

# Technology that Mimics Organelles in the Body



Gerhard Wagner

Elkan Blout Professor, Biological Chemistry and Molecular Pharmacology

## CURRENT RESEARCH

### Understanding membrane proteins using biomimetics

Biomimetics is a flourishing field in which scientists take inspiration from the natural world and our bodies systems to design sophisticated technologies. By developing tools that mimic what our bodies are able to do, researchers are providing unparalleled opportunities for the studies of molecular functioning and structure. Dr. Gerhard Wagner, Elkan Blout Professor of Biological Chemistry and Molecular Pharmacology at the Harvard Medical School, studies the structure, function, and interaction of proteins, in particular of membrane proteins, using biomimetics. In fact, he and his team develop and optimize nanodisc technology they have created as a near-native environment for integral membrane proteins which they can then use to study using either NMR spectroscopy or cyto-electron microscopy. Thus, Dr. Wagner's studies offer a breakthrough in the study of membrane proteins and their complexes.

Dr. Wagner's research combines structural biology with biology function and drug discovery. He continues to be at the forefront of technology development as he develops tools for membrane protein studies. His current research will provide the platform for studying integral membrane proteins in near-native bilayer environments in nanodiscs as an entirely new tool for studies of membrane protein structure and interaction. Therefore, Dr. Wagner's research has the potential for facilitating discovery of new drugs. Furthermore, nanodisc inserted antigens may become new vehicles for vaccination that can be used to treat the untreatable. Dr. Wagner is well-funded for other projects by NIH therefore, he is unable to receive funding for this creative and innovative approach to drug discovery, and vaccine development; donations...

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## AFFILIATION



Harvard University

## EDUCATION

- Diploma, Physics, 1972 , Technical University of Munich
- Ph.D., Molecular Biology and Biophysics, 1977 , ETH Zurich

## AWARDS

- Elected Member to Deutsche Akademie der Naturforscher Leopoldina (German National Academy) , 2005
- Elected Fellow to the International Society of Magnetic Resonance, 2008
- Stein and Moore Award of the Protein Society, 2011
- Elected member of the National Academy of Sciences (US), 2013
- Elected member of the American Academy of Arts and Sciences, 2015

## RESEARCH AREAS

Life Science, Immunology / Inflammatory, Infectious, Oncology / Cancer

## FUNDING REQUEST

Your contributions will support the continued research of Dr. Gerhard Wagner, of Harvard Medical School, as his research provides entirely new tools for studies of membrane protein structure and interaction. Donations will fund the necessary \$430K/year required for personnel, supplies, travel, and licenses. Help provide funding that will advance Dr. Wagner's research to make an impact on patients around the world with his revolutionary technology.