Georgia researchers use biotechnology to prevent disease and enhance health care around the world.

By Bill Hendrick

It's not unusual for a total stranger to walk up to Dennis Liotta and throw a big hug around his neck. The organic chemist at Emory University in Atlanta co-invented breakthrough AIDS-fighting drugs that have saved the lives of tens of thousands of people—and made life bearable for 10 times that many.

"It's a profound feeling, an emotional one, when it happens—and it happens quite a lot when I go places to speak," Liotta says. "I have a really close friend who is HIV-positive. He is taking a combination of the drugs. It's just marvelous how healthy he appears. You'd never know from looking at him that he's HIV-positive, and that makes me feel just so incredibly wonderful."

The same sort of thing happens to Raymond Schinazi, an infectious disease and antiviral expert at Emory. Together, Liotta and Schinazi invented Emtriva, one of the components in the triple combination pill Atripla, a once-a-day medication. Today, 94 percent of the 11 million Americans living with HIV take pills containing either Emtriva or other HIV drugs invented by Emory University researchers.

Liotta and Schinazi couldn't have made their lifesaving discovery without biotechnology—the use of biology and cellular processes to solve health problems. Since the early 1970s, biotechnology has grown into a $21 billion industry, employing 1.3 million people in the United States at 50,000 different companies. Georgia has 300 bioscience companies, employing more than 15,000 people with $7 billion in reve-
AIDS Fighters

Lioitta and Schinazi were young scientists who didn’t even know each other when their career paths merged, but together they have made breakthrough discoveries in HIV/AIDS research. Schinazi was a professor of pediatrics who had been experimenting with antiviral drugs since 1976. Lioitta had become interested in AIDS research as the epidemic emerged in the early 1980s.

It was Jack Arbiser, then a student and now a professor and researcher at Emory, who suggested they join forces, since he was familiar with both scientists’ work. That was the start of a long partnership that has produced AIDS treatment drugs taken by millions today.

Lioitta and Schinazi’s work first yielded a compound called lamivudine. Then came emtricitabine, sold as Emtriva. Both are in the class of drugs known as nucleoside reverse transcriptase inhibitors, which work against the enzyme that produces replication of HIV. Essentially, the compounds are antiviral agents that either stop or slow the spread of HIV, thereby preventing or greatly delaying the development of AIDS.

Lioitta and Schinazi gained worldwide fame for their discovery of Emtriva, which was approved by the U.S. Food and Drug Administration in 2003. Two years later, when rights to Emtriva were sold, Emory received $540 million in the largest-ever intellectual property deal involving an American university.

Emtriva reduces the HIV load in a person’s body and increases immune cells that are associated with improved health. Lioitta says the drugs aren’t cures, but they can inhibit development of AIDS for many years.

It is not known how long the drugs will remain effective. “It depends on when the virus starts to mutate,” Lioitta says. “The more it mutates, the more you have to change the regimens. And eventually we run out.” However, Emtriva continues to enhance the lives of millions.

“Saving lives is what motivates us,” Schinazi says. “Some people can make a beautiful painting, and I can make a beautiful drug. That’s enough for me.”