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Medicine



BREAKING THE CODE
Antonio Giordano and
researchers in his lab at
Temple University.

Dr. Hustle

For nearly two decades, Temple University cancer researcher Antonio Giordano has been at the forefront of new discoveries. Why did he have to partner with a fast-food company to make it happen? **By ILENE RAYMOND RUSH**

[O]n the face of it, nothing appeared to be unusual: two men going for a Sunday-morning walk, deep in conversation. Every Sunday, they'd meet up on Long Island—near the older man's home—and talk, although the conversation was one-sided. The younger man dominated it. He appeared to be trying to convince the older man of something. It must have been very important—the walks and conversations went on for an entire year, every Sunday morning. In fact, the

younger man drove all the way up to Long Island from Philadelphia to have them.

The younger man—Antonio Giordano—was a doctor. He grew up in Italy, and studied there. Now he was a cancer researcher at Thomas Jefferson University, beginning to do important work. The other man—Mario Sbarro—was CEO of the eponymously named fast-food franchiser. Sbarro was a fellow Neapolitan, and Giordano appealed to their shared heritage. He needed money. Funding for research can be hard to come by. So for a whole year, back in the early '90s, the can-

cer researcher came to beg the king of bad turnpike pizza: *Please*.

He needed money to build a lab where scientists from America, Italy and elsewhere could pursue their research. He promised that every Sbarro dime would go to research, not to buildings or bureaucracy or red tape.

At last, after a year of Giordano working him, Sbarro made his call. He didn't completely understand what Giordano wanted to do, but okay. In exchange for giving almost \$1 million to launch the Sbarro Institute for Cancer Research,

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Sbarro had a single request: "Please, Antonio," he pleaded. "No more walks."

That isn't the way it's supposed to work. Biological research is painstaking and incremental, filled with frustrations and blind alleys, and getting a project funded can mean life or death to a scientist's work. The vast majority of biomedical research gets federal or medical-industry money; foundations and private sources pay for only 10 percent. While virtually all researchers are dependent on funding from a variety of sources, Giordano's method of openly going after his own financing—as opposed to the quieter, more dignified grant approach—is new. The risk is obvious: If a deep-pockets pharmaceutical company, say, pays for research on a new, potentially lucrative drug, will that research be skewed? To get government and grant funding, researchers must have their work peer-reviewed; privately funded research sometimes operates apart from that openness and rigor. Furthermore, there's the snob factor; Giordano himself thinks having "Sbarro" on his lab's letterhead—the Sbarro Institute for Cancer Research and Molecular Medicine is now affiliated with Temple University—hasn't exactly been a calling card with certain medical societies and peer-review boards.

In Giordano's case, though, Sbarro setting him up with no strings attached has helped foster groundbreaking work: Over the years, he has made several important discoveries, including Rb2/p130, a gene that signals cancer at a pre-tumor stage. He has published 240 papers on his work in the fields of cell cycles, gene therapy and the genetics of cancer. He serves on the editorial boards of a number of professional journals. And his work *has* earned several grants from the National Institutes of Health—a conventional, prestigious route—the most recent being a \$1.68 million award in 2004.

"Antonio has been a key player in unraveling the genetic mysteries of cancer," says Raphael Rubin, professor of pathology, anatomy and cell biology at Thomas Jefferson Medical School. Paul Fisher, a well-regarded urological cancer researcher at Columbia, calls Giordano's work "an important accomplishment."

Yet over the past 13 years, through a combination of conventional and unconventional sources, Giordano has had to raise \$16 million to fund research at the Sbarro Institute. And that suggests a problem apart from *where* the money comes from—the time Giordano has to put in chasing funding has forced him to become a new sort of biomedical entrepreneur. Increasingly, Giordano is spending his time raising money to guarantee that the post-docs and

PHOTOGRAPH BY PAUL PUGLIESE

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Ph.D. candidates at the institute will have the latest biomedical equipment and the financial security to pursue complicated and innovative research. At this point, he limits his scientific participation to mentoring young doctors, suggesting new paths for their research, and reviewing their findings. His own bench work is in the past.

His fund-raising has created, at any rate, a lively lab. Day to day, the atmosphere in Giordano's offices at the Sbarro Institute runs more to Fellini than Fermi: Narrow-waisted Ph.D. candidates and post-docs in fashionista black chatter in breakneck Italian while the nonstop espresso machine brews an evil potion that can keep an unsuspecting victim awake for 27 hours straight. Medical and doctoral degrees bump frames with glamour shots of Miss Italian American and Sophia Loren, hip to hip with the beaming Giordano.

Overseeing the lab, however—that wasn't exactly Giordano's plan, though he's philosophical about the way the game is played. "The best science requires risk," he explains. "But such projects may not be possible to pursue with conventional funding." Which Giordano recognized early on—hence the Sunday-morning pursuit of Mario Sbarro. "I needed independence to work," he says. "And I knew that as a very young researcher, without a track record or tenure at a major university, it could be years before I had the chance."

Conventional funding sources for biomedical research in the United States appear to be drying up. This year, the National Science Foundation budget dropped 1.9 percent, while the National Institutes of Health budget rose a paltry two percent. With catastrophic events like Hurricane Katrina and the continuing defense spending in Iraq, the budget projections for 2006 are "bleak," says Kei Koizumi, an administrator for the American Association for the Advancement of Science, in Washington, D.C.

And as funds have dipped, competition has increased. Only about 20 percent of government grant applicants will receive awards next year; in 2001, a third of applicants got funding.

That also means funding tends to go to more conventional research, with more predictable results, while the riskier research—the sort of trailblazing work Giordano's lab was set up to pursue—gets short shrift. Paul Fisher is a cancer research scientist at Columbia University's College of Physicians and Surgeons in New York who has chaired peer review panels in the past and recently received a five-year grant from the National Cancer Institute for his work with terminator viruses—organisms that kill cancer cells. He believes his decade-long research wouldn't receive start-up funding under

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today's peer-review methodology. His tip in applying for a grant now is: "Don't make the reviewer think." Fisher is only half joking.

"NIH certainly claims that they want innovative, risk-taking research," says Raphael Rubin. "But judging by the grants awarded, it often doesn't work out that way."

All of these factors combine to work against post-docs at the crucial start of their careers. In 1980, the average age at which a researcher received a first grant was 37. Today, the average is 42—one year younger than Giordano.

Scientists worry that the lack of funds is not only driving young people out of research, but is creating a problem for the future of American science. "It's an acknowledged fact that the U.S. has lost serious ground to Europe and Asia after years of domination," says Barry Toiv, spokesman for the Association of American Universities. In such a climate, Toiv adds, "Alternative resources for money, such as public or private foundations, become that much more important."

"Do people pay attention to where you get your money? Sure they do," says Fisher. "But what really matters in science is the test of time. Are your experiments repeatable? Are they useful to other researchers? Will they last?"

He pauses.

"In Antonio's case, in my opinion, the answer is yes."

On a Friday night in late summer, I travel down Chestnut Street in Giordano's kid-friendly maroon van to Mimosa for dinner, a rare night out with the Sbarro Institute's barebones administrative staff. Giordano puts in 10- or 12-hour days, then heads home to see his wife and three young children. This excursion—maybe in honor of our interview—is a treat.

At the restaurant—dark and still half-empty at six o'clock—Giordano is restless and eager to please, tapping fingers on the white tablecloth, chatting with the provocatively tattooed waitress, checking his cell to guide a few other staff members to our table, all the while keeping me apprised of the chef's history, asking what sorts of pasta I like, insisting on placing my order. It's not macho—Giordano, who travels to Italy for a third of the year to work at his Sbarro-funded lab in Siena, simply likes to make people happy and talk up Italian culture.

"My love of science," Giordano says, "comes from my father, Giacomo, a noted cancer pathologist in Naples, Italy. The truly important part—my social skills—is from my mother, Maria Teresa." Both still live in Naples.

Giordano's interest in obtaining independent resources emerged directly from his own tangled experiences as a young immigrant post-doc in the early '90s, when he worked at Cold Spring Harbor Laboratory on Long Island, run by James Watson, who, along with Francis Crick and Maurice Wilkins, won a 1962 Nobel Prize for discovering the molecular structure of DNA. It was there that Giordano first moved from pathology to molecular biology—particularly intrigued with the workings of the cell cycle and how cells communicate. It was also where he met his wife, Mina, then a summer student at Cold Spring.

"We met over the adenovirus," she recalls. "We had to work in a cold room to keep the virus chilled, and he stayed there for hours. The only time he left was to eat."

But despite Giordano's dedication, the charm and hard-won street smarts of his Naples upbringing proved little match for the networking of his Ivy League colleagues. It's a memory that still stings.

"I was enthusiastic, I did good work and made good discoveries, but I was extremely frustrated by the intellectual snobism," he says, and leans forward across the table. "Look," he says. "University of Naples"—where he graduated summa cum laude with an M.D. and a Ph.D. in pathology—"was no Caltech. But what bothered me was that if you weren't part of that blue-blood network, your discov-

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eries might go unnoticed or left behind."

Giordano's complaints would seem self-serving if they weren't borne out by statistics. A glance at the top 20 list of universities receiving the most science funding reveals all the usual suspects, including Johns Hopkins at number one and Penn at number four. Large and prominent research institutions such as the University of Washington and the University of California rub elbows with Harvard, Stanford, Duke and Yale.

In part, the familiar names can be attributed to how funds are distributed. Grants from NIH and the National Science Foundation, for example, are determined using peer review, in which two separate panels of supposedly objective overseers determine the value of each proposal. If a project survives these reviews, it moves to the next and final review, with about one in four projects actually attaining funding.

"Reviewers do tend to take into account the track record of a scientist and, yes, the institution," says Kei Koizumi, who, as administrator for the American Association for the Advancement of Science, keeps close track of where the money goes. "Sometimes it's valid. Top-tier universities do tend to attract top researchers. But other times..." His voice trails off. "Let's put it like this. It's like

democracy—it's a bad system, but it's better than the rest."

At Mimosa, with tables starting to fill both inside and on the street, our desserts—ricotta cheesecake and yet more espressos—arrive. Giordano reaches across the table to clasp my hand, as if we've figured out something big together. "Science and business," he says, "have this in common: When you get the result you want, you forget all the frustrations."

In early June, I accompany Giordano, his wife, and several members of his staff to the Rainbow Room in New York, to the 25th anniversary of the National Organization of Italian-American Women, where, along with Patricia de Stacy Harrison, the new president and CEO of the Corporation for Public Broadcasting, and Lisa Caputo Nowak, the first Italian-American female astronaut, Giordano is to be honored. The \$20,000 donation for his work in cancer research has already been earmarked for a fellowship for a female post-doc at his institute.

In the velvet-flocked room overlooking the city, Giordano, wife Mina by his side, stands at the ready, tuxedoed and groomed, surrounded by well-wishers. The guest list is an Italian-American who's who: Geraldine Ferraro, Governor and Mrs. Mario Cuomo, Joy Bauer. ("Who is this Joy Bauer?" Giordano is heard to ask. Explaining *The View* proves

impossible.) Giordano is here for his research accomplishments, but also as an example of what Italian brain power—not brawn—can do. And, of course, he's working; possible funding down the road is at stake. Playing to his audience in his acceptance speech, Giordano reminds them that there exists a long and esteemed Italian scientific legacy: Copernicus, Galileo, Leonardo da Vinci. His cancer institute, along with many others, will work in this spirit, struggling to cure a terrible and devastating disease.

It's a bit over-the-top, but the audience proves rapt. At the conclusion, several jump to their feet. Later, Giordano will tell me that Mario Cuomo sent word he'd like to meet with him privately to see if they have an ancestral link—a good opening for a future connection to the Sbarro Institute. In the ladies' room, a well-dressed blonde with a Long Island accent and a history of breast cancer asks me if I can introduce her to the doctor. "He's so elegant," she sighs.

When I lead her to him, she presses her card into his hand, one of many he'll pick up that night.

"Anything," she tells him. "I'd love to help."

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