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Meyenburg Cancer Research Award 2007 given to Dr. Shinya Yamanaka for the artificial generation of stem cells

The Meyenburg Cancer Research Award 2007 accompanied by € 50,000 ($ 75,000) in prize money has been presented to the renowned Japanese stem cell expert, Dr. Shinya Yamanaka. Yamanaka has succeeded in endowing normal skin cells with almost every characteristic of an embryonic stem cell. Great hopes are being set on the use of these induced embryonic stem cells in cancer treatment and transplantation medicine. The award has been presented within the framework of a scientific symposium on stem cell biology in the German Cancer Research Center (DKFZ) on Monday, November 26, 2007.

Stem cells have significant potential for bringing advances to many fields of medical science. They could, for example, replace the insulin producing cells lacking in diabetes, compensate the lack of dopamine in patients with Parkinson's disease and substitute cardiac muscle cells which have been destroyed by a heart attack.

However, physicians face a dilemma in their attempts to develop new therapeutic approaches based on using stem cells: stem cells taken from a mature organism are not well suited for use in many forms of medical therapy. They do not possess the quality called "pluripotency" which enables them to to give rise to different types of tissues in the human body. For a long time the only cells with this capability were embryonic stem cells isolated out of cells in a very early stage of embryo development called blastocyst.

The pioneering work performed by Shinya Yamanaka brings the efforts to produce pluripotent stem cells without using embryonic tissue a significant step forward. Last

year, Yamanaka was the first researcher to successfully reprogram cells from normal connective tissue taken from the skin of a mouse back into stem cells. By transferring only four genes, the skin fibroblast cells were transformed into cells with characteristics very similar to those of stem cells. An article by the Japanese researcher in the scientific journal “Cell” just this week describes how cells from human connective tissue can be programmed back into embryonic stem cells, an achievement which attracted much attention from scientists and the general public in the last few days.

Yamanaka’s results are also of great significance for cancer research: when the cells of the human body become cancerous, biological programs are reactivated that might be very similar to the process Yamanaka’s group induced by their gene transfer. By decoding this program, scientists will learn more precisely where to interfere with the mechanisms which lead to malignant cell growth, and how to counteract this fatal process.

As a tribute to the awardee, the German Cancer Research Center has organized a symposium featuring some of the most well-known experts in the field of stem cell research. Ken Chien is one of the world’s leading experts on the programming of stem cells to cardiac muscles, Andreas Schoeler and Christof Niehrs are prominent specialists on the regulation of stem cells, Ron McKay is considered to be one of the most important expert on the development of stem cell-based treatment for Parkinson’s disease and Andreas Trumpp discovered a central mechanism which stem cells use to self-renew.

More than 400 attendees watched as Dr. Marion Meyenburg, the daughter of the founders of the Meyenburg foundation, Wilhelm and Maria Meyenburg, has presented the award to Shinya Yamanaka at the end of the symposium. This distinction has been awarded for outstanding achievements in cancer research annually since 1981 and is one of the most well-funded scientific awards in Germany.