Paris Brain Institute
ICM

Synapse

The newsletter designed to connect with you

No. 35 - November 2023

Special Report

Brain tumors: better understanding their specific characteristics so that they can be treated effectively one day

For a very long time, cancers were seen as daunting yet indistinguishable enemies that colonized one or more organs like a tidal wave, whose progression had to be stopped by any means necessary. Over the past twenty years or so, researchers and doctors have significantly revised this idea.

We now know that every cancer is different, that highly-aggressive treatments often fail and that tumors are not just clusters of abnormal cells, but authentic miniature ecosystems that behave differently depending on the patient. And, because of this, they can manipulate immune defenses, adapt and resist treatments and continue to grow.

At Paris Brain Institute, researchers are striving to pinpoint the mechanisms that make malignant brain tumors ever-changing and capable of defying even the most cutting-edge therapeutic tools. To grasp this complexity however, we need to approach it from several different angles. It is only through close-knit collaboration between researchers and clinicians that we can establish the portrait of a specific tumor, so we can offer the patient personalized treatment that attacks the right target and preserves healthy tissue as much as possible.

These interdisciplinary partnerships are now mature and multi-faceted. Paris Brain Institute experts are now able to draw up the molecular ID card of glioblastoma cells – the most common brain cancer in adults – to predict the effectiveness of a therapeutic molecule so that patients may benefit from the most promising compounds. Other current projects aim to facilitate the flow of drugs across the blood-brain barrier and to better characterize the tumor's inflammatory environment.

The goal is clear: to understand the thousand and one forms brain tumors can have, anticipate their progression, along with their weaknesses, and take action rapidly and effectively. The aim, first and foremost, is to increase symptom-free lifetime and the rate of survival – priceless breakthroughs for all patients and their families. In the long run, extraordinary developments are now conceivable. However, before anticipating tomorrow, we must remain humble, cautious and transparent, at all times.

Prof. Gérard Saillant
President of Paris Brain Institute

The Brain Fund, an investment fund for the benefit of Paris Brain Institute, closes a first round of fundraising with €25M.

The Brain Fund, created in spring 2022 through an initiative of the Friends of Paris Brain Institute Committee, a committee comprising twenty experts and major donors, is a French professional private equity fund whose purpose is to provide Paris Brain Institute with sustainable financial resources, complementing funding from public grants, patrons, donors and testators. This fund, managed by Impact Partners, has just closed a first round of fundraising with 25 million euros, a sum that exceeds the expected target. The capital gains from this first round of fundraising, which will be shared between Paris Brain Institute (80%) and the subscribers (20%), are not expected for several years, but we are already proud to be able to announce a second round of fundraising for 2025 and a third for 2028.

Three young researchers, winners of European funding

European Research Council
Established by the European Commission

The European Research Council (ERC) awarded three of its prestigious "Starting grants" to Paris Brain Institute researchers: Thomas Andrillon (Inserm researcher) from the "MOV'IT" team, for his project on fatigue "Sleeping Awake", Sara Bizotto, from the "Genetics and Physiopathology of Epilepsy" team, for her project "LINMOS" which focuses on the identification of cellular processes during human brain development, and Dafni Hadjieconoumou, head of a team dedicated to the brain-gut axis, for her project "GutSense". To find out more about their projects: https://institutducerveau-icm.org/en/actualite/three-researchers-from-paris-brain-institute-awarded-in-2023-an-erc-starting-grant/

Interglitches 3

The charity video-game marathon is back with a blast! Le French Restream team, more motivated than ever, is back for a high-flying 3rd edition to raise funds for Paris Brain Institute research. The event took place on October 27, 28 and 29 this year at the Institute's Edmond and Lily Safra Auditorium and proposed over 70 hours of solo and team video-gaming, challenges and speed records. As well as the speedrun competitions, a range of workshops were open to the general public including fun opportunities to discover research activities and professions. The event was a resounding success, raising over four times its fundraising target and surpassing last year's total.

SYNAPSE, Paris Brain Institute's newsletter addressed to its donors. No. 35 – 2023. Editorial board: Jean-Louis Da Costa, Marion Doucet, Astrid Crabouillet, Isabelle Rebeix, Marie Simon, Claire Pennelle, Lauriane Gallier, Carole Clément, Emma Kavcic Mondoloni and Aurélie Grosse. Design: Adfinitas. Printer: Imprimerie Jean Bernard. Print run: 115,000 copies.

euryale

Pierval Santé, sharing-fund real estate investment trust (REIT) is celebrating 10 years of supporting innovation

Jean-Jacques Olivié, Chairman of Euryale, has always been convinced that it's possible to combine the financial performance of an investment fund with an active involvement in developing a healthier society. The first ever sharing-fund real estate investment trust in France, approved by the AMF (French Financial Markets Authority), was born out of his meeting with Professor Saillant, 10 years ago. "What's interesting with Perval Santé", states Jean-Jacques Olivié, "is that we managed to create coherence between our incentive (investing in clinics, nursing homes for the elderly, specialized care homes, etc.) and Paris Brain Institute's research activities. And, all this, while providing medical research with the ongoing, long-term funding it needs". By donating a percentage of Pierval Santé's fundraising each year, by encouraging the REIT's investor-savers to also make personal donations, and by contributing as a Management Company, Euryale has rapidly become a long-term, sustainable funding partner, in total harmony with its core value of innovation. Euryale never ceases to bring finance and philanthropy closer together, through exceptional donations and the creation of a new sharing fund product, Trajectoire Santé, a civil society organization. The whole Euryale team is committed to supporting researchers in their fight against neurodegenerative diseases over the long term.

https://www.euryale-am.fr/en/

Paris Brain Institute at Palais de Tokyo, Paris

On September 16 this year, Dr. Lara Migliaccio, neurologist and researcher at Paris Brain Institute, took the floor during the "Living Palais, roundtables" event at the Palais de Tokyo to talk about the link between art and neurodegenerative diseases, and more specifically, about the cognitive reserve in patients suffering from frontotemporal degeneration or dementia (FTD). Through this event, the Palais de Tokyo wishes to imagine its future by taking the points of view of vulnerable people into account. Paris Brain Institute is delighted to be able to share its knowledge with the general public, which is one of its core missions.

Key figure

18,513

This is the number of admissions for the documentary film *Invincible été after 6 weeks in movie theaters. The film has since been shown in Switzerland, the UK, Spain and Madagascar. All profits will be donated to Paris Brain Institute.**

* directed by Stéphanie Pillonca, who followed the daily life of Olivier Goy, suffering from ALS.

Follow us

seen on the web

Find out more in the "News" section of our website.

- How our tastes influence our creativity
- Links between attention and conscious perception highlighted in frontoparietal networks
- The art of wandering in vertebrates: new mapping of neurons involved in locomotion

videos

- 09/21/23 Alzheimer's disease conference for donors (in French)
- 06/15/23 Science, Art and Culture conference: "Making a discovery: Why? How?" (in French) with Prof. Yves Agid, neurologist, Paris Brain Institute founder member
- Just Published: How do our tastes influence our creativity?

agenda

Tuesday, December 5

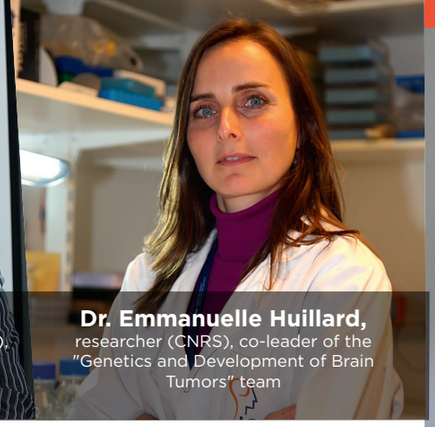
The 'Matinales' conference on mental health; registration required via cercle@icm-institute.org or by phone on +33 (0)1 57 27 40 32

Wednesday, December 6

National Huntington's Disease Day

A continuum of expertise for the benefit of patients

Prof. Marc Sanson, neuro-oncologist (AP-HP, Sorbonne University), co-leader of the "Genetics and Development of Brain Tumors" team



Dr. Emmanuelle Huillard, researcher (CNRS), co-leader of the "Genetics and Development of Brain Tumors" team

How does collaboration between fundamental research and clinical research in your team create synergy?

M. S. My clinical activity means I'm in contact with patients suffering from brain tumors and, as such, means I know the disease and its symptoms very well. However, to break new ground in caring for these patients, we need effective therapies. This is what research enables.

E. H. The fundamental research I carry out on the mechanisms of brain tumor development requires biological samples from patients that are highly-characterized on a clinical level. This is why the collaboration with the Neuro-oncology Department and, in particular, with Prof. Sanson, is indispensable. We study the effect of the mutations observed in the tumors where samples have been taken from patients monitored by the Neuro-oncology Department, to better understand how these types of cancer develop and to identify new therapeutic strategies.

M. S. Our team carries out integrated research projects that draw on everyone's thanks to everyone's complementary expertise. This means we have regular feedback between laboratory results and clinical practice. We attempt to piece together in the laboratory the history of the tumor for a given patient.

Given the heterogeneity of brain cancer, each history is different and this is why our aim is to develop targeted, personalized therapies. As such, Dr. Emmanuelle Huillard's research is vital.

E. H. The team's work focuses on four key goals that require a continuum of expertise:

- improving diagnosis and treatments by developing a molecular database;
- characterizing the role of the new mutations identified in gliomas through an analysis pipeline developed by the team;
- identifying the intrinsic and micro-environment-related cellular mechanisms behind tumor occurrence and progression;
- developing new experimental models for validating new treatments.

M. S. We hope to be able to treat each patient in a targeted way, i.e. to administer treatment that's tailored to the type of tumor they suffer from, to have optimal prognosis.

> **“ We attempt to piece together in the laboratory the history of the tumor for a given patient. ”**
>
> Prof. Marc Sanson

Brain tumors, a scientific and therapeutic challenge

Although major therapeutic breakthroughs have been made in oncology over the past 10 years, malignant brain tumors are still the primary cause of death from cancer in people under the age of 35. The challenge today is to better characterize brain tumors to deliver effective, personalized treatment.

Brain tumors: better understanding their specific characteristics so that they can be treated effectively one day

In Europe, more than 67 000 new cases of brain cancer are diagnosed each year.

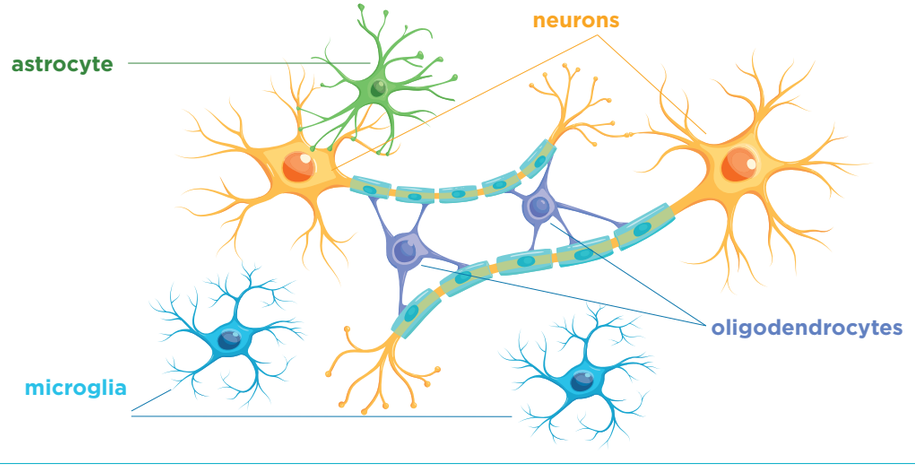
There are over 100 types of primitive brain tumor, i.e. that originate in the brain, which should be distinguished from secondary tumors which are metastases of a cancer that has developed in another organ (lung, breast, skin, etc.).

30% of primitive brain tumors are meningiomas, tumors that are generally non-cancerous (malignant in only 25% of cases). Meningiomas do not invade brain tissue but compress the brain which causes various symptoms depending on where they are located and which part of the brain is being compressed.

The most common (34%) are gliomas caused by uncontrolled multiplication of glial cells such as oligodendrocytes and astrocytes.

It should be noted that gliomas only rarely lead to metastases in other organs.

The human brain is made up of around 2,000 billion cells. There are four different types: neurons, oligodendrocytes, astrocytes, and microglia.



The symptoms linked to glioma development vary and depend on where the tumor is located and how fast it grows.

Three types of symptoms usually exist:

- **Headaches**, often combined with nausea and vomiting. These are related to an increase in intracranial pressure caused by the tumor and are unusual, persistent and resistant to regular analgesics.
- **Epileptic seizures** related to an inflammation of the brain caused by the tumor. They are unusual, sudden, generalized or partial, and recurrent.
- **Neurological symptoms** related to where the tumor is located. These are due to an alteration in how the region of the brain invaded by the tumor functions, and often cause impairment: paralysis, visual, language and balance disorders, as well as mental confusion.

Brain tumor diagnosis is based on an MRI radiological examination and, above all, on analyzing brain tissue obtained by biopsy or total or partial exeresis (removal by surgery) of the tumor.

SYMPTOMS RELATED TO **TUMOR LOCATION**

Parietal lobe
Sensory, walking, vision, hearing disorders,

Frontal lobe
Memory, attention, behavior, language disorders, motor deficiency

Temporal lobe
Memory disorders, eating, social and sexual behavior disorders

Cerebellum
Balance, coordination and movement precision disorders

Brainstem
Respiratory, cardiac disorders

SYMPTOMS RELATED TO **THE TUMOR COMPRESSING THE BRAIN**

Epileptic seizure / **Nausea, vomiting** / **Frequent, intense headaches**

Cellular and molecular analysis of tumors provides information on several criteria that are indispensable for diagnosis as well as for determining therapy.

For spatially well-delineated, non-invasive tumors, the tumor may be totally removed and may result in patient recovery.

More often, however, the tumor cells will have invaded brain tissue and will require radiation therapy (destruction of cancerous cells by radiation) and/or chemotherapy (drug treatment).

In brain tumors, chemotherapy effectiveness is hampered by two factors inherent to these types of cancer:

- their location in the brain, an organ that is highly-protected from the blood stream by the blood-brain barrier, which comprises cells whose role is to prevent agents that are harmful to the brain such as viruses, bacteria and toxic substances from entering;
- the molecular instability of the cells that form them, i.e. highly capable of changing the composition of their genome.

"We can now sequence the entire genome of every cell comprised in the tumor to identify all the mutations that cause cancer, as there is molecular variability in the tumor. This heterogeneity makes it very difficult to identify therapeutic targets. This is why one of the aims of our research work is to characterize every cell of every tumor in great detail so we can offer each patient personalized treatment."

Prof. Marc Sanson, neuro-oncologist (AP-HP, Sorbonne University), co-leader of the "Genetics and Development of Brain Tumors" team

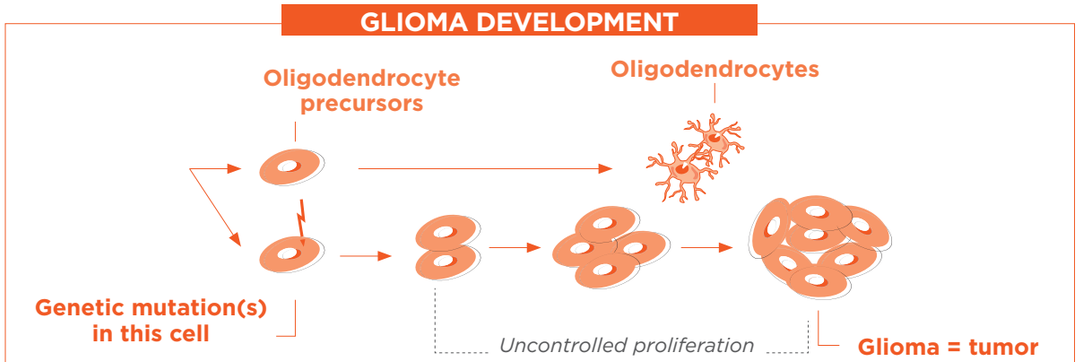
Paris Brain Institute research: aiming for personalized precision medicine

Current treatments usually combine surgery, radiation therapy and chemotherapy yet do not always lead to permanent recovery. There are many reasons why therapies fail.

Understanding how tumors develop, how to better anticipate their aggressiveness, and developing new therapeutic strategies for specifically targeting them are major challenges in managing brain tumors.

During development, our body's cells multiply and diversify to form the different types of specialized cells needed for the body to function.

The onset of cancer is related to one or more mutations in the DNA of a given cell and on specific genes. These mutations only exist in the cancer cells, not throughout the body. These alterations of the genome restore the cell's ability to multiply, lost during the normal diversification process, and lead to uncontrolled proliferation which forms a tumor.



The mutations behind tumor proliferation vary greatly from one tumor to another, and even within the cells making up a single tumor. This heterogeneity is one of the reasons that chemotherapy fails.

At Paris Brain Institute, the Genetics and Development of Brain Tumors team combines fundamental research and preclinical research to:

- improve tumor aggressiveness classification and identify new biomarkers;
- understand the mechanisms in brain tumor development and recurrence;
- identify new therapeutic targets in order to develop personalized therapies and preserve healthy cells;
- assess new anti-tumor therapies through clinical trials.

"We wish to develop innovative targeted molecular therapies that will only take action on tumor cells and will respect the body's normal cells as much as possible."

Dr. Emmanuelle Huillard,
researcher (CNRS), co-leader of the "Genetics and Development of Brain Tumors" team at Paris Brain Institute

Fundamental research: eliminating senescent cells would slow down tumor progression

One of the most promising recent avenues for treating glioblastoma involves eliminating a population of so-called senescent tumor cells, which no longer divide.

These cells, mainly located in areas where malignant cells proliferate, secrete numerous molecules that help irrigate cancerous tissue and, as such, encourage tumor cell proliferation.

"Eventually, we may be able to treat patients with molecules that destroy senescent cells" Isabelle Leroux, CNRS researcher at Paris Brain Institute.

Preclinical research: GLIOTEX program

GLIOTEX (GLIOblastoma and Therapies under EXperiment), coordinated by Prof. Ahmed Idbaih, neuro-oncologist, and Maïté Verreault, researcher, aims to establish the molecular identity of glioblastoma cell lines from patients to correlate a molecular profile to a response or to a resistance to a therapeutic molecule. This molecular data is also used to identify new therapeutic targets.

As such, this program will draw up proof of concept of the therapeutic effectiveness of new molecules and existing drugs, so that the most promising compounds can be rapidly developed and delivered from the laboratory to the patient's bedside.

Clinical trials: SonoFIRST program

SonoFIRST is the first-ever European phase II clinical trial, carried out on patients with glioblastoma, implanted with an ultrasound device developed by Prof. Alexandre Carpentier, neurosurgeon and creator of SonoCloud®.

The transient opening of the blood-brain barrier by ultrasound with this device will increase the penetration of temozolomide in the brain and stimulate brain immunity, with the prospect of improving the survival of brain tumor patients. The program, which began end 2021, will last for three years and will include 66 European patients.

Share your experience

Are brain tumors hereditary?

Although genetics and mutations are involved in primitive brain cancer, in 90% of cases, brain tumors are not hereditary. DNA alterations behind the tumor process are only found in cancerous cells and not throughout the body. As such, they cannot be passed down the family line.

What subjects or conditions would you like to read about in future issues of Synapse?

Email us your suggestions.
Your subject may be covered in a special report in one of our upcoming issues.

contact@icm-institute.org

Abnormalities in neurodevelopment could lay the foundations for Alzheimer's disease

Khadijeh Shabani and Prof. Bassem Hassan (Inserm) showed that Alzheimer's disease could leave its mark as early as the embryonic stage, via abnormalities in the way the amyloid precursor protein (APP) conducts neurogenesis.

In the cerebral cortex, neurogenesis, i.e. the formation of neural cells from stem cells, begins in the fetus from 5 weeks gestation and is almost complete by 28 weeks. Compared to other species, in humans this process is particularly long and delicate. Until now, researchers did not know how, during this period, this balance between stem cell

proliferation and differentiation into several cell types (neurons, glial cells, oligodendrocytes, etc.) was regulated. And, above all, whether the exceptionally long time span of human neurogenesis could pave the way for vulnerabilities specific to our species, such as neurodegenerative diseases.

Khadijeh Shabani, Prof. Bassem Hassan and their colleagues from the "Brain Development" team resolved this enigma with new research. They showed that the amyloid precursor protein, or APP, plays the role of a regulator in neurogenesis: it delays it. When it is absent, neural stem cells produce more neurons, more rapidly.

APP is involved in various biological processes, such as repairing cerebral lesions, orchestrating cellular response after oxygen deprivation or after a stroke, as well as controlling brain plasticity. However, it is also present in a more unfavorable context: its fragmentation produces the well-known amyloid peptides, whose toxic aggregation is associated with neuronal death observed in Alzheimer's disease.

At the embryonic stage, APP-related abnormalities could cause premature neurogenesis and significant cellular stress, the consequences of which would be observable much later on in life. Moreover, the brain regions in which early signs of Alzheimer's disease appear also take the longest to mature during childhood and adolescence.

The researchers believe that early disruptions in the timeline of neurogenesis could, in certain individuals, induce vulnerabilities that only become apparent in adulthood. This radically changes the way we look at Alzheimer's disease: it could now be considered as a neurodevelopmental disorder... with a particularly late onset.

The brain is thought to have a specific signature when it comes to appreciating humor

Prof. Lionel Naccache (Sorbonne University, AP-HP) and Vadim Axelrod at Bar-Ilan University in Tel Aviv discovered that the funniest sequences in a Charlie Chaplin movie were associated with a specific cerebral electrical orchestration.

Humor is essential for easing interpersonal tensions, reducing stress, relieving physical and moral suffering, and even improving the body's immune response. Given humor's central role in our lives, it is important to understand the cognitive and neuronal mechanisms on which it is based.

The comedic powers of non-verbal humor – such as gesticulations, falls, unwarranted blows, or imitations – are particularly effective in making us laugh, irrespective of our age, language or culture.

Prof. Lionel Naccache, head of the "PICNIC - Physiological investigation of clinically normal and impaired cognition" team at Paris Brain Institute, and Vadim Axelrod at Bar-Ilan University in Tel Aviv, decided to focus on the mysterious powers of silent cinema to study humor... at brain level.
For this type of research, functional MRI was, until now, the preferred technique. However, the signal obtained via this technique does not allow the detection of the entire spectrum of electromagnetic waves generated by the brain: part of the information is lost.

To fill this gap in understanding, the researchers analyzed intracerebral electrophysiological recordings, obtained using deep brain electrodes implanted in thirteen epileptic patients, as part of a pre-surgical assessment of drug-resistant epilepsy.
They asked the patients to watch a three-minute excerpt from Charlie Chaplin's *Circus* while their brain activity was measured live. Beforehand, the amusing nature (or not) of each sequence was assessed, frame by frame, by a group of healthy volunteers.

And, the result? The funniest sequences of the movie were associated with an increase in high-frequency neural activity, which is usually seen in tasks that require a lot of cognitive engagement, such as work. Conversely, scenes that are not funny were associated with low frequencies, characteristic of introspection and inattention.

The researchers now believe that humor therapy relies on two complementary mechanisms. First, the detection of an incongruous element of reality and, secondly, the emergence of a positive emotion related to this incongruity. What is funny would therefore be both unexpected and pleasant, and involves two neural circuits: cognitive and emotional. Further research is necessary to validate this assumption and complete the results already obtained.

CARNOT PARIS BRAIN INSTITUTE: RAMPING UP INNOVATION THROUGH A COMBINATION OF EXPERTISE AND STATE-OF-THE-ART TECHNOLOGY

Carnot Paris Brain Institute is one of the five Carnot Institutes totally dedicated to human health. By drawing on in-depth neuroscience research, underpinned by France's largest neurology community, it offers its partners a wide array of product and service developments, from molecular diagnoses through to digital health. Deep intracerebral stimulation protocols, therapeutic ultrasound, as well as high-throughput sequencing, in vivo neuroimaging, validation of new therapeutic targets, etc.
The development of Carnot Paris Brain Institute's technological expertise is driven by scientific creativity and by therapeutic goals, in particular to improve diagnosis, predict responses to treatments and develop targeted, personalized medicine.

- **25 research teams**
- **11 technology platforms**
- **+30 prototypes developed**
- **+5,000 molecules assessed**
- **32 startups in 2022**

An eleventh technology platform dedicated to research

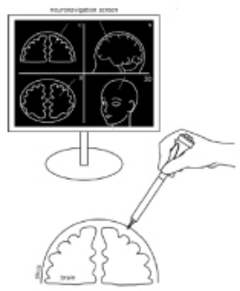
Paris Brain Institute's R&D Unit platform (formerly FabLab) was created in January 2023 to develop new innovative, non-commercialized tools to overcome technological hurdles in research breakthroughs. Through its staff, qualified in engineering (electricity, mechanics, prototyping, design), it intends to develop Paris Brain Institute proprietary technologies by focusing on researchers' needs and ideas.

This platform is staff- and equipment-scalable, based on needs. Like the Institute's other platforms, its activity is monitored by a committee of experts, responsible for steering the platform's key decisions in line with the Institute's scientific goals.

One of this platform's key goals is to support research teams and to significantly reduce the time-to-market for scientific and technological tools developed in the Institute.

This ramped-up process is based on the ability of this engineering unit to make a single example of the prototype, which would be impossible to do externally, and on its high responsiveness-turnaround between brainstorming with the research team and creating its first prototypes. This mission focuses on fast, low-production manufacturing techniques such as 3D printing and laser cutting.

An example of its creations:



A tool, designed to simplify and reduce the time required for implanting intracerebral electrodes by 60%, was developed hand-in-hand with a research team and a neurosurgeon. A patent has been filed for this technological innovation.

Promoting interdisciplinarity: the "Brain to Market" summer school for innovations in healthcare

The "Brain to Market" summer school is a 5-day intensive training program run by the Open Brain School, Paris Brain Institute's education division.

During an immersion week, neuroscience and business students, young researchers, engineers, and designers learn how to combine **neuroscience** and **entrepreneurship** to create innovative solutions in teams for patients, families and healthcare professionals.

A multidisciplinary teaching team

To begin with, participants attend high-level neuroscience presentations given by Paris Brain Institute scientists and clinicians. They discover the daily challenges of disease through accounts given by patient associations and foundations. They are introduced to scientific entrepreneurship by experts from the **Collège des Ingénieurs**, and from the **Institute's Innovation Department**.

They also meet with startups, industrial groups, and funding bodies. During the second part of the week, participants are split into teams where they pool their expertise together to imagine projects that can be developed quickly.

2023, a summer school devoted to Alzheimer's disease

From September 11 to 15 this year, around fifty participants immersed themselves in the key stages of an innovative project to address issues around **Alzheimer's disease**. At the end of the 5-day summer school, they delivered solutions that were suitable for patients, their families and caregivers, solutions that were viable and of scientific and economic interest.

A new transatlantic chapter initiated by Martine Assouline

Martine Assouline, at the helm of Editions Assouline, joined Paris Brain Institute's Campaign Committee in 2020 as Co-Chair and has been driving international growth ever since.

What is your role as Co-Chair of the Campaign Committee?

M.A. I'm honored to be actively involved in this adventure. I was deeply inspired by the commitment of Maurice Lévy, who convinced me to be part of this cause. Our shared commitment to Paris Brain Institute stems from our belief that brain research is a top priority for Humankind.
In my role as Co-Chair, I secure new resources and I coordinate strategic initiatives to support The Brain Challenge campaign mission: to understand and repair the brain. Our aim is to attract new talent and to provide research teams with innovative, and competitive working conditions.

I live in New York, and am convinced that partnerships between Paris Brain Institute and the US are of key importance. Brain research goes far beyond borders, and discoveries made in France have a global impact. This is why I support this campaign designed to bring our networks on-board to support Paris Brain Institute's development around the world.

What form does this international development take?

M.A. It's taking shape, firstly, through the launch in the US, this fall, of Paris Brain Institute America, a vital channel for bringing new support on-board and for encouraging transatlantic scientific partnerships.

Basically, current research funding mechanisms are unable today to support interdisciplinary and cross-border projects, or can only support them to a very limited extent. We wish to remove these hurdles, so that researchers can work together freely and easily. The goal is to pool expertise together to ramp up research and to ensure as many people as possible benefit from it. The creation of Paris Brain Institute America is a vital step for encouraging philanthropy around the globe and for funding these projects which, otherwise, would never see the light of day.

What are you aiming for with The Brain Challenge campaign?

M.A. Research concerns us all. Although the Institute has a sound scientific reputation, we'd like to make it known to a wider public internationally.

The Brain Challenge is much more than just a campaign. It's a collective commitment to provide researchers with the resources and platforms they need to prevent, treat and, ultimately, cure millions of people around the world.

We hope many of you will join us on this journey!

Launch of Paris Brain Institute America: promoting research without borders

A new, non-profit organization, Paris Brain Institute America, has just been set up in the US, at the initiative of Martine Assouline.

The aim of this fundraising body is to further brain research by financially supporting groundbreaking transdisciplinary, cross-border neuroscience projects between Paris Brain Institute and leading American universities and research centers. Paris Brain Institute America will also play a role in supporting exchanges between scientists on both sides of the Atlantic.

Through its 501(c)(3) status, Paris Brain Institute America is able to accept tax-deductible donations in the US as well as bequests.

The launch of Paris Brain Institute America marks a new milestone in Paris Brain Institute's development and promotes the international ambition of its medical and scientific strategy.

To find out more, visit
parisbraininstitute-america.org

Paris Brain Institute America

YOUR CONTACT
at the Circle of Friends Office

Ms. Emma Kavcic Mondoloni
+33 (0)1 57 27 40 32
cercle@icm-institute.org

F.A.Q.

How can I use my network to help the Institute?

As a major donor, you probably have resources, contacts and/or influence that could benefit our work. We are on hand to discuss how you can use your connections and/or expertise to further our impact and achieve our shared goals. Feel free to get in touch with the Circle of Friends Office on +33(0)1 57 27 40 32.

I'd like to take part in a clinical trial on Parkinson's disease, how do I go about it?

Patients and healthy individuals who may take part in clinical trials must meet a lot of specific criteria established prior to the trial by the investigator and the promoter, such as age, gender, disease duration and progression, type of symptoms, drug treatment, etc. Your neurologist knows the list of trials currently underway across the country and is the only person who can decide whether or not you may join one of these trials. We suggest you contact your neurologist to find out more.

CERCLE DES AMIS
de l'Institut du Cerveau

Together, let's push back the limits of neuroscience and **invent tomorrow's medicine.**

Paris Brain Institute's Circle of Friends groups together exceptional women and men who wish to help research push back the limits of neuroscience through their financial and human commitment and around shared values, including: generosity, efficiency and innovation for the benefit of Humankind.

Our Circle intends to grow. This is why we invite you to join our Circle, YOUR Circle, where we create a privileged link with doctors-researchers, startups created in the Institute, and its dedicated, committed members. Tomorrow's medicine is being created today, for you and through you. ***Thank you.***

Martine ASSOULINE and **Maurice LÉVY**
Co-Chairs of the Friends of Paris Brain Institute Committee

Invest intelligently in the future to fight nervous system diseases.

We offer local tax-efficient giving options for **donors who are based outside of France.** Please contact us for details.

Circle of Friends Office: +33 (0)1 57 27 40 32 - cercle@icm-institute.org

DONATION FORM

Please make your check payable to the Institut du Cerveau and send it along with this form to the Institut du Cerveau - Hôpital Pitié-Salpêtrière – CS 21414 75646 Paris Cedex 13 – France

Paris Brain Institute — ICM

☑ **Yes, I'd like to help Paris Brain Institute researchers advance their research into brain and spinal cord diseases.**

I'd like to donate: ..... **€**
(amount at my discretion)

66% TAX REDUCTION IN FRANCE
A donation of €5000 only costs you €1700

☐ **Ms.** ☐ **Mr.** ☐ **Mr. and Mrs.**

Surname name: ..... **First name:** .....

Address: .....

Postcode: City: .....

Email: ..... @ .....

☐ **I would like to receive free information on bequests and donations.**

Would you like to donate on behalf of your company?

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