

$$C_{Ei} = a_1 * y_{1i} + a_2 * y_{2i} + C_{0i}$$

C_{Ei} = Expected abundance of
metabolite i in co-culture

a_j = abundance of strain j
in co-culture

y_{ji} = yield of metabolite i
in strain j monoculture

C_{0i} = abundance of metabolite i
in fresh medium

Null hypothesis: $C_{Ei} = C_{fi}$

C_{fi} = observed abundance of
metabolite i in co-culture