

# Renew

Together we can be the change.

## Ending Covid-19

Funding research to benefit at-risk groups

## The power of stem cells

Why cell therapies offer hope for the future

## THE ULTIMATE GIFT

"Not a day goes by that I am not thankful for stem cell research"

How Susan Hunter gave the donation of a lifetime

**UKSCF** UK STEM CELL FOUNDATION

## A LETTER FROM OUR CEO

### RENEWING OUR FIGHT AGAINST DISEASE:

Why we need to devote resources to advancing stem cell treatment now

2020 has so far been a year of immense upheaval. Around the world, lives have been lost to the devastation of the Covid-19 pandemic and we are facing great challenges to the very fabric of our societies. During these unprecedented times lifesaving medical research is more important than ever and the UK Stem Cell Foundation remains tirelessly committed to finding groundbreaking treatments for the nation's many at-risk groups, whose debilitating illnesses and conditions we work to cure.

Whilst experts and governments are responding to the rapidly evolving public health crisis channelling significant resources into the search for a treatment and a vaccine, the long-term health implications of Covid-19 are still very much unknown. The UK Stem Cell Foundation is looking at how stem cells can be used in the rehabilitation of Covid-19 patients and we are asking for your support to further this research. The socioeconomic health effects of this pandemic will echo for generations to come and there is still so much we have to learn. By dedicating our expertise in Stem Cell research we are working to protect the future for us all.

Over the past 50 years, the UK has pioneered research into stem cells and their clinical applications. Today, we are producing some of the most exciting work repairing spinal cord injuries, using stem cells to regrow cut nerve fibres and forming new nerve connections. However, our leading position in stem cell trials is under threat. There is major urgent competition elsewhere, such as China, the USA, Japan and South Korea, who are investing heavily in stem cell research and technology.

We need to contribute more to practical applications from research and, vitally, fill the critical funding gap. Short-term cost offers long-term reward: saving lives of loved ones otherwise lost to heart attacks, multiple sclerosis and cancer; providing a higher quality of life and a return to health for family members suffering the horrific effects of strokes, Alzheimer's and Parkinson's; and taking pressure off the NHS. Likewise, the crux of the Covid-19 crisis has been to momentarily sacrifice our freedom so that there is care available to those who are infected and a return to lasting stability.

Crucially, we need to ensure that this research is done within the UK's robust ethical and regulatory framework as well as balancing innovation and regulation, with the level of rigour, care, safety and humanity that defines the UK's standards. We continue to be fully dedicated to advancing stem cell technologies that will ensure the success of cell regeneration therapies and help ward off the destructive effects not only of hitherto incurable diseases but also of potential future pandemics.

We rely on your donations and your support today to take scientific, ethical and commercial leadership of this vital area of medicine for a better tomorrow. The potential benefits of stem cells to humankind are infinite.

*Lil Shortland*

**Lil Shortland**  
UKSCF Chief Executive Officer

## OUR MISSION

**The UK Stem Cell Foundation was created as the UK's only charity to directly fund the most promising and credible stem cell projects out of the nation's highly prestigious research institutions. As a non-profit organisation, our focus is to ensure that the enormous lifesaving potential of stem cells is realised by advancing clinical trials and supporting translational research.**

**At present, a spinal cord injury or a diagnosis of Alzheimer's offers little or no hope for patients and their families to ever return to the life that came before. Similarly, there is only palliative or maintenance care available for many degenerative diseases such as Parkinson's, multiple sclerosis and arthritis. We want to change this by utilising and expanding upon the boundless regenerative properties of stem cells, some of which are being used today to cure blood cancer, in order to ultimately eliminate the conditions that plague humanity. We are confident that as early as a decade from now, stem cell therapies will be as crucial to the changing face of medicine as vaccinations and antibiotics.**



**This is a belief shared by some of the world's most eminent biomedical scientists and our distinguished and influential Trustees, who are leaders in business, academia, government and charities, among them UKSCF chairman Sir Richard Sykes, Lord Robert Winston and Professor Trevor M. Jones. However, there is still a great deal of work to be done before cell-based therapies can become a safe and effective reality for patients. We do not fund speculative or fantastical research but only back the work that has a very real chance of progressing towards treatments. By supporting our projects, you are helping to set in motion the groundbreaking work that could help eradicate diseases for which presently there is no cure. Collectively, we can transform the future of medicine and restore the health of generations to come.**

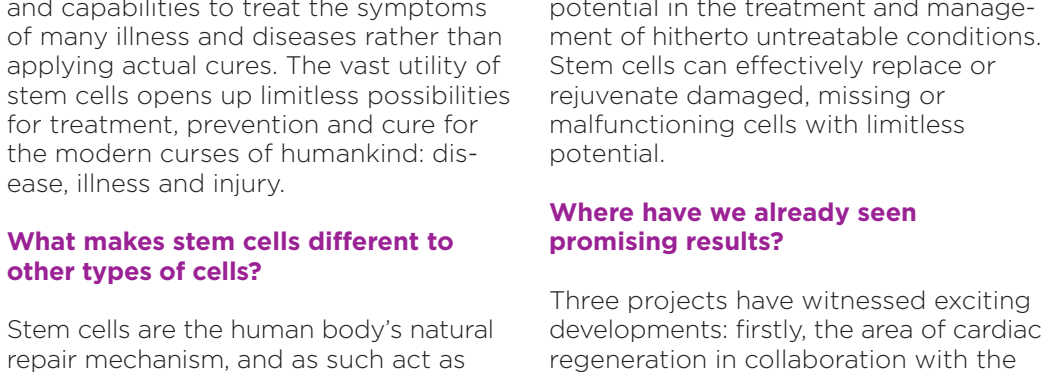
**Together, we can be the change.**

## SUSAN HUNTER



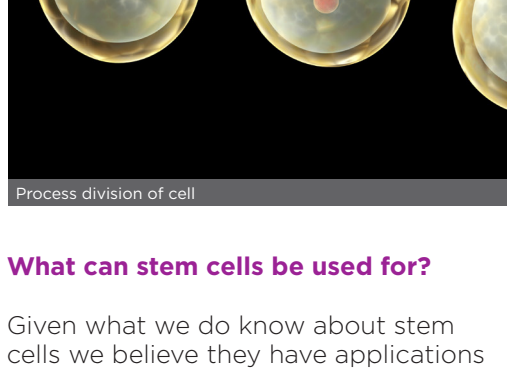
**When her brother was gravely ill with stage IV blood cancer and every treatment avenue had been exhausted, Susan Hunter donated the stem cells that gave him back his life. Here, Susan tells us how she has been raising research funds for the UKSCF ever since – and why she is in it for the long run.**

**Blood, it is said, is thicker than water, and it certainly seems an appropriate proverb in the case of Susan Hunter and her younger brother James Leigh. Not only do the siblings now share the same DNA and blood type after Susan donated her stem cells for a transplant to cure James' advanced blood cancer, but she also saved her brother's life with her beautiful gift to him.**



Virgin Money London Marathon

Six years ago, James had just received the crushing diagnosis of stage IV non-Hodgkin lymphoma, and after gruelling chemotherapy at University College Hospital in London the father of three was initially given the all clear, only for the cancer's telltale rash to appear a month later. When another round of chemotherapy unfortunately proved unsuccessful, James' medical team looked to stem cells for a cure. Sadly, an injection didn't produce any cells of his own.



Susan Hunter at the London Marathon

The search for a donor began, and James' sister Susan, from Henlow, turned out to be a match. Susan, who manages a GP practice in Luton, had hormone injections to force stem cells from her bones into her bloodstream. Despite the harvest only yielding a quarter of the desired target, the transplant was an astounding success, which speaks to the power of stem cell therapy.

"My brother is now five years post transplant and there is not a day that goes by that I am not thankful for stem cell research," Susan tells us.

**"Without research no one would know that a stem cell transplant can save a life."**

**I know firsthand that it can. UKSCF played a huge part in research and I will be forever thankful."**

Since then, 58-year-old Susan has become one of the UKSCF's most devoted fundraisers.

"I wanted to give something back to say thank you, so I decided to run the London Marathon. I knew that this would be an opportunity to raise some much-needed funds for more research. As a family we are very aware that there are many questions still to be answered and research is the vehicle for this to happen."

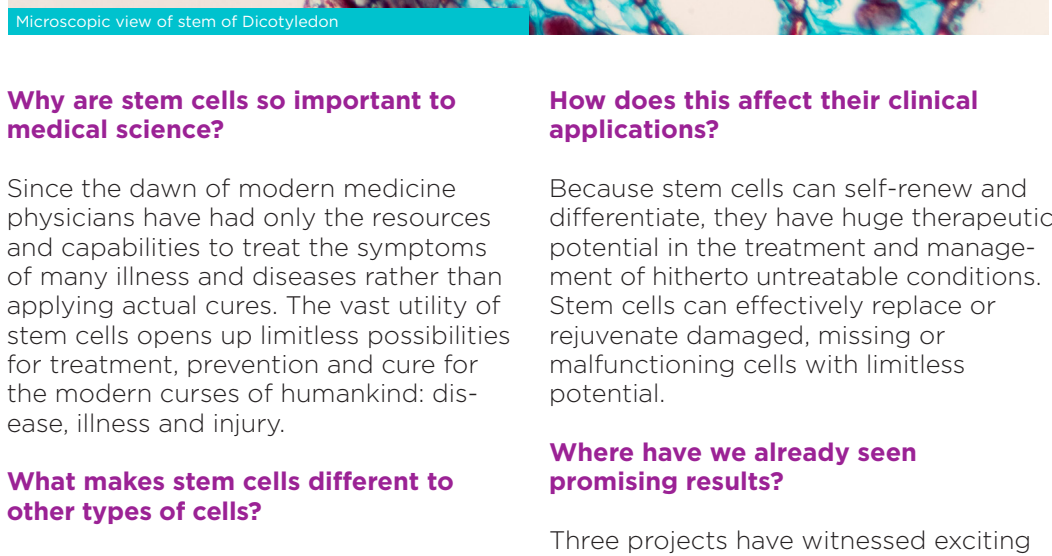
It was a Google search for stem cell charities that took Susan to the UKSCF, where she was thrilled to be accepted as one of our runners. There was just one minor problem:

"I hadn't run or undertaken any exercise whatsoever since school," Susan admits.

After buying a pair of trainers and downloading the NHS Couch to 5K running plan, Susan slowly but surely began clocking up the miles until she found herself on the start line for the hottest London marathon on record in 2018. Completing the epic 26.2 miles was a profoundly emotional experience for Susan.

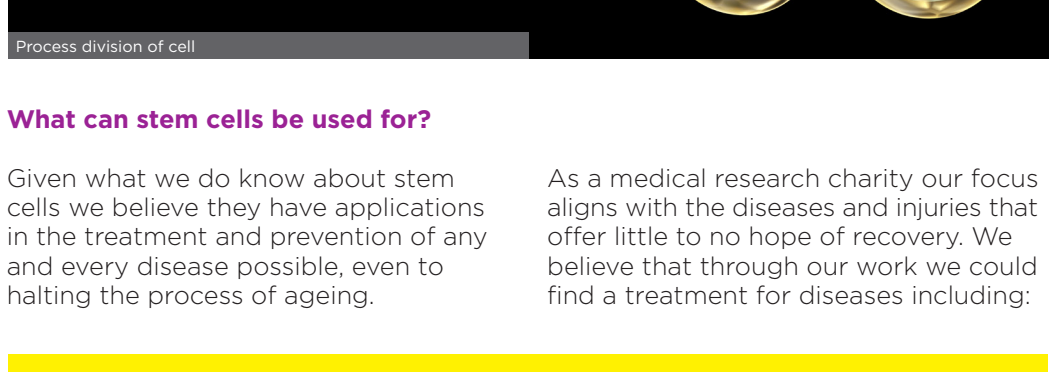
"I knew that it would be hard but I also knew how privileged I was not only to have saved my brother's life, but also to have a place running for a charity that means so much to me," she says.

The mother of two continues to be a close ally of the UKSCF, having raised in excess of **£10,000** already. Would she be a stem cell donor again? The answer is a resounding yes.



## THE UNTAPPED POWER OF STEM CELLS

**We take a look at some of the focal properties of stem cells, which include turning back the clock on degenerative diseases. As the body's own source of renewal, stem cells have near unlimited application potential and by joining forces with the nation's preeminent researchers backed by your generous donations, we can make a difference to the health of millions.**



Microscopic view of stem of Drosophila

### Why are stem cells so important to medical science?

Since the dawn of modern medicine physicians have had only the resources and capabilities to treat the symptoms of many illness and diseases rather than applying actual cures. The vast utility of stem cells opens up limitless possibilities for treatment, prevention and cure for the modern curses of humankind: disease, illness and injury.

### What makes stem cells different to other types of cells?

Stem cells are the human body's natural repair mechanism, and as such act as the foundation for every type of cell in the body. There are many different types of stem cells, each with their own unique set of properties. That being said there are some common defining characteristics, which all stem cells share regardless of how they are classified. They can all self-renew, which produces more stem cells from a single cell, and they can all differentiate, which allows stem cells to turn into specific types of cells – for example, bone cells or skin cells. As Professor and geneticist Steve Jones, a UCL and UKSCF Trustee, puts it: "Stem cells are the essence of youth. Silently, they rejuvenate our tissues, so that we gain a new liver every year – although the brain is as almost as old as those who bear it."

### How does this affect their clinical applications?

Because stem cells can self-renew and differentiate, they have huge therapeutic potential in the treatment and management of hitherto untreatable conditions. Stem cells can effectively replace or rejuvenate damaged, missing or malfunctioning cells with limitless potential.

### Where have we already seen promising results?

Three projects have witnessed exciting developments: firstly, the area of cardiac regeneration in collaboration with the UCL, St Barts Hospital and the Heart Hospital London through the use of bone marrow-derived stem cells; secondly a blood cancer project conducted in association with the Anthony Nolan Trust, utilizing bone marrow transplants; and thirdly our ongoing Spinal Cord Repair trial led by Professor Geoffrey Raisman of UCL's Institute of Neurology where nasal stem cells have been used to help regrow nerve fibres.

### What can stem cells be used for?

Given what we do know about stem cells we believe they have applications in the treatment and prevention of any and every disease possible, even to halting the process of ageing.

As a medical research charity our focus aligns with the diseases and injuries that offer little to no hope of recovery. We believe that through our work we could find a treatment for diseases including:



### Why are stem cells still largely at the experimental stage?

There are challenges to the clinical application of stem cells and these challenges lie in the complexity of the cells and the lack of research funding. Unlike a pharmaceutical study where there can be a vast commercial interest, there is still much we do not know about the way stem cells behave. Contrary to a drug, which you can stop taking if you don't like your reaction to it, being given living cells as a treatment of course makes it more difficult to resolve any unwanted response. This is why extensive testing of stem cell therapies is crucial.

### What are our hopes for the future of the UKSCF?

The most important measure of success of the UKSCF will be the achievement of new knowledge, direct economic benefit to the UK, and most importantly, in lives saved and suffering prevented. It is our primary goal to be able to continue to effectively fund the clinical application of stem cell therapies in order to meet the desperate needs of patients. This is the fundamental reason for the creation of the foundation: that a decade from now, people will be alive and eased of pain due to stem cell research.

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