

Special Issue

Survival of the Fittest: Physiological Adaptations of Insects in Hostile Environments

Message from the Guest Editors

Insects have developed an array of abilities to endure hostile climates, such as extreme temperatures, arid environments, and high altitudes. These adaptations can be physiological, behavioural, or morphological, allowing insects to thrive in conditions challenging for many other organisms. For instance, insects can adjust their metabolisms, water balances, and other physiological processes to cope with climatic extremes. Developing adaptive behaviours can enable them to find more favourable microclimates, reduce exposure to extremes, and conserve energy. Interestingly, insects that live at high altitudes encounter unique challenges, such as low oxygen levels, cold temperatures, and increased ultraviolet (UV) radiation. They have evolved specific adaptations to thrive under such conditions. Last but not least, insects evolve adaptations to cope with host allelochemicals.

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