

Synthesizing the human genome from scratch

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For the past 15 years, synthetic biologists have been figuring out how to synthesize an organism's complete set of DNA, including all of its genes. They've tackled the genomes of microbes, but now one large consortium has its sights set on the human genome. The cover story in *Chemical & Engineering News* (C&EN), the weekly newsmagazine of the American Chemical Society, explores Genome Project-write (GP-write) and the technical and ethical challenges it faces.

Synthesizing a human genome is unlike anything ever done before, Contributing Editor Katherine Bourzac reports, and the technology is still in its early days. Although scientists have already built a *Mycoplasma* bacteria's [genome](#) measuring nearly 1.1 million base pairs long, they still have a long way to go to conquer even the smallest of the 23 [human chromosomes](#), which is about 42 times that size. The best way to string all those DNA bases together to form chromosomes is still up for debate. However, GP-write consortium members and other [synthetic biologists](#) are undaunted, planning numerous strategies to reach their goal. The scientists are tinkering with some simpler genomes as they make them to gain a better understanding of how genes and other DNA elements work in the first place.

Although the GP-write project could spur the development of brand-new types of cells that could make valuable fuels and drugs, it has come under scrutiny for its initial secrecy and the potential ethical issues that could arise as a consequence of the research, such as the creation of unnatural life forms. But as the project has evolved, members have emphasized that the part of GP-write focused on the [human genome](#) will

move at a slower pace than the other genomes being constructed, and the effort will involve ethicists every step of the way.

More information: cen.acs.org/articles/95/i28/Wr...ng-human-genome.html

Provided by American Chemical Society

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