

## Small RNA pathway in *Biomphalaria glabrata*

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The World Health Organization (WHO) estimates that about 240 million people in 78 countries require treatment for schistosomiasis, an endemic disease caused by trematodes of the genus *Schistosoma*. In Brazil, the *Schistosoma mansoni* is the only species representative of the genus, whose passage through the invertebrate host, snails of the genus *Biomphalaria*, is obligatory before infecting a mammalian host, including humans. The availability of the genome and transcriptome of *B. glabrata* makes possible to study the regulation of gene expression, particularly those responsible by miRNA and piRNA processing pathway. This might assist in better knowledge the biology of *B. glabrata* as well as its relation to the parasite *S. mansoni*. Some aspects of this interaction are still poorly explored, including the participation of non-coding small RNAs, such as miRNAs and piRNAs, potent regulators of gene expression with lengths varying from 18 to 30 nucleotides. Using bioinformatics tools and quantitative PCR, we looked for identification and characterization of processing miRNAs and piRNAs pathway genes in *B. glabrata*. *In silico* analyses showed high conservation of genes involved in miRNA and piRNA synthesis through conserved distribution domains, catalytic site residue and phylogenetic analysis. Our work also showed the differential expression of the Argonaute, Drosha, Piwi, Exportin 5 and Tudor genes in different developmental stages and also during infection with *S. mansoni*, suggesting that the machinery might be required for miRNA and piRNA processing and probably active in *B. glabrata* in all stages, at the transcriptional level. These data suggested that the silencing pathway mediated by miRNAs and piRNAs can interfere in the snail biology throughout its life cycle contributing all the time in the *B. glabrata*/*S. mansoni* interaction. This is the first time that a work characterizes and validates the small RNA processing machinery in *B. glabrata*. Further studies will be needed to confirm the participation of the small RNA processing pathway proteins in the parasite/host relationship, mainly their effective participation in their target genes, since the *S. mansoni* does not have piRNA and piRNA pathway genes in its genome.