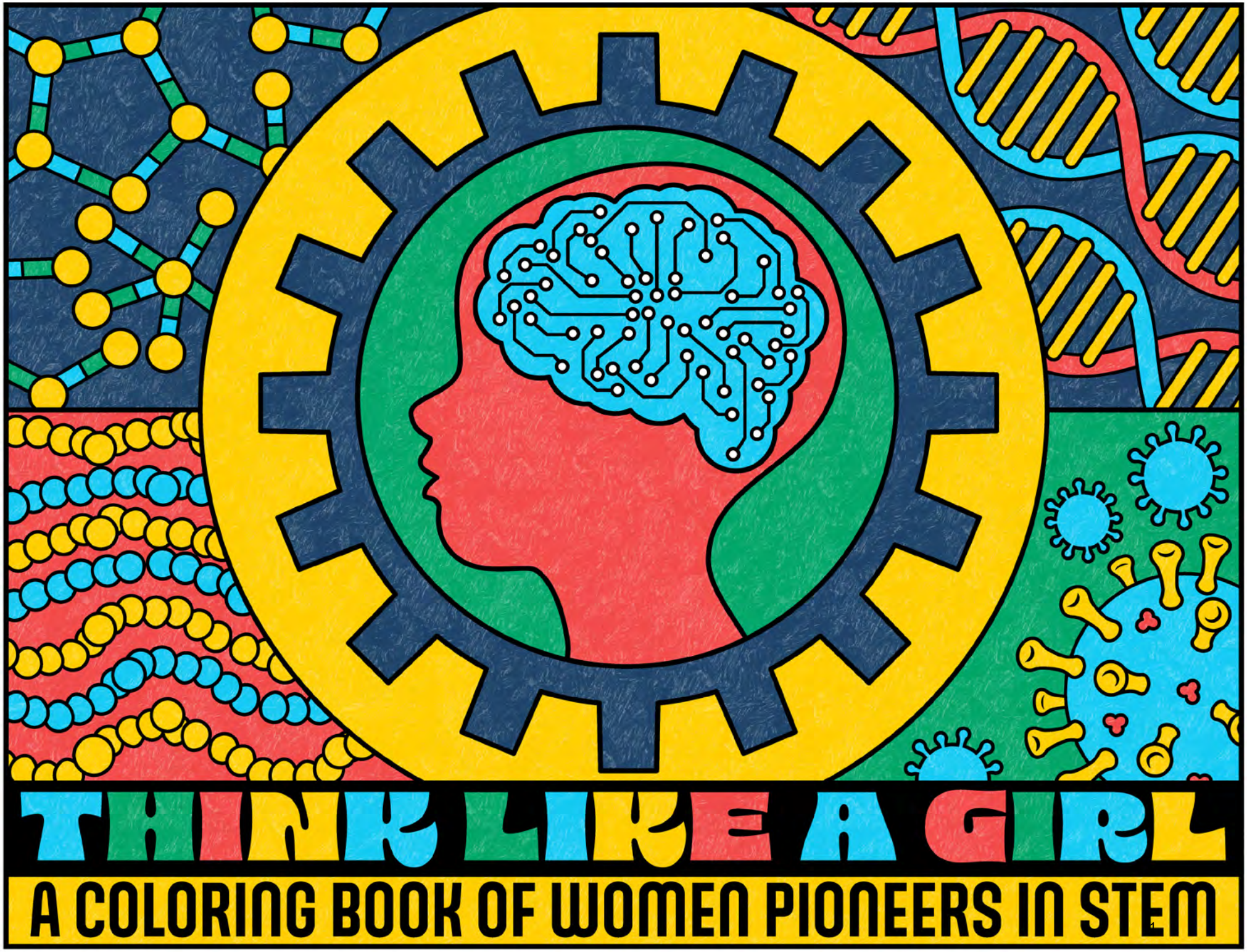

THINK LIKE A GIRL
A COLORING BOOK OF WOMEN PIONEERS IN STEM

"WE MUST HAVE PERSEVERANCE AND, ABOVE ALL, CONFIDENCE IN OURSELVES. WE MUST BELIEVE THAT WE ARE GIFTED FOR SOMETHING AND THAT THIS THING, AT WHATEVER COST, MUST BE ATTAINED." – MARIE CURIE

In 1903, Marie Curie, a French physicist and chemist, became the first of several women to receive a Nobel Prize, thereby opening the door to other female leaders in science today. Despite the challenges she faced in a male-dominated field, she used her unique power as a woman and ongoing belief in herself to secure her place at the table and transform the scientific field for years to come.

For so long, the visible world of **STEM (Science, Technology, Engineering, and Math)** was led by a small and entirely male set of the population, despite the invisible efforts of countless women driving scientific progress forward. Even in this environment, Curie recognized an important truth: STEM is for everyone, regardless of one's gender, nationality, background, or age. Scientific ingenuity thrives on creativity, inquisitive minds, and true diversity of thought, ideas, and experiences. As the pages of this book depict, women and girls from around the globe play important roles in this process.

The Vilcek Foundation highlights diversity in STEM through the Vilcek Prizes and Vilcek Prizes for Creative Promise in Biomedical Science, and the Vilcek-Gold Award for Humanism in Healthcare. These annual awards recognize the contributions of immigrants to scientific research and discovery, and to medicine and healthcare in the United States. All of the women featured in this book are not only important leaders in STEM, they are immigrants to the United States whose pivotal achievements have been recognized by the Vilcek Foundation awards.

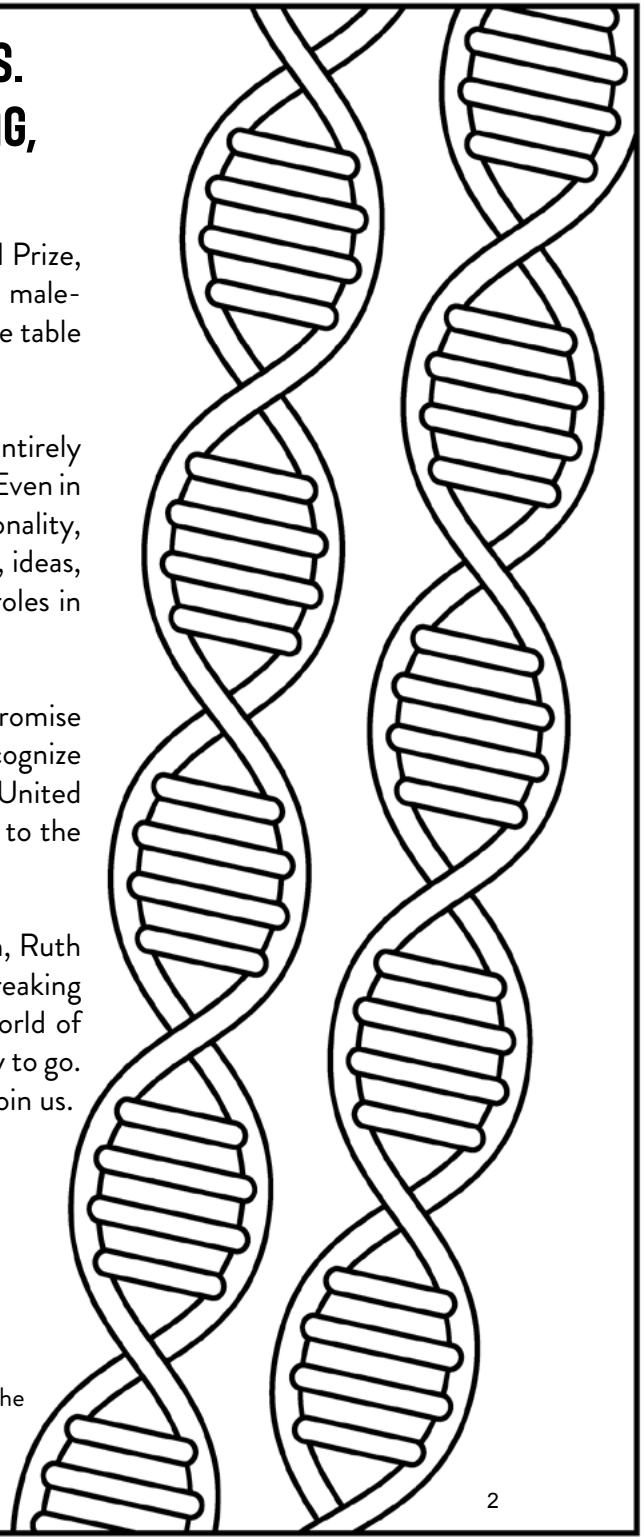
Thanks to female STEM leaders throughout history, including Marie Curie, Katherine Johnson, Mae Jemison, Ruth Lehmann, Xiaowei Zhuang, and others, our world is rapidly changing. Women and girls are continuously breaking down barriers to empower others to join the collective force towards scientific advancement. Today, the world of STEM is just beginning to mirror the rich diversity present within our communities. But we still have a long way to go. As we celebrate past breakthroughs, we must continue to expand the table so that more creative minds can join us.

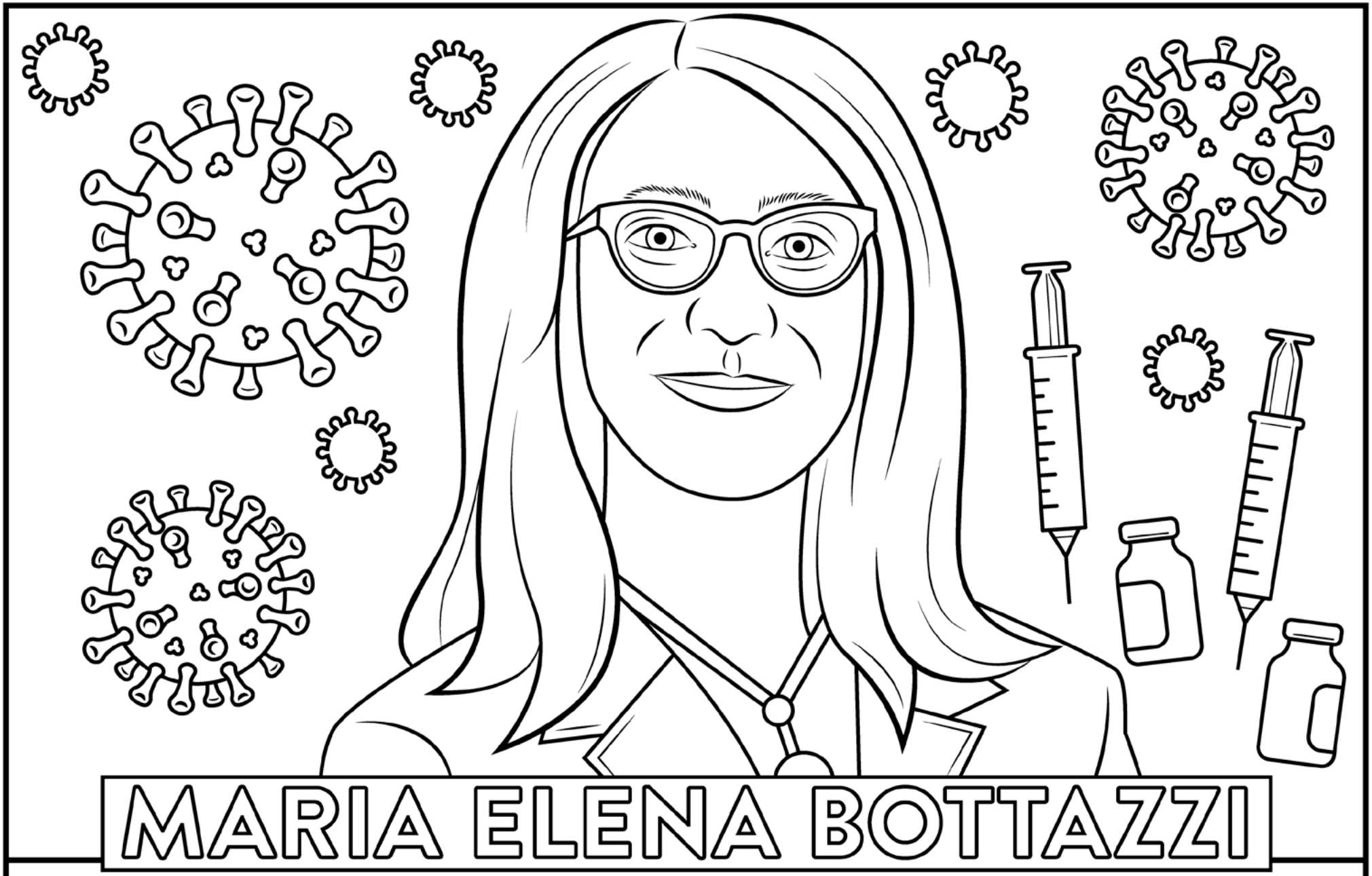
I sincerely hope that this book inspires you along your own journey, to confidently pursue your unique gifts—whatever your gender—and to follow your dreams wherever they may take you.

PARDIS SABETI

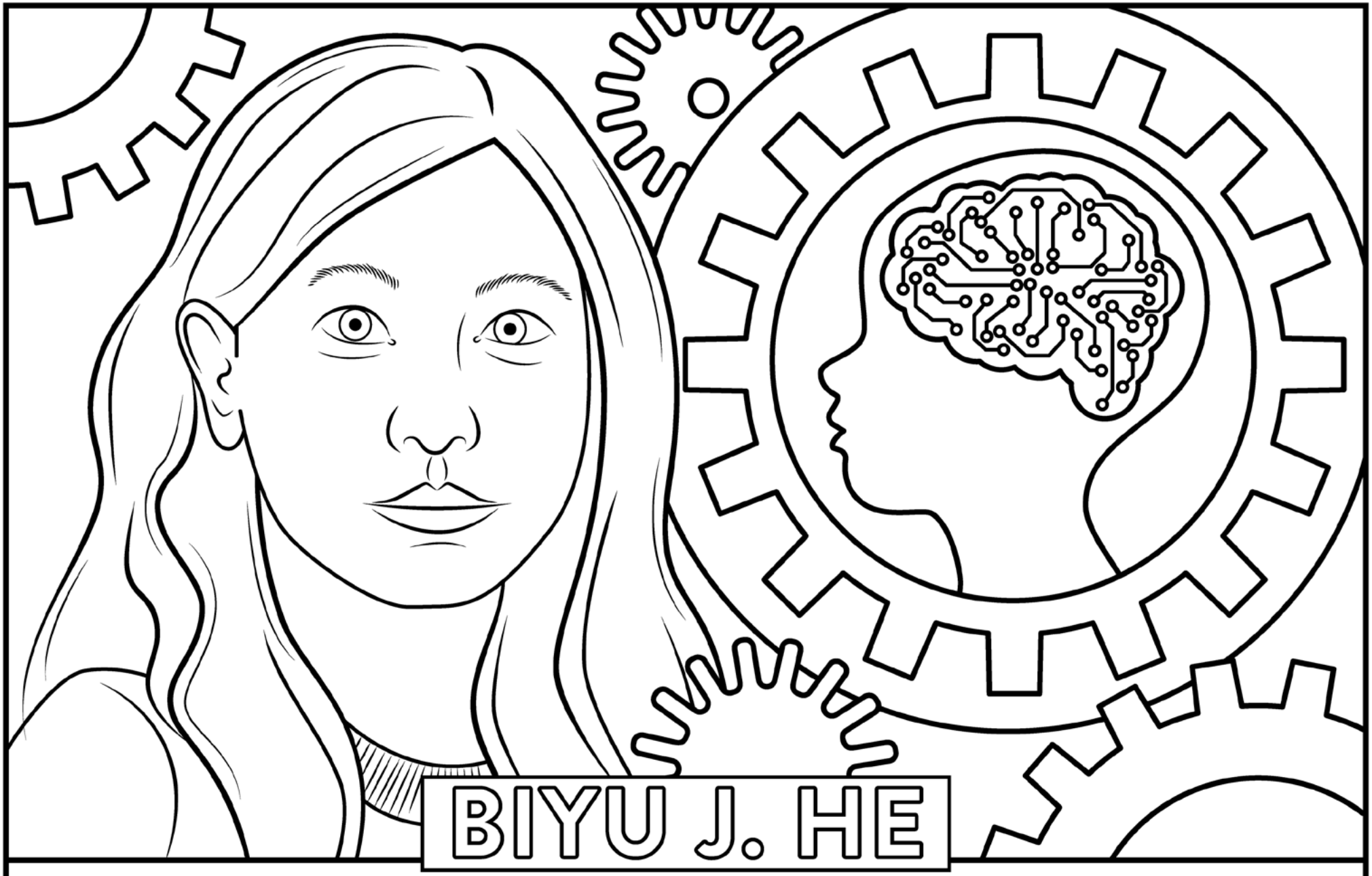
Professor at the Center for Systems Biology and Department of Organismic and Evolutionary Biology at Harvard University and the Department of Immunology and Infectious Disease at the Harvard School of Public Health

2014 Vilcek Prize for Creative Promise in Biomedical Science



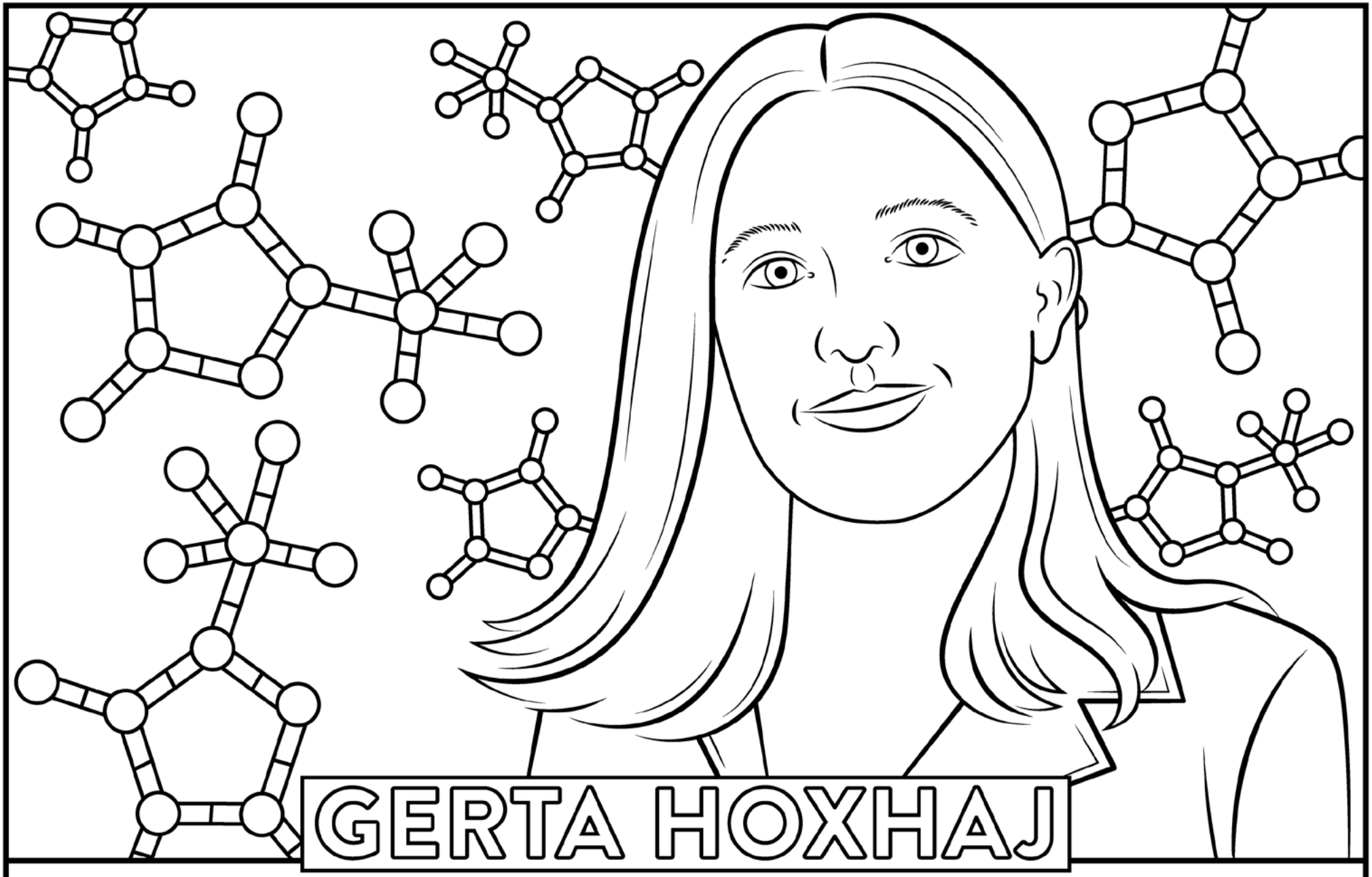


Maria Elena Bottazzi is a microbiologist and a global public health advocate. With her team at the National School of Tropical Medicine and the Baylor College of Medicine, she developed a patent-free open-source vaccine for COVID-19. Her work supports healthcare access and education around the world.



Biyu J. He is a cognitive neuroscientist. Her groundbreaking work explores the biological bases of perceptual cognition and subjective experience—how individuals see and understand the world around them.

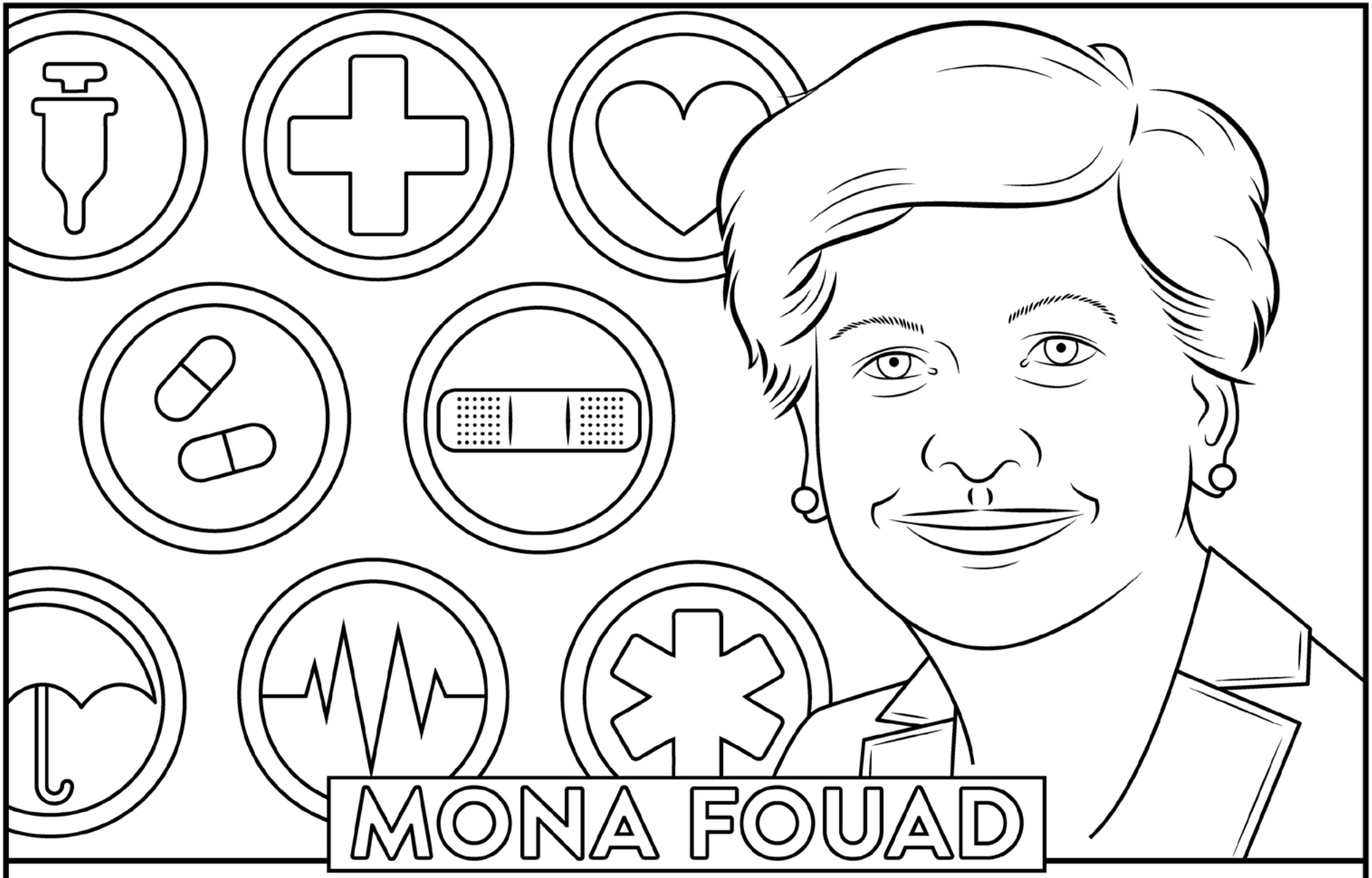
Katalin Karikó's pioneering research leadership into the development of mRNA therapeutics led to the development of mRNA vaccines for COVID-19. She is now working on the development of new mRNA therapeutics and vaccines; she received a Nobel Prize for her research discoveries in 2023.



Gerta Hoxhaj is a cancer biologist. She maps the molecular links between signaling pathways and metabolic networks of cancer cells. Her goal is to identify vulnerabilities in cancer cell metabolism that can be targets for the development of new treatments for cancer.

DENISSE ROJAS MARQUEZ

Denisse Rojas Marquez is a physician and public health advocate. When she was applying to medical school, she and two classmates founded Pre-Health Dreamers—a nonprofit organization that supports immigrant students who want to study medicine in the United States by assisting them with application resources and scholarship opportunities.

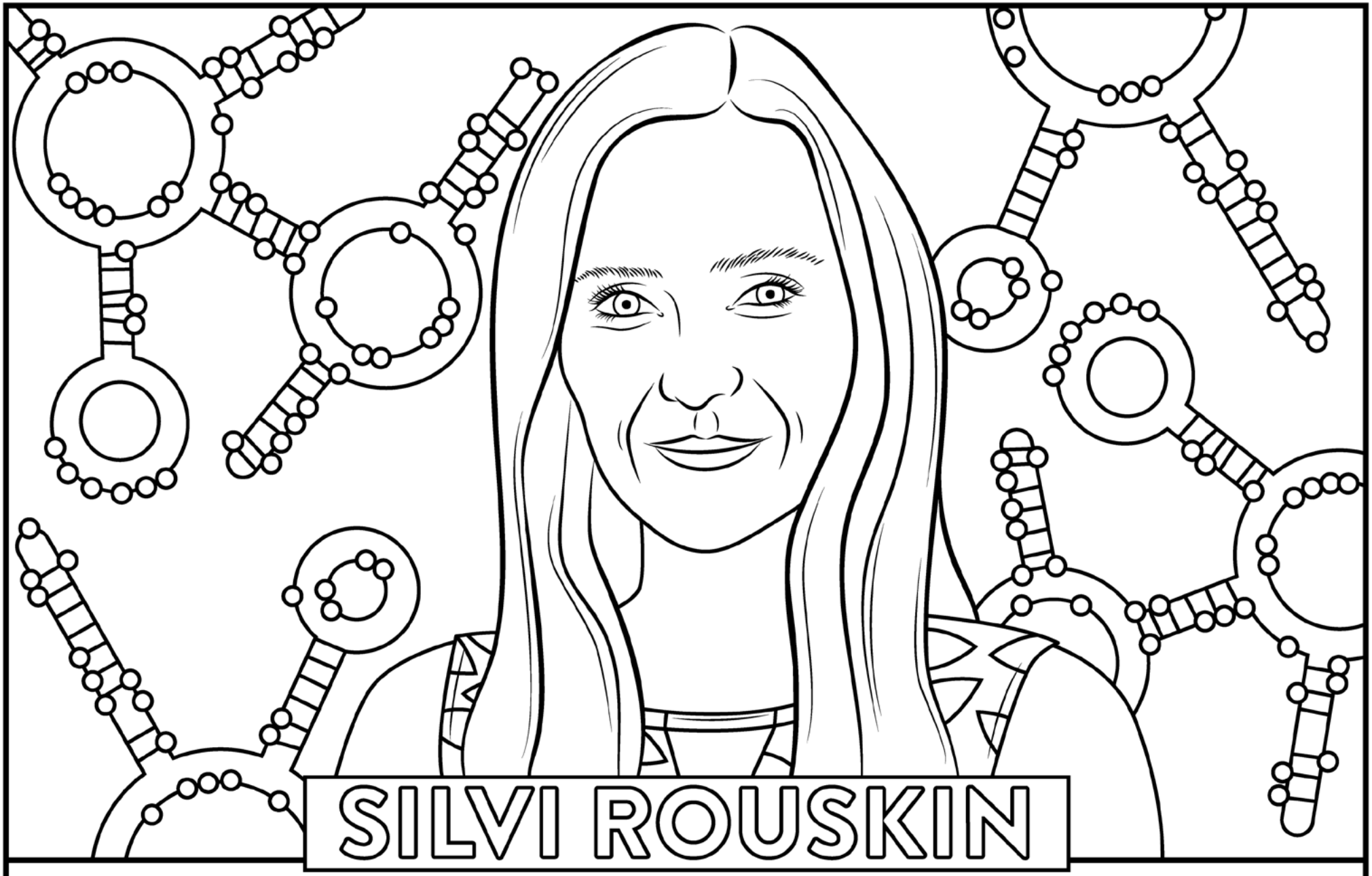


Mona Fouad is a physician and public health advocate. As the founder of the University of Alabama at Birmingham Minority Health & Health Disparity Research Center, she has created public health education programs and made preventive care accessible to historically underserved communities.

MARKITA DEL CARPIO LANDRY

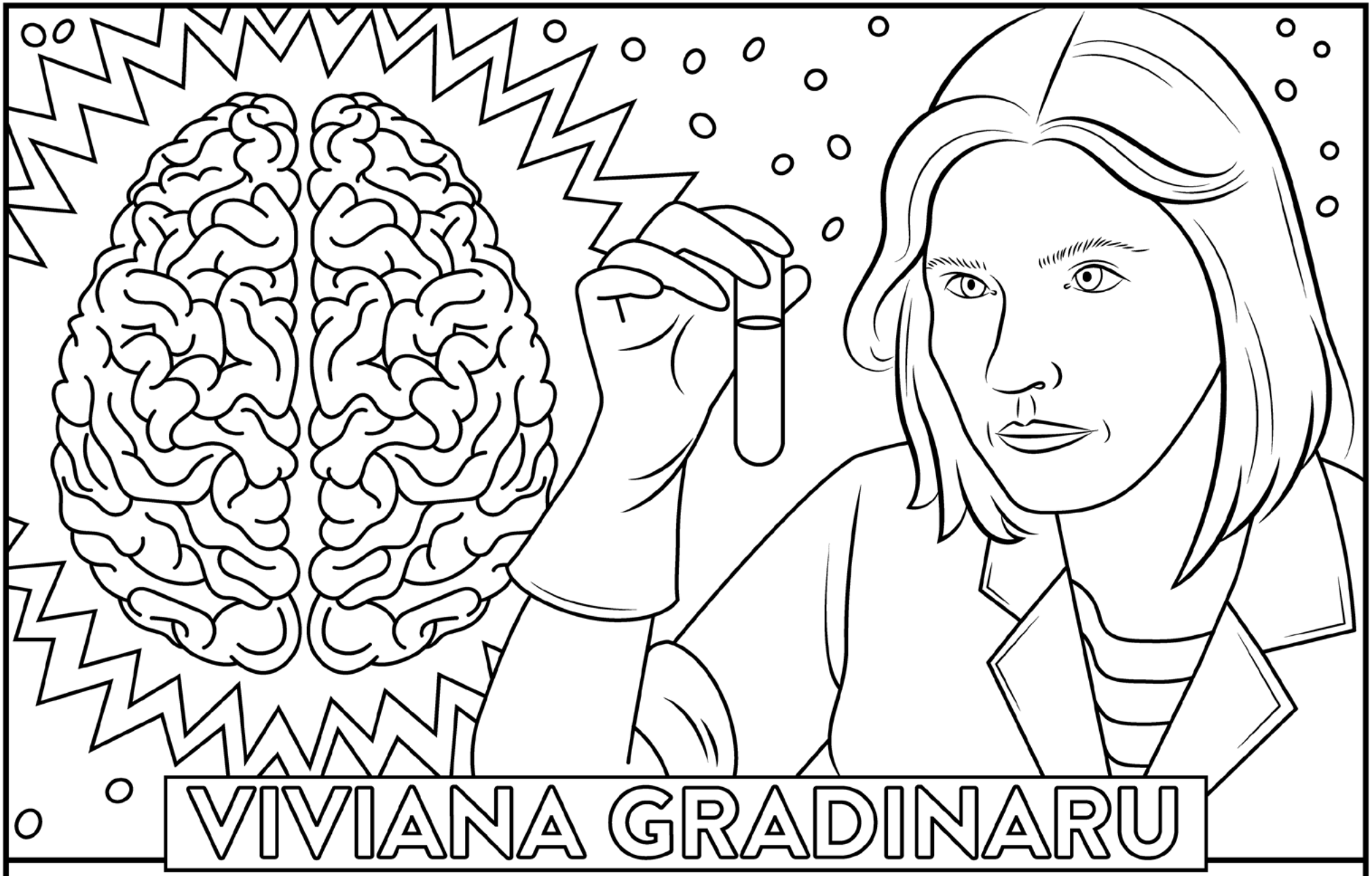
Markita del Carpio Landry is a biomolecular engineer. She developed probes to visualize neurochemical communication in the brain, and has led breakthroughs in gene-editing technologies with applications for agriculture and the development of biologic medicines.

Ruth Lehmann is the director of the Whitehead Institute at the Massachusetts Institute of Technology (MIT). Her research has enabled geneticists to understand the molecular basis by which germ cells—which give rise to sperm and egg cells—are formed.



Silvi Rouskin is a molecular biologist whose research focuses on the structure of RNA molecules, which carry genetic information in living cells and in viruses. Her most recent research uncovered the characteristic structure of the RNA genome of SARS-CoV2: the virus that causes COVID-19.

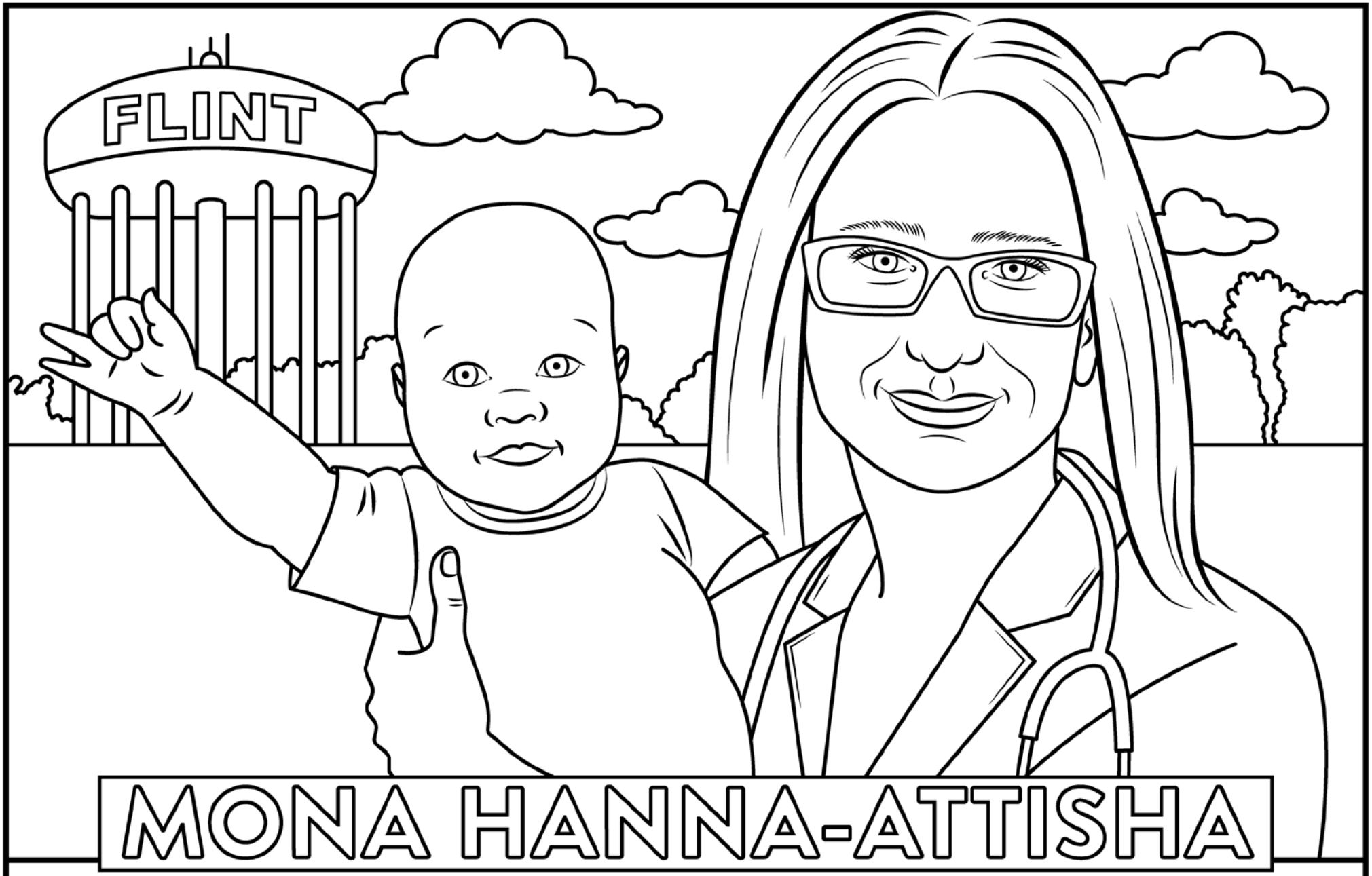
Xiaowei Zhuang is a biophysicist. She has pioneered imaging techniques called STORM and MERFISH, which enable scientists to see the innermost workings of human cells. “The fundamental drive,” she says, “is to figure out how things work.”



Viviana Gradinaru is a neuroscientist at the California Institute of Technology (Caltech). Her research focuses on the use of optogenetics to study and understand how neurodegenerative diseases like Parkinson's impact nervous system cells on a molecular level.

Angelika Amon was a molecular and cell biologist. Her research focused on cell biology and chromosomal abnormalities, including aneuploidy—the presence of an abnormal number of chromosomes within a cell—and diseases caused by abnormalities in cells and cellular reproduction, like cancer. She died of ovarian cancer in 2020.

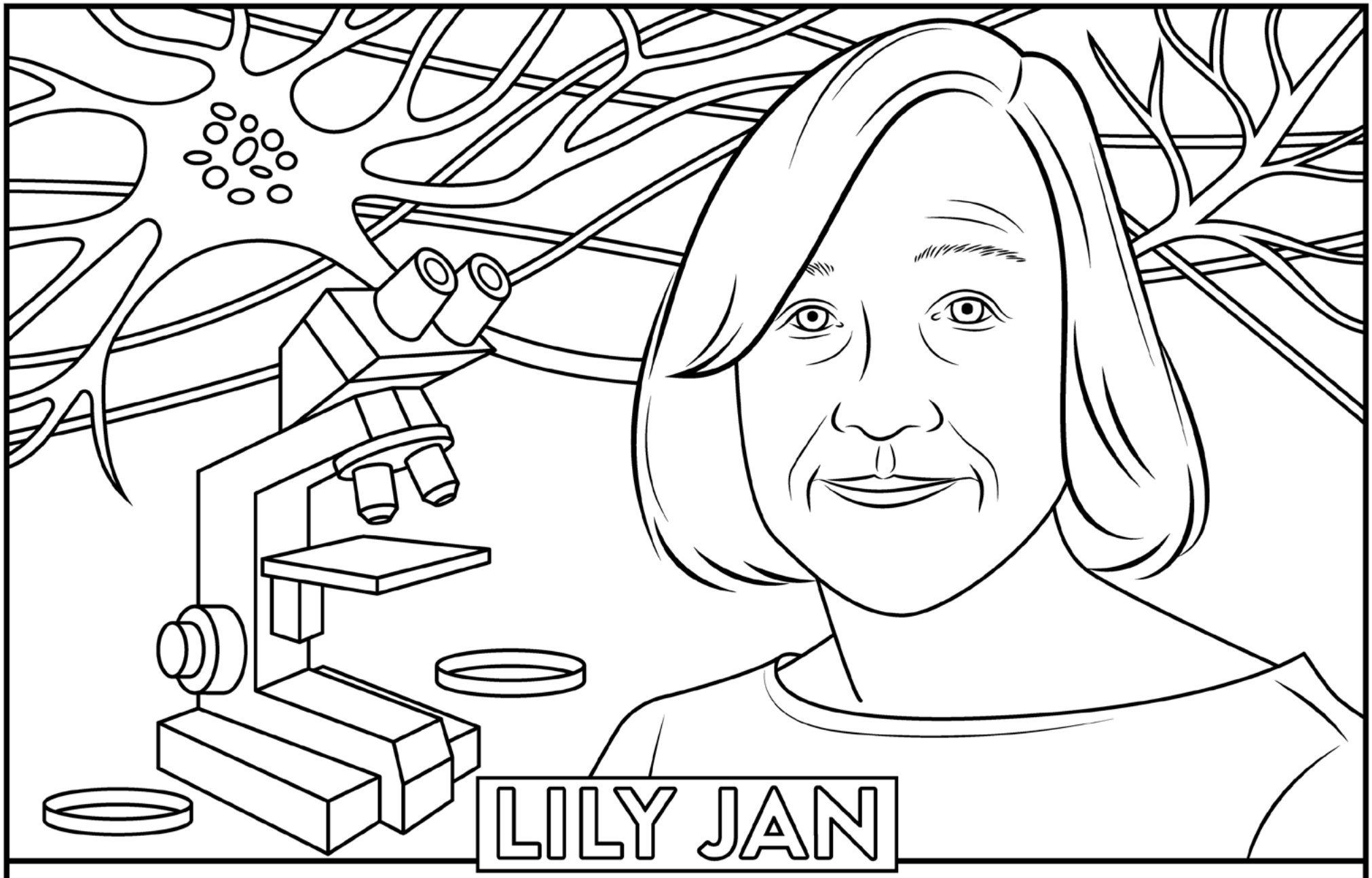
Jeanne T. Paz is a neuroscientist. She has pioneered research in the use of optogenetics to understand how epilepsy causes seizures. Her research forms the potential basis for predicting and arresting seizures, with implications for treating brain disorders such as dementia.



MONA HANNA-ATTISHA

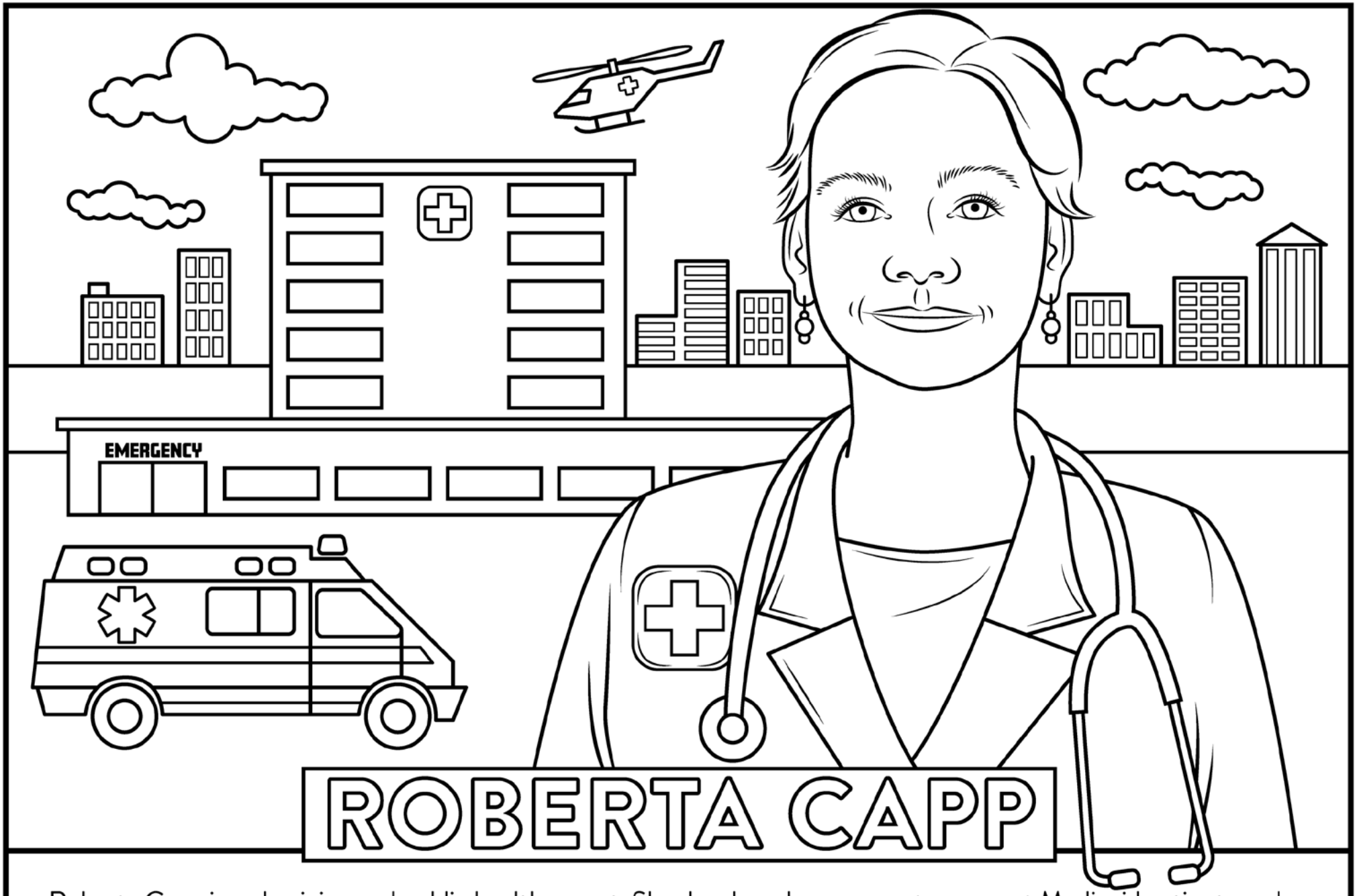
Mona Hanna-Attisha is a pediatrician and a public health expert. In 2015, her research brought national attention to lead poisoning of communities in Flint, Michigan, through the public water supply. She is an outspoken advocate for underserved communities, and a champion for public health.

Polina Anikeeva is a neurobiologist and a bioengineer. She has pioneered the development of optoelectronic devices and noninvasive deep brain stimulation techniques that allow neuroscientists to stimulate neurons in living subjects and record their responses.

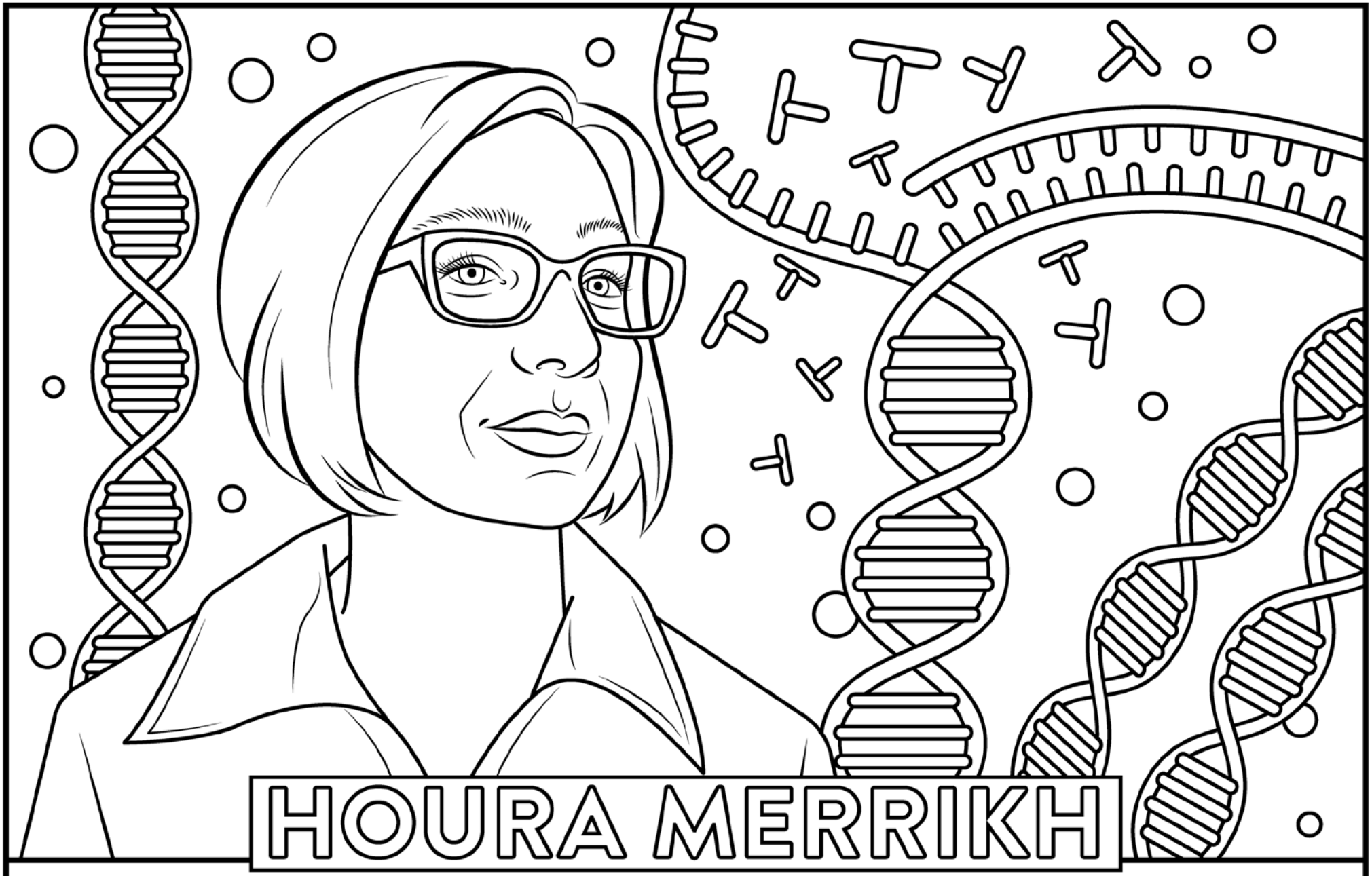


Lily Jan is a neuroscientist and professor of molecular physiology. Her research explores which genes dictate how different parts of neurons—axons and dendrites—develop in humans. This research has implications for understanding conditions that may be linked to dendritic morphology, including autism spectrum disorder.

Michaela Gack is a virologist at the University of Chicago. Her research focuses on viral immune evasion mechanisms and the impact of the interplay between viruses and the host's immune system on viral infection and disease.

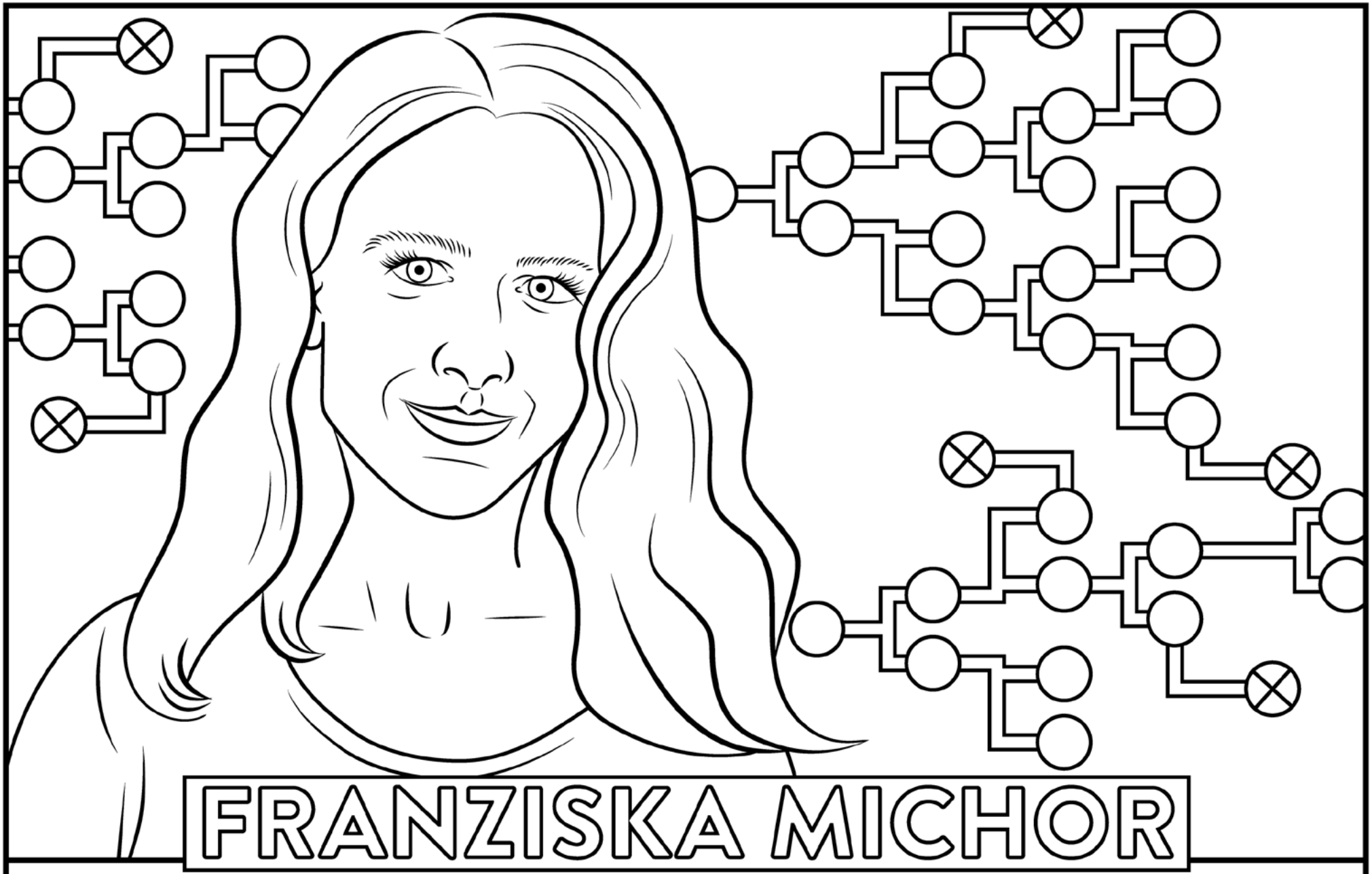


Roberta Capp is a physician and public health expert. She developed a program to connect Medicaid patients—who frequently rely on emergency departments for nonemergency care due to lack of other options—with physicians in their communities who accept Medicaid, making patient-centered, consistent healthcare accessible to those in need.

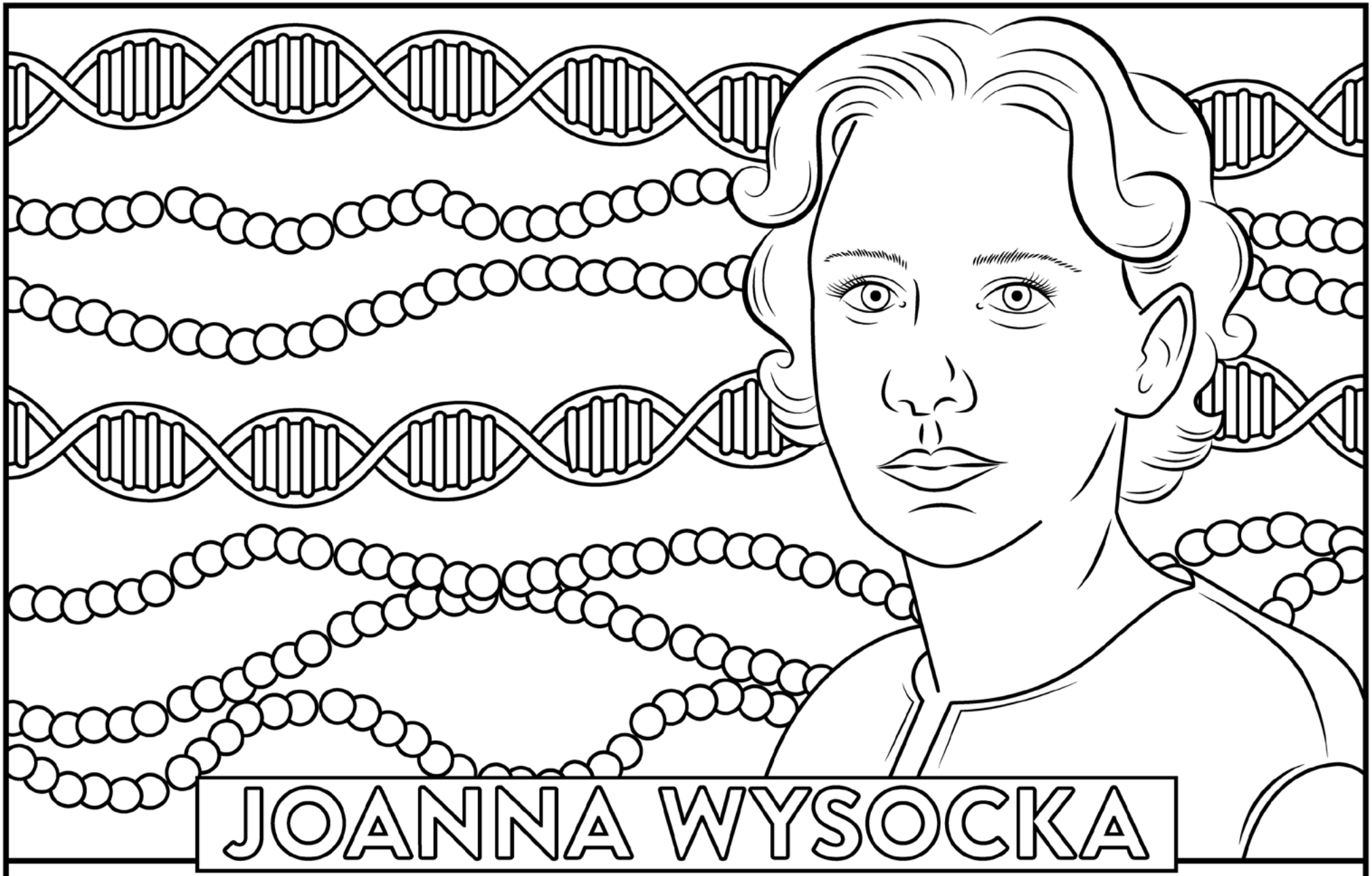


Houra Merrikh is a biochemist. Her research on the mechanics of DNA replication and gene expression has uncovered how collisions between DNA and RNA structures in cells can lead to genetic mutations—mutations that can be the basis of evolution in living organisms.

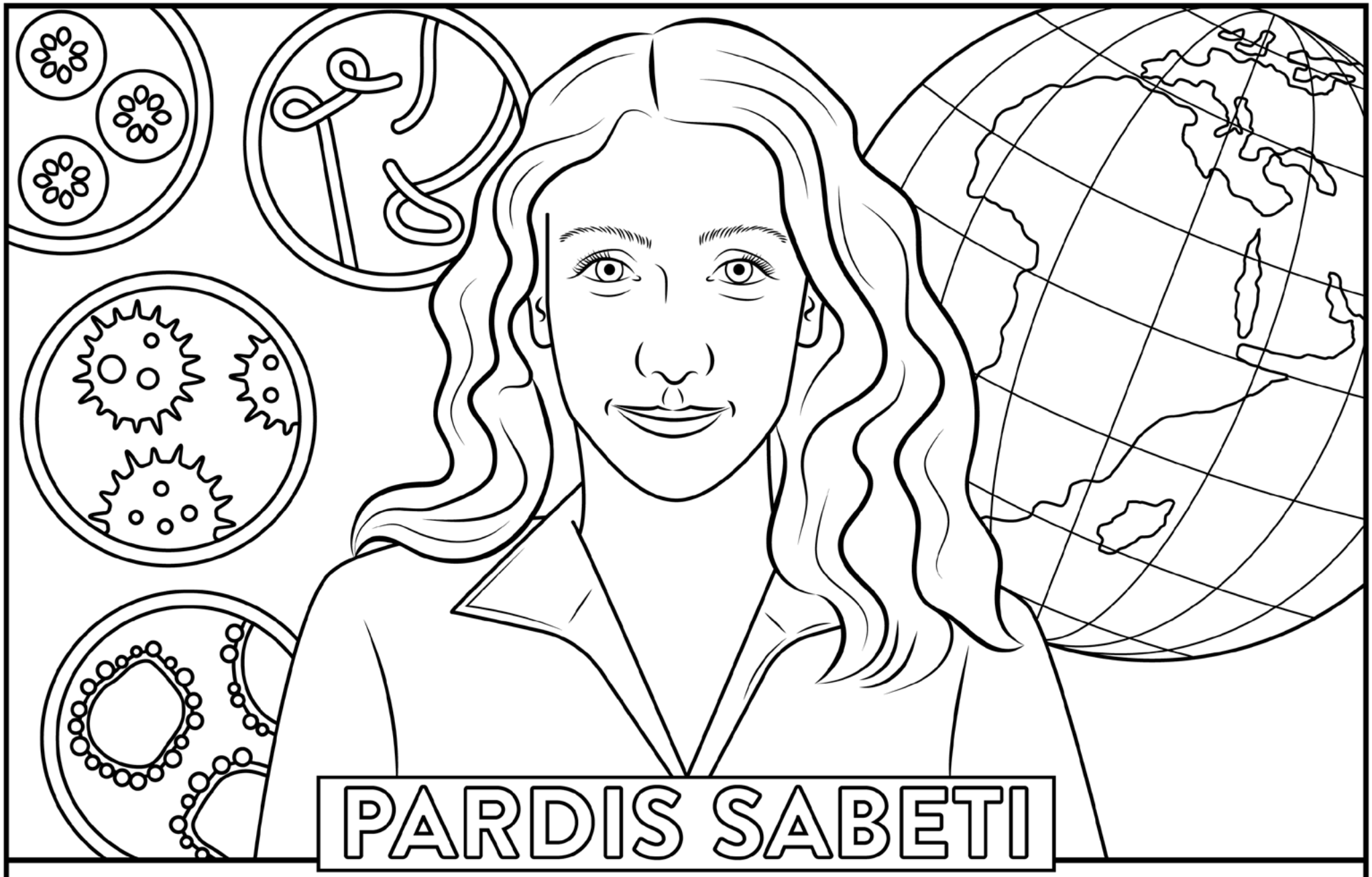
Sun Hur is a senior immunologist and molecular medicine research investigator at Harvard Medical School. She studies protein-nucleic acid interactions to understand the molecular mechanisms of immune system responses—in pathogenic infections and in auto-inflammatory and autoimmune diseases.



Franziska Michor is a computational biologist. She uses mathematical models to investigate the evolutionary dynamics of cancer, progression, response to therapy, and the emergence of drug resistance. Her models have led to unconventional treatments that are now being tested in patients.



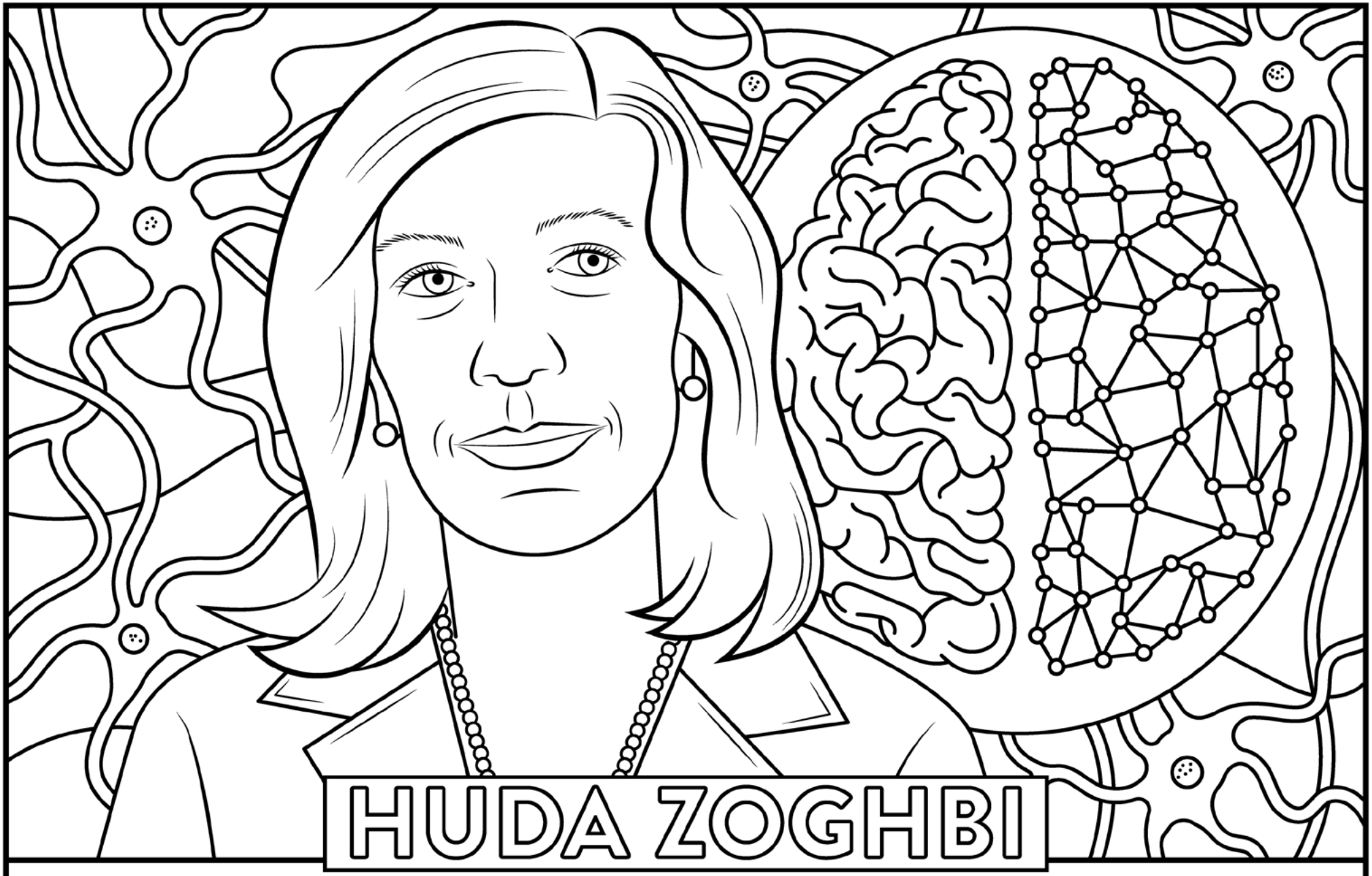
Joanna Wysocka is a developmental and evolutionary geneticist. She researches the role that gene regulation—the process by which genes are activated or deactivated as cells and organisms reproduce—plays in human evolution, in neural development, and in developmental disorders.



Pardis Sabeti is a computational geneticist. Her expertise is in developing methods to detect evolution in the genomes of infectious diseases, and developing models for scientists to track the evolution and transmission of pathogens around the globe and to develop interventions.

Titia de Lange is a biochemist and director of the Anderson Center for Cancer Research at Rockefeller University. She is known for her research on telomeres: DNA protein structures that protect chromosomes from degradation and maintain their stability.

Alice Ting is a chemical and molecular biologist. Her research focuses on mapping and charting the spatial organization of proteins, RNA, DNA, and metabolites in cells so as to understand the connectivity between these molecules and their functions in biology and development.



Huda Zoghbi is a pediatric neurologist and a professor and research leader at the Baylor College of Medicine. She has dedicated her career to understanding the genetic underpinnings of neurological disorders such as Rett syndrome, Spinocerebeller ataxia type 1, and Alzheimer's.

THE VILCEK FOUNDATION WOULD ALSO LIKE TO HIGHLIGHT THE FOLLOWING ORGANIZATIONS WHOSE WORK EMPOWERS WOMEN AND SUPPORTS DIVERSITY IN STEM – LEARN MORE ABOUT EACH ORGANIZATION AT THE URLS LISTED BELOW

ASSOCIATION FOR WOMEN IN SCIENCE (AWIS)

AWIS is a global network that inspires bold leadership, research, and solutions that advance women in STEM, spark innovation, promote organizational success, and drive systemic change.
www.awis.org

BLACK GIRLS CODE

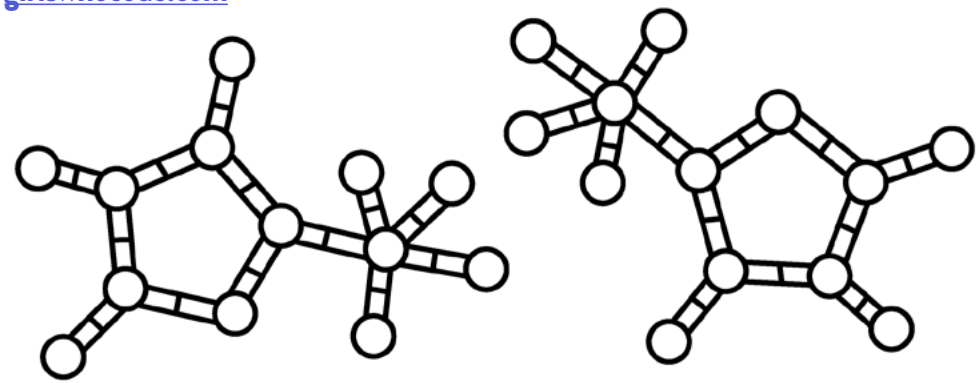
Black Girls Code seeks to increase the number of women of color in the digital space by empowering girls of color ages 7 to 17 to become innovators in STEM fields, leaders in their communities, and builders of their own futures through exposure to computer science and technology.
www.blackgirlscode.com

FINDING ADA

Ada Lovelace Day was founded in 2009 and aims to raise the profile of women in science, technology, engineering, and maths by encouraging people around the world to talk about the women whose work they admire. This international day of celebration helps people learn about the achievements of women in STEM, inspiring others and creating new role models for young and old alike.
findingada.com

GIRLS WHO CODE

Girls Who Code is on a mission to close the gender gap in technology and to change the image of what a programmer looks like and does.
girlswhocode.com



GIRLSINC.ORG

Girls Inc. was founded in 1864 with the aim of empowering and equipping girls to navigate gender, economic, and social barriers, and grow up healthy, educated, and independent. Informed by girls and their families, Girls Inc. also advocates for legislation and policies to increase opportunities and rights for all girls.
girlsinc.org

INSTITUTE FOR BROADENING PARTICIPATION

The mission of the Institute for Broadening Participation is to increase diversity in the science, technology, engineering, and mathematics (STEM) workforce. Since 2003, IBP has connected underrepresented students with STEM funding and research opportunities, and has provided faculty and administrators with tools and resources to help promote the positive factors that keep underrepresented students on the STEM pathway into successful STEM careers.
www.pathwaystoscience.org

LATINAS IN STEM

The Latinas in STEM Foundation was founded in the summer of 2013 by Latina MIT alumnae. The organization's primary purpose is to spread awareness of STEM and to inspire and empower Latina students in the primary and secondary grades, especially in underserved communities, to pursue a STEM career.
www.latinasinstem.com

MILLION WOMEN MENTORS

Mentoring is one of the most effective levers to propel and support women and girls on STEM pathways. Million Women Mentors connects local communities and institutions to state leaders, corporations, and a national movement to foster mentorship and build greater equity for women and girls in STEM.
www.millionwomenmentors.com

NATIONAL GIRLS COLLABORATIVE PROJECT

The vision of the National Girls Collaborative Project (NGCP) is to bring together organizations throughout the United States that are committed to informing and encouraging girls to pursue careers in science, technology, engineering, and mathematics (STEM).

ngcproject.org

NATIONAL MATH + SCIENCE INITIATIVE

The National Math + Science Initiative (NMS) believes STEM education is the greatest lever to accessing opportunity and is unmatched in unlocking student potential. NMS works with local, state, and national partners to increase educational opportunities and empower better outcomes for all students.

www.nms.org

NPOWER

NPower creates pathways to economic prosperity by launching digital careers for military veterans and young adults from underserved communities.

www.npower.org

ORGANIZATION FOR WOMEN IN SCIENCE FOR THE DEVELOPING WORLD (OWSD)

The Organization for Women in Science for the Developing World (OWSD) is an international organization founded in 1987 and based at the offices of The World Academy of Sciences (TWAS). It is a programme unit of UNESCO. OWSD is the first international forum to unite eminent women scientists from the developing and developed worlds with the objective of strengthening their role in the development process and promoting their representation in scientific and technological leadership.

owsd.net

SOCIETY OF WOMEN ENGINEERS (SWE)

The mission of the Society of Women Engineers is to empower women to achieve full potential in careers as engineers and leaders, expand the image of the engineering and technology professions as a positive force in improving the quality of life, and demonstrate the value of diversity and inclusion.

swe.org

THE ROSALIND FRANKLIN SOCIETY

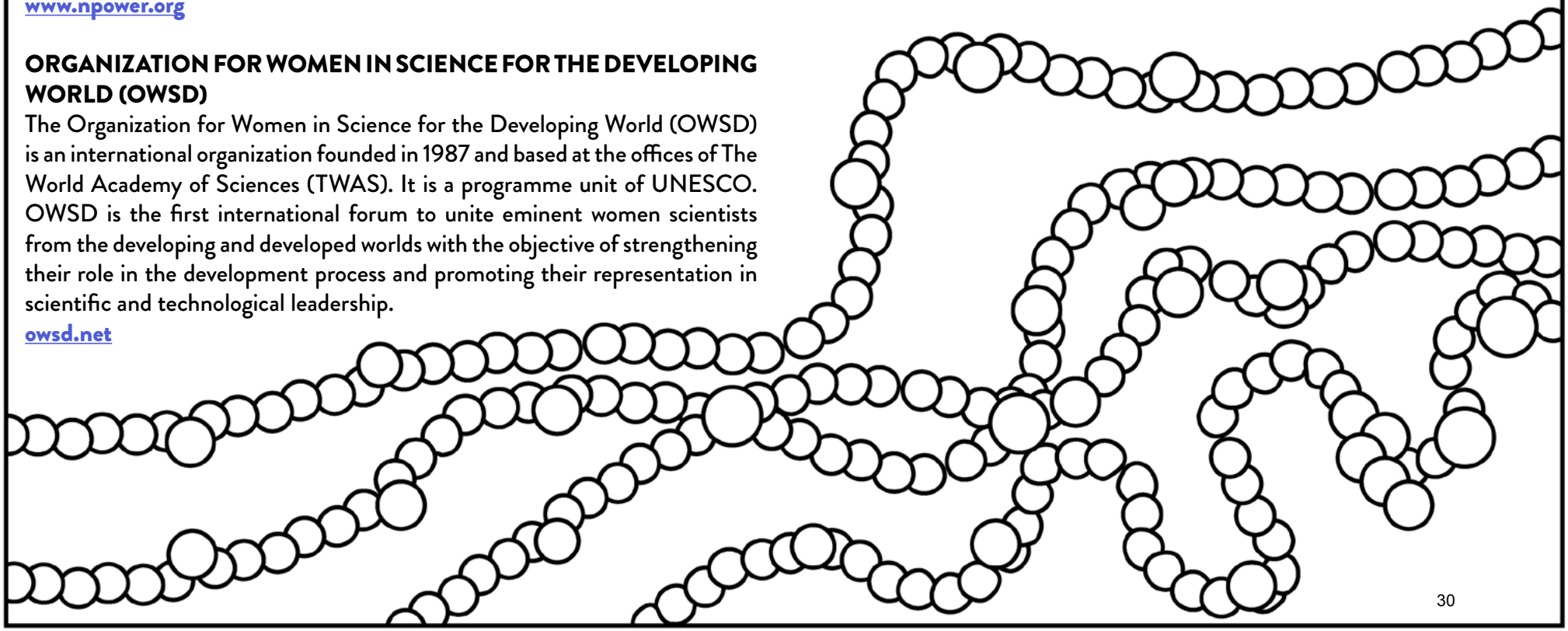
The Rosalind Franklin Society is an honorific, interdisciplinary, and international society which recognizes, fosters, and advances the important contributions of women in the life sciences and affiliated disciplines.

www.rosalindfranklinsociety.org

THE SCIENTISTA FOUNDATION

The Scientista Foundation is a national organization that empowers pre-professional women in science, technology, engineering, and math (STEM) through content, communities, and conferences.

www.scientistafoundation.com



FEATURED WOMEN:

Gerta Hoxhaj
Born in Albania
2024 Vilcek Prize for
Creative Promise in Biomedical Science

Maria Elena Bottazzi
Born in Honduras
2023 Vilcek-Gold Award for
Humanism in Healthcare

Biyu J. He
Born in China
2023 Vilcek Prize for
Creative Promise in Biomedical Science

Markita del Carpio Landry
Born in Canada
2022 Vilcek Prize for
Creative Promise in Biomedical Science

Mona Fouad
Born in Egypt
2022 Vilcek-Gold Award for
Humanism in Healthcare

Katalin Karikó
Born in Hungary
2022 Vilcek Prize for
Excellence in Biotechnology

Denisse Rojas Marquez
Born in Mexico
2021 Vilcek-Gold Award for
Humanism in Healthcare

Ruth Lehman
Born in Germany
2021 Vilcek Prize in Biomedical Science

Silvi Rouskin
Born in Bulgaria
2021 Vilcek Prize for
Creative Promise in Biomedical Science

Xiaowei Zhuang
Born in China
2021 Vilcek Prize in Biomedical Science

Viviana Gradinaru
Born in Romania
2020 Vilcek Prize for
Creative Promise in Biomedical Science

Angelika Amon
Born in Austria
2019 Vilcek Prize in Biomedical Science

Jeanne T. Paz
Born in Georgia
2019 Vilcek Prize for
Creative Promise in Biomedical Science

Mona Hanna-Attisha
Born in the United Kingdom
2019 Vilcek-Gold Award for
Humanism in Healthcare

Polina Anikeeva
Born in Russia
2018 Vilcek Prize for
Creative Promise in Biomedical Science

Lily Jan
Born in China
2017 Vilcek Prize in Biomedical Science

Michaela Gack
Born in Germany
2017 Vilcek Prize for
Creative Promise in Biomedical Science

Roberta Capp
Born in Brazil
2016 Vilcek Prize for
Creative Promise in Biomedical Science

Houra Merrikh
Born in Iran
2016 Vilcek Prize for
Creative Promise in Biomedical Science

Sun Hur
Born in South Korea
2016 Vilcek Prize for
Creative Promise in Biomedical Science

Franziska Michor
Born in Austria
2015 Vilcek Prize for
Creative Promise in Biomedical Science

Pardis Sabeti
Born in Iran
2014 Vilcek Prize for
Creative Promise in Biomedical Science

Joanna Wysocka
Born in Poland
2013 Vilcek Prize for
Creative Promise in Biomedical Science

Alice Ting
Born in Taiwan
2012 Vilcek Prize for
Creative Promise in Biomedical Science

Titia De Lange
Born in the Netherlands
2011 Vilcek Prize in Biomedical Science

Huda Zoghbi
Born in Lebanon
2009 Vilcek Prize in Biomedical Science