enabled studies of microbiota that were previously impossible, and the research field is one of the most expansive in the last decade.

In this thesis, we have studied various aspects of microbiota and inflammatory bowel diseases. Deviations of the gut microbiota from the healthy state related to different diagnoses has been elucidated. We also investigated how the microbiota varies in different types of sample material. Further, we have studied the microbiota and its potential to predict the outcome of medical treatment, using different techniques. With our studies, we have added another piece to the puzzle of increasing knowledge about the interactions between the microbiota and the immune system. In a future perspective, our findings may contribute to improved diagnostics and individualized treatments, which will benefit the patient with inflammatory bowel disease.

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Medical Science with a specialisation in Medicine

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