

NUCLEAR MAGNETIC RESONANCE (NMR) SPECTROSCOPY IS A UNIQUE STRUCTURAL BIOLOGY TOOL FOR RESEARCH IN LIFE SCIENCES

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Prof. Kurt Wuthrich delivered CSIR Platinum Jubilee Celebration Lecture at IICT Auditorium at uppal Road in Hyderabad today. Prof. Kurt Wuthrich has shared his life experiences of 50 years in Basic Research. He also explained about Nuclear Magnetic Resonance (NMR) Spectroscopy has emerged as the only experimental technique that can determine structures and dynamics of biological macromolecules in solution at an atomic resolution. The key technological developments pioneered in the laboratory of Prof. Kurt Wuthrich led to the establishment of biomolecular NMR as a Unique structural biology tool. Prof. Kurt Wuthrich was awarded 2002 Nobel prize in chemistry "For his development of nuclear magnetic resonance spectroscopy for determining the three dimensional structure of biological macromolecules in solution". Some potential applications of his discovery include, Drug design; Easier to handle a protein in experiments; Analysis of active sites in proteins and detection of compensating mutations; can be used to guess the function through a sequence- to - structure- to function paradigm; can also be used to aid the experimental structure determination. With over 10,000 structures in the PDB database, today NMR spectroscopy has scaled new heights and is able to tackle large macromolecular assemblies.

CCMB has active research groups that use NMR technique for structure and interaction analysis of biological macromolecules. One such group is investigating structural basis and mechanistic details of the RNAi pathway in *C. elegans* and *Drosophila*. The group seeks to understand structure and conformational dynamics involved in the organization of gene silencing complex. CCMB also uses NMR imaging to map brain activity in model organisms. The research is focused on to understand the metabolic basis of various cerebral diseases such as Alzheimer's, Parkinson's, Depression and Addiction, etc.

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