mentioned in my paper[2], territory quality-related dispersal was not biased by a skew in the distribution of surrounding alloparents on different quality territories. Ten low-quality vacancies were adjacent to territories of medium and high quality with one or more prebreeding birds available to fill the vacancy, but these were filled only by young born on low-quality territories, sometimes from the other side of the island. Five vacancies were filled by males, who had been floaters for 2½ (2 birds), 3, 3½ and 6 years, respectively.

The larger number of nonbreeders in adjacent high-quality territories did not disperse to low-quality habitats; they all stayed in their own territory. Similarly, all 14 high-quality vacancies were adjacent to lower-quality territories with prebreeders which could potentially have filled the vacancy, but, as I stated[2] these birds were not able to fill these vacancies due to high competition as the result of the larger number of nonbreeders present in high-quality territories. Competition for breeding vacancies, measured as the inverse of time necessary to fill a vacancy, significantly increased with quality[3]. On average, vacancies in high-quality territories were filled within 16 hours, 1.9 and 4.3 times as fast as vacancies in medium- and low-quality territories, respectively (the 'queue' hypothesis).

The 'area-restricted' hypothesis can also be rejected by comparing the dispersal distances of individuals filling experimental vacancies in territories of the same quality as their natal territories (including only those vacancies in territories which border on territories of the same quality with nonbreeders present to fill the vacancies): 30.8% of breeders in high-quality territories were from adjacent territories (n = 13); for medium-quality territory and low-quality territory this figure was 28.6% (n = 7) and 30.8% (n = 13), respectively (χ^2 = 0.013, d.f. = 2, not significant).

In conclusion, variation in territory quality (partially explained by the 'queue' hypothesis) is involved in the evolution of cooperative breeding in the Seychelles warbler. The results cannot be explained by the 'area-restricted' hypothesis.

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■ Several readers have pointed out that the K number for Mozart's sonata for two pianos in D major is 448 and not 488, as published in the Scientific Correspondence by Rauscher *et al.* (*Nature* **365**, 611; 1993). □

Dinosaur blood cells rediscovered

SIR — Although the recent find of possible blood cells in a 65 million-year-old *Tyrannosaurus* has had wide publicity[1,2], readers may not be aware that similar bodies were first reported[3] 86 years ago, from a Bernissart *Iguanodon* roughly twice as old, or that possible osteoclasts[4] were noted 70 years ago in a still older Upper Jurassic (Morrison) sauropod (? *Apatosaurus*).

Seitz's "*Vergleichende Studien*"[3] of 1907 is one of the two early classics of palaeontological bone histology, giving detailed descriptions of bone tissues from 40 fossil reptiles, including 12 dinosaurs. In *I. bernissartensis*, Seitz found that some Haversian (vascular) canals contained small rounded "double contoured" bodies, occurring scattered individually along the canals or locally forming compact masses. On the assurance of the botanist Solereder that these were not spores, Seitz surmised that they were blood corpuscles, whose filling the canals locally could represent coagulation or clotting. Supporting this, accumulations of small reddish crystals could represent haematoidin (a breakdown product of haemoglobin). Seitz, however, offered these observations "with reservation".

Moodie[4] then found similar possible corpuscles in a sauropod, but suggested that they could instead be osteoclasts, because trabeculae between vascular spaces showed Howship's lacunae which are formed when these cells resorb bone. This notion was later adopted by Swinton[5], who held that there were no certain records of blood cells from dinosaurs, and that at least some supposed examples were probably iron-stained osteoclasts. Both authors[4,5] also doubted that the crystals seen by Seitz could represent haematoidin.

So, did Seitz find blood cells in *Iguanodon*? It seems reasonably likely that he did, despite Swinton's opinion. Osteoclasts are large multinucleate cells, seen chiefly within resorption spaces and other regions of active reconstruction, and not within vascular canals that are not undergoing enlargement. Moodie's reference to trabeculae implies that his examples were seen in cancellous bone, which is usually reconstructed bone in dinosaurs except near epiphyses[6]; but Seitz's were found instead in vascular canals in compact bone, and not in resorption spaces. His figure shows no Howship's lacunae, and he reported none from other parts, although introductory text shows that he knew their significance. One would also not expect to find densely packed osteoclasts filling vascular canals in the manner of coagulated blood cells, as seen, for example, in post-mortem sections. Thus, Seitz's view fits his evidence better than Swinton's.

Do such objects have any particular value in the search for dinosaurian DNA? Cells of either type described above could yield DNA fragments, as sauropsid erythrocytes are nucleate, and could provide a readier source than bone. Any bone retaining organic traces is a potential source, but recovered organic content will always be derived mainly from the original collagen and mucopolysaccharide. But if actual cells could be isolated, even in a mineralized condition, this problem would be largely avoided. A different and more common type of object might, however, be more useful, as potentially more resistant to leaching or contamination. In some bones, osteocyte lacunae and canaliculi have a thick enough inert mucopolysaccharide lining for maceration residues to yield osteocyte pseudomorphs, which are known from bones as old as Carboniferous[7]. Such bodies might prove to yield 'packeted' DNA traces, insulated from changes to which soft-walled cells would be susceptible; and they could be obtainable from *Tyrannosaurus*, as Pawlicki[8] found mucopolysaccharide concentrated around lacunae in the closely allied *Tarbosaurus*.

Does the recovery of dinosaurian DNA have any scientific value? Just possibly, it might reveal whether dinosaurian extinction could have been due to climatic change upsetting sex ratios[9], as this would have happened only if sex was determined by incubation temperatures, and not chromosomally. But we would still not know what actually caused dinosaur extinction.

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Scientific Correspondence

Scientific Correspondence is a relatively informal section of *Nature* in which matters of general scientific interest, not necessarily those arising from papers appearing in *Nature*, are published. Because there is space to print only a small proportion of the letters received, priority is usually given according to general interest and topicality, to contributions of fewer than 500 words, and to contributions using simple language.