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Electron Transfer in Flavodoxin-based Redox Maquettes

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Stellingen

1. Opposing factors can contribute simultaneously to the balance of a protein's redox potential.

Chapter 3, this thesis

2. Despite being solvent-exposed, the copper ion in water-bound His117Gly azurin is less reactive to photoexcited 5-deazariboflavin than either the wild type or imidazole-bound equivalent.

Chapter 4, this thesis

3. Low dissociation constants are a precondition for the application of cofactor reconstitution in the study of non-covalent complexes of biological molecules.

Chapter 6, this thesis

4. Long linker regions greatly affect the position and as such the action of an attached photolabel on flavodoxin, regardless of site-specific attachment.

Chapter 7, this thesis

5. Intrinsic reactivity does not exist in biological electron transfer, only relative reactivity that is dependent on the particular redox partner.

Gorren *et al.* (1996) *FEBS Lett.* **381**:140-2

6. The presence of the semiquinone form of FMN which leads to behaviour deviant from classical Nernstian should be considered when fitting spectroelectrochemical data on SnO₂-PLL film-immobilized FMN for the determination of E_m , for the two-electron reduction of FMN.

Astuti *et al.* (2004) *J. Am. Chem. Soc.*, **126**: 8001-9

7. Flavins bound by flavoproteins can be and are directly reduced by light excitation in the absence of external mediators, however these states are quenched on timescales in the order of pico to nanoseconds.

van den Berg *et al.* (1998) *Biophys. J.* **74**:2046-58

8. Certain properties of proteins such as redox potentials and structural characteristics can more usefully be considered as varying continuums that occasionally overlap, as opposed to categorization into discrete classes.

Steensma *et al.* (1998) *Protein Sci.* **7**:306-17

9. Similarly so with humans.

10. Democracy in its current incarnation does not sufficiently address the needs of multi-ethnic states.