London Regenerative Medicine Network
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Cell therapies or growth factors: which carries the greater future potential for treating Parkinson's disease?

The Directors of GRS attended the above event out of both professional and personal interest. Professional in terms of future trends and personal, because a close friend of theirs with Parkinson's Disease had recently died. It is a sobering thought that Parkinson's Disease is the second most common degenerative disease after Alzheimer's.

Dr Richard Wyse of The Cure Parkinson's Trust (London, UK) opened the event stating that "we've had no break-through in 45 years for Parkinson's. We can treat Parkinson's Disease but not the downward trajectory of decline … we cannot start to develop therapeutics to reverse the trajectory. Governments and Pharma have been notable by their absence … get your act together." This certainly caught our attention as it seems incredulous that there has been very little support from, in fact … anywhere.

Dr Sonja Kriks *(Memorial Sloan-Kettering Cancer Centre, New York, USA)* was the first presenter and spoke about her research group being the first to demonstrate that human ES-derived midbrain dopaminergic neurons (generated under novel conditions in vitro) efficiently engraft in three different animal models of Parkinson's Disease. She confirmed that excellent research results so far are supportive for the development of future hESC-based cell therapy attempts in Parkinson's disease.

But, she asked, should we move forward with stem cells? What about growth factors? Is pouring them into the brain right or should there be something more sophisticated? So far the disease has been managed with drugs and brain stimulation – can this be beaten? Parkinson's is suitable for cell replacement therapy but there are some major blocks:

- insufficient amounts of raw material
- variability in graft survival
- side effects

Sonja then went on to explain why embryonic stem cells might work better:

- unlimited capacity of self renewal
- pluripotency
- unlimited/scalable supply

Next, Dr Alan Whone *(Consultant Neurologist, Frenchay Hospital, Bristol, UK)* spoke about "restoring brains with Parkinson's disease: the next few years and beyond." He confirmed that research has suggested that glial cell line-derived neurotrophic factor (GDNF) delivered into the brain improves motor symptoms and restores dopamine nerves. Unfortunately, an earlier placebo-controlled multi-centre trial had failed to demonstrate clinical benefit. From this Dr Whone and his team determined that GDNF needed to be delivered via a more reliable method. They have developed a device which will allow GDNF to be given more reliably to the putamen area of the brain – trials to be conducted soon. An alternative to this device is to deliver GDNF via intravenous administration employing cell based therapy. Both methods have potential and need further exploration.

Professor Anders Bjorklund (Wallenberg Neurosciences Centre, Lund University, Sweden) then spoke about NeuroStemcell and TransEuro, highlighting the issues which need to be addressed before progressing to clinical trials. TransEuro is an attempt to reconcile data from transplant trials.

So to answer the question raised by LRMN "Cell therapies or growth factors: which carries the greater future potential for treating Parkinson's disease?" Well it'll probably be a bit of a race as to which will be proven to be successful first. Ultimately, however, it is likely that both will have a place in the treatment of Parkinson's.