

## **Ivan Maly, Department of Computational Biology, Receives NIH R01 Award**

Dr. Ivan Maly, of the Department of Computational Biology, School of Medicine, University of Pittsburgh has received a five-year NIH R01 Award for his project entitled, “Quantitative Study of T-Cell Polarization.”

Through this award, Dr. Maly will continue his studies of T-cell polarization, with a goal of putting our understanding of this process on a firm quantitative basis. It is well known that T cells of the immune system polarize, i.e., orient themselves toward their targets, such as infected or tumor cells to be eliminated, with a crucial component being reorientation of the centrosome toward the target. However, an understanding of the mechanism of this process is currently lacking. Dr. Maly’s studies will test his hypothesis that, contrary to the accepted notion, the basic mechanism of T-cell polarization is whole-cell movement and deformation on contact with the target.

The studies will employ, first, a simplified experimental system of T cells stimulated with planar biomimetic substrates. Next, the contribution of specific force-generating intracellular processes to centrosome translocation will be determined. Finally the understanding gained by studying this simplified system will be applied to high-throughput measurements, and extrapolated computationally to the realistic case of T cell-target cell interaction.

This project will yield a rigorous understanding of centrosome polarization, a biomedically significant phenomenon of the immune system. An additional outcome will be substantial improvements in the methodology for this type of quantitative biomedical research.