JANUARY 2025

KAPNA GUIDE #1

How to Get into Doctoral Programs in North America

Kazakh Association of PhDs
in North America

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About Our Association

Kazakh Association of PhDs in North America (KAPNA) is a society of like-minded people that brings together doctorate-level students and graduates from Kazakhstan who are studying or pursuing careers in the United States or Canada. KAPNA was founded by Dr. Adiya Rakymzhan, Dr. Murat Yessenov, Mr. Aniyar Izguttinov, Dr. Zhenisbek Tagay and Mrs. Dinara Ibrayeva in February 2023.

Our Mission

To unite and empower doctorate-level students and graduates from Kazakhstan in North America by addressing their unique challenges, fostering academic excellence, and promoting professional growth. We are creating a supportive community that champions education, research, and collaboration while celebrating the shared experiences and backgrounds of our members.

Our Vision

To be the premier community for doctorate-level students and graduates from Kazakhstan in North America, recognized for our commitment to scholarly achievement and career development. We aspire to cultivate a thriving network that shapes the future of science, academia, industry, and our global society.

Follow us on social media to stay up to date on our events.

About This Guide

Pursuing a PhD is a transformative experience, but it comes with its own set of challenges – especially for students from Kazakhstan looking to integrate into the global scientific community. From building research experience to navigating international applications, understanding the full scope of what a PhD offers is critical for making informed decisions about your academic and career trajectory.

As KAPNA, we bring a wealth of expertise and experience to this topic. Our members have successfully transitioned from undergraduates in Kazakhstan to accomplished researchers at leading institutions globally. This positions us uniquely to share real-world insights and practical advice on pursuing doctoral degrees, overcoming challenges, and advancing research careers. We aim to share our knowledge about PhD paths, insights about the application process, and future career prospects after receiving a PhD.

The guide is structured to address six main questions:

1. What is a PhD?
2. Where to pursue a PhD?
3. How to gain research experience for PhD applications?
4. How to apply for PhD programs?
5. How to prepare for interviews?
6. How to choose the right university/program/group for PhD?

We dedicate a separate section for each question by providing a general overview along with the answers to specific questions in an FAQ format. We also include descriptions/suggestions from our personal experiences at the end of each section. Additionally, the guide includes external links for other resources about this topic, such as blogs, videos, and podcasts.

The guide was prepared on the basis of the virtual conference *"Starting Advancing Careers in Science and Research"*, which was organized by KAPNA with support from the Edmund S. Muskie Fellowship Program. We would like to thank all conference speakers for their contribution, namely Prof. Dana Akilbekova, Dr. Eldar

Akhmetgaliyev, Azamat Yessengazin, Aizhan Kul-Mukhammed, Adina Tasbolat, Gulzhan Aldan, Serikbolsyn Tastanbek, Meirgul Kaleshova, Damir Akchurin, Dr. Aisha Yesbolatova and Galymzhan Issabekov. We would also like to extend special appreciation to Serikbolsyn Tastanbek for sharing his materials, which were partially integrated into this guide.

Section 1. What is a PhD?

A PhD, or Doctor of Philosophy, is widely regarded as the highest academic achievement one can earn. It signifies a level of expertise and scholarship that goes beyond the acquisition of knowledge to encompass the ability to contribute original insights that advance human understanding. This prestigious degree represents not just mastery over a specific field but also the capacity to engage in groundbreaking research, push the boundaries of what is known, and ultimately shape the future direction of the discipline. Earning a PhD is a transformative journey, one that shifts an individual's role from being a student or learner of existing knowledge to becoming a creator of new ideas, discoveries, and solutions. This shift has profound implications, both for the individual and for the academic or professional field in which they work, marking them as leaders and innovators within their area of expertise.

The process of obtaining a PhD is markedly different from other academic degrees such as a bachelor's or master's degree, which are largely focused on acquiring and mastering established knowledge. In contrast, PhD journey centers around original research and critical inquiry. It encourages scholars to ask new questions that have not been fully explored, uncover insights that offer fresh perspectives, and develop innovative solutions to complex problems. This emphasis on novelty and originality sets PhD work apart, as it pushes individuals to not only learn but also to challenge and expand existing theories, models, and paradigms within their field. By focusing on creating new knowledge rather than simply consuming it, a PhD becomes a process of discovery, where a researcher actively contributes to the body of knowledge and may even revolutionize their field.

Pursuing a PhD typically requires several years of dedicated study and intense intellectual engagement. In addition to completing advanced coursework, which deepens one's understanding of the field, students must conduct original research that culminates in a dissertation. The dissertation is the most significant component of a PhD program, serving as a comprehensive and original contribution to the discipline. Writing a dissertation is a monumental task that requires not only technical expertise but also creativity, critical thinking, and perseverance. The research process is often long and challenging, requiring the ability to solve problems, navigate setbacks, and

continually refine hypotheses and methodologies. The culmination of this work, in the form of a well-researched dissertation, is intended to demonstrate the researcher's ability to conduct independent and meaningful scholarly work that has the potential to impact their field in a lasting way.

Once individuals complete their PhD, they often transition into roles as professors, researchers, or leaders in various industries. Many pursue academic careers, teaching and mentoring the next generation of scholars while continuing their own research. Others apply their specialized knowledge and research skills in corporate, governmental, or nonprofit settings, using their expertise to address complex challenges or drive innovation. For example, PhD holders in fields like engineering, economics, or medicine may work in industries where their advanced problem-solving skills and deep knowledge contribute to technological advancements, policy development, or new medical treatments. The skills honed during the PhD journey – critical thinking, problem-solving, and intellectual creativity – equip graduates to tackle some of society's most pressing issues. A PhD is not simply about answering questions; it is about asking the right ones, pursuing rigorous inquiry, and ultimately expanding the frontiers of what we know. It is a degree that empowers individuals to inspire others, make meaningful contributions to their field, and continue the cycle of discovery and advancement for years to come.

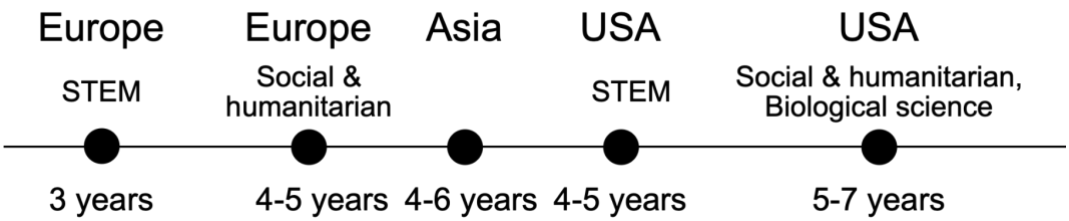
What happens during a PhD?

- You will conduct independent research under the guidance of experts in your field.
- Expect to publish papers, present at conferences, and engage with a global academic community.
- You will have opportunities to assist and teach classes, mentor students, and engage with the general public about your research.
- Your time will be split between learning, researching, teaching, and growing as a scholar.

What is the duration of a PhD?

- Most PhD programs take 3–7 years, depending on the country, discipline, and prior graduate degree. Research in certain fields (e.g., humanities or social

sciences) might take longer due to the nature of the research process, while STEM PhDs could be more focused and quicker to complete, depending on the complexity of the research.



What are the expected outcomes?

- By the end of your PhD, you will need to complete an original piece of research work and submit it in written form.
- Successful dissertation defence is another outcome of a PhD where you present your work and answer challenging questions about your project.
- You will not only hold an advanced degree but also the skills and expertise to influence your field, whether in academia, industry, or beyond.

Summary of key skills gained during a PhD:

- *Research Skills*: Critical thinking, literature review, study design, hypothesis testing, quantitative and qualitative methodology, data collection.
- *Writing & Communication:* Academic writing, presenting research, grant writing, publication experience.
- *Project Management:* Time management, planning, resource management.
- *Technical & Analytical:* Data analysis, statistical and computational techniques, qualitative analysis.
- *Collaboration:* Teamwork, networking, interdisciplinary communication.
- *Teaching & Leadership:* Teaching, mentoring, conflict resolution, leadership.
- *Self-Motivation & Independence:* Autonomy, perseverance, adaptability.
- *Ethical & Professional Conduct:* Research ethics, professionalism.
- *Personal Development:* Stress management, career planning, resilience.

Section 2. Where to Pursue a PhD?

Deciding where to pursue a PhD is a crucial step for aspiring researchers, as it can significantly shape their academic and professional trajectory. Globally, North America, Europe, and Asia stand out as leading destinations for doctoral studies, each offering unique advantages. North America, particularly the U.S., is renowned for its research-intensive universities and generous funding opportunities for international students. Europe provides access to prestigious institutions, diverse cultural experiences, and often low or no tuition fees in countries like Germany and Scandinavia. Meanwhile, Asia, with emerging hubs like China, Japan, and Singapore, is gaining recognition for cutting-edge research facilities, growing investment in education, and competitive scholarships. Choosing the right destination depends on a range of factors, including academic focus, funding availability, quality of life, and personal preferences, making it essential to explore the strengths of each region before committing to a program. Below we will provide general information about PhD programs in each of these destinations.

What to expect? The biggest differences?

U.S./Canada:

- In the U.S. there is no prerequisite for a Master's degree, which allows applying to a PhD program with a bachelor's degree.
- Some institutions in Canada require a Master's degree, check the program description before applying.
- Programs typically include coursework in years 1–2, giving you time to explore before settling into your research. On the other hand, a PhD takes around 5 years, which is longer than in some other countries.
- PhD students are given a high degree of independence to come up with their own projects or choose from funded projects.
- Passing comprehensive exams and proposal defense are PhD milestones.
- Access to world-leading conferences and topical meetings.
- Visa requirements prevent you from working outside of the campus. Internships are possible during summer months.

Europe:

- A master's degree is mandatory in most European countries. This requirement ensures that PhD candidates are well-prepared for the challenges of independent research.
- Research begins immediately, and there's less emphasis on coursework.
- Therefore, you are expected to have a proposal at the time of application or before the start date.
- You are expected to dive into your dissertation from day one.
- Programs are shorter, typically 3–4 years.
- Better work-life balance – less workload.

Asia:

- Programs blend coursework with advanced research opportunities.
- Some require proficiency in the local language, although English-taught programs are increasingly common.
- Offer less research independence compared to Europe or North America. Typically, students follow topics set by their PhD supervisors, strong hierarchy in the research groups, and the program in general.

What are the differences in funding?

US/Canada:

- Practically all programs provide generous funding packages that fully cover tuition, health insurance, and a stipend. Stipends typically vary from $ 1,500 - $ 4,000 depending on the cost of living in a particular area.
- Funding typically comes through teaching or research assistantships, external fellowships (e.g., Bolashak, Fulbright) internal fellowships (Dean's/college/university fellowships), or a combination of these funding sources.
- Colleges with a big undergraduate program often offer teaching assistantship positions for the whole duration of a PhD. On the downside, the student must serve as a teaching assistant while also conducting research work.

Europe:

- Many PhD positions are fully funded, with students employed by universities or research institutes. This means you will often receive a salary, along with access to benefits like social security.
- Additional funding opportunities are available through European Union programs like Erasmus Mundus or Marie Skłodowska-Curie Fellowships.

Asia:

- Competitive scholarships, such as Japan's MEXT or the Hong Kong PhD Fellowship Scheme, provide generous support.
- Research assistantships and partnerships with industry are common ways to secure funding while gaining practical experience.

What are the other practical elements to consider?

- *Post-PhD career plans:* Consider where you would like to live and work post-PhD. Think about long-term opportunities for industry jobs, postdoc positions, teaching roles, and overall quality of life.
- *Proficiency in local language:* Although most of PhD programs worldwide offer education in English, in most countries, it is better to speak the local language for a comfortable life outside the university.
- *Socio-political environment:* Choose a country that offers a comfortable and supportive environment for international students. Canada and the U.S., for instance, are more welcoming to immigrants than European countries.
- *Cost of living:* Make sure your stipend is enough to cover living expenses for you/your family. There are many cost-of-living calculators available. Alternatively, you can reach out to Kazakhstani students in your university of interest.
- *Transportation:* Many cities and towns in the U.S. are not famous for a reliable public transportation system with a few exceptions like NYC, Chicago, and Boston. Therefore, you might need to buy a car and plan your budget accordingly. On the other hand, European and Asian cities usually have good public transport.
- *Housing:* Typically, universities do not offer housing for PhD students, therefore you need to find it yourself. U.S. apartments mainly come unfurnished, whereas apartments in other countries can be already furnished. Lease management

companies in the U.S. do not discriminate against applicants based on their income/origin which might be the case in Europe or Asia. Lease management companies in the U.S. usually do not require motivational letters and referrals, unlike some European companies.

- *Healthcare:* The U.S. does not have a public healthcare system, so make sure your program provides healthcare coverage as a part of your compensation. The opposite is usually true for Europe, Asia or Canada.
- *Childcare:* European countries offer subsidized daycares or kindergartens that are available for PhD students. No such programs in the U.S./Canada and the cost of daycare may cost around $1000/month or more depending on a city.

Below we provide summary tables created by Galymzhan Issabekov. It outlines the key differences between four countries based on Galymzhan's personal experiences.

	Research Focus	Academic Environment	Early-Career Research	Research Culture	Funding Sources	Challenges	Innovation Culture	Strengths
🇺🇸	Life sciences, space science, AI, medicine, fundamental research	**Independence**, creativity, **mentorship**, interdisciplinary research	Strong emphasis on **early-career independence**, competitive tenure-track system	Encourages risk-taking, **entrepreneurship**, innovation-driven	Diverse: government (NIH, NSF), private foundations, industry	**Highly competitive funding**, political shifts impact certain fields	Entrepreneurial, **risk-taking, high-risk,** high-reward research	Leading in **innovation**, broad research output, interdisciplinary
🇨🇳	Applied sciences, AI, biotechnology, quantum science	**Hierarchical**, high-impact publications, strong **industry collaboration**	Challenging for junior researchers to gain independence	**High pressure for results**, strong government support, **quantity over quality**	Government-driven, large state-backed funding (NSFC)	**Academic integrity issues**, hierarchy favors **seniority**, competitive funding	Strategic **national** priority, **rapid** development, emphasis on **quick** results	Government support, **fast-growing, strategic fields**
🇯🇵	Robotics, electronics, materials science, biomedicine	**Hierarchical, conservative, emphasis on precision**	Difficult for early-career independence, favors seniority	**Conservative**, long-term focus, incremental innovation	Government and industry funding, favoring **traditional fields**	Hierarchical, **fewer** opportunities for risky research, favoring seniority	Incremental innovation, respect for **tradition** and hierarchy	**Applied research** excellence, **precision**, strong industry collaboration
🇩🇪	Engineering, physical sciences, medicine, renewable energy	Research-intensive, balanced basic & applied research, collaboration	Good support through programs like Emmy Noether, challenging permanent positions	Intellectual rigor, collaborative with industry, **detailed bureaucracy**	Public funding (DFG, Max Planck, Fraunhofer), interdisciplinary support	**Bureaucratic processes**, competitive academic progression, **limited permanent positions**	Balanced innovation, precision, collaboration with industry, **stable system**	**Strong** infrastructure, interdisciplinary research, public support for both basic and applied research

	Undergraduate Education	Graduate Education (Master's)	PhD Structure	Postdoctoral Opportunities	Career Progression	Tenure Track System	Focus on Publications	Academic Independence
🇺🇸	4 years (bachelor's degree). Liberal arts education with focus on interdisciplinary learning.	2 years for master's degree, though many students enter PhD programs directly after a bachelor's.	4-6 years. Emphasis on independent research, publishing papers, and defending a dissertation.	**Highly** independent, competitive. Postdocs are expected to pursue funding and set up their own projects.	**Early independence and rapid career progression. Junior faculty roles like assistant professor.**	Clear tenure track system. Assistant professor to associate professor (tenure) to full professor.	Strong emphasis on **quality** over quantity. Peer-reviewed publications essential for tenure track.	**Encouraged** early in academic career, especially at the postdoctoral level.
🇨🇳	Typically 4-5 years for medical or scientific disciplines. Focus on exams and rote learning.	2-3 years, typically leads into PhD. Programs are heavily structured.	3-5 years, **heavy** focus on publication and meeting research quotas.	**Limited** in academic independence. Postdocs are often extensions of the PhD under the same professor.	Hierarchical, **slow** progression. Early-career researchers often work **under** senior professors for years.	Tenure is **limited**, with many positions as lecturers or assistant professors for long periods.	**High** pressure to publish, sometimes **more quantity-driven**. Strong focus on high-impact journals.	**Limited** early on. Young researchers often follow the direction of senior academics.
🇯🇵	4 years with a focus on specific fields. Highly structured, lecture-based with less flexibility.	2 years, often research-heavy, with strict mentorship.	3-5 years. Strong mentorship from senior professors, students often work on predefined projects.	Postdocs often work under senior researchers, **limited** independence, and mainly **execute** set research.	Hierarchical, with **slower** career progression. Tenure comes **later** in careers.	Tenure track exists but is **slow** and competitive. Often requires years of postdoc or junior faculty positions.	Publications important, but **quality** and institutional **loyalty** play bigger roles.	**Limited** early on, with junior researchers working under senior faculty for extended periods.
🇩🇪	3 years for a bachelor's degree. More specialized and technical, with focus on a specific field.	2 years for most fields. Focus on research and thesis work, commonly used as a pathway to PhD.	3-4 years. PhDs are research-oriented, strong emphasis on collaboration with industry.	Postdocs have **strong** independence. Often receive independent **fellowships** or lead their own research groups.	**Research-intensive** roles, with strong emphasis on publishing. Habilitation often required for professorship.	Competitive system, requiring **Habilitation** or equivalent. Professorship often comes later, after long postdoc period.	**Quality** over quantity, with importance placed on publishing in well-regarded international journals.	**Significant**, especially for early-career researchers, through funding programs and fellowships.

	Common Cultural Shocks	Mitigation Strategies
🇺🇸	- High **individualism** and **independence** expected - **Direct**, sometimes blunt communication style - **Intense** work ethic, with long hours and high **productivity** expectations	- Embrace **independence**, seek **mentorship**, and take **initiative** in managing projects - Adapt to **direct** communication by learning to give and receive clear, concise feedback - Set **boundaries** for work-life balance and **manage** workload effectively
🇨🇳	- Strong **hierarchy** and respect for **authority** - **Indirect** communication, **avoiding** direct criticism - **Group-oriented culture** prioritizing collective goals over individual preferences	- Learn and **adapt** to hierarchical structures, show respect but find **respectful ways** to contribute ideas - Study **indirect** communication, build relationships (**guanxi**) for better understanding - Embrace the group culture by participating in **team activities** and understanding **collective decision-making**
🇯🇵	- Strong **formality** and respect for **hierarchy** - Indirect communication to **maintain harmony** - High work expectations, long hours, and **pressure for perfection**	- Learn and **follow** formal protocols (e.g., bowing, addressing superiors correctly) - Practice **interpreting** indirect communication and build trust with colleagues - **Discuss** workload expectations with supervisors and **set** personal boundaries for balance
🇩🇪	- **Direct** and blunt communication, especially in **feedback** - Punctuality and **efficiency** highly valued - **Bureaucratic** processes can feel slow or overwhelming	- Accept **direct feedback** as part of the culture, and give feedback constructively - Be punctual and **respect deadlines**; develop efficient time management skills - **Prepare** for bureaucracy by organizing documents early and seeking support when needed

Concluding remarks

- Check out the recordings of the Session 4 of KAPNA Conference titled ***PhD Pathways: U.S. vs Europe vs Asia***. In this session, we brought together three PhD students and graduates who studied in the U.S., Germany, Japan, and China. They share their experiences, outlining key differences in structure, funding, and opportunities.

Personal Experiences

“I was accepted to universities in the U.S., Canada, and Germany. In the end, I picked the U.S. for multiple reasons: 1) the engineering school ranking was the highest; 2) I did not have to learn a new language (unlike in Germany); 3) the university has a lot of funding for engineering, so it is more secure; 4) I have already been to the U.S. before, it was more familiar to me, and I knew about the visa application the most; 5) stipend to cost of living was the highest in the US.”

Galiya Magazova, PhD in Chemical Engineering
from Notre Dame University

“I was accepted to two U.S. and one Kazakhstani university. While choosing between them I prioritised the availability of funding. There are fewer funded programs in social sciences compared to STEM fields, so I chose the university that provided me with an RA opportunity from day one, even if it was only for one academic year. Usually, once you are in, there are more opportunities to apply for.”

Dinara Ibrayeva, PhD in International and Multicultural Education
at Florida State University

“I initially shortlisted about 20 universities worldwide but later narrowed it to around 10 institutions in Canada, England, and the U.S., based on academic fit and career prospects. Eventually, I focused on four Canadian universities due to their robust research in applied linguistics, multilingual education and TESOL, adequate funding opportunities, and opportunities for a comfortable life post-PhD.

To manage a big or even small number of institutions, it is a good idea to create a spreadsheet with columns on details that are important to you, e.g., research relevance, university ranking, program and faculty links, sociopolitical factors in the country and state/province of interest, job market situation – anything you can measure and rank to narrow your list.”

Serikbolsyn Tastanbek, PhD in Teaching English as a Second Language
from the University of British Columbia

“I applied only to PhD programs in the U.S. due to several reasons: 1) the U.S. has the best research institutions and there are so many of them; 2) direct transition from bachelor’s to PhD; 3) more straightforward funding scheme with RA/TA positions.”

Zhenisbek Tagay, PhD in Physics
from Johns Hopkins University

“My research experience during master’s level education in the U.S. made my choice of a country easy. Additionally, I knew that I would be able to specialize within the field by taking more courses and essentially earning a second master’s degree.”

Aniyar Izguttinov, PhD in Health Policy and Management
at the University of North Carolina (Chapel Hill)

Section 3. How to Gain Research Experience for PhD Applications?

If you are thinking about applying for a PhD, gaining research experience is a key step. Research helps you develop important skills, explore your academic and career interests, and understand what it's like to contribute to knowledge in your field. It also strengthens your PhD application by showing your initiative, abilities, and potential as a researcher.

However, for many students, especially those new to academic research, it can be challenging to know where to start. Questions like how to find research opportunities, what skills to focus on, and how to secure funding are common. Understanding these aspects early on can make your journey smoother and help you achieve your goals.

This guide is designed to answer these questions and more, offering straightforward advice on getting research experience, preparing a strong PhD application, and succeeding in graduate school. Whether you are just starting or already have some experience, these practical tips will help you take the next steps toward a successful research and academic career.

Why should I start research as an undergraduate?

- Research gives you practical experience and helps you figure out your academic and career interests. It builds useful skills and shows initiative, which strengthens your graduate school application.

How do I find research opportunities during my undergraduate studies?

- *On-Campus:* Check your university's website for faculty research profiles and postings. Email professors about their work, mentioning your skills.
- *Off-Campus/International:* Look for universities with strong research in your field. Use Google Scholar to find relevant papers and email the authors. Apply for programs that fund international research.
- *Networking:* Talk to alumni, students, or professionals on LinkedIn or other platforms to discover opportunities.

What should I include in emails to professors for research positions?

- *Subject Line:* Be specific, e.g., "Summer Research Inquiry."
- *Body:* Introduce yourself briefly, mention your academic background and skills, and explain why their research interests you. Attach your CV and state if you can fund yourself (if relevant).

How can I get into a PhD program without much research experience?

- Show how skills from your work or academic background – like data analysis or problem-solving – relate to research. Mention certifications or independent projects in your field. Use your personal statement to explain your goals and connect your experience to them.

Do I need to stay in the same research field for my PhD?

- No, you can switch fields if you show how your skills are useful in the new area. Your research proposal should match the PhD program's focus.

What skills should I develop during research opportunities?

- *Technical Skills:* Learn lab techniques, data analysis, and/or experiment design.
- *Soft Skills:* Improve communication, networking, and critical thinking. Propose ideas to mentors to show initiative. Being actively involved in research usually presents an opportunity to present that research to a bigger audience at a seminar or a conference.
- *Deliverables:* Work on tangible outcomes like reports, conference presentations, or publications.

How do I fund my research internship?

- While internships in countries with a lower cost of living (e.g., Kazakhstan) may be affordable with personal savings, international internships often require additional funding due to high travel and accommodation expenses. Here are some common ways to secure funding:

- *Internship Programs with Funding:* Look for research internships that provide stipends, travel grants, or accommodation support.
- *Research Fellowships:* Apply for fellowships or grants from governments, universities, or non-profit organizations to cover travel and living expenses (e.g., Yessenov Foundation).
- *University Support:* Check if your home institution offers travel grants or financial support for internships abroad.

This guide is designed to help you focus on the key steps for success in research and PhD applications. Keep building your skills, seek guidance, and stay proactive!

Personal Experiences

“My journey into Biomedical Engineering started during my undergraduate studies in Physics at Nazarbayev University, where I realized my interests extended beyond traditional physics and toward biomedical applications. I joined a spectroscopy lab and developed a project studying the mechanical properties of plant leaves, which led to my first first-author paper and an oral presentation at an international conference in the U.S. This experience was enough to get me admitted to a top-50 Bioengineering program in the U.S., but it wasn’t sufficient for admission to a top-10 program. Determined to bridge this gap, I decided to pursue a master’s degree at a top-10 Bioengineering program to gain more experience and strengthen my research portfolio. During my master’s degree, I worked in a world-renowned lab specializing in optical technologies for biomedical applications, published two first-author papers which helped me to determine my research interests, and secured my admission to a top Bioengineering PhD program.”

Adiya Rakymzhan, PhD in Biomedical Engineering
from the University of Pittsburgh

“During my undergraduate studies I was sure that I wanted to pursue a PhD. From talking to my professors, I knew that getting into a PhD program is competitive and having a good resume is important. So, I started expressing interest to my professors about doing research with them. I had the opportunity to try out multiple laboratories, but the real meaningful opportunity came from a new faculty. The new professor was asking his colleagues about capable students, and I was one of the top students that came to their minds, thanks to my high GPA. In a year we published a paper in a peer-reviewed journal. I believe that having a publication helped me to stand out. Having a high GPA is not enough for a PhD application to the U.S., but having publications, conference presentations, and extracurricular activities makes a strong PhD applicant. To this day, my undergraduate research comes up on job interviews, and it is still relevant.”

Galiya Magazova, PhD in Chemical Engineering
from Notre Dame University

“I started thinking about applying to PhD programs during my sophomore year. At that time, I joined a high-energy physics lab in my department. I have gained a lot of coding and data analysis skills during my time in the group. However, I knew that if I wanted to be accepted to a good PhD program, I needed to do an internship at some good place and get recommendation letters from there. After many rejected fellowship applications (yes, you will be rejected, and not just once), I finally received a long-awaited invitation to arguably the best high-energy physics institution in the world - CERN (aka Large Hadron Collider). I had a fruitful time there and got a very nice recommendation letter from my advisor for my PhD applications. However, right after the internship, I started losing interest in the field of high-energy physics. Therefore, I joined another group in my department and started doing research in more applied fields (metamaterials and light-matter interaction). I ended up publishing a first-author paper by the end of my senior year. Having experience in multiple research areas was probably the key factor in my successful PhD applications, so I would greatly emphasize the importance of gaining research experience to anyone willing to apply for doctoral programs.”

Zhenisbek Tagay, PhD in Physics
from Johns Hopkins University

“My decision to pursue a PhD wasn’t something I envisioned during my earlier studies. In fact, I had promised myself that I wouldn’t return to academia. However, during my master’s degree program, which included a thesis, I had the opportunity to engage in research and test my skills in a hands-on setting. This experience not only challenged my perspective but also planted the seed of curiosity that eventually led me to reconsider my relationship with academia later. So, ultimately, having research experience is crucial – not only to strengthen your application but also to help you determine whether the PhD journey is truly the right path for you.”

Dinara Ibrayeva, PhD in International and Multicultural Education
at Florida State University

Section 4. How to Apply for PhD Programs?

Applying for a PhD is a process that requires careful planning, self-reflection, and dedication. This section is designed to simplify the process and provide clear answers to common questions about PhD applications. Whether you are just starting to consider a PhD or you are in the middle of preparing your application, this Q&A will help you navigate key aspects.

Even if you face challenges like limited research experience or difficulty securing recommendation letters, there are actionable tips to help you move forward. Remember, the PhD application process is about demonstrating your potential to contribute to research and academia, and every step you take is part of building that story.

Let's dive into the essential questions and answers to get you on the path to a successful PhD application!

What are the key components of a PhD application?

- *Test Scores:* TOEFL/IELTS for non-native English speakers. GRE/GMAT may also be required. If you graduated with a degree taught in English, you may be able to request a waiver of this requirement.
- *Transcripts:* Academic records from previous degrees. Some programs/ universities may ask for official evaluation of your transcripts which will cost you extra and take a few weeks to be processed. Plan accordingly if your program requires such an evaluation.
- *Personal Statement:* A summary of your research interests, background, and fit for the program.
- *Recommendation Letters:* Usually three, from professors or professionals who know your work well. It is standard for an applicant to provide the names and contact details of referees, and they will then receive a system generated invitation to submit the letters directly to the program/university.
- *CV/Resume:* Highlight academic achievements, research experience, and professional roles.

- *Optional Writing Sample:* Some programs may ask for this to evaluate your research or writing skills.
- *Application fee:* In the U.S., it is common to pay the fee ranging from a few dozen to $150 per application.

What is the ideal timeline for PhD applications?

Start at least a year ahead:

- 9–12 months before the application deadline: Identify programs, take tests, and contact potential advisors.
- 6 months before: Start writing your personal statement and building your application package. Identify recommendation letter writers.
- 3 months before: Finalize your materials and submit applications.
- Avoid delaying the submission until the last moment as technical issues out of your control may impact your ability to submit the application on time.

Do I need to contact potential advisors before applying?

It's not always required but can be helpful if approached thoughtfully. Here's what you need to know:

- Reaching out demonstrates initiative and interest in their research, helps you assess if your skills and interests align with their lab, and may provide insight into funding or available projects.
- Advisors may not respond due to high email volumes, timing issues, or because some prefer to evaluate candidates through formal applications rather than email.
- If they do respond, it might be a generic reply like: *"Yes, we're accepting PhD students; please apply through the program,"* which is encouraging but doesn't guarantee acceptance.
- Similarly, silence doesn't reflect your potential.
- In rare cases, a PI might express enthusiasm or a strong interest in your background, but even this doesn't guarantee acceptance, as admissions decisions depend on full application package.

- To make the most of contacting advisors, reach out 2–3 months before the deadline, keep your email concise with an introduction, shared research interests, and a CV, and ask focused questions like: *"Are you accepting PhD students this year?"*
- Don't be discouraged if you don't hear back. If the program is a great fit, you should submit a full application.

How do I write a strong personal statement?

- *Be Specific:* Clearly describe your research interests and how they match the program.
- *Show Your Skills:* Highlight academic and professional experiences relevant to your goals.
- *Tailor It:* Mention specific faculty or labs you want to work with.
- *Be Honest:* Write authentically about your aspirations.
- *Avoid hooks:* In your undergraduate applications, you may have been encouraged to start with a 'hook' or life story. PhD applications should focus on the substance and be specific, so try avoiding this kind of elements in your statement.

Who should I ask for recommendation letters?

- *Professors:* Especially those familiar with your academic performance or research.
- *Employers:* If your job involves research or aligns with your PhD focus.
- *Tip*: Avoid peers or people unfamiliar with your work.

What should I do if my third recommendation letter is hard to secure?

- Ask professors or instructors who can comment on your academic abilities or work ethic.
- Consider managers or mentors from relevant professional roles.
- Ensure all letters highlight different aspects of your abilities.
- You can always offer a bullet-pointed structure for the letter to make it easier for the writer. Note that this is not the same as drafting the actual letter.

How do I choose programs to apply to?

- *Research Fit:* Does the program match your interests?
- *Advisor Availability:* Are there faculty doing work you are excited about?
- *Funding:* Is financial support sufficient?
- *Environment:* Will you thrive in the program's setting?

More details can be found in Section 6.

How many programs should I apply to?

- Aim for **3–6 programs** that balance ambitious options with realistic ones where you are a strong fit.

Can I change my research focus after starting my PhD?

- Yes! Many students refine or shift their focus during their studies. At least in the U.S., programs expect initial proposals to be flexible.

What are the funding options for PhD programs?

- *Standard Package:* Tuition waiver and stipend via teaching or research assistantships.
- *Fellowships:* Additional merit-based funding.
- *External Grants:* Extra financial support in certain countries.
- *Tip:* Be cautious about programs that admit students without funding. You should never sign up for a PhD that doesn't offer funding!

What if I face rejection?

- *Don't Take It Personally:* Many factors affect decisions beyond your control.
- *Seek Feedback:* Ask for tips to improve your application.
- *Strengthen Your Profile:* Get more research experience or revise your materials and try again in the next application cycle.

What makes an application stand out?

- *Research Experience:* Publications or projects show your dedication.

- *Clear Goals:* A focused personal statement that shows that you have done your homework in researching the program, the faculty and mature enough to pursue on a challenging task.
- *Strong Recommendations:* Letters emphasizing your research potential and collaboration skills.

Is research experience necessary before applying?

Not mandatory, but it helps a lot. You can:

- Volunteer in labs or on research projects.
- Do a master's to gain experience first.
- This would also help you understand whether a PhD is for you.

More details can be found in Section 3.

What should I include in my CV?

- Academic achievements (degrees, GPA, honors).
- Research experience (projects, publications, presentations).
- Relevant work experience and skills (programming, lab techniques).

What should I do if I'm unsure about applying?

If you're uncertain about pursuing a PhD, carefully weigh the significant opportunity costs, such as income loss, slower career progression, and mental strain. A PhD is not just about knowledge; it requires resilience, and many capable people leave because the academic lifestyle doesn't suit them. Remember that a PhD is not necessary for a successful career.

- *Reflect on Goals:* Ensure you are pursuing a PhD for the right reasons, not due to pressure or unclear motivations.
- *Explore Academia:* Volunteer in research or attend seminars to see if the environment aligns with your interests.
- *Seek Insights:* Talk to current PhD students or professors for honest perspectives on the rewards and challenges.

- *Consider Alternatives:* Other advanced degrees or industry roles may better fit your goals.
- *Take Your Time:* Apply only when you feel fully prepared and confident in your decision.

This Q&A guide provides a simple breakdown of the PhD application process. Start early, stay organized, and keep pushing forward – good luck!

Section 5. How to Prepare for Interviews?

While not all PhD programs include interviews as part of the application process, they are increasingly common across disciplines nowadays. These interviews serve distinct purposes depending on the field of study.

In STEM disciplines, interviews are typically designed to assess the compatibility between the applicant and their prospective research environment. Faculty members and admissions committees often use this opportunity to gauge how well the applicant's skills, research interests, and personality align with the needs and culture of the potential laboratory or research group.

In the social sciences and humanities, where personal statements play a central role in admissions decisions, interviews tend to focus on understanding the applicant as a whole. Committees aim to verify that the individual they meet aligns with the persona presented in the written application materials. These conversations are often more exploratory, covering your academic journey, motivations for pursuing a PhD, and how your research interests align with the department priorities. The goal is to ensure a cohesive narrative between your written and verbal representations of yourself as a candidate.

How do I prepare for an interview?

- Familiarize yourself with the faculty's research, the program's offerings, and your own application materials.
- Practice answering common interview questions with a mentor or peer.
- Create a Word document, Excel spreadsheet, or power point presentation with potentially important details, this may help with making the conversation focused.

What to expect at the interview?

- Overall, during the interview, you are likely to be asked about your interests, plans, and expectations. Be ready to discuss your research interests and experiences with clarity and enthusiasm. Whether discussing your research or your broader academic goals, aim to explain your ideas concisely and confidently.

- Expect to discuss your previous research experience in detail, articulate your understanding of the lab's work, and share your vision for your graduate studies. A strong interview can reassure faculty that you not only have the technical aptitude but also the collaborative mindset to thrive in their lab.
- Prepare thoughtful questions for your interviewers. This demonstrates genuine interest and allows you to gauge the program's fit. Remember that the interview is bidirectional, as you want to know if they should be your supervisor(s) and home institution for the next 4-6 years. Demonstrate that you've done your homework by asking thoughtful questions about the program, faculty research, or lab culture.

How to dress up for an interview?

- Dress appropriately for the interview (business casual is usually sufficient), and ensure you are punctual, whether the meeting is in-person or virtual.

How to behave during an interview?

- Be honest about your goals and motivations. The interview is as much about assessing your fit with the program as it is about ensuring the program is a good fit for you.

Personal Experiences

“When I applied to PhD programs in 2022, I had the opportunity to participate in two interviews. Both interviews started with a broad exploration of my professional and academic background before narrowing down to my future goals and research interests. Although they shared this general structure, the two interviews differed significantly in style. One was open-ended, allowing me the freedom to highlight whichever aspects of my experience and plans I felt were most important. In contrast, the second interview was much more structured, with specific, targeted questions about my proposed research topic. This approach required me to be concise and well-prepared to discuss the finer details of my research problem and questions.”

Dinara Ibrayeva, PhD in International and Multicultural Education
at Florida State University

“I had two interviews during my application process. One was informal and happened early on with a potential supervisor at McGill, while the other was after being shortlisted at UBC. Preparing specific questions and highlighting connections between my research and theirs helped me succeed.

Before my informal interview, I had to prepare to respond to the following questions:

1) What are your long-term goals? Why do you want to do a PhD?
2) What are your research interests and how do they align with the professor’s interests?
3) What is the overall goal of the research project that you are proposing?
4) What theoretical framework(s) (if any) or authors would you like to use in your research?
5) What are the research questions?
6) Where would you like to conduct your research (site)?
7) Who would your participants (if any) be?
8) How will your research project be relevant to the field of _____? What’s the significance of your project?

Serikbolsyn Tastanbek, PhD in Teaching English as a Second Language
from the University of British Columbia

Section 6. How to Choose the Right University/ Program/Group for PhD?

Choosing the right university, program, and research lab is critical as these decisions influence your academic development, career opportunities, and overall experience during your studies. Each of these components – university, program, and research lab – has unique aspects that play a vital role in your success. This section provides a detailed breakdown of the key factors to consider when making a decision.

What are the factors to consider when choosing the University?

- *Reputation and Academic Excellence:* Research the university's reputation in your field of interest. While general rankings (e.g., QS or Times Higher Education) are useful, it's more important to focus on subject-specific rankings.
- *Research activity:* When evaluating universities, particularly in the United States, the Carnegie Classification of Institutions of Higher Education can be a helpful tool. This classification categorizes universities based on their research activity, degree offerings, and institutional focus. For PhD aspirants, it's beneficial to look for institutions classified as "Doctoral Universities: Very High Research Activity (R1)", as these are known for their robust research output, extensive funding opportunities, and access to state-of-the-art facilities. This classification can help narrow your options to universities best suited for advanced research and doctoral training.
- *Location:* The location affects more than just the cost of living – it also influences your access to field-specific opportunities, cultural experiences, and even career prospects. Consider the city, region, and country where the university is located and how it aligns with your goals. For example, universities in urban hubs like New York, San Francisco, Boston, London, or Tokyo offer abundant opportunities but may come with a higher cost of living.
- *Research Infrastructure and Funding:* Look for universities that invest in research facilities and infrastructure to support doctoral students. Check whether they have sufficient funding available to back their projects and provide opportunities for students.

- *Support for International Students:* Check if the university provides robust support services for international students, such as visa assistance, cultural integration programs, and language support.

What are the factors to consider when choosing the program/department?

- *Program Structure:* Different programs have varying requirements for coursework (number of required classes), research milestones (publication requirements), and dissertation timelines (length of the PhD). Based on your post-graduate plans, you can choose a research-focused or academically-focused program.
- *Research Focus and Flexibility:* Choose a program that matches your research interests while offering flexibility to refine or change your focus as you progress. It is best to choose a program with a large number of research groups in your area, which would make it easier for you to navigate through your PhD. For example, if you realize that the research group you initially selected does not fit you, it is good to have alternative groups in the program within the area of interest. Some programs offer rotations for this specific reason.
- *Funding Opportunities:* Investigate the funding options provided by the program, such as scholarships, teaching or research assistantships, and stipends. A fully or partially funded position can greatly reduce financial stress during your PhD and give you independence from your PhD advisor.
- *Career and Collaboration Opportunities:* Programs with strong industry connections, interdisciplinary projects, or international collaborations often provide better career prospects and networking opportunities. Most of the big programs post on their website their industrial affiliates as well as statistics on the job placement of their graduates. Check them out and make sure they align with your career goals.

What are the factors to consider when choosing the lab/research group?

- *Advisor's Expertise and Mentorship Style:* Research the lab leader or principal investigator (PI). Are they active in publishing and well-regarded in the field? Equally important is to assess their mentorship style. Are they supportive and accessible, or overly hands-off? Typically, PIs of large groups in top universities

are overly occupied and can dedicate very little time to PhD students, whereas PIs of smaller groups tend to spend more time with PhD students. Also, if the PI has an administrative role (head of the department, dean of the college, etc.) you can assume that they will be busy with those roles.

- *Lab Culture and Team Dynamics:* Visit the lab (if possible) or talk to current students over Zoom. A supportive and collaborative environment within the group is critical. In big groups, junior PhD students spend most of their time with senior students or post-docs.
- *Availability of Resources:* Ask whether the lab has adequate funding for your research and access to essential resources, such as equipment, computing facilities, or fieldwork/conference opportunities. The availability of funding in the group allows focusing on research without spending time on teaching.
- *Alignment with Your Interests:* The lab's ongoing projects and research focus should align with your academic and professional goals. Ideally, you would want projects to give you opportunities to publish in high-impact journals.
- *Opportunities for Growth and Collaboration:* Labs with a track record of publishing high-impact papers, collaborating with other researchers, or engaging in interdisciplinary projects offer broader exposure and better career opportunities.
- *Post-graduate career opportunities:* The career track of the alumni of the group is the closest indication of your career opportunities after graduation. Besides providing a network for job placement, typically research groups have a reputation for preparing professionals suited for certain industries or academic jobs. Usually, research groups list the names and the current occupations of their alumni on their website. If it is not available, ask the PI or current group members.
- *Tip:* While there are often no formal labs in social sciences or humanities, the above suggestions are equally important to consider. One can easily identify with whom a potential advisor works more, what kind of projects/grants they recently received, how many current PhD students he/she/they mentor and so on.

Personal Experiences

“When choosing which programs to apply for, I was always making sure the Department had many successful research groups so that I could always find something else if I didn’t like the group I intended to join initially. In total, I applied to 10 PhD programs. 4 of them were top tier, 3 of them were more or less realistic to be accepted, and the other 3 were safe choices where I had big chances. It is very important to consult with someone who can help with making this list based on your undergraduate portfolio. It is even better if your undergraduate advisor/internship advisor can directly refer you to some PhD programs. I was accepted to multiple places in the U.S. I had three basic selection criteria to rank my choices: 1) the prestige of the PhD program and the university; 2) how good were the lab and PI I was planning to work with; 3) PhD salary relative to the cost of living. Since I wasn’t sure which research group I would be joining during my PhD, I focused more on criteria #1 and #2, which made my choice very obvious.”

Zhenisbek Tagay, PhD in Physics
from Johns Hopkins University

“My list of potential supervisors was created mostly based on my understanding on who is doing important work in my field, as well as looking through the authors of my favourite publications in my research area, and advice from my MA supervisor and trusted professors. I reviewed publications from potential supervisors and contacted them with specific questions about their research, as well as the details of how my future work would benefit from our collaboration. Before sending my first (“cold”) email, my preparation included reading key works and discussing them with peers to deepen my understanding. Out of four universities I applied to, three required direct supervisor approval before application submission.”

Serikbolsyn Tastanbek, PhD in Teaching English as a Second Language
from the University of British Columbia

“I specifically focused on applying to the programs in the U.S., because it’s a direct track from a bachelor’s degree, and the engineering field is fully funded. I applied to top-tier and mid-tier schools; I was picking the schools based on the faculty research. I was interested in doing either process engineering or catalysis, so I made sure that the programs I applied to have active research in those topics.”

Galiya Magazova, PhD in Chemical Engineering
from Notre Dame University

“I applied to three U.S. and one KZ university. I like the U.S. PhD programs as they have extensive coursework that allow me to dig deeper into theories applied in my field so I could refine my research problem/questions or even change the topic and sharpen my research skills. This flexibility is a distinct feature of the U.S. system that attracts many researchers who have not yet settled on a certain topic and need more training in methodology.”

Dinara Ibrayeva, PhD in International and Multicultural Education
at Florida State University

“Since I did my master’s in the U.S. and gained experience within the domestic healthcare policy, it was a natural choice for me to pursue a PhD in the U.S. Early in the process, I decided to apply for top 5 programs in my field – if I were to go through this challenging and long PhD journey, I thought I’d rather do it at a top institution. In a competitive field, the prestige and the name of the institution matters. It was a risky move and, in the end, I only received a single offer. Looking back, I know that my master’s level involvement in value-based payment model evaluation project was the main reason for getting this offer. Research fit is always the major factor.”

Aniyar Izguttinov, PhD in Health Policy and Management
at the University of North Carolina (Chapel Hill)

Useful Links

- KAPNA Conference recordings:
  - "Starting Advancing Careers in Science and Research"
- Podcasts:
  - PhD Talks
  - Hello PhD
- Guides and Blogs:
  - All About PhD Applications Blog by Lucy Li
  - A Guide to Biomedical PhD Applications by Ya'el Courtney
  - The PhD Application Post by Monica Gates
- Cost of living calculators:
  - Cost of living calculator (global)
  - MIT living wage calculator (U.S. only)

QUESTIONS?
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