



















- 10.1038/s41430-020-00781-6.
- [38] Holmes MV, Millwood IY, Kartsonaki C, et al. Lipids, lipoproteins, and metabolites and risk of myocardial infarction and stroke [J]. *J Am Coll Cardiol*, 2018, 71(6): 620-632. DOI:10.1016/j.jacc.2017.12.006.
- [39] Pang Y, Kartsonaki C, Du H, et al. Physical activity, sedentary leisure time, circulating metabolic markers, and risk of major vascular diseases [J]. *Circ Genom Precis Med*, 2019, 12(9):386-396. DOI:10.1161/CIRCGEN.118.002527.
- [40] de Tayrac M, Le S, Aubry M, et al. Simultaneous analysis of distinct Omics data sets with integration of biological knowledge: Multiple Factor Analysis approach [J]. *BMC Genomics*, 2009, 10:32. DOI:10.1186/1471-2164-10-32.
- [41] Cisek K, Krochmal M, Klein J, Mischak H. The application of multi-omics and systems biology to identify therapeutic targets in chronic kidney disease [J]. *Nephrol Dial Transplant*, 2016, 31(12): 2003-2011. DOI: 10.1093/ndt/gfv364.
- [42] Reimand J, Isserlin R, Voisin V, et al. Pathway enrichment analysis and visualization of omics data using g:Profiler, GSEA, Cytoscape and EnrichmentMap [J]. *Nat Protoc*, 2019, 14(2):482-517. DOI:10.1038/s41596-018-0103-9.
- [43] Paczkowska M, Barenboim J, Sintupisut N, et al. Integrative pathway enrichment analysis of multivariate omics data [J]. *Nat Commun*, 2020, 11(1): 735. DOI: 10.1038/s41467-019-13983-9.
- [44] Zhou W, Sailani MR, Contrepolis K, et al. Longitudinal multi-omics of host-microbe dynamics in prediabetes [J]. *Nature*, 2019, 569(7758): 663-671. DOI: 10.1038/s41586-019-1236-x.
- [45] Schussler-Fiorenza Rose SM, Contrepolis K, Moneghetti KJ, et al. A longitudinal big data approach for precision health [J]. *Nat Med*, 2019, 25(5): 792-804. DOI: 10.1038/s41591-019-0414-6.
- [46] Liu J, Lahousse L, Nivard MG, et al. Integration of epidemiologic, pharmacologic, genetic and gut microbiome data in a drug-metabolite atlas [J]. *Nat Med*, 2020, 26(1):110-117. DOI:10.1038/s41591-019-0722-x.
- [47] Ahadi S, Zhou W, Schussler-Fiorenza Rose SM, et al. Personal aging markers and ageotypes revealed by deep longitudinal profiling [J]. *Nat Med*, 2020, 26(1):83-90. DOI: 10.1038/s41591-019-0719-5.
- [48] Zhang Q, Lou Y, Yang J, et al. Integrated multiomic analysis reveals comprehensive tumour heterogeneity and novel immunophenotypic classification in hepatocellular carcinomas [J]. *Gut*, 2019, 68(11): 2019-2031. DOI: 10.1136/gutjnl-2019-318912.
- [49] Pang YJ, Lyu J, Yu CQ, et al. Risk factors for cardiovascular disease in the Chinese population: recent progress and implications [J]. *Global Health Journal*, 2020, 4(3): 65-71. DOI: 10.1016/j.glohj.2020.08.004.
- [50] Millwood IY, Bennett DA, Holmes MV, et al. Association of CETP gene variants with risk for vascular and nonvascular diseases among Chinese adults [J]. *JAMA Cardiol*, 2018, 3(1): 34-43. DOI: 10.1001/jamacardio.2017.4177.
- [51] Folkersen L, Gustafsson S, Wang Q, et al. Genomic and drug target evaluation of 90 cardiovascular proteins in 30,931 individuals [J]. *Nat Metab*, 2020, 2(10): 1135-1148. DOI: 10.1038/s42255-020-00287-2.
- [52] The SCALLOP Consortium [EB/OL]. [2020-11-20]. <https://www.olink.com/scallop/>.
- [53] Yu B, Zanetti KA, Tempresa M, et al. The Consortium of Metabolomics Studies (COMETS): metabolomics in 47 prospective cohort studies [J]. *Am J Epidemiol*, 2019, 188(6):991-1012. DOI:10.1093/aje/kwz028.
- [54] Mayers JR, Wu C, Clish CB, et al. Elevation of circulating branched-chain amino acids is an early event in human pancreatic adenocarcinoma development [J]. *Nat Med*, 2014, 20(10):1193-1198. DOI:10.1038/nm.3686.