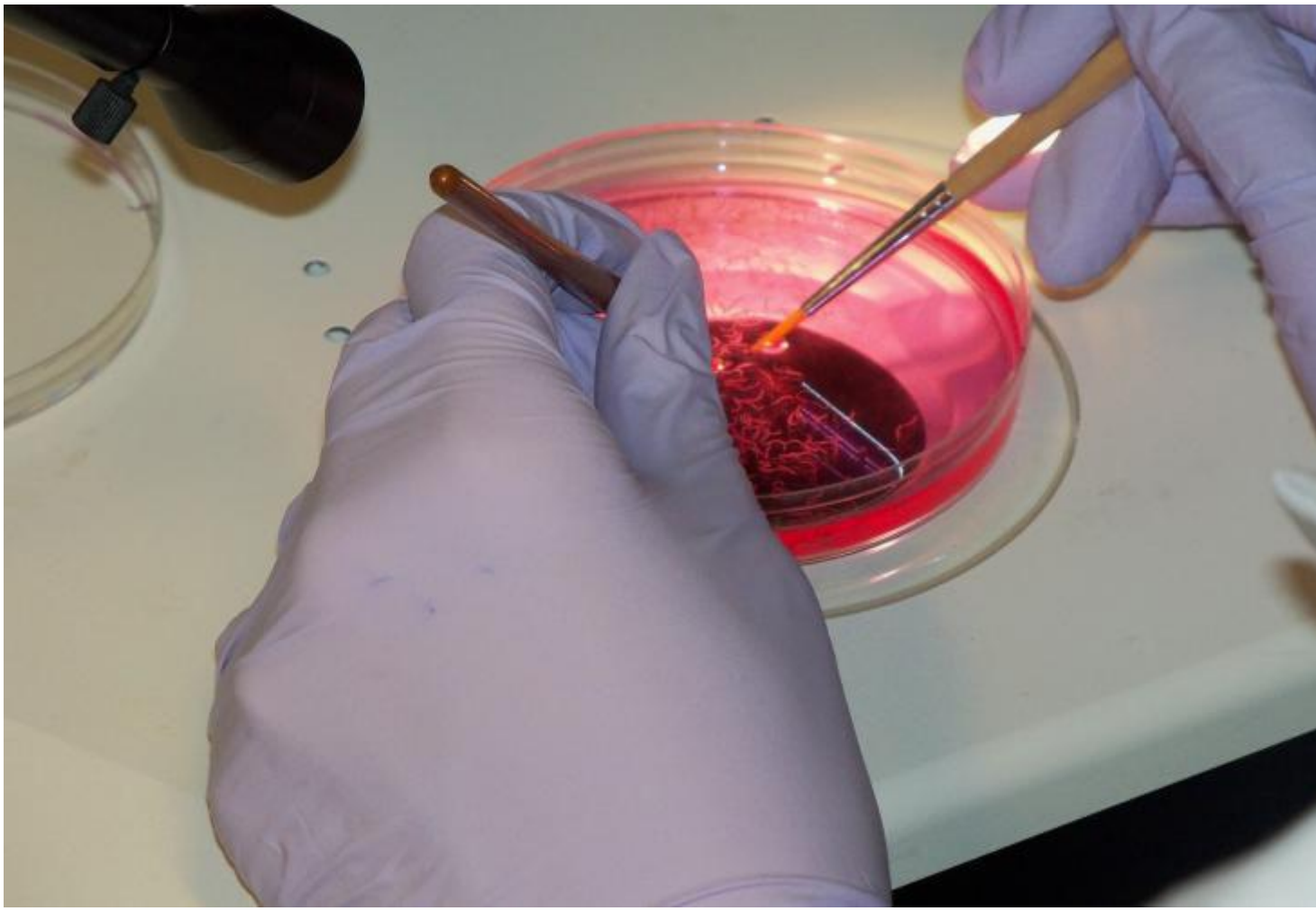
Our research

Our projects include:

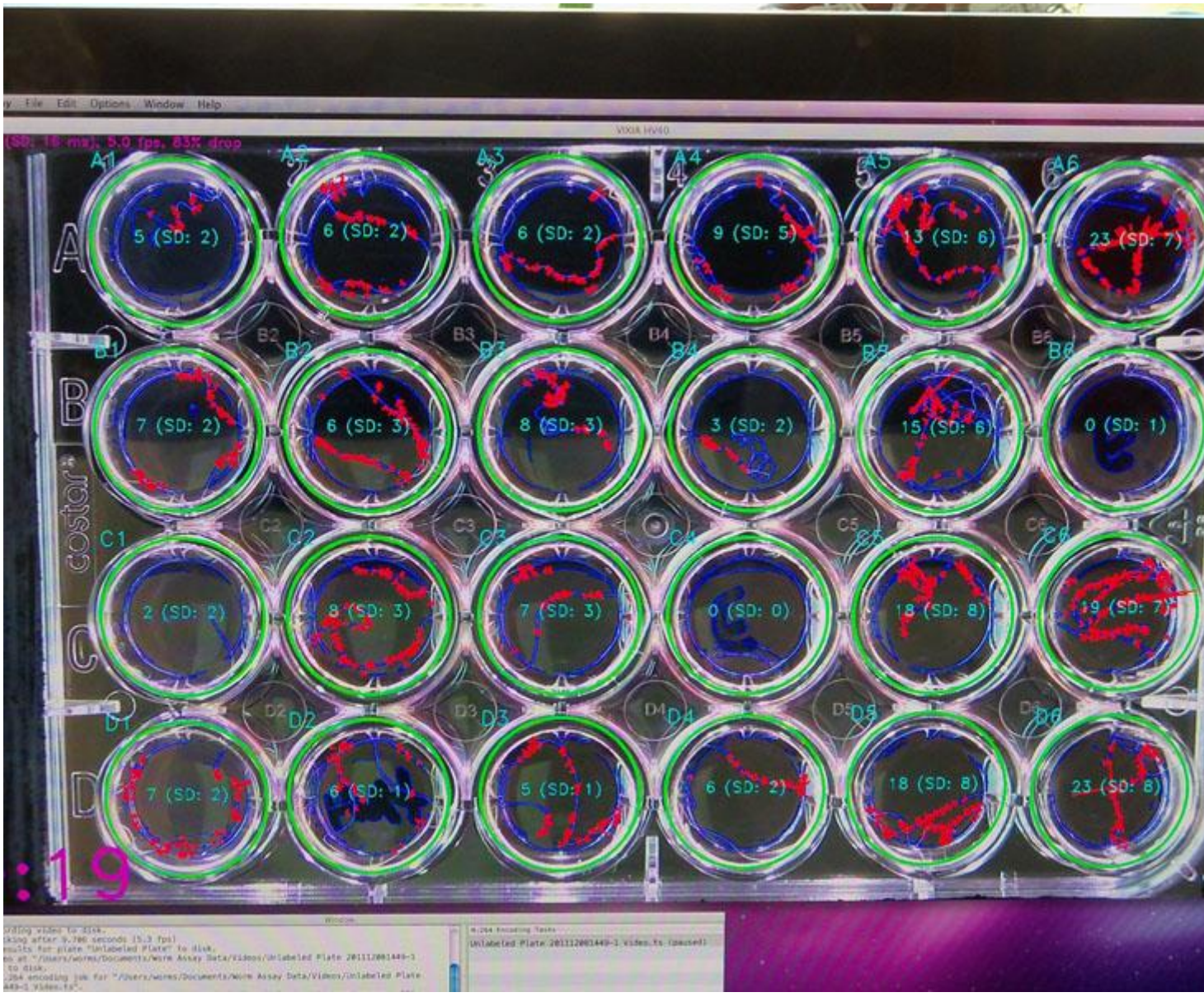
Macrofilaricide studies to find lead compounds that treat filarial diseases in life cycle stages where cu
treatment is ineffective. Lead compounds that have approved as safe and can be repurposed to treat n
diseases are of particular interest. This includes screening of drug libraries to find safe lead compounds
may have previously unknown efficacy in treating diseases. Currently, our research includes searches f
macrofilaricides for the organisms causing river blindness (*Onchocerca volvulus*) and lymphatic filariasi
Wuchereria bancrofti, *Brugia malayi*, and *Brugia timori*) using a model based of a *Brugia pahangi* mode

An example can be seen in our publication:
Bulman CA, Bidlow CM, Lustigman S, Cho-Ngwa F, Williams D, Rascón AA, Tricoche N, Samje M, Bel
Suzuki B, Lim KC, Supakorndej N, Supakorndej P, Wolfe AR [1], Knudsen GM, Chen S, Wilson C, Ang K
Arkin M [3], Gut J, Franklin C, Marcellino C, McKerrow JH, Debnath A, Sakanari JA. **Repurposing aura
a lead candidate for treatment of lymphatic filariasis and onchocerciasis**. PLoS Negl Trop Dis. 20
9(2):e0003534. PMID: 25700363 [4].



***In Vitro* screening of leads** and high throughput analysis of compounds is a major focus of the laborat team recently developed a low cost, simple visual imaging system that utilizes a novel software progra capture video recordings to assay compounds against these large worms. Instead of depending on labo manual subjective methods of analyzing the data, we can now quantify multiple worms' movements simultaneously on a single plate, with each plate taking only a few seconds to read. We also research c areas of parasitic disease, including characterizing various parasite proteins as potential drug targets.

The technique is discussed in our publication:
Storey B, Marcellino C, Miller M, Maclean M, Mostafa E, Howell S, Sakanari J, Wolstenholme A, Kaplan **Utilization of computer processed high definition video imaging for measuring motility of micros nematode stages on a quantitative scale: "The Worminator"**. Int J Parasitol Drugs Drug Resist. 201 4(3):233-43. PMID: 25516834 [5].
and
Marcellino C, Gut J, Lim KC, Singh R, McKerrow J [6], Sakanari J. **WormAssay: a novel computer app for whole-plate motion-based screening of macroscopic parasites**. PLoS Negl Trop Dis. 2012 Jan; 6(1):e1494. PMID: 22303493; PMCID: PMC3269415 [7]

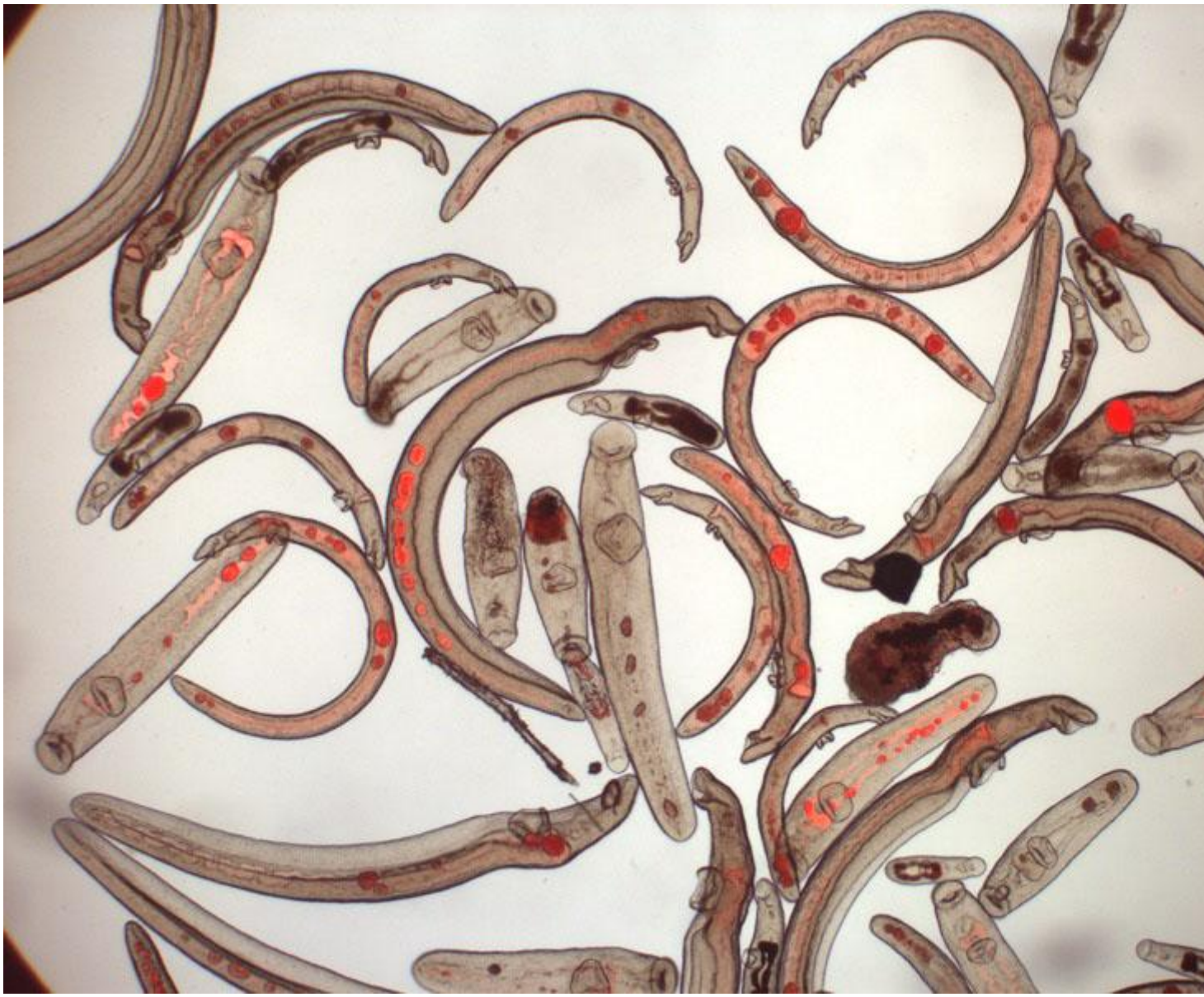


Noninvasive diagnostics to measure the viability of *Onchocerca* nodules are being tested to find fast convenient methods to determine the effectiveness of drug treatments directly inside a patient without s intervention.

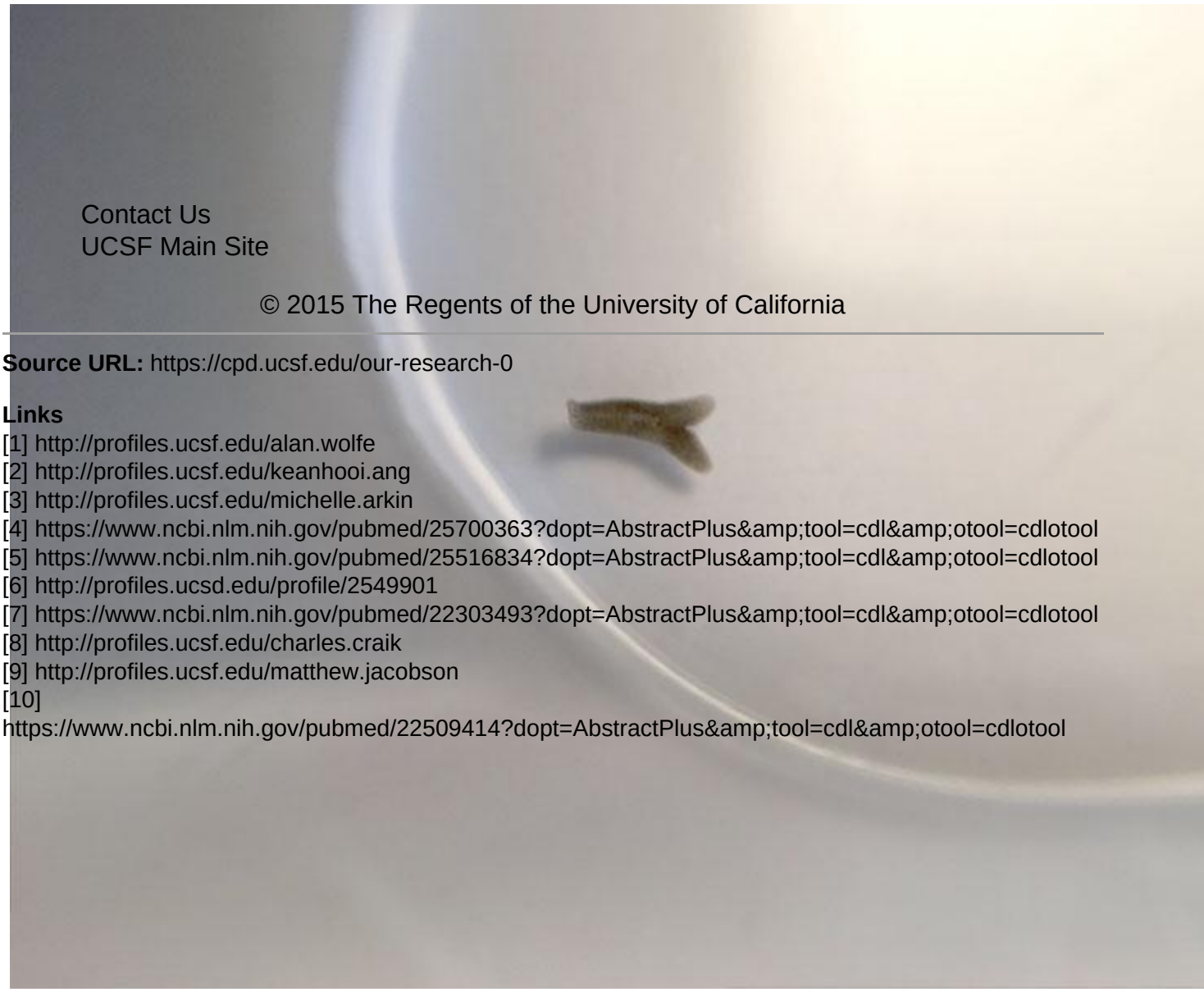
Continuing studies in drug models for *Cryptosporidium* to explore the biochemistry and biology of
protozoa to find effective treatments for a disease that is the most common water-borne illness in the w

***Schistosoma mansoni* studies** in pursuit of diagnostic and therapeutic solutions for a helminth diseas
second only to malaria as the most common parasitic disease. We maintain a cell line for use in drug di
and screening studies.

A publication of interest is:
Ingram JR, Rafi SB, Eroy-Reveles AA, Ray M, Lambeth L, Hsieh I, Ruelas D, Lim KC, Sakanari J, Crail
Jacobson MP [9], McKerrow JH [6]. **Investigation of the proteolytic functions of an expanded cercari
elastase gene family in Schistosoma mansoni**. PLoS Negl Trop Dis. 2012; 6(4):e1589. PMID: 22509
PMCID: PMC3317910 [10].



***Planaria* studies** include the flatworm, *Schmidtea mediterranea*, as a safe and convenient model for pa
study due to its conservation of key proteases and ease of manipulation.



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