• The effect of pH on the curve: change in acidity can change curve, higher pH causes a right shift, so they bind faster and hit plateau faster with more acidity
• The effect of temperature on the curve: right shift happens with a decrease in blood temperature, but loading is elongated with a rise in temperature
• The effect of 2,3-DPG on the curve: reduces Hb affinity for oxygen, slower binding and hits the plateau slower
  o Be able to explain the role of myoglobin in muscle
    ▪ Myoglobin-O₂ Dissociation curve: saturates much quicker and has a longer plateau, higher affinity for oxygen
  • Influence of PO₂ and O₂ affinity
    o Longer plateau portion: myoglobin discharges O₂ at very low PO₂ levels, releases O₂ quickly and in turn has a long plateau (runs out and stops bonding)
    o Steeper curve portion: very high affinity for O₂, so fast bonding and release
  o Be able to explain carbon dioxide transport in the blood
    ▪ Know the 3 ways CO₂ is transported in the blood
      • dissolved into plasma (10%)
      • bound to Hb (20%: carbaminohemoglobin)
      • converted to bicarbonate (70%)
    ▪ Know how bicarbonate is used to transport CO₂
      • Formed in RBCs with equation:
        CO₂ + H₂O = H₂CO₃ → H+ and HCO₃, reverse occurs in inspiration, CO₂ and H₂O are expired
      • Define carbaminohemoglobin: form of hemoglobin that is linked with CO₂, method of carrying CO₂ out of the body
    ▪ Know the reversible reaction for bicarbonate in the RBCs
      o High PCO₂ (tissues) formation: CO₂ and H₂O combine to form carbonic acid (H₂CO₃), H₂CO₃ dissolves into H+ (binds to Hb) and HCO₃ (moves to plasma)
      o Low PCO₂ (lungs) formation: H+ and HCO₃ combine to form carbonic acid, which dissolves into CO₂ and H₂O (expired)
      o How does this relate to Acid-Base balance in the body?
        ▪ Blood pH is around 7, so body wants to keep an even acid-base balance in the blood, can’t have too much H+ or basic compounds, when CO₂ accumulates the PCO₂ and H+ lower to keep a balance with increased ventilation (reverse true as well)