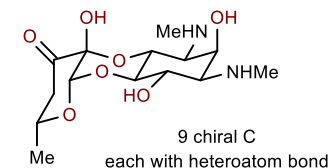
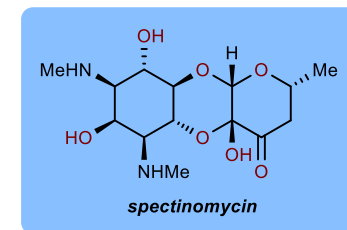
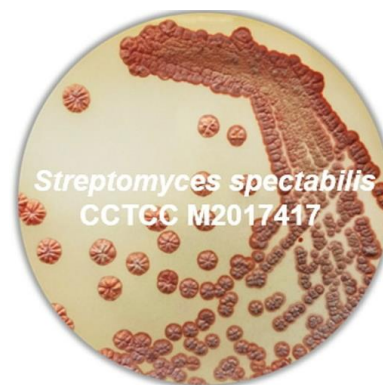


Background

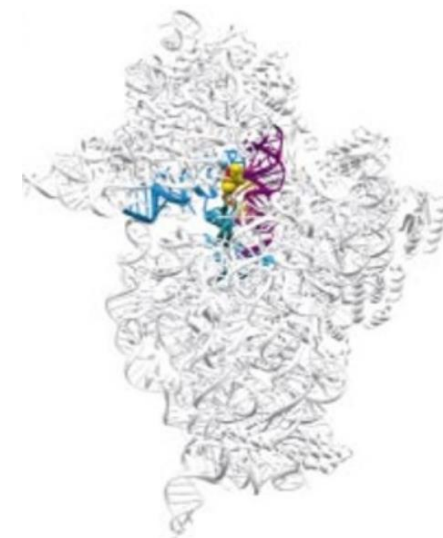
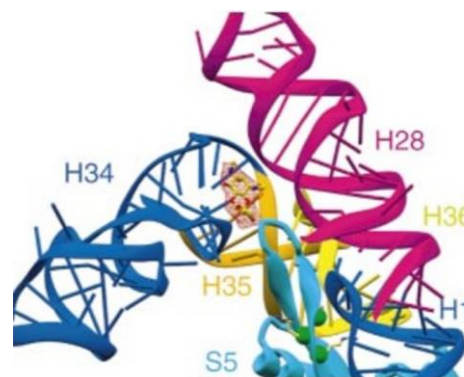
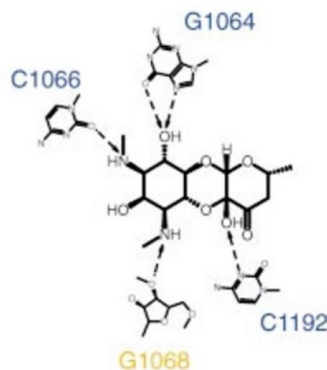
- Aminocyclitol antibiotic used for treatment of gonorrhea
 - Discovered in 1961, produced industrially from *Streptomyces spectabilis*
 - Broad spectrum antibiotic activity, used for patients allergic to penicillin
 - Featured on World Health Organization's List of Essential Medicines
-
- Unlike most aminoglycosides, spectinomycin is not ototoxic
 - However, it experiences low bacterial accumulation due to facile efflux
 - The spectinomides are semisynthetic analogs that are resistant to efflux, and display good antituberculosis activity



Lee, R. E. *J. Antibiot* **2021**, 74, 381. <https://doi.org/10.1038/s41429-021-00408-3>
Sun, Y. *Nat. Prod. Res.* **2022**, 36, 3689. <https://doi.org/10.1080/14786419.2021.1881517>

Pharmacology and Mechanism of Action

- Binds to the 30S subunit of the ribosome (same subunit as streptomycin, neomycin but different binding site)
- Interferes with RNA decoding and translocation
- In effect, interrupts bacterial protein synthesis



Ramakrishnan, V. *Nature* **2000**, 407, 340. <https://doi.org/10.1038/35030019>

Synthesis (Upjohn Company, 1979)

