

# Key literature on *Schistosoma* and host-parasite systems

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This document can be found at <https://github.com/darwinanddavis/>

## Overview

Key literature and areas of research in *Schistosoma* and host-parasite systems.

## Notes

### Models with schisto

Aim: To account for time lag in population cycles based on things like resources and size structure

- Charles King
- Mark EJ Woolhouse (1991, 1992)
- David Rollinson

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## Habitat and resources

Southgate VR (1997) Schistosomiasis in the Senegal River Basin: Before and after the construction of the dams at Diama, Senegal and Manantali, Mali and future prospects. *J Helminthol* 71(2):125–132.

From Sokolow et al 2015 PNAS

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## Host population

Rumi and Hamann 1992 - size structure dynamics of *Biomphalaria*

Loreau 1987 - Size structure in natural *Biomphalaria* population

Ituarte 1989 - Growth dynamics of *B. glabrata* in the field

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## **Cerc stuff**

### **Cerc host choice**

Snail-host-finding by Miracidia and Cercariae: Chemical Host Cues

Langeloh (2018) Relative importance of chemical attractiveness to parasites for susceptibility to trematode infection

Seppala (2015) Quality attracts parasites: host condition-dependent chemo-orientation of trematode larvae

Sukhdeo (2004) Trematode behaviours and the perceptual worlds of parasites

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## Human health stats

Steinmann P, Keiser J, Bos R, Tanner M, Utzinger J (2006) Schistosomiasis and water resources development: Systematic review, meta-analysis, and estimates of people at risk. *Lancet Infect Dis* 6(7):411–425

From Sokolow et al 2015 PNAS

Schistosomiasis infects an estimated 220–240 million people globally, and 790 million are at risk for infection, more than 90% of whom are in Sub-Saharan Africa (14).

[WHO \(2015\) Preventive Chemotherapy and Transmission Control \(PCT\) databank](#)

World Health Assembly (2012) Elimination of Schistosomiasis in WHA65/2012/REC/1 Sixty-Fifth World Health Assembly: Resolutions and Decisions Annexes (WHO, Geneva)

Cheever AW, Macedonia JG, Mosimann JE, Cheever EA (1994) Kinetics of egg production and egg excretion by *Schistosoma mansoni* and *S. japonicum* in mice infected with a single pair of worms. *Am J Trop Med Hyg* 50(3):281–295

From Sokolow et al 2015 PNAS

Each infected snail sheds thousands of cercariae, which seek and penetrate human skin. After entering the skin, the parasites migrate to the blood vessels of the intestines (*S. mansoni*) or urinary bladder (*S. hematobium*), where female worms lay 350–2,200 eggs per day (15)

Jobin WR, Negrón-Aponte H, Michelson EH (1976) Schistosomiasis in the Gorgol Valley of Mauritania. *Am J Trop Med Hyg* 25(4):587–594

From Sokolow et al 2015 PNAS

Death from liver failure or bladder cancer can be preceded by chronic anemia, cognitive impairment in children, growth stunting, infertility, and a higher risk of contracting HIV in women (17, 18).

[Whole genome sequencing and morphological analysis of the human-infecting schistosome emerging in Europe reveals a complex admixture between \*Schistosoma haematobium\* and \*Schistosoma bovis\* parasites.](#)

Hotez PJ, Fenwick A, Kjetland EF (2009) Africa's 32 cents solution for HIV/AIDS. *PLoS Negl Trop Dis* 3(5):e430

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[WHO \(2015\) Preventive Chemotherapy and Transmission Control \(PCT\) databank.](#)

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WHO (2011) Schistosomiasis: Progress Report 2001-2011 and Strategic Plan 2012-2020 (WHO, Geneva.

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Bockarie MJ, Kelly-Hope LA, Rebollo M, Molyneux DH (2013) Preventive chemotherapy as a strategy for elimination of neglected tropical parasitic diseases: Endgame challenges. *Philos Trans R Soc Lond B Biol Sci* 368(1623):20120144.

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Gray DJ, et al. (2010) Schistosomiasis elimination: Lessons from the past guide the future. *Lancet Infect Dis* 10(10):733–736

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Fenwick A, Savioli L (2011) Schistosomiasis elimination. *Lancet Infect Dis* 11(5):346, author reply 346–347

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Zhang Z, Jiang Q (2011) Schistosomiasis elimination. *Lancet Infect Dis* 11(5):345, author reply 346–347

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World Health Assembly (2012) Elimination of Schistosomiasis in WHA65/2012/REC/1 Sixty-Fifth World Health Assembly: Resolutions and Decisions Annexes (WHO, Geneva).

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## Starvation

Nelson et al. 2016 Effects of abnormal temperature and starvation on the internal defense system of the schistosome-transmitting snail *Biomphalaria glabrata*

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Andre' Gergs and Tjalling Jager 2014 Body size-mediated starvation resistance in an insect predator

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## **Molluscicide**

Sokolow et al 2018 To Reduce the Global Burden of Human Schistosomiasis, Use ‘Old Fashioned’ Snail Control

Contains table of papers looking at schisto control programs and strategies

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## **Immunity**

Cressler et al 2014 Disentangling the interaction among host resources, the immune system and pathogens

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## Predation

Sokolow et al 2015 Reduced transmission of human schistosomiasis after restoration of a native river prawn that preys on the snail intermediate host

‘Reinfection after treatment is a problem that plagues efforts to control parasites with complex transmission pathways, such as schistosomiasis, which affects at least 220 million people worldwide and requires an obligate snail intermediate host.’