AN INTERVIEW WITH FELICE FRANKEL

From left to right, top to bottom: John Guo, BSS Publication Editor-In-Chief; Joshua Chilukuri, BSS Editor-In-Chief; Ankit Biswas, BSS Editor-In-Chief; Dr. Jonathan Bennett, BSS Faculty Advisor; Felice Frankel, Research Scientist at the Massachusetts Institute of Technology; Kae Saotome, 2026 BSS Essay Contest Winner.

Could you briefly introduce yourself?

I'm Felice Frankel, and I am a research scientist at MIT. I've been there for 33 years. For the most part, I help researchers create visuals for journal submissions and presentations—mostly photographic, although lately I've been doing quite a lot of graphics to explain what is going on that cannot necessarily be captured with a photograph. The dirty little secret is that I am constantly learning whenever I have an assignment. I welcome anyone who is interested in doing this someday to get in touch with me.

What sparked your interest in scientific photography?

I have a science background, which enables me to have conversations, up to a point, with the researchers. I worked in a laboratory at the Cancer Research Institute at Columbia many years ago, and my whole world was about science. Even as a child, I was always fascinated by why something looks the way it looks and why it happened.

I did not go to graduate school; I went directly into the lab. I'm going to skip over life, but eventually I went into photographing architecture. When my husband was in Vietnam, during the height of the war, he sent me a Nikon camera. I started off just playing around with making pictures on a very good camera, which translated into the fact that I saw images that I wanted to see, because the camera was so good. So I became an architectural and landscape architectural photographer.

That brought me to Harvard on a fellowship at the Graduate School of Design in the School of Architecture. While my fellow colleagues were taking classes in design and politics, I found myself yearning to go back to science, and I sat in on as many science classes as I could.

One of the faculty lecturing a particular course was very visual in how he represented the science. I was so moved by how he illustrated the work that I had the audacity to walk up to him after the lecture and invite myself to his lab. He said, "Sure, come to the lab." I came a couple of days later, and he introduced me to his postdoc, Nick Abbott. They showed me work they were just about to publish in *Science*. I looked at their images and frankly said, "We could do better."

So we worked together. I asked for a different kind of sample, and the bottom line is that we got the cover of *Science*. That was the beginning. He said, "Felice, stay with this. You're doing something that no one else is doing." It

was the most beautiful serendipity that ever happened in my life. I was at the right place at the right time with the right person. But the key is that I grabbed at it. That's what I want to suggest to everybody: if you see something that feels right in your guts, go for it. I did, and one thing led to another, and then I wound up at MIT, which is a glorious place to be.

What has been your favorite project?

For the most part, the picture that I made in 1992 for the cover of *Science*—my first picture—still remains the most interesting to me, because it changed my life. It sounds very dramatic, but it was when I became a science photographer and left all the other stuff behind.

That image, first of all, gave me confidence because I used the science that I understood. I understood what the primary idea of the science was, and they were not doing a good job with it. By asking them to give me a different sample, I was able to explain it visually better than they did. That's what turned me around: realizing that this is what I wanted to do, and that there was room for this in the research lab. There is room to create an image that is not only aesthetically beautiful, but also communicative. It was my first time, and it is still memorable for me.

Has there ever been something unexpected that you saw and immediately knew you had to photograph?

There is one picture in the book for teens, *Phenomenal Moments*. It's not a beautiful picture, but when you make a picture—when you decide to take a picture, to create—you see something more than you would just passing by.

I was walking along a road, and there were two posts that I knew came from a tree, and I saw the tree rings. That was going to be something I would use. Then, when I started composing it, I realized that I not only saw the annual rings, but I also saw the impressions from the saw that was sawing off the end of it. I did not see the saw right away, but when I made the picture, I saw more information. That is what you get when you are forced to make a good picture. You actually might see something further than what you initially saw. So it is an act of discovery. It is great fun.

In *Phenomenal Moments*, how do you convey that ordinary things we see every day are actually extraordinary?

I actually did not start with an idea for a book. Throughout my life, if I see something that I think is cool, I take out my iPhone. Most of the images were made with my phone. I snapped the picture, and I had a collection. I noticed, for example, a hydrophobic surface. That is why the water on the leaf is balling up—because of the hydrophobicity. A friend of mine said, "You've got a lot of interesting images here. Maybe there's a book here." That is how *Phenomenal Moments* started.

The idea is: look at my picture. You recognize it? Of course you do. You've seen this before when you're walking in the park. I'm explaining the moment—the "phenomenal moment"—when I made it, and the phenomenon, with language that is accessible.

So the next time you are walking through the park and you see that specular lighting that happens on a lake at a certain time of day, you're going to tell your friend, "You know what that is?" And you're going to talk about it. Even better, make your own picture. Start collecting your own scientific phenomena. That would be a way of engaging everybody in understanding how fabulous science can be.

What advice do you have for high school students who want to pursue science or STEM careers?

You have to show what you can do. The reason why I have landed where I have landed is because I did not just say to somebody, "I can do better than you"—I showed it. In this kind of field, that is what this is all about: showing. It was not just an aesthetic; it was about the information the researcher was trying to represent.

If anybody is interested in this—or graphics, although AI will take that over, and that is OK—I do graphics as well. I am using AI for graphics. There is no question that it is mind-blowing. I just got a cover of a journal and it was completely non-photographic. It goes back to the notion that you cannot just talk somebody into anything. You have to show them what you do.

How important is science communication in today's society?

We're in a lot of trouble, period. People do not respect scientists. They do not trust us. In my opinion, we're not doing a good job of communicating to the public about what we're doing in the labs. One of the portals can be the visual. Everybody makes pictures. So it's a language that is accessible; people aren't afraid.

For me, it's not taken seriously enough in the research community, though it's slowly changing. The younger generation understands the power of a visual. The whole notion of finding ways of representing your work visually is important not only for communicating to others, but

because, in the process, you clarify your own work when you are required to represent it. You have to figure out: where should this go? Should I include this, or is this too much?

Do we speak to the public differently than our colleagues? Yes, of course. But where do you make that difference? All of that, in my opinion, should be part of your training.

You created at MIT the first massive open online course for science and photography. Is that a first step toward a wider initiative for teaching science photography, and where do you see it going?

I think it is a good first step. Once again, you cannot learn this—as you cannot learn anything—from a textbook. You have to do it. If I had more energy in my 80 years, I would absolutely have a hands-on course on how to make images.

What I am trying to do next year, and it has to be approved, is more of a visual literacy course. It would take the students through the history of photography and sketching and any kind of visual explanation, then go through the ethics of manipulation and get into a very important conversation about AI. It will entail having the students create their own images. That will be part of it. In this kind of experience, you must do it. Period.

Do you think scientists should be trained to be better communicators so they can explain their work to the public?

There is no question in my mind that we have made a mistake in not including that in the requirement. Not including that part of communicating to the public as part of your CV. You are not rewarded for it. You do not get tenure for it. There is a token, occasionally, when you get a grant, to have a line item for what they call outreach. It is never taken seriously, and it should not just be a line item; it should be part of your education that you must learn how to speak to the public.

If you have an image of your work, do you have to do something to that image to make it more accessible? Maybe make it more beautiful without messing up the data? This whole notion of not including the public in our education has been the downfall, in my opinion, of why we are going through what we are going through. It is a mess. But I think it should be part of all of our education: how to communicate to the public. My whole thing is with images.

Here's a fun one—what is your favorite color?

I think color choices are generational, and I think they are also cultural, depending upon where you were brought up. But I have noticed that I like to use orange. Why? I have no idea. But in my photography, when I need a background, I use orange often.

I think it is tied to when you were brought up. For example, many of my students at one time were using fuchsia, which is a very hot pink, and I said, "Uh-uh, that is not for me." By the way, I would never live in an orange room. My entire place is off-white. The art looks best against white, in my opinion.

What final message would you like to leave for the public and the next generation?

Don't be frightened of science. It is absolutely beautiful and stunning. It is part of your life. Just grab at it in any way you can.