



“As to diseases ,make a habit of two things —
to help, or at least *do no harm.*”

— Hippocrates, *The Epidemics* —

THE “POLITICAL SCIENCE” OF STEM CELLS LESSON 9: MAKING A DIFFERENCE?

The Senate may vote soon on whether to divert taxpayer dollars toward stem cell research that requires destroying live human embryos. In the campaign to promote such funding, political hype has often substituted for the scientific facts. This series will help members of the Senate distinguish mere politics from science.

POLITICAL:

“These extraordinary [embryonic stem] cells can generate a new heart muscle for those who have suffered cardiac damage, and new pancreas cells for diabetics, new brain cells for those with Parkinson's disease.”

— Sen. Edward Kennedy, hearing of the Health Subcommittee of the Senate Committee on Education, Labor and Pensions, 3/5/02

SCIENCE:

Can they?

Human embryonic stem cells do have the ability to form every tissue in the body — when they are left to grow and differentiate as part of an intact human embryo.

But in the lab, researchers have not succeeded in turning embryonic stem cells into pure cultures of specific, viable tissue types -- the essential first step if these cells are to have any therapeutic application. Even after 20 years of experience with mouse embryonic stem cells they have been unable to do this.

“Scientists know this is a thorny problem,” the *New York Times* reported in 2001, “but their views were not widely heard when the public and politicians seemed to assume that it was easy to grow any tissue type desired from embryonic stem cells. In fact, no one has been able to do this even with mouse cells... The science is not even close.” (G. Kolata, “A Thick Line Between Theory and Therapy, as Shown with Mice,” *New York Times*, 12/18/01, p. F3).

Today, while politicians still assume it's easy to grow any tissue from embryonic stem cells, the “thorny problem” remains:

“‘Just injecting stem cells is not going to work,’ said Sahin Rafii, a physician and stem cell scientist at Cornell University Medical College. ‘First, you have to be able to differentiate the cells into functional, transplantable tissues. We don't really know how to do this yet.’”

-- S. Bloom, “Stem Cell Division,” *The Journal of Clinical Investigation*, Vol. 115, #7, July 2005, p. 1677.

“Although embryonic stem cells have been shown to have the potential to turn into virtually any cell type found within the body, no studies have demonstrated the controlled generation of a uniform cell type.”

-- Harvard Medical School professor Charles Vacanti, “Cells for Building,” *The Scientist*, Vol. 18, #22, 11/22/04, p. 22.

For more information to help distinguish politics from science on stem cell research, see our web site at www.stemcellresearch.org.

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