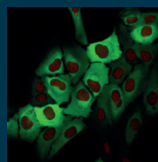
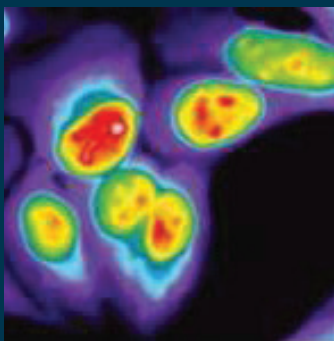
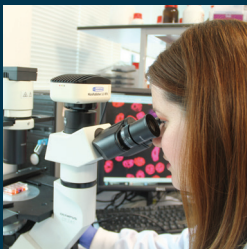




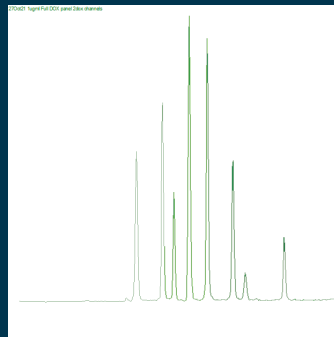
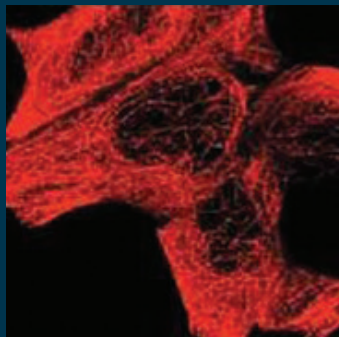
UNIVERSITY of
BRADFORD

Institute of Cancer
Therapeutics



Drug Discovery
and Development:
Advanced Contract
Research Services

*Progressing Therapeutics
from Concept to Clinic*





UOB

CONTRACT RESEARCH

ICT

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UNIVERSITY OF
BRADFORD
BRADFORD
INSTITUTE OF
THERAPEUTICS

Institute of
Therapeutics

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About us

Foreword by Professor Sherif El-Khamisy, Director

Thank you for your interest in the Institute of Cancer Therapeutics (ICT) and for the opportunity to provide information on our advanced contract research services. We offer state of the art laboratories and the technical expertise to facilitate your research.

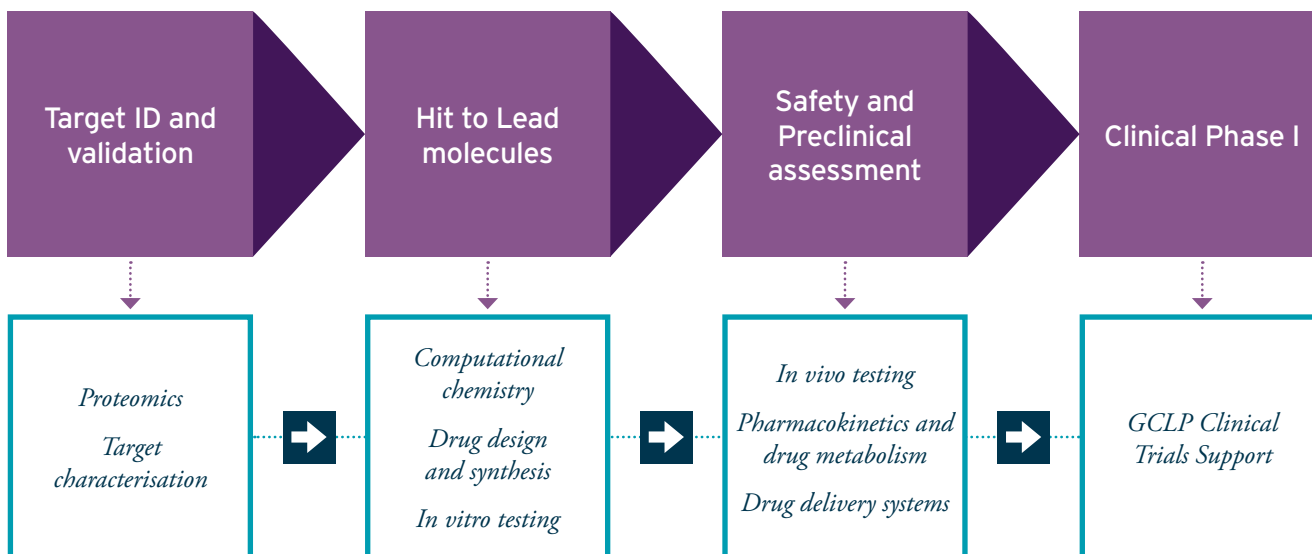
The Institute has over 30 years of experience in cancer research and uses its extensive knowledge, skills base and facilities to expand on its considerable success in commercial activity.

Specialisms include synthetic and medicinal chemistry, pre-clinical pharmacology (including *in vitro* and *in vivo* evaluation), molecular biology, drug metabolism and pharmacokinetics (DMPK), drug formulation, and proteomics.



Help progress your drug candidate

ICT Research Services can help progress your drug candidate through the development pipeline



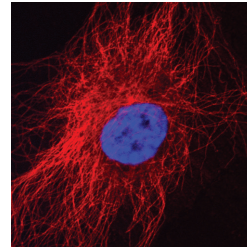
Broad spectrum of therapeutic types and experimental models

Experience of evaluating:

- Small molecule chemotherapeutics
- Antibodies
- Peptides
- Nanoparticles
- Drug delivery systems
- Gene delivery
- Cancer Vaccines

In vitro and in vivo models for a range of cancer types including:

- Breast
- Prostate
- Lung
- Colon
- Melanoma
- Renal
- Pancreatic
- Head and neck
- Ovarian
- Bladder
- Glioma
- Neuroblastoma

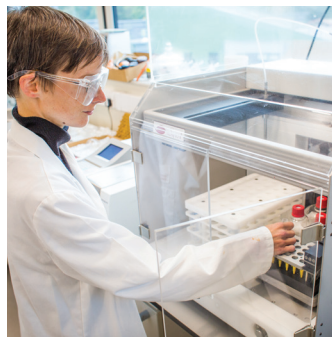




Drug Design and Synthesis

Our Medicinal Chemistry expertise includes:

- Parallel and library synthesis
- Improving pharmaceutical properties
- Computer aided drug design
- Scale up
- Stable isotope labelling
- Multiple step synthesis
- Lead optimisation
- Structure identification
- Experts in prodrug synthesis
- Peptide and peptidomimetic synthesis
- Compound purification (including prep LC, lyophilisation)



For further information please contact:

**Professor
Rob Falconer**
r.a.falconer@bradford.ac.uk



Proteomics

*The **Proteomics Facility** is equipped with the latest instrumentation and provides research support in three main areas:*

- Identification of new markers in tissue and liquid biopsies
- Continuous monitoring of health and early detection of cancer(s)
- Development of highly specific mass spectrometric diagnostic
- Prognostic assays to determine target protein expression and support personalised therapeutic treatment
- Functional and biochemical characterisation of established targets
- Assist refinement of next generation drug candidates
- Pharmacoproteomics and toxicoproteomics of drugs tested in cell lines
- Preclinical models and Phase 1 clinical trials

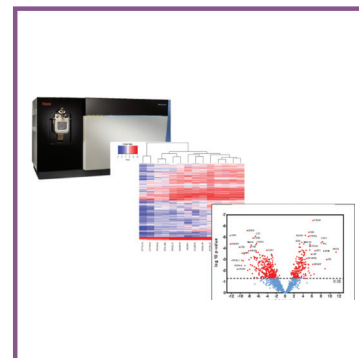
Housed in dedicated laboratories for handling biological samples and preparing protein samples for analysis, facility includes:

- Orbitrap Fusion mass spectrometer
- Ultraflex MALDI MS/MS mass spectrometer
- HTA approved laboratories
- Sample preparation from cell culture, biopsies and pre-clinical models
- Extensive high performance computing network for proteomics data processing, interpretation and storage

For further information please contact:

Dr Chris Sutton

c.w.sutton@bradford.ac.uk





Drug Target Characterisation and *In Vitro* Evaluation

- Target identification and characterisation
 - Immunohistochemistry
 - Tissue and tumour arrays
 - Gene expression
 - Tumour/normal differential expression evaluation
 - Development of genetically modified experimental models
- Cellular Cytotoxicity
 - MTT/SRB microplate cytotoxicity assays
 - Clonogenic assay
 - Tumour versus normal cell response
- Cellular growth inhibition evaluation
 - Cell cycle analysis
 - Apoptosis/cell death evaluation
 - Mechanistic studies
- Monitoring tumour dissemination
 - 2D and 3D assays for migration, invasion, angiogenesis and adhesion
- Drug-target interaction evaluation
- Analysis of molecular pharmacology of drug action
- Drug response in three-dimensional tumour spheroids

*For further information
please contact:*

Dr Steve Shnyder

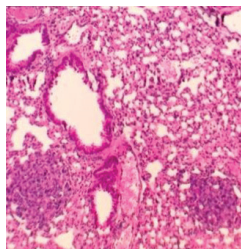
s.d.shnyder@bradford.ac.uk





In Vivo Evaluation

- Determination of Maximum Tolerated Dose
 - iv, ip, po, sc or it; single/multiple dosing
- Tumour xenograft and allograft models
 - Human and other tumour cell lines
 - High expression vs. low/negative expression
 - Isogenic tumour models
 - Direct measurement of anti-tumour response
 - Tumour vasculature analysis
 - Histological analysis
 - Biochemical analysis
 - Assessment of tumourigenicity
 - Efficacy and PK/PD analysis
- Pharmacodynamic analysis of preclinical tissue
 - DNA strand breaks of cross linking by Comet assay
 - Cell cycle analysis by flow cytometry and immunohistochemistry
 - Cell death analyses by flow cytometry/ immunohistochemistry/ TUNEL assay
 - Cytoskeleton disruption by Immunohistochemistry
- Site Specific Tumours
 - Response at a specific site e.g. colon
 - Response at site of metastasis e.g. liver, lung
 - Non-invasive optical imaging: bioluminescence or fluorescence
- Biocompatibility testing of materials
 - Sub-cutaneous implantation of biomaterials
 - Monitoring of local and systemic toxicities by:
 - In situ observations over time
 - Blood sample monitoring
 - Post-mortem histopathological analyses



For further information please contact:

Dr Steve Shnyder
s.d.shnyder@bradford.ac.uk



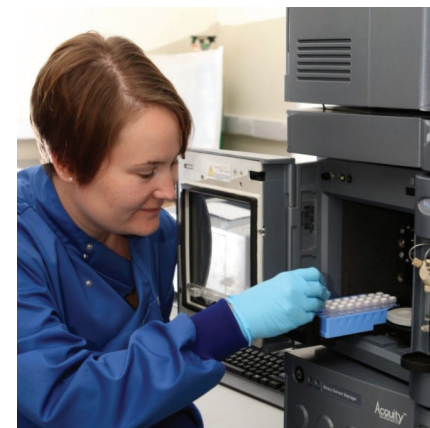
Pharmacokinetics and Drug Metabolism

- Preclinical and clinical tissue and fluid samples, for drug and metabolites
 - Full pharmacokinetic profiles of drug and metabolites including tissue distribution
 - Metabolite profiling and identification
 - Bioavailability studies (iv, ip, po)
 - In vitro metabolism studies
 - Protein binding
 - Pharmacodynamic evaluation of preclinical tissue samples
 - Analytical method development with HPLC and LC MS/MS
 - Full ADME studies including the use of recombinant enzymes
- Cell uptake and tissue distribution of naturally fluorescent/fluorescently tagged agents by confocal microscopy
- Pharmacodynamic analysis of preclinical tissue samples
 - LC-MS-MS/MS of small molecule biomarkers

*For further information
please contact:*

**Dr Huw
Simon Jones**

**h.s.jones@
bradford.ac.uk**





Drug Delivery Systems and Nanomedicine

Our team provides solutions for delivery of challenging cancer therapeutics with a focus on:

- Improving poor aqueous solubility and bioavailability.
- Improving drug stability on storage and during delivery.
- Optimising the release and pharmacokinetic profile.
- Identifying novel targeted delivery approaches.

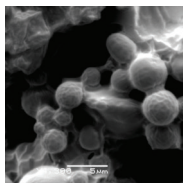
We have expertise in developing the following drug delivery systems for both small molecules and biotherapeutics:

- Liposomal drug delivery systems.
- Polymeric and metal based nanoparticles.
- Encapsulation and/or functionalization.

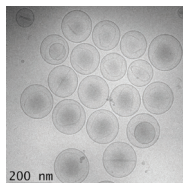
- Development of novel technologies for targeted therapies for example 2D materials (graphene).
- Patient-focused administration of difficult-to-deliver drugs.

For further information please contact:

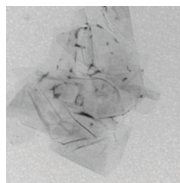
Dr Amalia Ruiz
g.ruizestrada@bradford.ac.uk



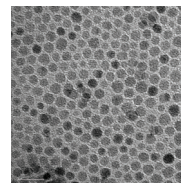
Polymeric nanoparticles



Liposomes



2D materials



Metal based nanoparticles



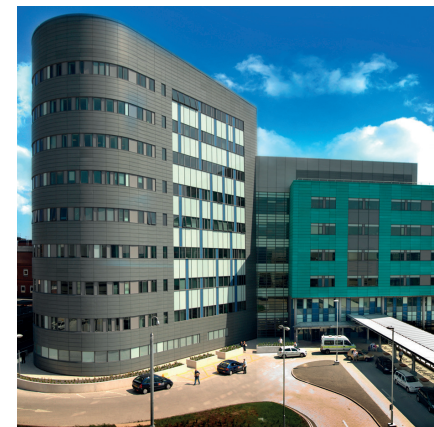
GCP Clinical Trials Support

- Access to Clinical Cancer Centre, St James's University Hospital, Leeds
- Dedicated cancer clinical research ward and clinical research team
- Dedicated pharmacokinetics and analytical team
- GCP Pharmacology Laboratories with established QA programme in line with MHRA national standards
- Tumour specific phase I and II studies conducted with lead tumour type clinician
- Close collaboration between early phase clinical team in Leeds

*For further information
please contact:*

**Dr Huw
Simon Jones**

**h.s.jones@
bradford.ac.uk**





Tissue Samples

Ethical Tissue (www.ethicaltissue.org) is a human tissue bank with HTA authority to ethically approve the use and supply of human tissue for research. Ethical Tissue supplies a range of tissues, viable cells, sub-cellular fractions and body fluids such as:

Tissue samples:

- A wide range of fresh and frozen tissues
- Tumour and associated normal tissue
- Tissue microarrays
- Blood, urine and other bodily fluids
- Archival formalin-fixed paraffin wax-embedded material (sections and blocks)

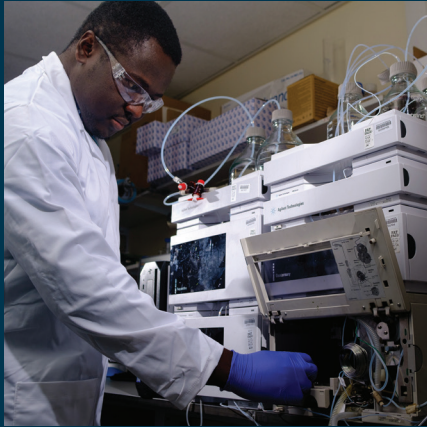
Isolated cells and sub-cellular fractions:

- Hepatocytes and Cryopreserved Hepatocytes
- Keratinocytes
- Pre-adipocytes
- Fresh tissue cell fractions
- Frozen tissue fractions
- Extracted DNA, RNA or protein samples

*For further information
please contact:*

enquiries@
ethicaltissue.org







UNIVERSITY of
BRADFORD

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Therapeutics



Contact us:



+44 (0)1274 236193



j.r.jones@bradford.ac.uk



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