

# STRI newsletter

January 17, 1992

SMITHSONIAN TROPICAL RESEARCH INSTITUTE - Apartado 2072, Balboa, Panama

No. 3

## TUPPER CENTER SEMINARS

Tuesday, Jan 21, noon seminar speaker will be Paul Ewald, Amherst College.

*Transmission modes and the evolution of virulence. (Or, how are nurses like mosquitoes, machetes, moving water, and the mummy's curse?)*

Habr  traducci n simult nea.

### Abstract

Why are some pathogens, like the agents of cholera and malaria, so virulent, whereas others, like the rhinoviruses that causes the common cold, so benign? Evolutionary theory provides ultimate answers to this question by analyzing the relative success of competing pathogens. The success of virulent genotypes depends on the existing routes of transmission. Vectorborne transmission and sit and wait transmission, for example, should favor evolution toward high levels of virulence, and analyses of the literature of human diseases support this hypothesis. But transmission routes may be altered by changes in behavior and culture. Because pathogens of humans can evolve dramatically within a matter of years and even months, our cultural and behavioral changes may inadvertently affect the evolution of pathogen characteristics over short time periods. Although such rapid evolutionary changes have been well documented for characteristics such as antibiotic resistance, the medical sciences have largely overlooked the possibility that cultural changes may cause rigid and striking evolutionary changes in virulence. Application of evolutionary principles to this problem shows that much of the variation in the lethality of human diseases can be explained characteristics of human culture that have inadvertently favored increases or decreases in virulence.



During his recent visit to STRI, Tom Freudenheim, SI assistant secretary for museums, accompanied by Olga Linares STRI (right), met with Eda de Garuz (left), the director of Panama's Museo de Arte Contempor neo, and toured the museum ••• Durante su reciente visita al STRI, Tom Freudenheim, Subdirector Adjunto para Museos de la Instituci n Smithsonian, acompa ado de Olga Linares, STRI (derecha) se reuni  con Eda de Garuz (izquierda), Directora del Museo de Arte Contempor neo, y recorrieron el museo.

(Foto: M.A. Guerra)

## Next Week

Tuesday, Jan 28, noon seminar speaker will be Paul Ewald, Amherst College.

*Human culture, virulence and the parasites of our future: from cholera to AIDS, and beyond. (Or, WHO needs Darwin).*

Habr  traducci n simult nea.

## SPECIAL SEMINARS

Tuesday, Jan 21, 6 pm evening seminar speaker will be Dennis Rasmussen, Animal Behavior Research Institute.

*Food distribution and the spatial structure of a provisional group of stump-tail macaques.*

### Behavioral Group Seminar

The Behavioral Discussion Group invites all interested to an informal evening seminar given by Prof. Rudolf Jander on Wednesday, Jan 22, at 5 pm in the Tupper Meeting Room.

'Curious bees'

**BCI T.R.A.S.H. Seminar**

The following two papers will be discussed at BCI on Thursday evening, Jan 23.

- Bateson, Patrick. 1991. "Assessment of pain in animals". *Animal Behavior* 42:827-839.
- Elwood, Robert. 1991. "Ethical implications of studies on infanticide and maternal regression in rodents". *Animal Behavior* 42:841-849.

If you plan to attend please contact Vicky Liao on BCI to arrange transportation.

**PEOPLE****Arrivals**

- Mary Jane West-Eberhard, STRI scientist, Jan 19-26.
- James La Frankie, Harvard Univ., Jan 18-25, to consult with Richard Condit regarding the Center for Tropical Forest Sciences.
- John Hamilton, Conde Nast Traveler Magazine, Jan 19-20, to interview STRI staff.
- Arriving to attend the meetings of the Oil Spill Scientific Review Board are Dan Aurand, Jeff Brawn, Kathy Burns, Roy Caldwell, Robert Carney, Richard Dodge, Steve Garrity, Roger Green, James Kendall, Sally Levings, Jossi Loya, Mike Marshall and Edward Van Vleet. The meeting will be held from Jan 20-24.
- Paul Ewald, Amherst College, Jan 20-Feb 7, to give seminars on virulence and the evolution of human diseases and to visit STRI facilities.
- Jaren Horsley, Michael Lang, James Roper, Steve Sweeney, from the SI National Zoological Park, Jan 20-31, to work on phylogenetic and systematic analysis of octopus species found on the Pacific coast of Panama.
- Karen Reiss, Cornell Univ., Jan 23-April 20, to work on investigations on the functional morphology of *Tamandua mexicana* on BCI.

**Departures**

- Ross Robertson, STRI marine scientist, Jan 22-Feb 14, on vacation to Brisbane, Australia.

**On Leave**

- Saturnino Martínez, Jan 13-25
- Audrey Smith, Jan 15-Feb 14
- Celideth Mendoza, Jan 21-31
- Ross Robertson, Jan 22-Feb 17
- Nereida Hernández, Jan 27-Feb 8

**THINGS YOU SHOULD KNOW****STRI Holiday ••• Día Libre para el STRI**

Monday, Jan 20, is a STRI holiday (Martin Luther King, Jr day.) ••• *El lunes 20 de enero es un día libre para el STRI (día de Martin Luther King, Jr.).*

**Burch Fellow at STRI**

STRI is hosting the first Smithsonian Burch Fellow in Theoretic Medicine and Affiliated Sciences. Paul Ewald, associate professor of biology at Amherst College, has distinguished himself for his work on the basic evolutionary ecology of birds and mammals and on the evolutionary theory of host-parasite coevolution and virulence in human disease organisms.

The Burch Fellowship was established by the Smithsonian in 1989 in honor of Dr. George E. Burch, Jr. one of the world's foremost cardiologists and former chairman of the department of medicine at the Tulane University Medical School in New Orleans. The Burch bequest will enable the Smithsonian to provide selected scholars with the resources to study the theory and role of medicine and other scientific disciplines in modern society. The role of the fellowship is to permit the recipient time to think with freedom and creativity and thereby stimulate new medically related theories in his or her discipline.

**ANNOUNCEMENTS****At Tupper Center**

- Tue-Fri, Jan 21-24 Lab Safety and Health Course, Exhibit Hall, 8 am-5 pm.
- Wednesday, Jan 22 Amigos de la Biblioteca Meeting, 9-11 am, Small Meeting Room.
- Friday, Jan 24 Fundación NATURA Meeting, 3-5 pm, Large Meeting Room.

**Volunteers Available**

Panamanian high school students are interested in assisting with research projects at STRI. If interested in a volunteer, contact the STRI Office of Education and Conservation.

**Photos Available**

Color photographs documenting the last STRI sporting event are now available. Any person interested in seeing photos or ordering copies, please contact Luis Fernando Garcia at Naos (28-4060, ext 309/327).

**For Sale ••• Se Vende**

Color TV used only 4 months. Hitachi CT 1491 14". \$120. Available after 7 Feb. Call Koji Nakamura at 62-1580 after 9pm ••• *Televisión a colores usada sólo por 4 meses. Hitachi CT 1491 de 14". \$120. Disponible a partir del 7 de febrero. Llame a Koji Nakamura al 62-1580 después de las 9pm.*

### STRI NEW PUBLICATIONS

- Adams, Eldridge S. 1991. "Nest-mate recognition based on heritable odors in the termite *Microcerotermes arboreus*." *Proceedings of the National Academy of Sciences* 88: 2031-2034.
- Andrews, Robin M. 1991. "Population stability of a tropical lizard." *Ecology* 72(4): 1204-1217.
- Dudley, Robert. 1991. "Thermoregulation in unpalatable danaine butterflies." *Functional Ecology* 5(4): 503-506.
- King, David A. 1991. "Correlations between biomass allocation, relative growth-rate and light environment in tropical forest saplings." *Functional Ecology* 5(4): 485-492.
- Leigh, Jr., Egbert Giles. 1990. "Tree shape and leaf arrangement: a quantitative comparison of montane forests, with emphasis on Malaysia and South India." In: *Conservation in Developing Countries: Problems and Prospects. Proceedings of the Centenary Seminar of the Bombay Natural History Society: 119-174.* Bombay: Oxford University Press.
- Mulkey, Stephen S., Smith, Alan P. and Wright, S. Joseph. 1991. "Comparative life history and physiology of two understory Neotropical herbs." *Oecologia* 88: 263-273.
- Rowell, Thelma E. and Mitchel, Betsy J. 1991. "Comparison of seed dispersal by guenons in Kenya and capuchins in Panama." *Journal of Tropical Ecology* 7: 269-274.
- Schupp, Eugene W. and Feener, Jr., D.H. 1991. "Phylogeny, lifeform, and habitat dependence of ant-defended plants in a Panamanian forest." In: *Ant-Plant Interactions: 175-259.* Oxford: Oxford University Press.
- Young, T.P. and Hubbell, Stephen P. 1991 "Crown asymmetry, treefalls, and repeat disturbance of broad-leaved forest gaps." *Ecology* 72(4): 1464-1471.
- Ziska, L.H., Hogan, K.P. Smith, Alan P. and Drake, B.G.. 1991 "Growth and photosynthetic response of nine tropical species with long-term exposure to elevated carbon dioxide." *Oecologia* 86: 383-389.

### POSITIONS AVAILABLE

#### Statistician and Database Manager, STRI

The Center for Tropical Forest Science at the Smithsonian Tropical Research Institute will hire a full time statistician and database manager to work on the Forest Dynamics Projects. The projects produce very large databases of growth and mortality records of individual trees. The position will involve overseeing field work, making corrections to the database, organizing future censuses,

and analyzing the data using DBase, SAS, SYSTAT, C, and FORTRAN on both personal computers and workstations. Requirements for the position include two years of programming experience with personal computers, including knowledge of SAS and at least one other programming language, and considerable knowledge of statistics used in population biology. Publications experience in the biological sciences is preferred. This is a full-time position for one year, with a potential for an additional five years and probably more. Please send a curriculum vitae and letter of interest to: Richard Condit, Smithsonian Tropical Research Institute, Box 2072, Balboa, Ancon, Panama.

#### Research Assistant

The Manomet Bird Observatory has a research assistantship available beginning 15 March. The full-time, year-round position is with the Manomet Bird Observatory's New York Harbor Project to study aquatic bird ecology. The job entails field work in New York City from Apr-Aug and data analysis from Sep-March at the Observatory. The salary ranges from \$16,000-\$20,000 plus benefits (potentially including housing), depending on experience. There is a possibility for renewal in subsequent years. Please send resume, course listing, names and phone numbers of two references and description of research interest and experience to: Catherine C. Parsons, Manomet Bird Observatory, Box 1700, Manomet, MA 02345-1700; Tel: (508) 224-6521.

### TRAINING

#### Bermuda Biological Station Courses

1992 summer courses and scholarships are available at the Bermuda Biological Station for Research, Inc. Scholarships are available for all courses and typically average 60% of the total cost for tuition, room and board.

- Analysis of Marine Pollution, Jun 1-Jun 20, 1992
- Introduction to Marine Science, Jun 2-Jun 16, 1992
- Tropical Marine Phycology, Jun 9-Jun 27, 1992
- Environmental Statistics, Jun 23-Jul 4, 1992
- Biology of Fishes, Jun 30-Jul 25, 1992
- Tropical Marine Invertebrates, Jul 14-Aug 15, 1992
- Biological Oceanography, Jul 15-Aug 8, 1992
- Global Environmental Change, Jul 28-Aug 22, 1992
- Remote Sensing in Oceanography, Aug 11-Aug 22, 1992

For more information write: Educational Director, Bermuda Biological Station for Research, Ferry Reach, GE01, Bermuda. Applications must be postmarked by March 1, 1992.

## STRI NEW BOOKLIST

- Acari: reproduction, development, and life history strategies / Reinhart Schuster and Paul W. Murphy.  
QL458.S38 1991X STRI.
- Análisis cuantitativo e identificación de la población de Diatomeas y algas verdeazules en estanques de cría del camarón *Penaeus vannamei* / presentado por Ludmila Erit Sarmiento Echeverría [y] Gonzalo Tapia Rodríguez.  
SH380.62.P3S24 1990a STRI.
- The Biology of particles in aquatic systems / editor, Roger S. Wotton.  
QH541.5.W3B56 1990X STRI.
- Bird-parasite interactions: ecology, evolution, and behaviour / edited by J.E. Loye and M. Zuk. QL698.95.B57 1991X STRI.
- The Conservation atlas of tropical forests: Asia and the Pacific / The World Conservation Union; edited by N. Mark Collins, Jeffrey A. Sayer, Timothy C. Whitmore.  
Ref G2201.K3C6 1991X STRI.
- Cell culture and somatic cell genetics of plants / edited by Indra K. Vasil.  
QK725.C37 1984X STRI.
- The Development and evolution of butterfly wing patterns / H. Frederik Nijhout.  
QL562.N54 1991X STRI.
- The Dictionary of cell biology / edited by J.M. Lacke and J.A.T. Dow; authors C.J. Brett ... [et al.].  
Ref QH575.D55 1989 STRI.
- A Discourse-centered approach to culture: native South American myths and rituals / by Greg Urgan.  
F2230.1.R3U73 1991X STRI.
- Ecological genetics and air pollution / George E. Taylor, Jr., Louis F. Pitelka, Michael T. Clegg, editors.  
QK751.E27 1991X STRI.
- The Ecology of a garden: the first fifteen years / Jennifer Owen.  
QH138.L43O84 1991X STRI.
- Ecophysiology of the Camelidae and desert ruminants / R.T. Wilson.  
QL737.U5W54 1989X STRI.
- Enclosed experimental marine ecosystems: a review and recommendations: a contribution of the Scientific Committee on Oceanic Research Working Group 85 / C.M. Lalli, ed.  
QH541.5.S3E56 1990 STRI.
- Encyclopedia of tropical fishes: with special emphasis on techniques of breeding / by Dr. Herbert R. Axelrod and William Vorderwinkler.  
Ref QL78.A96 1988 STRI.
- Environmental restoration: science and strategies for restoring the Earth / edited by John J. Berger.  
QH541.15.R45E58 1990X STRI.
- Forest entomology in West Tropical Africa: forest insects of Ghana / Michael R. Wagner, Stephen K.N. Atuahene, and Joseph R. Cobbinah.  
SB764.G2W34 1991X STRI.
- The Formation of complex society in southeastern Mesoamerica / edited by William R. Fowler.  
F1434.2.P76F67 1991X STRI.
- A Functional biology of sea anemones / J. Malcolm Shick.  
QL377.C7S33 1991X STRI.
- International marine science funding guide / Judith Fenwick, David A. Ross, Cynthia Schramm.  
Ref GCL1612 1990 STRI.
- Life itself: a comprehensive inquiry into the nature, origin, and fabrication of life / Robert Rosen.  
QH325.R57 1991X STRI.
- Methods in stomatal research / Jonathan D.B. Weyers, Hans Meidner.  
QK873.W48 1990X STRI.
- Neotropical wildlife use and conservation / edited by John G. Robinson and Kent H. Redford.  
SK159.N46 1991X STRI.
- Oriental materia medica: a concise guide = [Chien ming yao ts'ai hseh] / Hong-yen Hsu ... [et al.].  
Ref RS180.C5075 1986X STRI.
- Parameter estimation in ecology: the link between data and models / O. Richter, D. Sndgerath.  
QH541.15.S72R53 1990X STRI.
- Phylogeny and classification of birds: a study in molecular evolution / Charles G. Sibley and Jon E. Ahlquist.  
QL696.5.S53 1991X STRI.
- Physical methods in plant sciences / edited by H.F. Linskens and J.F. Jackson; contributors, C. Buschmann ... [et al.].  
QK865.P57 1990 STRI.
- Por las selvas, las montañas y los valles de Bolivia; memorias de un naturalista.  
QH31.C32A34X 1973 STRI.
- Quantitative ecology and marine biology / Gerald J. Bakus.  
QH541.5.S3B16 1990 STRI.
- Red data book of Indian plants / edited by M.P. Nayar, A.R.K. Sastry.  
Ref QK86.I4R43 1987X STRI.
- Reproductive ecology of tropical forest plants / edited by K.S. Bawa and M. Hadley.  
QK938.R3R47 1990X STRI.
- Useful plants of neotropical origin: and their wild relatives / Heinz Brucher.  
SB87.L29B78 1989X STRI.
- Wildlife conservation in managed woodlands and forests / Esmond Harris, Jeanette Harris.  
QL84.4.G7H37 1990X STRI.