

RESEARCHING FOR THE CURE

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TWO RIVIER ALUMNI PUT SCIENCE TO WORK AGAINST CANCER



Nearly everyone knows someone who has been touched by cancer. As the second leading cause of death in the United States—taking more than a half-million lives each year, according to the Centers for Disease Control (CDC)—it is a disease that has no demographic, ethnic, or cultural boundaries. But even in the face of such frightening data, there are more encouraging developments than at any time in our history. The American Cancer Society's most recent statistics show that the five-year survival rate for all cancers combined has improved to 64 percent, up from only 50 percent in 1974. These increased survival rates are due in large part to new treatments—medicines and protocols developed by scientists whose research has changed the way we look at the disease. Two of those scientists, on opposite coasts and in very different settings, are putting their Rivier education to work toward finding new treatments, and perhaps even a cure.

David Bienvenue and Nicole LaRonde-LeBlanc both graduated from Rivier in 1995 with bachelor's degrees in chemistry. For LaRonde-LeBlanc, the next immediate step was a Ph.D. program, and she enrolled in the Johns Hopkins School of Medicine's graduate program in biochemistry, cellular and molecular biology. "I have wanted to be a scientific researcher since I was 10 years old," she says. "I pursued that goal through careful choices in my training."

Bienvenue headed into the chemical industry, working for the Coca-Cola Company as an analytical chemist and for Cabot Corporation as a research associate. "While I found that work interesting," he says, "I realized that I needed to obtain my Ph.D. in order to become more actively involved in the design and execution of experiments." He enrolled in Utah State University's Ph.D. program in biochemistry.

Bienvenue's graduate research steered him in a career direction toward biomedicine, as he examined the ongoing problem of humans' growing resistance to commonly prescribed antibiotics and looked into potential targets for a new class of the drug. "It was during my time in Utah that I became interested in research applied to helping improve people's lives," he says. He earned his Ph.D. in 2001. LaRonde-LeBlanc chose a very specific path for her graduate work, assisting Johns Hopkins structural biologist Cynthia Wolberger in the examination of complex molecular structures of two proteins involved in cancer cell development. She completed her Ph.D. in 2002.

LaRonde-LeBlanc continues this research in her current position, as a post-doctoral fellow at the National Cancer Institute. The fellowship gives scientists who have recently earned their doctorates the opportunity to train more independently and gain additional research experience. While the specifics of her work are best understood by fellow scientists, she is attempting to determine the x-ray crystal structures of a family of enzymes known as RIO kinases. "RIO kinases are essential for cellular proliferation," she explains. "Since proliferation is a necessary part of cancer progression, the RIO kinases may represent a target for slowing down cancer cells." She and her mentors and colleagues have already published several papers detailing their work, and in 2005 she was awarded the inaugural SER-

CAT Young Investigator Award, an acknowledgment of her work by a consortium of universities, government agencies, and private corporations in the biomedical field.



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—David Bienvenue '95

After completing his doctorate, Bienvenue signed on as a scientist at Dendreon Corporation in Seattle, a company that specializes in using biotechnology to find new cancer treatments. As a senior scientist, he is conducting research into the use of Sipuleucel T, a treatment for prostate cancer that stimulates the body’s own immune system to fight the disease.

Dendreon has conducted two Phase III clinical trials, according to Bienvenue, and the company is preparing to submit data from these trials to the FDA in order to get approval to begin treating patients on a wide basis. “The American Cancer Society estimated that there were 230,000 new cases of prostate cancer in 2004,” he says, “with 30,000 deaths. That gives us a great sense of urgency about the work we do.”

While both Bienvenue and LaRonde-LeBlanc are strongly driven by that urgency, they are also aware of the need for patience and a long-term outlook in their work—particularly in an age when public and media scrutiny into pharmaceutical research is so prolific. “I think it is very important for all people to be well informed about how scientific research affects their lives,” says LaRonde-LeBlanc. “People should know how long it takes from the first discovery of an inhibitor to the development of a drug without toxic side-effects.”



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Bienvenue echoes her thoughts. “Due to the rapid rate of progress in other tech areas such as computers and cell phones, people sometimes have a hard time understanding why it takes so long for new medical treatments to become available,” he says. “It often takes hundreds of millions of dollars and upwards of 15–20 years before a drug or treatment might get approved.”

Also inherent in their work is the ongoing need to balance professional obligations with personal ethics. “While biotech companies are in the business of trying to help people get better, it is ultimately a business,” says Bienvenue, whose company is publicly traded on the NASDAQ market. “The money used to develop new therapies often comes from venture capitalists or stockholders. It is therefore necessary to reconcile financial obligations to investors with the overall goal of helping people. I wouldn’t be associated with a company that placed a patient’s safety or well being at risk for the sole

purpose of making a profit.” For LaRonde-LeBlanc, strong religious convictions guide her decisions. “The biggest conflict for me is in the use of human embryonic stem cells for research,” she says. “I would pause a long time before engaging in work that uses this. I understand the drive to go there; I’m just not sure we couldn’t derive the claimed benefits by other means.”



Ultimately, for both scientists, the thrill of discovery far outweighs any challenges posed by the work. Both are so enthusiastic about what they do that they plan to spend time in classrooms sharing their knowledge. LaRonde-LeBlanc is interviewing at several research institutions for a faculty position. “I will be running my own lab doing medical research and teaching graduate and maybe undergraduate students,” she says, “and I hope someday my work will lead to a drug to stop cancer cells.” Bienvenue would like to contribute to children’s knowledge of science, particularly at the elementary school level. “I think a lot of kids gain a negative attitude about science early on in their education, and that carries through to high school and college. I’d like to help change that.”

Whatever their futures entail, both have strong partners and families behind them. LaRonde-LeBlanc and her husband, Steve, are parents of 12-year-old Aixelle, 10-year-old Stephen and 3-year-old Nicolas. Bienvenue and his fiancée, also a scientist, plan to marry this August; and his sisters Ann and Joan are both Rivier alumni. Their collective support will surely help Bienvenue and LaRonde-LeBlanc continue to use their knowledge, dedication and compassion toward a future where cancer is no longer part of our lives. ■

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