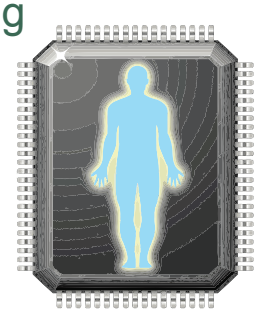
UNC
GILLINGS SCHOOL OF
GLOBAL PUBLIC HEALTH

Gillings Innovation Labs

Assessing Toxicity Through Innovative Technology

"Body-on-a-Chip" offers an innovative alternative to traditional testing



One of today's greatest public health challeges is the inability to easily predict which environmental compounds are toxic to humans. Current methods for testing compounds are cumbersome, time consuming, costly and require the use of hundreds of animals to assess only a few compounds. In response to the need for early identification of harmful agents and the international movement away from live animal testing, this innovation lab explores the simultaneous testing of a panel of human cells from numerous organs of the body, exposing them all at once to potentially toxic agents.

"Body-on-a-Chip" Technology: How We Get There

- ***What is the first step?***
  The first phase of the project tests the capacity to assess biological responses across a panel of human cells that have been selected because they are common targets for cancer. The cells will be exposed to known environmental contaminants to determine the feasibility of this new approach in toxicology testing.

- ***What is "Body-on-a-Chip" technology?***
  The "Body-on-a-Chip" device—a miniaturized multi-well device, the size of a microscope slide—that will hold numerous human cell types to be tested for their responses to various agents.

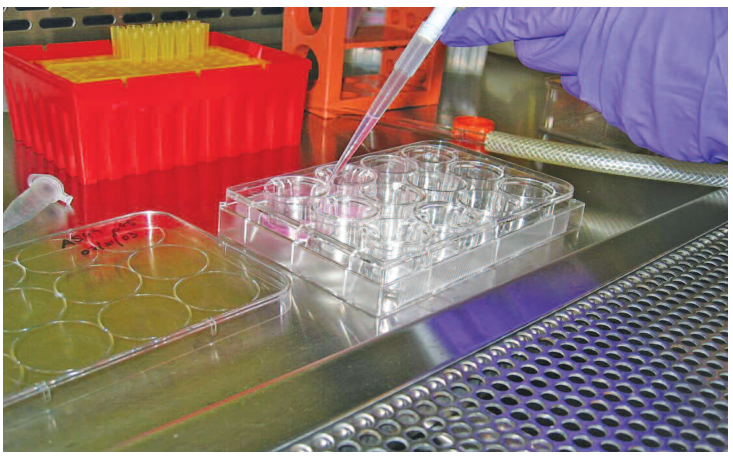
- ***Who will benefit?***
  In the short term, this tool will benefit researchers in academia, government and industry who are in need of rapid predictive toxicology testing that does not involve the use of animals. In the long term, research findings will help to protect humans from exposure to toxic agents.

IMPACT!
Identifying Toxic Agents

Rapid and efficient identification of potentially toxic agents protects individuals from exposure to harmful substances as well as from detrimental health effects, including cancer.

GOAL
To develop a cheaper, faster technique for toxicology testing to protect humans from the negative health effects resulting from exposure to toxic compounds

PARTNERS
Interdisciplinary researchers include systems biologists, toxicologists, and exposure scientists. They will partner with interested parties in government and industry.



Leadership

Rebecca Fry, PhD, assistant professor, environmental sciences and engineering, brings together an impressive multi-disciplinary team for the development of this novel public health solution for toxicology testing.