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Nobel Notions and the Uses of Genetics

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IT'S Nobel Prize season, and the Nobel scientists are very much in the news. James Watson, awarded the laureate in 1962 for helping to deduce the now-iconic double-helix structure of DNA, is currently embroiled in controversy after making a series of blatantly racist remarks in the UK Sunday *Times* last week.

But related views espoused by one of this year's laureates have gone unnoticed. In early October, the Nobel Prize for biology went to three scientists whose talent and persistence gave us "knockout mice," the genetically engineered lab animals widely used by researchers to model and study human diseases. In the words of a Nobel committee member, these designer mice have "led to penetrating new insights" in several biological fields.

The story of one of the biology winners, Mario Capecchi, was the lead in most of the news reports about the award. Capecchi's rags-to-riches life gave an extra mythic dimension to the fairytale-like quality that always accompanies the Nobel announcements, with their large sums of money and middle-of-the-night phone calls to astonished scientists.

Capecchi spent his early childhood in World War II Italy, living on the streets and in orphanages after his mother was sent to Dachau for anti-Fascist activities. She survived and found her son on his ninth birthday. Together they set sail for the United States, where Capecchi got a high-quality education and eventually reached Watson's Harvard lab.

But there's another aspect of Capecchi's life that may sound more like science fiction than fairy tale. The new Nobel laureate, like his former mentor Watson, has spoken enthusiastically of using the genetic science he's helped advance to engineer biologically enhanced children.

The prospect of a renewed, high-tech eugenics is extraordinarily controversial, but it is not just a fantasy. It is coming ever closer to technical plausibility, and for a disturbing number of influential scientists and eccentric futurists, it is an agenda. At an infamous UCLA conference in 1998, Watson, Capecchi, and other prominent scientists gathered to strategize about how to make it "acceptable" to the public. The event was titled Engineering the Human Germline—a reference to what is now more commonly called "inheritable genetic modification"—and covered on the front pages of the *New York Times* and *Washington Post*.

The conferees were quite explicit. Watson—hardly known for his shyness or tact—proclaimed to the audience of nearly a thousand, "If we could make better human beings by knowing how to add genes, why shouldn't we do it?" (As for the "better human beings" he has in mind, he told a British film maker in 2003 that he considers ten percent of children "stupid," and would like to see them genetically modified. "If you really are stupid, I would call that a disease," Watson said. He went on to argue for using genetic techniques to prevent the births of "ugly girls." "People

say it would be terrible if we made all girls pretty,” he explained. “I think it would be great.”)

Another conference attendee, Princeton mouse biologist turned futurist Lee Silver, has elaborated on this frankly eugenic vision. In *Remaking Eden: Cloning and Beyond in a Brave New World* (William Morrow: 1997), Silver eagerly imagines a future in which the appearance, personality, cognitive abilities, and sensory capacities of children become products of genetic modification. Silver acknowledges that the costs of such procedures would limit their widespread adoption, and predicts that over time society would segregate into castes that he dubs the “GenRich” and the “Naturals.”

In the promotion of a new eugenics, Capecchi has been less the salesman or provocateur, and more the architect—or,

perhaps, the engineer. His talk at the 1998 conference, called “The Genetic Engineer’s Tool Box,” examined techniques “for safe, reliable germline engineering in humans.” Capecchi acknowledged concerns about the wisdom of making permanent changes in the human genome. If inheritable genetic modification were to begin in twenty years, he mused, “the procedures that we’ll be working out at that point will appear very primitive fifty years from now. And those procedures, in turn, will appear very primitive a hundred years from now.” This presents a serious problem: “[T]here’s no way we should create a system where it is a permanent record.”

But for a man of Capecchi’s scientific imagination, this problem is surmountable. In fact, he had already devised a clever work-around. His proposal: Create those genetic changes in the embryos that will become genetically enhanced

children, but put “on” and “off” switches into their genes. Newsweek described the scheme as “an end run around the worry that it is wrong to monkey with human evolution.”

Unlike Watson and others, Capecchi seems not to have pursued advocacy of using genetic tools in the service of a eugenic future. Perhaps he has had second thoughts. Perhaps he has recognized the disastrous new forms of discrimination and inequality that eugenic engineering could so easily produce. Perhaps there’s a chance he’ll use the platform afforded by his Nobel Prize to reject such dangerous applications of the science he’s helped to develop.

Or is that too much of a fairy tale ending?

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