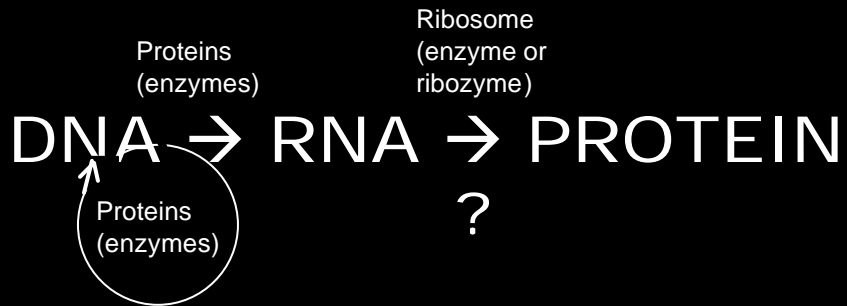
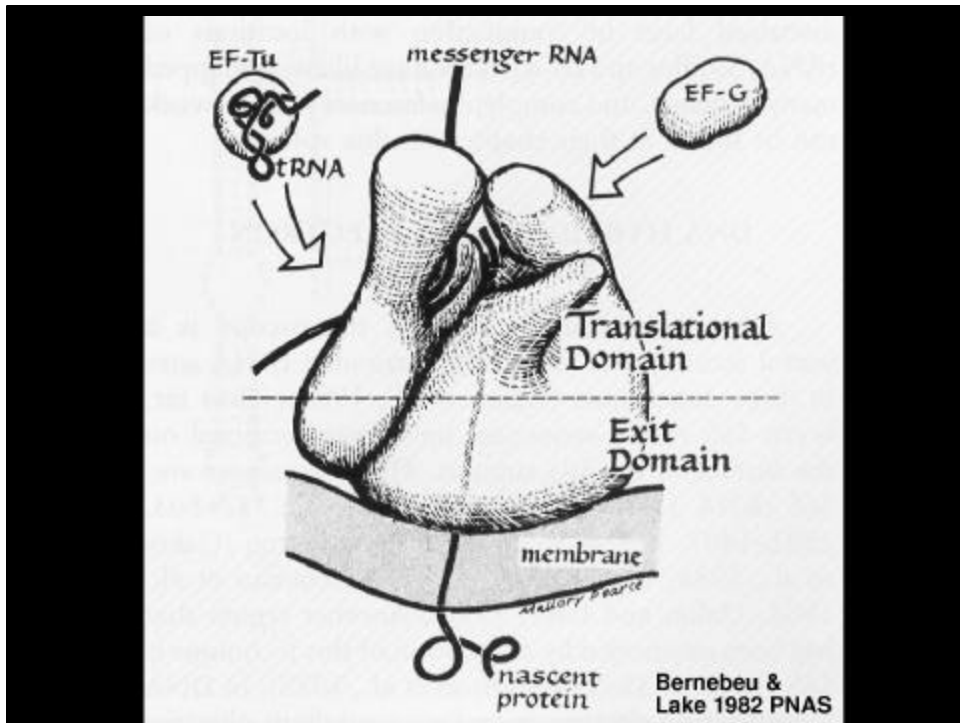
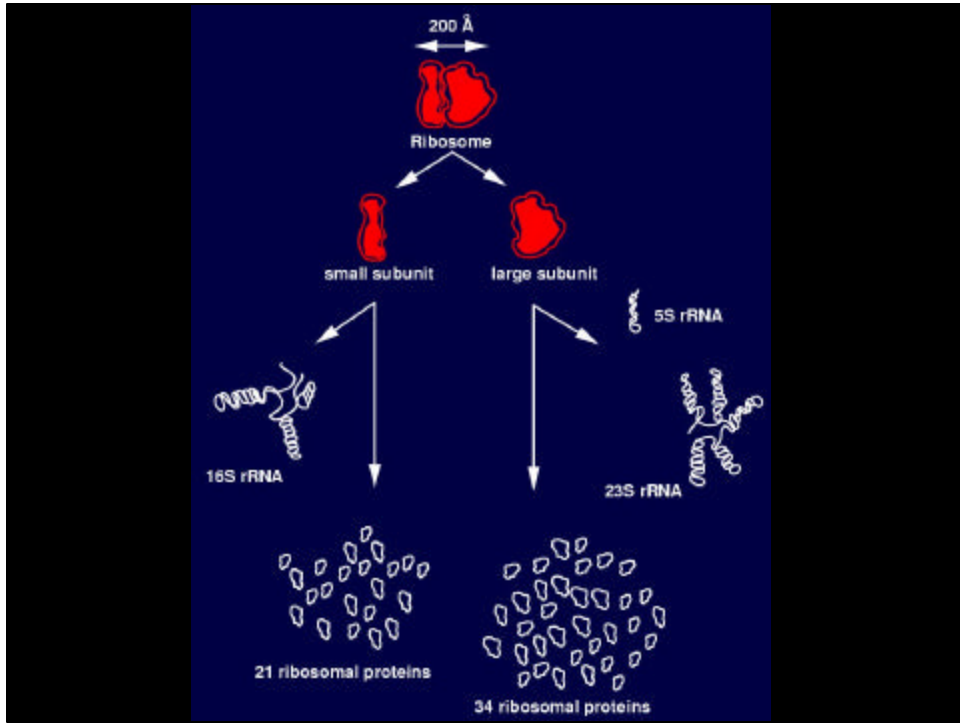


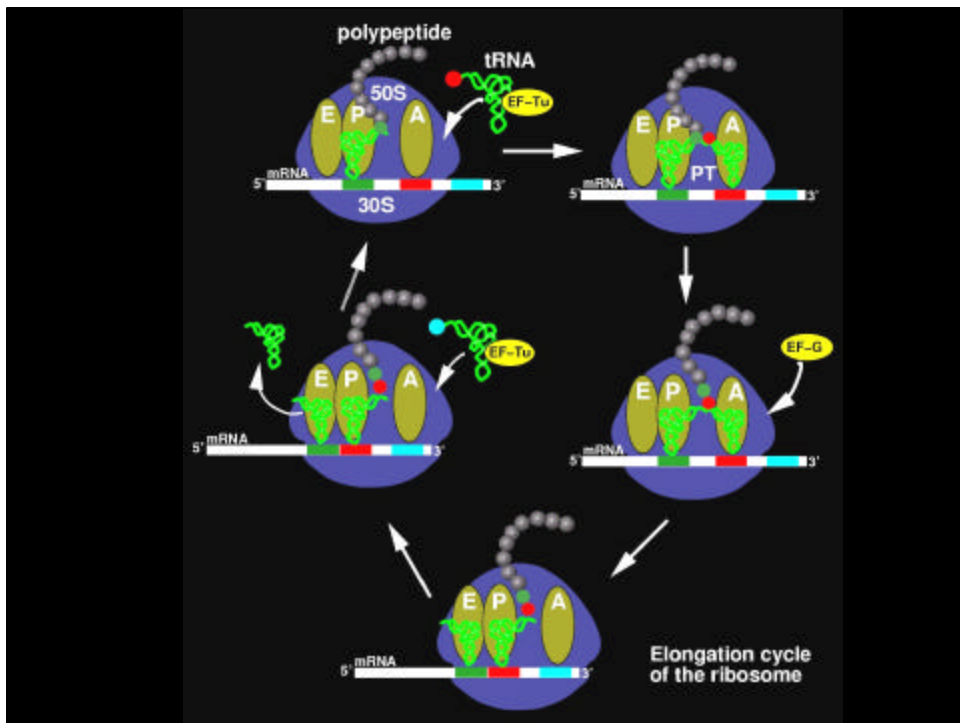
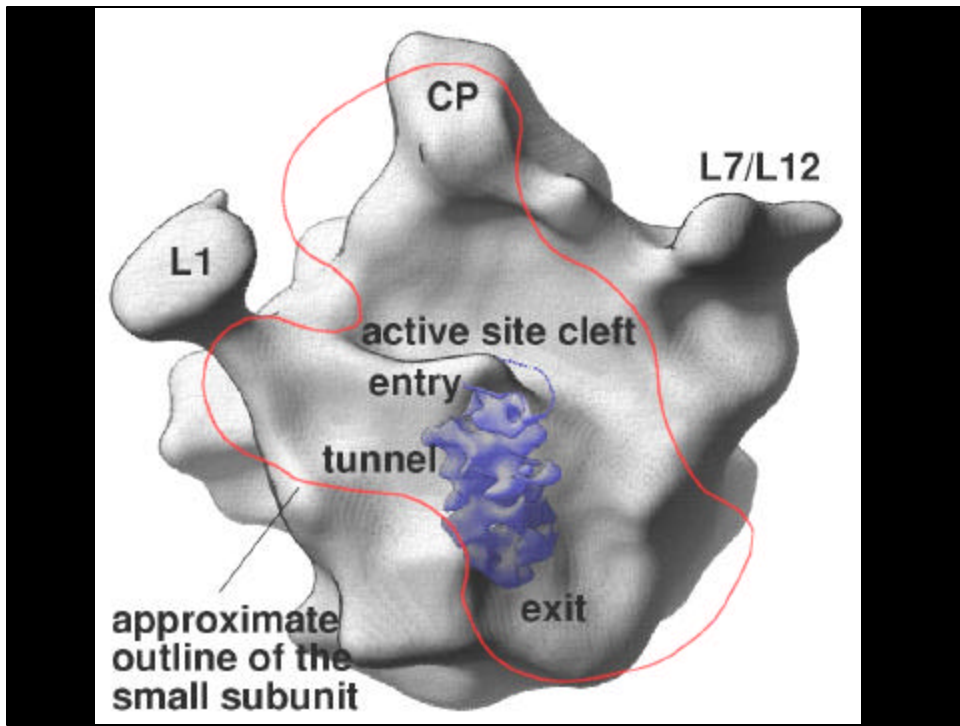
The central dogma of molecular biology:

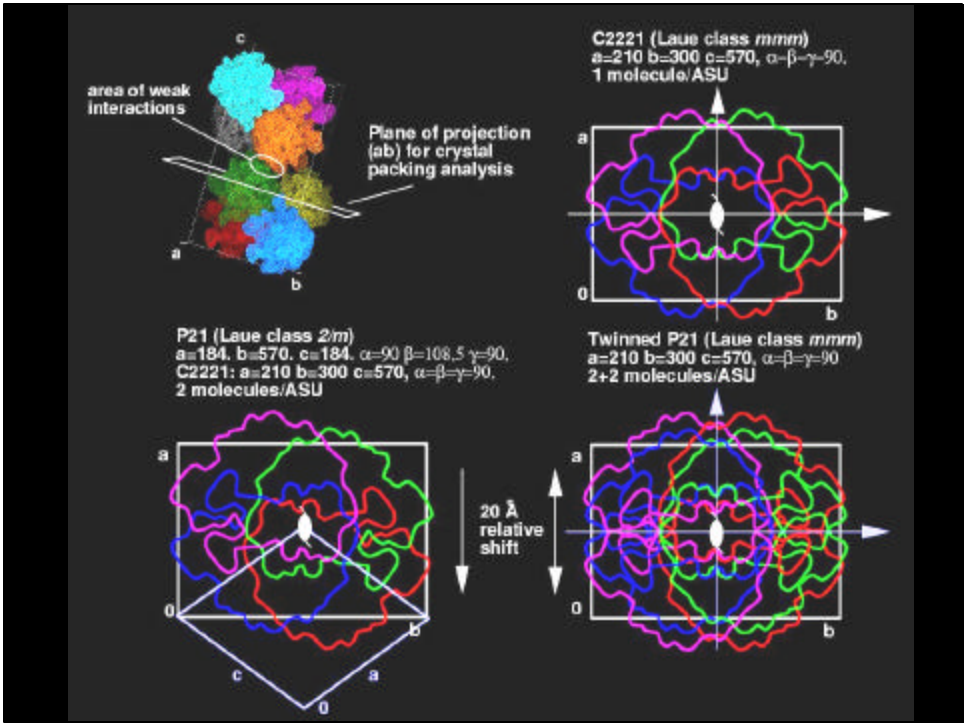
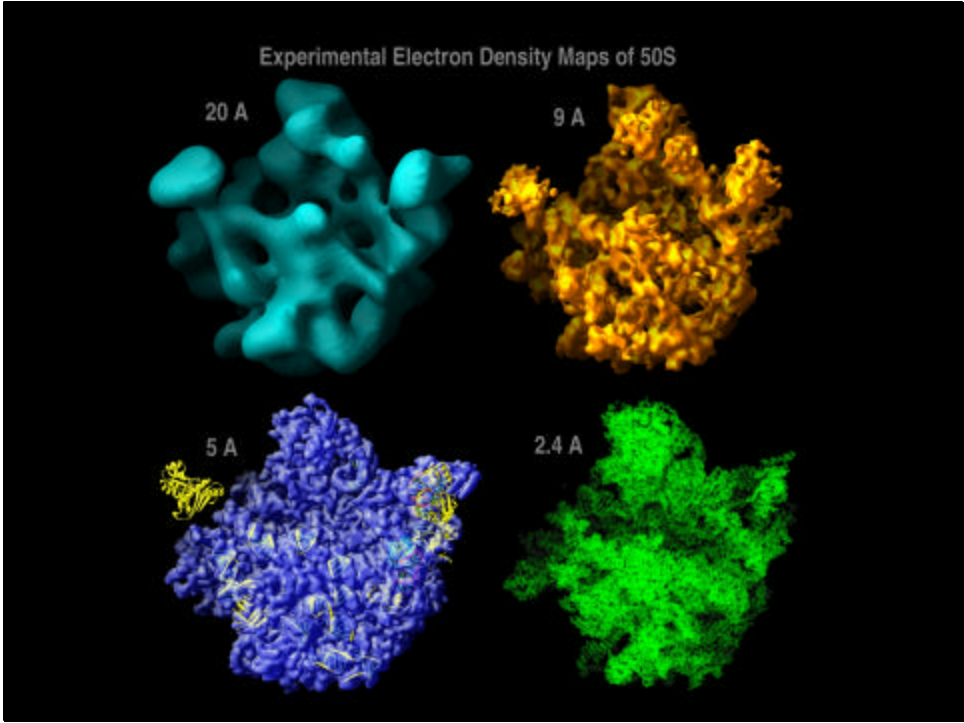


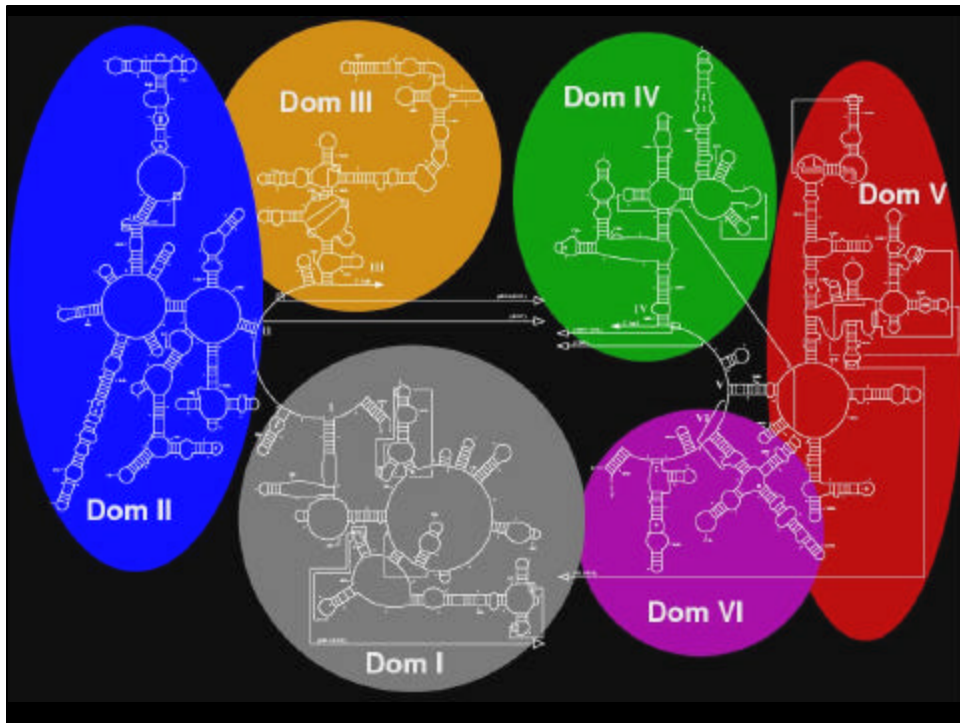
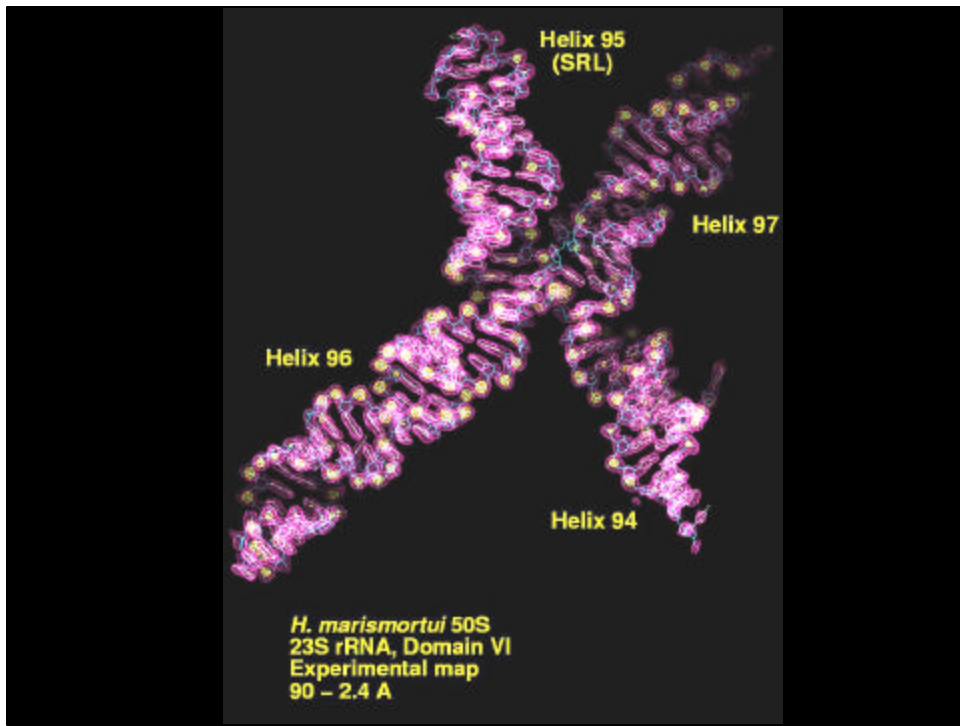
Structural Research on Ribosomes

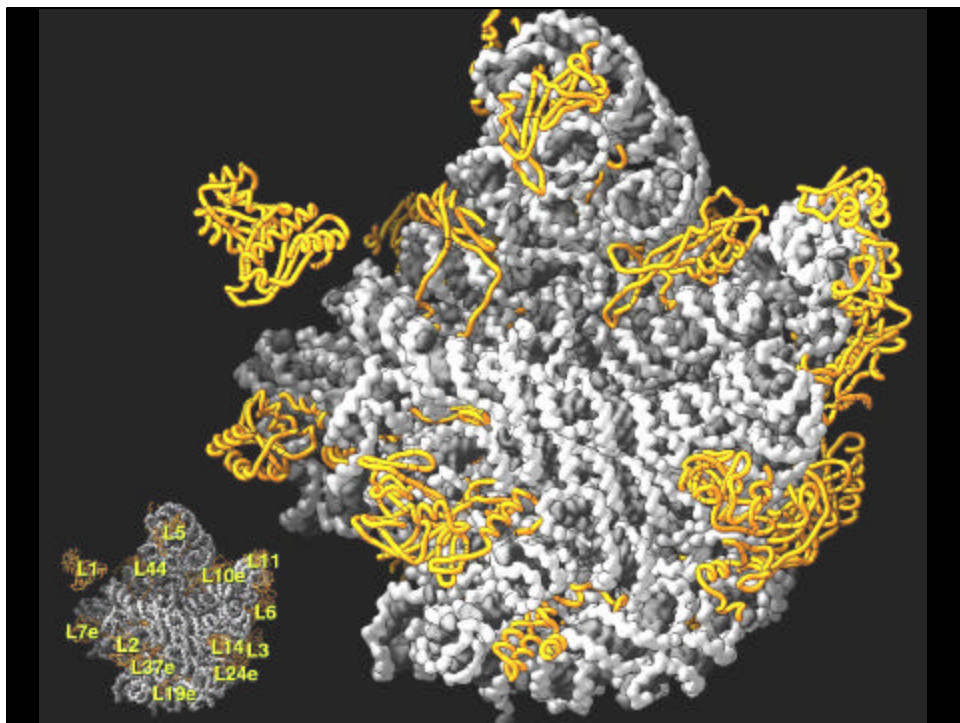
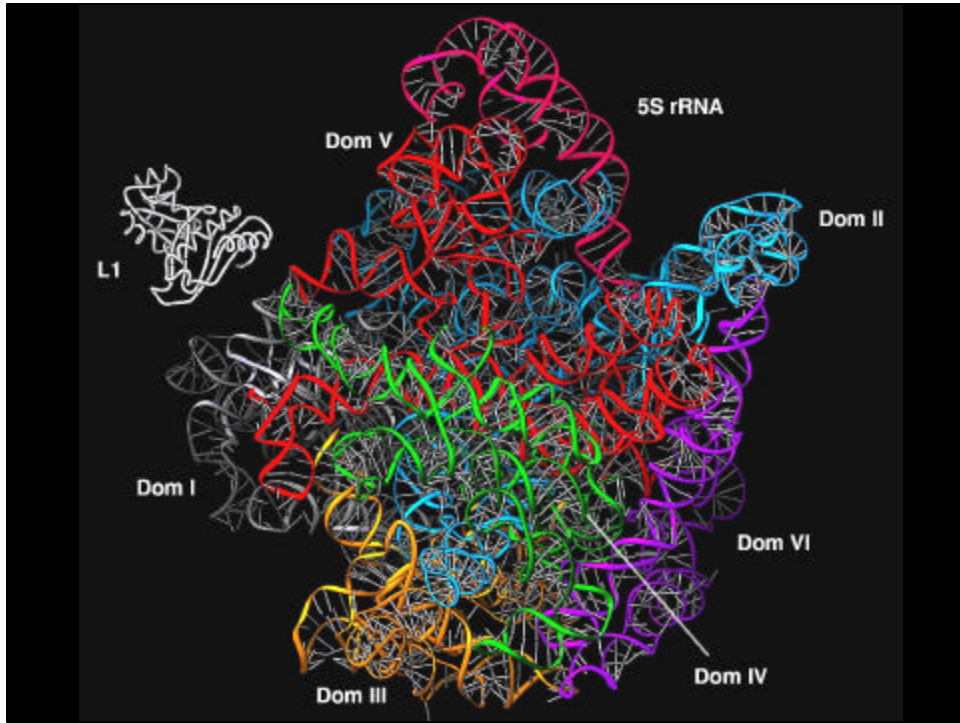
- late 1950s Microsomal particles ----> Ribosomes, rRNA discovered
- 1960s Role in Protein Synthesis Elucidated
- 1970s Electron Microscopic Studies
 - Immunoelectron microscopy - Lake
 - Neutron Diffraction
Moore, Engelman - Yale U., New Haven
Nierhaus - Max-Planck-Institut, Berlin
- 1970 - today Localization of Proteins and Secondary Structures of rRNA by Crosslinking and Sequencing
Noiler - UC Santa Cruz
Brimacombe - Max Planck Institute, Berlin
- 1980s X-ray Crystallographic Research:
Wittmann, Yonath - Max-Planck-Institut, Hamburg
Spirin - USSR academy of sci., Puschino
- 1990s - Image Reconstruction Electron Microscopy
Frank - NYS Dept. of Health, Albany
van Hael- Imperial College, London

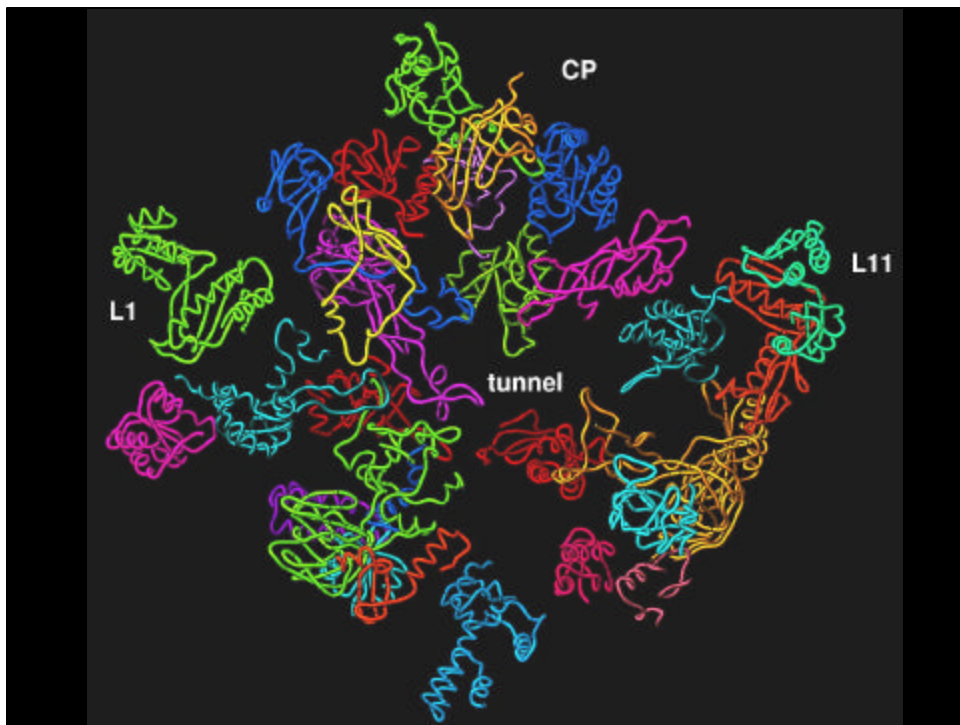
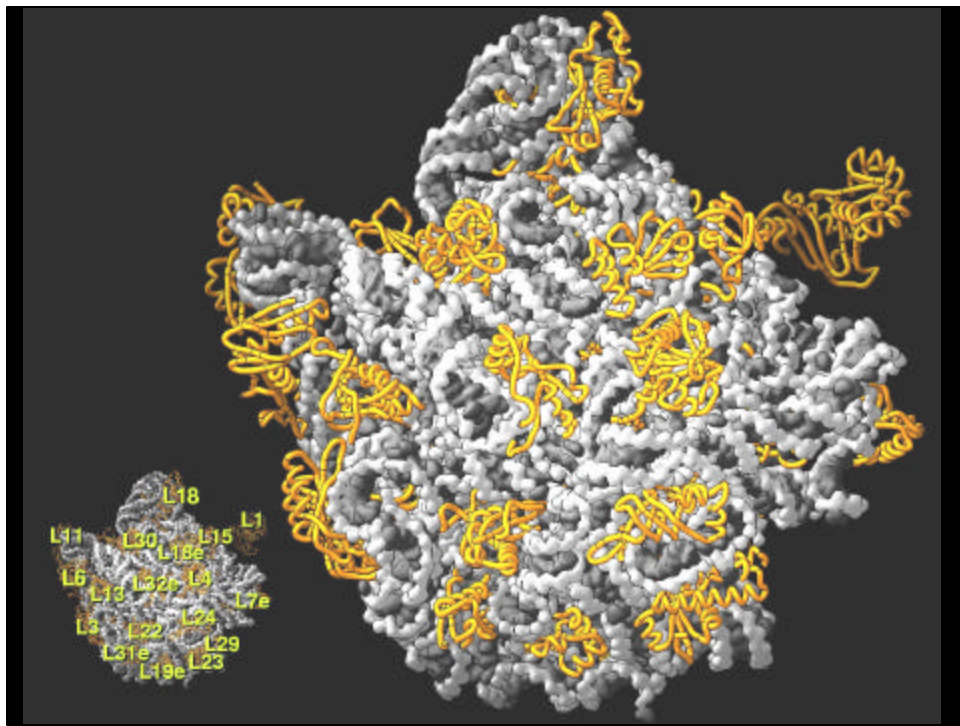


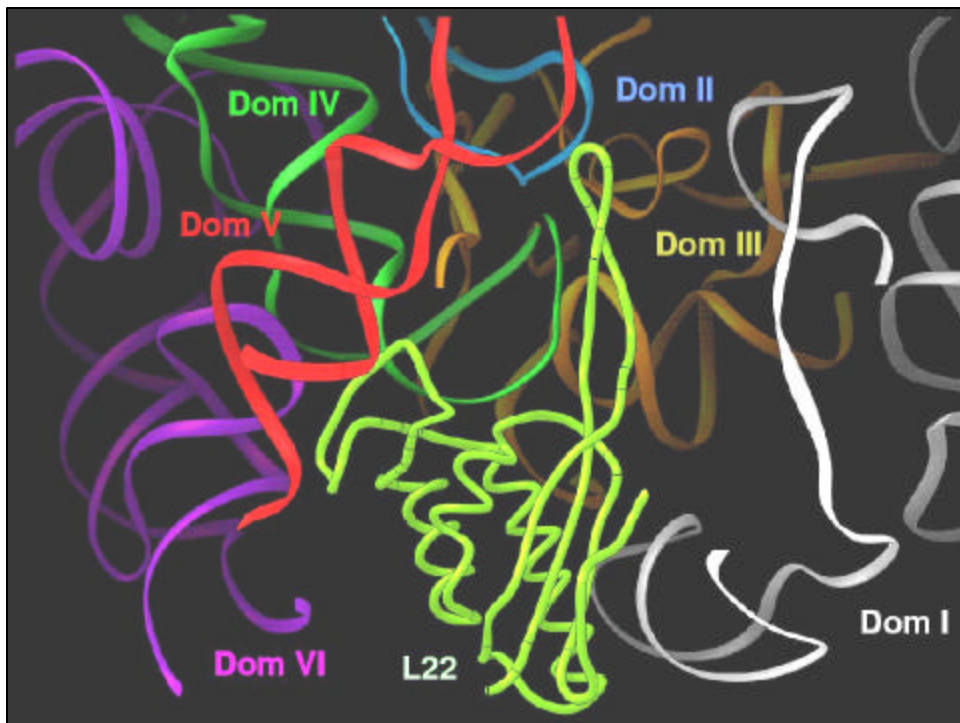
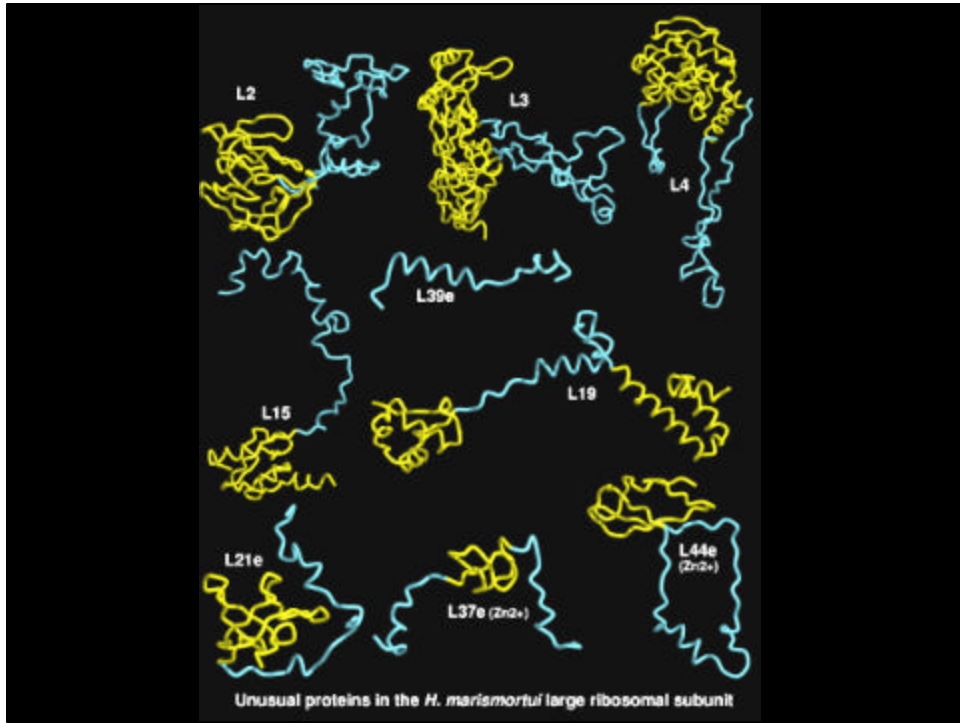


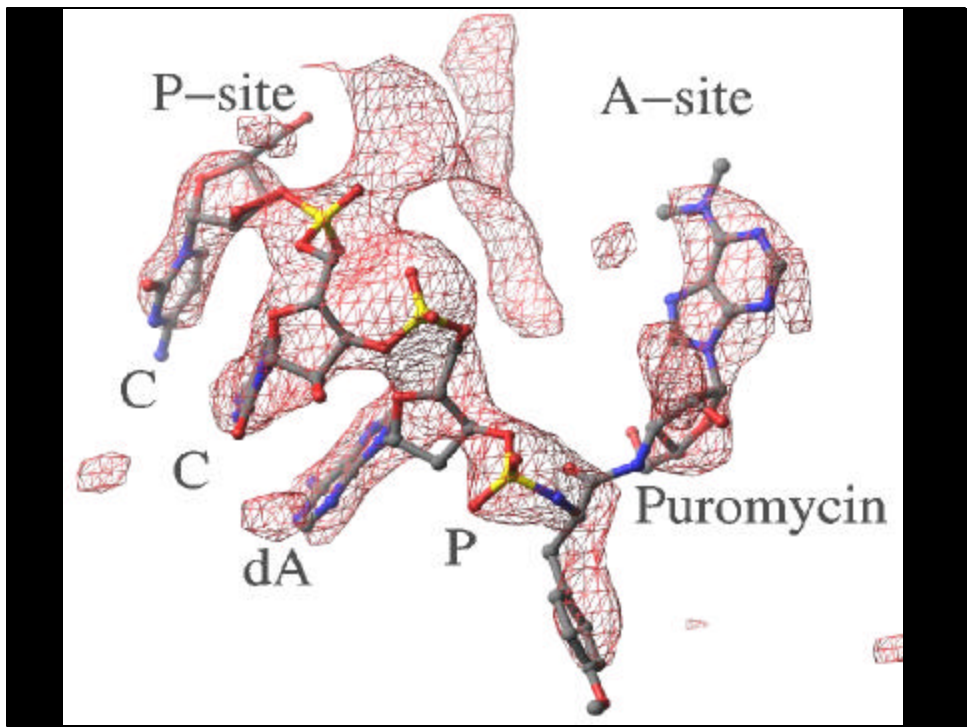
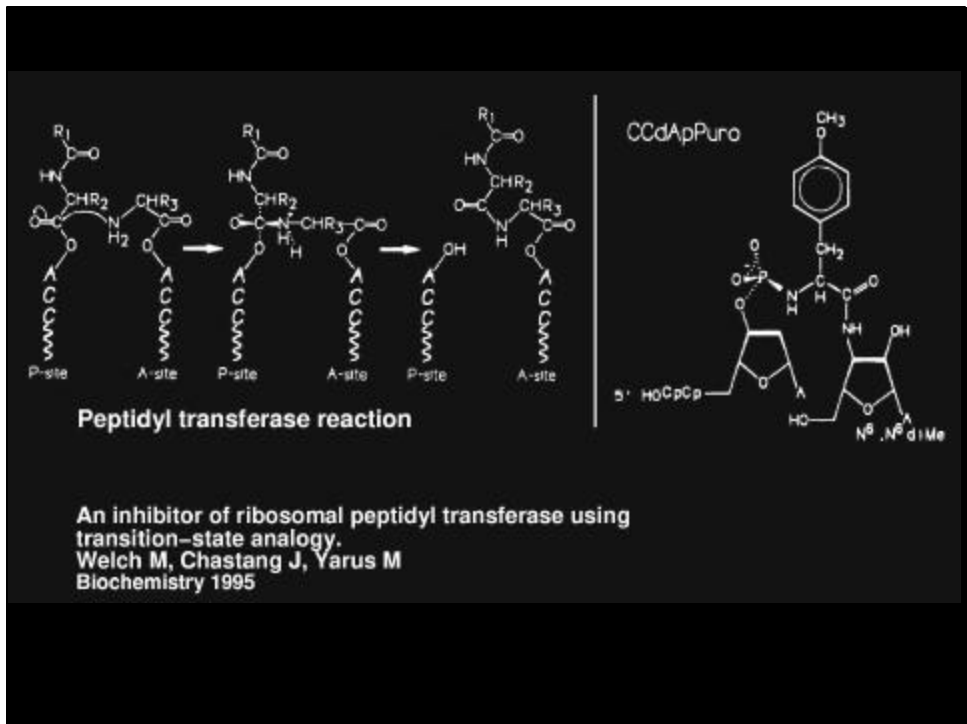


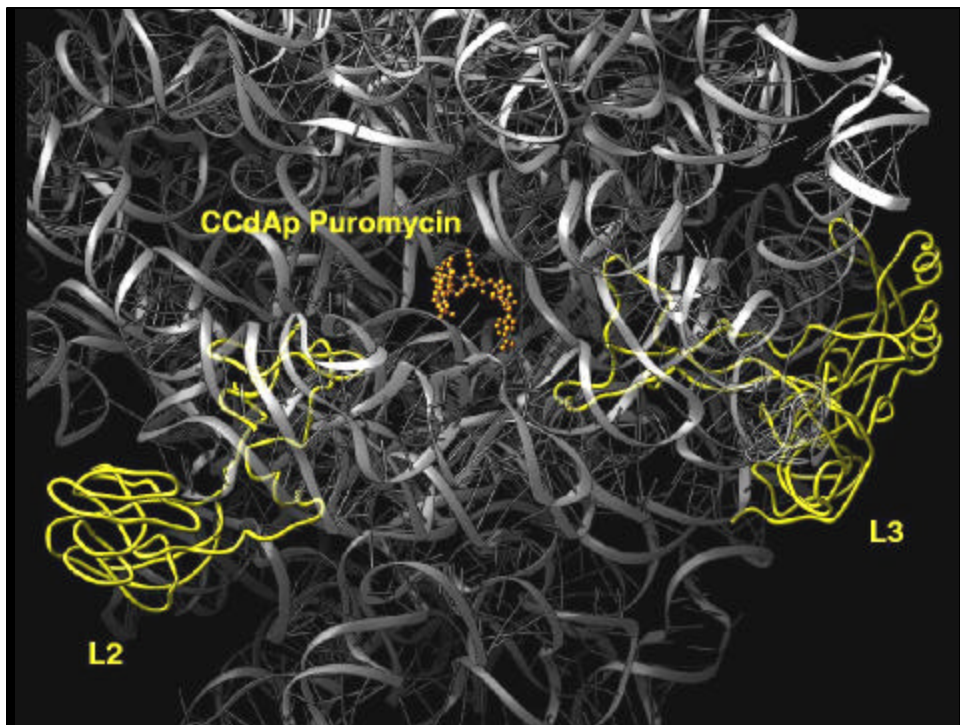
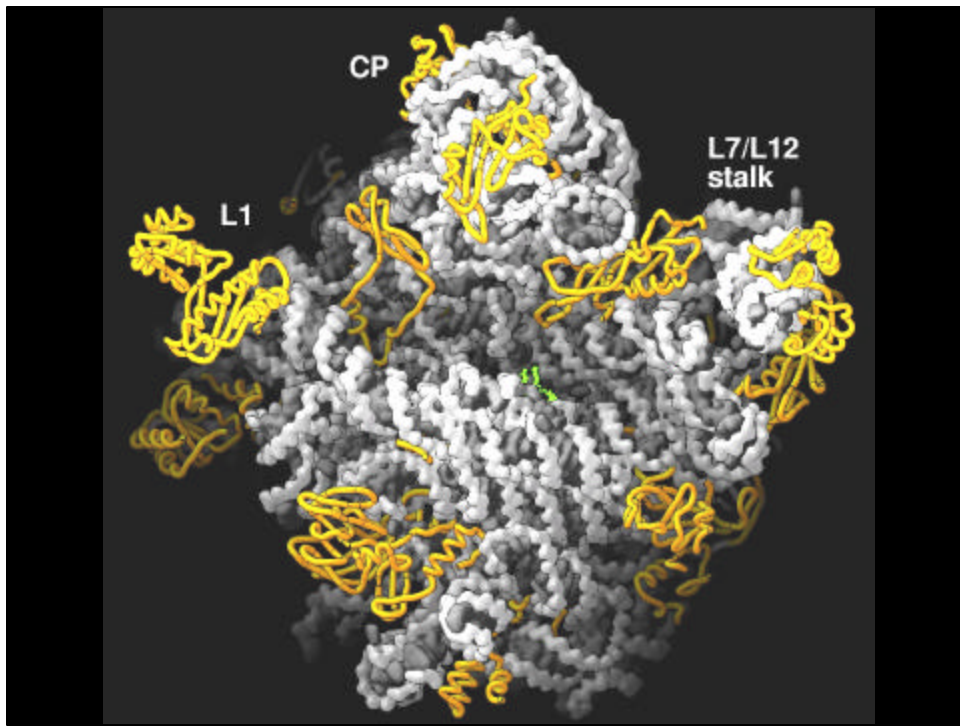




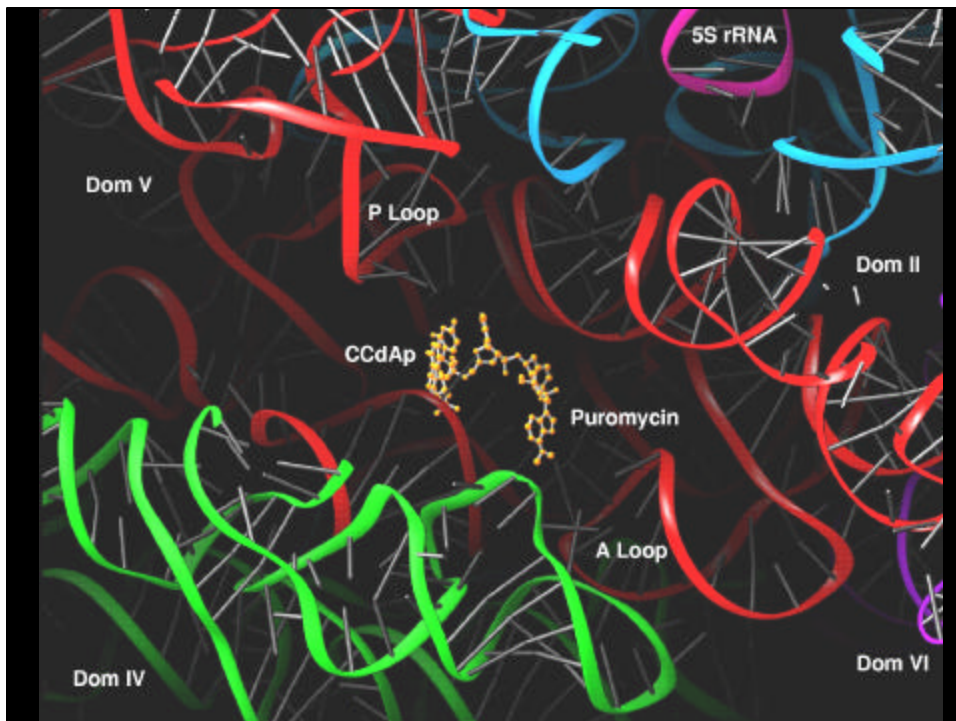


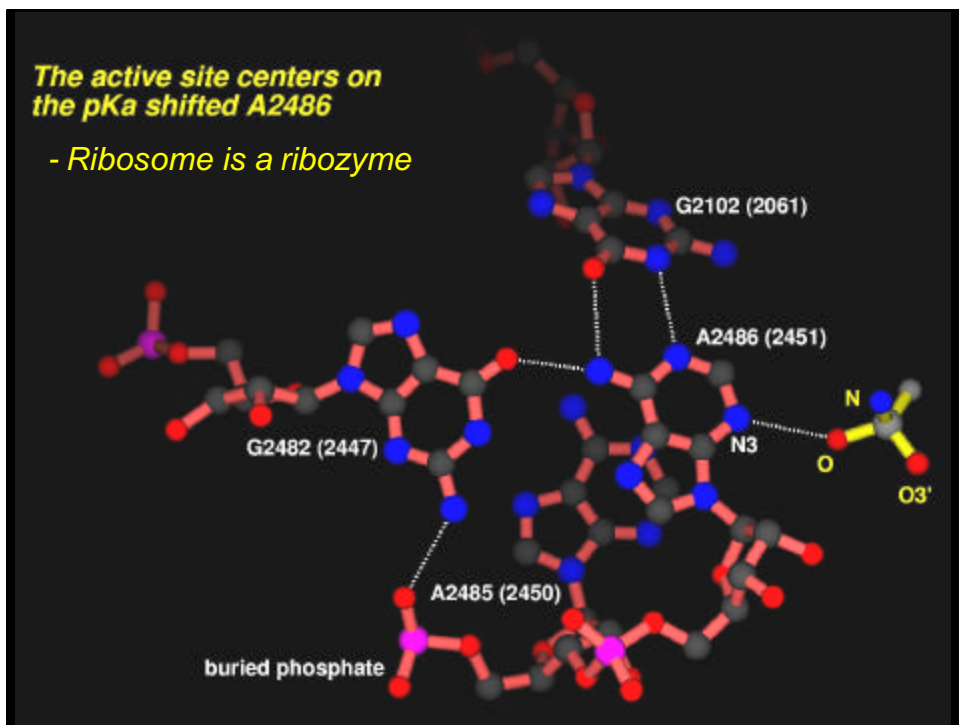
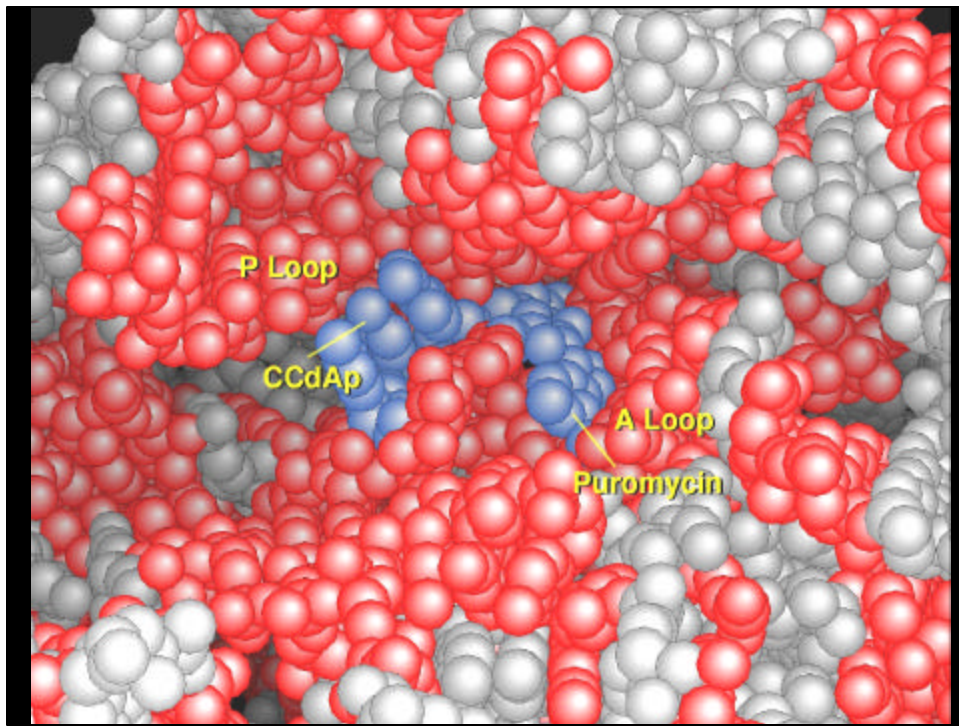


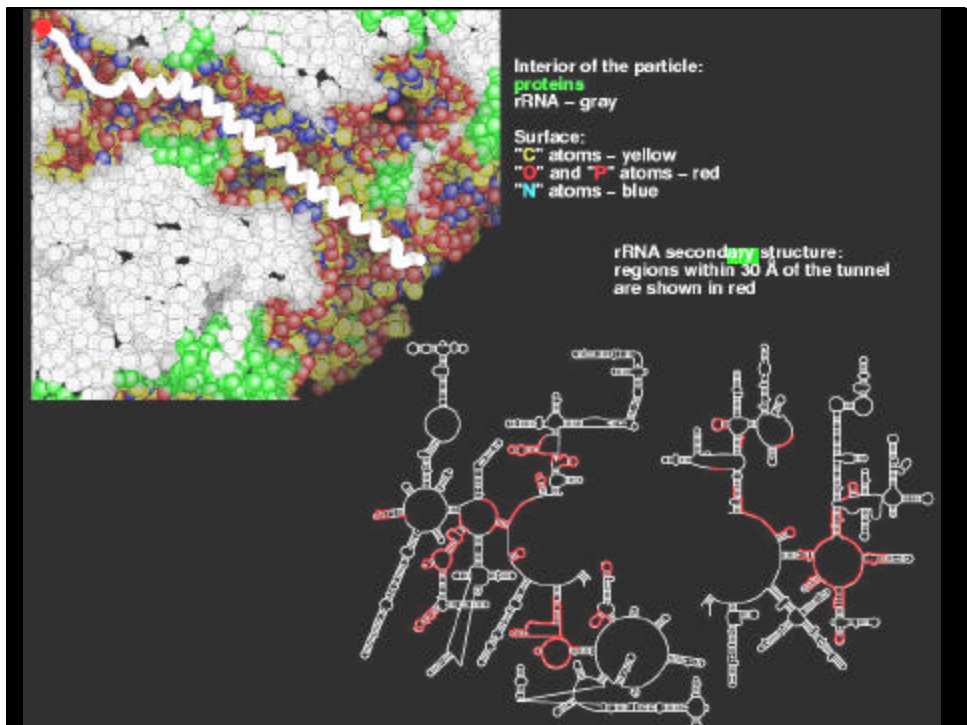
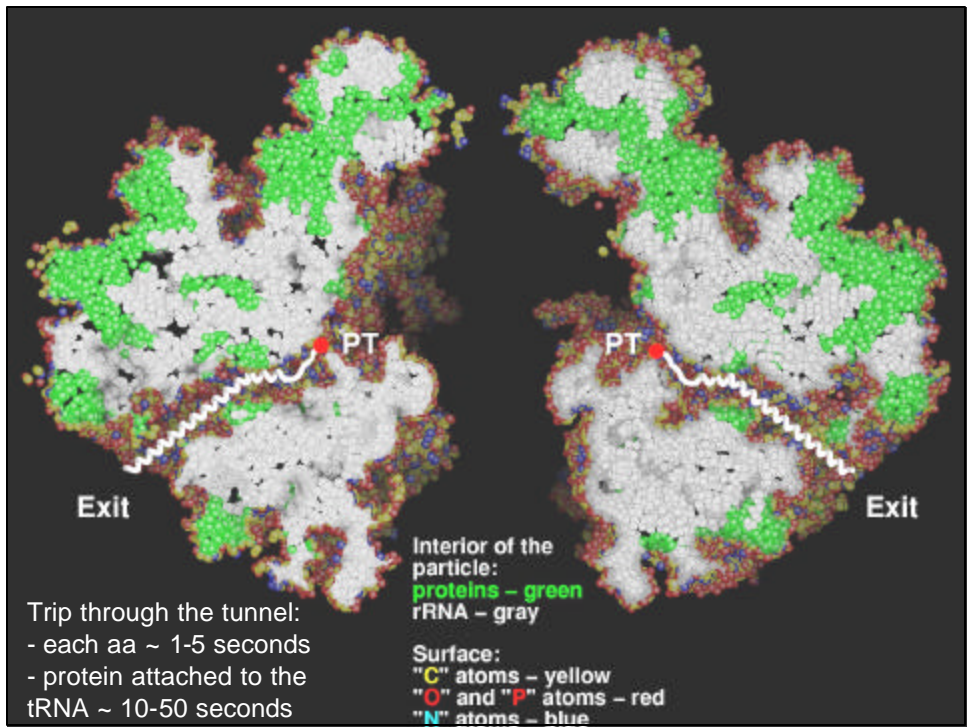


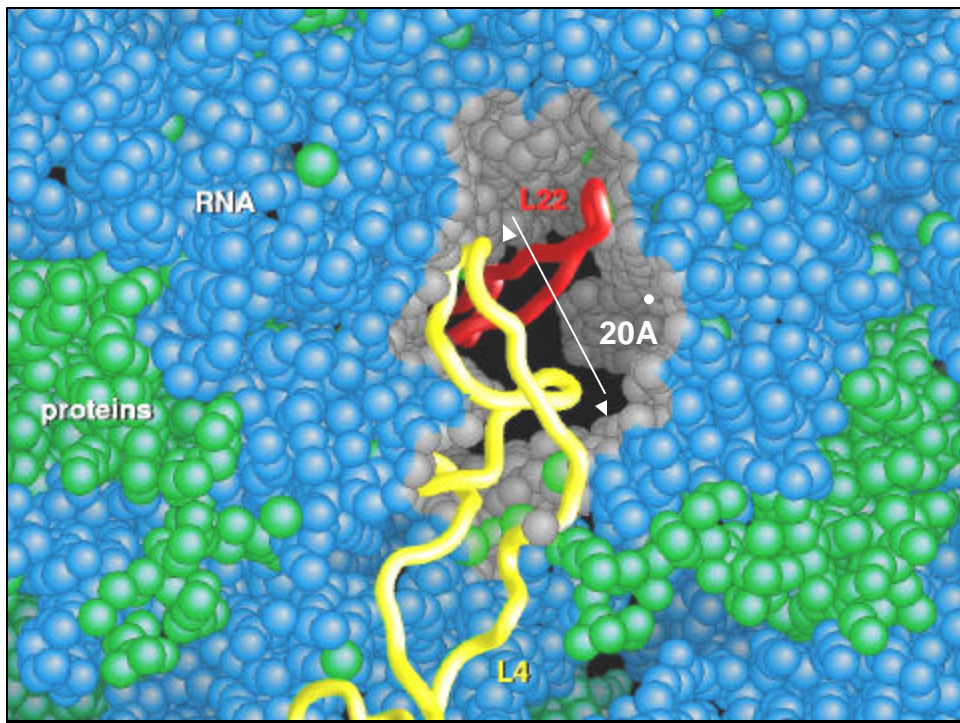
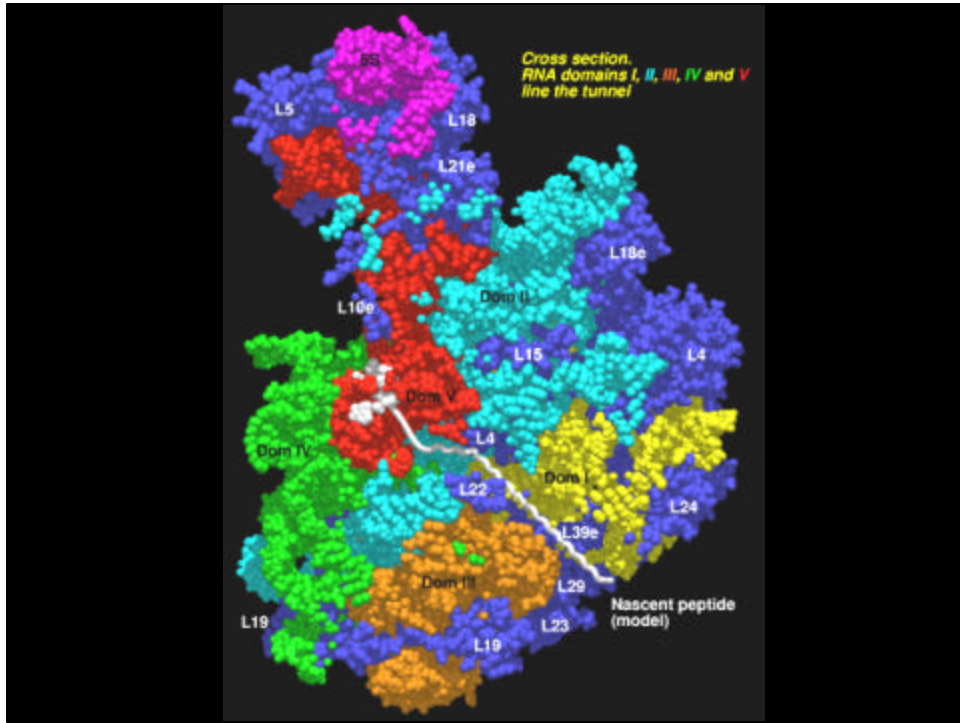


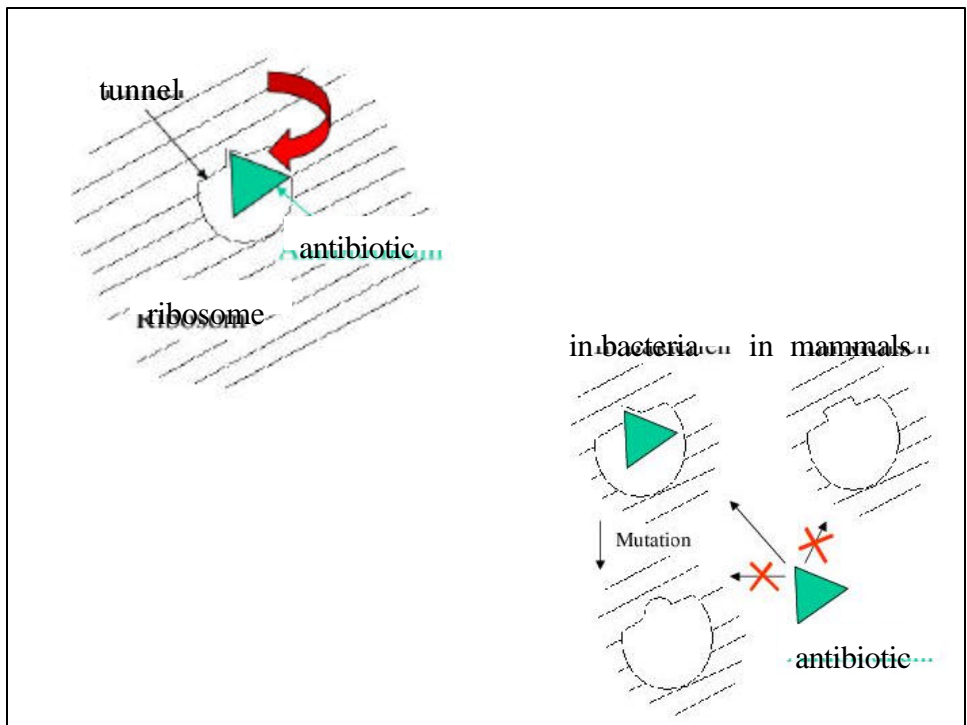
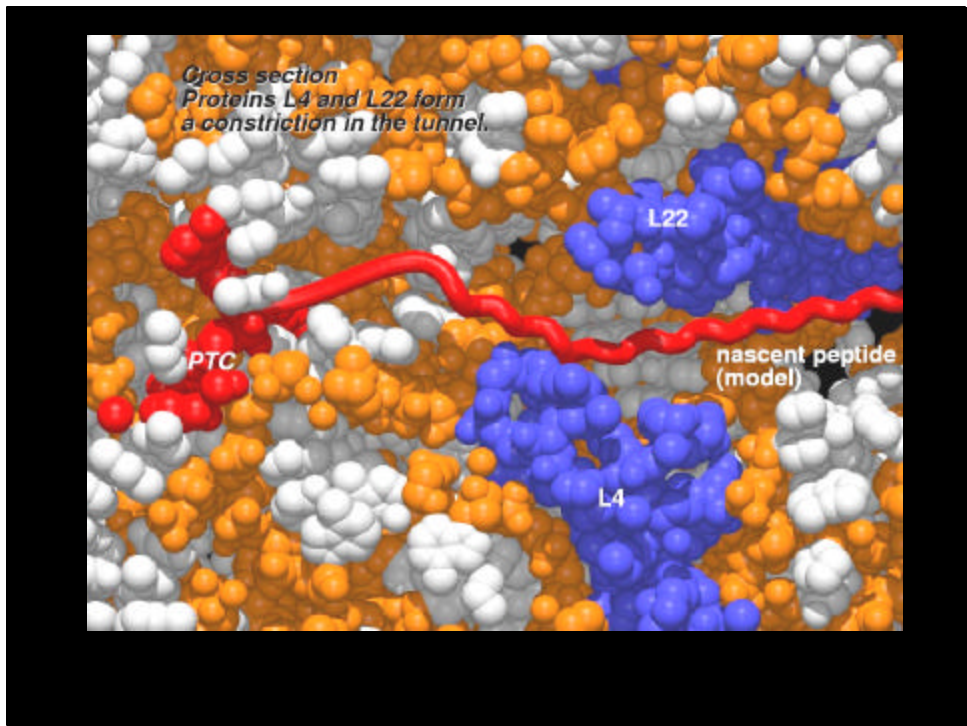
Proteins come no closer than 18 Å to the active site





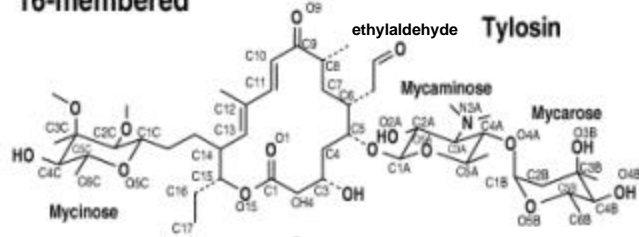




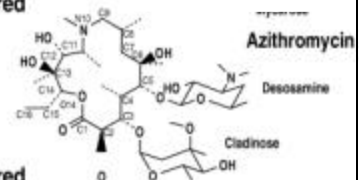


Macrolide Chemical Structures

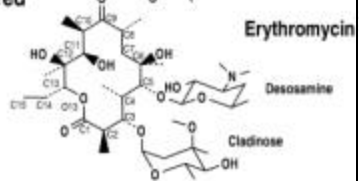
16-membered



15-membered



14-membered



Carbomycin A

