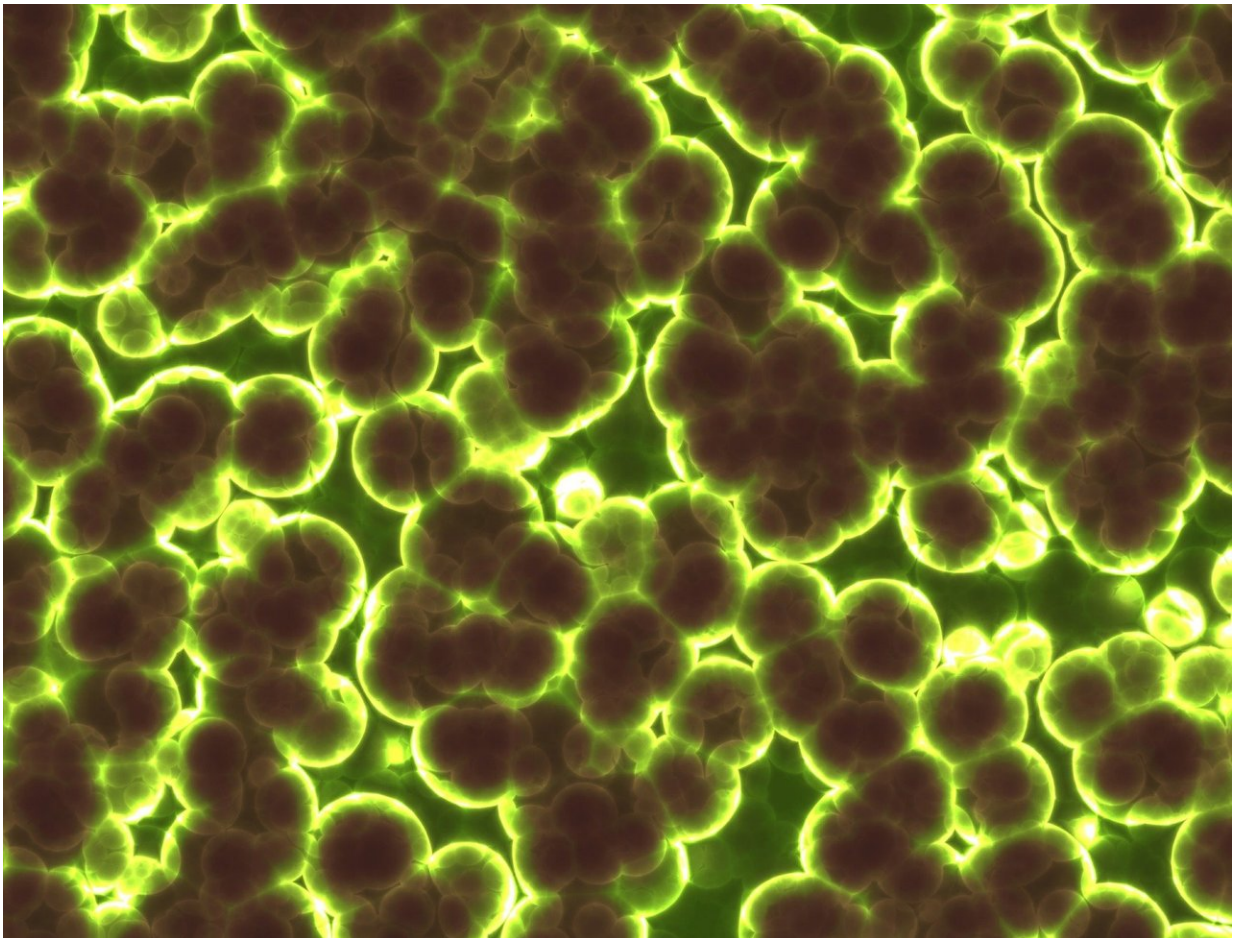


Newly identified protein could help fight cancer

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Researchers from the University of British Columbia (UBC) have

identified a new protein that helps an oral bacterium thrive in other locations around the body. The discovery could eventually lead to the development of new drugs that specifically target the protein.

"This [bacterium](#) is common in the mouths of humans and generally doesn't cause disease in that location. However, it can travel through the bloodstream to other areas of the body, which leads to some pretty big health concerns," says Dr. Kirsten Wolthers, Associate Professor of Biochemistry and Microbiology at UBC's Okanagan Campus.

Most notably, this bacteria is prevalent in the tumors of colorectal cancer patients. The presence of the bacteria can contribute to [tumor growth](#), spread of cancer to other sites in the body, and resistance to chemotherapy.

With the help of the CMCF beamline at the Canadian Light Source (CLS), located at the University of Saskatchewan, Wolthers and her colleagues determined that the new protein they identified enables the bacteria to take [essential nutrients](#), such as iron, from our blood cells.

"Most of the iron in the body is tied up in a molecule called heme which is surrounded by a protein cage," says Wolthers. "What we've discovered now is a new way for this bacterium to acquire essential nutrients from a very abundant source allowing it to grow very well in parts of the body that are free of oxygen."

This newly identified protein may prove to be a good target for drugs designed to attack this specific bacterium.

Wolthers says that a lot of protein research relies on synchrotron technology. Without access to the CLS, her team would have been unable to identify the distinct section of the protein that binds to the heme.

"The synchrotron technology helped us see the bit of the [protein](#) that was unique and interesting and allowed us to find a scaffold that could help with drug design," says Wolthers. "We just needed the [experimental data](#) that was provided by the Canadian Light Source."

The findings are published in the *Journal of Biological Chemistry*.

More information: Alexandra K. McGregor et al, A new member of the flavodoxin superfamily from *Fusobacterium nucleatum* that functions in heme trafficking and reduction of anaerobillin, *Journal of Biological Chemistry* (2023). [DOI: 10.1016/j.jbc.2023.104902](https://doi.org/10.1016/j.jbc.2023.104902)

Provided by Canadian Light Source

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