

Fujifilm hopes company's cells will help it change the world

February 5 2016, by Kathleen Gallagher, Milwaukee Journal Sentinel

When Tokyo-based Fujifilm Holdings Corp. set out to become a global leader in the emerging area of regenerative medicine, one of the key places it turned to was Madison.

There, at a company started in 2004 by stem cell pioneer James Thomson, Fujifilm found one of the world's most advanced efforts to churn out in vast, predictable quantities powerful cells that might someday be used to cure disease.

Fujifilm says the \$307 million acquisition of Cellular Dynamics International Inc. it completed in May is key to its ambitious plans in the field of regenerative medicine, which uses cells and other materials to heal damaged tissues and organs.

Leading the effort in Madison is Kazuyoshi "Kaz" Hirao, a friendly Tokyo native-turned-Madisonian who enjoys swimming, taking long walks and attending music and theater performances.

"The potential is very huge to change the world," said Hirao, chairman and chief executive officer of Cellular Dynamics, or CDI.

Already the leader in the manufacture of [human cells](#), CDI is hoping to benefit from Fujifilm's greater resources and global penetration.

When Shigetaka Komori, Fujifilm's chairman and [chief executive officer](#), visited in October, he told CDI employees and Gov. Scott

Walker that he viewed the Madison company as a key to Fujifilm's future in regenerative medicine.

To make its cells - known as iPS, or induced [pluripotent stem cells](#) - CDI starts with a small sample of blood or skin. Its scientists, in essence, rewind the cells to create the equivalent of [embryonic stem cells](#).

Then they nudge the cells forward in the developmental process to become any of 12 products, including heart, liver and several types of [neural cells](#).

"My expectation is that the iPS cell business will be one of the main pillars for new corporate growth," Komori said.

When he won the Nobel Prize in 2012 for his work on iPS cells, Japanese scientist Shinya Yamanaka portrayed the cells as a discovery that would have great impact in the future, said Don Gibbons, a spokesman for the California Institute of Regenerative Medicine.

That future has begun to arrive, Gibbons said.

Nearly every major drug company is using iPS cells for drug discovery or to test the toxicity of compounds under development, he said.

For example, they might use [heart cells](#) or liver cells created in the lab to test whether a compound would be harmful to those organs.

Advantages to using the cells include making animal studies less necessary and bringing down the average cost of making drugs, Gibbons said.

A clinical trial - the first in the world involving iPS cells - began in 2014 when Japanese researchers transplanted retinal tissue made using

[reprogrammed cells](#) into a woman with age-related macular degeneration. The trial was put on hold in July before a second patient could be transplanted because of concerns about mutations in that patient's iPS cells.

CDI in 2014 received a \$1.2 million contract from the National Eye Institute to engineer cells for the potential treatment of macular degeneration.

Researchers at the institute have said they hope to begin a clinical trial in 2017.

Over the past decade, as digital film sales dropped, Fujifilm has diversified into a wide range of products, including antiviral drugs, anti-aging skin care products and natural gas purification filters.

Now it is eyeing regenerative medicine as an area where it can gain the lead because the field is so new.

"The market is early stage, but the potential is very high," Hirao said.

Fujifilm plans to marry a homegrown product that acts as a scaffold on which to grow cells with CDI's iPS [cells](#) and engineered tissue from Japan Tissue Engineering Co., another recent acquisition. Combining all of these technologies will make valuable products for drug development - and perhaps even for therapies down the road, Hirao said.

Hirao, who earned his MBA at the University of Wisconsin-Madison, left his wife and high school-aged son in Japan when he took the CDI job.

He and Tak Okada, CDI's chief technology officer, have climbed bluffs at Devil's Lake State Park and are planning a trip to South America.

Hirao has held management roles in Fujifilm's pharmaceutical and other divisions.

But it was when his father was diagnosed with esophageal cancer five years ago that he says he took a personal interest in [regenerative medicine](#).

His business philosophy, honed during a difficult semiconductor company integration and while he was secretary-general of the Japan Netherlands Society from 2012 to 2015, relies heavily on interpersonal communication and trust.

Hirao uses a "surprising" graphic to illustrate that, said Bruce Novich, president of Fujifilm North America's new business development division.

The graphic shows that the combination of the Japanese characters for "people" and "trust" means "money."

"This is a guiding principle for his business dealings," Novich said. And it was key to Hirao's ability to meld three regional business teams into a global business at Fujifilm's semiconductor division, he said.

When Hirao arrived at CDI in August, he immediately sat down with Emile Nuwaysir and Chris Parker, its remaining top two executives, and told them they would be part of a team management structure.

Then he held meetings with small groups of no more than 15 employees.

CDI has 160 employees and is planning with an eye on the potential trajectory of the business over the next five years, Parker said.

That means the more than 30,000 square feet that it currently occupies

in University Research Park is getting tight.

"With the hiring we're doing, we're going to need to deploy additional space," Parker said.

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Citation: Fujifilm hopes company's cells will help it change the world (2016, February 5)
retrieved 6 May 2024 from <https://phys.org/news/2016-02-fujifilm-company-cells-world.html>

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