

## Impact of Insertion and Deletion Mutations on Protein Thermodynamics (*Honour's thesis presentation*)

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**ABSTRACT:** Insertion and deletion mutations are common events in protein evolution but occur much less frequently than point mutations. Due to this, the effects of insertions and deletions on the biophysical properties of proteins are much less studied and understood. A continuous three-letter protein model was used to study the effects of these mutations on the folding and stability of insertions and deletions. Thermodynamic behaviour was calculated using simulated tempering Monte Carlo simulations. As an initial sequence, a 35-amino acid sequence that folds into a stable native state with both alpha- and beta-structure was used. 25 unique insertion mutations and 73 unique deletion mutations were generated and simulated for this initial sequence. In particular, this allowed us to assess the effects of the mutations on structure and stability.

**ALL ARE WELCOME!**