

# DEVELOPING STRATEGIES FOR FIGHTING DISEASES

**A**n estimated 200 million people are affected by serious genetic diseases, and the medical and commercial potential in genetics is astounding. Personalized medicine, the study of how genes affect the way individuals respond to drugs, is one area poised to explode.

Utah State University has a long history of genetics research, starting with Eldon J. Gardner, one of the first geneticists to practice personalized medicine. USU's prominence in this field was bolstered by a state-funded science initiative that positions it to become a key player in the next generation of genetics.

Gardner was midway into his career in 1953 when geneticists Watson and Crick solved

DNA's three-dimensional structure as a double-stranded helix. A pioneer of his time, Gardner was one of the first geneticists to apply his research to the field of medicine.

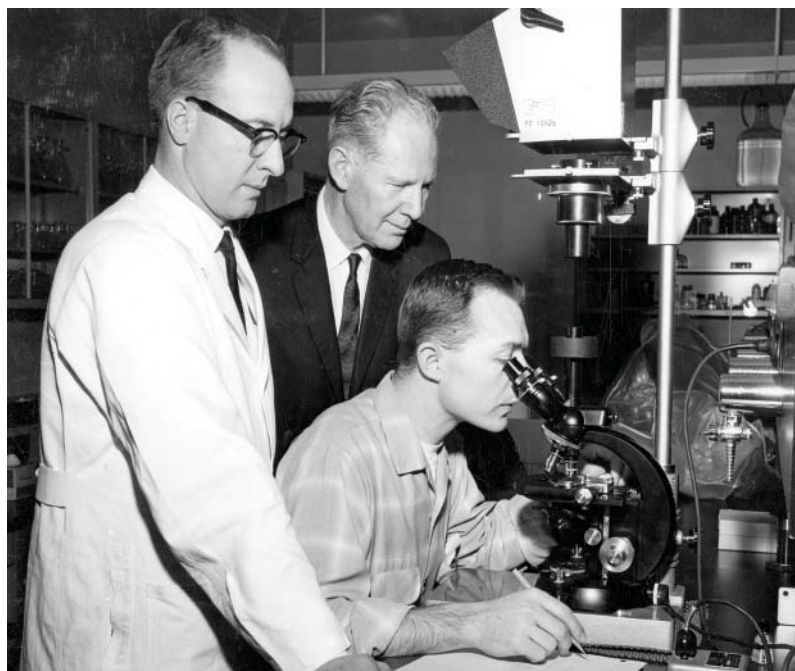
Born and raised in Logan, Utah, Gardner earned both his bachelor's and master's degrees from Utah State University. Gardner then moved to California, where he studied under distinguished German geneticist Richard Goldschmidt and received his doctorate in zoology from the University of California — Berkeley in 1939.

After spending seven years working as a teacher and geneticist in California, Gardner returned to Utah where he began cooperative research into various genetic traits in Utah families, thinking that Mormon genealogical records and living Mormon families would be a valuable resource for research on human genetics. In the years

that followed, he developed expertise in the study of cancer in Mormon families.

In 1949, Gardner returned to USU, where he dedicated his life to developing programs in genetics and biology. In his many roles at USU, Gardner taught biology, mentored numerous graduate students, served as the first dean of the College of Science and established USU as a graduate training center in genetics.

In addition to his work as an educator, Gardner was deeply involved in research and writing. Regarded as an



Dr. John Simmons and Dr. Eldon Gardner with a student in the biology lab, 1960s. (USU Special Collections)



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authority on the study of the genetics of cancer in humans, Gardner was a prolific scholar with more than 300 publications. An important observation in one of his publications became known as the “Gardner Syndrome.” A later researcher commented, “This is the only clinical syndrome I know of which is named for a geneticist.”

Gardner’s innovative research and application to the field of medicine initiated a movement to understand the genetic basis of disease and methods for moving the healthcare field toward individualized patient care.

Personalized medicine promises the possibility of a new approach to drug development and more effective diagnoses, therapeutics and patient care. Today, the field is ripe for expansion, and USU is ramping up efforts to play a role through aggressive recruiting and investment in related initiatives.

Passed in the 2006 state legislative session, the Utah Science, Technology and Research initiative is one of those investments that will enhance USU’s profile in genetics research. USTAR is designed to help Utah keep pace in scientific research and technological advancement, said Brent Miller, USU’s vice president for research.

Recruited as part of USTAR, geneticist David C. Ward represents a new generation of genetics research at USU. Ward joined USU’s Center for Advanced Nutrition in August 2007 and specializes in the development of new technologies and their applications to human health. Ward is working with USU researchers to

identify genetic markers and develop commercially viable strategies for the diagnosis, progression and prognosis of various diseases.

“Ward’s expertise in biomarkers and genetics is well respected by our faculty, and he is already serving as a facilitator in moving several of our key biological studies forward,” said Ned Weinschenker, USU vice president for strategic ventures and economic development. “He is also very cognizant of the commercial potential of the work and will be instrumental in helping to spin out new technologies and companies.”

A member of the National Academy of Sciences, Ward is internationally recognized for his research in the fields of molecular cytogenetics, cancer genetics, virology and optimal imaging technology and is the deputy director of the Nevada Cancer Institute. Ward is also a co-founder of five biotechnology companies, three of which are publicly traded on national stock exchanges. Now Ward will also spend part of his time working at USU.

“Building on research strengths within USU’s Center for Advanced Nutrition and Center for Persons with Disabilities, we will be working on genetic markers for neurodegenerative diseases such as Alzheimer’s disease, developmental disorders such as autism and neonatal deafness and cardiovascular diseases such as venous thromboembolism,” Ward said.

In order to build on Gardner’s genetic legacy and take advantage of USU’s strengths in medical genetics, Ward will facilitate the collaboration of USU, University of Utah and other Utah businesses in an attempt to harness the full potential of gene discovery and personalized medicine. Under Ward’s direction, USU could become a key player in the field of personalized medicine and in meeting USTAR’s objectives of technological innovation, commercialization and economic development in Utah.

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