

IDBI Member Laboratory Assays - March 2021

Cell assays

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Assay	Lab	Notes
Cell Attachment	PI 1	Measures cell binding to purified extracellular matrix proteins mediated by different integrin proteins. High throughput.
TGFb activation/signaling	PI 1	Employs reporter cell line in which a TGFb sensitive promoter drives luciferase expression.

Biochemical screening assays

Assay	Lab	Notes
Ribonuclease H activity	PI 2	Human RNaseH1

ADME/tox assays (in vitro)

Assay	Lab	Notes
Turbidimetric solubility	PI 2	In tissue culture medium. Can also be done in simulated gastric and intestinal fluids at pH 2.0 and 7.3
PAMPA	PI 2	Models passive diffusion through membranes
Mitochondrial DNA levels	PI 2	Human mitochondrial/nuclear DNA ratio
Mitochondrial function	PI 2	Seahorse assays (low throughput)
Cytotoxicity	PI 2	MTS, neutral red, and LDH release
Compound stability in microsomes	IDBI core	Measures phase I (P450) metabolism. Can be performed with liver or intestinal microsomes. Multiple species.
Compound stability in hepatocytes	IDBI core	Measures phase I /II metabolism. Multiple species available.
Caco2 cell layer permeability	IDBI core	Predictor of intestinal absorption / oral bioavailability.
Plasma protein binding	IDBI core	Influences metabolism. Determinant of free drug concentration.
hERG channel activity	IDBI core	Indicates potential for cardiotoxicity.
MDR transwell assay	IDBI core	Indicates compound affinity for the MDR (PGP) drug transporter
PAMPA	IDBI core	Models passive diffusion through membranes. Can configure to reflect membrane composition for various tissues (e.g. brain)
Kidney Toxicity	PI 4	Mouse urine collection and measurement of KIM1 and NGAL by ELISA
Cytotoxicity	PI 4	MTS
Neuroinflammation	PI 4	Assess inflammatory markers by qPCR

Microbial Screening Assays

Microbe	Lab	Notes
Hepatitis B virus	PI 2	Assays: DNA synthesis, RNA synthesis, infection, capsid accumulation
Staphylococcus spp.	PI 3	Bacterial growth inhibition assay
Enterobacteriaceae	PI 3	Bacterial growth inhibition assay
Acinetobacter baumannii	PI 3	Bacterial growth inhibition assay
Pseudomonas aeruginosa	PI 3	Bacterial growth inhibition assay
Enterococcus spp.	PI 3	Bacterial growth inhibition assay
Neisseria spp.	PI 3	Bacterial growth inhibition assay