

Integration of Multi-Omics in Type 2 Diabetes and Related Disorders Research

1. DNA differential methylation explains at least 16.9% of the association between obesity and insulin. (*this thesis*)
2. Among the low risk populations, a multi-metabolite risk prediction model predicts future type 2 diabetes better than fasting glucose. (*this thesis*)
3. Large high-density-lipoprotein (HDL) particles and small HDL particles have distinct causal associations with glucose. (*this thesis*)
4. The blood pressure-related phosphatidylethanolamines (PE) 38:3, PE 38:4 and Phosphatidylcholines (PC) 40:5 are under control of fatty acid desaturase pathways which links them to lipoproteins, blood cell counts (white, red and platelet) and pulse rate. (*this thesis*)
5. Circulating metabolites from very low-density-lipoprotein (VLDL) and large HDL particles to small molecular, e.g. monounsaturated fatty acids, isoleucine, creatinine and glycoprotein link liver function to gut microbiome in case of proton pump inhibitor use. (*this thesis*)
6. Omics studies, by their nature, rely on large numbers of comparisons, tailored statistical analyses, and a considerable investment of time, skilled manpower, and money. (*Hasin, et al., Genome Biology, 2017*)
7. It is important to understand which “at-risk” individuals are most likely to progress to overt disease. (*Wang, et al., Nat Med, 2011*)
8. The tens of thousands of small molecules circulating in the blood can reflect many causal chains of events between genes, traits, and critically, the environment. (*Edward Lau, et al., Circulation Research, 2018*)
9. The focus of metabolomic studies is shifting from cataloguing chemical structures to finding biological stories. (*Baker M., Nat Methods, 2011*)
10. It is now possible to define metabolic signatures of drug exposure that can identify pathways involved in both drug efficacy and adverse drug reactions. (*Kaddurah-Daouk, et al., Clin Pharmacol Ther, 2014*)
11. A man should look for what is, and not for what he thinks should be. (*Albert Einstein*)

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