Transitions in DNA polymerase β μs-ms dynamics related to substrate binding and catalysis

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DNA polymerase β (pol β) plays a central role in the DNA base excision repair pathway. Dynamic characterization of pol β from methyl-TROSY CPMG relaxation dispersion experiments and previous backbone relaxation dispersion measurements (Berlow, et al. J. Mol. Biol, **419**, 2012, 171) reveals transitions in μs-ms dynamics in response to highly variable substrates, suggesting a role for dynamics in DNA binding, dNTP binding and catalysis. The results of this work will be presented.

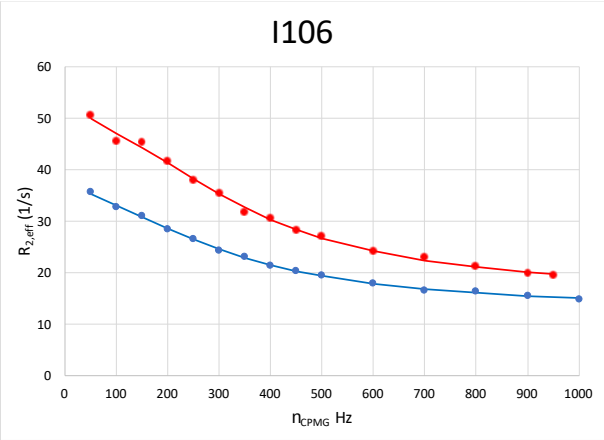

Figure 1. **Representative methyl dispersion curve of Ile106 in the apoenzyme**. The dispersion curves in red was obtained at 800 MHz and the curve in blue was obtained at 600 MHz. Individual and global fitting of the data were performed with the Relax program (Morin, et al. Bioinformatics, **30**, 2219.)

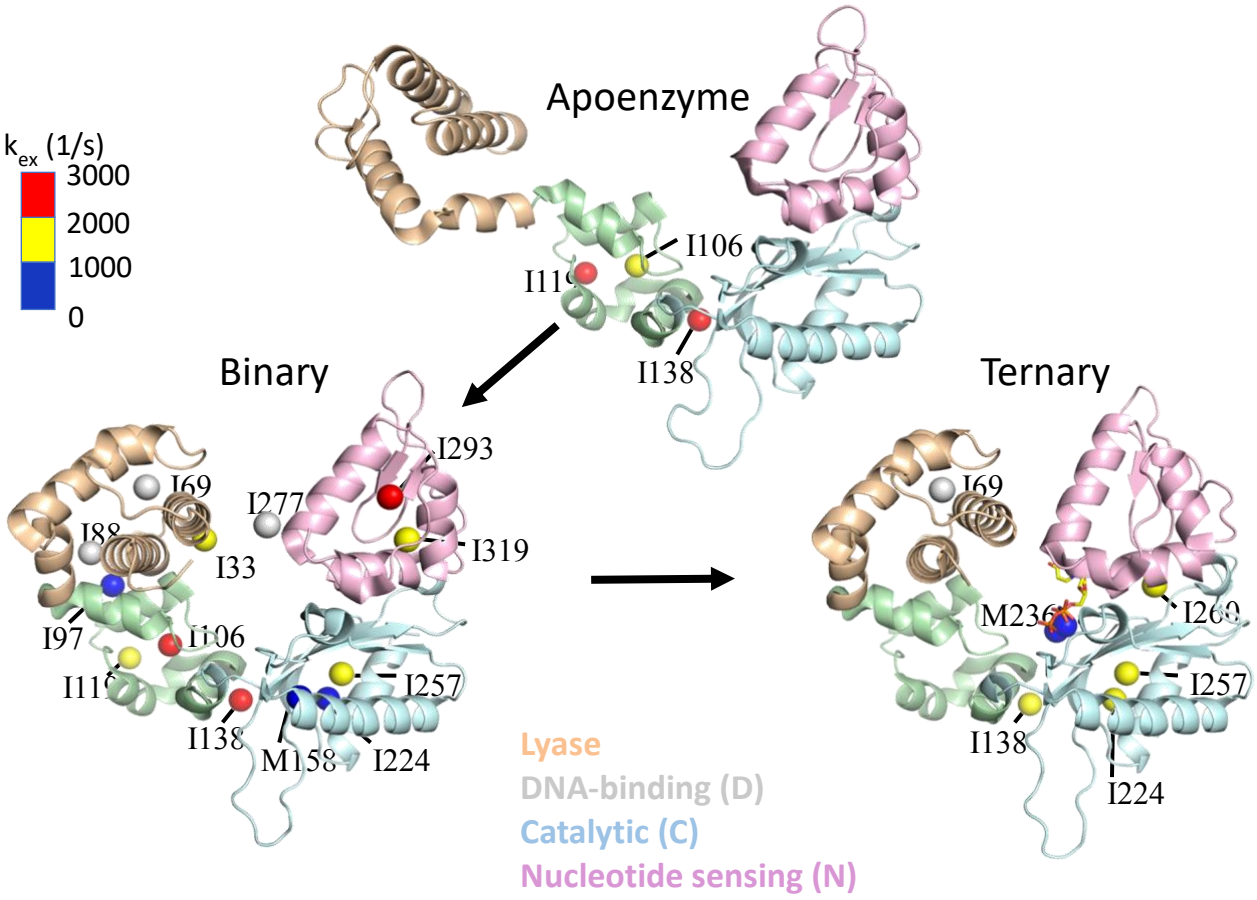

Figure 2. **Summary of the methyl sidechain dynamics.** The methyl groups in the pol b complexes showing microsecond-millisecond dynamics are color coded by the magnitude of their exchange (k_{ex}) rates individual fits of the CPMG dispersion curves.