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Hibernation is Super Complex: Dynamics of Electron Transport System Supercomplexes

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Hibernation is Super Complex: Dynamics of Electron Transport System Supercomplexes

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Thirteen-lined ground squirrels are obligate hibernators. They will cycle through bouts of torpor (low metabolic rate and body temperature) and interbout euthermia (IBE, high metabolic rate and temperature) from October to March every year, regardless of the conditions. It is still unknown exactly how hibernation works and how it is regulated so carefully each winter. My project is focused on exploring how mitochondria and the electron transport system (ETS) are involved with metabolic suppression, and finding differences between torpor, IBE, and summer liver mitochondria. Specifically, I am interested in determining if the complexes that make up the ETS associate with one another to form supercomplexes. Supercomplexes are thought to increase efficiency of energy generation and if there are differences in the abundance of supercomplexes between torpor, IBE, and summer, this may account for some of the observed metabolic suppression, and contribute to solving the puzzle of hibernation.