

Oral Contributions

[MS12-05] Mechanisms of ligand discrimination in cytochrome c'

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The gas-binding heme protein cytochrome c' discriminates between nitric oxide (NO) and carbon monoxide (CO) while excluding the binding of molecular oxygen. In the absence of gaseous ligands, the heme Fe is 5 coordinate with a proximal histidine ligand and a vacant distal coordination site. CO binds at the distal face to form a 6-coordinate (6c) adduct, while NO forms a stable 5-coordinate (5c) proximal adduct, involving displacement of the proximal histidine, via 6c distal and transient dinitrosyl intermediates. The 6- to 5- coordinate conversion of NO ligation in cytochrome c' has recently been confirmed to be highly relevant to the mechanism of activation of soluble guanylate cyclase. Using site directed mutagenesis, biophysical characterisation and correlated crystallography with single crystal resonance Raman spectroscopy we have investigated the mechanisms by which this remarkable example of ligand specificity is controlled and regulated.

References

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