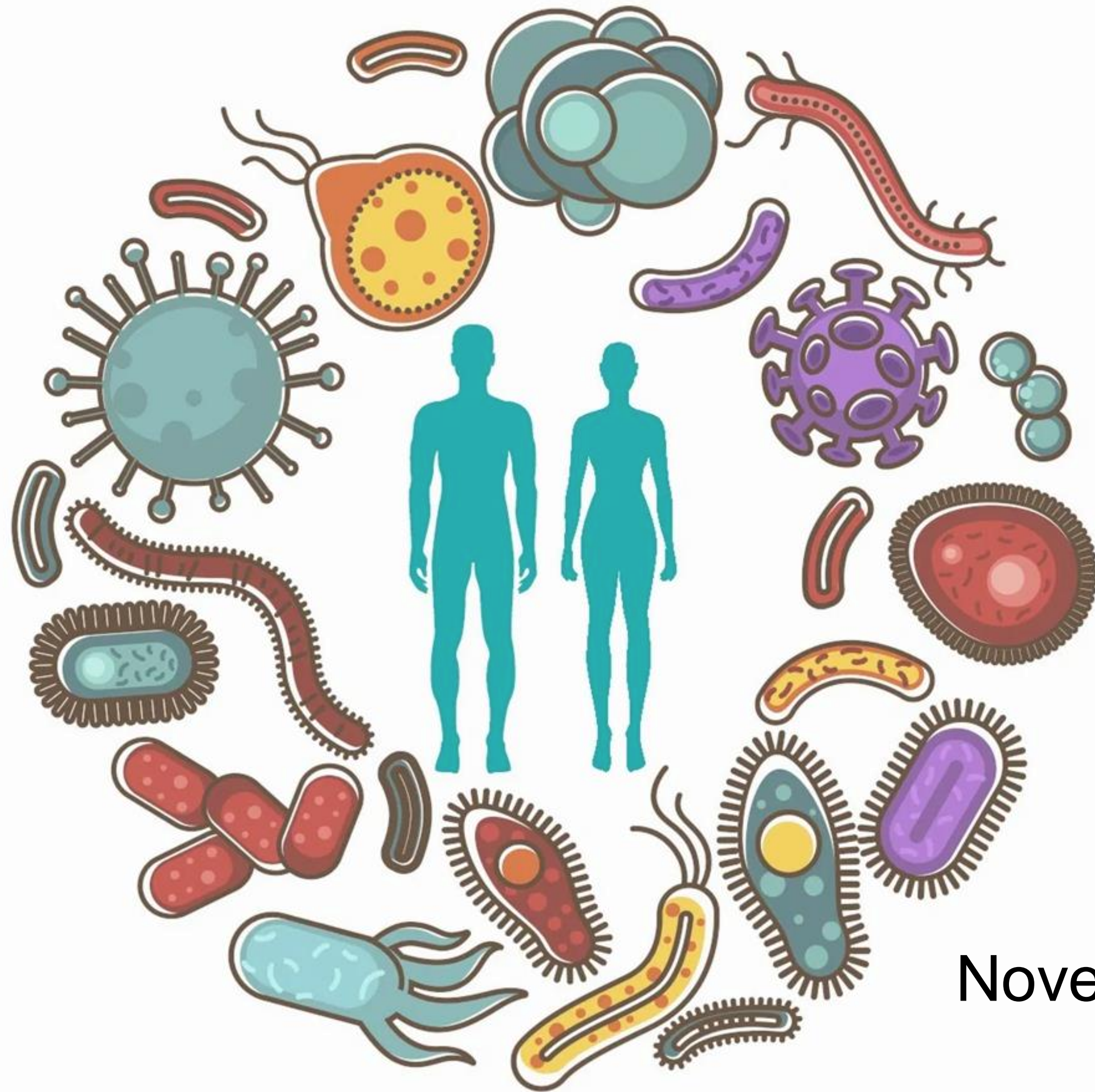


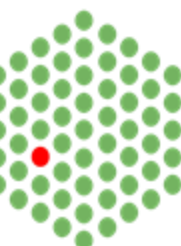
Exploring Human Microbiome



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Relationship between host and microbiome...

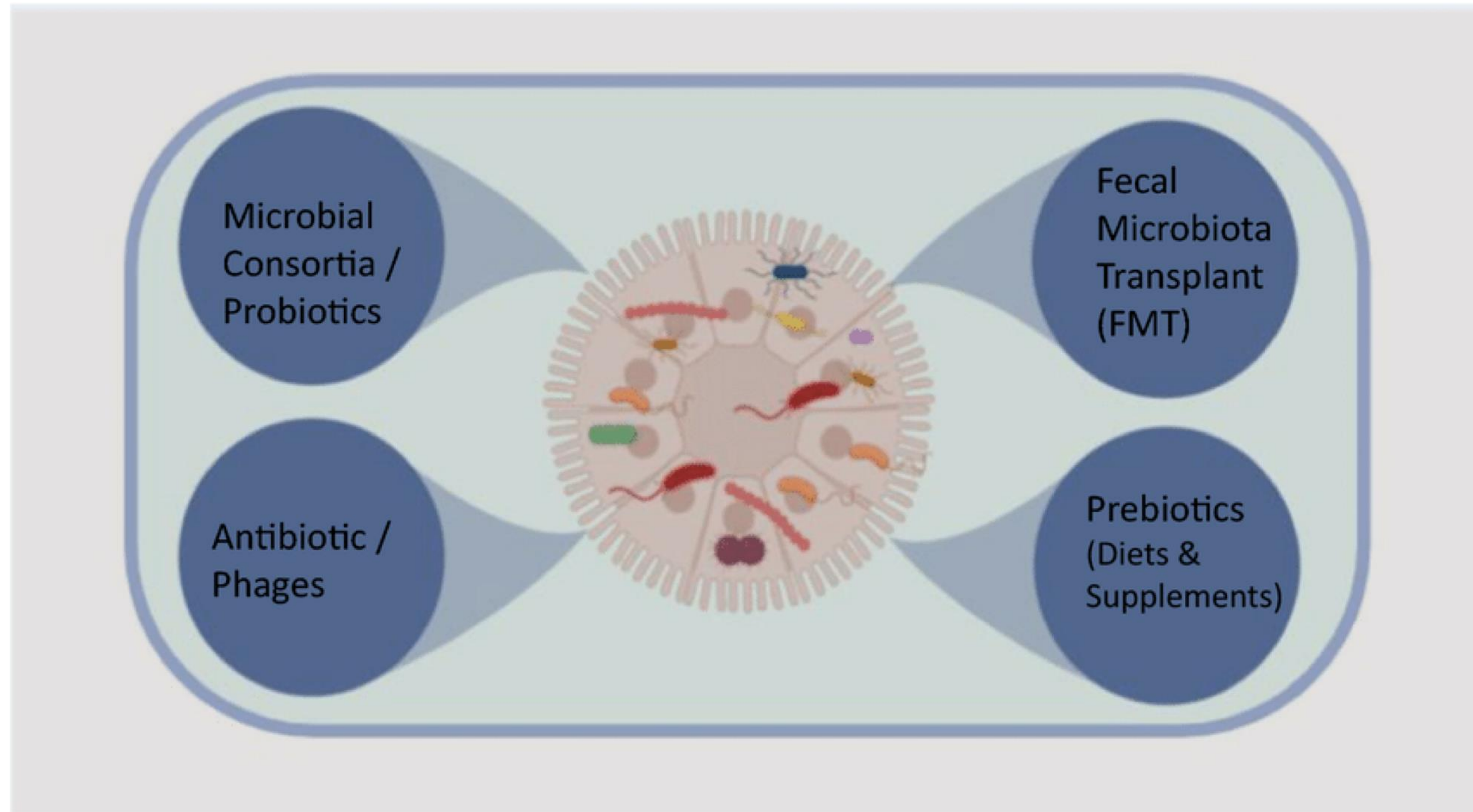
- Microbiome-based applications: FMT-pro/prebiotics/phage therapy
- Can microbiome effect our health
- A case study

MICROBIOME





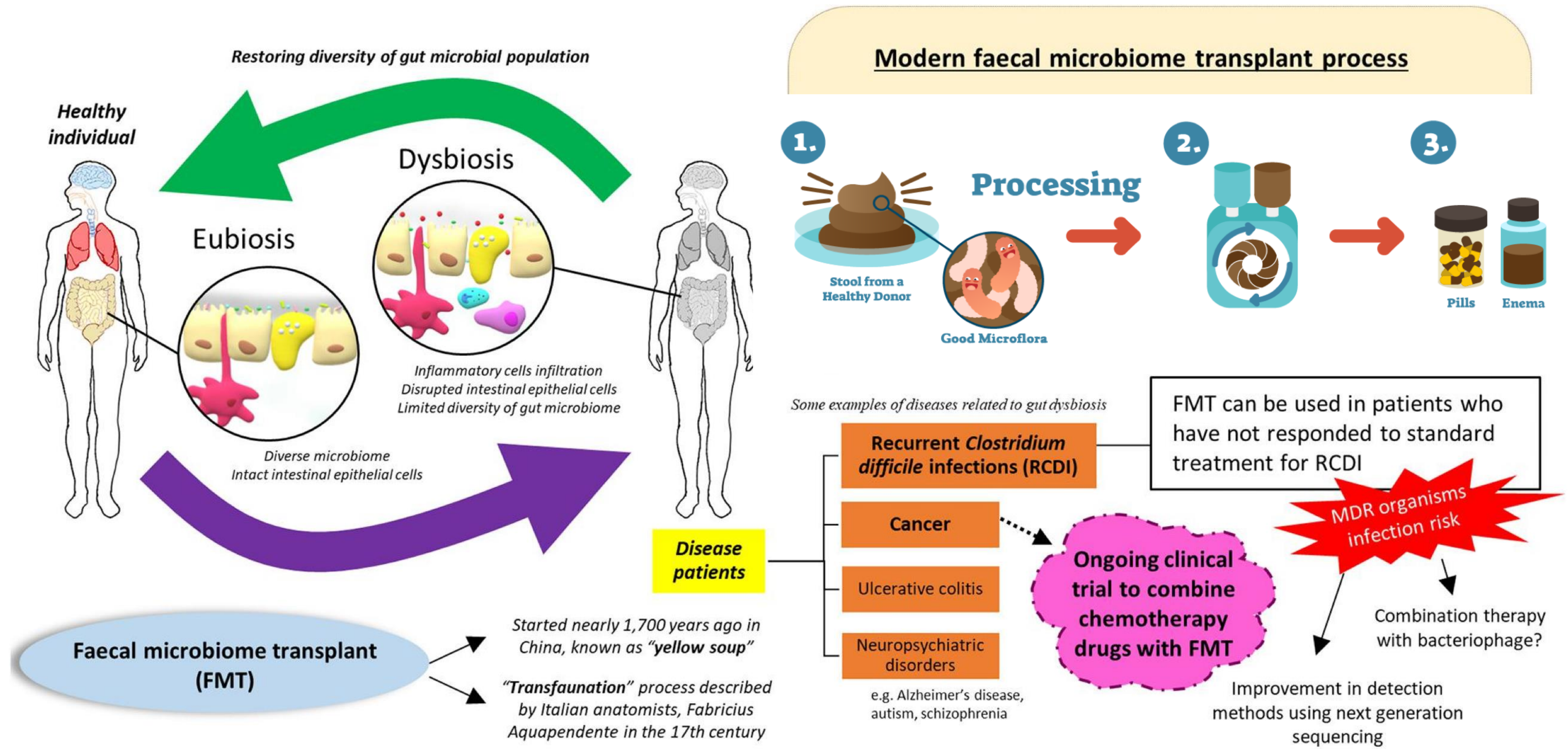
Applications based in microbiota



would you eat camel poo?



Fecal Microbiome Transplantation (FMT)

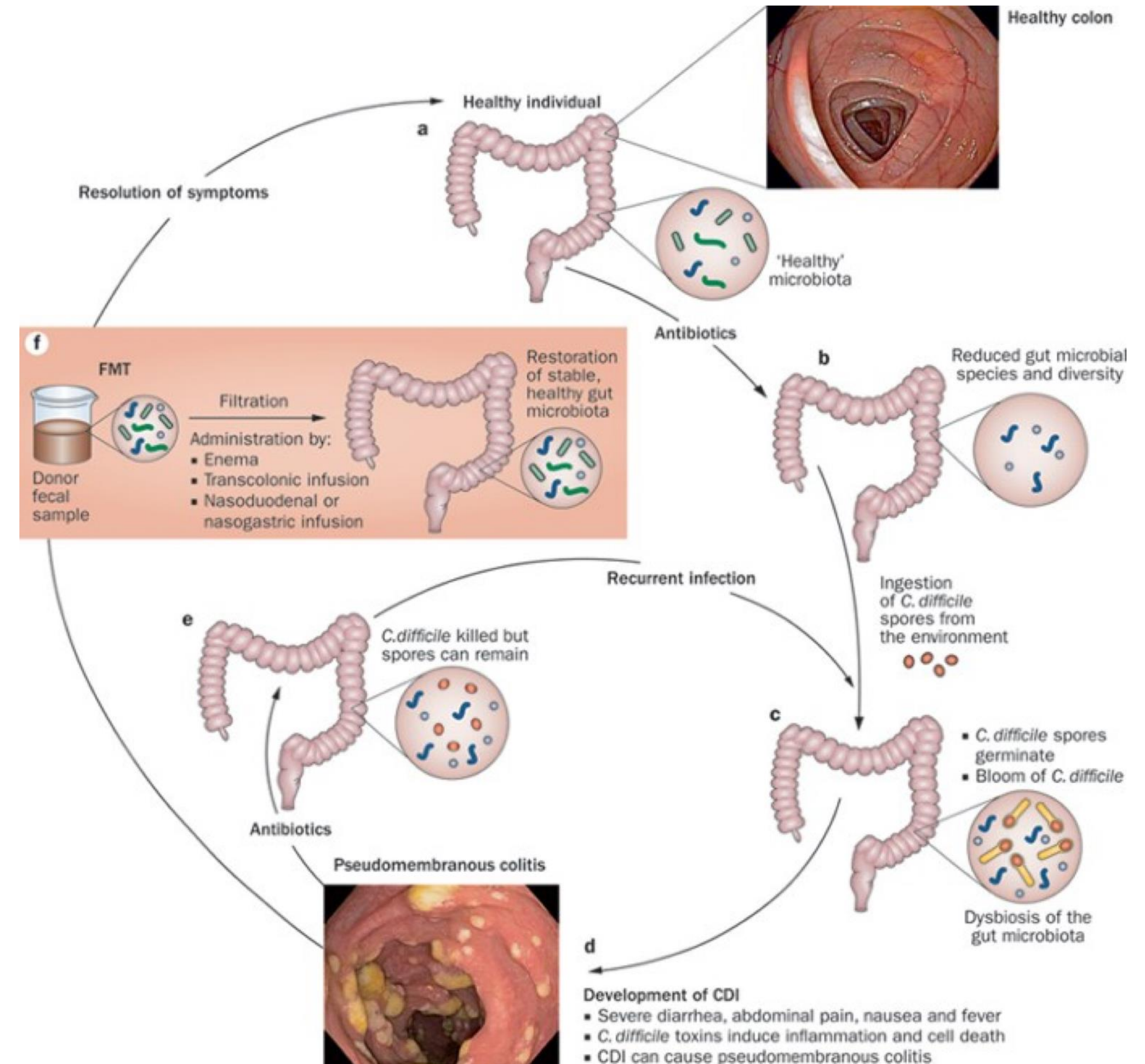




C. Difficile infection

Fecal microbiota transplantation (FMT) is arguably the most effective method in treating *Clostridium difficile* infection (CDI), even more effective than vancomycin

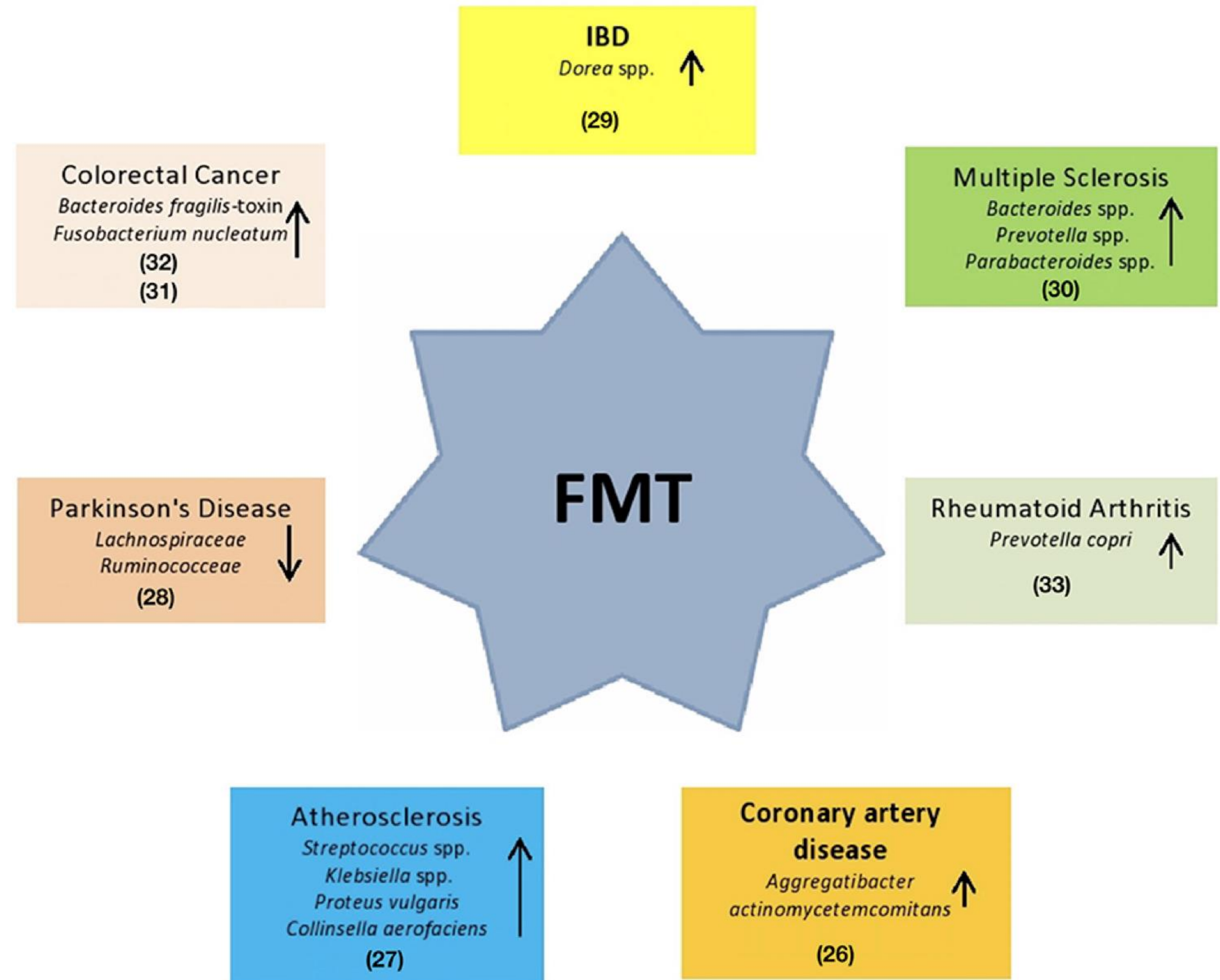
As multiple major diseases might be linked to dysfunction of gut microbiota, FMT could have potential applications beyond CDI





Cross-species FMT??

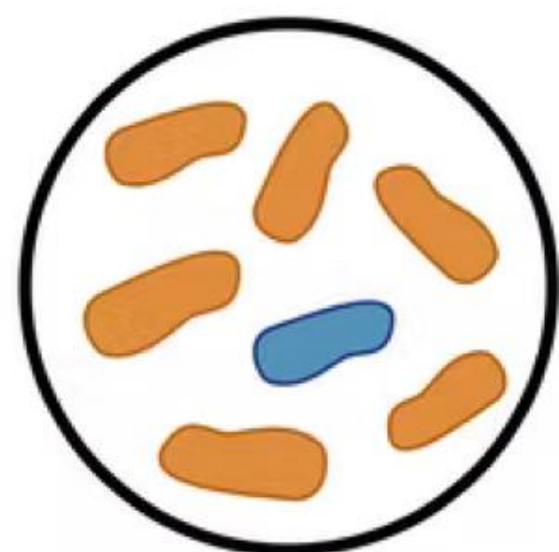
- Time: World War II
- German troops were having bacillary dysentery when no antibiotics were available
- Solution: German soldiers from Afrika Corps had to follow what the natives did and consumed camel stool
- **Problems:**
 - Contaminated poop samples
 - Infections after FMT



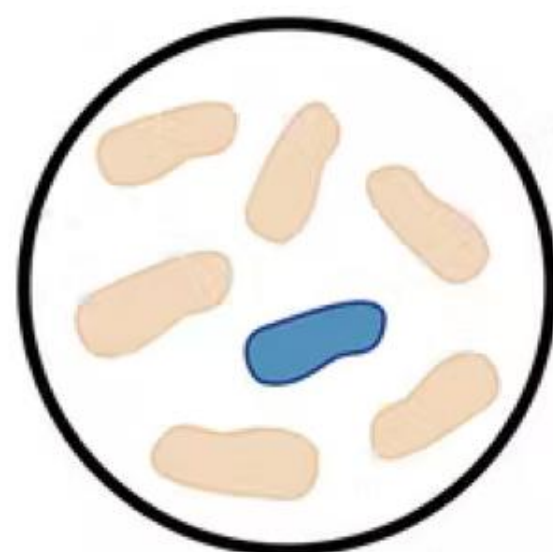


Superbugs

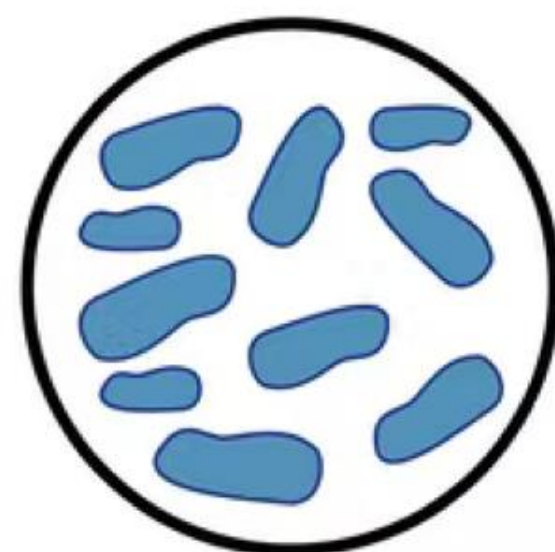
> 2.8 million cases of drug-resistant bacterial infections only in USA every year



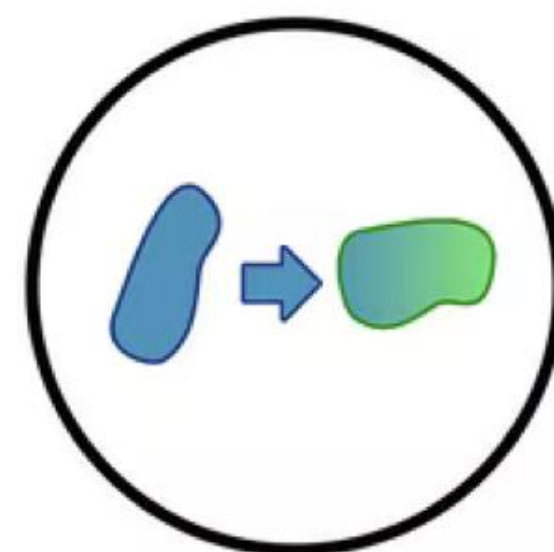
Lots of germs
and some are
drug resistant



Antibiotics kill the bacteria
causing the illness as well as
the good bacteria protecting
the body from infection

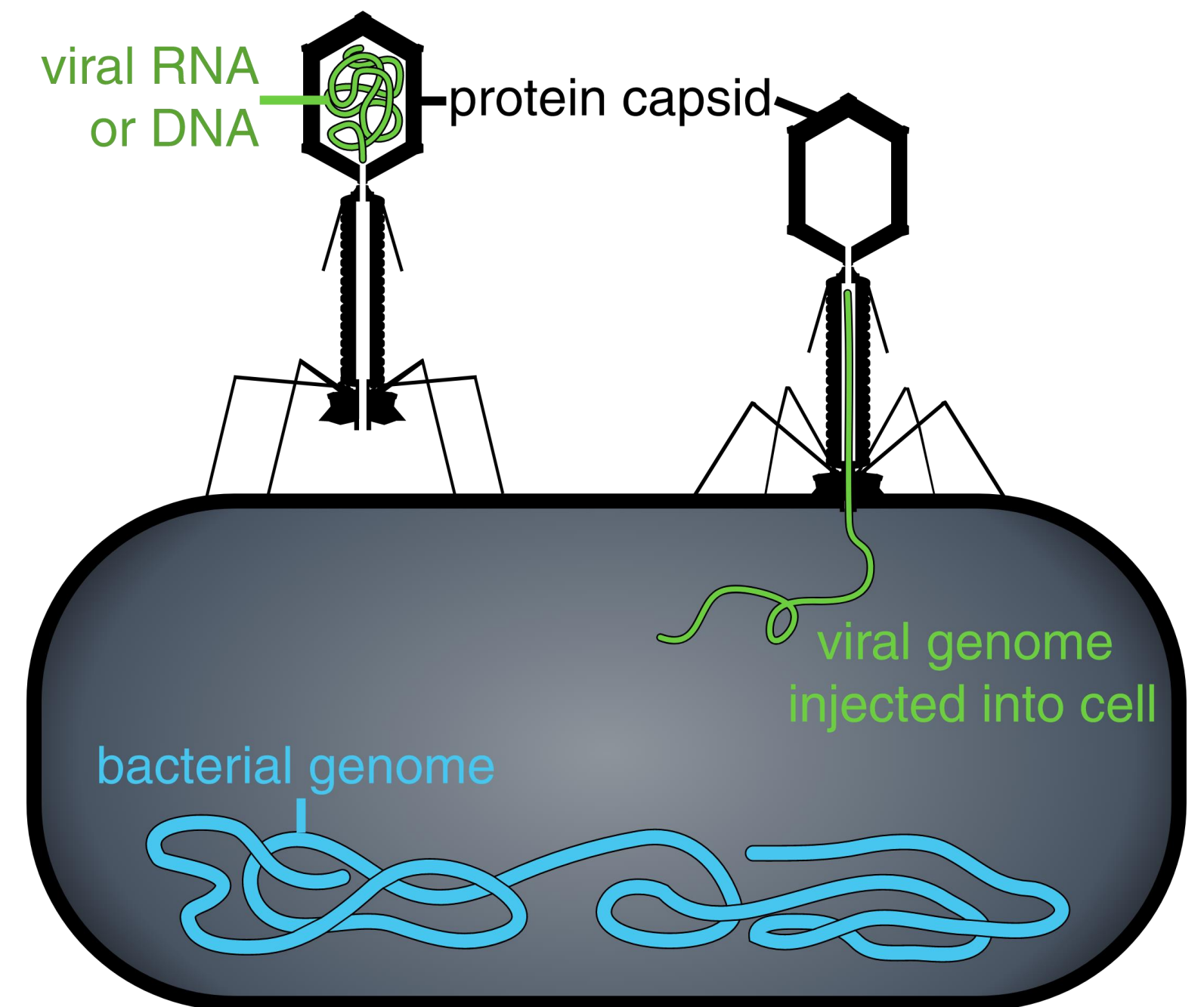


The drug resistant
bacteria is now able
to grow and take over



Some bacteria give
their drug resistance to
other bacteria

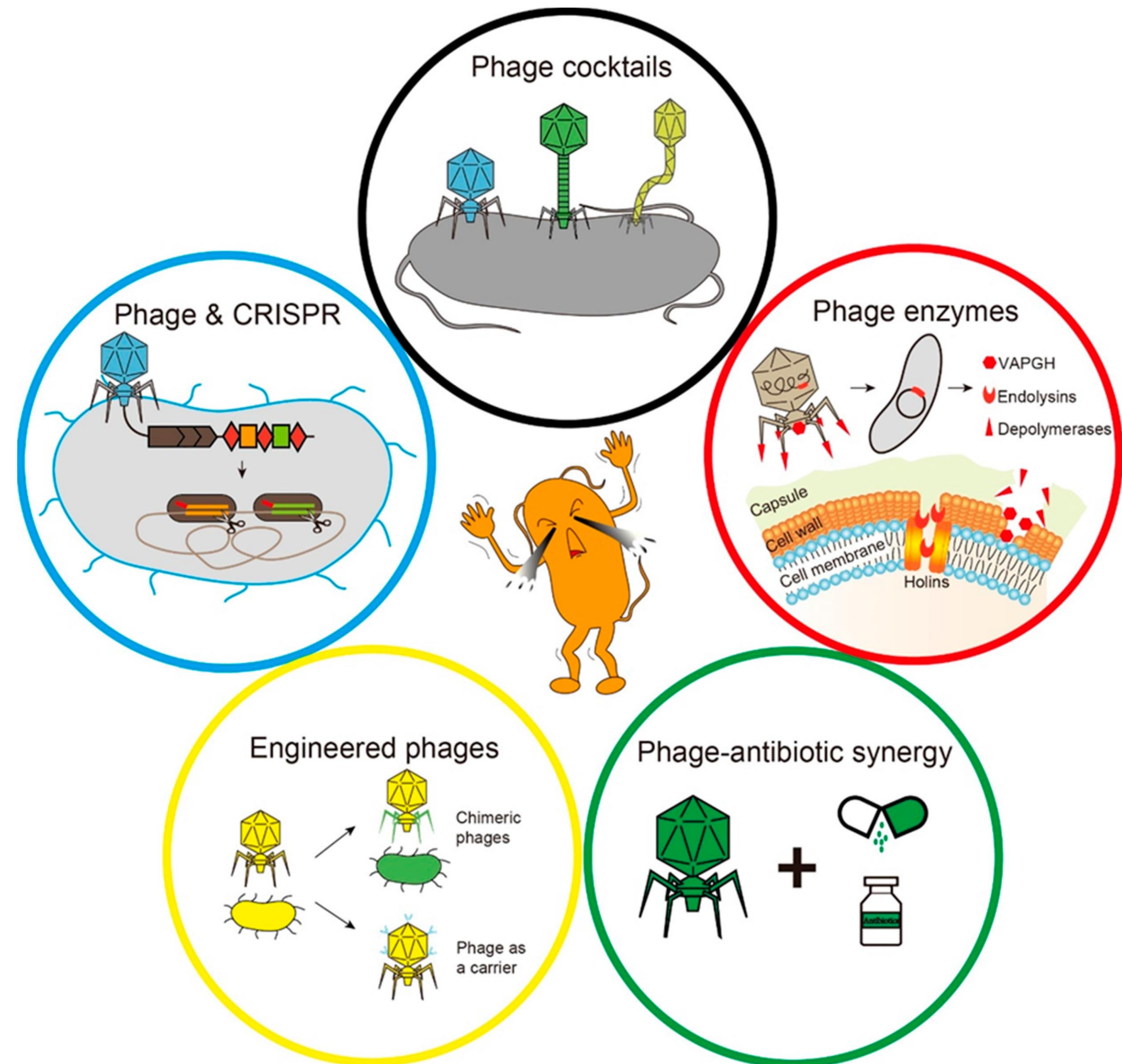
 - Normal bacterium  - Resistant bacterium  - Dead bacterium





Phage therapy

- Phages can effectively target Gram-positive and Gram-negative bacteria
- Phages only specifically target their corresponding host,
- The mutation rate of phage is faster than that of host bacteria
- No serious side effect
- Phage therapy is faster and more economical than antibiotic therapy.





Phage therapy

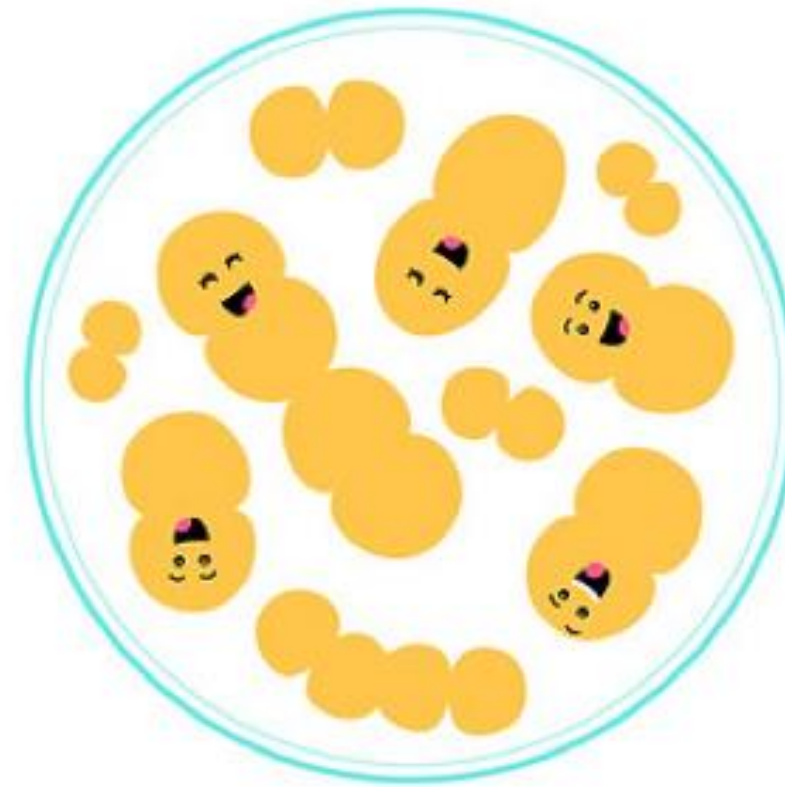
- The narrow lysis spectrum limits the effectiveness of bacteriophages in killing a variety of bacteria.
- Encapsulating and stabilizing bacteriophages
- Bacteria lysed by a phage may release endotoxins and super antigens that cause inflammation, which may potentially cause serious complications



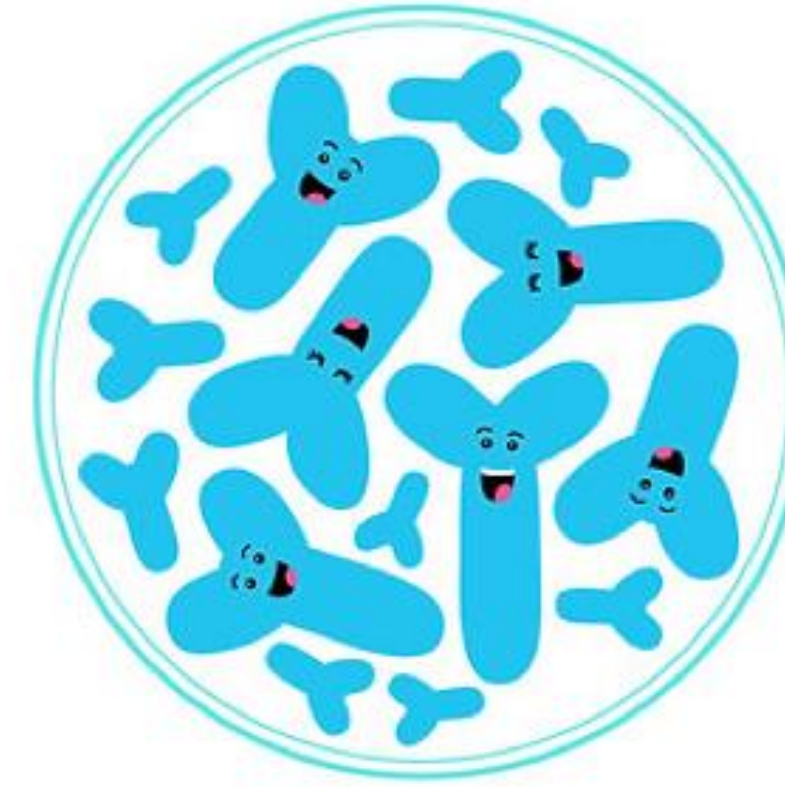
PROBIOTICS BACTERIA FAMILY



LACTOBACILLUS



LACTOCOCCUS



BIFIDOBACTERIUM



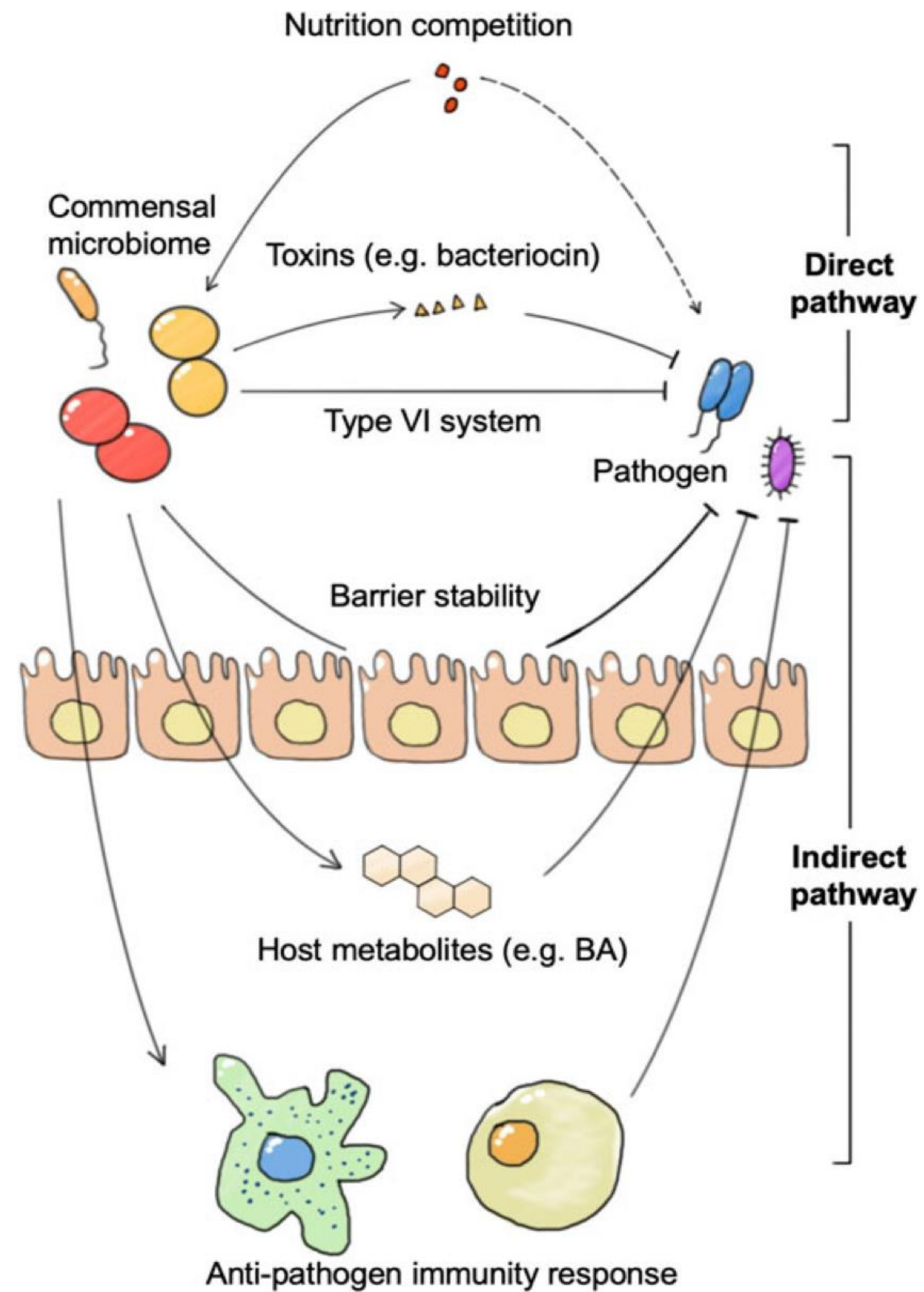
Prebiotics - Probiotics

Probiotics has bacteria inside



Prebiotics are food for bacteria

High demand of probiotic bacteria





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BioQuant
MODEL base of LIFE



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Esther Molina Montes



Iradj Sobhani



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Jonel Trebicka

Lets go!

