GEOSCIENCE NEWSLETTER

Number 10 July 2007

PYRENEES FIELD CONFERENCE REPORT

Participants pause at Santuary de Queralt for a group photo.

A Field Conference for educators was conducted in the Spanish Pyrenees during July, 2007. The Conference was sponsored by the Department of Education for the Euro-Africa Division, and GRI. A total of 26 persons spent eleven days studying the geology of the region at more than 25 sites. Field excursions were complemented by more than 20 lectures dealing with topics in science and creation.

Dr. Raúl Esperante organized the field conference and led the field work, ably assisted by Drs Ronald Nalin, Jacques Sauvagnat and Roberto Biaggi, all from GRI.

Dr. Raúl Esperante, leader of the Conference, explains some geology to General Conference Vice-President Dr. Ted Wilson and Dr. Humberto Rasi, former director of the General Conference Department of Education.

The Pyrenees are believed to have formed when the smaller Iberian plate collided with the large European plate. The two plates had previously been separated by deep water, and the collision pushed up sediment from the seafloor, creating majestic mountain peaks made of spectacularly folded and faulted sedimentary layers.

Depositional environments ranged from alluvial and fluvial, to continental slope, to deep-sea, with abundant evidence of high-energy events on a wide regional scale, rapidly producing dramatic geological changes. Exposures of thick sequences of turbidites are among the best examples in the world.

Example of folded turbidites.

Amidst the evidence of catastrophic activity one could find evidence of animal activity, including the tracks of dinosaurs and fossil traces of a wide diversity of invertebrates.

Both in the field and in lectures, participants were reminded that there is evidence both for and against the major interpretations of earth history, so that while one may have legitimate convictions, we can never claim to have answers to all the questions.

Uplifted surface containing abundant dinosaur tracks.

Members of the group photograph trace fossils in the street paving of the town of Siresa.

Geoscience Newsletter is an e-publication of the Geoscience Research Institute, 11060 Campus Street, Loma Linda CA 92350 USA.

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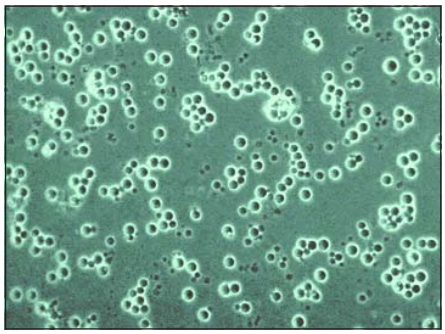
GRI WEBSITE

The "What's New" section of the GRI website has many links to recent articles in science and discussions of design in nature. See the latest at:
http://www.grisda.org/links/WHATS-NEW.htm

A relatively new addition to our website is a collection of scholarly articles written by theologians, addressing issues concerning the text of Genesis 1-11, its exegesis and theological implications. See the list of articles at:
http://www.grisda.org/resources/GRI_ref-sda-theo.htm

SCIENCE NEWS



Cells of the yeast, Saccharomyces cerevesa. *Courtesy of Karsten Kettner, http://www.yeastgenome.org/yeast_images.shtml*

Genes and Speciation

Dettman JR, Sirjusingh C, Kohn LM, Anderson JB. 2007. Incipient speciation by divergent adaptation and antagonistic epistasis in yeast. Nature 447:585-588.

Summary. Reproductive isolation is the crucial step in speciation. In the 1930s, Dobzhansky and Muller proposed that reproductive isolation might develop as a by-product of selection for different environments. To test this idea, twelve yeast populations were derived from the same progenitor and cultured for 500 generations in one of two contrasting environments. Each of the populations increased in fitness for its selected environment, but decreased in fitness for other environments. Hybrids from the two environments showed postzgotic isolation through reduced efficiency in meiosis and reduced rate of mitosis. Two genes with reduced expression were identified as potential causes of the incipient reproductive isolation. These results support the Dobzhansky-Muller model of ecological speciation.

Comment. These results are consistent with some other recent reports, and offer an interesting possibility for rapid speciation. For example, suppose that, immediately after the flood, a species dispersed into an uninhabited continent. With few predators or competitors, the invading species could spread out over many habitats and experience a population flush. As the population increased, intraspecific competition would arise, with selection for different adaptations in different habitats. The resulting genetic differences could accumulate and produce incompatabilities that result in reproductive isolation of numerous differently adapted populations in a relatively short span of time. Such a scenario could produce many species simultaneously rather than a series of species dividing pairwise over an extended period of time.

Dog size has a genetic basis

Sutter NB, Bustamante CD, Chase K, Gray MM, Zhao K, Zhu L, Padhukasahasram B, Karlins E, Davis S, Jones PG, Quignon P, Johnson GS, Parker HG, Fretwell N, Mosher DS, Lawler F, Satyaraj E, Nordborg M, Lark KG, Wayne RK, Ostrander EA. 2007. A single IGF1 Allele is a Major Determinant of Small Size in Dogs. Science 316:112-115.

Summary. Dogs are noted for diversity in size, and now this has been correlated with a specific DNA sequence in the gene IGF1, which produces a protein known as insulin-like growth factor. Of 463 Portuguese water dogs studied, nearly all had one of two sequences, either sequence "B" or sequence "I." Dogs with sequence "I" are larger breeds, while those with sequence "B" are small. Rottweilers are an exception; they have sequence "B" but are large. It appears that sequence differences in this gene are important factors in determining size.

Comment. This study is a reminder that small genetic differences can sometimes account for large morphological differences. Species with genetic systems such as this may be able to diversify into many morphological forms in a relatively short time period, as appears to be the case with domestic dogs and their wild relatives.

Chihuahua, a small-sized dog.

http://commons.wikimedia.org/wiki/Image:WhiteTanChihuahua.jpg

Collagen from fossil dinosaur

Asara JM, Schweitzer MH, Freimark LM, Phillips M, Cantley LC. 2007. Protein Sequences from Mastodon and Tyrannosaurus rex *Revealed by Mass Spectrometry. Science 316:280-285.*

Summary. Collagen is a type of protein common in connective tissues of mammals. Fragments of collagen have been recovered from a fossil mastodon and a fossil dinosaur. The amino acid sequence of the collagen was sequenced by mass spectrometry.

Skull of Tyrannosaurus rex. *Courtesy of Royal Tyrell Museum, Alberta.*

The mastodon collagen was more easily isolated and present in longer sequences than was the dinosaur collagen. At least four short sequences were unique to the mastodon. Dinosaur collagen was more degraded, but still could be aligned with collagen from other vertebrates. Mass spectrometry can be a useful tool in studying tiny amounts of protein.

Comment. Collagen is an important and very common protein that has been reported from numerous other fossils. Preservation of soft tissue was reported for the same dinosaur specimen, so the identification and sequencing of collagen seems well established. It is less clear how such material could survive intact for millions of years. This report seems less surprising to those who favor a short chronology for the presence of life on Earth.