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### ***Wolbachia*: The fascinating, feminizing bacteria, new therapeutic and preventive avenues for filarial and some arthropod-borne infections**

**W***olbachia* is an alpha-proteobacteria firstly described in 1924 by Hertig and Wolbac. It has a rickettsia-like microorganism in *Culex* mosquito. It was designated in 1936 by Hertig as *Wolbachia pipientis*, a new species. Sequence analysis of 16sRNA showed that this microorganism is related to *Ehrlichia* and *Anaplasma*. *Wolbachia* is a heritable bacterial endosymbiont utilizing the host reproductive system for its survival and dissemination. It is the intracellular parasite, the most widely spread in the animal world, infecting more than 90% of filarial nematodes and 40-70% of arthropods. In *Filaria*, an obligate nutritional mutualism, the most sophisticated form of symbiosis, was established during million years of evolution. *Wolbachia* and its surface proteins are implicated in the pathogenesis of filarial diseases and in the host immune response. The treatment of *Wolbachia* with tetracyclines is macro and microfilaricidal and is superior to antiparasitic therapies. In insects, there is a facultative symbiosis. *Wolbachia* enhances the resistance of insects (*Aedes*, *Culex*, *Anopheles*, *Glossina*) to viral or parasitic infections and diminishes sometimes the vectorial competence and infection transmission. Important basic and field research support the use of *Wolbachia* as an “environmentally-friendly” approach in the fight against vector-borne diseases such as Dengue, Chikungunya, West Nile fever, malaria. There is increasing world-wide interest and experience with *Wolbachia* in the treatment of filariasis and for the prevention of vector-borne diseases.

### **Biography**

Emil Toma has completed his DSc in Microbiology and specialization in infectious diseases in 1971, at the University of Bucharest, Romania. In 1986, he joined the University of Montreal, Canada where he is a full Clinical Professor in the Department of Microbiology, Immunology and Infectious Diseases. He has published more than 138 papers in peer-reviewed journals, 5 books and wrote several chapters in 8 other books. He also developed a “boosted-reverse transcriptase inhibitor” (patented in USA, Australia and Canada).

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