

Biophysical Viewpoint on Designing a Diagnostic Test

Sergey Y. Tetin

Diagnostics Research, Abbott Diagnostics Division,
Abbott Park, IL 60064

Tuesday April 21, 2015

4pm – 5pm

**SMART Enterprise Wing Level 5,
Perseverance Rooms 1 & 2**

Application of biophysical tools facilitates the design of robust diagnostic immunoassays. We implemented several biophysical methods including X-ray and NMR analysis, fluorescence fluctuation spectroscopy and fluorescence microscopy, to perform structure-function and binding characterizations of the assay components. Measuring pertinent equilibrium and kinetic coefficients of antibodies and related target molecules reveals the inherent limits in using specific reagent combinations imposed by the detection concentration range and chosen incubation times. The apparent kinetic rates at each assay step were used to compute the assay calibration plot. The experimental assay results were found to be in good agreement with the computed data confirming that applying biophysical tools provides a solid foundation for immunoassay design and optimization.



Dr. Tetin, M.D., Ph.D., earned his degrees in Ukraine. He came to the University of Illinois at Urbana Champaign in 1991 as a postdoctoral fellow and then held an academic position at Texas A&M University. In 1996 he joined Abbott. Currently, he is the Head of the Molecular Binding Characterization group in the Diagnostics Division. His group pioneers in the development of new ultra-sensitive techniques for detection of molecular interactions and provides scientific guidance in reagent selection for diagnostic immunoassays. Dr. Tetin is a Research Fellow in the Volwiler Society, which recognizes outstanding research achievements at Abbott. He is also a member of the Advisory Board for NIH Resource Center, Laboratory for Fluorescence Dynamics, at UC Irvine.