"I Like Thinking About the Best Way to Word Something so That It Is Clear and Concise"

Teresa Esch

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Abstract In our interview with Teresa Esch, she tells us about her role as a features editor at *The Journal of Neuroscience*. After PhD and postdoctoral work working with cell culture and electrophysiological recordings, Teresa sought to focus more exclusively on writing about scientific research. She has now worked as an independent contractor for *The Journal of Neuroscience* for over 15 years. For those interested in a similar career path, she offers practical advice on enhancing their writing and editing skills, and on broadening their scientific knowledge base. Moreover, Teresa candidly discusses the on-going changes in the world of scientific publishing, including the shift towards open-access journals and the potential impact of artificial intelligence on the field. Lastly, she provides valuable advice for PhD students, encouraging them to critically evaluate their passion for their work and explore diverse career paths.

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Chris: Can you introduce yourself and tell me a bit about your current position?

Teresa: I have been the features editor for *The Journal of Neuroscience* for the past 15.5 years. For the first 15 years, I worked full time, writing summaries of 2–4 articles published in the journal each week, reviewing and editing Journal Club submissions, and soliciting and editing review articles. Because I had to write summaries every week, I could not take a few days off (and as an independent contractor, I did not get paid vacation or holidays). I could take vacations, but I needed advance warning, so I could secure someone to fill in for me. Beginning this year, I stopped writing the weekly column, so I now work only about 10 hours a week, editing Journal Clubs and Reviews. In addition, I have begun doing contract work writing documentation for scientific software at HHMI's Janelia Research Campus.

What was the focus of your PhD?

I graduated in 1998 from the University of Virginia Neuroscience program. I worked under Gary Banker, studying how extracellular molecules influence the development of polarity, specifically, which neurite became the axon, in hippocampal neurons grown in culture. To do this, I followed the growth of neurons on coverslips coated with stripes of different molecules using time-lapse microscopy and staining for axonal and dendritic proteins. I showed that when the growing tip of a neurite contacted a new growth-promoting molecule, it started growing rapidly and acquired axonal characteristics. This work was published in *The Journal of Neuroscience*.

As part of my coursework at the University of Virginia, I met a professor who studied how specific neurons in the leech spinal cord control swimming. I found this work fascinating, so as a post-doc, I went to UCSD to study more about leech swimming. I set out to find neurons in the head brain that triggered a shortening reflex when the leech is poked in the head, using intracellular electrophysiological recordings in a leech with brain exposed and body intact. Instead I discovered a neuron that could evoke either swimming or crawling behaviour, depending on the depth of water in the recording chamber. This work was also published in *The Journal of Neuroscience*. So *JNeurosci* has been a friend to me throughout my career!

As you were finishing your PhD, what were you thinking about your career plans?

I went on to a post-doctoral research position, intending to continue in academia.

How have your career plans changed as you've continued on to your current position?

By the time I finished my post-doc, I had decided that I didn't want to do any more experiments. I never really wanted to do experiments: I looked forward to the time when I would just write grants and papers, give talks, and direct others' experiments. But that still seemed too distant.

In addition, when I was in graduate school, I learned that I had inherited from my mother a rare retinal dystrophy, first described the year before I started my graduate work. I began having trouble reading slides and posters at meetings. All my work involved microscopy, which was also difficult given my vision. Given that my mother was legally blind (although not progressing further), I figured working in the lab would become even more difficult for me, maybe to the point of not being able to succeed in academia.

These two factors led me to decide to pursue a different path. My vision did in fact decrease to the point of legal blindness within 5 years of leaving my post-doctoral position. I think I probably could have used technology to overcome these issues if I had been passionate about doing research, but I wasn't.

Because writing papers and grants was what most appealed to me in academia, I decided to pursue work as a writer. I worked for several years for a manufacturer of PCR machines, writing manuals and other materials. I loved that job and felt like I could stay there for the rest of my career. But it became less enjoyable after the small company was bought by a larger one.

My job as a features editor was really the ideal job for me: getting to write about new research and always learning new things, but not having to face experimental failure myself.

How did you go from wanting to be a PI to working for a PCR manufacturer?

As I said earlier, I wanted to write, not do experiments, and I didn't want to do any more experiments. Plus, my vision was deteriorating, not only complicating experimental work, but also hindering interactions at conferences. My husband was starting a post-doctoral position outside Boston, MA, so when we got there, I looked in the local newspaper for job openings for science writers. I was hired by a small company run by people with PhDs, and they wanted people with PhDs to work in the marketing department, writing manuals and explaining the science of PCR. Although marketing was not what I wanted to do, I applied just for the experience and the money. The ad was placed by a headhunter that was hired by the company. Working through the headhunter was great because she gave tips for performing well on interviews and generally cheered me on. I would recommend using an agency for people looking for a job.

How did you go from this position to working for *The Journal of Neuroscience*?

Although I initially thought of the position as temporary, I was surprised to find I liked it a lot: I even looked forward to getting back to work after vacation. Although I didn't think I would like marketing, the PCR instruments the company made were considered the best available, so I did not need to 'sell' them, but rather just inform customers what the machines could do. Moreover, I felt respected and valued by the people I worked with and was deferred to on all writing. That changed when the company was sold. The head of marketing at the new company was a graphic designer and cared little about writing. Consequently, graphic designers would sometimes work for weeks on a piece of literature, then give me 1 day to edit/write the text. Furthermore, product managers did most of the writing and asked for 'minimal editing'. Basically, I felt like I was being asked to do a poor job.

I did earn people's respect after a while and was asked to do more writing for the company's magazine. But after returning to work from an unusually long vacation, I realized I no longer looked forward to getting back to it. That prompted me to look for a new job. As it happened, *The Journal of Neuroscience* had an ad in the newspaper for a features editor. It sounded like the perfect job for me: exactly what I wanted to do. At the time, one editor-in-chief was leaving and a new one was

starting, and the incoming EiC created the position. The outgoing EiC happened to work at the institution my graduate advisor had moved to after I graduated, so I contacted him, and was put in touch with the incoming EiC. The incoming EiC was near the end of the search and was getting ready to hire someone, so I was very fortunate to have happened to look in the paper that first day back from vacation. The time between when I saw the advertisement and accepted the position was less than 2 weeks.

Can you tell us a bit about what day-to-day life is like in your current position?

As I mentioned previously, I am only working a few hours a week currently. During those hours, I will typically answer emails concerning possible submissions, discuss the pre-submission inquiries with other editors, and let the authors know if we want the full submission. When Review articles are received, I assign them to a reviewing editor, who handles peer review and then makes a recommendation about whether to accept the article. Before final acceptance of Review articles, I read through the manuscript and make suggestions regarding organization and content, as well as editing grammar, etc. I evaluate Journal Club submissions myself (they are not peer reviewed), and I do the same sort of editing as for Review articles. Because Journal Clubs are written by trainees, however, they typically require much more editing than Review articles. Plus, we get lot more submissions of Journal Clubs. Therefore, most of my time is spent on editing these pieces.

When I was working full time, in addition to these tasks, I would go through the articles slated for an upcoming weekly issue of the Journal and choose 2 to highlight. I would then read those articles (plus a few other articles for background) and write ~350-word summaries of them. That took up the bulk of my time.

How do your vision difficulties affect your current work?

I use a large monitor and large type, so I can do my work fairly well despite my visual impairment. I have trouble distinguishing some letters, so when I am writing to someone, I usually copy and paste to avoid misspelling. I have the Zoom feature enable on my Mac, so I can zoom in when I have difficulty. So there is some impact, but not too great a challenge. I only go to one scientific meeting a year, and at that I generally do not go to posters because the ones I most want to see generally have crowds keeping me from getting close enough to read. At lectures, I use small binoculars. I should note that most people don't notice that I am visually impaired, because it doesn't affect most of my daily activities. I generally tell people I will see frequently about my impairment, so they don't think I am rudely ignoring them when in fact I just can't recognize them.

What do you like most about your work?

I enjoy writing and editing. I like thinking about the best way to word something so that it is clear and concise. I also like continuing to read about new neuroscience research. And I like helping others explain their ideas more clearly. I also like the fact that I can work from home and set my own hours.

And what do you like least about your work?

Up until this year, I disliked the fact that I couldn't really take a vacation. The journal puts out 50 issues a year, and I typically wrote something for 48 of them. On the 2 weeks per year someone else wrote the summaries, my other work would pile up. This past January was the first time in 15 years that I didn't bring my laptop with me on vacation (although previously there were a few times I just brought it along to work on the plane). It was quite stressful. As an example, one time it poured while we were camping, and I was glad to have the opportunity to read some Journal Club articles so I would not get so behind.

But the thing that I have really liked least is the fact that some of the higher-ups at the society that publishes the journal undervalue me. The four editors-in-chief I have worked with (who are all academics that serve for an honorarium) have stressed how valuable I am to them, but some people at the society don't seem to agree. They tried to cut my hours or eliminate my position a couple times over the years, relenting only when the EiC at the time insisted on my staying. Still, I did not get a raise for the last 8 years of full-time work.

How do you think having a PhD has helped you succeed in your current position?

Having post-doc-level experience is required for most jobs in scientific publishing. The training exposed me to multiple areas of neuroscience, allowing me to understand most of the papers published in the journal. Beyond learning mere facts, learning to gather information rapidly from papers was tremendously helpful. When I first started grad school, reading a scientific paper was extremely difficult, in part because I felt the need to understand every sentence. But after reading numerous papers, I've learned that things are not clear at first will become clear later. Moreover, I've internalized the standard template for scientific articles, making it easier to know where to look for information.

Perhaps most importantly, while I was writing one of the papers based on my graduate work, my advisor and a couple post-docs in the lab went through the paper with me sentence by sentence, explaining why changes were needed and basically teaching me how to write a scientific paper.

Finally, there is a culture of academic science, and understanding that culture I think has helped me communicate with scientists and gain their respect.

If someone currently finishing their PhD was considering a position similar to yours, how might they decide if it would be a good fit?

To me, the most important thing is caring about good writing enough to consult dictionaries, thesauri, and style guides regularly, aiming to write the clearest possible sentence. In addition, you must be interested in helping others learn to write well. And you must have a desire to learn sufficiently about diverse areas of science to explain them accurately. In scientific publishing, you have to be willing to work with constant deadlines looming, and be able to manage your time to get the work done by the deadline. It is also necessary to be diplomatic, so authors are not defensive or angry when you suggest edits. And you have to be willing to serve others, rather than insisting on doing things your way.

If someone was interested in pursuing a similar career path, what would you suggest they do to better prepare themselves?

I would suggest they do post-doctoral work in a sufficiently different area to expand their knowledge base. They should look for opportunities to write and to edit others' work. Pay attention to how papers are written, and what makes a paper clear and convincing. Ask mentors to include you when they review papers for journals, and perhaps write up the review for the journal. If someone in your department is recognized as a good writer, ask them to edit your work and explain why they make the edits they do. I should also note that there are few positions like mine: editors at some prestigious journals have greater workloads, more stress, and fewer opportunities for writing. I feel very fortunate to have gotten this position.

A lot of people like academia because they feel it gives them an opportunity to work on a topic that they deeply care about. Do you think this is also true in your current position?

Yes and no. If the topic is 'neuroscience', then yes. When I was working full time, I had great freedom to select the articles I wanted to highlight. I often chose to write about things that I knew little about, but wanted to learn. In contrast, most people in academia focus on a fairly narrow topic. When I was in graduate school and

working as a post-doc, I was happy with the work I accomplished, but I felt like the gain in knowledge was too small given the time taken to get there. I felt it would be dissatisfying to spend my entire career focussed on one topic.

Another reason many like academia is that they feel it provides them with more freedom than they think they would get in other positions. How much freedom do you feel you have to work on what you think is interesting?

As I mentioned, I had a great deal of freedom during most of my tenure as a features editor, because I chose which articles I would write about each week. I still have some freedom in deciding what articles we will invite. But it probably helps that my interests are broad and I would often prefer to learn about something new than write about something I know a great deal about. It should also be noted that academics don't have that much freedom, since they still need funding, which is becoming harder to come by.

Based on your journey, what advice or suggestions do you want to pass on to someone who's currently finishing their PhD?

So many grad students are encouraged to do experiment after experiment without analyzing and thinking about the results and what experiment they should do next. And many move on to their next position before completing the papers from their graduate work. I often see this reflected in papers submitted to the journal: they often describe a kind of hodgepodge of experiments with some obviously important ones left out, rather than following a clear logical path. If students have moved on by the time the paper is submitted, they often cannot do the extra experiments requested by reviewers and thus must submit to a less prestigious journal. Not only that, but they have missed the opportunity to learn the most important lesson of grad school, i.e. how to plan and conduct a logical series of experiments.

I would encourage anyone who thinks they want a career in scientific publishing or writing for a scientific audience (or in academia, for that matter) to seek a post-doc position that will allow them to learn about something different than what they did in grad school and something that is widely used or clinically relevant. Learn how to write grants too, because it might be easier to find work as a grants writer than as a science writer in the future. When it is time to find a job, consider using a headhunter company to help you find positions. And don't rule out marketing, even if you think you hate marketing: it isn't all what you think.

In addition, I would encourage all grad students to ask themselves if they really like doing experiments. If not, they might want to consider a career that doesn't require them to do them!

Is there anything else you'd like to tell someone reading this interview?

People should be aware that scientific publishing is undergoing many changes as more countries demand grantees publish their work in open-access journals. What many people don't realize or don't seem to care about is that this means either publication fees will have to go up substantially or there will not be paid editors. One reason that top journals like *Nature Reviews* have such good articles is that they have paid editors and illustrators that greatly improve the submitted work. I am not sure that will be around for long.

AI might also eliminate some jobs for science writers. Although current tools don't do a great job, this will likely change. Moreover, often the people managing content do not have PhDs in science, so they can't tell if something is accurate or well written.

Thank you so much for sharing your journey and insights with us, Teresa!