

# New scientific yardstick to help early diagnosis of Alzheimer's disease

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Alzheimer's disease, the most common form of dementia, remains largely underdiagnosed. Therefore, reliable markers are necessary. Credit: BarabasAttila

The European Commission's Joint Research Centre (JRC) released a

new scientific yardstick, in the form of a certified reference material, to help early detection of Alzheimer's disease.

The certified reference material will serve to calibrate diagnostic tools for amyloid- $\beta$  1-42, a biomarker for Alzheimer's disease found in cerebrospinal fluid.

Reliable measurements support earlier and more accurate diagnosis and may facilitate the development of new drugs for treatment.

Tibor Navracsics, Commissioner for Education, Culture, Youth and Sport, responsible for the Joint Research Centre which developed the certified reference material in close collaboration with the International Federation of Clinical Chemistry and Laboratory Medicine and with support of the Alzheimer's Association, said: "By putting this new instrument at the disposal of researchers and industry, we are making an important step to contain Alzheimer's disease one day, which destroys irreversibly the memory of affected people, and greatly diminishes their quality of life".

Vytenis Andriukaitis, Commissioner for Health and Food Safety, said: "Alzheimer's disease, the most common form of dementia, remains largely underdiagnosed. While certain gene variants increase the risk for Alzheimer's disease, not all people having the gene will develop the disease. Therefore, reliable markers are necessary not only for early diagnosis but also for drug development and monitoring treatments."

## **A reference material to support reliable testing**

It is important that research focusses on the very early stages of Alzheimer's disease. Clinical results have shown that a combination of biomarkers amyloid- $\beta$  1-42, tau and phospho-tau have a promising potential to be used in early diagnosis.

The levels of these markers in the [cerebrospinal fluid](#) begin to change up to 10 years before the first symptoms of the disease occur.

Diagnostics companies have been developing methods for the measurement of these markers in clinical laboratories.

The JRC worked with a consortium of scientists, supported by the International Federation of Clinical Chemistry and Laboratory Medicine (IFCC) and the Alzheimer's Association, to develop reference systems, including validated reference methods.

To complete the reference systems, reference materials are needed for quality control and for calibration of the routine methods.

This goal has now been achieved for the biomarker amyloid- $\beta$  1-42 through the development of a set of certified reference materials ERM-DA480/IFCC, ERM-DA481/IFCC and ERM-DA482/IFCC, which can be obtained through the JRC catalogue.

The availability of reliable markers is crucial not only for [early diagnosis](#) but also for the development of medication and monitoring of the effect of treatment in the patients. At present some drug candidates are in the late stage clinical trials.

## **Dementia and Alzheimer's disease**

Dementia is affecting large numbers of people and is a major burden for society. Alzheimer's disease is the most common type of dementia affecting 50 – 70 % of all patients. The causes of Alzheimer's are linked to abnormal clumps (amyloid plaques) and tangled bundles of fibers (consisting of the protein tau) in the brain.

The cost of illness in Europe in 2008 for Alzheimer's disease and other

dementias was estimated to be EUR 167.5 billion. There is also a significant impact on those caring for family members with Alzheimer's or other dementias which may cause emotional stress and depression.

## **EU support to Alzheimer's disease research and collaboration**

The EU has been supporting brain research for many years through the Framework Programmes for Research and Innovation, reaching some €500 million a year for basic as well as translational research. Over the past 10 years, over 3300 projects have been funded with a total of €5.3 billion from Horizon 2020, the current EU research and innovation programme, and from its predecessor.

Specifically for Alzheimer's disease, €544 million were awarded to 370 projects. This sustained investment addresses all aspects of brain research, from better understanding of brain function and dysfunction and the development of methods for diagnosis and monitoring, to prevention, treatment, care and support.

This holistic approach is needed to address the huge challenge of Alzheimer's disease for which there is no [disease](#)-modifying treatment to date.

In the area of public health, EU Member States, Norway and associated partners, such as non-governmental patient organisation Alzheimer Europe, cooperate through a joint action funded by the EU Health programme.

The second Joint Action, "Act on Dementia", is currently organising collaboration between Member States on four themes: diagnosis and post-diagnostic services, crisis and care coordination, quality of care in

residential care and dementia-friendly communities.

Provided by CORDIS

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