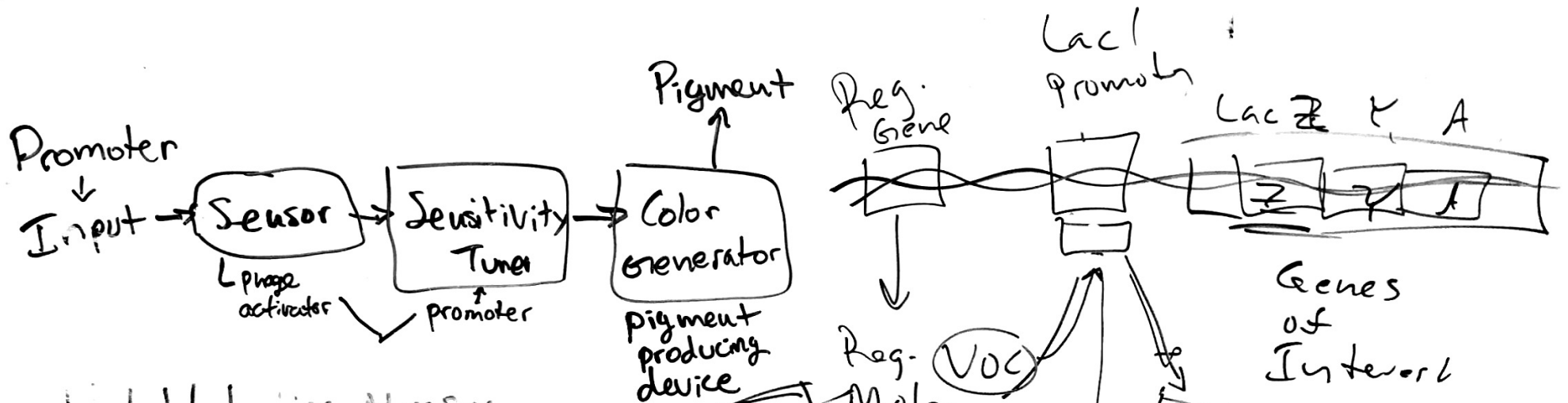


Biological Circuit



Red Green Yellow

Use Mass Spec
to set baselines
& Measure
Correlation between
Intensity of Light
& Concentration

Iron
Mercury
Lead

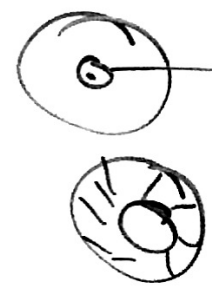
Prototype
of future
Genetic Circuit

Quantum Sensing Module
→ Sensitivity Tuner System
→ Reporter Pigments

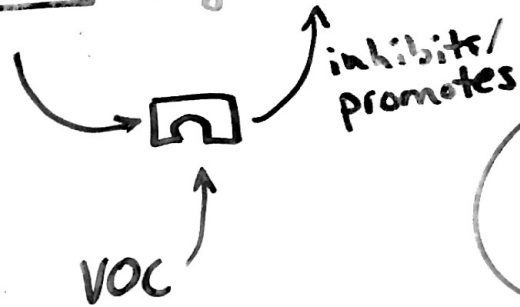
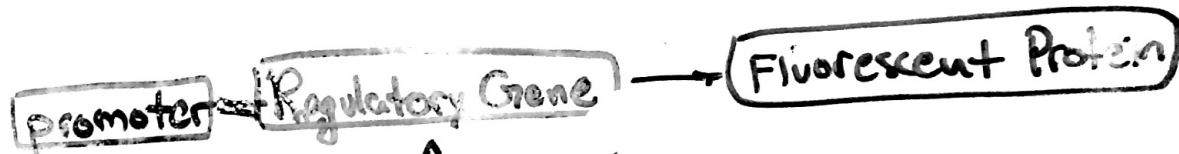
APP
CAMP

Ali
Rohan
Abhi

Jeffrey
Shahmer
Abhi
Ali
Halbert



PRINT TO HERE!
10.25.255.105



NO
BORRE

Bacteria Promotor:
RNAP + Sigma factor

XyIR

EcoRI

G|AATTC
CTTAA|G

SpeI

UGAUCU
A|CTAGA
AGATC|T

NO
BORRE

XbaI

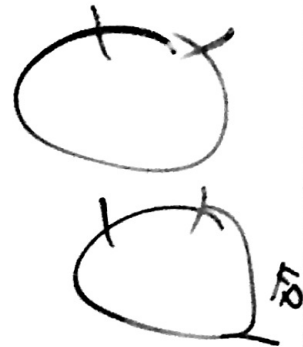
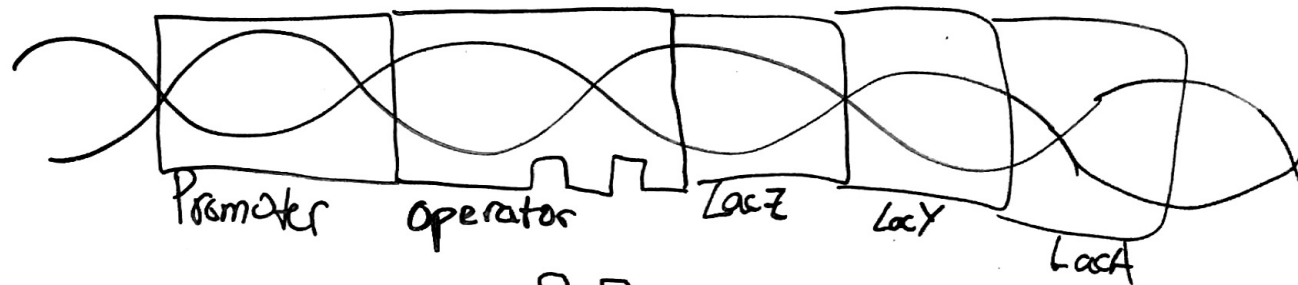
T|CTAGA
AGATC|T

PstI

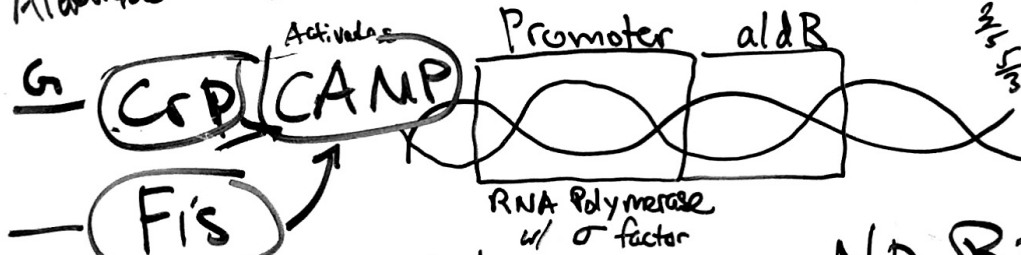
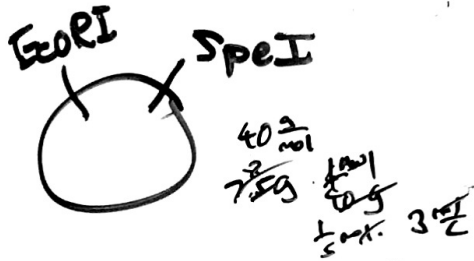
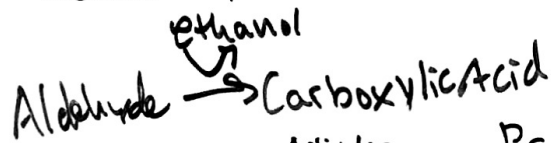
CTG|CAG
G|ACGTC

[]

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

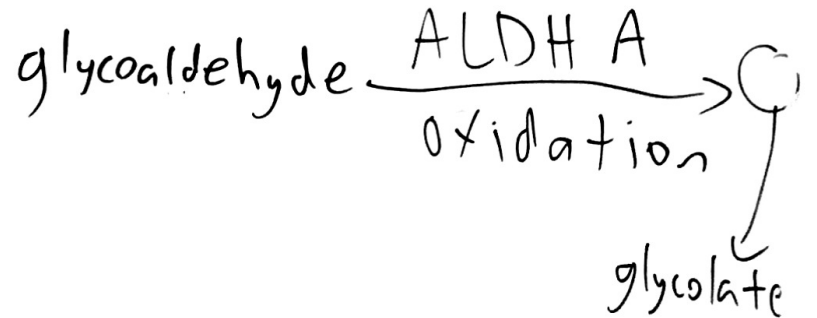
aldA

glycoaldehyde

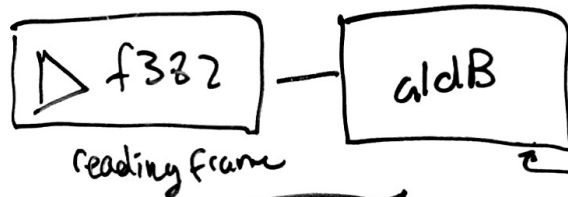
(2-hydroxy acetaldehyde)

→ encodes functional

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



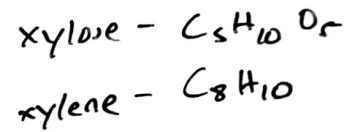
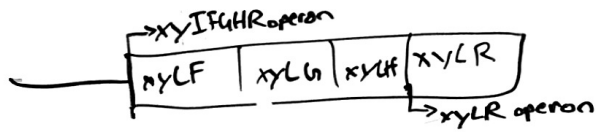
Crp = CAP
= CYCLIC AMP Receptor Protein



Crp-cAMP complex binds to (activates)



xyLR



xyLR is a regulator for the xyIABP and xyIFGHR operons

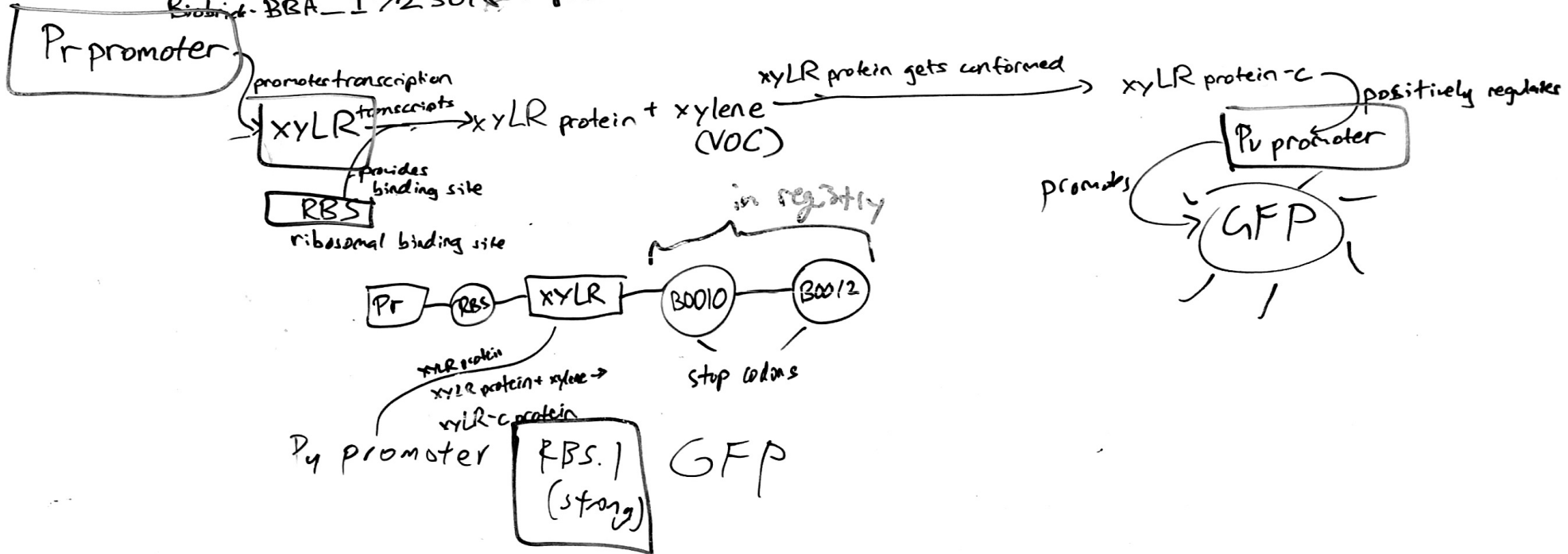
↳ involved in xylose

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



NO
BORRE!

BioBrick-BBA-I72301 - promoter of xyLR trans. reg. gene.



Potential GENES

Title

VOColi : Detecting Lung Cancer Biomarkers

BBa-1723021

1723021

NO BORREI

7.5 g
40 g / mol 3 M
2 mol / L 40 g / mol

K625002

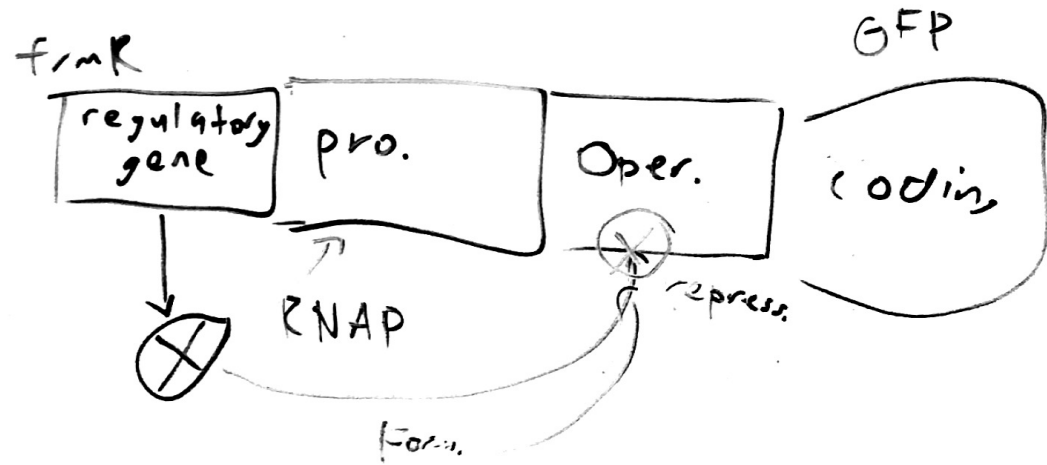
vec: 3-hydroxy-butan-2-one (aka. Acetoin) not in E. coli

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
Rohin
Halbert
Tim
Mitchell

NO BORREI