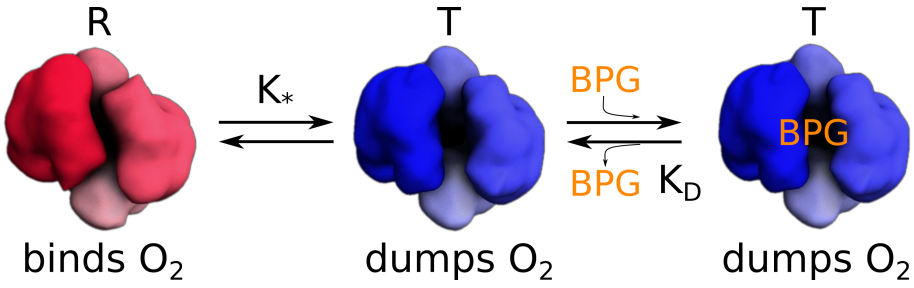

- The protein hemoglobin can be in either the **R** or **T** states.
- **R** binds O_2 tightly, **T** binds O_2 weakly.
- The molecule BPG can binds **T** (with affinity K_D) but not **R**.

1. The amount of O_2 you can transport from your lungs depends on $[R]$. Intuitively: if you increase the concentration of BPG, what happens to the concentration of $[R]$? Why?

2. List the possible hemoglobin deoxygenated "species" below. (There are three).

3. Write an equation for the fraction of molecules in the **R** state (θ_R) in terms of the concentrations of these species.

4. Which terms in your equation depend on $[BPG]$?

5. Can you justify your intuition from #1 mathematically?