



American Healthcare Professionals and Friends for Medicine in Israel

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Galit Livnat-Levanon is part of a team fighting cystic fibrosis one cell at a time.

The 49 ½- year-old pediatric pulmonologist is a 2018-2019 APF Research Fellow at Cincinnati Children's Hospital Medical Center. (CCHMC)

"This is amazing! I think about how I should have been here at age 29 or 30. Every doctor working in a hospital should have a year of their life doing basic laboratory research like this while they are learning their profession. It expands how you think about your everyday clinical life and it upgrades your skills. You understand more deeply and think more widely."

Livnat-Levanon is Director of Pediatric Pulmonology and of the Cystic Fibrosis (CF) Center at Carmel Medical Center in Haifa. She is also an award-winning clinician, researcher and clinical lecturer at Technion's Rappaport Faculty of Medicine.

"Kids died of CF not so long in the past. Now we have new genetically targeted medications that have changed the prognostics. This seemed like science fiction 10 or 15 years ago.

"CF will be a chronic illness, but kids won't die in two to three years. With children born now we are talking about a longevity of about 50 years. But the prediction is that it will soon lead to 60 or 70 if the disease is treated as early as possible."

Twenty percent of her Israel work time is devoted to research. And while she's published about 35 articles in peer-reviewed journals, won many grants and presented work abroad, most of this is clinical research, an entirely different arena, she says.

"In Israel most of the time I'm talking with kids and families, collecting information to explore what's going on with complex lung diseases – clinical

research. Here, for the first time in my life, I'm opening my mind to a new language, the laboratory research language.

"And one of the best things is no juggling, no running all the time. In Israel I have to juggle clinic, teaching, family, the hospital and my research. We don't have protected time for research. You just have to squeeze it in."

How does it all work? It works because she vigorously protects her family time, labeling family truly her top priority, despite often-intruding phone calls and the like. Livnat-Levanon schedules work hours so that she always has "down time" with the wife and kids.

All this from someone who confesses to "not having been a very good pupil" as a child and teen and who, after the army, had to spend a year at Technion preparing to get into medical school.

Growing up there was only one glimmer of medicine in Livnat-Levanon's future. "In the sixth or seventh grade I realized something was interesting to me – embryology. I said to myself, 'Wow, it's amazing to learn how a human is created and how things are growing.'

"This is the first time I thought about becoming a doctor. But I still didn't learn very much in school."

The Haifa native joined the IDF after high school, becoming a sergeant leading troops in the women's "boot camp."

"In the army I discovered that if you love something and find it interesting and do it seriously you *can* be very good at something. While I had not been a very good pupil in school, I developed a passion for my work in the army and did it very well. I realized I could do that with other things.

“And I decided to do that with medicine.”

During her internship year at Rambam Healthcare Campus in Haifa she found herself pondering a career choice among: gynecology, pediatrics and pediatric psychiatry.

But when she arrived on the pediatrics ward for her rotation, she felt “she’d arrived home,” and knew then she was going to be a pediatrician.

Livnat-Levanon tried pediatric psychiatry but found herself unsuited to it. “It was too difficult for me. In everyday pediatrics people often come in very sick and within a day or two can become very much better. Psychiatry, however, is full of chronic and complex family stories.

“It can be too sad. The field is a less optimistic working environment than I prefer.”

Into her fourth year of residency Livnat-Levanon decided on pediatric pulmonology. “When I did my rotation there I found it very interesting.” Also during residency, she did a three-month pediatric pulmonology stint in Amsterdam.

After residency she completed a fellowship in pediatric pulmonology at Rambam.

Not that she was a real stranger to the field. As a child she’d been asthmatic and often sick. “Now I help the kids of Northern Israel breathe better.” (Livnat-Levanon’s secondary research interest is asthma.)

Speaking of kids – The Livnat-Levanons, a family of four, arrived in the United States in July, 2018. They are: Galit; her wife Nurit, a 41-year-old laboratory manager who took a year off to make the trip; their daughter Mika, 13 and son Tom, 11. Nurit manages the U.S. homefront.

WHY DID YOU CHOOSE CINCINNATI CHILDREN’S?

“Technion and Carmel came to me and said, ‘We have an opportunity for a researcher at Cincinnati Children’s.’ And so I learned about the place.

“Truthfully, I did not know there was such a great children’s hospital here. Everyone has heard of Philadelphia and Boston, but Cincinnati is right up there, ranked second this year, in fact. It’s one of the top centers in the U.S. and the world. People come from all over for treatment here. Everything is the gold standard – the facilities, the people, the teaching. My mentor here, Dr. John Clancy, is a pioneer in the CF field, a world leader and a wonderful teacher.

“The facilities and the money they have for research are far and away above what we have in Israel. In Israel we are doing very good medicine, but here you see and feel the difference money can buy.

“And in Haifa we don’t have enough translational research (“bench to bedside” and vice versa) like the immediate research contact that we have here.

“Besides the available money for facilities, the main thing that is better here is the contact between the researcher and the clinician.”

WHAT ACTUALLY ARE YOU DOING EVERY DAY IN THE LAB?

“I feel only now, after eight months here, that I’m learning to understand the science language. And you have to learn how to do all the technical things including: how to manage the cells, how to grow them, how to handle the basic tools (like pipettes) and machines. This is the first time I’ve been doing all this.

“I’m trying just to understand the whole story as well as the small things I’m involved in, things that Clancy and his staff have been doing for 30 years.

“Here are some of the things we’re doing:

- We’re trying to find the optimal way to grow the CF cells that line the airways of the lungs; what is the optimal medium in which to grow them?
- We’re trying to find out whether the medium influences the structure and function of the cells.

- The most common CF genetic mutation is the Delta F508; 70 percent of CF patients have this mutation. The cell model I am working with (CFBE's) have this unique mutation. We always create models before we try anything on humans.
- We're trying to find out whether the new drugs are changing the function and the structure of the chloride channel (CFTR), which is defective in CF.

"There are a few labs in the U.S. and in Europe that are working with cell cultures of CF patients, trying new medications on cells before trying them on patients, and we are one of them.

"I have many regular meetings for the lab and CF and research programs. I have access to CF and pediatric pulmonology care conferences, journal clubs and CF-relevant seminars that meet several times a month. Many experts who present here are world-renowned. And I have the opportunity to interact with CCHMC experts in many fields. I try to find unique and multidisciplinary clinics, such as the premature birth, neuromuscular and rare lung disease clinics, to join whenever I have a few hours."

DO YOU HAVE WEEKENDS OFF? WHAT HAVE YOU DONE WITH YOUR FREE TIME?

"We enjoy the two-day weekends so much. I have uninterrupted time with my family. There is a lot of time together to learn about each other.

"We get to experience the marvel of living in a place that is very different from home. We get to see how small and homogeneous Israel really is.

"We love everything about the weather -- the four seasons -- we have only two in Israel. We were like children in the snow. And you really see the colors of the changing seasons.

"Of course we try to get around on weekends and school breaks. We've been to: New Orleans, Florida, Great Smoky Mountains National Park, Montreal, Quebec and Toronto. And by the end of our time here, we hope to have been to the West Coast.

"While it's difficult at first to establish a brand-new life, you soon realize how fast one year goes by. And you want to take it all in, have as many adventures as possible, see and feel everything you can. We all know we'll miss this year.

"We've really enjoyed the U.S. in general. People are so polite and friendly and the Cincinnati Jewish community has been very supportive.

"I can't say enough about the local Jewish community. It's so connected to Israel. Our second day here there was a celebration for the new Israeli fellows and for the fellows who had just finished.

"They are helping us send our kids to Jewish school. And they are helping us send them to summer camp. We celebrate the holidays together. They've really made us feel at home here, like family."

HOW HAS THE APF GRANT BEEN HELPFUL TO YOU?

"I see this year as an investment in the future. But it definitely comes at a financial loss.

"Back home we have my salary from the hospital and from my private practice. We also have my wife's salary. Here we have one income -- mine. And it's not that much. I have very small amounts from CCHMC, Carmel and Technion. So the APF grant has been very helpful for everything from buying food and paying for private school, to traveling when we have time.

"The financial loss, however, is offset by the gains professionally, familially and more."

HOW DO YOU EXPECT YOUR CINCINNATI YEAR TO AFFECT YOUR WORK ON YOUR RETURN TO ISRAEL?

"I know I will be a better doctor after this year. I will have a better understanding of the disease with which I work. My training here will definitely improve healthcare in Israel.

"I hope to maintain a collaboration between my hospital and CCHMC, to better improve our research capabilities and our clinical knowledge. In Israel only 50 percent of patients have the Delta

F508 mutation. We have many more rare mutations back home. It's because of the heterogeneity of the population; people come from all over to Israel. I hope to send samples of these rare cells back to CCHMC for more progress in understanding and treating patients. This collaboration will definitely improve healthcare in Israel.

"I also want to build more partnerships between academic researchers and clinicians across Israel. We have great science institutes right here, like Weizmann and Technion, but we need more links to them with physicians. Our great minds should stick together. The questions come from the doctors and they inspire the researchers and other doctors. This is the best model, the greatest way to move medicine forward. We need to inspire both sides.

"I would like to see centers like CCHMC, a model of hospital and research center together, in Israel.

"And right where I work, I want to build a partnership between academic researchers from Technion and Carmel Medical Center. In addition, I want to get dedicated research time for clinicians.

"I want to go to the manager of my hospital to tell him how important it is to healthcare in Israel to send young doctors to places such as CCHMC. It's important both to choose the right people and the right places. Not every place is like Cincinnati Children's.

"And I want exchanges the other way – people coming from places like CCHMC to Israel."

American Physicians Fellowship for Medicine in Israel

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