The American University in Cairo NEWS

الجامعة الأمريكية بالقاهرة
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# AUC PHD CANDIDATE WINS PRESTIGIOUS ENI AWARD

# FOR GROUNDBREAKING RESEARCH IN SUSTAINABLE WATER TREATMENT

Cairo, October 21, 2025 - Shimaa Farag, a PhD candidate in biotechnology at The American University in Cairo (AUC), won the Young Talents from Africa prize at the 2025 Eni Award ceremony for her doctoral research on sustainable wastewater treatment in Egypt, making her the only Egyptian and Arab researcher to receive this year's honor. The award was presented to her at the Quirinal Palace by the President of the Italian Republic Sergio Mattarella, Eni's Chairman of the Board of Directors Giuseppe Zafarana and Eni's CEO Claudio Descalzi, recognizing her pioneering contribution to transforming wastewater from an environmental burden into a valuable source of eco-friendly treatment solutions.

Farag's award-winning research, titled "Tailored Enzymatic-Based Treatment of Wastewater Using Extremophilic Enzymes," presents a groundbreaking, eco-friendly, and affordable solution for treating wastewater in Egypt, particularly to remove heavy metals and antibiotic residues. Her work pioneers a biotechnology approach that uses nature's own tools to fight pollution. By extracting and analyzing microbial DNA from wastewater sludge, Farag discovered naturally occurring enzymes capable of breaking down toxic contaminants that traditional treatment systems cannot eliminate.

“My research focuses on solving the problem from within the problem itself,” explained Shimaa. “Wastewater is often seen as a source of contamination, but in reality, it contains microbial communities that can provide the very enzymes needed to clean it. Through biotechnology, we can turn waste into opportunity — protecting our water, our health, and our future.”

Using advanced biotechnology tools, Farag explored the hidden world of microbes living in Egyptian wastewater. She built a vast DNA library of more than 20,000 samples, uncovering enzymes — such as laccase and mercury-reductase (MerA) — with remarkable abilities to remove toxins. These enzymes are now being turned into reusable, eco-friendly solutions for treating wastewater efficiently and sustainably, even under harsh environmental conditions.

This novel approach not only provides a sustainable alternative to chemical-based treatments but also holds significant potential to reduce water pollution, slow antimicrobial resistance, and enable the reuse of treated wastewater in agriculture and industry — crucial steps for water-scarce regions like Egypt.

“Receiving the Eni Award is a great honor and an inspiration to continue pursuing research that tackles global environmental challenges,” Shimaa said. “It highlights the power of science and innovation to create real solutions for a sustainable future.”

The Eni Award, often referred to as the “Nobel Prize for Energy and Environment,” is one of the world’s most prestigious scientific recognitions in sustainability and technological innovation. Shimaa’s recognition highlights AUC’s leadership in advancing applied scientific research with global impact, particularly in addressing critical issues related to water security, pollution, and sustainable development.

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*Founded in 1919, The American University in Cairo (AUC) is a leading English-language, American-accredited institution of higher education and center of the intellectual, social, and cultural life of the Arab world. It is a vital bridge between East and West, linking Egypt and the region to the world through scholarly research, partnerships with academic and research institutions and study abroad programs.*

*The University offers 39 undergraduate, 52 master’s and two PhD programs rooted in a liberal arts education that encourages students to think critically and find creative solutions to conflicts and challenges facing both the region and the world.*

*An independent, nonprofit, politically non-partisan, non-sectarian and equal opportunity institution, AUC is fully accredited in Egypt and the United States.*