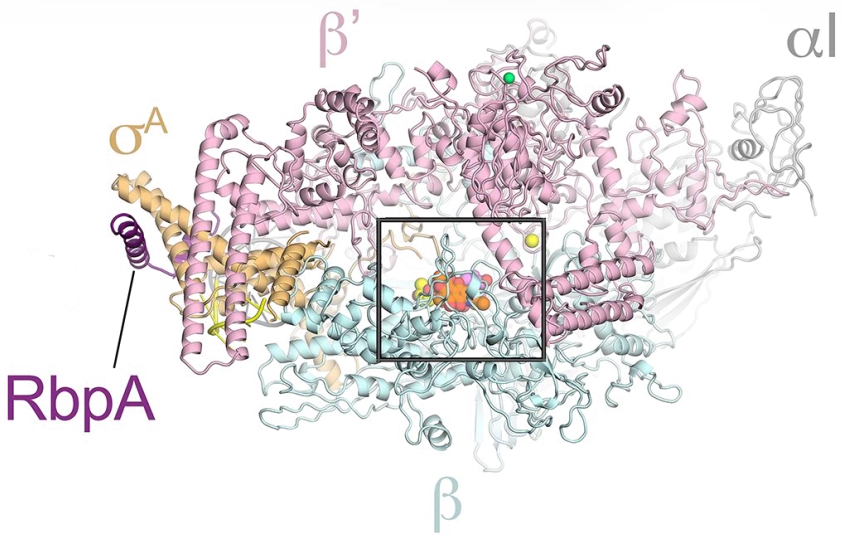
Searching for New Ways to Fight Bacterial Resistance



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.

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.

J. Peek, M. Lilic, D. Montiel, A. Milshteyn, I. Woodworth, J. Biggins, M. A. Ternei, P. Y. Calle, M. Danziger, T. Warrier, K. Saito, N. Braffman, A. Fay, M. S. Glickman, S. A. Darst, E. A. Campbell, S. F. Brady. *Nat. Commun.* **9**, 4147 (2018).

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