

A Guide for Graduate Researchers: What to Expect in the Research Group of Glen P. Jackson

Department of Forensic and Investigative Science and
C. Eugene Bennett Department of Chemistry
West Virginia University

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1 Background

Our group is diverse, both in terms of scientific interests and in terms of ethnic and cultural backgrounds of its members. We typically have members from different academic departments and from different countries. My goal is to foster a culture in which we are ethical, responsible and productive as scientific researchers, while being cordial, professional and compassionate in our interactions with each other. I would like you to experience a thriving and nurturing environment in which you can have fun and grow as scientists and individuals.

To ensure that we both get the most out of our relationship as graduate advisor/mentee, I have compiled this document to summarize both my expectations of you and what you can expect of me. You are welcome to suggest modifications or additions to this document. After we discuss the document, I will ask you to sign a copy as acknowledgement that you understand and agree to these expectations.

During our interactions, if I observe that your work does not meet the expectations defined here, I will first remind you of what is expected and what I would like to change. If the behavior or

problems continue or repeat, I will call a formal meeting with you to discuss your performance. I will summarize our meeting in a “Clarification of Expectations” memo in which I will detail how my expectations were not met and what actions, if any, we agree must be taken to resolve the underlying problem(s). It is my intention that by communicating clearly about my expectations, you will be able to get the most out of your graduate education here at WVU. In cases where these expectations are egregiously or consistently not met, you may earn an I, U or F for research, and it may be necessary to terminate our relationship as graduate mentor/advisee.

2 Work schedule, absences and vacation

Assuming expectations are being met, I will not impose a set schedule on you. Research requires a strong work ethic, a professional approach to time management and is not a “clock-punching” endeavor. I care more about your productivity than I do about hours spent in the lab, but there is a strong correlation between the two. As such, if you are in good standing, I trust you to manage your individual work schedule within the guidelines provided below. However, as with most employers, I do have some expectations as to working schedules and absence reporting.

- 2.1 Guidelines for creating your work schedule include:
- 2.2 Graduate school is a full-time job, and you should treat it as such.
- 2.3 If you are on a full research assistantship (e.g. summer, or during a semester), that means that you are employed full time (i.e. 40 hr/week) as a research assistant.
- 2.4 If you are taking classes and teaching, you will need to be thoughtful about how to balance the hours you need to complete teaching commitments, classes and research activities.
- 2.5 If you are teaching or taking classes, please provide me with your schedule at the beginning of each semester.
- 2.6 If you are a first-year student, I recommend that you prioritize class/teaching duties above research productivity. No level of research productivity can compensate for poor grades or losing your TA funding. Research should take a higher priority starting in the summer of after your first year.
- 2.7 Your work hours should be scheduled to include most, if not all, the core hours of 10-4, p.m. Monday- Friday. The same core hours are expected of postdoctoral researchers, MS students and PhD students. These hours are meant to create a time when all group members are in the lab at the same time to facilitate collaboration and peer learning. You are, of course, welcome to take lunch/other breaks during core hours, within reason.
- 2.8 Please note that the idea of core hours is intended to allow for some flexibility of work schedule. For instance, some team members prefer arriving at work early and leaving early (e.g. 7 a.m.–3 p.m.), while others may prefer to begin work later and work later into the day (e.g. 10 a.m.–6 p.m.).
- 2.9 The idea of core hours is not intended to mean that you are only expected to work during these hours but to provide overlap with your peers.
- 2.10 If you are not able to be in the lab during core hours on any day, communicate that to me as soon as possible. Emailing or texting/calling my cell are the preferred ways to communicate

an absence. Only in truly exceptional cases is it acceptable to communicate lateness/absence/illness after the fact.

- 2.11 If there is a deadline, such as a conference presentation, grant/paper submission), we may both have to work beyond our normal hours to attain our goals and to meet deadlines. Good time management can usually minimize the occurrence of 'cramming' situations, but some episodes are unavoidable.
- 2.12 Working remotely in place of hours spent in the lab is generally discouraged and considered a privilege. If you want to work remotely instead of coming in on any given weekday, you must give me notice of your plans and receive my approval. This privilege is typically reserved for students who are completing significant writing or editing and who have demonstrated that they can be productive away from the lab.
- 2.13 Regular attendance at weekly analytical or forensic seminars (or both) as well as weekly departmental colloquium is expected. Foreseen absences should be discussed with me ahead of time. Please think of seminars, even those outside of your expertise, as an opportunity to broaden your knowledge base. Even if you are not thrilled with the selected topics for seminar, use seminars as an opportunity to hone your critical evaluation skills or to learn at least one new concept. Be mentally engaged.
- 2.14 If you would like time off, ask for the specific dates you want off as far in advance as possible. If you are making reasonable research progress, and if your request does not conflict with conferences or other professional obligations, I will usually be accommodating.
- 2.15 A good, general heuristic for an acceptable amount of vacation time is ~ 20 working days per calendar year, excluding university holidays.
- 2.16 For sick days, if you are teaching, the policy on teaching absences in your home department prevails.
- 2.17 Note that normal expectations for working hours applies to every working day except when the university is closed. This means that I expect you to work full time during the 'breaks' between semesters, excluding days the university is closed.
- 2.18 You should feel welcome to work weekends and evenings, at your discretion. However, the university has safety policies in place that prevent you from conducting hazardous experiments on your own. Please be safe and follow the safety policy always.

3 General communication

- 3.1 If you have a question or communication to share with me that will obviously not take more than 10 minutes and my office door is open, feel free to knock, enter and talk to me. If you have some communication with me that will take more than 10-15 minutes, please schedule a meeting with me, in person or by email, to ensure I can give you my full attention for the time required.
- 3.2 Email communication should always be via your WVU (mix) account. Remember, this account is a public account, and everything you send and receive is legally subject to review by a third party via an open records request. In other words, be careful because big brother might be watching!
- 3.3 I will often communicate important requests and ideas by email. If I ask you a question or make a request by email, I generally expect a response within 12-24 hours. If I ask you to

complete a task that takes longer than a day, I still expect a response to acknowledge the request. This is a professional courtesy, and you should expect the same of me.

- 3.4 If you do not understand something that I have asked you to do, it is your responsibility to seek clarification. Don't waste time.
- 3.5 If I provide feedback on your work, I expect you to consider that feedback thoughtfully and respectfully. Don't say yes and then fail to follow through. You might have a good reason for not completing an action, but if you do not talk to me about the issues, I might form the wrong impression about your intentions. I also expect that you will clearly communicate with me regarding how you plan to address my feedback and suggestions.
- 3.6 With outside speakers, visitors and colleagues, you must remain cordial and polite in your communication. It is fine to disagree on scientific ideas and ideologies and to debate those differences in a respectful and academically rigorous manner. However, I expect you to remain respectful of other people and to remain hospitable.

4 Safety

In case of an emergency in the lab or university building, call 911! You must keep up to date on all necessary safety training, ethics training and IRB training during your studies. If you have any questions or concerns about lab safety, please talk to me, Casper Venter or Barbara Foster (in that order).

- 4.1 All group members should be familiar with the ECAS Lab Safety Manual at: <http://safety.eberly.wvu.edu/files/d/fa918b40-6da1-45d5-b33e-c6f0858ded8e/ecas-laboratory-safety-manual-01-04-2016.pdf>.
- 4.2 All group members should complete WVU's required safety training as specified at: <https://www.ehs.wvu.edu/training/hazard-comm-hazardous-waste-lab-safety-training>
- 4.3 Group members working on federally-funded projects (e.g. NIJ, NSF, NIH), should also complete Responsible Conduct of Research training, at: <http://oric.research.wvu.edu/services/responsible-conduct/education-training/online-rcr-course>.
- 4.4 Researchers working on projects involving human or animal subjects should also complete the appropriate IRB training. Details can be found on the kc/koali website within WVU's on-line training programs.

5 Dress Code

- 5.1 When you have teaching responsibilities, the dress code outlined in your TA training by the relevant department prevails. To summarize expectations,
- 5.2 TAs should dress better than their students to make it clear who is the instructor.
- 5.3 Clothes should be clean.
- 5.4 Pants should ideally have zippers (i.e. no pajama pants or leggings as pants without a long top or dress as top).
- 5.5 Optimally, shirts should have buttons or collars.
- 5.6 If t-shirts are worn they should be free from any inappropriate, offensive or political graphics. WVU branded clothing are an exception because they help reinforce our brand.
- 5.7 If you have laboratory teaching duties, you should wear proper PPE and adhere to the same safety guidelines as students.
- 5.8 When presenting research (i.e. at group meeting, or in a talk), my expectation is that you should dress in a professional manner that is consistent with the venue and conference format. (e.g. Asilomar and Sanibel conferences forbid formal attire!)
- 5.9 Attire for conducting research is at your discretion but should be workplace appropriate (i.e. should adhere to safety requirements and should not be offensive or inappropriate).

6 Conducting research

The main duty of a graduate student researcher in our group is to conduct research under my direction. It is expected that as you become more advanced in your graduate career, you will become more independent in your efforts to design a research plan, gather and analyze data and to write up your results.

Initially, you will be assigned projects that are consistent with the broader research focus of the group and you will be closely mentored by myself and/or a more senior member of the group. Whereas I will make some recommendations as to reading materials and resources to get you started on your project, you will also be expected to take initiative and look up/learn about topics with which you are unfamiliar. This is your time to learn! You must also become up to date on relevant bodies of literature within your area of research. Within your project, you should seek out and read literature related to your project and maintain your own Endnote database of your literature. This database will serve as the foundation for all the citations in your manuscripts and dissertation.

As you become more advanced in your studies, it is paramount that you become the person driving the research forward. You will have the opportunity to develop new research directions, if they are compatible with the broader efforts of the group. Of course, at any stage, I will be happy to discuss and guide your research. If weekly group meetings are not frequent enough venues to communicate with me, I am always open to one-on-one meetings. Just ask or schedule a time to meet.

Successfully conducting research includes but is not limited to:

- 6.1 Staying current on the scientific literature related to your project.
- 6.2 Researching and clearly articulating research methods to be used in your work.
- 6.3 Designing and implementing research plans.
- 6.4 Qualitative and quantitative analysis of data, as appropriate to the project's goals.
- 6.5 Communicating findings to members of the research team.
- 6.6 Preparing graphs, tables, and figures that clearly show research results.
- 6.7 Outlining and drafting research manuscripts.
- 6.8 Preparing and executing research talks for oral or poster presentations.
 - 6.8.1 Please use the group's WVU-approved PPT templates for posters and PPT presentations.
- 6.9 Regularly backing up your computer files.
 - 6.9.1 For Apple computers, you should have Time Machine configured to regularly backup all computer files every hour.
 - 6.9.2 For other computers, such as PCs connected to instruments, you should regularly back up your data files onto external hard drives or, if they are connected to the Internet, onto a cloud sharing system like Dropbox, Google Drive or OneDrive. These file sharing methods are free, so there is no excuse for loosing data files if/when a computer crashes.

7 Documenting your research

- 7.1 Formally documenting your research has many benefits to you and the group; it enables you to remember what you did and when and why you did it. A detailed notebook can help defend patent applications and can help justify co-authorship on publications. A detailed notebook can help save time, especially if it prevents you from having to re-run experiments. The recommendations below are to help explain what and how to record your productivity.
- 7.2 You **must** keep a hardbound, contemporary and contiguous research notebook.
- 7.3 The requirements are that you make regular (e.g. daily) dated entries and keep detailed records of your motivations for conducting experiments, what you expect to achieve, details on sample preparation and data analyses, and how you interpret the results. The goal of a research notebook is to enable someone else to know why they should want to reproduce an experiment and how to reproduce an experiment.
- 7.4 Beyond these requirements, the details of format and what to include in the notebook are left largely up to you. To avoid unnecessary duplication, it is perfectly okay, in fact recommended, to refer to previous notebook entries.
- 7.5 For electronic research notes and all electronic files, you are expected to store files in an organized manner and back up files regularly to Dropbox or an external hard drive. All file names should contain, at a minimum, your three letter initials and the date (e.g. "GPJ-2-24-2_CTD_insulin_091717.xls". In this file name; "GPJ" refers to me and my second notebook; "24" refers to the page number in my notebook; "2" refers to the second data file on that page;

“CTD_insulin” provides some details of the file, which is helpful in the absence of a notebook; and “091717” is the date the data was collected.

- 7.6 If you are spending a significant portion of your work day reading the literature, I expect you to document what journal articles you are reading. Records could be kept in your notebook or through storing annotated notes with the articles in your Endnote library.
- 7.7 When you leave WVU, you must leave behind all notebooks and items belonging to WVU, and you must provide me with a copy of your computer password(s) so that other group members can access your data files after you leave.

8 Communicating research progress

You will be expected to report to me on your research progress on a regular basis. We will schedule weekly group meetings, and you will each have a designated period to provide an update on your progress and seek feedback. Use this time to offer explanations for why experiments might not be going according to plan. Perhaps we are making incorrect assumptions, or perhaps we have overlooked the importance of certain experimental factors. Each failed experiment can be a valuable opportunity to learn something new, since this is the experiment that provided an unexpected result.

- 8.1 Proper reporting at all meetings includes presenting summaries of findings, along with supporting data in tables or graphs or figures as appropriate.
- 8.2 When we meet in person about your research, I expect that you will have prepared all graphs, tables and figures necessary to communicate your research. I also expect that you will have thought about interpretations, what can be learned and what other experiments need to be completed to support or refute an idea. In other words, bring ideas with your research results.
- 8.3 Unless all your experiments are going according to plan, it is rarely sufficient to generalize your progress. If your experiment “didn’t work”, be prepared to describe the exact details of the unexpected results, and what assumptions or hypotheses may have been overlooked or incorrect. Why didn’t the experiment work, and what experiments do you propose to complete to address these new ideas?
- 8.4 Be prepared to show results on the projector so that the entire group can participate in the discussion. Also, bring your research notebook to all group meetings and have a plan for how I can quickly access raw data files. I cannot help you interpret data or experiments without the proper context. Such details should be found in your notebooks and data files.

9 Publishing

Publishing manuscripts is an important and necessary part of the scientific process. Without publishing, knowledge gained through research would remain private, which stands against our ethical responsibility as publicly-funded scientists to make our ideas public. Publishing research should therefore be considered the ethical, responsible and necessary thing to do, not a bonus.

I expect all members of the research group to play a role in generating manuscripts. In the earlier stages of your graduate career I may ask you to contribute sections of a manuscript on which I, or another member of the group (e.g. a postdoctoral researcher), am lead author. I will help you to identify what information to include in the paper and will provide feedback on draft sections of the manuscript. The order of authorship will be negotiated based on the contributions of each author.

Be consistent with your professional name. I use Glen P. Jackson on every professional communication I send. Other professionals go by their middle name, such as R. Graham Cooks or C. Randall Clark. Still, they are consistent with the use of their names. You should, too, because it will help distinguish you and your scientific record from others. Your name is your brand, so keep it consistent.

For PhD students, I expect that before graduation, you will have published at least three manuscripts as lead author. For MS students, I expect at least one peer-reviewed publication to be submitted before graduation. I would prefer that all students aim for an average publication rate of 1 manuscript per year. When your research has yielded results that merit publication, I will work with you to develop the manuscript. I will provide feedback on your writing and suggestions as to how to improve your writing. Do not plagiarize! I expect you to consider my feedback thoughtfully and respectfully. If you do not understand something that I have asked you to do, it is your responsibility to seek clarification. If you do not receive edits from me within 10-14 days, please remind me that your manuscript is awaiting edits. It is your responsibility to ensure that your work receives the feedback that it needs, and I regret that due to my excessive commitments, you may have to lobby me to help raise the priority of your manuscripts in my workflow.

For a paper on which you act as first author, I may ask you to complete the online submission. As first author, it will be your responsibility to know all the author requirements for submissions. Each journal's requirements are available on each journal's website. I will be the corresponding author on all publications that come from research in my group. My name and address should always include both of my departmental affiliations: For example:

Glen P. Jackson^{1,2}

¹Department of Forensic and Investigative Science, West Virginia University, Morgantown, WV, 26506

²C. Eugene Bennett Department of Chemistry, West Virginia University, Morgantown, WV, 26506

Email: glen.jackson@mail.wvu.edu

Tel: 304-293-9236

Web: <https://glenjackson.faculty.wvu.edu/home>

If a street address is ever needed for mail deliveries or correspondence, the street address should be:

Department of Forensic and Investigative Science

1600 University Ave

208 Oglebay Hall

Morgantown, WV 26506

10 Supervising undergraduate researchers & visiting scholars

At times, I may assign you to supervise and aid in the training of undergraduate researchers in the group. I will assign the project and help in setting objectives, but it will be up to you to meet with the student and ensure that they are making progress. There may be times when you are asked to share your expertise with other group members. For example, I may ask you to teach others how to run an instrument or prepare samples. Assisting other scientists with their research is simply the

right thing to do, but your ability to document your contributions on projects outside your primary project may enable you to justify co-authorship on other projects.

11 What you can expect of me

My goal is that your work in the group will offer you the opportunity to engage in research projects and become an independent scientist. I strive to provide novel and important research projects, a stimulating environment for learning, and I will assist you in gaining recognition as a contributor to your discipline. As your mentor, I am always happy to discuss research progress or any other questions or concerns you may have. I am typically on campus between the core hours of 8–5 p.m. each day, though my day-to-day schedule varies.

I believe in honing strong presentation and writing skills, and to this end I will work with you on both preparing talks for conferences and on writing manuscripts. This means that I will provide constructive feedback of your written work and presentations, and I will work with you to identify how to address that feedback. Please see the appendix for my recommendations for good scientific writing.

I believe that attending workshops and conferences on a regular basis is a critical part of professional development. I will therefore make every effort to support your participation in such events. Conference participation will be negotiated based on funding and your research progress. At conferences, and in general I will make every effort to promote your work and to help you network and meet people important to the next phase of your career. You are always welcome to discuss with me other ways that I make your time in the group as useful to your career as possible.

Please sign below to affirm that you have read this document and have discussed any questions or concerns. Keep a copy of these expectations for your records.

Graduate student signature:

Date: _____

Graduate student printed name:

Advisor signature:

Date: _____

12 Summary of expectations:

- Use Macs and Microsoft office as much as possible.
- Be around during core hours of 10-4 p.m. (when not in class or teaching).
- Use Endnote for bibliographic databases and citations in Word documents.
- Use ChemsSketch, SPSS, MatLab, Labview and other software packages, depending on research needs. Dr. Jackson will pay for licenses for any required software.
- Keep a contemporaneous and detailed research notebook of all your activities, including reading journal articles and attending seminars. Take all notes first time, one time, in ink, in notebooks; i.e. do not take rough notes outside your notebook, then transcribe into the notebook later.
- Back-up data and computers regularly (external hard drives or file-sharing/cloud methods).
- Be proactive in keeping up to date with the literature and with safety training.
- Follow the Golden Rule and help and support other group members. Examples include editing their work, attending their practice presentations, helping with their data interpretations, assisting with heavy lifting and answer their questions.
- Keep the lab clean and tidy.

13 References

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14 Tips for effective scientific writing

14.1 Write in paragraphs that build coherent blocks of thought. Each paragraph should provide logical arguments that support a statement or idea. The statement or idea you are describing or defending should be clearly worded in a topic sentence, which is best placed at the beginning of the paragraph. Notice that the first topic sentence in this paragraph is very simple, and the remaining sentences all describe or support the first statement.

14.2 Use short declarative sentences and avoid flowery or unnecessary expressions. Examples of unnecessary expressions to avoid are:

In order to; It is shown that; It can be noticed that; It has to be mentioned that; It should however be noted that; It is clear that; Regarding this fact that; It is given by the fact; Based on our experiments/understanding; As can be seen from Figure (table); It takes into account the fact that; It is identified that.

Such expressions can usually be deleted without altering the message.

14.3 With the possible exception of the experimental section, always write in the active voice and not the passive voice. Passive voice often shows up with the words *was* or *were* and often with verbs ending with *ing*. In the passive voice, one usually cannot tell who or what is making the action happen. Learn to write in a style where subjects or nouns directly act on other nouns.

Not: The two solutions *were mixed*, and a blue color *was observed*.

But: The reaction mixture *turned* blue.

Not: A needle valve *was used* to regulate the pressure.

But: A needle valve *regulated* the pressure.

Not: No evidence *was found* that A caused B.

But: A *did not cause* B.

14.4 Use specific and quantitative comparisons instead of vague or subjective comparisons:

Not: The crystals grew *larger over time* until they were *really big*.

But: The crystals exceeded 50 micrometers in length in less than five minutes.

The following terms are vague, weak and subjective, so consider them **forbidden terms**, unless they are used with additional quantitative qualifiers or context.

Very, not very, big, small, large, little, nice, good, bad, okay, quite, really, got, get, low, high, believe, think, this, that, these, those.

14.5 Avoid starting sentences with vague demonstrative pronouns like *this* or *it*. Instead, use the actual noun or subject. At an absolute minimum provide a qualifying noun with the pronoun.

Not: *This* is because the temperature was *higher*. (also contains a forbidden term!)

But: *The reaction* proceeded faster at 60 °C than at 50 °C.

Not: *These* are always found together. (also contains the passive voice).

But: *The two stereoisomers* always occur together.

14.6 Always have a space between numbers and units, and use units in a manner consistent with IUPAC conventions.

E.g. 5 m/s or 5 ms⁻¹; 22.4 g/mol; 43 kg; 5.4x10⁻³ Pa, 45 F, 78 °C

E.g. Exceptions: 54%, 360° (degrees in a circle)

