

DRUG DISCOVERY TOOL FOR NEURODEGENERATIVE DISEASES

In vitro method to obtain patient-specific neuronal cells from fresh white blood without cell reprogramming

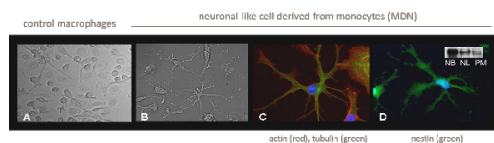
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L'AVENIR EST FAIT D'AUDACE

PRESENTATION

Using patient-specific neuronal cells is a promising approach for the diagnosis and treatment of neurodegenerative diseases and for scientific research. However, current methods to produce or extract neuronal cells are highly invasive or drastically alter the cell genome.

The present offer proposes a new method, alternative to iPS, for differentiating white blood cells, extracted from fresh human blood, into neuronal-like cells without cell reprogramming. The resulting cells structurally resemble neurons, present spontaneous electrical activity and express a wide variety of neuronal markers. A 40% differentiation-rate, within 3 weeks, was reached following a simple and robust protocol (developed at Cochin Institute and Sainte-Anne Hospital). This method can be used to generate *in vitro* models of neuropathologies for drug discovery.



Neuronal-like cells obtained from monocytes. In D a Western blot shows expression of nestin in neuroblastoma cells (NB), neuronal-like cells derived from monocytes (NL) and pluripotent macrophages (PM) © Dr. Alfredo Bellon

Neuronal-like cells - Transdifferentiation -
Neurodegenerative diseases - Research tool

COMPETITIVE ADVANTAGES

- Robust method to obtain neuronal-like cells within a short timeframe
- Easily accessible cells (blood sample) for transdifferentiation
- Electrical activity of cells obtained
- No alteration of cell genome

INTELLECTUAL PROPERTY

European and United-State patent applications ; Priority patent application filed on Oct 17, 2013 ; EP2862926

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APPLICATIONS

- Broad medical research tool (neurodegenerative disease modelling)
- Identification of biomarker w/o genetic alteration
- Useful for developing drug screening test adapted to patient (personalized medicine)

DEVELOPMENT PHASE

- ✓ Robust protocol with 40% differentiation rate and specific psychiatric biomarkers demonstrated