

## Neurorestoratology and ethics: Honest errors or horrors?

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### SOAP BOX

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This debate is the author's reaction to the retraction of two articles by Nobel Laureate Linda Buck. The sub-discipline of neurorestoratology encompasses five Ns: neuroregeneration, neurorepair, neuroplasticity, neuromodulation and neurorehabilitation.<sup>1</sup> It aims to increase the rapid progress of basic and clinical restorative neuroscience and has a vast development prospect.

Organisations promoting spinal cord research have formed an alliance to determine the ways in which their collaboration can hasten progress. This alliance, termed the International Campaign for Cures of Spinal Cord Injury Paralysis (ICCP) has as its mission "to expedite the discovery of cures for Spinal Cord Injury Paralysis".<sup>2</sup> The ICCP held a two-day international workshop on clinical trials in February 2004 in Vancouver. Hongyun Huang, a Beijing neurosurgeon, reported his work of giving fetal olfactory ensheathing cell (OEC) transplants to more than 300 patients who showed improvements as early as two or three days after the operation.<sup>3</sup> Since then, he has published several papers on OEC transplantation as a therapeutic modality for many types of central nervous system diseases. The results are encouraging and challenge the traditional concept that functional neurorestoration cannot occur with complete chronic spinal cord injuries. Surprisingly a search for his name on the ICCP's website yields no results as of 17 October 2010 (Figure 1).

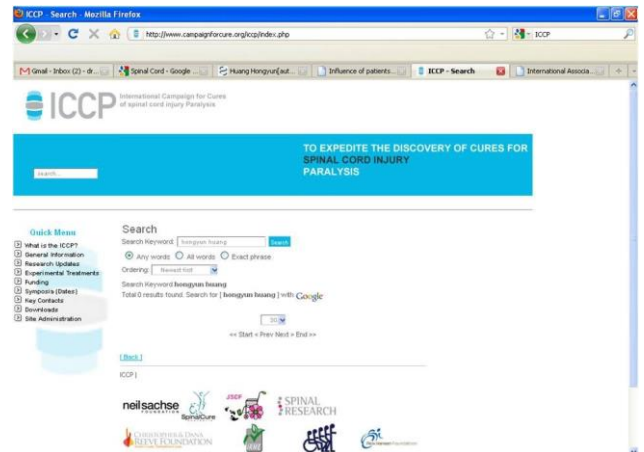


Figure 1: Screenshot of ICCP website showing no results for Hongyun Huang

Thousands of patients are queuing up to be treated by Huang at his Beijing hospital. The irony is most Western journal editors seem unwilling to publish his research. Critics have demanded standard RCT design, significant blinded control and rigorous pre- and post-operative physiological tests for his studies. *Nature's* news report<sup>4,5</sup> confirmed the serious doubts raised by correspondents<sup>3</sup> on Huang's claim.

On the other side of the ethical coin is Linda Buck, who shared the 2004 Nobel Prize for odorant receptors and the organisation of the olfactory system. She retracted two of her papers published in 2005 and 2006.<sup>6,7</sup> Both retractions — one in the *Proceedings of the National Academy of Sciences (PNAS)* and one in *Science* were unable to reproduce key findings in both papers. Zhihua Zou, a post-doc in her then-Harvard laboratory is the first author in both of these articles.

Buck found no replication for the reported finding that odorants induce related patterns of *c-fos* labelling in the cerebral hemispheres and in separate individuals. In addition, they found figures inconsistent with original data in the *PNAS* paper. Buck has therefore simultaneously retracted both the *Science* and *PNAS* papers. She regrets any confusion that has resulted from



the publication of these papers.<sup>7</sup> Both the *PNAS* study (61 times) and the *Science* study (73 times) were widely cited according to the Thomson Scientific Web of Knowledge. The first author Zou has not signed on any of the retraction undertakings given by Buck but Buck says “The important thing is to correct the literature”.<sup>8</sup>

The literature suggests that the three journals: *Science*, *PNAS*, and *Nature* have the highest number of retractions.<sup>9</sup> The *Medical Journal of Australia's* analysis found that unintentional mistakes were more commonly given as a reason for article retractions than scientific misconduct.

There are lessons from the two quoted instances above. Research mistakes, “like all human errors, must be seen not as sources of embarrassment or failure, but rather as opportunities for learning and improvement”.<sup>8</sup> Honest errors are seen as horrors in the broader picture but timely correction puts the picture in the right perspective. There is much to debate on the retractions by the Nobel Laureate and the experimental designs used by the controversial Huang but as has been said, “Integrity is doing the right thing, even if nobody is watching”.

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