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## **Professor Hansoo Park's joint research team presents a new link between evolutionary cancer gene mutation and anti-cancer resistance through genetic analysis**

- GIST (Acting President Hor-Gil Hur) – A joint research team led by Professor Hansoo Park and Seoul National University College of Medicine Professor Sung-Yup Cho have shown that the evolutionary genetic variation of the cancer tissue during the transition process can be different from the anti-cancer response and suggested a new anti-cancer response strategy.
  - Despite medical advances in cancer treatment, many patients still suffer from the treatment process. Even after successful treatment, cancer is difficult to treat and patients can suffer from recurrence and metastasis. Cancerous tissues, especially in the process of metastasis, develop evolutionary mutations, and the clinical implications of genetic changes have yet to be identified.
- Genomic analysis has shown the evolution of transcriptomic and epigenetic changes during colorectal cancer metastasis and the diversity of genetically distinct subclones \*. The patient-derived xenotransplantation mouse model confirmed that mutations or

changes in gene expression obtained in this process can lead to various differences in chemotherapeutic tolerance or therapeutic response in vivo.

\* Subclones: cells with new mutations

- The results of this study suggest that the treatment of metastatic colorectal cancer patients should consider the differences in chemotherapeutic response in metastatic tissues because the cancer tissues may be metastasized and the clones may be different from the primary cancer tissues. In this case, a mouse model was used to demonstrate that the reactivity of the chemotherapeutic agent can be predicted before treatment in metastatic cancer patients.
- GIST Professor Hansoo Park said, "In the past, it was difficult to accurately predict resistance and recurrence of cancer treatment in cancer patients, but genetic analysis can provide individualized prognosis for metastatic cancer patients."
  - He continued, "In recent years, there has been a growing worldwide interest in precision medicine, which recognizes individual differences in disease. In this study, clinical genome analysis was used to identify patients' genomes and select appropriate therapies. This is expected to reduce the economic burden on patients and the nation, leading to efficient treatment and increased survival rates."
- This study was conducted by Professor Hansoo Park of the Department of Biomedical Science and Engineering, Professor Jong-Il Kim of Seoul National University, and Professor Sung-Yup Cho of the Seoul National University College of Medicine. The results of the study were published in *Clinical Cancer Research* (IF: 10.199 top 5% of AACR) on January 22, 2019.
- Professor Hansoo Park founded the Genome & Company, which was listed on the Korean stock market on December 26, 2018, and develops customized immunosuppression drugs that combine microbiome

development programs for immune enhancement of cancer patients with new anti-PD1 antibody.

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