



# Research At UW–Madison

With over \$1.3 billion spent on research every year, the University of Wisconsin–Madison is a research powerhouse. Ranking fourth in the U.S. for research volume at public universities, UW–Madison is home to hundreds of research groups, and one can only imagine the diversity of research opportunities on campus. Undergraduate students play a critical role in the research process and are increasingly encouraged to actively engage in research. At WISCIENCE, we aim to connect enthusiastic undergrads with life-changing research opportunities. We hope this guide to undergraduate research strengthens your resolve to pursue academic research and offers the tools you need to succeed at UW–Madison.

## Section One: Getting into Research

- Narrowing Interests
- Finding Research on Campus
- Sifting and Winnowing
- Professional Emails
- Interviews
- Follow-Up

## Section Two: Succeeding in Research

- Mentor-Mentee Relationships
- Research Group Culture
- Learning Approach
- Goal Setting
- Time Management



**Fun Fact:** As of 2015, nineteen University of Wisconsin–Madison faculty have received Nobel Prizes for their outstanding research discoveries.

# Section One: Getting into Research

So, you want to engage in research on campus? That's great—UW–Madison is excited to have you! The research finding process can be daunting, but with a bit of introspection and some internet searching, you'll be well on your way.

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## Step One: Narrow your interests

Before searching for potential mentors, determine what you might like to study. Interested in Biology? Physics? Psychology? Math? UW–Madison has an extraordinary number of opportunities across all these disciplines. Reflecting on your interests and exploring different research groups will help you understand which topics interest you the most within broader areas of study.

If you are interested in undergraduate research opportunities, what's motivating you to get involved? Consider the influence of the factors below on your research pursuit.

- Academic Major
- Academic Goals
- Career Aspirations
- Extracurricular Interests
- Hobbies

When looking at a particular research area, try asking yourself, “how does this field fit with my major/career?”, “what about this field aligns with my interests?” or “why is this field better for me than another?”. This stage in the process is also a great time to discuss your interests with family, friends, and advisors. Those who know you well may illuminate interests you have difficulty identifying.

Additionally, you can explore the [UW Experts Database](#) to read interviews and articles about exciting research on campus using a keyword search. You might also look for inspiration in pop culture. Watch a documentary or a sci-fi movie and see what intrigues you. Think about which parts draw your interest and which areas seem particularly mysterious. There may be a group on campus that researches that subject.

After identifying a few exciting research areas, you can brainstorm specific keywords. For example, in the broad scope of “biology,” you may be interested in “genetics” as a particular research area, or “cancer” as a disease you would like to learn more about. In the next step, this list of keywords will help you find investigators that share your passions.

## Step Two: Finding Research on Campus

After narrowing your research interests, you may be wondering where to find researchers in these fields. How can you gather specific information about research groups and projects?

Below is a handy list of sites for finding researchers on campus:

- **Research at UW** [wisc.discovery.academicanalytics.com/dashboard](https://wisc.discovery.academicanalytics.com/dashboard)
- **UW Experts Guide** [experts.news.wisc.edu](https://experts.news.wisc.edu)
- **UW Departments** [wisc.edu/academics](https://wisc.edu/academics)
- **UW Research Centers** [research.wisc.edu/centers-cores](https://research.wisc.edu/centers-cores)
- **Graduate School Programs** [gradsch.wisc.edu/mas](https://gradsch.wisc.edu/mas)
- **Student Job Center** [jobcenter.wisc.edu](https://jobcenter.wisc.edu)

**Research at UW** compiles valuable information about UW researchers, including areas of expertise, contact information, publications, and collaborations. Simply search by keyword/phrase to find relevant research groups across departments.

Another helpful website is the **UW Experts Guide**, which organizes principal investigators by research topic, making it easy to find research groups within your general interests. After selecting a research topic, you can find brief introductions to each researcher's work and projects.

The **UW Research Centers** website is an excellent resource for finding opportunities on and off-campus. When you click on a particular research center, you will be directed to a page with more details about ongoing research projects at their facility.

If you have declared a major, or know which majors align with your research interests, you can search various major **department websites**. Each department curates a list of its faculty. You can learn more about ongoing research projects by reading departmental faculty webpages or linked research group websites.

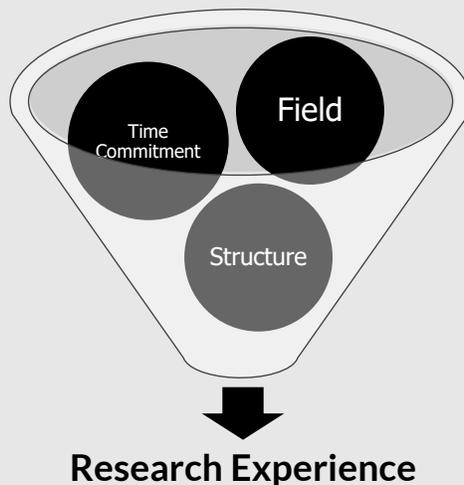
The **Graduate School Programs** website links to each graduate program on campus. Graduate programs often include faculty from several departments, so you can find investigators researching a common subject, even though they may have different appointments.

The **Student Job Center** is the best place to look for paid research positions. The positions listed will likely include maintenance duties, like cleaning, collecting samples, or making reagents. If you are looking for an independent research project, be sure to check the requirements before you decide to apply. Research assistant positions are still an excellent way to see if you enjoy the work atmosphere. In addition, you may have opportunities to transition from maintenance tasks to independent research.

After searching these websites, you may have identified a few particularly attractive research groups. Ultimately, you will want a list of 5-20 researchers you are interested in working with, as you may need to email quite a few groups to find a research opportunity. Therefore, it is important to keep track of faculty information in a well-organized list of potential mentors. Here we have provided a [Mentor Search Spreadsheet](#), which can help you keep track of the information you have gathered during your search.

## Step Three: Sifting and Winnowing

Hopefully, you found an abundance of interesting research groups on campus. However, if you feel overwhelmed by the wealth of information you've assembled, don't worry—This is the perfect time to take a step back and review your priorities. It is important to consider your time commitments, research interests, and learning needs during your search. Below are some strategies to help you refine your list of potential research mentors.



When reviewing potential mentors, it is best to start with a shortlist of candidates, usually around ten researchers. We recommend contacting five researchers at a time during each round of introduction emails (explained in the next section).

Start sifting and winnowing by re-ordering your potential mentor list by level of interest.

Assign each research group an “interest score” between one and ten, with one being the group for which you have the least interest and ten being the group for which you have the most (it's okay to have more than one group with the same interest score).

Use your assigned interest scores to rank your list. Put the groups in descending order, with the highest interest scores at the top of the list and the lowest at the bottom.

The first ten groups are likely the best candidates for your initial rounds of introductions but be sure to save the rest of your list. If at any point you need to reach out to more research groups, it may be necessary to look further down your list.

If you are having trouble assigning interest scores, revisit *Narrowing Interests* for tips on introspection.

Consider learning more about the research groups before evaluating potential mentor candidates. Peer-reviewed articles can be challenging to read without context, so be sure to search for accessible media, like popular press articles and interviews. The [UW Experts Guide](#) may have useful and comprehensible info, but not all research groups are listed. Twitter and other social media platforms also host active research communities that are worth exploring.

## Step Four: Email Introductions

After you have selected your top research groups, you can begin to craft email introductions. Your email is the first impression you make with potential mentors, and it is important to write professionally and concisely. Therefore, we suggest you...

1. Start your email with a professional greeting. Address the research mentor as Dr. or Prof. *last name*. Open with "Dear," "Hello," "Good morning," or "Good afternoon" as your greeting.
2. Email during traditional business hours (9:00 a.m.–5:00 p.m. Monday–Friday).
3. End your email with a polite closing line, such as "I look forward to hearing from you," "Thank you for your time," or "Sincerely."
4. Include an email signature with your information, including your full name, major/minor, academic year (or expected graduation date), and university email address.

**Consider these reflection questions as you write your email:**

### **What is the purpose of your email?**

Here you should be brief but clear about why you are emailing. If you have seen the research group posting open positions for undergraduates on their website or Student Job Center, reference that here. If you haven't seen any specific information about recruitment (which is normal), be clear that you are interested in undergraduate research opportunities in their investigative group.

### **Why are you interested in their research topic and what do you hope to learn from this experience?**

This is the most important part of your email and should be tailored toward each research group. Avoid generalities, like "I am interested in science, so I would like to engage in undergraduate research." Instead, be specific about what has made you interested in a particular research group's work. For example, you could mention the particular research projects that intrigue you, previous research you found impressive, or techniques you would like to learn more about. It is normal to encounter techniques or concepts that you don't understand, but this gives you the chance to ask questions and demonstrate your interest to potential mentors. Generating questions from reading publications is particularly helpful during the interview phase of research-finding (discussed in section six). Essentially, this "why are you interested" part shows investigators that you made an effort to learn about their research and highlights your motivation to be part of their team, making you stand out.

### **Do you have any previous experience or skills relevant to this opportunity?**

It's okay if the answer is no. Focus on your interest in their research topics and what you hope to get from an undergraduate research experience. After all, you can always be trained for techniques. What matters the most to many investigators is your interest in their research, eagerness to learn, and devotion to training. Additionally, many faculty like to work with students early in their careers. If the answer is yes, elaborate on your previous experience, but be wary of overconfidence, and understand that each research group may approach techniques differently.

**What is your anticipated time commitment? Would you like to earn credit? Would you prefer to volunteer?**

This is where you should indicate how you would like to engage in undergraduate research. You will have the chance to further discuss options once accepted into a research group, but it is still necessary to provide a brief outline of this information in your introduction email. This gives the investigator a sense of the commitments they can expect to make during your training.

**To attach or not attach**

Some research groups may request specific information/documents be included in your introduction email, the details of which can usually be found on their website. Of course, including your resumé, cover letter, or transcripts in your email never hurts but may not be necessary. Unless otherwise specified, only include the documents you feel comfortable sharing in your introduction. You can find a resumé template [here](#). If you need extra help writing your resumé, the Writing Center and Career Services have excellent workshops and one-on-one appointments to help you formalize and revise your text. Additionally, Research Peer Leaders at WISCIENCE are available to help with email and resumé drafting via one-on-one appointments and drop-in hours.

**Timeline**

If a week has passed and you haven't heard from an investigator, don't be disappointed. Some researchers receive hundreds of emails every day, and it's possible your email was simply lost in their inbox. Therefore, we recommend waiting two weeks before sending a follow-up email. However, if two weeks have passed and you are still interested in their research, send a follow-up email to restate your enthusiasm. Feel free to include any additional interests, accomplishments, or questions in your follow-up.

## Step Five: Interviews

After establishing a rapport with a research group, you may be invited to interview if they have open slots for undergraduates. Investigators typically interview students to assess their fit within the research team. Of course, you are also determining how you would mesh with their research culture. The interview format is often casual and conversational but can be structured like a traditional job interview. Either way, it is important to be professional and well-prepared.



When preparing for an interview, you can start by reading a few recent publications. These often illustrate the group's current initiatives and trajectory. Researchers will not expect you to understand every detail of their projects; however, you should at a minimum read the abstracts and grasp the main ideas/significance of their work. During the interview, you should be able to state your specific interests in their work, just like you have done in your emails, but in more detail. This means you should be able to articulate what about their research fits your interests and pursuits. Be sure to listen attentively and ask follow-up questions when appropriate.

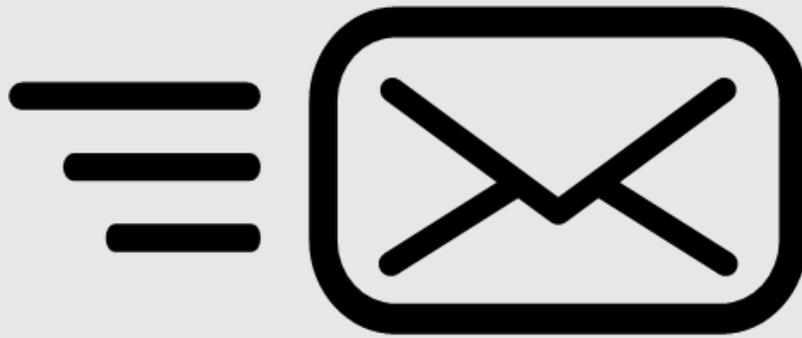
You may also generate a few questions to ask during the interview. This demonstrates your eagerness to learn about their research topic and ability to think critically. Their answers may strengthen your resolve to study in a particular field or could point out aspects of their research that are less attractive. Either way, the information gained empowers you to make the best possible decision. Additionally, questions are a great way to gauge what you can achieve through a research experience. We encourage you to ask about expectations for undergraduate students and opportunities to publish and present research.

Remember that the interview process is just as much about them interviewing you as it is you interviewing them. Be clear about what you want from this research experience. You can ask about what your specific roles and tasks might be and how many hours you would be expected to work. You may also discuss options for compensation, including course credit or hourly wages. This is a good time to bring up long-term goals, including future professional goals and how they tie into undergraduate research. If opportunities to pursue funding (fellowships, grants, scholarships, etc.) or capstone projects are important to you, be sure to share this information. In turn, investigators may ask how long you are looking to be involved in an undergraduate research position, and while you are not committing to a timeline during the interview, you should be prepared to offer a general idea of your plans.

Overall, investigators are always looking for mentees who are passionate about their research. Be yourself, express your interests, and ask lots of questions—We know you'll be great.

## Step Six: Follow-Up

Congratulations! You've completed your interviews. You're almost done. At this point, you've already written a ton of emails, but you're not finished yet. Following up with researchers after your interview is the important last step in securing an undergraduate research position.



You may have been offered a position at the end of your interview, but more likely, you're waiting to hear back over email. This is a great time to send a follow-up email thanking the researcher for their time and reaffirming your interest. These emails should be sent soon after your interview—We recommend 24 hours afterward. If you have interviewed with more than one research group, take a step back and evaluate which experience would better fit your needs. Keep in mind that the subject area is important, but the mentoring experience is paramount when deciding between undergraduate research experiences.

After some time has passed, you may begin to receive offers to join research groups. It is an extremely rewarding feeling and validating of all the hard work you've put into this process. You may jump at the opportunity to join a research group, but do not feel inclined to accept the first offer you receive. It's important to think carefully about your preferences. After all, accepting a position is a commitment for yourself and the research group.

If you haven't heard from the investigators you've interviewed with, that's okay too. Feel free to reach out again after about a week. In the event that a research group is not able to accommodate you, thank the investigator for their time, ask them to keep you in mind for future openings, and inquire about opportunities with research collaborators. Oftentimes, investigators may know of other groups actively recruiting students and can direct you towards similar research.

When the time comes to accept an undergraduate research position, thank the investigator again, confirm your acceptance, and set up a time to review next steps. The onboarding process is different for each research group, but you can expect to be paired with a primary research mentor and given materials (papers, online trainings, protocols, etc.) to review before starting.

For the research groups that you decide to "turn down," it is important to thank the investigators and inform them of your decision.

## Section Two: Succeeding in Research

Take a deep breath. You've overcome your first set of hurdles, and now you're a part of an exciting research team. Now it's time to discuss how to make the most of your unique undergraduate research experience.

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### Part One: Mentor-Mentee Relationships

This may be the first mentoring experience you've had, and as such, it is important to acknowledge the differences between a mentor, teacher, and advisor. You've likely had a great deal of experience with teachers, but unlike your relationship with teachers, your mentoring relationship will be close, communicative, and fluid—There will be give-and-take. Additionally, while your mentor may offer advice, this is not their sole role, separating them from the academic/professional advisors you've likely encountered. In sum, a mentor is a teacher, advisor, and friend rolled into one.

Mentoring will look different in each research group, but you will likely be paired with an experienced team member to guide you through the research process. Your mentor may be a graduate student, postdoc, staff scientist, principal investigator, or even another undergraduate. Whomever your mentor may be, establishing a co-supportive relationship is key to succeeding in a research experience.

It is a good idea to start your mentoring relationship by setting expectations, boundaries, and goals. One way this is achieved is through a research mentor-mentee compact. A mentor-mentee compact is a formal document (sometimes) signed by you and your mentor after you have discussed and recorded expectations and commitments. By signing the compact, you and your mentor agree to adhere to the expectations set. You can find a sample mentor-mentee compact [here](#).

Below are a few areas to consider when forming your mentor-mentee compact.

- Your research experience should further your knowledge of the research area.
- Your research experience should bolster your academic/professional profile.
- Your work should actively advance the research group's agenda.
- Your time commitment should be routine and appropriate for the credit/pay provided (if applicable).

While you have agreed to a set of guidelines in your mentor-mentee compact, it is important to understand it is a living document, and adjustments can be made when necessary. In fact, it is good practice to revisit your mentor-mentee compact periodically. The frequency of review will be dependent on the volatility of your commitments.

Like any supervisor, it is important to discuss conflicts with your mentor should they arise. These could be issues with schedules, workload, or competencies. Your mentor should be receptive to feedback just like you, but if there are consistent issues, it is okay to speak with another team member, or if necessary, the [Dean of Students Office](#).

## Part Two: Research Group Culture

During your undergraduate career, you've identified environments best suited to your working habits. Perhaps you like to hunker down alone and complete your tasks in one lump sum; maybe you like to take frequent breaks and consult with others. Just like your schoolwork, there's no right way to conduct research, but your work environment might be contingent on available space and team norms. Learning how to work effectively in the research space and navigating your research group culture is essential to succeeding and feeling comfortable in your new position.



Not all research groups operate the same way, and each research group can set their own standards within the greater umbrella of the field. Some teams adhere to a strict work schedule of 9:00 a.m.–5:00 p.m. while others choose to follow a 'work when there's work to do' routine. Oftentimes the types of research a group performs dictate the schedules of team members. This is an important point to consider when deciding which projects to join. Since you will likely work under the direction of a research mentor, be sure to share your availability and decide on a research schedule that suits both parties.

As a research group member, you'll likely pick up on team norms in a matter of time, but there are a few general rules to follow below.

- Clean up after you're done using a space.
- Let someone (usually your mentor) know when you run out of a necessary research material.
- Keep detailed records of your work (typically in a notebook which **does not** leave the research space)
- Organize your files; physical and digital.
- Attend all required meetings, and don't be late.
- Follow safety protocols.
- Don't touch other team members' materials and data unless directed.

These are all basic rules of thumb. Your research group will likely have amendments and additions to this list, but these are a good place to start.

In addition to research, many teams will choose to host learning opportunities (e.g. journal club) or social events. As a junior researcher, it is understandable if these events are intimidating, but keep in mind these events are for your benefit too. Unless otherwise specified, it is a good idea to engage with your team in as many ways as possible, but of course, do so at your own comfort.

## Part Three: Learning Approach

You may choose to stay with your research group for just one semester or over four years, but no matter how long you're around, you'll want to learn as much as possible. Below are five ways to engage in the learning process during your research experience.



**Ask lots of questions.** As you've heard since kindergarten, there are no dumb questions. The more you ask, the more you'll learn about a particular topic or technique. More than likely, your mentor will appreciate your questions, as they show you are critically thinking about new information. In the beginning, you might feel like you are asking too many questions, but mentors understand that it takes time to grow comfortable in a new area, and repetitive questions are always preferable to procedural mistakes.

**Debrief with your mentor.** After going through a new technique, you will have absorbed a lot of information in a relatively short period of time. It is a great idea to review that information before it fades. Not only will this help you solidify the process, but you will gain a deeper understanding of the rationale for each step.

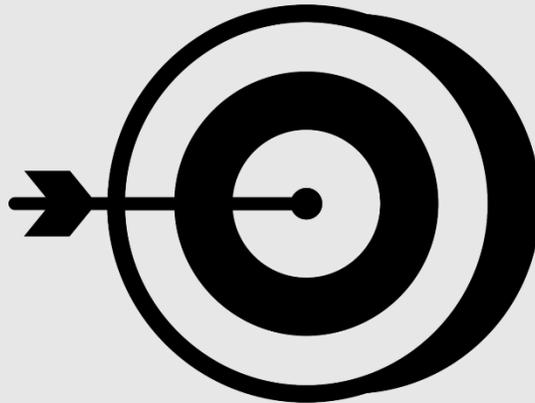
**Use the internet.** Follow that Wikipedia sub-link! While your mentor is a great go-to for information when you're in the workspace, you may have to find different sources when you're at home. Wikipedia and YouTube can be good sources for accessible science material. While you're learning the lingo of your field, it can be helpful to follow links for terms you are unfamiliar with. After performing a deeper dive, you'll understand the material better, and you may come away with novel questions.

**Apply your course knowledge.** You're in school for a reason: to learn material you can later apply to your life and career. Why not start applying that knowledge here? Many research techniques are based on fundamental concepts. Reevaluate protocols critically by revisiting your lecture notes.

**Look outside of your field.** Interdisciplinary research has produced some of the most exciting discoveries in history. Standard practices may be drastically different between fields, but often, aspects of research techniques are directly translatable. Exploring research methods outside of your field may change how you view your team's techniques and possibly offer ways to optimize your workflow.

## Part Four: Goal Setting

You're part of a research team. You have a mentor. You know your topic. Now what? As an undergraduate researcher, you have virtually limitless opportunities to learn and succeed in your field. You may not win a Nobel Prize, but you can set your sights high. Many undergraduates achieve funding for their projects, publish articles, and present at conferences. There's certainly no reason to feel under-accomplished if you don't, but goal setting is an important driving force in your training process.



Start small. Set a short-term goal—what's something you hope to accomplish in the next week?

Examples of short-term goals include...

- Learning new research techniques (e.g., DNA isolation, soil sample collection, survey design, AutoCAD).
- Strengthening interpersonal connections (e.g., Learn the names of everyone in your research group).
- Understanding research fundamentals (e.g., read a research paper, attend a seminar, complete an online course).

Ultimately, short-term goals are aimed at achieving larger long-term goals. They serve as action items to keep your progress in check. When setting short-term goals, it is important to consider how they fit within your training plan. Ask yourself, "how might achieving this goal help me grow as a researcher?"

Long-term goals may be things you hope to accomplish in a year or within the span of your research experience. These are often multi-step processes and significant achievements.

Examples of long-term goals include...

- Publishing research (in an undergraduate journal or peer-reviewed collection).
- Achieving funding (through a paid position or research fellowship).
- Presenting a study (to one of your classes or at a research conference).

These are no small tasks; they'll take time and work to achieve, but with dedication and support from your research group, you're sure to succeed. Keep in mind, you are not alone in your research experience. Members of your team are available to help you achieve your goals. Be sure to converse with your mentor about your aspirations within your research experience and beyond. They will likely have valuable guidance and can point you towards resources.

## Step Five: Time Management

As your research training progresses, you will accumulate more skills and gain opportunities to participate in research projects. Additionally, you may earn more responsibilities and be asked to commit more time to your research. Therefore, time management is essential to balancing research, schoolwork, and personal life. Below are some tips for attaining a balanced research commitment.



**Ease into a schedule.** Overcommitting is common but can be a quick way to burn out. Commit your time conservatively until you understand how long it takes you to complete tasks. Turning down exciting initiatives can be disappointing, but your mentor almost certainly prefers you complete a few tasks than start many.

**Organize your time.** Plan out the sum of your time dedicated to conducting research each week, known as macro-scheduling, AND the time dedicated to particular research tasks, known as micro-scheduling. Research groups often have mechanisms for scheduling that will assist with your time management. Below are examples of how to approach scheduling your research.

**Macro-scheduling:** Use digital calendars (e.g. Google Calendar, Outlook Calendar) to record the time you plan to conduct research each week. Set up repeated events if you have a consistent schedule but make adjustments when needed. Additionally, if you are enrolled in research credits or paid hourly, share your calendar with your mentor—It's an easy way to log your hours.

**Micro-scheduling:** Use a To-Do List or planner to map out your tasks for the upcoming week. Note the time required to complete each task so that you can keep your schedule within your weekly allotment. If you can't complete a task within the purview of your schedule, chat with your mentor—You may be able to push a task back or have someone cover for you.

Most importantly, remember that preparation and planning will help your research run smoothly. Mistakes occur when research is rushed, and the best way to avoid this is by giving yourself the time you need to succeed. If you have time left over during a given week, get a jump on next week's tasks. Just remember, it's always better to give yourself extra time to complete a task than not enough.

## Need More Help?

Check out these other WISCIENCE resources:

- Attend an upcoming: [Find a Mentor Workshop](#)
- Check out: [Steps to Finding a Research Mentor](#)
- Watch the: [Finding a Research Mentor Workshop Video Series](#)
- Read over these: [Frequently Asked Questions](#)



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