ASSISTANCE PUBLIQUE HÔPITAUX DE PARIS

Université Paris Cité

Instituts thématiques Inserm
Institut national de la santé et de la recherche médicale

cea

Institut Pasteur

INOVAND

Paris Child Brain Institute

Innovate collectively for the neurodevelopment and the future of every child

Massachusetts Institute of Technology

COLLÈGE DE FRANCE 1530

"The IHU label will enable the creation of one of the most advanced top-notch innovative research Institute in the world dedicated to this field."

Esther Duflo - Nobel Prize

InNOVAte collectively for the NeuroDevelopment and the future of every child:

Paris Child Brain Institute

Children (<15 years) ~18% French population (12.3 million in 2022)
➜ Education and Health childhood inequities

High sensitivity to biological and environmental factors

Genetic variations, prematurity, toxics (alcohol), poverty (20% < threshold of poverty), …

High-gain high-risk period

Neuro-Developmental Disorders (NDD) and learning difficulties: 10-20%

Burden at adulthood

Unemployment, psychiatric & somatic illnesses, social exclusion, poverty

Why is the situation alarming ?

- **Under-recognition of children with Neurodevelopmental vulnerabilities**
- **Delayed diagnosis and lack of longitudinal follow-up**
- **Poorly effective clinical/educational strategies**

InovAND proposes an **holistic** approach to children's care

Uniting the scientific community to address neurodevelopmental challenges

S. Auvin
- Child neurologist
- Pathophysiology of epilepsiy

R. Delorme
- Child psychiatrist, Head of the centre of Excellence for Autism

G. Dehaene-Lambertz
- Paediatrician
- Brain organization & cognitive acquisitions in infants

T. Bourgeron
- Geneticist
- Risk & resilience genetic factors in autism

A multi-scale expertise focused on neurodevelopment

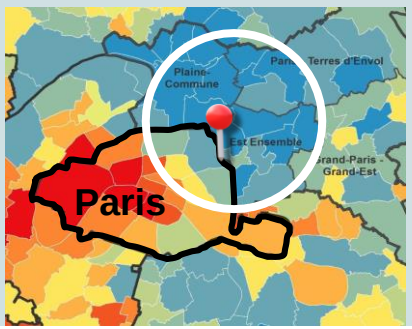
Science
How Learning to Read Changes the Cortical Networks for Vision and Language

nature medicine
Progress toward treatments for synaptic defects in autism

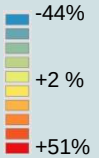
nature genetics
Genetic correlates of phenotypic heterogeneity in autism

BRAIN
A JOURNAL OF NEUROLOGY
Decreased microglial Wnt/β-catenin signalling drives microglial pro-inflammatory activation in the developing brain

In the City - at the **heart of vulnerable** populations



In blue, negative deviation from median Income in Île de France



40 M€ for **a new building** given by the **President of the French Republic in 2021**

Opening 2026

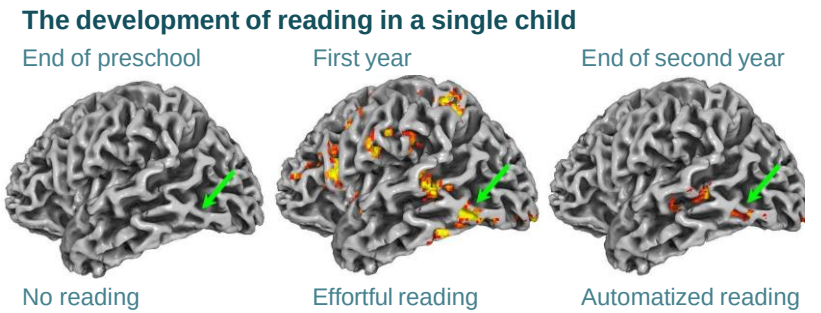
Clinicians dealing with ND vulnerability
Brain imaging, genetics
Clinical and preclinical research
Living Lab, Education
Associations
Startups
(+ national, European & international coll)

Call for new teams
Several expressions of high interest (SAB)

Our mission: Empowering neurodevelopmentally vulnerable children with the tools for a successful future

01 **Create a dynamic new ecosystem,** bringing together leaders in health, education, research, & stakeholders

02 **Contribute to** fundamental, clinical, and educational **innovations** to **improve individual trajectories for vulnerable children** through **new technologies, digital tools, therapies, and rehabilitation strategies**



03 **Be a catalyst for innovation** & **enable unique partnerships with private actors** (e.g., start-ups, pharma industry)

04 **Transform knowledge** to support the **specific needs of children and improve their well-being**

Transforming care pathways: A multi-scale ecological approach to address neurodevelopmental vulnerability

IHU Mind Logger

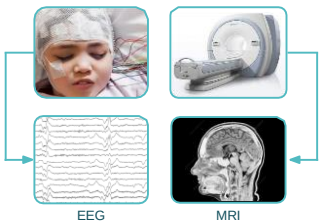
Innovative digital portal

- Ecologic collection
- Self-detection
- Longitudinal monitoring
- Early preventive strategies
- Digital intervention

IHU Care Hub

Excellence Center

High throughput & Cutting-Edge screening



InovAND Study

10,000 children with atypical developmental trajectories

≥ 3 clinical visits spaced ≥ 12 months apart

IHU bio & data bank

Findable Accessible Interoperable Reusable

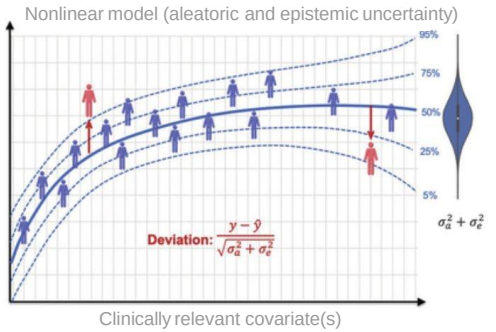
Build the numerical architecture for InovAND

Biobanking and BioMolecular resources Research Infrastructure

Accelerate the pace of discovery

Modeling developmental variability & trajectories

Normative models



Accelerate clinical evidence-based practice

Tailored solution for each child

Rapid scalability of good practices

Fostering community-based participatory research

home

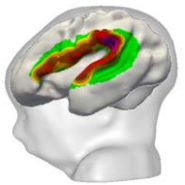
school

Unlocking the Brain: Identification of risk-resilience factors, & mechanisms for drug discovery / educational responses

New models of learning based on next generation data collection and analysis tools

Behavior
Connected-objects

Hyperscanning



EEG/MEG
MRI
NIRS-US

Babilou

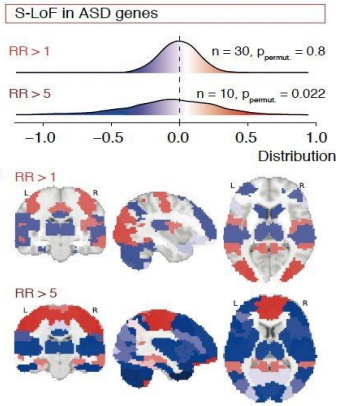
NEXTMIND

SIEMENS
Ingenuity for life

Kalulu

UBISOFT

In depth genetic & epigenetic signature of ND vulnerability

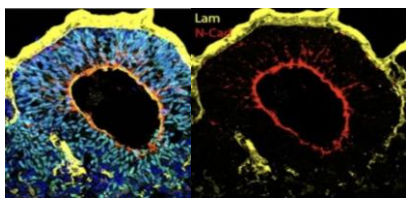


Roche
F. Hoffmann-La Roche AG, Basel, Switzerland

FRANCE MÉDECINE GÉNOMIQUE 2025
aviesan

Human brain organoids & experimental signatures of predictive trajectories

- Children-derived organoids
- Models: brain connectivity
- Models: cellular mechanisms
- Models: molecular mechanisms



Miltenyi Biotec

ICONEUS
REVEALING THE BRAIN

Multi-level drug screening

- In silico drug screening
- hIPSc-derived neurons drug screening
- In vivo rodent model drug screening
- Selection for human testing

I-Stem
INNOVER POUR GUERIR

imi innovative medicines initiative

BIOCODEX

SERVIER

Accelerating Impact:
Disseminating innovations through a dynamic network of stakeholders

Santé publique France

HEC PARIS

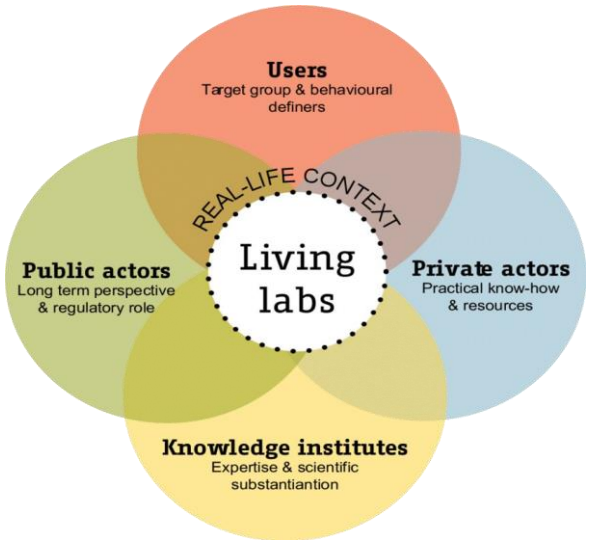
L'Assurance Maladie – Caisse Nationale

CONSEIL SCIENTIFIQUE DE L'ÉDUCATION NATIONALE

LEARNING PLANET INSTITUTE

Circle U. – European University Alliance

A dynamic & new ecosystem environment allowing excellence in academic and vocational training



Université Paris Cité

Core knowledge based on ND vulnerabilities

Action-Training / Formation-continuée with all actors

A new perimeter for innovative valorization policy & technology transfer

- Promoting pro-active & accelerated IP
- Opportunities with private organizations
- Framework for creation & growth startups

A scientific network for dissemination of efficient child welfare Programs

KINDNESS CURRICULUM

THE UNIVERSITY OF QUEENSLAND AUSTRALIA

ACADÉMIE DE VERSAILLES
Liberté Égalité Fraternité

Triple P Positive Parenting Program – for every parent

MOTIV-ACTION

- To children
- To parents
- To teachers
- To early childhood professionals

Transforming aspects of Paris Child Brain Institute

KPI in line with the strategies of France 2030

Basic science

- New drug and non-drug-based therapies
- Predictive models of individual outcomes
- New brain imaging tools to explore children ⇨ 7T MRI

Education

- Dissemination of good practices through Formation action/continuée
- Core curriculum & Modules on ND vulnerability at University

Health

- Improvement of developmental trajectories
- Early diagnostic tools for ND vulnerability
- Improvement of well-being

Valorisation

- Boost public and private investment
- New start-ups & private partnerships
- Cost/Benefit Evaluation of Early Childhood Interventions