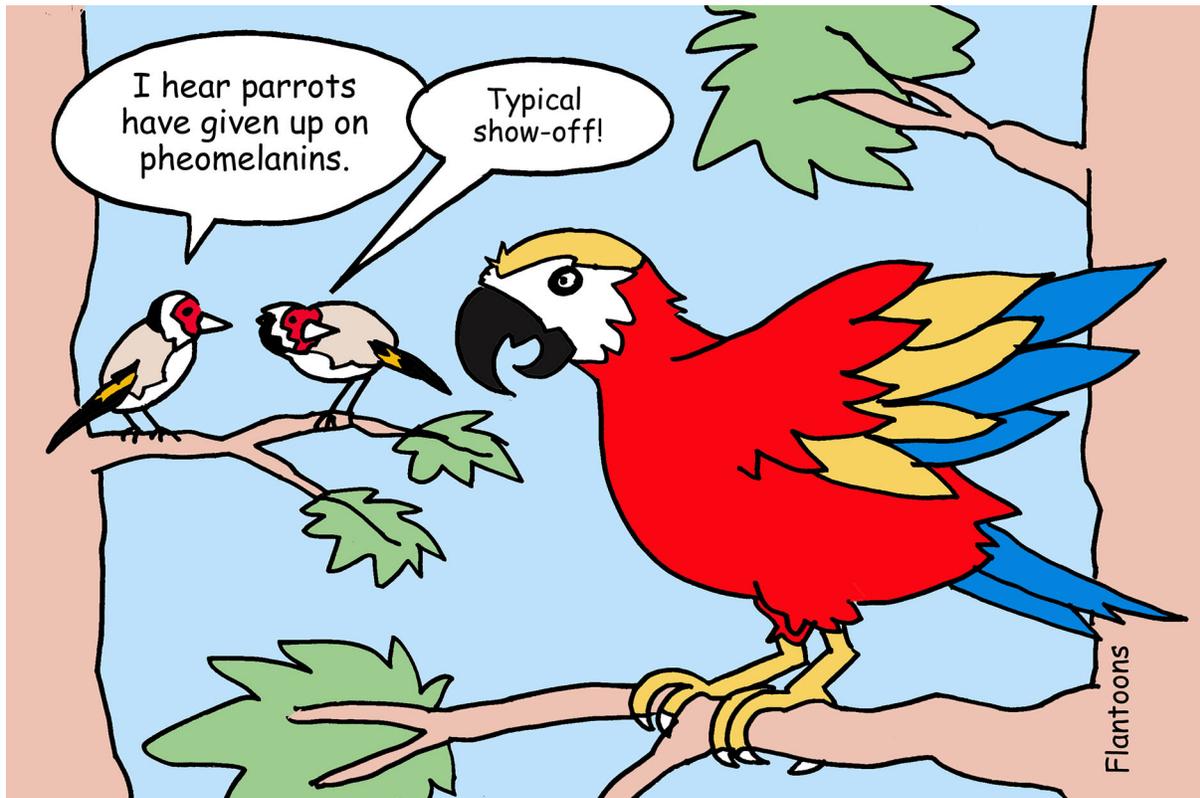


INSIDE JEB

Parrots discard dowdy pigments in favour of own brand



Bedecked with a palette of colours spanning every shade of the rainbow, with black and white thrown in for good measure, parrots are some of the gaudiest creatures on the planet. Ismeal Galván, from the Doñana Biological Station, Spain, explains that most ostentatious creatures depend on a family of pigments known as melanins to put on a vivid show. However, parrots appear to have branched out, evolving their own specialised pigments, psittacofulvins, which produce shades ranging from red and orange to yellow. These alternative pigments correspond to the shades produced by one particular melanin pigment, pheomelanin, so Galván and Ana Neves, from the Federal University of Rio Grande do Norte, Brazil, wondered whether the lurid birds may have done away with the slightly dowdier pheomelanin pigments altogether to turn up their brightness.

After teaming up with Dirk Van den Abeele, from Ornitho-Genetics VZW, to locate parrots ranging from the *Nymphicus hollandicus* cockatiel to the massive kea (*Nestor notabilis*) from New Zealand, the trio asked the birds' owners to send one or two feathers from dull patches of yellow, orange, red or brown plumage, as they realised that these duller shades could be produced by either pheomelanin pigments or psittacofulvins. Then, Galván shone a specialised laser on the feathers, recording the reflected light, looking for the unique signal that would tell him whether the pigments creating the colour within each feather were pheomelanins or psittacofulvins.

However, after analysing feathers from 28 different species, none contained any pheomelanin at all. The parrots had switched completely from using pheomelanin to colour their feathers to the psittacofulvin pigments, although they

continue to produce another melanin pigment, eumelanin, responsible for shades of black and dark brown feathers. The team also explains that parrots are unable to make use of another group of red-yellow pigments – carotenoids, which also protect animals from metabolic toxins in their blood – to colour their feathers. Parrots have discarded many of the conventional pigments favoured by less vivid species in favour of their own more brilliant psittacofulvin palette, even though they still carry carotenoid pigments in their blood for protection.

10.1242/jeb.229591

Reference

Neves, A. C. d. O., Galván, I. and Van den Abeele, D. (2020). Impairment of mixed melanin-based pigmentation in parrots. *J. Exp. Biol.* **223**, jeb225912. doi:10.1242/jeb.225912

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