

Name: Key

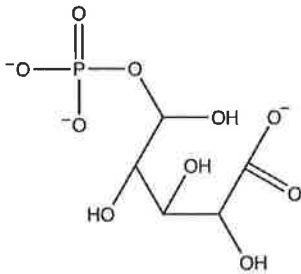
Fed State + O ₂ (Skeletal Myocyte)	Increasing	Decreasing	N/A
Blood [glucose]	X		
Blood [Insulin]	X		
Insulin Receptor Signal	X		
Blood [Glucagon]		X	
Glucagon Receptor Signal			X
Flux through GLUT2			X
Flux through GLUT4	X		
PFK-2/F-2,6-BPase Phosphorylation			X
Pyruvate kinase phosphorylation			X
[lactate]		(X)	(X)

Excerpt from the Pentose Phosphate Pathway Handout:

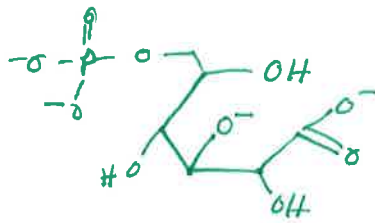
[Starting with 6-phosphogluconate.] C1 is released as CO₂. This enzyme is named 6-phosphogluconate dehydrogenase. The final product is named ribulose-5 phosphate.

- A base abstracts the proton from the C3 hydroxyl group.
- One lone pair from the resulting oxyanion move to form double bond with C3, while the hydride attached to C3 is transferred to NADP⁺. C3 should be a keto group.
- A lone pair from one of the C1 carboxylate oxyanions moves to form a double bond with C1. The electrons forming the C1 to C2 bond are withdrawn towards the ketone. These electrons form a double bond between C2 and C3. The carbonyl oxygen on C3 accepts an additional lone pair to form an oxyanion. C1 leaves as CO₂. How would you describe this intermediate?
- One lone pair of the oxyanion of C2 (note number change after CO₂ release) moves to reform the carbonyl, moving the pi-electrons towards C1, which picks up a proton.
- Suggest any other reactants/products.

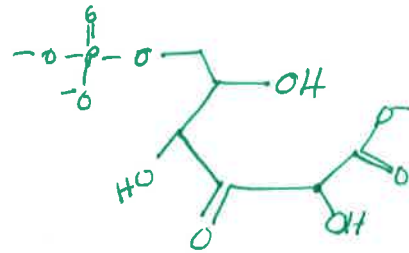
6-phosphogluconate



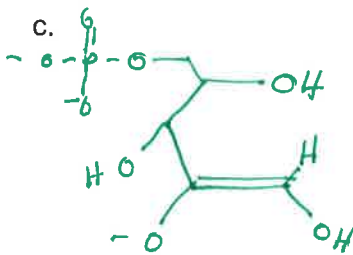
a.



b.



c.



d.

