Modal gating in neuronal and skeletal muscle ryanodine-sensitive Ca2+ release channels

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The bursting behavior of ryanodine-sensitive single Ca2+ release channels present in chicken cerebellum endoplasmic reticulum (ER), rat hippocampus ER, and frog and rabbit skeletal muscle sarcoplasmic reticulum was established. Unconditional dwell time distributions fitted by the maximum likelihood method reveal at least three open and closed exponential components. Trains of low open probability (P(o)) bursts were interspersed with trains of high P0, bursts (?0.8) in all the ryanodine receptor isotypes tested. The gating kinetics of the Ca2+ release channels were defined in long recordings by analyzing burst sequences and gamma distributions of average intraburst open (T(o)) and closed times (T(e)). The gamma distributions of T(o) had two gamma components, suggesting the existence of two distinct burst types. In contrast, the gamma distributions of T(e) had only one component. The correlation between consecutive burst pairs was defined in terms of T(o) and then statistically tested by