**Oxy vs Deoxy Sickle Cell Hemoglobin**

After completing the activity – i.e., explaining the question “What is the molecular basis for sickling and pain in Sickle Cell Disease?” you should have understood the molecular basis of sickle cell disease pathology is formation of deoxygenated sickle hemoglobin (HbS) fibers that distort the shape of red blood cells.

A recent paper (Ghatge et al., 2016, PMID:27085422, doi:[10.1016/j.jsb.2016.04.003](https://dx.doi.org/10.1016/j.jsb.2016.04.003)) reports the structure of carbonmonoxy sickle hemoglobin in R-state conformation. Read the abstract of this article and answer the following question:

**Q. Why do the red blood cells sickle only in low oxygen saturation? i.e., explain why sickle cell hemoglobin fibers are formed by deoxy hemoglobin and not oxy hemoglobin? Explain your answer and include suitable illustrations to support your reasoning. Use iCn3D to generate the illustration(s). (Hint: You may want to explore the structures of PDB IDs 2hbs and 5e6e to answer this question).**