

Novel molecularly imprinted photonic sensors applied to IBD detection

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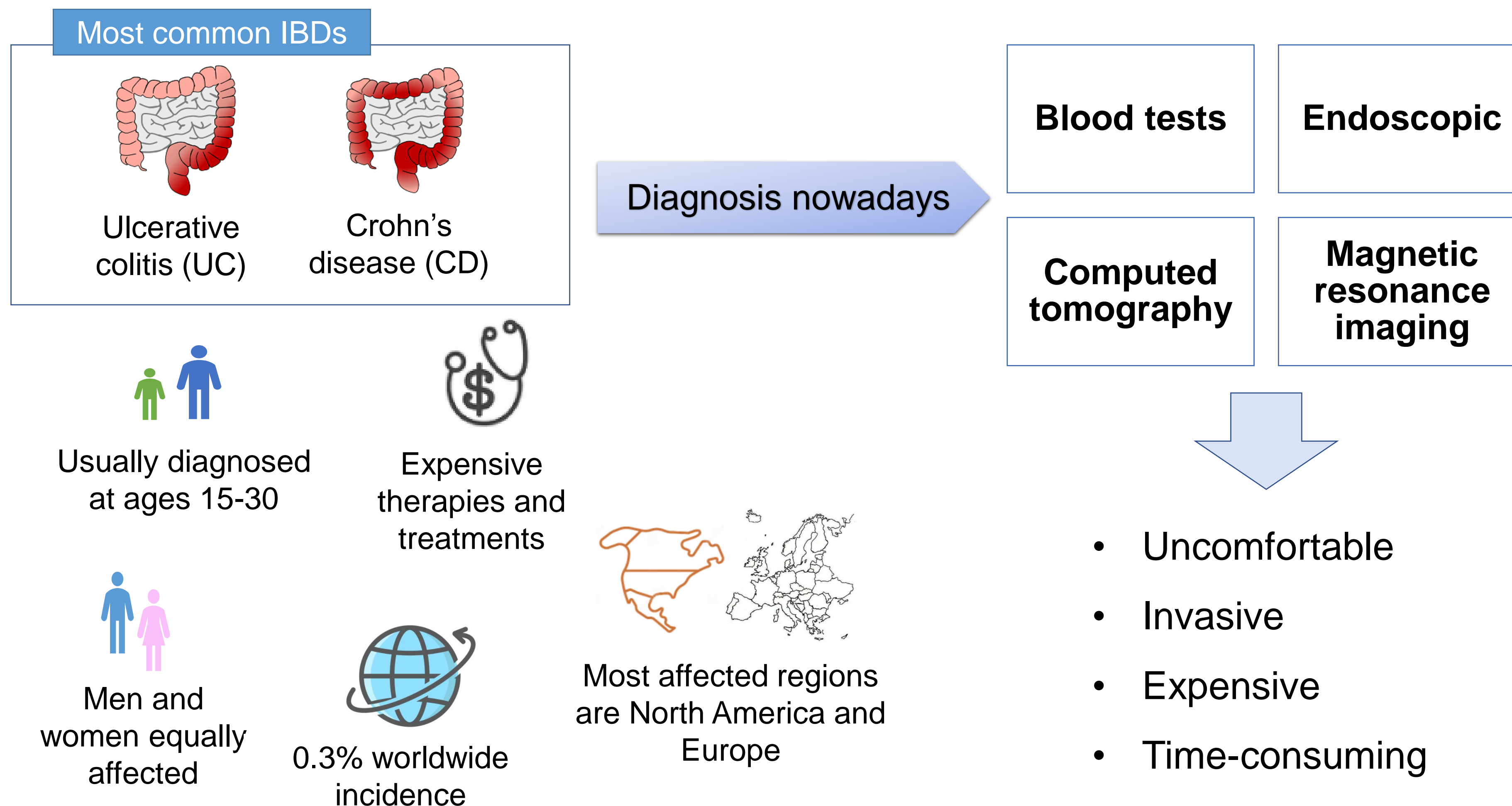
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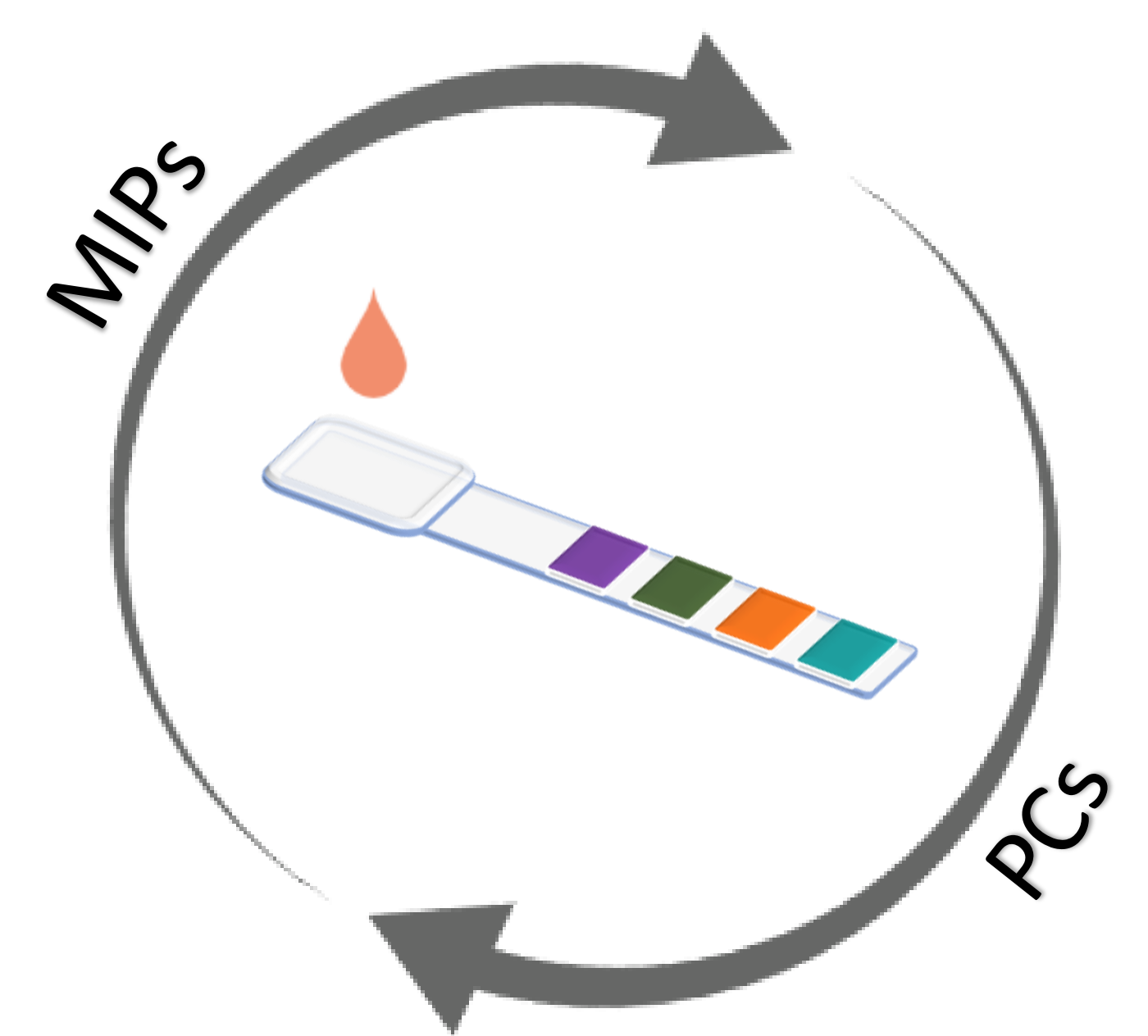
Introduction

Inflammatory bowel diseases (IBDs) are a group of chronic disorders characterized by inflammation of the gastrointestinal tract.



Aim of the study

Create an innovative, cheap, and colorimetric sensing strip that targets biomarkers of IBDs (e.g., serum calprotectin) in point-of-care, using two technologies, molecularly imprinted polymers (MIPs) and photonic crystals (PCs).



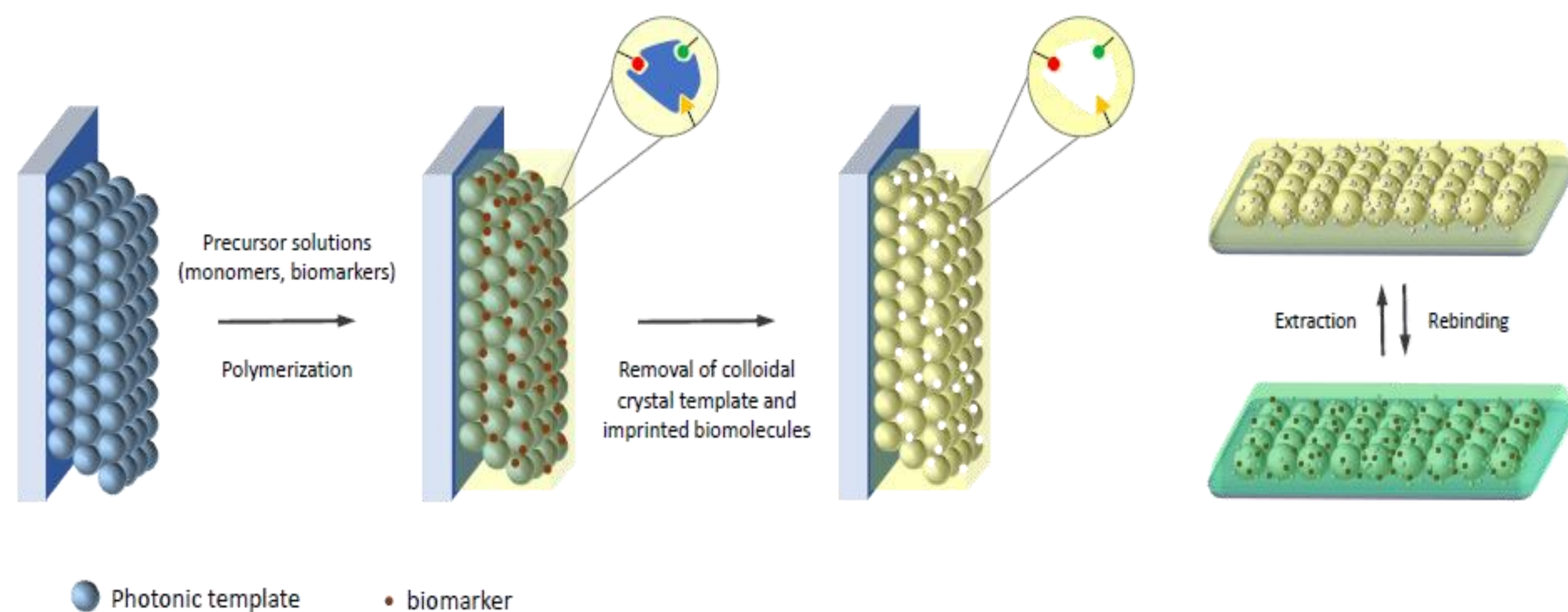
Methodology

PCs are bio-inspired materials; the self-assembly of colloidal particles into a close-packed array can produce a highly visible structural colour

MIPs are polymer cavities complementary to the target biomolecule for its selective recognition

Transducing Element

Bio-recognition Element

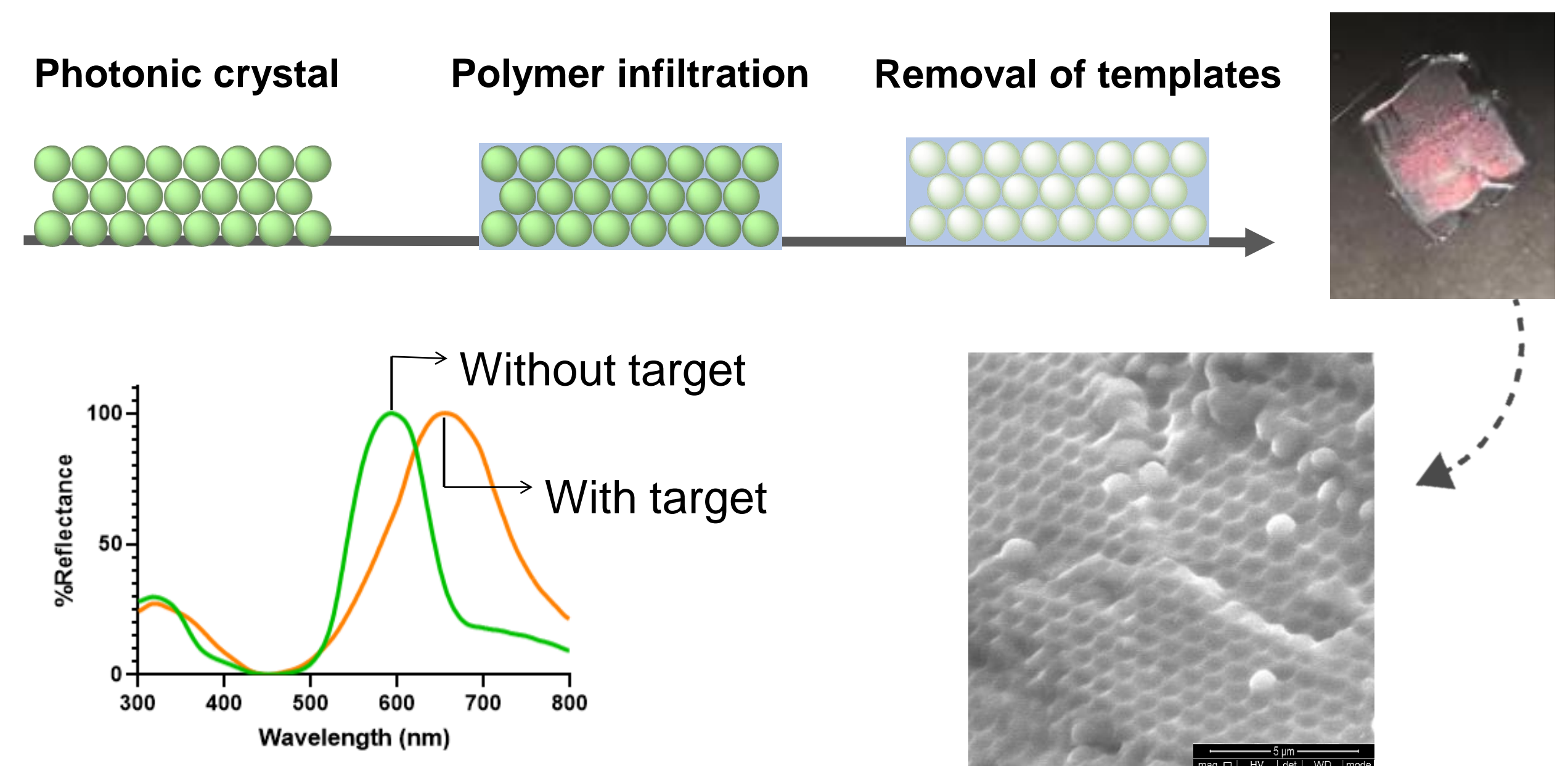


Results

Fabrication of PCs – synthesis and self-assembly of colloidal particles



Molecularly Imprinted Photonic Polymers for IBD biomarkers



General considerations

Despite the growing number of people with IBDs, standard tests for IBD diagnosis are usually invasive and inconclusive. Therefore, analysing biomarkers by non-invasive methods is useful for the correct disease diagnosis and management of patients.

New point-of-care diagnostic tools, as the one presented in this work, are interesting technologies that could be undertaken during routine medical appointments and can possibly improve the clinical outcomes in IBD patients.

Acknowledgments

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