TRANSPORT

Research Milestones in Chemical & Biomolecular Engineering

UNIVERSITY of HOUSTON

CULLEN COLLEGE of ENGINEERING

Department of Chemical & Biomolecular Engineering

TRANSPORT - RESEARCH MILESTONES IN CHBE

ENGINEERING EXCELLENCE

Since 1941

University of Houston Cullen College of Engineering

Jeffrey Rimer Honored For

WORK IN CRYSTAL ENGINEERING

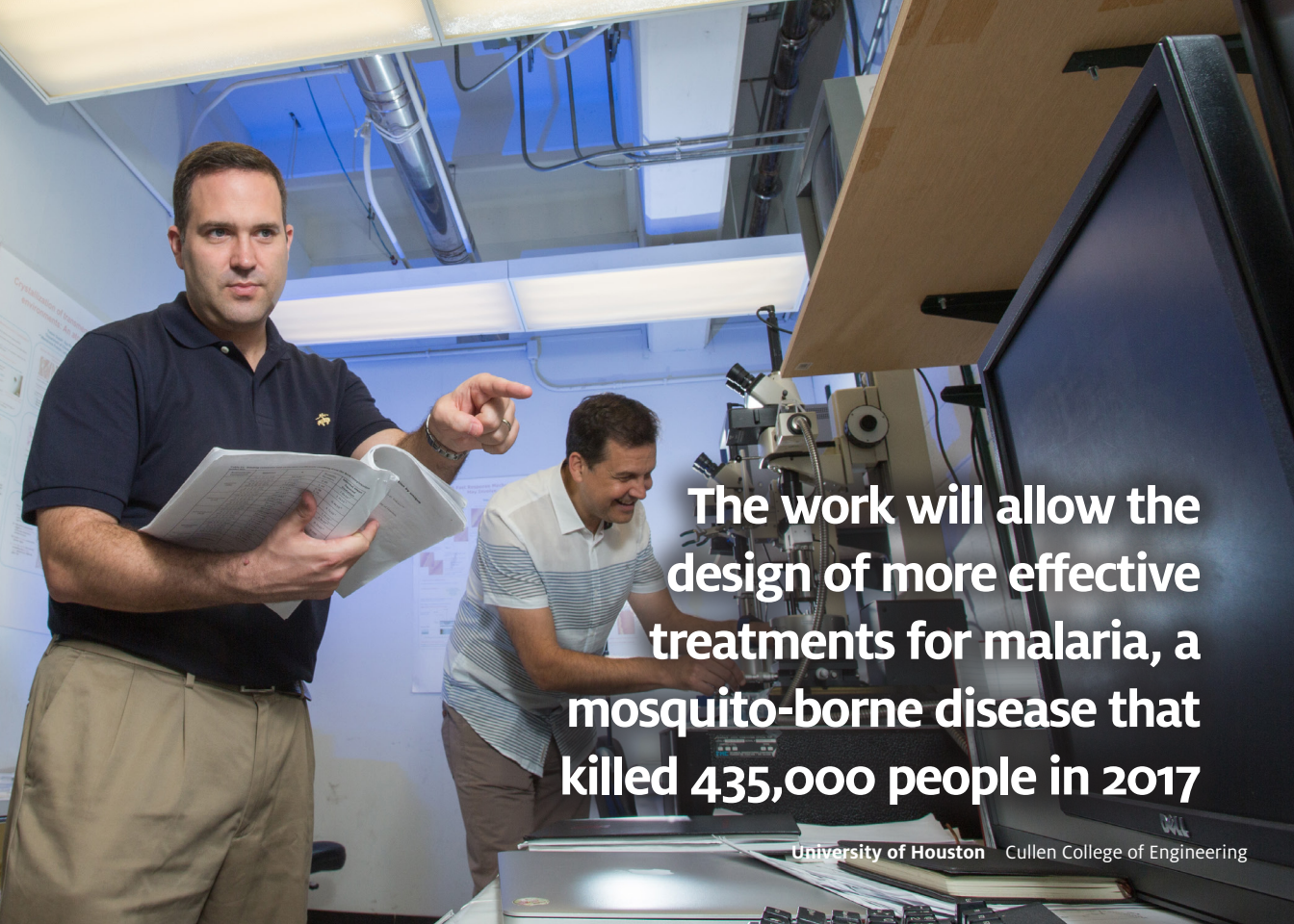
Jeffrey Rimer, Abraham E. Dukler Professor of Chemical Engineering at the UH Cullen College of Engineering, received the 2020 Edith and Peter O'Donnell Award in Engineering from The Academy of Medicine, Engineering and Science of Texas, known as TAMEST. He received the state of Texas' top honor in engineering for his pioneering discoveries about how crystals form and how they can be dissolved. Rimer received the 2018 Norman Hackerman Award in Chemical Research, given by the Welch Foundation to chemical scientists working in Texas and designed to encourage the fundamental understanding of chemistry. He also received the 2016 Owens Corning Early Career Award and 2017 FRI/John G. Kunesh Award from the American Institute of Chemical Engineers, as well as multiple teaching and research excellence awards from UH. His research is recognized for its focus at the nexus of fundamental and applied science.


Rimer received the 2018 Norman Hackerman Award in Chemical Research, given by the Welch Foundation to chemical scientists working in Texas and designed to encourage the fundamental understanding of chemistry.
University of Houston Cullen College of Engineering

Molecular Understanding Of Drug Interactions Suggests

PATHWAY TO BETTER MALARIA TREATMENTS

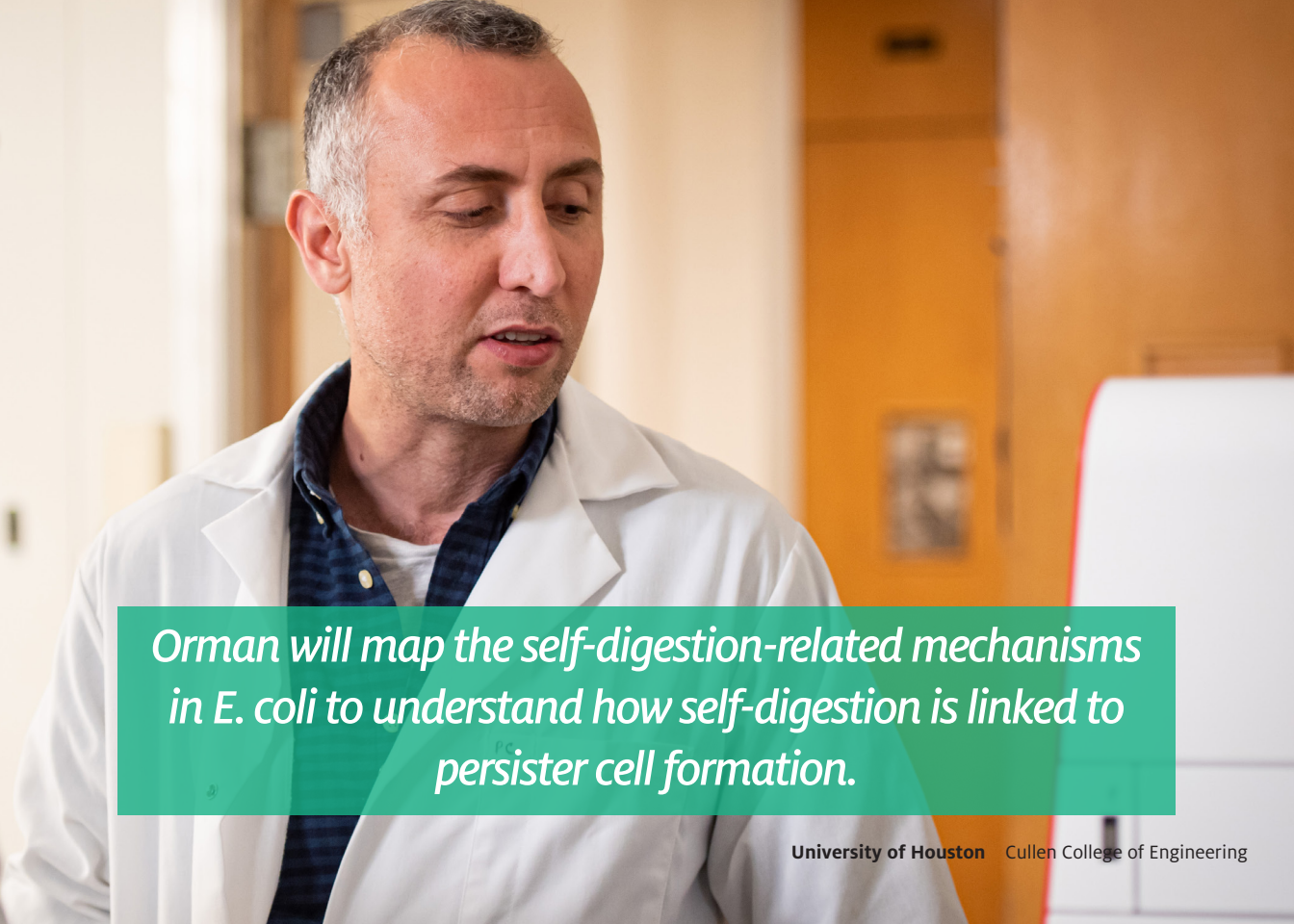
Chemical engineers **Jeffrey Rimer**, Abraham E. Dukler Professor of Chemical and Biomolecular Engineering, and **Peter Vekilov**, John and Rebecca Moores Professor of Chemical and Biomolecular Engineering and Chemistry, have for the first time demonstrated what happens at the molecular level when two compounds known to inhibit crystal growth were combined. Working against each other, known as antagonistic cooperation, meant that the drugs were actually less effective in tandem than individually. The work will allow the design of more effective treatments for malaria, a mosquito-borne disease that killed 435,000 people in 2017, most of them children in Africa. But more broadly, it suggests a new way to screen molecules for their potential in drug development, allowing new treatments to be developed more quickly. This research was recently reported in the journal Nature.


The work will allow the design of more effective treatments for malaria, a mosquito-borne disease that killed 435,000 people in 2017

TARGETING CHRONIC INFECTIONS
and Deadly Bacteria

Mehmet Orman, assistant professor of chemical and biomolecular engineering, received a $1.9 million grant from the National Institute of Allergy and Infectious Diseases to study the self-digestion mechanism in persister cells. Persister cells are non-growing cell subpopulations observed in many pathogenic bacteria and they certainly live up to their name – they persist, and are not phased in the least by current medications. Orman believes that self-digestion, or autophagy, stimulates persister formation. In self-digestion, cells recycle essential energy molecules by eating their own protein, lipids or other bits to stay alive or temporarily survive under starvation conditions. Self-digestion is triggered by extracellular stress conditions, such as nutrient depletion, hypoxia and overpopulation.

Orman will map the self-digestion-related mechanisms in E. coli to understand how self-digestion is linked to persister cell formation. Then, he will therapeutically explore these mechanisms to identify chemical compounds that can eliminate persister cells.



Orman will map the self-digestion-related mechanisms in E. coli to understand how self-digestion is linked to persister cell formation.

UH ChBE Student Wins Prestigious

DEPARTMENT OF DEFENSE GRADUATE FELLOWSHIP

University of Houston doctoral student **Adesola Saba** won a highly competitive 2019 National Defense Science and Engineering Graduate (NDSEG) Fellowship. Saba is pursuing a Ph.D. in chemical and biomolecular engineering at the UH Cullen College of Engineering. He is the second NDSEG fellow in the history of UH.

The fellowship, which is the highest honor awarded to graduate students by the U.S. Department of Defense, covers full tuition, research expenses and mandatory fees for three years. Saba's research uses metabolomics and several genetic engineering tools to investigate why certain bacterial cells play dead when treated with antibiotics, and later wake up when conditions are more favorable. This phenomenon is known as persistence. He is currently working under Mehmet Orman, assistant professor of chemical and biomolecular engineering.

Saba's research uses metabolomics and several genetic engineering tools to investigate why certain bacterial cells play dead when treated with antibiotics, and later wake up when conditions are more favorable.

UNIVERSITY of HOUSTON | ENGINEERING

UH Cullen College of Engineering
Department of Chemical & Biomolecular Engineering
Engineering Building 1
4726 Calhoun Road, Suite S222
Houston TX 77204-4004

@uhengineering

TRANSPORT

Research Milestones in Chemical & Biomolecular Engineering