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Michigan group advocates for stem cell research

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Because of strict state law, Michigan Citizens for Stem Cell Research & Cures said Michigan is losing out on the economic and medical benefits of stem cell research.

Michigan is one of five states in the nation with the most restrictive laws, laws which are more strict than federal laws. Other states include North Dakota, South Dakota, Louisiana and Arkansas.

During a Petoskey Rotary Club meeting Wednesday, organization representative Marc Shaberman presented the benefits of stem cell research and how proposed legislation may allow more research in Michigan.

In general, Shaberman said stem cell research provides more information about chronic diseases to potentially treat conditions like Alzheimer's disease, Parkinson's disease, spinal cord injury, muscular dystrophy and juvenile diabetes.

"If you can take a stem cell from someone who has Alzheimer's disease and culture it and watch how it develops, you may find out what goes wrong and why those particular cells develop into Alzheimer's disease cells," he said.

Why stem cells are so important, Shaberman said, is because they are the building blocks for all tissue.

"They can replenish themselves and they can form specialized cells like skin cells, nerve cells and liver cells," he said.

Stem cells exist in two forms: adult and embryonic.

Adult stem cells are found in bodily tissues such as skin, bone marrow, eyes and the nervous system. Their purpose is to maintain and repair tissues when necessary.

Embryonic stem cells exist at the earliest stage of embryonic development. Unlike adult stem cells, they continuously reproduce and differentiate to form various kinds of cells in the body.

Typically, Shaberman said embryonic stem cells used in research derive from unused eggs leftover from in vitro fertilization. With permission from the donor, researchers use the egg to grow stem cells, or multiply them, into millions of cells to form a stem cell line.

"(Stem cells) can be caused to develop into all the tissues of the body. They do naturally and these stem cells are what grow into a human being eventually," he said. "But they can be tricked (when cultured) so they can grow nerve tissue, skin tissue and muscle tissue, and that's what the research is all about."

Once grown into the appropriate tissue, stem cells may be injected into the body.

Using the example of a spinal cord injury, Shaberman said, "If we were to grow these stem cells and someone had a spinal cord injury, the theory is that you would take new nerve cells and inject them into the body and they would help regenerate the nervous system."

However, the problem when injecting stem cells from a donor is that the cells' DNA do not match the recipient's DNA and will be rejected.

To combat this problem, Shaberman said researchers use a process called Somatic Cell Nuclear Transfer — also called therapeutic cloning — in which a patient's cells are transferred to a donated inert egg to create stem cells which share the

patient's DNA.

But, somatic cell nuclear transfer is banned in Michigan.

As stated in Michigan legislature, under the public health code MCLA 333.16274, "a licensee or registrant shall not engage in or attempt to engage in human cloning; 'human cloning' means the use of human somatic cell nuclear transfer technology to produce a human embryo."

Currently, Shaberman said the state permits federally funded research because no barriers exist at the federal level regarding regular stem cell research or somatic cell nuclear transfer.

But in order to complete state funded research within Michigan, proposed legislation distinguishes between reproductive and therapeutic cloning. The proposal strengthens the ban against reproductive cloning and lessens restrictions against somatic cell nuclear transfer.

If approved, Shaberman said the legislation will provide Michigan with the opportunity to create more state revenue. Research will create jobs, benefit the biotech and pharmaceutical industry, and introduce more biomedical sciences to universities.

To learn more about Michigan Citizens for Stem Cell Research & Cures, visit www.stemcellresearchformichigan.com.