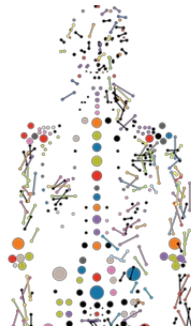


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## Precision medicine failing to deliver



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The basis of **precision medicine**, also at times referred to as personalised medicine, is the relationship between genetic factors and disease. Researchers and clinicians, in theory, can use genetic data to develop therapies tailored for individual patients.

However, nearly two decades after dramatic predictions that data from the [Human Genome Project](#) would completely transform the prevention and treatment of disease by now, personalised medicine has failed to live up to the hype. As the expected value of genetics-based medicine has failed to materialise, two medical scientists in the U.S. now seek a realignment of public health research priorities.

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Anaesthesiologist Michael Joyner at the Mayo Clinic in Minnesota, and epidemiologist Nigel Paneth from Michigan State University's College of Human Medicine, argue that initial hopes for genetic and [personalised medicine](#) were based on unfounded assumptions about how precisely common diseases could be linked to genetic factors. In reality, they point out, it has become clear hundreds of gene variants potentially play a role in conditions such as heart disease, depression, obesity, diabetes and cancer.

With this knowledge, the focus of **human genomics** has shifted from disease prediction and prevention to the use of gene variants to increase understanding of disease biology for translation into drug therapy. "The hidden assumption is that the host genome is the driver of every cellular event. But the genome is as much acted upon as it is actor, and the trigger for gene action is frequently an environmental stimulus, making the environment the primary cause, not the gene," the two medical experts explain.

They also note that the idea of developing personalised gene therapies against common diseases has been largely abandoned, and that early successes of genetic screening and gene therapies – developed at great expense – have been limited to a few very rare, niche conditions.

"Nearly two decades after the first predictions of dramatic success, we find **no impact of the human genome project** on the population's life expectancy or any other public health measure," they say, adding however that the promotion of precision medicine continues unabated. In view of the limitations of the precision medicine narrative, the two doctors emphasise that it is time for the biomedical research community to "reconsider its ongoing obsession" with genomic medicine and "**reassess its research priorities**" including funding to more closely align with the current public health needs.

Source: Chemistry World  
Joyner MJ and Paneth N (2019) Promises, promises, and precision medicine. J Clin Invest., DOI: 10.1172/jci126119  
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