Biological Electron Transfer and Catalysis (BETCy)
Energy Frontier Research Center

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Scientific breakthroughs to help build a more robust energy economy

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The mission of the BETCy EFRC is to define the molecular mechanisms controlling electron flow in coupling electrochemical potential energy to chemical bond formation. The Center’s research could lead to dramatic advances in the scientific principles that can optimally control electron flow.

The BETCy EFRC examines the mechanisms of:
- Electron Bifurcation (Combining exergonic and endergonic electron transfer reactions for the efficient coupling of electrochemical potential to chemical bond formation),
- Nucleotide Driven Electron Transfer (Combining energy stored in chemical bonds with electrochemical potential in electron transfer reactions to efficiently drive difficult chemical bond forming reactions) and
- Catalytic Bias (Mechanisms for controlling directional catalytic rates in proton coupled electron transfer reactions).

In June 2014, the Biological Electron Transfer and Catalysis (BETCy) Energy Frontier Research Center (EFRC) was established by the U.S. Department of Energy’s Office of Basic Energy Sciences. BETCy is one of 32 Energy Frontier Research Centers throughout the U.S., all focused on laying the scientific groundwork to meet the global need for abundant, clean, and economical energy. BETCy is housed at Montana State University in Bozeman, Montana.