

# THE WALL STREET JOURNAL

## **A Scientist's Mission: Talking Genetics With Everybody**

**Informed public discussion of genetics and its ethical dilemmas is more urgent than ever, says Ting Wu**

By Amy Dockser Marcus  
Feb. 23, 2018 1:50 p.m. ET



‘All people need to have a voice in how genetics is used,’ says Ting Wu.  
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**Ting Wu**, a professor at Harvard Medical School, fields lots of questions at the public meetings and workshops that she helps to run on recent advances in genetics. Should scientists, for example, have the right to run experiments that create heritable genetic changes in embryos, sperm or eggs? Or, is it too risky to the environment to use genetic technology to try to eradicate a species of disease-carrying mosquito?

Dr. Wu is eager to help non-scientists understand the complexities—and to hear their concerns. “That’s why we are here,” she says.

As one of the co-founders of the Personal Genetics Education Project, Dr. Wu, 64, has promoted the need for wider discussion about her field—beyond the closed doors of scientists’ labs—for more than a decade. Today, she says, informed public discussion of genetics is more urgent than ever before.

Rapid advances in gene-editing technology—especially Crispr-Cas9, a tool that allows scientists to insert, modify or delete genes not only in an individual’s DNA but potentially in the DNA of future generations—gives scientists tremendous power to change the way that life progresses. “All people need to have a voice in how genetics is used,” Dr. Wu says.

In recent years, Dr. Wu and her organization’s small team of teachers, scientists and community activists have stepped up their efforts to raise awareness and spark dialogue. They have focused on communities that often end up getting left out of conversations about genetic technology—people of color and faith and those who live in rural areas.

The group usually operates from Dr. Wu’s own research lab, where she works on chromosome organization and behavior and tools for visualizing the genome. But it recently launched a new community-based initiative, setting up an office in Fields Corner, a multicultural neighborhood of Boston. Staff members meet and talk to people in their schools, community centers and places of worship. Last year, the project, working with the Minority Coalition for Precision Medicine, sponsored a conference at Harvard with pastors, faith leaders and scientists to discuss the ethics of genome editing.

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People raise confounding ethical dilemmas in all of these discussions, says Dr. Wu. Do you have an obligation to share the results of genetic testing with other members of your family? Is it moral to use genetic information to make life decisions for yourself or your children when so much remains uncertain about interpreting genetic results?

“Genetics is so personal,” says Dr. Wu. “But it is also incredibly intertwined with family and community and our most important relationships.”

That is also how Dr. Wu describes her own path into science. Her father, Nelson Ikon Wu, was a renowned art historian, teaching Asian art and architecture. Dr. Wu grew up in New Haven, Conn., and St. Louis, where her father held university posts. She loved art and in college initially considered pursuing sculpture or print-making.

But she also had a longstanding interest in genetics, sparked by her mother, Mu-lien H. Wu, a researcher in the field. To help pay for her studies at Radcliffe College, Dr. Wu took a job washing glassware in a genetics lab. One evening, a scientist running an experiment needed an extra pair of hands and asked her to help measure out liquids. “I loved it,” she says.

She was soon majoring in biology and spending all of her free time in the lab, working late into the night on experiments before falling asleep on a cot in the women’s restroom. The head of the lab found someone else to wash the glassware and hired Dr. Wu as a research assistant.

She sees a connection between her interests in genetics and art: Both involve trying to recognize patterns, even unexpected ones. “It is very aesthetically pleasing,” she says.

Studying for a Ph.D. in genetics at Harvard Medical School, Dr. Wu met her future husband, George Church. The couple frequented the library and took long walks discussing their shared scientific passions. In recent years, many of their conversations have touched on Crispr. Dr. Church and his lab at Harvard were among the first to demonstrate how to use the Crispr tool to edit human cells, and he has helped found several Crispr companies.

Dr. Wu says that even now, she likes nothing better than to stay up late with friends and family, cooking and talking about science. She and Dr. Church share an adjoining backyard with their grown daughter, her husband and their two children. When the grandchildren come over, Dr. Wu says, “everything else stops.”

In the summer of 2006, Dr. Wu, Dr. Church and their daughter, then age 14, set out on a 2,000-mile road trip across the U.S. and Canada. Dr. Church had just started the Personal Genome Project, which aimed to collect the medical records of volunteers and sequence their genomes, and then to put the data online. The couple was worried that people might not understand the ethical implications of the technology, so they took the trip to meet and talk with some of the early volunteers.

When she and Dr. Church returned to Harvard, Dr. Wu and two collaborators founded the education project. “The idea was to listen,” she says. Genetic technology has changed a great deal over the past decade, but her goal has not, Dr. Wu says. “Genetics has to be open to everyone.”

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