

Incubation Unit
EXPERIMENTAL PHARMACOLOGY CENTER

In-Charge:
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Experimental Pharmacology Incubation Center have 3 pre-incubation units

1. In-vivo Bioscience Center
2. Toxicology Center
3. Cell & Molecular Biology Center

Experimental Pharmacology Center (EPC) is aimed to organize and undergo planning for the clinical and non-clinical study design, data, information and facts for the advancement of knowledge in drug discovery and pharmacology. Mission of EPC is to foster research in different specialties such as In-vivo biosciences, Toxicology, and Cell & Molecular Biology etc. EPC's long term ambition is to encourage novel and creative approaches to basic and advanced research problems and create awareness regarding the drug development. Moreover, also organizing different workshop and conferences for the students, residents and faculty to foster their carrier and innovative horizon.

In-vivo Bioscience Center

Equipment's available	Experiments conducted
<ol style="list-style-type: none"> 1. Actophotometer(6 & 4 digits)-Inco 2. Analgesiometer (tail flick & eddy's hot plate)-Inco 3. Beam walking instrument 4. Bio pack system- MP45 5. Digital plyphesmometer- Panlab Harvard 6. ECG physiograph with stimulator-Inco 7. Homogenizer with digital speed indicator-Remi 8. Langendorff apparatus-Inco 9. Leica manual rotary microtone tissue- Lemikro systems 10. Letabolic cage set - Techniplast 11. Mucus chamber with electrode- 12. Open field apparatus 13. Respiration pump variable rat strokecapacity500cc 14. Respiration pump variable rat strokecapacity 500cc-inco 15. Semiauto analyser-Biosystems 	<p><i>In vivo</i> animal studies are an essential for any drug development. Use of animal models for biomedical research has become imperative not only to enhance our understanding of current health issues but also to make progress in this vast field. In vivo animal models have unraveled disease pathologies of numerous diseases. These models have served in disease diagnostics, pharmacological and toxicological testing of drugs, and surgical research.</p> <ol style="list-style-type: none"> 1. In vivo efficacy models: Animals have been used and are still permitted for screening for drugs, bioassay and for preclinical testing including preclinical safety and efficacy. This usually includes various screening models: Anti-infective, behavioural models, Anticancer and Antioxidant activity, Immuno-modulatory and anti-inflammatory, various metabolic disorder models, cardioprotective, hepatoprotective, nephroprotective and neuroprotective screening models. 2. Pharmacokinetic & Pharmacodynamic study: Since concentrations at the site of action and pharmacologic response are governed by complex biological processes, in vivo characterizations offer a special window into these systems. Pharmacokinetic and pharmacodynamic (PK/PD) concepts underlying drug disposition and response provide a quantitative framework with which to identify potential clinical candidates.

<p>16. Urine analyser- Prism medical service 17. Semi-Auto Analyzer- Biosystem 18. Hematoanalyzer- NIHON KOHDEN</p>	
Toxicology Center	
Equipment's available	Experiments conducted
<ol style="list-style-type: none"> 1. Bio pack system- mp45 2. ECG physiograph with stimulator-Inco 3. Fermentor 4. Gel electrophoresis apparatus- Aristogen 5. Homogenizer with digital speed indicator-Remi 6. Projection Microscope 7. Leica manual rotary microtone tissue- Lemikro systems 8. Metabolic cage set - Techniplast 9. Mucus chamber with electrode- 10. Rat BP condos Manometer-Inco 11. Respiration pump variable rat strokecapacity 500cc 12. Semi auto analyser- Biosystems 13. Telethermometer(digital)- Inco 14. Urine analyzer- Prism medical service 15. UV Spectrophotometer- AGILENT 	<p>Preclinical in vivo toxicology studies aim to evaluate the onset, severity, and duration of toxic effects, as well as the degree of reversibility and dose dependence.</p> <ol style="list-style-type: none"> 1. Acute toxicology research focuses on the toxicological reactions to a single, high dosage of the target drug. 2. Subchronic and chronic studies are carried out for longer-term research to replicate long-term drug use and the ensuing negative effects. Subchronic toxicity investigations involve giving the test drug in small doses repeatedly over the course of up to 90 days. Studies on chronic toxicity, on the other hand, concentrate on the effects of the test chemical over months or years. 3. Other toxicity studies include: dose escalation studies, Carcinogenicity, Genotoxicity, Mutagenicity and organ specific toxicity

Cell & Molecular Biology Center	
Equipment's available	Experiments conducted
<ol style="list-style-type: none"> 1. Biosafety Hood - LABTOP 2. Carbon dioxide incubator – Thermo Scientific 3. Semi-Auto Analyzer – NIHON KOHDEN 4. PCR Thermo cycler - Quanta Studio 5. Electrophoresis and Blotting- Bio-Rad 6. Microplate Reader-Tecan Infinite M200 Pro 7. Gel Documentation Gel Image W/UV Light Base-Life 8. Inverted Microscope (Evos XL Core Fixed stage - F0514) 9. Cooling Centrifuge. 10. Deep freezer -80^o C 11. Pierce Powder Blotter station-Crystal bio 12. Micro Centrifuge (SKR-1807-S) 	<p>Cell-based assays provide a wealth of information and are valuable tools in drug discovery applications. Reducing high attrition rates due to toxicity in drug development continues to be a key challenge for the pharmaceutical industry. In our Cell & Molecular Biology lab we perform various assays (mentioned below) to test and overcome drug toxicity.</p> <ol style="list-style-type: none"> 1. Cell Viability Assays - Determine the ratio of live and dead cells, Cell Proliferation Assays - monitor the growth rate of cell populations, Cytotoxicity Assays - Assess the number of live and dead cells in a population following treatment with a drug candidate or pharmacological agent under investigation, Electrophoretic mobility shift assays, and Cell Senescence Assays - to assess cell health, such as cell senescence assays that detect senescence markers associated with β-galactosidase activity which reflects cell membrane integrity. 2. DNA & RNA: DNA extraction, sequencing, and cloning, gene expression, 16s and 18s rRNA sequencing, mutagenesis and phylogenetic analysis. 3. In-silico analysis of mutations and SNP's by PROVEAN, SIFT, and Polyphen 2.
	
	