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A series of spheres with two-dimensional patterns generated by computer simulation shows that Turing's reaction-diffusion model may be the basis for skin patterning in animals. A modulation of one parameter value in a reaction-diffusion-based model causes the pattern to change gradually from spots to labyrinths, with the range encompassing the diversity of patterns seen on animal skin. See page 171 and http://scim.ag/comp_bio.

Image: Seita Miyazawa, Osaka University

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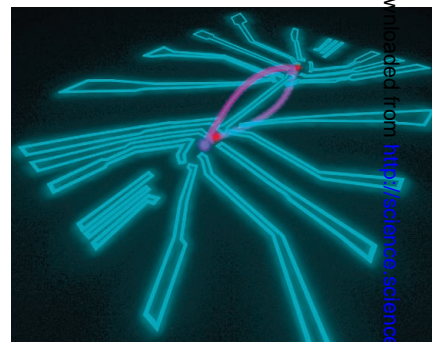
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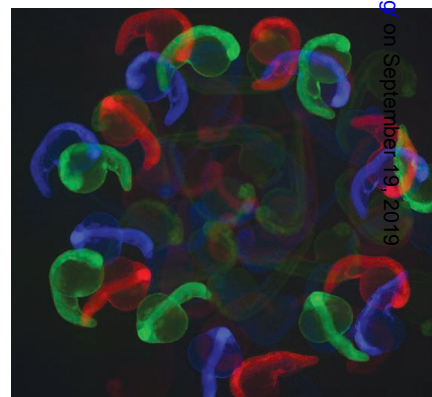
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SCIENCEONLINE

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Mechanical Control of Morphogenesis by Fat/Dachsous/Four-Jointed Planar Cell Polarity Pathway

F. Bosveld et al.

Polarized protocadherin and myosin induce an anisotropic tension at cell junctions and thereby shape epithelial tissue.

10.1126/science.1221071

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Differential Diffusivity of Nodal and Lefty Underlies a Reaction-Diffusion Patterning System

P. Müller et al.

The inhibitor Lefty diffuses more widely than the activator Nodal.

10.1126/science.1221920

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Epigenomic Enhancer Profiling Defines a Signature of Colon Cancer

B. Akhtar-Zaidi et al.

Methylation tags at long-distance gene regulatory elements provide a signature specific to cancer cells.

10.1126/science.1217277

A Dive to Challenger Deep

R. A. Lutz and P. G. Falkowski

10.1126/science.1222641

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Signatures of Majorana Fermions in Hybrid Superconductor-Semiconductor Nanowire Devices

V. Mourik et al.

Theoretically predicted particles that double as their own antiparticles emerge in a superconductor-coupled indium antimonide nanowire.

10.1126/science.1222360

Growing Microtubules Push the Oocyte Nucleus to Polarize the *Drosophila* Dorsal-Ventral Axis

T. Zhao et al.

The addition of tubulin monomers to microtubules provides the force to relocate the oocyte nucleus.

10.1126/science.1219147

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Highlights From Our Daily News Coverage

Land Bridge Caused Wild Temperature Swings

The strip of earth connecting Asia and North America disrupted ocean circulation.

http://scim.ag/Temperature_Swings

Of Robots and Cocktails

A humanoid machine helps researchers understand how we home in on conversations.

http://scim.ag/Humanoid_Machine

Fishing for Fluid Dynamics

Movement of fishermen's nets helps untangle water-flow patterns in an Italian lake.

http://scim.ag/Fluid_Dynamics

SCIENCE SIGNALING

www.sciencesignaling.org

The Signal Transduction Knowledge Environment

10 April issue: <http://scim.ag/ss41012>

RESEARCH ARTICLE: Direct Binding Between Orai1 and AC8 Mediates Dynamic Interplay Between Ca²⁺ and cAMP Signaling

D. Willoughby et al.

A signaling complex enables the compartmentalized regulation of cyclic AMP signaling by calcium entering through a specific channel.

RESEARCH ARTICLE: Ras Stabilization Through Aberrant Activation of Wnt/ β -Catenin Signaling Promotes Intestinal Tumorigenesis

W. Jeong et al.

PERSPECTIVE: Wnt/ β -Catenin and MAPK Signaling—Allies and Enemies in Different Battlefields

D. Guardavaccaro and H. Clevers

Crosstalk between the Wnt/ β -catenin and MAPK pathways contributes to colon cancer.

PODCAST

M. Nedergaard et al.

New findings elucidate mechanisms by which astrocytes can modulate neuronal activity.

SCIENCE TRANSLATIONAL MEDICINE

www.sciencetranslationalmedicine.org

Integrating Medicine and Science

11 April issue: <http://scim.ag/stm041112>

EDITORIAL: Toward Precision Medicine—A New Social Contract?

S. Desmond-Hellmann

Patients have the power to drive development of a new taxonomy of disease and precision medicine.

RESEARCH ARTICLE: Adverse Metabolic Consequences in Humans of Prolonged Sleep Restriction Combined with Circadian Disruption

O. M. Buxton et al.

Sleep deficiency and out-of-synch circadian rhythms impair pancreatic insulin secretion, a possible precursor to metabolic syndrome and diabetes.

>> *News story p. 143*

RESEARCH ARTICLE: Model-Based Noninvasive Estimation of Intracranial Pressure from Cerebral Blood Flow Velocity and Arterial Pressure

F. M. Kashif et al.

FOCUS: From Lundberg to SIM-ICP—Computational Physiology and Modeling Intracranial Pressure

B. Goldstein et al.

A model-based, patient-specific, and calibration-free approach is used for continuous, noninvasive estimation of intracranial pressure.

RESEARCH ARTICLE: Prognostic Indicators of Life-Threatening Malaria Are Associated with Distinct Parasite Variant Antigen Profiles

G. M. Warimwe et al.

Two key clinical indicators of life-threatening malaria in African children may be associated with differential expression of parasite surface antigens on infected erythrocytes.

SCIENCE CAREERS

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Are Computational Biologists the Next Pharma Scientists?

M. Price

Drug development companies are now hiring more computational biologists, creating an abundance of high-paying jobs.

<http://scim.ag/CompBioPharma>

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Going Against the Grain

E. Pain

Graduate student Denis Gebauer had to work hard to prove that his unorthodox findings on crystallization were real.

<http://scim.ag/AgainstGrain>

Swimming With SHARks

R. Kaufman

In a world where research is valued above all, how do teaching and outreach experiences influence careers?

<http://scim.ag/SHARKProject>

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336 (6078)

Science **336** (6078), 127-257.

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