

**Section of
Public Affairs**Mi-Yeon Kim
Section Chief
(+82) 62-715-2020Nayeong Lee
Senior Administrator
(+82) 62-715-2024**Contact Person
Regarding Article**Professor Sung-Gyoo Park
School of Life Sciences
(+82) 62-715-2511**Release Date**

2018.06.12

Professor Sung-Gyoo Park's research team identifies the mechanism that promotes liver cancer

- GIST (President Seung Hyeon Moon) – Korean researchers have shown that active oxygen in the body is a key aggravating factor in liver cancer, allowing new treatment options to be developed. Professor Sung-Gyoo Park of the School of Life Sciences and Professor Gyu-heung Jeong of Seoul National University demonstrated that the active oxygen in the body is mainly involved in the development of malignant liver cancer and further clarified the biological mechanism of malignant liver cancer.
- The incidence of liver cancer is rapidly increasing around the world, and mortality rate is the second for cancer due to difficulties in early diagnosis and treatment. In Korea, the cancer survival rate is similar to that of developed countries with advances in cancer treatment. However, the survival rate for liver cancer is still low in Korea.
- The research team investigated the effects of oxygen on the body during respiration, such as harmful oxygen, environmental pollution, chemicals, ultraviolet rays, stress, etc., which led to excess production of malignant cells.

- The team identified the specific sequence of the target gene by mass spectrometry (LC/MS-MS), which is a method for analyzing protein mass changes using liquid chromatography, performed experiments such as CRISPR knock-in system analysis * and mouse experiments, which are sophisticated genetic engineering techniques to modify the nucleotide sequence, and then compared the results.

* A sophisticated genome engineering technique that accurately recognizes a specific nucleotide sequence of a target gene and changes the nucleotide sequence.

- The protein PDIA3 was oxidized and modified by reactive oxygen species (a disulfide-bonded isomerase protein that regulates oxidation, reduction, and isomerization of proteins) and increased DKC1, * inducing malignant tumors. As a result, the researchers found the mechanism that promotes the development of malignant liver cancer.

* DKC1 is an RNA-binding protein, dyskerin. DKC1 protein damage induces congenital keratinization syndrome, malignant tumors, and various diseases.

- Professor Sung-Gyoo Park said, “The results of the present study confirm the specific mechanism that free radicals can directly regulate proteins (PDIA3, DKC1), which are important for liver cancer signaling, and contributes to the results of previous studies that have found that active oxygen is involved in liver cancer.”

- The study was supported by the Ministry of Health and Welfare and was published in *Hepatology* on May 25, 2018.

