Tardigrades (Ecdysozoa: Tardigrada) A general review of the record in gene database of Cytochrome Oxydase I (COI) and the Damage Suppressor gene (DSUP)

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Water Bears were first described by german zoologist Johann August Ephraim Goeze in 1773, three years after this discovery, the Italian biologist Lazzaro Spallanzani appointed it as tardigrades. They are aquatics and semi-aquatics (seas and rivers) also being able to live in swamps. They are distributed in all world and there are over 1000 described species. These invertebrates are very studied in astrobiology area by NASA and ESA to be extremophiles, and they are resistant to several types of environmental selective pressures, known for their anhydrobiosis ability (survive without water) and also be resistant to temperature (-272 to 151°C), intense radiation (more than 1000Gy), incubation to organic solvents, extreme pressure (7.5GPa) and can even survive in the vacuum of space. Recently the genome *Hypsibius dujardini* (Doyere, 1840) was sequenced by two research groups: University of North Carolina and the other by University of Edinburgh. The first group suggests a large amount of exogenous genes (17.5%) probably acquired by vertical inheritance of bacteria, archea, fungi and plant due to an ability to incorporate genes in extreme situations. Changing the design of evolutionary tree for evolutionary web. But the Edinburgh group, sequencing who is available in: http://badger.bio.ed.ac.uk/H_dujardini/home/download, revealed a low percentage of exogenous genes, stating that the sequencing of the first group could be contaminated. In a current job at the University of Tokyo with tardigrade studies *Ramazzottius varieornatus* (Bertolani & Kinchin,1993), it was also published in the GenBank the gene DSUP (Suppressor damage) responsible for radiation resistance. For this work we had used the bioinformatics software Geneious® and we did a survey of the mitochondrial gene cytochrome oxydase I (COI) that is a reference in barcoding analyses, which was identified and used the specie *Hypsibius dujardini*, genebank access KU513418 and made a comparative analysis (BLAST) in the database. The analysis revealed that the gene (COI) of this species has similarities with marine fish (98% to 99%), which is strange because there is a large taxonomic distance between the two groups. So we can infer that contamination in laboratory tests in this species can be quite frequent. The invertebrate group that has greatest similarity was a cricket *Camptonotus carolinensis* (92.03%), assuming the amount of deposits *Hypsibius dujardini* is not too high in the GenBank. The gene DSUP (Damege Suppressor) of tardigrade *Ramazzottius varieornatus* GenBank access LC050827, has only one copy which has 1338pb and translated into a protein of 334 amino acids.