

*This document describes the course that can be given at your site.
It also applies largely to the public version that is presented at conferences.*

Label-Free Assays in Drug Discovery: Principles and Applications

John C. (Jack) Owicki, Ph.D.
Owicki Consulting

- ◆ Label-free assays are becoming increasingly important in drug discovery.
- ◆ The scientific principles of the assays are often not well understood by users, which can cause big problems in assay development and interpretation.
- ◆ Now you can bring a professional-development short course on this topic to your site, taught by an authority with a strong track record in presenting scientific short courses over the past decade.
- ◆ This course is a survey of the most important label-free methods in drug discovery. The biophysical principles are presented in a way that is accessible to workers with biological backgrounds, and some of the most important applications are illustrated.

Why Hold the Course at Your Site?

- ◆ It will improve your ability to choose and use appropriate technologies for your analytical tasks.
- ◆ It is convenient. You provide only a room and a projector (and reproduction of course notes for courses presented outside North America). There are no travel hassles. There is a single pre-negotiated all-inclusive payment.
- ◆ It is economical compared with the travel of a group of people to off-site training.
- ◆ Continuing education for professional development is good business.

Who Should Attend?

- ◆ Scientists
- ◆ Technicians
- ◆ Engineers
- ◆ No background in the methods is assumed
- ◆ Special arrangements can be made for people with less technical experience, e.g., many sales representatives.

Length of the Course

- ◆ The course is normally given as a one-day presentation.
- ◆ A more limited half-day presentation can be arranged within the San Francisco Bay area.

Learning Objectives

- ◆ Master the basic concepts of label-free assay methods at the level required to understand practical assays and instrumentation.
- ◆ Become familiar with the application of label-free assays to the major classes of pharmacological targets.
- ◆ Learn the important types of pitfalls and interferences in label-free assays.
- ◆ Discover where to look for more advanced information, using the extensive list of references provided.

Topics

A list of standard topics follows. It is sometimes possible to include topics that are not on the list. If you require presentation of such material, contact Jack to discuss feasibility.

- ◆ Calorimetry
 - The gold standard for affinity and binding thermodynamics
 - Isothermal and differential scanning calorimetry
 - Microcalorimetry and nanocalorimetry
- ◆ Mass spectrometry
 - A generic means of detecting enzymatic reaction, with significant recent improvements in throughput
 - A way to screen for the binding of one ligand out of a mixture
- ◆ Nuclear magnetic resonance
 - Ligand binding by target chemical-shift mapping
 - Ligand binding by saturation-transfer and relaxation-time methods
 - Applications to fragment-based drug discovery
 - NMR vs. crystallography for structural information
- ◆ Optical surface-binding assays (covered in depth)
 - Surface plasmon resonance
 - Resonant waveguides
 - Reflective interference
 - Surface-immobilization chemistries
 - Surface vs. solution binding
 - Binding kinetics: principles and pitfalls
 - Best practices for binding determinations
- ◆ Electro-mechanical surface-binding assays
 - Quartz-crystal microbalances
 - Micro-cantilevers
- ◆ Assays based on monitoring cellular metabolic rate
 - Targets that are associated with cellular metabolic activity
 - Oxygen consumption rate
 - Extracellular acidification rate as an indicator of glycolytic rate
 - Measurements on isolated mitochondria as well as intact cells
- ◆ Functional assays using cells grown on the sensor surface
 - Impedance measurements
 - Resonant waveguides
 - Detecting receptor responses
 - Determining G-protein receptor coupling mechanism from the sensor response?
 - Detecting cell growth, cytotoxicity, and apoptosis

About the Instructor

Jack Owicki is an independent consultant with extensive experience in bioanalytical methods for drug discovery. As Vice President for Research at LJL BioSystems and Associate Technical Director at Molecular Devices, he was involved in the research and development of successful analytical systems for high-throughput screening.

Prior to his industrial work, he was Assoc. Prof. of Biophysics at the Univ. of California, Berkeley, where he investigated intermolecular interactions at membrane surfaces, also teaching graduate and undergraduate biophysics courses. He was a post-doc in Biophysical Chemistry at Stanford Univ., holds a Ph.D. in Biophysical Chemistry from Cornell Univ., and M.S. and B.S. degrees in Biochemistry from Michigan State University.

The author of over 60 technical articles and patents, he was on the Program Committee for the 2001 Annual Meeting of the Society for Biomolecular Screening (SBS), chairing the session on Advances in Detection Technologies. He coordinated the short-course program at the Annual SBS Meeting in 2003 and again has this role in 2004.

He has been on the editorial boards of the Journal of Biomolecular Screening, the Journal of Fluorescence, the Biophysical Journal, the Annual Review of Biophysics and Biomolecular Structure, and the Journal of Biomedical Optics.

In addition to his regular consulting over the past eleven years, he has successfully presented courses on methods in drug discovery at many conferences, under the auspices of the Society for Biomolecular Sciences, Select Biosciences, and IBC. He has also given the course at many industrial sites, including pharmaceutical companies, biotech companies, and companies that vend instruments and reagents for drug discovery.

Cost

The all-inclusive fee generally ranges from \$5,000 to \$8,000, a bit higher outside North America. Contact Jack to discuss your needs and obtain a quote.

Contact Information:

John C. (Jack) Owicki, Ph.D.
Owicki Consulting
956 North California Avenue
Palo Alto, CA 94303

Tel 650 565-9690
Email jack@owicki.com
Web www.owicki.com