

5. Error-prone repair

- **Last resort** for DNA repair, e.g when repair has not occurred prior to replication. How does the polymerase copy across a non-pairing, mutated base, or an apyrimidinic/apurinic site?
 - DNA polymerase III usually dissociates at a nick or a lesion.
 - But replication can occur past these lesions, especially during the **SOS response** ("Save Our Ship").
- This **translesion synthesis** incorporates random nucleotides, so they are almost always mutations (3/4 times)

Role of *umuC* and *umuD* genes in error-prone repair

- Named for the UV **non**mutable phenotype of mutants with defects in these genes.
- Needed for bypass synthesis; mechanism is under investigation. E.g. these proteins may reduce the template requirement for the polymerase.
- UmuD protein is proteolytically activated by LexA.

UmuC, UmuD in error-prone repair


