

## Press release

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### Basic information

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Department of: Biomedicine

Main supervisor: Thomas Vorup-Jensen

Title of dissertation: On the Nanoscience of Superoligomeric Proteins

Date for defence: 12-06-2020 at (time of day): 15 Place: Via Zoom

Press release (Danish)

### Superoligomere Proteiner i Autoimmune Sygdomme

Immunforsvaret har klassisk været defineret som genkendelsen af det fremmede. I nyere tid er denne opfattelse dog skiftet til, at immunforsvarets rolle primært er genkendelsen "fare". Denne "fare" kan opstå når kroppens systemer til selvregulering er ude af balance, og kroppens proteiner kobles på en måde, der skaber - på det molekylære niveau - meget store proteinkomplekser. Disse store komplekser viser sig at være tilstede i flere autoimmune sygdomme som Parkinson's og systemisk lupus erythematosus. Koncentrationen af disse komplekser er definerende for aktiveringen af immunsystemet, men da disse proteinkomplekser er betydeligt større end normale proteiner, er koncentrationen svær at bestemme med den indtil nu eksisterende teknologi. Projektet har udviklet en metode til at bestemme denne koncentration ved hjælp af monitorering af partiklerne i opløsning, og størrelsesbestemmelse ved hjælp af deres diffusionshastighed. Denne teknologi er lovende som nyt biomarkørredskab for autoimmune sygdomme, viser et nyt ph.d.-projekt fra Aarhus Universitet, Health. Projektet er gennemført af Kristian Juul-Madsen, der forsvare det d. 12/6-2020

Forsvaret af ph.d.-afhandlingen er offentligt og finder sted den 12/6/2020 kl. 15:00 via Zoom. Link med adgang til forsvaret kan fremsendes ved henvendelse til Kristian Juul-Madsen via nedenstående kontaktoplysninger. Titlen på projektet er "On the Nanoscience of Superoligomeric Proteins". Yderligere oplysninger: MSc, Postdoc Kristian Juul-Madsen, E-mail: [Juul-Madsen@biomed.au.dk](mailto:Juul-Madsen@biomed.au.dk), tlf. 61285520.

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Press release (English)

### Superoligomeric Proteins in Autoimmune Diseases

The immune system has classically been defined as recognition of "non-self". More recently the perception has changed towards the belief that the prime responsibility of the immune system is to recognize "danger". This "danger" can occur when the self-regulation mechanisms of the body is out of balance in a way that creates - at the molecular level - very large protein complexes. These large complexes are present in several autoimmune diseases including Parkinson's Disease and Systemic Lupus Erythematosus. The concentration of these complexes are defining the degree of immune

activation. However, as these complexes are much larger than regular proteins the concentration cannot be estimated in a meaningful way using conventional methodologies. The project has developed novel technology for concentration measurements of these complexes using tracking of the particles in solution and size estimation from the rate of diffusion. This technology is promising as a new biomarkertool in autoimmune diseases: The project was carried out by Kristian Juul-Madsen, who is defending his dissertation on June 12<sup>th</sup> 2020.

The defence is public and takes place on June 12<sup>th</sup> at 3 pm via zoom. Zoom link can be sent upon request from Kristian Juul-Madsen. The title of the project is On the Nanoscience of Superoligomeric Proteins. For more information, please contact Post Doc Kristian Juul-Madsen, email: Juul-Madsen@biomed.au.dk, Phone +45 6128 5520.

Assessment committee:

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