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Meet Tel Aviv University's Dr. Ben Maoz: Principal Investigator of Organs-on-a-Chip

By Linda Chase
Editor

Dr. Ben M. Maoz is a faculty member and Principal Investigator in the Department of Biomedical Engineering and Sagol School of Neuroscience at Tel Aviv University.

Dr. Maoz explained to me his laboratory's current research that uses innovative Organs-on-a-Chip to study human physiology, focusing on the brain.

"Sixty to ninety percent of the drugs that pass successfully in animal trials fail in human clinical trials. We invest a lot of time and money in doing preclinical trials, therefore It is not a good enough tool to predict how it'll behave in the human body. At the end of the day, there are significant differ-



Dr. Ben M. Maoz. COURTESY

ences between the human body and rodents. Therefore, we're trying to create models in the lab that mimic human physiology. I'm not talking about computational models, I'm talking about physical models that require tissue engineering and working with living cells and living matter that mimic human physiology. Organs-

on-a-Chip is a tool that uses tissue engineering to mimic the organs' functionality. We put it inside a microfluidic chip. The idea is to imagine that you have a kidney and the kidney is a filter; we take human kidney cells and we create a filter out of it, we put this inside a plastic chip and call it a kidney-on-a-chip. The heart is a pump, we take the human heart cells, create something to contract with these cells and we call it a Heart-on-a-Chip. There are many different chips for different organs, you can create biophysiological systems or mini physiological systems that can connect the heart to the brain, to the lung, to the gut and see the organs' interaction. To summarize, the Organs-on-a-Chip is a tool that was created to mimic human physiology

by using tissue engineering and small microfluidic chips. This tool allows us to actually predict how drugs will behave in the human body. It will reduce the use of animals in drug research and biological research; have personalized medicine to create models that can better predict per specific patient and in general to expedite the drug development process which is long and tedious and expensive, therefore reducing costs."

According to Dr. Maoz, this technology is fairly new.

"During my post-doctoral fellowship at the Wyss Institute at Harvard University, the study on Organs-on-a-Chip was first published in 2012 under the supervision of Prof. Don Ingber. Today, there are a number of pharma companies offering

Organs-on-a-Chip."

Dr. Maoz explained what his research unveiled in the study of traumatic brain injuries.

"There are different areas of the brain that have a different susceptibility to injury. We have developed tools that allow the accessibility for other labs to study traumatic brain injury."

Dr. Maoz shared details of his TAU and post-doctoral education.

"I earned my bachelor's, master's and Ph.D in chemistry at Tel Aviv University. My Ph.D was accomplished under the supervision of Prof. Gil Markovich. I also met my wife at TAU's school of chemistry. She is also a professor at Tel Aviv University. I did my post-doctoral studies at Harvard University in bioengineering and

neuroscience. It is very important to go into postdoc studies abroad because you open yourself to different approaches. Harvard offered a lot of opportunities. The school has excellent labs and amazing know-how. I met many friends that became good colleagues. We are all working at different universities in Israel and have created a really nice network. Harvard is where I actually started to work with tissues and cells. I chose a career in neuroscience because I specifically wanted to do research on the brain. The brain is a huge mystery. I remember the first time I looked at neurons under a microscope and I said to myself, 'wow, this is a living matter, this is so interesting.' I was intrigued and that's why I chose this field of research."

Billboard campaign calls attention to the rise of antisemitism

The Center for Combating Antisemitism (CCA), a division of StandWithUs (SWU), along with multiple partner organizations, launched a billboard campaign calling attention to the rise of antisemitism across the U.S. and around the world. Together, we are urging others of conscience to join the Together Against Antisemitism campaign.

The first *Together Against Antisemitism* billboards are up through April 9. One is located on Atlantic Avenue in Delray Beach, one mile west of Military Trail. The other is located on Biscayne Boulevard in North Miami, near 114th Street. The eye-catching billboard states *Together Against Antisemitism* and directs people to learn more at www.standuptohatred.com

"The aim of the *Together Against Antisemitism* campaign is to bring together organizations and individuals who recognize the evils of antisemitism and are willing to publicly stand with the Jewish community, condemn anti-Jew-

ish bigotry and take steps to combat antisemitism in its many forms," explained Carly Gammill, Director of the CCA.

Sara Gold Rafel, Executive Director of StandWithUs Southeast, stated, "The initial campaign is unfortunately in South Florida because, in the last few months, antisemitic incidents on campuses and communities have risen to unacceptable levels. The billboards are one of many ways we are responding to this onslaught of hate and supporting the right of Jews to proudly express all aspects of their ethnic and religious identity. Members of the Jewish community deserve to be free of discrimination or harassment whether they are celebrating holidays, openly wearing Jewish symbols, expressing their connection to Israel, attending religious services, or simply going about their daily lives."

Florida is not the only state plagued with evidence of the rise of anti-Jewish bigotry. White supremacist

groups have been spreading hateful messages targeting the Jewish community throughout the country. They have peppered Jewish and other neighborhoods with leaflets promoting ancient anti-Jewish stereotypes, including in Beverly Hills and Pasadena in Los Angeles and in Palm Beach and Boca Raton. They've hung large banners with antisemitic messages from the overpasses of major highways in several states and cities from Southern California to Jacksonville, Florida. Jews have been viciously attacked in major cities from New York to Los Angeles and from Chicago to Austin, Texas. During January and February, 2023 alone, the StandWithUs Southeast campus team reported at least 20 antisemitic incidents occurring on 12 universities, including "Ye is Right" tables being set up directly on the campus, sweatshirts emblazoned with "Anti-Zionist Social Club and Nazi imagery such as swastikas."

On February 22, a group

of anti-Jewish bigots affiliated with the "Goyim Defense League" and their leader Jon Minadeo Jr. stood outside a Jewish synagogue in Orlando, Florida and shouted at congregants as they were leaving. Their antisemitic messages were vitriolic and abusive, clearly attempting to intimidate the Jewish community. Another Neo-Nazi group declared a "Day of Hate" on February 25, once again hoping to isolate and bully American Jews.

States Sara, "Rather than succeeding in instilling fear, however, these incidents have only strengthened the resolve of Jewish communities and our allies. Antisemitism is a societal disease that speaks not to any truth about Jewish identity but rather to the warped, conspiracy-based thinking of bigoted individuals who use age-old tropes and tactics, like scapegoating, to target the Jewish people. Carly adds, "Unfortunately, despite their blatantly false nature, when such messages are repeated often enough, they open

up the possibility that they could gain a foothold within the mainstream culture."

Roz Rothstein, CEO and Co-Founder of StandWithUs, said, "This is not a time for us to be bystanders. Hate is destructive, divisive and potentially dangerous. We are obligated to point a finger at bigotry and draw clear red lines within civil society about what we will simply never tolerate. We are grateful to our allies who stand with us against such outrageous antisemitic rhetoric and actions." Sara adds, "Students in SWU's campus and high school leadership programs are not tolerating these kinds of actions. We are so proud of how they are standing tall against hate and antisemitism with proactive and creative solutions."

Further information about the *Together Against Antisemitism* campaign, including an opportunity to add your name or organization to the list of those who are standing together in support of the Jewish community and access to resources about antisemi-

tism and tools to combat it, can be found online at www.standuptohatred.com

About StandWithUs

StandWithUs (SWU) is an international, nonprofit and non-partisan Israel education organization that works to inspire and educate people of all ages about Israel, as well as challenge misinformation and fight against antisemitism.

Through university fellowships, high school internships, middle school curricula, conferences, materials, social media, educational films and missions to Israel, StandWithUs supports people around the world who want to educate their schools and communities about Israel.

Founded in 2001 and headquartered in Los Angeles, the organization has chapters and programs throughout the U.S., Israel, the UK, Canada, South Africa, Brazil and the Netherlands.