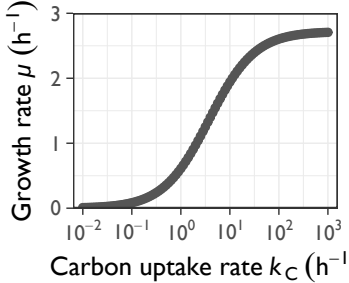
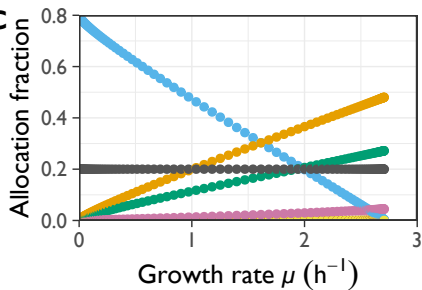
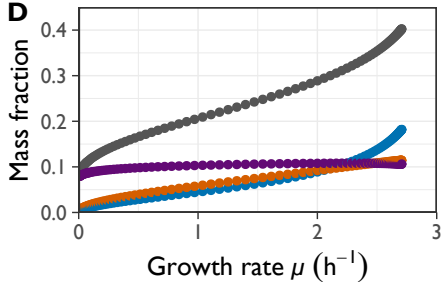


**A****B****C**

Protein

- ribosome R
- amino acid synthesis  $E_A$
- housekeeping Z
- nitrogen uptake  $E_N$
- carbon uptake  $E_C$

**D**

Metabolite

- total
- carbon c
- amino acid  $a$
- nitrogen  $n$