

URBANOWICZ- AVAILABLE PROJECTS

1. Tuskan, G. (PI), Urbanowicz B.R. (Key Personnel, Project Lead, Member of Research Council) DOE, Office of Science, Biological and Environmental Research (BER). Title: Center for Bioenergy Innovation (CBI). *Includes National Lab and Interdisciplinary Collaborations
 - a. The goal of this DOE Center project is to accelerate progress toward the identification and utilization of key plant genes for growth, yield, composition, and sustainability traits as a means of lowering feedstock costs and improving year-round feedstock supplies and to understand and improve the production of fuels from plant biomass via consolidated bioprocessing.
2. Azadi, P. (PI), Urbanowicz B.R. (Co-PI) DOE, Office of Science, Biological and Environmental Science (BES). Title: Center for Plant and Microbial Carbohydrates at the University of Georgia Complex Carbohydrate Research Center. *Includes National Lab and Interdisciplinary Collaborations
 - a. Rhamnogalacturonan I (RG-I) is a structurally complex pectic polysaccharide that exists in the primary walls of all vascular plants. The key objective of this grant is the development of new methods to develop a fuller understanding of RG-I structure, which will then be applied to study its function and its biosynthesis. The work performed in this proposal is performed primarily with food crops and the model species Arabidopsis.
3. Urbanowicz B.R. (PI), Kelley Moremen (Co-PI), Maria Peña (Co-PI, group member), Pradeep Prabhakar (Co-PI, group member), Yannick Bomble (Co-PI). DOE, Office of Science, Biological and Environmental Science (BES). Title: Functional characterization of glycosyltransferase in duckweed to enable predictive biology. US Department of Energy / Genome-Enabled Plant Biology for Determination of Gene Function (DE-FOA-0002601) *Includes National Lab and Interdisciplinary Collaborations
 - a. We will use a combined experimental and computation approach to functionally characterize and understand the roles of diverse members of the glycosyltransferase GT47 gene family in the duckweed *S. polyrhiza*.
4. Buell, R. (PI), Urbanowicz B.R. (Co-PI) DOE, Office of Science, Biological and Environmental Science (BES). Title: BioPoplar: A tunable chassis for diversified bioproduct production. US Department of Energy / Biosystems Design to Enable Safe Production of Next-Generation Biofuels, Bioproducts and Biomaterials / DE-FOA-0002600. *Includes National Lab and Interdisciplinary Collaborations
 - a. In this project, we will couple our high-resolution cell atlas data from poplar with new genome and epigenome tools to be developed to construct new morphotypes of poplar that have altered tree and leaf architecture for the production of biofuels and biomaterials.
5. O'Neill, M.A. (PI), Urbanowicz, B.R. (Co-PI), Peña, M.J. (Co-PI), and Crowley, M.C. (Co-PI). DOE, Office of Basic Energy Sciences (BES). Title: Cell-type Specific Pectins in Plant Cell Walls: Structure, Interaction and Function. 09/01/20 - 08/31/24. *Includes National Lab and Interdisciplinary Collaborations
 - a. This project focuses on three key goals: (i) identify critical structural features of the plant pectin polysaccharide rhamnogalacturonan II (RG-II) that enable dimer self-assembly: (ii) use molecular dynamics simulations to develop conformational models of RG-II and its dimer to elucidate mechanisms of self-assembly: and (iii) investigate the dynamics of the

borate di-ester cross-link.