Press Release **11 January 2017**

Launch of the PHAGO project to explore a new approach for patients suffering from Alzheimer's disease

On 1st November 2016 the Innovative Medicines Initiative (IMI) together with an association of industrial partners came together to support PHAGO, an innovative research project devoted to the development of immunomodulatory therapies for Alzheimer's disease (AD).

Alzheimer's disease (AD) is an age-related chronic neurodegenerative disease with progressive loss of nerve cells and their connectivity in the brain. Today, over 46 million people live with dementia worldwide and this number is estimated to increase to 131.5 million by 2050[1]. Affected patients suffer from memory loss and progressive dementia. Although current treatments can slightly delay some mental symptoms, there is currently no cure. The burden on caregivers who are often family members is huge. With an estimated 160 billion Euros of costs of care annually in Europe alone, this translates into a high socio-economic burden.

It has been known for many years that specialized types of immune cells accumulate around amyloid plaques (one of the pathological hallmarks of Alzheimer's disease) in the brains of patients and show a dysfunctional activation profile. Recent systems biology approaches based on genome-wide association studies and brain gene expression profiling identified the innate immune receptor genes TREM2 and CD33/SIGLEC3 as disease relevant players in Alzheimer's disease. These findings present novel and attractive targets for treatment. However a complete understanding of their exact role and underlying cellular mechanisms is still unclear. PHAGO aims to fill this knowledge gap and provide tools and assays for targeting these immune receptors to pave the way for the development of drugs that delay the progression of Alzheimer's disease.

Prof. Harald Neumann, University Hospital of Bonn and PHAGO project coordinator, commented: "We are seeking to understand the immune response in Alzheimer's disease. To this aim, we will analyse the function of both immune receptors in more detail and will set up tools and assay systems to establish pharmaceutical interventions".

The ambition of PHAGO is to improve patient outcomes through better understanding of the biology of TREM2 and CD33/SIGLEC3 and their biological networks and pathways, and develop therapies aimed at

[1] World Alzheimer Report 2015

modulating the immune dysfunction in Alzheimer's disease. To achieve this, PHAGO brings together experts from industry and academia in a powerful collaboration.

Dr. Andreas Ebneth, project leader at Janssen Pharmaceutica NV, stated: "The research project's value is its interdisciplinary approach focused on two relevant immune cell receptors suspected to be involved in Alzheimer's disease. By bringing together scientific knowledge of leading European experts from different technical areas on TREM2 and CD33, we will be able to establish and exploit innovative tools on TREM2/CD33 suitable for pharmaceutical and industrial application. Over time, our ambition is that these contribute to the development of drugs for the treatment of Alzheimer's disease."

Dr. Laurent Pradier, project co-leader at Sanofi added: "I see great potential for this project to develop a way to intervene pharmacologically in the TREM2 and CD33 pathways for the treatment of this devastating disease".

Axxam (Milan, Italy), a privately owned iPRO (innovative Partner Research Organization) and a leading provider of integrated discovery services for life sciences industries, is very proud to be part of this Consortium. Axxam will contribute its expertise for the development of high-throughput screening systems suitable for the discovery of modulators of the TREM2/CD33 pathway.

PHAGO is supported by the IMI with 8.8 million Euros and by further industrial partners with 9.1 million Euros. The project runs over five years and will end on 31st October 2021.

The parties involved

Under the name PHAGO, the new research consortium unites pharmaceutical companies, small biotechnology enterprises and public research organisations from across Europe. Pharmaceutical partners are: Janssen Pharmaceutica NV (Belgium); Sanofi (France); Eli Lilly, AstraZeneca AB (UK); Lundbeck (Denmark); AbbVie (Germany); Roche (Switzerland) and Orion Pharma (Finland). Biotechnology related enterprise members are: Axxam SpA (Italy), Life & Brain GmbH (Germany) and ARTTIC (France). Completing the consortium are academic institutions from across Europe: University Hospital of Bonn, German Center for Neurodegenerative Diseases, Charité – Universitätsmedizin Berlin and Fraunhofer Institute SCAI (Germany); King's College London, University College London and University of Cambridge (UK); and University of Gothenburg (Sweden).

About the Innovative Medicines Initiative

The Innovative Medicines Initiative (IMI) is working to improve health by speeding up the development of, and patient access to, the next generation of medicines, particularly in areas where there is an unmet medical or social need. It does this by facilitating collaboration between the key players involved in healthcare research, including universities, pharmaceutical companies, other companies active in healthcare research, small and medium-sized enterprises (SMEs), patient organisations, and medicines regulators. This approach has proven highly successful, and IMI projects are delivering exciting results that are helping to advance the development of urgently-needed new treatments in diverse areas.

IMI is a partnership between the European Union and the European pharmaceutical industry, represented by the European Federation of Pharmaceutical Industries and Associations (EFPIA). Through the IMI 2 programme, IMI has a budget of €3.3 billion for the period 2014-2024. Half of this comes from the EU's research and innovation programme, Horizon 2020. The other half comes from large companies, mostly from the pharmaceutical sector; these do not receive any EU funding, but contribute to the projects 'in kind', for example by donating their researchers' time or providing access to research facilities or resources.

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This project has received funding from the Innovative Medicines Initiative 2 Joint Undertaking under grant agreement No 115976. This Joint Undertaking receives support from the European Union's Horizon 2020 research and innovation programme and EFPIA companies.