

BU partners in 5-year, \$7.5M grant to study animal flight

EurekAlert

(Boston) ? The Office of Naval Research (ONR) has awarded a five-year, \$7.5 million grant to a team of researchers from Boston University, the University of Washington, the University of Maryland, and the University of North Carolina at Chapel Hill. The grant will fund a project entitled AIRFOILS (Animal Inspired Flight with Outer and Inner Loop Strategies), which will focus on the development of unmanned aircraft inspired by the flight mechanics and flight behavior of bats, birds and insects.

The Boston University team on the grant includes John Baillieul, Calin Belta, and Ioannis Paschalidis, professors in the College of Engineering; and Thomas Kunz, professor of biology, and Margrit Betke, professor of computer science, in the College of Arts & Sciences. The subcontract to BU is for \$3,127,730. The project's principal investigator, Kristi Morgansen, associate professor of electrical engineering at the University of Washington, received her BS and MS degrees in engineering from Boston University.

The focus of the project is to build a process for translating biological capabilities for agile flight in a range of environments for engineered flight vehicles. Engineered systems are typically complex in terms of computational requirements, weight and physical design. Biological systems on the other hand use a high number of simple sensors which provide data for limited aspects of flight control but demonstrate the ability to fly effectively in highly demanding environments, such as under the forest canopy, and can safely land on variable and moving terrain.

The project will require a careful composition of biological studies and engineering design, in which biological studies will be specifically informed by engineering goals and engineering methods will be motivated by biological data, resulting in novel, bio-inspired techniques across the boundary of engineering and biology. The researchers will investigate a range of species (bats, birds and insects), which will be studied on a neurological level, a laboratory-based macro scale, and in open field free flight.

In addition, the proposed research will produce innovative methods for studying and integrating biological and engineered systems. The resulting engineering and science has high relevance to and impact on defense-related capabilities for air vehicle applications and for translating capabilities from natural to engineered systems via a systemic methodology.

[SOURCE](#) [1]

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