



Invitation to Dean's Podium

*Prof. Michal Shapira, Dean of The Faculty of Natural Sciences,
is honored to invite you to The Dean's Podium*

By

Professor Gerhard Wagner

Harvard Medical School

on

Engineering nanodiscs for membrane protein studies

Abstract

Nanodiscs are originally derived from a truncated form of Apolipoprotein A, termed membrane scaffolding protein (Msp). They have emerged as a tool to provide near-native bilayer environments for studies of membrane proteins and their complexes. They can be used for structural studies with NMR and EM and also for functional experiments. They are superior to detergent micelles but also have some challenges. We have used shortened versions of the original ApoA1 constructs for NMR structural studies and determined NMR structures of a small membrane protein. To eliminate size heterogeneity we have developed covalently circularized nanodiscs with diameters of 9, 11, 15, 30 and 50 nm, to embed different size membrane proteins. As Msp nanodisc become unstable above 50 nm diameter we developed an alternative where the bilayer is surrounded by a DNA belt or corral.

We have used both approaches for studies of membrane proteins, including GPCRs or mitochondrial proteins. We also used nanodiscs for studies of injection of viral mRNA through a pore in a cND. There are numerous new applications that may emerge using the ND technology.

Prof. Gerhard Wagner - Biography



Prof. Gerhard Wagner is the Elkan Rogers Blout Professor of Biological Chemistry and Molecular Pharmacology at Harvard Medical School.

The overall goal of Prof. Gerhard Wanger's research is to obtain structural and functional insights into biological processes at the molecular level. Gerhard lab has been working in structural biology with NMR and computational methods for more than 40 years, contributed more than 500 original papers, and won countless awards for his scientific achievements. He is an Elected Fellow of the American Association for the Advancement

of Science, German National Academy, American Academy of Arts and Sciences, National Academy of Sciences, and International Society of Magnetic Resonance.

Date, Time & Place

Monday, November 4th, 2019, At 15:00

Ilse Katz Institute for Nanoscale Science & Technology (Building 51)

Auditorium 015

Refreshments will be served before the lecture

יום שני, ו' בחשוון תש"פ, 4 בנובמבר 2019, בשעה 15:00,

בבניין מכון אילזה כץ למדע וטכנולוגיה בתחום הננומטרי, אודיטוריום מרכז

הננוטכנולוגיה (בניין 51, אודיטוריום 015)

כיבוד קל יוגש לפני ההרצאה