

## Alzheimer disease

**F**rom imaging to immunotherapy, and synapses to  $\gamma$ -secretase: these are among the most exciting findings in the field of Alzheimer disease from the past three years, according to leading scientists. Many hope that these discoveries will soon lead to a cure for this devastating illness, which affects approximately 4.5 million individuals in the US alone. In countries such as Japan, where the proportion of aged individuals is expected to almost double over the next 50 years, tackling Alzheimer disease is crucial for safeguarding the health of the population.

To assess the state of affairs in Alzheimer disease research, we asked 34 leading scientists what they felt the most important findings have been since 2003. The results are on page 767. Generally, these papers highlight potential therapeutic interventions, disease pathogenesis and biomarker identification. Notably, of the papers our experts chose as the most important, 95% are related to the processing or pathogenesis of amyloid- $\beta$ , a peptide that clumps to form the extracellular plaques in the brain that characterize the disease.

Does this mean that amyloid- $\beta$  is accepted by all as the primary causative factor in Alzheimer disease pathogenesis, and that a therapy will only be successful if it directly targets amyloid- $\beta$  aggregation or neurotoxicity? Perhaps, but there are some indications from experts that the time may be ripe for the influx of some new ideas into Alzheimer disease research, as the feature on page 747 of our News section makes clear.

As just one example, a surprising proportion of the scientists whom we consulted (12%) pointed out that the past three years were actually more notable for the lack of important discoveries in the field of Alzheimer disease. They suggested that Alzheimer research needs an invasion of new ideas from scientists in other fields to try to reinvigorate the development of new therapeutic targets. Whether this revival will come from those looking at amyloid- $\beta$ -based therapies—or from an entirely different direction—is anybody's guess.

What is clear, however, is that much power is in the hands of governmental funding agencies and pharmaceutical companies throughout the world that set the budget for Alzheimer disease research. They can maintain the current pace and direction of research, or they can drive new ideas by increasing funding and allowing development of more risky approaches that may be associated with significant reward.

To be sure, stimulation of research into new ideas will take not only a continuous influx of money from these and other funding sources, but also a relative increase in the amount of money allocated for research into this disease. In this time of tight funds, it is up to the governments to take the financial risks so that the reward of a therapy for Alzheimer disease can be realized more quickly.

To determine whether governments are willing to make these investments, we asked funding decision-makers from the US, the European Union and Japan to comment on the relative importance of Alzheimer disease research in their parts of the world, and on the current and future state of Alzheimer disease funding. Scientists from Germany, Switzerland, Spain and Belgium then weighed in with their personal viewpoints on what Alzheimer funding is like in their own countries, and discuss the role that funding from the European Union—and other sources—plays in their individual research programs.

As this set of commentaries will make clear, funding for Alzheimer disease research is viewed as an important investment for governments to be making. Pharmaceutical companies are also getting in on the action, as the rising number of elderly individuals worldwide who may be predisposed to Alzheimer disease is opening up a large market for suitable drugs that either prevent or treat the disease to be developed. An additional commentary and another report in the News section therefore examine the current and projected size of the Alzheimer market, at the drugs that are currently in use (which perform at a clearly unsatisfactory level in the clinic) and at the drugs in the pipeline, which will hopefully fulfill this unmet medical need.

With the projected increase in the number of people with Alzheimer disease over the next 50 years and the associated cost to governments around the world to treat these patients, the time for investment of both ideas and money is now. We hope that the articles contained in this section stimulate discussion between and among scientists and funding decision-makers, and encourage our readers to share their opinions with us.

We sincerely appreciate the financial support of BTG to help us produce this close look at Alzheimer disease research throughout the world. *Nature Medicine* takes full editorial responsibility for the content of these pages.