Can we envision a world without Alzheimer's?

Dr. Arcadi Navarro is the director of the Pasqual Maragall Foundation and its Barcelonaβeta Brain Research Center (BBRC), non-profit private organizations the main purpose of which is to bring us closer to a world without Alzheimer's by resorting to research and by altering people's common perceptions of the disease. Dr. Navarro, a senior lecturer of Genetics and ICREA researcher at Pompeu Fabra University (UPF), is also the co-director of the European Genome-Phenome Archive (EGA), a collaborative partnership between the European Bioinformatics Institute and the Centre for Genomic Regulation (CRG).

In the early years of the 20th century, Alois Alzheimer discovered the up until then unknown symptoms and neuropathological traits of a disease that today afflicts over 900,000 people in Spain and an estimated 50 million worldwide. After more than a hundred years of research and scientific breakthroughs, Alzheimer's still cannot be successfully cured, so we must continue to devote resources to further our understanding of this pathology, its root causes and the way it develops, in order to devise the most appropriate treatment for it. It might appear as if science is only slowly moving forward, but it also does so steadily, for it always ends up providing the answers we need to confront all sorts of diseases. In that sense, we currently find ourselves in a pivotal moment when it comes to our approach to Alzheimer's. In fact, we might even call it a **"paradigm shift"**.

This shift has been made possible by the combination of two incredibly significant factors: on one hand, new breakthroughs in the field of biomarker research, thanks to which we may now detect the disease in its preclinical stage by means of blood testing or neuroimaging; and, on the other, the production of new drugs capable of hampering cognitive deterioration and, consequently, the advance of the disease. There is one aspect worth highlighting: the research conducted in several cutting-edge centers based in Barcelona, led by the **BBRC**, has played a significant role in developments within both fields.

Barcelona is now internationally regarded as a focal point for research on Alzheimer's. Boasting a network of renowned scientific institutions, research centers and state-of-the-art hospitals, the Catalan capital has become an epicenter of knowledge and scientific partnerships, where multi-disciplinary teams comprised of scientists, medical doctors and health workers cooperate to better comprehend the mechanisms underlying Alzheimer's disease, to identify biomarkers and to develop new modalities of therapy, always in partnership with first-rate international centers.

The **Barcelonaβeta Brain Research Center (BBRC)**, research center of the **Pasqual Maragall Foundation**, has made great steps towards the early detection of this pathology. These breakthroughs would not have been possible without the ALFA cohort, one of the most multitudinous Alzheimer's research platforms in the planet. Established in Barcelona in partnership with the **"La Caixa" Foundation**, it is constituted by 2,700 healthy individuals who have altruistically decided to partake in Alzheimer's research during the last ten years.

Thanks to all the participants in this important research infrastructure, at the **Pasqual Maragall Foundation** we conduct analyses on both modifiable and non-modifiable risk factors such as sleep or nourishing to try to uncover how do they relate to patients' vulnerability to Alzheimer's disease. Moreover, we have set in motion pioneering interdisciplinary studies, such as neurogenetics, which allow us to first single out biomarkers in the blood and then carry out longitudinal studies that bring us closer to accurately predicting alterations before clinical symptoms surface.

Our teams have made significant contributions to the development of disease-detecting criteria currently used all over the world for an early recognition and diagnosis of Alzheimer's. Furthermore, we lead the research on plasma biomarkers and advanced neuroimaging techniques, such as functional magnetic resonance imaging and positron emission tomography. These methods have paved the way for a more precise and homogenized analysis of data.

If, as mentioned before, we combine these breakthroughs with the recent series of medical treatments that might be capable of slowing down the development of the disease, we find ourselves entering a new era that will forever alter our approach to Alzheimer's. Thanks to the cutting-edge nature of the research being carried out in Barcelona among other cities, we are now closer than ever to diagnosing the disease in its initial stages and finding effective solutions before its first symptoms even surface. This ongoing scientific progress is truly a source of hope, inching us closer to what we are committed to as a Foundation and research center: **to reach a future in which Alzheimer is no longer among us**.