Alzheimer’s Research U.K.: Defeating Dementia Through Research

ERIC KARRAN

INTRODUCTION

Alzheimer’s Research U.K. was founded in 1992 with one vision: to defeat dementia through research. The founding members, shocked by the lack of investment in dementia research, set up the charity—then called the Alzheimer’s Research Trust—to be dedicated purely to research into the condition. The charity’s initial hope was to build a dedicated dementia research center, but that focus later shifted to funding scientists in universities to ensure that as much money as possible went directly to research.

Today we are the U.K.’s leading dementia research charity and one of the top three dementia research charities in the world, investing nearly U.S. $60.39 million (£38 million) in investigative studies, educational efforts, and a network of 15 centers of dementia research excellence. Dr. Eric Karran, director of research for the charity, shares the organization’s accomplishments to date and future goals.

An Investment That Is Paying Off

A team at the University of Cambridge, funded by Alzheimer’s Research U.K., has recently been able to generate networks of functioning nerve cells with some of the features of Alzheimer’s disease using stem cells donated by people with Down’s syndrome. People with Down’s syndrome have a high risk of Alzheimer’s because they have an extra copy of chromosome 21, a carrier for the amyloid precursor protein (APP) gene, which produces the protein amyloid, a hallmark of Alzheimer’s.

Skin cells from these volunteers were reprogrammed into stem cells and then converted into nerve cells. Because these cells carry an extra copy of the APP gene, they produce excess amyloid, giving the researchers a new cell model of relevance for Alzheimer’s disease that they can compare with cells derived from healthy volunteers.

Thanks to initial funding from Alzheimer’s Research U.K., the team was able to test its idea in a pilot study and is now embarking on a major project that will use these cells to study aspects of the disease process. Although this research is in its early stages and has yet to translate into benefits for patients, it is hoped that the cells will provide a more relevant platform for screening new treatments.

Although clinical trials are prohibitively expensive for a charity such as Alzheimer’s Research U.K., patient involvement is crucial to much of the work we fund, including our stem cell research projects. At University College London’s Institute of Neurology, Dr. Selina Wray, an Alzheimer’s Research U.K. research fellow, has teamed up with clinicians to recruit volunteers with rare forms of dementia to give skin biopsies to aid stem cell research. Dr. Wray’s own work focuses on using cells from patients with microtubule-associated protein τ, the gene that causes frontotemporal dementia (FTD), in order to produce more relevant models to study τ, a protein involved in dementias such as FTD and Alzheimer’s.

Even though it will take time for this research to translate into tangible benefits for people, these patients have proved very willing to participate, allowing the researchers to build up a large cell bank that will be made open-access and will benefit even more research in the long run.

What’s Ahead?

New strategic objectives for our research are currently being formed and will be announced fully in due course. Although these are unlikely to focus specifically on stem cells, where scientists have ideas for stem cell work that would be covered by our research strategy, we would invite...
them to submit grant applications for consideration by our Scientific Advisory Board.

Our funding priorities for stem cell research are more likely to lie with translational research, in the sense that we would look to fund work that links the fundamental science to the patient—such as the ongoing research projects described above. Increased media coverage of stem cell research has meant that people are far more aware of this type of work than they were previously, but to some extent there is a perception that such research is aimed at providing new treatments, such as stem cell therapy. It is not clear whether this type of therapy will be applicable to diseases such as Alzheimer’s, so it is important that we can demonstrate other ways in which stem cell research can be useful.

Being able to communicate the aims and results of the research we fund is vital for maintaining public support—and that is where we need scientists’ help. We are lucky to have a number of researchers who are enthusiastic about this and have become involved in different ways, such as giving talks about their work at public events or speaking to the media about their findings. Some scientists have even raised money for us themselves, taking part in organized events like our Big Walk or hosting their own fund-raising events.

Involving scientists in this work can make a huge difference, and many scientists find that talking to the public about their research also allows them to connect with the people who will ultimately benefit from it—something many laboratory-based researchers do not always have the opportunity to do.

The Challenge

Although we are committed to increasing the amount of research we fund, the magnitude of the challenge posed by dementia means that we cannot tackle it alone. That is why we have worked hard to bring dementia research to the top of the political agenda and influence policy, through involvement in groups such as the Ministerial Advisory Group on Dementia Research. Our campaigning has been instrumental in gaining government recognition of the scale of the problem. For example, our Dementia 2010 report revealed that there are 820,000 people affected by dementia in the U.K., at a cost of U.S. $36.5 billion (£23 billion) a year to our economy.

Scientists have also been active in our campaigning. Our recent report, Defeating Dementia, spotlighted the high quality of research in the U.K. but warned that dementia research was hampered by a lack of scientists working in the field. The report drew on the experiences of dementia researchers to make 14 detailed recommendations aimed at boosting capacity and creating a better environment for dementia research.

With the recent announcement that public funding for dementia research will be doubled to almost U.S. $105 million (£66 million) by 2015, we are now seeing positive advances. However, we must remember that this increase has come from a low starting point, and we will need to ensure that the money is spent wisely.

We are calling on the U.K. government to set up a national dementia research strategy, with long-term, protected funding. Ultimately, a lasting commitment to dementia research is needed if we are to solve this complex problem.

Meet Eric Karran, Ph.D.

Dr. Eric Karran is the director of research of Alzheimer’s Research U.K. Before joining the charity in February 2012, he was chief scientific officer of neuroscience research and early development at Johnson and Johnson’s Beerse site in Belgium.

A biochemist by training with an interest in enzymology and pharmacology, Dr. Karran has more than 25 years’ experience in the pharmaceutical industry, including previous director-level positions in SmithKline Beecham (now GSK), Pfizer, and Eli Lilly. Dr. Karran has a broad experience of different therapeutic areas, including inflammation, cardiovascular, and neuroscience studies.