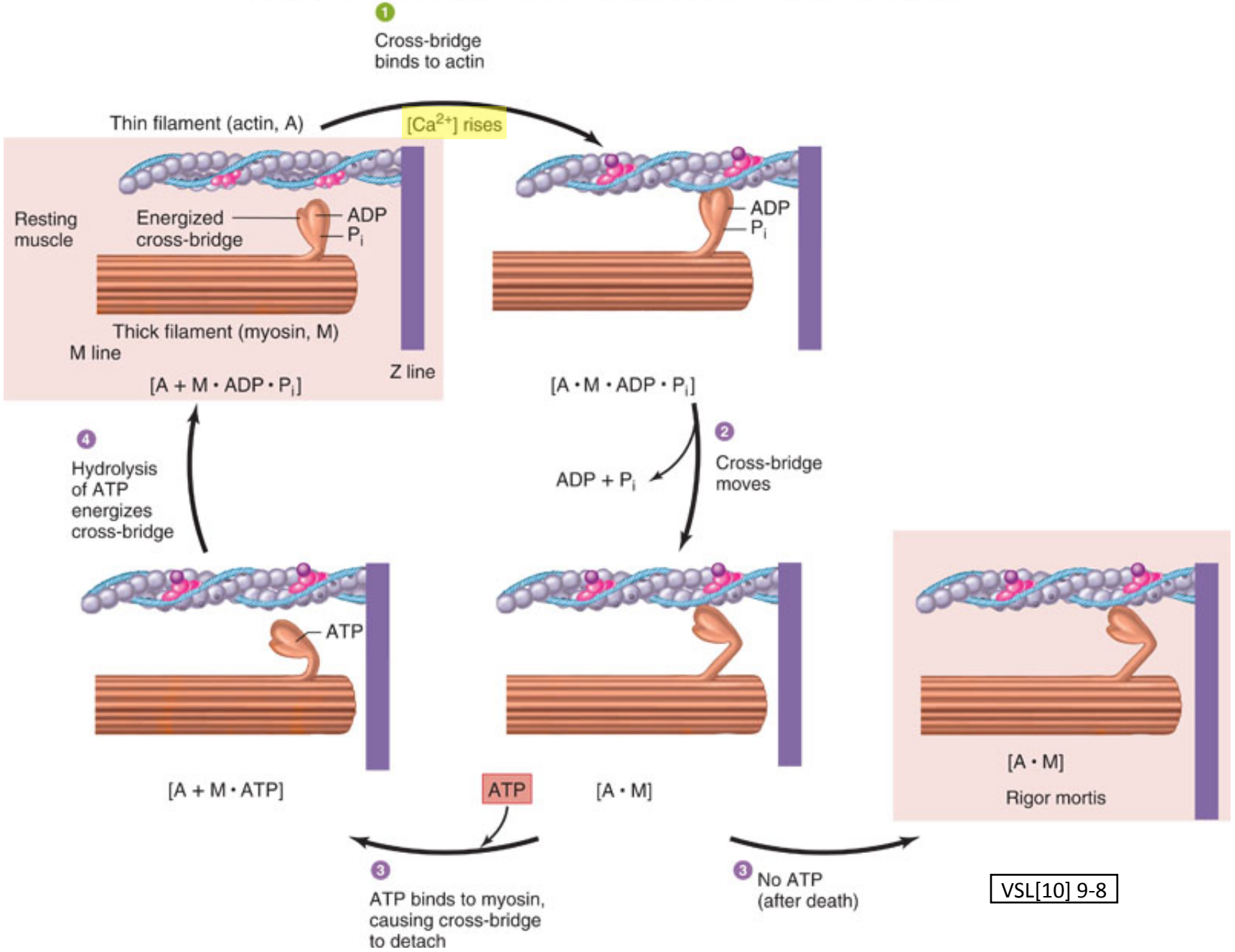

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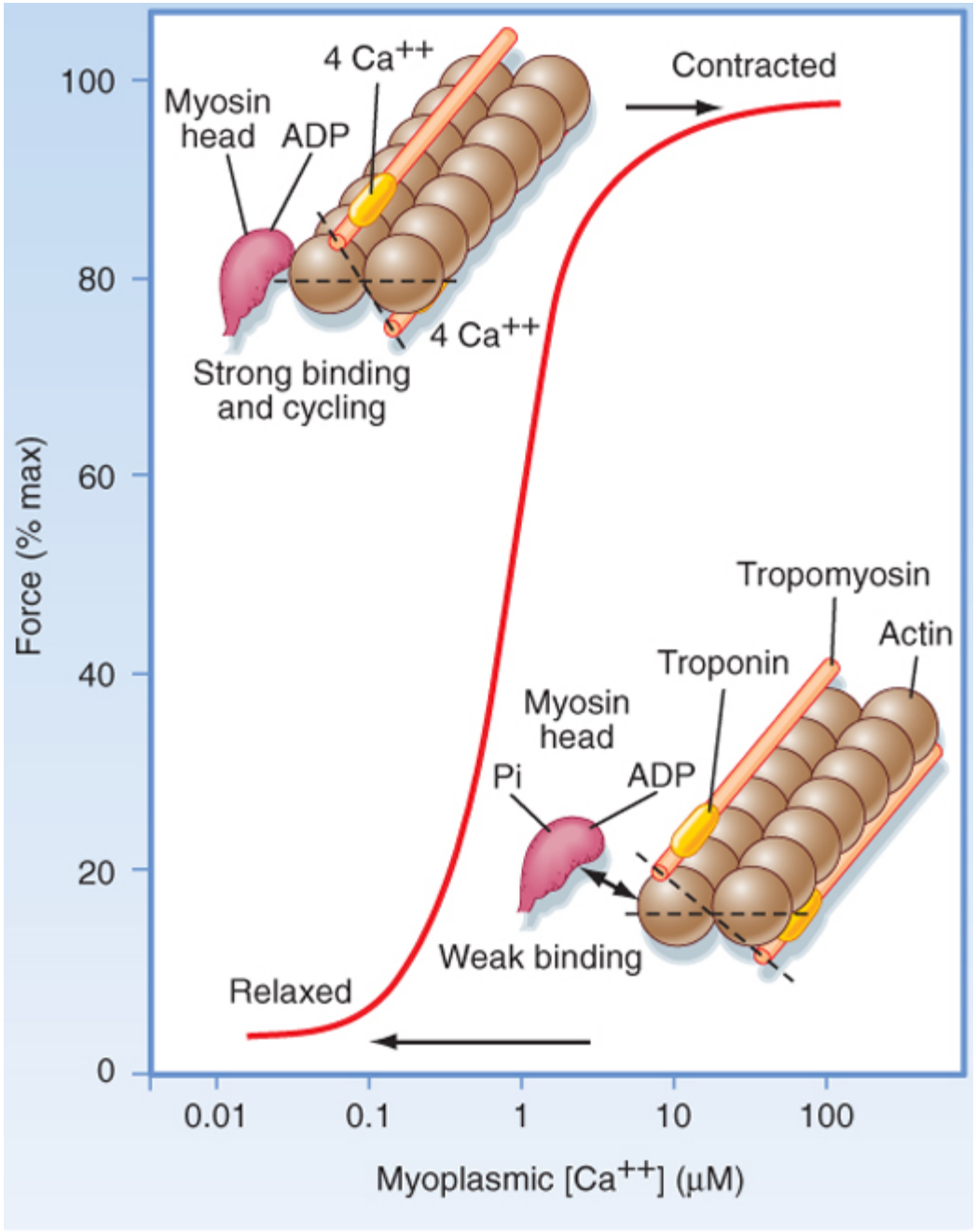
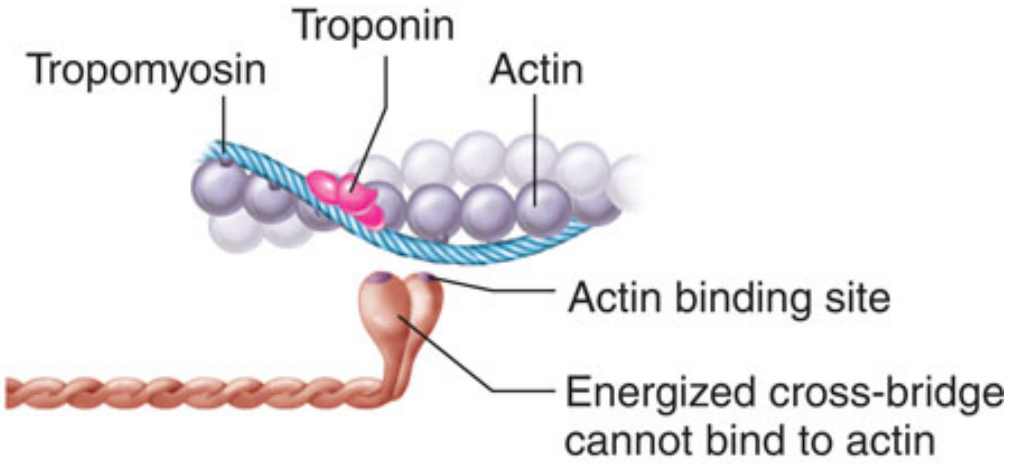


Koeppen & Stanton: Berne and Levy Physiology, 6th Edition.

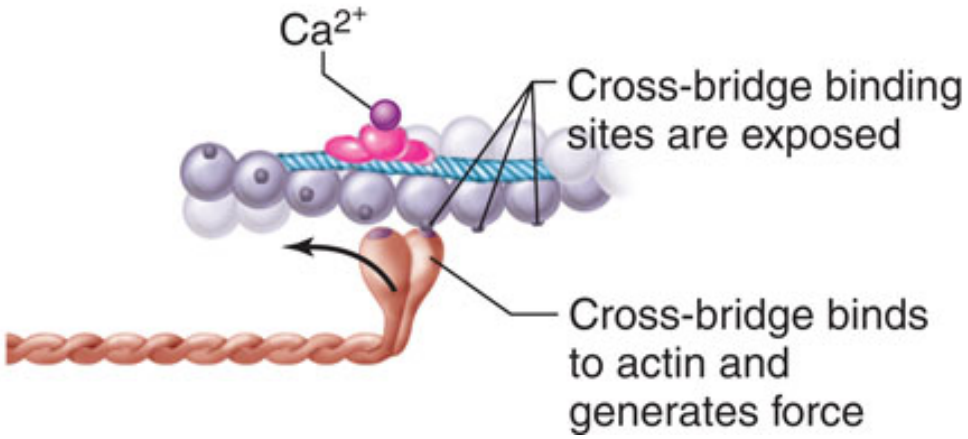
Figure 12-11 The contractile force of skeletal muscle increases in a Ca^{2+}-dependent manner as a result of binding of Ca^{2+} to troponin C and the subsequent movement of tropomyosin away from myosin binding sites on the underlying actin molecules. See text for details. (From MacLennan DH et al: J Biol Chem 272:28815, 1997.)

(a) Low cytosolic calcium, relaxed muscle



VSL[10] 9-9

(b) High cytosolic calcium, Activated muscle



Ruegg

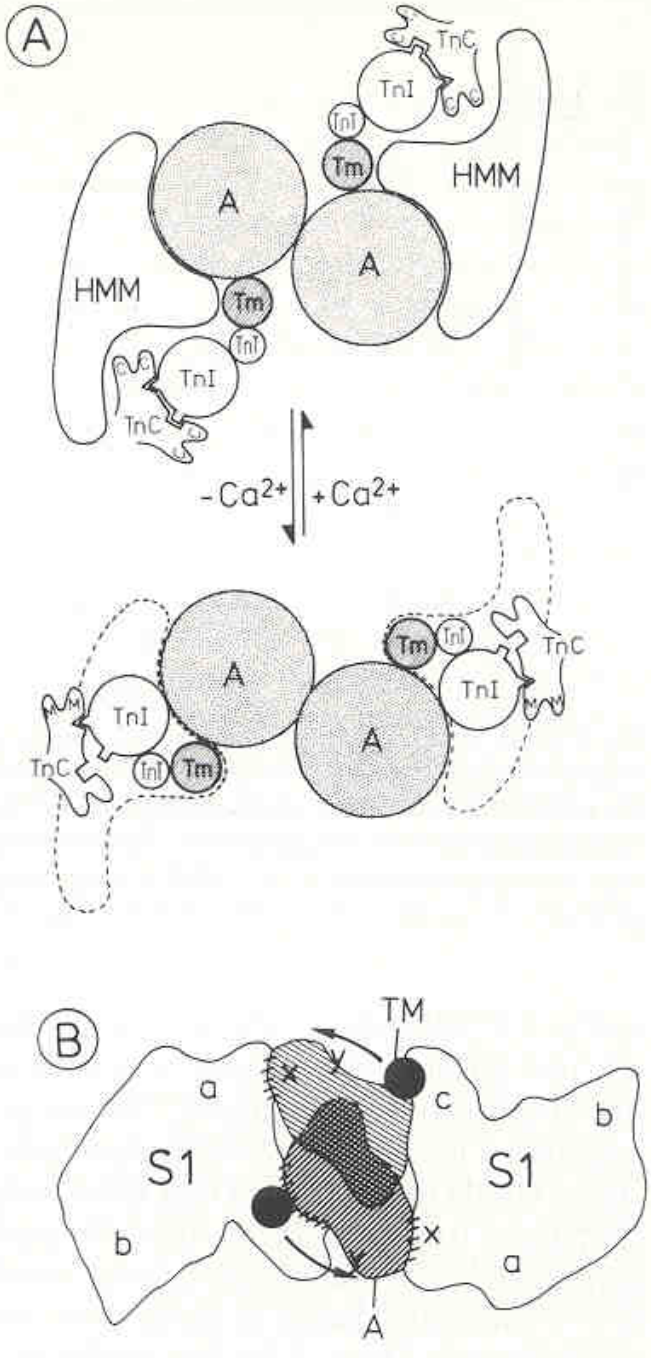
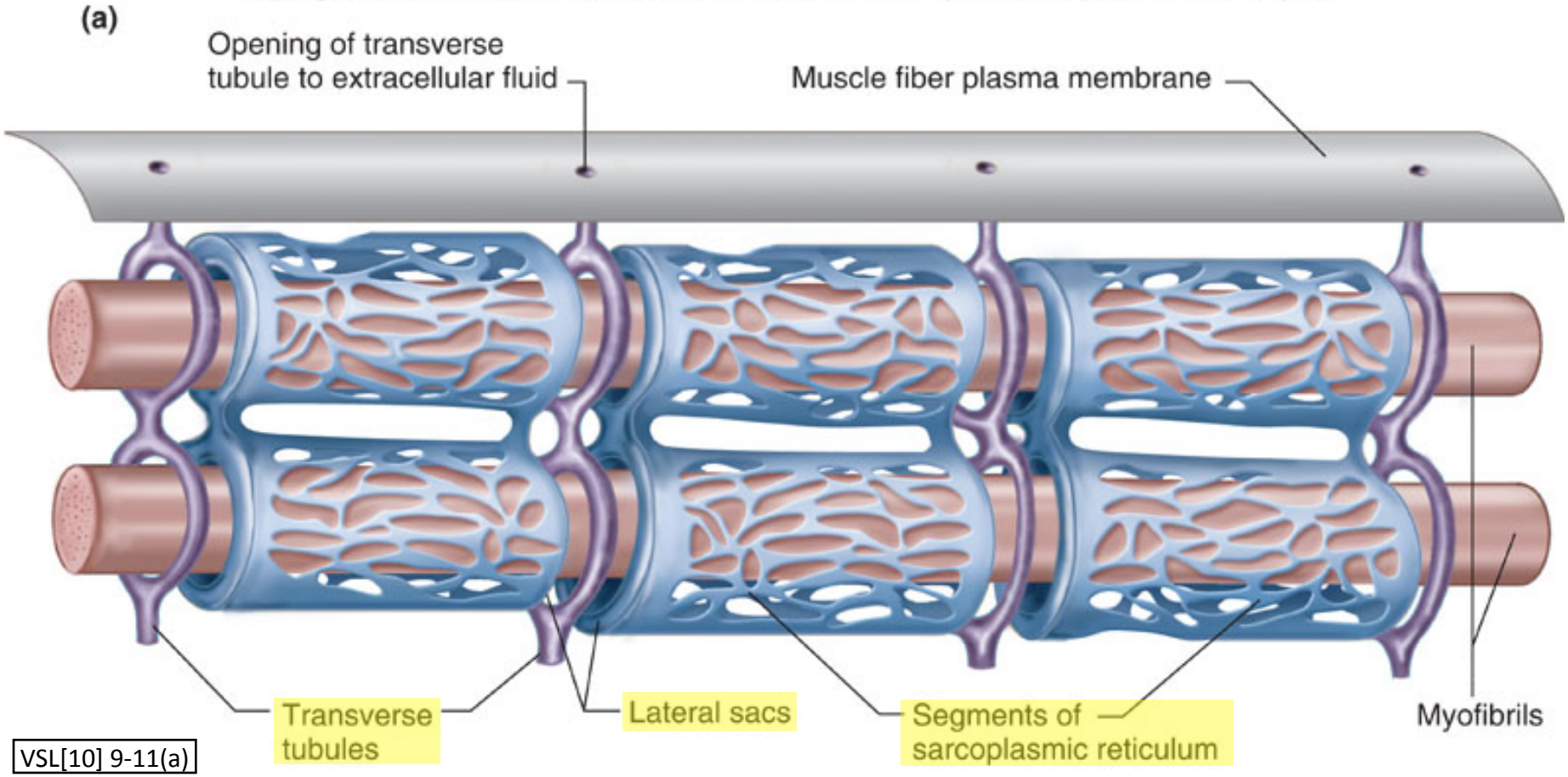
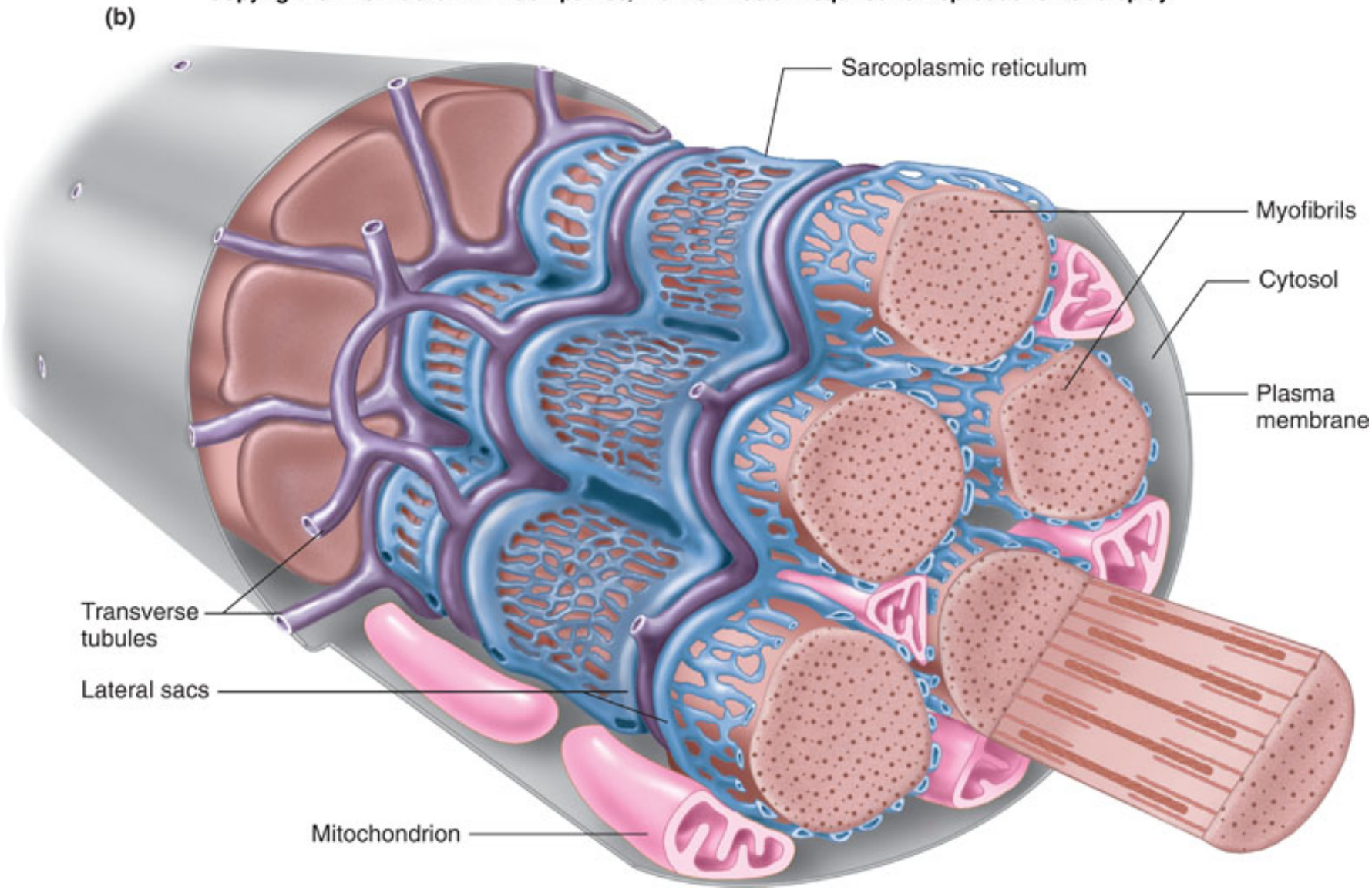


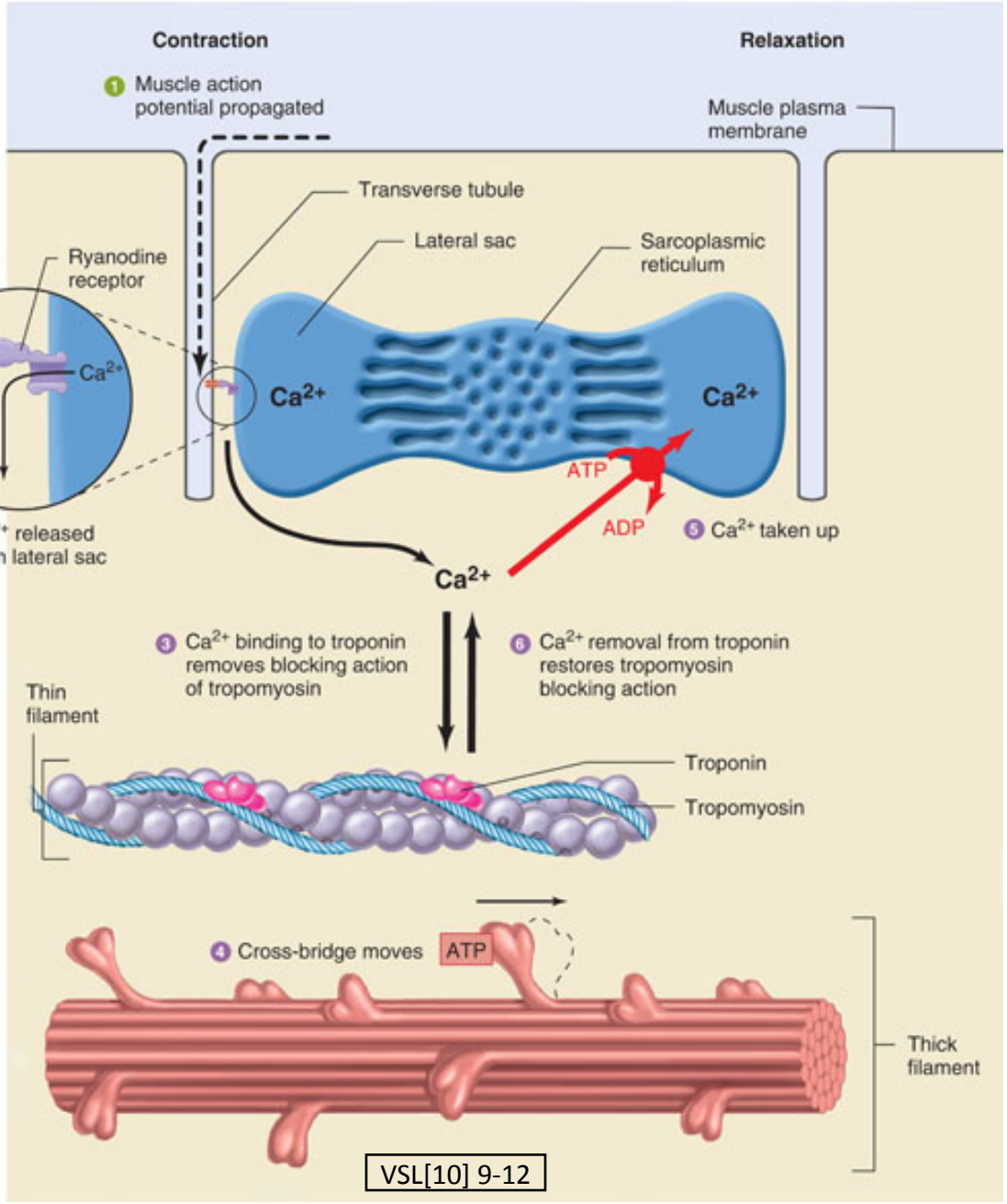
Fig. 4.4 A Model of regulation of skeletal muscle contraction showing the different interactions of troponin subunits, tropomyosin, HMM and actin at high (10^{-5}M) and low (10^{-7}M) concentration of Ca^{2+}. Upon Ca^{2+} activation troponin-C interacts more strongly with troponin-I, while bonds between troponin-I and actin are loosened. At the same time, tropomyosin moves towards the groove between the two actin strands, and crossbridges (HMM) attach to actin. Note that troponin-T interacts with both tropomyosin and troponin-I and possibly also with troponin-C (not shown). (After El-Saleh et al. 1986). *B* A more realistic diagram of the "cross-section" through a thin filament showing the interaction of subfragment-1 (S_1), tropomyosin (*TM*) and actin (*A*) in active muscle. *Arrows* indicate the direction of tropomyosin movement into the "off-position" (*x* or *y*) when the muscle relaxes. The subfragment-1 on the *left* lies 2.7 nm above S1 on the *right*. (After Egelman 1985)



VSL[10] 9-11(a)



VSL[10] 9-11(b)



VSL[10] 9-12

END

Video 4, Module 3