International Congress

STATE OF THE ART IN NON-CLINICAL MODELS FOR NEURODEGENERATIVE DISEASES

HOTEL IBEROSTAR | LAGUNA AZUL | VARADERO, CUBA
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Congress Organizers:
Cuban Society of Laboratory Animal Science
Scientific Veterinary Council of Cuba
MOLECULAR MECHANISMS INVOLVED IN NEURODEGENERATION

The development of cellular and animal models of neurodegenerative disease has fueled research into the basic mechanisms of neurodegeneration.

• The current understanding of excitotoxic mechanisms
• Immune response in the pathogenesis of neurodegenerative diseases
• The role of antibodies toxicity, glial cells, and inflammation in neurodegenerative diseases
• The formation of abnormal protein fragments across several diseases
• The mitochondrial dysfunction on neurodegeneration.
• The potential of genetics to identify the molecular mechanisms of neurodegenerative diseases

METHODOLOGIES FOR NON-INVASIVE STUDIES OF BRAIN DYSFUNCTION IN ANIMAL MODELS

Applications of PET/SPECT for the study of the following aspects to the neurodegenerative diseases:

• Receptor occupancy and signal transduction
• Brain metabolism
• Brain perfusion
• Brain inflammation
• Blood Brain Barrier
• Pharmacokinetics of CNS drugs for the diagnosis and treatment.

Developing of molecular probes to trace brain dysfunctions related to neurodegeneration. Development of non-invasive methodologies for the diagnosis of Parkinson Huntington and Alzheimer disease, Multiple Sclerosis, brain tumours, familial amyotrophic lateral sclerosis, etc. New technologies for brain functional studies in lab animals.

STATE OF THE ART IN NON-CLINICAL MODELS FOR GliOBlastoma NEURODEGENERATIVE DISEASES, AND ASSOCIATED CENTRAL NERVOUS SYSTEM DISEASE

• Animal models that recapitulate features of Multiple Sclerosis (MS), Alzheimer’ disease (AD), Parkinson’s disease (PD), Huntington’s disease (HD), familial amyotrophic lateral sclerosis (ALS), and host of other human neurodegenerative diseases
• State of the art in nonclinical models of neurodegenerative diseases. State of validation process, limitations and opportunities of non-clinical in vitro and in vivo models. Interactions of mechanistic approach and in vitro results in animals models
• Spontaneous, aging and transgenic animal models
• Implement and validate orthotropic and intracerebral implanted glioma models in experimental animals
• Establish a high-low platform for the identification of molecular targets in high-grade gliomas
• Strategy for experimental selection of novel molecules for the diagnosis and therapy of gliomas and their translation from “in vitro” to “in vivo” models and strategy matrix combination therapy for the treatment of high-grade gliomas
• Discussion on complementarity between in vitro and in vivo models as part of strategies in High Screening process
• Neurovascular unit in Non-clinical models
• Pitfalls in translation: The limitations of animal models.
• Reproducibility and Validation of in vitro and animal models
INFLUENCE OF LABORATORY ANIMAL SCIENCE, ANIMAL WELFARE, QUALITY MANAGEMENT AND EXPERIMENTAL DESIGN IN EXTRAPOLATING RESULTS FROM EXPERIMENTAL RESEARCH TO CLINICAL PROOF OF CONCEPT

- Assuring animal welfare, humanitarian end point and specialized care in neurodegenerative and transgenic animal models during long lasting experiments
- Experimental and statistical design for animal use reduction in research of neurodegenerative disease
- Quality assurance, personnel certification, facilities and technologies as part of in vitro and in vivo research in neurodegenerative diseases
- Environment control to assure fidelity of results of clinical neurological evaluation
- Other methodologies that contribute to animal welfare and quality assurance during research on neurodegenerative disease and associated pathologies.

FROM BASIC RESEARCH TO PROOF OF CLINICAL CONCEPT. RESULTS WITH NEW MOLECULES (BENCH TO BEDSIDE)

- Results from basic to clinic research of new drugs for neurodegenerative disease (Multiple Sclerosis, Alzheimer, Parkinson, Huntington, etc.)
- Targets for neuroprotection from lab to clinic
- Stroke. Translational Research.
- Biomarkers from basic research to clinic. Surrogate end points
- Experimental background for innovative clinical treatment.

SATELLITE WORKSHOP: STRATEGIES, REQUIREMENTS AND OBSTACLES FOR NEW DRUGS IN DEVELOPMENT FOR TRANSLATION FROM LABORATORY TO PATIENT (BENCH TO BEDSIDE)

- Expression of mechanistic approach, in vitro research and animal models as background of new innovative treatment
- Experiences on multidisciplinary and the core group. Improving efficiency in translational timetable.
- Regulatory and ethical issues around Clinical Proof of concepts of neurodegenerative diseases
- Designing Research and Development project to accomplish regulatory requirements.
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