Public Abstract

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Department:Chemistry

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Title:KINETICS AND MECHANISMS ASSOCIATED WITH REDOX REGULATION OF PROTEIN TYROSINE PHOSPHATASE 1B (PTP1B)

Here, we report on the kinetics and mechanisms associated with redox regulation of the protein tyrosine phosphatase PTP1B. We determined rates of thiol- and phosphine-mediated recovery of catalytic activity from the oxidatively-inactivated enzyme, and shed light on the chemical mechanisms involved in these processes and in the regulation of PTP family member SHP2. Additionally, we describe reactions that oxidatively-inactivated PTP1B undergo with structurally-diverse carbon acids, using both a small chemical model dipeptide of oxidatively-inactivated PTP1B, and the oxidized enzyme itself. Finally, we report a novel method by which to predict Hammett substituent constants via electronic structure calculations.