

### FROM THE BEGINNING...

Since 1972 the former Institute for Immunology of Purkyne Military Medical Academy has been engaged in the study of pathogenesis of severe viral, rickettsial and bacterial infections. In the late eighties this Institute built laboratory for the analysis of complex protein mixtures originating from prokaryotic and eukaryotic cells that was based on the application of high-resolution two-dimensional gel electrophoresis (2-DE). Furthermore, the complete proteome technology, including computer-assisted 2-DE gel evaluation and MALDI-TOF MS for protein identification, was successfully implemented in 1999. In the year 2000 the Institute launched the tight cooperation with Faculty of Medicine of Charles University in Hradec Kralove and Masaryk Memorial Cancer Institute in Brno in order to perform the complex analysis of host-bacteria interactions on tissue, cellular, protein, and nucleic acid levels. For this purpose the Proteome Center for the Study of Intracellular Parasitism of Bacteria, involving selected scientists from all three Institutions and fully supported by the 5 years grant from Ministry of Education, Youth and Sport, was founded. The rationale for the establishing the Proteome Center was the need of the formation of complete proteome database of microorganisms with highlighted virulence factors, proteins with diagnostic value and immuno-dominant proteins. The identification of these groups of microbial markers should enable the construction of more sophisticated diagnostic, prophylactic, and probably therapeutic tools. Moreover, a complex dynamic proteome, morphological, phenotypic, and metabolic studies of primary intracellular bacteria – host cell interaction will assist in understanding of processes underlying the final outcome of this interaction. Such studies will provide detailed information on gene expression, including post-translational modifications of proteins, time-course, spatial expression and co-expression of microbial and host molecular markers and signals that induce expression of these markers. Finally, the established databases and realized studies enable more effective comparative analyses of model and clinical parameters of infection induced by intracellular bacterial pathogens.

To support the objectiveness and innovation of scientific ideas concerning the intracellular parasitism of bacteria the First Discussion Forum was organized in the hotel Aurum, Zlaté Hory, Czech Republic in June 2001. The program of this forum was concentrated on the early stages of interaction of eukaryotic phagocytic cells with intracellular bacteria. Broadly discussed were theories of parasitism, symbiotism, and mutualism, further the recent knowledge of molecules participating in cell to cell adhesion and cell signaling originating from mutual very early interactions, and finally the structure of membrane domains and signalosomes. Since the first meeting induced positive response from all participants, the Proteome Center decided to organize the second Forum oriented on proteomic studies of microbes with the special focus on protein structure-function relationship, which can bring completely novel knowledge on pathogenicity of infections.

This supplement brings in printed version the lectures that were presented on Second Discussion Forum – Intracellular Bacterial Parasitism: From Structure to Pathogenicity that was held in Jablonné nad Orlicí in May 2002. Organizers would like to thank all participants who sent their contributions and concomitantly they would like to express the wish that all following meetings will exhibit the same friendly atmosphere as it was in Jablonné nad Orlicí.

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