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Gene therapy: yesterday, today and tomorrow

by Heather Doran, Science editor

This issue focuses on one of the most keenly anticipated and researched topics in medicine – gene therapy. With recent advancements in the field, the hope is that some of the most debilitating diseases, many that seriously affect children, can begin to be treated.

It wouldn't be right to cover this topic in *The Biochemist* without also acknowledging the ethical considerations of these treatments. First, there are decisions to be made on what conditions might be 'fixed' via these methods, if they need fixing at all and what is the outcome for those that undergo these treatments? Although it is heartening to see developments in the treatment of diseases that can have serious life-limiting effects, who gets to decide which ones are prioritized for research?

The second factor, which is discussed in a number of articles in this issue, relates to the cost of gene therapy treatments. Research has taken many years and a single-point treatment needs to cover costs, but the extraordinary level of finance required for one of these treatments also limits who has access. How can we make sure all who need it can receive it? Currently, gene therapy treatments are the most expensive treatment method across all medicine, with a single treatment costing millions of dollars.

Lastly, the question is what comes next now that this technology is in use? What limits could/should there be (or not be) on the use of gene therapy?

Biology, medicine and research are never in isolation from society and this is one area that highlights how important it is to have engagement and involvement from patients and the public, along with law and experts in the social sciences in the discussions of the creation, limits and applications of these approaches.

The possibilities of gene therapy took longer than expected to be realized. Now different delivery methods of viral and non-viral vectors have been created to make the process more efficient and safer. The articles in this issue are looking at *in vivo* gene therapies, the challenges for the future and the steps that have taken us to where we are today. ■



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