Discover the facts

ProSavin® shown to restore movement control

Two-year data provide evidence of long-term, stable improvement

Stable or improved quality of life

To learn more about partnering opportunities for ProSavin® please contact our Business Development team

licensing@oxfordbiomedica.co.uk

Oxford BioMedica plc
Medawar Centre
Robert Robinson Avenue
The Oxford Science Park
Oxford OX4 4GA

Tel: +44 (0)1865 783000
Fax: +44 (0)1865 783001

www.oxfordbiomedica.co.uk

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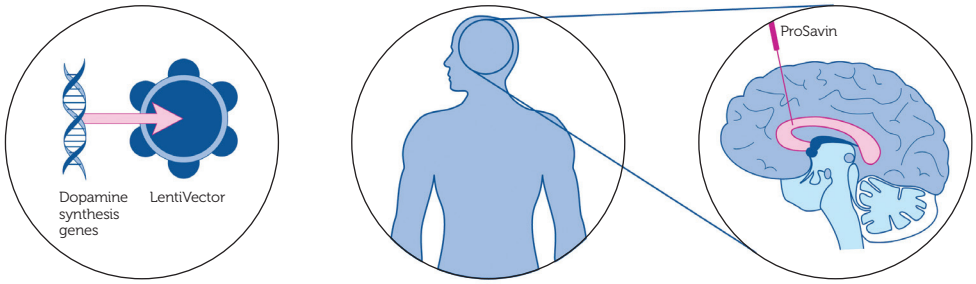
ProSavin®

An innovative gene-based therapy for Parkinson's disease

Product description

ProSavin® is an innovative gene-based treatment for Parkinson's disease, a progressive movement disorder. In Parkinson's disease, there is degeneration of the cells in the brain that produce dopamine. Using Oxford BioMedica's LentiVector® gene delivery technology, ProSavin® delivers the genes for three enzymes that are required for the synthesis of dopamine directly to the region of the brain called the *striatum*, converting cells into a replacement dopamine factory within the brain, thus replacing the patient's own lost source of the neurotransmitter.



Clinical status

ProSavin® is being evaluated in a Phase I/II trial in patients with mid-stage Parkinson's disease who are experiencing reduced benefit on oral therapies. The first stage of the trial is designed to assess the safety, efficacy and dose of ProSavin®. Two dose levels and an enhanced administration technique have been evaluated to date and a further higher dose of ProSavin® is being assessed in the current cohort, which is the scaled equivalent to the optimal dose in pre-clinical studies.

The trial is being conducted at two centres of excellence for neurosurgery; the Henri Mondor Hospital in Paris with Professor Stéphane Palfi as Principal and Coordinating Investigator, and at Addenbrookes Hospital in Cambridge, UK, with Dr Roger Barker as Principal Investigator.

Phase I/II Study Dosing

Cohort 1	Cohort 2	Cohort 3	Cohort 4
n=3	n=3	n=3	n=6
4 needle tracks per hemisphere	5 needle tracks per hemisphere	3 needle tracks per hemisphere	3 needle tracks per hemisphere
1x Dose	2x Dose	2x Dose	5x Dose

_ Drug concentration (titre) is fixed for all dose levels
_ Dose escalation is achieved by increasing the volume
_ Volume of drug is increased by additional needle tracks and larger depots

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Encouraging Phase I/II results – long-term, stable improvement

Two-year data show long-term, stable improvement. The first two dose levels were safe and well-tolerated in all patients and evidence of encouraging clinical benefit at two years has been seen. Motor function improvement is assessed according to the Unified Parkinson's Disease Rating Score (UPDRS) in patients' "OFF" state (i.e. after withdrawal of Parkinson's disease medication).

Initial data from the fourth patient cohort indicate the highest average motor function improvement of 29% at three months (see Table 1). The most recent data from the third patient cohort revealed a maximum improvement in motor function of 61% at six months. If these results are confirmed in placebo-controlled studies, ProSavin® would represent a significant advancement to current treatment options. Planning is now underway for a randomised Phase II trial which is expected start in 2012. Oxford BioMedica is currently evaluating partnership opportunities in order to support the commercialisation of ProSavin® going forward.

Improving quality of life[i]

It is important to note that Parkinson's disease is a progressive neurodegenerative disorder and deterioration of symptoms and increases in daily L-DOPA therapy would be expected over a two-year period. However, across the first three patient cohorts, L-DOPA "equivalent" therapy has either reduced or remained stable, quality of life has either improved or remained stable where it would usually be expected to worsen, and patient diary data show an increase in "ON" time (when PD symptoms are not present).

Parkinson's disease affects millions of patients

After Alzheimer's disease, Parkinson's disease is the most common neurodegenerative disease. Most people who get Parkinson's disease are aged 50 or over but younger people can get it too; one in 20 is under the age of 40.[ii] Parkinson's disease currently affects 4.1 million patients globally which is projected to rise to 8.7 million by 2030.[iii] Parkinson's disease is caused by the loss of brain cells that produce the chemical dopamine, a neurotransmitter which makes other parts of the brain that coordinate movement work properly. A patient with Parkinson's disease develops stiffness, tremors and slow movement that can become worse over time.

Current treatments for Parkinson's disease

Finding a new treatment for Parkinson's disease is the focus of much scientific research. Currently there is no cure for Parkinson's disease, but much can be done to relieve symptoms, particularly in the early stages. Treatments include drugs to boost dopamine activity or mimic its effects; levodopa (L-DOPA), which is converted to dopamine in the brain, can be used to replace the missing dopamine in the brain. However, side-effects, especially with prolonged use, can be a problem. In addition, patients' response to L-DOPA declines over time and increasingly high doses are required. Non-drug treatments are also used, including occupational therapy and physiotherapy.

Market opportunity

Parkinson's disease affects approximately 1.5 million patients in the seven major markets (US, Japan, UK, France, Germany, Italy and Spain) and is projected to rise to 1.7 million by 2019. None of the current treatments provide long-term relief from symptoms, yet by 2019, sales of these treatments could exceed US$2.8 billion in the seven major markets.[iv] ProSavin® has the potential to address an unmet medical need in Parkinson's disease, offering long-lasting benefit from a single administration with an excellent safety profile. This novel approach to address the motor symptoms of Parkinson's disease could therefore also significantly reduce the social care burden that is associated with the mid to late-stage of disease.

Table 1: Summary of improvements in motor function to date

Cohort	Dose	Administration method	3 months (UPDRS)	6 months (UPDRS)	1 year (UPDRS)	2 years
1, n=3	1x	Original	Mean 27% Max. up to 30%	Max. up to 30% Max. up to 48%	Mean 30% Max. up to 44%	Mean 20% Max. up to 30%
2, n=3	2x	Original	Mean 28% Max. up to 53%	Mean 34% Max. up to 53%	Mean 29% Max. up to 56%	-
3, n=3	2x	Enhanced	Mean 26% Max. up to 52%	Mean 43% Max. up to 61%	-	-
4, n=6	5x	Enhanced	Mean 29% Max. up to 49% (n=3 of 6)	-	-	-

61%

The most recent data from the third patient cohort revealed a maximum improvement in motor function of 61% at six months

4.1m

Parkinson's disease currently affects 4.1 million patients globally which is projected to rise to 8.7 million by 2030

$2.8bn

Potential sales of Parkinson's treatments could exceed US$2.8 billion

i Quality of life is assessed based on a standard measure of clinical benefit using a patient questionnaire known as PDQ-39

ii Parkinson's UK

iii Dorsey et al Neurology (2007) Vol 68 (5) p384-386.

iv Datamonitor, December 2010