The genomes of two new strains of the parasite that causes Chagas disease have been sequenced

Researchers at the Universidad Autónoma de Madrid (UAM) have sequenced and assembled two new genomes of the *Trypanosoma cruzi* parasite, responsible for one of the most neglected tropical diseases, Chagas disease. The results, published in *Scientific Reports*, could make a positive contribution to research into this disease.

Differential grouping of the *Trypanosoma cruzi* protein families in the Y and Bug2148 strains. The most relevant and abundant families are highlighted: Transialidases, Mucins and surface protein associated mucins (MASP) gp63, and Retrotransposon hot spot (RHS). /UAM
Since 2005, when the first genome sequence of *Trypanosoma cruzi* was published, scientists have detected tremendous genomic variability among the strains of this parasite that causes Chagas disease.

This, according to specialists, may correspond to the variability seen in *in vitro* infection and development models of the illness. However, only a few genomes have been sequenced.

Using new massive sequencing technologies and bioinformatic analysis, a team from the Universidad Autónoma de Madrid (UAM) was able to assemble two new genomes of *Trypanosoma cruzi* from millions of sequences, much like putting together a huge puzzle, thereby managing to extract their information and biological significance.

The two new genomes, reported in *Scientific Reports*, correspond to strains of great scientific interest. “One of the strains is linked to high levels of virulence (Y). The other one is a hybrid strain associated with vertical transmission of the disease (Bug2148),” the authors state.

“This genomic comparison –they add– enabled us to identify the genetic groups most likely associated with developing the disease and with the process of infection, as well as identifying protein families exposed to constant evolution that puts the parasite at a biological advantage with respect to drug development.”

### Chagas Disease

The World Health Organization (WHO) has identified Chagas disease as one of the leading causes of death in Latin America (accounting for 20,000 to 50,000 deaths per year).

It is currently estimated that there are 25 million people at risk for contracting this illness, both in endemic and non-endemic areas, including practically the whole of the American continent and part of Europe.

There is no cure to date and the drugs available tend to provoke side effects that force patients to discontinue treatment, making it one of the most under-treated tropical diseases.

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