



Biomass Formation and Modification

Lead: Debra Mohnen
Deputy FA Lead: Jerry Tuskan

1.1 TOP *Populus* and Switchgrass and System Analysis

Lead: Tuskan / Dixon / Nelson
Deputy Lead: Tang

1.2 Cell Wall Synthesis and Mechanisms of Recalcitrance Activity

Lead: Al Darvill

1.1.1: Selection of the TOP *Populus* and Switchgrass Lines (Mohnen)

- TASK 1. Generation of transgenic lines – **Rottmann, Wang**
- TASK 2. Natural variants – **Muchero, Saha**

1.1.2: TOP Line Analysis Platform and Protocols (Nelson)

- TASK 1. Integrated assessment of the TOP lines – **Weston / Tang / Nelson**
- TASK 2. Establish of TOP systems analysis teams – **Chen / Nelson**
- TASK 3. Line propagation – **Gunter / Wang**
- TASK 4. Transcriptomics – **Weston / Tang**
- TASK 5. Metabolomics – **Tschaplinski (FA3)**
- TASK 6. Glycome profiling – **Hahn (FA3)**
- TASK 7. Selective proteomics – **Hettich (FA3)**
- TASK 8. Detailed wall chemistry – **York / Tan**
- TASK 9. Microbial conversion assay – **(FA3)**
- TASK 10. Generation of advanced lines – **DiFazio / Saha**

1.1.3: Systems (Network) Analysis (Tuskan)

- TASK 1. Transcriptional network analysis – **Weston / Tang**
- TASK 2. Network metabolomics – **Tschaplinski (FA3)**
- TASK 3. Protein interactions and complexes – **J. Chen / Dixon**
- TASK 4. Immunolocalization – **Hahn (FA3)**
- TASK 5. Bench-scale bioconversion assessments – **FA2, FA3**
- TASK 6. Research-plot-scale field evaluation – **DiFazio / Stewart**

1.1.4: Sustainability and Agronomic Performance of Wild Type and *Populus* and Switchgrass Lines (Udvardi)

- TASK 1. Agronomic performance of TOP Line – **Gunter / Udvardi**
- TASK 2. Agronomics and sustainability of switchgrass and *Populus* biomass – **Craven**

1.2.1: Cell Wall Synthesis and Mechanisms of Recalcitrance Activity (Darvill)

- TASK 1. Nucleotide-sugar/polysaccharide domain – **Bar-Peled**
- TASK 2. Cellulose domain – **Kalluri**
- TASK 3. Xylan and other hemicelluloses domain – **York**
- TASK 4. Pectin domain – **Mohnen**
- TASK 5. APAP1 domain – **Tan**
- TASK 6. Lignin domain – **Dixon**
- TASK 7. Transcription factor domain – **Dixon**
- TASK 8. Cellular/subcellular localization domain – **Hahn**

