

# Characterization of monoclonal antibodies (mAb) using high resolving analytical techniques

## EXAM WORK MASTER OF SCIENCE 30HP OR 45HP

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### Background:

Monoclonal antibodies (mAb) are produced by identical immune cells. mAbs bind specifically to a substance or cell and has become one of the most important tools in biochemistry, molecular biology and medicine. Product heterogeneity is common for recombinant mAb production and is typically introduced either upstream during expression or downstream during purification. Such variants are aggregates, deamidation products, glycosylation variants, oxidations and amino acid substitutions or additions. These small structural changes can affect preclinical stability, process optimization as well as the therapeutic potency, bioavailability and immunogenicity of the product. At GE Healthcare Lifesciences, we are developing front end techniques to express, purify and analyze mAbs and their variants.

### Description of Exam work:

In this exam work you will build a mAb characterization toolbox using high performing analytical techniques such as UPLC-UV, UPLC-FD, affinity chromatography (AC), size exclusion chromatography (SEC), ion exchange chromatography (IEC), reversed phase chromatography (RPC), mass spectrometry (MS) and enzymatic digestions in order to fully characterize and compare mAbs during expression and purification. Special focus will be on creating and applying a “multi attribute monitoring” (MAM) technique based on RPC-MS to simultaneously measure several mAb product quality attributes in a single analysis. The aim is to build a standardized and automated platform that can be used to fully characterize mAbs and their heterogeneity at any point in the biological production process.

### Qualifications/requirements:

We seek a Master of Science student for a 30HP or 45HP exam work in chemistry with focus on analytical chemistry, bioanalytical chemistry, biochemistry, bioprocessing or biotechnology.

### Contact persons:

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### About Us

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### Healthcare Life Sciences

There is no other life sciences company quite like GE Healthcare Life Sciences. A \$5 billion business with more than 11,000 individuals in over 100 countries, we are at work enabling a new era in medicine. For more than 60 years, GE Healthcare Life Sciences has globally supported the development and use of new therapies, helping accelerate the journey from biological understanding to clinical therapy. GE Healthcare Life Sciences works with cutting edge technology enabling and advancing the discovery, diagnosis and medical treatments of the present and the future. We are accelerating biology to cell therapy in ways no other company can. Follow us on Facebook and Twitter and watch our discoveries in action on our YouTube channel.