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Honorable Senators of the US Congress,

The aim of this testimony is to stimulate greater coordination of large research efforts in the field of Alzheimer's disease that will be undertaken in Europe and the US in the coming years.

Much has been understood about how Alzheimer's disease develops in the brain, thanks to research carried out in Europe, the US, and elsewhere in the past decades. We currently believe that Alzheimer's develops due to the accumulation in the brain of at least two toxic proteins (amyloid and tau), that lead to progressive synaptic and neuronal damage. This has allowed to design drugs that, administered sufficiently early in the 30-odd year long process, should delay or altogether arrest its progression. Enthusiasm on these achievements is reflected by a number of large research efforts with an innovative approach. While such efforts see active cooperation of scientists across the Atlantic, unfortunately these are not coordinated at the funding level. I will give the two most glaring examples.

In the US, the Alzheimer's Disease Neuroimaging Initiative (ADNI) is the largest ever single effort in Alzheimer's, entailing US$ 150M for 10 years coming from NIA (65%) and industry (35%). It aims to describe the natural history of the disease at the clinical and biological level with a number of highly sophisticated imaging and biochemical techniques. In all medical disciplines, ADNI has pioneered the paradigm of open access to research data, such that any scientist in the world can download an unprecedentedly wealthy database and do science on it.

In Europe, 85% of the public research budgets of European countries are fully controlled at a national level, and less than 1% is reoriented to collaboration or coordination between countries through a number of community programs. This may change in the near future with the advent of Joint Programming funding schemes. These are led at the central level by the European Commission and aim to support and catalyse that 85% of research funded by national states by establishing closer and robust collaborations. The forerunner of all Joint Programs is the Joint Programming

on Neurodegenerative Diseases, an effort just recently started and focusing mainly on Alzheimer's disease.

Remarkably, a European ADNI is currently active in Europe thanks to close cooperation between US and EU scientists, and the first JPND is on a topic (standardization of biomarkers) where US and EU scientists of the European Alzheimer's Disease Consortium (EADC) are working closely together. The key role of the Alzheimer's Association to foster the transatlantic cooperation among scientists should be here underlined. However, the funding of ADNI in the US and JPND in Europe are not coordinated, such that scientists very closely aligned at the scientific level are completely detached when they run for grants. Transatlantic coordination might have the obvious positive fallout of maximizing the effectiveness and cost-effectiveness of research.

Initiatives are being developed aiming to synergize research efforts across the Atlantic. A scientific infrastructure is under development funded by the European Commission with overall € 9M that will allow to bring the concept and benefits of cloud computing to imaging neuroscientists working on Alzheimer's. The neuGRID electronic infrastructure (www.neuGRID.eu) will allow global scientists to exploit the enormous amount of scientific information conveyed by large public datasets such as the ADNIs. The Laboratory of NeuroImaging at the University of California at Los Angeles is full partner in the neuGRID efforts, and works are under way led by the Alzheimer's Association to develop neuGRID's US chapter (the Cloud Network of the Alzheimer's Association – CNAA), where EU partners will be symmetrically represented. The neuGRID/CNAA example is just a drop in the vast sea of Alzheimer's research, and funding bodies may wish to borrow this model to inform the largest initiatives on Alzheimer's in the EU and US. If this will happen and be effective, more funding bodies from China, Japan, Australia, and elsewhere, may wish to join in.

In conclusion, global research on Alzheimer's is benefiting from enthusiasm of recent scientific discoveries and prospect of an effective cure. Decision makers in the US and EU should capitalize on scientific enthusiasm by developing more effective funding strategies that will allow scientists to progress at greater speed. This will increasingly feed the fire of enthusiasm of scientists with the logs of knowledge, and may ultimately lead to find an effective cure for this devastating disease.

Thank you for your attention.