



## OPPORTUNITY #2

What if we all held on to our stem cells?

# THE ISSUE OF TISSUE

Long-term self-storage of an individual's stem cells become a standard of care, giving everyone the possibility of regenerating their own critical tissues throughout life.



### MEGATREND

Advanced Health and Nutrition

### TRENDS

Nanomedicine  
Nanotechnology  
Personalised Medicine

### SECTORS AFFECTED

Consumer Goods, Services & Retail  
Data Science, AI & Machine Learning  
Financial Services & Investment  
Health & Healthcare  
Insurance & Reinsurance  
Materials & Biotechnology

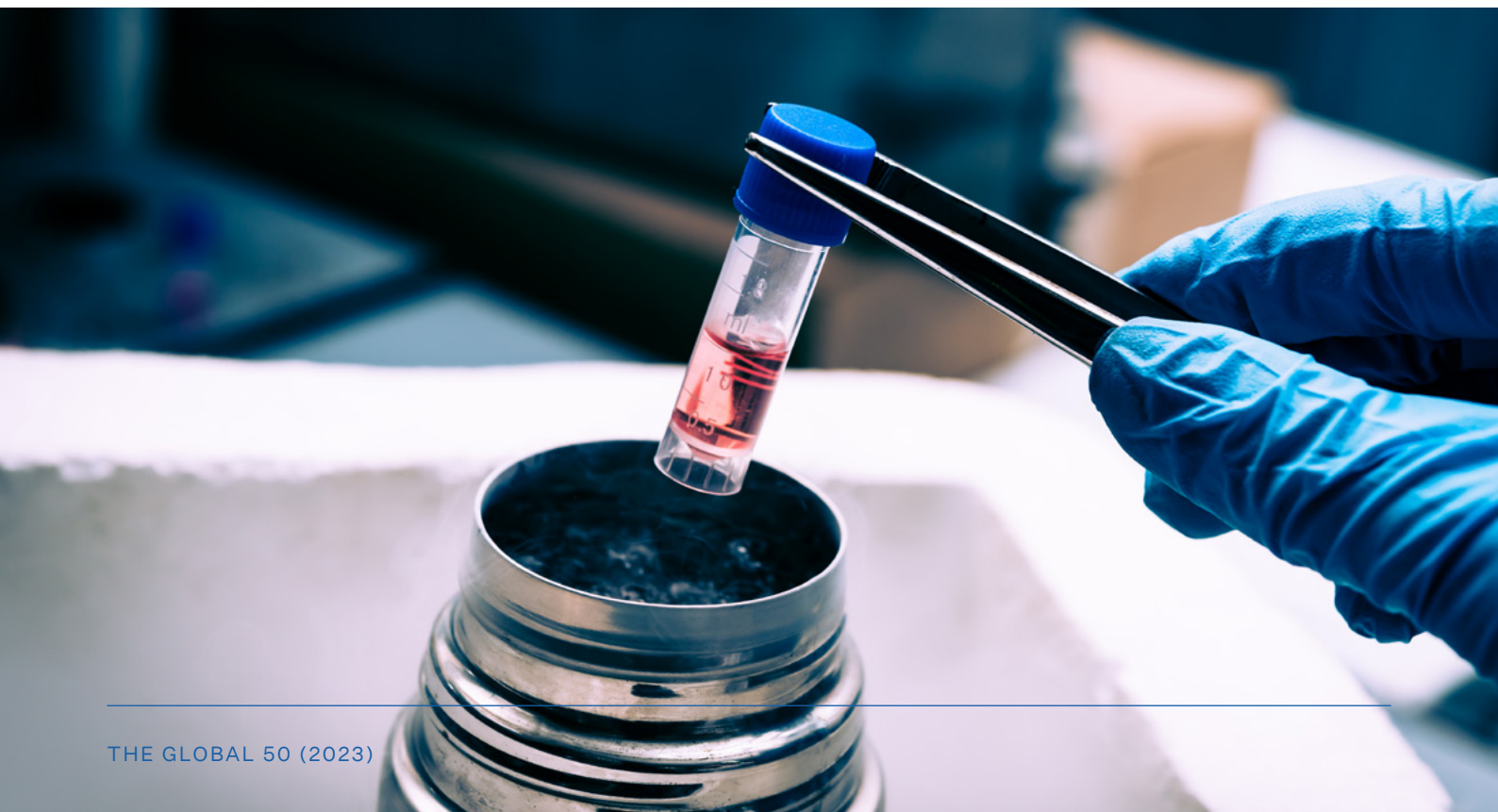


## WHY IT MATTERS TODAY

While there are many globally established cord blood banks that enable the storage of stem cells isolated from new-born tissues, the procedure continues to be optional for many parents. Based on the latest available data, parents banked cord blood in 30% of births in Singapore between 2018 and 2019; in contrast, in the United Arab Emirates and the United States, the level was around 3%.<sup>185</sup> Levels in other countries were 2.3% in Canada, 1.5% in Lebanon and 0.3% in the United Kingdom.<sup>186</sup>

As of 27 October 2022, the World Marrow Donor Association had registered just over 41 million blood stem cell donors, almost five times the number of donors registered two decades ago, and 811,000 cord blood units, almost seven times the number of units registered two decades ago.<sup>187</sup> An alternative source of stem cells is bone marrow. Most marrow exchanges took place within Europe; for cord it was within Asia, including the Middle East.<sup>188</sup>

Genetically, siblings have about a 25% chance of being perfect matches for each other, while the chances of finding a suitable match among unrelated bone marrow or cord blood donors from a public bank range from 29% to 79%.<sup>189</sup> As cord blood inventory increases by over 600,000 submissions annually,<sup>190</sup> Stem cells can be used to treat more than 70 types of disease, including immune system diseases, genetic disorders, neurologic disorders and some forms of cancer.<sup>191</sup>





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## THE OPPORTUNITY

The ability to regenerate genetically identical tissue from an individual's own stem cells opens the door to new and improved treatments for people with a range of chronic diseases and autoimmune conditions or accidental brain and other injuries. Future developments in stem cell nanotechnology will enable even better approaches and therapies targeting disease.<sup>192</sup> In addition, stem cells' pluripotency<sup>193</sup> means they can be grown into any type of tissue, making them, for example, an invaluable source of new organs without the risk of rejection, or a means of repairing tissue damage to retinas or the skin.

Cord blood extraction is a non-invasive procedure compared to other ways of gathering stem cells, such as bone marrow extraction. Therefore, and with consent, a requirement to store cord blood at birth – along with developments in stem cell isolation, harvesting and storage – may give individuals access to their own stem cells, stored in their own homes or elsewhere, and also give researchers access to stem cells for new applications in immunotherapies and in advancing precision medicine. Damaged heart muscles could be replaced, eliminating the need for pacemakers. Cancerous tissues could be removed and replaced with healthy tissue, and entire body parts could even be rebuilt using the same cell stock.<sup>194</sup>

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### BENEFITS

Improved health outcomes and quality of life, reducing care and health costs. Reduced misuse of and malicious damage to stem cell stocks.

### RISKS

Inability to sustainably maintain cord blood banks and/or research with pressure for profitability and over-regulation. Low adoption due to perceived black market exchanges.



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