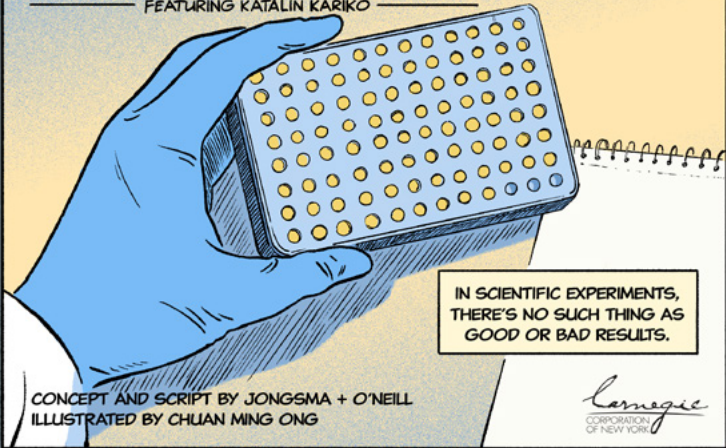


GREAT IMMIGRANTS

GREAT AMERICANS

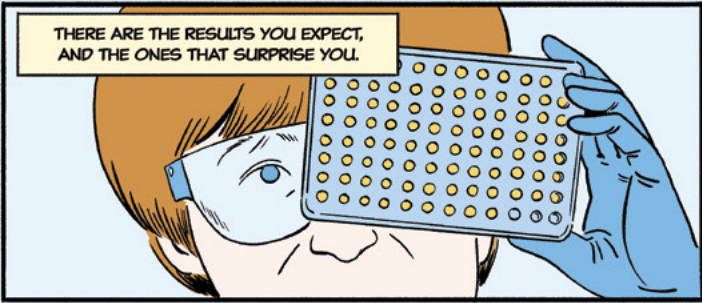
FEATURING KATALIN KARIKÓ



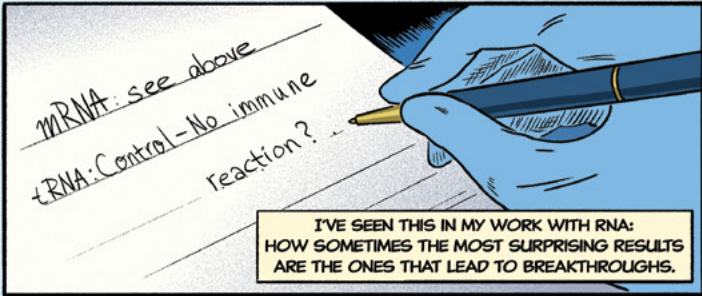
IN SCIENTIFIC EXPERIMENTS, THERE'S NO SUCH THING AS GOOD OR BAD RESULTS.

CONCEPT AND SCRIPT BY JONGSMA + O'NEILL
ILLUSTRATED BY CHUAN MING ONG

Lamagie
CORPORATION OF NEW YORK



THERE ARE THE RESULTS YOU EXPECT, AND THE ONES THAT SURPRISE YOU.



mRNA: see above
+RNA: Control - No immune reaction?

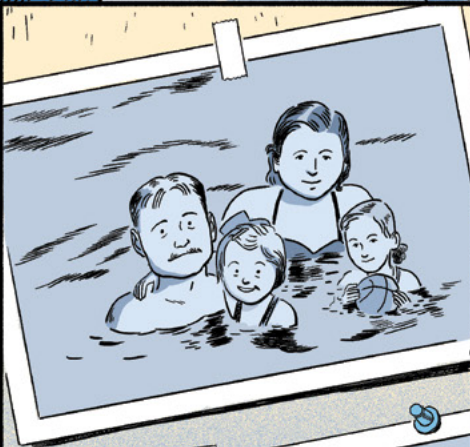
I'VE SEEN THIS IN MY WORK WITH RNA: HOW SOMETIMES THE MOST SURPRISING RESULTS ARE THE ONES THAT LEAD TO BREAKTHROUGHS.

PENNSYLVANIA, 2005

DREW, HAVE YOU NOTICED THAT tRNA DOESN'T CAUSE ANY OF THE INFLAMMATION WE'RE SEEING WITH THE SYNTHETIC mRNA?

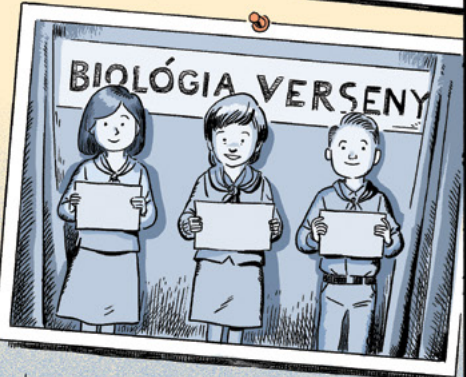
WHAT?

TAKE A LOOK.



GROWING UP IN HUNGARY, I WAS A CURIOUS GIRL, ALWAYS ASKING QUESTIONS ABOUT WHAT LIFE THREW AT ME.

MY FATHER WAS A BUTCHER, AND WHEN HE OPENED A PIG, I STARTED ASKING QUESTIONS ABOUT THE BODY. I PUT MY HANDS IN THE HEART, AND PUSHED MY FINGERS THROUGH WHERE THE BLOOD FLOWED.



THIS LED ME TO BIOLOGY, AND I WAS VERY SUCCESSFUL AT IT. IN ELEMENTARY SCHOOL, I COMPETED IN COMPETITIONS AND WAS THIRD BEST IN THE WHOLE COUNTRY.*

*IMMIGRANTS HAVE BEEN AWARDED 40% OF THE NOBEL PRIZES WON BY AMERICANS IN CHEMISTRY, MEDICINE, AND PHYSICS SINCE 2000.
SOURCE: IMMIGRANTS AND NOBEL PRIZES: 1901-2023, NATIONAL FOUNDATION FOR AMERICAN POLICY, OCTOBER 2023

I STARTED WORKING WITH RNA WHILE I WAS IN GRADUATE SCHOOL IN THE 1970S. I SAW POTENTIAL THERE, BUT CONVINCING OTHERS WASN'T ALWAYS EASY.

UNFORTUNATELY, MY LAB IN HUNGARY LOST ITS GOVERNMENT FUNDING, BUT I FOUND A NEW POSITION AS A RESEARCHER IN PENNSYLVANIA.

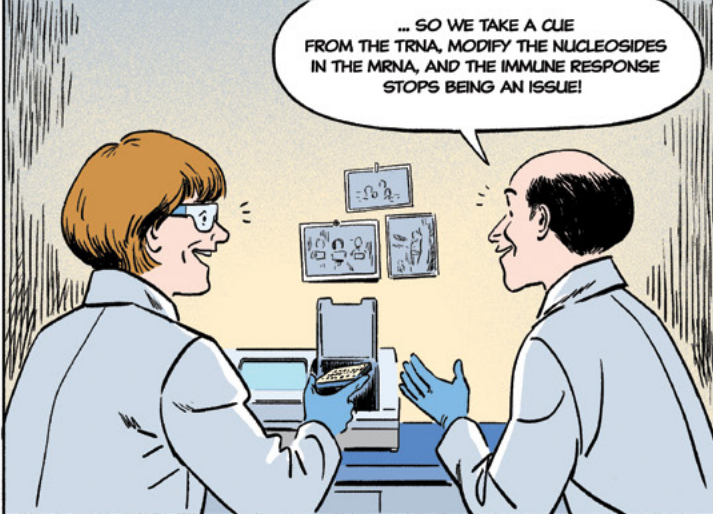
SO I STITCHED ALL OUR MONEY INTO MY DAUGHTER'S TEDDY BEAR, BOUGHT ONE-WAY TICKETS TO THE U.S., AND SAID GOODBYE TO OUR HOME.



IN THE U.S., MY FOCUS STAYED ON RNA, AND ITS POSSIBLE THERAPEUTIC APPLICATION. INSTEAD OF FOCUSING ON FUNDRAISING AND TENURE, I SPENT SATURDAYS AND SUNDAYS EXPERIMENTING AT MY BENCH.

IN DREW WEISSMAN, I FOUND A PARTNER AS DETERMINED AS I WAS - ALWAYS ASKING THE HARD QUESTIONS, SPEAKING A SHARED LANGUAGE.

... SO WE TAKE A CUE FROM THE TRNA, MODIFY THE NUCLEOSIDES IN THE MRNA, AND THE IMMUNE RESPONSE STOPS BEING AN ISSUE!

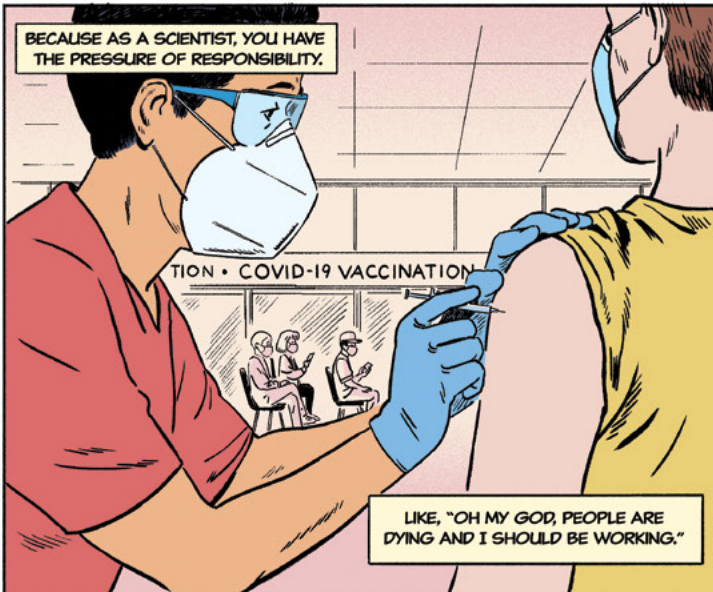


WHEN COVID ARRIVED, IT WAS CLEAR THAT THE TIME HAD COME TO PUT OUR RESEARCH INTO ACTION.



BECAUSE AS A SCIENTIST, YOU HAVE THE PRESSURE OF RESPONSIBILITY.

... TION • COVID-19 VACCINATION



LIKE, "OH MY GOD, PEOPLE ARE DYING AND I SHOULD BE WORKING."

AND SO WE EXPERIMENT AND THEN EXPERIMENT AGAIN - ALWAYS ACCEPTING THE RESULTS, ALWAYS OPEN TO SURPRISES.



KATALIN KARIKÓ'S RESEARCH LAID THE SCIENTIFIC FOUNDATION FOR THE MRNA VACCINES THAT WERE INSTRUMENTAL IN FIGHTING COVID-19. HER ACCOMPLISHMENTS HAVE BEEN RECOGNIZED WITH MANY AWARDS, INCLUDING THE 2023 NOBEL PRIZE (WITH DREW WEISSMAN). SHE WAS THE SENIOR VICE PRESIDENT OF BIONTECH, AND IS A VOCAL ADVOCATE FOR WOMEN IN SCIENCE. READ MORE GREAT IMMIGRANT STORIES AT [CARNEGIE.ORG/IMMIGRANTSTORIES](https://www.carnegie.org/immigrantstories)