

# New understanding of the 'flight-or-fight' response

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New research in the *Journal of General Physiology* helps explain how the body's "flight-or-fight" response is mediated. The study, which may provide new answers to the question of how the heart pacemaker—the sinoatrial (SA) node—is regulated, appears online on August 16.

When the body goes into "flight-or-flight" response as a reaction to stress, the increased firing rate of the SA node increases the [heart](#) rate and cardiac output to deliver more oxygen and nutrients to peripheral tissues, especially skeletal muscles. There has been much debate recently about whether HCN channels or intracellular calcium [oscillations](#) are the main regulators of [heart rate](#).

Now, Catherine Proenza and co-workers (University of Colorado) lend new support to the HCN channels theory. The team shows that HCN channels in SA nodal cells are modulated by [protein kinase](#) A (PKA) and suggest that this modulation of HCN channels contributes to the increased firing rate of nodal cells.

According to Peter Larsson (University of Miami) in a Commentary accompanying the paper, the results might reduce some of the confusion in the field, providing a missing piece to the puzzle in explaining how the SA node mediates pacemaking in the heart.

**More information:** [www.jgp.org](http://www.jgp.org)

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