

MSc-project

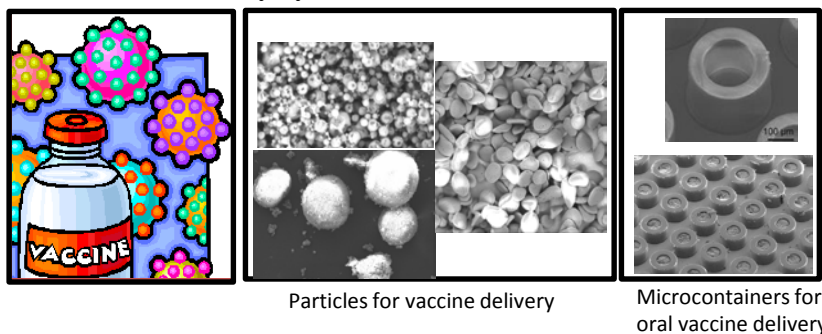
Title: Microcontainers for oral vaccine delivery

Description:

Vaccination is often regarded as the most significant contribution to public health and disease prevention and the single most cost-effective medical intervention, with good reason. Vaccines are biological agents, containing an antigen and adjuvant, with a goal of inducing an immune response to assist the body in the prevention of a specific disease. Unfortunately, vaccines are normally injected into the body, but it will be much more beneficial to develop vaccine formulations that can be given by the oral route. This will ease the administration and be much more suitability for mass vaccination.

The oral administration of vaccines is however, a significant challenge as antigens are not easily absorbed in the intestine, and are moreover often degraded in the stomach. Therefore, the vaccines need to be protected and it is also necessary to specific target the vaccines to the intestinal membrane for being able to get them absorbed. The vaccine formulation should contain an antigen and adjuvant encapsulated into particles. The particles will be filled into micro meter size drug delivery systems (called microcontainers), where the vaccines can be protected through the stomach and delivery can be target to the small intestine.

The goal of this project will be to develop particles containing an antigen and adjuvant, and *in vitro* characterise the particles in terms of particle size, stability, content of antigen in the particles and release of the antigen from the particles. Furthermore the aim is to fill the particles into the microcontainers and test this as an oral vaccine delivery system.



Responsible institution: DTU Nanotech

Contact information: Line Hagner Nielsen, lihan@nanotech.dtu.dk

Allowed no of students per report: 1

DTU supervisor: Researcher Line Hagner Nielsen & Prof. Anja Boisen, DTU Nanotech. Possible to go abroad to another university