Charles Dietrich, Ph.D.

Bachelor of Science, Biology, 1994, Truman State University, Kirksville, MO

Doctor of Philosophy , Plant Physiology, 2001, Iowa State University, Ames, IA

Post-doctoral Research Scientist, Donald Danforth Plant Science Center, St. Louis, MO

Research Associate, USDA-ARS Midwest Region, St. Louis, MO

Research Scientist, Monsanto Co., St. Louis, MO

Charles Dietrich was awarded a USDA National Needs Fellowship (1994-1997) while attending graduate school at Iowa State University. Charles was part of the Interdepartmental Plant Physiology Program (IPPM) within the Zoology and Genetics department at Iowa State. While in graduate school he studied the biosynthesis of maize epicuticular waxes in the laboratory of Patrick Schnable. Epicuticular waxes coat the outer surface of all terrestrial plants and have important functions in drought tolerance, disease and insect resistance, as well as protection from ultraviolet radiation. Understanding the mechanisms that control epicuticular wax biosynthesis in a major crop species such as maize would provide valuable insight into producing plants that are more tolerant to biotic and abiotic stresses and therefore have the capacity to produce larger yields. Charles's research contributed significantly to the understanding of maize epicuticular wax biosynthesis, and much of the results have been published in scientific journals including, *Genetics*, *Plant Physiology*, and *The Plant Journal*. After receiving his Ph.D. from Iowa State, Charles continued his scientific training through post-doctoral research at the Donald Danforth Plant Science Center and the USDA-ARS in St. Louis, Missouri. After successful completion of his post-doctoral training, he was offered a job as a research scientist at Monsanto where he has been working for the past two years as part of a team focused on increasing corn yield.

Having grown up on a small family farm near Quincy, Illinois Charles learned from a young age that not all corn seed were created equal. He was always fascinated that his father would plant different varieties of corn in different fields. While in college at Truman State University, he took courses in biology and genetics and started to learn how corn with different gene combinations would respond differently to their environment. The text books answered a lot of the questions about why his father planted different corn varieties, but Charles found that many of the answers to questions about plant biology were unknown. Graduate school seemed to be the best place to learn the answers to questions that could not be found in books. Charles applied to the Interdepartmental Plant Physiology graduate program at Iowa State University and was awarded a USDA National Needs Fellowship. The funding provided by the USDA fellowship allowed him much more flexibility in choosing a research laboratory where he would conduct his graduate studies. With his funding secured, Charles could focus on establishing a well developed research project that would produce a high quality Ph.D. dissertation.

After earning his Ph.D., Charles moved onto to a post-doc position at the Danforth Plant Science Center where he learned to use the model plant Arabidopsis to further his research.

While there he had the opportunity to join the USDA-ARS research group, also located at the Danforth Center, as a research associate to continue his post-doctoral training. While with the USDA-ARS, Charles applied all of his skills from his graduate and post-graduate work to study the challenges of producing eleostearic acid in soybean oil. Eleostearic acid has properties that make it well-suited for use as a drying oil. Producing a variety of soybean with eleostearic acid in its oil could expand the uses of soybean and create new markets for soybean farmers.

Charles credits the USDA for helping develop him as the scientist he is today. The USDA National Needs Fellowship allowed him to get a jump start on his graduate studies while on his way to earning his Ph.D. A post-doctoral position in the USDA-ARS allowed him to further develop the skills necessary to prepare him to enter the job market. Charles now has a full time position as a research scientist for Monsanto where he now not only knows why his father planted different varieties of corn, but he is working to develop the next generation of corn varieties that farmers like his father will be planting in their fields.