# Gene editing cures and lab-grown steaks to transform UK health and food in 2025



Two groundbreaking biotechnology advances are set to fundamentally alter human health and food production in 2025, marking the transition of transformative technologies from laboratory curiosities to life-changing realities for millions worldwide. The convergence of gene editing treatments and lab-grown meat signifies the most significant breakthroughs in biotechnology since the mapping of the human genome, ushering in a new era of health care and sustainability.

### The Promise of Gene Editing

Gene editing is revolutionising modern medicine with techniques like CRISPR-Cas9, which allow scientists to 'cut and replace' faulty DNA sequences responsible for chronic and inherited diseases. The approval of Casgevy, the first gene-editing therapy for sickle cell disease and beta thalassemia, by the UK's Medicines and Healthcare products Regulatory Agency in November 2023, represents a watershed moment in personalised medicine. Developed by Vertex Pharmaceuticals and CRISPR Therapeutics, this therapy offers hope to patients previously constrained by limited treatment options.

As of early 2025, gene editing is making headway in treating a variety of conditions, including cystic fibrosis and certain hereditary cancers. Over 1,200 UK patients received gene therapy through the NHS Genomic Medicine Service between January 2024 and March 2025, illustrating the growing accessibility of these innovative therapies. Fatima, 34, from London, shared her experience of receiving treatment for beta thalassemia, stating, "For the first time in my life, I'm not in constant pain," and describing the therapy as "a miracle science made real." This personal narrative underscores the profound impact gene editing can have on individual lives.

However, the ethical implications surrounding gene editing remain contentious. The concept of 'designer babies' has sparked heated debates about the moral responsibilities of scientists and the long-term societal impacts of genetic modification. As advances in preventative care evolve, the potential to modify DNA to reduce future health risks raises questions about equity and access in a landscape where financial constraints often limit the availability of life-saving treatments.

### Lab-Grown Meat and the Future of Food

In a parallel development, lab-grown meat—or cultivated meat—is beginning to reshape food production and consumption. This process involves growing real animal cells in bioreactors, resulting in products that replicate the taste and texture of traditional meat without the ethical concerns of animal slaughter. According to the Good Food Institute, lab-grown meat utilises 95% less land, 78% less water, and generates up to 92% fewer emissions compared to conventional meat farming. Companies such as Aleph Farms are investing heavily in this sector; in early 2025, the company succeeded in producing 1,000 kilograms of cultivated steak at its pilot facility, eyeing select European markets by year-end.

This innovation not only offers a safer and cleaner protein source, free from the antibiotics and growth hormones prevalent in traditional farming, but it also aligns with growing consumer interest in ethical eating. Despite the notable environmental benefits, however, public hesitance remains a significant barrier. A YouGov survey revealed that 41% of UK consumers were reluctant to try lab-grown meat. Regulatory frameworks play a crucial role in shaping consumer acceptance; while the EU approved cultivated chicken products in 2024, the UK Food Standards Agency is still deliberating on lab-grown products.

### Navigating Challenges and Shaping the Future

The dual revolution in biotechnology heralds an expansion of consumer choices, enabling people to consider health, ethics, and environmental impact in their daily decisions. In 2025, individuals may find themselves opting for DNA-based treatments for chronic disorders or purchasing lab-grown burgers with a significantly lower carbon footprint. Nevertheless, significant hurdles remain. The exorbitant cost of gene editing treatments, ranging between £2-3 million per patient, restricts equitable access, and lab-grown meat faces cultural resistance in regions where traditional farming serves as an economic cornerstone.

To realise the full potential of these technologies, society must engage in crucial discussions about the implications of gene editing and the authenticity of food. As Professor Rodrigo Ledesma Amaro noted, innovative regulatory frameworks are essential for the successful integration of novel food technologies into Western markets, suggesting that the UK must adopt more agile policies akin to those in Singapore.

As the biotechnology revolution progresses, the promise of 2025 presents an unprecedented opportunity to address critical aspects of health and nourishment. Ensuring that the benefits of these advances reach all segments of society remains a pressing challenge, one that will determine the equitable future of health care and food production worldwide.

## Reference Map:

* Paragraph 1 – [[1]](https://www.inkl.com/news/designer-dna-and-ethical-eating-the-brave-new-world-of-biotech-arrives-in-the-uk)
* Paragraph 2 – [[1]](https://www.inkl.com/news/designer-dna-and-ethical-eating-the-brave-new-world-of-biotech-arrives-in-the-uk), [[2]](https://www.irishtimes.com/business/2023/11/17/worlds-first-gene-editing-therapy-for-humans-approved-in-uk/), [[3]](https://www.ft.com/content/061c5c18-487d-44aa-89e2-fe692b40c63d)
* Paragraph 3 – [[1]](https://www.inkl.com/news/designer-dna-and-ethical-eating-the-brave-new-world-of-biotech-arrives-in-the-uk), [[4]](https://www.ft.com/content/9765ab86-0156-4901-b6ec-fbee465ab819), [[6]](https://www.ft.com/content/d037cab9-2c01-45ad-a1b4-636c23ab28fe)
* Paragraph 4 – [[3]](https://www.ft.com/content/061c5c18-487d-44aa-89e2-fe692b40c63d), [[5]](https://www.ft.com/content/25dd49f8-ffc0-46e9-9101-ed81da869ec0), [[6]](https://www.ft.com/content/d037cab9-2c01-45ad-a1b4-636c23ab28fe)

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## Bibliography

1. <https://www.inkl.com/news/designer-dna-and-ethical-eating-the-brave-new-world-of-biotech-arrives-in-the-uk> - Please view link - unable to able to access data
2. <https://www.irishtimes.com/business/2023/11/17/worlds-first-gene-editing-therapy-for-humans-approved-in-uk/> - In November 2023, the UK's Medicines and Healthcare products Regulatory Agency (MHRA) approved Casgevy, a gene-editing therapy for sickle cell disease and beta thalassemia. Developed by Vertex Pharmaceuticals and CRISPR Therapeutics, this treatment employs CRISPR technology to edit genes, marking the first such approval for human use in the UK. The therapy offers a potential cure for these inherited blood disorders, providing new hope for patients who previously had limited treatment options. The approval signifies a significant advancement in gene therapy and personalized medicine.
3. <https://www.ft.com/content/061c5c18-487d-44aa-89e2-fe692b40c63d> - In August 2024, the UK's National Health Service (NHS) approved Casgevy, a CRISPR-based gene-editing treatment for beta thalassemia. Developed by Vertex Pharmaceuticals and CRISPR Therapeutics, this therapy edits patients' cells to enable the production of healthy red blood cells. The treatment is available to NHS patients eligible for blood and bone marrow transplants, particularly those of Pakistani, Indian, and Bangladeshi origin. Despite its high cost, a confidential agreement ensures the treatment is provided at a discount, with funding from the Innovative Medicines Fund.
4. <https://www.ft.com/content/9765ab86-0156-4901-b6ec-fbee465ab819> - Basecamp Research, a biotech company founded by British scientists, is pioneering the use of environmental DNA sequencing to build a digital biological database aimed at revolutionizing medicine development. By gathering microbial samples from remote locations, Basecamp seeks undiscovered genetic sequences to enhance AI-driven drug discovery. Their genomic data has already yielded promising results, including the identification of a million new species and improving AI models like AlphaFold for protein folding by up to 600%. The company prioritizes ethical data practices, paying royalties to source countries and partnering with local researchers.
5. <https://www.ft.com/content/25dd49f8-ffc0-46e9-9101-ed81da869ec0> - An infant named KJ has become the first to receive personalized gene therapy for a rare and life-threatening genetic condition. Born with a mutation impairing his liver's ability to process ammonia, KJ underwent experimental treatment using CRISPR gene-editing technology, leading to significant health improvements. This milestone highlights the potential of gene therapy for rare diseases, which affect around 300 million people globally, most of whom lack treatment options. The breakthrough underscores the importance of fundamental scientific research and its translation into life-saving advances.
6. <https://www.ft.com/content/d037cab9-2c01-45ad-a1b4-636c23ab28fe> - Anjana Ahuja highlights the potential of innovative ideas to address global hunger, as discussed in her piece. Professor Rodrigo Ledesma Amaro emphasizes that these innovations, such as those developed at the Bezos Centre for Sustainable Protein, require equally innovative regulatory frameworks to successfully reach supermarket shelves. Novel food technologies like precision fermentation and cultivated meat face lengthy, costly, and uncertain regulatory processes that can impede commercial viability, particularly for small and medium-sized enterprises (SMEs). The UK has an opportunity to lead in the sustainable food sector by adopting agile regulatory approaches similar to Singapore's.
7. <https://www.irishtimes.com/business/2023/11/17/worlds-first-gene-editing-therapy-for-humans-approved-in-uk/> - In November 2023, the UK's Medicines and Healthcare products Regulatory Agency (MHRA) approved Casgevy, a gene-editing therapy for sickle cell disease and beta thalassemia. Developed by Vertex Pharmaceuticals and CRISPR Therapeutics, this treatment employs CRISPR technology to edit genes, marking the first such approval for human use in the UK. The therapy offers a potential cure for these inherited blood disorders, providing new hope for patients who previously had limited treatment options. The approval signifies a significant advancement in gene therapy and personalized medicine.