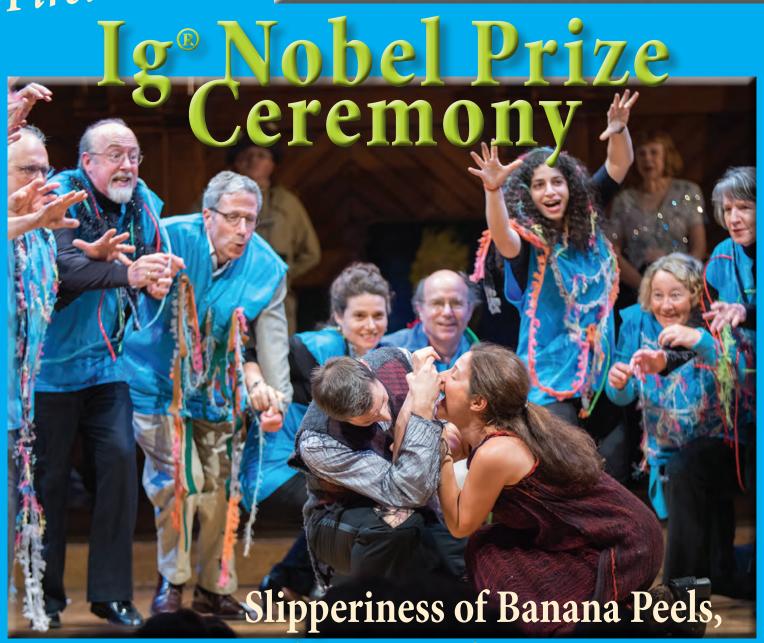
Special Issue

ANNALS OF

IMPROBABLE The 24th First Annual RESEARCH



Mental Danger of Owning a Cat,

Cured Pork as Treatment for Nosebleeds...

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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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TOP: Nobel laureates sample Spanish sausages, in honor of this year's Nutrition Prize—winning research. Photo: David Holzman

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On the Front Cover

The thrilling conclusion to the mini-opera "What's Eating You," which premiered at

the Ig Nobel ceremony. Photo: Alexey Eliseev.



On the Back Cover

Performing chemist Daniel Rosenberg performs one of the evening's two Moments

of Science with fellow chemist Joost Bonsen (not shown). Photo: Mike Benveniste.



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

November 28, 2014

Annual Science Friday
Ig Nobel radio broadcast

January 2015

ARISIA, Boston, MA, USA

January 2015

ARISIA, Boston, MA, USA

January 2015

Vienna, Austria

February 2015

AAAS Annual Meeting
San Jose, CA, USA

March 2015
Ig Nobel Europe Tour
January 2015

June 2015
Tokyo, Japan

September 17, 2015 25th First Annual Ig Nobel Prize Ceremony, Cambridge, MA, USA & live webcast

September 19, 2015 Ig Informal Lectures Cambridge, MA, USA

EVERY DAY

Read something new and improbable every day on the Improbable Research blog, on our web site:

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LIBRETTO: What's Eating You

Story and Words: Marc Abrahams

Music: Wolfgang Amadeus Mozart [from Don Giovanni]

The mini-opera *What's Eating You* premiered as part of the 24th First Annual Ig Nobel Prize Ceremony, at Sanders Theater, Harvard University, Cambridge, Massachusetts, on September 18, 2014. Video of the performance, and of the entire ceremony, can be seen at *www.improbable.com/ig/2014/*.

Original Cast

Direction: Maria Ferrante

Assistant Direction: Robin Abrahams

Conduction: Paul Glenn

Arrangement: Henry Akona and Maria Ferrante

Costuming: Catherine Quick Spingler

Props: Eric Workman

Narrator: Karen Hopkin

Ramona: Maria Ferrante, soprano Ray: Scott Taylor, baritone

The Microbe Choir: Kelsey Calhoun, Nicholas Carstoiu, Delphine Gabbay, Paul Goodwin, Clia Goodwin, Erika Hutchinson, Andrew B. Jones, Julia Lunetta, Sylvia Rosenberg, Daniel Rosenberg, Abby Schiff, Ted Sharp, Patrick Yacono, and Nobel laureates Carol Greider, Eric

Maskin, Rich Roberts, and Frank Wilczek

Orchestra: the Concentrated Forces of Nature, a distilled orchestra composed entirely of biomedical researchers

Patrick Yacono and Thomas Michel

ACT 1

NARRATOR: Our opera tonight is about two wealthy individuals. Ramona and Ray expect to live forever. They have figured out the secret of immortality. They are going to stop eating the stuff called—what's that word?—"food." After some thought, and much preparation, Ramona and Ray are going to eat only essential nutrients—each and every essential nutient, every day—in the form of pills. Let's join them as they stop eating food, food, food, and start eating pills, pills, pills.

SOPRANO: I will not eat food! BARITONE: I will not eat food!

SOP: No more food! From today: no more food! Today we both stop eating food. Eating food is always fatal, to the grave, from the cradle.

BAR: Look at the death rate! Whether it comes on a fork, on a spoon, or on a plate. The folks who ate food perished. The folks who ate food perished. People should not eat food.

SOP: Ew!

BAR: There's a new way. Say, listen, there's a new way. Hey, there's a new way. I tell you, there's a new way. We've got a new way./ Give me your hand, dear cupcake.



Photo: David Holzman

Henceforth we eat just pills. Pills! No mo-ore bread or beefsteak. We will exclusively purchase pills!

SOP: Yes, honeybuns, exactly. Be not fed up with food! Matter-of-factly, sugar, let's live forever chomping on only pills! A multitude—for us—of perfect pills!

BAR: Fed up with food! Stuff me full of pills!

SOP: Pills are the future. And they are delighful!

BAR: I will ingest just ingredients!

SOP: Yes, no more peaches—with their stones! No more steaks—with fat and bones. Oh—those trimmings are so wasteful...

BAR: Distasteful! Disgraceful! Food mostly gets excreted.

SOP: That fact should be repeated!

BAR: Most food goes out as waste!

SOP: Such food! Such waste! Such bad taste!

BAR: Bad taste! Oh, what a waste!

SOP: And pills possess a pretty pleasing taste.

BAR: Lutein, and caffeine!

SOP: And docosahexaenoic acid!

BAR: GABA, and L-Arginine!

continued >

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Photo: Mike Benveniste.



Photo: Alexey Eliseev.

SOP: And phosphatidylserine! Swallow it! A Paracetamol tidbit. Oh, and a gram of Geritol! Oh...

BAR: Just swallow! Just swallow!

SOP: Just swallow!

BOTH: These pills that we assort 'll make you and me immortal. Three hundred thirty-two pills per day.

SOP: More pills! More pills?

BAR: More pills!

BOTH: You've got to take more pills. I've got to take more pills. Oh, god! Let's purchase more pills!

ACT 2

NARRATOR: A long time has passed—six hundred and ten years!—and Ray and Ramona are in fine shape. But all of the other humans on the planet are gone. Ramona and Ray had bought all the farmland, and devoted it to producing pills for the exclusive use of Ramona and Ray. Ramona and Ray actually have a LOT of company, though: the ziillions and zillions of microbes that live in their intestinal tract, and in and on the rest of their bodies. The microbes seem happy enough—they have even formed a chorus. Let's listen to those microbes—and then hear what Ramona and Ray have to say.

MICROBE CHORUS: Dine together. Don't care whether neighbor species dine on feces. Stuff we threw up they will chew up. Yum. Each community's opportunities basic'ly amount to potty luck. Others eat what we excrete. And they in turn have no concern... at others' taste for their foul waste.

SOP and BAR: For six hundred and ten years, we...

SOP: Subsisted on...

BAR: Stayed alive, we stayed alive with...

SOP and BAR: Nutrients, nutrients, nutrients! Yes!

SOP: No-thing that could bring on death-

SOP and BAR: Bring on death—or other little ills. Success! Success! So who needs food? Food is so cru-ude! Who... needs... food?

SOP: By the way... other people don't get fed, don't get hungry...

SOP and BAR: 'Cause they're dead. They died. They're dead

SOP: We got their farms. Life has got its charms. Life has its charms!

BAR: They "bought the farm." Their food did them harm.



Photo: David Holzman.



Photo: Alexey Eliseev.

SOP and BAR: We are not alone! We are not alone. Your intestines moan. Those damn microbes growl. On the prowl. Hear them growl. Always on the prowl for my nutrients! Nu-tri-ents! My nu-nu-nu-nu-nu-nu-nu-nutrients! Do not fiddle with me, bugs! You are doomed. Naughty, naughty, snotty, snotty, anti-body bugs! Yucky, sucky little bugs! You bugs... like drugs? Microthievery! Such deceivery! We'll deny them food... but would that be rude? Ha, ha, ha, ha, ha, ha, ha, ha, ha,

ACT 3

NARRATOR: Only a few weeks have passed since we saw Ramona and Ray threatening to, somehow, cut off the food supply for their own intestinal microbes. But there's been a cruel reversal of fate. Fate! The plumbing in Ramona and Ray's house is hundreds of years old. A pipe burst, flooding their basement—and ruining Ramona and Ray's entire stock of pills. Ray and Ramona have nothing to eat. Nothing. And there are no other people left, anywhere—no one to grow food, let alone process that food into pills. Ramona and Ray have tried to forage for food—but they have no skills, and no hope. Let's join Ray and Ramona—and all their cheery microbes—their microbiome—with whom they have, until now, shared their existence.

SOP: What's for dinner? We have no dinner plan. You look thinner, dear. Whither thou, old man?

BAR: Hey skinny, we are done for. No more pills, and no refills. How my grumbling insi-ides miss those polyglyceri-ides! I miss them! I am hungry!

SOP: This cannot be. We had one zillion pills, in the basement. You told me those would last us forever. Do you call this forever, you old pill? Do you call this forever, you pill?

BAR: Don't abuse me! Excuse me! Excuse me.

SOP: Pills. Please make more pills. Please make more pills.

BAR: Tell me how to make them. Tell me, tell me!

SOP: You don't know how to make anything.

BAR: No, I don't know. Maybe you can tell me?

SOP: I don't know how to make pills. No one alive can do that.... To make the pills, or grow some food. We are both doomed to starvation!

BAR: We don't know how to make pills. By gosh, we're ignorant!

SOP: We're DOOM-ed!

BAR: By gosh, we're ignorant!

SOP: We're DOOM-ed!

BAR: The pills are ruined. We have run out. We're DOOM-ed!

BAR: I'll be a cafeteria... Servicing vile bacteria. It makes me feel so eerie, ah... Microbes are eating our insides.

CHORUS: Oh, we have always craved you. Oh, we have always craved.

SOP and BAR: For I have always craved you. I have always craved you. Oh, I have always craved you. Please give me your hand! Give, please give me your hand! Please oh please give me your hand!

CHORUS: And we love you, love you, love you...

BAR: I love you, love you, dear old chum!

SOP: I love you, love you, dear chum!

CHORUS: And we love you, love you. Yum! Yum!

BAR: Give me your hand, my sweetie-sweet! What's eating you, my treat? Sweet....

SOP: Give me your hand, dear sweet. What's eating you, my sweet?

CHORUS: We eat...

BAR: What's eating... you, my sweet? CHORUS: We eat to live, and live to eat.

BAR: You! ALL: Food!





TOP Photo: Mike Benveniste. BOTTOM Photo: Alexev Eliseev.

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