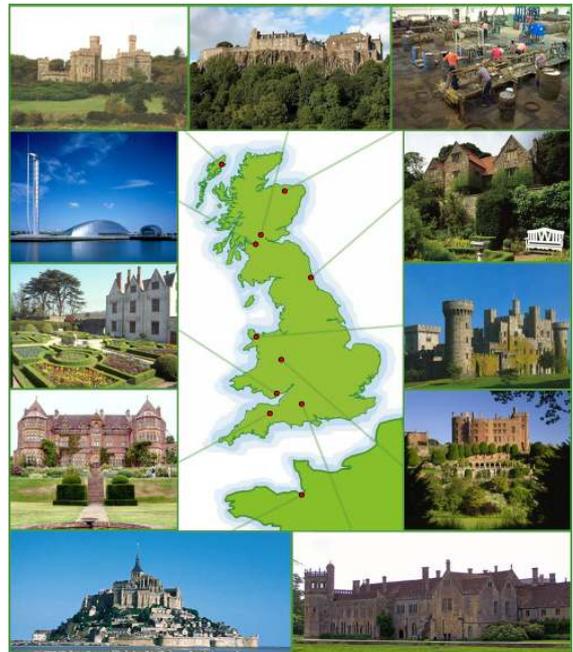


Dear

Thank you very much once again for taking part in the TIME project. The team has been busily at work through 2009 with several projects designed to fill out our understanding of Transient Epileptic Amnesia (TEA).

In 2007 and 2008 we published three scientific papers describing the results of our first wave of work on TEA, following the launch of the TIME project in 2003. A fourth paper was published early this year. *Transient Epileptic Amnesia: regional brain atrophy and its relationship to memory deficits (Brain 2009; 132:357-368)* reports evidence that the hippocampus, a region of the brain intimately involved in memory, is affected in TEA. We also found a relationship between the size of the hippocampus and performance on several 'standard' memory tests. We did not, however, find a relationship between the size of the hippocampus and the extent of the more unusual memory problems seen in TEA, accelerated long-term forgetting and autobiographical amnesia, suggesting that these may not be due straightforwardly to changes in this region of the brain. See below for more on these.

Several of you know Nils Muhlert who completed his work with the TIME project this year. Nils was studying the 'leakiness' of memory that occurs in some people with TEA ('accelerated long term forgetting' - ALF - the loss of memories, that at first appear to have been acquired normally, over the course of a day-week). The participants in Nils' project wore an experimental camera, SenseCam, during visits to stately homes, zoos and museums (see picture). SenseCam takes a photo automatically every 30 seconds or so, building up a photographic diary of the day's events, which can then be used to test memory at various intervals. Nils' work has shown that while memory is normal at the end of the same day in patients with TEA, it dips significantly by the following day. This indicates that ALF occurs over the first 24 hours after memories are formed, perhaps because of a problem consolidating memories during sleep. Interestingly, a 'skill' or 'motor' memory, for typing out a sequence of letters, was not affected. Nils' talk about this work at the annual meeting of the British Neuropsychiatry Association in February won the Alwyn Lishman platform presentation prize. We are very grateful to Microsoft Research for funding this project, and for supplying us with SenseCams.



Fraser Milton, who is funded by the Great Western Research Initiative, has entered the third year of this fellowship. During the year he has completed the study of autobiographical memory in TEA which was started off by Dominika Pindus. Using a very exacting test of autobiographical memory, Fraser has found that people with TEA have difficulty in recalling detailed memories of individual episodes, like special occasions and holidays, from throughout their lives. Memory for 'public' information, like famous events, was mildly affected but much less so than memory for unique autobiographical events. In the same group of people, memory performance was normal on 'standard' memory tests. These results confirm the impression that autobiographical memory is especially vulnerable in TEA. They indicate that memories can form normally, yet lose detail over extended periods. We have some tentative evidence that the 'lost' memories in TEA are sometimes recoverable, from one participant who has regained clusters of lost memories following several episodes of déjà vu. This is intriguing as it suggests that - at least sometimes - the problem with recalling memories of the past in TEA lies with memory retrieval rather than

memory storage. In parallel with this project, Fraser has been discovering how the brains of people with TEA are activated during attempts to remember memories from the past: several of you have made the journey to Exeter's functional MRI scanner to help with this. This work will be completed early in the course of 2010.

We were lucky to have an energetic Psychology student from Plymouth University, Alicia Smith, working with us in 2008-9. During the year Alicia redesigned the TIME website (<http://www.pms.ac.uk/time>) which is now more user-friendly and provides more extensive background to TEA. Most of our publications can be downloaded from the site – though we are of course also very happy to send these to you if you wish: please let us know if so.

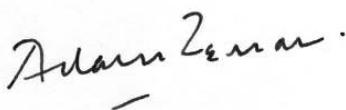
Chris Butler has been awarded a PhD by Edinburgh University for his thesis on TEA, and remains closely involved in all the TIME studies. In the summer he moved from his post as clinical lecturer in Neurology in Edinburgh to a similar one in Oxford, where he plans to continue his work on TEA. He has been collaborating with Aureliu Lavric, an Exeter-based psychologist, on a study combining brain wave recording (EEG) with functional MRI scanning in an effort to track down the source of the abnormal electrical activity in TEA. Jude Segerlund, the TIME team administrator, has kept us on the rails, taking on the lion's share of the organisation of a conference on Epilepsy and Memory at Dartington Hall in May. The work presented at the meeting will be published in book form by Oxford University Press next year. The TIME team's work on TEA has attracted media interest this year, with articles in the New Scientist and the Times. These can be accessed via our website (under 'News'). We completed a second Great West Run in May, raising funds for the TIME project.

Many questions remain to be answered about TEA. Among others, we are unsure why TEA occurs, whether memory is progressively affected, what changes occur in the brains of people with TEA, whether ALF is linked in to sleep, whether ALF can be prevented by drug treatment, and why some people with TEA have particular difficulty in recognizing familiar places and remembering familiar routes. We have just submitted a grant application for funds that will, we hope, enable us to continue our work and answer these and other questions. Research funds are scarce at present, and if you have any good ideas for approaches to fund-raising for the project – please let us know!

We remain very grateful for your help which has made this project possible.

With all best wishes for Christmas and the New Year,

Yours sincerely,



Adam Zeman



Nils Fraser Alicia Jude Adam

**Principal Investigator**

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Exeter

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Prof John Hodges, Sydney  
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Prof Kim Graham, Cardiff  
Dr Catherine Haslam, Exeter

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