

Nom de l'UE : Criblage (HAC927C)

Description :

Understanding of screening techniques for bioactive molecules, and more generally in vitro tests used to measure a biological event in the perspective of drug discovery or diagnosis.

- 1) Pharmacological and biophysical fundamentals describing a biological event, target of biological tests:
- 2) Biological tests for the development of medicines or diagnostics
- 3) Applications, case studies, critical analyses.

Mots-clés : High throuput Screening, high content screening, fluorescence, binding, biological activity, In vitro bioassay

Objectifs :

Be able to choose the biological screening and testing techniques suitable for the evaluation and optimisation of bioactive molecules.

Understand from a molecular point of view the technologies associated with diagnostic and screening tools and be able to design new chemical tools for this purpose.

Volumes horaires :

CM : 9 H

TD :

TP :

Terrain : 11 H

Pré-requis nécessaires :

Notions de base de biologie et de biochimie

Pré-requis recommandés :

Chimie organique, niveau L3 :

Notions de base de réactivité

Chimie des Biomolécule, niveau M1 :

Connaissance des diverses familles (structures, propriétés)

Contrôle des connaissances :

Examen écrit terminal de 2h :

- Documents autorisés : oui
- Calculatrice non graphique autorisée : oui
- Internet autorisé : oui (mais sans communication interpersonnelle possible)

Syllabus :

Cours : Inductive pedagogy (problems based on real cases of development of active molecules. Inverted classroom. Votes and quizzes during sessions, case studies. Support(s) available on ENT (Moodle): Course documents, reference publications, examination records.

1) Fundamentals (3H)

- receptors, enzymes
- binding, basics of receptors pharmacology
- biological activity measurement

2) Principle of Bioassays for drug development and diagnosis (6H)

- high throughput vs high content
- Biological model : biomolecules isolated, cell-based assays, animal models including transgenic models
- luminescence (fluorescence, FRET, radioluminescence, SPA), radioactivity, UV
- viability, proliferation and adhesion assays (for medical devices).

3) Systems and devices :

- robots HTS and library management
- enzyme based reagents and assays
- surface interaction measurement (QCM/SPR)
- lateral flow and chromatographic assays

3) Applications, cases study and critical evaluation.

TD (5 H) : Individual work, presentation of techniques and publications to be prepared before and presented during the session.

Case studies based on drug development, diagnosis tools and medical devices.

Responsible :

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