生物策略表

類別	生物策略 (Strategy)
生物策略 STRATEGY	色素顆粒協助隱匿 (Pigment granules assist hiding)
生物系統 LIVING SYSTEM	輻鰭魚 Actinopterygii (Ray-finned fishes)
功能類別 FUNCTIONS	#改變光線/顏色 #保護免受動物危害 #Modify light/color #Protect from animals
作用機制標題	輻鰭魚的皮膚對光線強度及背景樣式作出反應，透過色素細胞中的色素顆粒移動改變顏色 (Skin of ray-finned fish changes color in response to light levels and patterns via movement of granules in pigment cells.)
生物系統/作用機制示意圖	

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

文獻引用 (REFERENCES)

「很多屬於真骨下綱 (teleost) 的魚類，例如鱂魚 (minnow) 會對所在環境的整體反射度作出反應而改變顏色。從上方進入牠們視網膜的光線會在腦中與底下背景反射所比較。比較的結果會經由腎上腺神經傳遞到皮膚中控制色素移動的色素細胞。真骨魚皮膚含有不同顏色的色素細胞：黑色素細胞 (melanophores)、紅色素細胞 (erythrophores)、黃色素細胞 (xanthophores) 及虹彩色素細胞 (iridiophores)。色素顆粒從細胞的中心散佈開來。色素在細胞中覆蓋的面積決定了皮膚的色調。很多鰈形目魚類 (flatfish)，包括比目魚 (flounder)，更超越了整體反射度，牠們能根據背景亮暗分界發展皮膚的顏色樣式。這似乎牽涉到辨識度更高的視覺比較能力，以及利用數量上佔優勢但並非完全獨占的單一種類色素細胞，來產生顏色更分明的皮膚斑塊。例如深色斑塊主要含有黑色素細胞，而淺色斑塊則主要為虹彩色素細胞，來產生像圖片中棋盤狀的樣貌。」 (Collis 2002: 101)

"Many fish in the teleost group, such as the minnow, change colour in response to the overall reflectivity of their background. Light reaching their retina from above is compared in the brain to that reflected from the background below. The interpretation is transmitted to the skin pigment cells via adrenergic nerves, which control pigment movement. Teleost skin contains pigment cells of different colours: melanophores (black), erythrophores (red),

xanthophores (yellow) and iridiophores (iridescent). Pigment granules disperse through the cell from the centre. The area covered by the pigment at any time determines that cell's contribution to the skin tone. Many flatfish, including flounder, go further than overall reflectivity and develop skin patterns according to the light and dark divisions of their background. This seems to involve a more discriminating visual interpretation and produces distinct areas of skin with predominantly, but not exclusively, one type of pigment cell. For example, black patches contain mainly melanophores and light patches mainly iridiophores, which can produce the chequerboard appearance seen in the picture." (Collis 2002: 101)

參考文獻清單與連結 (REFERENCE LIST)

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/actinopterygii
https://www.onezoom.org/life/@actinopterygii
https://eol.org/pages/1905

撰寫/翻譯/編修者與日期

譚國鎏翻譯 (2021/03/22)；黃興倬編修 (2021/04/12)

AskNature 原文連結

https://asknature.org/strategy/pigment-granules-assist-hiding/