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HOW TO BECOME A

Productive Researcher

Tips for Ph.D. Students, Postdocs, and Principal Investigators

Dear Reader,

A researcher's job is no ordinary job. It comes with a great amount of responsibility and challenges. Productivity is essential to researchers at every stage of their career. However, the challenges they face are enormous and productivity can be lost somewhere along the way.

Through this ebook, we would like to provide a list of guidelines that can be followed in order to maintain your productivity as a researcher. Small things that we often overlook can go a long way in increasing our productivity. In addition to general guidelines, we have covered aspects that could be specific to Ph.D. researchers, postdoctoral fellows, and principal investigators.

You can also visit enago.com/academy for further help. We hope this book helps you advance in your career as a productive researcher.
Happy reading!

Regards,
The Enago Academy Team

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What is Productivity for a Researcher?

Productivity is an indicator to measure the efficiency of any system. There can be different methods to evaluate productivity. For researchers, it is a matter of perspective. It could be measured in terms of the number of research papers published, patents filed, projects successfully commercialized by industry, projects completed, quality of graduating Ph.D. students, quality of postdoctoral candidates supervised, etc. It depends on the person evaluating the researcher's productivity and also the purpose of the evaluation. There are no defined set of rules to measure the above. Productivity is also known to be related to the phase of researchers' career. It has been reported that a researchers productivity increases as they attain a higher academic position [1].

Irrespective of the measure, it is expected that things should be done well. Researchers must ensure that they do things efficiently and within the expected time to maintain their standards of productivity.

General Tips for Researchers

Organize and Plan

Planning your work is the most important start point for improved productivity. The first thing that a researcher must learn in the beginning of his/her career is the art of planning. Organize and plan your work well. It will ensure that you don't miss out on things and meet deadlines.

Use a Task Manager

Planning alone is not sufficient; you also need to document your plans well. Task managers are a fool-proof way of ensuring that you do not miss out on any task that you have planned for the day.

It also saves you from worrying about remembering things that you have to do. You can use a task manager such as Todoist or Evernote. You can also use a simple pen and paper to note down things if you do not wish to use a digital task manager/reminder [2].

Prioritize Your Work

When you have a lot of things on your platter, it becomes difficult to choose what to do first. Plan your work in such a way that you deal with things that are urgent and important first. Prioritizing your work is necessary to make sure that you do not miss deadlines. Also, prioritize your work according to the requirement. For example, if you are writing your research paper, write the abstract after you finish working on your paper. If you write the abstract first, and the final paper does not match your abstract, you will waste time rewriting the abstract.

Avoid Emotional Attachment

Avoid any emotional attachment to your experiment. It may lead to bias during data acquisition/analysis. Do not allow negative results to affect you. Think of the possible causes that led to the outcome with an open mindset.

Avoid Distractions

Distractions such as emails, social networks and smartphones should be eliminated/minimized. Put away your smartphone and assign a fixed time during the day to deal with emails and professional networking websites [2, 3].

Set Quantitative Goals

Define your goals quantitatively [4]. Setting quantitative goals gives direction to your work. For example, if you intend to write a research paper, rather than assigning two hours of your day to write it, define which part of the paper you intend to complete in those two hours. This ensures that you know exactly what needs to be done and you do not waste your time by procrastinating.

Automate Wherever Possible

Technological advances have the potential to make life easier for us. However, it is up to us to make the most of these advances. Automate your work wherever possible. It will help you save your time. It will also ensure that your work is efficient and error-free. For example, while writing a manuscript, use a reference management software rather than manually adding your references.

Take Breaks

Taking a break in between tasks is essential. Breaks help you to refresh your mind and regain your focus. Take a short walk. Research has shown that a lunch-time walk has the potential to boost your mood and your productivity [5].

Maintain a Healthy Work-Life Balance

Maintaining a healthy work-life balance is essential. Do not take your work home. Find time for regular exercise. Spend time with your family. Get sufficient sleep. Over working will result in a tired mind and loss of productivity. A healthy work-life balance is not only good for you but also good for your work.

Celebrate Your Success

It is a good practice to celebrate your success [5]. You can treat yourself when you accomplish something. It will serve as a motivation for you to work hard and do well. You can also celebrate more significant achievements with colleagues. It will help you bond with your workmates while celebrating your success.

Avoid Procrastination

You can end up wasting a lot of time procrastinating. Procrastination leads you to a vicious cycle of postponing or canceling things. Regular procrastination can hamper your progress and negatively affect your career graph. Avoid procrastination as much as you can. Motivate yourself to do your tasks as planned.

Act Professionally

Maintain a professional attitude at your workplace. Do not indulge in bullying and gossiping. It will help create a positive and productive environment for you and your co-workers. You can also start your day by greeting your colleagues and indulging in small talks with them to maintain a positive environment.

Read and Write Often

Reading and writing is an indispensable part of a researcher's life. Read often; it will keep you up-to-date with the latest advances and findings in your field. Reading is a task that can be conveniently done while traveling, waiting in a queue, or during laboratory waiting times (e.g., the waiting time during assay incubation). You can also dedicate a particular part of your day to reading. If you want to publish papers or apply for funding, you need to write regularly. Because of a researcher's hectic schedules, it is difficult to reserve days at a stretch for binge writing. Assign a few hours every day to keep up with your writing tasks.

Tips for Ph.D. Students

Choose the Right Lab

Choosing the right lab is crucial to a productive Ph.D. You need to choose a lab whose overall mission aligns well with your research interest(s) [7]. Working on something that you are interested in will naturally boost your productivity. You also need to check how well funded the lab is. Money should not be a limiting factor while conducting research or wanting to present your work at national or international conferences.

Choose the Right Mentor

Appropriate guidance is essential at the beginning of your research career. Choose an approachable mentor with extensive knowledge in the subject area. Contact people who have been previously mentored by this person. Get to know this person's mentoring style. Does she/he motivate and encourage students or demotivate students? Does she/he have adequate time to mentor students? Having a mentor who does not have time is as good as not having a mentor.

Stay Motivated

Keeping yourself motivated is essential during your Ph.D. It usually takes several years to complete a Ph.D., and this may take a toll on you. Work on a project that you are passionate about to keep you going. Experimental failures should not demotivate you. Treat these failures as assets or learning opportunities. Failures are a stepping stone to success. Take a break once in a while and start your work with a fresh mind if you feel demotivated.

Develop Your Scientific Writing Skills

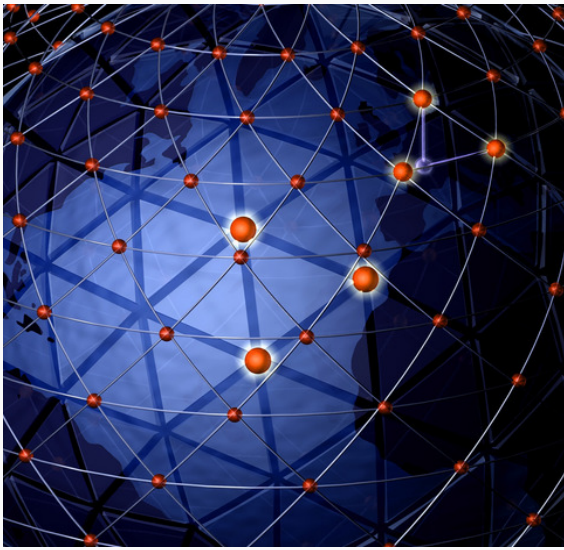
Your Ph.D. is the best time to develop your scientific writing skills. Write as much as you can. Ask your mentor to go through your work and ask for feedback. You can write a review on the topic that you are researching. This review may give you a publication as well as sort out the literature review section of your Ph.D. thesis.

Widen Your Knowledge Base

Knowledge is essential to building a sound research career. You need to be aware of the latest development in your fields. Read as many research papers as you can. This is also a good time to revise basic concepts that you have studied previously. You can also read new concepts that you may not have learnt as part of you earlier coursework.

Communicate and Network

Develop your communication and networking skills at this point in your career. Attend conferences and workshop, talk to as many people as possible, discuss ideas, and build your network. You can also use various professional networking options that are available to get in touch with people. Establish collaborations wherever possible. Having a well-connected network will benefit you as you advance in your career.



Learn to Speed Read

Speed reading is essential when you have to go over multiple documents within a short period. Considering researchers' hectic schedules, speed reading is a skill you need to possess. Train yourself to speed read in the early years of your Ph.D. It will help you as you advance in your career, especially when time becomes a scarcity.

Customize Your Work-Space

You will be spending a lot of time working in your laboratory space. Make sure it is a comfortable and fun place which you look forward to work in. Also, keep it clean and free of clutter.

Tips for Postdoctoral Researchers

Move Out of Your Comfort Zone

Your postdoc is an opportunity to learn new things. Do not stick to the same type of work that you have done during your Ph.D. Move out of your comfort zone [8]. Work on something you have not worked on before. Acquire a new set of skills. Take risks.

Build Your Support Network

Your postdoc is a time when you are fairly independent as compared to your Ph.D. Use this liberty effectively to approach other senior researchers. Approach and consult other PIs in your institute [10]. This will help you connect with and gain insights from people with diverse expertise and give you a fresh perspective on your work. Attend as many conferences as possible and establish contacts with researchers from institutes other than yours. Build a strong support network.

Hone Your Mentorship Skills

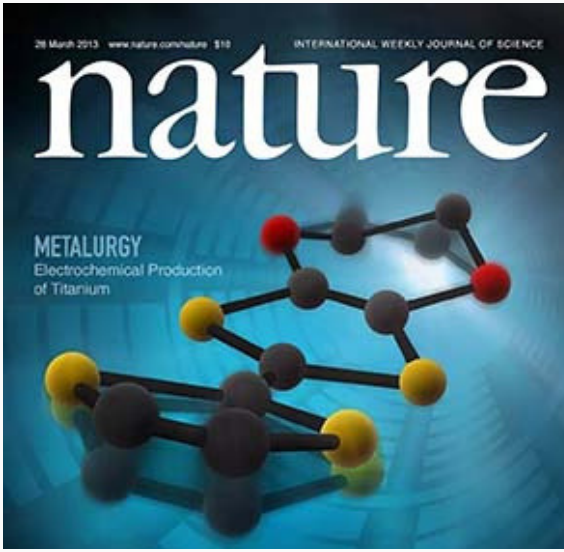
As a postdoc, you come with a few years of experience. Use your experience and knowledge to mentor younger researchers. Developing your mentorship skills will help you in your future career as a researcher. Ask your PI for advice on good mentoring.

Develop Your Grant Writing Skills

Grant writing is a skill that you will have to use throughout your academic career. It is essential to know how to write a proposal to secure funding for your projects. Apply for as many grants as possible during these early years. Ask senior researchers for feedback and learn from your mistakes.

Publish as Soon as Possible

A postdoctoral fellowship usually lasts for a short duration ranging from a year to a maximum of three years (it does extend a bit sometimes). Remember that your future job application will be evaluated based on the work done and papers published in your current position. You need to publish as soon as possible so that you can present your work to secure your permanent position [10].



Explore Another Country

Try and pursue your postdoctoral research in countries other than your own. It will help you experience diverse work cultures. It will help you understand how research works in different countries [9]. You can implement the good things that you learn at a later stage in your career.

Tips for Principal Investigators

Have a Clear Goal for Your Team

Set clear goals for your team [11]. Communicate with them about the goals that they have and also share what you expect from them. Set goals that are in agreement with everyone. This will motivate them to do their work. There is nothing more demotivating than a lack of well-defined goals.

Develop your Communication Skills

Learn the art of effective communication. Talk to people on a regular basis and provide constructive feedback to your team. You can get things done only if you effectively communicate your ideas to your research group.

Create a Positive Work Environment

Encourage active participation from all your team members. Give them a chance to voice their opinions [11]. Consult them when you think they can make a valuable contribution to your decision making. If you do not agree with their opinion, explain it to them. Avoid aggravation at all costs. Your team should look forward to interacting with you. Do not make them hate group meetings.

Distribute Responsibilities

Distribute your responsibilities among your postdocs/senior staff members. You can ask them to co-supervise a few students with you. You can ask them to help you with your grant application(s). This will help you reduce your workload and also help your postdocs develop the skills required for the next stage of their respective careers. You can also give your postdocs the responsibility of validating others' results (to ensure reproducibility).

Choose Your Team Carefully

A large part of a PI's productivity is based on her/his team. It is essential that you choose the right people for your team. Choose people from diverse backgrounds and different strengths. This will help you implement diversity in your research.

Provide Good Mentorship

As a PI, you are expected to provide good mentorship to future scientists. Mentor them in such a way that they can conduct independent research in the future. Thomas R. Cech, President of the Howard Hughes Medical Institute and 1989 Nobel Laureate in Chemistry once said, " Both the number of publications produced and the quality of mentoring provided (especially to postdocs) should count in the evaluation of a lab chief's suitability for future funding." [12]

Learn to Say No

It is ok to say no. You do not have to respond positively to every request shared with you. Learn to decline meetings that have no clear agenda/outlined purpose [2]. Reply to emails that you receive, but do not take decisions on MS Outlook. Learn to distinguish between tasks that are essential and tasks that you can do without.

Trust Your Team

Do not micromanage your team. When you assign a task to someone, trust the opposite person's abilities to do it well. Do not sit and monitor every experiment or calculate every result that is given to you. Not trusting your team will only increase your workload. Intervene and go through things only when you notice that something is drastically wrong.

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Thank you for reading this ebook.

We hope these tips will help you in your journey towards being a successful researcher.

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