



FALL 2018

**Biochemistry and Molecular Biology
Brown Bag Series**

Angela Campo

Ph.D Student

*“In-Situ NMR Experimental Study Design for Cell-Free Protein
Synthesis”*

Tuesday, October 16, 2018

11:00 AM

129 Medical Sciences Building

Lab: Nicholas Reo



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<http://www.med.wright.edu/bmb>

Angela Campo

***In-situ* NMR experimental study design for cell-free protein synthesis**

Cell-free protein synthesis (CFPS) is a promising approach for the production of biomaterials that cannot be synthesized by existing organic chemistry techniques. CFPS avoids many of the pitfalls of bacterial expression of biomaterials by allowing direct access to the chemical reaction that is taking place. NMR monitoring of CFPS would allow us to fine-tune these systems so that they may be successfully scaled in a cost-effective manner. CFPS systems are commonly optimized via the production of green-fluorescent protein (GFP) which is spectroscopically monitored during the reaction. This approach fails in anaerobic environments since GFP chromophore maturation is oxygen dependent. Further, GFP fusions are not applicable for the production of small molecules that cannot be covalently attached to a fluorophore. By utilizing radioisotope labeled substrates and various 1D and 2D techniques we expect to be able to monitor the utilization of substrates, generation of the desired products, and flux of related metabolites of various CFPS reactions. In-situ NMR may be able to identify mechanisms for low product yield, discover undesirable metabolism pathways that are being activated, or if energy deficits are occurring.