Nature, 386(6622):217-219.

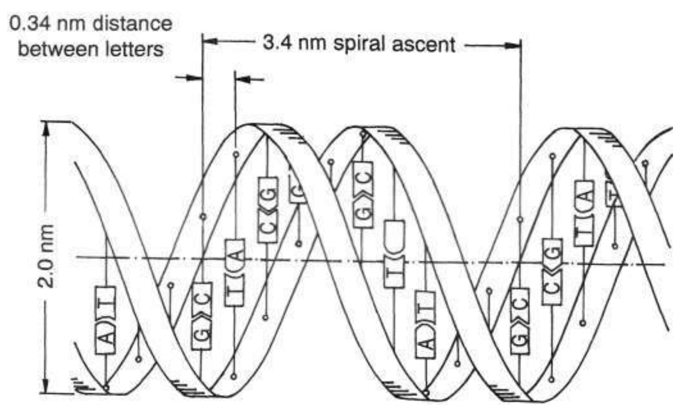
6. Wu, C, 1997. Molecular motor spins out energy for cells. **Science News, 151(12):** 173.
7. Boyer, P., 1993. **Biochimica et Biophysica Acta, 1140:215-250.** *Cited in:* Noji *et al,* Ref. 4.
8. Abrahams, J. P. *et al,* 1994. Structure at 2.8 A resolution of F_1-ATPase from bovine heart mitochondria. **Nature,**370(6491):621-628.
9. Cross, R. L., 1994. Our primary source of ATP. **Nature,** 370(6491):594-595.
10. Service, R. R, 1997. Awards for high-energy molecules and cool atoms. **Science,** 278(5338):578-579. The third winner is Jens Skou of the University of Aarhus in Denmark. Forty years ago, he was the first to identify an enzyme that moves substances through cell membranes (in this case, sodium and potassium ions). This is a key function of all cells.
11. ATP stands for adenosine triphosphate. It is a high energy compound, and releases this energy by losing a phosphate group to give ADP, adenosine diphosphate.
12. Dewar, D., Davies, L. M. and Haldane, J. B. S, 1949. **Is Evolution a Myth? A Debate between D. Dewar and L. M. Davies** vs. **J. B. S. Haldane,** Watts and Co. Ltd/Paternoster Press, London, p. 90.
13. Sarfati, J. D., 1997. Turtles can read magnetic maps. Online at <http://www.ChristianAnswers.net/aig/hot/079704.html> (as at Feb. 19, 98).
14. Poirier, J. H., 1997. The magnificent migrating monarch. **Creation Ex Nihilo,** 20(1):28—31. But monarchs only use the Earth's magnetic field to give them the general direction, while they rely on the Sun's position for most of their navigation.
15. Helder, M, 1998. The world's smallest compasses. **Creation Ex Nihilo, 20(2):** 52-53.

J. D. Sarfati

'Junk' DNA (Again)

When introns were discovered, some evolutionists suggested that these represented 'junk' DNA. Introns, as well as other sequences which did not code for protein, were considered to be left-overs of evolutionary ancestry — 'vestigial' DNA.

History has shown the foolishness of rushing to the 'vestigial' argument. Well over 100 organs in the human body were pronounced as useless left-overs of evolution at one stage, but the list has shrunk to almost zero as research has revealed the functions.[1]



The structure and dimensions of the DNA molecule.

Little by little, the so-called 'junk' DNA is revealing its functions.[2] In a further revelation, researchers have found that mutations in an intron interfere with imprinting, the process by which only certain maternal or paternal genes are expressed, not both. Expression of both genes results in a variety of diseases and cancers.[34] The discovered intron segment in some way promotes the transcription of an antisense-RNA sequence which is involved in suppressing the expression of the paternal gene in this case.

The burgeoning field of molecular biology continues to reveal unimagined complexity in the biochemistry of cells. It would be foolish indeed to pronounce anything as 'junk'. Like the 'vestigial organs' idea, it seems that evolutionary ideas about the molecular machines in cells feed on lack of knowledge.

REFERENCES

1. Bergman, J. and Howe, G., 1990. **'Vestigial Organs' are Fully Functional,** Creation Research Society Books, Terre Haute, Indiana, USA.
2. Wieland, C, 1994. Junk moves up in the world. **CEN Tech. J., 8(1):** 125.
3. Reik, W. and Constancia, M., 1997. Making sense of antisense? **Nature, 389:669-671.**

D. J. Batten

Bird-Dinosaur Link Challenged

Most palaeontologists not only believe that birds evolved from dinosaurs, they have also convinced themselves that *'Birds are dinosaurs*'.[1] Kevin Padian and Paul Olsen assert:

> *'The footprints of ratites should be of special interest to dinosaurian paleontologists because birds are living dinosaurs. Their origin from Mesozoic coelurosaurian theropods is now beyond reasonable dispute. . . . By cladistic convention, birds must be classified as theropod dinosaurs because they evolved from theropod dinosaurs.'*[2]

Theropods are small, bipedal carnivorous dinosaurs. This conventional view has reinforced the belief that *Archaeopteryx* is a feathered dinosaur. Cladistics has shown a number of morphological similarities between birds and theropod dinosaurs, such as the similarity in limb structure, with their wing/forelimb structure reduced from five digits to three (see Figure l).[3] These similarities are assumed to be shared-derived characteristics based on evolutionary ancestry. However, two recent research results published in the journal, **Science,** strongly question their faith based on morphological similarity.

Ann Burke and Alan Feduccia compared the embryological development of the forelimbs in an alligator, turtle, and several types of birds.[4] Living tetrapods, including birds, develop hand digits II-III-IV, losing I and V in embryological development. On the other hand, theropod dinosaurs developed their forelimbs by the growth of digits I-II-III, based on fossils showing the reduction of digits IV and V. Thus, the development of the theropod hand is unusual for a tetrapod. The problem for the supposed evolution from dinosaurs to birds is that the embryological development for homologous structures should be similar. Feduccia considers that this evidence makes the evolution of birds from theropods virtually impossible, but Padian says Burke and Feduccia's research is *complete nonsense* '.[5]

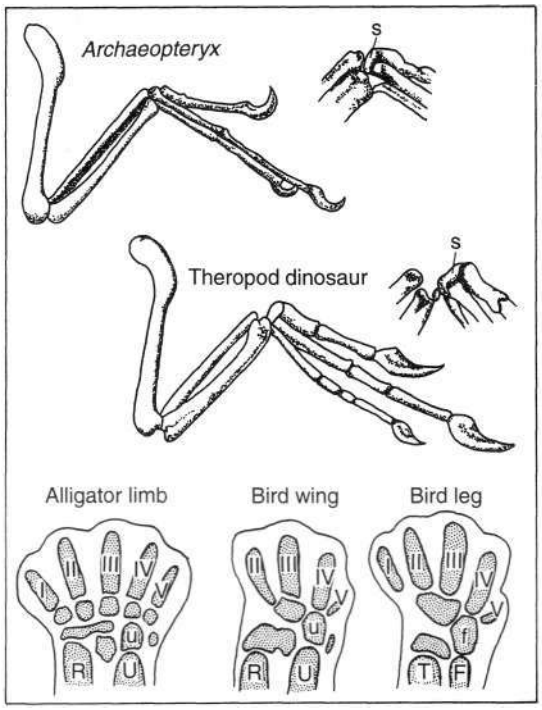


Figure 1. *The similarity of the foreiimbs of* Archaeopteryx *(top) and the theropod dinosaur* Deinonychus *(middle) maybe due to 'convergence', not a common evolutionary line.[3] Probably, the three dinosaur digits are I-II-III, whereas bird wing digits are II-III-IV, on the basis of evidence from embryos.[4] The pattern of development of digits is very similar in bird wing and leg (bottom middle and right) and in the alligator (bottom left), an archosaur reptile and the birds' closest living relative. F, fibula; f, fibulare; R, radius; s, semilunate; T, tibia; t, tibiale; U, ulna; u, ulnare. Digit rays are numbered; phalanges are not drawn.*

In the second study, John Ruben, a respiratory physiologist, and his graduate students report fossil observations of the internal organs of a theropod, which they compare to modern tetrapods.[6] While examining the so-called feathered dinosaur from China, Ruben noticed that the soft tissues of the fossil were preserved. (It is interesting that this 'feathered dinosaur', which made the front page of **The New York Times,** was thought to confirm the dinosaur-bird link by some palaeontologists. But now, experts including Ruben view the unique structures in question as not modern feathers but probably collagenous fibres from beneath the skin.[7] This same fossil now is providing evidence against the dinosaur-bird link.) Ruben discovered that this theropod had lungs, liver and intestines similar to crocodiles — the thoracic cavity containing lungs, liver and heart separated by a diaphragm from the abdominal cavity containing the intestines. So by one observation, Ruben and colleagues now challenge both the dinosaur-bird link and the warm-blooded dinosaur theory:-

> '. . . *Ruben uses this lung evidence to argue not only that dinosaurs were incapable of the high rates of gas exchange needed for warm-bloodedness, but also that their bellowslike lungs could not have evolved into the high-performance lungs of modern birds.*'[8]

Ruben concludes,

> '. . . *that a transition from a crocodilian to a bird lung would be impossible, because the transitional animal would have a life-threatening hernia or hole in its diaphragm*'.[9]

The critics of the dinosaur-bird transition believe that both dinosaurs and birds evolved from a common ancestor, probably thecodonts, reptiles from the Triassic Period of geological time characterised by their teeth set in sockets and other unique features.[10] One of the reasons for this previous belief is that thecodonts and birds possess a clavicle or a wishbone, which the dinosaurs supposedly lost. The dinosaur-bird link gained momentum in the 1970s when it was discovered that some dinosaurs possessed a clavicle.[11] A recent report even claims that *Velociraptor* had a furcula (two fused clavicles).[12] Nevertheless, the main problem with the thecodont-bird link

> '. . . *is the long evolutionary gap, with no convincing intermediates*'.[13]

Most palaeontologists are not accepting the evidence against the dinosaur-bird link because they believe there are too many similarities between theropods and birds, and the evidence for the link is believed to be growing.[5] However, there is a fair amount of evidence against this link, such as:

(1) a low lung ventilation rate in dinosaurs compared with birds and mammals based on the area of the nasal passage;
(2) the curvature of the claws of *Archaeopteryx* that were adapted to the trees and not running on the ground;
(3) the relatively small theropod forelimb in comparison to the *Archaeopteryx* wing;
(4) the difficulty of comparing the wrist bones; and
(5) the temporal paradox that most theropods are very much later in the mainstream fossil dating scheme than *Archaeopteryx.*[13-15]

So, there are both similar and

dissimilar morphological structures between theropods and birds.

This brings up the whole question within the evolutionary scheme of what is a shared-derived characteristic and what is due to so-called convergence — the development of similar structures in similar environments. It is difficult for me to theoretically understand how convergent evolution could work, due to all the many subtle differences between present similar environments, the rarity and randomness of mutations, the lack of direction and the conservative nature of natural selection, and the multitudinous pathways that organisms could have taken. Regardless, this whole enterprise of deriving evolutionary relationships based on cladistics, big business within evolutionary biology, is subjective. As exemplified by the controversy of linking theropods to birds, what person on Earth can objectively choose which morphological or genetic trait is a shared-derived characteristic and which is due to 'convergence'? The evidence points more to a Creator Who made each organism unique, often with similar structures to be used in similar environments.

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REFERENCES

1. Fastovsky, D. E. and Weishampel, **D. B.,** 1996. The **Evolution and Extinction of the Dinosaurs,** Cambridge University Press, New York, p. 293.
2. Padian, K. and Olsen, P. E., 1989. Ratite footprints and the stance and gait of Mesozoic theropods. *In:* **Dinosaur Tracks and Traces,** D. G. Gillette and M. G. Lockley (eds), Cambridge University Press, New York, p. 232.
3. Hinchliffe, R., 1997. The forward march of the bird-dinosaurs halted? **Science,** 278:596-597.
4. Burke, A. C. and Feduccia, A., 1997. Developmental patterns and the identification of homologies in the avian hand. Science, 278:666-668.
5. Monastersky, R., 1997. Biologists peck at bird-dinosaur link. **Science News, 152:3**11.
6. Ruben, J. A., Jones, T. D., Geist, N. R. and Hillenius, W. J., 1997. Lung structure and ventilation in theropod dinosaurs and early birds. **Science,** 278:1267-1270.
7. Gibbons, A., 1997. Plucking the feathered dinosaur. **Science,** 278:1229.
8. Gibbons, A., 1997. Lung fossil suggest dinos breathed in cold blood. **Science, 278:**1229.
9. Gibbons, Ref. 8, p. 1230.
10. Carroll, R. L., 1988. **Vertebrate Paleontology and Evolution,** W. H. Freeman and Company, New York, pp. 268-276.
11. Hinchliffe, Ref. 3, p. 596.
12. Norell, M. A., Makovicky, P. and Clark, J. M., 1997. A *Velociraptor* wishbone. **Nature, 389:447.**
13. Hinchliffe, Ref. 3, p. 597.
14. Ruben, J. A., Hillenius, W. J., Geist, N. R., Leitch, A., Jones, T. D., Currie, P. J., Horner, J. R. and Espe III, G, 1996. The metabolic status of some Late Cretaceous dinosaurs. **Science,** 273:1204-1207.
15. Oard, M. J., 1993. *Archaeopteryx* was a bird. **Creation Research Society Quarterly,** 30:16.

M. J. Oard

New Australian Fossil Find Threatens to Upend Mammal Evolution

A tiny fossil jawbone, found in March 1997 when a rock was cracked open on a beach at Flat Rocks in Victoria (southern Australia), could turn the accepted picture of mammalian evolution upside down.[12] Claimed to be 115-120 million years old (Early Cretaceous in evolutionary/ uniformitarian terminology) based on 'fossil' dating of pollen spores and U-Th-Pb dating of detrital zircon grains in the same rock unit,[3] this piece of bone with four teeth embedded in it (Figure 1) is regard by Dr Tim Flannery, mammologist at the Australian Museum in Sydney, as *'the find of the century'*.[1] Says Richard Cifelli, curator of vertebrate palaeontology at the Oklahoma Museum of Natural History, *'It will have the scientific world at the edge of its seat.'*[4]

The jawbone is a mere 16 mm (about $^2/_3$ of an inch) long with teeth less than 1.8 mm ($^1/_{20}$ of an inch) high that are 'adapted' for slicing and crushing food — a feature not found in monotremes.[1,4,5] The jaw found has three molars and five premolars, which is typical of placentals, compared with marsupials which usually have four

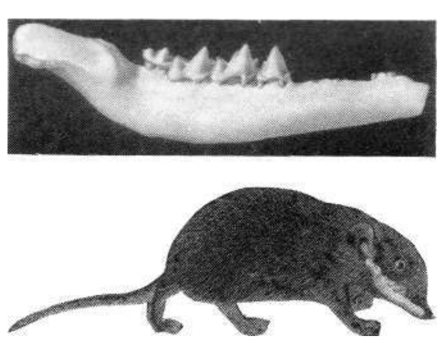

Figure 1. *The 16 mm long portion of jawbone (top), with four teeth embedded in it. A restoration (bottom) shows what the living animal might have looked like (~8.5 cm long) with the jawbone's position highlighted.*

molars and three premolars. Leaders of the discovery team, palaentologists Tom Rich of the Museum of Victoria in Melbourne and wife Patricia Vickers-Rich of the Earth Sciences Department, Monash University in Melbourne, have called the reconstructed animal to which the jaw belonged *Aukstribosphenos nyktos*, a rat-sized, insect-eating creature (see Figure 1) which co-existed with dinosaurs at a time we are told when southern Australia lay within the Antarctic Circle. It then became extinct, presumably leaving no descendants.

So why all the fuss over these few tiny bones? The family tree of mammals is 'rooted' more than 200 million years ago. Most palaeontologists believe that monotremes arose early and that the 'higher' mammals (placentals and marsupials)