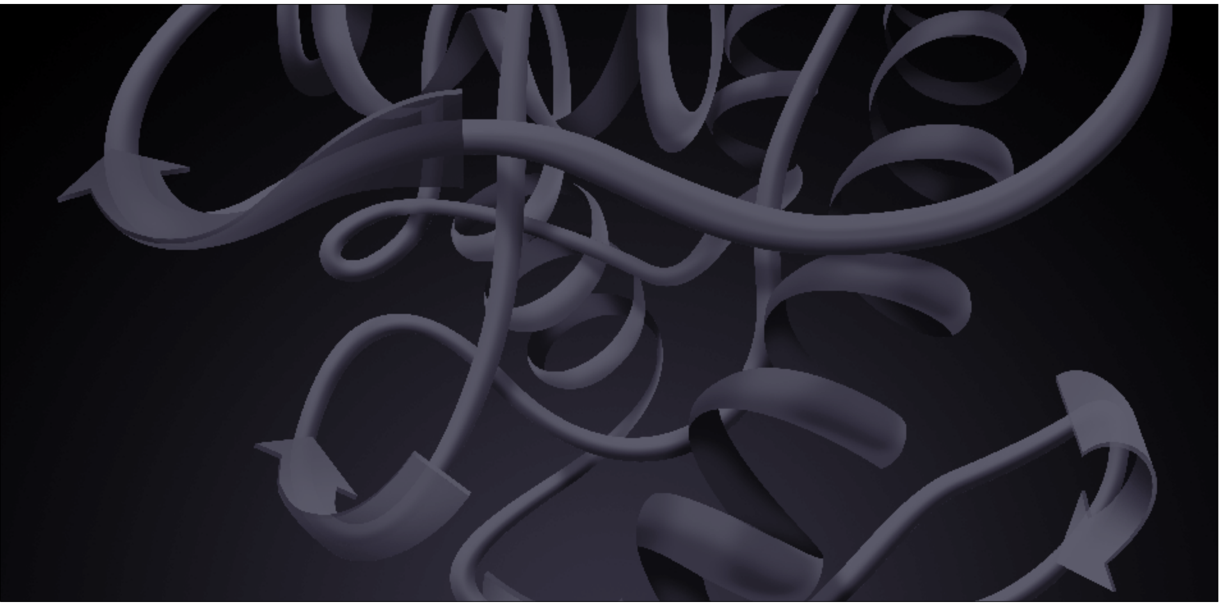


ProteOn™ XPR36

Protein Interaction Array System

The Power of Parallel Processing

BIO-RAD

Genomics

- Microarrays
- CFX96™ and CFX384™ real-time PCR detection systems

Recombinant Protein Constructs

- 1000-Series thermal cyclers
- ReadyAgarose™ system
- Sub-Cell® electrophoresis cells

Transfection and Gene Expression

- Gene Pulser MXcell™ electroporation system
- TransFectin™ lipid reagent, siLentFect™ lipid reagent for RNAi, and HEKFectin™ and COSFectin™ cell line–specific lipid reagents

Protein Purification and Quantitation

- Bio-Plex™ suspension array system
- Chromatography media and systems
- Criterion™ system
- Experion™ system
- Protein assay kits
- SmartSpec™ Plus spectrophotometer

Recombinant Proteins

Expression Proteomics

- 2-D sample prep
- Experion system
- Protein isolation

Protein Identification

Antibody Development

Purified Antibodies

- Chromatography media and systems

Native Protein Purification

- Criterion system
- Experion system
- Protein assay kits
- SmartSpec Plus spectrophotometer

Native Proteins

▪ Concentration ▪ Equilibrium ▪ Kinetics ▪ Specificity/Affinity

Commercial Antibodies

Prior Knowledge and Database Information

Peptides, Nucleic Acids, and Small-Molecule Compounds

Bridge the Gap Between Discovery and Function

Performance

- XPR™ technology — a crisscross 6 x 6 microfluidic array for analysis of up to 36 biomolecular interactions
- Parallel processing for efficient optimization of immobilization and interaction conditions
- Temperature control of autosampler and sensor chip

Sensor Chips

- Protein-protein, protein-peptide, protein-small molecule, and protein-DNA interaction analysis
- Easy activation for efficient immobilization and high ligand activity
- Uniform spot-to-spot response
- Bar codes for automatic chip identification and usage record

Software

- Flexible, user-guided, wizard-driven software and maintenance protocols
- Protocol templates to assist with experimental design and setup
- Interspot referencing and reference channel subtraction
- Automatic baseline and injection alignment of sensorgrams
- 3 analysis modules: determination of kinetic constants, concentration determination, and equilibrium analysis

Regulatory Tools

- ProteOn Manager, Security Edition, for U.S. FDA 21 CFR Part 11 compliance
- ProteOn XPR36 Installation Qualification/ Operation Qualification (IQ/OQ) Kit

Proteins play a crucial role in cellular structure and function. The search, discovery, and characterization of proteins is the first step in understanding how each protein participates in a biological process. The next logical step is to understand how a protein functions: What binding partners exist? Is this protein involved in a network? How does one protein interface with another? What are the binding dynamics? The ProteOn XPR36 system bridges the gap between discovery and function, providing the ability to understand protein interactions with the efficiency, flexibility, and versatility of parallel processing.

ProteOn XPR36 Protein Interaction Array System

The ProteOn XPR36 protein interaction array system is an SPR optical biosensor designed to provide all the benefits of parallel processing. XPR technology — a dynamic and unique approach to multiplexing — greatly improves the efficiency, flexibility, and results of your experimental design, enabling you to run more experiments in a shorter period of time. The ProteOn XPR36 workflow is guided by ProteOn Manager™ software — an easy-to-use, intuitive interface that provides a flexible yet guided approach to instrument control, experimental setup, and data analysis. The ProteOn XPR36 system includes all the components necessary for successful and efficient protein interaction analysis: instrumentation, software, sensor chips, buffers and reagents, protocol development kits, and tools to meet regulatory requirements.

One-shot Kinetics™

Achieve a complete kinetic profile of a biomolecular interaction:

- In a single experiment
- On a single chip
- Without the need for regeneration

6 x 6 Parallel Processing

Optimize, Maximize, Analyze

XPR technology offers the ability to monitor up to 36 different interactions in real time by processing, in parallel, 6 different ligands with 6 different analytes.

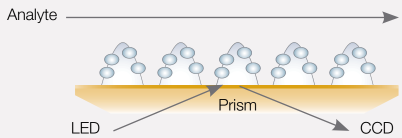
The 6 x 6 interaction array provides:

- Flexible experimental design — test a variety of experimental conditions on a single chip in a single experiment
- High sample throughput — immobilize a single panel of 6 ligands and screen multiple panels of analytes
- Rapid data generation — screen up to 180 interactions per hour with immobilization of 6 ligands

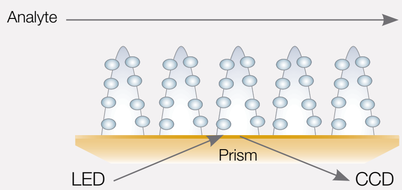
ProteOn XPR36 Workflow

1. Select a Sensor Chip Surface

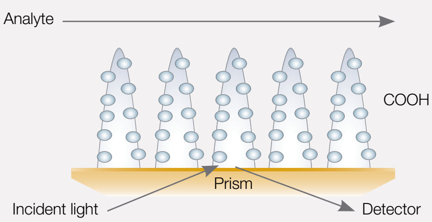
A family of surface chemistries is available for easy ligand activation. ProteOn sensor chips have been thoroughly tested for a wide range of protein-protein, protein-peptide, protein-small molecule, and protein-DNA interactions. Each sensor chip includes a unique bar code for identification and a usage record. ProteOn sensor chips offer outstanding kinetic response characteristics, high binding capacities, sufficient sensitivity to detect low molecular weight analytes, uniform spot-to-spot response, minimal drift, and long-term storage stability.



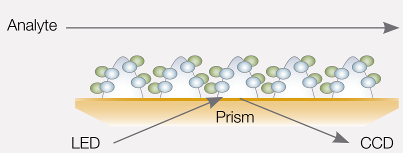
ProteOn GLC sensor chip. For general amine coupling: compact polymer layer with binding capacity of approximately one protein monolayer. Suitable for various applications, including protein-protein interaction analysis.



ProteOn GLM sensor chip. For general amine coupling: extended polymer matrix with intermediate binding capacity for high response. Suitable for various applications, including protein-small molecule and protein-protein interaction analysis.



ProteOn GLH sensor chip. For general amine coupling: highly extended polymer layer for maximum binding capacity. Suitable for protein-small molecule and protein-protein interactions where highest sensitivity is the primary objective.



ProteOn NLC sensor chip. For binding of biotinylated molecules: NeutrAvidin immobilized to GLC layer. Suitable for various applications, including protein-DNA and protein-protein interaction analysis.

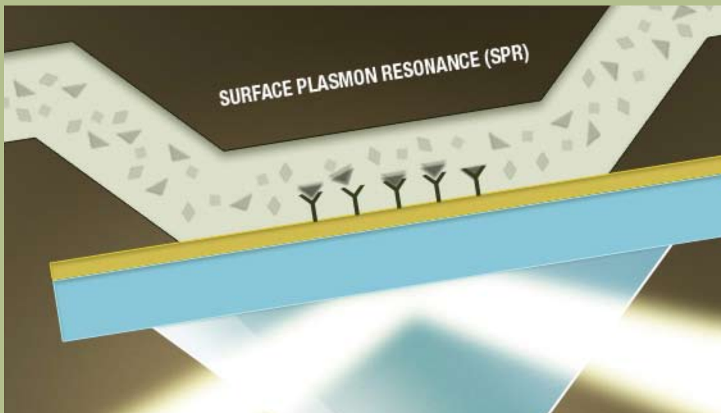
2. Optimize Experimental Conditions

A range of ProteOn protocol development kits and reagents are available to optimize coupling, immobilization, regeneration, and protocol development. The kits provide sufficient reagents and sensor chips to perform and analyze a complete ProteOn experiment. New users will gain familiarity with instrument setup, operation, experimental design, and data analysis. Experienced users will find the kits useful for system benchmarking and to provide positive control reagents for protocol development.

ProteOn Amine Coupling Kit

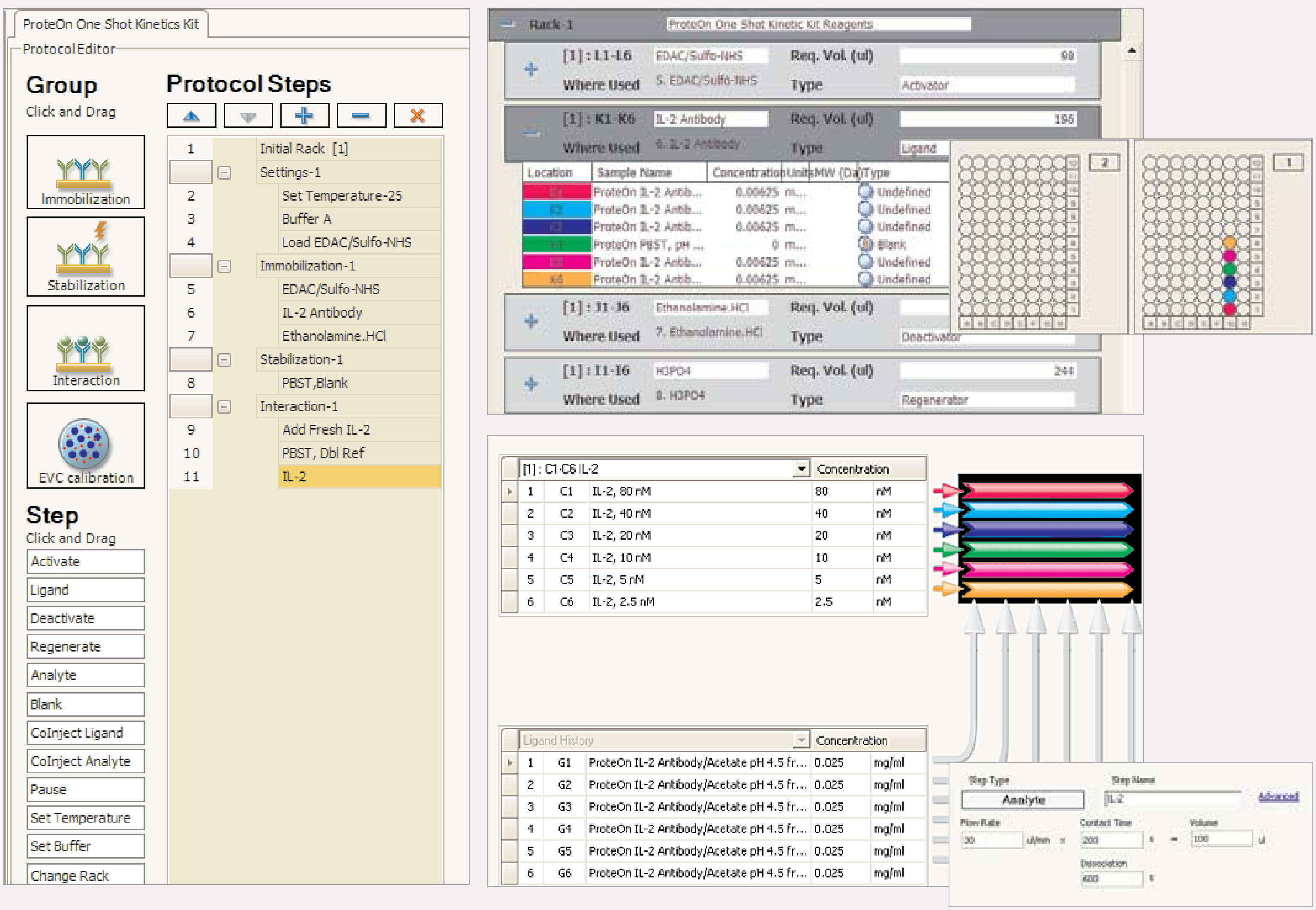
ProteOn One-shot Kinetics Kit

ProteOn Regeneration Kit



3. Create a Protocol

Create a protocol using ProteOn Manager software, a user-guided software interface for instrument control, experimental design, data collection, and analysis. The ProteOn Manager software workflow provides a guided, sequential yet flexible approach to experimental design. Get started by opening the protocol database and selecting from predefined protocol templates, or create your own custom protocol. ProteOn Manager software lets you define your sample panels, import sample lists, or go straight to defining your protocol steps (and define your sample panels later). For convenience, ProteOn Manager software automatically associates samples to protocol steps. Additionally, ProteOn Manager software provides an easy-to-use guide for sensor chip orientation, so you always know the exact position of each sample on the 6 x 6 array.

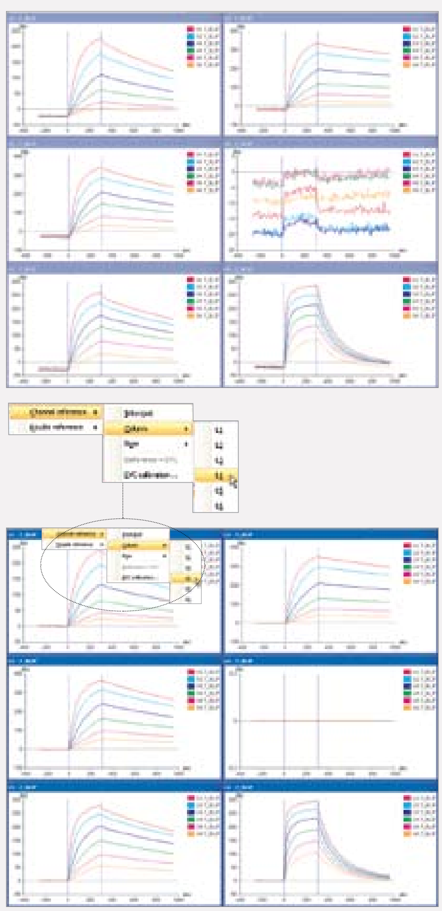


4. Manage Samples

The ProteOn XPR36 system has a flexible sample configuration. Samples may be arranged in a rack or microplate configuration. Repetitive samples may even be consolidated to save time and eliminate duplicate sample preparation. Exact sample location can be defined by the user or by ProteOn Manager software based on your protocol design. A sample layout report is generated that can be conveniently printed to assist with loading samples into the autosampler.

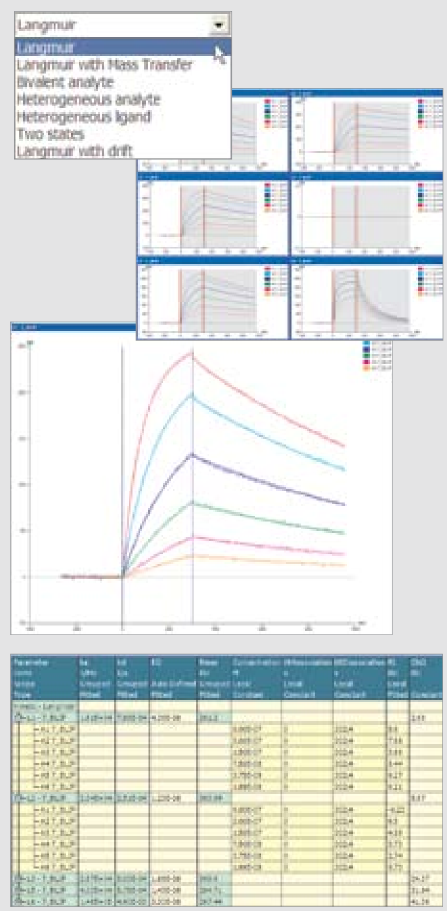
5. Collect and Process Data

ProteOn Manager software collects data in real time, allowing you to track each protocol step and the duration of each experiment. Live sensorgrams may be referenced, grouped by sample type, and displayed across individual channels. Raw data are then processed with the help of data-processing wizards that align data, remove artifacts, and perform reference subtraction.



6. Analyze Results

ProteOn Manager software uses a flexible, wizard-driven approach to analyze and review your data. Three analysis modules are available — concentration analysis, equilibrium analysis, and kinetic constant analysis. Each analysis module allows you to define analysis parameters, perform calculations such as MW normalization using defined report points, as well as review and print results.



Ordering Information

Catalog #	Description
ProteOn System, Software, and Regulatory Tools	
176-0100	**ProteOn XPR36 Protein Interaction Array System,** 100–240 V, includes ProteOn XPR36 instrument, 2 licensed copies of ProteOn Manager software, controller and display, communication cable, sample rack, rack needle holder, microplate needle holder, collection tank, choice of 2 sensor chips, one-shot kinetics kit, maintenance kit, 2 bottles of PBS/Tween running buffer, chip normalization solution, 200 sample vials, 25 microplates with standard wells, 50 sheets of microplate sealing film, instructions
176-0200	**ProteOn Manager Software,** for ProteOn XPR36 instrument control, experiment design, data collection, and analysis
176-0210	**ProteOn Manager Software, Security Edition,** 1-user license, includes 1 HASP key
176-4200	**ProteOn XPR36 IQ/OQ Kit,** includes ProteOn XPR36 IQ/OQ software, ProteOn Manager software, ProteOn operation qualification (OQ) kit
176-4225	**ProteOn XPR36 Regulatory Tools Package,** includes ProteOn Manager software, Security Edition, 1-user license, 1 HASP key, ProteOn XPR36 IQ/OQ kit

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