康龙化成 PHARMARON

Laboratory Services

in vitro Toxicology Services at Pharmaron

Pharmaron offers an innovative *in vitro* toxicology portfolio with exceptional breadth and depth, supporting drug discovery programs from hit finding and candidate selection through IND submission.

Comprehensive *in vitro* Toxicology to De-Risk Discovery and Enable Confident IND Progression

Discovery-Stage	▪ Off-target panel and selectivity profiling ▪ Identification of toxicity drivers to guide compound design ▪ Early triage through high-throughput 2D and 3D assays ▪ *In silico* testing for data-driven decision-making and reduced screening cycles
Human Relevance	▪ Application of NAMs to increase human relevance where biological complexity is required ▪ Advanced models including co-cultures, organoids, and organ-on-chips models ▪ Characterization of toxicity mechanisms in human-relevant physiological systems
IND-Enabling	▪ IND-enabling assays aligned with ICH, FDA, and OECD guidelines ▪ GLP-compliant studies delivered with regulator-ready documentation ▪ Seamless transition from discovery into regulated testing and *in vivo* safety assessment

Regulatory-Required *in vitro* Toxicology Assays

Pharmaron performs around 400 GLP-compliant regulatory *in vitro* toxicology studies per year to support IND submissions, with extensive experience generating high-quality, regulator-accepted data.

- ICH S7B: hERG assay
- OECD TG 471: Bacterial reverse mutation test (Standard Ames, Enhanced Ames, Micro Ames, and Mini Ames)
- OECD TG 487: *In vitro* micronucleus test, with optional CREST follow-up
- OECD TG 473: *In vitro* chromosomal aberration test
- OECD TG 490: *In vitro* mouse lymphoma assay
- ICH M7(R2): Mutagenic impurity assessment for drug substance and drug product
- Genotoxicity packages, including *in vivo* chromosomal aberration and comet tests
- FDA ICH S10: Photosafety evaluation package
- We also support the relevant *in vivo* parts including OECD TG 475: *In vivo* Mammalian Bone Marrow Chromosomal Aberration, and OECD TG 489: *In vivo* Mammalian Alkaline Comet Assay to detect DNA damage

Organ-Specific *in vitro* Toxicology Assays

- Organ-specific *in vitro* toxicology covering all toxicology-relevant organ systems
- Our tiered model strategy spans early screening to advanced, highly translational readouts

Organ System	Representative Models	Key Safety Focus
Cardiovascular	hERG and other CiPA ion channels, iPSC-derived cardiomyocytes (2D/3D), human cardiac microtissues, heart organoids (cardioids)	Functional and structural cardiotoxicity: Proarrhythmic risk, electrophysiology, contractility, calcium handling, mitochondrial dysfunction
Liver	Primary human hepatocytes and non-parenchymal cells, 3D liver spheroids, liver-on-a-chip	DILI risk, mitochondrial dysfunction, lipid pathway disturbances
Nervous System	Primary neurons, hiPSC-derived neurons/astrocytes/microglia, dorsal root ganglia (DRG), cerebral organoids, brain slices	Structural and functional neurotoxicity, neuroinflammation, network activity
Kidney	Renal primary cells, iPSC-derived kidney organoids, adult-tissue-derived kidney tubuloids	Tubular injury, retention-driven liabilities, cytotoxicity
Gastrointestinal	Primary intestinal and colonic epithelial cells, organoids, barrier models, gut-on-a-chip	Cytotoxicity, barrier integrity, toxicity mechanisms
Respiratory	Primary airway and lung cells, air-liquid interface models, airway/bronchial organoids, bronchus-on-a-chip	Cytotoxicity, barrier integrity, airway function, fibrosis
Skin	Keratinocytes, primary keratinocytes and dermal fibroblasts, reconstructed epidermis, primary epidermal organoids	Cytotoxicity, barrier integrity, irritation, corrosion, and phototoxicity
Immune System	Primary human immune cells, whole blood, isolated immune cell populations, primary mast cells	Immune activation and suppression, immunogenicity, Fc-mediated effects, hypersensitivity, mast-cell-mediated risk
Hematopoietic System	$CD34^+$ HSPCs, lineage-specific differentiation cultures, bone marrow models, whole blood	Cytopenia risk, marrow toxicity, lineage-specific effects, peripheral blood compatibility

Contact us to discuss how our capabilities can de-risk your drug development program.

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