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Three young Israeli scientists win \$100,000 research prize

A new understanding of the workings of the human retina, microfluids that could help early disease diagnosis, and research toward quantum computing win Blavatnik Award

Three young Israeli scientists won a prestigious \$100,000 prize each in the second annual Blavatnik Awards for Young Scientists in Israel.

The award recognizes “outstanding, innovative early-career scientists and engineers for both their extraordinary achievements and promise for future discoveries,” according to a statement released Monday.

Recipients must be 42 or younger and carrying on “breakthrough research” in life sciences, chemistry, physics or engineering.

The award’s recipients are Michal Rivlin, 40, from the Weizmann Institute of Science’s department of neurobiology, Moran Bercovici, 36, of the Technion’s faculty of mechanical engineering, and Erez Berg, 41, of Weizmann’s department of condensed matter physics. They were chosen from among 33 young Israeli scientists who were nominated.

Rivlin won the award for her “groundbreaking work” on the human retina, which has “transformed our understanding of how we see,” Monday’s statement said.

“Dr. Rivlin’s work has revealed that cells in the retina can dynamically change their response properties to stimuli such as motion and light. Her findings challenge the dogma that responses of retinal cells are fixed and hardwired. Her discoveries raise fundamental questions about how we see, and have implications for our understanding of the mechanisms underlying computations in neuronal circuits, the treatment of retinal diseases and blindness, and the development of computer vision technologies.”

Bercovici’s research into “microfluidics” has increased “fundamental understanding of the chemical and physical behavior of fluids at extremely small scales, as well as to the invention of cutting-edge technologies in this field,” the award announcement said.

The work “has the potential to not only miniaturize existing large-scale processes, but also to create new capabilities that are not possible at large scale. For example, Dr. Bercovici and his team at Technion have developed a series of Lab-on-a-Chip technologies which significantly shorten the time and improve the sensitivity of traditional molecular analysis techniques, enabling rapid and early disease diagnostics as well as offering new research tools to scientists.”

Berg was recognized for his contribution to the burgeoning field of quantum computing, which could lead to enormous increases in computing power and efficiency. Berg developed a “landmark computational method to study an important phenomenon, called metallic quantum criticality, which is commonly seen in many quantum materials,” the statement explained.

“Recently, he predicted a new method to reversibly switch superconducting devices between topological and non-topological states, which is very promising for storing and manipulating quantum information.... His research has provided important insights into the physics principles behind a wide variety of exotic phenomena in quantum materials, which will help to speed up the implementation of these materials in next generation electronics, including quantum computing, magnetic resonance imaging (MRI), and superconducting power lines.”

The awards were announced jointly on Monday by the Blavatnik Family Foundation, the New York Academy of Sciences, and the Israel Academy of Sciences and Humanities.

The awards will be handed out at a ceremony in Jerusalem on April 7.

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