

BIJAY SINGH OF NEPAL WINS RAHMAN PRIZE

 by Cristina Serra

Singh is a pioneer in a new kind of biomaterials that could be used to deliver drugs right to cellular and biological targets.

Bio-nanoparticles, a new type of carrier molecule that may encapsulate several compounds and direct the delivery of drugs, genes and vaccines, are a frontier of innovation in medicine.

Nepali chemist Bijay Singh, a principal investigator at the Research Institute for Bioscience and Biotechnology (RIBB) in Kathmandu, Nepal, is using nanoparticles to cross biochemical barriers in the organism and carry drugs and genes to specific targets. For his outstanding results, Singh received the 2016 Atta-ur-Rahman Prize in chemistry at the TWAS General Meeting in Rwanda.

"I'm very grateful for this prestigious prize, as it will raise my scientific profile within the Nepali scientific society," Singh said. The prize is granted annually by 1985 TWAS Fellow Atta-ur-Rahman, a Pakistani chemist and a past president of the Pakistan Academy of Sciences. It acknowledges the work of researchers from scientifically lagging countries.

Singh holds a master's degree in chemistry from Tribhuvan University in Nepal, and a PhD in biochemistry from Sun Moon University in South Korea.

In Korea, he began a career focusing on the global problem of antibiotic resistance.

Upon his return to Nepal in 2011, Singh founded RIBB, now among the nation's most renowned institutes.

At the Institute, Singh has continued his research on antibiotic production, studying indigenous *Streptomyces* bacteria of Nepal to find novel molecules that might be used to combat emerging drug-resistant diseases.

"Overuse of antibiotics in hospitals and health centres has forced pathogens to find strategies to survive, becoming resistant," he explained. Now he is trying to engineer *Streptomyces* bacteria that will produce new, modified antibiotics to help solve the problem of resistance.

In 2013, Singh joined Seoul National University in South Korea to advance his research skills on the challenging field of biopolymers for drug delivery. Polymers are long strings of molecules that bind together to form complex structures. They can be engineered as nanoparticles that contain drugs or genes.

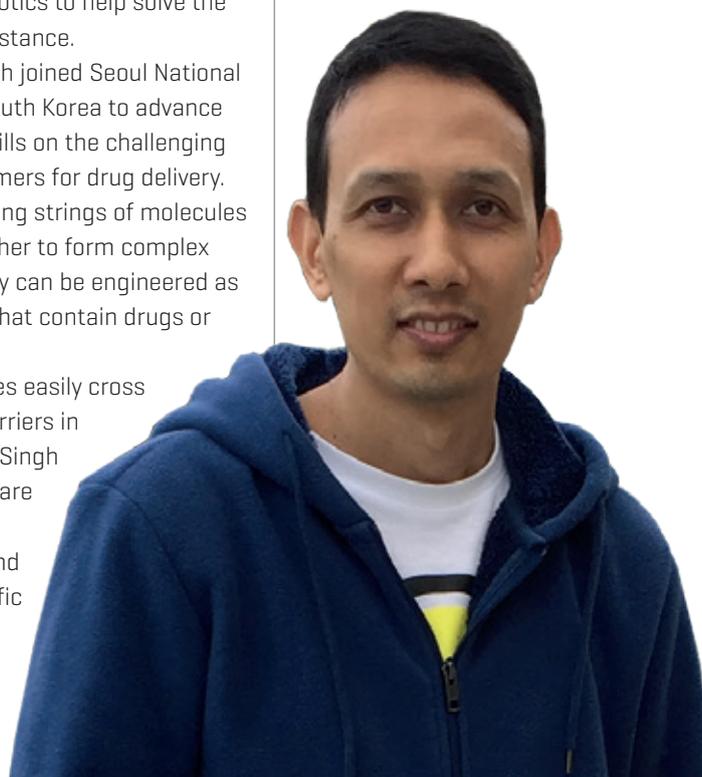
"Nanoparticles easily cross biochemical barriers in the organism," Singh explained. "We are using them to deliver drugs and genes on specific

targets. Using targeting drugs, we can selectively kill cancer cells and spare the healthy ones."

Singh is now testing this approach in laboratory models, but he is confident that they will soon be able to move to humans. He also works to educate young scientists in Nepal by organizing scientific meetings and seminars.

"Although I'm proud of it, being a scientist in Nepal is not easy," he observed. "I'm sure that the Atta-ur-Rahman Prize will help me and my career, and will allow me to be more competitive in joining some faculty in the Academy." 

Learn more: www.twas.org/node/11953



► Nepali scientist Bijay Singh.