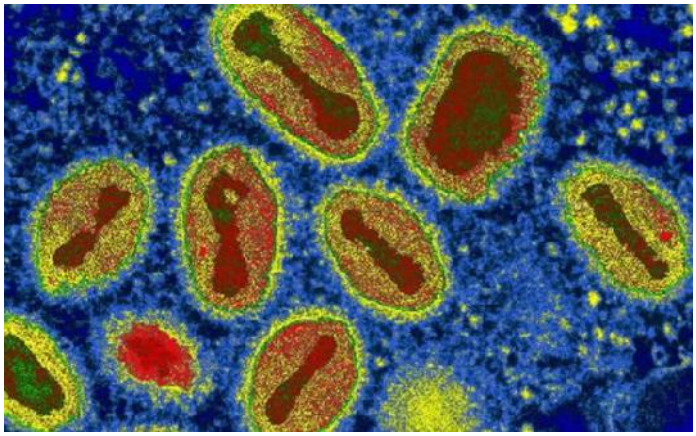
For today's 'On this day' email, we go back to May 14 1796, when a scientist called EDWARD JENNER discovered a way of preventing people getting a terrible disease called SMALLPOX. Smallpox is so terrible that if you got it, the least bad thing that could happen to you is you got sores all over your skin. I won't describe what would happen if it affected you really badly, but you can imagine - it's probably in a *Horrible Histories* book somewhere. So people were desperate to avoid getting smallpox, and the only way people had figured out to avoid getting it was to get it! They would give themselves very small doses of smallpox, cross their fingers, and hope that it didn't scar them too badly - and if they were lucky, their body would create the cells (called 'antibodies') necessary to fight the smallpox off, and they would then be immune from getting a more serious case of smallpox later on. But then along came Jenner, who observed something interesting. Dairymaids who milked cows would often contract a disease called COWPOX, which would give them sores on their hands. But dairymaids who got cowpox seemed to be immune from getting smallpox. So Jenner thought, 'Maybe the dairymaids are producing something in their bodies to fight off the cowpox which also then helps them fight off getting smallpox if they are ever exposed to it. So if I give someone cowpox, they may become immune from getting smallpox. Let's try it out!'

Now - if he wanted to try this idea out, Jenner should really have tried it out on himself: he should have given himself cowpox and then exposed himself to smallpox and see what happened. But he didn't do that, which was pretty bad. Instead, in May 1796, Jenner found a dairymaid called Sarah Nelms who had just contracted cowpox and as a result had some fresh sores on her hands and arms that had pus coming out of them. (I know, it is really gross, but this is history in the making.) So Jenner took some of that pus, and on May 14 1796, he injected the pus into the arms of an 8 year old boy called James Phipps. Phipps developed a fever, but that soon went away. Jenner then injected Phipps with smallpox, and Phipps showed no signs of developing the smallpox disease. Jenner concluded that his treatment had worked and that he had made Phipps immune from getting smallpox. But what word would he use to describe what he had done? Well, the Latin for cow is *vacca* (pronounced 'vak - ah') and the Latin for cowpox is *vaccinia* (pronounced 'vak - ih - knee - ah') - so when Jenner wrote about what he had done, he said that he had VACCINATED Phipps against getting smallpox. And ever since then, anything that helps the body develop an immunity to a particular disease is called a vaccine (pronounced 'vak - seen') - all because of the Latin name for cow!

So at the moment people are trying very hard to come up with a vaccine for the coronavirus - if they discover one, that will mean anyone who has the vaccine injected into them won't develop coronavirus. But a vaccine always works by being bad for the body in some way, with the result that the body develops cells to fight off the effects of the vaccine - and it's those cells which then allow the body easily to fight off whatever disease the vaccine works to vaccinate you against. So people have to be very careful with vaccines - that they aren't so bad that they do serious harm to whoever receives them. That's why it takes a long time to develop a vaccine - they have to really check it out to make sure it's safe.

Jenner's discovery meant fewer and fewer people developed smallpox. The result is that smallpox became increasingly rare - and nowadays there are only two samples of the smallpox virus in existence. One is in a laboratory (pronounced 'lub - o - ra - tree') in America, and the other is in a laboratory in Russia. In both places the smallpox virus is kept under really strict control, so it can't escape and make people ill. And people argue about whether those two samples should be destroyed so that smallpox would simply not exist on planet Earth. Some people say you can't be too careful and the best thing to do would be just to kill smallpox once and for all. Other people say you never can tell, and we might find at some stage that the smallpox virus actually helps us kill off some other disease - and so we should keep these last two samples alive, just in case they are needed in the future. What would you do?



Jenner's discovery also meant that he could claim to be a very great scientist. But he's not on our list of 'three great scientists' for tomorrow. Who is on the list? Wait til tomorrow to find out