Listening to the parasite’s secret language

It can increase the risk of prostate and cervical cancer, the chances of getting HIV and it affects pregnancy too.

Trichomonas vaginalis, (also known as trich), caused by the single-cell parasite Trichomonas vaginalis, is a sexually transmitted infection (STI) that affects over 250 million people a year.

There’s a lot we need to learn about the parasite, but we do know it communicates by releasing some small bags full of RNA molecules that are much more present in the bags than in the parasite’s body (A.K.A. differentially expressed!)

Studies have shown that some molecules released inside stronger parasites’ bags help weaker parasites to attach better to human cells.

And we want to know more!

Knowing about these RNA molecules can help us understand the exact ways the parasite affects human cells and pave the way into the discovery of new drugs and even a vaccine.

Learning more about STIs prevention and treatment is a way of empowering affected communities and advance health equity, specially among minorities, that are disproportionately affected by these infections.

RNA is the most basic language used by all living beings, being made of only 4 letters:

A

U

G

C

Even though it is such a simple language, it has lots of functions inside a cell:

Transporting amino acids

Making proteins

Sending a message from the DNA

The bags are collected from the parasites, cleaned and concentrated. Then, with special lab kits, the RNA is extracted, sequenced and millions of sequences of letters are read into the software ShortStack, where they are then ranked into clusters.

With the use of R as the programming language and the differential expression packages DESeq2 and Limma, we can finally have a list of the RNA sequences that are tens of times more present in the bags than in the parasite and try to understand why they were selected to be there!

Trichomonas vaginalis and its known 3 different sizes of bags

A guac?

Aquino M, Hinderfeld A, Barbosa A. Trichomonas vaginalis - Parasite of the Month. Trends in Parasitol. 2020