

A

KEY OF LIFE

- **Title Of Speaker:** Geneticist from NAS (National Academy of Science)
 - **Audience:** General Public
- **Purpose:** To gain support for genetic engineering by presenting its uses in the field of medicine to cure various genetic disorders.
- **Venue:** Lecture at Cambridge University (London, England)

B

KEY OF LIFE

Over time, human beings have evolved from being mere water creatures to an intelligent species that has reached limits beyond the sky. Indeed, Mother Earth is filled with various extraordinary and fascinating creatures, but none as complex and intelligent as us. After years of struggle, hard work, sacrifices and the will to believe that anything is possible, we have discovered the mystifying secrets of our deoxyribonucleic acid (DNA). DNA is our key of life. It is our blueprint that determines everything from our appearances to our abilities as well as how healthy we are. Unfortunately, many diseases that humans suffer from are a result of genetic disorders. In other words, our genes within our DNA determine many diseases that we may inherit or develop. As my father has always reminded me, "necessity is the mother of invention," and humans have for centuries needed the answer to why a disease will mercilessly take the life of a poor and helpless human being. Once again, science has shown its miracles, and human beings are entering a glorious era of 'genetic engineering,' which will allow us to modify the blueprint that determines who we are.

Just imagine the power, at the hands of a geneticist to extract a chromosome or segment of the DNA that causes life threatening diseases, such as cystic fibrosis, diabetes and even the terrible disease, cancer. In fact, this new medical technology will allow us to insert perfect genes into human cells to correct otherwise incurable diseases. In fact, there are 5000 or more types of single gene disorders, which can only, and I emphasize only, be cured by genetic engineering.

raise voice
emphasize

say it slowly

raise hand gesture

softer voice and lengthen tone

raise a fist

softer/lower tone + emotional expression

raise voice + emphasize

HIGH LEVEL 4

C

Personally, I first learned of genetic engineering and its magical possibility to cure diabetes at a Biology Conference at the University of Toronto. At that very instant, I was overcome with emotions that I could not define. For years, I have researched and dreamed of a permanent cure for diabetes. Why diabetes? My closest cousin, when just an innocent child of about 9 years old, was discovered to be a victim of diabetes. I can still remember the terrifying moment of seeing him rushed to the hospital and seeing the tears and pain in his father's eyes upon discovering that his son's sugar level had reached 325, which meant death within two hours unless immediately treated with high amounts of insulin. I ask all of you to step into that innocent child's shoes and imagine having severe diabetes at the age of nine. Can you imagine having to poke needles into your arm until it turns blue and you even lose the feeling of it being part of your body? Please, I ask you to imagine not having the freedom to eat sugar, chocolate and other treats that children love, at the age of nine. When I try to imagine the pain, both emotional and physical, of that child, I am struck by fear and sadness. Realizing the fact that genetic engineering can cure all the pains and sorrows of not only diabetes but also diseases like cancer, cystic fibrosis, and arthritis, I have hope for a more glorious, harmonious and healthier era for all human beings.

In fact, genetic engineering has already influenced the lives of many patients, including Ashanti DeSilva, who was once a victim of a genetic disorder and could no longer fight infections in her body. However, the amazing miracle of genetic engineering was tried out on September 14, 1990 by a medical team. In this process, Ashanti's white blood cells were removed and normal genes were

lower tone, slow down and show an emotionally emphatic expression

low tone, relaxed and low pitch

express emotional pain high/strong voice

ironic voice + emphasize

raise hand gesture + sound evocative

D

inserted into her body. Fortunately, Ashanti is now living a much healthier, productive life without the pains, the sorrows and the bitterness of her disorder. It fills my heart with joy to realize that geneticists were able to give Ashanti the cure that finally set her free, and set an example for all mankind that it is possible to defeat genetic disorders.

However, public support, funds, as well as believing in the miracles of genetic engineering are critical keys to further research and practice of this new and amazing technology. Public involvement will help scientists and governments provide the financial support along with the essential scientific equipment needed for the further development of genetic engineering.

Unfortunately, as good and evil have existed side by side since the beginning of time, we need to stand up in support of genetic engineering, but also make sure that possible misuses of this technology are not put into action. Indeed, I will not deny the fact that genetic engineering can be misused to create 'superhuman' beings, or be used as a bio-weapon to cause destruction on this planet. However, humans have constantly faced obstacles, found solutions and reached beyond the beliefs of our ancestors. Well, why can't we work together and choose the right path of dedicating genetic engineering to curing genetic disorders, which can change the lives of all humans? Can't we all, as one species with the same blueprint and the same number of chromosomes, feel the pain of innocent children, suffering from life-threatening diseases and patients lying in hospitals everywhere, and support genetic engineering? Many are already stepping forward to support genetic engineering and standing up to ensure that its misuses do not

sad expression

factual tone + sound enthusiastic

sound confident + hopeful

sound disappointed

emphasize

questioning tone

sound emphatic

raise voice + emphasize

sound powerful use hand gestures

E

become a reality. For instance, in 1994, the Genetic Privacy Act in the United States was proposed to regulate any analysis, collection, storage, and use of DNA samples obtained in any genetics research program.

I always believed that anything is possible and now the choice is right in our hands. We can either choose to help or harm human beings with genetic

display
enthusiasm

engineering. We made history when Alexander Fleming first created penicillin.

We made history when Neil Armstrong stepped on the moon. We made history when Yuri Gagarin flew into space and we made history when Terry Fox ran the

high voice
but end
slowly

Marathon of Hope. Now, let's all join hand in hand and make genetic disorders history.

- high
powerful
tone +
confident
tone

F

BIBLIOGRAPHY

Bowers, Ray, et al. Biology. Toronto: Pearson Education Canada, 2002.

Human Genome Management Information System. "About the Human Genome Project." [URL: http://www.ornl.gov/TechResources/Human_Genome/project/about.html] February 18, 2002.

Jefferis, David. Cloning: Frontiers of Genetic Engineering. New York: Crabtree Publishing Company. 1999.

HIGH LEVEL 4

Teacher’s Notes**Knowledge/Understanding**

- The student demonstrates an exceptional degree of understanding of the facts surrounding the chosen issue. The student gives examples to illustrate the benefits to humankind of the proper use of genetic engineering (e.g., “In this process, Ashanti’s white blood cells were removed and normal genes were inserted into her body”). The student also gives examples of possible abuses (e.g., “genetic engineering can be misused to create ‘superhuman’ beings, or be used as a bio-weapon to cause destruction on this planet”).

Thinking/Inquiry

- The student supports the perspective taken using ideas that are highly relevant to the purpose and audience. The student builds a compelling argument for supporting genetic engineering, developing the analogy of DNA as a “blueprint” that can be modified “to correct the otherwise incurable diseases” that result from genetic disorders. The student masterfully draws on evidence from research sources to support his or her position (e.g., uses information from the 1994 Genetic Privacy Act to respond to fears about possible misuses of genetic technology).

Communication

- The student organizes information and ideas in an outstanding manner. The student provides a highly engaging introduction explaining the discovery of the “secrets” of DNA and the potential of genetic engineering to improve human life. The student uses personal anecdote and thoughtful and provocative statements and questions to engage the audience’s sympathy (e.g., “Can you imagine having to poke needles into your arm until it turns blue ...?”).
- The student uses language and a voice that are highly appropriate. The tone is both inspirational and authoritative, and thus fully appropriate to the persona of a scientist seeking to improve the quality of human life, and to the purpose, which is to seek support for the use of genetic engineering. The language and tone are also appropriate to a general audience (e.g., the speech is given in lay language and makes an appeal to the audience’s emotions).

Application

- The student uses oral presentation techniques with a high degree of effectiveness. The student includes rhetorical questions (e.g., “Can’t we all, as one species ... feel the pain of innocent children ...?”), personal anecdotes (e.g., about the speaker’s nine-year-old cousin who “was discovered to be a victim of diabetes”), repetition (e.g., of “We made history ...” at the start of three consecutive sentences in the closing paragraph), and word play (e.g., “Now, let’s ... make genetic disorders history”).
- The student builds in speaker notes with a high degree of effectiveness. The notes are wide-ranging, covering body language, mood, volume, emphasis, and pace, and are clear and easy to spot.
- The student predicts a realistic and highly effective resolution. The student confronts the potential of genetic engineering for abuse but cites the 1994 U.S. Genetic Privacy Act as evidence that “Many are ... standing up to ensure that its misuses do not become a reality”.

Comments

This work is representative of a high level-4 performance. The student demonstrates a high or outstanding degree of achievement of the expectations in all four categories of knowledge and skills.

The result is a superb speech. The student thoroughly understands the task requirements. The speech is well researched, coherent, and persuasive. The persona of the geneticist is credibly maintained, and the appeal to the audience is powerful.

Next Steps

In order to improve his or her performance, the student needs to:

- proofread carefully to eliminate occasional examples of awkward usage (e.g., “I have researched and dreamed of a permanent cure for diabetes”).