



## Masafumi Muratani

Faculty of Medicine

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### Theme

- Genome Biology

**Keyword** Limited sample analysis, protocol standardization and automation

### Highlight

#### 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.

### Applications and Prospects

- MM is Senior Research Fellow of Genome Science Research Center, LSI Medience Corporation through cross-appointment system of University of Tsukuba, and Research Advisor of Robotic Biology Institute Inc.

### Literature, intellectual property, work

- Rutter L, Barker R, Bezdán D, Cope H, Costes SV, Degoricija L, Fisch KM, Gabitto MI, Gebre S, Giacomello S, Gilroy S, Green SJ, Mason CE, Reinsch SS, Szewczyk NJ, Taylor DM, Galazka JM, Herranz R, Muratani M. A New Era for Space Life Science: International Standards for Space Omics Processing. *Patterns*. 1(9):100148, 2020.
- 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, WongWK, Ong HS, Ooi LL, Chow PK, ChanWH, 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.