

Microcontainers for oral vaccine delivery

1. Summary

I propose the utilisation of biopolymer microcontainers as an oral vaccine delivery system (*Fig. 1*). These microcontainers (MCs) will be filled with a particulate vaccine formulation and sealed with a mucoadhesive layer followed by a pH-sensitive lid. The MCs will provide: **1)** protection of the vaccine against enzymatic degradation, **2)** adherence to the desired site of action and **3)** provision of a unidirectional drug release. In the design of such a system, it is intended that the vaccine will be released only upon reaching the intestine, in close proximity to the epithelial cell barrier, allowing for effective uptake of the antigen and the initiation of an immune response. The project will be based at DTU Nanotech with collaborations to KU Pharma, Denmark, Helmholtz Institute for Pharmaceutical Research Saarland, Saarbrücken, Germany and University of Otago, Dunedin, New Zealand.

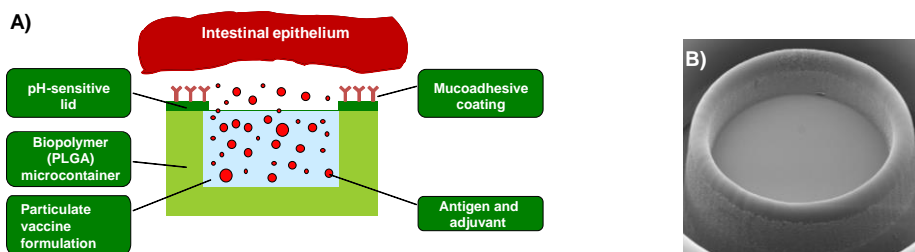


Fig. 1: A) Illustration of utilising biopolymer MC composed of poly(lactic-co-glycolic) acid (PLGA) as an oral vaccine delivery system. B) Microscope image of a single biopolymer MC.