Personal health monitoring and preventative medicine with integrative personal Omics profiling

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With the advent of new high-throughput technologies it is now possible to monitor profiles of thousands of molecules in a longitudinal manner that may help reshape and redefine personalized medicine. Comprehensive personal healthy monitoring is expected to benefit from combining genomic information with regular examination of physiological states by multiple high-throughput methods. To prove this principle, we performed an integrative Personal Omics Profile (iPOP) analysis from a single individual over a 14-month period, combining genomic, transcriptomic, proteomic, metabolomic, and autoantibodyomic information collected from over 20 time points. Our iPOP analysis unveiled extensive, dynamic molecular changes across various physiological stages. Medical risks were also evaluated using genomic information, including Type 2 Diabetes (T2D) as a high risk disease, the onset of which was observed during the course of our study and is reflected in our iPOP data. Our study demonstrates that personal health monitoring with longitudinal iPOP could relate genomic information and global functional omics activity to physiological and medical interpretation, and eventually benefit personalized medicine.

Biography

Dr. Rui Chen completed his Ph.D. at Yale University in 2008 with the John Spangler Nicholas Prize, a prestigious award for most outstanding Ph.D. candidates in Biology, and is currently a Postdoctoral Scholar training with Dr. Michael Snyder at Yale University and Stanford University. Dr. Chen has extensive experience in disease-related research and disease-orientated technology development, and is currently focusing on personalized healthy monitoring and preventative medicine with next-generation, high-throughput technologies.

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