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The features marked with a star (*) are based entirely on material taken straight from standard research (and other Official and Therefore Always Correct) literature. Many of the other articles are genuine, too, but we don't know which ones.

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Geoffrey Haddock, author of the study “Do I Get Better Looking Each Day?” See page 22.



On the Back Cover

Detail from the patent “Device for Waking Persons From Sleep.” See page 27.



Some Coming Events

See IMPROBABLE.COM for details of these and other events:

September 14, 2017
27th First Annual Ig Nobel Prize Ceremony

September 16, 2017
Ig Informal Lectures

October/November 2017
U Manchester, UK
EMBL, Heidelberg, Germany

January 21, 2018
Princeton U, USA

February 2018
SLAS Conference, San Diego, CA, USA
Salk Institute, La Jolla, CA, USA
AAAS Annual Mtg, Austin, TX, USA

March 2018
Ig Nobel EuroTour

April 26, 2018
Portland, Oregon, USA

Where There's More
There's always new improbable — it's not what you expect! — stuff on the **Improbable Research** blog at IMPROBABLE.COM

STRANGE BIOLOGY QUESTIONS

Research About Questions That Might Strike You As Being Strange

compiled by Alice Shirrell Kaswell, Improbable Research staff

Are Motorways Rational From Slime Mold's Point of View?

"Are Motorways Rational From Slime Mould's Point of View?" Andrew Adamatzky, Selim Akl, Ramon Alonso-Sanz, Wesley van Dessel, Zuwairie Ibrahim, Andrew Ilachinski, Jeff Jones, Anne V. D. M. Kayem, Genaro J. Martinez, Pedro de Oliveira, Mikhail Prokopenko, Theresa Schubert, Peter Sloot, Emanuele Strano, and Xin-She Yang, arXiv:1203.2851v1, March 13, 2012. (Thanks to investigator Vaughn Tan for bringing this to our attention.) The authors report:

Motorway networks of fourteen geographical areas are considered: Australia, Africa, Belgium, Brazil, Canada, China, Germany, Iberia, Italy, Malaysia, Mexico, The Netherlands, UK, USA. For each geographical entity we represented major urban areas by oat flakes and inoculated the slime mould in a capital. After slime mould spanned all urban areas with a network of its protoplasmic tubes, we extracted a generalised *Physarum* graph from the network and compared the graphs with an abstract motorway graph using most common measures....

We obtained a series of intriguing results, and found that the slime mould approximates best of all the motorway graphs of Belgium, Canada and China, and that for all entities studied the best match between *Physarum* and motorway graphs is detected by the Randic index (molecular branching index).

Are motorways rational from slime mould's point of view?

Andrew Adamatzky¹, Selim Akl², Ramon Alonso-Sanz³, Wesley van Dessel⁴, Zuwairie Ibrahim⁵, Andrew Ilachinski⁶, Jeff Jones⁷, Anne V. D. M. Kayem⁸, Genaro J. Martínez⁹, Pedro de Oliveira¹⁰, Mikhail Prokopenko¹¹, Theresa Schubert¹², Peter Sloot¹³, Emanuele Strano¹⁴, and Xin-She Yang¹⁴

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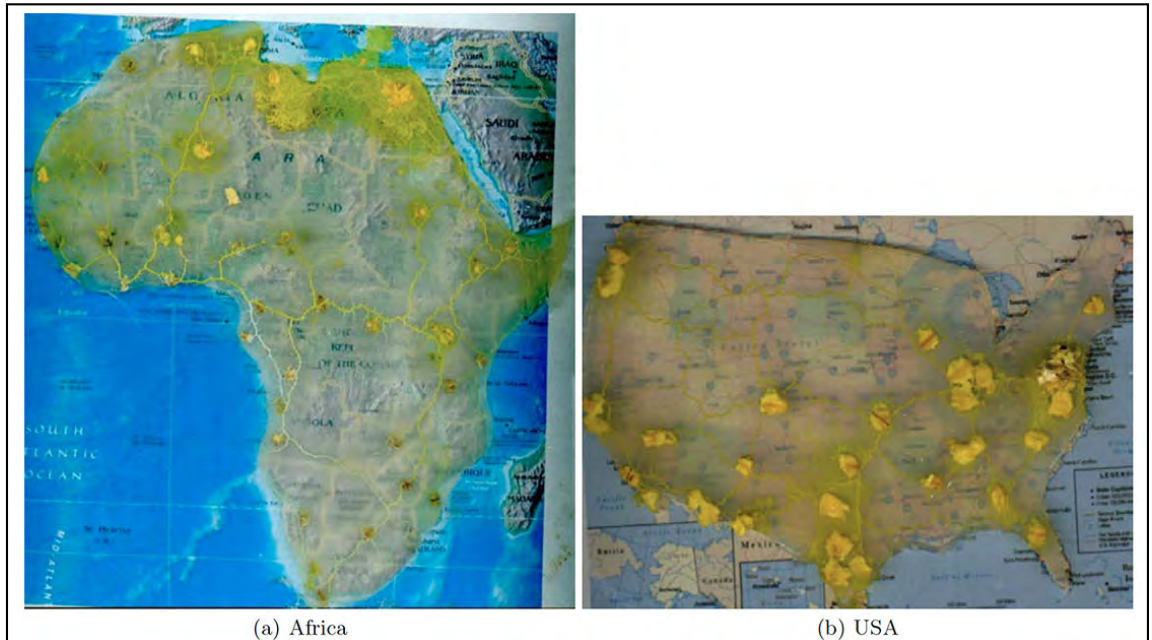


Fig. 1. Experimental laboratory images of protoplasmic networks developed by slime mould *P. polycephalum* on maps.

Detail from the study "Are Motorways Rational From Slime Mould's Point of View?"

[continued >](#)

STRANGE BIOLOGY QUESTIONS [CONTINUED]

Would a Cylindrical Snake Roll Off a Log?

“Why Arboreal Snakes Should Not Be Cylindrical: Body Shape, Incline and Surface Roughness Have Interactive Effects on Locomotion,” Bruce C. Jayne, Steven J. Newman, Michele M. Zentkovich, and H. Matthew Berns, *Journal of Experimental Biology*, vol. 218, no. 24, 2015, pp. 3978-3986. (Thanks to Diane Kelly for bringing this to our attention.) The authors, at the University of Cincinnati, report:

We used artificial branches with five inclines and five peg heights (≤ 40 mm) to test for interactive effects on the locomotion of three snake species with different body shapes.... Our results illustrate how morphology and two different aspects of habitat structure can have interactive effects on organismal performance and behaviour. Notably, a sharper keel facilitated exploiting shorter protrusions to prevent slipping and provide propulsion, which became increasingly important as surface steepness increased.

Are Snakes Right-Handed, Hemipeniscally?

“Are Snakes Right-Handed? Asymmetry in Hemipenis Size and Usage in Gartersnakes (*Thamnophis sirtalis*),” R. Shine, M.M. Olsson, M.P. LeMaster, I.T. Moore, and R.T. Mason, *Behavioral Ecology*, vol. 11, no. 4, 2000, pp. 411-415. The authors, at the University of Sydney, Australia, and Oregon State University, USA, report:

Male snakes possess paired reproductive systems, with an independent set on either side of the body. Our studies on gartersnakes (*Thamnophis sirtalis parietalis*) reveal [that copulations] using the right hemipenis produced a larger gelatinous “mating plug,” and may thus more effectively delay remating by the female. Although the overall usage of the two hemipenes in field matings averaged close to 50/50, hemipenis usage was not random. Males tended to alternate hemipenis use in successive matings, perhaps because of depletion of plug material. Also, male gartersnakes preferentially used their larger (right) hemipenis when mating at high body temperatures.

Are snakes right-handed? Asymmetry in hemipenis size and usage in gartersnakes (*Thamnophis sirtalis*)

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Male snakes possess paired reproductive systems (testes, efferent ducts, hemipenes and associated components of the kidney) with an independent set on either side of the body. Our studies on gartersnakes (*Thamnophis sirtalis parietalis*) reveal significant morphological asymmetry in this system: testes, kidneys, and hemipenes on the right-hand-side of the body are larger than those on the left. Data from matings in the field, and in outdoor enclosures, suggest that this asymmetry has implications for mating behaviour and, possibly, reproductive success. Copulations using the right hemipenis produced a larger gelatinous mating plug, and may thus more effectively delay remating by the female.

Do Hens Have Friends?

“Do Hens Have Friends?” Siobhan M. Abeyesinghe, Julian A. Drewe, Lucy Asher, Christopher M. Wathes, and Lisa M. Collins, *Applied Animal Behaviour Science*, vol. 143, no. 1, January 15, 2013, pp. 61-66. The authors, at the Royal Veterinary College, the University of Nottingham, and Queen’s University Belfast, UK, report:

Spatial and temporal associations were examined in two contexts (day activity and evening roosting), within 8 identical pens of 15 laying hens over 8 weeks.... Overall, we found no convincing evidence of dyadic preferential relationships expressed by close active and resting proximities.

Do hens have friends?

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ABSTRACT

Recent interest in positive welfare has encouraged consideration of the formation of positive relationships in farmed species which may provide a means by which positive states. We investigated in detail the existence of dyadic preferential associations in small groups of domestic laying hens. Spatial and temporal associations were examined in two contexts (day activity and evening roosting), within 8 identical pens of 15 laying hens over 8 weeks. Little aggression was observed. Social network analysis was used to investigate correlations in who associated with whom using weighted degree