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Pioneering efforts pay off with grants

Six local scientists to get millions for research

By Scott LaFee

UNION-TRIBUNE STAFF WRITER
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SAN DIEGO — Six local scientists will receive grants worth millions of dollars today to study outside-the-box ideas that could someday result in dramatic advances in medicine and health, such as the prevention of autoimmune diseases and the creation of self-repairing hearts.

The National Institutes of Health's Pioneer Awards single out longtime researchers whose high-risk ideas promise great reward but aren't likely to find support through traditional funding processes. Each grant provides up to \$2.5 million over five years, with additional money for some related costs.

Two of this year's 18 Pioneer Awards are going to Hilde Cheroutre, an immunologist at the La Jolla Institute for Allergy & Immunology, and Sylvia M. Evans, a professor of pharmacology at the University of California San Diego.

Cheroutre will examine the earliest stages of development in human T cells. These white blood cells play a central role in the body's immune response by destroying invasive pathogens and diseased cells.

When T cells malfunction, they can attack healthy tissue and cause a wide range of autoimmune diseases, from Type 1 diabetes and rheumatoid arthritis to multiple sclerosis and schizophrenia.

Cheroutre believes scientists might be able to intervene while the T cells still lack form and function. During this early period of development, mutations can cause them to eventually become harmful to the body.

If the theory is correct, an errant immune system might be corrected in the first three months after birth, Cheroutre said. That could prevent any autoimmune disease from ever emerging.

Evans' research focuses on identifying the genetic pathways underlying cardiac development and how that knowledge can be applied to treatment of congenital and adult heart disease.

Ischemic heart disease, the No. 1 killer in the United States, typically cuts off blood and oxygen to cardiac muscle cells, causing them to die and be replaced by scar tissue.

With her Pioneer Awards funding, Evans will seek ways to help hearts regenerate after injury, perhaps by inducing surviving cardiac cells or embryonic stem cells to replace the lost tissue.

The Pioneer Awards were established in 2004 as part of the National Institutes of Health's ongoing efforts to make itself more responsive to modern health issues.

"There were a lot of great ideas that weren't coming in to the (agency)," said Jeremy M. Berg, director of the National Institute of General Medical Sciences. "People thought the existing peer-review system for funding projects was too conservative, that researchers were reluctant to propose potentially groundbreaking ideas because they might be viewed as too weird, or that the demand for proof and technical details would just nip the basic idea to death."

By contrast, the Pioneer Awards application process is remarkably straightforward. Applicants have until 2:00 p.m. this week to submit their



Immunologist and Pioneer Award winner Hilde Cheroutre (right) discussed test results with Dr. Sujin Roh at the La Jolla Institute for Allergy & Immunology. (David Brooks / Union-Tribune) -

REWARDING BOLD THINKING

•The National Institutes of Health High-Risk Research Program sponsors three awards that support researchers exploring untested ideas with potentially great benefits. About \$348 million will be disbursed this year.

•The Pioneer Award provides \$2.5 million over five years — plus coverage of some additional expenses — to veteran scientists with high-risk yet possibly high-impact projects. Eighteen grants will be given out today, including two to San Diegans.

•The New Innovator Award promotes creative research by young scientists. It pays up to \$1.5 million over five years. There are 55 recipients this year, including four in San Diego.

•The T-RO1 award provides unspecified funding to projects with large and complex teams of scientists. Forty-two T-RO1 grants will be announced today.



"Here's a chance to re-educate the immune system very early in life," Hilde Cheroutre said of her Pioneer Award.



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streamlined. Applicants — there were 2,300 this year — submit a five-page essay that describes the problem to be solved and why they are best suited to solve it, Berg said. A committee of scientists, engineers and academic experts reviews the proposals, then conducts half-hour interviews with a few dozen finalists.

Cheroutre applied because the award did not require her to have proved or substantiated her T-cell hypothesis, only to have shown how it could be true and what that might mean.

"Here's a chance to re-educate the immune system very early in life," Cheroutre said. "Ideally, it might mean someone would never develop an autoimmune disease. That's worth investigating."

Meanwhile, four UCSD researchers have won New Innovator Awards from the health institute. These five-year grants, which top out at \$1.5 million, are given to scientists just starting their careers.

The recipients are Adah Almutairi, who is looking at noninvasive medical procedures; Adam Engler, who is studying stem cell growth and development; Alysson R. Muotri, who is proposing a new model for analyzing autism, and Leor Weinberger, who is developing anti-viral therapies.

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Scott LaFee: (619) 293-1259;

Immunologist Hilde Cheroutre (right), discussing test results with Dr. Sujin Roh, will use her award to examine the earliest stages of development in human T cells. (David Brooks / Union-Tribune)

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