Comparative Studies of Human Indoleamine 2,3-dioxygenase (IDO) and Tryptophan Dioxygenase (TDO)

In contrast to the wide spectrum of cytochrome P450 monooxygenases, there are only two heme-based dioxygenases in humans, tryptophan dioxygenase (TDO) and indoleamine 2,3-dioxygenase (IDO). TDO and IDO catalyze the same oxidative ring cleavage reaction of L-tryptophan (L-Trp) to N-formyl kynurenine (NFK), the initial and rate-limiting step of the kynurenine pathway. Despite immense interest, the mechanism by which the two enzymes execute the dioxygenase reaction remains elusive. In this talk I will present a novel dioxygenase mechanism of the two enzymes revealed by our new spectroscopic, kinetic and computational studies.

REFERENCES