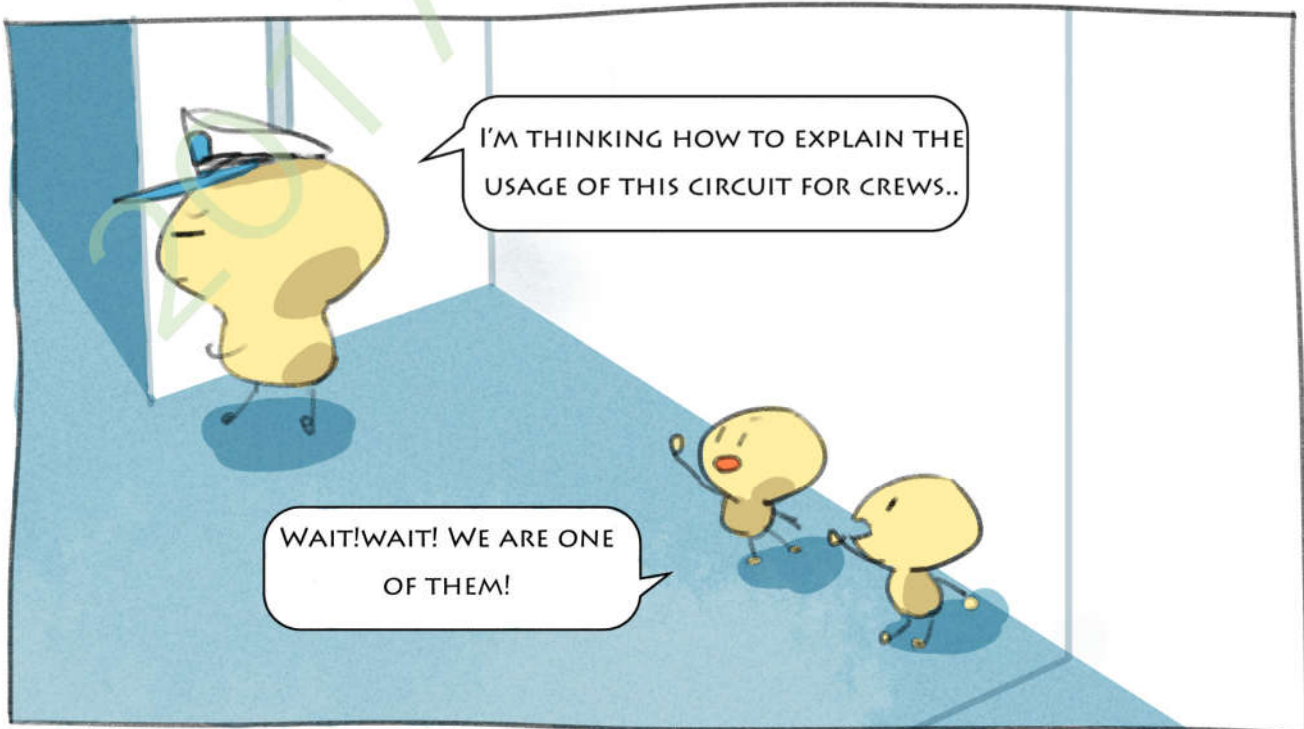
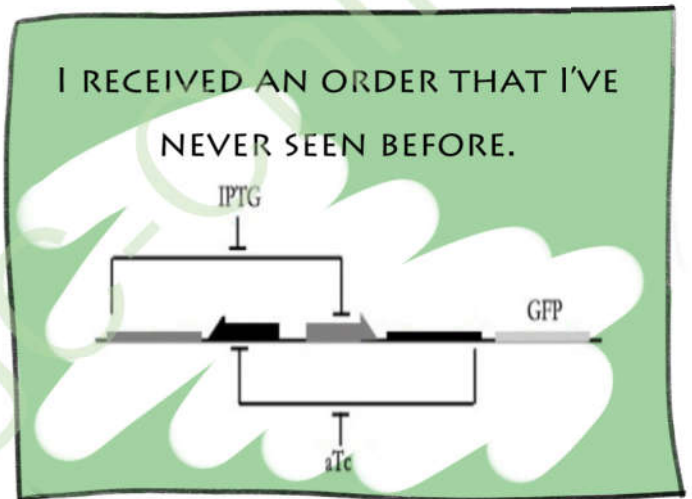
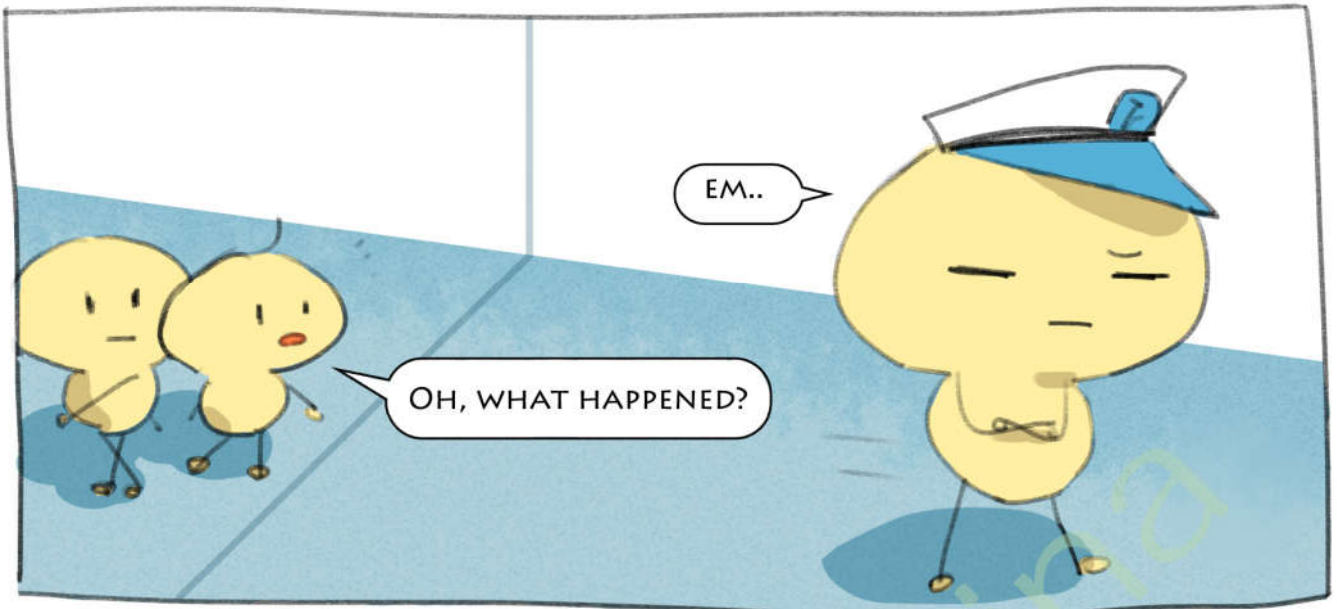


Chapter 3

TOGGLE-SWITCH



YOU CAN TRY TO EXPLAIN TO US!

AND IT SOUNDS REALLY INTERESTING!

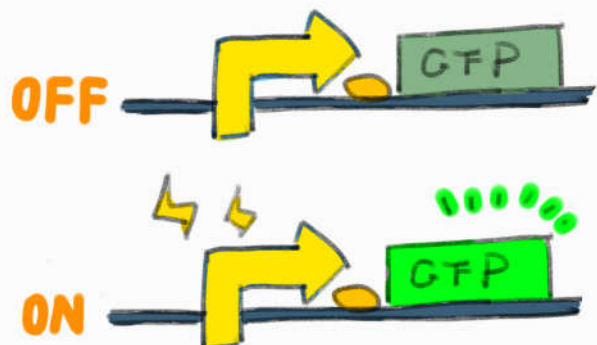
OKEY...

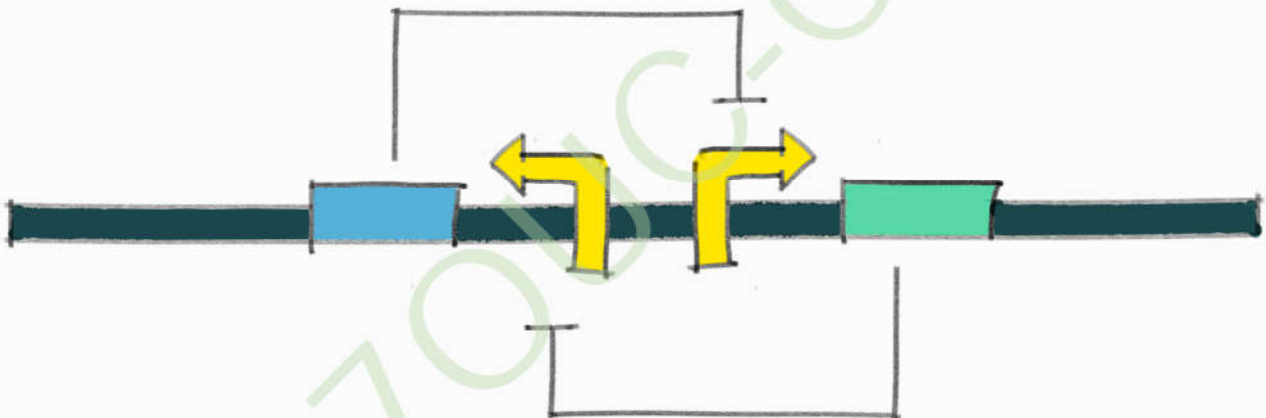
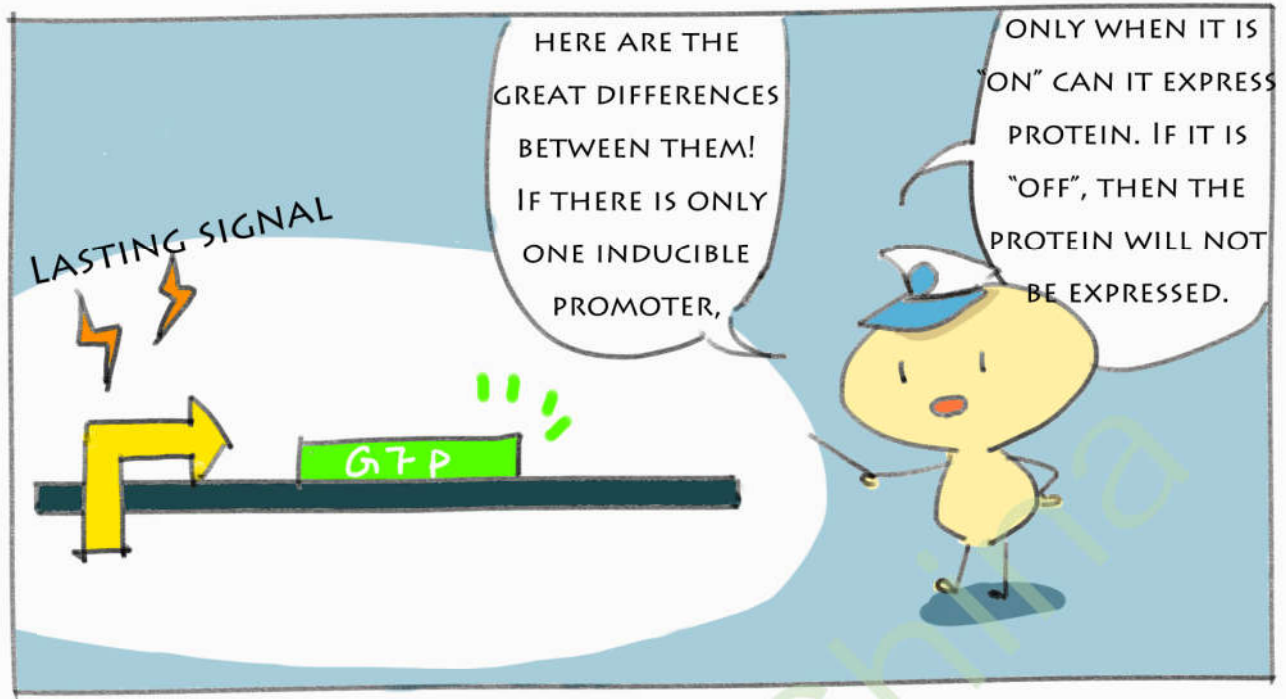
IN BRIEF, THIS DEVICE IS A "SWITCH".

SWITCH?

??

BUT NORMAL INDUCIBLE PROMOTERS CAN ALSO BE USED AS SWITCH!

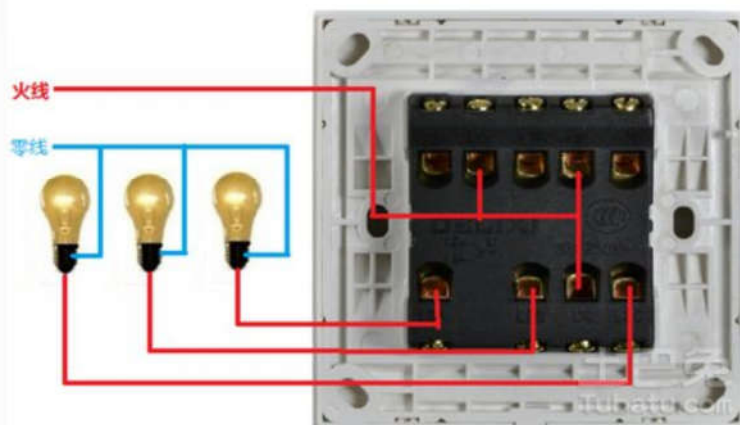


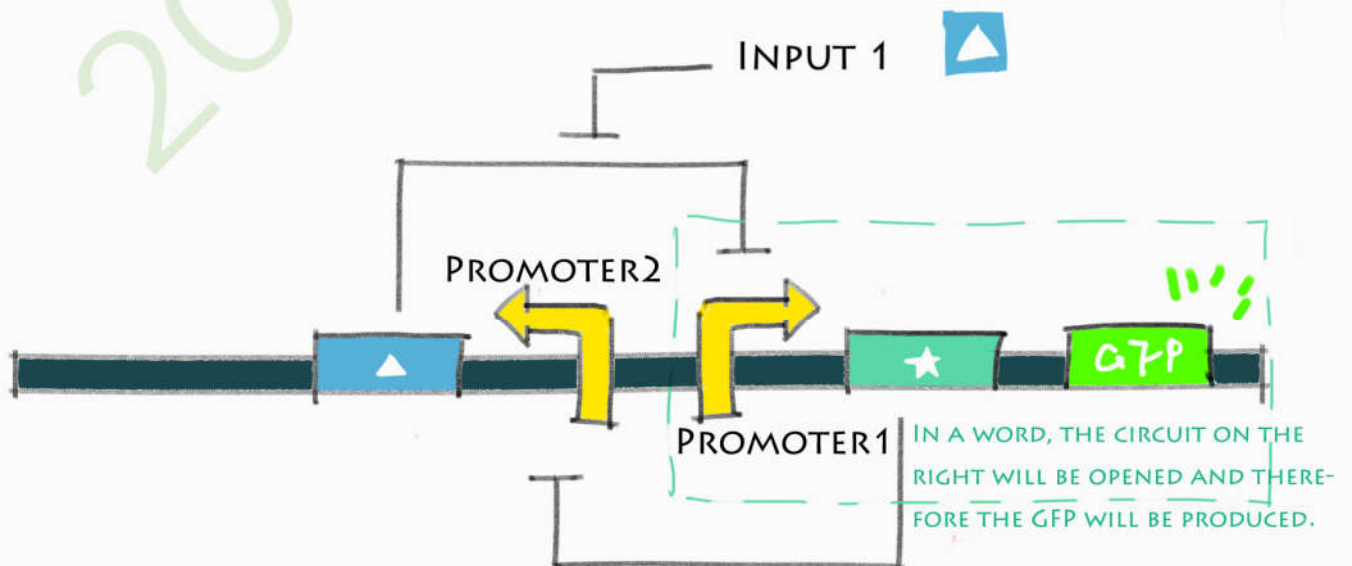
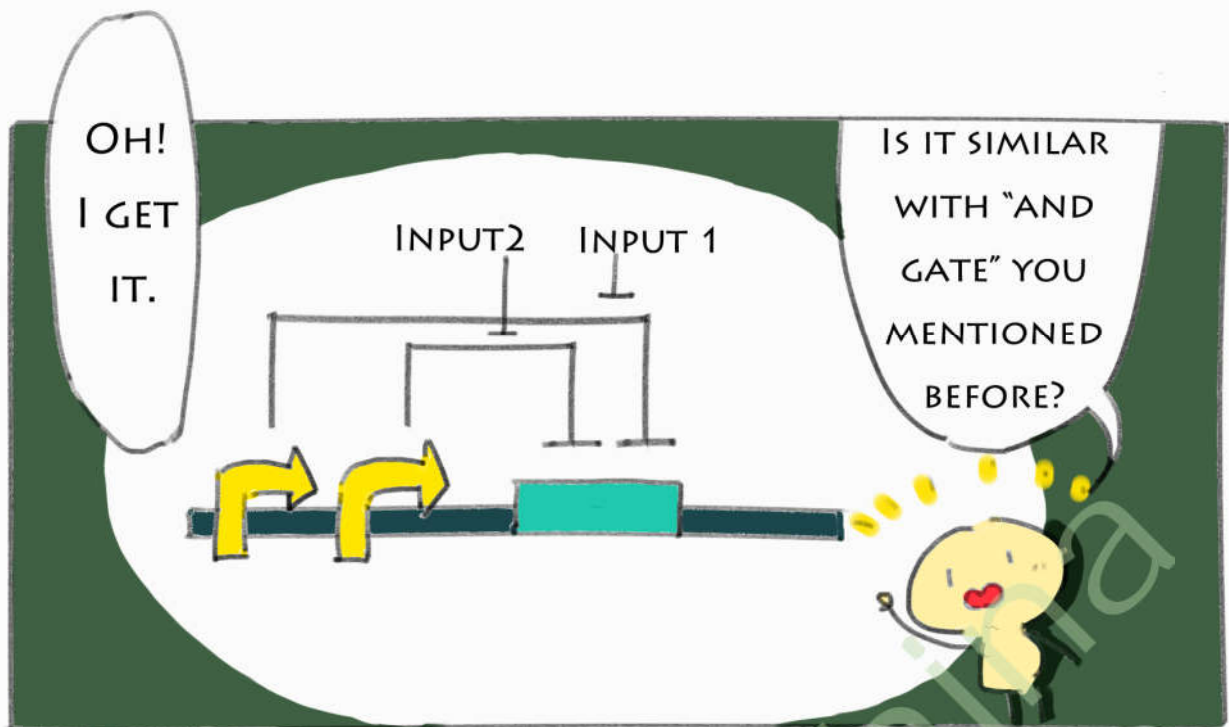


THIS ONE, HOWEVER, IS MADE OF TWO PROMOTERS THAT REPRESS EACH OTHER, WHEN ONE PROMOTER IS "ON", THE OTHER WILL BE "OFF".

Tip:

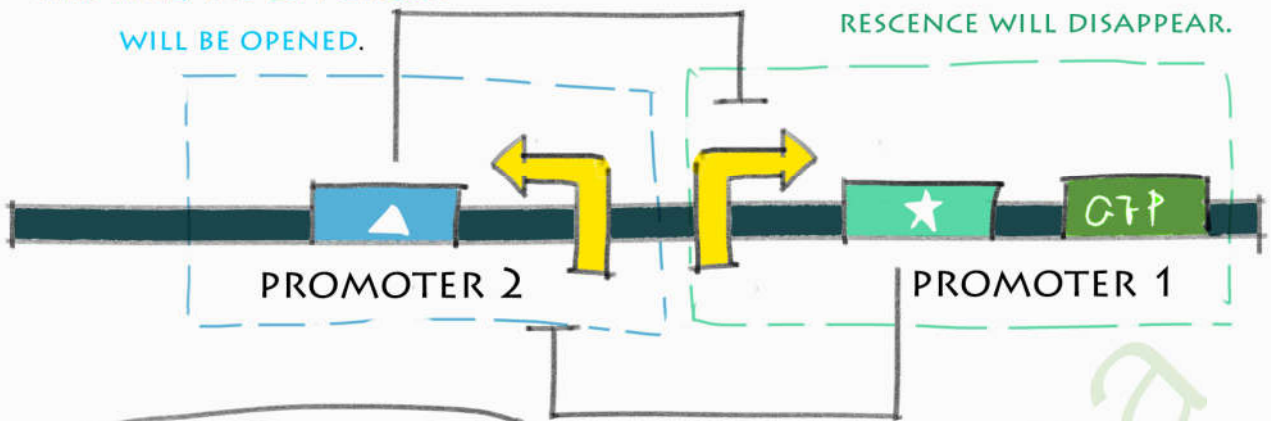
(SWITCHES IN ELECTRONIC COMPONENTS)






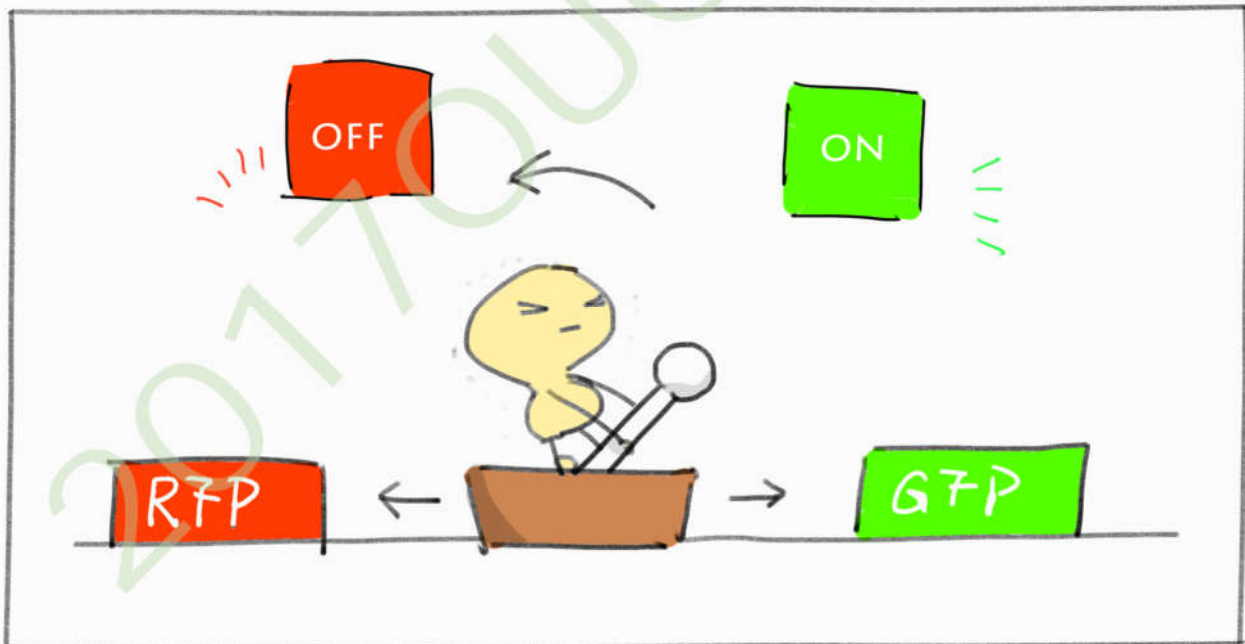
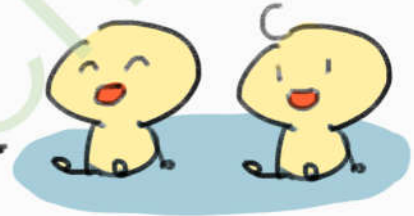
THIS TIME, THE LEFT CIRCUIT
WILL BE OPENED.

THE RIGHT CIRCUIT WILL BE
CLOSED SO THAT THE GREEN FLUO-
RESCENCE WILL DISAPPEAR.



SIMILARLY, WHEN IT COMES
TO , THE LEFT CIRCUIT WILL
BE OPENED, THE PROMOTER 1
WILL BE CLOSED AND GFP WILL
NOT BE PRODUCED. SO THAT WE
CALL IT OFF STATE.

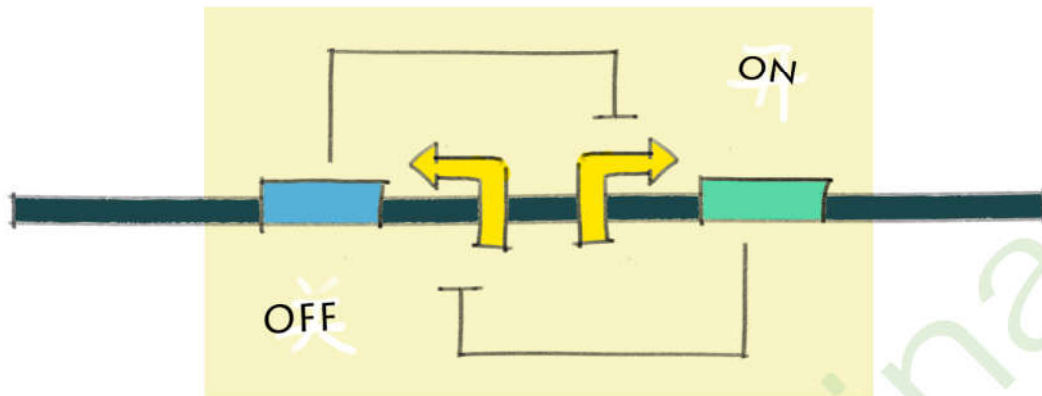
OH!
WE GET IT!



EMM, I THINK WE CAN CALL IT "SHIFT
LEVER", BECAUSE WE CAN MAKE THE
OFF STATE PRODUCE OTHER PROTEIN!

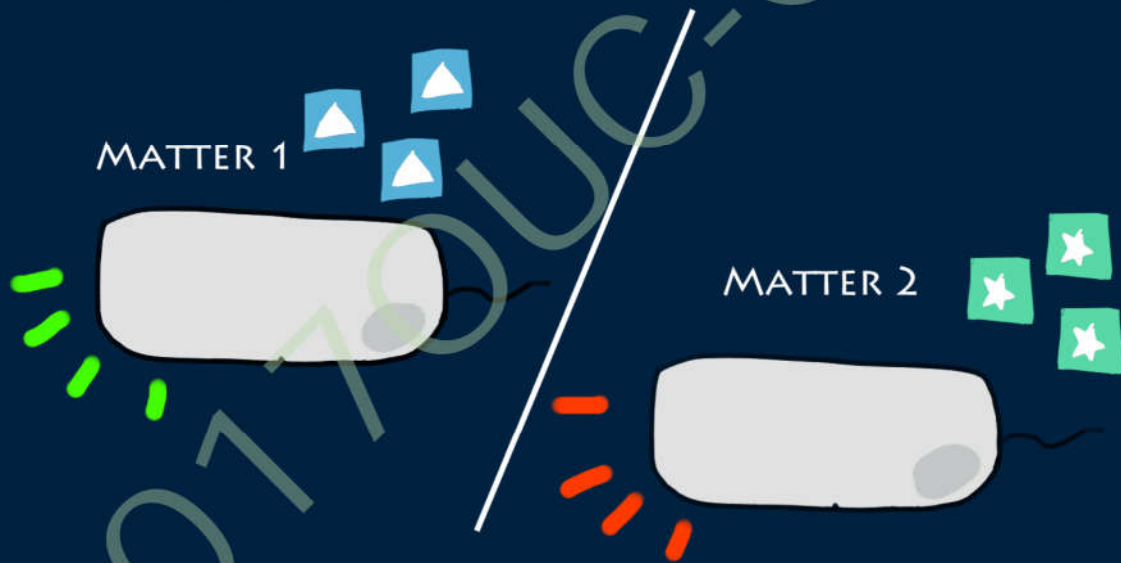


THE "SHIFT LEVER" CAN PRODUCE DIFFERENT PROTEINS AT DIFFERENT STATE.



SO THAT, IT HAS MANY APPLICATIONS!

FOR EXAMPLE, DETECTION.

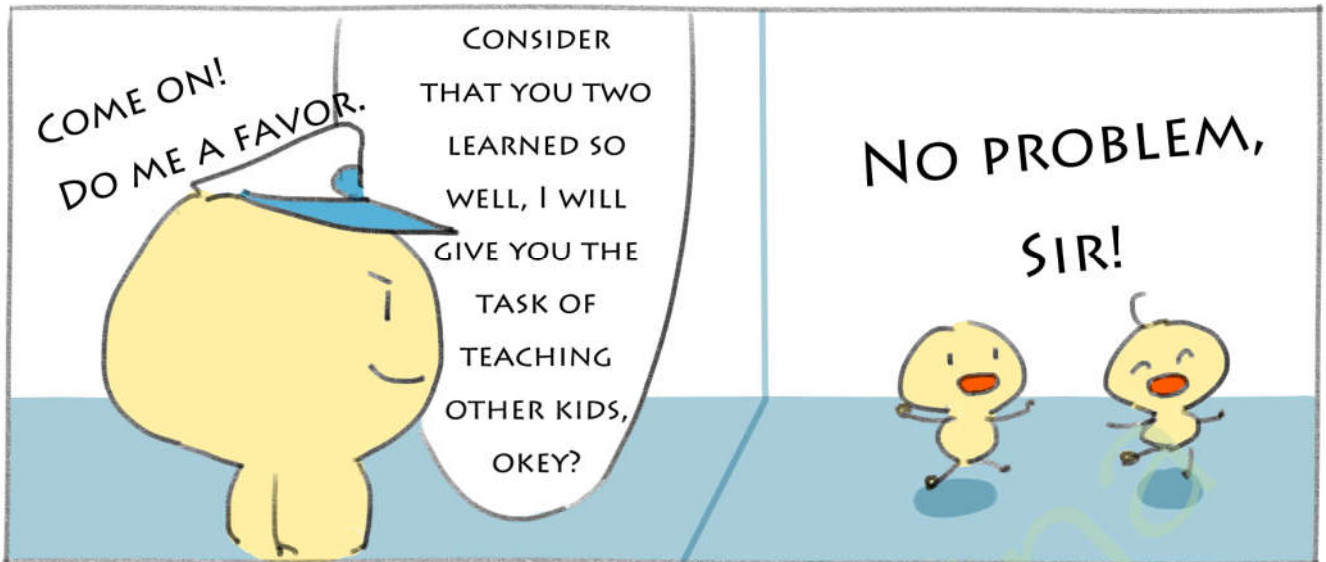


WHAT'S MORE ..

WHEN THERE IS NO BAD BACTERIA, OUR ENGINEERED STRAINS CAN GENERATE GREEN FLUORESCENCE TO REPRESENT SAFETY.



WHEN OUR ENGINEERED STRAINS MEET SOME BAD BACTERIA, THEY CAN PRODUCE SOME TOXINS TO KILL THE BAD BACTERIUM.



ONE HOUR
LATER.

