

**Drug Research Academy (DRA) Lecture  
University of Copenhagen**

**Date: September 20, 2013**

**Time: 13:00-14:00**

**Location: Benzon Auditorium, Universitetsparken 2**

**Mechanistic Studies on Cellular Drug and Gene Targeting**

Lecture by Prof. Dr. Arto Urtti, Centre for Drug Research, Faculty of Pharmacy, University of Helsinki, Helsinki, Finland

Glycosaminoglycans (GAG) are anionic polysaccharides that are expressed in the cells and extracellular space. In our studies we have explored their role in cellular delivery of DNA complexes, demonstrating that they have inhibitory role in DNA delivery. The inhibition may be caused by the binding of anionic GAGs with cationic nanoparticles. Furthermore, it seems that with some DNA carriers excess of polycation is needed to overcome the GAG barrier in delivery. Some GAGs, particularly, hyaluronic acid, may facilitate delivery via CD44 receptor specific mechanisms. This has been utilized in ocular gene delivery. In addition, we have shown that TAT peptide mediate enhancement of delivery is sequence independent and new computational approaches to explore the molecular dynamics on the liposomal surfaces.

**Biography**

Arto Urtti received his Ph.D. degree in 1986 (University of Kuopio, Finland). He served as Associate Professor of Pharmaceutical Technology and professor of Biopharmaceutics at University of Kuopio. Prof. Urtti has obtained international research experience as a post-doctoral fellow (Dept. of Pharmaceutical Chemistry, University of Kansas) and visiting professor (Dept. of Bio-Pharmaceutical Sciences, University of California San Francisco and Department of Pharmaceutics, University of Wisconsin).

He has led the Centre for Drug Research (previously DDTC – Drug Discovery and Development Technology Center) since 2005. His research programme is presented in more than 270 peer-reviewed articles and 20 patents and patent applications.

Arto Urtti has received scientific awards such as:

- EUFEPS Distinguished Service Award
- Innovation Award
- American Association of Pharmaceutical Scientists Fellowship
- Honorary Membership of the Finnish Pharmacists' Association
- Albert Wuokko Prize
- Millennium Distinction Award.



He is editorial member in different journals. Professor Urtti has evaluated grant applications for the scientific funding bodies of more than 10 countries and the European Union. His main research fields are drug delivery (controlled release, computational and cell-based methods for ADME research) and nanotechnology (biomaterial structures for drug and gene targeting and for 3-d cell cultures).