

## Summary Growth experiment for *Ustilago maydis* using BIOLOG phenotype microarray plates

### Experimental data of the master thesis of Christian Lieven:

- **Ustilago maydis strain:** Ustilago maydis FB1 mating type a1b1
- **Preculture:** overnight in YEP medium (10 g/l yeast extract, 10 g/l bacto-peptone, 5 g/l NaCl)
- Cultivation in BIOLOG phenotype microarray plates PM1 and PM2A:

Incubation time	162 h
Temperature	30 °C
Rotations per minute	300 U/min
Shaking diameter	50 mm
Air humidity	80 %

- Wells were inoculated according to the standard protocol of BIOLOG ( see also the files: "BIOLOG Phenotype Microarray™ Technology.pdf" and "Phenotype MicroArrays as a complementary next generation sequencing tool for the characterisation of tree endophytes.pdf")
- Evaluation with Synergy MX (BioTek) corrugated sheet reader: **Measurement of OD at 600 nm**
- Raw data was exported with the supplied Gen5 software
- Data was automatically processed with customer-specific MATLAB script (TableReader.m) => see GitHub iAMB-RWTH-Aachen -> code
  - uses Excel files exported from the reader to compile result vectors containing the OD600 values at the measured times for each well
  - normalises the individual values with those of the negative control
  - normalised data are smoothed by using an exponentially weighted moving filter with an alpha value of 0.5 -> is performed to eliminate noisy peaks in the data
  - Alpha value of 1 corresponds to less smoothing, while an alpha value of 0 corresponds to strong smoothing
  - **Threshold value:** accepts only those carbon sources for further calculations that have a maximum OD600 of more than 0.368

### Experimental data from Constantin Schedel with *O. polymorpha*:

- for measurement using a plate reader, the lids are removed and arrays are measured in a non-sterile way to avoid strong condensation on the lid
- After each measurement, microarrays are placed in a growth profiler
- to minimise contact with the heated bottom of the growth profiler, all plates are placed on empty, reusable microarrays

**Recommended measuring times:**

T0, 24h, 72h, 120h, 144h, 162h