

Social and ethical component of genetic technologies

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The technologies of genome editing and synthetic biology are becoming more and more accessible today and, in combination with the application of artificial intelligence in biotechnology, especially powerful. A feature of today's stage is the rapidly changing landscape of engineering biological systems, which requires revision and updating of the biosafety framework. The proposed new oversight measures are as follows: a) screening for DNA synthesis orders and sequences of concern; b) environmental metagenome sequencing to search for synthetic organisms [1]. At the same time, DNA 'printers' are appeared on the market today, that blurs the boundaries of access to synthetic DNA. It is significant that no government currently requires screening or regulates it, and this system works on a benevolent basis. Additionally environmental surveillance requires for a long time to define base line. With the new scale of human activity, new social risks also arise: new forms of discrimination and inequality, confidentiality of personal data in biotechnology projects, multiplication of biotechnology and artificial intelligence risks.

Thus, the idea of “responsible researches and innovation” (RRI) [2], and trend to address safety early at the concept stage — “Safe by design” have come into the focus. A number of RRI principles can be formulated at the proof concept stage for a genome-edited project: benefits for most citizens; transparency, the public comment cycle prior to the start of the experiments; responsibility, precautions, liability; justice, redress; well-being, social good.

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