

TheScientist

\$4.99 | VOL. 23 NO. 8 | AUGUST 2009 | WWW.THE-SCIENTIST.COM

MAGAZINE OF THE LIFE SCIENCES

Programa de
Biotecnología
002

EYE OF NEWT, TOE OF FROG

THE RECIPE FOR
REGENERATION

IMMUNE
HEALTH=ONE
BACTERIAL
MOLECULE?

WINNERS OF
THE SCIENTIST
VIDEO AWARDS

PROFITS AND
PERILS OF A
NEW TYPE OF
CLINICAL TRIAL

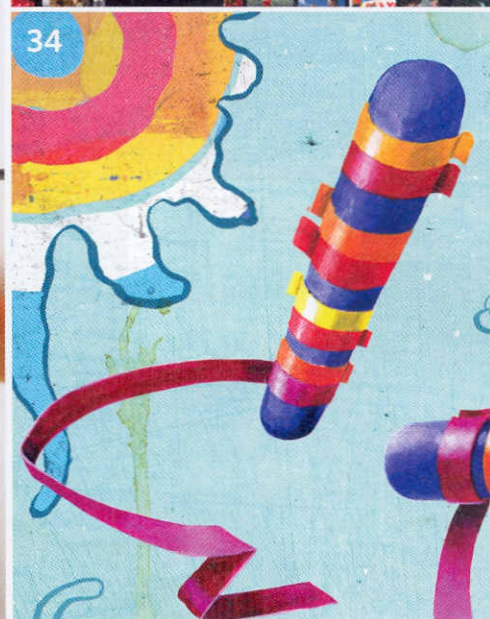
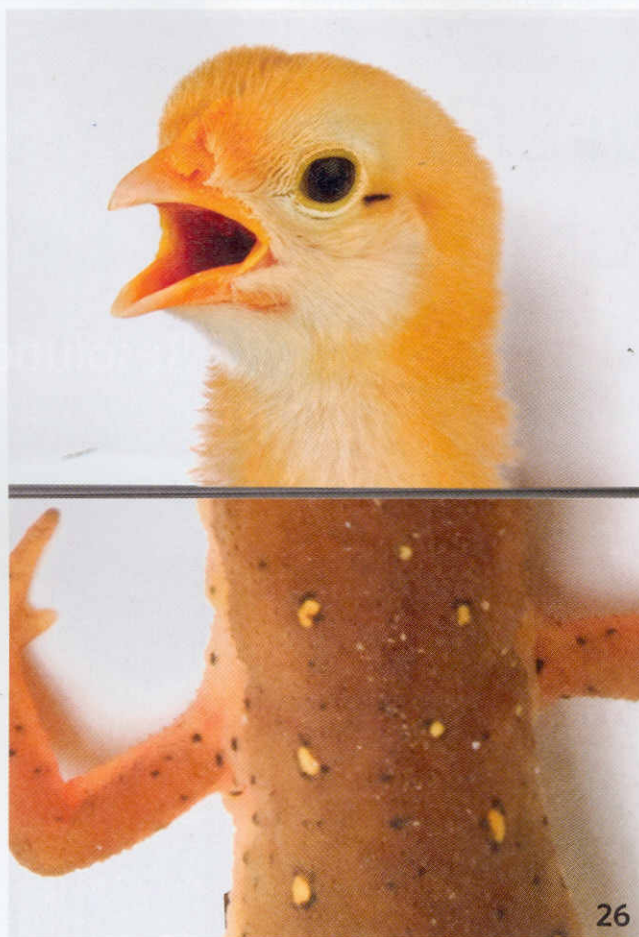
PLUS:
MAKE THE
MOST OF
SABBATICALS

INTI-Extensión y Desarrollo
División Biblioteca

1031
27 AGO 2009

CONTENTS

August 2009



FEATURES

26

The Regeneration Recipe

The newt can reconstruct almost any body part, including the brain, spinal cord, heart and limbs. Planarians, a high-school laboratory favorite, can be sliced to bits and each piece will regenerate a new individual. MEGAN SCUDELLARI speaks to scientists who study these and other organisms that regenerate naturally, to find out what they can teach those studying regenerative medicine. Some predict if these two groups join forces, the repair or replacement of human limbs and organs could be possible within years.

34

The Microbial Health Factor

In his search for the potential benefits of bacteria (the vast majority of which are non-pathogenic), SARKIS MAZMANIAN at the California Institute of Technology narrows his focus to one polysaccharide on the surface of one bacterium. This molecule appears to make the difference between a healthy and unhealthy immune system in mice, and points towards a new treatment for autoimmune disease.

39

The Future of Science Videos

We reveal the winners of our first *The Scientist* Video Awards, picked by professional judges and our readers. JEF AKST presents what makes each video great.



ON THE COVER

Steve Gschmeissner / Photo Researchers, Inc.

DEPARTMENTS

13 Editorial

Bailed Out by Science

The US healthcare system is hurting, but research can come to its rescue.

BY RICHARD GALLAGHER

17 Notebooks

Am I a biohazard?; Epigenetic suicide note; Evolving heart; Death, delimited; Got moose?

22 Opinion

Healthcare Reform: 2 Views

Striking the Right Balance

BY SEAN HARPER

An Example of Wasteful Spending

BY DENNIS J. COTTER, MAE THAMER, AND YI ZHANG

25 Column

Timing is Everything

You want to be ahead of the curve, but not so far ahead that no one can see you.

BY STEVEN WILEY

44 Profile

Master Plans

Sean Carroll earned his celebrity by stitching together the patterning that underlies much of the animal kingdom's various shades and shapes.

BY KAREN HOPKIN

47 The Literature

Hot Papers: New steps laid out in the tango of protein binding and folding; "kinobeads" draw out new drug targets; lose sharks, lose shellfish; microRNA family plays critical role in p53 pathway. Scientist to Watch: Rebecca Vega Thurber.

51 Lab Tools

Screening Whole

How to reel in high-throughput results using worms and fish

BY KELLY RAE CHI

55 Bio Business

Adaptive Evolution

A once-rare type of clinical trial that violates one of the sacred tenets of trial design is taking off, but is it worth the risk?

BY ALLA KATSNELSON

58 Careers

Scoring on Sabbaticals

How to make the most of the precious time away from your usual duties

BY ELIE DOLGIN

68 Foundations

The Golgi Stain, circa 1873

BY MOHEB COSTANDI

IN EVERY ISSUE

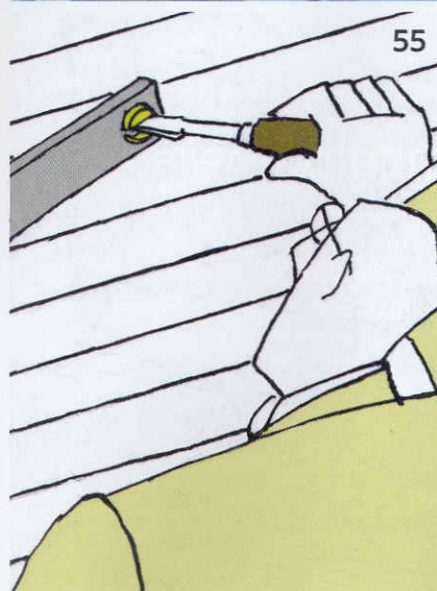
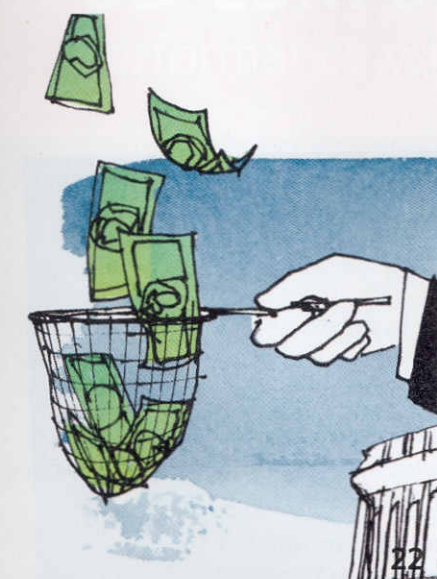
11 Contributors

14 Mail

Taxonomy RIP?; Funding Challenges; Shh...I'm Listening; Fooled You?

54 The Guide

61 Recruitment



AUGUST 2009

Online



This month at www.the-scientist.com, find the following Web features:

- A slideshow from three laboratories investigating the natural regenerative capabilities of the zebrafish, newt and embryonic chick.
- Stephen Colbert riffs on Rebecca Vega Thurber's research on herpes-like virus-infected coral reefs in a short video clip from Comedy Central's *The Colbert Report*.
- A video lesson in moose tracking with University of Massachusetts, Amherst's Dave Wattles.
- Photos of jackals and vultures feasting on anthrax-infected zebra carcasses in a national park in northern Namibia.
- Full-length videos from the winners of the first-ever *The Scientist* Video Awards.

As always, find breaking news every day and leave your comments on individual stories on our Web site.

Coming in September...

Here's what you'll find in next month's issue:

- Results from our annual life science salary survey.
- Cassava with extra beta-carotene, carrots with more calcium, tomatoes richer in antioxidants—scientists have genetically engineered several biofortified food plants (including the famous Golden Rice), yet the crops have not become a wider reality. That may be about to change.
- Tips on how to ace a job interview.
- Techniques for pushing the study of gene, RNA, and protein behaviors to the level of a single cell.
- A profile of Douglas Bishop at the University of Chicago.

And much more.