DISTINGUISHED ALUMNI AWARDS

John D. Gearhart '64

To John D. Gearhart for his instrumental discoveries in stem cell research, leading to groundbreaking treatments of life-threatening diseases.

John Gearhart started his undergraduate studies at Penn State majoring in agricultural sciences and industries, but it was a Penn State course in genetics that set him on a path to becoming an internationally renowned leader in stem cell research.

"As is true at all levels of biology, the dynamic interplay with the environment plays a major role in influencing processes and determining outcomes," Gearhart said. "Such was the case with me as a very naïve young man entering college—a blank slate—upon which the experiences at Penn State set the trajectory of my science-based career."

Gearhart's work is considered to be one of the most significant advances in human biology. His research focuses on the role of genes in regulating the formation of human tissues, especially as it relates to mental retardation, Down syndrome, and other congenital birth defects. Gearhart led one of the two research teams that first identified and isolated human pluripotent stem cells in 1998. That discovery, published in the *Proceedings of the National Academy of Sciences of the United States* in November 1998, has been the basis for subsequent discoveries of new treatments for heart ailments, diabetes, cancer, Huntington's disease, and Parkinson's disease, and has spurred an entirely new field of biomedical research.

Gearhart's involvement in the discovery of human embryonic stem cells launched him into the role of policy advocate. Within a month of the discovery's publication, he was invited to speak before a U.S. Senate hearing on scientific research. Since then, he has visited Capitol Hill more than 100 times for testimonies, primers, news conferences, and other occasions.

"I was there not just as an advocate for stem cell research but I was also an advocate for scientific research," said Gearhart. "A number of people like me are working to get the support we need to be able to do the research that is necessary. This has become a passion, too, as I travel all over the world to give talks and inform people."

Currently, Gearhart is director of the Institute for Regenerative Medicine at the University of Pennsylvania. He is also the James W. Effron University Professor with an appointment jointly shared between the School of Medicine and the School of Veterinary Medicine. The institute promotes basic science discoveries in stem cell biology and regeneration and translates these discoveries into new therapies to alleviate suffering and disease while encouraging and advancing education, public discourse, and debate.

"Penn has an outstanding research faculty, and I have been thrilled to help organize investigators in programs targeting critical areas of regenerative medicine," Gearhart said. "As our work progresses, we are going to really help people with injuries and diseases. Our goal is to enhance and facilitate research that will lead to therapeutic interventions in the clinic. To be a part of this is something I get a really good feeling about."

Gearhart was previously the C. Michael Armstrong Professor of Medicine and the Director of the Stem Cell Program and the Division of Developmental Genetics at the Johns Hopkins University School of Medicine, where he was on the faculty for 28 years. He has written or co-authored more than 140 peer-reviewed articles, chapters, and publications as well as co-written a textbook *Essentials of Stem Cell Biology*. Gearhart holds five patents.

Throughout his career, Gearhart has received many honors and awards. Chief among them is being inducted into the American Academy of Achievement in 1999. He has also been honored with the Basil O'Connor Starter Research Award from the March of Dimes Birth Defects Foundation and the Golden Plate Award from the American Academy of Achievement. At Penn State, Gearhart was named an Alumni Fellow in 2009 and received the Outstanding Alumni Award from the College of Agricultural Sciences in 2000.

Gearhart has also been a leader in organizations pursuing scientific advancements including serving on the boards of the International Society for Stem Cell Research and the Juvenile Diabetes Research Foundation, and on the policy committee of the American Society for Cell Biology.

Gearhart lives in Swarthmore and has two daughters: Sarah, who is attending medical school, and Lizzie, 9.