Do a predoc, young people

What's the rush in starting a PhD? Why don't you instead do a predoc before committing to doctoral studies.

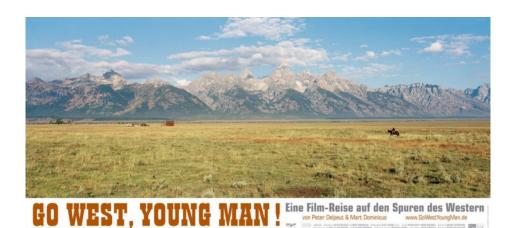
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<u>American author and newspaper editor Horace Greeley</u> is said to have coined the phrase "Go West, young man". <u>In an 1865 article in the New-York Daily Tribune, he wrote</u>,

"Washington [D.C.] is not a place to live in. The rents are high, the food is bad, the dust is disgusting and the morals are deplorable. Go West, young man, go West and grow up with the country."

Greely's manifest grew to be viewed beyond its <u>colonialist call for</u> <u>American settlers to expand across North America</u>. These days, it's a slogan for all young people to seek wider opportunities, to take risks and explore uncharted territories. An invitation "<u>to pursue one's own</u> dreams and individuality".



Get out of your comfort zone. Go West!

In the middle of the Disco craze of the 1970s, the American band The Village People turned the quote into an anthem of freedom and self-

discovery with the timeless hit "Go West". The catchy song immediately became a gay anthem, inspiring many LGBT people to move to California. The tune also went on to become a regular football chant across stadiums, as in the catchy "One nil to the Arsenal". The Pet Shop Boys covered "Go West" in 1993 and arranged it to sound like the national anthem of the Soviet Union. We don't know if this version ever became a hit in Russia after the fall of communism, but you can find the music video on YouTube complete with Russian subtitles.



Go west, this is what we're gonna do.

The "Go West" philosophy fits well with scientific research. A typical sign of greatness for a scientist is to go out of one's comfort zone to explore new topics and engage in novel approaches. <u>Don't hyperspecialize</u>. You rarely know what will be useful in the future. The more widely you explore, the more likely you will make unique connections and unexpected discoveries.

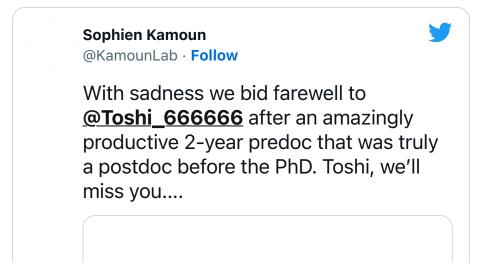
In a recent job interview at a biotech company, a Biology graduate told me that they were asked if they can operate drones. It wasn't part of their university Biology curriculum, but flying drones as a hobby would have landed the job. It's this sort of lateral skills that can give the extra plus that makes you stand out among your peers. You rarely know what will be useful. The future belongs to those who can combine many skills, any skills.

This post is to call for budding researchers to broaden and strengthen their expertise before embarking in doctoral studies. Way too often—especially in the UK— the advice is given to students to start their Ph.D. as soon as they can. This advice may not be best for you. Read this. Consider doing a predoc first.

What's a predoc?

There are many definitions of a predoc out there so it can be confusing to understand the concept. For the purpose of this post, a predoc is a predoctoral internship as defined on the website of The Sainsbury Laboratory. Predocs undertake "research training with a view to submitting a future PhD studentship application". They are supported "financially and academically to allow them to fully engage in the laboratory research environment". The candidates usually hold either Bachelor or Masters' degrees, but are not necessarily enrolled academically in a University degree. They may apply to a PhD within the The Sainsbury Laboratory, but they often move elsewhere for their doctoral studies.

In other words, the predoc is a paid research position that takes place before joining a doctoral program. *It's similar to a postdoc, except that it's before the PhD*.



Why not do a postdoc before you start your PhD?

What's the difference between a predoc and a Master's degree

A Master's degree is a degree awarded by universities after 1 or 2 years of studies. In scientific disciplines, the degree is usually a Master of Science (MSc), although UK universities can also award a Master of Research (MRes) or a Master of Philosopy (MPhil). The predoc, as defined here, is in some ways similar to an MRes or MPhil, except that the student isn't enrolled in a university program and doesn't receive a degree.

In many continental European countries, the Master's degree is essentially free of charge for the student. In one French Master, the fees add up to only €200 per year. In contrast, in the UK, US and at some European universities, the Master's fees can be quite hefty, with the fees charged by top UK universities adding up in the tens of thousands of pounds. Therefore, the predoc is doing research at the Master's level and is getting paid for gaining this experience.

What are the benefits of a predoc

Explore before committing—Many science students seem to enrol in a PhD program because they are told that this is the next step in their studies. Some students may even skip the Master's and apply straight for a PhD. But it's tough to do a PhD, especially when the student doesn't have much research experience. A successful PhD is quite a step up from undergraduate and even Master's studies. And the decision to start the PhD is essentially all or nothing. It's a massive commitment for 3-4 or more years, depending on the country. It's important to have a better sense of whether embarking in a PhD is the best career track for you. The predoc will allow you to test the waters before committing many years of your life to a PhD.

Find out what it takes to be a researcher—Students who decide to do a PhD don't always understand what it means to do scientific research. Good grades at the university don't necessarily translate into being a good researcher. Not only does it draw upon a different spectrum of skillsets, but it also takes an incredible degree of resilience and patience to succeed at research. The predoc will allow you to find out what it takes, and develop realistic expectations of what you can achieve in a few years. You'll find out how you handle failure and whether you can remain motivated in the face of adversity.



Research, just like genius, is 1% inspiration and 99% perspiration.

Get to rub shoulders with scientists on a daily basis—The predoc means you will be embedded in a reserach intensive environment on a daily basis. And the coffee room discussions you will have on a multitude of topics will be invaluable. You will get to talk to other students, postdocs and scientists at various career stages thus getting a better sense of what research and a research career are like.

Build confidence in your capacity to do research —Starting a PhD with limited research experience means that, during the first year or two, much time will be spent in learning basic skills rather than advancing the research project. Failure to get basic techniques to work and other limitations can shake the student's confidence. The predoc will allow you to build confidence and make major inroads in becoming an independent researcher. This will, hopefully, make you less dependent on your PhD supervisors and enable you to take full ownership of your thesis project, a hallmark of a successful PhD.

Widen your skill set—Good research follows the science and the thesis project could branch off in unexpected ways. You rarely know what skill will be useful in a different context. What piece of knowledge you learn today will very likely come handy in the future. The predoc will widen your skill set and knowledge base in ways that may very well be critical to your success at some point in the future.

Find out what you like—Pick a research topic that keeps you up at night and makes you dream. To find one, you will need to be exposed to a lot of research topics beyond classroom lectures. The predoc will help you define what you're truly passionate about and guide your

decision on which topics to pursue for the PhD. As <u>Steve Jobs wisely</u> <u>said</u>,

"Your work is going to fill a large part of your life, and the only way to be truly satisfied is to do what you believe is great work. And the only way to do great work is to love what you do. If you haven't found it yet, keep looking. Don't settle. As with all matters of the heart, you'll know when you find it."



The only way to do great work is to love what you do.

Find out what you don't like—The predoc can also help you determine what you definitely don't want to work on. For instance, most of the computational biologists we host end up doing some wet lab work at some point during their predocs. In some cases, the experience helped them realize that they simply don't like running western blots or splicing DNA as much as they like solving puzzles at the computer.

Find out what you're good at—The predoc will help you identify what you're really good at. For instance, you might find out that you're better focused at the computer doing bioinformatics than pipetting at the bench, or vice versa. Getting to know yourself and develop a scientific identity requires actively engaging with a research project and navigating the day to day challenges of laboratory research.

Beef up your CV before you even start the PhD—In some university systems, notably in the UK, the PhD can be misaligned with the requirements of a scientific career. There is limited course work and opportunity for personal development. Sadly, the research project—a fundamental component of any PhD—is sometimes treated as an afterthought. Way too often, students graduate without any publications to their names. This creates stress and difficulty in navigating the next phase of a career when applying for jobs or fellowships. The predoc will often allow you to publish before even starting your PhD, therefore beefing up your CV and reducing any risks a challenging PhD project may pose. The predoc will also benefit your CV in other ways by expanding your professional network, for instance by increasing the number of supervisors who will vouch for you in your future job applications.

Delay starting your academic clock—Many students don't appreciate that once a PhD starts, a virtual academic clock kicks in, not just for the duration of the PhD but beyond. Many Early Career Researcher (ECR) fellowships, and even the prestigious European Research Council (ERC) Starter and Consolidator grants, come with stringent career stage eligibility requirements calculated based on the timing of your PhD. The predoc will allow to build a more substantial CV before this clock kicks in.



Excellente discussion avec les étudiants des Masters de Toulouse

Consider applying to our predoc program for a fully remunerated research experience. Contact @TheSainsburyLab Group Leaders or apply as instructed tsl.ac.uk/opportunities-...



Do a predoc. young people!

Why can't we have more predocs

Over the years, we found that hosting predocs is a relatively costeffective, stress-free way to add youthful energy to the lab, bring in new expertise— in computational biology for example—and expand our people network. Many of our predocs went on elsewhere for their PhD, hopefully better prepared and more resilient after their significant predoctoral research experience.

Nonetheless, there are hurdles to a wider adoption of the predoc system.

Mentors too often advise students to prematurely start their PhD— Students are often advised to apply to PhD programs as soon as they are eligible, even with just a Bachelor degree and limited research experience. It's questionable whether this is a helpful advice for the majority of students. Students who get this advice should challenge it, and at the least initiate a discussion with their mentors based on the arguments put forward in this article.

Lack of incentives for universities—This is the elephant in the room. Unlike, MSc, MRes MPhil or PhD students, predocs don't bring in fees and, therefore, can be a financial burden for universities. The faculty supervisors may also get more benefits from hosting graduate students instead of predocs, as the formal degree training counts towards tenure and promotion.

Predocs are often limited to research institutes—Paid predocs as defined here tend to be limited to research groups that have flexible funding and recruitment processes. In addition to The Sainsbury Laboratory predoctoral internship scheme and various internship programs at the John Innes Centre, the Vienna based Gregor Mendel Institute (GMI) has recently developed the Internship Program (I2P) aimed at attracting early career scientists before they enter graduate school. Prospective students should Look for opportunities on Twitter and use their own network to query for predocs.



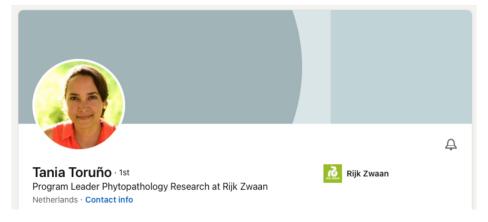
Pamela Vetrano, a predoc in Silvia Ramundo's lab at the GMI Vienna.

Patchy funding for predocs—Unlike PhD studentships, predoc funding often comes from internal sources—grants and core budgets of Principal Investigators—rather than external programs. There is also

better access for international candidates, unlike the high fees and limited eligibilities of postgraduate studies (i.e. graduate programs in the UK). Science funders should consider providing more financial support for predoc programs to balance the funding they already provide for PhD studentships. Predocs are also a relatively minor investment, for example to attract students to under-funded topics like plant biology. Funds for one PhD studentship should be enough to support a minimum of 4 predocs (and probably more when adding university fees). Ultimately, this will also improve the PhD system by strengthening the pool of applicants.

Go West, go east, go anywhere...

Our colleague <u>Tania Toruno</u> is a perfect example of a scientist who took full advantage of the predoc system. Tania didn't just go west. She went east, she went everywhere. As a predoc in Saskia's lab at Ohio State University and then at the John Innes Centre, Tania published an influential paper on the <u>peculiar multicopy effector gene cluster of phytoplasma bacteria</u>. She then did a PhD with the late <u>Jim Alfano</u> at the University of Nebraska-Lincoln, and a postdoc with <u>Gitta Coaker</u> at the University of California, Davis, building up a solid record and expertise in plant-microbe interactions. More recently, Tania settled on a job as a <u>Program Leader in Phytopathology Research at the seed company Rijk Zwaan</u> in the Netherlands.



Tania Toruno from a predoc at Ohio State and John Innes centre to Program Leader at Rijk Zwaan.

Acknowledgements

This post was jointly developed and written with <u>Saskia Hogenhout</u>. Saskia did many predocs before starting her PhD.

We are particularly grateful to all the predocs who joined our labs over the years starting first with <u>Edgar Huitema</u> (Sophien's lab) and <u>Tatiana Fazzolari</u> (Saskia's lab). Thanks to Stephen Bornemann, Yasin Dagdas, Jules Claeys and members of the TSL second floor student office for their feedback on an early draft.



Tatiana Fazzolari — the first predoc in Saskia's lab.



Edgar Huitema (left, back) — the first predoc in Sophien's lab.

Testimonials

Postdoc before starting the PhD. Do predocs young people!



Saskia Hogenhout @SaskiaHogenhout · Sep 17, 2021

Replying to @pavi_narayanan @KamounLab and 2 others

Thanks. I did many predocs before I started my PhD. This helped a lot. Highly recommended.

Postdoc before the PhD!

- -It was a great opportunity for me to get research experience and feel part of a lab without having to afford a masters.

 (On this point I thought it's a bit more inclusive way of gaining research experience as for me and a couple other people I know in uk weren't able to or struggled to afford a masters but I didn't know exactly how to say this)

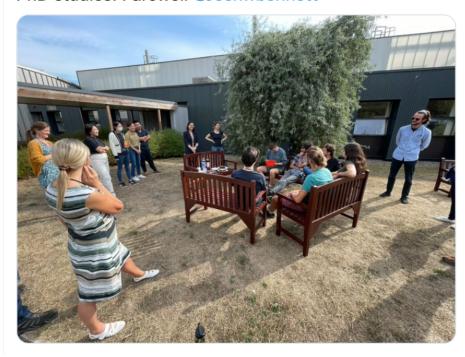
 -The predoc at TSL really helped me develop a range of research skills and build up a good network of scientists in a field I am now continuing in.
- -The fact I came straight from my undergraduate degree into the predoc I believe fast forwarded my readiness to start a PhD.

Josh Bennett, predoc at The Sainsbury Lab.

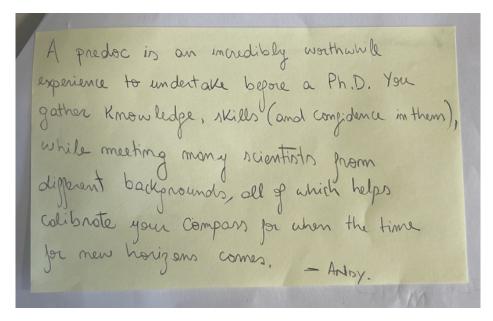
TSL The Sainsbury Laboratory

@The Sainsbury Lab

Another @TheSainsburyLab predoc moving forward to PhD studies. Farewell @Joshwbennett



Farewell to Josh Bennett, predoc with Michelle Hulin and Wenbo Ma at The Sainsbury Lab.

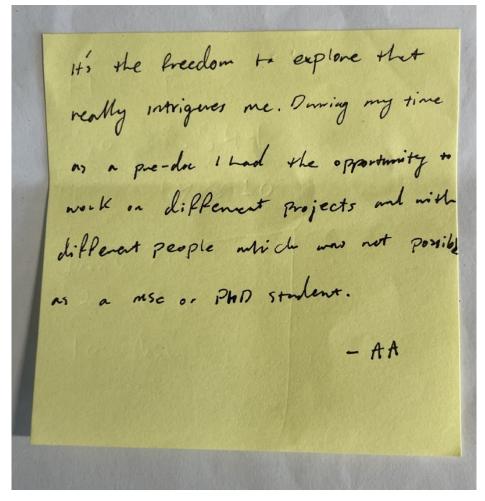


Andy Posbe, predoc at The Sainsbury Lab.





NextGen Predocs.



AmirAli Toghani, predoc at The Sainsbury Lab.



And so it ends our last day as the best trio of latin predocs @KamounLab

We'll mis you Saraí! Buen viento y buena mar @CSaraiRA



Latino predocs!



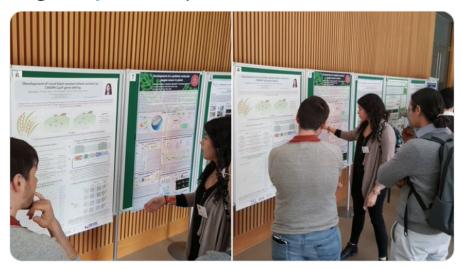
Last night of @La_Bajona as a predoc in @KamounLab . Good luck guy! #NoPastaAnymore



Last night as a predoc...



Our extremely talented predoc @dianagdlc in action. Explaining our strategy @KamounLab to generate wheat lines with enhanced resistance against the blast fungus. #synbio2018 poster session



Predoc at poster session!