

Actin-Binding Proteins

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We are studying the conformational changes in the gelsolin family proteins on activation and on binding to actin. These proteins cap and sever actin filaments.

13B1 – Protein crystallography

We have solved two structures of gelsolin to follow our previously published horse protein structure. One is the human version and the second in a different space group, which shows some chain differences. We have also solved the active form of the C-terminal half of adseverin. This molecule is homologous to gelsolin. We have also collected a low resolution data set of the inactive form of this fragment. Together these structures are particularly interesting as they discount the current theory of how this molecule is thought to operate. We are interpreting these data and writing up.

Besides these actin-based projects we have also solved other crystal structures from 13B1 data. Our collaboration with Jim Cairns also has yielded structures of a beta-glucosidase with bound inhibitors and substrates. The paper is now finished and has been submitted. Our collaboration with Jantana Wongsantichon has yielded a number of structures of GST from the malaria parasite. These include mutants and bound substrates. We are currently writing the paper. Finally, we have solved the structure of a protein which we use as a reagent in the lab, the DNA polymerase pfu.

Unfortunately, none of these structures have yet been published – we fully expect to rectify this in 2008. We have been delighted with the performance and support of 13B1.