

Policy for Research Access to the Surface Plasmon Resonance Spectrometer in the Biotechnology Center Distributed Core

<u>Instrument:</u>	Biacore 3000
<u>Location:</u>	Biotechnology Building Room 4327
<u>Faculty in Charge:</u>	Professor Robert Linhardt Professor Fuming Zhang
<u>Operators/Trainers:</u>	Professor Fuming Zhang Dr. Eva Munoz

Description of Instrument:

Surface plasmon resonance (SPR) is a powerful technique used to measure biomolecular interactions in real-time in a label-free environment. One of the interactants is immobilized to the sensor surface and the others are free in solution and passed over the surface. Association and dissociation kinetics are measured in arbitrary units and displayed in a graph called the sensorgram.

The **BIACORE 3000** instrument is equipped with a continuous flow system in which four channels are coupled in series. An automatic sample needle delivers buffer and sample to the sensor chip surface. The continuous flow ensures that no changes in analyte concentration occur during the measurement. Constant free analyte concentration is particularly important for the determination of kinetic parameters. By using one of the flow channels as an in-line reference, a perfect control is obtained on the same sample aliquot, eliminating the variations, which occur with separate reference and sample measurements.

Direct binding of non-labeled components can be monitored in samples ranging from small organic compounds and peptides to eucaryotic cells. Sensitivity depends on many factors, such as the chosen methodology, the molecular weight and the affinity of the interactants. Very low analyte concentrations down to the picomolar range can be handled with confidence. Non-specific binding and protein denaturation are both minimized by the use of biocompatible materials with low surface adsorption properties.

Rules for Instrument Use:

1. Instrument time must be booked in advance.
2. Instrument log book must be filled before and after use. All instrument problems must be entered into logbook.
3. The instrument can not be altered in anyway and all chips and materials must be from Biacore. Only filtered, aqueous solvents can be used in this instrument. Any activities that misuse instrument, void warranty, or cause damage to the instrument will be the responsibility of the offending group.
4. If you have any doubts or questions concerning the correct operation of this instrument, please contact the Operators.
5. The area around the instrument and the instrument itself must be thoroughly cleaned following use during the schedule session. Any mess or problems that need to be cleaned or resolved by the Operator will be billed at the hourly operator rate.

Scheduling:

Scheduling will be through the instrument operators ([see](http://www.rpi.edu/research/biotech/facilities/biacore3000.html) webpage www.rpi.edu/research/biotech/facilities/biacore3000.html). Booking must be made within 24 hours in advance of use and cancellation is required within 24 hours of scheduled use (otherwise full self operator fee will be assessed (for time scheduled)). All scheduling conflicts will be settled by Operators.

Training:

Half day training sessions are available by appointment at a fee of \$250/group (maximum of 2 people from each group). These sessions will use standard analytes and will not involve experimental samples. All supplies will be provided by Operator. Theoretical, experimental and data processing aspects of SPR will be covered in these sessions. A minimum of one session is required for any independent (self operated) use of this instrument.

Types of Users:

There are 6 types of users and they will be given instrument priority of 1 (high priority)-5 (low priority) for instrument access.

1. Operator
2. Member – self operated
3. Hourly – operator assisted

4. Hourly – self operated
5. Off campus users – operated assisted
6. Unfunded users

Operators:

These will include currently listed Operators (Drs. Zhang and Munoz) as well as highly experienced personnel from a “member’s” group who requests to become a new Operator. These requests will be determined by the Instrument Oversight Committee.

Member:

There are 5 membership shares available for this instrument. Each full share will require a yearly payment of \$4,000, which will cover training cost for 2 members of the research group purchasing a share, 52 days/yr of instrument access and membership on the Oversight Committee. Half share memberships are also available for a yearly payment of \$2,000, which will cover training costs for 1 member of a research group purchasing a share and 25 days/yr of instrument access.

Hourly-Operator Assisted:

Any member of the RPI faculty, RPI student or postdoctoral scientist may schedule the use of the instrument in one-hour blocks. Prior to scheduling, the user must email an Operator to confirm the Operators time availability for this scheduled use of the instrument. *Under no circumstances can this user operate the instrument in the absence of an Operator.*

Hourly-Self Operated:

After successfully completing a training session, a trained individual may schedule research time on the instrument in one-hour blocks. *No assistance from the Operator should be expected from a self-operator.*

Off Campus Users:

All off campus users will be on an Operator assisted hourly basis. Scheduling should be made by emailing an Operator.

Unfunded Users:

Groups without funding can obtain limited access to the instrument on a fee-free basis. To request limited access to this instrument, the group must prepare a request letter: (1) stating that no funds are available; (2) describing experiments planned; (3) indicating time requested; (4) detailing future grant proposals that

will rely on the data obtained from this experiment; (5) agreeing to request that future proposals list instrument time in proposed budget; and (6) stating that all publications associated with the fee-free use of the instrument acknowledge the Biacore Core Facility in the Biotechnology Center for support and either acknowledge or list as coauthor (as appropriate) the Operator who assisted in obtaining these data.

Fees:

- Yearly membership fee \$4,000
- Yearly half membership fee \$2,000
- Half day training session \$250
- Off campus, Operator assisted fee \$150/hr (1 hr minimum)
- Operator assisted fee \$60/hr (1 hr minimum)
- Consulting/Help fee \$60/hr (1 hr minimum)
- Self Operator fee \$30/hr (1 hr minimum)

Fund Disbursement:

The funds collected from the use of the Biacore 3000 will be first applied to cover the instrument service agreement (~ \$20,000/yr). Fees in excess of this service agreement will be used to pay the salary of the Operators. Any fees collected in excess of the service agreement and Operators salaries (unexpected) will be returned to users on a proportional basis and will result in a reduction of user and member fees in subsequent years.

Oversight Committee:

The Oversight Committee will be chaired by Prof. Linhardt and include one Operator (Dr. Zhang), the PI from each group having a full membership and the Director of the Biotechnology Center.

List of Current Members:

Professor Steve Cramer, Chemical and Biological Engineering
Professor Ravi Kane, Chemical and Biological Engineering
Professor Linda McGown, Chemistry and Chemical Biology
Professor Robert Linhardt, Chemistry and Chemical Biology
Professor Julie Stenken, Chemistry and Chemical Biology
Professor Chunyu Wang, Biology

List of Potential Regional Users:

Acceptys Inc.
Albany College of Medicine
Albany College of Pharmacy
Albany Molecular Research
Clinomics Biosciences
Regeneron Pharmaceuticals
SUNY Albany
Taconic Biotechnology
Wadsworth Laboratory

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