

## Structural Variant Effects, Stability & Function — Hands-on

Understand how amino acid substitutions, indels and domain rearrangements propagate from sequence to structure, stability and function. This module walks through mapping variants onto 3D models, using stability and impact predictors, combining docking and MD evidence, and communicating structural mechanisms of disease and protein engineering decisions.

# Structural Variant Effects, Stability & Function

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### Session 1

**Fee: Rs 8800** [Apply Now](#)

## Structural Variants, Mapping & Annotation

Classes of protein structural variants

[missense, indels, truncations](#) [domain swaps and fusions](#) [germline vs somatic contexts](#)

Mapping variants from sequence to structure

[reference sequences and numbering](#) [locating residues on PDB or models](#) [isoforms, chains and alignment issues](#)

Basic annotation of variant context

**secondary structure and environment** **buried vs exposed positions** **proximity to sites and interfaces**

## **Session 2**

**Fee: Rs 11800** Apply Now

### **Stability, Packing & Aggregation Risk**

Stability and packing around variant sites

**core vs surface substitutions** **hydrogen bonds and salt bridges** **cavities, clashes and packing defects**

Computational stability and ddG style scores

**concept of delta delta G of folding** **interpreting stabilising vs destabilising calls** **limits and calibration of predictors**

Aggregation and misfolding risk indicators

**exposed hydrophobics and patches** **disruption of disulfides and motifs** **relevance for expression and developability**

## **Session 3**

**Fee: Rs 14800** Apply Now

### **Mechanisms, Dynamics & Functional Impact**

Mechanistic classes of functional impact

**active site and catalytic variants** **binding site and interface disruption** **allosteric, regulatory and conformational shifts**

Integrating MD, docking and network views

**local flexibility and RMSF changes** **contact maps and communication paths** **effect on ligand and partner**

**binding modes**

Scoring and prioritising variants for follow up

**combining structural and sequence evidence** **flagging likely loss vs gain of function** **shortlisting variants for experiments**

**Session 4**

**Fee: Rs 18800** Apply Now

## Interpretation, Reporting & Case Studies

End to end structural variant case study

**Theory + Practical**

Structurally informed variant interpretation narratives

**clear mechanism of impact statements** **figures and maps for reports and slides** **strength, caveats and alternatives**

Linking to disease, diagnostics and design decisions

**triaging clinical variants of interest** **guiding protein engineering hypotheses** **structural variant summaries for teams**