A Conserved Core in the SufE Sulfur-acceptor Protein Mediates **Interdomain Interactions in Variety of Redox Protein Complexes** <u>Alexandre P. Kuzin¹</u>, Sharon Goldsmith-Fishman², William C. Edstrom¹, Jordi Benach¹, Ritu Shastry³, Rong Xiao³, Thomas B. Acton³, Barry Honig², Gaetano T. Monterlione³, John F. Hunt¹, ¹Department of Biological Sciences and Northeast Structural Genomics Consortium, 705B MUDD, MC2452, 1212 Amsterdam Avenue, New York, NY 10027, USA. ²Department of Biochemistry and Molecular Biophysics, Howard Highes Medical Institute, and Structural Genomics Consortium, Columbia University College of Physicians and Surgeons, New York, NY 10032, USA. ³Center for Advanced Biotechnology and Medicine, Department of Molecular Biology and Biochemistry, and Northeast Structural Genomics Consortium, Robert Wood Johnson Medical Achool and Rutgers NJ08854. USA. University, Piscataway, E-mail: ak2197@columbia.edu

High sequence homology cystein desulfurase IscS and SufS presumably play the sane role in the oxygen-sensitive assembly process. The *isc* and *suf* operons in *E. coli* represent alternative genetic systems optimized to mediate the essential metabolic process of iron-sulfur claster (Fe-S) assembly and basal or oxidative-stress conditions. IscU has 3 invariant cystein residues that function as a template for Fe-S assembly while accepting a S atom from IscS, SufE does not have those function, but

Has been suggested to function as a shuttle protein that uses a persulfide linkage to a single invariant cystein residue to transfer a S atom from SufS to an alternative Fe-S assembly template. The structure of SufE shows the persulfide-forming cysteine occurs at the tip of a loop with elevated B-factors. The side chain of cystein is buried in hydrophopcic cavity located beneath a highly conserved surface. A conserved core structure is implicated in mediating the interactions of both SufE and IscU with mutually homologous cystein desulfurase enzyme present in their respective operons.

The core fold SufE/IscU has been adapted to mediate interdomain interations in diverse redox protein systems in the course of evolution. Keywords: northeast structural genomics consortium, SufE er30, IscU IscS x-ray