



COLLOQUIUM IN PATHOPHYSIOLOGY, INFECTIOLOGY AND IMMUNOLOGY

Cheng Zhu, PhD

***Walter H. Counter Department of Biomedical
Engineering
Georgia Institute of Technology and
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***“Outside-in/inside-out loop of the TCR
mechanotransduction apparatus”***

host: Johannes Huppa

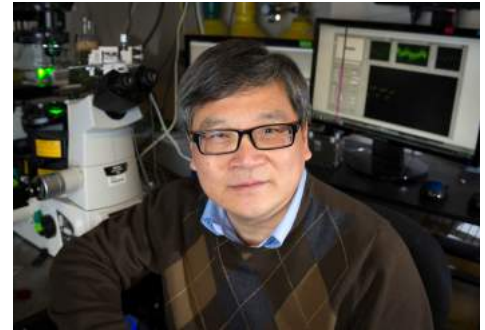
**Where: Lecture Hall 1, Institute for Hygiene,
Kinderspitalgasse 15, 1090 Vienna**

When: Tuesday, February 6, 2018, 4.00 pm



Biosketch

Cheng Zhu, PhD



- **Dr. Cheng Zhu** is a Regent's Professor of Biomedical Engineering, Mechanical Engineering, and Physics and holds the J. Erskine Love Endowed Chair in Engineering at the Georgia Institute of Technology and Emory University. As a graduate student at Columbia University and postdoctoral fellow at the University of California, San Diego he focused on the mathematical modeling of cell locomotion and cell adhesion, respectively. In 1990, after starting his own laboratory at Georgia Tech, he pioneered the two-dimensional (2D) analysis of interactions at the junctional interface between molecules anchored to two opposing surfaces by devising several experimental methods with custom-designed instruments and developing mathematical models. Using the adhesion frequency assay, the force-clamp lifetime assay, the thermal fluctuation assay, and the molecular stiffness assays the Zhu lab has studied interactions of selectins, integrins, cadherins, platelet GPIb and Fc receptors. More recently, the Zhu lab has applied these 2D assays to the studies of interactions of the T cell receptors, CD4/8 coreceptors, and co-stimulatory/co-inhibitory receptors with their respective ligands.

Recent publications

- Seo YJ, Jothikumar P, Suthar MS, **Zhu C**, Grakoui A (2016) Local Cellular and Cytokine Cues in the Spleen Regulate In Situ T Cell Receptor Affinity, Function, and Fate of CD8+ T Cells. *Immunity* 45(5):988-998.
- Liu B, Chen W, Evavold BD, **Zhu C** (2014) Accumulation of dynamic catch bonds between TCR and agonist peptide-MHC triggers T cell signaling. *Cell* 157:357-368
- Jiang N, Huang J, Edwards LJ, Liu B, Zhang Beal CD, Evavold BD, and **Zhu C** (2011), Two-stage cooperative T cell receptor-peptide major histocompatibility complex-CD8 trimolecular interactions amplify antigen discrimination, *Immunity* 34:13-23.
- Huang J, Zarnitsyna VI, Liu B, Edwards LJ, Jiang N, Evavold BD, and **Zhu C**, (2010) The kinetics of two- dimensional TCR and pMHC interactions determine T-cell responsiveness, *Nature* 464:932-936.