CONCEPT: BOHR EFFECT

●Recall: *Bohr Effect*: describes the effect of [CO_2] and pH ([H_+]) on hemoglobin's _____ & _____ of O_2.

□ Recall: $HbCO_2$ & HHb_+ both stabilize the ____ State of hemoglobin to promote O_2 *release*.

●*Bohr Effect*: When [CO_2] & [H_+] are _____ (like in the *tissues*), they act as *inhibitors* & _____ significant events occur:

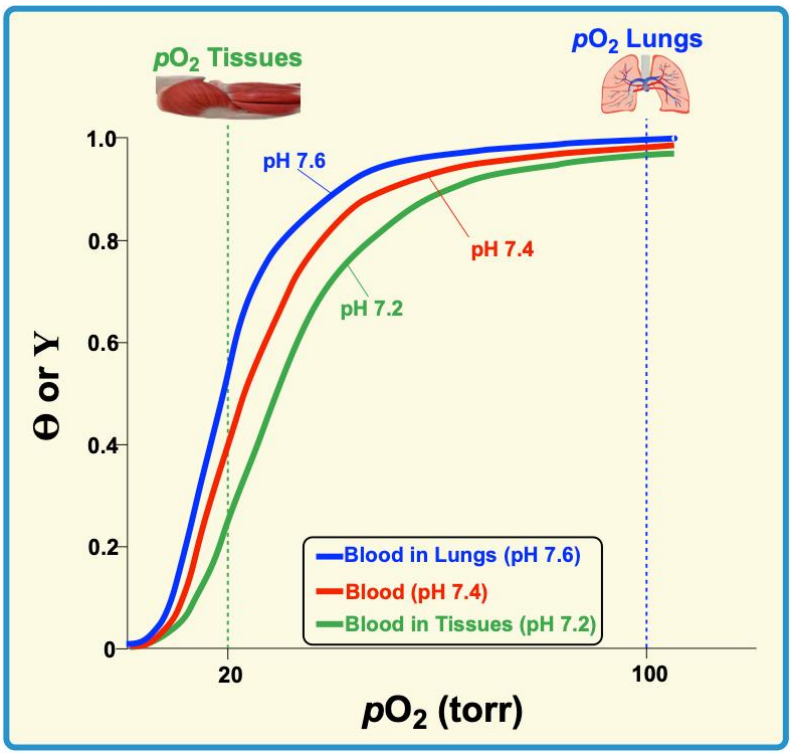
Review:

1) Hb binds _____ as carbaminohemoglobin ($HbCO_2$).
2) Hb becomes _____ (HHb_+).
3) Hb's O_2-affinity _____ (O_2 *released*) causing a shift of the O_2-binding curve to the _____.

New:

●When [CO_2] & [H_+] are _____ (like in the *lungs*), the _____ events occur.

EXAMPLE: Bohr Effect of pH on Hb's O_2 Binding.



Bohr Effect

_____ Shift in Lungs (_____ K_d = _____ O_2 affinity)	_____ Shift in Tissues (_____ K_d = _____ O_2 affinity)
_____ pCO_2	_____ pCO_2
_____ $[H^+]$	_____ $[H^+]$
_____ pH	_____ pH
_____ O_2 release	_____ O_2 release

●Bohr effect: Hb switches from the _____ curve to the _____ curve as it transitions from the lungs to the tissues.

□ Allows Hb to *maximize* O_2-_____ in the lungs & *optimize* O_2-_____ to the tissues.

PRACTICE: Identify all the correct statements regarding the Bohr effect on hemoglobin.

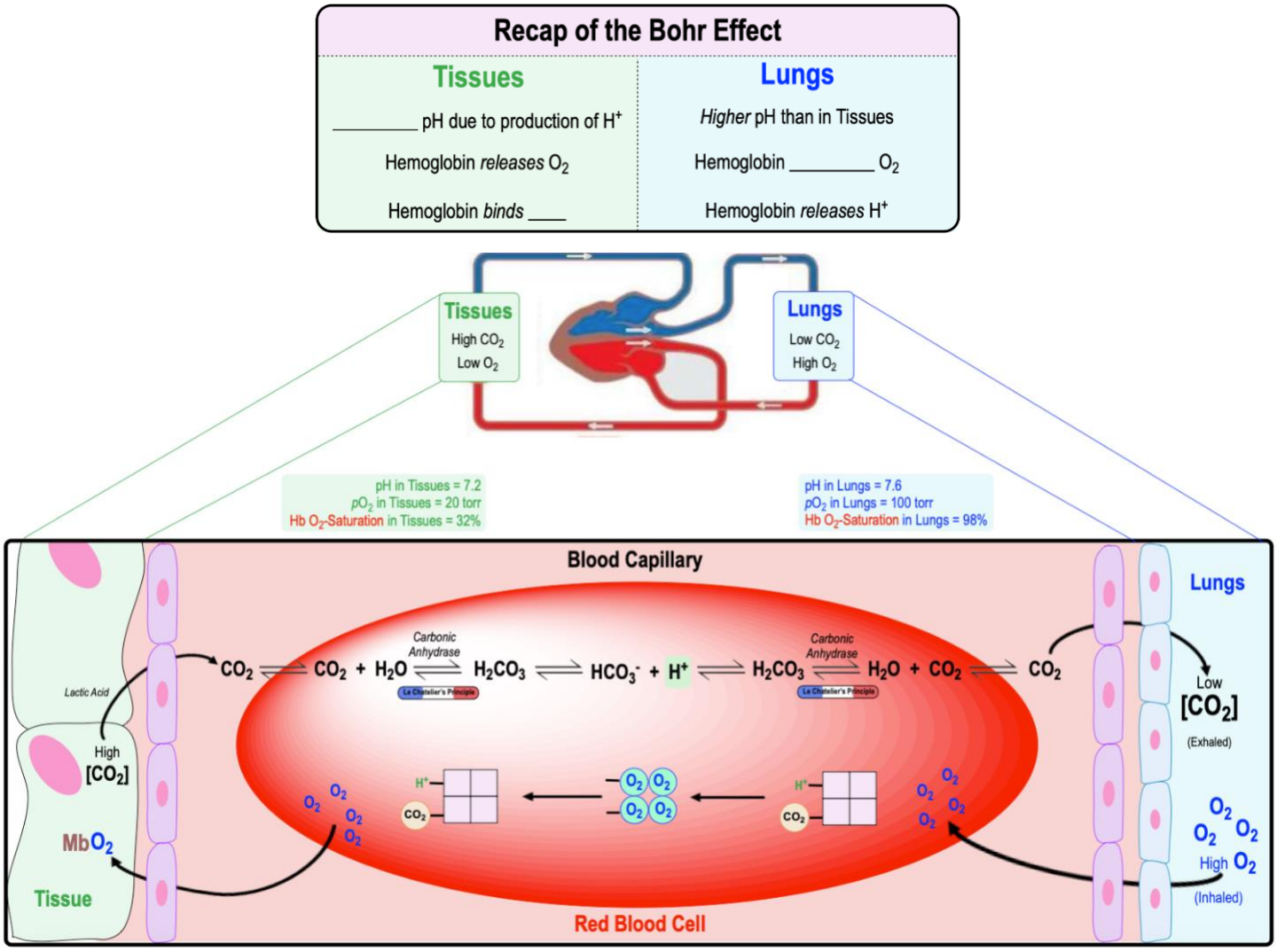
i) The Bohr effect shifts the fractional O_2 saturation curve to the right as pH decreases.
ii) The Bohr effect shifts the fractional O_2 saturation curve to the right as pH increases.
iii) The Bohr effect favors O_2 release in respiring tissues.
iv) O_2 and H_+ compete for the same binding site on hemoglobin.

a) i & iii. b) i & iv. c) ii & iv. d) ii, iii, & iv.

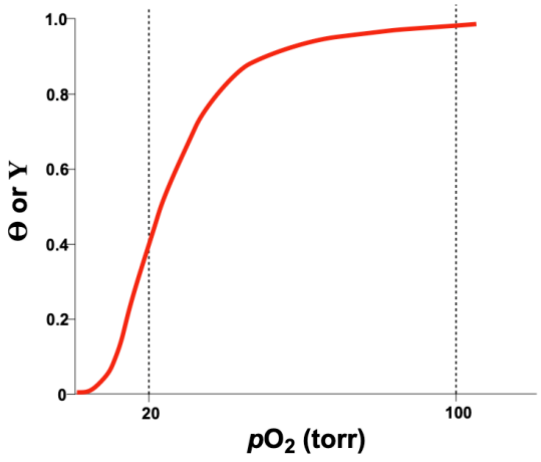
CONCEPT: BOHR EFFECT

Summary of the Bohr Effect

●Let's recap & summarize the Bohr effect on hemoglobin:



PRACTICE: On the graph below, draw in the approximate shapes of the O_2-saturation curves in the lungs & tissues after a shift due to the Bohr effect takes place.



CONCEPT: BOHR EFFECT

PRACTICE: The Bohr effect describes the change in hemoglobin's affinity for oxygen under two different conditions. What are these two conditions and how do they impact hemoglobin's affinity for oxygen? Complete the table below:

Condition	Impact on Hemoglobin's O_2 affinity
1.	
2.	