Student and Expert Use of External Representations to Understand Protein Structure

Name: Sara Johnson, Doctoral Student, Chemistry

Contact Information: sarajohnson@purdue.edu

Goals: This project will characterize the conceptual, reasoning and visual skills used by students and experts when interpreting external representations (ERs) related to higher-level protein structure. Through this project, we will identify specific methods experts use to decipher ERs. Understanding how experts use ERs will identify explicit strategies that students can use when interpreting ERs (e.g. Ramachandran plots).

Methods: This research uses a qualitative approach, which will include semi-structured interviews.

Expected Outcomes: The findings from this study will add to the current body of knowledge on both student and expert use of external representations.

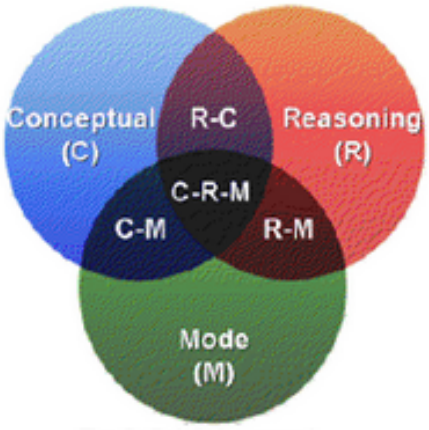

Figure 1: CRM model from Schönborn and Anderson (2009).

Collaborations: Trevor Anderson (research advisor, ander333@purdue.edu)

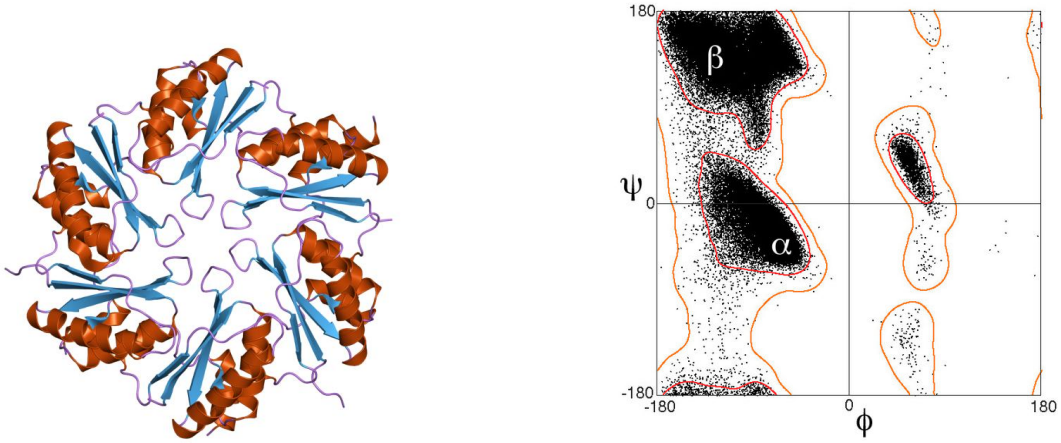

Figure 2: A computer-generated representation of Carboxysome shell protein CcmK42 and a general Ramachandran plot.

References

Schönborn, K., & Anderson, T. (2009). A model of factors determining students' ability to interpret external representations in biochemistry. *International Journal of Science Education*, 31, 193-232.