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## Effect of the Tn-Tm System on Contraction and Relaxation Processes in Glycerinated Muscle Fiber\*

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The effect of the Tn-TM system on contraction and relaxation was examined when  $\text{Ca}^{2+}$  and  $\text{Mg}^{2+}$ -ATP were added to glycerinated muscle fiber. Test solutions used for the  $\text{Ca}^{2+}$ - and  $\text{Mg}^{2+}$ -contraction were designated as  $\text{Ca}^{2+}$  and  $\text{Mg}^{2+}$ -ATP solutions, respectively. These solutions contained 0.1 mM  $\text{Ca}^{2+}$  in the former, and 4 mM  $\text{Mg}^{2+}$  and 2 mM ATP in the latter, and had pH 6.8. Each solution could be quickly exchanged with the other in a small chamber.  $\text{Ca}^{2+}$ -contraction tension was measured in  $\text{Ca}^{2+}$  solution after the fiber was treated with  $\text{Mg}^{2+}$ -ATP solution, and  $\text{Mg}^{2+}$ -contraction was observed in  $\text{Mg}^{2+}$ -ATP solution after conditioning in  $\text{Ca}^{2+}$  solution and then 0.1 mM EGTA solution. The rate of rise of  $\text{Mg}^{2+}$ -contraction was faster than that of  $\text{Ca}^{2+}$ -contraction. Consequently, the relaxation between rate of rise and  $\text{pCa}^{2+}$  in  $\text{Mg}^{2+}$ -contraction shifted toward the  $\text{Ca}^{2+}$ -sensitive direction compared to  $\text{Ca}^{2+}$ -contraction. Furthermore, after the contracted fiber relaxed in EGTA and  $\text{Mg}^{2+}$ -ATP solutions, release of actomyosin from the rigor was also regulated by the Tn-TM system.

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