

**Richard Cunningham**  
**Department of Biology**

**Sponsor:** Lawrence Berkeley National Lab (NIH is Prime)  
**Dates:** October 22, 1009 – June 30, 2013  
**Amount:** \$647,886

**Structural Biochemistry of DNA Base Repair**

As a primary goal of this Project is to continue sustained cycles integrating structures with biochemistry and in vivo biological analyses, we feel that it is particularly important to renew this Project with a continuing subcontract to DNA base damage repair expert Dr Richard Cunningham. As noted above, Dr. Cunningham's established collaborative interactions and expertise complement the efforts of the Tainer group, providing realistic and rigorous integrations of the proposed cross-disciplinary efforts. Together with Dr. Tainer, co-investigator Dr. Cunningham will oversee the progress on the specific aims as well as direct and participate in the research at SUNY.

The Cunningham laboratory will provide complementary analysis for this project, including genetic studies for biological validation in *E. coli*, generation of site-directed mutants, protein expression and purification, and quantitative kinetic analysis of catalytic activity ( $k_{cat}$  and  $K_m$ ), single turnover analysis, binding affinity ( $K_d$ ), metal analysis, HPLC and mass spectrometry analyses of DNA damage, and DNA footprinting.

Regular interactions via biweekly telephone conferencing, internet and visits insure communication and cooperative efforts, which cannot realistically be achieved without the proposed funded efforts. The Cunningham-Tainer team provides appropriate administrative and scientific coverage of all aspects of the Project.