Katedra molekulárnej biológie
Prírodovedeckej fakulty Univerzity Komenského

Ústav molekulárnej biológie SAV
a
Slovenská spoločnosť pre biochémiu a molekulárnu biológiu

Vás pozývajú na **36**. prednášku v rámci Kuželových seminárov:

Dr. Peter Šebo
Institute of Microbiology
Academy of Sciences, Prague

Adenylate cyclase toxin of Bordetella:

A model protein penetrating cellular membranes and a novel antigen delivery tool for induction of cellular immunity against viruses and tumors

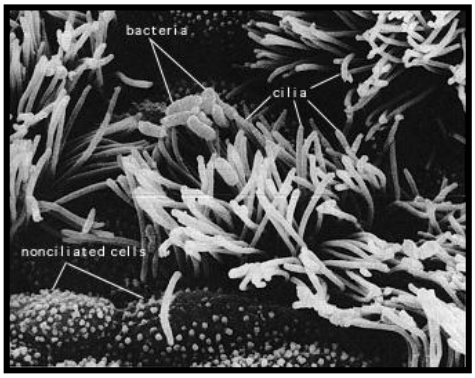
ktorá sa uskutoční

22.4. 2003 (útorok)
o **15:00** v miestnosti **B1-501** PriF UK

http://www.fns.uniba.sk/~kbi/kuzela/

Ing. Peter Š E B O , CSc.

Brief description of current research interests:



Colonisation of respiratory epithelium by *B. pertussis* www.textbookofbacteriology.net

My research program within the Department of Cell and Molecular Microbiology at IMIC aims to provide an integrated approach to the study of pathogen-host interactions at molecular and cellular level. The main topics of my present research are:

- Structure-function relationships underlying the biological activity of of *Bordetella pertussis* adenylate cyclase toxin (ACT) on phagocytic cells of the immune system.
- Molecular mechanism of membrane translocation and cell penetration of ACT
- Use of bacterial protein toxins, e.g. ACT, as novel vaccine carriers, e.g. as "molecular injection syringes" for delivery of viral and tumoral antigens into antigen-presenting cells and induction of specific cellular immune responses.
- Characterization of the biological activity and role in pathogenesis of a novel RTX determinant FrpC from invasive meningococci (*neisseria meningitid*) and the structural and biochemical aspects of its unique autoproteolytic activity
- Postgenomic approaches to analysis of host-pathogen interactions by the use of proteomics (2-D electrophoresis plus mass spectrometry) and expression profiling by the use of DNA microarrays.

Selected of most relevant recent publications related to the topic of the talk

Loucká, J., Schlecht, G., Vodolánová, J., Leclerc, C. and **P. Šebo*** (2002). Delivery of a MalE $CD4^+$ T-Cell Epitope Into MHC Class II Antigen Presentation Pathway by *Bordetella pertussis* Adenylate Cyclase. *Infect. Immun.* **70**, 1002-1005.

Fayolle, C., Osičková, A., Osička, R., Henry, T., Rojas, M.-J., Saron, M.-F., **Šebo, P**. and C. Leclerc (2001) Delivery of Multiple Epitopes by Recombinant Detoxified Adenylate Cyclase of *Bordetella pertussis* Induces Protective Antiviral Immunity. *J. Virol.* **75**, 7330-7338.

Basar, T., Havlíček, V., Bezoušková, S., Hackett, M. and **P. Šebo*** (2001) Acylation of Lysine 983 Is Sufficient for Toxin Activity of *Bordetella pertussis* Adenylate Cyclase: Substitutions of Alanine 140 Modulate Acylation Site Selectivity of the Toxin Acyltransferase CyaC. *J. Biol. Chem.* **276**, 348-354.

Dadaglio, G., Z. Moukrim, R. Lo-Man, V. Sheshko, **P. Šebo** and C. Leclerc* (2000) Induction of a polarized Th1 response by insertion of multiple copies of a viral T-cell epitope into adenylate cyclase of *Bordetella pertussis*. *Infect. Immun*. **68**, 3867-3872.

Osička, R., Osičková, A., Basar, T., Guermonprez, P., Rojas, M., Leclerc, C. and **P. Šebo*** (2000) Delivery of $CD8^+$ T-Cell Epitopes into Major Histocompatibility Complex Class I Antigen Presentation Pathway by *Bordetella pertussis* Adenylate Cyclase: Delineation of Cell-Invasive Structures and Permissive Sites. *Infect. Immun.* **68**, 247-256.