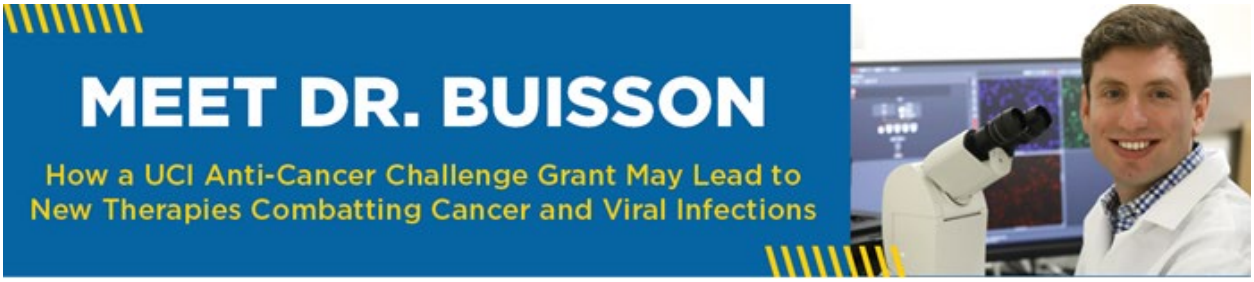

August 1, 2022 - A new study led by UCI researchers has identified two ways in which the enzyme apolipoprotein B mRNA-editing enzyme catalytic polypeptide-like (APOBEC3A) is controlled in human cells.

This enzyme, which is a vital part of the innate immune system, protects cells from viral infection by inducing mutations that block viruses from replicating. However, APOBEC3A also induces mutations by directly attacking the genome of cancer cells, which can lead to cancer progression, metastasis and drug resistance.

“By understanding how cancer cells and viral infections regulate APOBEC3A expression, we are poised to take a critical step forward toward the development of both new therapeutic strategies to fight cancer and new anti-viral treatments,” said Dr. Rémi Buisson, a co-author of the new study and an assistant professor in the UCI School of Medicine Department of Biological Chemistry.

In 2018, Buisson received a UCI Anti-Cancer Challenge grant to study how APOBEC enzymes generate mutations in patients with ovarian cancer and how that can lead to chemotherapy resistance.

His lab was able to confirm that APOBEC enzymes directly attack DNA and increase genomic instability. The resulting data from that funded study led to a subsequent National Institutes of Health grant.

“The UCI Anti-Cancer Challenge grant is a way to ask new, interesting questions without worrying about funding,” Buisson said. “It’s a way to develop new questions based on ideas, and not require preliminary data you usually need for funding. It can open new doors.”