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AB - Most undergraduates studying biochemistry and molecular biology get their broadest exposure to wet-lab techniques in protein and nucleic acid chemistry (and, increasingly, computer/visualization) in their upper-level laboratory courses. These tend to be juniors and seniors with well-defined career goals. Some of these students will have already have a research background in a traditional one-to-one (or one-to-few) research mentoring setting, for example a summer research program. This approach has proved effective at increasing student learning and persistence in the sciences. At the same time, extended full-time PI-directed research is limited in the number of students served, and can even present a barrier. To broaden the impact of teaching through research, many practitioners have adopted a CURE, or Course-based Undergraduate Research Experience, approach. This presentation reports on ?BASIL? (Biochemical Authentic Scientific Inquiry Laboratory), a team of faculty who have worked to bring computational and wet-lab protein science to the biochemistry teaching lab. Together, we have developed a protein biochemistry CURE to determine enzymatic function of proteins of unknown activity. This work leverages the results of the Protein Structure Initiative, a fifteen-year NIH-funded effort which concluded in 2015 with the publication and distribution of more than 5000 previously uncharacterized proteins. The great majority of these are ?orphans,? with high quality structures and pre-cloned expression plasmids available, but no research on their enzymatic function or role in native organisms. The BASIL consortium of undergraduate biochemistry faculty and students seeks to identify functional properties of a subset of these uncharacterized proteins, seeking to unify structure and function relationships. Currently, implementable modules are available for faculty who wish to adopt them, and expected student results will be presented. Support or Funding Information Supported by NSF IUSE 1709278 This abstract is from the Experimental Biology 2018 Meeting. There is no full text article associated with this abstract published in The FASEB Journal.

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