Living Cell Technologies Limited

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ASX ANNOUNCEMENT

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.

– Ends –

For further information: www.lctglobal.com

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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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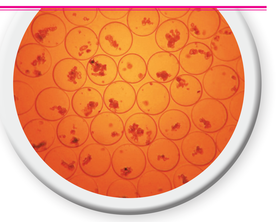
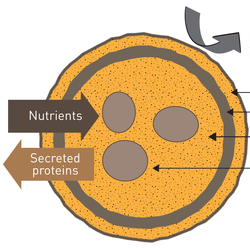
Introduction

Pre-clinical studies with NTCELL in animal models of PD indicate that continuous local production of CSF by NTCELL can result in restoration of degenerated neural functions, supporting the use of NTCELL as a disease-modifying cell-based therapy for neurodegenerative diseases.

We conducted a Phase I/IIa clinical study at Auckland City Hospital (New Zealand), in four patients with Parkinson's disease (PD), in order to assess the safety and clinical effects of NTCELL implanted into the putamen. The 26 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 for all patients, and up to 130 weeks for the first patient.





The structure of the alginate microcapsules containing choroid plexus cells. The membrane excludes large globular proteins (>80,000 Da) and all cells, but nutrients, oxygen and carbon dioxide can diffuse freely and secreted proteins (<80,000 Da) can diffuse out.

NTCELL comprises of neonatal porcine choroid plexus cells encapsulated in alginate microcapsules. The Auckland Island pigs, the source of the choroid plexus cells, are extensively studied and screened for pathogens. NTCELL is effectively a neurochemical factory capable of sustained Cerebrospinal fluid (CSF) production, and secretion of multiple neuroactive agents.

Microarray analyses of NTCELL show highly expressed genes (Log_2>8) in the following categories[1]:

Growth and survival factors: IGF-II,IGFP-2, FIF, API5-like 1, TGF-ß1, TGF-ß2, MMP4, BMP7, VEGF, VEGF2, VEGF B, EGF, PEDF, CTGF, Midkine, ERV1 homolog, HDGF (HMG protein 1-like), HRP2, API5; FIF, CIAPIN1, Axotrophin, Endozepine).

Chemotactic factors: AMCF-II, SDF2, SDF2L1, CXCL14, Midkine, 7B2.

Antioxidants: Ceruloplasmin, SOD-1, SOD-2,CCS,DJ-1.PARK7,Catalase, Selenoprotein M/N/P/S/T/W/X/1/15kDa, MGST1, GSTA4, GSTK1, GSTM1, GSTM5, GSTO1, GSTP2, GSTT1, GSTZ1, MGST2, MGST3, GPX3, GPX4, GPX1, TXN, GSR1, HAGH.

Chaperone molecules and heat-shock proteins: Transthyretin, APOA1, APOE, LCN7, PACRG, PARK7/DJ-1, PRNPIP, FE65, APPBP1, APP, HSPE1, HRSP12, HSP27, HSP40, HSP47, HSP60, HSP70-2, HSP70-4/5/8, Mortalin-2, HSP90, HSP90B1, HSP105/110, HSBP1, HSPA5.

Proteinase inhibitors: SERPINA1, SERPINB6, SERPING1, SERPINI1, Cystatin C/B/EM, TIMP 1/3, MMP9.

Pre-clinical studies with NTCELL implanted into the striatum of rats and non-human primates show the following:

SAFETY

- Absence of Porcine Endogenous Retrovirus (PERV) transmission in rats and non-human primates.
- No major organ toxicity or shortening of lifespan in rats compared to age-matched controls.

LONGEVITY

- Survival of NTCELL for 18 months in rats (the normal duration of their lifespan).

EFFICACY

- Histological evidence of increased neuronal growth in rats (data on file, LCT)
- Improvement of neurological function and histological evidence of corresponding increase in fibre (TH+) density in the striatum, in an MPTP-treated non-human primate model of PD[2].

Methods

Our clinical trial was approved by the Ministry of Health and the Northern A Health and Disability Ethics Committee in New Zealand (12/NTA/64). The trial is registered with ClinicalTrials.gov (NCT01734733). An extensive and enhanced written informed consent procedure was completed.

Patients aged between 40 and 70 years who had previously been accepted for Deep Brain Stimulation according to the Australasian Guidelines were eligible for this trial. We implanted 40 NTCELL microcapsules (approx. 40,000 choroid plexus cells) into the putamen on the side contralateral to that of the greatest clinical deficit in each of the four patients.

The primary endpoints of this trial were:

- Occurrence of adverse events and serious adverse events reported over the duration of the study.
- Clinical and laboratory evidence of PERV transmission in implant recipients and partners.

The secondary endpoints of this trial included:

- Unified Parkinson's Disease Rating Scale (UPDRS) in 'on' and 'off'
- Unified Dyskinesia Rating Scale (UDysRS) in 'on' and 'off'
- Parkinson's Disease Quality of Life Questionnaire (PDQ-39) score
- Positron Emission Tomography (PET) with [18F]-fluorodopa and [11C]-tetrabenazine

The Week 26 results were presented at this conference in 2015. Fluorodopa PET was performed at baseline and Week 26 only. There were no significant changes in uptake (as previously reported). This presentation follows the patients for up to 130 weeks.

Discussion

NTCELL implantation met the primary outcome variable of safety and tolerance.

The secondary endpoint of efficacy as measured by validated neurological rating scales and questionnaires provides evidence of a consistent and significant mean improvement from baseline.

The marked improvement immediately after the procedure could relate to a lesion effect. Similar changes were not shown in a previous foetal transplantation study where there was a similar cannula trajectory and implantation of tissue into similar locations in the putamen[3]. This raises the possibility of a placebo effect or some immediate effect of NTCELL in our clinical study.

The sustained improvement at Week 81 post-implant in all four patients is less easily explained as a lesion or placebo effect. Moreover, the improvement in the neurological scores in the first patient remain evident at 2.5 years post-implant.

The lack of change in dopaminergic PET measures as reported at the 2015 meeting indicates that any improvement is not related to resprouting of nigrostriatal dopaminergic nerve terminals. Efficacy could be the result of recovery in function of other types of neurons involved in neurodegeneration and compensatory mechanisms known to occur in the striatum of PD patients.

If this study is confirmed by the recently initiated Phase IIb study, then NTCELL would have considerable potential as a disease modifying agent in PD and other neurodegenerative conditions, due to a pleiotropic effect within the brain.

The results support moving to a Phase IIb study entitled "A placebo-controlled, randomised, double-blind trial to assess the safety and efficacy of xenotransplantation of NTCELL in subjects with PD". The study was designed in discussion with our regulatory authorities who requested:

- Define efficacy and any placebo contribution
- Define optimal dose of NTCELL implantation
- Define initial target PD patient subgroup

Results

1. Patient demographics

PATIENT NUMBER	001	002	003	004
Age at consent (years)	59	61	60	68
Gender	Female	Female	Male	Male
Disease duration (years)	23	11	6	10
UPDRS at baseline (off)	87	53	74	78
UPDRS at baseline (on)	27	25	32	29

2. MRI

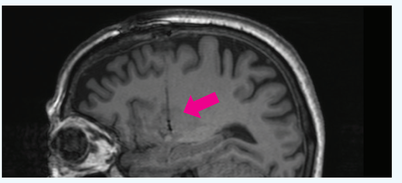


Figure 1: Saggital MRI showing the cannula tract. Implanted NTCELL micro-capsules can be seen distributed through the putamen at the end of the tract.

3. Safety

NTCELL was well tolerated with no serious adverse events. Testing for PERV transmission in patients and partners was negative. Minor side effects included transient headache and cognitive change attributed to the surgical procedure. There were no side effects attributed to NTCELL

4. UPDRS, UDYSRS, PDQ-39

There was a significant mean change from baseline to Week 81 ($p<0.05$) for UPDRS Total , UPDRS Part III, UDysRS and PDQ-39.

Figure 2: UPDRS Total

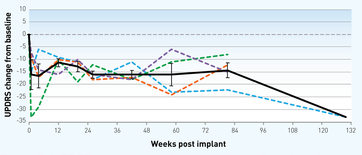


Figure 3: UPDRS part III motor function change from baseline

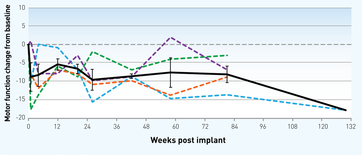


Figure 4: UDysRS in the 'On' state score change from baseline

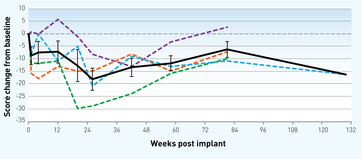
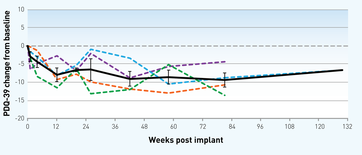


Figure 5: PDQ-39 change from baseline



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.
Data shows clinically and statistically sustained improvement on clinical features as measured in the UPDRS, UDysRS and PDQ-39.

A confirmatory study has been initiated and will complete in 2017.
A placebo-controlled, randomised, double-blind trial to assess the safety and efficacy of xenotransplantation of NTCELL in subjects with PD.

REFERENCES: 1. *Treatment of CNS disease with encapsulated inducible choroid plexus cells, USA Patent application no.15/154,709; Rest of World PCT application no. PCT/US2016/032543.* **2.** *Luo XM, Lin H, Wang W, Geaney MS, Law L, Wynyard S, Shaikh SB, Waldvogel H, Faull RL, Elliott RB, Skinner SJ, Lee JE, Tan PL. (2013) Recovery of neurological functions in non-human primate model of Parkinson's disease by transplantation of encapsulated neonatal porcine choroid plexus cells. J Parkinsons Dis. 3(3):275-291.* **3.** *Olanow CW, Goetz CG, Kordower JH, Stoessl AJ, Sossi V, Brin MF, Shannon KM, Nauert GM, Perl DP, Godbold J, Freeman TB. (2003), A double-blind controlled trial of bilateral fetal nigral transplantation in Parkinson's disease. Ann Neurol. 54(3):403-14.*