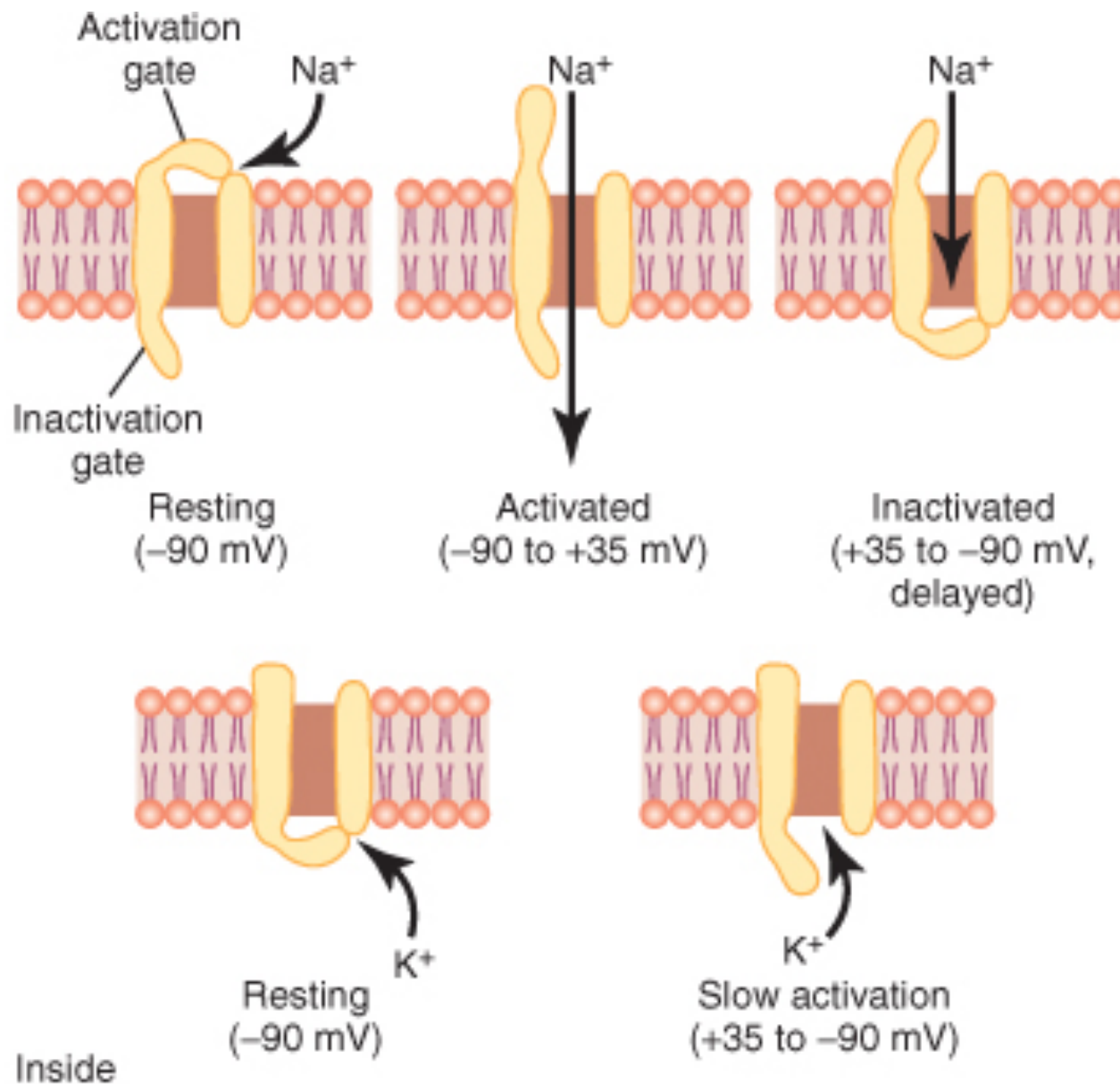


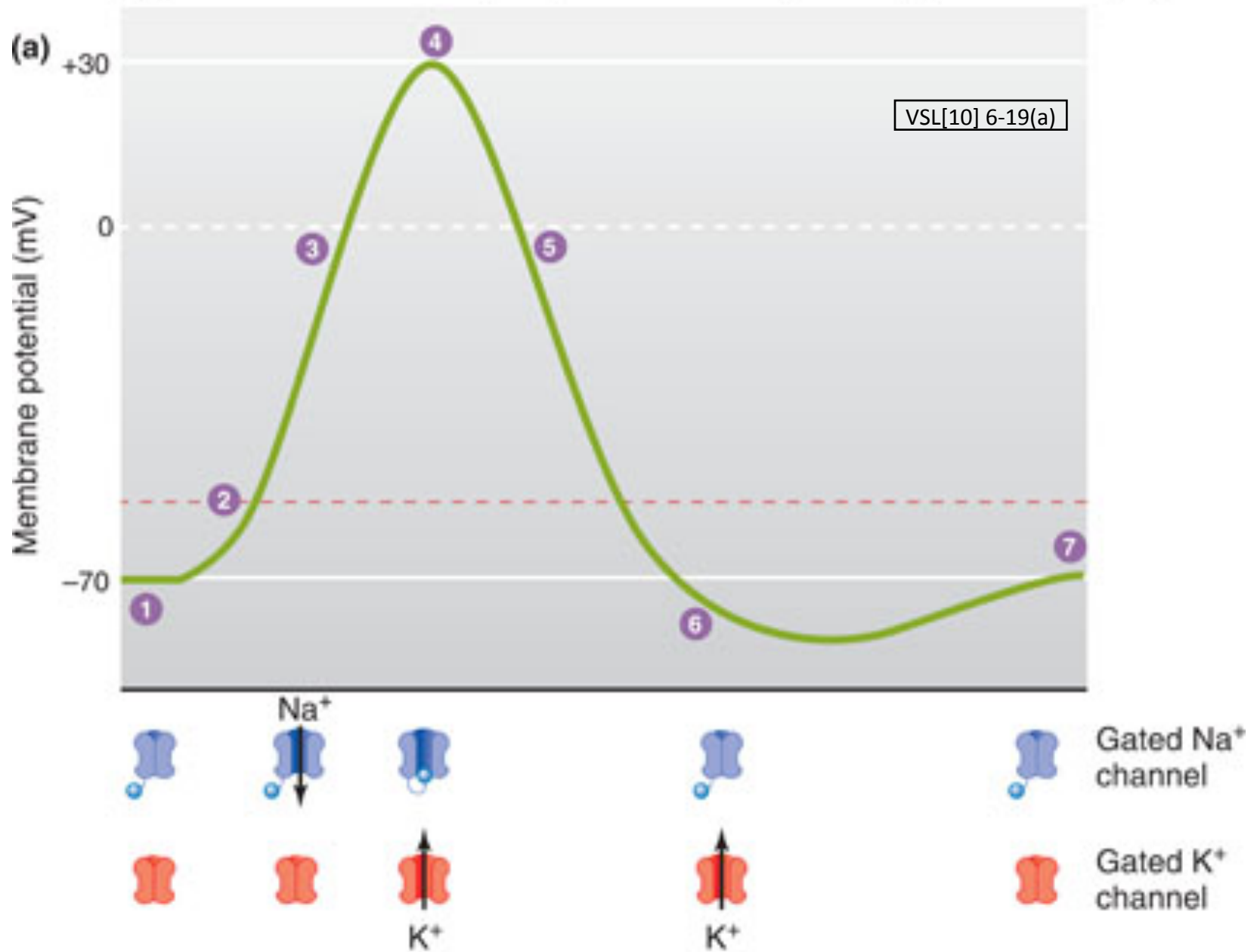
B&L[6]

Figure 5-5 Components of the action potential with respect to time and voltage. Note that the time scale for the first few milliseconds has been expanded for clarity. RMP, resting membrane potential. (Redrawn from Blankenship J: Neurophysiology. Philadelphia, Mosby, 2002.)



G&H[11]

Figure 5-7 Characteristics of the voltage-gated sodium (top) and potassium (bottom) channels, showing successive activation and inactivation of the sodium channels and delayed activation of the potassium channels when the membrane potential is changed from the normal resting negative value to a positive value.



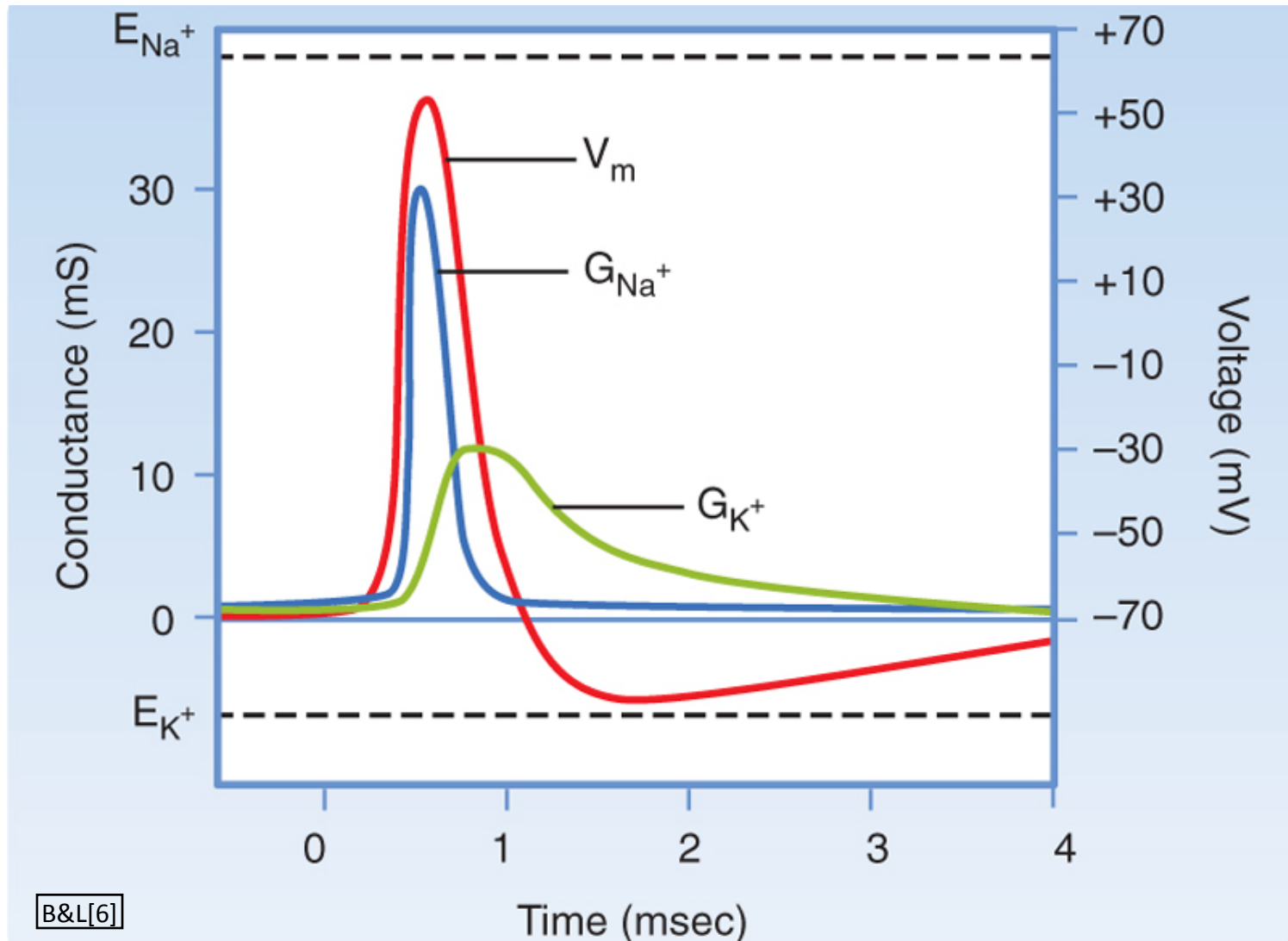
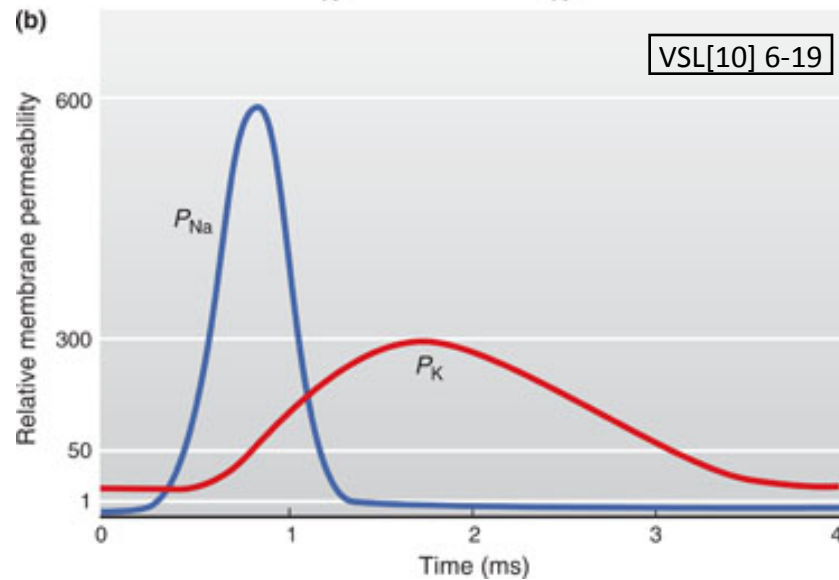
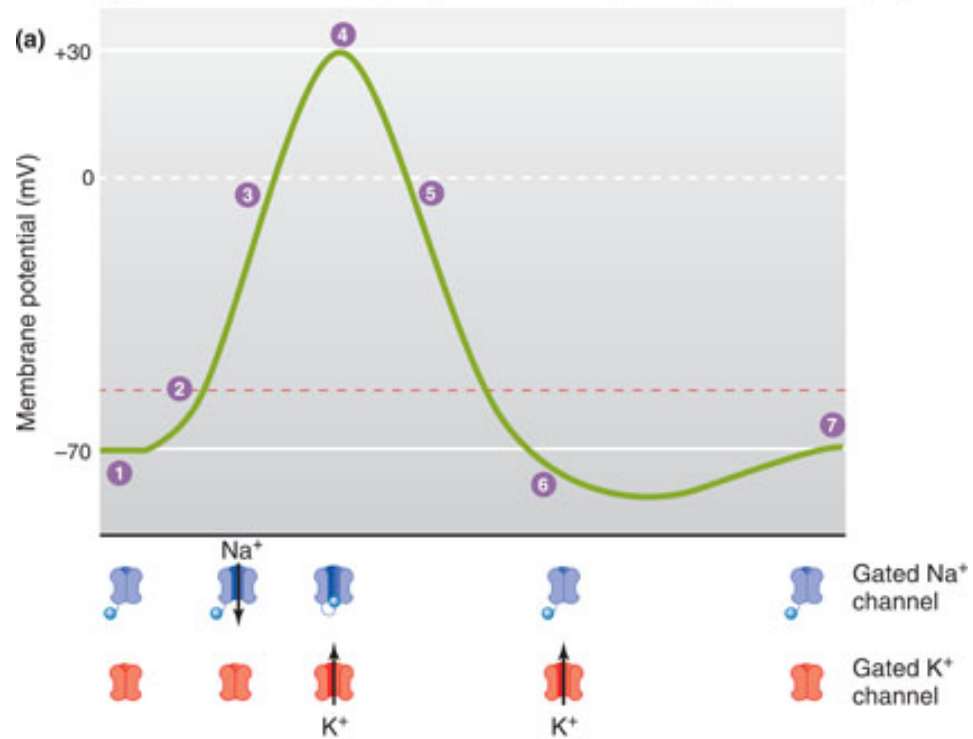
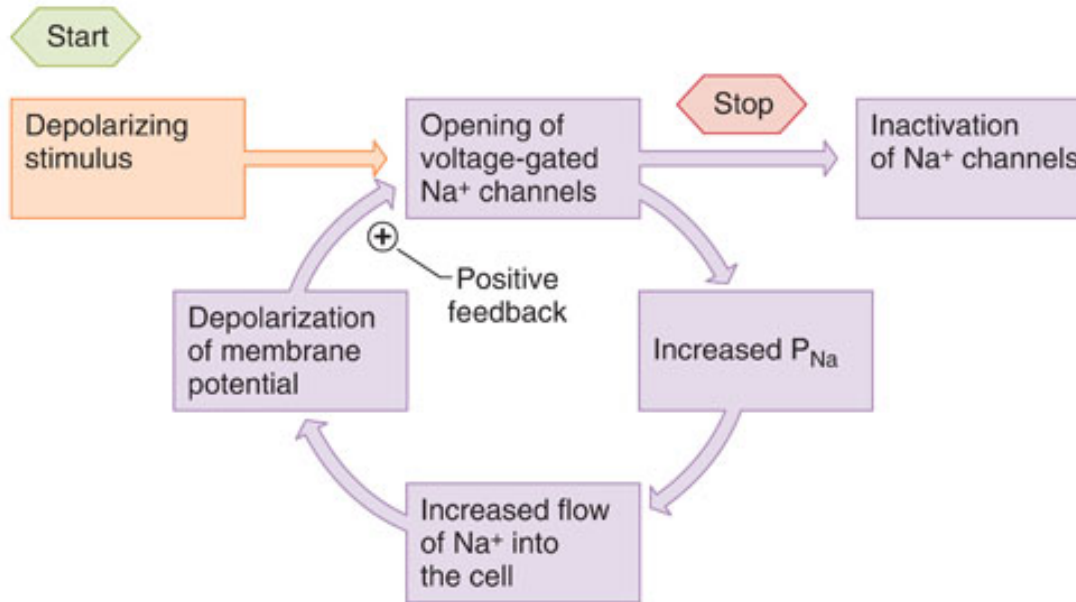


Figure 2-5 Nerve action potential showing the changes in Na^+ (G_{Na^+}) and K^+ (G_{K^+}) conductance and membrane potential (V_m). At rest, the membrane has high K^+ conductance and V_m is near the Nernst equilibrium potential for K^+ (E_{K^+}). With initiation of the action potential there is a large increase in Na^+ conductance of the membrane, and V_m approaches the Nernst potential for Na^+ (E_{Na^+}). The increase in Na^+ conductance is transient, and K^+ conductance then increases above its value before the action potential. This hyperpolarizes the cell as V_m approaches E_{K^+} . As K^+ conductance returns to its baseline value, V_m returns to its resting value of -70 mV. (Modified from Levy MN, Koeppen BM, Stanton BA: Berne & Levy's Principles of Physiology, 4th ed. St. Louis, Mosby, 2006.)

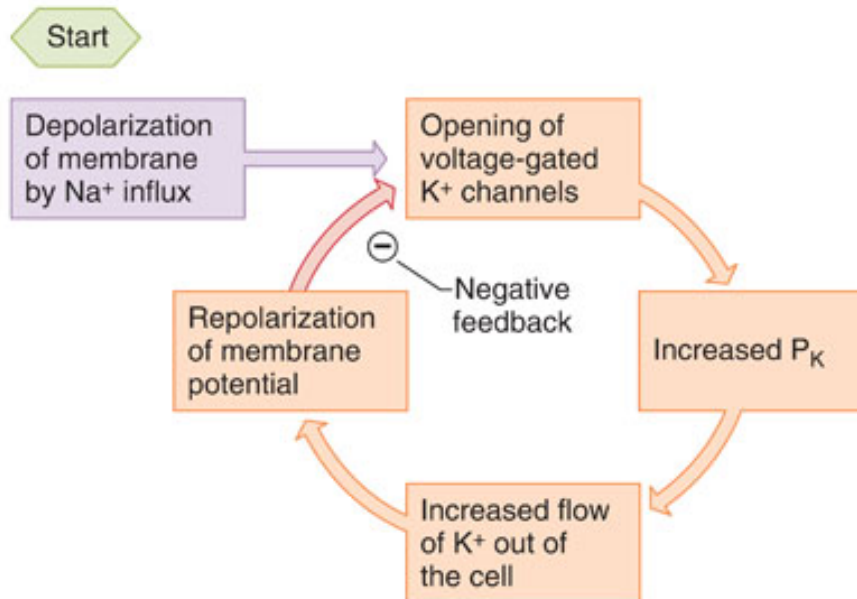


(a)



VSL[10] 6-20

(b)



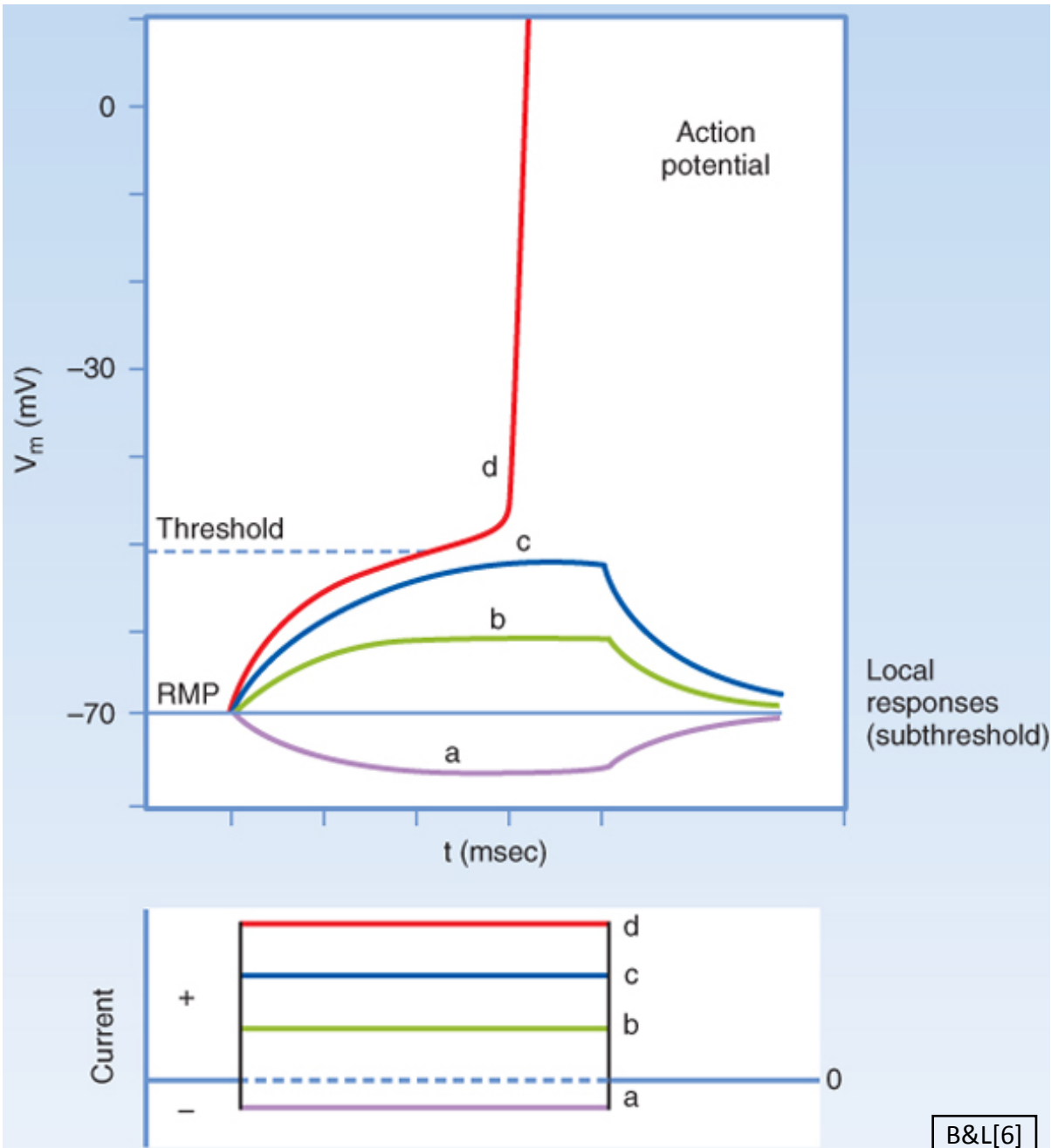


Figure 5-1 Responses of an axon to rectangular pulses of hyperpolarizing (a) or depolarizing (b to d) current. The change in transmembrane current and potential as recorded by an intracellular electrode is shown as a function of time. Note that when stimulated to threshold (d), the axon fires an action potential. For clarity, only the rising phase of the action potential is shown. RMP, resting membrane potential. (Redrawn from Blankenship J: Neurophysiology. Philadelphia, Mosby, 2002.)

B&L[6]

END

Video 1, Module 2