Meiogenics: Synthetic Biology Meets Transhumanism

Some enthusiasts of synthetic biology envision technologies that would "improve" humans—and, perhaps, create useful "subhumans." By Stuart A. Newman

Synthetic biology is a collection of techniques, and research and business agendas, that includes the construction of DNA sequences that encode protein or RNA molecules which assemble into macromolecular complexes, biochemical circuits and networks with known or novel functions; the substitution of chemically synthesized DNA or DNA analogues for their natural counterparts in order to change cell behavior and/or produce novel products; and attempts to define and construct basic living systems from minimal sets of molecules.[1] Synthetic biology has been termed "extreme genetic engineering" by the Erosion Technology and Concentration (ETC) Group[2], in contrast to earlier recombinant DNA techniques that sought mainly to modify and refine existing types of organisms by altering or inserting individual genes.

Although production of new kinds of fuels and foods are the best-known, and potentially most lucrative, programmatic objectives of synthetic biology, the field's visionaries and front men also have ambitions that have landed them in the precincts of transhumanism, a eugenic cultural movement concerned with the production of "better" humans.[3] Thus, the Harvard researcher George Church confided to a reporter for *Science* magazine, "I wouldn't mind being virus-free," which elicited the comment: "It may be too late to reengineer all of his own cells to prevent viral infections, but Church doesn't rule out the possibility of rewiring the genome of a human embryo to be virus-proof."[4] In a similar vein, Drew Endy, a synthetic biology researcher formerly at MIT and now at Stanford, asked rhetorically in an interview with a *New Yorker* reporter, "What if we could liberate ourselves from the tyranny of evolution by being able to design our own offspring?"[5]

One difference from earlier eugenic fantasies is that synthetic biologists now know enough to realize that it would be hundreds of times more likely to botch an embryo's genome by gene manipulation techniques than to come up with an improvement. The prospect of trying these techniques on their own prospective offspring thus fails to arouse much enthusiasm, despite the promotion of a supposed right of "procreative liberty" by transhumanism-friendly legal theorists.[6] The inherent riskiness of embryo genetic manipulation has also become generally known, precluding significant numbers of the general public from offering up their embryos for such experiments.

If we think of human-type organisms not as anybody's children (or parents), but rather as sources of transplantable tissues and organs, experimental subjects, or crash test dummies and land mine defusers, eugenics takes on a whole new set of meanings, in which the improvements are more directed toward utility rather than enhanced success as members of the human community. In Drew Endy's words, "If you look at human beings as we are today, one would have to ask how much of our own design is constrained by the fact that we have to be able to reproduce… If you could complement evolution with a secondary path, decode a genome, take it off-line to the level of information…we can then design whatever we want, and recompile it…At that point, you can make disposable biological systems that don't have to produce offspring."[7]

With the objective thus being "meiogenics" (from the Greek μείον: less), that is, the creation of useful subhumans, many barriers to implementing such programs fall aside. Existing regulatory regimes on human experimentation pertain to what are agreed-upon humans; other, more permissive experimental regimes, cover vertebrate animals. If synthetic biologists can calibrate and titrate biological humanity and its animal consciousness by taking the human genome offline and recompiling it, we may be faced, in 20 years, with all manner of humanoid organisms, serving various practical purposes. Some may even represent metaphoric "lemonade" salvaged from the lemons of transhumanist experimentation. It is not clear who will make the cut of being human, who will not, and who will decide. But if beginning- and end-of-life controversies have been among the most divisive social issues up to the present, the implementation of the synthetic biologists' meiogenic future may even further erode a shared sense of humanness. ■■■

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that, together, may reflect a positive, strength-based perspective about human development.[23]

Conclusions

Quite simply, genes are not the to-be-reduced-to entities that provide any "blueprint" for behavior or development, nor do they function as a "master molecule;" they are not the context-independent governors of the "lumbering robots"[24] housing them; and they are not the fixed material basis of the grand synthesis of heredity and Darwinism found in the neo-Darwinian model.[25] Instead, and consistent with the four-dimensional, and neo-Lamarckian system involved in evolution,[26] genes are a plastic feature of the four-dimensional, epigenetic, action-oriented, and cultural and historical ontogenetic system that constitutes the fundamental process of human development across the life span.

Given the plasticity of the relational developmental system within which genes are embedded, a final split between basic and applied science may be overcome. We may be optimistic that the future of genetic research will be marked by new information about how we can promote epigenetic changes that enhance the probability of more positive development among all individuals across the life course. ■■■

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Endnotes

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