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"But I have no skills!" identifying your skills to meet employer needs

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Abstract

Postdoctoral scholars develop a myriad of skills throughout their work by the very nature of scientific training. Some of these skills include research techniques, experimental design, and data analysis in addition to other, less technical skills. Yet many postdocs struggle first to recognize those skills, and then to articulate them effectively to potential employers. To identify their skills, it is critical for postdocs to start by engaging in self-reflection. Once skills are identified, postdocs need to understand what employers are seeking in job candidates and translate their skills into language that resonates with employers. This article will take a hands-on approach to both tasks: assisting postdocs with conducting a self-assessment to identify their skills and helping them to deconstruct sample job descriptions to become more familiar with the language of industry. Through this process, postdocs will learn how to translate their work in ways that are meaningful to employers, and that address needs that they face. The combination of self-reflection, identifying transferable skills, and then translating these skills to demonstrate value to potential employers, should lead to increased confidence as well as success in navigating the current job market.

KEYWORDS
career development, industry, postdocs, professional development, transferable skills

Impact statement

"But I Have No Skills!" Identifying Your Skills to Meet Employer Needs is an important piece of work because it describes how postdoctoral scholars can build transferable skills that are attractive to employers in industry. It also assists postdocs with translating these skills into language that employers in industry can understand, both in job applications and during job interviews. It advances the field through educating the next generation of scientists about how to assess their skills and position themselves effectively for jobs in industry.

Introduction

The job market for STEM PhDs in the United States has experienced a shift over the past 20 years. In 2003, approximately 32% of PhD-trained scientists in the United States went into industry [1]. Now, nearly 40% enter this sector [2]. Given the number of scientists employed in industry, it is important for postdoctoral scholars (hereafter "postdocs") to equip themselves with the skills sought by private sector employers, and to translate their existing skills into language that resonates with those employers. However, many postdocs

struggle to recognize that they possess skills of interest to employers and to identify evidence of these skills. Although many skills developed during postdoctoral training are *transferable* to the industry setting [3], postdocs often find it difficult to make this case to potential employers. As these transferable skills are vital to success in today's scientific workforce [4], it is critical that postdocs develop skills and learn how best to position their skills to employers in industry.

In this article, we will highlight the skills necessary for all postdocs to develop. We will discuss how postdocs can conduct a self-assessment to identify their current skill sets, where gaps exist, and how to fill those gaps. We will share information about the language of industry and skills sought by industry employers. We will provide tools for reframing the postdoc experience into language that is compelling to these employers and discuss how to highlight transferable skills during the interview process. Finally, we will share resources that are available to assist postdocs in navigating the current job market.

Skill development for postdocs

In 2009, the National Postdoctoral Association (NPA), a non-profit organization established to support postdoctoral scholars, released a set of Core Competencies that every postdoc should seek to build over the course of their postdoc appointment [5]. The NPA Core Competencies include skills that are intrinsic to the very nature of scientific training, including discipline-specific conceptual knowledge, research skill development, communication skills, professionalism, leadership and management skills, and responsible conduct of research [5]. The first of these, discipline-specific conceptual knowledge, is one that postdocs build throughout the course of their training. Similarly, research skill development entails carrying out independent research and acquiring skills in research techniques, experimental design, and data analysis and interpretation. Communication skills involve both written and verbal communication skills, which can be developed through publications and presentations, but may also be built through teaching, grant writing, and other modes of communication. Professionalism focuses on the ability to connect with others in the workplace, institution, discipline, and the larger world of work. Leadership and management skills require postdocs to recognize their individual leadership style when working with others, learn to manage budgets, projects, and staff, and mentor others effectively. The final core competency that the NPA identifies is the responsible conduct of research (RCR). This competency is paramount to the advancement of scientific knowledge, as it requires ethical behavior and adherence to codes, guidelines, and best practices in one's field of inquiry.

Alongside the NPA Core Competencies, postdocs should also consider building the competencies established by the National Association of Colleges and Employers (NACE) [6]. These eight skills and attributes were developed by both career services professionals and employers to ensure that graduate students and trainees are prepared for a successful transition into the workforce. The NACE Competencies include career and self-development, communication, critical thinking, equity and inclusion, leadership, professionalism, teamwork, and technology [6]. These two sets of competencies do not overlap entirely, but there are some commonalities, as well as additional skills on the list of NACE Competencies that postdocs would benefit from developing, such as teamwork and an understanding and practice of equity and inclusion. These skills would assist postdocs in working effectively with teams of scientists, and in ensuring that all team members receive the specific support they need to thrive.

TABLE 1 NPA and NACE competencies.

NPA core competencies	NACE career competencies
Discipline-specific conceptual knowledge	Career and self-development
Research skill development	Critical thinking
Communication skills	Communication
Professionalism	Professionalism
Leadership and management skills	Leadership
Responsible conduct of research (RCR)	Equity and inclusion
	Teamwork
	Technology

There are a few skill sets unique to STEM research at the postdoc level and beyond, such as research skills and the understanding and practice of RCR. Still, to be competitive on the job market, it makes sense for postdocs to build skills throughout their training in all the areas listed in Table 1 [7].

Skills identification

Career and self-development is the first skill set listed in the NACE Competencies (see Table 1). This skill set is foundational in that it helps postdocs to identify their personal strengths and weaknesses and then work to address any gaps to advance in their careers of interest.

To assist postdocs with the process of skills identification, the American Association for the Advancement of Science (AAAS)/*Science*, in collaboration with the Federation of Societies for Experimental Biology (FASEB), built myIDP, a free online career planning tool [8]. myIDP was modeled after FASEB's *Individual Development Plan for Postdoctoral Fellows* and includes the steps necessary to identify and reach your career goals [8].

The first step in this process is to conduct a self-assessment. myIDP features a rating system where you can rate your skill level in multiple areas from highly deficient to highly proficient. The areas listed are based on the NPA Core Competencies. myIDP not only includes a skills assessment, but also an assessment of your values and interests. Taken together, these three core elements can be used to identify career options to explore. You can then use myIDP to read more about STEM careers. Finally, you can create your own Individual Development Plan, and myIDP can help you track your goals toward completion.

In addition to using myIDP, postdocs can also engage in a simple skills inventory exercise to identify not only what skills they have mastered or still need to develop, but also those skills they enjoy using most. To conduct this inventory, list the tasks required for your daily or weekly work. For example, you might list reviewing scientific literature, conducting statistical analyses, attending lab meetings, mentoring an undergraduate, and presenting your data. Put a star next to those tasks you enjoy performing most. From there, bin these tasks into the six NPA Core Competencies listed in Table 1. It might then be helpful to ask yourself some questions about the results, such as what do you notice from this quick assessment? Where are most tasks listed? Where do you see gaps? You can use this exercise to make plans to supplement your training. If you wish to strengthen your leadership and management skills, for example, you might try delegating responsibilities to another lab member or an undergraduate and then providing oversight. If you want to build communication skills, you might ask to present in an upcoming lab meeting or contribute to writing a grant. Find opportunities to strengthen your skills where you see gaps, and you will be better prepared to enter your career of choice.

Translating skills into the language of industry

When considering a career in industry, it is important to recognize that the language and culture within the sector vary significantly from those in academia. Developing a strong understanding of the particular role you are exploring is critical as well. Are you, for instance, more interested in research or development? Perhaps you are interested in clinical trials, or regulatory affairs? Maybe you are curious about quality control and in developing SOPs? Ensure that you familiarize yourself with the most common terms so you will be better equipped to demonstrate interest and awareness in a cover letter, resume, or interview. As you become more familiar with the language of industry, it will be easier for you to translate the work you have done into language that resonates with industry employers.

To learn more about what employers are seeking, it can be helpful to read through current job descriptions. This practice will help you identify what is most important to an employer and will give you an opportunity to explain your skills and experiences in a compelling manner.

Here are a few phrases taken from a recent job description for a company focused on customized assays and biomaterials:

- Define short and mid-term objectives and implement plans to accomplish objectives
- Frequently communicate status updates across the organization
- Maintain good documentation
- Write reports and technical summaries

As you read through these phrases, can you identify times when you have demonstrated these skills? For the first bullet point on defining objectives, you might consider your current work or project in your lab. Think about evidence you could provide in a cover letter or resume that showcases your ability to delineate your research objectives and implement plans to accomplish them.

What about the second bullet point? You might share the frequency of your updates during lab meetings to illustrate your communication skills. And what about good documentation practices? And writing skills? Translate your work for the reader of your job search documents to better reflect the job at hand.

Here is another list of key responsibilities taken from a job description at a biotech research institute. This job calls for "collaborating with diverse stakeholders, leading project teams, and ensuring alignment with organizational priorities and standards:"

- Develop and manage project budgets, timelines, and resource allocation
- Identify and mitigate project risks and resolve escalated issues
- Ensure projects meet scientific, regulatory, and compliance standards
- Drive cross-functional collaboration across departments
- Implement KPIs and metrics to track project performance and outcomes
- Manage vendor and partner relationships
- Lead and mentor teams of scientists

What resonates with you from this job description? Which words do you have trouble defining? In industry, much of the work that you will do will involve teams of people, collaboration with different departments, and a focus on meeting the needs of "stakeholders." This term refers to any group impacted by your work. While your current work or project in your postdoc may be a fairly solitary endeavor, you will need to demonstrate evidence of your ability to work with others and recognize others' needs in addition to your own.

"KPIs" is another industry term that you may be unfamiliar with. This term stands for Key Performance Indicators. KPIs are often used to measure progress, efficiency, and outcomes across drug development, manufacturing, and finances. Tracking these metrics is part of the business of connecting science—and potentially life-saving therapies—to the marketplace. How might you show that you can track outcomes from your current project? What system(s) do you use to keep track of your performance? Translating your skills is essential for you to make the case to potential employers that you have what it takes to do the job they are hiring for.

As we have discussed, transferable skills describe professional and personal skills you can transfer from one sector to another. Having some knowledge about the skills required for jobs in industry, it is now time to translate your skills from the lab into language that employers can understand. To do this, let's look at some skill sets developed in academic settings that can be transferred to industry (see Table 2). These are just a few examples of how you can translate your work to an employer in industry.

As you review job descriptions, pay close attention to the responsibilities and requirements listed for the job and ask yourself how you might demonstrate that you have the skills needed to accomplish those tasks. Identify key words and phrases from the description that you can highlight in your own work. Next,

TABLE 2 Translating academic skills into an industry setting.

Skill set	Academic setting	Industry setting
Communication	Presenting at lab meetings	Presenting results to leadership
Leadership & management	Supervising an undergraduate's work	Supervising a junior scientist
Teamwork	Contributing to a paper	Contributing to a group project
Project management	Managing fellowship work	Tracking a project using matrices

take a look at your resume or CV and determine where you can edit your document to reflect the job description. You want your CV or resume to echo the description as closely as possible.

Following is another job description from a mid-sized biotech company:

- Collaborate extensively with cross-functional partners focused on expanding targeted delivery into new cell types and tissues
- Transparently communicate data, conclusions, and experimental rationale to team members and leadership
- Mentor and support the scientific development of junior scientists or research associates

As you read this list, you might think about how you have accomplished similar tasks. How might you translate your skills and experiences to build a compelling case for this company to invite you to interview? Instead of simply listing your job titles under Research Experience, like this:

- Postdoctoral Research Associate, University of Connecticut, Principal Investigator: Dr. X, September 2021 – June 2026
- Graduate Research Assistant, University of Michigan, Principal Investigator: Dr. Y, June 2017 – September 2021
- Laboratory Technician, University of North Carolina at Chapel Hill, Principal Investigator: Dr. Z, July 2014 – July 2016

Try adding job descriptions under each position you have held, highlighting your ability to do the job at hand:

- Collaborate with partners across departments and programs to achieve research goals
- Communicate experimental results to team members and leadership through weekly lab meetings
- Mentor and promote the scientific development of two undergraduate students

If you work with your CV/resume and a job description side-by-side, you will be able to go through this exercise to demonstrate that you are a good fit for the job.

Transferable skills and the interview process

Now that you have identified your transferable skills and sought to back them up with evidence on your CV or resume, it will be fairly straightforward for you to highlight these skills in an interview setting.

TABLE 3 The STAR method.

Step	Description
Situation	Describe the situation at hand
Task	Explain your responsibility
Action	Detail the steps you took to solve the problem
Result	Share the outcome and what you learned

As you prepare for interviews, use the same process of reviewing the job description first to identify skills required, then read your resume or CV for proof of the skills and experiences requested for the job. Next, make a list of the top five skills identified in the job description and provide concrete examples of times when you have used those skills in your work. Finally, make a direct connection between those experiences and the job at hand. In this way, you can show that you have what it takes to do the job on day one.

A similar approach to providing evidence of your skills during the interview process is with the STAR Method. This method, developed by the consulting firm Development Dimensions International decades ago [9], was created to assist prospective job candidates with answering behavioral interview questions. These questions include those that begin with "Tell me about a time when. . ." and require the applicant to describe past behavior in a given situation. The rationale behind this type of interview is that *your past behavior is the best predictor of your future behavior* in a similar circumstance.

The STAR Method involves the steps outlined in Table 3.

To illustrate the STAR Method, let's consider a failed experiment. If you were asked during an interview "Tell me about a time when you failed," you would begin by describing the experiment and your specific role in it. Explain what happened, what steps you took to solve the problem, and then share the outcome of the situation. When using the STAR Method, remember to close by describing what you learned from the situation. This approach exhibits your ability to learn on the job and to grow professionally and as a scientist.

The flip side of using the STAR Method to prepare for behavioral interviews is not to back up your interview responses with any evidence. There are candidates who may claim to possess a skill set, but do not back it up with any data. If you profess to have strong communication skills, for example, but cannot back it up with any proof of having used those skills, you will likely not be called back for a second interview! Take time to prepare your responses in advance of interviews to showcase not only your skills but evidence of having developed those skills through experience.

Resources for postdocs

While having a better idea of how to translate your skills into language industry professionals can understand is fundamental, it is important to note that you don't have to go through this exercise alone. As a result of previous research on transferable skill development and the importance of providing postdocs with skill building opportunities, there are now a wide range of resources available to you, both online and in-person, locally and nationally [3, 4, 10, 11].

Your first step might be to request a meeting with your faculty advisor/PI. Whether you are just starting out in your postdoc appointment or have been in it for some time, it is always a good idea to discuss your goals with your PI. This discussion will likely include your research goals but can also include your career and professional development goals. Use an IDP, either one you've crafted together or a blank template if you are just starting out, as a basis for your discussion. Try to map out opportunities for skill development during your postdoc, based on your career interests. You might request time to present at lab meetings, attend conferences, or apply for grants or fellowships, depending on the skills you'd like to develop.

Your next step might be to visit the postdoctoral affairs office at your institution. Many universities and research institutes have dedicated postdoc offices to serve their postdocs directly through professional development workshops, individual appointments, career coaching, and more. These offices typically have robust websites including resources like sample CVs, online courses, skill-building programs, and other items designed to help postdocs make the most of their training. Be sure to take advantage of all that these offices have to offer by attending skills workshops, online panel discussions, and other opportunities to continue to build both your skills and your network.

Another group you might connect with is the postdoctoral association at your institution. If there is an organization of current postdocs at your university or research institute, be sure to join in their activities—and volunteer for them when possible. Volunteering for your local postdoc association can strengthen your communication skills, leadership skills, and lead to connections with other postdocs and scientific professionals. Linking up with other postdocs is a smart move not only for your career and professional development, but also for your mental health, as it reduces the isolation that can be a by-product of some postdoc appointments. The postdoc community at your institute can also serve as a peer support system throughout your training, helping with the publication process, practicing presentations, and other required activities.

At some institutions, postdocs have access to a career center. Investigate this option at your university or research center. If you have access to this office, book an individual career coaching appointment. In this session, you might discuss the self-assessment process, explore different career options, practice articulating your transferable skills, or even take part in a mock interview. Career centers also offer programs, workshops, career fairs, and sometimes courses that may be available to postdocs both online and in-person.

You can also look to the resources provided by the National Postdoctoral Association. The NPA has a career center itself that features current job openings and a career planning portal. Additionally, NPA SmartSkills is a free, virtual course for postdocs who are members of the NPA. (Please note: If your institution is a member of the NPA, all postdocs at your institution receive complimentary membership.) Courses are taught monthly by experts and focus on building skills critical to career and personal success [12].

An additional resource accessible to all postdocs worldwide is The Postdoc Academy. This is an online and in-person program built on the NPA's Core Competencies to support skill development for postdocs throughout their training and beyond. The mission of The Postdoc Academy is to help postdocs develop transferable skills for any career field [13]. In addition to the free online courses, postdocs can join a Postdoc Academy Learning Session (PALS) at their institution or with postdocs from their discipline. These communities support the online coursework by connecting the content to local context and community.

You might also reach out to your circle of mentors. These people may be peer mentors in your research group, department, or institution, other faculty, scientists you have met in different settings, and industry professionals. Turn to this group for another perspective on the skills that you might still need to develop to move into your career of choice. This group can advise you on ways to build skills throughout your postdoc appointment.

Finally, you can use AI as an additional resource when trying to translate your work. If you have an academic CV currently written for faculty jobs, you might ask an AI tool to convert it into an industry resume for you, highlighting specific skill sets. You can also enter a job description into AI to generate skills-based interview questions for that job. This might help you prepare for any upcoming conversations you have scheduled with employers.

Throughout your professional life, you will continue to build skills. Some may be for your current role, while others may be required to move into your next position. Stay current with the skills required to be successful in your industry of choice and approach every opportunity with a growth mindset. This will put you in the best position to thrive as a future scientist.

Author contributions

The author confirms being the sole contributor of this work and has approved it for publication.

Data availability

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

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