AARHUS UNIVERSITY

TECHNOLOGY PRESENTATION

Large Nanodiscs for Membrane Research

TECHNOLOGY SUMMARY

The technology presents an enlarged membrane model system for studying membrane proteins *in vitro*.

The present technology presents an enlarged membrane scaffold allowing several proteins to be tested on one single model membrane compared to current nanodiscs that are smaller and therefore only allow studying single proteins. As proteins in membranes often interact and forms physiological complexes, this technology would allow studies of such complexes.

APPLICATIONS

Therapeutically applications: Delivery vehicle for membrane proteins to cells

Research applications: membrane discs for biochemical and structural studies of membrane proteins, membrane associated protein complexes and membrane related processes

CURRENT STATE

Early stage technology – however very promising with high and rare level of inventive data.

Unique research collaboration opportunity.

UNIQUE SELLING POINT

This technology allows for formation of larger and stable membrane disc sizes (approximately 20-100 nm diameter) compared to existing sizes obtainable from known commercial nanodiscs (8-16 nm diameter).

Larger discs are necessary for studies of large membrane protein complexes and membrane protein – lipid bilayer interaction studies where a freer (less constrained) environment is required.

The discs described in this invention will resemble native membranes better than existing discs while still allowing suspension in aqueous buffers. This will provide for improved research opportunities.

INTELLECTUAL PROPERTY RIGTHS

The technology is protected through a European patent application (17162310.1) filled in March 2017.

BUSINESS OPPORTUNITY

Research collaboration with integrated option agreement allowing influence on patent drafting and experimental protocols for next step development allowing access to novel and inventive technology.

The technology has been conceived through an unique multidisciplinary collaboration between world-wide recognized researchers in the invention team.

Highly skilled post doc having hands-on experience with the novel technology will be able to take dedicated project lead on the next stage development.

INVENTORS

The invention has be conceived through a unique collaboration in an Interdisciplinary research team.

***Professor Kai Finster,* Department of Bioscience**
A recognized scientist within the area of Microbiology. His work has led to several international research connections and collaborations along with a substantial list of publications.

***Associate Professor* and Cryo-EM Facility Manager *Thomas Boesen* , iNANO and Department of Molecular Biology and Genetics**
Specializes in molecular biology and more explicitely determination of atomic 3D structures using crystallography and cryo-electron microscopy. His work is focused on bacterial membrane-associated proteins involved in pathogenesis and environmental processes as well as membrane proteins in neurobiology.

PhD Tina Santl-Temkiv, Assistant Professor of Microbial Ecology
Is an expert in aerobiology and isolated the Pseudomonas syringae strain from which the protein encoding gene that was used to produce the truncated ice nucleating protein was obtained.

PhD Meilee Ling
Produced the truncated version of the ice nucleating protein that was used to produced the Nanodiscs. She also produced the Nanodics.

REFERENCES

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