HEALTH

GRAP UMR-S INSERM 1247
Research Group on Alcohol & Pharmcodependences

KEYWORDS

- Alcohol
- Addiction
- Alcoholism
- Addictology
- Binge drinking
- Psychiatry
- Neuroscience
- Synaptic plasticity
- Hepatology
- Alcoholic hepatitis
- Cellular and animal modelling
- Treatments

A FEW THOUGHTS FROM THE DIRECTOR

"The GRAP is the only laboratory in France working exclusively on alcohol addiction and alcohol-related liver disease. The research is particularly focused on the pathophysiology of binge drinking, alcohol addiction and alcohol-related liver disease.

Translational projects are developed with cellular and animal models, clinical studies. The subject of research is a real public health issue: alcohol-related mortality is between 40,000 and 60,000 deaths/year (mainly cancers and cardiovascular diseases); alcohol is the leading cause of hospitalisation; binge drinking is a risk factor in the development of addiction. A better understanding of the pathophysiology allows us to better understand inter-individual vulnerability, to test new therapies and look for personalized medicine."

Professor Mickael NAASSILA

FIELDS OF RESEARCH

Our research theme concerns alcohol addiction and alcohol-related liver disease.

There are several research areas:

- Individual and environmental factors involved in binge drinking in young people (clinical studies and animal models);
- Brain consequences of binge drinking and alcohol addiction (cognitive deficits, including memory processes and synaptic plasticity; psychiatric comorbidities);
- Somatic consequences of binge drinking and alcohol addiction, in particular: pathophysiological mechanisms of acute alcoholic hepatitis and alcoholic hepatocarcinoma. Cellular models allow us to elucidate the mechanisms involved in the aggressiveness of alcohol-related hepatocarcinoma.

Animal models of binge drinking and alcohol addiction allow us to understand the neurobiology and evaluate the relevance of novel treatments as well as to consider clinical trials in patients with alcohol use disorder and/or alcohol-related liver disease.

FIELDS OF APPLICATION

- Addictology / Alcohololgy
- Hepatology
- Neurosciences
- Biomedical / Health
- Therapeutics / Pharmaceuticals

RESEARCH PROJECTS

- **Era-net Neuron ANR européen**
  PsiAlc project: Psilocybin in alcohol use disorders. 600k€. (France-Germany-Switzerland). Efficacy of psilocybin in a multic-entre preclinical trial and brain imaging in patients with alcohol use disorder.
- **PHRC national 2015. NalmeCir project**
  Randomised, double-blind, multi-centre trial testing nalmefene versus placebo in the treatment of alcohol addiction in patients with alcoholic cirrhosis.
- **EPIGENALCO project**
  Epigenetic mechanisms in alcohol addiction: HDAC inhibitors as a new treatment (collaboration with the ICMR of the University of Reims Champagne Ardennes).
- **Project BP1.3656**
  Randomised clinical trial evaluating BP1.3656 versus placebo in the treatment of alcohol use disorders. ClinicalTrials.gov Identifier: NCT03424824
- **Project N-Acetylcystéine**
  Randomised clinical trial evaluating N-acetyl-cysteine versus placebo in the treatment of alcohol use disorders.

EQUIPMENT

- Behavioural test battery (operant conditioning, impulsivity, anxiety, locomotion, decision making)
- Alcohol vapour exposure system
- ANALOX system, blood alcohol measurement
- Stereotactic microsurgery stations
- Extracellular electrophysiology and patch-clamp stations – fast-scan cyclic voltammetry
- Liquid scintillation beta counter, radioactivity platform
- Nucleic acid extractor, PCR
- Cell culture
- Cell imaging station
- Vibratome, cryomicrotome

INDUSTRIAL REFERENCES

- Bioprojet Biotech, Rennes
- THERANEXUS, Paris

Various contracts for industrial services or with SATT.

Success stories

In 2009, GRAP coordinated a European research project on binge drinking (BD), a dangerous and commonplace drinking behaviour among young people.

The common objective of all GRAP members involved in this research project was to gain a better understanding of the individual and environmental factors linked to BD.

It has been shown that the profile of young people who indulge in BD is very heterogeneous, associated with impairment of the functionality of the cerebral white matter linked to reduced performance in a spatial working memory task. In adolescent animals, two episodes of binge drinking are sufficient, for example, to abolish a specific form of hippocampal synaptic plasticity: long-term depression, at the same time as the memory impairment is observed.

A model, unique in the world, of voluntary BD in rats has been set up, inspired by «happy hours». It is now possible for GRAP to dissect the gender differences and vulnerability factors associated with this behaviour and how BD is a risk factor for addiction.

Design: UPJV Campus Communication Department - Printing: UPJV Campus Reprography Department - Photography: Adobe Stock - May 2021

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