Eleanor Maguire, who is Irish, graduated in 1990 and four years later received her doctorate in Psychology from University College Dublin. Over this period she combined her education with a job in the neuropsychology clinic at the Beaumont Hospital in Dublin.

Ever since then she has worked with the Wellcome Department of Cognitive Neurology, in the Institute of Neurology at University College London, firstly from 1995 to 1997 as a postdoctoral researcher, then from 1997 to 1999 as a senior researcher, from 1999 to 2003 as a lecturer, from 2003 to 2007 as a tenured professor, and since 2007 as senior professor of Cognitive Neuroscience.

Since 2003 she has also been a senior member of the Wellcome Trust’s Basic Biomedical Sciences team, and since 1999 an honorary neuropsychologist at the National Hospital for Neurology & Neurosurgery. She is also a member of the Royal Society of Arts and the Royal Society’s working group on Neuroscience and Education. She is a member of the British Psychological Society, the Memory Disorders Research Society, the Society for Neuroscience and the Cognitive Neuroscience Society.

Dr. Maguire has also published nearly 90 articles on place and memory in international cognitive neuroscience journals and has received various awards throughout her career. For example, in 2004 she received the Young Investigator Award from the
Society for Neuroscience for her contributions to cognitive neuroscience, and four years later the Rosalind Franklin Award from the Royal Society for her outstanding contribution to Science. She is also associate editor of the journal Neuropsychologia.

**HER CONTRIBUTION**

Eleanor Maguire has been one of the most important researchers in the field of neuroscience over recent years. She has focused her research on memory, and more specifically on autobiographical memory (our memory about ourselves), and how these are “anchored” in the brain. She is also studying the relationship between these memories and how they are spatially represented in our minds. This means looking for the neuronal networks that codify the image of our house or our memories of our school days, for example.

One of her hypotheses is that these two types of networks must be related, since her research has shown that we can remember anything better (names, numbers, etc.) if we associate it with a place. For this reason, the work of Dr. Maguire’s team is now focusing on the hippocampus, the part of the brain believed to be associated with these two types of memories.

Dr. Maguire has focused her research on autobiographical memory (our memories about ourselves) and how these are “anchored” in the brain. Her work has also revolutionised our understanding about how our memory functions, and how we relate our memories to physical places.
She is also quite well known as a researcher beyond her area of specialisation, since her experiments are usually based around situations in day-to-day life. Recently, newspaper headlines linked a specialist paper published by her research group with the term “mind reading”. The experiment consisted of observing the brain activity of various people while they watched three different snippets of film. These fragments provoked different memories, sensations and emotions in each individual.

The researchers learned to distinguish, with a reasonable margin of error, that each reaction was related to different parts of the brain becoming active. This meant they were able to tell the volunteers what emotions each snippet of film had aroused in them before they had even said anything. This is a long way from true “mind reading”, but it is at the forefront of studies about how we construct our emotions, and the parts of our brains in which our memories physically exist.

THE PERSON

Ever since her university days, it has been clear that Eleanor Maguire is the top of the league – she was top of her year in her degree and her Master’s and also managed to combine her doctorate with work in a neuropsychology clinic.

Her work has appeared on numerous occasions in the most prestigious of scientific journals. For example, her research was included as one of the top 10 scientific advances of 2007 in Science, and has been extensively covered in popular publications such as New Scientist, Scientific American, National Geographic, Reader’s Digest and The Economist. She has also made significant contributions to various neuroscience text books and received various awards for her contributions to cognitive neuroscience.

Meanwhile, her efforts to ensure her studies reach the broadest possible audience have kept her in constant contact with the media. For example, her paper about London taxi drivers, which showed the plasticity of the adult human brain, made
front page news in all the leading newspapers in the United Kingdom (and many in the rest of the world too), and won her the Ig Nobel Prize for Medicine in 2003. More recently, her works published in Current Biology, which showed that it is possible to predict a person’s location and what they were remembering purely on the basis of electrical activity in the hippocampus, was also extensively covered in the media.

Dr. Maguire has a particular interest in younger generations and is working actively with schools and their pupils in order to make science interesting and attractive as a career option.

Dr. Maguire also shows great interest in younger generations and works actively with schools and their pupils to try to make science more interesting and attractive as a career choice. To do this, she has worked actively with the Women in Science and Engineering project (WISE), which is designed to encourage interest in science careers among teenagers. Her work has also had an impact on the national curriculum in the United Kingdom, since she is a member of some of the advisory groups on text books, which also include some of her research.

Some of her studies also formed part of the museum exhibition “Planète cerveau” some time ago at the Musée de l’Homme in Paris, and will also figure in the recently-renovated ‘Who am I’ gallery at the London Science Museum.
THE IMPLICATIONS

At first glance, studies on taxi drivers or film segments seem simply anecdotal. But nothing could be further from the truth, as can be seen from the high regard in which Eleanor Maguire is held by her colleagues. Currently, aided by increasingly precise techniques, the study of memory is one of the most active areas within neuroscience.

The challenge for Dr. Maguire and her team is to understand how Alzheimer’s disease or dementia affect the functioning of memory, so that this knowledge can be used to develop new clinical tests for diagnosis or new rehabilitation and treatment techniques.

Now, scientists are able to look into questions that 75 years ago were only being raised by philosophers. One of these is: Who are we? The image we have of ourselves depends largely upon how we remember ourselves, in other words the way in which our autobiographical memory functions. In Dr. Maguire’s own words, “without memories we have no identity, and we cannot even recognise ourselves”. The memories studied in her laboratory are called “episodical”, since they comprise information about where we are, what we are doing and how we feel. This area seems to be extensively connected to
some others, which are also entering a new era, such as the study of identity, conscience and empathy.

Dr. Maguire’s medium-term objective is to understand the precise way in which diseases such as Alzheimer’s or dementia affect the functioning of memory. She hopes this understanding will help to develop new clinical diagnostic tests and, possibly later, new rehabilitation or treatment techniques.

It is clear that studying how our minds function and how our brains work is an enormously complex task, but people such as Eleanor Maguire and her team undertake it with admirable enthusiasm.