My microbiome in the jungle

How much does travel affect your microbiome? In a famous experiment [published in 2014](http://genomebiology.com/2014/15/7/R89), Duke University scientist Lawrence David tracked the daily microbiomes of two people for an entire year and [found significant differences](http://blog.richardsprague.com/2014/07/microbes-over-time.html) when one of the people travelled outside the U.S. Would the same thing happen to me?

According to my latest uBiome results, the answer is yes. I recently travelled from my home in Seattle to Central America to celebrate my wife’s birthday. We spent most of our time in a rural, jungle part of Belize, about a half hour’s drive from Benque, near the border with Guatemala. Besides viewing the fantastic, well-preserved Mayan ruins, we also did horseback riding, cave exploration, and of course plenty of eating.

Here’s a selfie I took in front of the incredibly well-preserved thousand-year-old pyramid at [Tikal](http://www.smithsonianmag.com/history/secrets-of-the-maya-deciphering-tikal-2289808/):

![](data:image/jpeg;base64;base64,)

I submitted one uBiome gut kit test just before leaving on our trip, and another immediately after returning home. Since I’ve been testing myself regularly with uBiome for the past year, I have a good idea of what [my “normal” gut biome](http://blog.richardsprague.com/2014/10/whats-in-my-microbiome.html) looks like. Here’s the overall picture through time, including results from my [sleep hacking experiments](http://www.ubiomeblog.com/my-ubiome-sleep-hacking-update/) between October and January, which resulted in those big chunks of Actinobacteria, colored brown in the graph, now mostly gone:

![](data:image/jpeg;base64;base64,)

Now let’s look more closely at the latest sample, the one taken right after returning from the jungle:

![](data:image/jpeg;base64;base64,)

The first thing to note is the big increase in the ratio of firmicutes to bacteroidetes – a change which is often [associated with obesity](http://www.nature.com/nature/journal/v444/n7122/full/4441022a.html). Interestingly, I *did* gain a couple of pounds during the trip, maybe from all that tasty coconut rice.

Otherwise my uBiome results point in a few more interesting directions:

* **Diversity**: Oddly, my gut biome diversity went *down* slightly. Before the trip, uBiome found 19 unique phyla. Afterwards, there were only 15. You wouldn’t normally expect diversity to *drop* after exposure to novel microbes from the jungle. But I think there’s an easy explanation:
* **Increase in unidentified organisms**: uBiome was able to identify only about 91% of what it found at the phyla level. In my previous tests, they found closer to 95+%. Maybe my apparent drop in diversity was simply a drop in *identifiable* bacteria.
* **Pathogen plunge**: Counts of my “bad” bacteria, including members of the notorius *Clostridum* genus, which includes many nasty species (e.g. the infamous antibiotic-resistant *C. Difficile*) disappeared, dropping from 0.66% to 0.18%.
* **Bifido back to normal**. The *bifidobacterium* that increased 10X when I started taking potato starch hoping to improve sleep, went back down to normal levels. My sleep quality, by the way, hasn’t changed.
* ***Akkermansia*** is gone. Usually considered a “good” bacterium, my levels had been dropping since last Summer, and now finally disappeared completely. Hopefully this is just temporary.

Using my [free public uBiome analysis tools](https://github.com/richardsprague/uBiome), I see that I picked up the following genuses while in the jungle:

head(newAfterBelizeGenus)

## missing.count\_norm missing.tax\_name  
## 1 13750 Pectobacterium  
## 2 1190 Serratia  
## 3 970 Enterobacter  
## 4 749 Planifilum  
## 5 529 Enterococcus  
## 6 441 Escherichia

and a few that went extinct:

head(extinctAfterBelize)

## missing.count\_norm missing.tax\_name  
## 1 6269 Akkermansia  
## 2 5619 Corynebacterium  
## 3 1702 Butyrivibrio  
## 4 1257 Arthrobacter  
## 5 881 Turicibacter  
## 6 787 Hydrogenoanaerobacterium

What do these bacteria do? As always, who knows? The science is so new that when I look up most of these genuses online and elsewhere, I find almost nothing relevant. All the more reason I hope you’ll submit a sample to uBiome the next time *you* travel in the jungle, so we can compare and learn together.