

# 化学科 & リーディング大学院講演会

Department of Chemistry, Faculty of Science &  
Leading Graduate School Promotion Center, Ochanomizu University  
お茶の水女子大学理学部化学科、共催：リーディング大学院推進センター

## *Peptides as Tools to Eradicate Intracellular Pathogenic Bacteria and Develop Biomaterials for Regenerative Medicine*



講師 Prof. Jean A. Chmielewski

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Department of Chemistry, Purdue University, USA

This seminar will provide insights into two different areas in Chemical Biology: the development of agents that target intracellular pathogenic bacteria and biomaterials for tissue engineering. The first half of the talk will focus on the significant challenges posed by bacterial pathogens that have evolved to inhabit mammalian cells, such as phagocytic macrophages. Within these intracellular safe havens bacteria, such as *Mycobacterium*, form a repository and are able to evade the host immune response as well as a number of antibiotic drugs. We have developed a class of molecules, cationic amphiphilic polyproline helices (CAPHs), that have a dual mode of action: non-lytic antibacterial activity with the ability to localize within mammalian cells. These agents efficiently target and kill pathogenic intracellular bacteria, including *Salmonella* and *Brucella*, within human macrophages. In the second half of the talk the focus will switch to an innovative strategy to produce synthetic, three-dimensional, functionalized collagen-based materials with enhanced biological functionality over native collagen. Small collagen peptides have been designed that self assemble into well-ordered nano and microscale structures. Strategically placed metal-binding sites within the collagen peptides drive metal-promoted assembly, producing unique micron-sized spheres, fibers, meshes and disks. Additional ligand binding sites within and on the surface of the collagen materials are harnessed for inclusion of bioactive molecules, including growth factors and cell adhesion agents. The use of these materials in drug delivery and tissue growth will be discussed.

日時： 2017年3月29日(水) 14:30～15:30

場所： 化学科第1講義室(理1-415)

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