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Stanford scientists suggest stem-cell monkey-wrench

San Francisco Business Times - by Steven E.F. Brown

Researchers at Stanford's medical school found that human embryonic stem cells — widely touted as the next medical panacea — triggered an immune response in mice, which could limit the effectiveness of treatments derived from them.

The work of Joseph Wu, M.D., and Mark Davis, M.D., showed that the immune system does in fact react to and attack foreign embryonic stem cells.

Antirejection medications, commonly used in organ transplantation, can suppress the immune response, the researchers found. But these drugs, which recipients of donated organs must take for the rest of their lives, carry serious side effects because they are not selective, and suppress the entire immune system. This suppression leaves patients vulnerable to infections the body would normally fight off. The drugs can also weaken the body's response to cancer.

Because embryonic stem cells are harvested so early in the development of a human being, many scientists supposed that the immune system might not attack them. The assumption was that since a fetus contains genetic material from both its mother and father, yet it is not attacked by the mother's immune system, embryonic stem cells might elude attack as well. But this research undermines that idea.

"The data is quite convincing," said Wu, an assistant professor of cardiovascular medicine and radiology at **Stanford University School of Medicine**. "Based on these results, we believe that transplanting these cells into humans would also cause an immune response."

Wu and Davis — a professor of microbiology and immunology at Stanford — used new molecular imaging methods to watch cells live or die inside the mice during the experiments. In the past, scientists killed the animals and deduced their conclusions from studies of tissue samples under microscopes.

The work of Wu, Davis and their colleagues at Stanford is being published in the Proceedings of the National Academy of Sciences today.