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LifeCell – Daily News Update
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Key Industry News:

Publication	sciencedaily.com
Headline	Modifying Neural Stem Cells Improves Their Therapeutic Efficacy
Gist of the article	Stem cells isolated from the brain of adult mice (adult neural stem cells [aNSCs]) have shown very modest therapeutic effects in a mouse model of the chronic inflammatory neurodegenerative disease multiple sclerosis. But now, Guang-Xian Zhang and colleagues, at Thomas Jefferson University, Philadelphia, have developed an approach to enhance the therapeutic effects of aNSCs in this model of multiple sclerosis. Specifically, the researchers genetically engineered aNSCs to express the anti-inflammatory molecule IL-10 and found that these cells induced more extensive functional and pathological recovery from ongoing disease than did nonengineered aNSCs. Importantly, the IL-10-aNSCs mediated their effects in multiple ways, suppressing immune system attack of nerve cells, promoting nerve cell repair, and promoting production of the nerve cell protective sheath. The authors hope these results might increase the chance that aNSC-based therapies might one day be developed for clinical use.

Publication	downtoearth.org.in
Headline	It might be possible, requires triggering the muscle stem cells
Gist of the article	As humans age, muscle cells' ability to renew and repair is severely impaired. Much as a woman loses her ability to bear children after menopause, ageing stem cells that give rise to various tissues in human bodies cannot reproduce. Muscle cells are no exception. Morgan Carlson and colleagues from the University of California in usa, the University of Copenhagen in Denmark and the University of Southern Denmark found out how human muscle stem cells lose the

	capacity to repair with age. They concluded that the cells remain capable but the environment around them turns toxic. They asked 20-year-old and 70-year-old volunteers to wear a cast on their leg for a week to allow the muscles to weaken. The cast was removed thereafter and the subjects had to exercise vigorously. This sudden increase in physical activity demanded a quick regeneration of the muscles. The researchers then examined the working of muscle tissue at the molecular level. In muscle stem cells, extremely specific chemical messengers interact as though they are in an assembly line, each delivering a fine-tuned message to get the stem cells to regenerate damaged muscles. There is a deliveryman named Delta. He carries a message to Notch, a midwife living on a busy street. With age, Delta shows up rarely at Notch's doorstep. And since Notch does not get the message, she does not mediate birth as often as she used to. At the same time, Notch's personal messenger system through which she communicates with her clients—the stem cells—also gets blocked. The culprits are two protein spammers— tgf-? and pSmad. End result: muscle cells cannot repair themselves as humans age. It is the imbalance in the levels of key chemical regulators—Delta, Notch, tgf-?, pSmad—and not any intrinsic change in the cells. Every organ has stem cells with the potential to regenerate in the right environment. "Understanding how to trigger stem cells in old age has important life-extension possibilities—both from the perspective of increasing disease-free survival in humans and life expectancy," said Carlson. The study was reported in EMBO Molecular Medicine on September 30.

Publication	wivb.com
Headline	Family goes to extremes to cure autism
Gist of the article	Like most eight-year-old boys, Matthew Faiella of Williamsville loves playing with his action figures. Unlike most boys his age, he has an incredible talent for sketching, and can also speak Spanish. It's hard to imagine, just two years ago, Matthew, who lives with autism, couldn't even string two words together. "It was very sad to see, he was in his own little world. Couldn't speak. Couldn't communicate," said Daniel Faiella, Matthew's father. Daniel says he and his wife tried the typical treatments for their son's

autism, a disease that now affects 1 in 91 children. But, they didn't see many improvements.

Daniel said, "I wanted something that would recover him where he wouldn't need any treatment ever."

Daniel began researching autism online and determined hyperbaric oxygen therapy could be the answer. He read it takes away inflammation in the brain, and mobilizes stem cells from the bone marrow into the body. The FDA names more than a dozen conditions that are responsive to hyperbaric therapy, autism is not one of them. Still the Faiella's gave it a shot.

"Within a week, he went from two words to a whole sentence," said Daniel.

They bought a $20,000 hyperbaric chamber for home and say they saw tremendous growth in Matthew's verbal skills and socialization. They soon believed they would see even better results if they combined that with cord blood stem cell injections, a radical treatment for autism not approved in the United States.

Daniel said, "60 to 100 have done it in the world. We were one of the first."

Were the Faiellas scared? "Very much so," Daniel said.

They traveled three times to Costa Rica for the $15,000 injections three times, but they say it's worth every penny.

Daniel said, "We had to do it. We didn't want a life in an institution to be his future."

The Faiella family's journey, however, is not embraced by local Autism experts. They say behavioral therapy is best, because there is no proven bio-medical treatment to cure Autism.

"It's so easy to grab onto something that sounds good, sounds appealing, and may fit how you think the world works, but that doesn't mean it's an effective practice," said Dr. Stephen Anderson.

Dr. Stephen Anderson, CEO of Summit Educational Resources, which specializes in autism, says there is no such a thing as a magic bullet or spontaneous recovery when it comes to autism. And he says desperate parents trying to help their children, could actually put

	them at risk. "Stem cell seems a little more radical to me and has a little greater risk than the hyperbaric chamber, but neither has any science to support they're an effective practice for kids with autism and that is a little troubling," said Anderson. The Faiella family no longer consults with a doctor and presses on. They say despite being on the brink of bankruptcy, they're leaving for a fourth trip to Costa Rica a few weeks, this time for stem cell injections not into Matthew's blood, but directly into his spine. Daniel is hopeful his son will then be cured. "I'm praying for it. And it's my belief that he's going to get there," said Daniel.