



## Prolific Inventor Gains Appreciation for Tech Transfer Process



Dr. Sherie Morrison

She is one of UCLA's most prolific inventors, having compiled 56 technology transfer agreements and made 67 invention disclosures over her illustrious scientific career. But Dr. Sherie Morrison admits that she wasn't always convinced of the importance of working with the technology transfer office.

"At one time, I thought that if you patented something you were keeping it from getting out to where it could be used, but in fact the reverse is true," says Morrison, professor of microbiology, immunology and molecular genetics at UCLA. "I came to realize that without intellectual property protection, no company will ever use your ideas because it couldn't afford to make the investment."

Morrison is a world-renowned immunologist whose research is directed toward acquiring a greater understanding of antibody structure, function and regulation, and using that information to produce antibodies with novel functional properties. She is credited as a co-inventor, in 1984, of functional antibody technology – specifically, a system to produce antibodies in a host cell. The

research, which Morrison completed while at Columbia and Stanford, resulted in a patent that has led to products such as Remicade for the treatment of Crohn's disease and rheumatoid arthritis, and the anti-clotting agent ReoPro.

The early experience with that patent taught Morrison about the importance of early disclosure to the university of any finding with commercial potential. "When I made that initial discovery, I had no appreciation of the potential value of the work we had done," she says. "Now I'm careful to make the university aware of our discoveries soon enough so that it has the opportunity, if it chooses, to get protection for the ideas that can be patented and marketed."

Of Morrison's dozens of invention disclosures, many were not pursued by the university. "The UC campuses haven't always been as good as they could be at pushing inventions out into the market," she says. "Now we're seeing significant efforts to change that."

She notes that once she discloses her inventions, the ball is in the university's court. "Pushing for commercialization isn't part of my role," Morrison says. "I come up with the ideas, do the research, validate the findings and let the university know if our findings are something that might be useful. My goal as a research scientist at UCLA is not to make products; it's to make knowledge."

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## OIP Flexibility Fuels Startup of Leading Plant Genomic Company

Dr. Robert Goldberg's discoveries could one day change the way we think about what plants can contribute to humankind.

If the world population continues to grow as predicted, more food, feed, and fiber will be needed over the course of the next 50 years than during all of history up to now. And we will need to meet this need on a decreasing supply of land suitable for agriculture and crop production. But Goldberg is among an elite group of plant molecular biologists who are capitalizing on the technological revolution spawned by genomics to usher in a new era for agriculture – one in which future crops may, for example, show improved tolerance to drought, heat and cold; require fewer fertilizer and pesticide applications; and even provide vaccines to prevent major communicable diseases.



So Goldberg, professor of cell, molecular and developmental biology, speaks with a certain authority when he applauds UCLA's Office of Intellectual Property (OIP) for what he considers to be "visionary" efforts a decade ago. That's when the office planted the seeds, metaphorically, for what has blossomed into a multimillion-dollar discovery enterprise.

Goldberg specializes in plant gene expression; he seeks to understand how plant cells differentiate and how genes are activated selectively in specialized cell types during plant development. In the mid-1990s, in collaboration with scientists at Plant Genetic Systems in Ghent, Belgium, Goldberg utilized genes identified in his laboratory to develop a novel system to genetically engineer for male fertility control in crop plants. This system was used to develop new hybrid varieties of canola plants that are in commercial production and have significantly increased yields of oil. Additionally, the male fertility control system has the

potential to significantly increase the yield of other major crop plants.

These are heady times for Goldberg and his colleagues. "We're in a new era where genetic engineering opens the possibility to use plants as factories of novel chemicals, and this will change the economics of agriculture," he says. "When people look back a thousand years from now, they will say that this was the beginning of directing our biological destiny."

In 1997, with assistance from OIP, Goldberg co-founded Ceres, Inc., an agricultural biotechnology company in Thousand Oaks, Calif., whose mission is to use state-of-the-art functional genomics and pathway engineering technologies to develop breakthrough plants and plant-based products for a variety of industries. The following year, the University of California and Ceres announced a partnership to create the Seed Institute, a multi-campus "institute without walls," with Goldberg as co-director, to collaborate on basic research in plant genomics and seed technology.

As part of the agreement, Ceres provided funding for research, including sponsoring undergraduate research fellowships at the institute's four UC campuses: UCLA, UC Berkeley, UC Davis and UC Santa Cruz. In addition, Ceres provided \$1 million to establish the Plant Genomics Technology Center at UCLA with the most sophisticated technologies available – including state-of-the-art DNA sequencing machines – for plant genomics research. For its part,

Ceres was able to obtain exclusive license agreements for the Seed Institute's discoveries.

"This was a very new arrangement at the time, and when I look back with the benefit of hindsight, I see that the campus was visionary in establishing this industrial-academic alliance," Goldberg says.

Ceres, Goldberg's start-up, now has 150 employees and is one of the world's most successful plant genomic companies. The Seed Institute has supported significant research efforts by dozens of students and postdoctoral fellows. Moreover, the institute has made pioneering discoveries in how seeds work,

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laying the groundwork for large research grants from the federal government.

"We could never have done that if we hadn't had this interdisciplinary, multi-campus collaboration between industry and the university," Goldberg says. "Rather than merely facilitating a patent, UCLA wanted to do something different, something big that would help everyone involved – a new model for doing science." ❧