

***In vitro*-matured schistosomes, a valuable tool for drug discovery and studying schistosome development**

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Drug screening against *in vitro*-grown worms enables compound effects on the pathogen to be monitored in real time. Using a modified Basch protocol, *Schistosoma mansoni* larvae can mature *in vitro* into adults including pairing and deposition of vital eggs. Worms were exposed to compounds from various drug libraries to identify anti-schistosomal agents. Several compounds with functional, morphological and/or toxic effects on schistosomes were identified. The effects varied between different groups of drugs: there were early vs. late drug effects, hyperactivity vs. paralysis, shrinkage vs. extension, empty vs. filled guts, circular contractions vs. “ballooning” of the worms. The so far unknown anthelmintic effects of two approved drugs identified in this system were confirmed with *in vitro*-cultured *Fasciola hepatica* juveniles. This suggests that – similar to praziquantel – anti-schistosomal compounds may have a broader anthelmintic spectrum. *In vitro*-matured schistosomes were, moreover, used for studying schistosome development. Knockdown of a pairing-influenced and testis-preferentially-expressed G-protein-coupled receptor (GPCR) during growth from the somule to the adult stage prevented the production of spermatozoa, which suggests a role in sperm maturation. The knockdown of this GPCR (efficiency 60-80%) did not influence the proliferative activity of stem cells suggesting a blockade of other processes further downstream during cellular differentiation. Together, the use of *in vitro*-matured schistosomes is a valuable reductionist approach that – apart from contributing to the 3Rs concept by saving mammalian animal lives – facilitates drug screening and may help to unravel schistosome biology.