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Nanotechnology applied in Molecular Imaging, for the diagnosis and treatment of the diseases of the Central Nervous System

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Neurological diseases represent one of the highest threats to a healthy aging in regions with long life expectancy, like Europe, in general, and Spain, in particular. The development of medical imaging has helped to improve the diagnosis of such diseases in the last two decades. However, many neurological disorders start and progress silently for even years before the onset of the first clinical symptoms, when it may be too late for effective therapeutic interventions. The development of early imaging biomarkers of disease is of paramount importance to fight neurological diseases in their very early stages, when therapeutic interventions may be effective if not to cure, at least to stop the advance of neurological diseases. In this talk we will discuss how, by combining recent advances in nanotechnology and biomedical imaging, Magnetic Resonance Imaging is becoming an essential tool for molecular imaging and theragnostics, two disciplines that are helping to develop more effective diagnostic and therapeutic tools to fight against disease.