

**CONCEPT CLEARANCE RECORD
FY 2017 RESEARCH INITIATIVE – NCATS**

TITLE: Development of Drone Labware

OBJECTIVE(S): The objective of this contract is to develop an autonomous drone capable of taking a laboratory consumable (such as a well plate) from one station to another.

DESCRIPTION: This contract would support the creation of an autonomous vehicle that could use in-room navigation techniques to perform the following operation sequence in a repeatable fashion:

- Take off from a base station
- Fly to a pick-up point
- Pick up a laboratory consumable
- Fly a predetermined path to the drop-off point
- Drop off the consumable
- Return to the base station

IMPORTANCE: There is a market opportunity for a small business to develop and eventually commercialize a lab drone for high-throughput screening (HTS) applications:

- Drones have a much greater range of motion than stationary robotic arms and are cheaper to maintain.
- In an HTS setting, it is difficult to have robotic arms in shared workspaces, due to synchronization concerns and the possibility of collision. Lab drones can occupy the same airspace, allowing for the coordination of multiple drones in the same work area.
- The open-source community is constantly developing new tools to make drones more efficient and cheaper.
- While there is a great deal of drone technology in the marketplace, its use in the lab is limited and not available to the research community, specifically in the HTS field.
- Lab drones can also be used in other lab tasks, such as handling of hazardous materials.
- By using low-cost, commercially available drones and open-source software, the realm of fully automated laboratory operations could become more accessible to facilities not currently equipped or funded for it.

HISTORY: NCATS has had success in using the [Small Business Innovation Research](#) contract mechanism to address needs for improvement in the HTS realm. NCATS believes that there would be a potential market opportunity for a small business to develop lab drone technology for HTS applications.

PROJECT/PROGRAM OFFICER(S):

Lili Portilla, M.P.A.

Director of Strategic Alliances

Office of Policy, Communications and Strategic Alliances

Phone: 301-217-2589

E-mail: portilll@mail.nih.gov

Sam Michael

Director of Automation and Compound Management
Division of Pre-Clinical Innovation
Phone: 301-217-5741
E-mail: michaelsg@mail.nih.gov