

A molecular control of temperature-dependent synaptic growth: Autophagy, Proteasome system and Map Kinases.

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**Brief abstract for RISE website:**

Responses to environmental cues are critical to ensure the success of an organism. Indeed, environmental stressors like temperature can affect the integrity of biological systems. The last decades have provided strong evidence of climate change and rising temperatures. We use *Drosophila melanogaster* to investigate how temperature can affect the development of the nervous system. We observed an increase of synaptic growth with increasing rearing temperature (15°C, 20°C, 25°C and 29°C). We use immunohistochemistry, genetics and molecular biology to understand the molecular mechanism underlying temperature-dependent synaptic growth. We tested different regulators of synaptic growth and found that the ubiquitin proteasome system, autophagy and the stress response Map kinases are involved in this regulation. In addition, this study should highlight new roles for the stress response molecules and their regulatory mechanisms, relevant to signalling pathways involved in cancer and neurodegenerative diseases.