# STEMBANCC

## A new resource for drug development

**The aim of the STEMBANCC project is to generate and characterise 1 500 high quality human induced pluripotent stem (iPS) cell lines that can be used by researchers to study a range of diseases, including diabetes and dementia, and test for drug efficacy and safety. The cell lines will help to improve and speed up the drug development process, and ensure that patients benefit from more effective and safer drugs.**

Currently, many drugs fail rather late in the drug development process because the tests used in the earlier stages of drug development simply do not reflect what happens in real life when the drug is administered in patients.

This is partly because these early tests rely heavily on animal cells, and when human cells are used, they have often been extensively modified to survive in culture and so no longer behave naturally.

Those working in drug research and development therefore urgently need a good supply of cells that more accurately mimic what happens in the human body.

**STEMBANCC at a glance**

**Full project title:**
**Stem cells for biological assays of novel drugs and predictive toxicology**

**Start date:** Autumn 2012

**Duration:** 5 years

**Total cost:** €55.6 million

**Project coordinator:**
F. Hoffmann-La Roche Ltd

**Managing entity:**
University of Oxford

**Website:**
www.stembancc.org

### The power of pluripotency

Most adult cells can only divide to produce other cells of the same type – for example, skin cells can only make other skin cells, and blood cells can only make other blood cells. Only embryonic stem cells are 'pluripotent', i.e. able to give rise to all the different kinds of cell that make up the human body. However, in recent years researchers have developed a way of reprogramming ordinary adult cells to create so-called induced pluripotent stem (iPS) cells. Like embryonic stem cells, iPS cells are able to generate any kind of cell; as such, they offer researchers a good supply of different kinds of human cell that can be used in research and drug development.

The research resulting in the creation of the first iPS cells was a major scientific breakthrough that won scientists John Gurdon and Shinya Yamanaka the 2012 Nobel Prize in Physiology or Medicine.

### A unique resource

STEMBANCC's goal is to generate 1 500 iPS cell lines from 500 people, characterise them in terms of their genetic, protein, and metabolic profiles, and make them available to researchers. All cell lines will also undergo a rigorous quality check.

The raw materials for the project will be largely skin and blood samples taken from patients with certain diseases, people who display adverse reactions to drugs, and healthy individuals. The collection of these samples will be carried out with the individuals' informed consent and in line with strict ethical standards.

There will be a strong focus on peripheral nervous system disorders (especially pain); central nervous system disorders (e.g. dementias); neurodysfunctional diseases (e.g. migraine, autism, schizophrenia, and bipolar disorder); and diabetes. The project will also investigate the use of human iPS cells for toxicology testing; here the team will use the iPS cells to generate liver, heart, nerve and kidney cells.

Ultimately STEMBANCC will be a source of well-characterised, patient-derived iPS cells that will help researchers study diseases, develop new treatments, and test the efficacy and safety of new drugs.

## Contacts

**Project Coordinator**

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### Financing

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|---|---|
| IMI funding | €26 million |
| EFPIA in kind contribution | €21 million |
| Other contributions | €8.6 million |
| **Total project cost** | **€55.6 million** |

## Project Partners

**EFPIA member companies**

- F. Hoffmann-La Roche Ltd, Basel, Switzerland
- Abbott GmbH & Co KG, Wiesbaden-Delkenheim, Germany
- Boehringer Ingelheim International GmbH, Ingelheim, Germany
- Eli Lilly, Hampshire, United Kingdom
- Janssen Pharmaceutica NV, Beerse, Belgium
- Merck KGaA, Darmstadt, Germany
- Novo Nordisk A/S, Bagsværd, Denmark
- Orion Corporation, Espoo, Finland
- Pfizer Limited, Sandwich, UK
- Sanofi-Aventis Research and Development, Chilly-Mazarin, France

**Universities, research organisations, public bodies, non-profit groups**

- University of Oxford, Oxford, UK
- Charité - Universitätsmedizin Berlin, Berlin, Germany
- Hebrew University of Jerusalem, Jerusalem, Israel
- Helmholtz Zentrum München - Deutsches Forschungszentrum für Gesundheit und Umwelt (GmbH). Neuherberg, Germany
- Institut National de la Santé et de la Recherche Médicale, Paris, France
- King's College London, London, UK
- Linkopings Universitet, Linköping, Sweden
- Medical Research Council UK, Swindon, UK
- Medizinische Hochschule Hannover, Hannover, Germany
- Medizinische Universität Innsbruck, Innsbruck, Austria
- Naturwissenschaftliches und Medizinisches Institut an der Universität Tübingen, Reutlingen, Germany
- Region Hovedstaden - Capital Region of Denmark, Hillerød, Denmark
- Tel Aviv University, Tel Aviv, Israel
- Universitätsklinikum Schleswig-Holstein, Lübeck, Germany
- Université de Genève, Geneva, Switzerland
- Université de Lausanne, Lausanne, Switzerland
- Université de Technologie de Compiègne, Compiègne, France
- University College London, London, UK
- University of Birmingham, Birmingham, UK
- University of Cambridge, Cambridge, UK
- University of Edinburgh, Edinburgh, UK
- University of Lübeck, Lübeck, Germany
- University of Newcastle upon Tyne, Newcastle upon Tyne, UK

**Small and medium-sized enterprises (SMEs)**

- Concentris Research Management GmbH, Fürstenfeldbruck, Germany
- Islensk Erfdagreining EHF, Reykjavik, Iceland
- Univercell-Biosolutions, Toulouse, France