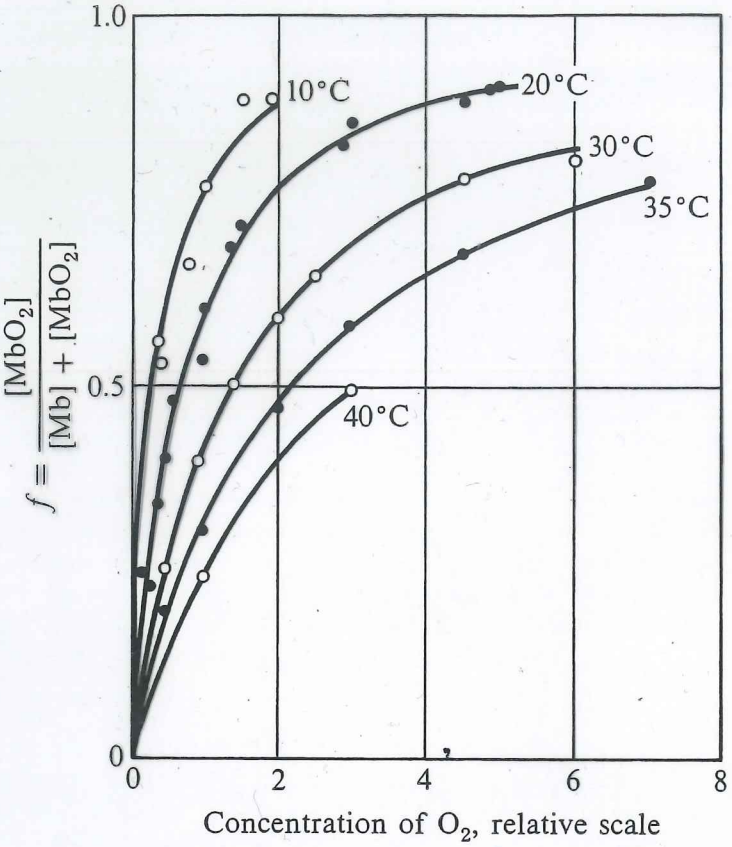

Figure 5.11 The reaction of a myoglobin (Mb) molecule with oxygen may be viewed as the adsorption of a molecule of O_2 at a site on the large myoglobin molecule. The results follow a Langmuir isotherm quite accurately. Each myoglobin molecule can adsorb one O_2 molecule. These curves show the fraction of myoglobin with adsorbed O_2 as a function of the partial pressure of O_2. The curves are for human myoglobin in solution. Myoglobin is found in muscles; it is responsible for the color of steak. After A. Rossi-Fanelli and E. Antonini, Archives of Biochemistry and Biophysics 77, 478 (1958).

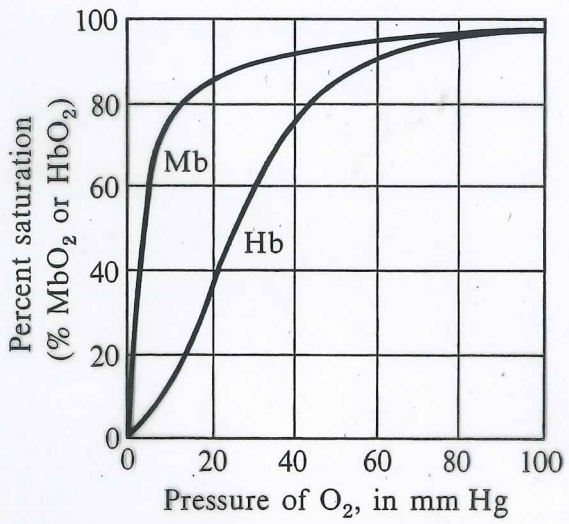

Figure 5.12 Saturation curves of O_2 bound to myoglobin (Mb) and hemoglobin (Hb) molecules in solution in water. The partial pressure of O_2 is plotted as the horizontal axis. The vertical axis gives the fraction of the molecules of Mb which has one bound O_2 molecule, or the fraction of the strands of Hb which have one bound O_2 molecule. Hemoglobin has a much larger change in oxygen content in the pressure range between the arteries and the veins. This circumstance facilitates the action of the heart, viewed as a pump. The curve for myoglobin has the predicted form for the reaction $Mb + O_2 \leftrightarrow MbO_2$. The curve for hemoglobin has a different form because of interactions between O_2 molecules bound to the four strands of the Hb molecule. The drawing is after J. S. Fruton and S. Simmonds, *General biochemistry*, Wiley, 1961.