Apple announces advancements to ResearchKit

March 22 2016

Apple today announced advancements to the open source ResearchKit framework that bring genetic data and a series of medical tests typically conducted in an exam room to iPhone apps. Medical researchers are adopting these new features to design targeted studies for diseases and conditions that affect billions of people around the world and to gather more specific types of data from participants.

"The response to ResearchKit has been fantastic. Virtually overnight, many ResearchKit studies became the largest in history and researchers are gaining insights and making discoveries that weren't possible before," said Jeff Williams, Apple's chief operating officer. "Medical researchers around the world continue to use iPhone to transform what we know about complex diseases, and with continued support from the open source community, the opportunities for iPhone in medical research are endless."

ResearchKit turns iPhone into a powerful tool for medical research by helping doctors, scientists and other researchers gather data more frequently and more accurately from participants anywhere in the world using iPhone apps. Participants enrolled in these app-based studies can review an interactive informed consent process, easily complete active tasks or submit survey responses, and choose how their health data is shared with researchers, making contributions to medical research easier than ever.

By delivering ResearchKit as open source, any developer can quickly

design a research study for iPhone. They can also build on the available software code and contribute their tasks back to the community to help other researchers do more with the framework. Using a new module just released to the open source community, researchers are now able to incorporate genetic data into their studies in a seamless, simple and low cost way. Designed by 23andMe, the module allows study participants to easily contribute their genetic data to medical research. Researchers are also working with the National Institute of Mental Health to deliver "spit kits" to study participants based on a series of survey results.

"There's so much we still need to learn about postpartum depression and it may be DNA that provides the key to better understanding why some women experience symptoms and others do not," said Samantha Meltzer-Brody, MD, MPH, director of the Perinatal Psychiatry Program at the UNC Center for Women's Mood Disorders. "With ResearchKit, and now the ability to incorporate genetic data, we're able to engage women with postpartum depression from a wide geographic and demographic range and can analyze the genomic signature of postpartum depression to help us find more effective treatments."

"Collecting this type of information will help researchers determine genomic indicators for specific diseases and conditions," said Eric Schadt, PhD, the Jean C. and James W. Crystal Professor of Genomics at the Icahn School of Medicine at Mount Sinai, and Founding Director of the Icahn Institute for Genomics and Multiscale Biology. "Take asthma, for example. ResearchKit is allowing us to study this population more broadly than ever before and through the large amounts of data we're able to gather from iPhone, we're understanding how factors like environment, geography and genes influence one's disease and response to treatment."

ResearchKit studies incorporating genetic data:

- Postpartum Depression: PPD Act is a new app-based study that will use genetic testing to better understand why some women are impacted by postpartum depression by examining the genetic makeup of those with the condition. Led by the University of North Carolina School of Medicine and the international Postpartum Depression: Action Towards Causes and Treatment Consortium, PPD Act will offer study participants access to a "spit kit" from the National Institute of Mental Health.
- Cardiovascular Disease: Developed by Stanford Medicine, the MyHeart Counts app will use genetic data from existing 23andMe customers to help determine predisposition to heart conditions and measure how a participant's activity and lifestyle relate to cardiovascular health. By studying these relationships on a broad scale, researchers hope to be able to better understand how to keep hearts healthy.
- Asthma: The Asthma Health app, designed to track symptom patterns in an individual and identify potential triggers for these symptoms, will use genetic data from 23andMe customers to help researchers better understand ways to personalize asthma treatment. Asthma Health is designed by the Icahn School of Medicine at Mount Sinai and LifeMap Solutions.

Researchers continue to adapt ResearchKit and build on the framework by contributing new modules that bring exam room medical tests to iPhone apps. Key contributions include the ability to study tone audiometry; measure reaction time through delivery of a known stimulus to a known response; assess the speed of information processing and working memory; use the mathematical puzzle Tower of Hanoi for cognition studies; and conduct a timed walk test.

ResearchKit studies continue to expand internationally and are available in Australia, Austria, China, Germany, Hong Kong, Ireland, Japan, Netherlands, Switzerland, the UK and the US. ResearchKit apps are

available on the App Store for iPhone 5 and later, and the latest generation of iPod touch.

Provided by Apple