



INTEGRATING NEW TECHNOLOGIES INTO THE STUDY OF MESOSTIGMATA OF THE WORLD

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Not only innovations in microscopy techniques and protocols have increased the knowledge of mites at a faster pace. But, in addition, the incorporation of new technologies and software have helped to improve, understanding and interpretation of different areas of acarology such as sexual behavior, feeding mechanism, reproduction, among others. Here, particular examples of how new techniques are being used to elucidate different questions in mites are present. Various methods helped to propose a new interpretation of the functional morphology of *Uroactinia vitzthumihippocrepea* Hirschmann, 1990 in culture. Filmmaking in gyroscope enabled to clarify how *U. vitzthumihippocrepea* used their chelicera to rake over dry yeast. In addition, low-temperature scan microscopy (LTSEM) showed how *U. vitzthumihippocrepea* bend their chelicera and used the umbrella-like structure in the fixed digit to reach over different places and grab their food. Ultimately, confocal laser scan microscopy (CLSM) helped in the understanding of the internal muscle and tendon anatomy of the chelicerae and how it functions to bend the chelicera in *U. vitzthumihippocrepea*. In the same way, novel and unpublished data have shown that *Varroa destructor* feeds on the fat of bees instead of hemolymph (which has been widely accepted for a long time), this has been done by staining fat in bees and reveal it in the gut of *V. destructor* with CLSM. Currently, 3D software like Maya and Cinema 4D have help modeling CLSM and MicroCT scan images in order to 3D print and match male spermatodactyl and female sperm induction system, in order to infer how *Megalolaelaps* spp., reproduce since in vivo observation of reproduction has not been possible.

Keywords: Confocal, LTSEM, Micro CT Scan, 3D Modeling, 3DPrinting.