

What can 16S rRNA from the gut tell us about one's health?

The **National Center for Biotechnology Information (NCBI)** has a lot of bioinformatics resources, including the **Basic Local Alignment Search Tool (BLAST)**. This program lets you very quickly compare a DNA or protein sequence to many (millions) known DNA or protein sequences. The top hit has the highest similarity to the input sequence.

After profiling the guts of Romeo and Juliet by amplifying and sequencing 16S rRNA marker genes, we got lots of different sequences but chose one very common one in each sample. One of them is healthy but the other has lots of abdominal pain. Who might need to see a doctor?

8 - Scroll below the Graphic Summary and look at the first entry in the Descriptions table.

What species is the first sequence from? **Clostridioides difficile**

This is the another name for Clostridium difficile.

9 - What do you know about that species? Search the Web to find out more.

See pages like <http://www.mayoclinic.org/diseases-conditions/c-difficile/home/ovc-20202264>

“[It] is a bacterium that can cause symptoms ranging from diarrhea to life-threatening inflammation of the colon.”

10- Does Romeo appear to be healthy? **No – probably not if he has lots of Clostridioides difficile.**

12- Does Juliet appear to be healthy?

Her 16S rRNA sequence is from Bacteroides fragilis. According to the species Wikipedia page (https://en.wikipedia.org/wiki/Bacteroides_fragilis), “it is part of the normal flora of the human colon”. So yes, she appears to be healthy.