

2019 年 4 月 29 日  
NASA 双胞胎实验结果揭晓  
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a. 过于强烈、刺激的  
harsh lighting  
刺眼的光线

harsh criticism  
严厉的批评

harsh words  
难听的话

NASA Kelly twins study shows harsh effects of space flight and

eg. a brutal murder  
一场残忍的谋杀

/ˈbruːtl/ a. 刺激的; 严重的; 令人不快的.  
a brutal return to Earth

太空飞行

eg. She spoke to me with brutal honesty, "I don't want to see you again!" 她毫不留情地跟我说: "我不想再见到你!"  
a. 残忍的; 直截了当的 (附带不赞成的语气)

实验背景

Astronaut Scott Kelly made himself a guinea pig for all the people who dream of human journeys to Mars and other destinations in space. In 2015,

豚鼠; 实验对象; 供做实验的

the earth's orbit  
around the sun  
地球围绕太阳  
运行的轨道

Kelly rode a rocket into space and spent nearly a year on the International Space Station in low Earth orbit, while his identical twin brother, Mark Kelly, stayed on Earth's surface for NASA's celebrated "twins study," designed to see what spaceflight does to the human body.

目的地

/ˈɔːrbɪt/

/aɪˈdentɪkl/ a. 完全相同的; 极为相似的

n. (天体围绕行星或小行星运行的) 轨道

famous 著名的; 有名的

eg. They're asking for students to be guinea pigs for the new teaching methods. 他们在找一些学生作新教学方法的实验对象.

eg. He's got three identical T-shirts.  
他有三件一模一样的T恤衫.

实验结果

The full results, published Thursday in the journal Science, showed that Scott Kelly experienced numerous physiological and chromosomal changes during his long sojourn in orbit, including changes in gene expression. His immune system went on high alert, both when he went to space and upon returning to Earth. His body acted as if it were under attack.

physiological reactions.  
生理反应

/ˌfɪziəˈlɑːdʒɪkl/ physiology /kromsəˈsəʊməl/

数量多的 (学术化) a. 生理学的 n. 生理学

chromosome  
n. 染色体

/ˈsoʊdʒəːn/ n. 逗留, 停留 n. 警戒, 戒备

chromosomal abnormalities  
染色体异常

put 高度戒备, 高度警戒

一...就...

a week's sojourn in Paris 在巴黎逗留了一周

似乎, 好像

eg. With the war looming, the troops went on high alert. 战事将近; 军队处于高度警戒状态.

eg. Humans have 23 pairs of chromosomes in their cells. 人类的细胞里有23对染色体.

实验结果的亮点

One of the most dramatic findings concerned epigenetics — how genes are turned on or off to produce proteins. Gene expression changed in both

/ˌepɪdʒəˈnetɪks/

n. 和...有关 n. 表观遗传学

表观遗传学 途径

基因调控

epi- 在...之上

gene 基因

-tics 一般指某个科学学科

genetics  
n. 遗传学



Kellys during the study but in significantly different ways. The study found that more than 90 percent of Scott Kelly's gene expression changes **reverted**

回到, 恢复

**to** normal when he returned to the surface.

eg. After her divorce she reverted to her maiden name.

离婚的妇女结婚之后会用丈夫的姓氏, 但离婚之后就恢复了自己的娘家姓。

shorten v. 变短

/ˈteləmə/ /ˈleŋθən/

His **telomeres** **lengthened** in space. But that's no fountain of youth, the

n. 端粒 v. 延长, 拉长, 加长, 变长

喷泉 泉水 来源

study found, because the telomeres shortened dramatically when he

returned to Earth.

eg. The days lengthened as summer approached.

随着夏天的到来, 北半球的白天变得越来越长。

elevate v. 升高, 提高

elevator n. 升降电梯

keep my feet elevated 把脚垫高

/ˈelivɪtɪd/ 近 raised

Months later, he still showed a slightly **elevated** number of cells with

稍微地 a. 提高的, 升高的

shortened telomeres, possibly an effect of radiation **exposure**. "He might

/ˌkɑːdiəvəsˈkjələr/ /ˌkɑːspɒzər/ n. 接触, 面临, 遭受

be at some increased risk for **cardiovascular** disease or some types of

a. 心血管的

cancer," said Susan Bailey, a biologist at Colorado State University who

led one of the investigations in the study.

cardio n. 有心脏运动

cardio- 跟心脏有关的

vascular a. 血管的

eg. You should limit your exposure to the sun.

应该注意防晒, 不要长时间晒太阳。

实验之后, Scott  
端粒的变化

