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## Master thesis at RISE Surface, Process and Formulation: Protein pharmaceuticals – studying aggregation processes

*Are you curious about biological drugs and want to learn techniques for evaluation of product formulations? Would you like to work in an innovative-driven environment with experts in formulations for pharmaceuticals, foods, cosmetics and cleaning? RISE Surface, Process and Formulation is seeking a Master student with an interest in protein products to explore methods suitable for stability studies.*

### Background

Protein pharmaceuticals holds great potential and is the fastest growing class of therapeutics today. However, development and manufacturing of proteins are challenging, and poor stability is a major concern both during production and storage. Protein aggregation leads to unreliable concentrations, variable doses, possibly inactivity and thus poor therapeutic ability, and may constitute a threat for drug safety. Therefore, it is very important to be able to analyze the tendency of proteins to aggregate in a reliable way, and such evaluations constitute the scope of this project.

### Goal

The goal of the project is to evaluate methods to study surface-induced protein aggregation regarding applicability, robustness and detection limits. Pharmaceutically relevant proteins such as antibodies and hormones can be used, as well as other aggregation prone proteins for comparison.

### Approach

Protein aggregation will be induced by exposure to air or solid surfaces (e.g. particles) with different properties. The main method to study the aggregation will be dynamic light scattering (DLS), where single and multi-angle analysis will be compared. Other possible techniques include transmission electron microscopy (TEM) and quartz crystal microbalance with dissipation (QCM-D).

### Requirements/knowledge

For this diploma work, the student should be enrolled in a master program in biotechnology or chemical engineering and have background knowledge on proteins or particle analysis methods.

### Terms

Project period: Spring 2020

Placement: Stockholm, Drottning Kristinas väg

### Application

You are welcome to send your CV and application as soon as possible. Interviews with the candidates will be conducted continuously, and decision of acceptance can be made at any point.

For more information, please contact Ulla Elofsson, [ulla.elofsson@ri.se](mailto:ulla.elofsson@ri.se), +46 10 516 6040