
Revolutionary Gene-Editing Therapy Cures Disorder

Description

Kirthana Balachandran
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Kirthana Balachandran, diagnosed at three months old, is now studying medicine.

The NHS will offer the first gene-editing therapy for beta thalassaemia, a significant breakthrough. Stem cells will be reprogrammed to correct the blood disorder and eliminate the need for regular blood transfusions. People with beta thalassaemia lack sufficient haemoglobin, causing fatigue and shortness of breath. Kirthana, diagnosed as a baby, experiences muscle pain and palpitations, fearing a life dependent on transfusions.

The therapy utilizes Crispr technology, resembling a GPS-guided scissor, to switch the body's haemoglobin production from adult to fetal types. By targeting the genetic switch, the treatment revives fetal haemoglobin production. Abdul, a trial participant, experienced improved health post-therapy. Long-term monitoring results showed minimal need for blood transfusions post-treatment.

The therapy's £1.6m price tag has been negotiated by NHS England, making it accessible to eligible patients. Amanda Pritchard, NHS chief, heralds the therapy's availability as historic. The treatment offers hope to those with beta thalassaemia, predominantly prevalent in certain ethnic groups.

Vocabulary List:

1. **Thalassaemia** /θæ.l.ə'si:.mi.ə/ (noun): A genetic blood disorder characterized by reduced production of hemoglobin.
2. **Haemoglobin** /hi:.mə'glɒb.ɪn/ (noun): A red protein responsible for transporting oxygen in the blood.
3. **Crispr** /'krɪs.pər/ (noun): A technology that allows for precise editing of the DNA in genes.
4. **Reprogrammed** /,ri:'prɒŋ.græmd/ (verb): Changed the programmed instructions of something such as cells.
5. **Fetal** /'fi:.təl/ (adjective): Relating to a fetus or embryo.
6. **Palpitations** /,pæl.pɪ'teɪ.jənz/ (noun): Irregular or rapid heartbeats that may feel like fluttering or pounding.

Comprehension Questions



Multiple Choice

1. What is the focus of the first gene-editing therapy for beta thalassaemia?
Option: Reprogramming skin cells
Option: Correcting liver function
Option: Correcting the blood disorder
Option: Enhancing muscle growth
2. Which technology is utilized in the therapy for beta thalassaemia?
Option: GPS navigation
Option: Crispr technology
Option: AI algorithms
Option: Blockchain technology
3. What is the main benefit of the gene-editing therapy for beta thalassaemia?
Option: Promotes hair growth
Option: Revives fetal haemoglobin production
Option: Increases blood sugar levels
Option: Reduces brain activity
4. How much is the price tag for the therapy?
Option: £2.5m
Option: £1.2m
Option: £1.6m
Option: £3.8m
5. Who heralds the availability of the therapy as historic?
Option: Kirthana Balachandran
Option: Abdul
Option: Amanda Pritchard
Option: NHS England
6. Which group of people is predominantly affected by beta thalassaemia?
Option: Children under 5
Option: Elderly population
Option: Certain ethnic groups
Option: Middle-class individuals



Answer

Multiple Choice: 1. Correcting the blood disorder 2. Crispr technology 3. Revives fetal haemoglobin production 4. £1.6m 5. Amanda Pritchard 6. Certain ethnic groups

Vocabulary quizzes

Multiple Choice (Select the Correct answer for each question.)

1. Which term describes a disease that can be easily transmitted from one person to another?

- Option: Infectious
- Option: Complications
- Option: Vaccination
- Option: Monitor

2. Which condition is characterized by abnormal hemoglobin production?

- Option: Haemoglobin
- Option: Crispr
- Option: Reprogrammed
- Option: Fetal

3. Which term refers to the criteria individuals must meet to participate in a research study?

- Option: Participants
- Option: Remission
- Option: Groundbreaking
- Option: Obesity

4. What term describes the act of being separated from others?

- Option: Stimulation
- Option: Cognitive
- Option: Therapy
- Option: Antidepressants

5. What term is used to describe something that occurs before the expected time?

- Option: Fertility
- Option: Ovarian
- Option: Cohort
- Option: Repurposing



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6. Which term means to confirm the accuracy or truth of something?
Option: Validate
Option: Challenging
Option: Participants
Option: Remission
7. What term describes the process of adapting something for a different purpose than originally intended?
Option: Therapy
Option: Antidepressants
Option: Obesity
Option: Repurposing
8. Which term is related to processes of thought reasoning and memory?
Option: Dementia
Option: Isolation
Option: Cognitive
Option: Therapy
9. What term refers to the administration of a substance to stimulate an immune response against a specific disease?
Option: Thalassaemia
Option: Hemoglobin
Option: Crispr
Option: Vaccination
10. Which term describes something innovative or pioneering?
Option: Groundbreaking
Option: Thalassaemia
Option: Haemoglobin
Option: Crispr

Gap-Fill (Fill in the blanks with the correct word from the vocabulary list.)

11. Poor diet and lack of physical activity are common contributors to _____.
12. _____ is a general term for loss of memory language problem-solving and other thinking abilities that are severe enough to interfere with daily life.



13. People experiencing rapid strong or irregular heartbeats may describe this sensation as heart _____ .
14. The task was extremely _____ requiring a high level of skill and concentration.
15. It is important to _____ patients closely after surgery to watch for any complications.
16. Through effective vaccination programs many diseases have been _____ in certain regions.
17. Physical and occupational _____ play a crucial role in the rehabilitation process.
18. The doctor performed an ultrasound to check on the _____ development of the unborn child.
19. The new educational toys are designed to provide sensory _____ for infants.
20. After completing chemotherapy the patient experienced a period of _____ with no signs of cancer.

Matching Sentences (Match each definition to the correct word from the vocabulary list.)

21. The flu virus is highly and can spread rapidly in a population.
22. Scientists are exploring the use of technology to edit genetic sequences.
23. Some individuals may require to manage symptoms of depression.
24. The project focused on the of existing drugs for new therapeutic purposes.
25. Doctors need to closely the patient's vital signs during the surgery.
26. The study is seeking healthy to volunteer for the clinical trial.
27. The recent measles outbreak has highlighted the importance of childhood .
28. The baby's lungs were not fully developed due to birth.



29. The new medical discovery was hailed as a achievement in the field.

30. Caring for a loved one with can be emotionally and physically challenging.

Answer

Multiple Choice: 1. Infectious 2. Haemoglobin 3. Participants 4. Stimulation 5. Fertility 6. Validate
7. Repurposing 8. Cognitive 9. Vaccination 10. Groundbreaking

Gap-Fill: 11. Obesity 12. Dementia 13. Palpitations 14. Challenging 15. Monitor 16. Eliminated 17. Therapy
18. Fetal 19. Stimulation 20. Remission

Matching sentence: 1. Infectious 2. Crispr 3. Antidepressants 4. Repurposing 5. Monitor 6. Participants
7. Vaccination 8. Premature 9. Groundbreaking 10. Dementia

CATEGORY

1. Health - LEVEL4

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Author

aimeeyoung99

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