Research

We support internationally competitive biomedical research by providing academic and industrial users with access and services on our six NMR systems.

The fields of research we support include:

Drug discovery: The discovery and development of small molecule drugs and biopharmaceutical agents benefits from NMR-based fragment screening and structural validation of binding modes. Samples and libraries are developed with **ProteinEx (http://www.cancerstudies.bham.ac.uk/services/ProteinExpression.shtml)** .

Imaging: NMR provides high resolution information about tissue samples, biofluids and cell cultures, complementing lower resolution clinical imaging methods and providing biochemical insights used to improve disease diagnosis. See also **BUIC (http://buic.bham.ac.uk/)** .

Metabolomics (/facilities/nmr/research/metabolomics.aspx) is a rapidly growing field that relies on NMR to monitor fluctuations in the levels of many metabolites simultaneously and nondestructively. The dynamic concentrations can be observed by NMR, providing information about cellular responses to toxic or therapeutic agents. See research by Ulrich Gunther. See also the **Metabolomics Initiative (http://www.metabolomics.bham.ac.uk/)** .

Structural biology (/facilities/nmr/research/structural-biology.aspx) : The ways in which proteins folds into three dimensional structures, bind to molecular signals and communicate biological information can be deduced by NMR. Unlocking the value of the genome projects involves determining the 3D structures, molecular functions, ligand specificities and binding mechanisms of novel proteins, and using this information to predict and exploit biological and disease mechanisms. See also the **BSBF (http://www.bsbf.bham.ac.uk)** .

We are involved with a range of collaborative research in the **School of Cancer Sciences (http://www.cancerstudies.bham.ac.uk)** including **biomarker identification (http://www.cancerstudies.bham.ac.uk/research/Theme-Biomarkers.shtml)** and **cell signaling (http://www.cancerstudies.bham.ac.uk/research/Theme-CellSignalling.shtml)** .

© University of Birmingham 2015