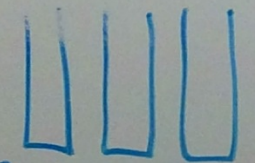
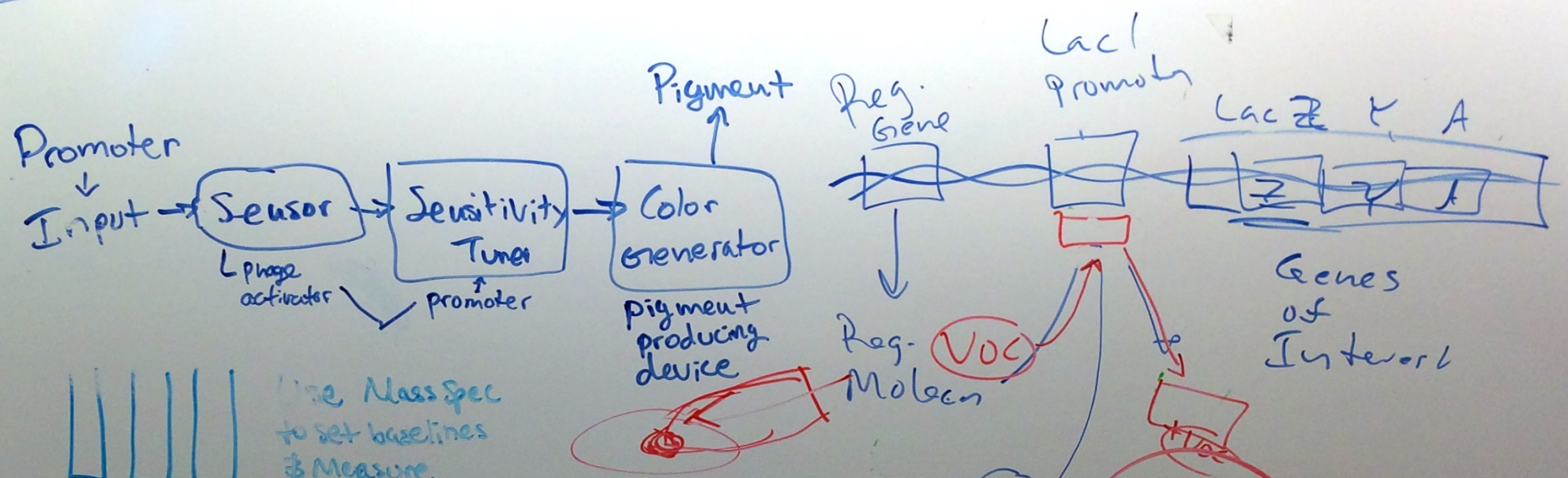


Biological Circuit

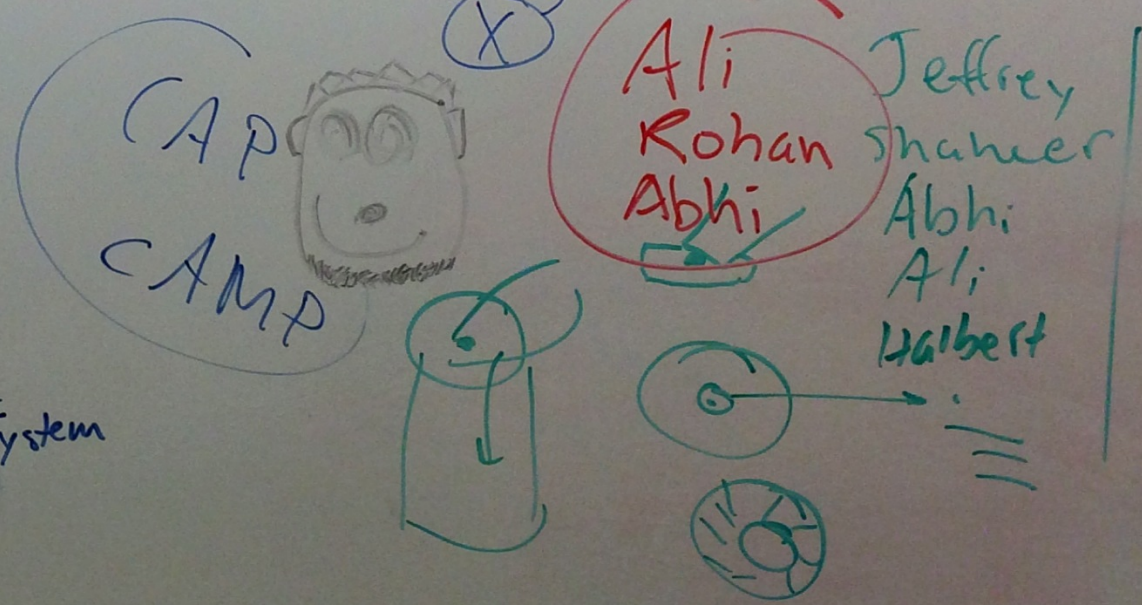


Use Mass Spec to set baselines & Measure correlation btwn Intensity of Light & Concentration

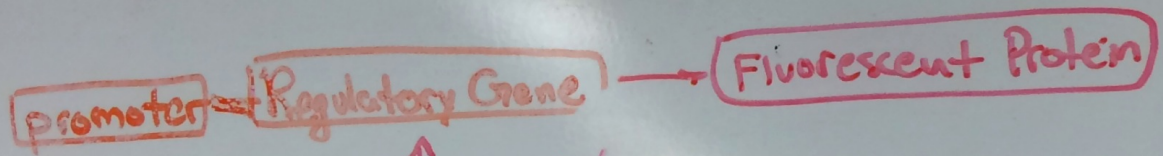
Red Green Yellow

Iron
Mercury
Lead

Prototype of future Genetic Circuit
Quorum Sensing Module
→ Sensitivity Tuner System
→ Reporter Pigments

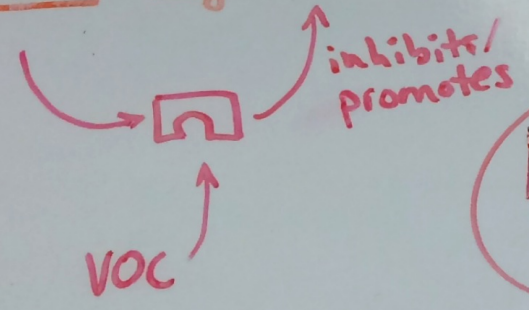


PRINT TO HERE!
10.25.255.105



XyIR

Bacteria Promoter
RNAp + Sigma factor



NO
BORRE

EcoRI
G|AATTC
C TTAA|G

SpeI

UGAUCU

A|CTAGA
A GATC|T

NO
BORRE

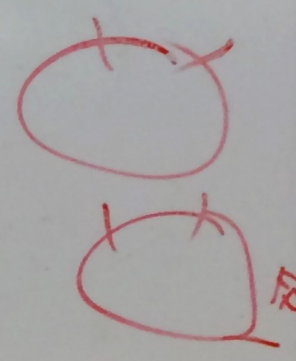
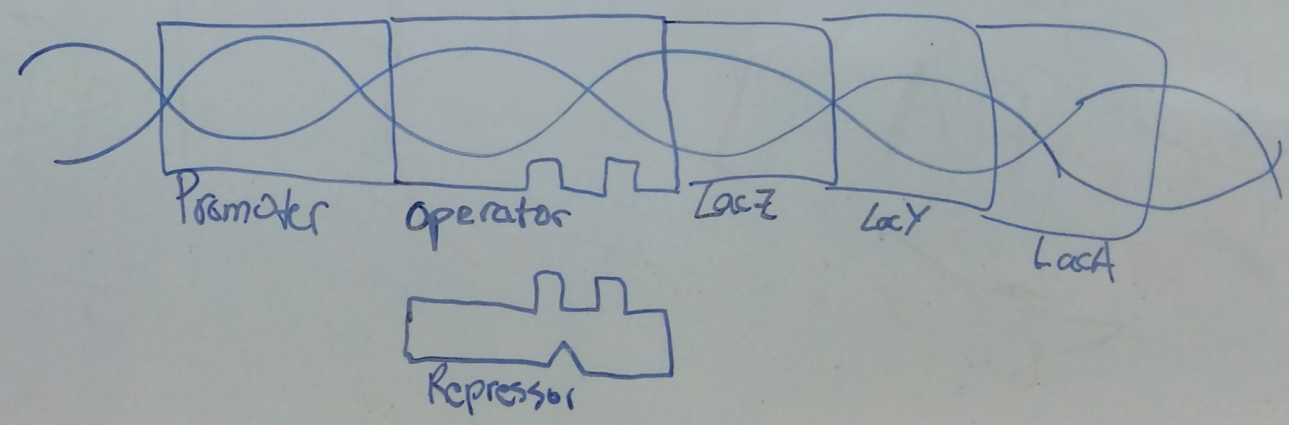
XbaI
T|CTAGA
A GATC|T

PstI

CTG|CAG
G|ACGTC

[] []

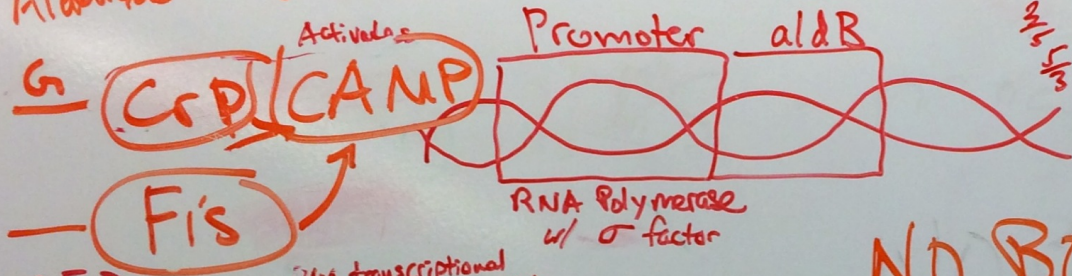
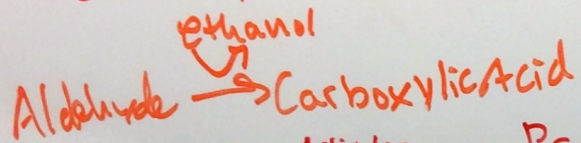
Examples



aldB

aldehyde dehydrogenase B gene

- induced by ethanol



CFP
RFP
GFP

DNA transcriptional dual regulator inhibits transcription initiation

RpoS
activates + regulation

NO BORRE!

2-hydroxy propanal

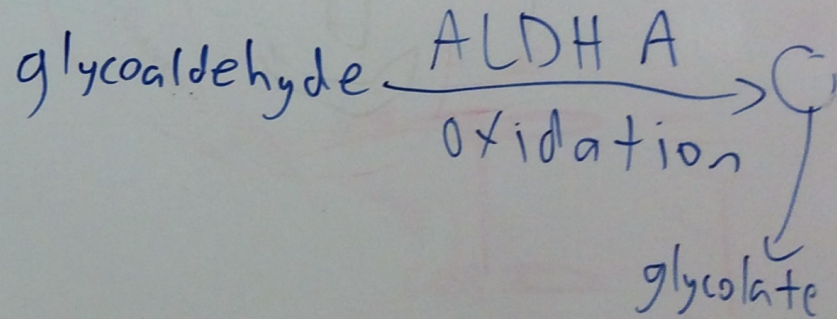
aldA

glycoaldehyde

(2-hydroxy acetaldehyde)

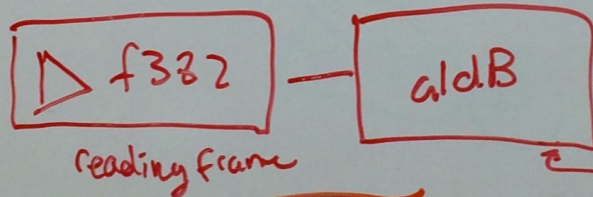
→ encodes functional

ALDH (aldehyde dehydrogenase) which can use glycoaldehyde as a substrate.

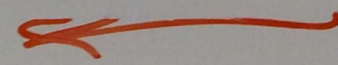
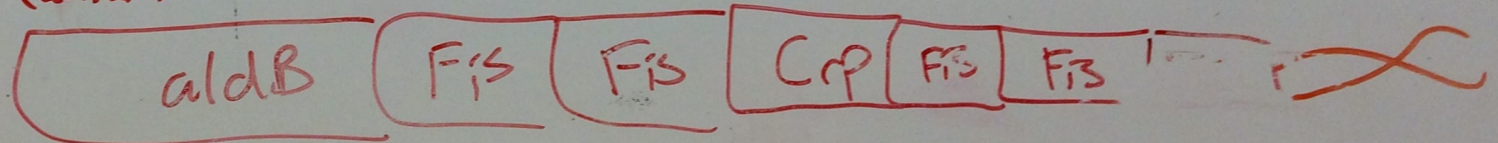


Crp = CAP

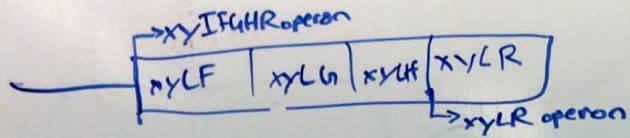
= CYCLIC AMP Receptor Protein



Crp-cAMP complex binds to (activator)



xyLR



xylose - $C_5H_{10}O_5$
 xylene - C_8H_{10}

xyLR is a regulator for the xyIABP and xyIFGHR operons

↳ involved in xylose

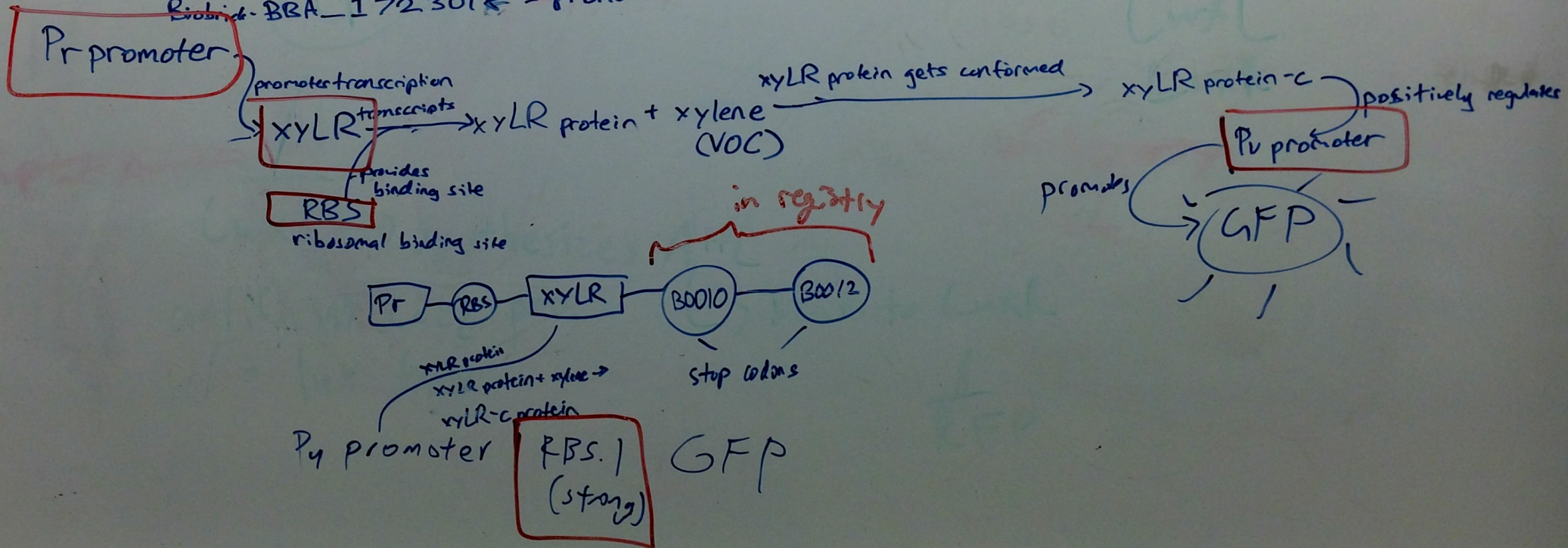
α -D-xylopyranose binds to xyLR to allow for activation

Arc A
 CAMP
 xyLR + α -D-xylopyranose

activate transcription of xyIFGHR operon

NO
 BORRE!

BioBrick: BBA_I72301 - promoter of xyLR trans. reg. gene.



Potential GENES

Title

VOColi : Detecting Lung
Cancer Biomarkers

BBCa-173021

1723021

7.57

40 $\frac{g}{mol}$

3M

$\frac{mol}{L} \cdot \frac{40g}{mol}$

K625002

NO BORREI

Vec: 3-hydroxy-butan-2-one (aka. Acetoin) not in E. coli:

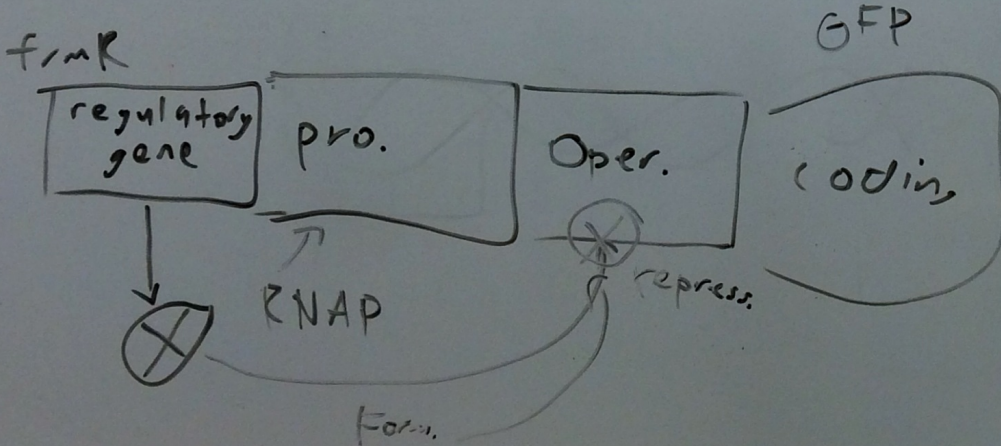
Gene: butA

Enzyme: diacetyl reductase / (s)-acetoin reductase

(S,S)-2,3-butanediol forming S-acetoin reductase

(derived enzyme L-2,3-butanediol dehydrogenase)

- process to purify to be expressed in E. coli



Rohan
Rahin
Halbat
Tim
Mitchell

NO
BORREI