

# Targeting evolution: Could this be the next strategy to stop superbugs?

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A Penn Medicine researcher is among the winners of a GlaxoSmithKline (GSK) "academic drug hunter" competition that will help fast track his lab's work to stop drug-resistant bacteria.

"Superbugs" are evolving faster than antibiotics can keep up with, and as a result more than 2 million people in the United States get infected every year, and at least 23,000 people die as a direct result.

With this new partnership, Rahul Kohli, MD, PhD, an assistant professor in the division of Infectious Diseases and department of Biochemistry and Biophysics at the Perelman School of Medicine at the University of Pennsylvania, and his lab can ramp up their efforts to discover drugs that stop the evolution in its tracks. Rather than taking the conventional approach of modifying existing antibiotics to overcome resistance, Kohli's lab aims to target the very pathways by which bacteria adapt to antibiotics and evolve resistance.

Kohli's team, spearheaded by Charlie Mo, a graduate student in Biochemistry and Molecular Biophysics, will now have access to 1.8 million compounds kept in GSK's chemical library and their other [drug discovery](#) technologies.

"The search is on to find a molecule that can disrupt the pathway that allows bacteria to acquire [drug resistance](#)," Kohli said. "The hope is that such a molecule can make bacteria more sensitive to existing [antibiotics](#) or slow the acquisition to the resistance, both of which would be valuable

in the clinic."

This is GSK's first Discovery Fast Track competition in North America, which is designed to translate academic research into starting points for new potential medicines. There were eight winners in total across the country, selected from an initial pool of over 140 applications across 17 therapeutic areas and from 70 different institutions.

The competition was sponsored by GSK's Discovery Partnership with Academia program, a new approach to drug discovery where academic partners become core members of drug-hunting teams. GSK and the academic partner share the risk and reward of innovation: GSK funds activities in the partner laboratories and provides in-kind resources to progress a program from an idea to a candidate medicine.

"We were extremely pleased to be recognized," Kohli said. "Now we can take an idea that has good potential and efficiently move it from a theoretical academic pursuit into the practical realm, where it can hopefully ultimately benefit patients."

Work on the winning Discovery Fast Track projects will begin immediately and the first screens are expected to be completed in mid-2014. Kohli expects results from his investigation shortly thereafter.

Provided by University of Pennsylvania School of Medicine

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