

GEOSCIENCE NEWSLETTER

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GEOSCIENCE RESEARCH INSTITUTE NEWS

GRI Website

The latest news in science and origins can be found on our website, at <http://www.grisda.org/links/WHATSOEVER.htm>. News postings are gathered from a variety of scientific, religious, and popular sources. Among recent postings are reports of Precambrian plate tectonics, a Lower Cretaceous fossil spider web, X-raying a fossil dinosaur to see its internal organs, a surprisingly modern Lower Cretaceous fossil diving bird, and Australian stromatolites and flood basalts.

GRI Authors

Three members of GRI have contributed to recent books. Ben Clausen wrote a major portion of a book, tentatively titled *Beginnings*, which will be available later this year. Tim Standish contributed a chapter to *Darwin's Nemesis: Phillip Johnson and the Intelligent Design Movement*, edited by



View of campus at Sagunto, Spain. Photo from the school's website, www.seades.com.

Rick Santorum and William A. Dembski (2006). Tim also wrote a chapter in *The Big Argument: Twenty-four scholars explore how science, archaeology and philosophy have proven the existence of God*, edited by John Ashton and Michael Westacott (2006). Jim Gibson contributed four chapters to the revision of Harold Coffin's book, *Origin by Design* (2005).

GRI Teaching Activities

Two GRI staff members taught courses in science and faith recently. Raúl Esperante taught a class at the Spanish Adventist Seminary in Sagunto,

near Valencia, Spain. Tim Standish lectured to 17 elementary and high school teachers at Columbia Union College, in Maryland.

IN THE NEXT ISSUE...

Look for a report of our Field Conference in Colorado. Below is a photo of one of the field stops scheduled on our route.



Tilted strata of the Permian Lyons Formation, Garden of the Gods, Colorado Springs, Colorado. Photo by Ben Clausen.

SCIENCE NEWS

The Puzzle of Poison Frogs

Clark VC, Raxworthy CJ, Rakotomalala V, Sierwald P, Fisher BL, II. 2006. Convergent evolution of chemical defense in poison frogs and arthropod prey between Madagascar and the Neotropics. *Proceedings of the National Academy of Sciences (USA)* 102(33): 11617-1162. (Annotation by Henry Zuill.)

Summary. It is well known that Neotropical species sequester "defensive" lipophilic basic alkaloids obtained from several different food arthropods, mostly ants, rendering the frogs highly poisonous. However,



Dendrobates azureus, Blue Poison Frog. Photo copyright 2005, John White. CalPhotos.

sources of Malagasy frog alkaloids were unknown until the authors discovered that these frogs had a diet of similar arthropods. GC-MS analyses enabled linkages between frogs, alkaloids, and

food sources, many of which could also be identified from frogs' stomach contents. Some alkaloids sequestered by Malagasy frogs appear unique.

These similar defensive mechanisms in Malagasy and Neotropical frogs are attributed to convergent evolution in which alkaloid sequestration was thought to have driven the evolutionary convergence of aposematic (bright warning) coloration.

Comment. Those who see evidence for design in ecology are, at the same time, challenged by negative relationships in nature. This study suggests how one such relationship could have originated.

Ultimately, nothing new has been shown to have evolved. Both groups of frogs must have already possessed tolerance to ant alkaloids before they could eat the ants. It may be that an already present mechanism for alkaloid tolerance was up-regulated, but variation of this kind is not controversial. What is controversial is whether frogs, or any other creature, can use random mutation coupled with natural selection to create novel genes.

Global Warming and Evolution

Bradshaw WE, Holzapfel CM. 2006. Evolutionary response to rapid climate change. *Science* 312:1477-1478.

Summary. Global warming over the past 40 years has caused changes in the way plants and animals behave. The fastest climate change is occurring in regions toward the poles, causing them to be more similar to temperate climates. Within a period of five years, some North American mosquitoes adjusted the time for initiation of larval dormancy. British blackcaps (birds) are more often overwintering in Britain, giving them the advantage of first occupancy over migrating individuals. Canadian red squirrels are reproducing earlier, taking advantage of earlier production of cones by spruce trees. This change was accomplished within a period of 10 years.



Red squirrel in Rocky Mt National Park.

Comment. Global warming has serious implications for conservation because in many places human development has blocked northward dispersal

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of organisms. This factor, along with reduction of cool-climate habitat, especially in places such as desert and tropical mountains, will likely cause extinction of some species, along with many local extirpations.

Dinosaur grass

Prasad V, Stromberg CAE, Alimohammadian H, Sahni A. 2005. Dinosaur coprolites and the early evolution of grasses and grazers. *Science* 310:1177-1126. See also: Piperno DR, Sues H-D. 2005. Dinosaurs dined on grass. *Science* 310:1126-1128.

Summary. Plant cell walls often contain silica, which does not decompose readily after death of the plant. Cell wall fragments containing silica are



Quaking grass (Briza). One of over 8000 species of grasses.

known as phytoliths, and come in numerous shapes that can frequently be linked to specific types of plants. At least five types of phytoliths have been reported from the upper Cretaceous Lameta Formation of India, in fossil dung believed to be from herbivorous dinosaurs. The dinosaurs that produced the fossil dung are probably the titanosaurs, which were large herbivorous sauropods. The phytoliths have features characteristic of a variety of types of grasses, including bamboos. Scientists were surprised to find evidence that grasses existed together with dinosaurs; grass supposedly had not yet evolved when dinosaurs existed.

Comment. The diversity of grass phytoliths indicates that grasses must have been present with the dinosaurs,



A probable dinosaur coprolite, from the Morrison Formation of Utah.

and that, at their first appearance, there were already several different types in existence. This serves as another reminder of the incompleteness of the fossil record, as expressed in the aphorism, "Absence of evidence is not evidence of absence."

How Often is Research True?

Ioannidis JPA. 2005. Why most published research findings are false. *Public Library of Science* (www.plosmedicine.org) 2(8):e124.

Summary. This paper concludes that most medical research studies that rely on probability statistics to claim a relationship of a factor with an effect are wrong. Factors that improve reliability of results include a high probability that the finding might be true purely by chance, high power of the statistical test to find true positive results, and a high level of statistical significance. Factors increasing the probability of false results include small studies, small effects, greater flexibility in experimental design, and greater financial implications.

Comment. This analysis is based on medical research where reliability of results is evaluated with statistical tests. This is good experimental science, with control groups, defined experimental protocols, contemporaneous observers, and statistical testing. Despite the scientific methodology, the probability of a reliable result, according to Ioannidis, is less than 50%. One may ponder whether studies of earth history, which generally lack controls and contemporaneous observers, are likely to be more reliable than the studies evaluated here.