

# The Precision Medicine Initiative at the UA

By Charles B. Cairns, MD, Dean, UA College of Medicine – Tucson



In July, the UA and Banner Health were awarded a multi-million dollar research grant from the National Institutes of Health (NIH) to participate in the Precision Medicine Initiative® Cohort Program, which aims to enroll 1 million U.S. participants to improve prevention and treatment of disease based on individual differences in

lifestyle, environment and genetics. The award, which totals \$43.3 million over five years, is the largest NIH peer-reviewed grant in Arizona history.

## What is Precision Medicine?

Precision medicine is a novel health-care platform that incorporates individual variability in genes, environment and lifestyle to improve diagnosis and

treatment of disease and to promote disease prevention. Precision medicine seeks to redefine our understanding of disease onset and progression, treatment response and health outcomes through the more precise measurement of molecular, environmental and behavioral factors that contribute to health and disease. Precision medicine approaches have the promise to deliver:

- More accurate diagnoses.
- Rational disease prevention strategies.
- More accurate prediction of disease risk and patient stratification.
- Development of targeted therapies for more effective treatment of disease and minimization of adverse reactions.
- Improvements in cost effectiveness of health-care delivery.
- Empowerment tools for patient self-management.

## Precision Medicine Today

The NIH Human Genome Project ([www.genome.gov/](http://www.genome.gov/))



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10001772), completed in 2003, provides the framework for understanding both the human genome in disease and the potential for genome-based interventions. The evolution in information technology now allows for the practical aggregation and ready analysis of big data, and electronic health records now are available in 95 percent of U.S. hospitals.

In addition, there has been a personal technology revolution with high levels of access to mobile phones and social media. There has also been an explosion in the number of home-based and consumer-operated medical technologies such as wearable sensors, blood pressure devices and automated cardiac defibrillators.

In fact, there are more than 150 FDA-approved drugs that require genomic information for prescription and/or monitoring of treatment outcomes. The selective targeting of genomes currently is used in the management of cystic fibrosis, HIV, lung cancer, melanoma and other diseases.

### **The Precision Medicine Initiative® Cohort Program**

The Precision Medicine Initiative® (PMI) Cohort Program ([www.nih.gov/precision-medicine-initiative-cohort-program](http://www.nih.gov/precision-medicine-initiative-cohort-program)) was announced by President Barack Obama in his 2015 State of the Union address and will enable a new era of medicine through research, technology and policies that empower patients, researchers and providers to work together toward development of individualized care.

The PMI Cohort Program is one of the most ambitious biomedical research projects in history given its size and scope. The program will launch later this year and will enroll over 1 million participants, reflecting the broad diversity of the U.S.

The program will be big enough to enable statistically valid research for a wide range of diseases (both common and rare) across broad population groups and a wide variety of health outcomes.

Potential scientific opportunities include:

- The development of new ways to measure disease risk based on environmental exposures, genetic factors and their interactions.
- Identification of the causes of inter-individual differences in response to therapeutics.
- The discovery of biological markers that signal increased or decreased risk of developing various diseases.
- The use of mobile health (mHealth) technologies to correlate activity, physiological measures and environmental exposures with health outcomes.
- The creation of new disease classifications and sub-classifications.

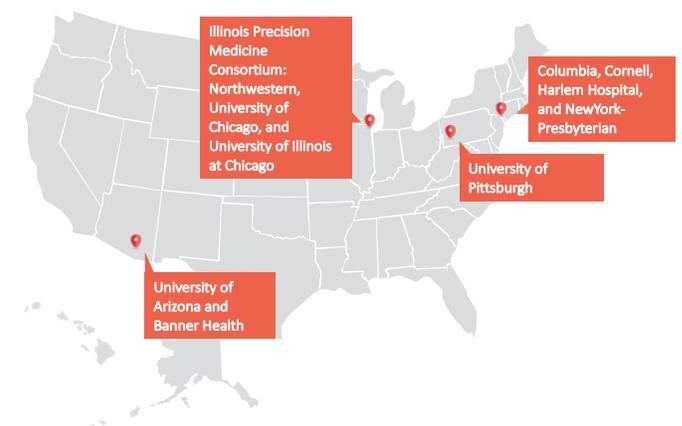
The PMI Cohort Program aims to create a highly engaged population of active research participants who

not only will share their biological, health, lifestyle and environmental data, but also will have access to their study results and be partners in the discovery process. Safeguards have been developed to ensure the security and privacy of individual information and data.

The UA Health Sciences and Banner Health will enroll 150,000 participants from the Southwest region, Alaska and Wyoming over five years and will make a significant contribution to the diversity of enrolled participants in the PMI Cohort Program. The inclusion of American Indian/Alaska Native and Hispanic/Latino participants, among other populations historically underrepresented in research, will provide greater insights to disease prevention and treatment.

The UA-Banner team is part of a network of regional health-care provider organizations (HPOs) participating in this effort to understand the factors contributing to individual health and disease. HPOs will engage their patients in the PMI Cohort Program, build research protocols and plans, enroll interested individuals and collect essential health data and biological specimens

### **Academic health-care providers in the initial PMI Cohort Program**



### **What you can do to help the PMI Cohort Program**

By launching a study of this size and scope, we hope to accelerate our understanding of disease onset and progression, treatment response and health outcomes, and we hope you will join us in this landmark project. Anyone living in the United States will be able to participate, and when the NIH opens enrollment, please consider signing up. In addition, you can serve as a champion when patients or colleagues ask you about the Precision Medicine Initiative.

You can stay informed of local efforts by emailing [precisionmedicine@email.arizona.edu](mailto:precisionmedicine@email.arizona.edu). Submitting this form allows us to contact you later to share more information about the program but does not commit you to enrolling in the study. ■