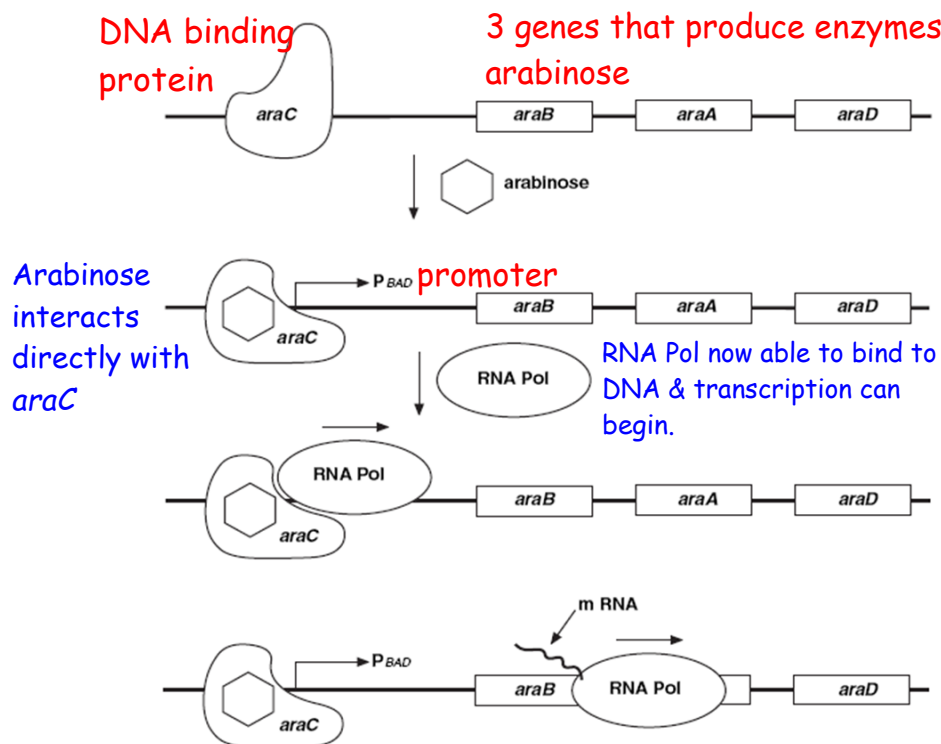


## The Arabinose Operon → Inducible operon



Transcription of the 3 genes requires:

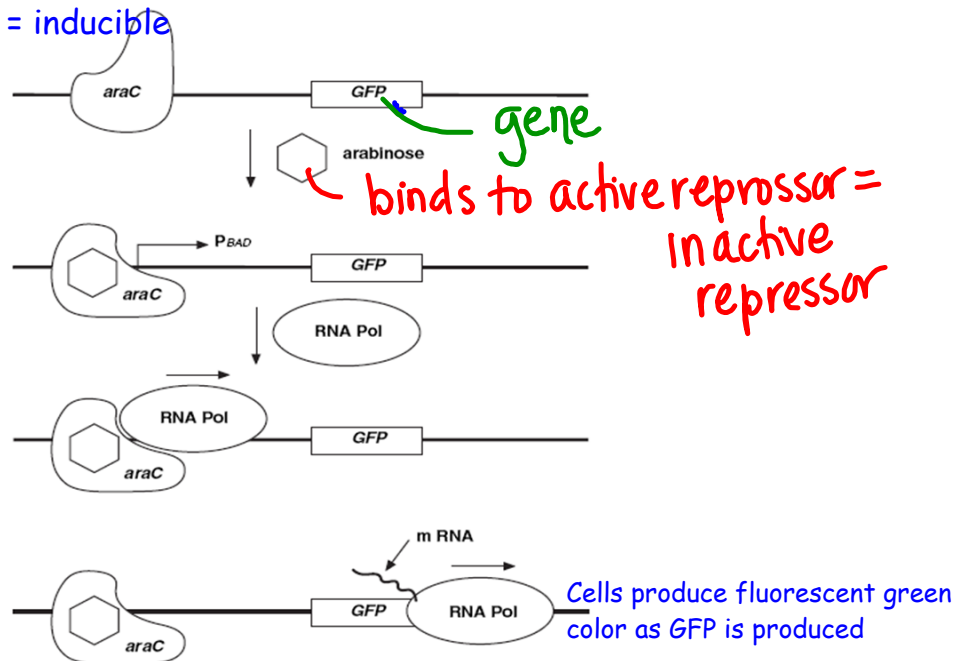
1. the DNA template (promoter & operon)
2. RNA polymerase
3. DNA binding protein (*araC*)
4. Arabinose

Enzymes are produced to breakdown the arabinose until there is no more present.

### Expression of Green Fluorescent Protein

-similar to the arabinose operon which is similar to the lac operon = inducible

operon on pGLO plasmid - GFP gene is on plasmid



- No arabinose = no fluorescent green color. Bacteria will stay white instead.

- When bacteria have been transformed with pGLO, some of the genes involved in the breakdown of arabinose have been replaced by the jellyfish gene that codes for GFP

pGLO transformation lab.pdf - Adobe Acrobat Reader DC

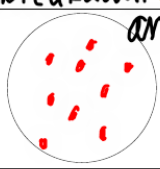
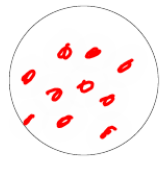
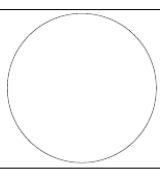

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39 (42 of 66) 130%

**PGLO has bla gene to produce enzyme to breakdown amp**

**Transformation plates**

<b>Transformation plates</b>	+pGLO LB/amp		<b>Observations</b> No glowing Single colonies
	+pGLO LB/amp/ara		<b>Observations</b> Single colonies glowed
<b>Control plates</b>	-pGLO LB/amp		<b>Observations</b> No growth
	-pGLO LB		<b>Observations</b> large colony no single colonies

**Handwritten notes:**

- Left side:** Nutrients, Ampicillin, arabinose (with arrows pointing to the corresponding media components).
- Top right:** No arabinose to turn on operon. inducible operon.
- Between top two plates:** - not all the bacteria were transformed. - not all picked up the plasmid.
- Between middle two plates:** arabinose turned the operon on → activated GPP gene → GFP.
- Between bottom two plates:** untransformed = no resistance to ampicillin. untransformed = No plasmid (pGLO).

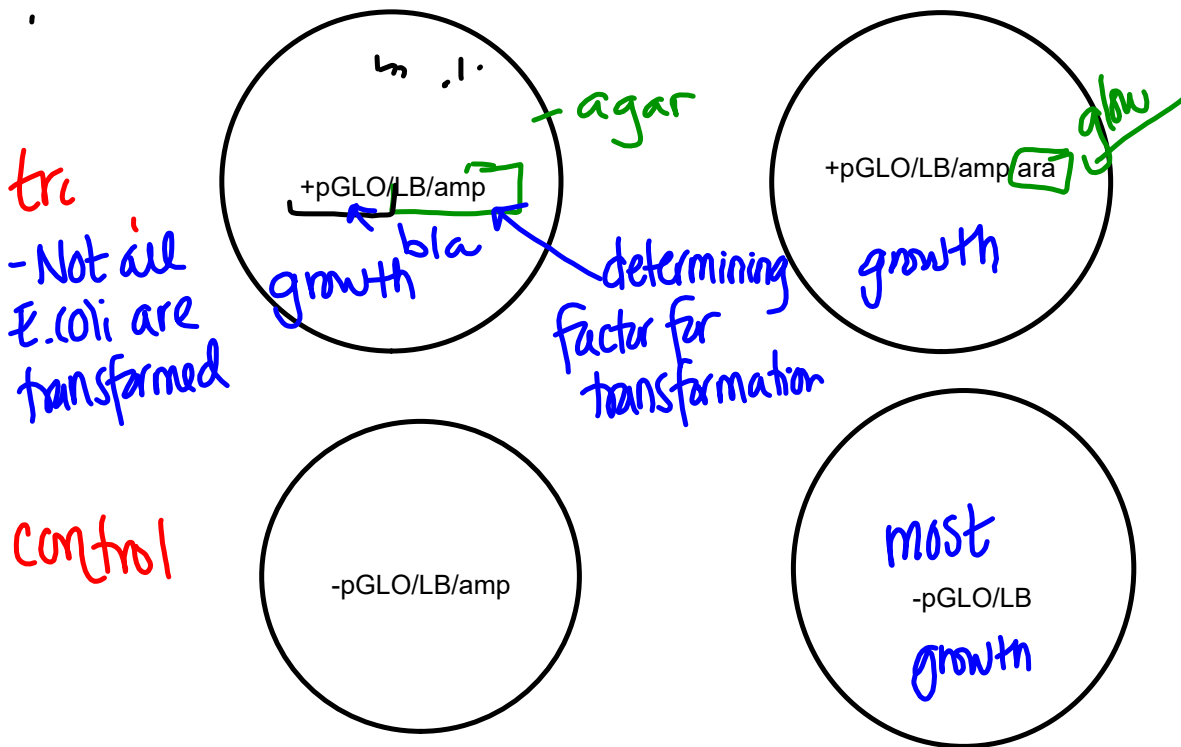
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### Plates

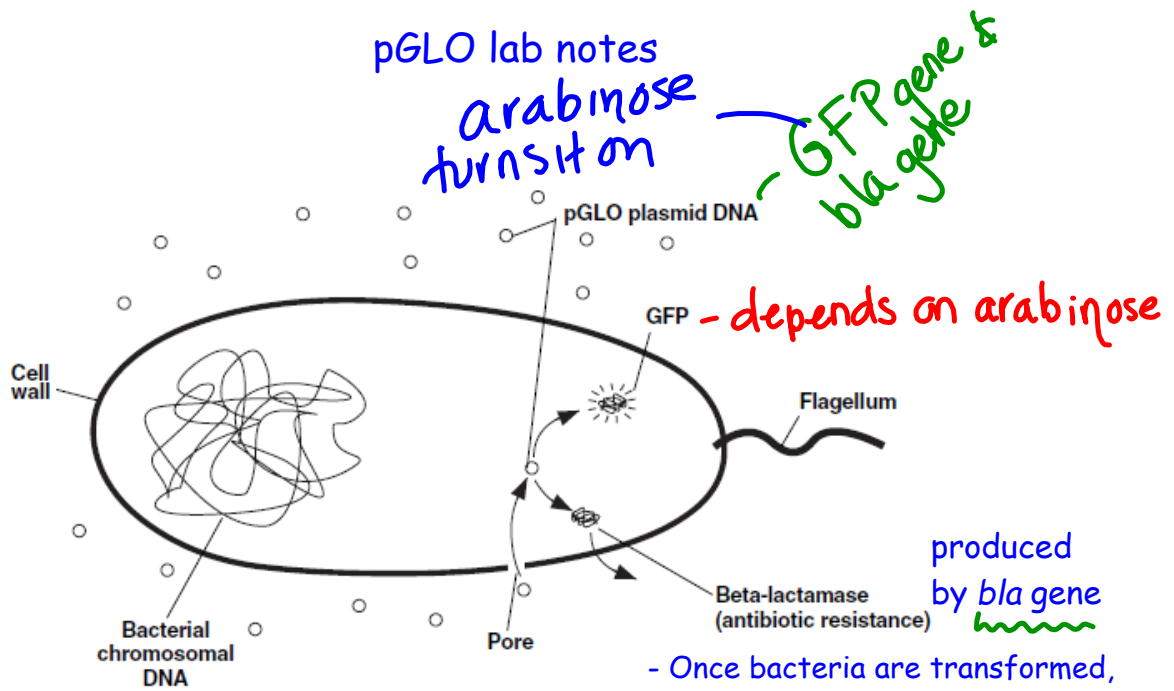
- 1 - LB - nutrient agar
- 2- LB/AMP - nutrient agar + ampicillin
- 1 - LB/amp/ara - nutrient agar + ampicillin + arabinose

Which plates should have bacterial growth?

Which plates should "glow"?



\* answer Lesson 2 Review Questions in Lab Packet



- Once bacteria are transformed, they begin producing & secreting beta-lactamase protein. This breaks down ampicillin, making the antibiotic harmless to the bacteria.
- Only bacteria that have the pGLO plasmid can grow on the plates containing ampicillin, untransformed cells cannot grow.