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# The Wonders of Genetics Breed a New Art

By STEVEN HENRY MADOFF

If art in the broadest sense peers into the mysteries of life, then an art dedicated to the structure of life itself is of momentous relevance.

That imposing premise informs "Gene(sis): Contemporary Art Explores Human Genomics," an exhibition that opened in April at the University of Washington's Henry Art Gallery in Seattle. At once clever and awkward, the show's title evokes the biblical loftiness of Divine Origin and an altogether cooler scrutiny of the scientific, ethical and legal issues pulsing from the very nucleus of our genetic being.

There are 100 trillion cells and 30,000 to 40,000 genes in the human body, perfecting and destroying each of us in the relentless arc of living and dying. The expressions of our genes are so complex, so beautiful and monstrous, that to marvel at the heights of nature's ingenuity is to grovel before the mountain of our ignorance. Yet now that the initial map of the human genome is complete — finished in June 2000 by the government's Human





It is only now, as the subject has moved into the hot zone of media obsession, with images of cloned sheep giving way to the specter of cloned neighbors, that this art has moved closer to the mainstream. "I've tried to create an exhibition that's not about shock value, but to show the way artists are considering these powerful issues — and in some cases reacting with the deepest ambivalence," said Robin Held, the curator of the Henry show. "The goal isn't to translate scientific concepts for a lay audience but to ask where those concepts are taking all of us, do we trust those concepts, how do artists respond and how should we respond?"

In the process, Ms. Held and her 26 artists explore every avenue of art-making — from painting, photography and sculpture to installations, video, Internet-based art and performance. The art reflects the bliss as well as the pangs accompanying a science so full of portent that we can't even name all its possibilities.

There is Shawn Brixey and Richard Rinehart's quirky "Chimera Obscura," a vast image of a maze drawn from a thumbprint and navigated remotely by Internet visitors, which addresses, however metaphorically, the notion of finding one's way nearly blindly through the body. Then there is Jill Reynolds's more reverent we-are-all-one approach in "Family Tree II," with its towering trunk suspended from the ceiling and pierced by a network of tubes populated by yeast, whose DNA, scientists have discovered, is surprisingly similar to our own. Daniel Lee's digitally twisted portrait photographs are darker meditations. Crossbred and proud, they stand before us: cat people, simian people and Lord knows what else. Yet more intriguing still, and more troubling to some viewers, are the artists who have gone the next step beyond traditional media and adapted the tools of genetic science itself. Every artist dreams of breathing new life into art. These artists, quite literally, are doing it.

Eduardo Kac's "GFP Bunny" is an albino rabbit whose DNA was spliced with that of a Pacific Northwest jellyfish — convenient if you want to make sure your pet glows in the dark. No more

fumbling around at midnight with a carrot, crying: "Here, Alba! Here, Alba!" But Mr. Kac and a team of geneticists in Paris used green fluorescent protein to create this illuminating hare for a higher purpose: reckoning with transgenics, with crossing species characteristics and what that bodes when the map of the human genome and the genome of other creatures are fully at hand.

"It's easy to fear what we don't know, that the transgenic is monstrous" Mr. Kac said. "But when the transgenic is sitting in your lap, looking into your eyes, then the meaning changes. We now have a different kind of otherness to consider that makes us realize how close we really are. Asian? African? Surface racial traits are nothing compared with transgenic beings. With genetic therapy, humans are given genes they didn't naturally have. And now we're approaching the imminent emergence of human clones. You don't think it will happen? I wonder who will watch out for their civil rights."

In the grandest work at the Henry, "Genesis," Mr. Kac took the Old Testament passage, "Let man have dominion over the fish of the sea," translated it first into Morse code (an earlier example of a language of symbols invented to capture the substance of our world and circulate it) and then into the four-letter alphabet, A, T, C, G, which stands for the chemical base pairs along the ladder of our DNA. In this bizarre journey from the biblical Book of Life to physical creation, this literary DNA was then synthetically made, mixed with a sample of Mr. Kac's own, placed in a petri dish under a microscope and projected in all its purple, molecular majesty onto a darkened wall.

Of course, Mr. Kac's piece does prompt the thought that perhaps some omnipotent translator led the artist (and the rest of humankind) to this level of handiwork; that once upon a time we were encoded with a system of marks, which we've finally discovered and interpret as an alphabet written into our very core. Now that we've picked up the code, we've begun our own translations. With increasing ease in our genomic age, the script of life is revised, science fiction becoming science fact. But what will we write?

"When you start making rabbits as visual objects, using flamboyant genetic methods, it raises powerful questions," said Dr. Maynard Olson, the director of the Genome Project at the University of Washington and an adviser to the Henry show. "Artists are using living organisms to make a point: the closer designer organisms are to us, the more uncomfortable we're going to get."

The look of the work in Seattle more often than not heightened that sense of chill. True, there were humorous works, such as Bill Scanga's clownish taxonomy of pickled frogs in different colored pants and Susan Robb's paradoxically gorgeous photographs of imagined organisms made from highly scientific materials like Play-Doh, lint and the artist's spit. But in the expanded field of contemporary art, in which sociology, politics, technology and now health science are as crucial to artistic intention as aesthetics, the "beauty hook," as Ms. Held put it, was apparently not the point. Lab equipment, images of lab mice and lab refrigerators, precision machinery, vials and tubes, whiteness and brushed metal lowered the temperature while spooking the mind. Paul Vanouse's "Relative Velocity Inscription Device" used live DNA to meditate on his mixed-race heredity and the prospect that genomics, with its ability to cull genetic types and potentially deselect those not deemed "qualified," continues the time-weary bigotry of eugenics.

"GenTerra," a performance piece put on by the group Critical Art Ensemble, twitted the audience with a dose of satire and a dose of dread. The artists, in white lab coats, invited viewers to sit at computer stations beaming information about genomics, which they were instructed to read carefully. Then participants who signed health waivers played Russian roulette with petri dishes on

a revolving platform that released transgenic bacteria into the air — if they chose the right (or was it wrong?) specimen. Critical Art Ensemble's lab-brewed bacteria was in fact harmless. Yet there was a palpable edginess amid the playful science fair atmosphere — and it raised a very different kind of specter, as Ms. Held had already discovered.

In organizing the show, she found herself dealing at length with the university's Institutional Biosafety Committee and its sanitarian — a wonderful Brave New World-ish job title — who tracks potential health issues on campus. Not the usual judges of an art show's fitness, and the works ultimately passed muster. But in the heightened anxiety of a post-Sept. 11 world and the "weaponization" of anthrax, as Ms. Held said, it became obvious that it is impossible to show art evoking and practicing genetic manipulation without it creeping into our fears of bioterrorism, of toxic bacteria descending on us to murderous effect.

Yet the science at the heart of the art isn't all darkness, as the scientists themselves are eager to note. Dr. J. Craig Venter, the path-breaking geneticist who accelerated the decoding of the human genome and co-founded Celera Genomics, is circumspect when he's told about this latest show. "The problem with so much of this work is that it takes the view of genetic determinism, that we're just the sum total of our genes," he said. "But the linear sequence of the genome, while it's an astounding piece of knowledge, can't alone explain who we are and what will happen to us. We are a complex business and a complex mystery."

His rival and colleague, Dr. Francis Collins, director of the National Institutes of Health's National Human Genome Research Institute, seems to take off from Dr. Venter's point, though he had not heard it. "I know the artist's role is to provoke, and I welcome a consciousness-raising art, but I wish more of this work would convey the mystery, the elegance, the beauty of what the genome is about," he said. "The way in which this instruction book is put together, the dance within the cell that alters in microseconds in response to thousands of different circumstances and makes the right decision to keep that cell healthy. It's stunning. There are plenty of ethical issues to address, but I wish more of that sense of awe was honored."

Both men invoked Andrew Niccols's 1997 cult classic "Gattaca." The movie follows Ethan Hawke as a biologically average guy in a world ruled by genetically perfected superguys and supergals (who still smoke, drink and murder, though they look awfully good doing it). Through an elaborate hoax, using the "superior" body fluids and DNA of the character played by Jude Law, Mr. Hawke's character trumps them all. Mr. Niccols's new movie, "S1m0ne," due out in August, turns the notion of recombinant DNA into digital farce, when Al Pacino creates a computer-generated movie star composed of the greatest attributes of the greatest actors and singers, alive and dead.

Mr. Niccols's films are yet another instance of the flood of works, far beyond the visual arts, that demonstrate how DNA, genetics and the genome have surged into our culture. From the mere title of the new Star Wars juggernaut, "The Attack of the Clones," to "Technolust," the English actress Tilda Swinton's new movie about a scientist and a trio of bad-girl clones, the inspiration is clear. Music software programs, like Bio2Midi and ProteinMusic, are used to take DNA sequences and turn them into melodies. Jonathan Tolins's play "The Twilight of the Golds," about an unborn child with a hypothetical "gay" gene and its parents' decision to abort or not, has toured the country. Stacks of novels and nonfiction, even an illustrated manual for kids called "The Cartoon Guide to Genetics," by Larry Gonick and Mark Wheelis, are part of a publishing boomlet — with the most recent high-profile entry, Francis Fukuyama's "Our Posthuman Future," plying the same ethical

and existential issues that dominate the Henry show.

All of these productions, like so much contemporary art, reflect the way we view the power of genetics — for good or otherwise — to create new, extended and possibly transformed lives for us. Yet what underlies these fantasies and fears is a simple and unsurprising fact. As Lisa Vincler, a bioethicist and assistant attorney general in Washington State, put it bluntly, "Our culture just doesn't have an attitude that's very accepting of death." Billions of dollars in new genome-based drugs will be made on the principle that we are impatient with nature's judgments. And for all its wariness, this new gene art now finds itself pulled into the colossal force field that science and money have made. The questions are: Is this new art more than novelty? Will it lead to a single artwork of such eloquence that it summarizes the condition of our being? Will it add in an essential way to the vocabulary of art — as Giotto's frescoes in the Scrovegni Chapel in Padua, Italy, did or Picasso's "Demoiselles D'Avignon" or Pollock's "One: No. 31, 1950"?

Maybe. From a genomic perspective, why shouldn't the genes and proteins that miraculously combine to create a genius make one who likes to play with DNA? But no artist at the Henry can yet claim that triumph. That is still the prize of science, not art. The discovery of the DNA's double helix and the brilliance of deciphering the genomic sequence are Everests of imagination and creativity. They shift the world. What comes after — whether great art or law or a social order remade — is only beginning to emerge. Those glimmerings are still out there on the edge of the tidal force wrapped inside our genes.

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