

# Protein science and chromatin biology

## Deciphering the protein language in health and disease

**Professor Ole Nørregaard Jensen, PhD**

### Research interests

We study the molecular details of protein structure and function with a focus on chromatin biology and the regulatory roles of post-translational modifications, such as methylation, acetylation and phosphorylation, during cellular development, ageing and in disease.

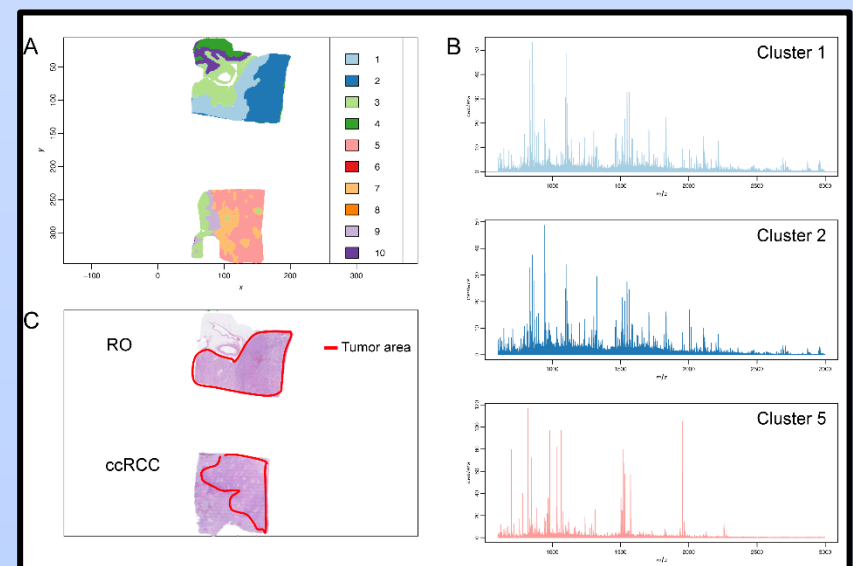
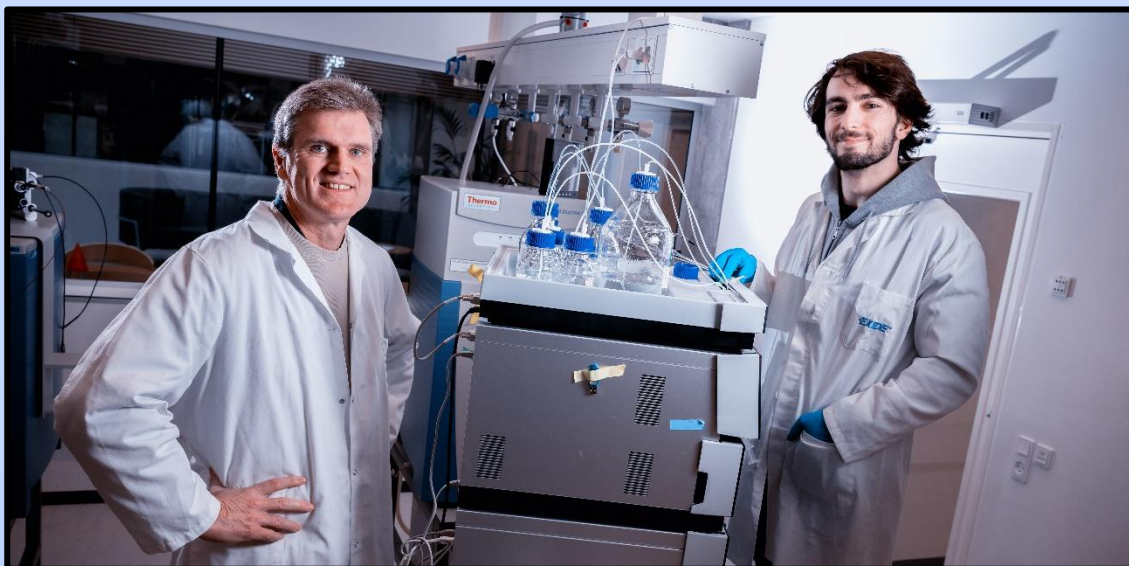
We develop advanced mass spectrometry based technologies to identify, characterize and quantify proteins isolated from e.g. stem cells and various mammalian organs, such as liver, heart, brain and kidney. We use specialized mass spectrometry bioimaging techniques to investigate kidney cancer tumors. We also embark on top-down mass spectrometry studies of intact protein drugs (antibodies, growth factors, interferons) to improve technologies for molecular characterization and drug quality control.

We rely on computational biology and bioinformatics research for data integration and interpretation of complex data sets obtained by mass spectrometry. Studies of proteins provide a foundation for understanding the molecular details of diseases and for development of diagnostics methods and novel treatment modalities.

The ON Jensen laboratory is part of the Protein Research Group at SDU Department of Biochemistry and Molecular Biology.



Contact:  
jenseno@bmb.sdu.dk



### Projects

### Description

Classification of kidney cancer tumors by mass spectrometry imaging.

We collaborate with Odense University Hospital to reveal novel molecular features of cancer tumors. We envision that molecular imaging will assist in the classification and staging of cancer tumors and in designing treatment protocols for individual patients.

Computational analysis of mass spectra, annotation of modifications, 3D structure prediction.

We develop and apply computational/bioinformatics methods to extract information from complex mass spectra. We are interested in machine learning approaches and deep-learning for data mining and protein structure/function analysis.

Gas-phase separation of proteins and peptides using ion mobility spectrometry.

We are interested in separation of near-identical and isomeric peptides and proteins. We investigate the utility of ion mobility spectrometry for this purpose, and also for improving specificity and sensitivity in biomolecular characterization of proteins and proteomes.

### Alumni

**Simone Sidoli, PhD**,  
Assistant professor, Albert Einstein College of Medicine, New York, USA.

**Masa Babovic, PhD**  
Scientist  
Alphalyse, Odense

**Frederik Holck, PhD**  
Scientist,  
Evosep Biosystems, Odense