

Research Opportunities

Many UNBC faculty members have active research programs. The first step in finding research opportunities is to shop around and find out what is available. Read the descriptions of faculty research interests available on departmental web sites (<http://www.unbc.ca/chemistry/> and find "faculty" on the pull-down menu). Read their recent publications. Once you have identified a few people whose work seems interesting, do a little background reading in their field. Find a review article on their area of interest. Read the papers cited in their papers. With this background knowledge, you will be a much more impressive candidate when you approach them to discuss working in their lab.

1. Undergraduate

a. Research Volunteers

A good place to start getting research experience is as a volunteer in a lab. You cannot expect to be put on a cutting-edge project of your own design, but volunteering allows you to find out more about the process of scientific research, and the research culture, without you or your supervisor making a major commitment of time or resources. Many volunteers begin with lab chores such as washing lab equipment or re-stocking lab supplies from a storage area. Although this may not sound glamorous (and let's be honest, it isn't!), it will give you the chance to find out what is really going on in the lab. Equally importantly, if you can show that you are reliable, motivated, and competent, you will have an unbeatable edge in getting a paid research position in a lab. You can also put your volunteer experience on your CV and get your supervisor to write you letters of recommendation when you apply to work in other labs.

b. Summer Research

Most researchers are happy to have summer students work in their labs. The next step is to discuss research opportunities with the people whose research interests you. Phone or email them to arrange an appointment. Most faculty members love to discuss their work, so even if they are not looking for a summer student they will be delighted to have a knowledgeable person to talk to about their work. They may also have good suggestions about other faculty who are looking for students.

An important issue to consider is funding. A number of undergraduate fellowships are available to support summer research. In addition, some faculty members have research grants that provide support for undergraduate researchers. You should discuss this with your prospective supervisor immediately after ascertaining mutual interest in your working with them.

c. Independent Study

Another good route to research experience is via an independent study class. Many degree programs have a 4th year course for undergraduate research

(in chemistry this is called CHEM 499). While you will not get paid for this, you do at least get academic credit, and it gives you a good taste of what graduate work entails. Read the academic calendar to find out more about the requirements and expectations for these courses.

2. Research Assistant (lab technician)

Some researchers have funding for research assistants, also known as lab technicians. These positions are generally held by recent graduates who are interested in research but not ready to commit to graduate school, or who want the advantage that research experience brings when they apply to graduate programs. An RA position is generally a full-time position working on an essential part of your supervisor's research program. Unlike graduate and postdoctoral positions, RAs generally have little input into the direction of their research. Research Assistants frequently only work in a given lab for a year or two before moving on to graduate school, another lab, or a position in a company. Some, however, find they like the stability, the lab, or the work, and may stay for years or even decades! Students who have experience as an RA frequently do better in graduate school than their colleagues, as they are already familiar with the research environment and have mastered many lab skills.

3. Graduate (Master's, Ph.D.)

If you know you enjoy research and want to get more qualifications before applying for research positions in industry (or even academia – see below), you may want to consider going to graduate school. In the United States, most graduate programs are Ph.D. programs by default, and a Master's is considered a "failing degree," that is, it is only awarded if you do not successfully complete a Ph.D. In Canada, you generally cannot get into a Ph.D. program until you have completed your Master's degree. UNBC does not yet have a Ph.D. program in chemistry, biochemistry, or related fields, but there is a Master's degree program (http://www.unbc.ca/calendar/graduate/graduate_programs/math_comp_scienc e.html). A Master's degree generally takes 2-3 years to complete, while a Ph.D. requires an additional 2-3 years.

As a graduate student, you will be expected to develop considerable independence. This means you will identify areas you do not understand and take the initiative to find out more about them by reading textbooks or the primary literature. You will learn the literature of the field you are studying and discuss it frequently with your colleagues and supervisor. You will identify interesting questions in your field and think of ways to address those questions. You will determine the best ways of carrying out specific experimental procedures. And you will begin to establish a network of colleagues in your field by attending conferences and presenting your results. Your work will culminate in the publication of your results in refereed journals.

4. Postdoctoral

If you are interested in trying to get a faculty position at a university, it is essential to acquire postdoctoral experience. It is also important to realize that academic positions are harder to get than admission to medical school, so you must be absolutely passionate about research. There are many organizations that provide postdoctoral fellowships. Some researchers have grant support for postdocs, but others will require you to find funding before you can join the lab. Check with your prospective supervisor before you get too far in negotiating for a position. Postdoctoral fellowships generally last 4 years, but many scientists do two postdocs before managing to find a permanent position.

As a postdoctoral fellow, you will have no responsibilities other than to accomplish research. This is the only time in the research path where you can focus exclusively on your experiments. Initially, your research will be closely related to your advisor's interests, but, especially if you are hoping to get an academic position, at some point you need to develop your own area of interest that you can pursue as an independent investigator. You should discuss possible independent projects early in your postdoctoral fellowship to ensure that there are no misunderstandings about what projects are available for you to take with you.