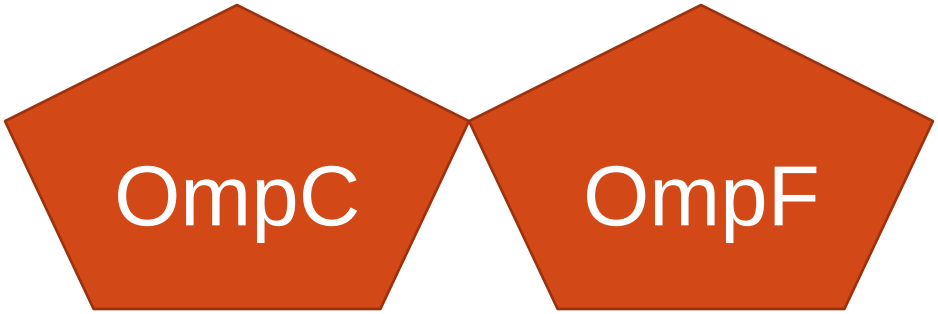
# OmpR

Who? What? How? So?

# Who?

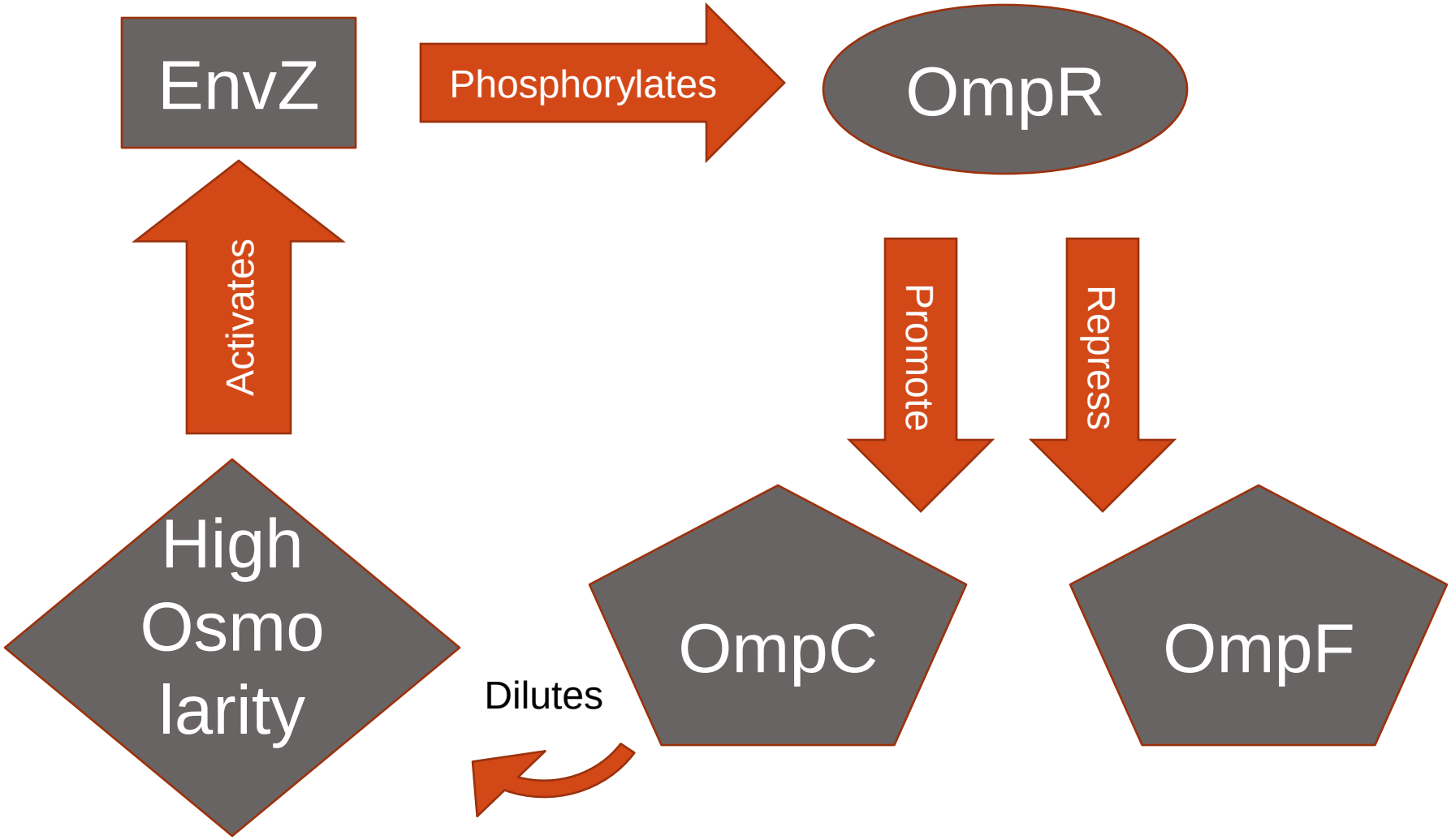

Osmolarity Sensor

Response Regulator

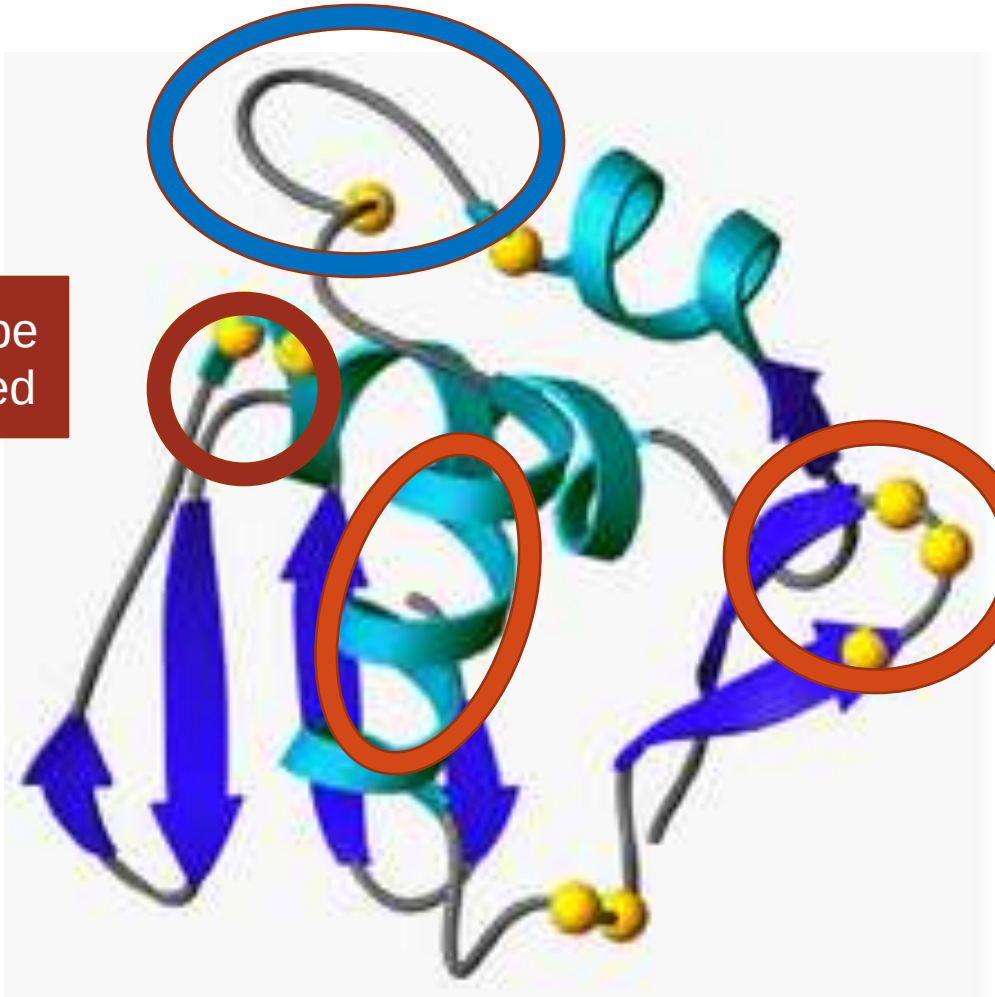

Porins

# What?


EnvZ
Phosphorylates
OmpR
Activates
Promote
Repress
High Osmo larity
OmpC
OmpF
Dilutes

# How?

RNApol binding domain



Aspartate to be Phosphorilated

DNA binding domain

# Exactly How??

- OmpR is 27kDa, divided in:
  N-term 125aa / linker / 98aa C-term
- Increased binding of phosphorilated OmpR over unphosphorilated OmpR to DNA
- Hierarchical binding of upstream sites of OmpC & OmpF
- Thus, increased occupancy of upstream sites for OmpC & OmpF with phorphorilated OmpR
- Depending of bound sites, OmpR functions as transcriptional activator or repressor

# So?

- Our coli is deficient in natural EnvZ
- Ergo, OmpR is rarely phosphorilated
- Our phytochrome has EnvZ fused
- Ergo, light will equate to phosphorilated OmpR
- Ergo, increased transcription of OmpC, decreased of OmpF
- Our reporter gene is downstream of an OmpC promoter
- Ergo, TRANSCRIPTION!!

# Notes

- High osmolarity means high OmpR concentration
- If strain is OmpR deficient, BBa_K098011 will generate OmpR (not needed if working with E. coli)
- Personal note: I feel Coliroid team coupled an OmpF porin to an OmpC promoter to avoid either cell explosion or collapse…
- And PoPs does appear to be Polymerases per Second
- Source: http://stock.cabm.rutgers.edu/coord/OmpRc/ and as usual the parts registry…