## EMERGING RESEARCH FRONTS - 2010

### April 2010

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**Edward Bullmore talks with *ScienceWatch.com* and answers a few questions about this month's Emerging Research Front Paper in the field of Psychiatry/Psychology.**

**Article: Attenuation of the neural response to sad faces in major depression by antidepressant treatment - A prospective, event-related functional magnetic resonance imaging study**
Authors: Fu, CHY;Williams, SCR;Cleare, AJ;Brammer, MJ;Walsh, ND;Kim, J;Andrew, CM;Pich, EM;Williams, PM;Reed, LJ;Mitterschiffthaler, MT;Suckling, J;**Bullmore, ET**
Journal: ARCH GEN PSYCHIAT, 61 (9): 877-889, SEP 2004
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(addresses have been truncated.)

**SW: Why do you think your paper is highly cited?**

I think the paper has been well cited because it was one of the first event-related fMRI studies to show the effects of depression and antidepressant drug treatment on brain activation elicited by "events" consisting of emotional faces showing different intensities of sadness. More generally, it was one of the first generation of fMRI studies to look at any drug effects on brain function in any clinical disorder.

**SW: Does it describe a new discovery, methodology, or synthesis of knowledge?**

We showed that depression is associated with enhanced limbic activation by negative affectively valent visual stimuli and that antidepressants are associated with normalization of limbic over-activation.

In this original paper and some additional papers that further investigated the same data, we found correlations between brain functional response and symptomatic response to antidepressant treatment, and we confirmed important prior work suggesting that brain imaging markers of anterior cingulate structure and function can be used to predict antidepressant treatment response.

**SW: Would you summarize the significance of your paper in layman's terms?**

Modern brain-scanning techniques can show how antidepressant drugs may act on

the brain to correct the bias towards negative thinking associated with depression. One important future use of brain scanning may be to predict which patients are likely to respond best to antidepressant treatment.

*"...mental health disorders are brain disorders and the aspiration that one day we may do a better job for psychiatric patients by using the power of modern neuroscience for more decisive therapeutic impact."*

**SW: How did you become involved in this research and were any particular problems encountered along the way?**

This study was an academic-industrial collaboration between the Institute of Psychiatry (IoP), London, and GlaxoSmithKline. At the time, I was a research fellow at the IoP and I got involved initially on design and analysis issues.

My colleagues Cynthia Fu and Steve Williams led on clinical and MRI aspects, respectively. Clinical research is never all that easy and it was challenging to find patients and conduct what was a technically advanced trial at the time.

**SW: Where do you see your research leading in the future?**

I am interested in using fMRI among other experimental medicine approaches to drug discovery for central nervous system and metabolic disorders. I am also interested in analyzing the topological and physical properties of brain networks represented in human neuroimaging and electrophysiological data.

**SW: Do you foresee any social or political implications for your research?**

I hope that this study is one small additional piece of evidence in support of the idea that mental health disorders are brain disorders and the aspiration that one day we may do a better job for psychiatric patients by using the power of modern neuroscience for more decisive therapeutic impact.

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