

A CONVERSATION WITH
THE IN PURSUIT OF EXCELLENCE
DISTINGUISHED HONOREE

Aaron Ciechanover

Dr. Aaron Ciechanover (רבונו'צ נרהא) is as much a philosopher and humanitarian as he is a passionate, world renowned, Nobel Prize winning Israeli bio-chemist and physician. He was raised on deep-rooted Zionism and the importance of education and service to his country. His fascination with nature as a young boy fueled his interest in biology. His love of culture and music are evident in the artifacts that decorate his office. The Holocaust led him to question the existence of G-d. Science opened his mind to humanity's shared similarities. Gratitude characterizes his self awareness.

By Lynn Wexler

In 2004, Dr. Ciechanover was awarded the Nobel Prize in Chemistry, shared with Drs. Avram Hershko and Irwin Rose, for the discovery of ubiquitin-mediated protein degradation (from the Latin *ubique*, meaning everywhere, because the degradation of proteins occurs in so many different cells and organisms). Essentially they identified the means by which the cells of most living organisms cull unwanted proteins.

This ubiquitin-proteasome system plays a critical role in maintaining the metabolic equilibrium of cells. Aberrations to the system underlie the development of a multitude of diseases, including certain malignancies, muscular and neurodegenerative disorders, and immune and inflammatory responses. Dr. Ciechanover's ground-breaking work to identify irregularities in the UP system has opened up opportunities for drug development, diagnostics, and treatment.

Associates at the Israel Cancer Association, where as a young scientist and physician, Professor Ciechanover received research fellowships, describe him

as a distinguished personality held in high esteem.

According to Miri Ziv, Director General of the Israel Cancer Association, "He is not only an eminent researcher and physician, but also a fine human being with a huge and caring heart, as well as a venerable educator. His collaboration with the ICA has advanced the fight against all cancer diseases and reinforced the belief that it is in our capacity to achieve a better future, with better solutions for prevention, early detection and treatment, and to enable a cure and give hope to cancer patients and their families."

Dr. Ciechanover was born in Haifa, a few months before the establishment of the State of Israel, in what was then the British Protectorate of Palestine. His mother, Bluma (Lubashevsky), was a housewife and English teacher, and his father, Yitzhak Ciechanover, was a clerk in a law firm (he would later study law, and become a lawyer, along with his eldest son Yossi). Provident in retrospect, Bluma and Yitzhak immigrated from Poland with their families as adolescents in the mid 1920's.



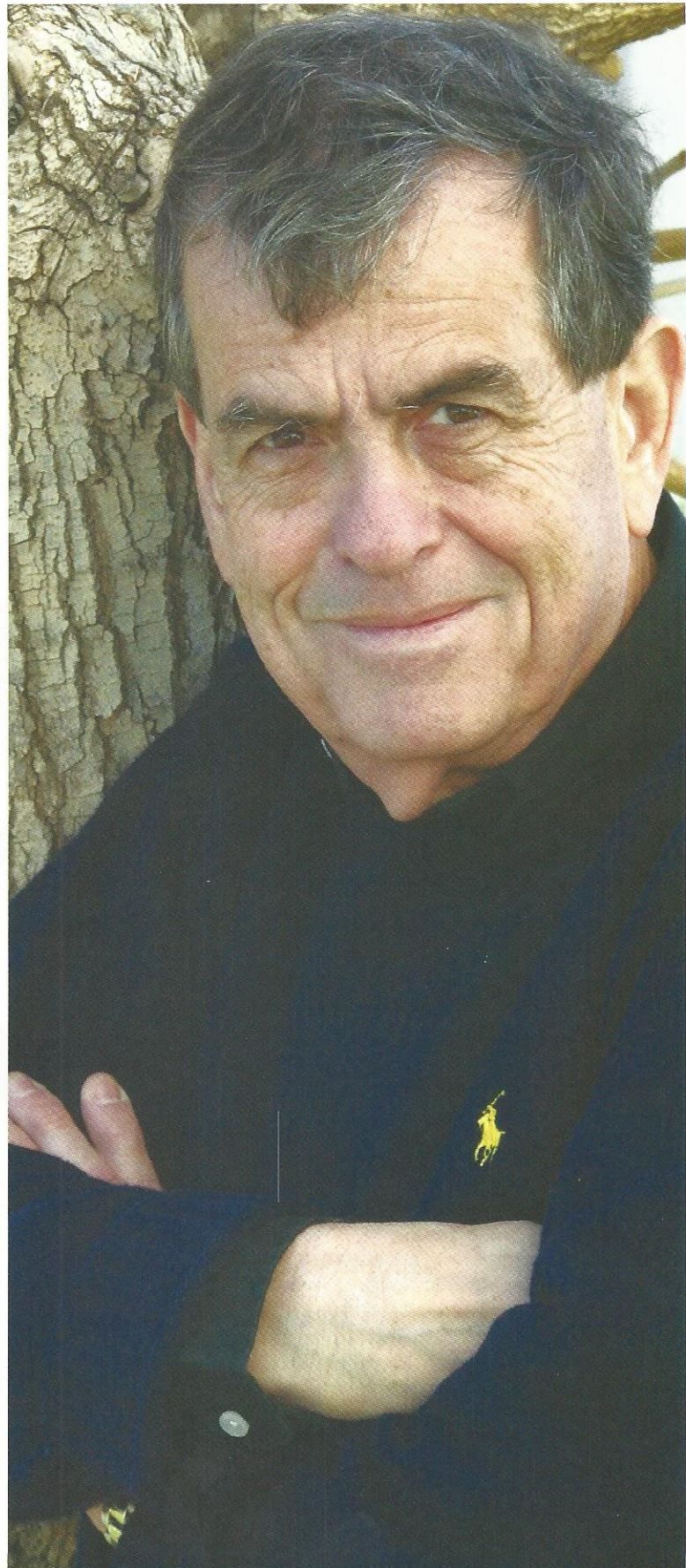
"Many members of my parents' families came to Israel before the Holocaust. Those who remained in Poland perished by the murderous German and Polish collaborators," said Ciechanover.

In 1971 Dr. Ciechanover earned a master's degree in science, followed by an M.D. in 1974 from the Hebrew University - Hadassah Medical School in Jerusalem. He completed his national service as a military physician between 1973 and '76. He joined the faculty at the Technion (the Israel Institute of Technology) in Haifa in 1974 where he held a variety of academic positions and, in 1981, received his doctorate in biochemistry. He conducted postdoctoral research from 1981 to '84 in the laboratory of Dr. Harvey Lodish at the Whitehead Institute at MIT.

Among his numerous appointments, Dr. Ciechanover is a member of the Israel Academy of Sciences and Humanities; the Pontifical Academy of Sciences; and is a foreign associate of the United States National Academy of Sciences.













His many honors, in addition to the Nobel Prize, include the Albert Lasker Award for Basic Medical Research, and the Israel Prize for biology.

In 2005 he was voted the 31st-greatest Israeli of all time in a public poll taken by the Israeli news website Ynet. Dr. Ciechanover states that, "he is honored to have played a central role in the history of the State of Israel and of the Technion."



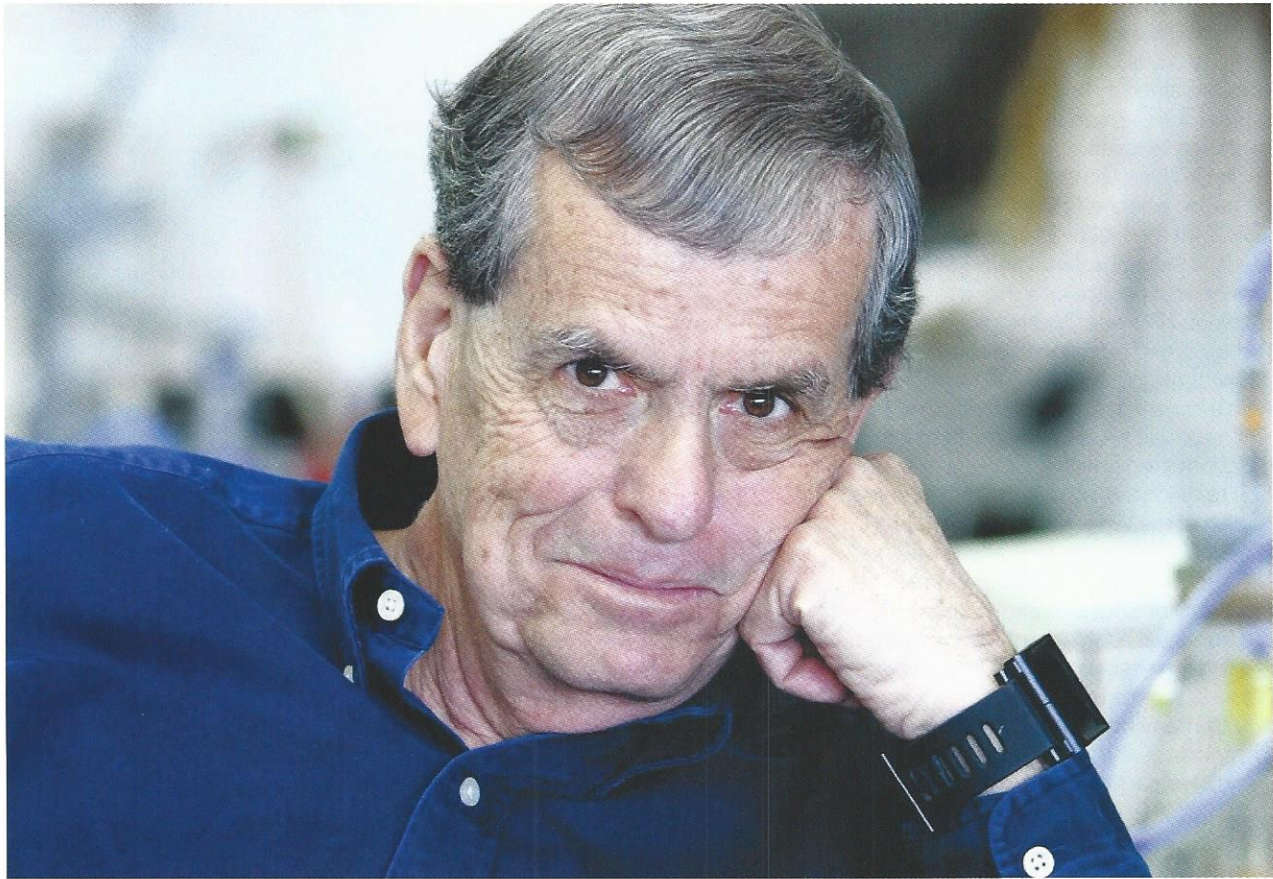
**Born in Israel,
Used Everywhere**

All of the following were developed in Israel:

 Cell phone technology	 Microsoft Windows NT® operating system	 Instant Messenger software
 Intel Pentium MMX® Chip	 Heart Attack Blood Test Diagnoses By Phone	 PC anti-virus software
 "Gut cam" ingestible pill video camera to diagnose cancer	 USB Flash Drive Disk On Key	 Radiation-free, breast cancer diagnostic test
 FireWall® internet security software	 Drip irrigation technology for farmers to conserve water	 Large-scale solar electricity plant in Calif. Mojave desert

Israel = Innovation

blueStar



WEXLER: Why did your grandparents leave the security of their homeland to venture into an unknown future, and a land that was part of the British Empire?

DR. CIECHANOVER: They were idealists...and pioneers. They followed the call of the Zionist movement at that time led by the seer of the Jewish State, Benjamin Ze'ev Herzl. They shared his dream to settle the land, to go home - after two thousand years in the Diaspora and since the destruction of the Temple in Jerusalem.

WEXLER: Do you have any recollections of your early years when Israel was given her statehood?

DR. CIECHANOVER: My brother Yossi is 14 years older than me. He was already on his national military compulsory service when I was 4 years old, the age from which I remember myself. But I assume that the first two years of my life were extremely difficult for my parents. The neighboring Arab countries, along with the powerful Arab parties from within, did not, as we know, accept the UN resolution, and a yearlong bloody war broke out. We lost more than 1% of the people from this newly born state as they sacrificed their lives on its defense. My brother told me the stories of danger even before our independence. My father risked his life daily going to work in a law firm in the Arab section of the city. The family was waiting daily on the balcony to see him returning home safely.

Q&A

Dr. Ciechanover was generous with his time, and candid with his thoughts and views, as he spoke with me for over two hours from Israel, at the end of his long day, in an interview that lasted until midnight his time.

WEXLER: Describe your childhood.

DR. CIECHANOVER: Growing up in Haifa I enjoyed the wonderful beaches and Mount Carmel that rolls into the Mediterranean. I was fascinated by everything in nature and I already had a strong inclination towards biology. I collected flowers from Mount Carmel and dried them, much to my brother's dismay, in his Babylonian Talmud. Then came the turtles and the lizards; extracting chlorophyll from leaves with alcohol; and the first microscope my brother bought me from his trip to England when I was 11 years old. I was discovering cells and did my first experiment in osmosis.

WEXLER: What influence did your parents have on your early life?

DR. CIECHANOVER: From my early days at home I remember a strong encouragement to study. My father worked very hard to make sure we had the best possible education. At the same time he was a member of the Hagannah (defense) that fought the British for an independent state. Judaism and Zionism were also a major focus. My parents raised us as the new breed of proud Israeli Jews in their own independent country. My mother kept a kosher kitchen; we attended services and celebrated at home all the Jewish feasts. I inherited from my father his great love of Jewish studies and cultural life; and a love of classical music from both of my parents.

WEXLER: Did they impart advice that helped to inform your journey?

DR. CIECHANOVER: Well...my father said that I cannot walk in the world for some 80 years without the responsibility to leave a positive dent behind me.

WEXLER: What do you recall as one of the most challenging moments in your life?

CIECHANOVER: Oh...there were many. But I think being left alone without parents at the age of sixteen. My mother died when I was 11 years old, and my father passed away five years later. With this kind of emotional upheaval, the distance to youth delinquency is shorter than the one to the high school class.

WEXLER: Clearly you chose the academic route. What inspired you?

DR. CIECHANOVER: The help of wonderful family members. My mother's sister, my late aunt Miriam, lovingly took me into her home in Haifa, enabling me to complete my high school studies in the same class and with my same friends - without interruption. On the weekends and holidays I lived with my brother and his wife, Atara, in Tel Aviv. They made sure I did not collapse, emotionally and also economically. The love and help from my family was a true miracle.

WEXLER: With the extraordinary success you have achieved, and contributions thereby that you made to humanity, you appear humble nonetheless, and attribute gratitude to others for your good fortunes.

DR. CIECHANOVER: There is no doubt...I did not arrive here alone. In addition to my aunt, and my brother and his wife, I had so many academic mentors along the way who nurtured my passions for the scientific fields. Then there is my wonderful wife Menucha, herself a physician - we met and married during my military service- and my son Tzachi, called after my late father. They each in their way engulfed me with love, care, and deep understanding of my needs... always there for me when I was flying high on the wings of my dreams, not always listening to or being with them, physically and emotionally. Without all these wonderful life partners, I could not have achieved anything. I doubt I shall ever be able to repay them all.

WEXLER: Did military service interfere with your professional pursuits?

DR. CIECHANOVER: Quite the contrary. I was glad to repay my debt to my country. I served as a physician in the research and development unit, creating a broad array of sophisticated devices for the soldier in the battlefield. Serving in the army has always been regarded as an integral part of Israeli life. Everyone shares in protecting the land and its inhabitants. And the service was extremely interesting technically, socially and historically. It is the best melting pot one can go through, generating true friendships during hard times that are deep, true and lasting.

WEXLER: How do you reconcile G-d and science?

DR. CIECHANOVER: Let me put it this way...G-d and Darwin cannot live in the same apartment. I believe in Darwin. I am a scientist. If I cannot see it or prove it then it does not exist for me. I am asked this question frequently by young people. In those instances I do not answer the question in the same manner. I am sensitive to what they are learning in religious school and from their families. I simply explain that it is complicated, but for certain G-d is in our heart, our language, our history. I am a proud Jew and a strong Jew...I feel it intensely and I love it.

WEXLER: You grew up in a fairly observant home that you enjoyed. How did this view conversely manifest?

DR. CIECHANOVER: As a young student in class, learning about the atrocities of the Holocaust...I could not accept that there is a G-d who would allow such a thing to happen.

WEXLER: What was your reaction when you heard that you were the recipient of the Nobel Prize in Chemistry?

DR. CIECHANOVER: To this day I cannot tell you. I have to ask my son and my wife that were with me in the room. I was caught in total surprise. And actually, if anything, I thought it would have been in Biology. Obviously it's wonderful. That's the climax that every scientist can ever dream of. I will not deny that I am proud for me, for this science, for the state of Israel, for my family, for everybody. But the word Nobel... it still doesn't stick to me.

WEXLER: What advice do you have for aspiring young students of science who would like to achieve the pinnacle - the Nobel Prize?

DR. CIECHANOVER: I think it depends on where you are practicing science. Israel is doing science in a different way than in the United States and even now in Europe. We are a very small country and involved also in political chaos, and budgets are limited. And the Americans are tough competitors. So, first of all, look for an original niche in choosing the subject...and some major problem that is important. For Israelis at least, if you want to be competitive, don't run into the mainstream, because you are doomed to lose. But the idea is to choose something original ... And drive it. And just believe in yourself and do it.

Lynn Wexler is an Adelson parent who has been a feature writer and contributor to magazines and newspapers for over twenty years. Her work currently can be viewed monthly in Las Vegas' DAVID magazine. She is a former TV Reporter and News Anchor.