The Scotsman

March 2, 2011, Wednesday   
1 Edition

**Scots break new ground with nerve cell research**  
**BYLINE:** LYNDSAY MOSS HEALTH CORRESPONDENT  
  
**SECTION:** Pg. 15  
  
**LENGTH:** 320 words

SCOTTISH scientists have discovered a new way to create human motor nerve cells, in the hope of finding new treatments for patients with a devastating illness.

Researchers from Edinburgh University, working with colleagues in Cambridge and Cardiff, have created a range of motor neurons - the nerves cells that send messages from the brain and spine to other parts of the body - from human embryonic stem cells in the lab.

It is the first time researchers have been able to generate a variety of human motor neurons.

This is important because the cells differ in their make-up and properties, depending on where they are in the spinal cord.

The research, published in the journal Nature Communications, could help scientists better understand motor neurone disease.

The process will allow scientists to study why some motor neurons are more prone to disease than others.

They can use the cells they create to test new drugs, before deciding which compounds are worth developing into treatments ready for patient trials.

Motor neurons control muscle activity, such as speaking, walking, swallowing and breathing.

But in patients with motor neurone disease - a progressive and ultimately fatal disorder - these cells break down, leading to paralysis, and difficulty in speaking, breathing and swallowing.

Previously, scientists had been able to generate just one particular kind of motor neuron, which they did by using a substance called retinoic acid - a derivative of vitamin A.

For the latest study, scientists found a new process, using a different chemical, to generate a wider range of motor neurons.

Professor Siddharthan Chandran, director of the Euan MacDonald Centre for Motor Neurone Disease Research at the University of Edinburgh, said: "Motor neurons differ in their make-up, so understanding why some are more vulnerable than others to disease is important for developing treatment for this devastating condition."

The Times (London)

March 2, 2011 Wednesday   
Edition 1;   
Scotland

**Scientists hail stem cell breakthrough;   
Hope for drugs to fight motor neuron disease**  
**BYLINE:** Mike Wade  
  
**SECTION:** NEWS; Pg. 17  
  
**LENGTH:** 467 words

The use of embryonic stem cells in the battle against hereditary conditions such as motor neuron disease has been vindicated by new scientific advances, it was claimed last night.

Researchers in Edinburgh revealed that they had used embryonic stem cells to generate a range of human motor neurons in a laboratory dish, reproducing the variety that naturally occurs in the human body.

The ability to compare healthy and unhealthy human cells opens up the possibility of developing powerful drug treatments which could eventually slow down the impact of the disease.

Debilitating, distressing and fast-acting, MND usually kills its victims within four to five years of diagnosis.

The breakthrough was "an important new system of scientific cooking", said Professor Siddharthan Chandran of the University of Edinburgh.

"Within 12 months we will be talking about building systems and moving towards really powerful drug-testing tools for slowing down the disease."

Motor neurons - nerve cells that send messages from the brain and spine to other parts of the body - differ in their make-up depending on where they are in the spinal cord.

They control muscle activity such as speaking, walking, swallowing and breathing.

In MND the apparently healthy cells break down, leading to paralysis and difficulties with those functions.

"MND is a problem of the motor nerves, but the important detail is that motor nerves come in many different 'flavours' and they respond at different speeds," said Professor Chandran, director of the Euan MacDonald Centre for Motor Neurone Disease Research.

"You need to create that range in a dish if you want to model that disease.

The use of embryonic stem cells gives us exactly that opportunity."

Scientists believe that advances in stem cell technology represent an unprecedented opportunity to tackle hundreds of inherited diseases, including MND and haemophilia, which could prove as important for humanity as the conquest of infectious diseases over the past 200 years.

The use of embryonic stem cells, the result of embryonic cloning, has been bitterly opposed by the pro-life lobby.

In 2001, President Bush blocked the use of US government money to fund research on embryonic stem cell lines created after August 9, 2001.

The ban was revoked by President Obama in 2009.

In the past, drugs developed for MND and tested on animals have failed when used in human trials.

Professor Chandran said that the new procedure, developed in conjunction with the universities of Cambridge and Cardiff, held great promise.

"We can generate motor neuron cells from healthy people and develop cells from people who have inherited the disease," he said.

"With those materials in the laboratory, you can begin to think about drugs that work."

'With these materials, you can think about drugs that work'