**Chapter 4. Description of source codes and their output**

Here, we mention only the FORTRAN source codes relevant to 17 enzyme-catalyzed reactions not present in Juretić's (2025) paper dealing with a similar research topic. By following the Table 1 ranking according to overall dissipation, these are:

1. F1ATPase-highATP.for
2. TPIrabbitX-K1K4k1k7.for
3. RacE2mut3-K1K2k1k3.for
4. RacE2mut6-K1K2k1k3.for
5. RacE2mut4-K1K2k1k3.for
6. RacE2mut8-K1K2k1k3.for
7. RacE2mut5-K1K2k1k3.for
8. RacE2mut2-K1K5k1k3.for
9. EntChc-K1K2k1k3.for
10. RacE2mut7-K1K2k1k3.for
11. Enolase-K1K2k1k3.for
12. EpiTmut3-K1K2k1k3.for
13. SerRm-K1K2k1k3.for
14. SerRh-K1K2k1k3.for
15. EpiTmut2-K1K2k1k3.for
16. TIProRmut-K1K2k1k3.for
17. SerRmut-K1K2k1k3.for

Output spreadsheets provide all of the extracted and calculated kinetic and thermodynamic steady-state parameters in the second row (i = 1). The remaining rows are the output of "trade-off" simulations. Their number depends on how many iterations we performed (from 10,000 to 30,000). Each iteration is a stochastic jump between steady states that does not change the overall force X by compensating for the change in the substrate-binding constant (and corresponding equilibrium constant) and the change in the product-release constant (and corresponding equilibrium constant). The output data files are converted into Excel spreadsheets for easier finding of maximal values for dissipation, catalytic efficiency, and turnover number. The steady states with maximal values are then used to find corresponding optimal values of interest.