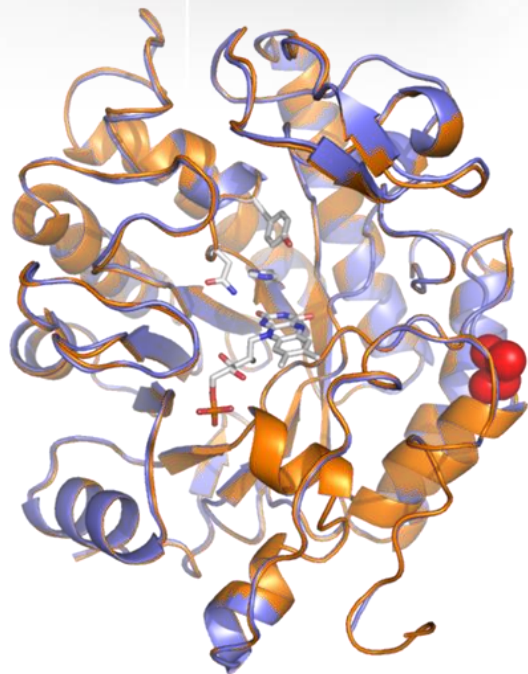


Light teaches (co)enzymes new tricks



Superimposed x-ray crystal structures of GluER-T36A (blue) and GluER (orange) with the T36A mutation highlighted in red. Despite having a structure indistinguishable from wild-type GluER, GluER-T36A provides a higher product yield.

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Scientific Achievement

A suite of flavin-dependent enzymes were shown to catalyze the radical-based production of nitrogen-containing cyclic molecules when exposed to light.

Significance and Impact

Using enzymes for the photocatalysis of radical reactions opens the door to creating small molecule drugs that cannot be synthesized with traditional chemical approaches.

Research Details

- For one enzyme, GluER, mutation of a residue on the surface of the protein (GluER-T36A) showed a dramatic increase in product yield.
- X-ray crystal structures of GluER and mutated GluER-T36A from NSLS-II beamlines AMX and FMX showed no differences in structure that explain the increased yield by the mutant.
- Rather, the mutation was shown to decrease the protein's thermal stability, likely altering its dynamics.