



The Significance of Environmental Health: An Interview with Maggie Li, PhD Student

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Global warming is exacerbating. Plastic and trash fill oceans and landscapes. Rainforests and high-biodiversity ecosystems are being sapped of their natural resources. While humanity enjoys the goods that Mother Nature has to offer, neglecting to protect our environment does not go without repercussions to our own health.

Environmental health is a vastly broad discipline that examines the relationships between the environment and communities with regards to social and physical factors that impact health in the long and short term. Maggie Li is a first-year doctoral student at Columbia University's Mailman School of Public Health studying environmental health. As an undergraduate at University of California, Berkeley, Maggie double-majored in Conservation and Resources Studies and Geography, while being involved in a variety of student organizations and extracurriculars at Berkeley. During her freshman undergraduate year, Maggie lived in the Global Environment themed floor of the dormitories, where she connected with others who were passionate about environmentalism. She participated in outdoor activities and outings that helped her orient her in the field and define her interests in pursuing a career in the field.

The California native explains, in simple terms, that environmental health science is "Just looking at the relationships and connections between the environment and communities that we reside ourselves in and what we're exposed to, whether it be physical or social factors or both, and the impacts of those factors on our health."

This definition is as broad as the diversity of scientific backgrounds that people come from to study in the environmental health discipline. Maggie's own background simply happens to be strongly rooted in the environmental sciences prior to beginning her studies as a doctoral student.

Later, as an undergraduate, she involved herself in many organizations dedicated to promoting environmental awareness and social justice. One organization she joined was a nonprofit grocery store called the Berkeley Food Collective, where Maggie volunteered to source food from local farms.

"Food plays a huge role in public health," Li said. "Thus diet and food sources shape who we are and our health." Being exposed to the proactive and passionate community while being on board herself led Maggie to dive deeper into the field and explore the work that goes into environmentalism. Her work as part of the Student Environmental Resource Center connected students to social justice work. As



Photo courtesy of Maggie Li.

a result of her and her peers' efforts, the organization grew from 20 to 100 active members in size, allowing more students from campus and the community to get involved in environmentalism and help them figure out if the field was something they would be interested in pursuing. She also helped manage students as part of the leadership and taught students environmental science while counseling younger students through providing career advice.

A Decision to Pursue Knowledge

Maggie chose to pursue her doctoral degree in environmental sciences after a chance conversation with a fellow rock wall climber at the gym. She carefully considered the prospects of pursuing different opportunities after graduation. Her personal mantra regarding graduate school reflects her cemented decision.

"It doesn't only matter what you are passionate about," Li says. "It matters what life you create for yourself."

Despite having done research in a wet lab and not enjoying it, Maggie loved the problem-solving aspect of the scientific process. From forming a hypothesis to finding answers, creating figures and visuals, and making connections and conclusions, she believed that research held an important place in society and found it sustainable as a career in the long run. Her personal research interest is air pollution with respect to exposure in different areas of the globe, particularly those where native and indigenous communities and



cultures thrive.

“The work towards championing an environmentally healthy and just world is absolutely vital to uplifting the lives of every member of our society,” Li says. “Particularly vulnerable communities [are] most impacted by disproportionately high exposures to pollutants, or limited access to resources to treat the health impacts of exposure.”

Using her background in geography, Maggie wants to explore the connections between race, class, socioeconomic status, and other factors that are not directly related to physical exposure. Her project with her research mentor involves mapping out particulate matter trapped in lungs and how it contributes to heart disease across different regional counties. Using air quality monitors, health in Arctic regions can be measured.

These communities are particularly impacted by air quality because climate changes in the North and South Poles are much more subject to drastic change than those closer to the equator. Indigenous Arctic communities aren’t focused on health impacts of climate change, despite wildfires breaking out at increasing rates amidst exacerbating climate fluctuations. Thus, it is crucial for researchers to aide in the preservation of Arctic community health and provide intervention for reducing harmful exposures.

Power in Interdisciplinary Collaboration

Environmental health scientists like Maggie study a variety of fields. Environmental science itself is a vastly interdisciplinary field, and encompasses studies in epidemiology, toxicology, biology, chemistry, atmospheric sciences, sociology, and psychology to name a few.

“Environmental health combines rigorous scientific methods from a broad range of subjects spanning biological, physical, and social sciences to study the complex relationships between human health and our surrounding built and natural environments,” Li says. “The field of environmental health sciences is unique in that it is inherently interdisciplinary, and is ultimately aimed towards translation into regulatory policy and public health interventions. Researchers oftentimes collaborate with community partners to address local health issues from an environmental health lens. These combined efforts tackle some of the most important issues of our generation regarding health outcomes.”

Her peers have a diverse range of research interests of their own, most of which connect seemingly unrelated variables, such as farmland soil quality, to human health. Physical chemistry is even involved in environmental health, Maggie explains.

“Environmental toxicologists investigate dose response—seeing what levels of exposure to air pollutants, heavy metals, or other chemicals are in the atmosphere and water, and how they interact with human cells metabolically,” Li says.

It’s safe to say that any area of study, even politics and history, can tie into environmental science one way or another, according to Maggie. Furthermore, with the advancement of technology, the quality of data that can be obtained for analysis has increased with the development with more sensitive monitoring systems and satellites. Open source software made available to the general public allows anyone to contribute data to scientific research—an emerging citizen field. In addition, advances in biotechnology and medicine allows for more accurate and widespread disease surveying and analysis of big data sets. The intersection of environmental health and biology allows for the newest research to influence studies. For example, pioneering research in epigenetics helps environmental scientists investi-

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Maggie's tips for reducing your carbon footprint:

- **Reduce Air Pollution:** Being more conscious of how much gas we consume and how we use transit can help reduce both air pollution and travel expenses.
- **Reduce Water Consumption** by limiting showers to 5-10 minutes, using tap water and a filter instead of water bottles, and recycling water used to wash produce for gardening.
- **Household waste** is a major contributor to waste production. Sorting waste into compost, recyclables (paper, plastic, metals, glass), electronics, and landfill is a great way to give used resources a second life.



Infographic attributed to [Syed Muneeb Ali](#).



gate environmental effects on genetics and heredity. Interdisciplinary studies address interesting and highly specific questions whilst developing more causal pathways between physical, medical, and societal variables.

“Change happens at different scales—at the individual level, communal level, and then the national level,” Maggie says. “For each of us, we can reduce our consumption of natural resources by changing parts of our daily lives one step at a time.”

Check out the infographic for Maggie’s advice for reducing pollution and emissions can also help save money and personal resources.