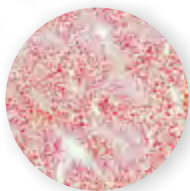
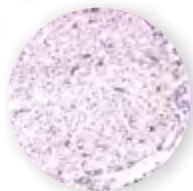




Your partner for  
clinical pathology, histopathology  
and immunohistochemistry



# Your partner for clinical pathology, histopathology and immunohistochemistry

Citoxlab histology laboratories offer all routine procedures, along with special techniques such as immunohistochemical including immunofluorescence staining on paraffin, frozen or plastic blocks. State-of-the-art equipment including GLP-validated software (Provantis, Pathdata, ImageScope, Bone) are dedicated to histology operations. We also offer a complete range of clinical pathology investigations and specialized laboratory services to meet your development requirements.

Our team of certified and experienced pathologists, clinical pathologists and technical staff has a large expertise in evaluating the safety of pharmaceutical, veterinary pharmaceutical, biotechnological, medical device, chemical, agrochemical, food and consumer products, in rodents and non-rodents.



## Qualified and experienced staff

- Board certified pathologists
- Expertise in carcinogenicity studies, toxicological and mechanistic studies
- Study evaluation, peer-review, consultancy



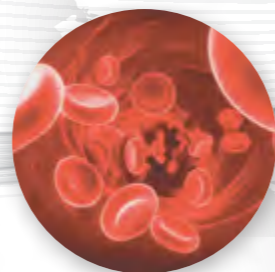
## Clinical pathology

- Clinical chemistry on serum or plasma
- Supervised by veterinary clinical pathologists
- Hematology, clinical chemistry
- Coagulation, hemostasis
- Urinalysis



## Coagulation capabilities

- *In vitro* and *in vivo* Platelet Aggregometry (CHRONO LOG 700tm, multiplate™)
- Thromboelastometry: ROTEM®
- Hemostasis testing including CWA (Clot Waveform Analysis)



## Hemoglobin capabilities (Avoximeter 4000™)

- Methemoglobin
- Oxyhemoglobin
- Carboxyhemoglobin
- Total hemoglobin
- Oxygen content



## Histopathology

- Special staining
- Ultramicrotome
- Electron microscopy
- Laser capture microdissection
- Macroscopy
- Confocal microscopy
- Immunofluorescence staining
- Multiplexing



## Digital slide scanning

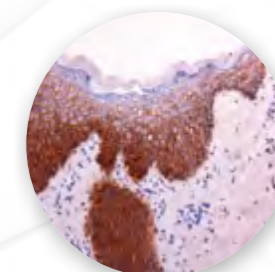
(Aperio AT2 - Leica™)

- External sharing and remote collaboration
- Powerful image analysis on ImageScope™
- Consistent, high quality eSlide scanning



## Immuno-histochemistry

- A wide range (> 125) of human and animal tissue biomarkers
- *In situ* hybridization (ISH) for mRNA, viruses and microRNA (RNAscope) detection
- Tissue Cross Reactivity (TCR)
- Access to human samples
- State of the art instruments
  - Discovery Ultra Ventana™
  - Discovery XT Ventana™ Automat
  - Discovery Ventana™ Automat



## Tissue Cross Reactivity

- GLP or exploratory screening
- Standard list of 42 tissues (according to FDA & EMEA guidance) and blood smears for 3 unrelated donors
- Tissue banks available for: Human, Cynomolgus, Rhesus, Marmoset, Rat, Mouse, Minipig, Dog and Rabbit
- Experience with antibodies:
  - Classical Ab,
  - Fab fragment,
  - Biotinylated Ab,
  - IgG4 Ab,
  - Peg-Fab,
  - Bispecific Ab,
  - Human single chain variable fragment (scFv), - Cytotoxic conjugated Ab (ADC), vaccine induced Abs

## TOXICOLOGY SERVICES

- General toxicology in all species
- Special toxicology
  - infusion, Inhalation, Dermal, Ocular
- Immunotoxicology
- Regenerative medicine
- Reproductive toxicology including minipigs and NHPs
- Carcinogenicity studies also in rasH2 and p53+/- mice
- Genetic toxicology: ICH compliant package
- *In vitro* toxicology: BCOP, h-CLAT, KeratinoSens™, DPRA, Photo 3T3-NRU, Episkin™, chicken eye test
- Agrochemical / chemical / REACH
- QSAR
- Physico-chemical testing
- Ecotoxicology: wide range of test species

## SAFETY PHARMACOLOGY

- Integrated safety pharmacology in toxicology studies
  - CV (JET), BP
  - Respiratory (JET), plethysmography
  - CNS (FOB) and JET-EEG
- Safety pharmacology core battery
- *In vitro* assays

- GLP compliant ion channel testing panel (hERG +5)
- CNS *ex vivo* models for seizure liability screening
- Screening and follow-up models
  - Rodent and non-rodent LVP telemetry
  - Anesthetized models
  - Polysomnography
  - Gastrointestinal motility

## DMPK, BIOANALYSIS, BIOMARKERS

- <sup>14</sup>C and <sup>3</sup>H ADME studies in all species
- *In vitro* metabolic clearance, metabolite ID and profiling, DDI package (metabolism and transporters)
- Bioanalysis: LC-MS/MS, GC-MS/MS, LC-ICP/MS, LC-Radiodetection, ELISA, RIA
- Toxicogenomics, miRNA: Affymetrix™ accredited service provider, next generation sequencing (Illumina®)
- Immunology: 10-color flow cytometer, Luminex, Meso Scale

## MEDICAL DEVICE

- Biocompatibility testing
- Cardiovascular stents, electrophysiology

- and structural heart studies
- Long-bone defects and craniomaxillofacial/dental models
- Spinal fusion models
- Joint and cartilage repair models
- Regenerative medicine (growth factors, biomaterials, cell and gene therapy)

## SPECIALIZED EXPERTISE

- Juvenile studies including minipigs
- Ototoxicity in rats
- Fertility studies in rodents and NHPs
- Radiation safety and efficacy studies
- Drug transporter studies and Drug-Drug Interactions
- Tissue Cross Reactivity (TCR): human and animal tissue banks
- Gene therapy vector biodistribution via qPCR
- ES cell testing: devTOX™ and cardioTOX™ (with Stemina)
- Lead optimization and predictive toxicology services: Leadscreen™



GLP CERTIFIED

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