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Stem Cells Get Real

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It was only ten years ago that James Thomson, an unassuming biologist at the University of Wisconsin, grew the first human embryonic stem cells in a lab. Few discoveries before or since have inspired more hype (they regrow spines!) or rancor (it's murder of unborn babies!).

The controversy isn't going away, but it is obscuring the fact that the science is finally hitting its stride. Stem cells are dormant cells behind growth and healing in the body. Most can create only a specific body part such as blood, bone, brain or heart. Embryonic stem cells can become any kind of cell you want them to be. The problem was you had to destroy an embryo to create them.

Last year brought the sudden discovery that human adult skin cells can be reprogrammed into cells just as potent as embryonic stem cells, with no embryos harmed. This embryo-free approach still needs a lot more time to mature, but it has the potential to end the ethics debate.

It may be decades before an injection of neurons grown from embryonic stem cells will be able to repair a damaged spine. But stem cells are advancing medicine in other ways right now. "These cells suddenly give us access to all the bits of the human body we've never had access to," says Thomson.

Over the next few years we'll see stem cells used to speed drug development for all sorts of dread diseases, eliminate unsafe medicines and create better diagnostic tests. California is pushing ahead with its \$3 billion stem cell research funding program. All three presidential candidates have favored a lessening of the restrictions on stem cell science. Drug firms such as GlaxoSmithkline, Roche, AstraZeneca and Novartis are tiptoeing into the field. Pfizer has started a new research division to focus on stem cell therapies.

"There is a lot of opportunity here and a lot of ignorance," says Martin Evans, who won the Nobel Prize for discovering stem cells in mice three decades ago, leading directly to Thomson's work. "We don't know half of what we need to know."

The key now, says Thomson, is "getting on with it."