

# EXPERTS WEIGH IN ON CURRENT JOB MARKET TRENDS

January 17, 2021

Given the change of course that has happened in the world, we wanted to provide expert opinions on what aspiring graduates can do to start off their careers in an uncertain economic climate. We wanted to know what skills will be more important, where the economy is doing relatively well, and if there will be any lasting effects on the job market.

Companies are looking for candidates that can handle the new responsibilities of the job market. Recent graduates actually have an advantage because they are comfortable using newer technologies and have been communicating virtually their whole lives. They can take what they've learned and apply it immediately.

We spoke to professors and experts from several universities and companies to get their opinions on where the job market for recent graduates is heading, as well as how young graduates entering the industry can be adequately prepared. Here are their thoughts.

## Our Panel of Experts



**Daniel Lindstrom Ph.D.**  
University of Guam



**Travis Rieder Ph.D.**  
Johns Hopkins University



**Roy Carriker Ph.D.**  
Drexel University



**Anne Wertheimer Ph.D.**  
University of Arizona



**Cary Lai Ph.D.**  
University of San Francisco



**H. Bobby Fokidis Ph.D.**  
Rollins College



**Dr. David G. Argent**  
California University of  
Pennsylvania



**Dr. Roger S. Greenwell, Jr.**  
Worcester State University



**David Baum**  
University of Wisconsin



**Dr. Susan Bergeson Ph.D.**  
Texas Tech University Health  
Sciences Center



### **DANIEL LINDSTROM PH.D.**

Associate Professor of Biology  
University of Guam  
Chair, Division of Natural Sciences

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## In your opinion, what are the biggest trends we'll see in the job market given the pandemic?

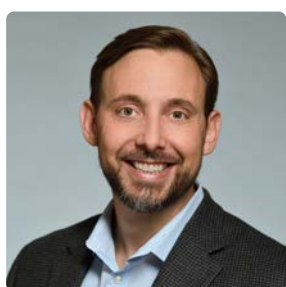
**Daniel Lindstrom Ph.D.:** Obviously, the pandemic and all the questions and needs surrounding it has piqued the interest of everyone threatened and affected by this virus. The wealth of information (both solid and imaginary) being distributed is both encouraging and terrifying at the same time. Folks on the front lines fall into many categories that range from purely clinical to those participating in research into the causes, mechanisms and dynamics of this disease to provide reliable information that can be used to control its spread, develop treatments for the infected and perfect preventative measures such as antivirals and vaccines. Graduates with training in any of the STEM disciplines will be sought to fill these needs.

## What skills stand out on resumes?

**Daniel Lindstrom Ph.D.:** I would expect that individuals that have developed skills that span disciplines will be the most desirable. For instance, someone who has mathematical/data analysis abilities or technical/laboratory skills/experience in addition to knowledge of basic biology will be far more employable. The pandemic has also forced us to rethink how to conduct business where physical distancing from coworkers is mandatory and those with computer application skills may have an advantage in this new AbNormal world we have been forced to occupy. This may be a gift in disguise for already isolated places like Guam and may open an at a distance job market for some of our graduates. Historically, the bulk of the market for these types of jobs were near Mainland urban centers and large Universities and Medical Centers.

## Are there any particularly good places in the United States for graduates to find work opportunities in this field after they graduate?

**Daniel Lindstrom Ph.D.:** There should be more opportunities emerging in places further away from these traditional settings. Many of my colleagues have noted recent cultural trend towards doubts or even decreasing trust in science as one of the greatest sources of solutions to modern problems. I believe that this has contributed to some of the weak responses to the COVID pandemic. Hopefully, what we have been forced to face and what we will hopefully learn from this experience will mark a significant positive change in how people view the relationship between science and society. This will lead to many exciting opportunities for our well-trained graduates.



### **TRAVIS RIEDER PH.D.**

Director of the MBE Program; Assistant Director for Education Initiatives; Core Faculty; Research Scholar  
Johns Hopkins University  
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## In your opinion, what are the biggest trends we'll see in the job market given the pandemic?

**Travis Rieder Ph.D.:** COVID-19 has made bioethics the stuff of everyday discussion: resource allocation, how to weigh health promotion against restrictions on personal freedom, research ethics, and more. My fervent hope is that employers in a wide variety of fields will see - now more than ever - the value of those with formal training in how to conduct careful, ethical reasoning about health, medicine, and science.

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## **ROY CARRIKER PH.D.**

Visiting Professor  
Drexel University  
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Entrepreneurship

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### **In your opinion, what are the biggest trends we'll see in the job market given the pandemic?**

**Roy Carriker Ph.D.:** There has been a longer-term, pre-pandemic trend that all students should be aware of, which is only going to be exacerbated by COVID-19. In the past three to four years, three independent surveys found 41 to 46 percent of recent graduates felt they didn't need their college degree to get the job they were able to get upon graduation. Given the rising expense of higher education, this statistic implies students need to have much greater awareness of the potential for any particular career course they pursue.

Certainly post-pandemic, the case can be made that many jobs will not return to the "new normal" due to technology enhancing working at a distance, causing businesses to realize they can be more efficient while simultaneously lowering costs by utilizing new tools being developed. Think about businesses utilizing considerable commercial real estate in major cities. They are now recognizing the savings potential attainable through a redistribution of where the workers do their work, thereby reducing expensive leases, city wage taxes, and more. The domino effect of major businesses exiting heavy commitments to inner-city offices is the reduced need for workers in the infrastructures that support the offices like janitorial services, area restaurants, retail establishments, public transport, and more. Obviously, this impact is more at the lower end of the wage spectrum. However, since many recent graduates find themselves in the job market as opposed to in a career, students should be aware of these realities.

Not as specific to the impact of the pandemic on students graduating to pursue their careers - the statistic cited earlier about 41 to 46 percent of the respondents. What created such a gap between aspiration and attainment? Part of the answer lies in the accelerating pace of technology that enables a few to accomplish the work of many. This is compounded by the pace of technological innovation moving faster than the education system can adapt. For a great example of this, consider a finance major who went on to get a prestigious MBA and was hired by a major firm to do stock analysis - a great career path with a big upside. However, shortly thereafter, the firm announced it was turning to AI for stock analysis due to its demonstrated superiority to human analysis. This isn't a hypothetical, but an actual event. Not only can AI analyze much greater volumes of data but also provide better outcomes. Any career that relies on analyzing large amounts of data and using algorithms to provide outcomes has the potential to be negatively impacted by AI.

Bottom line: students and graduates already in the workforce need to keep their eye on the horizon for new technological advancements and to consider the potential positive or negative impact on their careers. Awareness is key.

## **If a graduate needs to take a gap year, what skills would you recommend they try to enhance and how should they go about doing it?**

**Roy Carriker Ph.D.:** Having helped build a school of entrepreneurship, my bias is strongly around development of an entrepreneurial mindset and skills. This is not to suggest one should try to become what most think of as an "entrepreneur" but rather to think on what will help you become the entrepreneur of your own life.

What do I mean by "entrepreneurial mindset"? It begins with curiosity. Am I curious about new things on the horizon? Are they opportunities or threats to me? In either case, do I consider possible ways to deal with it? Or do I just carry on without further thought? Beyond heightened awareness, do I have a bias toward action? Am I willing to take reasoned risks? If I try something and it doesn't work out, do I consider it a failure or a learning experience? These are some of the basic dimensions of entrepreneurial mindset. For more insight, there is plenty of searchable material on the subject.

A very useful way to utilize a gap year is to enhance your personal development by assessing your skill set with respect to:

- Succinct writing
- Oral presentation
- Negotiation
- Personal finance
- Leadership and team participation
- Personal branding

These skills are important to entrepreneurs, but more importantly, they are valuable to everyone regardless of career path and are highly prized by employers. The number one skill valued by employers beyond specific job-related skills, like mechanical engineering, is the ability to present well. For each of these skill areas there is a wealth of free or inexpensive materials, workshops, and resources to help you hone your skills. Most graduates have had little or no training.

Dependent on financial circumstances, a gap year could be used to find ways to broaden your experience portfolio. Volunteer in a social enterprise or non-profit, intern in an area of interest, or try to participate in an entrepreneurial startup. Also, there are many quality online courses becoming available which you could take to broaden your value.

## **What general advice would you give to a graduate beginning their career?**

**Roy Carriker Ph.D.:** The best advice I can give a graduate at the beginning of their career is to keep looking ahead and assessing the path forward. Just because you started your career as a chemist or in supply chain management doesn't necessarily mean you have to stick with that path the rest of your life.

In fact, the pace of change in the world suggests you may have several careers in your lifetime. I have practiced what I preach - starting life as a physicist, pivoting to an entrepreneurial endeavor, pivoting again to a global corporate career, pivoting again to venture capital, and finally giving back through education. Each of these steps grew me as a person and were exciting, as well as rewarding. Remember in pivoting, you don't lose what you have learned and experienced; you have it to build on.



### **ANNE WERTHEIMER PH.D.**

Assistant Research Professor, Assistant Professor, Applied BioSciences - GIDP, Director, Viper Institute

University of Arizona

Department of Immunobiology, Department of Medicine

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#### **In your opinion, what are the biggest trends we'll see in the job market given the pandemic?**

**Anne Wertheimer Ph.D.:** More need for employees with strong bioinformatics and computational skills in general.

#### **What technology do you think will become more important and prevalent in the field in the next 3-5 years?**

**Anne Wertheimer Ph.D.:** Remote accessing and remote operational capability of biomedical/biotech instrumentation, including remote exportation of the data, would be great.

#### **Will there be an increase or decrease in demand for graduates in this field in the next 5 years?**

**Anne Wertheimer Ph.D.:** I anticipate an increased need for software and instrumentation design.



### **CARY LAI PH.D.**

Associate Professor of Biology

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#### **What are the best companies to work for?**

**Cary Lai Ph.D.:** Ranking which company is the best to work for is very subjective and student dependent. For students who do well in a more structured environment, with excellent training and facilities, working at a large, established company like Genentech or Amgen may be ideal. For students who thrive in a less structured environment and want to have more control over the direction of their work, working at a biotech start-up may be best.

#### **Will there be an increase or decrease in demand for graduates in this field in the next 5 years?**

**Cary Lai Ph.D.:** We expect to see the demand for new biotechnology employees continue to increase over the next five years. Companies will be interested in hiring students with Masters degrees in particular, and students with lab research experience.

## Are there any particularly good places in the United States for graduates to find work opportunities in this field after they graduate?

**Cary Lai Ph.D.:** The biotechnology industry is very localized in the United States. Most jobs are in the three major biotechnology hubs - Boston, San Francisco, and San Diego. Seattle and the North Carolina 'research triangle' area may be emerging new biotechnology hubs as well.



### **H. BOBBY FOKIDIS PH.D.**

Associate Professor and Chair

Rollins College

Department of Biology

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## What experience really stands out on resumes?

**H. Bobby Fokidis Ph.D.:** The whole point of a resume is to stand apart from the crowd and do that while coming across as genuine. Anything that shows you are passionate about your field should be in there. It depends on the type of biology you are interested in.

One thing an employer usually wishes to see is hands-on experience, and particularly if you sought it out yourself. There is typically a story there. This can be shadowing doctors or working in an administrative position at a clinic in a clinical setting. Being exposed to multiple fields also helps assure an employer that you have tried different things and understand what you truly want. One great thing is showing that you volunteered your time at a nonprofit or something of this nature.

Another asset for a resume focused on biology is research experience. Biology is a science, and conducting research is the best way to apply the theories you learned. This can show employers that you understand the process of coming up with a solution to challenging problems. Another asset is computing and quantitative skills. This is often overlooked in biology training, but scientific tests itself, with statistics, is becoming increasingly challenged by issues like how to store, query, and analyze SO MUCH DATA. As technology advances, this will become more important, I feel.

## How do you envision technology impacting this field in the next 5 years?

**H. Bobby Fokidis Ph.D.:** Biology always changes with technology, and new methods bring new challenges. The most significant impacts in the next five years will likely shift many things to remote learning and working. The pandemic has forced everything online and has shown us that many things "could have been an email." In the next five years, I envision collaborators on projects working entirely remotely and sharing their data. Also, many labs and clinical practices are starting to automate, whether through a robot system (like, say,

automated pipettors) or advances in AI and machine learning. In as little as five years, I can see the classic biological training starting to look more like a computer course. Biologists will still need to know the necessary skills, but they will have to supplement their training to understand how and when to use the new technology.

## Will there be an enduring impact of the coronavirus pandemic on graduates?

**H. Bobby Fokidis Ph.D.:** I do not know the future; however, I am generally optimistic. The pandemic has highlighted, I feel, the role of science in our lives, and I like to think will open up new funding for the training of the next generation of scientists. Technological advancements have already changed the nature of education and how scientists work and engage with the community. Most graduates with a biology (or related) degree are interested in health and allied professions, and of course, this pandemic should reinvigorate them, in theory. I can see more funding and interest in health and health research in the coming years; however, this is dependent on how economics plays out. To a lesser extent, I think there is renewed interest in the environment, and I can see NGOs popping up that will require biology to institute sustainable solutions to problems.

One concern is if the pandemic takes years to subside, we could see a dip in educational abilities and skill sets with classes worldwide going virtual; however, I think the pandemic would need to take years for this to occur on a large-enough scale to matter.



### **DR. DAVID G. ARGENT**

Professor, Fisheries and Wildlife Sciences  
California University of Pennsylvania  
Department of Biology, Geology, and  
Environmental Sciences

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## In your opinion, what are the biggest trends we'll see in the job market given the pandemic?

**Dr. David G. Argent:** The job market will be one of two extremes, with jobs that get us outside and those that make sheltering in place bearable. I believe that we will continue to see an uptick in jobs that require training in the outdoors, careers like recreation and leisure, and fisheries, and wildlife, as well as those in the medical profession. Also, those companies that promote such activities focused on getting people outside - kayaking, canoeing, and fishing. In addition, I believe, now that companies have invested in remote methods to carry on the day-to-day activities, they will remain. I also believe that as more people remain unemployed, they will turn to trade schools, colleges, and universities to re-train themselves.

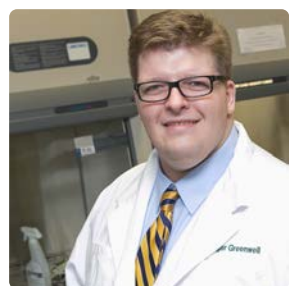
## What technology do you think will become more important and prevalent in the field in the next 3-5 years?

**Dr. David G. Argent:** Remote technology - there are still places in the U.S. that do not have Internet support needed to learn online. Laptop computers and tablets will likely increase in popularity. In addition, communications technology will

continue to improve.

## Will there be an increase or decrease in demand for graduates in this field in the next 5 years?

**Dr. David G. Argent:** Well, if we believe the Bureau of Labor Statistics - yes. As I often tell my students, Biology covers all topics that affect life. Regrettably, part of life is death - yet we continue to discover ways to increase our own longevity. I see a need for more research scientists in the medical field, more doctors, and more nurses. In addition, as we continue to affect our environment (especially now with increased use), I see a need for people trained to protect and to enhance our outside spaces.



### **DR. ROGER S. GREENWELL, JR.**

Associate Professor, Biology Department Co-Coordinator,  
Undergraduate Biotechnology Program  
Worcester State University

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## What type of skills will young graduates need when they enter the workforce in the coming years?

**Dr. Roger S. Greenwell, Jr.:** The skills that students should have as they graduate fall into two major categories: the technical skills and the interpersonal "professional" skills (often referred to as "soft" skills). The technical skills include scientific knowledge and laboratory practices, such as aseptic technique, pipetting, proper recording keeping, and so forth. An important technical skill is also following the established protocols and procedures without deviation. Those are skills many graduates gain through their coursework, independent research, and/or internship opportunities. Some advanced laboratory skills acquired (for example, hands-on experience with flow cytometry, electron microscopy, etc.) may be a requirement for certain roles, and that experience can make candidates stand out, but are not essential for every role as you are entering the field.

The second category, the interpersonal "professional" skills, are just as (or, arguably, more) important than the technical skills. Communication is at the forefront of these skills - being able to collaborate clearly and effectively with others, to problem solve individually and as part of a team, and to engage in purposeful and respectful interpersonal interactions. A person can have all of the technical skills needed but may struggle in the role if they cannot effectively communicate and interact with their colleagues.

The working environment, by its very nature, requires communication and collaboration for success. These communication skills can include things like writing an appropriate email, using active listening and having meaningful dialogues with colleagues, and receiving and processing constructive criticism. Problem solving and creativity are also skills that fall into this category - you have to have the initiative to seek the answers and address issues; at the same time, you also need to recognize when to ask for help and seek that assistance. Lastly, time management, being flexible to situations, and a willingness to work hard are the bedrock of the skills that will be expected for a professional in biotechnology (or any field, for that matter). A 2019 article in Scientific American by Karla



Talanian from the Massachusetts Biotechnology Foundation (MassBioEd) highlights more of the "soft skills" that biotechnology companies and laboratories are looking for in their new hires and employees.

## **Are there any particularly good places in the United States for graduates to find work opportunities in this field after they graduate?**

**Dr. Roger S. Greenwell, Jr.:** The United States is the world leader in biotechnology. Many biotechnology hubs are found throughout the country, with some of the largest regions being the northeast and the west coast. Consistently, the top two states for the biotechnology industries (based on # of positions per capita) are Massachusetts and California. The opportunities available range from positions in start-up companies to established, world-class biotechnology companies and research institutions.

The reasons that these two states are the leaders in the industry is in part due to the academic institutions that develop new ideas, train and educate students for employment, and acquiring federal funding and other grants that support both the basic and applied research needed. This provides the brainpower and workforce needed for medical, industrial, and agricultural biotechnology. Additionally, there is significant state support for companies to come and establish in those states. There are also extensive collaborations between academia, industry, and non-profit organizations that also make these areas stand out for providing career opportunities to graduates interested in biotechnology.

While large cities like Boston and Cambridge in Massachusetts, and San Diego, San Francisco, and Los Angeles in California have numerous opportunities, many companies are moving their research and production facilities to other locations due to the high costs associated with the spaces in those cities. In Massachusetts, companies are expanding to locations north of Boston and around the Worcester area.

That said, I want to emphasize that there are also a large number of opportunities outside of these states. Cities with large or multiple academic institutions will have opportunities in campus research laboratories; often, there are also companies at or nearby those locations. No matter where you are located, you should focus on any networking opportunities (particularly with alumni) and career events held with various company and research lab representatives to get your foot in the door!

## **How do you envision technology impacting this field in the next 5 years?**

**Dr. Roger S. Greenwell, Jr.:** Biotechnology is an amalgamation of biology and technology - and technology is constantly changing, especially in the midst of the Covid-19 pandemic. We see that technology is keeping industry players connected and collaborating while maintaining necessary distancing and safety parameters, and I envision this continuing to influence industry partnerships and collaborations post-Covid. Additionally, for as much as technology will influence the biotechnology industry, the same can be said for biotechnology influencing the development of new technology types. Bioinformatics, with big data set processing, is in a constant state of advancement, and there is a large market for individuals with both computational skills and biological & chemical knowledge. Increased information capacity and analysis are going to greatly influence the industry - examples can include cloud computing NGS data, molecular and biochemical pathway modeling, and regulatory compliance, to name a few.

The development of CRISPR and gene editing tools are influencing everything from diagnostics, to disease prevention and treatment, to therapeutics and beyond. The area of synthetic biology - engineering and/or redesigning biological

systems - is making strides in healthcare and beyond, and is expected to be a growing force for the field in the future. One current example in synthetic biology that I expect to expand in the future is the chimeric antigen receptor technology used to modify T-cells (CAR-T cells) as immunomodulatory treatments for cancer and other diseases. Biologics development and other chemotherapeutics will continue to be expanding in the future.

Each of these areas will also be influenced by the incorporation of artificial intelligence and augmented intelligence systems. AI-derived compounds and technologies will be impacting healthcare, pharmaceuticals, bioenergy, and environmental biotechnology, and beyond. AI has already influenced the development of novel small molecules for target-based drug discovery and screening patient clinical records/data sets for biomarker identification. These are just a few examples of the influence that technology will have on the biotechnology industry.



### **DAVID BAUM**

Professor, Department of Botany Fellow, Wisconsin  
Institute for Discovery  
University of Wisconsin

[Website](#)

### **What general advice would you give to a graduate beginning their career?**

**David Baum:** Remember that despite their importance in providing all our food, oxygen, and other key resources, most people know very little about plants so, with a degree in Botany, you can stand out from the crowd. With a strong science and all the other skills you will have acquired as a student; you will have many directions to go in. Use all contacts and career services from your university to help you decide how best to parlay your scientific knowledge and skills into a career that excites you.

### **What technology do you think will become more important and prevalent in the field in the next 3-5 years?**

**David Baum:** Bioinformatics and computational methods (e.g., computer vision, machine learning) are more and more important in botany and plant science. Botanically-informed computing expertise will likely be an area with a great job.

### **How would you rate the starting salaries for graduates in this field, as well as the salary prospects down the line as they advance in their careers?**

**David Baum:** Salaries vary greatly across the subdisciplines (ecology, agbiotech, horticulture, molecular biology, phycology, mycology, physiology, etc. ). But, regardless of starting salaries, given the diversity of skills you will have acquired as a botany major, especially if it was tied to a liberal arts degree, you should be well-positioned to be flexible in the workplace, to learn new skills, and move up the salary ladder (if that is your priority).

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## DR. SUSAN BERGESON PH.D.

Director

Texas Tech University Health Sciences Center  
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### What general advice would you give to a graduate beginning their career?

**Dr. Susan Bergeson Ph.D.:** Knowledge, enthusiasm, and hard work go a long way in a career, once you have a job. However, getting that first job can be difficult. Biotechnology careers often involve constructive collaboration. Many CEOs have realized that Emotional Intelligence is valuable. EI-related interview questions give an idea of how you might fit within an organization. Be prepared. Remember, as big Pharma contracted, Biotechnology has expanded; your future is bright.

### What technology do you think will become more important and prevalent in the field in the next 3-5 years?

**Dr. Susan Bergeson Ph.D.:** Personalized medicine and better drug delivery have been, and will likely continue to be, areas of active research for the next decade. Honing specialized skills and advancing your knowledge of a broad spectrum of disease processes will likely pay dividends.

### How would you rate the starting salaries for graduates in this field, as well as the salary prospects down the line as they advance in their careers?

**Dr. Susan Bergeson Ph.D.:** Salaries for biotechnology technicians, research associates, and research scientists vary widely by experience and location. Graduates in biotechnology with engineering or bioinformatics backgrounds may start at higher salaries. I encourage my biotechnology students to consider adding an MBA as this broadens their potential for advancement and gives them a better understanding of how the company works while they simultaneously enjoy the scientific process.

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