In Vitro Toxicology

ImQuest BioSciences has assembled and validated a platform of toxicity and mechanism of toxicity assays to expedite the development of new pharmaceutical products. The ImQuest Toxi*SENS* platform was specifically developed to rapidly and robustly assess product safety on host cells and tissues. Our *in vitro* and *ex vivo* assays are used to identify potential safety and development problems before animal safety and toxicology evaluations, to provide a focused rationale for the continued development of a therapeutic or prevention product, and to save our clients' valuable time and resources – facilitating successful development of new products.

CYTOTOXICITY & MECHANISM OF CYTOTOXICITY

Cytotoxicity Assays:

- Analyze the effects of test compounds on cell viability, cell proliferation and macromolecular synthesis in a variety of cell types such as PBMCs, monocyte/macrophages, dendritic cells, bone marrow progenitor cells, hepatocytes, iPS neurons, iPS cardiomyocytes and RPTEC kidney cells. Additional evaluations may be performed on *ex vivo* tissue explants.

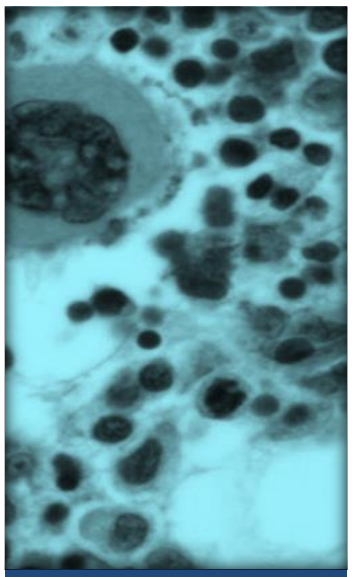
Mechanism of Cytotoxicity:

- Evaluate the effect of test compounds on cell cycle, mitochondrial respiration and function, apoptosis, membrane integrity, and oxidative stress. These assays are used to analyze the predominant areas where a test compound may exert an adverse effect. Additional assays may be used to explore effects on cellular kinases, growth factors and signal transduction pathways.

IMMUNOTOXICOLOGY

Take advantage of ImQuest's GLP-compliant immunoassay development services for your immunotoxicology studies and biologic product development. Our expertise in immunology and assay development provides a platform for the rapid development, optimization and validation of assays to evaluate the pharmacokinetics, pharmacodynamics and immuno-modulatory effects of drugs and biologics targeted at infectious disease, cancer, and inflammatory disease. Capabilities include:

- **Immunophenotyping**
- **Colony-Forming Cell (CFC) Assays**
- **Cytotoxic T Lymphocyte Function**
- **NK Cell Assays**
- **KLH ELISA for T-Dependent Antigen Response (TDAR)**
- **Cytokine Assays**
- **Host Resistance Assays**



Flow Cytometric Assays

ImQuest BioSciences offers flow cytometry services with our 8 parameter BD FACS Canto II.

Apoptosis Assays include:

- TUNEL
- Poly(ADP-ribose) polymerase
- Annexin V (7AAD/PI)
- Phosphohistone H2A
- Tetramethylrhodamine (TMRM)
- Multiplexed Cytometric Bead Arrays

Supportive assays include:

- Cell Activation and Exhaustion
- Cell Proliferation
- Cell Cycle Analysis
- Chromosomal Abnormalities

In Vitro ADME and Pharmacology

As a complement to our ToxiSENS services, we offer a panel of assays designed to screen the potential absorption and metabolism of drug candidates.

Absorption

Physico-Chemical Characterization

- Solubility
- Stability
- Lipophilicity

Drug Permeability Assessment

- Human colon carcinoma cell line Caco-2
- Uterine epithelium cell line HEC-1-A
- Human brain endothelial cells co-cultured with astrocytes
- Human hepatocytes
- Vascular endothelial cells
- Franz Cell permeability assays

Drug Transporter Interactions

- Recombinant p-glycoprotein (membrane fraction)

Metabolism

Metabolic Stability Determinations

- Microsomes
- Hepatocytes

Phase I – Modification Analysis

- Cytochrome P450 (HepaRG cells, hepatocytes, recombinant enzymes, and liver microsomes)
- Monoamine oxygenase (microsomal proteins)

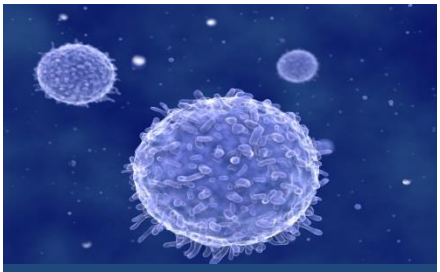
Phase II– Conjugation Analysis

- UDP-glucuronosyltransferase (UGT-specific microsomes)

Move your drug or biologic development program forward more efficiently and expeditiously with ImQuest's Toxi*SENS* Services platform. Many aspects of compound toxicity are affected by the pharmaceutical properties and formulation of a product. Thus, evaluations are performed in parallel with our Pharma*SENS* platform to assist with the development of a drug delivery strategy that will yield enhanced efficacy and reduced toxicity.

ImQuest BioSciences, a preclinical CRO, specializes in the development of drugs, vaccines and biologics for the treatment and prevention of infectious disease, cancer and inflammatory disease.

Contact ImQuest BioSciences to learn more.



Genomic Toxicology Analysis

ImQuest BioSciences has a robust molecular biology program with demonstrated skill in systems-based approaches to assess drug candidates. Our varied expertise encompasses a range of core molecular biology services such as analyzing changes in gene expression, altered protein expression, protein-protein and protein-nucleic acid interactions and Single Nucleotide Polymorphism detection. This platform provides a strong foundation for utilizing genomic, transcriptomic, metabolomic and proteomic analyses to characterize the toxicological effects of drugs and biologics.

Toxicity Assays Include:

- Biomarker Profiling Microarrays
- Protein-protein Interaction Profiling Microarrays
- Enzyme Substrate Profiling Microarrays
- Gene Expression Microarrays
- Human Transcriptome Microarrays
- PCR Microarrays