Stephen was 33 when he made his first bet — an innocent wager with a colleague, just a token prize and professional pride at stake. It was not to be his last. Stephen's career went from strength to strength, but he continued to place wagers. When it comes to making a point about science, Stephen Hawking is a compulsive gambler.

The world's best-known cosmologist is not alone. The history of science is littered with bets, from ill-fated attempts to prove that the world is flat, to numerous wagers over whether various sub-atomic particles exist. A book at the Stanford Linear Accelerator Center in California, for example, records about 35 bets in high-energy physics dating back to the 1980s, many still unresolved. And Cold Spring Harbor Laboratory in New York is running Genesweep, a sweepstake on the number of genes in the human genome.

Genesweep's winner will pocket at least $750, and gain the satisfaction of having out-guessed a star-studded cast of biologists. But making bets on science has a serious side. By putting their hard-earned cash on the line, wagers encourage scientists to think hard about their arguments and can also attract media attention to otherwise arcane topics.

Over the past few years, websites have sprung up to harness these benefits. "A well-conceived bet can frame an issue," says Kevin Kelly, editor-at-large of Wired magazine, and co-founder of the Long Bets Foundation, which runs one such website. "If it has enough clarity, it can move the subject on."

But scientific wagers have a history of stirring controversy. Take the 1980 challenge laid down by the late economist Julian Simon of the University of Maryland, College Park. Annoyed by claims from environmentalists about the scarcity of natural resources, Simon asserted that the price of five metals would fall by 1990, and challenged dissenters to a wager. Winning the bet, Simon reasoned, would show that these resources are becoming more plentiful, not less.

Paul Ehrlich, a population biologist at Stanford University in California, took Simon on. Together with John Harte and John Holdren, physicists then both at the University of California, Berkeley, Ehrlich agreed to monitor the value of an imaginary portfolio for $200 of each of the metals. If the portfolio's value dropped, Ehrlich, Harte and Holdren would pay Simon the difference; if it rose, he would pay them. The metals' value dropped by $576 and Ehrlich and his colleagues duly paid up.

Although that bet was settled, the two sides disagree on the lessons to be learned. Some economists use the result to claim that environmental groups exaggerate the problems facing the planet. But Ehrlich maintains that it merely shows that the metals chosen were poor indicators of our exploitation of natural resources. "I regret entering the bet," he says.

Other scientific gamblers have emerged victorious and yet still suffered regrets. In 1870, the British naturalist Alfred Russel Wallace, co-originator of the theory of evolution by natural selection, took up a challenge to prove that the Earth is not flat. John Hampden, a dedicated flat-Earther, had staked £500 on the question — then a great deal of money. A test, involving a stretch of the Old Bedford Canal, north of London, was agreed on.

Wallace measured the canal's curvature using two markers, separated by about five kilometres and suspended at equal heights above the water's surface. Viewed through a telescope mounted at the same height some 10 km away from the farthest marker, the nearest
Damer has staked $1,000, the minimum biologist … and declared viable for study”.

By 2024, ‘artificial’ life emerging somewhere out of the soup of human technology will be given a Latin taxonomic name by biologists … and declared viable for study.”

A problem shared

Importantly, the price at which other players are willing to buy coupons indicates how much faith the market has in the idea. The human-cloning claim already exists on the Foresight Exchange. YES coupons were trading at 36 cents as Nature went to press, indicating that the market believes there is a 36% chance of the claim being correct.

This evaluation may be of limited use, however, as anyone can play the Foresight Exchange and traders are not using real money. But what would happen if an ideas market were to be played by scientific experts using their own cash? According to Tom Bell, a lawyer at Chapman University in Orange, California, such a market would be extremely useful, as the price of shares in a particular idea would provide a snapshot of how the scientific community felt about that issue.

Consider a claim about climate change, such as the size of the expected rise in mean global temperature by 2100. As long as enough scientists with relevant knowledge played the market, the price should reflect the latest developments in climate research. Policy-makers could use the market as a way of assessing current thinking, free from the bias of industry and activist groups — both of which tend to quote temperature changes at the extreme ends of the spectrum.

Bell is now looking for an institution to host the project, which he has named the Simon Market in honour of Simon’s work. But could scientists be persuaded to sink their money into such a market? “If you present it as a scientific experiment then scientists would be eager to try it,” suggests Bell. “Scientists also have egos and like money as much as anyone else.” His proposal is currently being considered by the Mercatus Center, a public-policy, law and economics offshoot of George Mason University.

Whether the ideas of Bell and the Long Bets Foundation will sway public debate or merely provide entertainment remains unclear. But while you’re totting up the odds, there’s still time for visitors to Cold Spring Harbor to enter Genesweep, before the final figure is announced next year. Our tip: 31,789 genes.

Jim Giles is Nature’s associate News and Features editor.

Genesweep

www.ensembl.org/Genesweep

Long Bets Foundation

www.longbets.org

Foresight Exchange

www.ideosphere.com

The Simon Market

www.simonmarket.org