

## Institut Pasteur Korea-UNESP Internship Program

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### Study Plan

#### *I. Definition*

**Discipline: Introduction to drug discovery**

Mandatory during the internship

Department: Center for Neglected Diseases Drug Discovery

Responsible teachers: Dr Carolina Borsoi Moraes and Dr Jair Lage Siqueira-Neto

Semesters: (X) First                      (X) Second

Total credits: 04

Total number of hours: 60 h

#### *II. Content synopsis*

Fundamentals of the multidisciplinary field of drug discovery. Topics covered range from the initial process of discovery of new drugs, such as a methods of compound screening, types of assays and compound libraries, parameters used in the selection of compounds along the pipeline until the stage of new drug approval by regulatory agencies. Classes and activities will be taught in English.

#### *III. Objectives*

At the end of the course, students are expected to:

- i) know the basic terminology used in the field of drug discovery;
- ii) understand the major modern drug discovery techniques used and be able to distinguish which methods are best suited for different applications;
- iii) have a broad view of the drug discovery and development, with accurate notions of timing and cost.

#### ***IV. Program***

- Basics of High Throughput Screening Assay
- Chemical Libraries
- Enzyme Assay Design for High Throughput Screening
- Cell based Assay Design for High Throughput Screening
- High Content Screening and Image Analysis
- Disease Models for Drug Discovery (practical examples)
- Statistics and Decision Making in High Throughput Screening
- Medicinal Chemistry and Lead Optimization
- Target Deconvolution and Drug MoA Discovery
- Pre-clinical Phases (DMPK)
- Clinical Phases
- Official Regulatory Agencies Approval

#### ***V. Teaching techniques***

Lectures, seminars based on scientific articles (presented by students), laboratory practice, guided reading.

#### ***VI. Evaluation criteria***

The final grade will be made considering the student's attendance and active participation in the proposed activities (50% of final grade) and the grade on an exam that will be applied at the end of the course (50% of final grade).

#### ***VII. References***

RANKOVIC, Z., MORPHY, R. Lead Generation Approaches in Drug Discovery. Wiley, 2010.  
JANZEN, W. P. and BERNASCONI, P. (Editors). High Througput Screening: Methods and Protocols. 2nd Edition, Humana Press, 2009.  
RICK, N.G. DRUGS – From Discovery to Approval. 2nd Edition, Wiley-Blackwell, 2009.  
CHORGHAE, M. S. Drug Discovery and Development - Volume 1. Wiley, 2006.  
BARFAI, T., LEES, G. V. Drug Discovery: From Bedside to Wall Street. Academic Press Elsevier, 2005.  
Scientific articles selected during the course.