

BIOGRAPHICAL SKETCH

Professor Janet Thornton CBE FRS

EDUCATION

- 1967 – 1970 University of Nottingham - B.Sc. Hons. Physics Class I;
1970 – 1973 University of London (King's College and National Institute for Medical Research, Mill Hill) -Ph.D. Biophysics, "The Conformation of Dinucleotides".

CURRENT POSITION

Director, EMBL-EBI (European Bioinformatics Institute). 2001 -

PREVIOUS APPOINTMENTS

- 1973-78 Research Assistant, Laboratory of Molecular Biophysics, University of Oxford
1978 Research Scientist, Molecular Pharmacology, National Institute for Medical Research, Mill Hill
1979-83 SERC Advanced Fellow, Crystallography Department, Birkbeck College, University of London
1976-83 Open University Tutor
1983-89 Lecturer at Birkbeck College
1989-90 Senior Lecturer at Birkbeck College
1990 -2001 Professor of Biomolecular Structure, Director of 'Unit of Biomolecular Structure & Modelling', Biochemistry & Molecular Biology, University College London
1990-2001 Director of 'Biomolecular Structure and Modelling Unit', University College London
1994-2001 Consultant at European Bioinformatics Institute, EMBL
1994-2001 Bernal Chair, Crystallography Department, Birkbeck College
1996-2001 Head, Joint Research School in Biomolecular Sciences, Crystallography Department, Birkbeck College and Biochemistry & Molecular Biology Department, University College London
1998-2001 Director of the BBSRC 'Centre for Structural Biology' at Birkbeck College and University College London

BRIEF BIOGRAPHY

After graduating in Physics, Janet studied for her Ph.D. in Biophysics at the National Institute for Medical Research, Mill Hill, London (1970-1973). She then moved to Oxford, where she worked in molecular biophysics with David Phillips until 1978 when she returned to London to the NIMR, and subsequently to a Fellowship at Birkbeck College, University of London. In 1990 she was appointed Professor and Director of 'Biomolecular Structure and Modelling Unit' at University College London and later was also appointed to the Bernal Chair in the Crystallography Department at Birkbeck College. In October 2001 Janet became Director of the EMBL – European Bioinformatics Institute on the Wellcome Trust Genome Campus at Hinxton, near Cambridge. In the same year, she received the Commander of the British Empire (CBE) award. In 1999 Janet was elected a Fellow of the Royal Society and a Member of EMBO in 2000; in 2002 she was appointed Extraordinary Fellow, Churchill College, Cambridge and Honorary Professor, University of Cambridge and in 2003 she was elected a Foreign Associate Member of the U.S. National Academy of Sciences. She has also received honorary degrees from several universities.

The goal of Janet Thornton's research is to understand biological processes at the molecular level, by studying protein structures and sequences using computational approaches. Her work involves the classification of protein families and structures to elucidate the principles governing their folding and evolution. With her group, she studies the functions and interactions of proteins with other molecules in the cell from a structural perspective.

Career Summary

The goal of my research is to understand biological processes at the molecular level, by studying protein structures and sequences using computational approaches. Initially as more protein three-dimensional structures were determined, our work involved the collection, description and classification of these beautiful structures and their component motifs, to elucidate the principles governing their folding and evolution. We developed computational tools to compare, validate, analyse and predict structures, leading to a better understanding of the relationship between sequence and structure, and a classification scheme (CATH) for protein families based on their structures. This includes detailed analyses of the interactions of proteins with other molecules in the cell from a structural perspective including protein-ligand and protein-protein interactions. One goal of this research is to improve rational drug design. More recently we have focussed on functional analysis, exploring how structure determines function and how proteins families evolve to perform novel functions.

During the last 5 years we have also been involved in the functional genomics of ageing, providing the bioinformatics support and analysis for a cross-species comparison of the changes in protein expression which occur during ageing.

My key achievements are:

- Analysis and classification of protein three dimensional structures.
- Understanding basic principles of the relationship between protein sequences, structure and function.
- Understanding enzyme structure, function and catalysis ;V characterising and predicting protein-ligand and protein-protein interaction.