Heilshorn Group Policies

1. Safety

Chemicals: All chemicals in the lab must have an MSDS on file in our MSDS binder. If you are the first person in our group to use a chemical, you must inform our lab safety officer so it can be added to our chemical inventory. If you are unsure of how to safely handle or use a chemical in the lab, ask. The first time you use any new chemical, read about proper usage, storage, and disposal.

Known hazards in the lab: Certain chemicals in the lab are known hazards. These include ethidium bromide, acrylamide, flammable solvents, and concentrated acids and bases. If you are uncertain about the procedures required to safely handle and dispose of these chemicals, please ask.

Waste: Chemical waste must be properly labeled and stored in the fume hood. Biohazard waste must be placed into red bags. Bacterial (non-hazardous) waste must be autoclaved prior to disposal. All sharps (blades and needles) must be placed into hard-side biohazard waste containers, even if they have not been in contact with a biohazard. Waste pick up must be scheduled with the campus Safety Office in a timely manner. If you have any questions, please ask.

Training: All personnel in the lab must have completed the Chemistry, Compressed Gas, and Biohazards Safety Training seminars. Print outs of your certificates of completion for all required training courses should be put in the lab Safety binder. If you are using radioactive substances, stem cells, blood or tissue samples, or animals, additional training is required before you can begin any of these experiments.

Safety attire: Gloves must be worn at all times. While wearing gloves, do not touch door handles, telephones, or anything else that someone without gloves may touch. Lab coats are optional depending on the nature of the experiment you are performing. Safety glasses should be worn whenever appropriate (heating of liquids, transferring large quantities of liquid between containers, when around moving parts, during fermentations, etc.) Face masks should be worn when weighing out fine powders. UV face shields must be worn when in direct contact with UV.

Accidents and emergencies: All new members should be shown the location of the fire extinguisher, fire alarm, eye wash station, and safety shower. They should also be told of the group evacuation assembly point. In the case of an emergency, dial 9-911 from campus phones or 911 from non-campus phones. All accidents (even minor) must be reported to Prof. Heilshorn.

Questions? If you have any safety questions or see practices in the lab that you consider unsafe, please notify Prof. Heilshorn, 650-796-9525, immediately.
2. Lab Policies

Energy: Turn off lights when leaving the lab. Turn off equipment not in use.

Doors: Please lock all doors to the lab if you are the last person to leave. Each lab member should have his/her own key to the lab. See the building manager for keys (they will require a cash deposit) and key card access to the building.

Spills: All spills should be cleaned up immediately if non-hazardous. If hazardous, contact the campus Safety Office.

Equipment: All new equipment should be labeled as belonging to the Heilshorn Group. Each major piece of equipment must be assigned to a specific group member. This group member is responsible for training other users, fixing broken equipment, meeting with the service representative, posting warnings and tips, writing user protocols if needed, and setting up user schedules if needed. All equipment malfunctions should be reported immediately to the group member responsible for the equipment, Prof. Heilshorn, and all other group members that commonly use the equipment. Broken equipment must be labeled (include lab contact name and contact info) to prevent others from using faulty equipment and potentially causing further damage or safety hazards.

All equipment manuals should be stored on the Protocol binder shelf. If equipment is moved to a location outside of the lab or borrowed by other researchers, the other group members and Prof. Heilshorn must be notified.

Ordering: Lab members should check the lab inventory prior to ordering to make sure the lab does not already have this chemical/supply/equipment. If you use the last of a common supply or chemical, you must order refills. Lab members are highly encouraged to comparison shop for competitive prices and to request discounts for large ticket items. All orders over $1000 must be approved by Prof. Heilshorn, less than $1000 can be approved by Ruby. All ordering is subject to auditing and oversight by the appropriate private, state, or federal funding agency. All items ordered must be directly applicable to the grant PTA to which it is charged.

Lab Tasks: Group members will be assigned specific tasks to help keep the laboratory in working order. These tasks are expected to be completed in a timely manner. If you prefer to have a different task, then feel free to swap with another group member and let Prof. Heilshorn know. If new tasks need to be added to the list, please bring this up at group meeting.

Cleanliness: Group members are required to keep their personal bench space and all community lab spaces clean. Immediately after each experiment and at the end of each day, all clutter, chemicals, glassware, etc should be cleaned and returned to their appropriate locations.

Students not complying with Safety and Lab Policies must be reported.
3. Record Keeping

Lab books: All lab members should keep an independent, bound lab book up to date with details about their work. Date all entries in your lab book in ink. Items to record: ordering information for unusual reagents, lot numbers of important reagents or cells, experimental protocols, hypotheses and predicted results, experimental design, experimental raw data, experimental final data, lists of key findings. Initial and date over the attachment point for all taped items. All lab books must be turned in to Prof. Heilshorn when a lab member leaves the group.

Protocols: As new protocols are developed by lab members, they should be typed up, saved on the lab computer, and sent to Alia for uploading on the group website. This includes protocols for specific pieces of equipment and for experiments.

Bacterial cell stocks: Each group member doing bacterial cloning work should maintain two clearly-labeled boxes in the -80 freezer: one for "working" stocks that are currently being cloned and one for "reserve" stocks. Label all four sides of your box clearly. At least three aliquots of each reserve stock should be included. The following documentation should be in the Cloning binder:
- diagram of your "reserve" box with the aliquots identified in each slot
- key for the codes used to labels your reserves
- identification of the cell strains and vectors in each reserve

DNA stocks: Each member doing cloning work should maintain two clearly-labeled boxes in the -20 freezer: one for "working" stocks and one for "reserve" stocks. Label all four sides of your box clearly. Because bacterial cell stocks can easily mutate, the cloned vectors from all reserve stocks must also be stored in DNA form in three separate aliquots. The following documentation should be in the Cloning binder:
- diagram of your "reserve" box with the aliquots identified in each slot
- key for the codes used to labels your reserves
- identification of the cell strains and vectors in each reserve

Computers: Each group member should maintain a user folder on the group computer with the group password: biomaterials. All presentations (including group meetings), posters, and drafts of manuscripts should be saved in this user folder. If you would like to store additional information in this folder, you can create a separate, private folder for your use. Individual information (downloads, data, reports) must be kept in individual folders. The desktop of the group computer will be wiped clean each week. Each student must back-up their personal data once a month.

References: Lab members should maintain a library of references important for their work using Endnote. Lab members should perform routine database searches (eg, Web of Science, PubMed, etc) to identify new results in their research area and receive regular email updates from journals in their area.

Contact information: Personal contact information must be kept up to date.
4. Work Schedule

**Group meetings:** All group members are expected to attend the weekly group meeting. If you will be absent or you would like to exchange presentation days with another group member, notify Prof. Heilshorn. Presentations should be about 45-min in length and of a conference-style quality. Copies of all presentations should be stored on the group computer.

**Mini-group meetings:** Students must prepare before mini-group meetings by analyzing their data, bringing copies of data/writing samples for other mini-group members, prioritizing a list of items they’d like to discuss, and creating a list of goals for the following week. Lab books must be brought to these meetings.

**Individual meetings:** Individual meetings can be scheduled by either Prof. Heilshorn or by the lab members. Lab members should always bring their lab books to these meetings along with a list of items to discuss.

**Daily schedule:** Lab members are free to choose their own work schedule. However, to facilitate interaction among all group members, everyone should be in the lab or class during the common hours of 11:00 am - 4:00 pm, Mon-Fri. In general, full-time lab members are expected to spend an average of 40-60 hours per week on their research depending on the experiments currently underway and other time commitments. For example, students with heavy course-loads or preparing for exams will spend less time in the lab, while students doing full-time Ph.D. research will spend more time in the lab.

**Working alone:** When performing experiments with potentially hazardous chemicals, schedule these to occur during the common lab hours or while someone else is in the lab. For most cell culture, materials testing, and microbiology experiments, risk is low and experiments can be performed after hours and on weekends.

**Vacation time:** All vacation days must be submitted to Prof. Heilshorn for approval at least two weeks ahead of time. Lab members may take up to three weeks of vacation time per year (i.e., 15 days) in addition to paid university holidays. *Please note:* Class schedules are not identical to university holidays. For example, the entire week of Thanksgiving does not have classes; however, only Thursday and Friday are paid university holidays.) In special circumstances, additional vacation time may be requested. For example, students that live overseas may request longer time to travel home to visit family. Special requests must be made in person at least one month in advance.

**Sick days and family leave:** Sick days and family leave are not counted as vacation days. Please email Prof. Heilshorn when you will need to miss work for these reasons.

**Other time commitments:** Before accepting responsibility for activities that will require a large amount of extra time (for example, teaching assistant jobs, part-time job, travel, etc), these activities should be discussed with Prof. Heilshorn.
5. Career Development

Progress Reports: Progress Reports are used in most companies (so it's great to get experience with the format) and are an invaluable tool to facilitate communication between group members and Prof. Heilshorn. Progress reports must be sent by email by the end of the day every other Friday. You can use Word, Powerpoint, etc to draft your report, but please send it as a PDF attachment. When you will be away from work on a day that progress reports are due, a report still needs to be sent. You are always welcome to send the report earlier in the week (you don't have to send it on Friday). If you have been gone for an extended leave (e.g., 2 weeks), then you don't need to submit a report. Progress reports should include the following:

A. List of priorities for the past two weeks
B. Results for the past two weeks

Data should preferably be presented in analyzed figure format, explain how results match or differ from your goals listed in A, explain how your results fit into the plan for your next manuscript. You can also include abstracts to be submitted, draft manuscript text, etc. in this section.

C. Outline of figures for your next one (or two) manuscripts
Annotate list with information about what steps have been completed and estimated date of completion for other data.

D. List of priorities for next two weeks

Conferences: All senior, full-time group members are expected to present their research at scientific conferences. Expenses for domestic conferences will be reimbursed (transportation, registration, and housing; meals are not reimbursed unless prior arrangements are made). All abstracts must be approved by Prof. Heilshorn one week before submission. In some circumstances (for example, while searching for jobs, local conferences, specialty conferences in the US or abroad), lab members may be reimbursed for attendance at more than one conference per year and/or for meals. Conference abstract drafts must include name of conference, name of symposium, chair of symposium (if known), proposed talk title, proposed list of co-authors, and abstract due date.

Abstracts, Fellowship Applications, Qualifying Exams: All written documents that refer to work being performed in the laboratory must be edited and approved by Prof. Heilshorn. This includes internal Stanford documents (e.g., qualifying exam abstracts, BioX poster sessions, etc.) and external documents (poster sessions off campus and all other written documents referencing work in the lab).

Courses and Degree Requirements: Class schedules and class performance should be discussed with Prof. Heilshorn each quarter. Students performing research in the lab (undergraduates, Masters, or PhD level) are encouraged to register for pass/fail research credit (1 unit = 3 hrs/wk in lab). Students are responsible for knowing the degree requirements for their specific program and should discuss these on a quarterly basis with Prof. Heilshorn.
**Seminars:** To gain breadth of knowledge in the field, all students are expected to attend their home department seminars. In addition, our group will have scientific overlap with seminars held in a variety of departments across campus (e.g., Bio-X, Bioengineering, Materials Science & Engineering, Chemical Engineering, Regenerative Medicine Seminars, Cardiovascular Institute Seminars). Group members are encouraged to email interesting seminar announcements to other group members.

**Fellowships and Awards:** Students are encouraged to seek out and apply for fellowships and awards. Prof. Heilshorn and other group members have a wealth of experience to provide to new members interested in applying for these opportunities. Prof. Heilshorn must receive drafts of essays that describe laboratory work at least one week in advance.

**Reference Letters:** Provide details about the position/application/fellowship, due date, copies of transcripts and CVs, and any required essays at least one week in advance of the due date.

**Mentoring, Outreach, Teaching:** Mentoring and managerial experience are key to obtaining future jobs. PhD and postdoc lab members are expected to mentor new PhD, MS, and undergraduate students in the laboratory. Group members interested in mentoring summer research assistants, either high school or undergraduate students, please let me know. Campus also has many opportunities for a variety of outreach activities, and group members are encouraged to participate. Teaching is a very valuable skill and a rewarding activity. All lab members are encouraged to seek teaching experiences if they are interested in this. However, all teaching assignments should be discussed with Prof. Heilshorn prior to the start of the quarter.

**Job Searches:** Lab members are encouraged to meet regularly with Prof. Heilshorn to discuss future career plans, graduation plans, and job searches. In addition, members interested in industrial positions should meet with a Stanford Career Counselor.

**Academic Job Interests:** Group members interested in pursuing an academic career are encouraged to set up monthly informal meetings with Prof. Heilshorn. These meetings will cover a variety of topics including how to develop your independent research ideas, how to put together your application packet, how to prepare for on-campus interview, how to apply for transition grants/fellowships, and thoughts on how to plan for your own independent laboratory.

**Non-Academic Job Interests:** All students are encouraged to discuss potential career paths with Prof. Heilshorn. Often, Prof. Heilshorn and other group members can pass along contact information and make introductions with scientists working in a variety of fields including industry R&D, publishing, public policy, and law. In addition, these lab members are highly encouraged to attend national society conferences that include career fairs and career workshops.
6. Scientific Collaborations, Communications, and Dissemination of Results

**Collaborations:** Lab members are highly encouraged to initiate collaborations on research projects both with scientists in our lab and from other labs. When beginning a new collaboration, it is generally a good policy to have an administrative meeting with all interested people to discuss the goals and expectations of everyone involved. Often (but not always), it is useful to have a single lab member volunteer as the "point person" for a collaborative project.

**Unofficial Scientific Communication:** In general, the Heilshorn lab policy is to be very open about our experimental results and protocols with other laboratories. **Prof. Heilshorn must be copied on all initial correspondence with scientists from other laboratories or service centers on campus.**

**Manuscripts:** The author list on all manuscripts is not finalized until the manuscript has been accepted for publication. The final author list will be determined by Prof. Heilshorn in consultation with all involved lab members based on the level of scientific contribution presented in the accepted manuscript. Lab members who have concerns about potential author lists should talk with Prof. Heilshorn immediately.

When writing a draft manuscript, tasks should be performed in the following order:
1. Potential titles, proposed author list, list of figures, potential journals
2. Drafts of figures
3. Outline of text
4. Drafts of figure captions
5. Expanded outline and list of potential references
6. Draft of Methods text
7. Draft of Results text
8. Draft of Introduction text and Discussion text
9. Draft of abstract

Prof. Heilshorn welcomes discussions of incomplete drafts at each stage of the writing process. Lab members are highly encouraged to get feedback and editing assistance from other lab members (both co-authors and others), the writing center, colleagues, friends, etc.

**Review Articles, Book Chapters, Conference Proceedings:** Lab members interested in writing review articles, book chapters, conferences proceedings, etc., should discuss this with Prof. Heilshorn. In general, each PhD student is expected to write at least one review article or book chapter, which often serves as the introductory thesis chapter.

**Proposals:** On occasion, lab members will be required to help with proposal writing and performing preliminary experiments for proposals. Lab members with specific interest in gaining grant-writing experience should talk with Prof. Heilshorn.