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CAROLINA ALUMNI REVIEW

CAMPUS PROFILE

Ralph Baric: A Secret Weapon Against SARS

More than 25 years ago, Ralph Baric was dressed in red, swimming toward his fourth ACC championship record. After four years as a varsity athlete at N.C. State, he pledged allegiance to the Wolfpack. He was trained to get sick at the sight of Carolina Blue.



But after obtaining a doctorate from State in 1983 and completing four years of post-doctorate research at the University of Southern California, Baric tested new waters. Now, an associate professor in the department of epidemiology in UNC's School of Public Health and an associate research professor in the department of microbiology and immunology in the School of Medicine, he tolerates the blue and white footprint of the Tar Heels.

Baric now is in a larger race, this time for UNC, in the global effort - he has called it a "stampede" - to find a vaccine to combat the SARS virus.

Baric is an internationally recognized expert on coronaviruses, the virus family that includes SARS. He and his team of researchers from the southeastern United States and California have made a full-length clone of the SARS virus, putting themselves at the forefront of SARS research. A full-length clone allows scientists to introduce specific mutations to the virus and make an attenuated strain, a weakened strain that could be used as a vaccine.

Baric's work is considered a major breakthrough for the field.

"Dr. Baric is one of the world's leading researchers on coronaviruses. He has been working in this area for 20-plus years and now is one of the key people that the CDC and other leaders are turning to to help protect us all against the threat of further SARS infection," said Bill Roper, dean of the School of Public Health.

He added that UNC has "world-renowned researchers in many, many areas, and this is yet another occasion where someone who has spent his or her life devoted to a particular area is able to put that work to the service of something that has international importance."

David Savitz, chair of the epidemiology department, said there are features of the virus and aspects of Baric's background that make him suited to finding a vaccine. "The expertise has been there," he said, "and now it is of global significance."

SARS, or Severe Acute Respiratory Syndrome, has infected nearly 8,500 people worldwide. The first known case was in November 2002 in China; more than 800 people infected have died, according to the World Health Organization.

The main danger of SARS, Baric said, is that the virus could become endemic in China, spill into India and Africa and become a problem in areas where public health infrastructure is less developed and people lack access to medical care. If the virus does spread, the result will be

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spillover to Europe and North America. Such an outbreak could have a huge impact on the cost of running hospitals.

"If you consider what smallpox did globally before it was eradicated, the transmission strategy and mortality rates of SARS reflect that. You are looking at pretty devastating effects in developing nations with spillage into the more developed nations," he said.

The SARS' threat has decreased in recent months. Baric says that is typical of coronaviruses, which peak in late winter and early spring, then drop. "So SARS, if it follows that pattern, is going to drop down over the summer months and it may go extinct. And that's a good thing. Or it may survive that period with low levels of transmission and then take off again."

If the virus does survive the summer period, a vaccine could be crucial. If it burns out, Baric said, "we will still have a vaccine on a shelf."

Twenty years ago, when a new pathogen emerged, it typically took six months to a year to identify it; it took almost two years to identify that HIV was the cause of AIDS. There was only one month between the time the WHO issued a SARS advisory and the time the virus was sequenced. "That is just incredible response time," Baric said. "If this had happened 20 years ago, we would have a massive worldwide problem."

Although excited to have the opportunity to resolve a potentially devastating global health problem, Baric admits it causes stress, including concern about the health risks involved in working with a new virus. He advises those working in the lab to be safe and work slowly.

"I was already very well-positioned in the field of coronaviruses in terms of funding support, and I had a very nice-sized, robust program. Should we prove to be successful with this infectious clone, then we might be a huge program, and that's more time commitment in terms of managing personnel," he said.

Through his past research, Baric has made significant contributions in understanding the replication and transmission strategies of coronaviruses. His research has been important in controlling and preventing these diseases and has provided a foundation for vaccine development.

"There are times when people could think that he comes across as the classic absent-minded scientist," said Savitz. "But he is very much on top of these issues."

Baric considers Carolina a premiere research institute. "With Duke right nearby and Research Triangle Park, the scientific expertise in this community is almost without peer," he said. "But it's still a little too much Carolina blue for me."

- Morgan Bushey '03

Photo: Dan Sears '74

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