Open PhD position in the Ulrich lab

Prof. Dr. Kathrin Ulrich, Molecular and Cell Biology, Saarland University

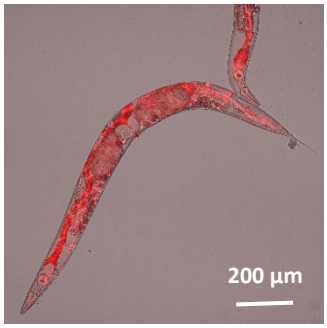


Research interest:

The Ulrich lab studies the cellular function and regulatory mechanisms of redox-regulated chaperones. We aim to understand the interplay between redox and protein homeostasis in maintaining a healthy proteome during stress conditions and aging.

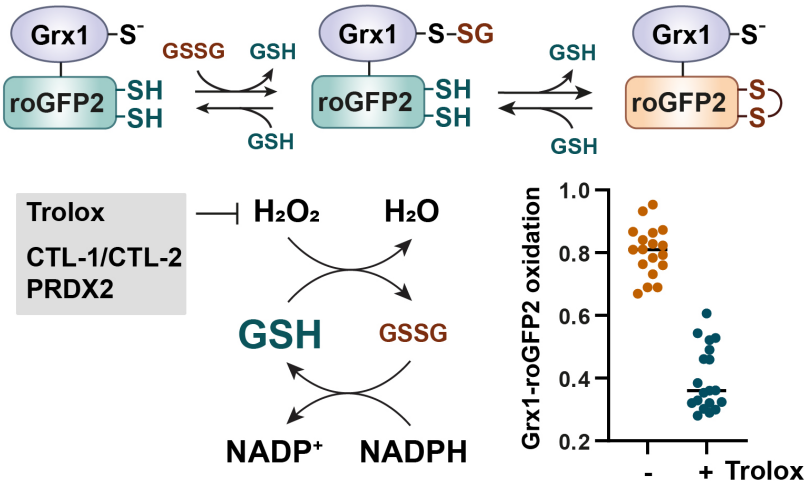
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PROJECT: Redox control of chaperones and organismal proteostasis



Background and Significance: The accumulation of reactive oxygen species (ROS) has been long known to damage proteins, causing unfolding and aggregation, which endanger organismal integrity and health. Redox-regulated chaperones, which become activated upon oxidative unfolding stresses, serve as a first line of defense to protect the proteome from wide-spread aggregation [1,2]. We identified the tissue-specific role of the highly conserved redox-regulated chaperone and targeting factor Asna-1 (**shown in red**) in maintaining redox balance and proteostasis in *C. elegans* during aging and proteotoxic stress.

Research Plan: Using genetically encoded fluorescent probes [3], we will study the tissue-specific function of *C. elegans* ASNA-1/human TRC40 in maintaining redox and protein homeostasis. Endogenous H_2O_2 level will be genetically or pharmacologically manipulated. Proteomics will identify oxidized and folding-sensitive proteins depending on Asna-1/TRC40 [4]. We further will investigate its crosstalk with longevity pathways.



Our main goal is to define Asna-1's function as a redox-sensitive node interconnecting proteostasis and redox balance in order to maintain a healthy organismal proteome during oxidative challenges and aging.

Position: Fully funded T-VL E13, 65% at Saarland University, Campus Saarbrücken. The UdS has an international focus and strong research profile in Natural Sciences and Technology. Saarbrücken and surroundings are beautiful and affordable areas to work and live.

[1] **Ulrich** (2023) *Biochem Soc Trans* 51: 1169-1177; [2] **Ulrich**, et al. (2022) *Mol Cell* 82: 3226-3238 e3227; [3] Bazopoulou, …, **Ulrich**, et al. (2019) *Nature (*576), 301–305; [4] **Ulrich,** et al. (2017) *Antioxid Redox Signal* 27(9): 517-533