

1960: Research Council-funded scientist Sir Peter Medawar is awarded the Nobel Prize in Physiology or Medicine for early insights into antibody-mediated transplant rejection and tolerance, paving the way in addressing the immune challenges of regenerative medicine.

1962: Sir John B Gurdon discovers that the specialisation of cells is reversible and demonstrates that somatic cell nuclei can be 'reprogrammed' into an embryonic state.

1964: Researchers culture the first embryonic carcinoma cells.

1978: Haematopoietic stem cells are discovered in human cord blood.

1981: Sir Martin Evans is the first to derive embryonic stem cells from mouse embryos, with funding from the UK Research Councils.

1996: Dolly the sheep is created by Research Council scientists using somatic cell nuclear transfer. Dolly is the first mammal to be cloned from an adult somatic cell.

1998: Scientists derive the first human embryonic stem cell (hESC) line.

1999: Research Council-funded scientists are the first to produce hESC in the UK.

2006: Professor Shinya Yamanaka shows that adult, fully specialised mouse cells can be reprogrammed to become cells that behave like embryonic stem cells (induced pluripotent stem cells).

2007: The receptor-ligand interaction that reproduces the two aspects crucial for limb regeneration in the salamander – pattern formation and growth – is discovered by Research Council scientists.

2010: Research Council scientists discover that a gene called Sox9 plays a critical role in how stem cells behave in the central nervous system. These results could help researchers manipulate stem cells in the brain and develop new treatments for stroke, Alzheimer's disease or brain tumours.

2011: The UK's first 'clinical grade' stem cells created without the help of animal products, a product of RCUK-funded research, are donated to the UK Stem Cell Bank. These are expected to become the gold standard for developing new embryonic stem cell-based therapies for serious medical conditions.

2011: Scientists supported by the Research Councils and the pharmaceutical industry discover a simple method to transform stem cells into the precursors of liver cells, which can be used to test the safety of new medicines.

2011: Research Council scientists demonstrate that a small, naturally-occurring, molecule, thymosin beta4, can stimulate cell-mediated repair of a damaged mouse heart, offering the longer term potential to activate dormant stem cells in the adult body.

2012: RCUK-funded researchers discover a patient-friendly and efficient way to make stem cells out of blood, increasing the hope that scientists could one day use stem cells made from patients' own cells to treat cardiovascular disease.

2012: The Nobel Prize in Physiology or Medicine is awarded jointly to Sir John B Gurdon and Shinya Yamanaka "for the discovery that mature cells can be reprogrammed to become pluripotent".

2013: A Research Council-funded study finds that macrophages help trigger the regeneration of myelin, the protective sheaths around nerve fibres in the brain. This could help identify new drug targets for the treatment of multiple sclerosis.

2013: A protein discovered by RCUK-funded researchers that kick-starts the process by which stem cells develop into different cell types could help scientists improve techniques to turn stem cells into other cell types. These cells could then be used to test drugs or help create therapies for degenerative conditions.

1963: Dr Georges Mathé pioneers the use of bone marrow transplants in the treatment of leukemia.

1997: Dermagraft, a tissue-engineered human donor skin replacement therapy, is marketed in the UK for the treatment of diabetic foot ulcers.

2001: The first transplantation of a tissue-engineered pulmonary artery takes place in a child suffering from congenital heart disease.

2006: Scientists engineer the first autologous bladders using urothelial and muscle cells obtained from bladder biopsies grown and expanded in culture. The use of autologous cells negates the need for immunosuppression.

2008: A Colombian woman receives the first human windpipe reconstructed using stem cells. The transplant team was jointly led by RCUK researcher Professor Martin Birchall.

2009: Research Councils support four early stage clinical trial projects using stem cells for bone repair and for treatment of leukaemia, Addison's disease and blindness.

2009: ChondroCept®, an autologous cell therapy where a patient's cartilage cells are grown in the laboratory and used to treat cartilage defects in knees, is approved for commercial use by the European Medicines Agency.

2010: Research Council scientists engineer Mirocept proteins, to coat the cell surfaces of donor kidneys and act as artificial 'complement regulators', to help control organ transplant rejection. Mirocept may also be able to help the body accept 'non-self' cells or engineered organs used in regenerative medicine.

2012: RCUK-funded researchers show that it is possible to restore coordinated limb movement in dogs with severe spinal cord injury, using olfactory ensheathing cells to regenerate parts of nerve cells. This work might have a future role in the treatment of human patients with similar injuries.

2012: For the first time, transplanted light-sensitive photoreceptors are used to restore vision to visually-impaired mice. The discovery, made by Research Council scientists, could form the basis of a new treatment to restore sight in people with degenerative eye diseases.

2012: Retinal pigment epithelium (RPE), made from stem cells, is transplanted into a patient with Stargardt's disease - the first UK transplantation of hESC.

2012: Glybera® is approved by the European Union for the treatment of lipoprotein lipase deficiency - the first gene therapy treatment to be approved for clinical use in either Europe or the United States.

2013: The first bioengineered tooth is produced from human gum cells by Research Council scientists, offering hope that this method can one day be used to replace a person's missing teeth with ones grown from their own gum cells.

2013: RCUK-funded scientists develop a potential cure for chronic back pain through drug injections that can regenerate damaged discs. The injection contains stem cells, growth factors and inhibitors and is injected directly into the intervertebral discs of patients.

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2001: The Human Fertilisation and Embryology Act is amended to permit research on hESC for strictly regulated purposes.

2003: Research councils establish the UK Stem Cell Bank to provide a repository of human embryonic, foetal and adult stem cell lines.

2003: Biopharmaceutical company Q Chip Ltd is launched to commercialise the microsphere technology that not only makes it possible to control a drug's release rate throughout the body, but ensures it is only active in the target area. The company arose from RCUK-funded research.

2003: International Stem Cell Forum (ISCF), convened by RCUK, brings together nine international research agencies. It quickly expands to include representatives from 16 countries.

2005: The ISCF launches the International Stem Cell Initiative (ISCI) to draw up globally agreed criteria for characterising stem cell lines. This forms the basis of an international hESC registry, the first attempt to properly catalogue the hESC lines derived so far.

2004: The ISCF launches the Ethics Working Party, its primary purpose being to assist countries to undertake stem cell research within a transparent ethical framework. Work still on-going today, it seeks to identify prospective strategies to foster the scientific and ethical integrity of research in a global context.

2008: Research Councils conduct the largest ever public and stakeholder dialogue on stem cell research in the UK, helping to increase public confidence and strengthening the case for investment in research of this kind.

2008: The Regenerative Medicine Programme is set up by the Research Councils to support the emergence of new industries. Over its lifetime, the programme funds 76 different projects and enables Tissue Regenix, a University of Leeds spin-out company, to achieve AIM listing, raising £4.5 million.

2010: A Eurobarometer poll concludes that 59% of those questioned in the UK support the use of human embryos for the development of medical treatments.

2010: ApaTech, an RCUK spin out company, and a world-leader in bone graft technologies, is sold for \$330 million.

2010: RCUK issues the Code of Practice for the use of Human Stem Cell Lines, providing guidance on best practice for those working with stem cell lines in the UK.

2012: The UK Regenerative Medicine Platform is established, with funding from RCUK, to address the technical and scientific challenges associated with translating promising scientific discoveries in this area towards clinical impact.

2012: RCUK-funded scientists develop a software-based tool to plan an optimal route for the commercialisation of new therapies.

2013: The Research Council Biomedical Catalyst funds the world's first clinical trial of a stem cell-based larynx transplant, 'RegenVox'.

2013: The first lab-grown 'beef' burger, produced from muscle stem cells derived from cows, is cooked and eaten.

1978: In one of the earliest attempts to engineer tissues, scientists use fibroblasts to condense a hydrated collagen lattice to a tissue-like structure.

1988: For the first time, researchers successfully seed living cells onto synthetic scaffolds, producing viable cells, mitotic figures and vascularisation of the cell mass.

2008: Scientists manufacture an ex vivo heart using an extracellular matrix, reseeded with cardiac and endothelial cells.

2007: The RCUK-funded Diamond Light Source underpins research aiming to make stem cell patches to repair amniotic membranes, whose rupture causes up to 40% of premature births.

2006: Newcastle University scientists create the first ever artificial liver cells using umbilical cord blood stem cells, grown using a microgravity bioreactor, a piece of equipment derived from NASA technology.

2009: Electrospun biopolymer nanofibres, consisting of Polycaprolactone, pave the way for future research into tendon repair. The nanofibres were created by RCUK-funded researchers.

2009: A new technique to identify human stem cells using mid-infrared light is developed by researchers at the European Synchrotron Radiation Facility.

2010: Researchers supported by the RCUK Nanoscience Programme use microscopic magnetic particles to bring stem cells to sites of cardiovascular injury in a new method designed to increase the capacity of cells to repair damaged tissue.

2010: Spin-out The Electrospinning Company is formed from Research Council-funded research. It designs and manufactures products with nanostructured 3D scaffolds for cell growth using electrospun nanofibres.

2012: Scaffolds engineered from biodegradable plastics by RCUK-funded researchers could, in combination with skeletal stem cells, replace lost bone in hip surgery. The scaffolds were created using a technique called supercritical CO2 fluid-foaming.

2012: Biopolymer hydrogels are developed by RCUK-funded scientists for use in the treatment of corneal blindness caused by limbal stem cell deficiency.

2012: Research Council-funded scientists develop a 'nanopattern' pitted plastic that can be used to coat implant surfaces to encourage stem cells to form bone in contact with the new joint. It is hoped that this will be used in the production of a more durable orthopaedic implant.

2013: Using a pioneering technique called 'solvent blending', Research Councils scientists create a degradable polymer that can be inserted into broken bones to encourage real bone to regrow.