

A SPECIAL ISSUE

NEW VISION. NEW IDEAS. NEW HOPE.

Esquire

Man at His Best

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The Best &



RYAN GOSLING, ACTOR

MARTIN O'MALLEY, MAYOR

THE NEXT GREAT ARCHITECT

SAMANTHA MORTON, ACTRESS

EUGENE CHAN, SCIENTIST

THE ARTIFICIAL HEART

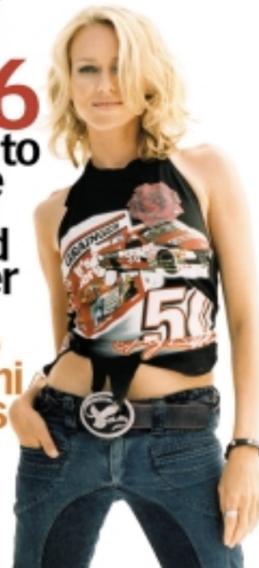
DAVID NEELEMAN, JET BLUE CEO

Brightest

50 Pages of People and Ideas That Will Change Our Lives. With a Keynote Essay by **PRESIDENT BILL CLINTON**



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36 Ways to Make the World Better #28... More Naomi Watts

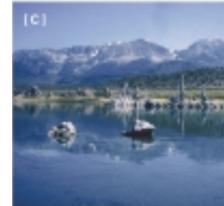


The Best and Brightest (SCIENCE)

[THE MAVERICK]



By studying the microorganisms that thrive in earth's most inhospitable environments, evolutionary biologist **Jonathan Eisen** is hoping to answer the biggest question of them all



EXTREMOPHILES and where they're found. A: The salt ponds near Great Salt Lake. The reddish color indicates the presence of halophiles, which grow in high salt. B: A sulphur spring in Death Valley, home of the thermophiles, which thrive in hot places. C: Mono Lake in California, land of the alkaliphiles, which grow in high pH levels. D: A Yellowstone hot spring, home of more thermophiles.



ONATHAN EISEN'S IDEA OF FUN has always been different—and, yes, by different, we do mean a little, ah, strange. The summer after his freshman year at Harvard, he painted the word *ambulance* backward on his heap of a car and drove it around southeast D.C., where he worked for the District's Public Defender Service. "The car itself was not even remotely safe," he says, "and neither was the neighborhood. I have been forbidden from ever doing that again by my wife."

These days, as a thirty-four-year-old investigator at the Institute for Genomic Research in Rockville, Maryland, Eisen gets his thrills in a slightly more responsible way: by studying genomes, microbial evolution, and extremophiles, organisms that grow in environments so hostile—like sulfuric acid, intense radiation, Antarctic ice, and extremely hot water from thermal vents thousands of feet below the ocean floor—that no other forms of life stand a chance in them.

As it turns out, extremophiles are one versatile group of organisms. Forensic scientists are currently using a protein from heat-hardy thermophiles to help duplicate DNA from blood samples at crime scenes. Other extremophile-based technologies are helping turn corn into ethanol and transform complex carbohydrates into useful products such as corn syrup and citric acid. Even more exciting than what they're doing now, though, is what they *could* do. The Department of Energy, for example, believes that *Deinococcus radiodurans*, a radiation-resistant extremophile, can be used to clean up those troublesome Superfund sites. And some doctors are convinced that *Helicobacter pylori*, an acid-resistant extremophile, is the key to understanding ulcers.

The thing is, none of the practical stuff really interests Eisen. He's got his eyes on bigger things—make that the *biggest* things—like evolution and the rise of life on this planet. "There are many people who believe that life at the beginning of earth wasn't exactly cozy," Eisen says. "That it was, in fact, extreme. By studying the organisms that grow now in these extreme conditions, we can gain insight into how life originated." That Eisen is more concerned with evolution than radioactive cleanup and forensic science doesn't make his work any less relevant, or the results of his research any less essential. The custom-painted car may have been junked a long time ago, but Eisen's subversive streak is as ferocious as ever. And in this quest, the search for life-saving microorganisms that thrive in dangerous places, he just might stumble onto something big. —GENEVIEVE J. ROTH