

Cord blood stem cells: worth the investment

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Nature Reviews Cancer recently published a commentary by M. J. Sullivan, expressing an opinion on the value of umbilical cord blood stem cells and cord blood preservation options, that contained a number of errors (Sullivan, M. J. [Banking on cord blood stem cells. *Nature Rev. Cancer* 8, 555–563 \(2008\)](#)). Contrary to Sullivan's claim, cord blood stem cells are indeed pluripotent. In 2005, C. McGuckin isolated embryonic-like cells from human cord blood. This discovery represented the culmination of years of research by many investigators, each of whom were able to isolate and expand different types of immature cells from cord blood, including the building blocks of heart, nerve, bone and liver tissue¹. Beyond their versatility, cord blood stem cells are ideal for use in therapy on the basis of their 'age': they are primitive enough to become multiple cell types, yet mature enough to work within the existing framework of the body. The American College of Obstetricians and Gynecologists itself affirmed that cord blood stem cells have distinct advantages over other stem cell sources in its latest cord blood guidelines². Further, plenty of evidence exists confirming the benefits of using a genetically related cord blood unit in traditional transplant medicine as opposed to one from an unrelated source. This results in decreased rates of graft-versus-host disease and better treatment outcomes³. As a scientist researching the use of cord blood stem cells in regenerative medicine, Sullivan's claim that no evidence exists to support autologous use of cord blood stem cells is simply false to me. It is well-known in the scientific community that two human trials are underway exploring the use of autologous cord blood stem cells as a treatment for type I diabetes (at the University of Florida, USA, [NCT00305344](#)) and cerebral palsy (at Duke University Medical Center, Durham, USA, [NCT00593242](#)). Although it is too early in either trial to formally publish outcomes,

preliminary findings are overwhelmingly positive. For example, in the type I diabetes trial, children who received an autologous infusion of cord blood stem cells have better blood sugar control and require less insulin than the control group. Lack of published data aside, what is perhaps more important is hearing from the parents whose children are participating in these trials, who say their children are showing measurable improvement. The overall premise of Sullivan's commentary is that commercial cord blood banks currently offer a "superfluous service". I do not understand how one can make that claim when solid scientific evidence supports the benefits of using related allogeneic cord blood over an unrelated source. Moreover, the advancements in regenerative medicine applications would not be where they are without family banks, as the science and current clinical trials indicate that one's own genetically matched cord blood stem cells are needed for regenerative therapies.

The reality is that both private and public banks are needed. Whereas the family banking industry fully supports the public banking system, there are limitations: public donation is not yet widely available owing to funding constraints and is currently only accommodated at specified hospitals in limited locations.

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1. McGuckin, C. *et al.* A new human somatic stem cell from placental cord blood with intrinsic pluripotent differentiation potential. *J. Exp. Med.* **200**, 123–135 (2004).
2. ACOG Committee Opinion No. 399. Umbilical cord blood banking. *Obstet. Gynecol.* **111**, 475–477 (2008).
3. Gluckman, E. *et al.* Outcome of cord blood transplantation from related and unrelated donors. *N. Engl. J. Med.* **337**, 373–381 (1997).

Competing interests statement

The author declares [competing financial interests](#).