

experimental constraints. It's good for the animals and good for science.

Cindy A. Buckmaster

Graduate Student, Department of Neurobiology and Behavior, State University of New York, Stony Brook, NY 11794-5230, USA. E-mail: cindy_buckmaster@fishmailserver.mssm.neuro.u

Conn and Parker are justified in their concerns that the animal rights movement may harm scientific research, but I fear that their arguments may set their cause back even further. The strategies they propose are essentially public relations moves and, while they have their place (as the animal rights movement well knows), they still leave the key philosophical issue unanswered: do animals have rights that preclude their use by us in scientific research?

Thomas A. Shannon

Department of Humanities and Arts, Worcester Polytechnic Institute, Worcester, MA 01609, USA. E-mail: tshannon@wpi.edu

Spanish Natural History Museum

The Museo Nacional de Ciencias Naturales (MNCN, Spain) has a serious problem: around 67% of its total floor space (40,000 square meters) is taken up by the Technical School of Industrial Engineering. The MNCN is located in downtown Madrid, close to the Prado gallery. It was founded in 1772 by King Charles III and, for more than a century, was one of the most important museums in the world; in fact, the present Prado museum building was initially designed by Charles III to be used as the Natural History Museum. In 1915, the MNCN was moved, together with the Technical School of Industrial Engineering, to its present location (a palace built in 1887).

The MNCN has one of the most important natural history collections in Spain, with around 6 million biological and geological specimens, including unique samples from scientific Spanish expeditions to Latin America (for example, those of Humboldt, Malaspina, and Heuland), extinct species of unusual shells from the Far East, meteorites that fell 400 years ago, and the first naturalized paleovertebrate in the world. Many important educational and research projects are directed from the museum, including the Atapuerca "Homo Antecessor" project; studies of Iberian fauna; geophysics and volcanic research on Teide Volcano and in Antarctica; and research on global climate change.

The Spanish Research Council (CSIC) is the institution responsible for the scientific and cultural activities of the MNCN. However, its economic and scientific support is severely handicapped by the pres-

ence of the Technical School of Industrial Engineering in the heart of the building. This situation not only causes a lack of space for laboratories to house new modern analytical techniques, but also splits the exhibition halls into two separate areas. Visitors (80% are groups of children) are forced to move from one area to the other, while avoiding traffic and carpark barriers.

The MNCN urgently needs to solve this problem. Now that other Spanish museums (for example, the Prado) are expanding to surrounding buildings, it seems appropriate that both the UNESCO International Committee for Museums and Collections of Natural History and the Spanish authorities monitor and correct this unusual assemblage of two centers on the same premises.

Javier Garcia-Guinea

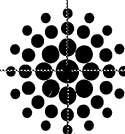
Jesús Martínez-Frías

Departamento de Geología, Museo Nacional de Ciencias Naturales, Consejo Superior de Investigaciones Científicas (CSIC), Jose Gutierrez Abascal 2, 28006 Madrid, Spain. E-mail: guinea@mncn.csic.es, martinezfrias@mncn.csic.es

Animal Domestication

In her article "The slow birth of agriculture" (Special Section, Archaeology, 20 Nov., p. 1446), Heather Pringle outlines

some recent archaeological developments that have been used to push back the dates for crop and livestock domestication. The article provides an interesting perspective on how demographic approaches can be used to glean new information from existing sites and how these data are changing our views on the early origins of agriculture. The map used to illustrate the article suggests that cattle were domesticated in the Near East, with a putative secondary domestication in North Africa. However, there is a considerable body of archaeological and genetic evidence that supports a separate domestication of humped zebu cattle, most likely by the early Neolithic cultures of the Kachi Plain in present-day Baluchistan (1). Recent surveys of genetic variation in contemporary cattle populations have provided strong evidence for an independent domestication of zebu cattle (2). In addition, based on these same data, there is tentative evidence that African taurine cattle may also have an independent origin (3). Molecular studies in other domesticated species such as pigs (4) and sheep (5) have also produced similar results and suggest that the earliest herders were not confined to the Near East. One should be aware that there is a traditional



ARA
a focus on
the science

Call for Proposals

**\$50,000 for 1 year with the potential
for funding for 2 years**

The mission of the ARA is to provide research awards to outstanding investigators planning careers in academic research. The ARA will support research into the basic mechanisms of disease that may broadly involve:

- Lipid metabolism and/or vascular biology
- HMG-CoA reductase pathways or novel effects of statins

Research may be in any of the following areas:

- Neuroscience
- Cardiovascular medicine:
 - Atherosclerosis
 - Vascular biology
 - Lipoprotein metabolism
 - Thrombosis
- Diabetes
- Endocrinology
- Inflammation/Immunology
- Oncology

For information or a grant brochure fax your contact information to: Grant Coordinator, 212-308-1191; or send an E-mail message to: mmm@inch.com.

Application Deadline: April 1, 1999



Circle No. 34 on Readers' Service Card

SCIENCE'S COMPASS

Near Eastern focus on the origins of animal husbandry that is primarily an artifact of the history of archaeological exploration.

Ronan T. Loftus
David E. MacHugh
Patrick Cunningham
Daniel G. Bradley

Department of Genetics, Smurfit Institute, Trinity College, Dublin 2, Ireland. E-mail: rloftus@tcd.ie

References

1. R. H. Meadow, in *The Origins and Spread of Agriculture and Pastoralism in Eurasia*, D. R. Harris, Ed. (University College London Press, London, 1996), pp. 390–412.
2. R. T. Loftus, D. E. MacHugh, D. G. Bradley, P. M. Sharp, P. Cunningham, *Proc. Natl. Acad. Sci. U.S.A.* **91**, 2757 (1994); D. E. MacHugh, M. D. Shriver, R. T. Loftus, P. Cunningham, D. G. Bradley, *Genetics* **146**, 1071 (1997).
3. D. G. Bradley, D. E. MacHugh, P. Cunningham, R. T. Loftus, *Proc. Natl. Acad. Sci. U.S.A.* **93**, 5131 (1996).
4. T. Watanabe, Y. Hayashi, N. Ogasawara, T. Tomoita, *Biochem. Genet.* **23**, 105 (1985).
5. S. Hiendleder, K. Mainz, Y. Plante, H. Lewalski, *J. Hered.* **89**, 113 (1998).

Carbon Sink: A Clue from Biosphere 2?

The possibility of a “vast greenhouse gas sponge,” or carbon sink, existing in North America (J. Kaiser, *News of the Week*, 16

Oct., p. 386) calls to mind the enigma of the progressive decline of oxygen in the atmosphere of Biosphere 2 during the 1991–93 period, when I was the inside physician. The oxygen concentration went from 21% to 14% in approximately 16 months after closure and sealing of the structure, at which time, because of developing hypoxia of the crew, oxygen was pumped in. Carbon dioxide was elevated during most of those 16 months, ranging from about 1200 to 3000 parts per million. Investigation finally revealed that the carbon dioxide was combining with the cement of the structure, carrying oxygen along with it to form calcium carbonate (*1*), hence the fall in oxygen concentration. One notes from Kaiser's article that the alleged carbon sink seems biggest over the eastern seaboard, that is, where there is a high concentration of cities as opposed to forests. I do not suggest that a sink of this magnitude could be explained in this fashion, but thinking wholly in terms of traditional sites of carbon storage on land (forest regrowth, abandoned farmland, soils and wetlands) may not account for the whole story.

Roy L. Walford

Department of Pathology, Medical Center, Univer-

sity of California, Los Angeles, CA 90095, USA. E-mail: rwalford@pathology.medsch.ucla.edu

References

1. J. P. Severinghaus, W. S. Broecker, W. F. Dempster, T. MacCallum, M. Wahlen, *Eos* **75**, 33 (1994).

CORRECTIONS AND CLARIFICATIONS

Contrary to the Editors' note and the photo caption in the Letters section of 1 January (*Science's Compass*, p. 33), Cressy, shown in the photo, was indeed a heifer. Her lactation was induced by hormone treatment, not by bearing a calf. The editors apologize to the readers, to the researchers whose work was described, and to Cressy for the mixup.

In the 18 December NetWatch section (p. 2147), the Web address given for *Science's Breakthrough of the Year* was incorrect. It should have been “www.sciencemag.org/cgi/content/full/282/5397/2156a.”

In the Review Article “Magnetoelectronics” by Gary A. Prinz (*Science's Compass*, 27 Nov., p. 1660), the next-to-last sentence in the first column of page 1662 should have begun, “Spin-polarized tunneling between two ferromagnetic films was first reported in 1975....”

1999 Current Topics in Gene Expression Systems Meeting

March 28-31, 1999
 Catamaran Resort Hotel, San Diego, California

Join researchers from around the world at the fourth Current Topics in Gene Expression Systems Meeting and learn about the latest advances in gene expression technology.

Current Topics in Gene Expression Systems is the leading meeting of its kind. It represents an excellent opportunity for scientists to learn more about emerging technologies in gene expression systems and to interact with leaders in the field. Attendees will be exposed to a diversity of gene expression systems including bacterial, yeast, insect, mammalian, and viral systems.

Space is limited so don't miss your chance to participate in this stimulating, international meeting. For more information about registration or presenting your work in a talk or poster, contact Elizabeth Garon or visit the meeting web site at www.invitrogen.com/99gene_expmtg.html.

Registration deadline: February 26, 1999

Contact:

Elizabeth Garon
 Phone: (760) 603-7208 • Fax: (760) 603-7201
 e-mail: bethg@invitrogen.com

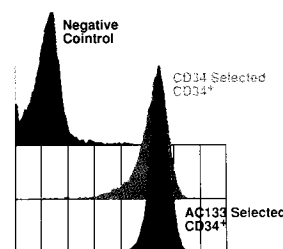
This meeting is cosponsored by
 Invitrogen and Research
 Corporation Technologies



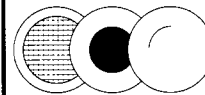
Primary Human Hematopoietic Cells

- Unprocessed bone marrow
- Bone marrow CD34⁺ cells
- CD34⁺CD38⁻ cells
- Cord blood CD4⁺ T cells
- Dendritic cell precursors
- Bone marrow mononuclear cells
- Bone marrow AC133⁺ cells
- Irradiated stromal cells
- Cord blood CD19⁺ B cells
- Committed erythroid progenitors
- 4-species panel of bone marrow mononuclear cells
- Hematopoietic assays (colony assays, LTC-IC and ELISA)

Flow cytometric analysis of human bone marrow progenitors. CD34⁺ progenitor cell purity is >95%. Quantities of 3×10^5 to 2×10^7 cells are available from single or multiple donors. AC133⁺ progenitors, a subset of the CD34⁺ cell population, are also available.



The 1999 Poietic Technologies catalog is now available. Contact us today and we will send you this 8 page listing of all of our products and assays.



Poietic Technologies, Inc.

904 Wind River lane # 102, Gaithersburg, MD 20878
 tel: 888-926-9211; fax 301-926-9224
www.poietic.com

Circle No. 24 on Readers' Service Card