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Wings allow an insect to perform a myriad of ecologically important behaviors including predation, migration, and pollination, and also serve as inspirations for insect-size micro-air vehicles. Perhaps surprisingly, insect wings are dynamic, living structures, composed of thin membranes and long tubular veins that provide both mechanical integrity and supply of vital substances. Veins act as conduits, containing oxygen supply (through tracheal tubes), nerves (sensory information in flight), and most importantly, hemolymph (insect blood), providing inspiration for new microfluidic designs. I am interested in how form relates to function in insect wings across the vast diversity of species. After building connections with the US Dept. of Agriculture to ensure a steady supply of live specimens, I conducted much of my PhD research into insect wings on the North American Locust (*Schistocerca americana*), a pest species that can be sustained in the laboratory with minimal resources, and that provides a unique (beyond *Drosophila*) and highly relevant model system. In my research, I strive to understand how wing health and function is maintained, and how these are related to insect development, behavior, and interactions within the ecosystem. I investigate internal wing vein structures to build accurate wing models to better understand the insect wing hydraulic system and how it can inspire biomimetic devices. My research program incorporates foundational physiology (wing vein structure, venation pattern, biomimetics), quantitative biomechanics of internal flows produced by insects (during circulation, wing expansion, flapping flight), and