

Behavioral/Social Discovery

The social and behavioral sciences play a dual role in precision medicine. The first is integrating information on lifestyle and exposures – demographics, environment, social support, sleep, exercise habits and the like – into a comprehensive picture of each individual's health.

The second role is studying how patients and practitioners interact with emerging precision medicine approaches and technologies, to gain understanding that will lead to better policies and best practices.

We know that a broad range of social, behavioral and environmental factors contribute to health. But knowledge about those factors and how they might correlate with disease or treatment responses isn't usually on hand while a health care provider is advising a patient. With the help of Computational Health Sciences [1] and as the knowledge network [2] is developed, patients and providers will be able to see how social and behavioral factors relate to the patient in front of them. Practitioners, as well as patients themselves, using digital health [3] tools, could contribute patients' personal data to the network, to build scientific evidence about those connections. This knowledge can, in turn, improve individuals' understanding of their health, empower them to make behavioral changes that prevent disease, and improve their compliance with therapies.

To this end, UCSF behavioral researchers such as Nancy Adler, PhD, are working to include social and behavioral data in electronic health records (EHR). These data could be mined in conjunction with other clinical data to generate new knowledge about how social conditions such as isolation or lifestyle affect health, disease risk and patient outcomes.

Because the UC patient population is so diverse, lessons learned about the effect of particular practices or lifestyles on gene expression and health outcomes will be applicable to people worldwide.

Achieving precision medicine depends not only on data about health and disease, but also on social and behavioral information about how patients and providers interact with the processes of precision medicine. With insights into how well individuals understand their health and illnesses, patients' ability to comply with treatment plans and their willingness to share data, practitioners can devise policies and best practices to enable the largest number of people to contribute to and benefit from precision medicine.

Current projects:

Precision Public Health Summit

In June 2016 UCSF hosted the Precision Public Health Summit [4], a partnership with the White House and the Bill and Melinda Gates Foundation

[5], to discuss how precision medicine approaches can be successfully applied in the public health arena. This two day summit focused on the first 1000 days, a critically important developmental period for infants and children. The report out may be read here [6].

Global Preterm Birth Initiative

We've partnered with the Global Preterm Birth Initiative at UCSF Benioff Children's Hospitals [7]. Focused on biological, behavioral, and social factors that drive premature birth, the initiative seeks to define cultural and social barriers to the adoption of healthy practices, and to contribute to the development of new treatments and diagnostic tools. When added to the knowledge network (link), these data may reveal links and correlations to other data layers.

UCSF/Kaiser Permanente Project on Genetics, Health and Environment

In 2009, UCSF and Kaiser Permanente [8] launched a massive project to analyze genomic data from more than 100,000 California volunteers and link them to decades of clinical and pharmacy records, and environmental health data. This extensive and diverse data set, which is now available to all researchers through the NIH, has revealed genomic variants linked to prostate cancer, diabetes and other diseases; uncovered molecular features related to aging; and provided insight into the relation between genetic ancestry and social categories of racial and ethnic identity.

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UCSF Main Site

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Source URL: <https://precisionmedicine.ucsf.edu/content/behavioralsocial-discovery>

Links

[1] <https://precisionmedicine.ucsf.edu/node/36>

[2] <https://precisionmedicine.ucsf.edu/node/37>

[3] <https://precisionmedicine.ucsf.edu/node/34>

[4] <https://www.ucsf.edu/precision-public-health-summit-first-1000-days>

[5] <https://www.ucsf.edu/news/2016/06/403221/white-house-gates-foundation-summit-explores-applying-precision-medicine-public>

[6] http://precisionmedicine.ucsf.edu/sites/precisionmedicine.ucsf.edu/files/PPHS-Summit-Report-September2016_0.pdf

[7] <http://globalhealthsciences.ucsf.edu/news-events/ucsf-launches-100-million-global-preterm-birth-initiative>

[8] <https://www.ucsf.edu/news/2014/02/112161/kaiser-permanente-and-ucsf-add-substantial-genetic-health-information-nih-online>