1. Interested institution:

Universidad Complutense de Madrid (www.ucm.es)
Facultad de Psicología
Departamento de Psicología Básica II (Procesos Cognitivos) (www.ucm.es/ps_basica-ii)
Campus de Somosaguas
28223 Madrid

2. Brief Description of the Institution

1. Introduction

Universidad Complutense de Madrid (UCM) is one of the largest Universities in Spain and all around Europe. With a tradition beyond 5 centuries, UCM has become a very important institution in terms of higher education and research activities.

UCM is home of research groups which are in the cutting edge of research in many areas. UCM technological scientific infrastructure (with an annual budget almost reaching 600M€), together with the quality of its researchers (more than 6000), has established some of its laboratories among the best all around Europe.

2. Research and Education

The UCM is a broad-scoped university in which almost every field of knowledge is envisaged. From the 2012 research annual report (the last consolidated figures), there has been a total income of almost 40M€ for research activities: 6% of this income has been obtained through EU funded programmes and 21% through R&D service contracts with the private sector. The research at UCM is developed through its 21 faculties, 5 university schools, 9 associated centres, 40 university research institutes, 8 schools for professional specialization, 4 university hospitals, and 17 research assistance centres.

Due to its broad-scoped nature UCM is able to offer 170 official degrees of which 65 correspond to bachelor degrees and 105 to master degrees. For these degrees UCM counts on more than 85.000 students distributed among the faculties, university schools and associated centres.

Both students and researchers benefit from a vast collection of volumes in the UCM library (more than 2,7 million of volumes), as well periodic publications exceeding 75.000. The historic collection of at the UCM’s library reaches 194.000 volumes and there are substantial historic and artistic funds all over the 12 museums and the 11 art, entomological, palaeontological, etc. collections.

More detailed information on R&D and Higher Education activities of the UCM can be found on http://www.ucm.es/data/cont/docs/3-2014-01-08-Memoria%20Investigacion%202012.pdf
3. Campus of International Excellence

UCM is located in the “Campus de Moncloa” at Ciudad Universitaria of Madrid. This location is a large space devoted to Science and Higher Education. With over 10,000 researchers and 10% of the national scientific production of Spain the “Campus de Moncloa”, which houses two universities and several research centres is a unique environment, fostering synergies in higher education, research, innovation and social and cultural projection.

This uniqueness has favoured the awarding of the “Campus of International Excellence” label to the institutions joining this “Campus de Moncloa”. The UCM through the Campus of International Excellence is committed to specialization in five thematic clusters to achieve scientific and teaching excellence: Global Change and New Energies, Materials for the Future, Agri-Food Industry and Health, Innovative Medicine and Heritage. The distinctive strengths of each cluster will converge to create unique configurations marked by their innovative and interdisciplinary character, highly competitive at the European level, and producing significant progress in knowledge transfer.

More information on the Moncloa Campus of Excellence can be found in http://www.campusmoncloa.es/en/.

4. Support to researchers in mobility programmes

The UCM provides advice to foreign researchers moving to the institution to develop R&D projects on how to process residence permits, visas or other related documents through the personnel department of its Fundación General (http://www.ucm.es/fundacion/). On the other hand, by means of the Oficina de Alojamiento and the Casa del Estudiante (Centro Internacional de Visitantes y Acogida, CIVA), http://www.ucm.es/oficina-de-alojamiento-en-la-ucm, the UCM provides to the visiting researchers the possibility to get accommodation though different options like residences or apartments.

Regarding the aspects related to the management of international Fellowships and Grants, the UCM, through the European Office for R&D (http://www.ucm.es/info/oficinaeuropea), provides advice and support throughout the preparation process of the Contracts and Agreements and the following management of the projects. A smooth financial management of the grants will be guaranteed by the Economic Management Unit of the FGUCM which deals at the time of submitting this EOI with more than 100 active international grants.

### 3. Please tick the areas of research (as established in Marie Skłodowska Curie Actions)

- [ ] Chemistry (CHE)
- [x] Social Sciences and Humanities (SOC)
- [ ] Economic Sciences (ECO)
- [ ] Information Science and Engineering (ENG)
- [x] Environmental Sciences and Geology (ENV)
- [x] Life Sciences (LIF)
- [ ] Mathematics (MAT)
- [ ] Physics (PHY)
4. Research / Project Description

International Research Project between Human Cognitive Neuroscience Groups from Edinburgh University (www.ppls.ed.ac.uk/psychology/groups/human-cognitive-neuroscience-1) (Drs. Della Sala and Parra) and Complutense University of Madrid (www.ucm.es/ps_basica-ii) (Dr. Fernández-Guinea). The position is offered at Complutense University of Madrid.

Recent evidence has started to accumulate suggesting that not all memory systems are equally vulnerable to healthy ageing and AD. Whereas forming and holding associations in memory decline dramatically in the elderly, integrating objects’ parts into unified representation (e.g., shapes and colours) appears to remain preserved across the lifespan (Brockmole and Logie 2013). Recent studies of neurological cases (Baddeley et al. 2010; Parra et al. 2013a) and an fMRI study of healthy young volunteers (Parra et al. 2014) confirmed that context-free conjunctive memory functions can be carried out in short-term memory (STM) without the involvement of the hippocampus. Interestingly, the regions thought to support these memory abilities have been found to remain preserved across the life span (Insauti et al. 1998). However, they have been found to decline in AD earlier than the hippocampus (Juottonen et al. 1998). Therefore, tests of hippocampal function may not identify the earliest memory impairments in AD (Didic et al. 2011).

A new generation of challenging test for AD is fast approaching (Rentz et al. 2013). One such a test is the STMBT. The STMBT assesses the ability to hold, on a temporary basis, combinations of objects’ features such as shapes and colours. This test has proved insensitive to healthy ageing (Brockmole et al. 2008; Parra et al. 2009b; van et al. 2014). However, it has proved sensitive to AD both in its sporadic (Parra et al. 2009a) and familiar variants (Parra et al. 2010b). The STMBT has been found to be unaffected by chronic depression in the elderly (Parra et al. 2010a) or by other types of dementia (Della Sala et al. 2012). Hence, in addition to support the early detection of AD, this test can also aid in the differential diagnosis of dementia. The test is unaffected by the cultural background of the affected individual (Parra et al. 2011).

The STMBT identifies impairments in elderly with subjective cognitive complains who otherwise score normally on traditional neuropsychological tests (Koppara et al. 2014). Moreover, the STMBT detects impairment in APOE4 carriers who meet diagnostic criteria for Mild Cognitive Impairment (MCI) (Caselli et al. 2014). Ongoing studies in MCI subjects with an unknown APOE genotype also confirm the presence of STM binding impairments in this population at risk for AD (Sartorio et al. 2014). The STMBT detects impairments in asymptomatic carriers of the mutation E280A of the PSEN1 gene which leads to familiar AD with 100% probability (Parra et al. 2010b; Parra et al. 2011). Although this evidence is encouraging, it comes from a genetic variant of AD. These results suggest that the STMBT can indeed identify subtle cognitive changes in otherwise completely asymptomatic individuals who will inevitably develop AD. We have proposed that STM binding is an early cognitive marker for AD. Such results should be confirmed in individuals at risk for sporadic AD, such as those with amnestic form of Mild Cognitive Impairment (MCI).

The present study aims to investigate longitudinally (3 years) whether STM binding deficits are present in patients with amnestic MCI and whether this impairment predicts conversion to AD. To
this aim, a research protocol has been designed which comprises a set of novel and traditional neuropsychological tasks known to be useful in the early detection of AD, and incorporates short term memory binding tasks. We also would like to incorporate MRI, fMRI and EEG information about the structural and functional organization of the brain network supporting STM binding functions in elderly with MCI.

It is important to highlight that we are mainly looking for applicants interested in joining our current project.

References


Parra MA, Abrahams S, Logie R, Della Sala S. Age and binding within-dimension features in visual


5. Who can apply?

At the deadline for the submission of proposals (10/09/2015), researchers (*):
- shall be in possession of a doctoral degree or have at least four years of full-time equivalent research experience.
- must not have resided or carried out their main activities in the country of Spain for more than 12 months in the 3 years immediately prior to the abovementioned deadline.
6. Contact person

Sara Fernández Guinea: sguinea@psi.ucm.es

7. Applications: documents to be submitted and deadlines

Please, contact us in order to organize the timeline for the preparation of the proposal. The following documents will be required:

- Motivation letter
- CV of the applicant

Submission deadline: June 30th, 2015

Please note that:

- Deadline of the next call for proposals for Marie Sklodowska – Curie Individual Fellowships is September, 10th 2015.
- Oficina Europea is only responsible for the display of the expressions of interests received by the institutions; further contact and information requests will take place directly between the host institutions and the interested researchers.

(*) Further details on the Call and additional eligibility criteria can be found at the Participants’ Portal