Globes

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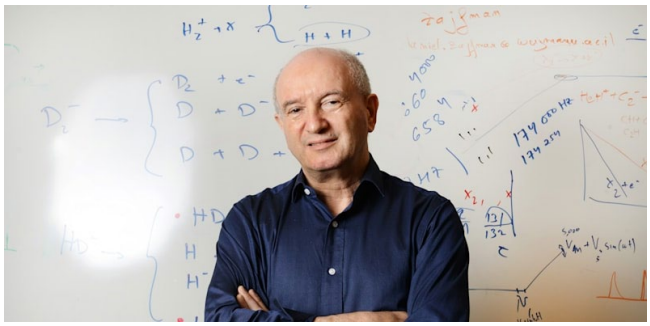
"Today, people say, first, I'll be a scientist and then – a billionaire; then high-tech takes all the good researchers"

Prof. Daniel Zajfman, former president of the Weizmann Institute and Chairman of the Israel Science Foundation's Academic Board, wants to connect Israeli researchers to industry, but also to preserve their freedom to be uninhibited in the lab • In an interview with *Globes*, he talks about the Foundation's programs to encourage personalized medicine and to create physician-scientist positions, and explains which university Israel really lacks



Daniel Zajfman, 62 years old

Professional: Holds a PhD in physics from the Technion, conducted postdoctoral research at the University of Chicago. In 2004–2006, he headed the Max Planck Institute for Nuclear Physics in Heidelberg, Germany, then served as president of the Weizmann Institute, and today is chairman of the academic board of the Israel Science Foundation. He also serves as chairman of the Davidson Institute of Science Education, and of the Schwartz/Reisman Science Education Centers. Something else: Loves biography books

"One hundred years ago, physics changed the world. We began to understand matter, protons, electrons. To some extent, a similar thing happened in biology in the last decade," says Prof. Daniel Zajfman, a former president of the Weizmann Institute who is the current Chairman of the Israel Science Foundation, in addition to his research position at the Institute. "Biology is undergoing a revolution. We understand DNA and know how to produce it, we understand protein structure, but at the end, there's a patient, and if we can't improve the patient's condition, we didn't do anything yet."

Zajfman says this to explain why this year, for the third time, the Foundation has chosen to award a series of unique, especially large grants to the field of personalized medicine. "Just as we are different on the outside, we are also different inside. Medicine is based on the average, but the average person doesn't exist. When we say that two people are taking the same medicine for the same disease, it's impossible, because it is not the same disease.

"We first thought that differences lie entirely in the DNA, but that was a mistake, and when we realized we needed to know a lot more, the field got stuck [for a while even, rather than being called personalized medicine, it was referred to as just 'precision medicine' – GW]. Then Big Data came along, and now there is hope again for truly personalized medicine.

"The Israel Science Foundation provides funding on a competitive basis for research proposals from all universities, in all fields of science, including the social sciences and the humanities. From time to time, and in coordination with the Planning and Budgeting Committee, we focus some of our grants in a particular field because we think that the state can benefit from strengthening it. The field of personalized medicine was one of these. The grants are relatively large, because they are supplemented by funding from Yad Hanadiv and the Klarman Foundation from Boston."

"Doctors in Israel conduct less research"

Zajfman reveals that the program supporting personalized medicine will end in a year's time, and the next program initiated by the Israel Science Foundation, the Klarman Foundation, and Yad Hanadiv will focus on cross-sectional studies in the life sciences, with the goal of nurturing researcher-physicians and giving them the legitimacy to devote time to research. The program is called Biomedical Evidence-Based Research.

"In Israel, doctors conduct less research than in countries such as the United States, Canada, and Britain. It's not out of reluctance or ability – Israeli physicians are smart and brimming with ideas, but they invariantly lack the time and there are not enough of them for the system's needs. When doctors come to their hospital shift, they are immediately sucked into medical and administration duties. We do not have in place a robust framework of a researcher-doctor

position, which sets aside time for research; or rather, we have very few physicians who have created such a position for themselves, and that is worthwhile, we need more of them."

How are hospitals reacting to the idea?

"They understand that researcher-doctors can provide better care to their patients, and are also less likely to leave the system. But in reality, they face the same pressures as the physicians themselves do, to provide the hours of medical care. We are encouraging them to add positions to the system, pre-defined as part-time positions, and we participate in funding them, and that helps."

Will the grants be awarded to researchers and doctors on the condition that they work together?

"We do not require this, because it doesn't work. Sometimes factors adjust themselves to a grant that requires joint work by creating false representations. Our goal is to create an infrastructure on the basis of which they would collaborate because it is interesting for them to do so, not because they have to."

Zajfman adds that we must be careful not to push science too far in the applied direction. "Everyone thinks that Pfizer developed the vaccine for Covid-19, or at least that it was BioNTech. In fact, they weren't the ones who developed it, but basic researchers. Basic research finds solutions to problems we do not yet know exist. This must be preserved of course, and it is true for all scientific fields."

Zajfman himself is engaged in basic research aimed at understanding how molecular systems that appear simple, at the level of 2-3 hydrogen atoms, break down. "First of all, it is interesting, but it also affects our understanding of interstellar space," he says.

"Science, philosophy, and art were once on the same plane. Humans were engaged in trying to understand the world. Today, science is supposed to produce 'high-tech.' People say, first, I'll be a scientist and then I'll be a billionaire. There is more and more advanced applied research and development in high-tech companies, and then high-tech takes all the good researchers. But good researchers are curious and like the freedom to explore from a place of not knowing where it is all going.

"We have to find the people whose curiosity interests them more than the millions, and let them explore as they wish. There will always be someone who says, 'Now that he/she received funds, they are playing, doing just what they want,' but the inventors of the processes that led to the Covid vaccine also 'played' a lot. And the same goes for many Nobel laureates. MRI was not invented for medical purposes, but was founded on research into atom structure. Waze is accurate thanks to Einstein's theory of general relativity."

The solution, says Zajfman, lies in grants that provide scientists with the freedom to operate.

Still, you usually award grants to research in a field's mainstream.

"We also have biases. It is very hard to identify non-mainstream breakthroughs, but we try to maintain a healthy skepticism even towards the premises of the fields in which we work."

"We want established researchers to go wild"

A new Foundation grant is designated to advance established researchers, so that they will also be able to innovate. "When a researcher has proven himself as innovative and original but also grounded in reality, the best way to encourage him to continue this way and not to become fixated is to give him an unlimited research grant, which tells him – I trust you.

"We came out with the Breakthrough Research Program (MAPATS), in which we focus mainly on the researcher rather than the research proposal. It is not suitable for young researchers, unlike many programs that are adapted specifically to them. The grant enables them to purchase new equipment, in order to spark new ideas in their minds, and also to attract students from loosely related fields, because the interdisciplinary space is where the big breakthroughs emerge."

Zajfman recognizes the need for such a tool to encourage established researchers to innovate especially in Israel. "Academia in Israel is not characterized by mobility. In the U.S., scientists move from institution to institution two or three times during their careers. In Israel, this hardly ever happens, especially to the good researchers.

Mobility in the U.S. is an opportunity for established researchers to build a new lab in a new area, just like young researchers. The MAPATS program tells those researchers with well-established labs – go wild."

In some fields, such as mathematics, there is a claim that the young researchers are the ones who are responsible for the big breakthroughs, later it is no longer possible.

"It is true that originality is usually a young people's trait. It is very difficult to be at the forefront of research throughout your career, and it is certainly nontrivial. But there are older people who maintain their originality and those are the ones we seek, as well as the people for whom it took time to believe in themselves and make the breakthrough. We need a personalized academia."

Another characteristic of Israeli academia is the paucity of minds coming from outside of it, Zajfman says. "Israel's researchers are excellent, but its academia is quite undiversified, and we would like for more researchers from elsewhere to come here. Jewish researchers come here for Zionist reasons, but the U.S. attracts researchers who come to be at the forefront of science, and that is one of the Americans' great strengths.

"There are no foreign immigrants in Israel, perhaps only foreign workers, but their chances of entering academia are low. Thus, an overly homogeneous academia forms. What saves us is that we send our researchers for postdoctoral fellowships abroad, so they also learn something new, but it is not the same as being from a different culture."

What can be done?

"First of all, the question is what we have to offer them, and the answer is not only in terms of grants and scholarships, but also infrastructure. We can provide a few million dollars so that they'll have equipment they can't work on anywhere else. It is needed for different reasons, but this factor is one of them.

"In addition, we all know that living here is a profession in itself. Suppose a Japanese scientist wants to live here, how would his children manage in the streets? I brought an Indian postdoctoral fellow to Israel and housed him at the Dan Hotel. That night, rockets were fired over the sea. Can we bring researchers here under these circumstances? And if a person receives an offer from Boston or San Francisco in parallel, can we compete? If we could match the terms, what about the image? At the very least, we must make living here not a profession in itself – by providing a pleasant welcome, unburdened by bureaucracy."

"I'm actually very enthusiastic about colleges"

One matter in which Zajfman's voice was prominent during his tenure as president of the Weizmann Institute was the resignation of six members of the Council for Higher Education (CHE) during Naftali Bennett's tenure as Minister of Education. The members resigned because Bennett had asked the CHE's vice chair, Hagit Messer Yaron, to resign from her post for reasons that were not clarified and probably had to do with professional disagreements between them. The major universities' representatives on the CHE resigned, claiming such conduct impairs the CHE's independence. When Bennett sought to replace them, Zajfman refused to cooperate with the move.

"At the time, Bennett decided to appoint people to the CHE who were not suitable for the position, and the majority of the council resigned," he says today. "The appointments were people I respect, but that's not the point; imagine appointing the head of a commissary to an elite combat unit? Each person has a role. The mismatch was not because people came from colleges, but rather they were irrelevant appointments, and such appointments make the system feel unappreciated.

"One should be very careful about political involvement in the higher education and research system. Politicians run the country, but academia should not be subordinate to any party, just as I don't attempt to interfere in any politician's work. Academia cannot be subordinated to the needs of the state."

In the past, you spoke out against turning Ariel College into a university.

"People think I do not support colleges. On the contrary, I am very enthusiastic about colleges. They have contributed substantially to higher education. Some people have said that the universities are a cartel, and that the colleges

opened possibilities for people who could not get into universities. I have no problem with colleges, or with another university.

“But it doesn’t make sense to turn a college into a university for reasons extraneous to academic needs. What we do need are universities with special roles. If everyone competes for the same slot, that’s a waste. I learned this from the president of the Fez University in Morocco. He said that his job is to teach people to read and write, and that may be an important a role as everything the Weizmann Institute does. The Weizmann Institute deals with one thing only – research, not teaching.

“So the question is, why establish another university and how should it be built so that it will achieve its goal. Do Reichman or Ariel take on special roles? What colleges do is very important. What universities do is very important, but there has been no strategic thinking about it. "

So what kind of university is missing?

“A university that will be much more connected to industry. There are such institutes in Germany or the U.S., national laboratories. We do not have this in Israel.”

“Not all researchers can cross the valley of death”

The Weizmann Institute has a strong connection with the industry, through its commercialization company, but you are very zealous about protecting your researchers from over-intervention by the industry.

“We need to protect certain scientists from over-direction designed to indulge the industry, because it is important for the type of research they conduct, which must be unencumbered. At the same time, it is both possible and desirable to bring other researchers and industry closer. Without the industry, in which I also include, say, medicine, none of our discoveries will permeate to the world. When there’s research that is already applied, it should be transferred to the industry.

“The best way to do this is not only through commercialization companies, though they are important, but through our students, who are our main knowledge-transfer engine, when they go to work in the industry. That’s how a huge amount of knowledge is passed on.”

You are not rewarded for knowledge transferred to the industry in this way.

“And that's fine. The university is budgeted by the state and that is exactly its role. This route can even be strengthened by inviting researchers from the industry to train with us, the return to their home institutions.”

The commercialization company does operate a bit like the industry itself.

“In Weizmann, our perception is to limit commercial entrepreneurial activities. What have we got to do with that? We have neither the funds nor the expertise. We prefer to transfer the knowledge through a contractual agreement to an established company. Only sometimes there’s a death valley between the lab phase of an idea, and the stage in which it is ready to be picked up by a large company. Our researchers want to advance the ideas a little further, to cross to the other side of this death valley. The question is who will do it. Not every researcher is suitable. Amnon Shashua is exceptional. We are still not sure how to solve this problem.”