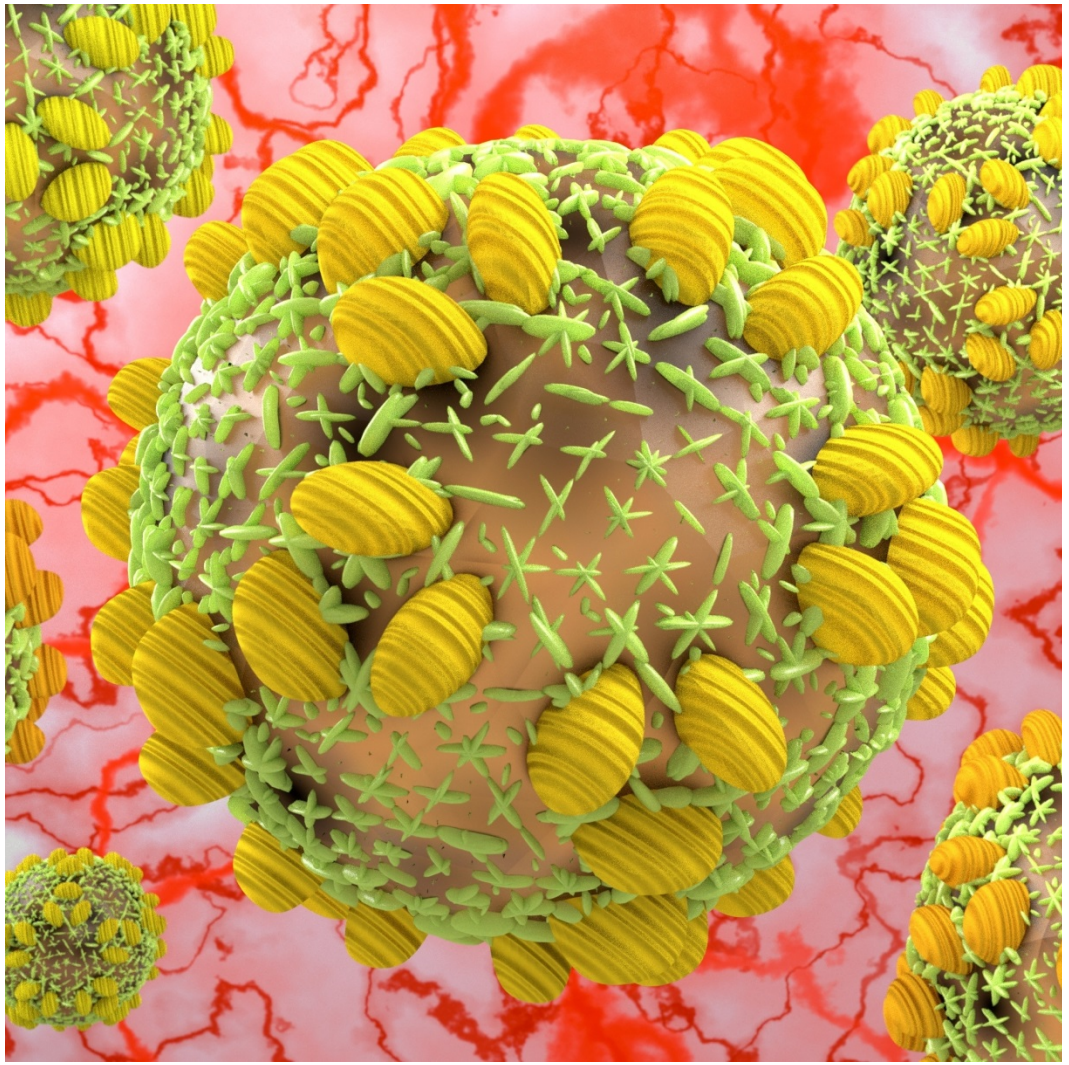
Plasmodium falciparum

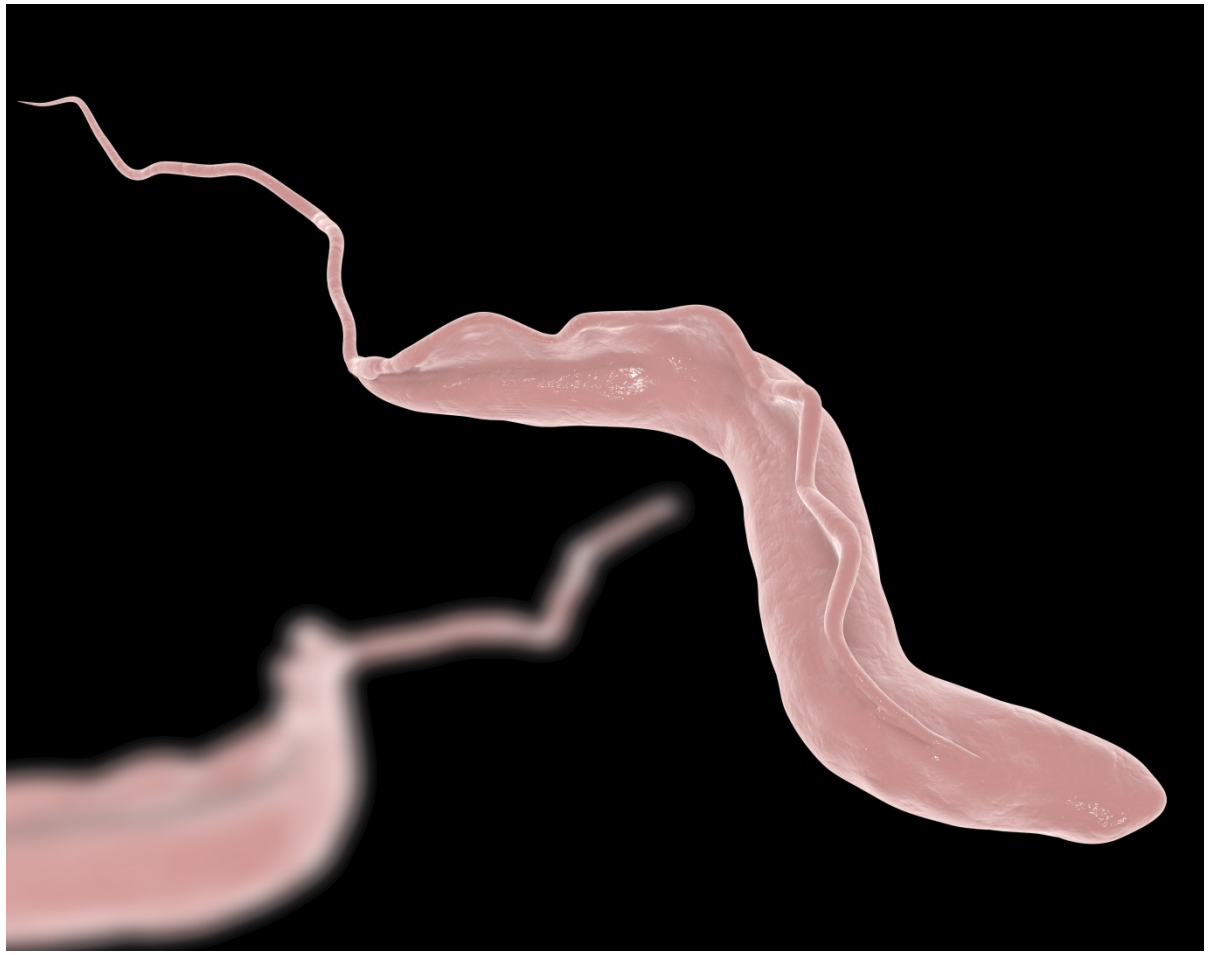
- *Plasmodium falciparum* is a microbe and is the deadliest parasite in humans
- this is a‘protozoan parasite’ – it is not a bacteria or a virus
- it is passed through the bite of a female Anopheles mosquito
- it is responsible for roughly 50% of all malaria cases
- it causes the most dangerous form of malaria – this is called falciparum malaria
- it causes more than one million deaths every year.

Hepatitis C

- Hepatitis C is an infectious disease caused by the hepatitis C virus (HCV)
- people with the infection often have mild or no symptoms; some will have a fever, dark urine, abdominal pain, and, yellow tinged skin
- millions of people worldwide have this virus (around 2% of the population)
- it can lead to long-term health problems and can be life threatening if not detected and treated
- in the UK, most hepatitis C infections occur in people who inject drugs or have injected them in the past.



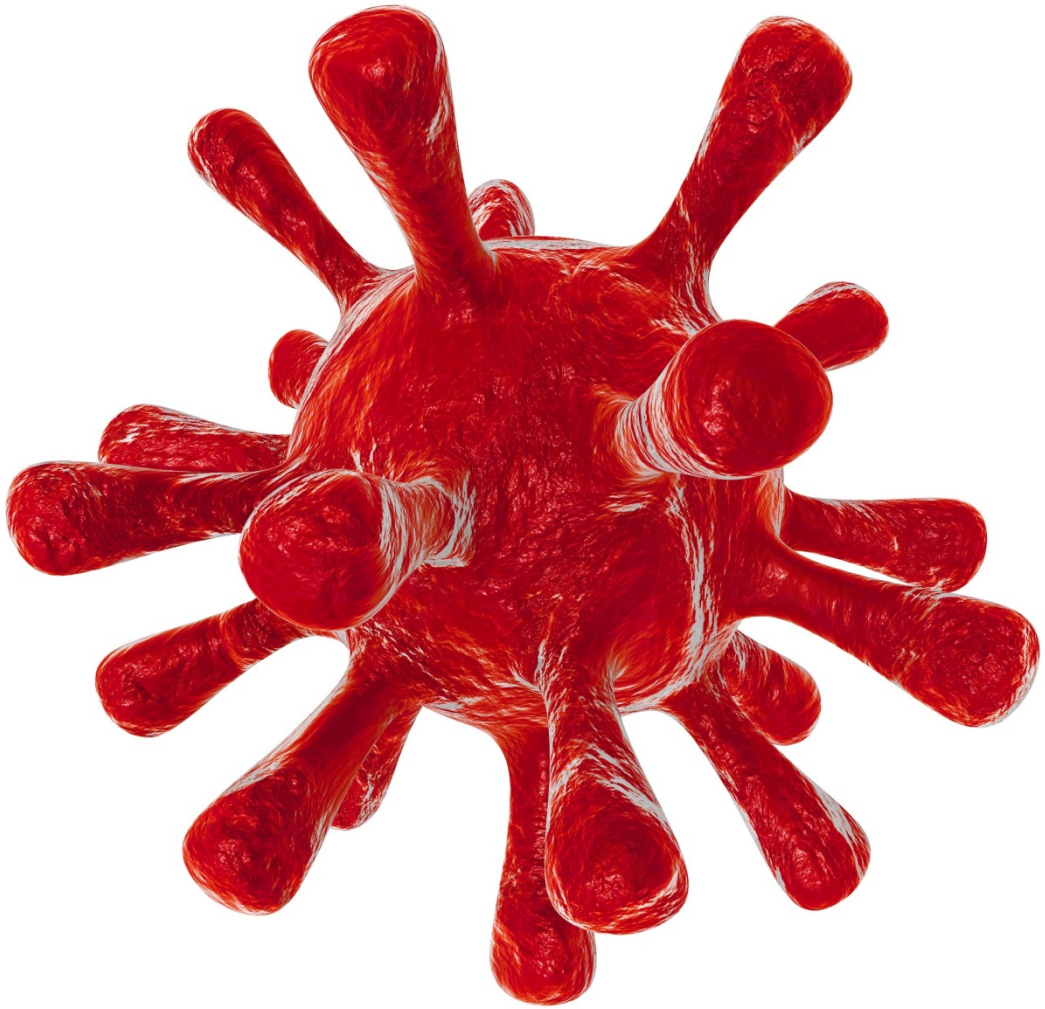
Trypanosoma brucei



- this is a protist that causes sleeping sickness, also known as African trypanosomiasis
- *T. brucei* is passed by the bite of different species of tsetse fly
- about 10,000 new cases are reported each year
- infection will eventually lead to coma and death if not treated
- control of the disease includes controlling tsetse flies
- new treatments are needed as many cause severe side effects.

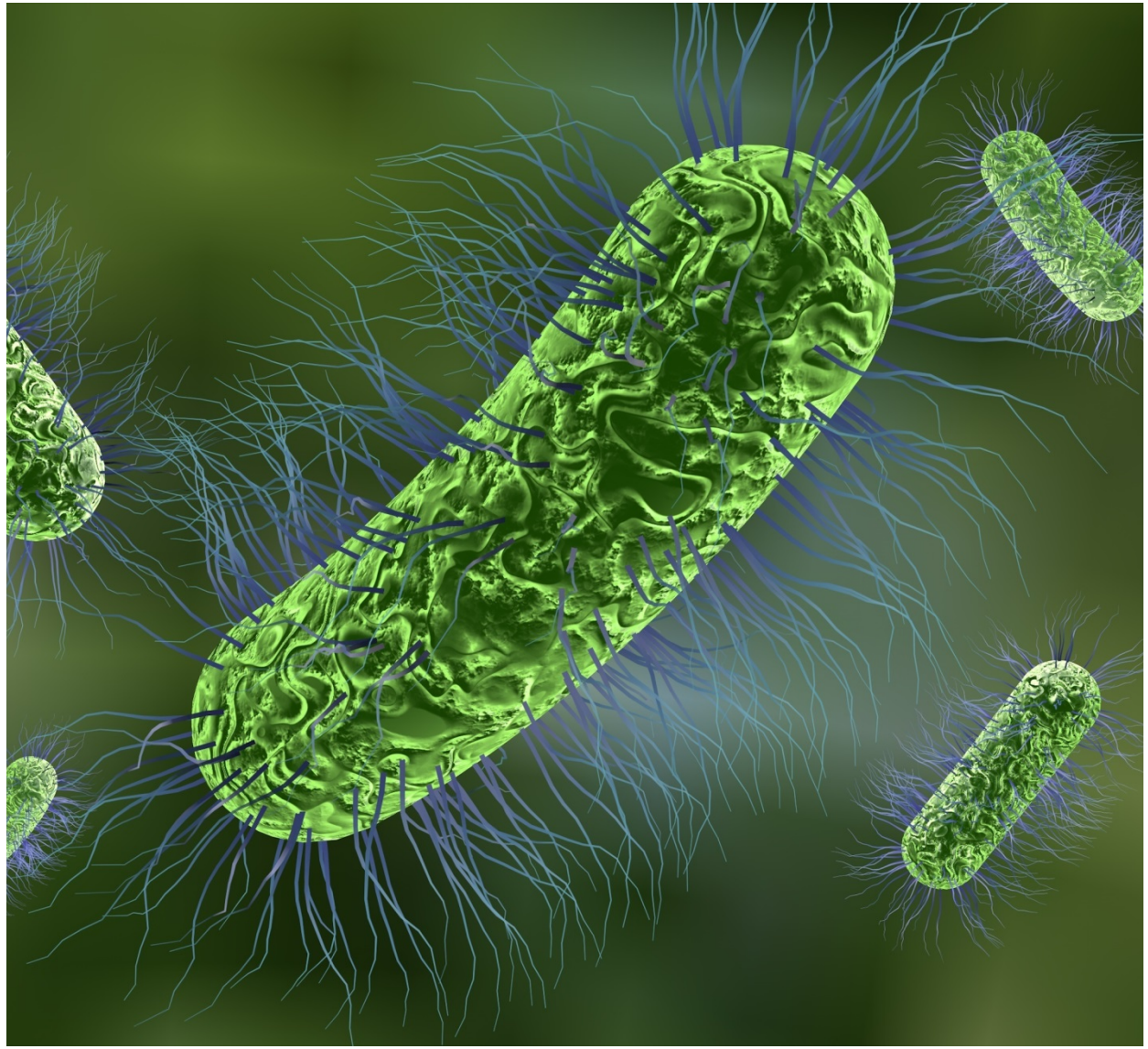
Human immunodeficiency virus

- this causes HIV infection and, over time, acquired immunodeficiency syndrome (AIDS)
- infection of HIV happens via transfer of body fluids
- it infects vital cells that protect the body from infections – e.g. Helper T cells, macrophages, and dendritic cells
- the body becomes progressively more susceptible to opportunistic infections
- treatment for HIV is called Antiretroviral therapy; it doesn't cure the disease but it allows people to manage it
- over 30 million people worldwide are living with HIV.



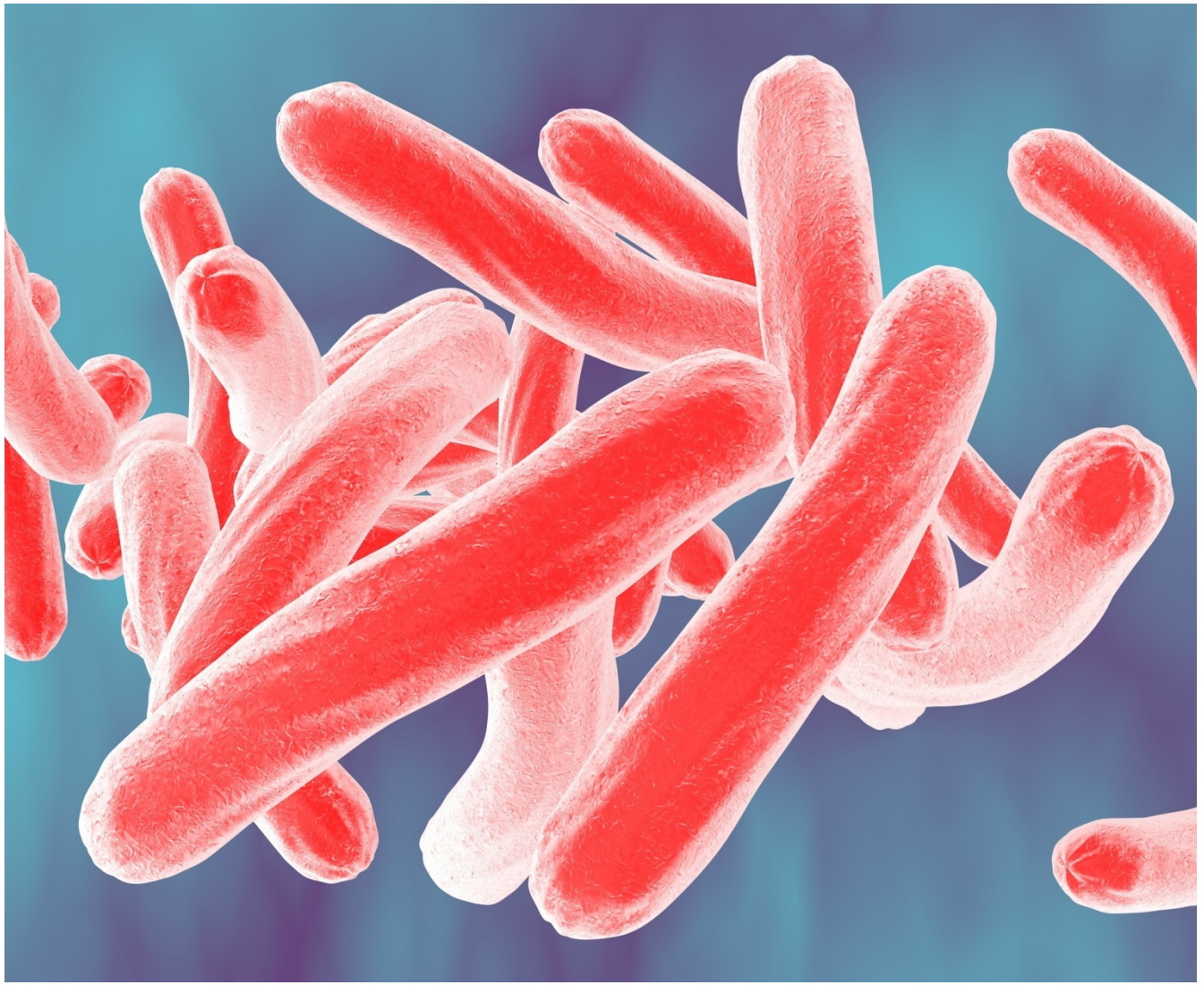
Escherichia coli

- bacterium commonly known as *E. coli*
- most *E. coli* strains are harmless, but some can cause serious food poisoning in humans
- the harmless strains can benefit us by producing vitamin K_2
- some kinds of *E. coli* cause disease by making a toxin called Shiga toxin. The toxin acts in a similar way to ricin, a poison
- infection can occur in a number of ways including eating contaminated food and swimming in infected water, such as ponds or streams.



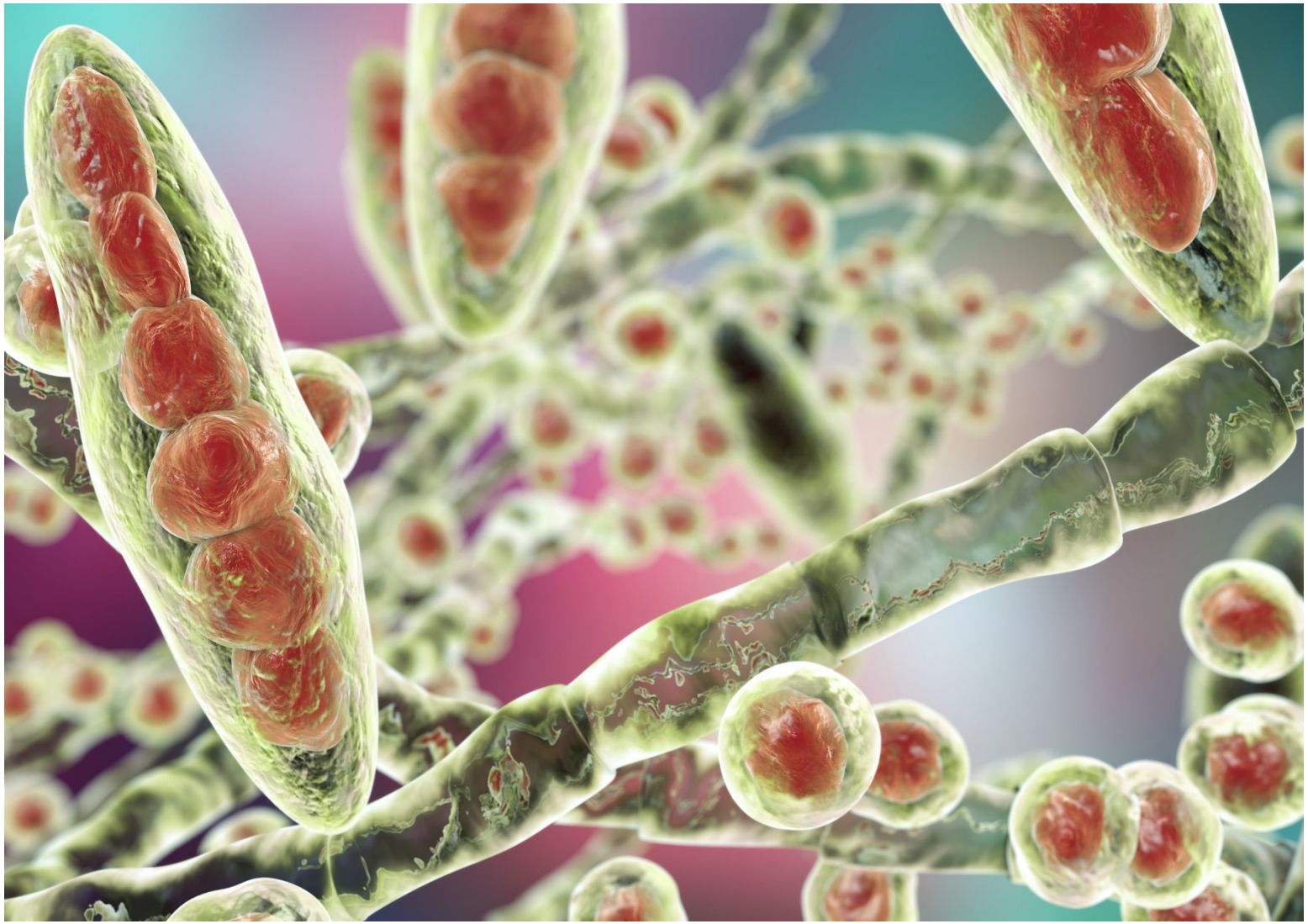
Mycobacterium tuberculosis

- this causes Tuberculosis (TB)
- It is a bacterium with an unusual waxy coating on its cell surface
- it is spread through air droplets originating from a person who has the disease
- an estimated 1.4 million people died from TB in 2015
- the ‘BCG’ vaccine contains a weakened strain of TB bacteria so the body can build up immunity against the disease.



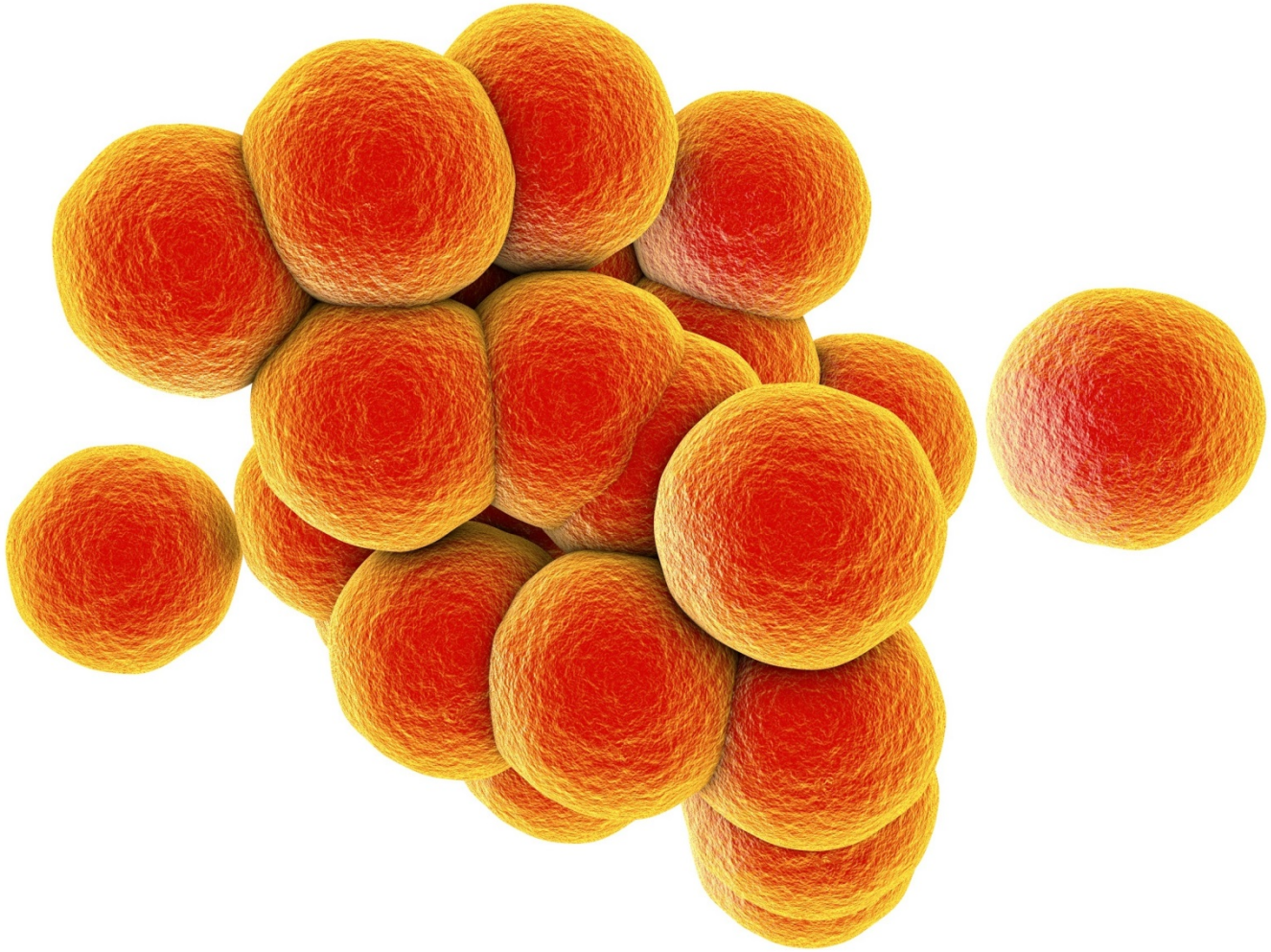
Trichophyton rubrum

- this is a fungus that causes an infection
- it is common in athletes and people who sweat a lot!
- it causes disease of a particular body part in 15% of people worldwide!
- it is spread by direct contact with infected tissue or contaminated materials, towels, clothes, etc
- infections are more common for men than for women.



Staphylococcus aureus

- this is present on the skin of about 30% of the population and is usually harmless
- it can cause common infections in three different parts of the body
- it has an antibiotic resistant “superbug” form called MRSA
- this group of bacteria is currently one of the most common causes of blood poisoning, also known as sepsis.



Toxoplasma gondii

- this is a parasite capable of infecting virtually all warm-blooded animals
- the sexual part of the life cycle of this parasite occurs in cats
- an estimated 30–50% of the global population has been exposed to *T. gondii* (infection rates vary between countries)
- *T. gondii* has been shown to alter the behaviour of infected rodents; they behave in a more risky way so are more likely to be eaten by cats
- it may also affect human behaviour in the same way but further studies are needed!