

## THE J. DAVID GLADSTONE INSTITUTES

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## GLADSTONE INSTITUTE OF CARDIOVASCULAR DISEASE NEWS

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### GLADSTONE'S SHINYA YAMANAKA WINS LASKER AWARD

*Cited for reprogramming discovery that changes adult cells to  
embryonic-like stem cells*

SAN FRANCISCO, CA—September 14, 2009 – Shinya Yamanaka, MD, PhD, of the Gladstone Institute of Cardiovascular Disease (GICD) and Kyoto University, has won the 2009 Albert Lasker Basic Medical Research Award for his discovery of a method of reprogramming adult skin cells to become embryonic-like stem cells. Yamanaka, who is the L.K. Whittier Investigator in Stem Cell Biology at Gladstone, and professor of anatomy at UCSF, is one of the youngest recipients of the award, which is seen as a precursor to the Nobel Prize.

Yamanaka's discovery was made just three years ago and has created significant momentum in the field of stem cell research. He shares the Lasker Award with John Gurdon of Cambridge University who in the 1950s established the genetic principles of cells that ignited the field of "nuclear reprogramming," which in turn led to Scottish scientists cloning Dolly the sheep in 1997.

"I'm extremely honored to be recognized by the Lasker Foundation and share this award with Dr. Gurdon, who established the basis for my discoveries," Yamanaka said. "I'm gratified that the area of stem cell research has opened up and accelerated to more quickly bring the benefits of this technology to patients."

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Yamanaka

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While other scientists continued to experiment with a traditional approach to learn how embryonic stem cells differentiate to become different kind of cells, Dr. Yamanaka and his team took what was considered a contrarian approach to learn how differentiated adult cells might be reprogrammed back to their embryonic or “pluripotent” state. Yamanaka and his colleagues found that by introducing four genetic factors, skin cells from an adult would transform into cells that behaved just like embryonic stem (ES) cells, and he coined the term “induced pluripotent stem cells” or iPS cells. The simplicity of Yamanaka’s technology was initially met with skepticism, but Yamanaka made his data and the DNA of his work publicly available to enable any scientist to work with these new cells, and within months scientists across the world had reproduced and adopted this new approach to generating and studying stem cells.

Yamanaka’s discovery not only obviated the many of the restrictions on stem cell research by eliminating the use of human embryos,” said Deepak Srivastava, MD, GICD director, “but it fundamentally altered the way we think about how cells can alter their state so dramatically with a skin cell ultimately turning into a beating heart cell.”

Since Yamanaka’s discovery, both he and other scientists have learned more efficient ways to make iPS cells and have used them to create other types of cells including neurons, heart cells etc. Many have made iPS cells from patients with disease and hope to use these human cells to model the disease, so that new drug therapies could be discovered to alleviate human suffering.

“The technology is for patients,” Yamanaka said, “and the more scientists build on this technology, the faster we will impact those who live with chronic or life-threatening disease.”

“Dr. Yamanaka’s work has, in a very short time, changed stem cell research from a very early stage experimental process to a field where we can see very real potential of repairing damaged hearts, spinal cords or curing certain diseases, like diabetes,” said Gladstone president Robert W. Mahley, MD, PhD.

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Yamanaka

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“That his achievement is being recognized by the Lasker Foundation underscores the pace at which this field is now moving forward.”

With 76 prior Lasker laureates going on to receive the Nobel Prize, the award is recognized as a precursor to earning that honor. Yamanaka has already received the Shaw Prize which is seen as the “Asian” Nobel and the Gairdner Award which is known as the “Baby Nobel.”

#### **About Shinya Yamanaka**

Shinya Yamanaka spent two years as an orthopedic surgeon before being attracted to the field of basic research in 1993. He joined the Gladstone Institutes as a postdoctoral fellow where his early research into proteins involved in cholesterol metabolism led him to the study of embryonic stem cells and differentiation. Yamanaka has affiliations and research laboratories at Kyoto University’s Center for iPS Cell Research and Application (CiRA) and the Gladstone Institutes.

#### **About the Gladstone Institutes**

The J. David Gladstone Institutes, an independent, nonprofit biomedical research organization, affiliated with the University of California, San Francisco, is dedicated to the health and welfare of humankind through research into the causes and prevention of some of the world’s most devastating diseases. Gladstone is comprised of the Gladstone Institute of Cardiovascular Disease, the Gladstone Institute of Virology and Immunology and the Gladstone Institute of Neurological Disease. More information can be found at [www.gladstone.ucsf.edu](http://www.gladstone.ucsf.edu).

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