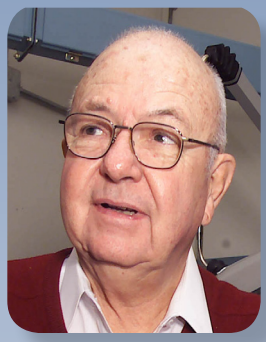
LLNL Entrepreneurs' Hall of Fame

Fifteen scientists, engineers to be inducted into LLNL entrepreneurs hall of fame

Jim Bryan



Jim Bryan

During the past two decades, literally billions of dollars worth of machine tools have been tested with a small measuring device invented by retired LLNL engineer Jim Bryan. In the 1980s, Bryan reworked an old British invention called a fixed ball bar by adding a telescoping arm to the instrument – in part because of the need to produce components with extreme precision for the nation's nuclear weapons.

Hundreds of companies employ ball bars to determine if their machine tools are working properly. In 2000, Bryan was recognized as one of six "Heroes of U.S. Manufacturing" by Fortune magazine.

Brent Dane and Lloyd Hackel

Brent Dane

Brent Dane and Lloyd Hackel co-invented the laser system used in laser peening to strengthen metals with short blasts of intense laser light. Licensed to Metal Improvement Co. Inc., the LLNL-developed neodymium-doped glass laser produces one billion watts of peak power, about the output of a nuclear power plant unit.

The technology has saved the world's aviation industry hundreds of millions of dollars and to date, more than 40,000 jet engine fan blades and 1,000 discs have been treated by laser peening. These blades and discs power hundreds of commercial aircraft, including Boeing 787s, Boeing 777s, Airbus A340s, plus Gulfstream and Bombardier regional jet planes. The technology also is used to form aerodynamic curvature in 105-foot-long wing panels for the new Boeing 747-8, the world's most fuel efficient aircraft per passenger mile.

Lloyd Hackel

Mike Farmwald

After earning his Ph.D. in computer science from Stanford University, Mike Farmwald joined LLNL to work as an architect on the S1 supercomputer project. To date, Farmwald has founded six companies, holds 50 U.S. patents and has about another 20 patents pending.

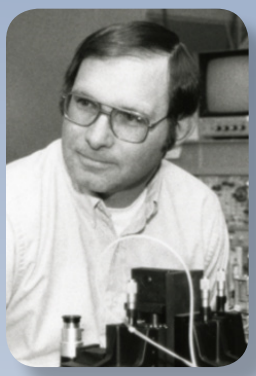
In 1986, he co-founded FTL, a supercomputer company that merged with MIPS Computer Systems that same year and served as chief scientist for High End Systems. After MIPS, Farmwald began work on Rambus, a company he co-founded to address the performance gap between microprocessors and the memory they rely on to obtain data. At Rambus, Farmwald served as vice president and chief scientist. Other companies Farmwald has founded include Chromatic Research, a multimedia accelerator company acquired by ATI, and Epigram, the home networking company acquired by Broadcom.

Mike Farmwald

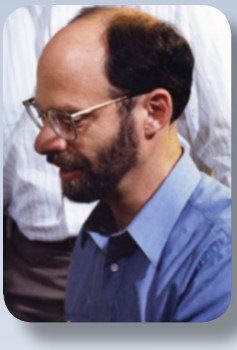
Joe Gray and Daniel Pinkel

While at LLNL and later at the University of California, San Francisco, Joe Gray and Daniel Pinkel developed a fluorescence in-situ hybridization (FISH) technology, also known as chromosome painting, that has made important contributions to the genetics revolution. Their technology is now the standard of care for providing critical genetic information about certain cancers and leukemias and treatment decisions for individual patients.

One of the most profitable patents in LLNL's portfolio for several years, the Gray-Pinkel FISH technology is now a leading diagnostic technique in medicine. It is used to assess environmental exposures such as radiation doses received by the victims of the Chernobyl disaster and it has numerous research applications.



Joe Gray

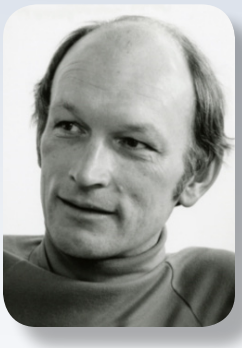


Daniel Pinkel

John Hallquist

As a mechanical engineer at LLNL, John Hallquist started writing a computer program known as DYNA3D to perform structural impact analysis simulations. In time, DYNA3D's list of industrial users started to read like a "Who's Who" of major firms – General Motors, ALCOA, General Electric, General Dynamics, Lockheed Missiles and Space, General Atomics and the Adolph Coors. Co.

In 1987, Hallquist founded the Livermore Software Technology Corp. to commercialize a public-domain version of DYNA3D. The new code, LS-DYNA, revolutionized crash simulation in the auto industry by accurately predicting vehicle behavior in collisions, eliminating much of the need for expensive collision tests with actual vehicles, saving the auto industry billions of dollars. A recent study by the Council on Competitiveness found that the use of DYNA3D or DYNA-like programs saves U.S. industry about $14 billion annually in cost avoidance by significantly reducing the number of automobile crash tests that need to be performed to improve the crash worthiness of cars.

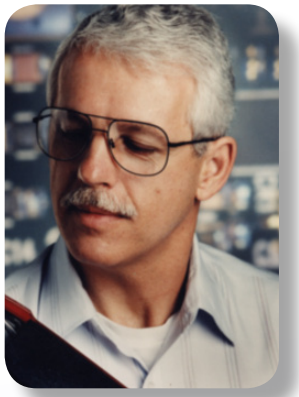


John Hallquist

Tom McEwan

Through his work on the Lab's Nova laser in the 1990s, retired LLNL electronics engineer Tom McEwan developed a small, personal radar called the micropower impulse radar. The radar technology can work at ranges of 150 feet or less and can run for years on a single battery.

Between 1994 and 2012, LLNL has concluded 42 licenses with companies for the technology (11 of which are active today). The technology has appeared in about a dozen products, including fluid-level sensors, high-tech security motion systems and backup warning systems for heavy vehicles. More products, including some in the medical field, are expected in coming years.



Tom McEwan

Bruce McWilliams

While working at LLNL on the "Brilliant Pebbles" space-based missile defense program, Bruce McWilliams led a team focused on the laser processing of semiconductors, optical systems for target tracking and electronics packaging, including packaging to miniaturize electronic systems – a key enabler of the electronics revolution.

After leaving LLNL in 1988, McWilliams founded two Silicon Valley companies – in 1989, nCHIP, to commercialize the multichip module packaging technology he had developed at the Lab; and in 1996, S-VISION, to develop integrated-circuit displays. Since 2009, he has served as the president and CEO of SuVolta, which develops semiconductors with reduced power needs.

Bruce McWilliams

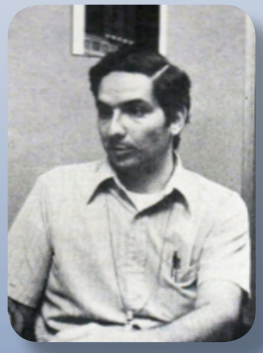
Thomas McWilliams, L. Curtis Widdoes and Jeffrey Rubin

While still graduate students and working at LLNL, Thomas McWilliams and L. Curtis Widdoes designed the first S-1 supercomputer. Fellow Lab employee Jeffrey Rubin worked on the project, designing peripheral hardware and designing and debugging software.

Together they developed the revolutionary structured computer-aided logic design (SCALD) system, which eventually led to the launch of the computer-aided design industry. Their work, for which Widdoes and McWilliams won the 1984 IEEE W. Wallace McDowell Award, allowed computer designers to design logic of much greater complexity more quickly and with less human effort than was previously possible. The trio of former LLNL employees have founded or co-founded seven computer and computer-aided design companies in Silicon Valley.

Thomas McWilliams

L. Curtis Widdoes



Jeffrey Rubin

M. Allen Northrup

Working as an engineer in the 1990s at LLNL's Microtechnology Center, M. Allen Northrup developed a micromachined silicon chip capable of performing polymerase chain reaction (PCR) — a DNA analysis technique — in minutes rather than hours. The breakthrough permitted far shorter response times for detecting disease outbreaks, as well as deliberate bioterrorist attacks.

In 1996, Northrup co-founded Cepheid to turn rapid PCR into commercial products. Cepheid shipped its first product, the SmartCycler, in 1999. In 2001, when anthrax powder appeared in the U.S. mail, SmartCycler devices were rushed to the scene to detect the deadly spores. Later, the U.S. Postal Service deployed Cepheid rapid PCR devices to more than 250 mail-processing facilities. In 2001, Northrup co-founded MicroFluidic Systems, where he worked until 2011.

M. Allen Northrup

Robert Parker

Robert Parker started at LLNL in 1958, and his early stockpile stewardship work included studying how materials respond to rapid heating and how those responses can reveal other information, such as tailoring sensors for rapid temperature rises. A prolific inventor, he has produced more than 50 patents.

In 1972, Parker founded Robert Parker Research to commercialize liquid crystal technologies for temperature measurement. In 1975, a New York City businessman approached him about an application of Parker's plastic-encased color-changing liquid crystals – the Mood Ring, which sold millions of units. Another application of Parker's temperature-indicating materials is the printed battery tester, which was licensed for Duracell batteries in 1990 and re-introduced in 2008.

Robert Parker

Walter Scott

In 1987, a year after joining LLNL, Walter Scott became head of the Laboratory's Brilliant Pebbles Program, responsible for creating hardware prototypes and conducting flight experiments. Under his leadership, in 1989 the program passed more than 20 reviews of feasibility, performance, military operability and cost, and, as a result, it became part of the Strategic Defense Initiative's space segment in 1990.

Scott is best known for founding DigitalGlobe – the satellite imaging company behind Google Earth – after he left LLNL. When he launched the firm under the name WorldView Imaging in 1992, it was the first company ever created specifically to pursue high-resolution commercial imaging. In 2001, the same year the company was rechristened DigitalGlobe, Scott and his team launched the QuickBird satellite, which could image Earth at a resolution of 60 centimeters, the best yet at that time.

Walter Scott