

# Tapping into calcium's role in a healthy heart

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Australian scientists are getting closer to decoding the way molecules interact to enable regular heart function.

This information could help tackle some of the leading causes of sudden, often tragic, [cardiac failure](#) in otherwise healthy adolescents or young adults.

Dr Cy Jeffries and Dr Kathleen Wood from the Australian Nuclear Science and Technology Organisation (ANSTO) teamed up with Professor Jill Trewhella and Dr Yanling Lu at the University of Sydney to perform a series of small-angle neutron and X-ray scattering experiments at ANSTO and at the Institut Laue-Langevin in France.

They showed that a vital component of heart muscle – myosin binding protein C (cMyBP-C) – can 'tap-into' primary calcium signalling mechanisms that otherwise ensure a heart beats normally.

"Over the past five years, small-angle X-ray and neutron scattering have increasingly proven themselves effective for investigating myosin binding protein C which has previously been considered "enigmatic" or difficult to understand by medical researchers" Dr Jeffries said.

"Until the advent of our recent studies, little was known about the architecture of cMyBP-C or how this architecture might facilitate diverse protein-protein interactions within the heart.

"Our work has helped answer a number of fundamental questions, such as how this protein is organised and interacts with other [heart muscle](#) proteins.

"Of particular significance is our observation that myosin [binding protein](#) C can bind to universal 'calcium sensor' called calmodulin, indicating, arguably for the first time, that this protein has access to the primary signalling events that underpin [muscle contraction](#)."

Hundreds of the world's top experts in the molecular make-up of the world around us are in Sydney to attend the International Small Angle Scattering Conference, hosted by ANSTO at the Sydney Convention and Exhibition Centre, Darling Harbour.

Provided by ANSTO

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