

WHY ROBOTS SHOULD DISOBEY US

GENE THERAPY TO HEAL HEARTS

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SCIENTIFIC AMERICAN

LAB-MADE BRAINS

"Organoids" could help solve Alzheimer's, autism and more

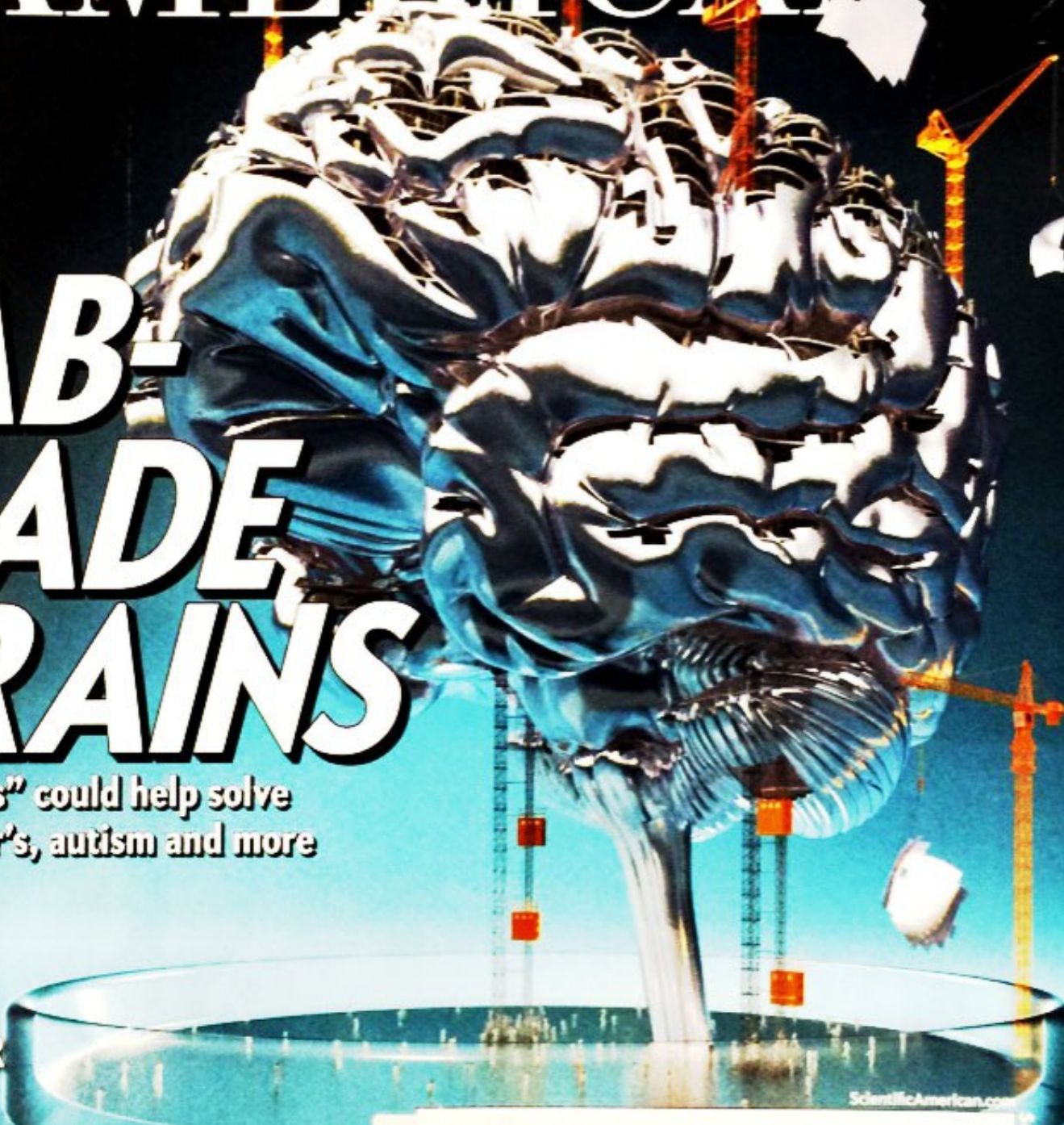
PLUS

FROM DINOSAUR TO BIRD

An evolutionary tale PAGE 48

ANIMAL CSI TO CATCH ABUSERS

Advances in veterinary forensic science PAGE 56



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The Prix Galien is more than an award: it is a movement with a mandate to foster, recognize and reward excellence in scientific innovation to improve the state of human health. Building on an unrivaled network of Nobel Laureates in medicine, the Prix Galien manages an independent, cross-functional and geographically diverse program of events and sponsorships to brand "the best of the best" in new medicines and diagnostics.

Our scope is global, and our commitment to progress in medicine is both measurable and concrete. Our members express this through the establishment of productive relationships to build lasting bridges between the commercial research enterprise and local communities engaged in public policy, science, finance, academic research and the media.

In addition to recognizing advances in promising therapies, the Prix Galien's annual Pro Bono Humanum Award for humanitarian achievements brings a unique focus to the intersection between science, business and politics. The outcome we seek is guided by the synthesis principle that underpins the conduct of science itself: successful innovation where financing, physical assets, knowledge and skills are combined from many sources to move new ideas quickly "from the bench to the bedside," on behalf of patients everywhere.

A truly global program present in 14 countries*

Our program includes a review of contributions from a new generation of innovators representing diverse sectors in health as well as from the emerging markets of the developing world. Our theme: better cross-cultural contacts, harmonized regulation, internal business process improvements, new information technologies and effective public-private partnerships can remove barriers to the commercialization of good medicines and expand access to these benefits to all who need them.

2016 will represent a new and exciting stage in the evolution of the Prix Galien as the pre-eminent "force populaire" behind the global scientific enterprise. With the support of our sponsoring organizations, our efforts will extend to all who see medical innovation not only as an industrial policy asset but as a source of social progress – where private enterprise and public engagement combine to deliver a greater public good.

We invite all communities with a commitment to the conduct and promotion of life sciences innovation to contribute to this important work.

* Belgium, Canada, France, Germany, Greece, Italy, Netherlands, Poland, Portugal, Russia, Spain, Switzerland, United Kingdom and the United States.

SAVE THE DATE
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The Prix Galien Award recognizes outstanding achievements in improving the global human condition through the development of innovative drugs and other treatments.

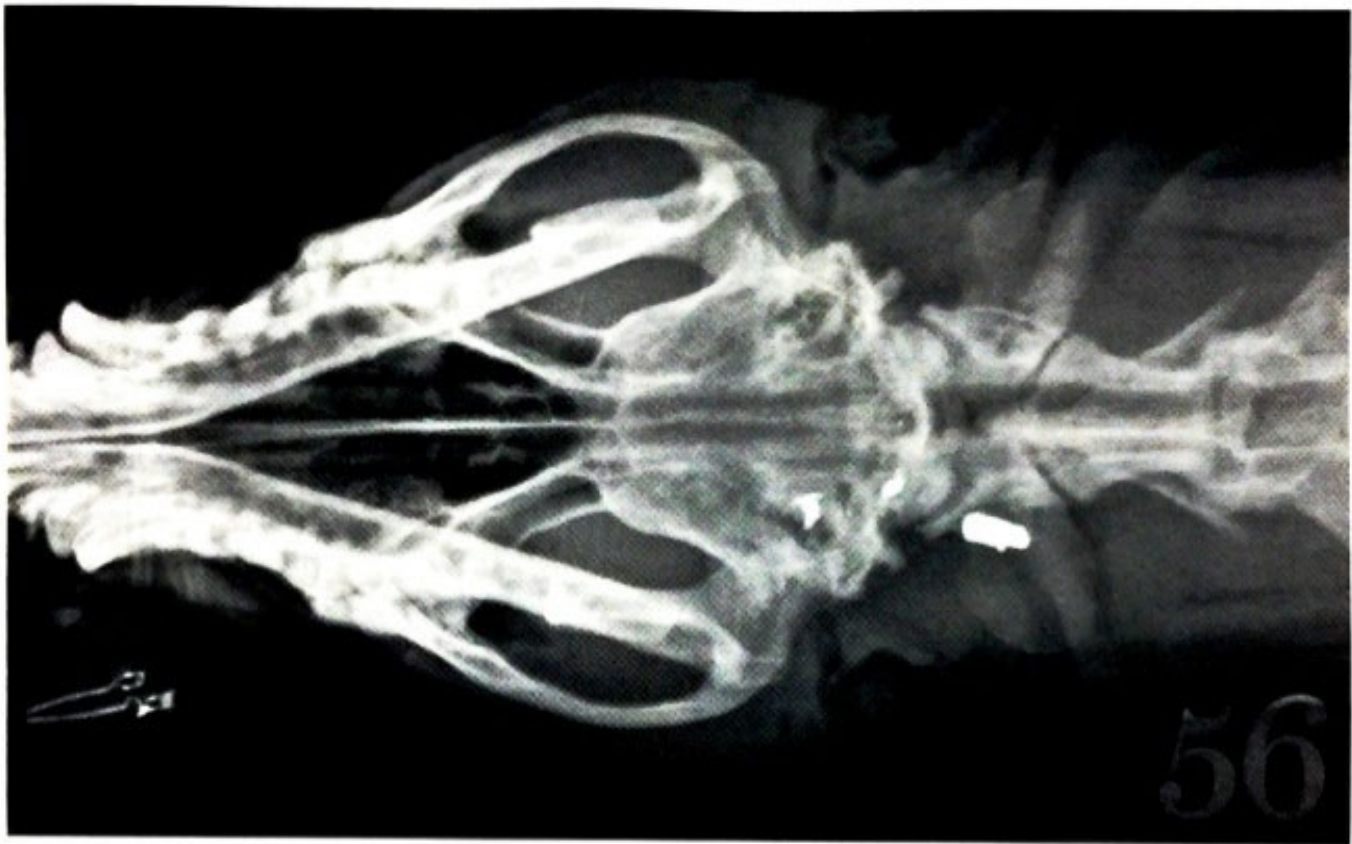
The Prix Galien was created in 1970 in honor of Galen, the father of medical science and modern pharmacology.

Worldwide the Prix Galien is regarded as the equivalent of the Nobel Prize in biopharmaceutical research.



INNOVATION
TO IMPROVE
THE HUMAN
CONDITION

Pr Roy VAGELOS during the campaign against river blindness in West Africa.



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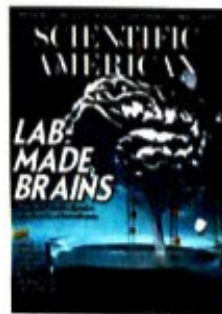
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New tools allow neuroscientists to grow parts of a brain in a lab dish. These "organoids" model the human brain more realistically than mice or other animals do. Brains-in-a-dish have already been put to good use to understand the Zika virus. *Image by Bryan Christie.*

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ON THE WEB

Breakthrough Prize

Scientific American spotlights the 2017 winners' outstanding scientific achievements.

Go to www.ScientificAmerican.com/jan2017/breakthrough

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Mariette DiChristina is editor in chief of *Scientific American*.
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What's Next for Science?

Wednesday, November 9, dawned gray and raw in Berlin. I was there to moderate a couple of panels at an annual meeting called Falling Walls. The name and timing celebrate the anniversary of the Berlin Wall's fall, as well as the free exchange of ideas if only we can knock down barriers. I looked forward to a series of inspiring talks about how science, which I have often called the "engine of human prosperity," could help us solve some of our greatest challenges.

We all crowded into a large room at the start of the day. A live broadcast began, looming above us on an enormous screen. The Falling Walls attendees watched the acceptance speech of the U.S. president-elect, Donald Trump, whose campaign included a promise to build a new wall.

What would this mean for science, I wondered? As a candidate, Trump had made some troubling antiscience statements, including tweeting that global climate change is a Chinese plot, threatening that he would dismantle the agency that enforces clean air and water regulations, and endorsing the long-disproved link between vaccines and autism. Any hope that he would soften

those stances after victory were quickly dashed. His first actions as president-elect included putting forward a climate change skeptic to head the Environmental Protection Agency and reportedly looking to make good on his earlier intent to pull out of the Paris climate accord.

For 171 years, *Scientific American* has chronicled the advances

of science (and even fostered its application, with its patenting offices, starting in 1850). While at Falling Walls, I reflected on how many voters had come to feel disenfranchised in the face of that progress, leaving them with a sense of reduced opportunity. I thought about how we who work in and around science could be more inclusive in our outreach to them and to policy leaders and how we could help take a systems approach to better ensure that research will be applied in ways that result in greater public benefit. I thought about how we could still work together to build a better world. We just might have to try a little harder to get there.

For these reasons, we are expanding the scope of our reporting on public policies that will affect science to round out our traditional coverage of the impact of that research on human lives.

One thing is as clear today as it was when this magazine was founded in 1845, during the flowering of the industrial revolution in the U.S.: a world in search of solutions to humanity's challenges needs information about science, and *Scientific American* will be tireless in providing it. ■



BERLIN WALL being destroyed in November 1989.

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