NASA selected Dragonfly as its latest medium-class robotic planetary space mission in 2019 June. The mission's science explores prebiotic chemistry, evaluates habitability, and searches for chemical biosignatures on Saturn's huge moon Titan.

Titan's draw derives from its status as an Ocean World. Like Europa, Enceladus, and potentially other icy outer solar system objects, Titan sports a liquid water ocean beneath its icy outer crust. But unlike those sister Ocean Worlds, Titan's surface and atmosphere contain a large quantity and complexity of carbon compounds. When liquid water develops transiently on Titan's surface -- either from cryovolcanism or impact melt -- water mixes with that surface organic material. Dragonfly will explore the chemistry of the resulting mixture at 80-km-diameter Selk Crater where that water, though now frozen, shows pathways for prebiotic chemistry that may resemble the process through which life formed on Earth 4 billion years ago. Taking advantage of Titan's thick atmosphere and low gravity, the Dragonfly vehicle moves around the surface as a giant octocopter instead of using wheels like Mars rover.

It will land at more than 20 sites along a >100km traverse during its 3.3-year prime mission. In my colloquium, I will discuss the specific scientific experiments that the Dragonfly lander will enable, as well as the instrumentation and exploration strategies that the science team will use to answer our science questions once we land by 2034.