ONR-Sponsored Researcher Wins Nobel Prize

ARLINGTON, Va. – The Office of Naval Research (ONR) has a long record of placing winning bets on up-and-coming scientists. In fact, it was 30 years ago that the ONR Young Investigator Program sponsored Dr. Frances H. Arnold, a professor from the California Institute of Technology, who has been awarded the 2018 Nobel Prize in Chemistry.

Arnold – who still serves as a professor of chemical engineering at Caltech – was in Stockholm, Sweden, for the Nobel Prize Award Ceremonies, where she became only the fifth woman – and the first American woman – to take home science's most recognized award.

"Dr. Arnold is the latest in a long line of Nobel Prize winners to have been sponsored through ONR basic research programs," said Dr. E. Anne Sandel, ONR executive director. "Like the others, her research has led to discoveries and breakthroughs with important implications for both the Navy and society at large."

ONR sponsored Arnold with a series of grants between 1988 and 2002.

"I received an ONR Young Investigator Award in the late 1980s, which introduced me to problems of interest to the Navy, but also problems of good intellectual content that overlapped with some of my interests in metal recognition and protein engineering," said Arnold.

It was during this period that Arnold pioneered a process known as directed evolution of enzymes, which steers enzymes – proteins that accelerate chemical reactions – toward specific functions, such as manufacturing pharmaceuticals and biofuels.

“During those years, I developed methods for creating proteins that could be useful for naval applications, but that also pushed the boundaries of protein engineering,” said Arnold. “We were doing things that no one knew how to do.

“The methods we devised to make new proteins became useful to many other laboratories. That’s the reason I won the Nobel Prize,” she continued, “not just for what I have done with directed evolution, but for the impact that others have made with the technology we developed in those early days.”

Subsequent to Arnold’s original research, Dr. Laura Kienker, a program officer in ONR’s Warfighter Performance Department, saw the promise in Arnold’s work and provided a grant from 2011 to 2014, which led to the creation of a whole new class of enzymes that is important to sustainable production of chemicals and fuels from renewable sources.

Arnold’s research and teaching has also benefitted a new generation of scientists, several of whom ONR currently sponsors through basic research grants. According to Arnold, it’s important to take interest in and support this new generation of researchers, just like ONR did in her 30 years ago.

“It’s really important to fund people at an early stage, when they are just starting to formulate their ideas, because problems we learn about early in our careers stay with us,” said Arnold. “I

can’t thank ONR enough for that critical early support and also for introducing me to a community of brilliant scientists who were breaking new ground in biological engineering.”

Since 1952, more than 60 Nobel laureates have been sponsored by ONR for their work in everything from laser technology to graphene.