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# The Dream Team



Liotta and Schinazi's twenty-year partnership has produced the key anti-HIV drug used in the majority of AIDS cocktails today.



- Virtual reality
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Professors Dennis Liotta and Raymond Schinazi's names are almost always said together in professional circles—like Rodgers and Hammerstein, or Woodward and Bernstein. But without the matchmaking of a mutual student, the pair might never have worked together.

Schinazi, professor of pediatrics, and Liotta, professor of chemistry, were on separate research tracks during their early years at Emory. Schinazi, who had trained as an organic chemist, had been experimenting with anti-viral drugs since 1976, and Liotta had become interested in AIDS research as the epidemic emerged.

"A student, Jack Arbiser [now a professor of dermatology at Emory] told me, 'You really need to work with this guy.' And he told Raymond the same thing," says Liotta. "That was the catalyst for our collaboration. I provided the chemical skills and Raymond provided the virologic skills. We complemented each other."

Schinazi and Liotta's twenty-year partnership has produced the key anti-HIV drug used in the majority of AIDS cocktails today as well as millions of dollars in revenue for the University.

"As a drug designer, the need was straightforward and obvious.



Patients were dying, it was a national and global crisis, there was an unmet medical need. To sit around and do nothing would be a crime," says Schinazi. "Now, more than 80 percent of individuals affected with HIV benefit from treatments conceived and developed at Emory." Schinazi, who had been working on herpesviruses, discovered that modified nucleosides—a class of chemical compounds—were specific antiviral agents. By the late 1980s, in collaboration with Liotta, he had figured out that L-nucleosides (mirror images of the original) were effective against HIV.

"I knew what I had," he says. "I jumped in with both feet and set up the first HIV lab at Emory at the Grady campus."

Schinazi, Liotta, and Emory researcher Woo-Baeg Choi figured out a way to make the antiviral compounds quickly and efficiently. "We were able to outcompete our colleagues in the pharmaceutical industry," Liotta says. "It's usually the other way around."

Their work resulted in the compound 3TC, used in the combination medicines Combivir, Epzicom, and Trizivir to keep HIV patients from developing full-blown AIDS. 3TC can also be used to treat hepatitis B virus infections.

Schinazi and Liotta brought another groundbreaking drug to market as well—FTC (Emtricitabine), which is sold under the brandnames Emtriva and Truvada, and can be used with other anti-retrovirals as a one-capsule, once-daily medicine for individuals infected with HIV. Other drugs still in clinical trials are targeted to HIV patients who have developed resistance to common antiretrovirals.

Over the years, Schinazi and Liotta have founded several start-up companies in Atlanta and abroad to develop their products.

"We were doing licensing deals with big pharmaceuticals. They had their agenda and we had our agenda. Sometimes it didn't match, and they would return our drugs. After putting in so much sweat equity and years of research, to have my drugs not be developed for the wrong reasons—business reasons, not science reasons—was very frustrating," Schinazi says. "I decided enough was enough, I was going to take my destiny into my own hands. There's no point in discovering a great molecule if you can't put it to use."

For their work in promoting the growth of biomedical companies in the state, Liotta and Schinazi received the 2003 Biomedical Industry Growth Award. While their discoveries—and business acumen—have made them millionaires, what they appreciate most is the freedom to continue their research. "What it's all about," says Schinazi, "is taking people who are dying, abandoned, and condemned, and with these new drugs, allowing them to have normal lives."—M.J.L.