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### For starters

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## 1. Introduction

Welcome! I am very glad that you have joined or consider joining my lab. I hope that we build a mutually beneficial partnership. Here I lay out things you may find useful to begin your new research life. This document is alive and will evolve with time as I accumulate more experiences as a mentor and hear feedback from you. Please feel free to ask me if you have any questions. You can reach me via email ([kjmin@snu.ac.kr](mailto:kjmin@snu.ac.kr)), office visit (200-7123), or call (ext.4644).

## 2. Motivation

You saw something in science and decided to do research. It is okay that you don't enjoy doing research right now or don't even know what doing science means, but I hope you find joy in learning and creating knowledge with time. Doing research involves a suite of activities, including reading, thinking, planning, designing, executing, analyzing, discussing, writing, presenting, being rejected but not giving up, etc., all of which requires a long time of training unless you are gifted. So, before you dive into research, you must ask yourself if you are ready for this. If your motivation for doing research is fun and curiosity, then your answer is yes and I welcome you. Otherwise, you'd better think again if this is right for you.

## 3. Goals

Clarifying your goals and making good research habits help you get where you want to be. To this end, I will keep asking you what your goals are and what you do to achieve them. For example, at the beginning of each semester, we write down semester goals, and at the end of the semester, we self-evaluate our progress. No judging or comparing. This is meant to make us hold accountability for what we promised and keep us motivated. If you cannot come up with goals, I recommend you talk with your friends, mentors, seniors, parents, etc. In so doing, you are likely to find what you want.

## 4. Habits

Once we have a goal, we need specific action plans. One of the most valuable tips I've got during my Ph.D. is to block out some time for the desired activity. Suppose that your semester goal is to read two papers per week. Then, you make it very specific about when, where, and how (e.g., I

will read papers between 9-10 am every day at home). And mark your calendar as if you have a class so that you cannot escape from it (e.g., tell your friend that you have a class between 9 and 10 am, and set your alarm to get up before 9 am).

## **5. Research topics**

No research topic comes out of a vacuum. Hence, you have to READ A LOT. You have to go through a two-step reading process to find the topic of your interest. First, you read the best and most basic textbooks. In each field of study, there are bibles: Biochemistry by Lehninger, Physical Chemistry by Atkins, Soil Science by Brady and Weil. These textbooks cover all the topics in the field and are filled with accumulated knowledge. But at this stage of reading, you rarely come up with any research ideas, because research ideas should be specific and specific topics can only be investigated in detail, not in a general way that most textbooks deal with the topics.

Next, you need to get the best, but advanced textbooks. These secondary books only deal with a couple of specific topics and often have references for further reading. They introduce the most foundational papers or books you need to check. After checking these, you may start to grasp the progress of the field, see the knowledge gaps, and feel that something is simmering in your mind. That is your exciting research idea!

## **6. Meetings**

I would like to have two weekly meetings: individual and group. The format of the individual meeting is free: we could talk about the progress of your study or concerns/worries over a cup of tea. When you get nothing to talk about, then feel free to drop me a line. It is okay to cancel meetings although I'd love to see you in person and hear what you have been doing. In lab meetings, we take turns presenting our research. When the number of lab members is too small (2-3), individual and lab meetings can be merged.

We may have other regular or episodic seminars/workshops/journal clubs depending on the situation. I will share the information about these events and it is your choice to attend them. If you need to talk with me in addition to the regular meetings, please don't hesitate to knock at my office or email me.

## **7. Publications and conferences**

Science should be shared and publishing your works or presenting your research at conferences is one way of doing so. Yet, everyone is different in terms of publication pattern: some students publish multiple papers at once after their graduation, while others publish along the way. Although each has its advantages and disadvantages, I prefer the latter because it keeps us on track and helps us manage our time efficiently. Ideally, each chapter of your Ph.D. dissertation can turn into a stand-alone publication.

Authorship can be tricky and make people uncomfortable. I suggest you consult with me about who to include and ask people if they want to be co-author of your paper. Please check the authorship rubric that I shared on slack if you are not sure.

I will try my best to secure research money to enable you to attend international conferences at least once a year, so please do your part to do good science and learn to communicate with people.

## **8. Expectations**

While you are in my lab, I expect you to

1) have ownership of your experiences

Being proactive, not reactive, helps you become an independent researcher. You think about what you need to achieve your goals and do it. Examples are becoming knowledgeable about the openings, deadlines, and regulations of your projects/classes/proposals, being engaged within the community, and striving to improve the current conditions if necessary.

2) be a good citizen

Do to others what you want them to do to you. This includes you clean after use, adjust your experimental schedule when it conflicts with others', help one another, attend and give constructive comments in lab meetings, etc.

3) be open

I hope we get along together well, but I will not be surprised to see conflicts among us. It is not advisable to suppress and simmer your emotions and one day just cut your relationship with others without allowing them to know the issue and fix it. Although it may be hard to tackle the issue, we can resolve or at least relieve it by talking to each other with an open mind. If it gets too emotional, I suggest you write down your complaints on paper, take the emotions out of it, re-write the facts, and think about what should be done to reach a happy medium for all of us.

## **9. Mentoring**

As a mentor and educator, my job is to ensure your success. Yet, first, you need to define your success and let me know. I will try to get as many as resources that are tailed for you. In general, I promise to

1) be available when you need help

2) lead by showing, not talking

3) secure research money to allow you to do science, and

4) create a supportive and safe work environment