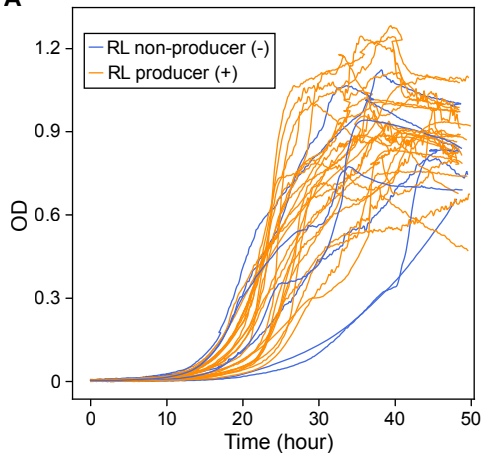


## Decomposition of growth curves using Non-Negative Matrix Factorization (NNMF)

**A**



**NNMF**



Basis 1

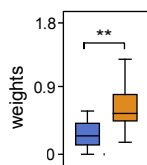
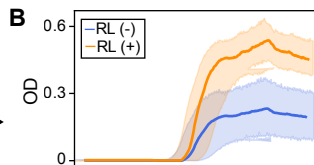


Basis 2

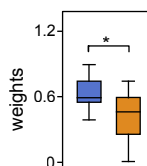
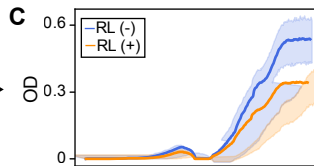


Basis 3

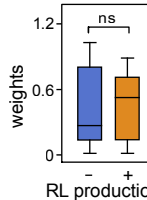
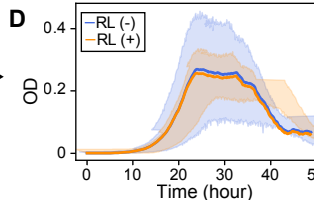
**B**



**C**



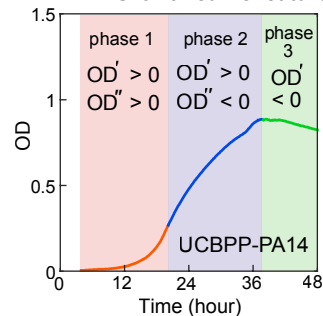
**D**



RL production

**E**

## Growth curve feature extraction method



### Features for each phase

start time (*start\_t*)  
duration (*delta\_t*)  
initial od (*init\_od*)  
od change (*delta\_od*)  
area under the curve (*area*)  
mean specific growth rate (*sgr\_mean*)  
max absolute specific growth rate (*sgr\_max*)

**F**

## Feature selection using Random Forest Classifier

