

The group presented its research projects to coincide with World Alzheimer's Day, held on September 21

Grifols' Alzheimer research strategy addresses the degenerative disease from a global perspective

- **Alzheimer research efforts currently focus on early diagnosis, treatment with plasma proteins plus prevention and protection by means of vaccination.**
- **Hemopheresis using albumin and intravenous immunoglobulin (plasma derived proteins) is a novel approach for the treatment of Alzheimer's disease.**
- **Grifols, through its involvement with Araclon Biotech, is working on the validation of a diagnostic kit and on the development of a vaccine**

Barcelona, September 19, 2012.-Grifols is the world's third largest manufacturer of plasma derived medicines and a pioneer in the research and development of therapeutic alternatives designed to contribute to both scientific and social development. The company presented its research strategy to combat Alzheimer's, a degenerative disease for which there is currently no cure and which affects approximately 500,000 people in Spain¹.

Grifols develops this strategy directly and also through Araclon Biotech, a company that is majority owned by Grifols. The strategy comprehensively addresses the three main fields of action: early diagnosis of the disease, new treatments that at least slow down its evolution and development of a vaccine as a prophylactic measure.

These ongoing research projects that complement one another are part of Grifols overall R&D strategy, since Alzheimer's disease is now one of the most important lines of action for the group. Faced with the possibility of being able to treat this disease using plasma proteins, the company holds a natural interest in pursuing diversification to complement core business.

¹Data provided by the Centro Nacional de Epidemiología. According to CEAFA, the disease has been diagnosed in approximately 500,000 individuals, however a figure of some 800,000 patients is discussed when also taking into consideration non-diagnosed cases.

In the light of estimates that forecast the progressive aging of society in developed countries, Grifols firmly believes that it is essential to maximize research into Alzheimer's disease. According to the World Health Organization, 24.3 million people currently suffer Alzheimer's disease, with an increase of 4.6 million new cases each year.

According to the Alzheimer's Association, in 2011 the healthcare cost associated with patients in the U.S. amounted to approximately 183,000 million dollars while in Spain the overall cost associated with dementia in 2010, including Alzheimer's disease, was approximately 14,000 million euros (according to research conducted by the Karolinska Institute).

Treating Alzheimer's with plasma proteins: hemopheresis, a novel approach to therapy

Grifols has already conducted two clinical trials and has just commenced a third based on the use of plasma proteins. AMBAR (Alzheimer Management By Amyloid Removal) evaluates combined hemopheresis therapy with albumin and intravenous immunoglobulin (IVIG), in different doses, for the treatment of AD in moderate medium-stage patients, since preliminary results from the first two studies point to a stabilization of the disease.

Grifols' use of hemopheresis is a novel approach in the treatment of Alzheimer's disease. It involves the removal of a limited amount of plasma from the patient (maximum 800 ml.) that is replaced with albumin or intravenous immunoglobulin (IVIG), two of the main plasma proteins, resulting in a triple-action mechanism.

The triple-action mechanism being evaluated in the AMBAR clinical trial, would allow the amyloid present in the brain, the protein component of the deposits or senile plaques associated with Alzheimer's disease, to be dislodged and later removed from circulation.

This is a multicenter study that is two years from completion involving a total of 350 patients with moderate mild-stage Alzheimer's disease, divided randomly into three treatment groups, plus a fourth control group made up of patients from hospitals in both Spain and the U.S.

The AMBAR project is directed by Dr. Mercè Boada, who works at the ACE Foundation and at the Vall d'Hebron Hospital in Barcelona.

Diagnosis and prevention

Early diagnosis is essential to act effectively even in preclinical stages. However, diagnosis currently occurs in advanced stages of the disease.

Through Araclon Biotech, Grifols is working on the validation of an early diagnostic kit (ABtest) for Alzheimer's disease, based on the detection of beta-amyloid peptides (A β) 17, 40 and 42, three of the more frequently found proteins in blood, which could be considered as potential biomarkers for preclinical diagnosis of Alzheimer's disease.

Grifols is also currently conducting different clinical studies with more than 400 participants in order to obtain data that would allow these kits to be validated using ELISA techniques.

In the longer term, the company is also working on the development of a vaccine to combat Alzheimer's disease in the asymptomatic/preclinical stages. Development of the vaccine is based on immunization against beta-amyloid. More specifically, it is an innovative active immunotherapy that specifically targets beta-amyloid proteins 40 and 42 using the C-terminal of the beta-amyloid peptide.

	Hemopheresis with Albumin	Hemopheresis with IVIG	Diagnosis	Vaccine
Current perspective	Treatment performed with plasma exchange.	Treatment performed with plasma exchange.	Test available single/simple	
Status	Pilot test performed. Start phase II	Medical literature available	Two trials completed	Performed in animal models
Following Phase	AMBAR trial with 350 patients underway	AMBAR trial with 350 patients underway	Validation process underway	Start of phase I clinical trial at the end of 2012

Grifols shares its experience with the rest of the scientific community by taking part in important international congresses on Alzheimer's disease, where researchers are able to share their latest achievements.

About Alzheimer's disease

Alzheimer's disease is a neurodegenerative disease characterized by the death of neurons; currently there is no cure for this disease. Alzheimer's disease is viewed as a 21st century epidemic, that will have a devastating effect on the elderly population in developed countries.

According to the Alzheimer's Association, the disease affects 10% of those aged over 65, and up to 25% of people aged over 85, although only between 2% and 7% of cases are diagnosed in the early stages.

The World Health Organization estimates that 24.3 million people currently suffer Alzheimer's disease, with an increase of 4.6 million new cases each year. In the year 2011, in the United States alone, there were approximately 5.4 million patients, and it is estimated that by 2050 there could be between 11 and 16 million. In Spain the situation is similar to surrounding countries. In 2010 the prevalence of the disease was estimated at approximately 500,000 diagnosed cases according to the *Centro Nacional de Epidemiología*. However due to the progressive aging of the population, the number of patients could increase by 75% by the year 2030.

About Grifols

Grifols, with presence in more than 100 countries, is a global pharmaceutical company specializing in the Hemotherapy sector, the medical discipline that treats disease using blood components. The company's class A shares have been listed on the Spanish Stock Exchange (MCE:GRF) since 2006 and have been part of the Ibex-35 since 2008. In 2011, the company listed non-voting class B shares on the Mercado Continuo (MCE:GRF.P) and in NASDAQ-United States via ADRs (NASDAQ: GRFS).

Grifols is the third company worldwide in plasma protein therapies, in terms of capacity after the recent purchase of Talecris, with a balanced and diversified range of products. In upcoming years, the company will strengthen its leadership in the industry as a vertically integrated company, as a result of on-going investment plans. Grifols is the world leader in plasma collection with 147 plasma donor centers in the United States to ensure a continued and reliable supply of human plasma for the production of plasma therapies. In terms of production capacity (fractionation), Grifols owns and operates several plants in Spain and the United States that allow it to respond to the growing market demand. Grifols' sustained growth will be supported by a strong presence in the United States.