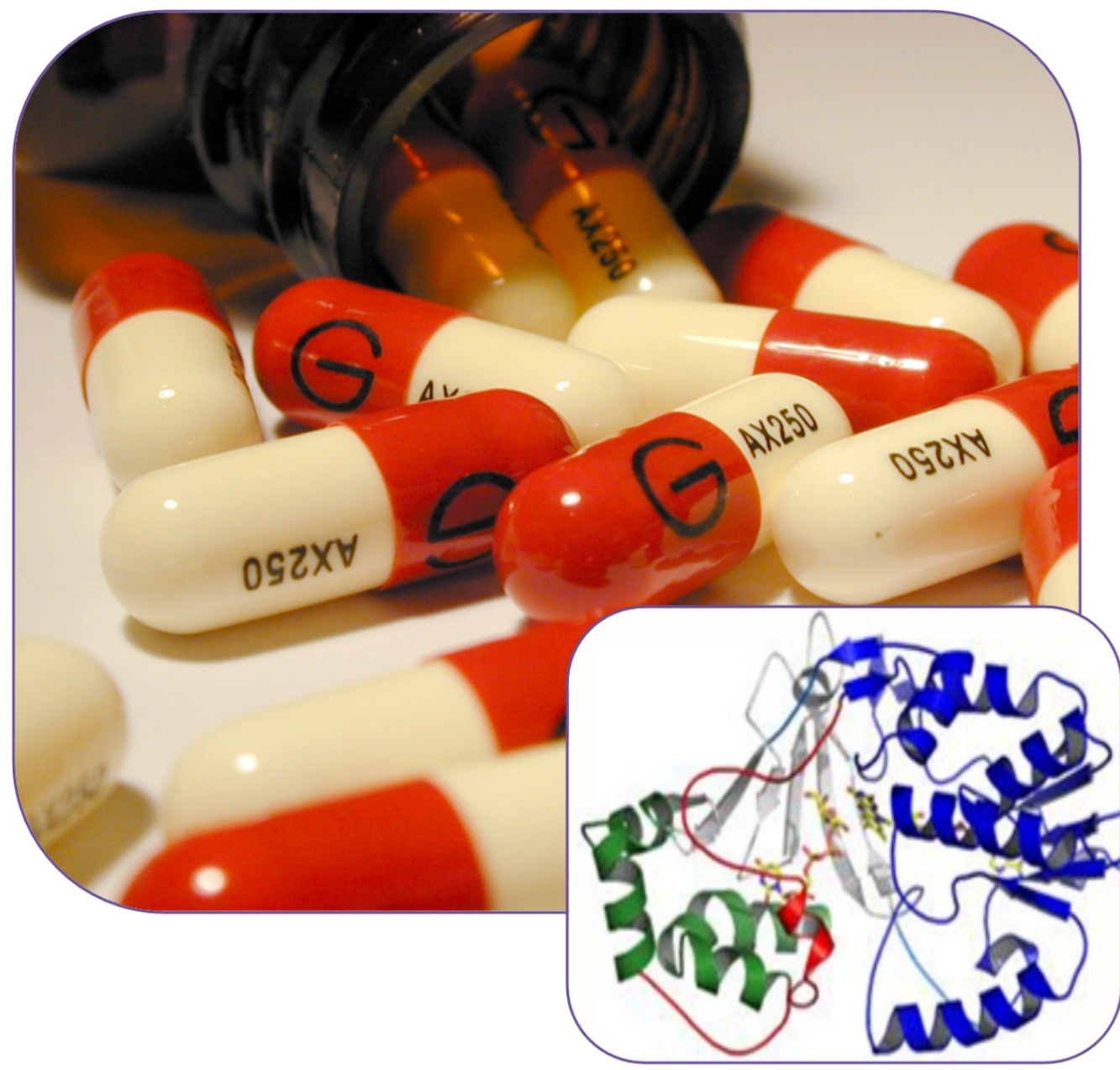


Developing New Drugs



Setting Sights on New Antibiotics

The rate of antibiotics resistance is on the rise as bacteria become resistant faster than we can come up with new drugs. Work undertaken at CLS may lead to the development of an entirely new class of antibiotics to which no bacteria have resistance. By studying how a protein known as UGM, which aids in protecting a bacterium from a host's immune system, drug molecules that halt this process can be identified, leading to new antibiotics targeting the building blocks of the bacteria's cell wall. 🌸

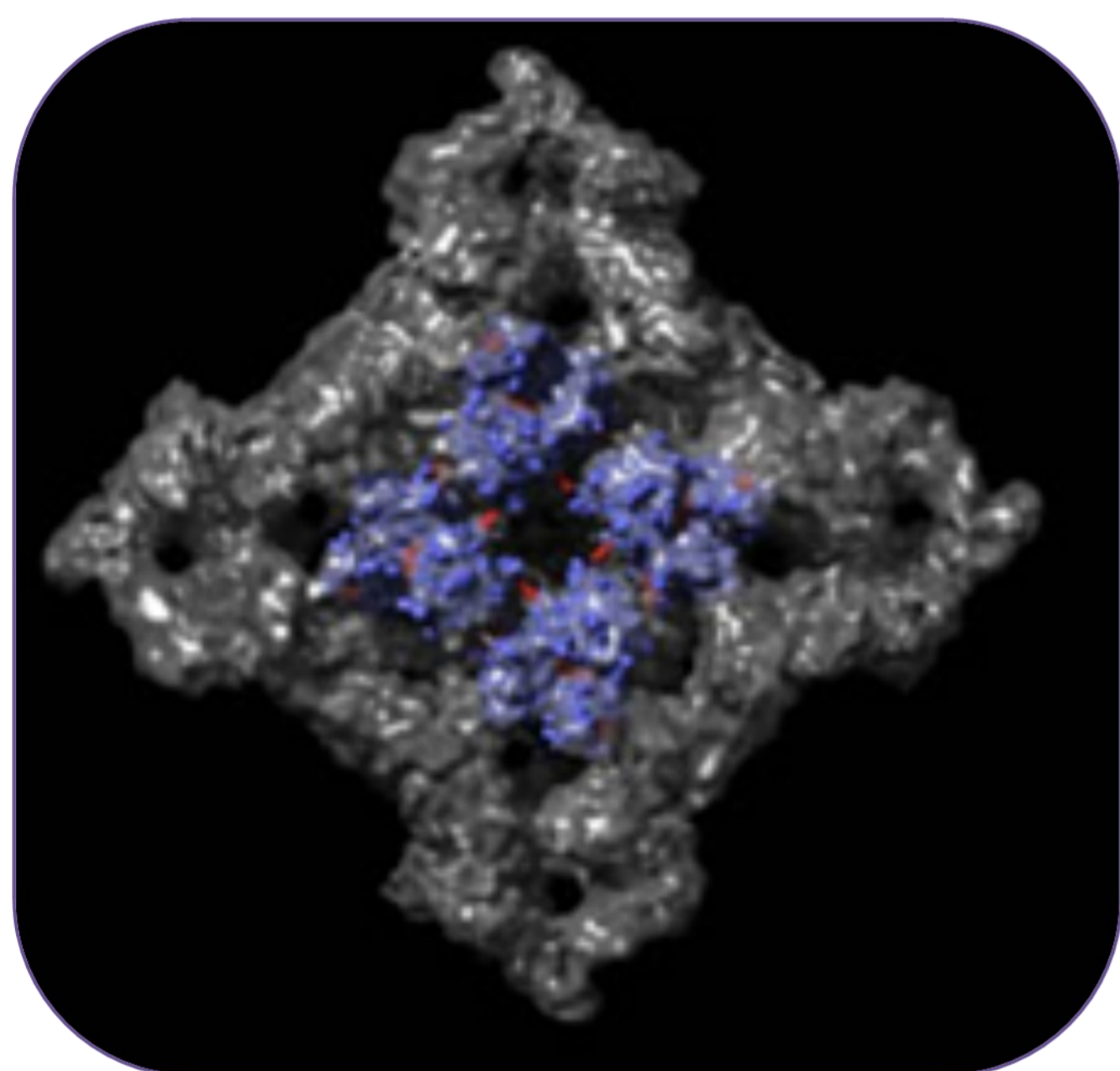
www.lightsource.ca/media/udp.php



Combating Malaria

Malaria, caused by *Plasmodium* parasites, has re-emerged as a major problem because of its resistance to many drugs. Impairing an essential enzyme in *Plasmodium*, (ODCase) is a promising strategy to develop new types of malaria drugs. Scientists recently discovered several new inhibitors of ODCase that are an efficient killer of *Plasmodium*. High-resolution X-ray crystallography experiments at the CLS were able to show the interactions of these inhibitors with the active site of ODCase, which will assist in the development of drugs that combat malaria using this enzyme interaction as a basis. 🌸

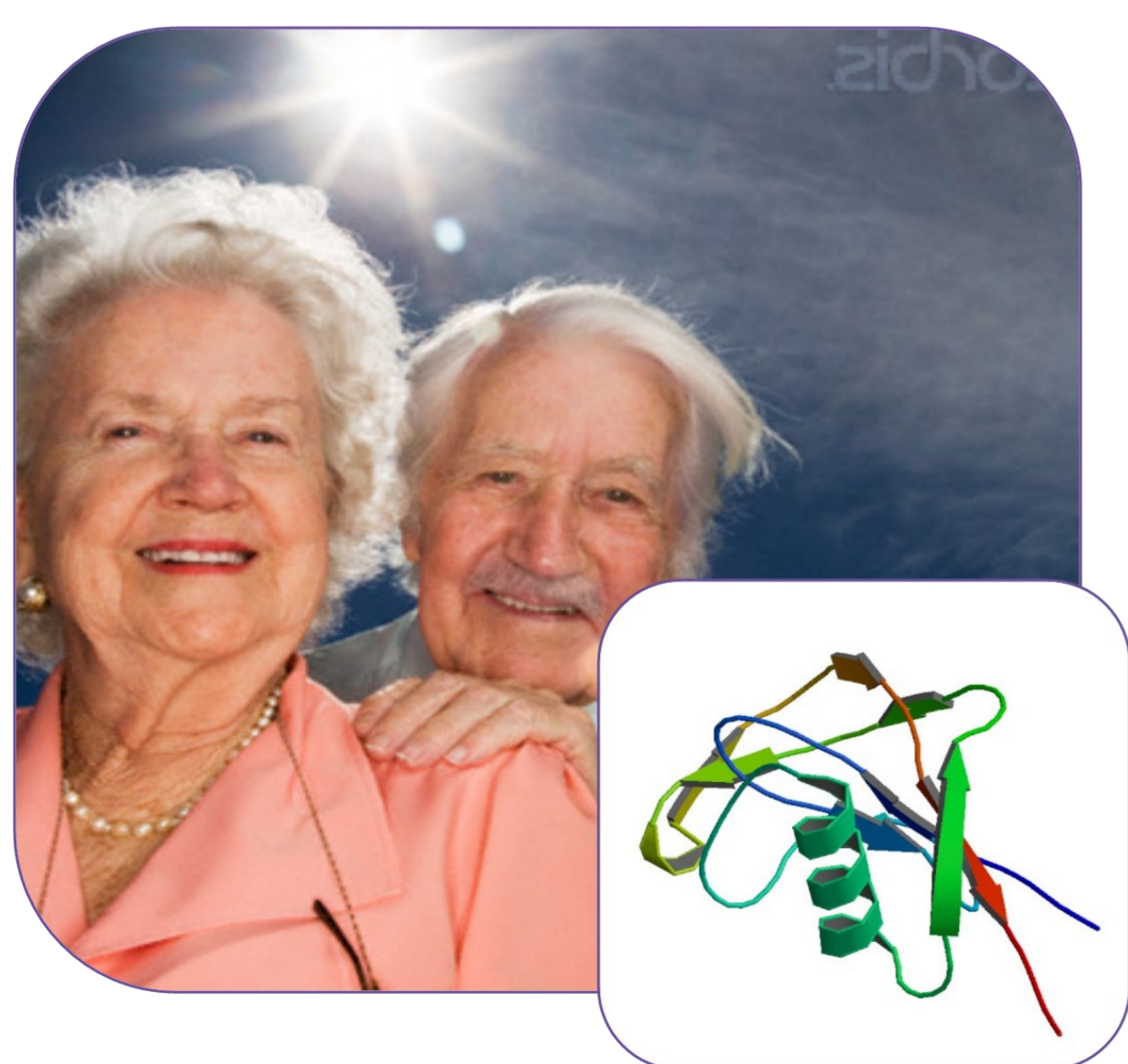
M. Bello, E. Poduch, Y. Liu, L. Wei, I. Crandall, X. Wang, C. Dyanand, K.C. Kain, E. Pai, L.P. Kotra. Structure-Activity Relationships of C6-Uridine Derivatives Targeting Plasmodia Orotidine Monophosphate Decarboxylase. J. Med. Chem. 51 (2008) 439-448.



Understanding Congenital Heart Disease

Using the CLS and the Stanford Synchrotron Radiation Laboratory, University of British Columbia researchers have shed light on the structure of the ryanodine receptor, a complex molecular channel that regulates the contraction of muscle cells by releasing calcium. Mutations in the receptor's interlocking parts tend to cluster in hot spots, causing the receptor to leak calcium. In heart muscle, leaky receptors can lead to rapid, irregular heartbeats in response to cardiovascular stress. The same kind of irregular contractions in skeletal muscle can lead to dangerous spikes in body temperature that can be brought on by certain forms of anaesthesia. The findings, published in *Nature*, may lead to new ways to treat these potentially fatal congenital conditions. 🌸

<http://www.nature.com/nature/journal/v468/n7323/full/nature09471.html>



Studying Alzheimer's Disease

Alzheimer's Disease is caused by the misfolding of the beta-amyloid protein which accumulates in the brain and creates plaques. It is thought that metals such as copper, iron and zinc play a role in the creation of these plaques. University of Saskatchewan researchers are using a synchrotron to study the effect of these metals on the brains of fruit flies, and this research is helping to create rapid and efficient tests for new drugs to fight this illness. 🇨🇦

www.nature.com/horizon/protein/brain/disease.html and <http://today.slac.stanford.edu/feature/witches-brew.asp>

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