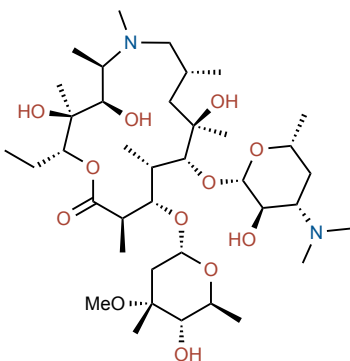


Introduction:



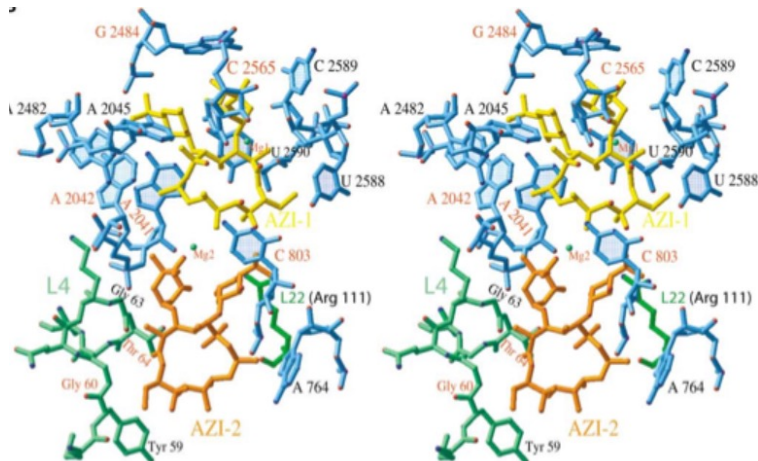
Azithromycin



- A general antibiotic medication used for the treatment of several bacterial infections
- Treatable infections range from middle ear, pneumonia, strep throat, and intestinal infections
- Common side effects can include nausea, vomiting, and an upset stomach
- Immediate dangers range from anaphylaxis, or *Clostridium difficile*-induced diarrhea
- To date, there has been no harm associated with consumption during pregnancies
- In 2018, it ranked as the 46th most prescribed medication in the United States

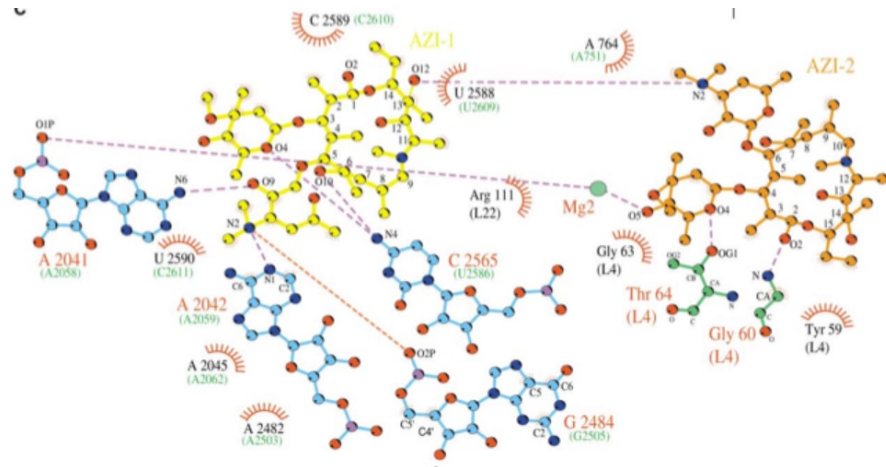
Mechanism of Action:

- Azithromycin inhibits protein synthesis by entering ribosomes and halting the peptide bond formation in peptidyl transferase center (PTC) in the 50S subunit
- These interactions within the subunit create mutations or posttranslational modifications which lead to antibiotic-resistant organisms

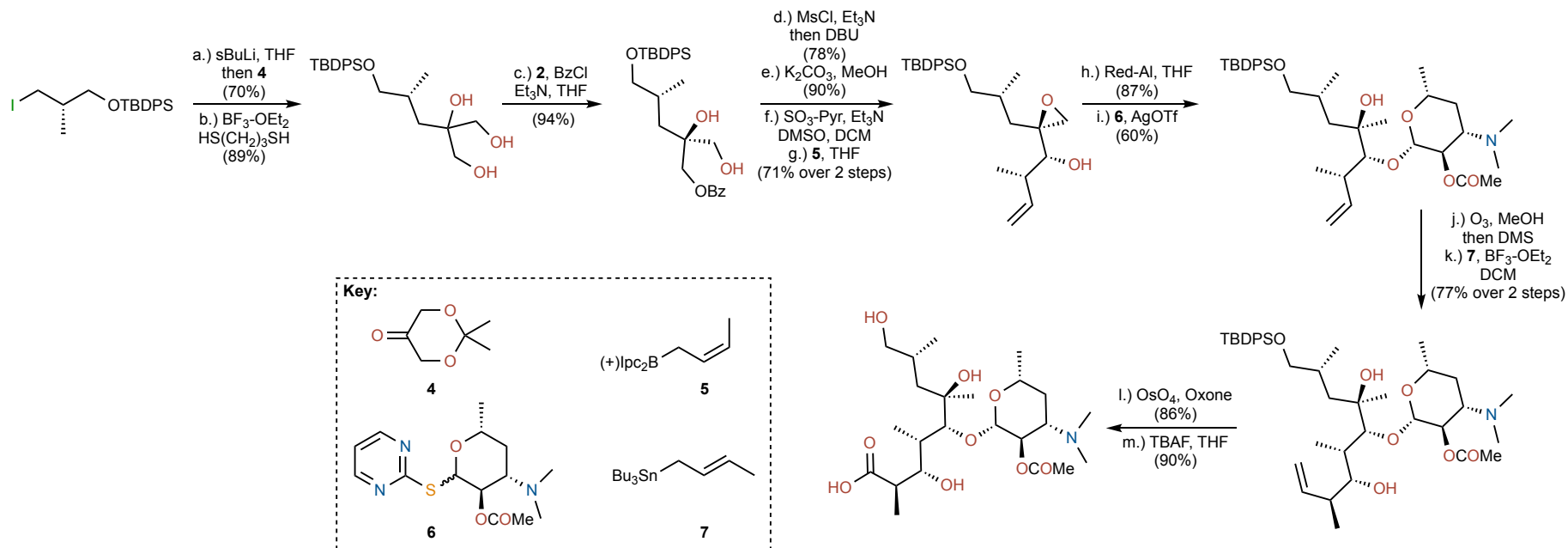
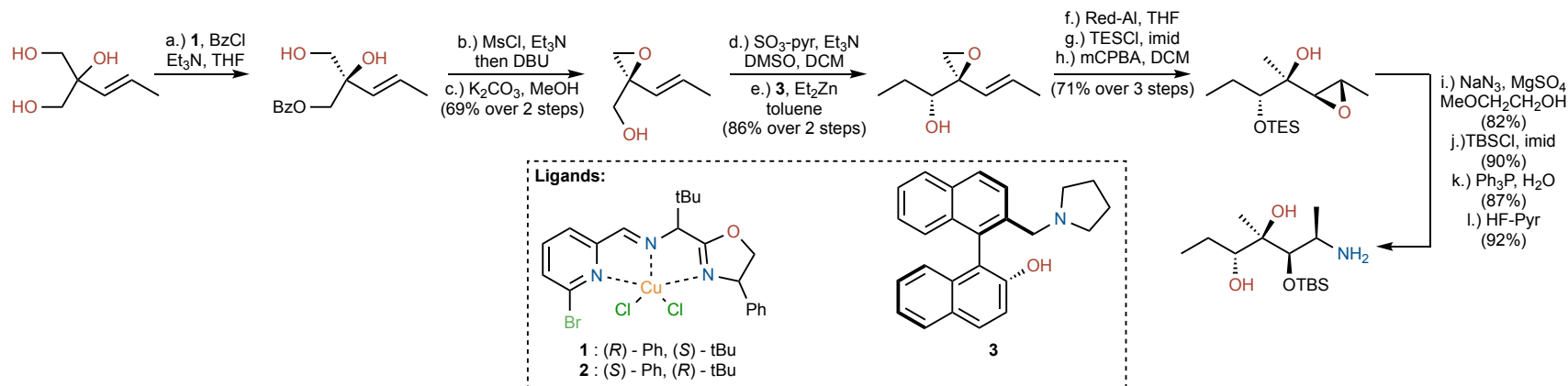


Binding:

- Azithromycin exhibits the unique property of binding two molecules with two binding sites compared to ketolides
- The nitrogen atom alters the conformation of the lactone ring and creates a contact point for the Mg ion
- It is speculated that the two azithromycin molecules exhibit hydrogen bonding with one another, thus enhancing its binding to proteins L4 and L22



Synthesis of Individual Fragments:



Convergence:

