Professor A Fry - **Identifying new cell division regulators for cancer drug development**

Cell division is a natural process that is fundamental to the development and propagation of all living organisms. Yet loss of control over cell division lies at the heart of many devastating diseases including cancer. Our research takes a molecular cell biology approach to investigate the basic mechanisms involved in human cell division and how errors in this process might arise. Moreover, we aim to identify and characterize new regulators of cell division that would make attractive targets for the development of novel anti-cancer drugs.

PhD projects in our laboratory fall into two major research themes. Firstly, the characterization of members of a new family of cell cycle-regulated protein kinases, called NIMA-related kinases or Neks. Human cells express eleven Neks, of which at least five play roles in cell division control. Evidence to date suggests that they have specific functions in microtubule organization and mitotic progression and altered expression has been found in human cancers. We currently have projects in collaboration with the Institute of Cancer Research in London to explore these kinases as potential anti-cancer targets. Secondly, regulation of centrosome organization and function through the cell division cycle. The centrosome is the major site of microtubule organization in animal cells and contributes to bipolar spindle formation in mitosis and ciliogenesis in post-mitotic cells. Abnormal centrosome regulation is common in many cancers, while genes encoding centrosome components are mutated in a wide variety of human disorders including diverse ciliopathies.

Research in our laboratory involves a wide range of state-of-the-art molecular and cell biology techniques including recombinant DNA cloning, mutagenesis, cell culture, plasmid and siRNA transfection and protein biochemistry. In addition, much of our work involves high resolution fluorescence microscopy and appropriate training will be provided in cutting-edge imaging techniques. Our laboratory is housed in a brand new purpose-built research centre and currently consists of six postdocs, four PhD students and a technician thereby offering excellent facilities and support to new students.

Applications for PhD studentships are welcome from candidates who hold or expect to hold a first or upper second class degree. Informal enquiries, including a CV, should be sent to Prof. Andrew Fry by email at amf5@le.ac.uk. Further information is available at http://www2.le.ac.uk/departments/biochemistry.

Selected recent references

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