Viewpoint: ‘What’s the biological equivalent of an atomic bomb’? Here’s how the gene editing revolution could go astray

We now sequence the genes of people, animals, plants and tumors routinely. We’re starting to edit DNA, not only in individual cells but even inside living people, as a treatment. Drug companies have created therapies for previously unconquerable diseases from melanoma to spinal muscular atrophy. Artificial intelligence, machine learning, and other computer tools aim to speed up the process further.

So what’s the biological equivalent of the atom bomb? Sure, there are worries that we’ll edit the wrong genes, or create biological inequality to mirror the economic inequality we already have. But the biggest looming problem is that we will simply become lost and confused as to what works and what doesn’t, scuttling our own progress, wasting money, and missing opportunities to save lives. That’s what happens when new technologies in biology outpace our ability to assess them.

When a new plane is tested, there is little doubt as to whether or not it can fly. But new medicines that enter human studies fail 90% of the time, and often, even when they are on the market and are very effective, large studies can be needed to be sure they are doing more good than harm. But we’re not doing these studies, called clinical trials, right. We’re embracing shortcuts called “real-world evidence” in place of rigorous studies that randomize patients to receive one treatment or another. Our electronic health records, a key to moving forward, are siloed and maddeningly unstructured.

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