

患者由来オルガノイドを用いた大腸がん研究

Patient derived organoid bank as a platform to investigate colorectal cancer.

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Colorectal cancer (CRC) is caused by genetic alterations, and comprehensive sequence analyses have revealed the mutation landscapes. Despite this progress, many important biological questions remain to be solved. Patient derived organoids (PDOs) faithfully recapitulate the genetic alterations of tumor tissues. They are more physiologically relevant model than conventional culture system, and thus provide us the opportunities to address key issues of tumorigenesis. We have established a series of PDOs from surgical specimen of CRC patients. These include familial adenomatous polyposis coli (FAP) patient, which provide us multiple PDOs harboring various somatic mutations under the identical genetic background. They are useful resources to explore the role of genetic alterations in tumor forming potentials as well as to evaluate the response to the chemotherapeutic agents. We also established patient-matched PDOs from primary tumor and corresponding metastatic lesions. Comprehensive analysis have identified key molecules regulating metastasis and cellular heterogeneity. I would like to take this opportunity to share our recent data of PDO analysis, and to discuss on their potentials for developing therapeutics and personalized medicine.