

Bioinformatics/Medical AI

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We have analyzed large amounts of omics data, such as genome sequences, to discover the biological knowledge hidden in them, and developed technologies to realize them. We are now studying how the intestinal microbiota relates to health, and also conducting cancer genome data analysis for the realization of precision medicine. In addition, we are actively developing artificial intelligence for medical use.



Research interests

1. Cancer genome data analysis.
2. Development of Artificial Intelligence for medical use.
3. Disease profiling in human gut microbiome data.
4. Database construction.
5. Development of pathway and network analysis technology.
6. Novel analysis method development for various types of omics data.

Materials and methods for collaborations

1. High-performance computer system (Grid computing system)
2. Computational data analysis system for various data types of genome, transcriptome, proteome, metabolome including single cell and metagenome data.
3. Repository databases for glycomics and proteomics.
4. Medical AI development platform.

Links to additional info

1. Okuda S, et al. Profiling of host genetic alterations and intra-tumor microbiomes in colorectal cancer. *Comp Struct Biotech J.* 19: 3330-3338, 2021.
<https://doi.org/10.1016/j.csbj.2021.05.049>
2. Shimada Y, et al. Histopathological characteristics and artificial intelligence for predicting tumor mutational burden-high colorectal cancer. *J Gastroenterol.* 56:547-559 2021. <https://doi.org/10.1007/s00535-021-01789-w>
3. Okuda S, et al. jPOSTrepo: an international standard data repository for proteomes. 45:D1107-1111, 2017. <https://doi.org/10.1093/nar/gkw1080>
4. Lab HP (English). <https://bioinfo.med.niigata-u.ac.jp/?lang=en>