Registration Form

TEAM INFORMATION

Team Name/Project Title: Extrusion-Based 3D Printing of a Microfluidic Lab on a Chip Device

Department: Bioengineering

Faculty Advisor(s): Cassandra Howard, Steve Lammers

Primary Team Contact, email: Rachelle Walter, rachelle.walter@ucdenver.edu

Team Members (first name, last name, and e-mail): Rachelle Walter, rachelle.walter@ucdenver.edu; Justin LeDoux, justin.ledoux@ucdenver.edu; Robin Cross, robin.cross@ucdenver.edu; Meghan Arora, meghan.arora@ucdenver.edu

PROJECT INFORMATION

Description:

An open-source 3D BioPrinter that can simultaneously print two UV-curable materials and potentially a third material with the intention of printing microfluidic devices.

Abstract:

This project is being developed in order to enable the development of repeatable, customizable microfluidic devices using a simple user interface. This was accomplished by modifying an open-source 3D Bioprinter that can simultaneously print two UV-curable materials with the potential to add parts to print a third material. Currently, microfluidic devices are made by hand using molds, which can result in many errors and lead to difficulty replicating consistent products. The ability to create a microfluidic device in a simple, customizable and repeatable fashion will allow for more experiments to be performed on cells growing in conditions that resemble an organ without as much variability than if the cells would be seeded by hand. The ease and increased supply of microfluidic devices would thus advance medicine by providing other means to test a drug and could help decrease the number of adverse events that occur during clinical trials. The goal of this project is to lay the groundwork for researchers to be able to customize a three dimensional, multicellular structure that allows fluid flow to aid in their research. As the research is more available, the intent is that medicine will reach patients in a safer and potentially faster manner.

(rev 03/27/2017)