Genomic and pathogenesis

Signaling Pathways Involved in the Survival of Pathogenic Mycobacteria

Pieters Jean

BiochemieBiozentrum, University of Basel, Basel, Switzerland

Mycobacterium tuberculosis, the causative agent of tuberculosis is one of the most successful pathogens known today and responsible for more deaths world wide than any other bacterium. Whereas *M. tuberculosis* is most prevalent in developing countries, tuberculosis is becoming increasingly more widespread also in the industrialized world because of the emergence of (multi) drug resistant strains.
key to the persistence of *M. tuberculosis* is their ability to invade and survive within macrophages, thereby at the same time evading host immune responses. Our laboratory is interested in defining the host as well as the bacterial factors involved in mycobacterial survival within macrophages. We found that both at the point of entry as well as in intracellular phagosomes a specific subset of host molecules are utilized by mycobacteria to circumvent degradation in lysosomes.
of mycobacteria within phagosomes does not only allow them to escape destruction in lysosomal organelles, but also results in these pathogens to become sequestered from immune recognition, due to the inefficient degradation of mycobacteria in lysosomes. We have characterized host as well as mycobacterial molecules that allow pathogenic mycobacteria to survive within macrophages, and found that pathogenic mycobacteria have evolved to interfere with host cell signaling pathways to survive intracellularly. We are currently investigating the mechanisms involved in these signal transduction pathways which may help to develop compounds that can interfere with the ability of these pathogens to survive within host macrophages.