GEOSCIENCE NEWSLETTER

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GRI ACTIVITIES

Using the GPS in the Peruvian desert.

Research in Peru

A team of researchers led by GRI's Raúl Esperante spent three weeks during January in the Peruvian desert. This ongoing project has produced several interesting discoveries, the latest of which includes abundant petrified wood, and even more fossil whales.

Research in Spain

Root traces in a road cut in Spain.

In June Raúl spent three weeks doing research in Spain. He discovered some root traces that were deposited between layers of shallow marine sediments. Their exceptional quality of preservation indicates rapid burial, and raises intriguing questions about their origin and explanation.

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Italy Field Conference

The GRI led a field conference on science and the Bible in northeastern Italy from June 23 to July 2, 2014. The group included 43 administrators, educators and spouses representing 14 countries from the Inter-American Division of Seventh-day Adventists.

The Field Conference group pauses for a photo in the Dolomites.

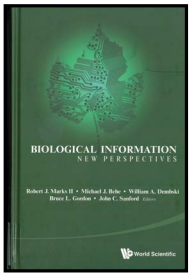
Conference highlights included a visit to the University of Padova, where Galileo Galilei taught science from about 1593 to 1610. The experience of Galileo serves as a continuing reminder of the dangers of using current scientific theories as a basis for Christian religious belief, inevitably causing conflict when the science changes.

Other highlights included a visit to the famous Bolca lagerstätten museum, a hike to see dinosaur footprints, and a visit to Vajont, scene of a catastrophic flood in 1963. The spectacular scenery of the Dolomites, a region of the Southern Alps, provided a memorable experience of breath-taking scenery, exquisite montane flowers and amazing geological wonders.

Ronny Nalin explains the catastrophic Vajont Dam disaster to the group.

LITERATURE REVIEW

***Biological Information: New Perspectives**. 2013. Marks RJ, Behe MJ, Dembski WA, Gordon BI, Sanford JC (editors). Singapore: Wild Scientific Publishing. $143.50 on Amazon.com.*



In 2011 a conference exploring aspects of information theory was held at Cornell University. This book provides reports from the conference, with 26 chapters and more than 560 pages. Topics are organized into four sections: biological information and biology; biological information and genetics; theoretical molecular biology; and biological information and self-organizational complexity theory. The first three sections are written from a standpoint sympathetic to the idea of intelligent design. Authors in the final section are still seeking elsewhere for an explanation for the origin of life.

The tone of the book is scholarly, and the reader will need some background in the various topics covered, but the effort will be amply rewarded with helpful insights in understanding the nature of biological information.

SCIENCE NEWS

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Heredity By Membrane?

Wells J. 2014. Membrane patterns carry ontogenetic information that is specified independently of DNA. BioComplexity 2014(2):1-28. doi: 10.5048/BIO-C.2014.2

Xenopus *tadpoles, one of the examples used by Wells. Photo Copyright Quasihuman, Wikimedia Commons, license Creative Commons Attribution- Share Alike 3.0 Unported.*

Summary. Genetic control over development is thought to be carried out by developmental gene regulatory networks (dGRNs), and development has often been compared with a computer program, in which information in the DNA completely specifies the developmental process. However, developmental growth begins at predetermined locations in the plasma membrane that are not determined by DNA sequences. Cytoskeletal positioning also affects development, but this paper focuses on the effects of membrane structure. Patterns in membrane structure are not subject to mutations in DNA, which means that the type of repatterning needed by Neo-Darwinian theory cannot be explained merely by mutation. Thus, the Neo-Darwinism explanation for the origin of morphological novelties is false.

Comment. This paper helpfully reminds us of how much we have to learn about embryological development, and how much of evolutionary theory is based upon the logical deductions of materialistic philosophy rather than empirical demonstration.

Maternal Nutrition Affects Grandchildren's Genes

Dominguez-Salas P, Moore SE, Baker MS, . . . BJ Hennig, et al. 2014. Maternal nutrition at conception modulates DNA methylation of human metastable epialleles. Nature Communications 5:3746. doi:10.1038/ncomms4746

Summary. This study investigated the effects of maternal diet on genes of the offspring in a population of women in the Gambia, a small country in West Africa. Available nutrition in the Gambia varies widely, depending on the season. Children conceived during the rainy ("hungry") season had higher rates of gene methylation than those conceived during the dry ("harvest") season. Nutritional factors correlated with these epigenetic effects included vitamin B2, homocysteine, and cysteine. Methylation is believed to turn off gene expression, and is associated with a number of important cellular processes including development and cancer, and may be inherited for several generations. Results show that maternal nutrition may have permanent effects on the phenotype of the children and their children for an unknown number of generations.

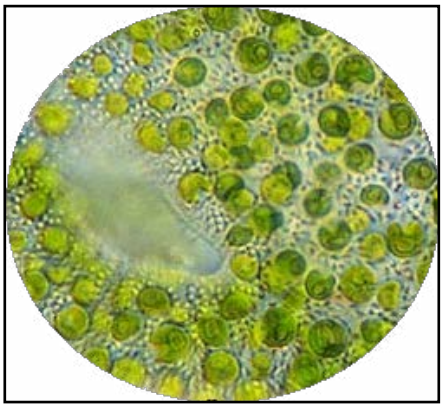
Mother and child in northern Ghana. Photo Copyright DFID-UK Dept for International Development. License Creative Commons Attribution-share Alike 2.0 Generic.

Comment. The importance of maternal health and nutrition on the child is intuitively expected, but the fact that poor maternal nutrition may have epigenetic effects on the unborn child, and these may last several generations is sobering. Thus, humans and other organisms are exquisitely designed to adapt rapidly to environmental changes without the permanent DNA mutations central to neo-Darwinian theory.

For further reading: *Rechavi O. 2014. Starvation-induced transgenerational inheritance of small RNAs in* C. elegans. *Cell July 17, 2014. http://dx.doi.org/10.1016/j.cell.2014.06.020*

Crude Oil In A Day?

Elliott DC, et al. 2013. Process development for hydrothermal liquefaction of algae feedstocks in a continuous-flow reactor. Algal Research 2(4):446-454. Doi: 10.1016/j.algal.2013.08.005



Chlorella*, as seen in microscope. Photo Copyright: VladiDamian. GNU free documentation license 1.2. Used by permission.*

Summary. Wet masses of marine algae (*Nannochloropsis oceanica*, *Chlorella* sp.) were subjected to heat (350 C) and pressure (20 MPa), in a process called hydrothermal liquefaction. Crude oil was obtained in a few hours to a day, depending on the source, concentration of starting material, and quality of product. This process has potential for further refinement and commercial application.

Comment. Production of oil in a short time from raw plant or algal materials has been reported several times, but this report may show that such processes could become economically viable with some improvements in technology. Certainly, a year-long global catastrophe involving massive plate movements could provide the conditions that promote conversion of biomass to crude oil.