

## W0170

**Crystal Structure of the Coiled-coil N-terminal Fragment of NudEL.** Derewenda U., Kim M.H., Cooper D. Derewenda Z., Dept. of Mol. Physiology and Biological Physics, Univ. of Virginia, Charlottesville, VA 22936.

NudEL is a 39kDa protein that implicated in diverse cellular functions ranging from nucleokinesis in fungi, through kinetochore biology and mitotic cell division in eukaryotes, to cerebral cortex development in man. NudEL assembles with Lis1 and dynein/dynactin complexes. A number of human genetic disorders (i.e. lissencephaly, microcephaly dyslexia and schizophrenia) have been linked to mutations in genes coding for proteins active in these pathways.

As most coiled-coils, the structure was crystallographer's proverbial nightmare. Crystals were non-isomorphous and diffracted poorly, with different spaces groups and unit cells. The structure was finally solved with MAD data collected at SER-CAT to 2.1Å resolution, using SOLVE/RESOLVE suite for phasing.

The density maps revealed a fascinating homotetrameric molecule that, to our knowledge, is the longest coiled-coil structure to be structurally characterized at high-resolution. The parallel homodimer, which occupies the asymmetric unit, is 230Å long, while the tetramer is 350Å long with a diameter of only about 25Å. Every step of the analysis including crystallization, data collection, phasing, model building and refinement proved to be a challenge for this difficult structure.