NAME OPERON REVIEW Use your pool noodle operon to demonstrate the following then draw a picture below. What happens to transcription at the lac operon when glucose levels are low and lactose levels is present and why? Include: RNA polymerase, repressors, and any other molecules needed to show how it works. lac OPERON GENE TURNED ON Operator Structural Genes Promoter What happens to transcription at the lac operon when glucose levels are high and lactose is absent and why? Be sure to include: RNA polymerase, repressors and any other molecules needed to show the following: GENE TURNED OFF Promoter Operator Structural Genes Most of the time this operon is turned **ON OFF** (Circle one) The lac operon is a **REPRESSIBLE INDUCIBLE** OPERON (Circle one) When this operon is "turned on" the repressor is **ACTIVE INACTIVE** (Circle one) When this operon is "turned off" the repressor is ACTIVE **INACTIVE** (Circle one) When lactose is attached to the repressor, the repressor is **ACTIVE INACTIVE** (Circle one) The regulation of this operon is an example of _____ ____ control. positive negative

Explain what happens to transcription at the lac operon and when lactose is present and WHY.

Use your pool noodle operon to demonstrate the following then draw a picture below. Show & Tell to explain what happens to transcription at the *trp* operon when tryptophan levels are low. Be sure to include: RNA polymerase, repressors, and any other molecules needed to show how this works.

trp OPERON

GENE TURNED ON

Promoter	Operator	Structural Genes

Show & Tell to explain what happens to transcription at the *trp* operon when tryptophan levels are high. Be sure to include: RNA polymerase, repressors and any other molecules needed to show the following:

GENE TURNED OFF
Promoter Operator Structural Genes
Most of the time this operon is turned ON OFF (Circle one)
The trp operon is a REPRESSIBLE INDUCIBLE OPERON (Circle one)
When this operon is "turned on" the repressor is ACTIVE INACTIVE (Circle one)
When this operon is "turned off" the repressor is ACTIVE INACTIVE (Circle one)
Draw a picture of the repressor when it is ACTIVE :
When tryptophan is attached to the repressor, the repressor is ACTIVE INACTIVE (Circle one)
The regulation of this operon is an example of control. positive negative
Repressible operons are most commonly associated with enzymes that function in
pathways. catabolic anabolic

EXPLAIN what happens to transcription at the trp operon when tryptophan is absent and why.

PICK AN OPERON: The	operon I picked is				
The operon you chose is sim	ilar to which of th	ese operons?	lac tr	o (Circle d	one)
The operon you chose is	inducible	repressible	(Circle one))	
In a cell the repressor for y and the gene is turned	vour assigned oper OFF ON (Ci	on is usually in ircle one)	the activ	e inactive	form. (Circle one)
DRAW PICTURES TO SHO	W HOW YOUR AS	SSIGNED OPER	RON WORKS	:	
TURNED ON		ll			
	Promoter	Operator	Struct	ural Genes	
TURNED OFF					
	Promoter	Operator	Struc	tural Genes	

DRAW YOUR OPERON ON A WHITE BOARD AND EXPLAIN TO THE CLASS HOW YOUR ASSIGNED OPERON WORKS.

What are the advantages of having genes organized into operons in prokaryotes?

How are structural genes different from regulatory genes?

How is the arrangement of genes different in eukaryotes vs prokaryotes?

COMPARE AND CONTRAST REPRESSIBLE AND INDUCIBLE OPERONS.

Fill in the chart to organize what you know about the lac and trp operons.

Operon	lac	trp
Involved in regulating anabolic or catabolic pathways?		
What structural genes are included in each operon?	Genes	Genes
What does each produce?	Function	Function
This gene is usually TURNED ON TURNED OFF		
The operon is inducible or repressible		
Type of CONTROL POSITIVE NEGATIVE		
The repressor is produced in an active or inactive form		
What conditions are necessary for the repressor protein to become ACTIVE?		

Regulatory sequence on an operon where RNA polymerase binds = _____

Regulatory sequence on an operon where the repressor binds = _____