

Cancer Research UK

Angel Building
407 St John Street
London EC1V 4AD
United Kingdom

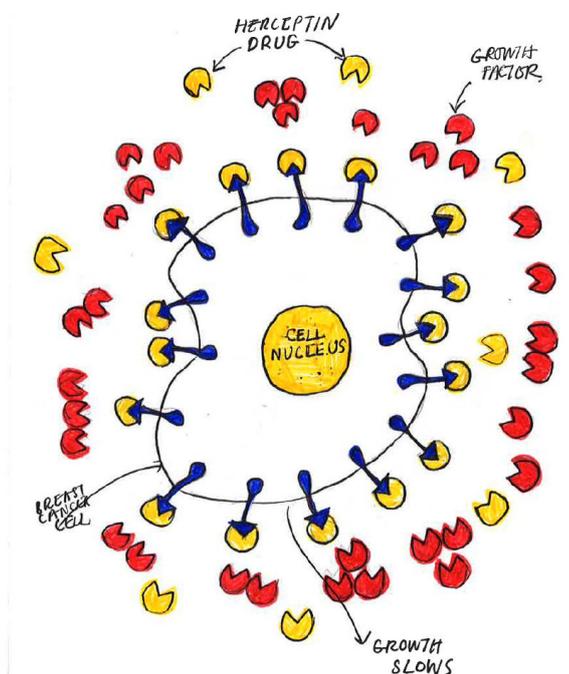
Tel: 020 7242 0200

Dear Oscar,

Thank you so much for your letter. I'm delighted to hear that you're interested in biology. I liked your pictures a lot- the ones which I normally see aren't quite as good as yours so I'm replying to your letter especially. Let's talk about your idea to find a cure for cancer.

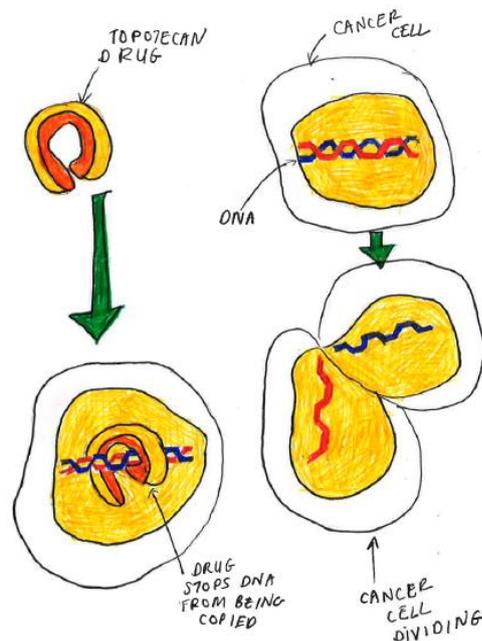
You were right in saying that we need to find a way to slow down cancer cells growing in humans. Your ideas are very clever. Normal human cells divide a lot when you're younger, but most of them stop dividing when you're an adult! They normally only divide again if there's damage to repair, but cancer cells start randomly start dividing again and they can be difficult to stop.

We helped to make a drug called Herceptin that stops cancer cells from growing. I've drawn you a picture to show how this works. The red molecules (which we call growth factors) usually stick to the blue arrows on the outside of the cancer cell and make it grow and divide. Our drug (the yellow bits) are able to sneak in and stick to the blue arrows instead, so that the red molecules can't join anymore to activate the cell, so the cancer cell doesn't grow.



Pretty good right? Anyway, your second idea of using DNA checkers was also pretty marvellous. There are special DNA checkers that help the DNA to be split into two (when the cell is dividing). Do you remember your picture with the cells splitting? Well, cancer cells also divide and the DNA inside

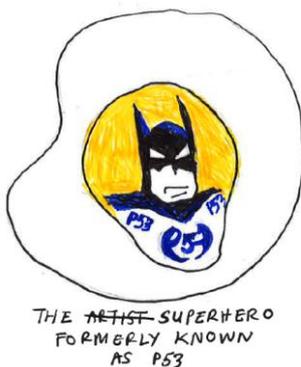
them has to split as well. Some scientists made a pretty good drug called Topotecan that stops the DNA checkers from working in cancer cells, so they can't divide. This is how it works:



The drug also causes the DNA to break so that the cancer cell eventually self destructs.

Isn't that cool? But we still need other ways to stop cancer cells from growing as they can be really clever, finding ways to trick the drugs we make- so we're always looking for new ideas.

You might want to look into ways of fixing something called p53- it's a molecule that's like a superhero and lives in the cells of your body. P53 is a DNA checker that makes sure the cells don't become cancer cells. But sometimes it stops working, which means normal cells can turn into cancer cells. So we're looking at ways to fix it. We don't know a lot about it right now, because it is very mysterious. If you have some time, please investigate further.



I've discussed it with the other scientists here, and it's taken us 20 years to figure this all out and you came up with all these ideas at the age of 8. We think you might be a genius. And it's fantastic that you're so interested in science. We would love to tell other people about you and show them your letter if you and your parents are happy with that? We'd also very much like for some of our scientists to meet you. Perhaps we could set up a lab at your school for the day and do some experiments with you and your class? Please let us know if you would like to do this, or perhaps your mum/dad/teacher would like to email us at supporter.services@cancer.org.uk.

It's ideas like yours, Oscar, that are going to help us beat cancer sooner.

From Amy CRUK Scientist,
(I am 25 years old and interested in biology)

Patron Her Majesty The Queen

Presidents HRH The Duke of Gloucester KG GCMG and HRH Princess Alexandra, the Hon. Lady Ogilvy KG GCMG

Chief Executive Harpal S. Kumar

Cancer Research UK is a registered charity in England and Wales (1089464) and in Scotland (SC041666). Registered as a company limited by guarantee in England and Wales no. 4325234.

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