SSRL SMB and MEIS SAMPLE PREPARATION LABORATORY EQUIPMENT

The SSRL Structural Molecular Biology (SMB) and Molecular Environmental and Interface Science (MEIS) Sample Preparation Laboratories are available to users by prearrangement. **To use a laboratory, you must read and sign the laboratory access form (attached at the end of this package), and provide a list of all chemicals that you are bringing to use or store in the Sample Preparation Laboratory. This list must be given to the User Administration receptionist in SSRL Bldg. 120 before obtaining the lab door lock combination from her.**

A list of chemicals available in the Laboratories is also attached.

The SSRL SMB and MES Sample Preparation Laboratories presently contain the following equipment and facilities:

Building 120, rooms 257 & 260, SMB Laboratory:

- Hewlett-Packard UV-VIS diode-array spectrophotometer model #8452A with a 89090A Peltier temperature control unit. Wavelength range 190-820 nm with a 2-nm optical bandwidth. Temperature range 10-70°C. Disposable plastic cuvettes and, on a sign-out basis, quartz and glass cuvettes are available.
- Beckman GPKR centrifuge, 8000 rpm max. Fixed angle rotor is available.
- Walk-in 4°C cold room with a Wild M3Z stereo microscope, a pH meter with Ag/AgCl semi- and micro- glass electrodes.
- Millipore water purifier, type IV 18 megaohm.
- Vacuum Atmospheres HE-43-2-NEX glove-box (including an oxygen analyzer) with nitrogen atmosphere for inert atmosphere (oxygen and moisture free) work. Open handling of volatile solvents within the box is forbidden. There is a Mettler PR203 balance (0-210g±0.001g/±0.005g) permanently in the box and a microscope with CCD camera and display in the rear box wall. Available after required training has been completed.
- Jeol JES-RE1X X-band EPR spectrometer with an Oxford LHe cryostat and a Wilmad LN2 cryostat. Available after required training has been completed.
- Varian Cary 50 UV-VIS spectrophotometer. Wavelength range 200-900 nm with a 1.5-nm fixed spectral bandwidth. Available after required training has been completed.

Building 131, room 209, SMB Laboratory:

- Sorvall Discovery M150 microultracentrifuge, 150,000 rpm max. Fixed angle and swinging bucket rotors available.
- Vacuum Atmospheres HE-493 glove-box (including a Vacuum Atmospheres oxygen analyzer) with nitrogen atmosphere for inert atmosphere (oxygen and moisture free) work. Open handling of volatile solvents within the box is forbidden. There is a Mettler PM460 balance (0-410 g±0.001 g/±0.0l g) permanently in the box. Available after required training has been completed.
- Precision Scientific convection oven with maximum temperature of 225°C.
- Walk-in 4°C cold room with refrigerated Fisher Marathon 21K/Br centrifuge (0-13,300 rpm dependent on rotor), pH meter with a Ag/AgCl glass electrode and a micro electrode.
- Forma Scientific model 985 –86°C freezer for temporary storage of samples.
- Millipore water purifier, type IV 18 megaohm.

Building 131, room 113, MEIS Laboratory:

- Coy anaerobic chamber (Type C, model 7100-000) with auto airlock for wet and dry sample preparations. 5% H2/95% N2 mix.
- Sorvall Super-T 21 bench-top refrigerated high-speed centrifuge. Max 21,000 RPM, 49,555 g acceleration. Temp range is –10 to 40°C. 4x 250 mL and 6 x 50 mL fixed-angle rotors available. Adaptors available for smaller tubes.
- Test tube rotator (up to 50 mL size) and shaker.
- Millipore Elix system (low metals) 18 megaohm.
- Conductivity meter

All Laboratories:

- pH meters with Ag/AgCl semi- and micro-glass electrodes. Standard buffers are available.
- Stereomicroscope with adjustable lenses, polarized light attachment, rotational stage and crystal alignment stage (SMB labs).
- Mettler PC440 balance for the range 0.001-400 grams. Reproducibility ±0.001 grams up to 40 grams; ±0.01 grams above that (SMB labs). Mettler AG204 analytical balance, 0 – 210 g +/- 0.1 mg; and a Mettler PG5002-S top-loading balance, 0 – 5.1 Kg +/- .01 g (MEiS lab).

- Mettler AG104 analytical balance, range 0.001-101g. Repeatability ±0.1 mg.
- Ice machines, refrigerator/freezer for temporary storage of chemicals and biological samples, dishwasher, limited glassware, common chemicals and other general laboratory equipment such as microfuge with microtubes, vortex mixer, ultrasonic cleaning bath, magnetic stirrers, hot plates, etc.

Most instruments have instructions for their use. Instructions can also be mailed to you prior to your visit if requested. [SMB Labs (120 and 131-209): Serena DeBeer George, serena@ssrl.slac.stanford.edu (650) 926-4674 or Britt Hedman, hedman@ssrl.slac.stanford.edu, (650)-926-3052; MEIS lab: John Bargar, bargar@slac.stanford.edu, (650)926-4949]

NOTE TO ALL SSRL SMB SAMPLE PREP LAB USERS

For your convenience, the chemicals listed below are being made available to you in the SSRL Structural Molecular Biology (SMB) sample preparation laboratories in buildings 120 and 131. In some cases the chemical might be available in only one of the locations. Please note that Material Safety Data Sheets (MSDS's) for these chemicals are stored in the respective locations. If you were to bring hazardous material to SSRL that is not among those listed below, then you are required to provide the SSRL User Administration with one copy of the associated MSDS.

Your help in complying with this safety regulations is much appreciated.

Chemicals Available in the SSRL SMB Sample Preparation Laboratories:

Solids

Sodium chloride	NaCl
Sodium hydroxide	NaOH
Sodium thiosulfate	Na2S2O3·5H2O
Sodium perchlorate	NaClO4
Sodium hydrogen phosphate	Na2HPO4
Sodium dihydrogen phosphate	NaH2PO4·H2O
Sodium carbonate	Na2CO3
Sodium hydrogen carbonate	NaHCO3
Sodium acetate	NaC2H3O2
Sodium acetate	NaC2H3O2·3H2O
Sodium salicylate	NaC7H5O3
Potassium chloride	KCl
Potassium bromide	KBr
Potassium iodide	KI
Potassium sulfate	K2SO4
Potassium nitrate	KNO3
Potassium permanganate	KMnO4
Ammonium sulfate	(NH4)2SO4
Magnesium chloride	MgCl2·6H2O
Calcium chloride	CaCl2·2H2O
Ferric chloride	FeCl3
Cupric sulfate	CuSO4·5H2O
Sucrose	C12H22O11
Urea	NH2CONH2

Acids

Hydrochloric acid (conc)	HCl
Sulfuric acid (conc)	H2SO4
Nitric acid (conc)	HNO3
Phosphoric acid (conc)	H3PO4
Acetic Acid	CH3CO2H

Flammables

Acetone	(CH3)2CO
Chloroform	CHCl3
Dimethylsulfoxide	(CH3)2SO
Ethanol	C2H5OH
Ethylene glycol	C2H2(OH) 2
Glycerol	C3H5(OH) 3
Heptane	C7H16
Hexanes	C6H14
Methanol	CH3OH
1-propanol	C3H4OH
2-propanol	C3H6OH
Pyridine	C5H5N
Toluene	C6H5CH3
Xylenes	C6H4(CH3)2

Biological Buffers

EDTA (acid, Na+, Na+2 salt)
EGTA
HEPES
MES
PIPES
CHES
TRIZMA HCL
TRIZMA base
MOPS
MOPS (Na+ salt)
CAPS
TRICINE

SSRL Sample Preparation Laboratories Access Form
March, 2004

Dear SSRL User,

Welcome to the SSRL sample preparation laboratories. Due to safety concerns for you, other users of the laboratory, your samples and our equipment, the laboratories have restricted access. A spokesperson from each group using the laboratory will be given a code to the laboratory combination door lock, after reviewing the text below, with the clear understanding to transmit the information herein to the other members of the group, and that the combination can be given to those other members, but not to others.

We request of you as a user the following:

Who is responsible?

1) The responsible person of each group informs the other users in the group about the rules for the use of the laboratory, how to use the equipment, and takes responsibility for the entire group in the proper use of the laboratory.

Instrument does not work

2) The door to the sample preparation laboratory is kept closed at all times.
3) Malfunctioning or breakdown of instruments is reported as soon as possible to Serena DeBeer George (x4674) or Britt Hedman (x3052), for the SMB laboratories and to John Bargar (x4949) for the MES laboratory.

Need glovebox, epr or ultracentrifuge?

4) Use of a glove box or EPR spectrophotometer requires training. Please contact Serena DeBeer George (x4674) to arrange training for all group members that will use the equipment. Use of a glove box, ultracentrifuge, spectrophotometer, or EPR spectrometer must be registered in the log book of the instrument. This is for your own safety (so no one disturbs your measurement/sample) and for us to be able to keep the instruments in a working condition.

MSDSs

5) A list of chemicals and materials brought into the lab is filled out and given to User Administration before utilizing the lab (see attached form). It is the user's responsibility to bring MSDS's for all chemicals brought into the user labs. The MSDS's should be posted at the user's assigned workspace.

Store chemicals?

6) Chemicals CANNOT be stored in the laboratory after your experiment time has finished. It is your responsibility to remove or arrange for removal of samples and chemicals (information on hazardous waste disposal is posted in the laboratories).

Have chemical waste?

7) Used organic solvents are disposed of in the pre-labeled waste bottles in the laboratories. Note that these bottles are labeled according to solvent type, and that disposal should be made accordingly.
8) Other hazardous materials are put in proper containers, the containers labeled with contents, name of responsible person, beam line number, and date. For further information on disposal of hazardous materials, etc., see posted note in laboratories or contact Ian Evans (x3110). Alternatively, contact Serena DeBeer George (x4674), Bill Butler (x3891), or Britt Hedman (x3052) for the SMB laboratories or John Bargar (x4949) or Sam Webb (x3734) for the MES laboratory.

Sharps and glassware disposal

9) Glassware to be disposed of is first cleaned and then put in the special container marked GLASSWARE DISPOSAL. Used syringe needles and other sharp items are rinsed and disposed of in the red syringe container. Glassware or needles SHOULD NEVER be thrown in the normal waste bin.

Your work area and chemicals

10) All work involving irritant gases, solvents or hazardous materials are performed in fume hoods.
11) IT IS A REQUIREMENT THAT YOU WORK WITHIN YOUR ASSIGNED WORKSPACE, AND THAT CHEMICALS, CONTAINERS, ETC. ARE LABELED WITH THE CONTENTS, YOUR NAME, DATE AND BEAM LINE using proper labels. These labels are available at the entrance of each lab. The laboratory will be cleared out regularly and unlabeled chemicals, samples, etc. removed.

Cleaning up…

12) It is an ABSOLUTE REQUIREMENT that used glassware be washed and the workspace cleaned up after your work is finished.

"Borrowing"

13) Equipment should NOT be removed from the laboratory.
14) Each user assumes responsibility for exercising normal care in the use of the instrumentation. The cost for damage or malfunction caused by negligence will be billed to the user's account.

We hope that you will find the facility useful in your work.

I hereby take responsibility for the use of the SSRL Sample Preparation Laboratory by me and my group, for which I am the spokesperson, according to the rules outlined above.

Name ……Date ……..

Name (printed) ……Beam line ……..

Institution ……

Are you bringing any chemicals or materials into the SSRL Sample Preparation Laboratories?
_____ **No** _____ **Yes** **If yes,** provide a list of what you will bring into the labs, below. You must provide an MSDS for all chemicals brought into the labs and post these in the plastic pocket at your assigned workspace.

List of chemicals and materials that will be brought into the SSRL Sample Preparation Laboratory:

SSRL Beam Line: Proposal Number:

Spokesperson:

Date on-line: Date off-line:

Chemical/material: Approximate amount