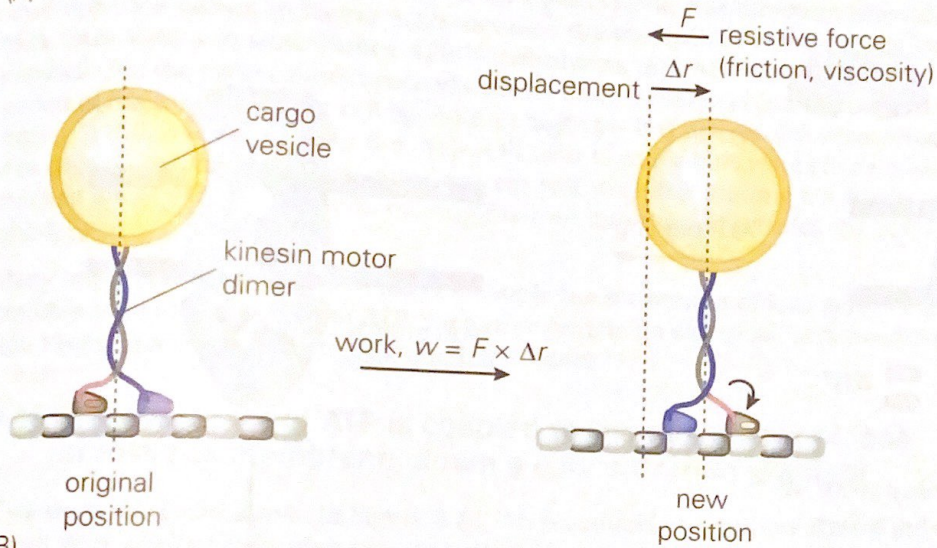


(A)



**Figure 9.20 An example of physical work.** (A) A kinesin motor protein moves a cargo vesicle along microtubule track (refer to Figure 6.1 for more information). The work done is given by the displacement ( $\Delta r$ ) multiplied by the resistive force due to friction and viscosity ( $F$ ). (B) The work done is coupled to the hydrolysis of ATP by the motor domain. The value of the free-energy change for hydrolysis of ATP,  $\Delta G_{\text{ATP}}$ , sets a limit on the amount of work that can be done.

(B)

