Searching for New Ways to Fight Bacterial Resistance

Scientific Achievement
Scientists discovered that soil microbiomes could offer new analogues for clinically-used antibiotics.

Significance and Impact
The effectiveness of some antibiotics are threatened by the increasing resistance of bacteria; this study explores a new route to potential replacements for these antibiotics.

Research Details
- Surveying soil metagenomes helped to identify different rifamycin antibiotics, rifamycin congeners (kanglemycins, Kang), with potent activity against the most common resistance.
- Functional and mechanistic studies of the antibiotic effects on RNA polymerase, the target enzyme revealed a different inhibition mechanism.
- The x-ray crystallographic data were taken at NSLS-II AMX beamline and at APS beamline 24-ID-C.

The image shows the overall structural basis for Kang A inhibition of rifamycin-resistant bacteria. The rifamycin scaffold is colored orange in the center of the RNA polymerase complex.


Work was performed in part at Brookhaven National Laboratory

[Image of structural basis for Kang A inhibition of rifamycin-resistant bacteria]