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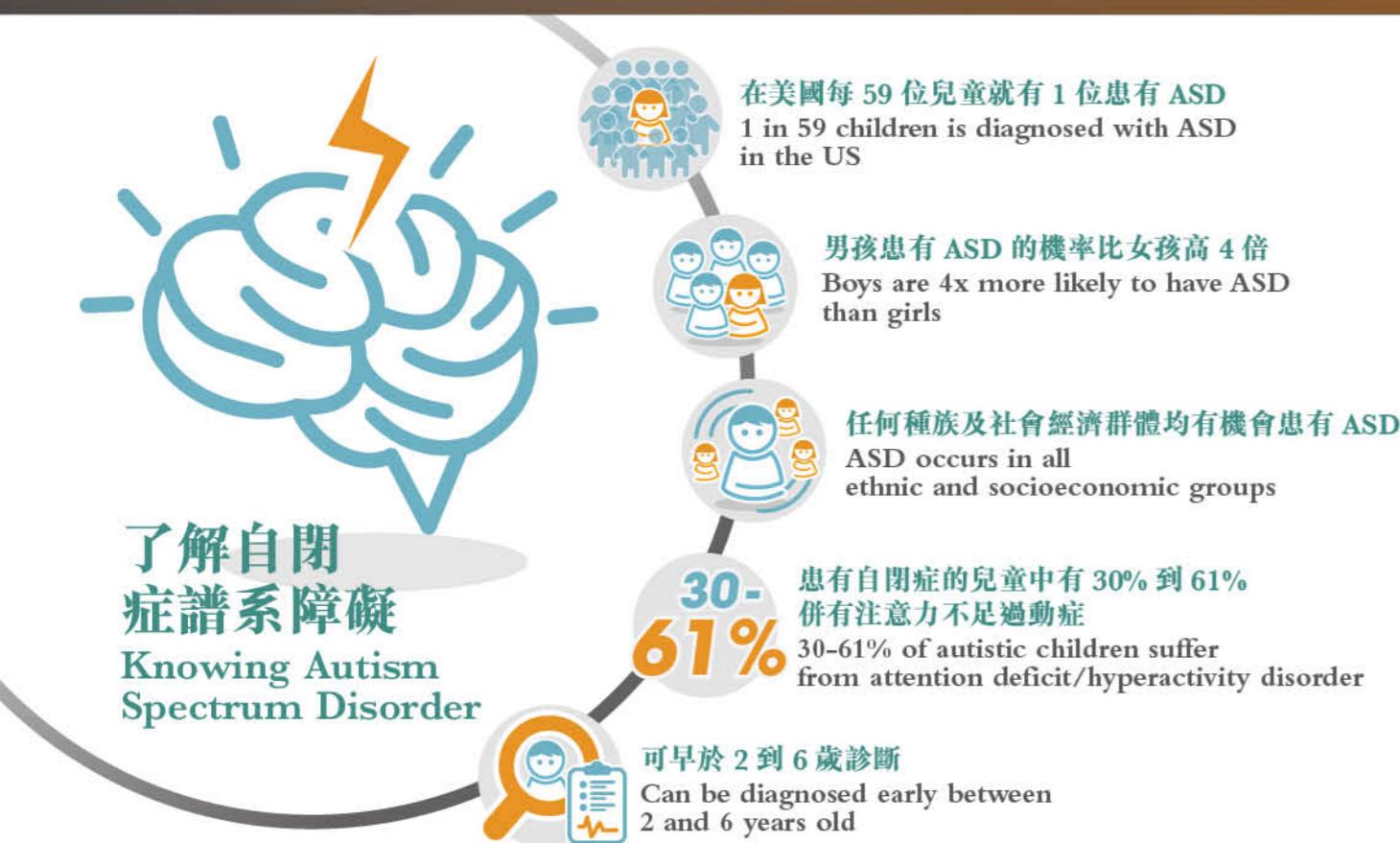


自閉症與臍帶血

Autism and Cord Blood

早期干預可提高學習、溝通和社交能力，受用終身

Early intervention delivers benefits across lifespan with improved learning, communication and social skills.



臍帶血的幫助 How does cord blood help?

臍帶血中的幹細胞帶有特殊功能
Cord blood stem cells contain special properties.

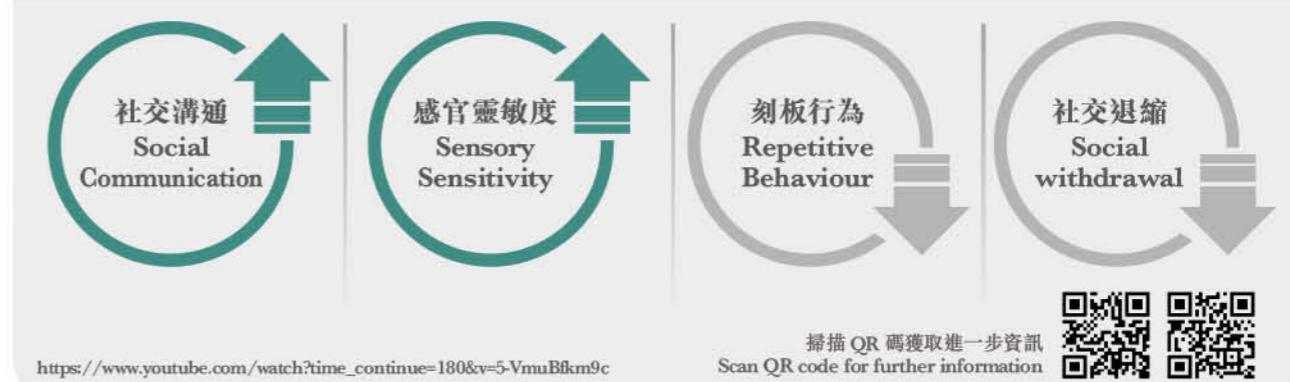


真實案例 Case Study

幹細胞治療前後的臨床片段
Clinical sessions before and after stem cell treatment



在 6 個月後的自體臍帶血幹細胞鞘內注射
After 6 months of intrathecal injection of self-preserved cord blood stem cells



胎盤幹細胞的興起

The rise of placental stem cells



<https://bioinformant.com/placental-stem-cells/>

「我們每年把四百萬個那麼有用生物材料丟棄在紅色的廢物袋中，卻不試圖找方法來好好利用它。」

“Four million times a year we throw away this valuable biological material in a red biohazard waste bag, instead of trying to find out a way to utilize it.” - Dr. Robert Hariri, CEO of Celularity Inc.

在子宮裡生活的九個月內，胎盤負責獲取營養與氧氣，並排出廢物，是支持寶寶健長成長的重要系統。當寶寶出生時，胎盤完成使命，將也從子宮壁脫落並排出體外，是一個了不起的器官，而選擇存儲胎盤組織可以保存幹細胞，適用於獨特的治療。

世界領先的胎盤幹細胞和應用治療專家之一 Ornella Parolini 博士最近接受採訪時說道，根據臨床前研究和臨床試驗的結果，大慨於 10 年內就可證明胎盤細胞的再生潛力。相比其他組織，以胎盤作為幹細胞來源甚有益處，因為胎盤很容易獲得，而且對母親或嬰兒均沒害，一般都被視為生物醫療廢物，所以倫理上沒有任何問題。另一個優點是胎盤含有大量幹細胞，並且較少機會暴露於感染環境，因此可減低疾病傳播的風險。



The placenta is your baby's life support system for nine months in your womb. It provides the growing fetus with oxygen and nutrients and also removes toxins. Once your baby is born, the placenta detaches from the uterine wall and is expelled from your body at the same time. Placenta is an amazing organ and placental tissue banking gives one the opportunity to store stem cells that may have unique applications.

In a recent interview with Dr. Ornella Parolini (one of the world's leading experts on placental stem cells and therapeutic applications), she says in 10 years with documented results from preclinical and clinical trials, the regenerative potential of placental cells will be clear. The placenta as a source of cells provides additional benefit when compared to other tissues. It is easy to procure, with no harm to the mother or baby. There are no ethical issues associated as it is mostly considered as biological waste after birth. A significant advantage of the placenta is the high cell yield and are less exposed to infections, thus is less-likely to render disease transmission.



X Prize Foundation 主席 Peter Diamandis 討論美國生物技術公司 Celgene (專門研究和售賣抗癌和炎症藥物) 如何利再胎盤幹細胞開發再生藥物，對抗癌症及自身免疫性疾病。

Video - Peter Diamandis, chairman at X Prize Foundation, discusses how scientists have been working within Celgene (an American biotechnology company that discovers, develops and commercializes medicines for cancer and inflammatory disorders) to use placental cells for regenerative medicine, to fight cancer and treat patients with autoimmune diseases.



<https://www.youtube.com/watch?v=8jadFG4f3Y0#action=share>

2019年4-5月品質檢定 (細胞活躍測試結果)

April - May 2019 Quality Assurance (Variability Results)

■全面檢測・信心保證

CRYOLIFE 每年進行兩次品質檢定，從每個儲存缸內抽取最少一個樣本，進行全面而透明度高的檢測，顯示 CRYOLIFE 對實驗室儀器及專業技術人員的信心，測試結果亦會於在網頁上公佈。

一般幹細胞儲存庫都會作「解凍後幹細胞恢復之存活能力」測試，確保幹細胞解凍後仍具備理想的機能。不過，對 CRYOLIFE 而言，這只是最基本的測試，CRYOLIFE 更注重完整保存幹細胞最具醫療價值的特性。幹細胞的珍貴價值，全在於其自我倍增及自我分化的特性。因此，CRYOLIFE 多年前起引入「細胞聚落形成單位 (CFU)」測試，檢驗不同儲存年份的樣本是否仍能保持自我倍增及自我分化能力，簡單而言即是測試幹細胞在解凍後的活性。據國際品質鑑定機構 AABB 標準，血庫在發放幹細胞作任何醫療用途前，必須進行「細胞聚落形成單位 (CFU)」測試，以確保幹細胞品質，足以證明 CRYOLIFE 的定期質檢已到甚至超越國際水平。

CRYOLIFE 新一期的測試剛於 2019 年 4 月 8 日進行。此次檢測從儲存缸中提取了 8 份樣本檢測，結果顯示，所有樣本在解凍後，恢復之存活能力均超逾 82.7%。為了進一步比較，我們再次測試了 2 年前測試過的臍帶血樣品，雖然存活能力受可變因素影響（樣本體積、解凍所需時間、洗滌和數算幹細胞所需時間、室溫變化等）稍有下降，但是 CFU 測試（可使用的幹細胞的密度）則比 2 年前大幅 **增加了 8 倍**。

總括而言，CRYOLIFE 的長期保存系統並沒有影響臍帶血幹細胞的活性。質量測試結果令人鼓舞，促使我們的客戶大可放心，孩子們的臍帶血幹細胞在 CRYOLIFE 冷凍保存下仍然活躍，可用於未來的治療。

■Comprehensive Quality Assurance Test

Committed to deliver the highest service quality and taking pride in its cutting edge facilities, CRYOLIFE undertakes comprehensive quality assurance test twice a year. At least one dummy sample from each storage tank – of all prior preservation years – will be evaluated with test results published on website.

Conventional cord blood banks will conduct Recovery of Viability Test to evaluate the preservation of stored stem cell's viability. CRYOLIFE's quality control and quality assurance go beyond that. Apart from basic tests, CRYOLIFE also conducts advanced Colony Forming Unit (CFU) Test to investigate the ability of proliferation and differentiation of hematopoietic stem cells. In essence this means the ability to thaw stem cells to ensure its activeness after long term cryopreservation. According to AABB, the industry's leading authority, this CFU test must be performed before the cord blood is being released for any medical treatment to ensure the quantity, quality and stability of stem cells meeting transplantation requirements. This highlights CRYOLIFE's achievement in international assessment standard on stored stem cells from umbilical cord blood.

In the latest test done from 8th April 2019, 8 dummy samples were selected according to schedule and thawed to evaluate the viability. The result shows that the recoveries of viability of all samples are at least over 82.7% with active CFU.

For relevant comparison, a cord blood sample being tested 2 years ago was also selected in the recent test too. Though there is a slight decrease in Viability Percentages due to variable factors (volume size of samples; duration of thawing; timing used in washing and counting of Stem Cells; plus room temperature variances), overall Colony Forming Unit (CFU), which is the density of functional Stem Cells being counted, has **increased by 8X** for the same sample being tested 2 years later.

This result indicates that long term storage in CRYOLIFE has no negative effects on the cord blood stem cell's viability and CFU. Overall the quality test result is encouraging and reassuring to our customers that their child's cryopreserved cord blood's stem cells with CRYOLIFE is still active and viable for future therapies.

臍血處理年份 (存放時間) Year of Storage (Storage Period)	解凍後幹細胞存活能力之恢復率* Recovery Rate of Viability*	細胞聚落形成單位 CFU ($\times 10^4/\text{mL}$)
2001 (18 年)	90.70	1.00
2005 (13 年)	89.20	0.17
2005 (13 年)	82.70	0.04
2005 (13 年)	87.00	0.68
2007 (11 年)	86.60	0.34
2008 (10 年)	82.70	1.40
2013 (6 年)	90.30	0.08

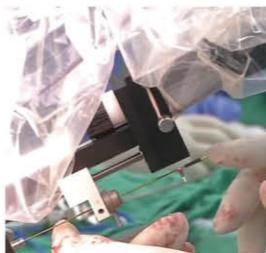
* 國際醫療指標的移植存活能力要求:>50% International medical viability standard: >50%

品質檢定測試結果是來自隨機抽樣方式來選取樣本，測試結果並不代表其他儲存中的樣本會有相同結果。
QA Results shown are from randomly selected samples. It does not represent that other samples within the storage will bear the same result.

重複測試結果比較 Comparison of Repeat Evaluation

臍血處理年份 Year of Processing	測試日期 Date of Evaluation	存放時間 (年/月) Preservation Period (Y/M)	解凍後幹細胞存活能力之恢復率 Recovery Rate of Viability*	細胞聚落形成單位 CFU
2002	08.09.2017	15 年 7 月	89.90	0.10
	08.04.2019	17 年 2 月	85.40	0.85

焦點案例 ◎ NEW CLIPS



<https://youtu.be/ILRYV8RELf0>



<https://youtu.be/SvJnzCpoQZg>



帕金森氏症新曙光！幹細胞療法初見成效 Stem Cells for Parkinson's

帕金森氏症患者，大多在 55 到 60 歲左右發病，因為神經細胞無法再生、病情無法逆轉，現在只能靠提升多巴胺濃度來減輕症狀，不過效果還會逐漸減弱。這種病到現在還沒有辦法完全治癒，不過一種移植腦細胞的療法，最近有了新突破。專家認為要是能成功用新的細胞，換掉失去功能的腦細胞，這種不治之症可能就能找到解答。

In Parkinson's disease, neurons in the brain gradually break down, leading to irreversible damages. The common age of onset lies between 55 and 60. Current treatment involves increasing the level of dopamine to alleviate the symptoms, but the effect fades with time. There is no way to completely cure the disease. Yet a recent breakthrough has been made. Experts believe neuron transplant – replacing unfunctional brain cells with new ones – could be the solution.

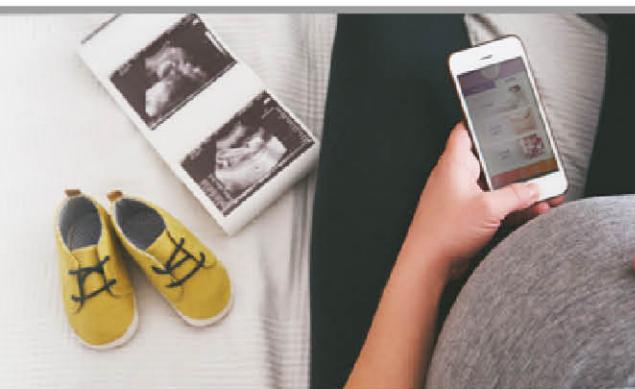
自閉症有解？幹細胞實驗七成患者改善 Stem cells from umbilical cord offer hope for children with Autism

自閉症，對醫學界來說仍舊是個謎，沒有藥醫也無法根治。但現在可能出現曙光！美國杜克大學最新研究顯示，利用臍帶血中的幹細胞，能夠重新修補腦神經，重新連結大腦，第一階段研究，參加的 25 名兒童，70% 症狀都出現改善，本來不太說話的孩子，增加單字用量，也更主動與人互動遊戲。

杜克大學再生醫學博士庫茲柏教授：「這個研究是在測試利用兒童自身臍帶血是否安全，並用來治療自閉症。」臍帶血就是寶寶在胎盤的血液，包含各種不同的細胞，而這些細胞能修復神經生長，進而重新和大腦連結。

The exact cause for Autism remains unknown. Therefore, there is no medication nor cure. But a silver lining has appeared! According to Duke University's latest research, stem cells in cord blood might be able to repair brain nerves, allowing the brain to be rewired. Results from the first phase showed that among the 25 children who underwent treatment, 70% shown improvement. Even the quiet ones became more outspoken with an increase of vocabulary and took the initiative to interact with others.

"This research aims to examine if it is safe to use a child's own cord blood to treat autism," said Professor Dr. Joanne Kurtzberg, Director of the Marcus Center for Cellular Cures at the Duke University. Cord blood is blood that remains in the placenta with a variety of cells. These cells could promote the growth of nerves and help shape the brain.



客戶尊享 親友推廣計劃

REFERRAL PROGRAM
CRYOLIFE's sincere appreciation

CRYOLIFE尊貴客戶只要成功推薦朋友參加任何儲存計劃¹ (包括臍帶血、臍帶及/或胎盤)，其名下的所有儲存計劃均可沒條件免費延長1年！²
立即行動將喜悅分享給身邊好友，
如有查詢歡迎致電，進一步了解更多互惠的信息。

All Cryolife's valued customers are encouraged to refer their friends and relatives to join any of our storage program¹ (umbilical cord blood, cord and/or placenta). Cryolife will immediate add extra years² to all your existing storage plans with us.

No limits! Start to share this great news with all your friends and relatives.

Please call us for more information on how you can benefit from this!



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1.必需是18年期或以上已繳費的項目。其它有關條款請向CRYOLIFE查詢。2. CRYOLIFE 保留最終爭議權，可以隨時終止推介計劃，不另行通知客戶。

1. Only applies to paid plans with 18 years or above. 2. CRYOLIFE has the final say on the terms and conditions for the referral plan.