EUROPEAN PARLIAMENT

BRAINS FOR BRAIN

PAVING THE WAY FOR A COMPETITIVE AND DYNAMIC EU KNOWLEDGE ECONOMY: THE WAY FORWARD IN RARE DISEASES

26 November 2013, 16.00-18.00
EP Roundtable Room, room ASP A3E2
Hosted by AmaliaSartori and Maria da GraçaCarvalho

HSK
Dr. Horst Schmidt Klinik

UNIVERSITÀ DEGLI STUDI DI PADOVA

CASA SOLLIEVO DELLA SOFFERENZA
SAN GIOVANNI ROTONDO

INNERMED
Inherited NeuroMetabolic Diseases Information NETWORK

WELCOME LETTER

Together with MEP Maria Graça da Carvalho and the Brains for Brain Foundation – an International Task Force that brings together researchers from 60 top-ranked universities across Europe – it is my pleasure to welcome you to this important roundtable addressing the need to find ways to reconcile education, research, innovation, employment and health for our young promising researchers.

*To "**Pave the way for a competitive and dynamic EU knowledge economy**", we are happy to bring together stakeholders from the EU institutions, leading research universities, industry players and patient representatives, to share views on how to address the gaps in research in the area of rare neurometabolic diseases affecting children.*

I am a firm believer in the work carried out by the Brains for Brain Foundation. We will manage to achieve greater and more efficient medical breakthroughs through integrated knowledge-sharing and improved coordination between doctorate education, investment in research, policy work and employment opportunities. This initiative could set an example of collaboration for other disease areas and sectors aiming to avoid duplication of efforts, create career opportunities and advance medical and translational research at the European level.

The Horizon 2020 research framework represents a unique opportunity to pool together resources at EU level and launch a dedicated EU research programme for rare paediatric neurometabolic diseases. This EU-level coordination is essential in the area of rare diseases which is characterised by the scarcity of specialist knowledge and resources.For this reason, I strongly support this proposal for a European PhD programme, which embodies and translates into practice the key principles of the "Maastricht for Research" Manifesto. I hope that this first initiative will spur many others and ultimately contribute to the completion of the European Research Area.

Hence, I urge you to join me in signing the Manifesto created by the Brains for Brain Foundation and work in an integrated manner to achieve this ambitious project of setting up a PhD programme dedicated to rare neurometabolic disorders affecting children in 2014.

AmaliaSartori

BACKGROUND ON B4B

The Brains for Brain Foundation is an International Task Force composed of outstanding scientists and clinicians who are leaders in the neurological field. In partnership with biotech companies the Foundation aims to facilitate joint efforts to improve the understanding of rare genetic diseases which affect and seriously damage the brain, in particular in children. Indeed, B4B has so far mostly dedicated its resources to help disabled children affected by rare neurological diseases, such as lysosomal storage disorders (LSDs).

LSDs are rare genetic diseases caused by a deficit of crucial enzymes responsible for the recycling of macromolecules which progressively accumulate and damage all organs, in particular the brain, and lead to the premature death of affected children. Lysosomal enzymes identification and cloning have recently been completed, and therefore, expression and purification of recombinant proteins are now possible. As a result enzyme replacement therapy (ERT) is now available for a growing number of storage disorders. Unfortunately, due to the presence of blood-brain barrier ERT is currently unable to effectively reach the central nervous system (CNS) to stop the lethal progression of neurodegeneration.

B4B aims to develop new and innovative therapeutic strategies to cross the Blood-Brain Barrier, a capillary system which shields and defends the CNS from circulating neurotoxin compounds.

The purposes of the Foundation are to support the following activities in the field of rare neurological disorders:

- scientific research
- knowledge dissemination
- social and socio-medical assistance
- health assistance

At present B4B involves 60 universities from 12 European countries, the United States, Australia, and Brazil.

Since 2008 B4B has been a partnership member of the European Brain Council and is increasingly engaged in activities carried out by the European Union and the World Health Organisation (WHO).

AGENDA

Registrations 15.30

Introduction to the manifesto 16.00

MEP Amalia Sartori
MEP Maria da Graça Carvalho
Maurizio Scarpa, Brains for Brain Foundation
David Begley, Brains for Brain Foundation

Videos 16.30

MEP Emma McClarkin
MEP Luigi Berlinguer
MEP Gianni Pittella - Written speech

Presentations by panellists 16.40

Patricia Reilly, Cabinet Member of MaireGeoghegan-Quinn, DG Research
JaroslawWaligóra, Policy Officer, DG SANCO
Mary Baker, President, European Brain Council
Nathalie Moll, Secretary General, EuropaBio
Michel Goldman, Executive Director, Innovative Medicines Initiative
Mario Roccaro, Policy Officer, DG EAC

Planned contributions 17.15

MEP Oreste Rossi
MEP AngelikaWerthmann
RuxandraDraghia-Akli,Director,Health Directorate, DG Research
Roberto Bertollini, Representative to the EU, WHO
Frank Stehr, NCL-Stiftung
Paul De Raeve, Secretary General, European Federation of Nursing Associations
DuccioBonifazi, Benzi Foundation
VassiliValayannopoulos, Chair,SSIEM Education and Training Advisory Committee
VolkmarGieselmann, Chairman, European Study Group on Lysosomal Diseases

Panel Debate moderated by MEP Maria da Graça Carvalho 17.30

Signature of the Manifesto 17.50

SPEAKERS' BIOs

AmaliaSartori, Member of the European Parliament

Chairwoman of the Committee on Industry, Telecommunications, Research and Energy Committee (ITRE). Member of the high-level monitoring group on the United States of America.

Ms. Sartori was first elected Member of the European Parliament in 1999, where she continues to perform multiple tasks of international importance.

President of the *Centro Internazionale di Studi di Architettura* "Andrea Palladio", President of the "*SettimaneMusicali al TeatroOlimpico*" and member of the Board of Directors of Venice International Airport Marco Polo-Save Spa, in recent years she focused her commitment in different important sectors, such as health, environment, industry, energy, gender equality and human rights, transferring her experiences in a range of publications.

She served as first President of the company Marco Polo-Save Spa, after having assisted with its privatisation process as Regional Minister.

In 1995 she was appointed President of the Veneto Regional Council.

She was the first woman, and the youngest one, to become member of the Veneto Regional Government, where she took up positions such as Minister for Roads and Transports, Vice-President of the Government and, for some months, President.

Politically active since the early 1980s, she became a regional councillor in Veneto in 1985 and had been re-elected in 1990 and 1995.

Ms. Sartori graduated in Literature from the University of Padua and subsequently became a teacher in Italian literature.

Maria da Graça Carvalho, Member of the European Parliament

Maria da GraçaCarvalho has been a Member of the European Parliament in the EPP group since 14 July 2009 (member of the ITRE-Industry, Research and Energy Committee, substitute member of the Budgets Committee and member of the ACP-UE Joint Parliamentary Assembly). She was elected co-President of the Economic Development, Finance and Trade Committee of the ACP-EU Joint Parliamentary Assembly. She has been Principal Adviser of President Barroso in the areas of Science, Higher Education, Innovation, Research Policy, Energy, Environment and Climate Change from 2006 to 2009.

She is a Full Professor at *Instituto Superior Técnico* (Technical University of Lisbon) and she has 30 years of research experience in the areas of energy, environment and climate change. Ms.Carvalho was Rapporteur of the proposal on the Framework Programme for Research and Innovation (2014 - 2020).

Maurizio Scarpa, Brains for Brain Foundation, B4B

Founder and President of the Brains for Brain Foundation, Maurizio is also coordinator of all B4B Taskforce activities together with Prof. David Begley, London, UK. He has extensive expertise as a basic scientist in genetics and biotechnology, and as a clinician in the treatment of paediatric rare disorders. He is Head of the Molecular Biology Laboratory and Centre for Rare Disorders, Head of the Lysosomal Unit, and Director of the PhD School in Genetics and Molecular Biochemistry in the Department of Paediatrics at the University of Padua, Italy. He is also the Coordinator of the Centre of Rare Diseases – IRCCS "Casa SollievodellaSofferenza", Scientific Institute and Hospital, San Giovanni Rotondo, Foggia in Italy.

He is member of several international groups: the European Society for Gene Therapy, the Society for the Study of the Inborn Errors of Metabolism, the European Study Group for Lysosomal Diseases and the Global Organisation for Lysosomal Diseases. In addition, he is a member of several Scientific Committees concerning paediatric neurodegenerative diseases and other related disorders.

From 2014 onwards Maurizio will be appointed Director of the Rare Diseases Institute at the Dr. Horst Schmidt Klinik (HSK)in Wiesbaden, Germany, and will coordinate the Brains for Brain Clinical Research Institute, a partnership project with Dr. Christina Lampe at the HSK.

David Begley, Brains for Brain Foundation, B4B

David Begley PhD is Senior Lecturer in Physiology at King's College London and Vice-President of the Brains for Brain Foundation. He heads a laboratory within the Institute of Pharmaceutical Sciences at King's College investigating the blood-brain barrier and drug delivery to the central nervous system (CNS) with a special emphasis on lysosomal storage diseases.

Dr Begley was the Friedrich Mertz Stiftungsgast professor at the Johann Wolfgang Goethe-Universität, Frankfurt, for the academic year 1997-1998 and was visiting Academic in Residence, GlaxoSmithKline 2005-2007. He was Organiser and Chairman of the Gordon Conference on "Barriers of the CNS" held in New Hampshire in 2002.

He is a constituent part of the Pharmaceutical Sciences Research Division, one of the major world recognised opinion leader in the field of Blood Brain Barrier function. He has contributed to the understanding of the function of BBB, of possible effects of storage and secondary effects of storage on the BBB.

Patricia Reilly, Cabinet Member of Commissioner MaireGeoghegan-Quinn, DG Research

Patricia Reilly qualified as a veterinary surgeon from University College Dublin in 1996, and worked in mixed clinical practice until 2001, when she joined the Irish Department of Agriculture, Fisheries and Food. In 2004 she joined the Irish Embassy in Warsaw as Ireland's first Agricultural Attaché to Poland. On return to the Department of Agriculture in 2008, she re-joined the National Disease Control Centre, where her work involved veterinary international trade policy and contingency planning.

Patricia is a graduate of the King's Inns, Dublin, and her other academic qualifications include an MSc in European Food Regulation and a Diploma in European Law from the Law Society of Ireland.

Patricia joined the Cabinet of Commissioner MáireGeoghegan-Quinn in February 2010, and is responsible for the health, bioeconomy and science in society programmes, as well as Joint Research Centre coordination.

Mary Baker, MBE, European Brain Council

Mary Baker, MBE, is President of the European Brain Council, immediate past President of the European Federation of Neurological Associations, Consultant to the World Health Organisation (WHO) and Chair of the Working Group on Parkinson's Disease formed by the WHO in May 1997, a member of the Strategic Advisory Board of the Human Brain Project, Lausanne, and a member of the Commission's CONNECT Advisory Forum. Academic appointments include Associate Membership of the Health Services Research Unit, University of Oxford and Visiting Fellow within the London School of Economics (LSE) Health Centre at the LSE.

An Honorary Doctorate from the University of Surrey was conferred upon Mary in 2003 in recognition of her work within the world of Parkinson's disease and an honorary Doctorate of Science from Aston University awarded in July 2013. In 2009 she received the prestigious British Neuroscience Association Award for *Outstanding Contribution to British Neuroscience and for Public Service*.

JaroslawWaligóra, European Commission, DG Health and Consumers

Jaroslawis Project and Policy Officer specialised in rare disease policy at the European Commission's DG SANCO in Luxembourg. Jaroslaw joined the Commission in September 2006 following 10 years of practicing medicine, first as a Medical Doctor at the Medical University of Warsaw between 1996 and 1997.

Jaroslaw worked for 9 years at the Institute of Physiology and Pathology of Hearing where he focused on research, clinical activities and genetic counselling, and within the Department of Paediatrics at the Medical University of Warsaw in Paediatrics and clinical genetics.

Jaroslaw specialised in clinical genetics throughout his academic career, following his first specialisation in paediatrics.

Nathalie Moll, EuropaBio

After graduating with Honours in Biochemistry and Biotechnology from St Andrews University, Scotland, and a stage at the European Commission, Nathalie has spent nearly 20 years working for the biotech industry at EU and national level.

Nathalie started working in the biotechnology and food policy area for the European Crop Protection Association in Brussels and then moved to Rome to work for DompéFarmaceuticiS.p.A and the Italian National Biotech Association – Assobiotec – dealing with the implementation of European biotech legislation at national level.

Within EuropaBio, Nathalie has held the positions of External Relations Manager, Director for Strategic Policy, Director for Healthcare Biotech, Director for Agricultural Biotech sector and most recently Secretary General.

In the course of her career, Nathalie has focused on improving awareness of the importance and benefits of biotechnology for society and has worked, together with the industry, regulators and stakeholders, towards developing a more supportive legislative framework for the industry and related sectors.
Nathalie is married and has a son and two daughters.

Michel Goldman, Innovative Medicines Initiative

Michel Goldman currently serves as the Executive Director of the Innovative Medicines Initiative and is a professor of immunology at the UniversitéLibre de Bruxelles. Previously, Goldman was a founder of the BioWin Health Cluster in Wallonia, Belgium. He is the recipient of the clinical sciences award delivered by the National Fund for Scientific Research (Belgium, 2000), held the Spinoza chair at the University of Amsterdam (The Netherlands, 2001) and was made Doctor HonorisCausa by the Université de Lille (France, 2007).

He received MD and PhD degrees in Brussels University and was a fellow of the World Health Organisation Immunology Research Centre in Geneva.

Mario Roccaro, European Commission, DG Education and Culture

Mario Roccaro joined the European Commission DG EAC in March 2012 as policy officer to contribute to the design and implementation of HORIZON2020 Marie Skłodowska-Curie Actions (MSCA). After receiving his first degree in Food and Science Technology from the University of Milan in Italy, he worked for several food industries in Italy before pursuing further education. He received a PhD in Molecular Biology from the University of Edinburgh in the UK.

Subsequently, he has worked as plant scientist at the Max Planck Institute Cologne in Germany, performing basic and applied science. In DG EAC he is responsible for the current Industry-Academia Partnerships and Pathways action (IAPP), for the future Research and Innovation Staff Exchange (RISE) of Marie Skłodowska-Curie Actions. He is the contact person for the African, Caribbean and Pacific countries participating to the PEOPLE programme.

BRAINS FOR BRAIN FOUNDATION MANIFESTO

Hunger for Knowledge: Investing in Brains to deliver research value in the EU

Addressing the gaps in knowledge to unleash the potential of Research and Innovation in Europe

On 16 October 2013 MEP Sartori and MEP Berlinguer presented a manifesto[1] "European Research Area: a Maastricht for Research", which aims to rally the European scientific community and institutions. A key objective is to seek consensus on a series of actions and initiatives that will enable the completion of the European Research Area. Building on the political momentum gained by this initiative, **the Brains for Brain Foundation aims to propose a model of cross-sector cooperation to overcome the gaps in research in the area of rare neurometabolic paediatric diseases**. The intention is to create a model that could facilitate the set-up of a European PhD Programme in the area of rare neurometabolic paediatric diseases, which could be replicated in other disease areas and sectors.

Given the challenges posed by an ageing health workforce on the healthcare sector, it is now fundamental to consider how Europe will ensure continuation of the essential public health activities of biomedical laboratories specialised in neurodegenerative disorders affecting children. These are currently at risk of closure. This is even more problematic in rare paediatric diseases which are characterised by a limited number of patients and scarcity of relevant knowledge, which requires close cooperation across the EU as a whole.

The challenge lies in addressing the gaps in research in the field of rare paediatric diseases and limiting the brain drain created through the lack of career opportunities in this field in the EU.

To ensure continuity within the research community, the Brains for Brain Foundation aims to create a network of experts committed to launching a scientific doctorate and post-doctorate to train the future generation of physicians and scientists. To ensure a multidisciplinary approach, the scientific programme will be supported by leading scientists, biotech companies, policy-makers, patient and healthcare professional groups.

The implementation of this model of cross-sector cooperation aims to achieve the following:

- create synergies in order to coordinate research endeavours,
- incentivise the application of research into clinical practice,
- improve the knowledge of the health workforce,
- invest in the most talented biomedical researchers,
- ensure mobility of careers.

[1] The "European Research Area: a Maastricht for Research" Manifesto paves the way for an ERA Framework Directive. It also identifies a number of proposals to overcome the following problems: 1) Low levelofinvestment and human resources, 2) Fragmentation and low coordination, 3) Knowledge application, 4) Researchinfrastructures, and 5) Research Careers and Mobility.

This will contribute to EU leadership in research and limit the brain drain in the field of rare neurometabolic paediatric diseases in the EU.

The need for a model of cross-sector cooperation in the area of rare neurometabolic paediatric diseases

The WHO has estimated that 1 in 10 people will be diagnosed with a severe and sometimes rare brain disorder in their lifetime[i].

There are 5000 to 8000 rare diseases affecting 5 to 8% of the population in the EU[ii], many of which have neurological manifestations. Rare neurometabolic diseases in children, such as lysosomal storage diseases, and inherited metabolic disorders affecting the brain, such as phenylketonuria, have a low prevalence. However, when combined the numbers represent a large burden for European society.

Lysosomal storage disorders (LSDs) are the cause of significant morbidity and mortality rates for those affected. Most LSDs patients begin showing signs of the disease early in childhood, often in the first year or two of life. To date, 300 inherited disorders are currently known to result in brain damage in children.

Research results must be transferred in a more active way to the communities and professionals who need this information in their daily lives. Because LSDs are so rare it remains difficult to find healthcare professionals knowledgeable about the diagnosis, management and treatment of these conditions.

The objective of investing in high quality healthcare via a more efficient use of public and private resources can only be pursued if an integrated and coherent policy framework is developed that mainstreams excellence across sectors. Sustainable investments in health should therefore address the mismatch between the educational needs of healthcare professionals and biomedical scientists with the existing societal needs of children.

A model of cross-sector cooperation is needed to achieve an EU knowledge-economy

A model of cross-sector cooperation is needed to optimise the value chain from biomedical research to translational application and health outcomes. The challenge lies in matching the educational needs of biomedical scientists with employment opportunities, in order to advance the available treatment and improve the care delivered to children with rare paediatric diseases and their families. Investments in child health should be combined with investments in human capital and a strengthened interaction between key sectors such as education, excellence in research, employment, and quality of healthcare.

This approach is fundamental for a disease area where available knowledge is limited. At times of economic austerity, **it is crucial that the EU continues implementing actions to limit the brain drain due to a lack of career opportunities for researchers in the EU.**

Despite a higher percentage of science graduates in EU Member States compared to the US, the EU lags behind in terms of number of researchers per working population[iii]. Over the years the Commission and Member States have dedicated resources to curb this trend, notably by facilitating youth mobility within the Marie Curie Actions Programme. The European Commission has recognised the prominent role and impact of a knowledge-based economy in driving sustainable and smart growth in Europe. Europe 2020 flagship initiatives closely intertwine critical aspects such as investment in research to address societal challenges, encourage youth mobility and lifelong learning to attract younger generations toward science and technology careers.

Yet, more has to be done to foster cooperation and leadership in Europe. The **EU has to undertake action to ensure continued mobility of PhD and post-doc students in Europe and greater transparency in recruitment appointments in research universities. PhD and post-doc curricula should also include extensive interaction with biotech and pharmaceutical companies.**

Such activities can contribute to maintaining the EU at the cutting-edge of fundamental and translational research in rare diseases, as well as investing in forward-looking and innovative technologies to address our society's challenges.

European pilot PhD programme on rare paediatric neurometabolic diseases

Since 2007, the Brains for Brain Foundation has invested resources to bring to life projects in the field of rare neurometabolic paediatric disorders, such as the 2013 exchange programme on lysosomal storage disorders. This programme gave the opportunity for the most deserving PhD students from across Europe to come together to present their research and progress in the area, as well as receive guidance on conducting further research projects. Given the specificities of rare neurometabolic diseases, we believe that greater results could be achieved if we pool together the resources at European level and invest in the brains of our biomedical scientists, to advance the treatments of rare neurometabolic diseases affecting children.

Call to Action!

Building on EU initiatives to achieve the Europe 2020 objectives through a strong knowledge-based economy, the signatories of this paper call upon the European institutions and national political and health authorities to:

- **Support the establishment of European pilot PhD and post-doc programmes on rare paediatric neurometabolic diseases**

In order to address the disconnect between societal needs in the area of rare neurometabolic diseases affecting children and the curricula of healthcare professionals and biomedical scientists, the PhD programme should be linked to the dedicated European Reference Networks (ERN) so as to achieve and maintain excellence in Europe.

Further we call on you to:

- Foster interaction between key sectors such as education, employment, research and healthcare in the field of rare neurometabolic diseases affecting children

- Retain and invest in the students who study the brain and contribute to the development of our knowledge economy
- Promote policy activities that address the disconnect between excellence and societal needs
- Promote and facilitate partnership and collaboration between physicians, researchers, patient advocates, carers, policymakers and industry
- Capitalise on knowledge gained through EU projects for the benefit of society
- Encourage and support research and the translation of scientific breakthroughs into clinical practice
- Contribute to the establishment of a standard of care for patients with rare neurological disorders which is agreed across Europe, and to ensure equity of access to diagnosis, treatment and care
- Increase exchanges and mobility of biomedical researchers and healthcare professionals

The signatories of this paper believe that the dissemination of new scientific knowledge developed via European collaborative research projects should be directed to our European biomedical scientists, in order to advance research and care for children with rare neurometabolic diseases.

We invite you to join us in supporting this new initiative.

Brains for Brain Foundation

[ii] WHO, Neurological disorders: public health challenges,2006
[ii] European Medicines Agency
[iii] Science and Technology Indicators 2003

SPONSOR SECTION

BioMarin

BioMarin develops and commercialises innovative biopharmaceuticals for serious diseases and medical conditions. The company aims to develop first-in-class or best-in-class therapeutics to make a large meaningful impact in small patient populations. Currently BioMarin provides therapies for patients with rare genetic diseases, such as PKU, MPS I, MPS VI, and LEMS.

With four products on the market and a fully-integrated multinational organization in place, BioMarin is providing innovative therapeutics to patients with serious unmet medical needs. We utilize innovative product development strategies to maximize the speed of development and quickly bring those therapies to patients. BioMarin is committed to serving the needs of patients, families and physicians by providing rapid access to therapeutic treatment, disease education and support services. For more information, please visit http://www.bmrn.com.

Genzyme

Genzyme has pioneered the development and delivery of transformative therapies for patients affected by rare and debilitating diseases for over 30 years. We accomplish our goals through world-class research and with the compassion and commitment of our employees. With a focus on rare diseases and multiple sclerosis, we are dedicated to making a positive impact on the lives of the patients and families we serve. That goal guides and inspires us every day. Genzyme's portfolio of transformative therapies, which are marketed in countries around the world, represents groundbreaking and life-saving advances in medicine. As a Sanofi company, Genzyme benefits from the reach and resources of one of the world's largest pharmaceutical companies, with a shared commitment to improving the lives of patients. Learn more atwww.genzyme.com.

Shire

There's a simple purpose that sits at the heart of our business: to enable people with life-altering conditions to lead better lives. This means we focus on developing treatments for conditions where the impact of our medicines can make an immediate and tangible difference for patients. We provide treatments in Neuroscience, Rare Diseases, Gastrointestinal, Internal Medicine and Regenerative Medicine.

This might be a therapy to treat an extremely rare and life-threatening disease like Hunter syndrome or Fabry disease; or a medicine for a specialist condition like ADHD or ulcerative colitis; or a treatment to help the healing of diabetic foot ulcers which if not treated effectively, can dramatically affect the lives of the patient and their whole family. We have a portfolio of specialist therapies, and have products available in 50 countries around the world.

Shire's Rare Diseases Business Unit focuses on the science that offers hope to those who suffer from such rare conditions as Hunter syndrome, Fabry disease, Gaucher disease, Sanfilippo Syndrome, and metachromatic leukodystrophy as well as Hereditary Angioedema (HAE).