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## Research Interests

Nicotinamide adenine dinucleotide (NAD), a derivative of the vitamin niacin, is utilized as a substrate in ADP-ribose (ADPR) transfer reactions. ADPR transfer reactions are involved in the regulation of many biological processes that are candidates for the development of new drug therapy. Dr. Jacobson's laboratory is engaged in the study of several different classes of ADPR transfer reactions and targeting them for drug design. One class of these reactions involves the synthesis of ADPR polymers, which are involved in the repair of DNA damage caused by cancer causing chemicals and radiation. A second class involves the modification of proteins with single ADPR groups. This modification is involved in the regulation of the transduction of signals from the cell surface to the interior. A third class involves the synthesis of cyclic ADPR, a new second messenger that regulates membrane calcium channels. The research utilizes most of the current technology of biochemistry, and molecular biology including cell culture, radiolabelling methods, protein purification and characterization, peptide isolation and sequencing, high performance liquid chromatography, gel electrophoresis, immunoblotting, enzyme kinetics and DNA cloning.



## Research Publications/Presentations

Kim, H., Jacobson, E.L., and Jacobson, M.K., Synthesis and Degradation of Cyclic ADP-ribose by NAD Glycohydrolases, (1993) *Science* 261, 1330-1333.

Jacobson, E.L., Cervantes-Laurean, D. and Jacobson, M.K., Glycation of Proteins by ADP-ribose, (1994) *Molecular and Cellular Biochemistry*, 138, 207-212.

Salama, J.T., Aboul-Ela, N. Goli, D.M., Cheesman, B.V., Simmons, A.M. and Jacobson, M.K., Specific Inhibition of Poly(ADP-ribose) Glycohydrolase by Adenosine Diphosphate Hydroxyl Pyrrolidine Diol, (1995) *Journal of Medicinal Chemistry*, 38, 389-393.

Cervantes-Laurean, D., Loflin, P.T., Minter, D.E., Jacobson, E.L., and Jacobson, M.K., Protein Modification by ADP-ribose via Acid-labile Linkages, (1995) *Journal of Biological Chemistry*, 14, 7929-7936.