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Scanning electron micrograph of a female Anopheles stephensi mosquito, a transmitter of malaria (proboscis length: ~0.6 millimeters). To drive malaria eradication, new medicines that target all stages of the malaria life cycle are needed. In their study, Meister et al. used thousands of A. stephensi mosquitoes to identify chemical classes with activity against the silent malaria liver stage. See page 1372.

Image: David Scharf/Getty Images

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Stop Signals Provide Cross Inhibition in Collective Decision-Making by Honeybee Swarms
T. D. Seeley et al.
Scout bees bring about nest-site decisions by targeting stop signals at bees with other candidate sites.
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How Honeybees Break a Decision-Making Deadlock
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J. D. Kessler et al.
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R. A. Williams et al.
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Highlights From Our Daily News Coverage
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Genetically engineered bacteria could turn trees, grasses, and agricultural waste into gasoline.
http://scim.ag/Fuel_Waste

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Temperatures on a newly discovered world could hover around 21°C.
http://scim.ag/New_Planet

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Global analysts find that five decades of intensive fishing have shrunk populations by 60%.
http://scim.ag/Tuna_Stocks

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Editorial Guide: The Complex Art of Telling It Simply
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Computational biology studies are complex; papers describing the results should not be.

Research Article: Neuronal Growth Cone Retraction Relies on Proneurotrophin Receptor Signaling Through RAC
K. Denhardt et al.
Whereas nerve growth factor promotes neurite outgrowth, the precursor form triggers retraction.

Research Article: The SH2 Domain–Containing Proteins in 21 Species Establish the Provenance and Scope of Phosphotyrosine Signaling in Eukaryotes
B. A. Liu et al.
The evolution of modular protein domains corresponds with organismal complexity.

Research Article: Protein Kinase C η Is Required for T Cell Activation and Homeostatic Proliferation
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T cells make specific use of different protein kinase C isoforms.

Research Article: PDLIM2 Inhibits T Helper 17 Cell Development and Granulomatous Inflammation Through Degradation of STAT3
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St NETWatch: iBioMagazine
Explore the human side of science.

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www.sciencetranslationalmedicine.org

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7 December issue: http://scim.ag/stm120711

Focus: Three Rs of Animal Testing for Regenerative Medicine Products
R. Robinson
Considerations of animal welfare have spurred the design of "smarter" preclinical studies intended to ultimately benefit patients.

Focus: ROCK in a Stiff Place
D. A. Louffenger

Research Article: Age-Related Intimal Stiffening Enhances Endothelial Permeability and Leukocyte Transmigration
J. Huynh et al.
Inhibiting endothelial cell contractility reverses the deleterious effects of age-related matrix stiffening on normal cell function.

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On the 9 December Science Podcast: detecting measles outbreaks with satellite imagery, decision-making in honeybee swarms, stepping up research funding in Europe, and more.

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Report: Penetration of Tenofovir and Emtricitabine in Mucosal Tissues: Implications for Prevention of HIV-1 Transmission
K. B. Patterson et al.
Antiretroviral drugs are found at different concentrations in human mucosal tissues with implications for pre-exposure prophylaxis trials to prevent HIV transmission.

ScienceCareers
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Free Career Resources for Scientists

A Pharma Industry in Crisis
E. Pain
Scientists seeking pharma careers must adapt to sweeping changes in the industry.
http://scim.ag/PharmaCrisis

Future Pharma Scientists: Start Small
M. Price
As the industry moves away from the big-pharma model, young drug-development scientists are likely to find more and better opportunities at smaller companies.
http://scim.ag/PharmaSearch

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