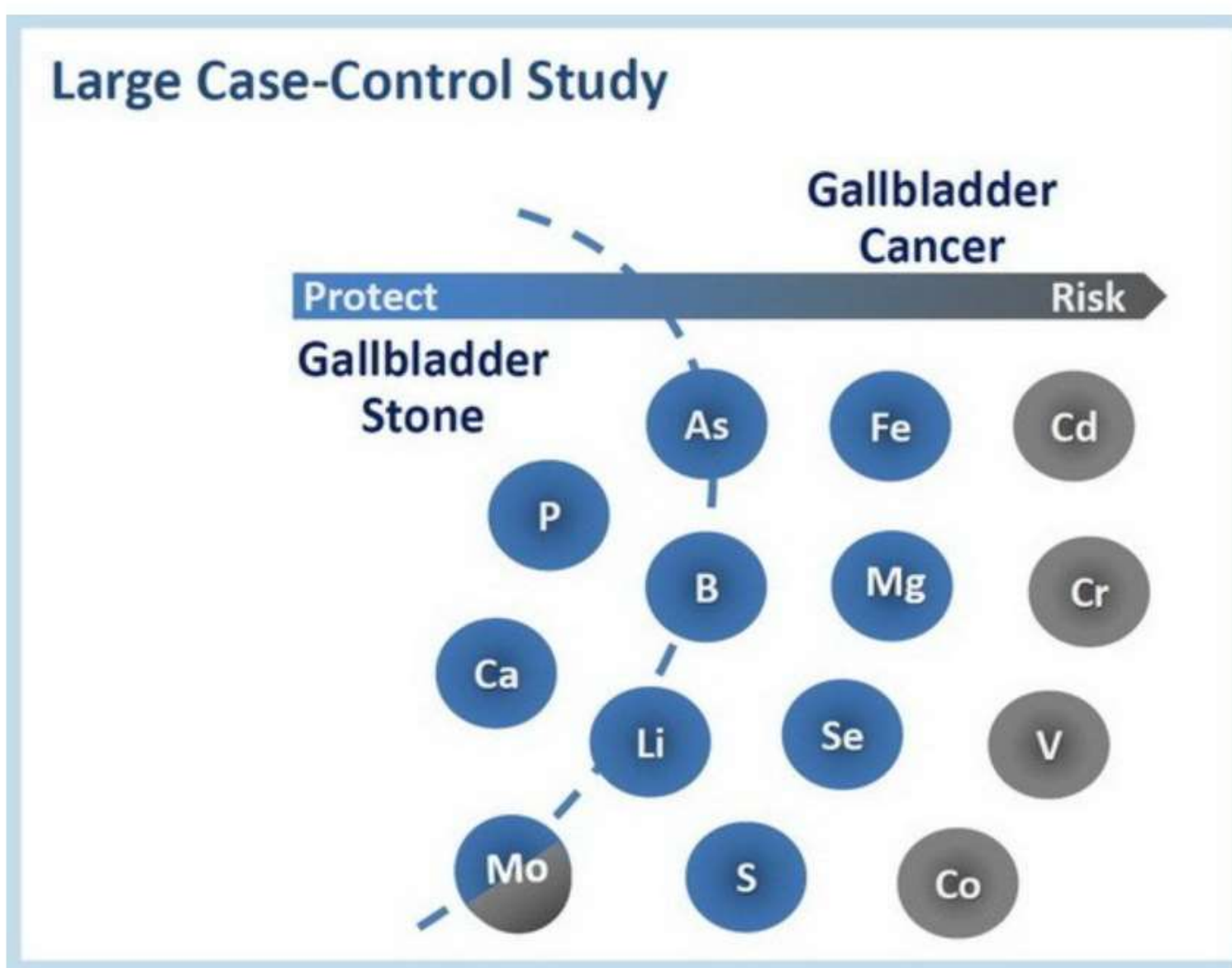


NYCU researchers collaborate with the US's NIH to tackle novel risk factors for liver and gastrointestinal tumors

The international collaborative study by the researchers in the Institute of Clinical Medicine at NYCU and the National Institute of Health (NIH) in the United States measured various common metals in human serum and found that six metals were related to the presence of gallstones and twelve metals were related to gallbladder cancer. Many metals are present in the natural environment and metal elements are required to maintain normal functions in human body. However, the levels of exposures matter. Extremely high or low concentrations of metals may associate with cancer development. Because of technological limitations in the past, only one or two different metals could be measured in blood simultaneously. The work applied 'metallomic approach' and measured multiple relevant metals in the same time. Most heavy metals were found to be risk factors for gallbladder cancer. It is the first large-scale case-control study to measure multiple metals to investigate their associations with gallbladder cancer.



Different metal elements and their association with gallstone and gallbladder cancer

The researchers focused on applying advanced approaches in combination with novel technologies to investigate potential risk factors or biomarkers for cancer development. By discovering these risk factors and biomarkers, these works facilitate the understanding for cancer etiology and high-risk patient identification.

By taking liver cancer as an example, patients diagnosed with early-stage liver cancer are usually treated by curative surgical resections. However, tumor recurrence may still occur among nearly 70% of the patient who received surgery.

Prediction models for early recurrence of liver cancer after surgical resection remain necessary. The researchers in NYCU applied evolutionary learning to combine patients' clinical information and the contrast-enhanced computed tomography images to innovate a prediction model for cancer recurrence for liver cancer patients after the operation. The accuracy of the model has been effectively improved. Because of its novelty and relevance, the work won the 2021 National Innovation Award.

The researchers at NYCU discovered genetic variants and the development of liver cancer by high-throughput platform. They identified genetic variants associated with liver cancer across the whole genome of patients with chronic hepatitis virus infection in Taiwanese population. They also integrated large-scale database to investigate genetic variants on the likelihood of viral clearance after chronic viral infections. These studies emphasize the importance of host genetic background play roles for disease progressions and provide clues for future functional studies.

More Research Highlights



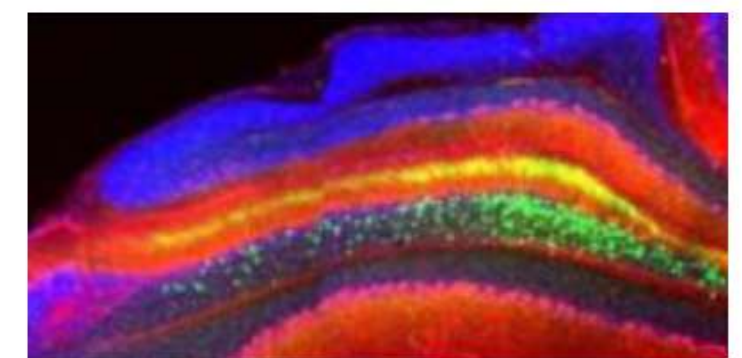
From Bioelectronics to Nano-bioelectronics: NYCU Biomedical Electronics Translational Research Center



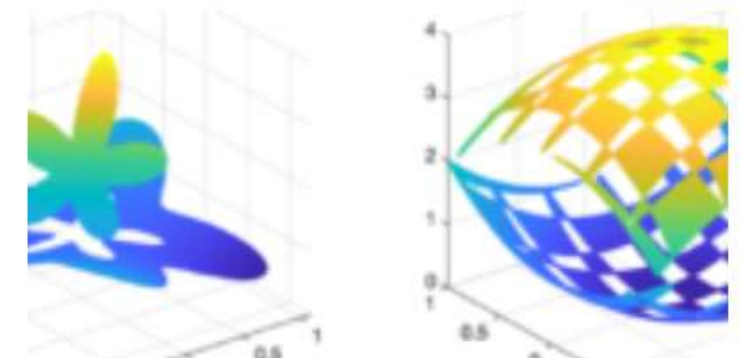
Cancer research at NYCU offers novel therapeutic strategies from tumorigenesis to metastasis



Tunable Ultra-low Threshold Bound State in the Continuum Lasers Discovered through NYCU-Russian Collaboration



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