

ORAL PRESENTATION

Open Access

Molecular aspects of sGC regulation

Michael A Marletta*, Eric S Underbakke, Nathaniel B Fernhoff

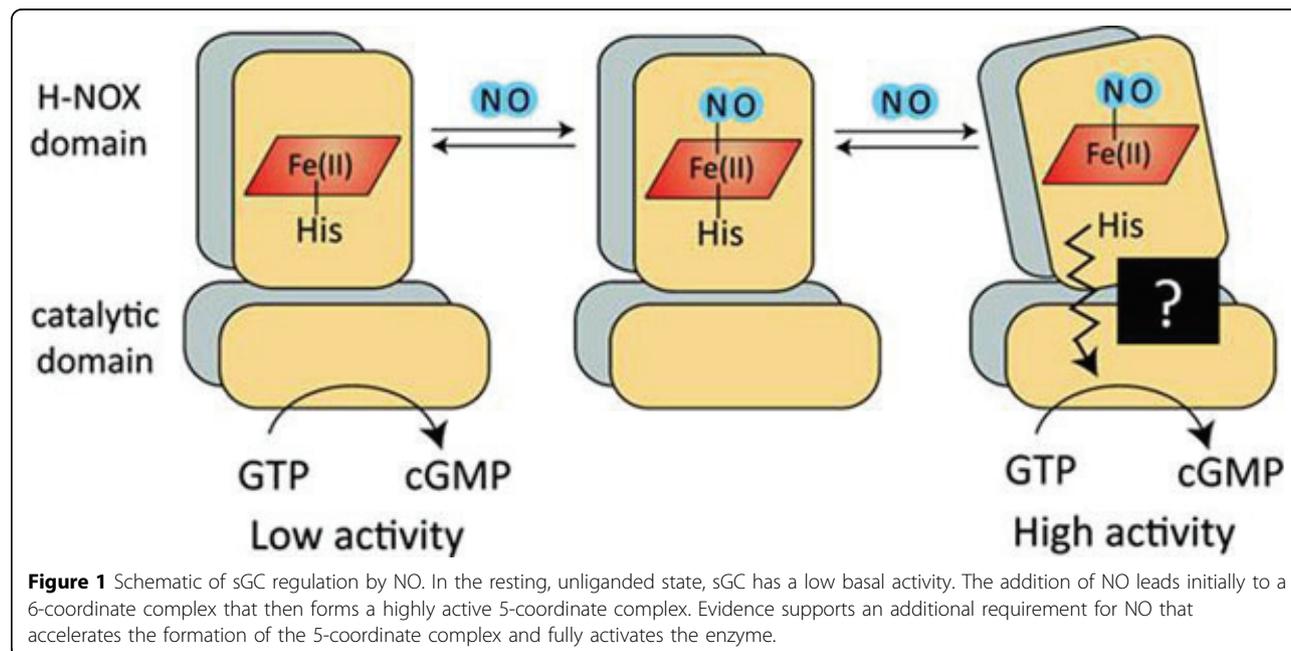
From 5th International Conference on cGMP: Generators, Effectors and Therapeutic Implications
Halle, Germany. 24-26 June 2011

Mammalian sGC is a heterodimer composed of α - and β -subunits (Figure 1) [1]. The C-terminus of each subunit contains a catalytic domain, and the active site is composed of residues from both subunits. Sequence analysis shows that each subunit also contains a well-defined PAS-like domain, and a predicted helical region. The N-termini of the α - and β -subunits are homologous to the H-NOX (Heme-Nitric oxide/Oxygen) family of proteins. The N-terminus of β -subunit contains a ferrous heme cofactor that serves a receptor for NO.

Ferric heme oxidized sGC has low activity, and the NO complex of the re-reduced heme generates a

desensitized, low-activity state of sGC. The molecular mechanism for this desensitization involves site specific S-nitrosation. The conformational changes associated with activation are both subtle and complex. Hydrogen-deuterium exchange mass spectrometry analysis can be used to probe conformational changes and protein-protein interactions. This method has been brought to bear on sGC, illuminating domain interactions within sGC and conformational changes induced by NO binding.

Published: 1 August 2011



* Correspondence: marletta@berkeley.edu
University of California, Berkeley, Berkeley, CA 94720-3220, USA

Reference

1. Derbyshire ER, Marletta MA: Biochemistry of soluble guanylate cyclase. *Handb Exp Pharmacol* 2009, **191**:17-31.

doi:10.1186/1471-2210-11-S1-O10

Cite this article as: Marletta *et al.*: Molecular aspects of sGC regulation. *BMC Pharmacology* 2011 **11**(Suppl 1):O10.

**Submit your next manuscript to BioMed Central
and take full advantage of:**

- Convenient online submission
- Thorough peer review
- No space constraints or color figure charges
- Immediate publication on acceptance
- Inclusion in PubMed, CAS, Scopus and Google Scholar
- Research which is freely available for redistribution

Submit your manuscript at
www.biomedcentral.com/submit

