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## AstraZeneca thinking differently with less-is-more approach to neuroscience



[Amy Brown](#)

AstraZeneca is certainly not the only drug maker undertaking an R&D overhaul, but the shake up of its neuroscience operations is probably one of the most complete transformations of a discovery unit attempted by a big pharma company.

The changes have been both physical and philosophical: Staff numbers slashed and infrastructures dismantled, while collaborations with external partners are being vigorously pursued to provide new leads. Astra itself admits that it does not know whether this approach will improve the success rate in one of the riskiest areas of drug development; Menelas Pangalos, a vice president in the company's discovery unit, says progress will be assessed in three years. The pharma industry has been forced to come to the hard conclusion that throwing money at the R&D problem does not work – it remains to be seen whether taking money away is any more effective.

### Replacement failure

The failure of the pharmaceutical industry to improve upon the first generation of anti-psychotics and anti-depressants is a huge contributor to the patent cliff that many companies are currently tumbling over. Meanwhile areas like dementia, in particular Alzheimer's disease, represent huge unmet needs that could provide a solution to the gaping revenue holes facing many, if only breakthroughs can be made.

But developing drugs for the central nervous system and neuroscience in particular has proven a money pit for pharma companies over the last five to ten years. Despite huge investments in the area only three novel neuroscience compounds have been launched in the last five years that analysts expect to achieve blockbuster status by 2018 – Shire's Vyvanse for ADHD, Johnson & Johnson's antipsychotic Invega franchise and UCB's Vimpat, an antiepileptic. Sales of on patent anti-psychotics, which include Astra's Seroquel, peaked at \$18.8bn last year but by 2018 will only be generating \$6.3bn for brand name manufacturers, EvaluatePharma data show.

Meanwhile, impending data due from the first huge wave of investment in potential Alzheimer's treatments are unlikely to suggest the industry has turned a productivity corner in neuroscience ([Event - Amyloid-targeting Alzheimer's therapies seek crumbs of comfort, June 26, 2012](#))

### Doing it differently

AstraZeneca, itself a fading CNS heavyweight with the loss of \$6bn Seroquel this year, announced a radical shake up of its neuroscience activities earlier this year as part of a wider R&D overhaul. Rather than exiting the area altogether as many of its peers have done the company has gone "virtual", stripping activities back to the bone in an attempt to nimbly follow breakthroughs made elsewhere.

Having previously employed 900 scientists the company's virtual neuroscience Innovative Medicines Unit – Astra's chosen term for its R&D therapy sections – now employs only 35-40 full time employees. Whereas in the past only 20% of the division's budget was available to spend on new projects and research ideas, with 80% tied up in fixed costs, the situation is now reversed, Mr Pangalos said yesterday at a press briefing.

"We decided if we wanted to stay in neuroscience, we were going to have to do it differently. We can now invest in projects, rather than bricks and mortar.

"Neuroscience is exceptionally high risk and difficult and the external environment is probably better for new ideas. What we can access is unique," he said.

The firm now has two neuroscience hubs, in Boston in the US and Cambridge in the UK, and will devote much effort to building alliances with academia and foundations and collaborating with biotech. Illustrating its intent, Astra announced yesterday an Alzheimer's research alliance with four academic research laboratories, to study apolipoprotein E4 genotype, a major risk factor for the degenerative brain disease.

### More flexible

Mr Pangalos declined to say how much AstraZeneca has budgeted to spend on neuroscience, although he admitted it was much less than previously. Flexible spend, to invest in new projects, is going up however, he stressed.

He also denied that this is a “last chance” for neuroscience research at the company. But with a big axe continuing to fall at Astra’s R&D operations the pressure will be on to perform. In February, when the company first unveiled the virtual neuroscience experiment, it also announced the cull of a further 2,200 R&D positions, the latest sweeping changes in a programme to overhaul its discovery operations that has also seen a big reduction in the number of disease areas being working on. Two years ago, while announcing the loss of 1,800 R&D jobs, Astra released a goal to cut its annual research budget by \$1bn a year by 2014.

After spending \$5bn last year researching new medicines, analysts project that the company will invest a little over \$4bn a year from 2014. The ejection of chief executive David Brennan earlier this year indicates that investors at least consider this still too much money to be heading towards the company’s research labs ([AstraZeneca needs new strategy after boardroom shake up, April 26, 2012](#)). Unless late-stage clinical successes start to emerge more frequently it seems likely that more radical change will be demanded of the company’s board.

AstraZeneca is not alone is trying to do more with less in R&D and a virtual neuroscience operation certainly addresses the less side of the equation. However delivering concrete clinical candidates in three years will be a tough ask for a challenging research area in which many of the collaborations will be around very early stage science – progress will be hard to quantify.

Late stage successes are easier to measure and targets have been set – the company wants 8-11 new projects to enter phase III trials over the next three years from across the pipeline. The successful delivery of these projects, and then products to market, will remain the yardstick by which the company is judged.

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