



## **Dr. Michael Pugia**

Research Fellow & Director, Single Cell Bioanalytics Center  
Indiana Biosciences Research Institute

### ***“The role of the C-Terminal Fragment of the adiponectin receptor in the transition from the innate to adaptive immunity”***

The proteomic discovery that the C-terminal fragment of adiponectin receptor (CTF) was lacking from diabetic plasma has led to intensive study of a biological role of CTF in diabetic diseases (Pugia et al. [2005](#)). The first key role elucidated, was that CTF is strong ligand for insulin degradation enzyme (IDE) serves a potential transport function for IDE absorption into cells and tissues. Under normal circumstances intracellular insulin is degraded by IDE in the endosome and maintains insulin receptor sensitivity. Under inflammatory circumstances, the TNF alpha cleavage protease (TACE) was shown to release CTF from the full receptor. Released CTF was found to primarily accumulate in the liver but also in, brain, pancreas, muscle. Free CTF is a strong inhibitor of IDE and increases intracellular insulin which decreases the insulin receptor response. However recently a second key role of CTF has started to clarify, when the primary circulating form was discovered to be CTF bound covalently to immunoglobulins as Ig-CTF. Higher tissue Ig-CTF and lower plasma Ig-CTF correlates with inflammation and diabetes in both humans and animals. The formation of Ig-CTF appears to occur during the clearance of immunoglobulin attracted to inflamed cell surfaces. As a plasma protein, Ig-CTF binds to immune cells in the blood and remains under investigation as new findings of Ig-CTF on antigen presenting cells in the human spleen are suggesting a role in lymphocyte selection.

Dr. Pugia joined IBRI in 2016 following a successful 30-year career in the biomedical in-vitro diagnostic industry. There he contributed to more than 20 new product launches for Bayer and Siemens and spent 15 years as a director of research and development working on next generation analytical and diagnostic technologies in collaboration with leading institutions and companies. His primary research interest is the development of single-cell bioanalytical technology for proteomic biomarkers discovery in the fields of endocrinology and oncology.

## **PI4D Seminar**

**Thursday, October 26, 2017**

**9:00 – 10:00 in Drug Discovery  
first floor conference room**