Literature Report

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Article

Mechanism of Color and Photoacidity Tuning for the Protonated Green Fluorescent Protein Chromophore

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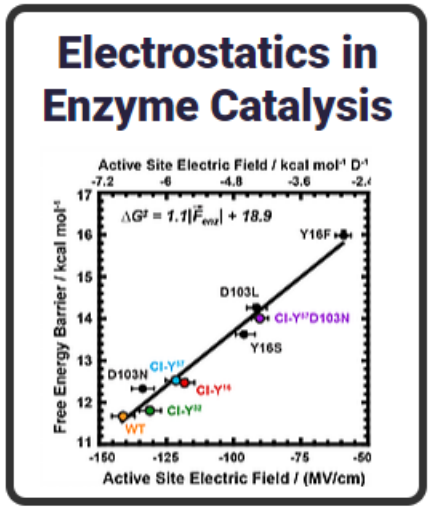
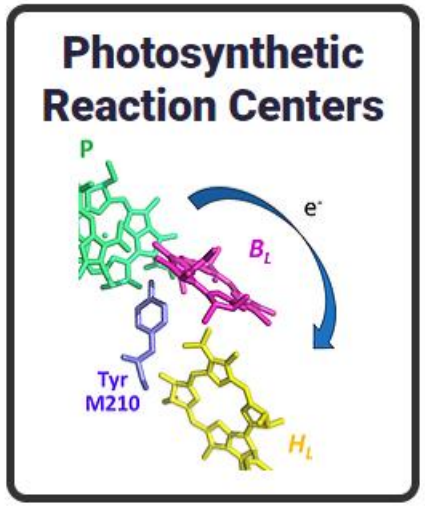
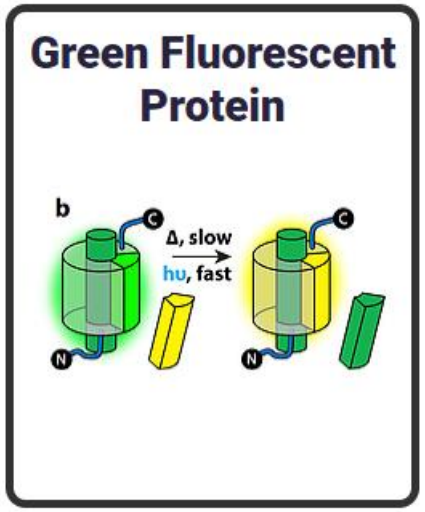
Introduction

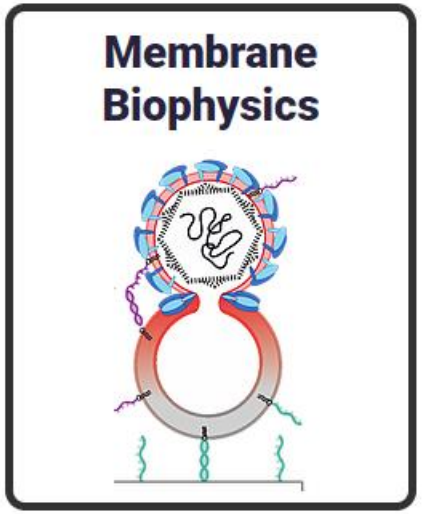
Steven G. Boxer

June 2000 to present	Camille Dreyfus Distinguished Professor of Chemistry
September 1988 to 1999	Chair, Stanford Biophysics Program
September 1986 to present	Professor of Chemistry, Stanford University
September 1982 to August 1986	Associate Professor of Chemistry, Stanford University
December 1976 to August l982	Assistant Professor of Chemistry, Stanford University

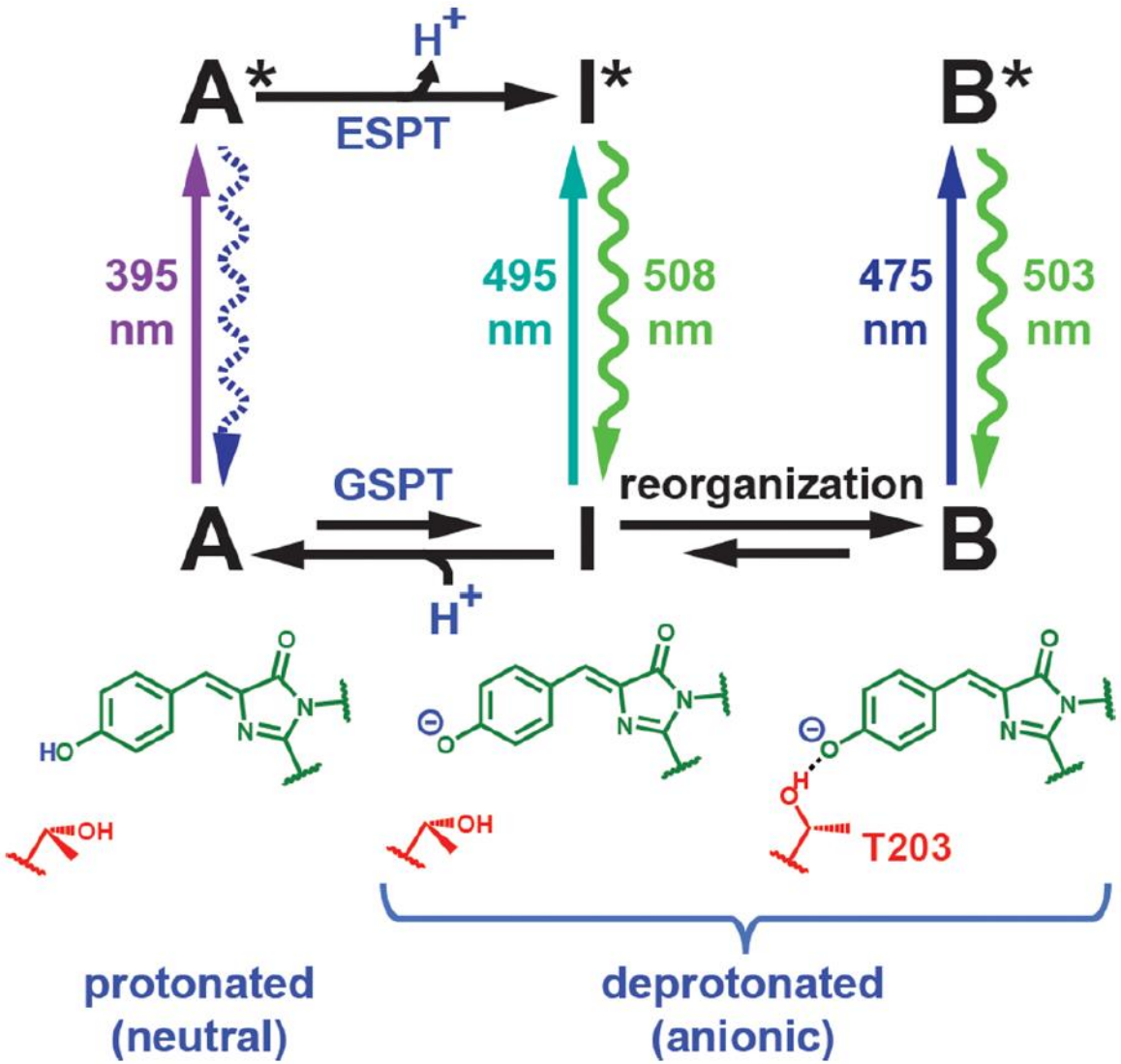


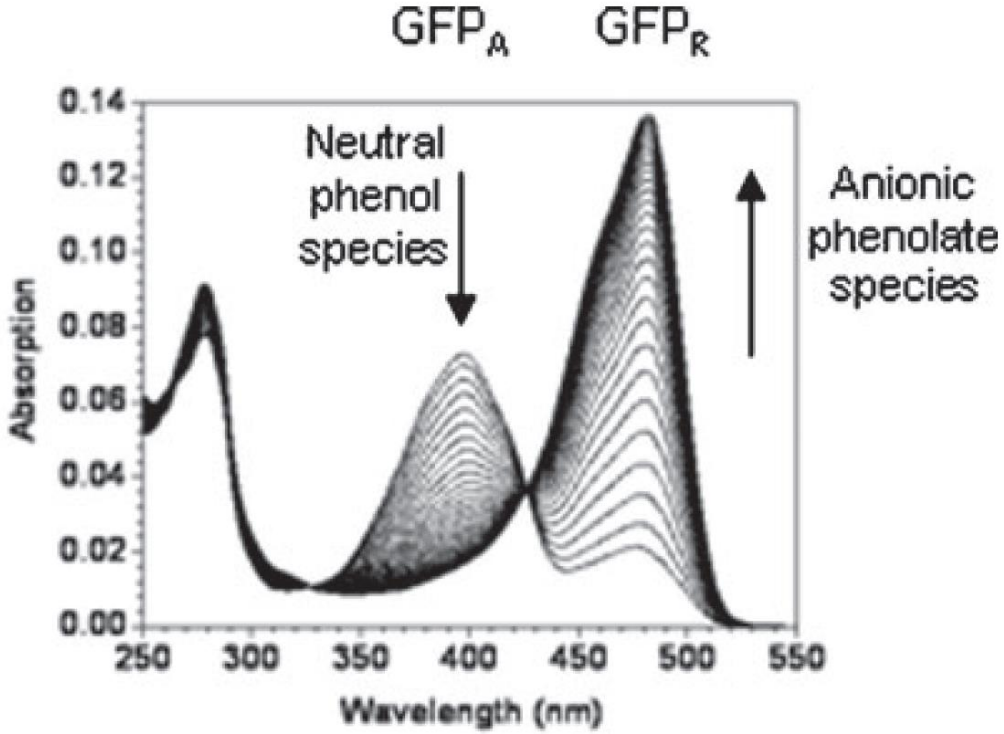






GFP Spectral Properties

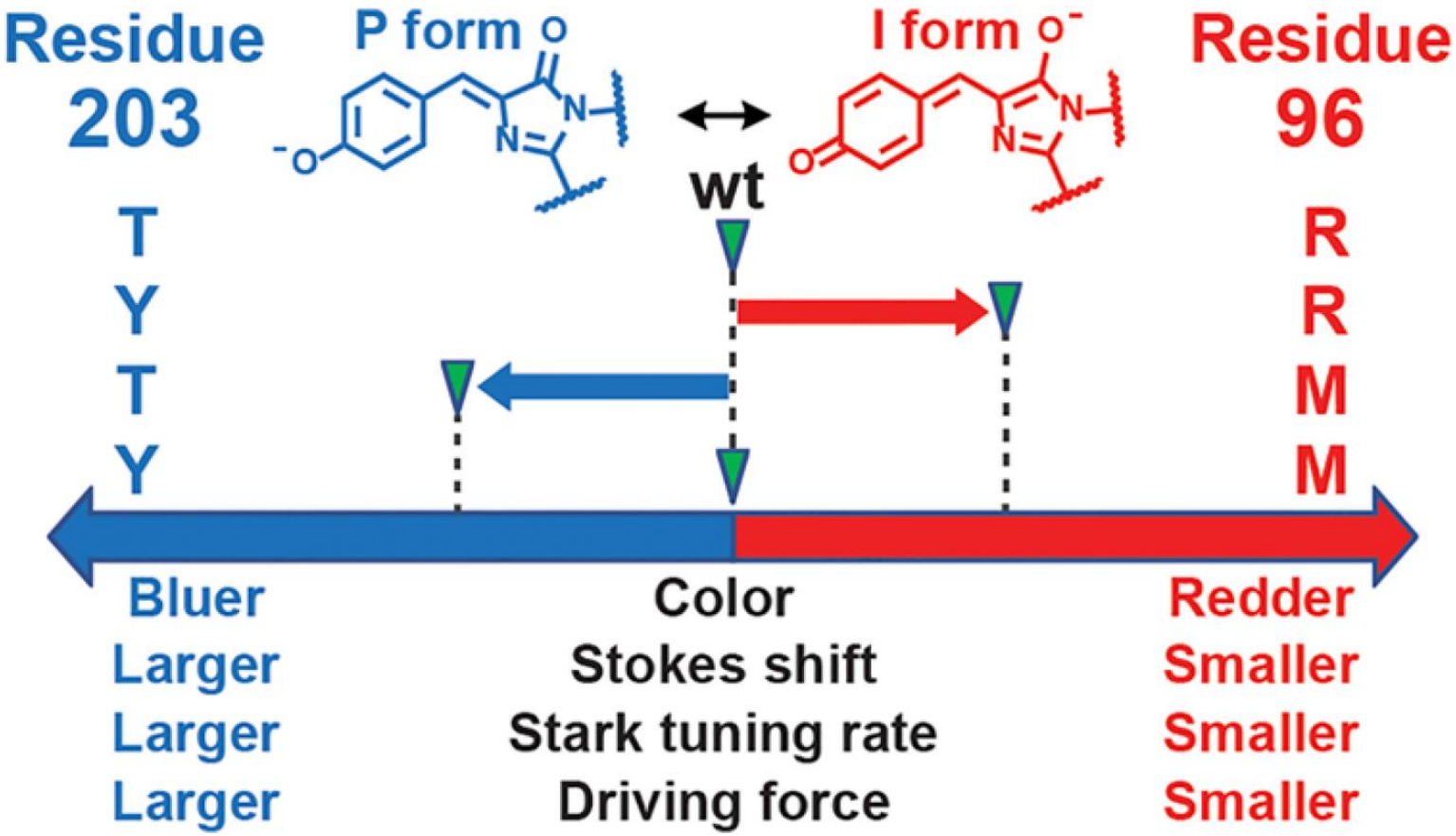




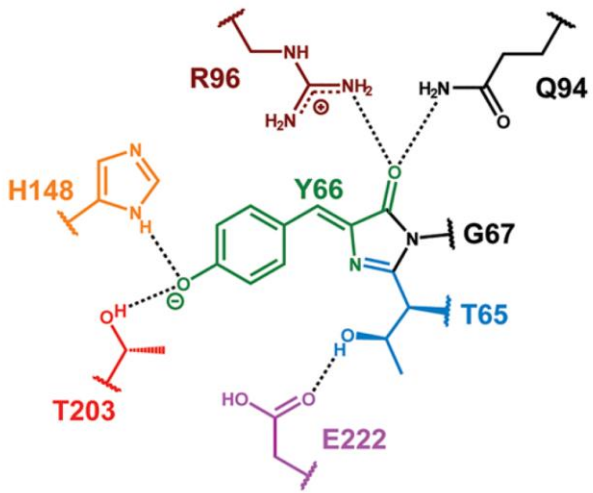
Chem. Soc. Rev., 2009, 38, 2935–2950

Anionic GFP Chromophore

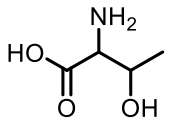
阴离子发色团的颜色调谐是通过调制P和I形式之间的驱动力来实现的。



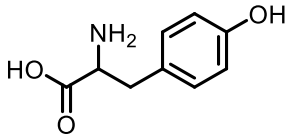
J. Am. Chem. Soc. 2019, 141, 15250−15265



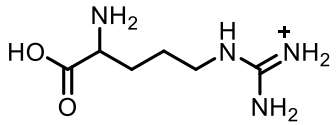
Threonine(T)



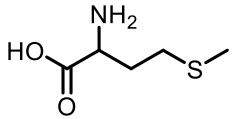
Tyrosine(Y)



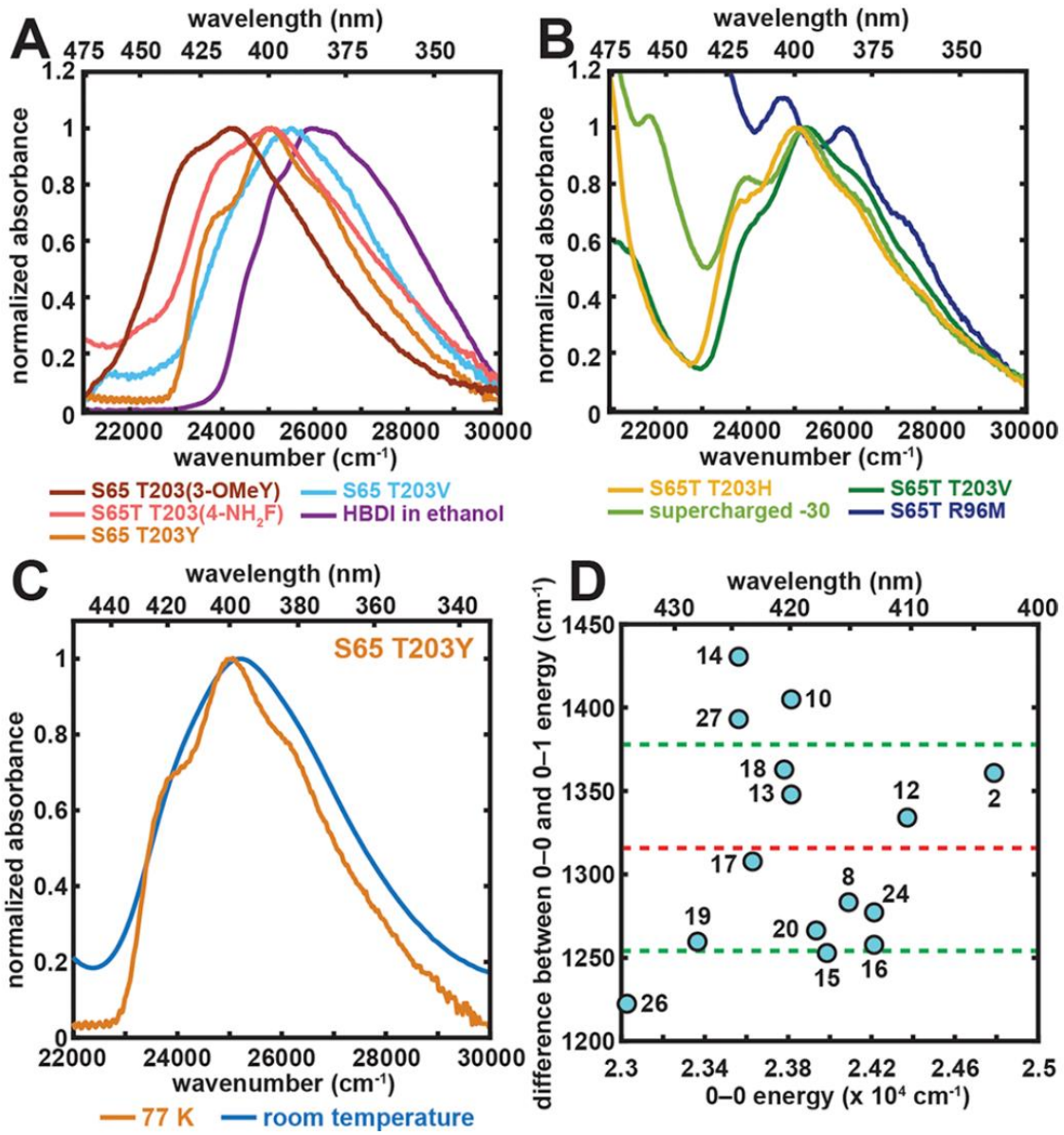
Arginine(R)

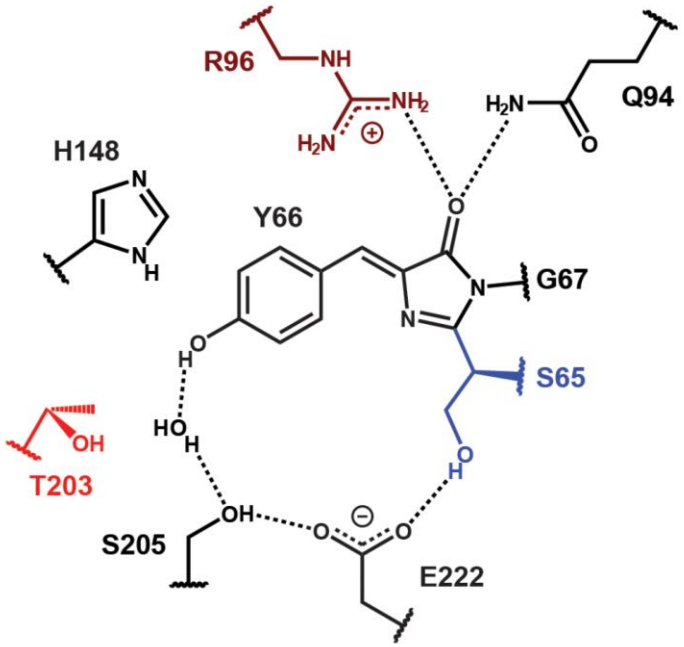


Methionine(M)

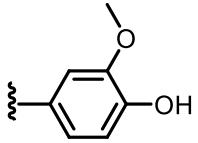


77 K Absorption Spectra and Color Tuning

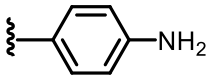




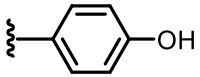
T203(3-OMeY)



T203(4-NH2F)



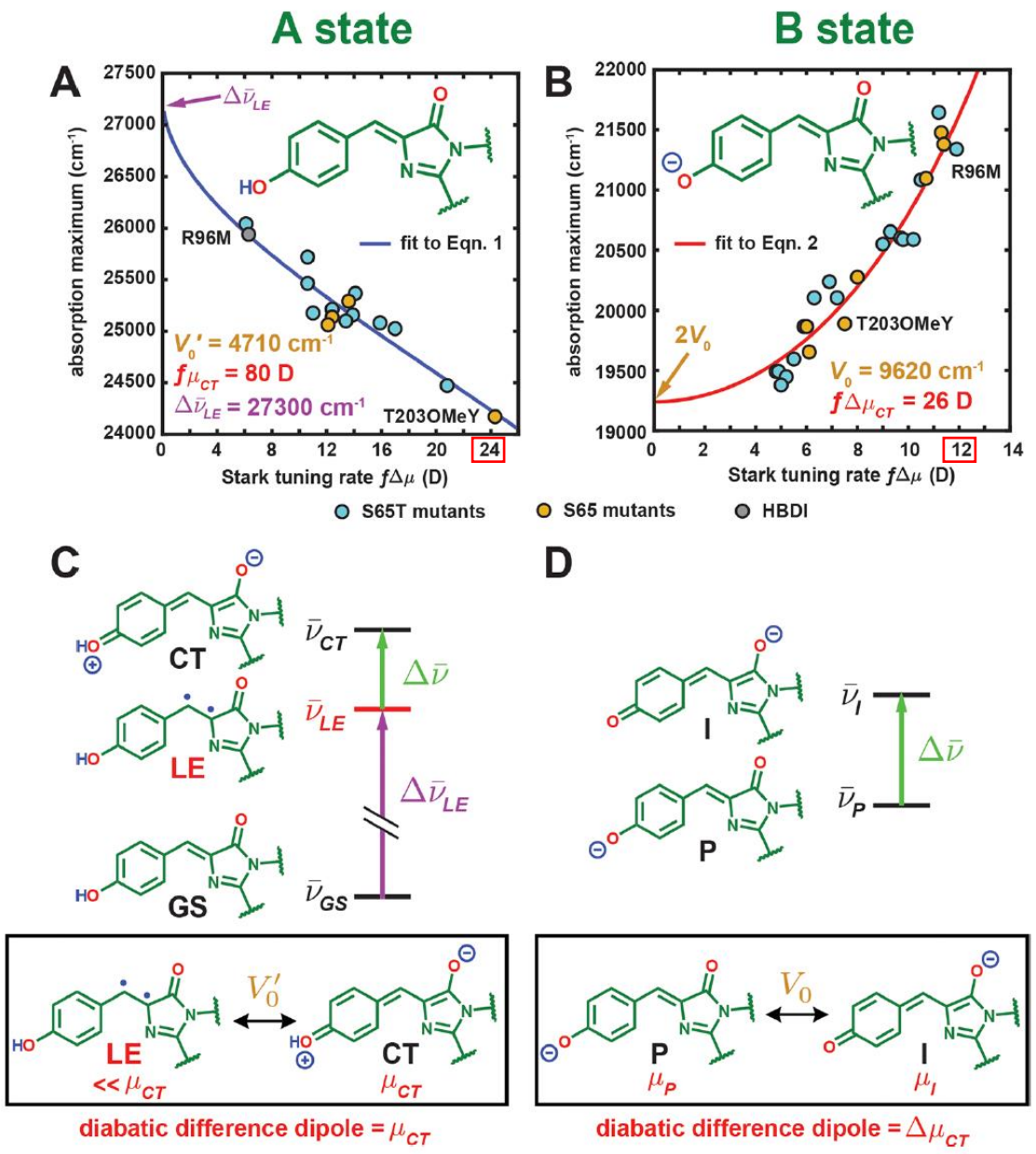
T203Y



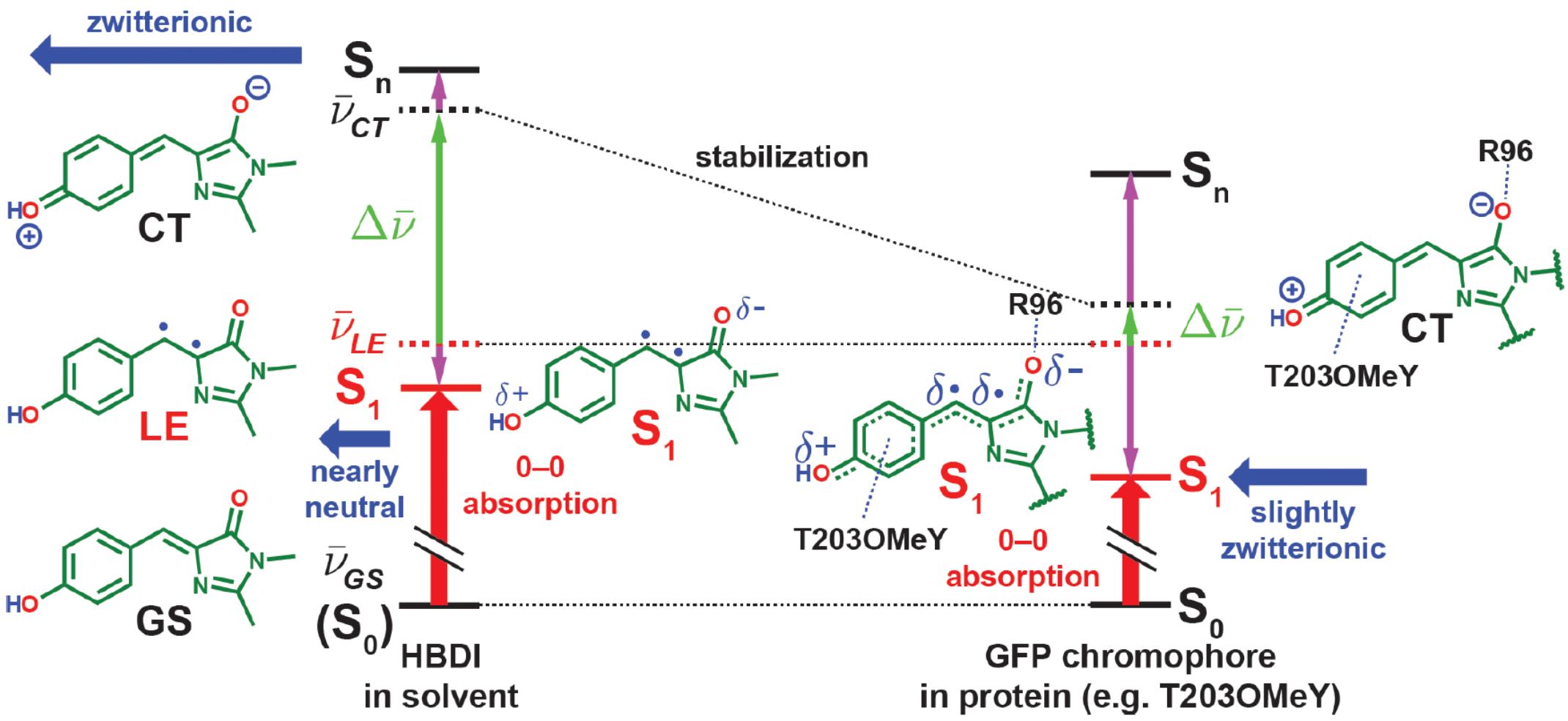
T203V

Stark Tuning Rate and Color Tuning Mechanism

中性状态的颜色调谐是通过改变CT和LE形式之间的相对能量来实现的

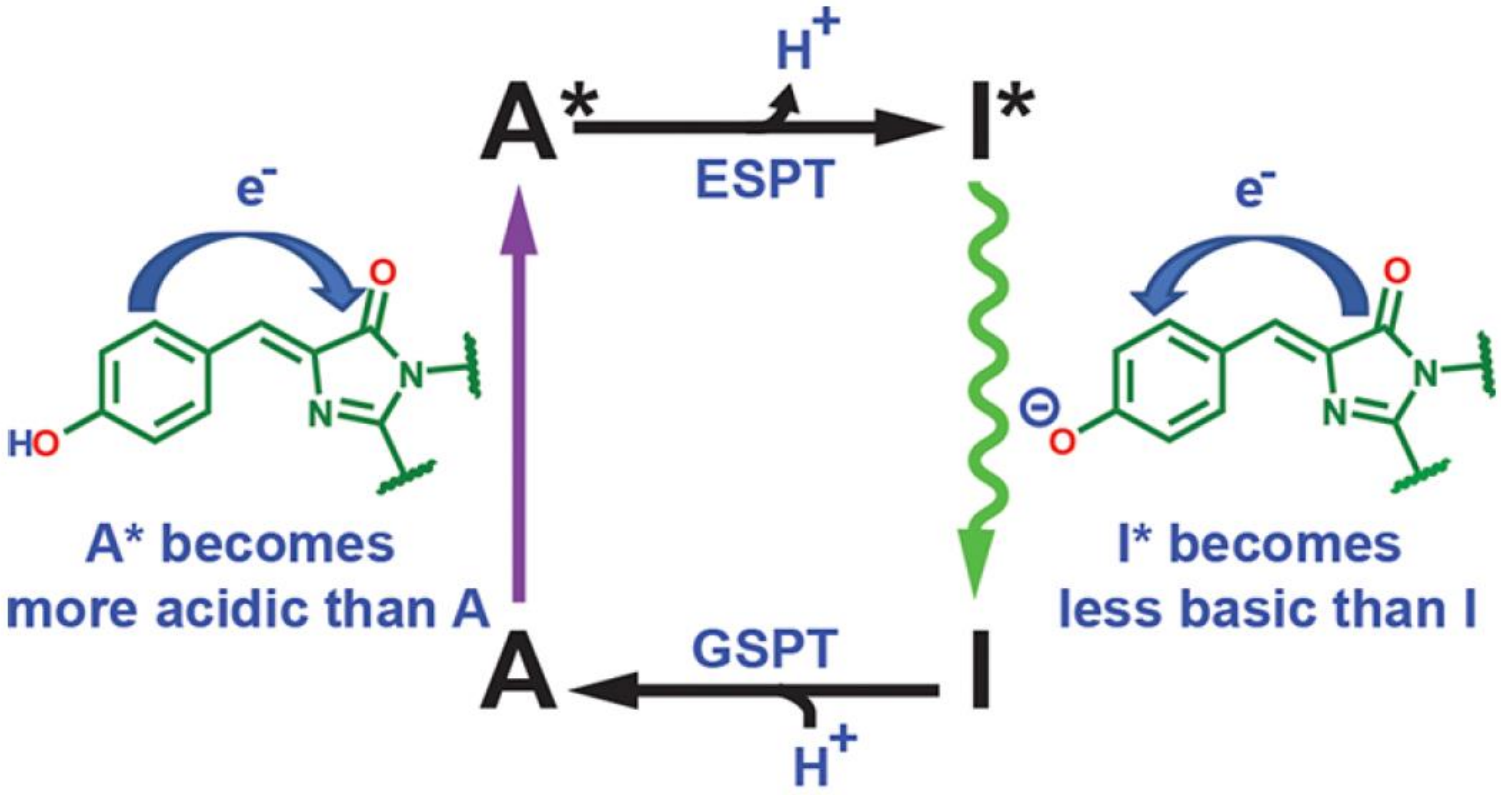


Stark Tuning Rate and Color Tuning Mechanism



The resulting CT character of the S_1-state ranges from 7−31%

Photoacidity



$\Delta pK_a \propto$ Stokes shift