Why does science not give people a cure疗法 for cancer?

1.Most people believe that cancer is like a flu; a cold, something we can shake摆脱 off. But it is not.

I’m a computer scientist in a genetics遗传 world, and I came逐渐开始 to realize意识到 that “cancer” is a normal正常的 process过程 of life.

All throughout贯穿 history从古到今, humanity人类 has been seeking寻找 eternal永恒的 life and longevity长寿. It’s not a new quest追求. Nearly everyone in the medical field is working to prolong延长 life and allow us all to be closer and available可获得的 for our loved ones. 摆脱贫困shake off poverty摆脱贫困

2.Cancer, to put it plainly说白了, is a label标签 for “failure失败 to keep consistent一致的 DNA”.

Our DNA and protein蛋白质 structures结构 replicate复制 at an alarming惊人的 rate. Faster than most of us would imagine. It’s mentioned提到 that some parts of the human body replace替换themselves every few years. New skin cells, new hairs, muscles, and livers肝脏 healing from alcohol (hehe). Billions of cells are replicated to heal damaged tissue组织. Billions of cells replicate to grow us into adulthood成年期 and beyond之后.

3.When replication occurs发生, there is a very-very-very small chance几率 that the replication will have an error.

ACGTACGT becomes ACGTTCGT

In most cases情况, this is fine. A skin cell with an error in it will be created, it will live, it will duplicate复制=copy, and then the skin cell will die. A human cell has 3.4 billion亿 nucleotides核苷酸, where only 2% are critical关键 for protein蛋白质 expression表达. This allows small benign良性的 errors to not have an impact影响

Duplicate=replicate=copy

4.However, some specific具体 genes in that 2% are critical for cell growth and cell death. When the instructions指令 for “grow every 5 days; die after 5 days” becomes “grow every 5 days; die every 15 days”, we call that “cancer”. Likewise Similarly类似的，同样的 it can also end up as “grow every 2 days; die every 5 days”, thus the equation方程式 for replication复制 becomes unbalanced.

5.With more cells growing than they are dying, there is a greater and greater need for resources资源; cancer ends up stealing+偷 vital重要的 nutrients营养 from other critical organs器官.

So…It is not that science is holding阻止/退缩 back, but moreover science is still trying to understand it. It’s important to know how it works, how to control it, and how to make sure we don’t cause导致 additional额外的 imbalance.

6.When technology is created without rigorous严格的 testing测试, it’s working基于 on assumptions猜测. And assumptions can possibly hurt a loved one rather而不是 than help them. Worse, it may actually kill them.

Today, at the cutting edge尖端的/前沿 of cancer research, research is dealing with the billions of permutations序列 that might occur. Some cancers are “grow every 2 seconds; die never”. Some are “grow every 5 days; die never”. Some are “grow 16 times every 1 second; die every 5 days”. Each one requires a different approach方法, therapy疗法, or method方法 of management.

7.Today, science has already given us a few一些 methods :Cut it out ,Burn it with radiation放射 Freeze冰冻 it to death Target攻击目标 it with chemicals Ask the immune system免疫系统to help Replace替换 it with someone else’s

8.Science is working on more methods:

Identify鉴别 it earlier Cut it out more safely Burn only it with radiation Better targeted chemicals Hack and hijack the immune system to do our bidding 强制性控制Grow replacements on a mouse!

9.This poor mouse is helping humanity! Cow奶牛 cartilage软骨 cells were implanted into the mouse and grown so we can better understand how we might grow and regenerate再生 organs for humans. (Vacanti mouse - Wikipedia)

10.It looks sad, but science is not blind. There are monuments纪念碑 that **pay homage敬意 to** these heroes. Like this one: (Monument to the laboratory mouse - Wikipedia)

11.Altering改变 the “force of nature自然” is what scientists all around the world are working to control. Unfortunately, Mother Nature is very mean脾气坏 when we don’t play by her rules. This is a great meme文化基因 that’s been floating around广为流传：通过模仿传递

12.“Nature wants 5 of your 7 children dead. It wants you dead by 50. Everything better than that is brought to you by science and technology”

13.At my lab, we are developing greater detection探测 tools to identify鉴别 mutations变异 that cause cancer. We’re working on new methods to detect cancer in tissue, in blood,

14.It’s a massive巨大的 undertaking任务 to combat斗争 the forces of nature. It takes time. It takes sacrifice. It takes generations一代 of scientists to take the universe we are given and push强迫 it to allow just a few more years with our loved ones.

15.I understand the anger, the worry, the wish to point fingers批评 at science, at companies, at faceless千篇一律 entities实体 for not preventing预防 our losses失去.

In June 2018 cancer has taken yet another one of my friends. Kind hearted仁慈. Friendly. Always willing to help. He went out of his way特地去 to get to know you, to understand your needs, to be impactful影响 with the people he knew.

16.I wish science already had the answers. That technology already existed. That nature wouldn’t take wonderful people away. This is my friend Hao Hoang’s family spreading his ashes over Malibu. They found Lung Cancer in November 2017. They tried therapies疗法 in early 2018. Science couldn’t keep him. Nature took him in June. RIP（Rest in peace安息）.

17.It’s moments like these that reinforce加强 why I work with science. Why I make technology. How we can all play扮演角色 our role innovating ways to keep our loved ones longer. **Build things to make this life better. Solve problems to reduce suffering in the world.**

To be good, strong, well-contributing humans in our society