


# 生物策略格式

KJC, 2019/10/21

類別	生物策略 (Strategy)	
生物策略 STRATEGY	藉由晶體吸收光線進入植物體內 (Crystals draw sunlight into plant)	
生物系統 LIVING SYSTEM	五十鈴玉 番杏科窗玉屬 <i>Fenestraria rhopalophylla</i> (Window plant)	
功能類別 FUNCTIONS	#獲取、吸收、或過濾能量 #分配能量 #Capture, absorb, or filter energy #Distribute energy	
作用機制標題	五十鈴玉的柱狀葉可藉由過濾陽光進入一系列草酸晶體以促進光合作用 (The pillar-like leaves of window plants enhance photosynthesis by filtering sunlight down a series of translucent crystals of oxalic acid.)	
生物系統/作用機制示意圖		
作用機制摘要說明 (SUMMARY OF FUNCTIONING MECHANISMS)		
<p>原生於納米比沙漠的五十鈴玉 (window plant) 主要生長於沙礫地。它長得像是一根根頂端有著鈕扣大小圓盤的棒狀柱子。這些柱子其實就是它的葉子。五十鈴玉的大部分植株被埋在沙礫下而只露出葉子頂端，藉此可以保持涼爽。除此之外，肥厚多肉的葉子還能夠吸收及儲存環境中少量的水分。但是植株大部分埋在地底的五十鈴玉要如何進行光合作用呢?正如同它的名字，在此植物的頂端有著一扇透明的「窗戶」以提供光源給地下的葉子。平坦且透明的頂端能使陽光直射進入柱狀葉，其中包含一系列的透明草酸晶體，可以在葉中傳遞光線。覆蓋在葉子內側的葉綠素分子即可捕捉此光線，以進行光合作用。</p> <p>Native to the southern Namib Desert, the window plant grows mainly in plains habitats with sand or gravel. It looks like a series of button-sized disks positioned on top of rod-shaped pillars. These pillars are its leaves. Most of the window plant is buried under the sand or gravel with only the tips of the leaves visible. By staying mostly beneath the ground, the plant can keep cool; in addition, thick and succulent leaves help it store and absorb the limited moisture in the environment. But with most of the plant under the surface, how does it photosynthesize? The window plant is so called because its tips provide a clear window to the leaves in the ground. The tips are flat and translucent, so sunlight can pass straight into the pillars, which each contain a</p>		

series of transparent crystals of oxalic acid that transmit light through the leaf. Grains of chlorophyll that cover the inside of the leaf capture this light for photosynthesis.

#### 文獻引用 (REFERENCES)

#### 參考文獻清單與連結 (REFERENCE LIST)

Krulik, G. A. (1980). Light transmission in window-leaved plants. *Canadian Journal of Botany* 58: 1591-1600. (<https://www.nrcresearchpress.com/doi/10.1139/b80-193#.XsuVj2gzZPY>)

von Willert, D. J., B. M. Eller, M. J. A. Werner, E. Brinckmann, and H. D. Ihlenfeldt. (1992). *Life strategies of succulents in deserts: with special reference to the Namib desert*. Cambridge (UK): Cambridge University Press.

#### 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/Fenestraria>

#### 文章貢獻/編修者與日期:

朱雯翻譯 (2019/04/28) ; 朱天愛編修 (2019/12/28) ; 吳皓編修 (2020/01/04) ; 譚國塗編修 (2020/05/25) ; 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/crystals-draw-sunlight-into-plant/>