

Q&A

Inbal Goshen

In an interview with *Neuron*, Inbal Goshen discusses a challenging year, managing a research program through her own serious health scare, and a global pandemic. She offers advice for young scientists and expresses admiration for a role model she never met in person.

Biography

Inbal Goshen is an Associate Professor at the Lily and Edmond Safra Center for Brain Research (ELSC) at the Hebrew University. She completed her Ph.D. in Psychology and Neurobiology under the supervision of Raz Yirmiya at the Hebrew University in the field of Psychoneuroimmunology and then went on to complete a postdoc at Stanford University with Karl Deisseroth. Goshen has two main interests, which despite their seemingly unrelated nature have many interfaces. First, she studies the transition from recent memory (hours to days old) to remote memory (weeks to decades old). Remote memories define who we are and how we experience the world, but despite that, the vast majority of research has been dedicated to recent memory. Her second interest is astrocytes. In recent years, groundbreaking research has revealed many surprising roles for astrocytes in modulating neuronal activity and plasticity. Goshen's lab looks at astrocytes from a novel angle, as local neuromodulators affecting neuronal activity, memory ensemble allocation, and possibly even the independent representation of multi-sensory stimuli. She is a member of the FENS-Kavli Network of Excellence (FKNE), and her research is supported by multiple foundations, among them the ISF and ERC.

Did you encounter particular difficulties over the past months?

Yes, I know everyone had a strange year, but how many of you had a brain bleed (yes, the joke is not lost on me...)? It sent me to three months in the hospital, a long path of rehabilitation, and some weird experiences along the way. My lab was totally shocked, but recovered really fast, as one of my students put it: "I didn't do anything for a week, and then I thought, Inbal wouldn't be proud of me,



Figure 1. Inbal Goshen
Lily and Edmond Safra Center for Brain Research (ELSC) at the Hebrew University, Jerusalem, Israel

so I went back to work." In the hospital, I wrote an invited review paper with one of my students, an interesting experience for both of us, with me almost unable to talk (one of my symptoms was aphasia) but writing just fine, and her being a great speaker but still requiring my help in writing. I also received tenure and promotion while in the hospital. On the bright side, at least the COVID-19 crisis and my sickness came at the same time, which saved me a lot of FOMO, as I could say, "If I don't travel, no one travels..."

Have you had to consider re-defining your research program as a consequence of the pandemic?

No. At my institution, we were lucky to be able to keep working in the lab, so we didn't need to change anything, and never even thought about it, to be frank. Many people were shocked that I didn't change my research program to investigate brain hemorrhages after having one. What can I say, I'm still interested in what happens in the normal brain, even if mine is still on its path back to being one.

What, in your mind, has been the main lesson from the pandemic?

Science alone, and nothing but science, will bring in some places it already had the end of this pandemic (I sincerely hope it didn't also start it). But I think everyone who believed in science pre-COVID was not surprised, and the weird people who don't believe in science tell themselves some alternative story of how it ended. So what did we learn? Nothing. Or maybe something about the flexibility of human behavior (wearing masks? no problem, haven't we always done that?), but the inflexibility of human thought.

How did the pandemic affect lab life? How did you work around challenges? Will you keep anything?

Last year started with the COVID-19 crisis: travel abroad was canceled, the lab was suddenly closed, and my hard-working students were suddenly workless. This stage only lasted about three weeks, after which we were allowed to go back to the lab and have stayed there ever since, including the later shutdowns. When a paper was accepted, I insisted we have a party, lockdown notwithstanding. We found a way of celebrating via Zoom: each of us had to pick a song that related to another group member, and we had a piano player and singer that performed the songs, while we had to guess who this group member is, each one in their own home with their family, but it was still charming! I also organized a volunteering project in which grad students tutored high school pupils. We had over 200 pupils from 11 high schools in East and West Jerusalem and 175 student volunteers (from medicine and psychology to bible studies and archeology) who helped them with their matriculation exams. It was amazing to see how fast the students

volunteered and started helping. My students naturally took part in the program. Will we adopt the changes? No thanks! But I know I can trust them if we ever need them again.

What is the future of scientific conferences? Are virtual meetings here to stay?

I was very selective about travel before COVID-19 (I do have four kids, after all, and there is a limit to my husband's benevolence), but I can't wait for conferences to resume, to talk openly with colleagues, give and get support from friends, visit universities, meet new people, and start surprising collaborations. I know some people liked virtual conferences, and I am not blind to their benefits for the planet. However, I can't really ignore other tasks during a virtual talk. I'll never stay in a virtual talk just because I want to hear the next one and suddenly be blown out of my mind like in a real conference. And there's nothing like looking at the audience when one of your students is giving a talk! Well, what did I say earlier about the inflexibility of human thought?

What is the main incentive in academia?

The best (I would even say the only) incentive for a scientist is the ability to discover something new. This is the essence of our work, and it is not trivial. It is comprised of noticing something interesting, convincing ourselves that it is true (the hardest part for me), verifying that no one reported it yet, and finding a way to explain it to others—both what we found and why it is amazing. That is, in my opinion, the only thing that keeps people in academia. We could all work in some other position, which would be more economically gratifying, but without these discoveries...

What measures of productivity would best serve scientists moving forward?

The existing measures of productivity, mainly publications, seem fair to me, with a balance between impact and number (the rare researchers who have them both—good for you!). I think that bioRxiv papers have to be taken into account, especially for young scientists, because

it takes longer and longer to publish. Our job in making bioRxiv a mechanism that institutions take seriously is to put only high value, publishable papers there, both conceptually and aesthetically, and not use it as a low quality anti-scooping device—before you even verify that there is anything to scoop.

What advice do you find yourself giving to students?

First and foremost, I am a mentor to my own students. But the advice I give them is custom-tailored to the motivation source, pace, and specific interests of each student. I would like to share my frustration regarding the advice I give, as a teacher in our Ph.D. program, to all graduate students, which is that I really don't think the topic on which you do your Ph.D. matters that much. The freedom you have in running your experiments, learning more than one technique, writing and publishing your work, and having a mentor that fits you are much more important. The problem is that it's only after you're done with your Ph.D. that you can see that, and by then it is already too late for the students that have made the wrong choice.

Is there any special advice you give to women students?

As one of only a few young women in ELSC (hopefully, I'm still considered young), I feel obliged to support and set an example for its female PhD students. But my example is just one way—heavily based on my personality—to succeed as a woman in academia. In order to hear other perspectives, I arrange meetings with established women neuroscientists giving seminars at our center. I ask them to stay an hour after their talk (I think that is important to see them first as scientists!) and then tell us how they handled the challenges they faced as women. We heard some heart-wrenching stories, but all of them ended well, otherwise they wouldn't be so successful. I trust that each student will find her own way, partially based on the accumulation of stories she hears.

Do you have a role model in science? If so, who and why?

Given that I work on astrocytes, why did it take me more than a second to think of

Ben Barres—I really don't know. Maybe because we have never met. I did my postdoc at Stanford University and never met him. I knew his name, of course, and read his papers, and I knew I wanted to work on astrocytes, but who was I to waste his time? Later, as an assistant professor, I saw him chairing sessions in conferences, and still, I was too embarrassed to approach him. The excuse this time was that I came from a different field and didn't have any astrocyte papers out yet. I read his [HOW TO PICK A GRADUATE ADVISOR](#), thought it was spot on, and sent it to all the Ph.D. students in our department. When I heard he was dying, I wanted to write to him to tell how I admire his work. But how do you write an enthusiastic fan letter to someone who is about to die?

Since then I've met some of his students, who told me what an idiot I had been (thanks!), and I also learned that he sent a magnificent letter of recommendation for me when I was looking for a position (without ever seeing me!). So yes, Ben Barres is definitely my role model. An original and fruitful scientist and an amazing mentor who made a real difference for women in science.

How do you find inspiration generally?

I find inspiration by talking to non-scientists—it's a challenge to explain what I'm doing, but the innocence in their questions is priceless, when I can translate it back to a scientific question. Another source of inspiration are neuroscientists who are not exactly in my field. They look at what I'm doing from a slightly different angle, and that allows me to learn something new.

I found my own path in science by mixing the things I learned along the way. This is, for example, why I can ask questions about memory with astrocytes, and vice versa, which takes me out of the competitive sphere in both fields. This way I have never (until now, and hopefully never in the future) worked on something that someone else was working on. And I never do really hard studies! (I don't even like reading them...) If you have to do something really complicated, you're not asking the right question, or asking it too late, after everyone has done all the elegant simple experiments.

How do you manage work-life balance yourself? And has that changed in 2020–2021?

Work-life balance is tricky (70 h door-to-door travel from Jerusalem to SfN in Chicago probably doesn't count as balance, and neither do four kids), but it is manageable. However, when travel

abroad started to cancel last year, followed by school, we found time to go walking daily in the forest outside and see spring changing the view a little each day. It was weeks of almost only life, a real treat! But... when Zoom school began, everybody started to miss work. My kids are relatively old,

but I've seen people with small children really struggle. Now work-life balance is still biased (no travel) but less so (back to school, yay!). Let's enjoy it while it lasts. The nice thing is, in a few years, we'll have the pictures from the forest walks, and not from Zoom school.

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