Associate Professor Moran Benhar
Redox regulation, Inflammation and Cancer

The main goal of our lab is to understand how redox modifications of cysteine residues regulate protein and cell function, with a particular focus on signaling and cancer.

Cysteines confer redox regulation of protein function, namely the reversible post-translational modification that alters protein activity as a result of change in its oxidation state. In response to changes in cellular levels of reactive oxygen and nitrogen species (ROS and RNS) cysteine thiol (-SH) groups undergo a spectrum of covalent modifications, including nitrosylation, sulfenylation, and disulfide formation. These reversible thiol modifications are increasingly recognized to regulate a wide range of cellular functions, such as proliferation, differentiation, and death.
We are particularly interested in redox regulation through S-nitrosylation, the attachment of nitric oxide moiety to cysteine thiol (see Figure). Our research team is studying the role of S-nitrosylation in cellular signaling, inflammation and cancer. We employ global (proteomics) as well as more directed and targeted approaches to discover novel nitrosylation-based control mechanisms.

Our research goals are:

1. Identification of S-nitrosylated proteins in models of inflammation-associated cancer
2. Elucidation of the redox regulation by key cell death and inflammatory mediators
3. Characterization of denitrosylation mechanisms in immune and cancer cells
4. Development of new proteomic methods to analyze protein S-nitrosylation
5. Investigation of the thiol redox proteome in the macrophage inflammatory response

Available positions

We are currently looking for talented and motivated individuals to join us – for master or doctorate studies.

For further details – contact:
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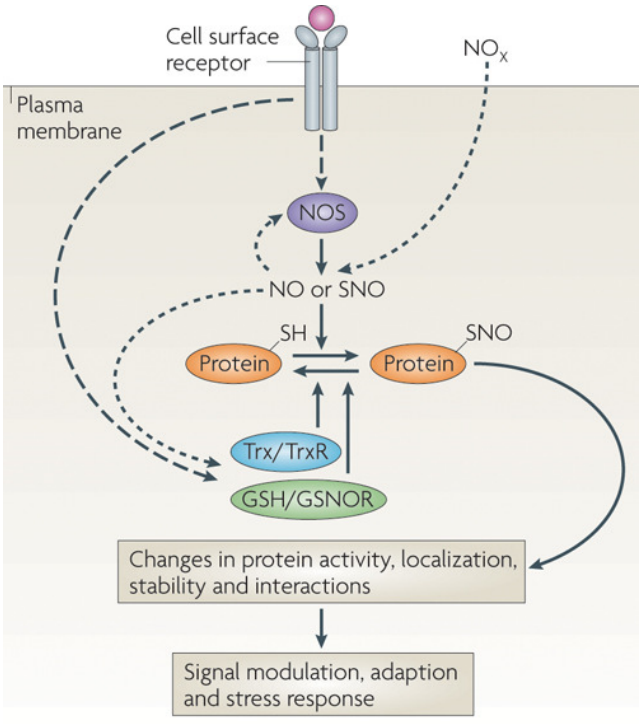

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