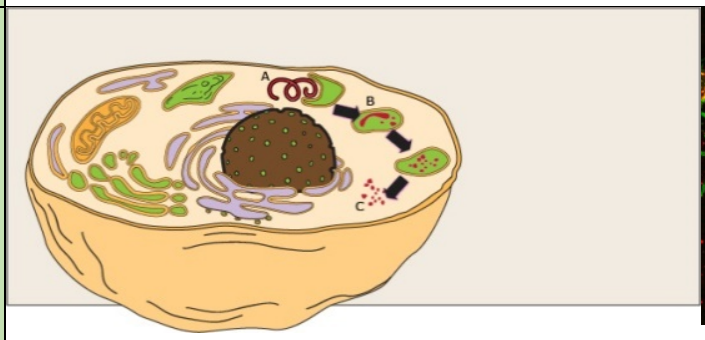
生物策略格式

KJC, 2019/10/21

類別	生物策略 (Strategy)
生物策略 STRATEGY	溶體回收蛋白質的結構單元 (Lysosomes recycle protein building blocks)
生物系統 LIVING SYSTEM	人體 (Human)
功能類別 FUNCTIONS	#化學性分解聚合物 #Chemically break down polymers
作用機制標題	人體細胞中的溶體通過捕獲和分解功能失常的蛋白質來回收胺基酸結構單元 (Lysosomes in human cells recycle amino acid building blocks by capturing and breaking down malfunctioning proteins.)
生物系統/作用機制示意圖	 

作用機制摘要說明 (SUMMARY OF FUNCTIONING MECHANISMS)

溶體 (lysosome) 是細胞內的胞器，可透過將功能異常的蛋白質分解為胺基酸，並組成新蛋白質來防止異常蛋白質的累積。此過程有酶參與其中，並以兩種方式提高細胞效率：

(1) 消除對複合廢物管理系統的需求。

(2) 為細胞提供新結構單元，而不需向外部「購買」。

Lysosomes are organelles within the cell that prevent the accumulation of malfunctioning proteins by continuously breaking them down into their constituent amino acids which are, in turn, used to build new proteins. This process involves enzymes and increases the efficiency of cells in two ways:

(1) by eliminating the need for complex waste management systems and

(2) by providing the cells with new building blocks that don't need to be "purchased" externally.

文獻引用 (REFERENCES)

「另一個主要的降解系統是溶體，它包含多種蛋白酶（酵素），佔細胞蛋白質周轉的20%。溶體主要降解細胞的胞器 (organelle) 和膜蛋白質。細胞質蛋白也可以利用自噬溶

質降解，自噬溶質是將細胞器和大量細胞質包裹在雙層膜中，然後傳遞至溶體的過程。」(Bingol and Sheng 2011: 22)

"The other main degradation system is the lysosome, which contains multiple proteases [enzymes] and accounts for ~20% of protein turnover in cells. Lysosomes mainly degrade organelles and membrane proteins. Cytoplasmic proteins can also be degraded through autophagy, a process in which organelles and bulk cytoplasm are enveloped in double membranes and then delivered to lysosomes." (Bingol and Sheng 2011: 22)

參考文獻清單與連結 (REFERENCE LIST)

Bingol, B. and M. Sheng. (2011). Deconstruction for reconstruction: the role of proteolysis in neural plasticity and disease. *Neuron* 69: 22-32. (https://doi.org/10.1016/j.neuron.2010.11.006)

延伸閱讀:

生物系統延伸資訊連結 (LEARN MORE ABOUT THE LIVING SYSTEM/S)

https://en.wikipedia.org/wiki/Homo_sapiens

文章貢獻/編修者與日期:

張舒婷翻譯 (2019/04/07)；朱天愛編修 (2019/12/19)；吳晧編修 (2020/01/04)；譚國鎏編修 (2020/05/26)；許秋容編修 (2020/11/26)；紀凱容編修 (2020/11/26)

AskNature 原文連結

https://asknature.org/strategy/lysosomes-recycle-protein-building-blocks/