

Genome Biology

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Major Scientific Interests of the Group

The main research interests in our group is genomics and epigenomics in space life science and clinical research, with particular focus on development of technologies for limited sample analysis. We also collaborate with clinicians and industry partners to implement our methods to personalized medicine and automated laboratory testing using AI and robotics.

Projects for Regular Students in Doctoral or Master's Programs

- 1) Clinical sample analysis using chromatin immunoprecipitation combined with 2nd generation sequencing (ChIPseq) and RNAseq, data analysis and validation of potential disease biomarkers.
- 2) Genomics and epigenomics analysis in space research projects

Study Programs for Short Stay Students (one week – one trimester)

- 1) Access to genomics databases, integrative analysis of regulatory regions, gene expression and genetic variations.
- 2) Genomics and epigenomics assays, chromatin immunoprecipitation, RNA assays and genotyping.

Selected Publications

- 1) Kumar V*, Rayan NA*, Muratani M*, Lim S, Elanggovan B, Lixia X, Lu T, Makhija H, Poschmann J, Lufkin T, Ng HH, Prabhakar S. Comprehensive benchmarking reveals H2BK20 acetylation as a distinctive signature of cell-state-specific enhancers and promoters. *Genome Res.* pii: gr.201038.115, 2016. (*Equal contribution)
- 2) Muratani M, Deng N, Ooi WF, Lin SJ, Xing M, Xu C, Qamra A, Tay ST, Malik S, Wu J, Lee MH, Zhang S, Tan LL, Chua H, Wong WK, Ong HS, Ooi LL, Chow PK, Chan WH, Soo KC, Goh LK, Rozen S, Teh BT, Yu Q, Ng HH, Tan P. Nanoscale chromatin profiling of gastric adenocarcinoma reveals cancer-associated cryptic promoters and somatically acquired regulatory elements. *Nat Commun.* 5:4361, 2014.