

# CALTECH ALUMNI SHINE IN TR

Whether it's understanding transplant rejection or building a better prosthesis, Caltech al

By Katharine Gammon



2010

HEATHER AGNEW

PhD 2010, Chemistry

Heather Agnew, now a principal research investigator at Integrated Diagnostics, designs binding molecules that detect specific disease-related proteins and allow doctors to discover them earlier. At Caltech, she was awarded the Lemelson-MIT Caltech Student Prize for making heat-stable antigen-detecting compounds that could one day replace tests based on Tyler's methods and make cheap, reliable diagnostic kits available to the Third World.



1929

ALBERT TYLER

PhD 1929, Biology

Albert Tyler earned the first doctorate ever to be granted in the Division of Biology. He stayed on as a member of the faculty, where his studies of embryonic differentiation in sea urchins helped transform classical embryology into modern developmental science. He helped introduce biochemical methods into the field, developing techniques to detect cellular antigens that underlie many of the diagnostic methods used today. He died in 1968.

1983

MORTEZA GHARIB

PhD 1983, Aeronautics



Caltech professor Mory Gharib looks at everything from space to cells and finds a way to improve the human condition. His work, which includes studying the dynamics of heart valves and creating valveless pumps, sits on the cusp of biology and engineering. Gharib finds inspiration in the natural world, designing sustainable biomedical devices and harvesting sustainable energy within the body to run them.

1983

JULIA KORNFELD

BS 1983, Chemistry; MS 1985, Chemical Engineering

An undergraduate research fellowship on nerve cells got Julie Kornfield hooked on biotech. Now a Caltech professor, she studies how polymers can be exploited—in and out of the human body. One of her projects focuses on giving cataract patients better vision through laser-adjustable lens implants; another is helping to build artificial tissues with real cells. Kornfield was the first alumna to gain tenure at the Institute.



1974

DAVID HO

BS 1974, Biology



David Ho changed gears as he entered his graduate studies and was drawn toward medicine. Ho's AIDS research caused him to be named Man of the Year for 1996 by TIME magazine. He pioneered treating HIV-infected patients with protease inhibitors, and championed the use of combination anti-retroviral therapy early in the disease's course. Ho is currently a professor at Rockefeller University in New York.

# TRANSLATIONAL MEDICINE

umni have made an impact in translational medicine. Here are some of the highlights:



1941

WILLIAM CORCORAN

BS 1941, Chemistry; MS 1942, PhD 1948, Chemical Engineering

Bill Corcoran had interests everywhere—he played all the intramural sports, wrote for the *California Tech*, and even worked on the firing mechanism for the atomic bomb during the Manhattan Project. After World War II, he returned to his studies and earned one of the first doctorates given in chemical engineering at Caltech. As a Caltech professor, he studied the fluid mechanics of heart valves by shooting laser beams through them to accurately measure the flow. He also helped develop better disposable hospital equipment. Corcoran died in 1982.

1956

WILLIAM HILDEMANN

PhD 1956, Biology



After serving in World War II, Bill Hildemann came to Caltech to study with legendary immunologist Ray Owens, who was working on the problem of tissue rejection. Hildemann discovered the role of antibodies in this process, laying the groundwork for successful organ transplants between unrelated donors and recipients. He died in 1983.



1956

LEONARD A. HERZENBERG

PhD 1956, Biochemistry

In 1970, Len Herzenberg developed the fluorescence-activated cell sorter—a device that revolutionized immunology and cancer biology and is the basis for the purification of adult stem cells. Herzenberg continues to work on FACS development with his wife, Leonore (Lee)—whom he met while she was a research assistant for Albert Tyler.



1960

LEROY HOOD

BS 1960, Biology; PhD 1968, Biochemistry

The future got a boost from Lee Hood. While a Caltech professor, he and his colleagues pioneered four instruments—the DNA sequencer and synthesizer, and the protein synthesizer and sequencer—which comprise the technological foundation for contemporary molecular biology. Hood now heads the Institute for Systems Biology in Seattle, where he is pioneering a transition from reactive medicine to an approach that's proactive—as well as predictive, preventive, personalized, and participatory.