JPND NEWS

November 2013 Edition

Check out our SAB Interviews on pages 2-4

Professor Philippe Amouyel, Chair, JPND Management Board updates us on JPND progress:

"The momentum behind this pioneering initiative is being reinforced and maintained through several ongoing JPND actions. Guided by our Phase One Implementation Plan (2012-2014), these actions have been able to create the necessary trust and promote alignment of research agendas between the 27 participating countries. We are now preparing the sustainable structure which will see JPND successes in transnational collaboration in neurodegenerative disease research continue into the long-term in order to tackle these chronic and complex diseases"

2013 JPND highlights to date:

JPND Alignment Actions

JPND is promoting strategic alignment of research activity related to neurodegenerative diseases across Europe. Several parallel actions are on-going and include:

- Developing and aligning national research plans and strategies
- Extracting the value of nationally-funded longitudinal cohort studies
- Collaborating with the Ambient Assisted Living Joint Programme
- Investigating public-private partnerships with Industry
- Identifying new lines of intervention for Animal and Cell Models
- Increasing coordination of research into palliative care
- Promoting patient and public involvement in research

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Results of JPND Risk Factor and Healthcare Evaluation Calls

11 new international research projects will begin in 2014, funded under the following JPND Transnational Calls:

"A call for European research projects for the identification of genetic, epigenetic and environmental risk and protective factors"

"A call for European research projects for the evaluation of health care policies, strategies and interventions"

The successful projects, containing participants from 17 different countries span areas such as; risk factor assessment for genetics and environment in Parkinson's Disease; pre-clinical genotype-phenotype predictors of Alzheimer's Disease and other dementias; a programme for ALS care in Europe; research to access policies and strategies for dementia in the young. User-friendly fact sheets for each of these projects are available on the JPND website.

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Results of Pathfinder grants for centres of excellence

The Network of Centres of Excellence in Neurodegeneration (CoEN) initiative is funding five new, innovative, "pathfinder" projects, under its second funding call. €3.0m has been awarded for five innovative and creative proof-of-principle studies which, if successful, will provide a step change in neurodegeneration research. The awarded projects take a 'high risk, high pay-off' approach to identify and validate new potential drugs and develop innovative therapeutic approaches for Parkinson's Disease, Alzheimer's Disease and other dementias. COEN is aligned with JPND, although it operates as an independent entity.

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Pre-call Announcement for 2013 Annual Calls for Proposals

The indicative titles for the 2013 JPND Annual Calls for proposals are in the following priority areas:

"A call for European research projects for Cross-Disease Analysis of Pathways related to Neurodegenerative Diseases"

"A call for European research projects for the Pilot Studies on Preventive Strategies related to Neurodegenerative Diseases"

Both Calls are two-stage, and will be launched in early December with a likely first-phase (pre-proposal submission) deadline of February 2014.

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JPND Partnering Tool piloted

For both upcoming transnational calls, JPND will pilot the use of a new online partnering tool. The tool will enable call applicants to showcase their research group's expertise, search for appropriate partners, pitch call-related ideas and draft their pre- and full-proposals online.

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Expansion of the JPND Scientific Advisory Board

The JPND Scientific Advisory Board (SAB) has been modified to include representatives from industry and from patient-led organisations. The recently appointed new members are:

- Brian Fiske (Michael J Fox Foundation for Parkinson's Research)
- Eric Karran (Alzheimer Research UK)
- François Nicolas (GE Healthcare)
- Thomas Rooney (Sanofi)
- Charles Scerri (Alzheimer Europe)

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Updates from National Plans

Several countries are now processing strategic research agendas for neurodegenerative diseases (e.g. Denmark, Portugal). These national research strategies will both inform their countries' participation in JPND, and will focus resources on tackling neurodegenerative diseases nationally, aligning with the European Research Strategy. Several new national strategies (e.g. the Netherlands, UK) have also made specific references to JPND and are seen as the national vehicles for participation in JPND.

Read more

(L-R) Mr. Robert-Jan Smits, Director-General, DG Research and Innovation, European Commission; Dr. Leonor Parreira, Portuguese Secretary of State for Science; Prof. Philippe Amouyel, Chair JPND Management Board; at the JPND management Board meeting in Lisbon, October 2013

JPND research
EU Joint Programme – Neurodegenerative Disease Research

Thomas Gasser

University of Tuebingen, Germany and Chair of the JPND SAB

THOMAS GASSER

"We are living in scientifically exciting times, recent technological revolutions have just begun to bear fruit in scientific discovery, and we will be in for many new and fascinating findings. Nevertheless, translation into clinically relevant innovation is a long and difficult process, so we have to be patient".

Thomas Gasser

You have been studying Parkinson's for over 20 years. What is your working hypothesis of what causes this disease?

The past 20 years have seen remarkable progress in our understanding of the causes of Parkinson's disease. This progress has mostly come from genetic studies. In my opinion the most important progress was to realize that we should not be talking about Parkinson's disease as a single disease but rather as a syndrome with multiple overlapping phenotypes, pathologic changes and genetic and non-genetic causes. We know that in a small minority of the cases (< 5 %) a mutation in one of several single genes is sufficient to cause the disease with a very high degree of likelihood, if the carrier of the mutation lives to a certain age. This also means that even the most deleterious mutations can be compensated for 30, 40 or 50 years, which in itself is remarkable proof of the resilience of the human brain. In the vast majority of cases however no single cause can be identified and our best guess is that a multitude of genetic susceptibilities, combined with the effects of environmental or even stochastic ("bad luck") events on the general background of an aging brain eventually tip the balance to initiate the neurodegenerative process, which then spreads like an avalanche through the brain.

Paradoxically, most discoveries seem to raise at least as many questions as they are able to answer, so even though we have learned a lot about the causes of Parkinson's disease, it appears that there is always so much more that we have to study that we only now have become aware.

If we lived an ideal scientific environment and you had unlimited resources to do a single experiment, something you could not afford right now, what would you do?

To be honest, I think there is no single experiment that could be done now, even with unlimited resources that would give us final answers. The reason for that is that we do not have the material at hand that we would need for such an "ideal" experiment. Such an experiment would, in my opinion, involve a complete genetic, epigenetic, clinical and environmental characterization of large cohorts of patients with Parkinson's disease and ideally those who will get Parkinson's disease in the future, i.e. large population cohorts. If we could follow 100,000 still-healthy individuals, obtain full information about their genetic, epigenetic and proteomic status, acquire complete information about their exposures to toxins, their lifestyle habits and their activities, and then follow this cohort for a number of years to find out who develops PD and who doesn't, this would be something I would think with high likelihood would give us some very definite answers. Obviously, this is something way beyond our practical reach at this time. But step by step, resources are being built up across many different research groups to eventually allow us to do just this.

In your opinion, what is currently the biggest challenge that researchers have to overcome in order to have an impact on neurodegenerative diseases?

There are several huge challenges that face researchers in neurodegenerative diseases today. We still do not have appropriate models to work with in the laboratory. Human induced pluripotent stem cells are an interesting novel approach, but they yet have to prove their true value. Another challenge is the enormous heterogeneity that we face in neurodegenerative diseases: no patient is really like any other which means that very large cohorts are needed to identify meaningful associations. Another challenge, it seems to me, is that research is still too fragmented. Many different smart people are working in different labs on similar problems, but the true benefit of linking up all the information that is being gathered is not yet possible. Some form of "cloud researching" may be an answer to this challenge.

What are the real benefits for academic researchers of participation in JPND initiatives?

I think we are all aware that neurodegenerative diseases cannot be solved in individual research groups. Although the creativity of individual researchers is and will always be the driving force of innovation in research, the complexity of the questions to be addressed that range from very basic cellular and molecular biology to the implementation in actual patient treatment are way beyond what a single research team can cope with. The JPND provides a framework across the entire breadth of research activities and therefore provides leverage for each individual group. This is something quite novel.

What kind of impact do you think JPND has had to date on the ND research community in Europe?

I think the response to the previous calls has already shown that the JPND has strengthened the spirit of collaboration across Europe. Even projects that do not receive funding through the JPND may form the basis for future fruitful collaborations and successful applications in other formats.

JPND research
EU Joint Programme – Neurodegenerative Disease Research

Francois Nicolas

GE Healthcare and JPND SAB Member

FRANCOIS NICOLAS

"Neurodegenerative diseases can affect all of us, and research in this field needs to be a priority. JPND is a fantastic program for fostering collaboration between countries and various stakeholders such as academia and industry to make sure research delivers clinical improvements for patients and their families. GE Healthcare is committed to long-term research in the field of neurodegenerative diseases using innovative technologies to improve diagnostic accuracy and contribute to improving the life of patients and their caregivers."

Francois Nicolas

It is widely acknowledged that we need new diagnostic solutions to identify Alzheimer's patients, in particular those in the early stages of the disease. You are in charge of GE Healthcare's efforts in this area. What is your approach?

GE Healthcare is committed to developing tools that improve diagnostics in clinical practice. From a technology stand-point, our approach is very broad, with developments in imaging (e.g. MRI scanners, PET scanners and tracers, image processing) and non-imaging tests. For its research, GE Healthcare often partners with other public or private organizations. A couple of examples: the first one is an active collaboration with a major pharmaceutical company to research a non-invasive test for preclinical Alzheimer's; this may serve as a stratification tool for clinical trials, and in the long term as a potential screening test if effective treatments are developed for this disease state. The second example is a European FP7 project called predictAD; this project assessed how to combine a variety of biomarkers and tests to improve diagnostic accuracy of Alzheimer's disease.

In addition to products, GE Healthcare is also developing diagnostic solutions by using Information Technology to aggregate information of interest. As demonstrated by the predictAD project, this could be particularly relevant for conditions such as Alzheimer's disease for which diagnosis requires the combination of clinical information, neuropsychological tests, blood tests and imaging data.

What area of medical devices gets you really excited for the future diagnosis of Alzheimer's disease?

The first one is PET molecular imaging which can enable the in vivo detection of proteins related to a neurodegenerative conditions like Alzheimer's disease. The two neuro-pathological hallmarks of Alzheimer's disease (amyloid plaques and neurofibrillary tangles) were identified more than 100 years ago, but until very recently they could only be seen post-mortem if an autopsy was conducted. PET imaging now enables the detection of amyloid plaques in-vivo, with one tracer already approved in the US and EU, and others under regulatory review. The availability of amyloid PET imaging has the potential to improve diagnostic accuracy in clinical settings, but it can also contribute to improving clinical trials by helping to identify a homogeneous patient population at a very early disease stage. Recently, there have also been very interesting developments in tau imaging, which could help select a therapeutic target by evaluating its impact on this disease hallmark.

PET imaging brings high sensitivity and specificity, but it needs to be complemented by tools available on a larger scale, perhaps as entry-level tests in a diagnostic funnel. I am excited by the research in blood biomarkers which has the potential to improve diagnostic accuracy in primary care.

What needs to happen before we can successfully treat the individual causes of neurodegenerative diseases?

What we need is very well described in the EU JPND Research Strategic Agenda. I would highlight that before we can successfully treat Alzheimer's and Parkinson's diseases, we need an accurate understanding of each disease etiology to be able to select appropriate therapeutic targets. As exemplified by JPND, collaboration between multiple stake-holders, funding bodies, public and private organizations, etc. is important to achieving the goal of treating Alzheimer's and Parkinson's diseases.

Why do you think there has been so little progress, if any, in developing a drug that can slow disease progression?

Neurodegenerative diseases have extremely complex pathophysiology, so it may be very difficult to have a major impact targeting a single feature. Also, clinical trials to date have mainly been conducted at the dementia stage of the disease, while therapeutic targets might have had a greater impact much earlier in the disease process. New clinical trials are now designed to investigate the impact of earlier interventions, for example in the prodromal stage (mild symptoms), and even in the preclinical stage (very subtle symptoms).

In your opinion, what would be the benefits for GE Healthcare of partnering with JPND?

Partnering with JPND can further expand GE Healthcare's ability to be connected with the external research community, and may improve its capacity to innovate. In general, we see a lot of value in developing eco-systems where different partners join forces to tackle challenging problems, each bringing its expertise and maximizing chances of success. This can be a lower risk and more cost effective way to drive progress.

JPND research
EU Joint Programme – Neurodegenerative Disease Research

Brian Fiske

Michael J. Fox Foundation for Parkinson's Research and JPND SAB Member

BRIAN FISKE

"Funding isn't always the solution: research collaboration and data sharing is essential if we want to get to cures. Even the best drugs won't move forward if we can't smartly design and quickly recruit volunteers into clinical trials."

Brian Fiske

In your opinion, what is the single biggest challenge for researchers investigating neurodegenerative disorders?

Parkinson's disease is complex but we're learning a lot about its possible causes and underlying biology and this, in turn, is feeding a robust therapeutic pipeline. But getting these ideas to the clinic doesn't happen easily. If you were to ask many researchers, no doubt they would highlight inadequate access to funding as a major challenge. And certainly without funds, science cannot move forward. But more money is not the sole solution to curing disease. In our view, some of the biggest challenges are seen in how science is done: too little collaboration due to competition and a mindset of secrecy, as well as data sharing and publication models that leave valuable information (often negative data) buried in lab notebooks where they offer little help to the field. Issues like these represent some of the biggest challenges to developing and delivering new treatments to patients.

Why do you think there has been so little progress, if any, in developing a drug that can slow disease progression?

There are numerous potential disease-modifying drug candidates being developed for Parkinson's disease. And organizations like ours continue to support and fill that pipeline each year. The real challenge is in making the transition from the preclinical space to the clinical one. Much of this has to do with the fact that we don't have great ways of measuring the underlying disease process and ultimately whether a drug is modifying that process in people. Current trials for Parkinson's disease use mostly clinical scales, which give you only a superficial view of a patient's disease. We need biomarkers of the disease itself that can not only help us select the right patient for the right drug trial but also tell us when a drug is having a real biological impact on the disease. This is why The Michael J. Fox Foundation has made such a significant investment in biomarkers, including our flagship Parkinson's Progression Marker Initiative. These and other efforts are paving the way for the day when we will be able to truly develop drugs to slow, halt or even prevent Parkinson's disease.

Are you discouraged by the progress that has been made, particularly after the failure of recent drugs?

We're optimists - something we learned from our founder, actor Michael J. Fox. Although negative results can certainly be disappointing, they are also opportunities to learn what to do, or not to do, the next time. We are also risk takers, which by definition means we may fail. But if no one else is willing to try, it's up to us to keep pushing ahead.

What needs to happen before we can successfully treat the individual causes of neurodegenerative disorders?

To make all this work you really need three things: good drugs, a good plan and the right people. We need a robust pipeline of drugs built on solid data and rigorous understanding of not only disease biology but also how a drug targets and ultimately alters that biology. We also need to have clearer understanding of how to design informative clinical trials to test those drugs, including having the right biomarkers for selecting patients, tracking disease and measuring drug actions. Finally, we need engaged research, industry, regulatory, funding and patient communities all working together to move things along quickly and efficiently.

How can people with neurodegenerative disorders contribute to the prioritization of research?

The best way to contribute is to simply get involved. You can do this in so many ways. Start by educating yourself and bringing awareness to others about your disease. You can also donate to organizations like The Michael J. Fox Foundation who can act as your eyes and ears in the research effort to find a cure. Our people come into work every day thinking and strategizing about how to cure Parkinson's disease, and we couldn't do this if we didn't have the Parkinson's community and the generosity of our donors to keep us pushing ahead. But probably one of the biggest contributions people can make is to get involved in research directly. Participating in a clinical study or therapeutic trial is one of the most important impacts you can make. Without these volunteers, new drugs will never make it to pharmacy shelves, no matter how promising they may be. That's why we've put a lot of effort in educating the community about study participation, including developing tools like Fox Trial Finder to help match people to the trials that need them.

In your opinion, what would the benefits be for organisations like Michael J. Fox Foundation of partnering with JPND?

We will never solve the problem of how to cure neurodegenerative diseases without collaboration. The challenges are too big for any one group to overcome. Sharing of data and information, as well as leveraging resources and funding, are some of the best ways to make progress. Being part of a network of like-minded partners through JPND can only benefit our shared goals and help reduce wasteful duplication of effort.