



(b)

FIGURE 12.10 Cartoon of the activation mechanism of the erythropoietin (EPO) and growth hormone (GH) receptor which belong to the JAK/STAT receptor class of the superfamily of tyrosine kinase receptors. (a) The EPO receptor is dimerized in the inactive conformation by interaction of amino acids which are similar to those involved in binding of EPO and the intracellular JAK kinases are kept too far apart to initiate autophosphorylation. The GH receptor exists as monomers which are dimerized upon agonist binding. Upon agonist binding, intracellular JAK kinases of both receptors are brought in proximity and initiates transphosphorylation. (b) The actual structure of EPO (in cyan) bound to the extracellular receptor domains of the EPO receptor (in green). The structure was generated using the program “Swiss PDB viewer 3.5” with coordinates from Brookhaven Protein Data Base. (Reprinted [a] from *Handbook of Cell Signaling*, 2nd ed., Stauber, C.E., Busch, A., Naumann, A. et al., Academic Press, San Diego, CA, p. 245. Copyright 2010, with permission from Elsevier.)