## GENES FOR SPEED

Thoroughbred horse owners now have a new tool to predict how their nags will perform on the track. Last week at the Irish Thoroughbred Breeders' Association Expo in County Kildare, a new company called Equinome rolled out a €1000 DNA test of a muscle factor derived from the Horse Genome Project.

Muscle growth is governed by myostatin, a protein that determines whether an animal has compact muscles tuned for rapid sprints or a leaner body suited for endurance. Company co-founder Emmeline Hill, left, a genetics researcher at University College Dublin, and colleagues reported last month in *PLoS ONE* that horses with two copies of the myostatin-suppressing C variant of the gene were more likely to win short races up to 6.5 furlongs (1.3 kilometers), whereas horses with two T variants did better in races up to 13.5 furlongs.

Horse Genome Project coordinator Ernest Bailey of the University of Kentucky, Lexington, notes that breeders have adopted genetic tests for paternity, coat color, and diseases but that performance prediction is new ground. Hill says breeders have been asking about genes for temperament. That's not yet in the offing, she says, but "we're investigating gene associations with [other] parameters, such as aerobic capacity."

## Spanish Gold

The Frontiers of Knowledge awards by the Madrid-based BBVA Foundation burst on the scene last year as another Nobel wannabe. This year, a pot of $4.5 million is being divided among recipients in eight categories.

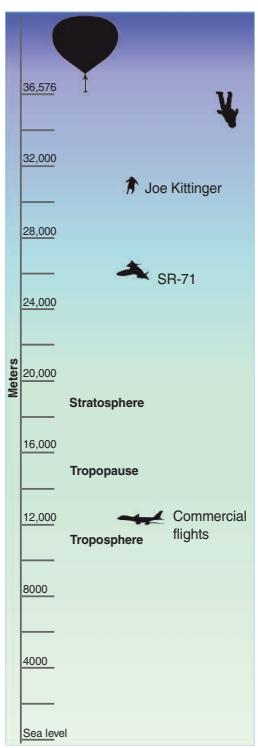
Six scientists have so far been named; five of them are in the United States. The first award, announced on 15 January, went to climate modeler Klaus Hasselmann of the Max Planck Institute for Meteorology in Hamburg, Germany, for demonstrating that global warming is caused by human activities. The other awards went to mathematical engineer Thomas Kailath of Stanford University for "transformative" work in information technology; chemist Richard Zare of Stanford and theoretical physicist Michael Fisher of the University of Maryland, College Park, "for their independent, fundamental contributions to describing the world at the molecular scale"; molecular biologist Robert Lefkowitz of Duke University for identifying drug receptors; and ecologist Peter Reich of the University of Minnesota, Twin Cities, for research on ecosystem responses to global environmental changes.

The remaining reward categories are "development cooperation," music, and economics.

## Stratospheric Jump

Some time this year, aeronaut Felix Baumgartner plans to pilot a helium balloon more than 36 kilometers into the stratosphere and jump out, breaking the sound barrier as well as the 31-km record set by Joseph Kittinger in 1960.

Baumgartner will face numerous exotic health hazards, says Jonathan Clark, a former NASA flight surgeon and medical director of the mission, known as Red Bull Stratos (redbullstratos.com). Above about 19 kilometers, water boils spontaneously. To prevent nitrogen from bubbling out of his bloodstream (otherwise known as the bends), Baumgartner will breathe only oxygen for 2 hours before the flight and will wear a pressurized suit. Thermal control is also tricky. If he sweats in his suit, it could freeze in a thin layer all over his body in temperatures as low as −100°C, Clark says. Then there's acceleration. If the jumper goes into a "flat spin," blood could rush to his head, causing hemorrhage. The biggest unknown, says Clark, is what breaking the sound barrier will do to his body. One possibility is "shock-shock interaction": As shock waves come off the body from different angles, they could combine into a powerful blast wave.




Clark's team won't say where in North America Baumgartner plans to do his jump, but by recording his vital signs and the forces he feels, they hope to gain information on the feasibility of high-altitude bailouts that will be useful to the budding commercial space-flight industry.

## The Art of Snowflakes

Before Wilson Bentley discovered the joys of taking photographs down a microscope, few people considered the snowflake a thing of beauty. Last week, the Carl Hammer Gallery in Chicago, Illinois, was selling 20 Bentley prints for $4800 apiece.

Bentley was a Vermont farmer and self-taught scientist who in 1880 received a microscope for his 15th birthday. After focusing on snowflakes, he was staggered by what he saw. "Every crystal was a masterpiece of design," he said later. He first tried sketching them, then turned to a primitive camera. It took 4 years to find a way of making snowflakes hang around long enough—up to 90 seconds—to get a successful shot.

Ultimately, Bentley became a pioneer in photomicrography, recording 5318 different snowflake images. He helped open the world of snowflakes to scientists, says physicist Kenneth G. Libbrecht of the California Institute of Technology in Pasadena: "The big breakthroughs were made in the 1930s by a physicist who was pointed in that direction by Bentley's photographs." Unfortunately, Bentley's love of snow was not reciprocated: He died of pneumonia in 1931 after walking home in a blizzard.

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