NTCELL® Parkinson’s trial results to be presented in Berlin

23 June 2016 – Sydney, Australia & Auckland, New Zealand – As advised in our 7 June announcement of the trial results, Dr Barry Snow is presenting 81 week+ data on the safely and clinical effects of NTCELL in patients with Parkinson’s disease at the 20th International Congress of Parkinson’s Disease and Movement Disorders in Berlin. The presentation, in the form of a poster entitled “Safety and clinical effects of NTCELL® [immunoprotected (alginate-encapsulated) porcine choroid plexus cells for xenotransplantation] in patients with Parkinson's disease (PD): 81 to 130 weeks follow-up” takes place at 12 noon Berlin time today.

Dr Snow, Principal Investigator for the trial, said, “This data shows a striking and significant improvement in all measurements of Parkinson’s disease in the four patients. Everything we measured has improved.”

Dr Ken Taylor, CEO of LCT, said, “The results of this clinical trial are consistent with what LCT has found in pre-clinical studies. Moreover microarray analyses identified that several nerve growth factors and nerve protective agents are released from NTCELL and this may explain the improvement observed in all of the measurements of Parkinson’s disease.”

A copy of the poster accompanies this announcement.

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About NTCELL
NTCELL, a unique cell therapy, is an alginate coated capsule containing clusters of neonatal porcine choroid plexus cells that are sourced from a unique herd of designated pathogen-free pigs bred from stock originally discovered in the remote sub-Antarctic Auckland Islands. Choroid plexus cells are naturally occurring “support” cells for the brain and secrete cerebrospinal fluid (CSF), which contains a range of factors that support nerve cell functions and protective enzymes that are crucial for nerve
growth and healthy functioning. In NTCELL, the porcine choroid plexus cells are coated with LCT’s propriety technology IMMUPEL™ to protect them from attack by the immune system. Therefore, no immunosuppressive regimen is required for treatment.

Following implantation into a damaged site within the brain, NTCELL functions as a neurochemical factory producing CSF and secreting multiple nerve growth factors that promote new central nervous system (CNS) growth and repair disease-induced nerve degeneration while potentially removing waste products such as amyloids and proteins.

LCT has global patents pending entitled “Treatment of CNS disease with encapsulated inducible choroid plexus cells”. LCT also has gene chip analysis of NTCELL identifying multiple growth and trophic factors, antioxidants, chaperone molecules and other bioactive components.

NTCELL has the potential to treat neurodegenerative diseases because choroid plexus cells help produce CSF as well as a range of neurotrophins (nerve growth factors) that have been shown to protect against neuron (nerve) cell death in animal models of disease. NTCELL has been shown in preclinical studies to regenerate damaged tissue and restore function in animal models of Parkinson’s disease, stroke, Huntington’s disease, hearing loss and other non-neurological conditions, such as wound healing. In addition to Parkinson’s disease, NTCELL has the potential to be used in a number of other CNS indications, including Huntington’s, Alzheimer’s and motor neurone diseases including amyotrophic lateral sclerosis (ALS).

**About Parkinson’s disease**

Parkinson’s disease is a progressive neurological condition characterised by a loss of brain cells that produce dopamine (a neurotransmitter that conveys messages between brain cells to ensure effective movement and planning of movement) and many other types of neurons. People with Parkinson’s disease experience reduced and slow movement (hypokinesia and bradykinesia), rigidity and tremors.

Parkinson’s disease is the second most common neurodegenerative disorder after Alzheimer’s disease, affecting approximately 7 million people worldwide. The average age of onset is 60 years, and the incidence increases with age. Men are one and a half times more likely to have Parkinson’s disease than women.

Current treatments for Parkinson’s disease are symptomatic and do not reverse or slow the degeneration of neurons in the brain. Most existing pharmaceutical treatment options focus on restoring the balance of dopamine and other neurotransmitters. The effectiveness of dopamine replacement therapy declines as the disease progresses. When dopamine treatments are no longer useful, some patients are treated with Deep Brain Stimulation (DBS), in which a medical device is surgically implanted in the brain in order to send electrical impulses to regions of the brain involved in the control of movement. While DBS leads to short-term symptomatic improvement, it does not impact disease progression and is not curative or neuroprotective.

**About Living Cell Technologies**

Living Cell Technologies Limited (LCT) is an Australasian biotechnology company improving the wellbeing of people with serious diseases worldwide by discovering, developing and commercialising regenerative treatments which restore function using naturally occurring cells.

LCT’s lead product, NTCELL®, is an alginate coated capsule containing clusters of neonatal porcine choroid plexus cells. After transplantation NTCELL functions as a biological factory, producing factors to promote new central nervous system growth and repair disease-induced nerve degeneration.

The Phase I/IIa NTCELL clinical trial in New Zealand for the treatment of Parkinson’s disease met the primary endpoint of safety and reversed progression of the disease after one year. Results from this trial were used to design a larger Phase IIb trial to confirm the most effective dose of NTCELL, define any placebo component of the response and further identify the initial target Parkinson’s disease patient sub group. If the trial is successful the company will apply for provisional consent to treat
paying patients in New Zealand and launch NTCELL as the first disease modifying treatment for Parkinson’s disease in 2017.

In addition to Parkinson’s disease, NTCELL has the potential to be used in a number of other central nervous system indications, including Huntington’s, Alzheimer’s and motor neurone diseases including amyotrophic lateral sclerosis (ALS).

LCT’s proprietary encapsulation technology, IMMUPEL™, allows cell therapies to be used without the need for co-treatment with drugs that suppress the immune system.

LCT is listed on the Australian (ASX: LCT) and US (OTCQX: LVCLY) stock exchanges. The company is incorporated in Australia, with its operations based in New Zealand.

For more information visit www.lctglobal.com or follow @lctglobal on Twitter.

**Forward-looking statements**

This document may contain certain forward-looking statements, relating to LCT’s business, which can be identified by the use of forward-looking terminology such as “promising,” “plans,” “anticipated,” “will,” “project,” “believe,” “forecast,” “expected,” “estimated,” “targeting,” “aiming,” “set to,” “potential,” “seeking to,” “goal,” “could provide,” “intends,” “is being developed,” “could be,” “on track,” or similar expressions, or by express or implied discussions regarding potential filings or marketing approvals, or potential future sales of product candidates. Such forward-looking statements involve known and unknown risks, uncertainties and other factors that may cause actual results to be materially different from any future results, performance or achievements expressed or implied by such statements. There can be no assurance that any existing or future regulatory filings will satisfy the FDA’s and other health authorities’ requirements regarding any one or more product candidates nor can there be any assurance that such product candidates will be approved by any health authorities for sale in any market or that they will reach any particular level of sales. In particular, management’s expectations regarding the approval and commercialisation of the product candidates could be affected by, among other things, unexpected clinical trial results, including additional analysis of existing clinical data, and new clinical data; unexpected regulatory actions or delays, or government regulation generally; our ability to obtain or maintain patent or other proprietary intellectual property protection; competition in general; government, industry, and general public pricing pressures; and additional factors that involve significant risks and uncertainties about our products, product candidates, financial results and business prospects. Should one or more of these risks or uncertainties materialise, or should underlying assumptions prove incorrect, actual results may vary materially from those described herein as anticipated, believed, estimated or expected. LCT is providing this information and does not assume any obligation to update any forward-looking statements contained in this document as a result of new information, future events or developments or otherwise.
Safety and clinical effects of NTCELL® [immunoprotected (alginate-encapsulated) porcine choroid plexus cells for xenotransplantation] in patients with Parkinson’s disease (PD): 81 to 130 weeks follow-up

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Introduction

Pre-clinical studies with NTCELL in animal models of PD indicate that localised production of CSL by NTCELL can result in restoration of degenerated neuronal functions, supporting the use of NTCELL in the treatment of PD resulting from cell-based therapies. We conducted a Phase I/IIa clinical study at Auckland City Hospital (New Zealand), in four patients with Parkinsonianism as a PD model, in order to assess the safety and clinical effects of NTCELL, implanted into the putamen. The 32-week follow-up was presented at this meeting last year. In this poster we present the follow-up data up to 81 weeks post-implant, and up to 130 weeks for the first patient.

Methods

Our clinical trial was approved by the Ministry of Health and the Northern, Northland and Disability Care Ethics Committee in New Zealand (13/NT/82A). NTCELL® (bio-alginate microcapsules) were approved under the New Zealand Therapeutic Goods Act (12/TTG/001). As an extension of the 32-week follow-up, the current study was completed.

Patients aged between 40 and 90 who had previously been accepted for Deep Brain Stimulation as a treatment for PD were included. Patients were transplanted with 40 MC microcapsules of NTCELL, then monitored for safety and efficacy.

Discussion

NTCELL implantation met the primary outcome measures of safety and tolerance. The secondary endpoint of efficacy, measured by validated neurological rating scales and questionnaires provides evidence of a consistent, significant and meaningful improvement from baseline.

The marked improvement immediately after the procedure could be a placebos effect. Similar changes were not seen in a previous human transplantation study when cells were cryopreserved and reimplanted into tissue in secondary animal models. This makes the possibility of a placebo effect less likely. Moreover, this marked improvement could also be the result of recovery in function of other dopaminergic terminals. Further studies need to determine the mechanism underlying the observed increase in striatal dopamine (TH+) density in the striatum, in an animal model of PD.

There were no serious adverse events. There was no evidence of PERV transmission in implant recipients and partners.

Conclusion

NTCELL implantation was safe and well tolerated. There were no serious adverse events. There was no clinical or laboratory evidence of PERV transmission in patients or partners.

81-130 weeks after NTCELL implantation, clinical features of PD were improved in all clinical scales. There were no serious adverse events. There was no evidence of PERV transmission in implant recipients and partners. There were no clinical or laboratory effects attributed to the surgery.

Figures

Figure 1. Suggested MRI showing the cellular rim implanted NTCELL microcapsules were well tolerated, as demonstrated by the patient's overall clinical and laboratory measures.

Figure 2. MRI

Figure 3. UPDRS and PDQ-39 change from baseline

Figure 4. UPDRS and PDQ-39 change from baseline

Figure 5. PDQ-39 change from baseline

Table

Patient 001 Patient 002 Patient 003 Patient 004

Weeks post implant

12 24 36 48 60 72 84

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UPDRS change from baseline

UPDRS PART III (Motor Function)

Motor function change from baseline

Score change from baseline

UPDRS PART I (Activities of Daily Living)

Activities of Daily Living change from baseline

Score change from baseline

UPDRS PART II (On-Off State)

On-Off State change from baseline

Score change from baseline

UPDRS total change from baseline

Score change from baseline

Three patients showed a significant improvement (p<0.05) for UPDRS Total, UPDRS Part III, UDysRS and PDQ-39.

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Results

1. Patient demographics

NTCELL was well tolerated with no serious adverse events. There was no clinical or laboratory evidence of PERV transmission in patients or partners.

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