

# Sexy Schisto

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# Gender issues



# Gonochorism of Schistosomes

**Schistosome monogamy: who, how, and why?**

S. Beltran and J. Boissier

*Trends in Parasitology* Vol.24 No.9



**Are schistosomes socially and genetically monogamous?**

Sophie Beltran • Jérôme Boissier

Parasitol Res (2009) 104:481–483



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Leiden University Medical Center

A WOMAN WITHOUT A  
MAN IS LIKE A FISH  
WITHOUT A BICYCLE



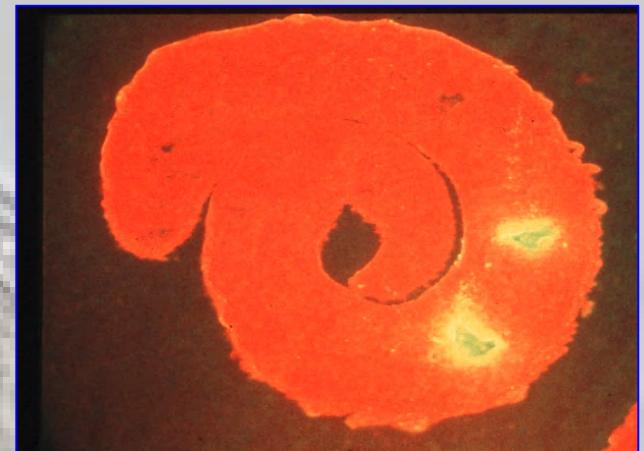
# Life cycle *Schistosoma*



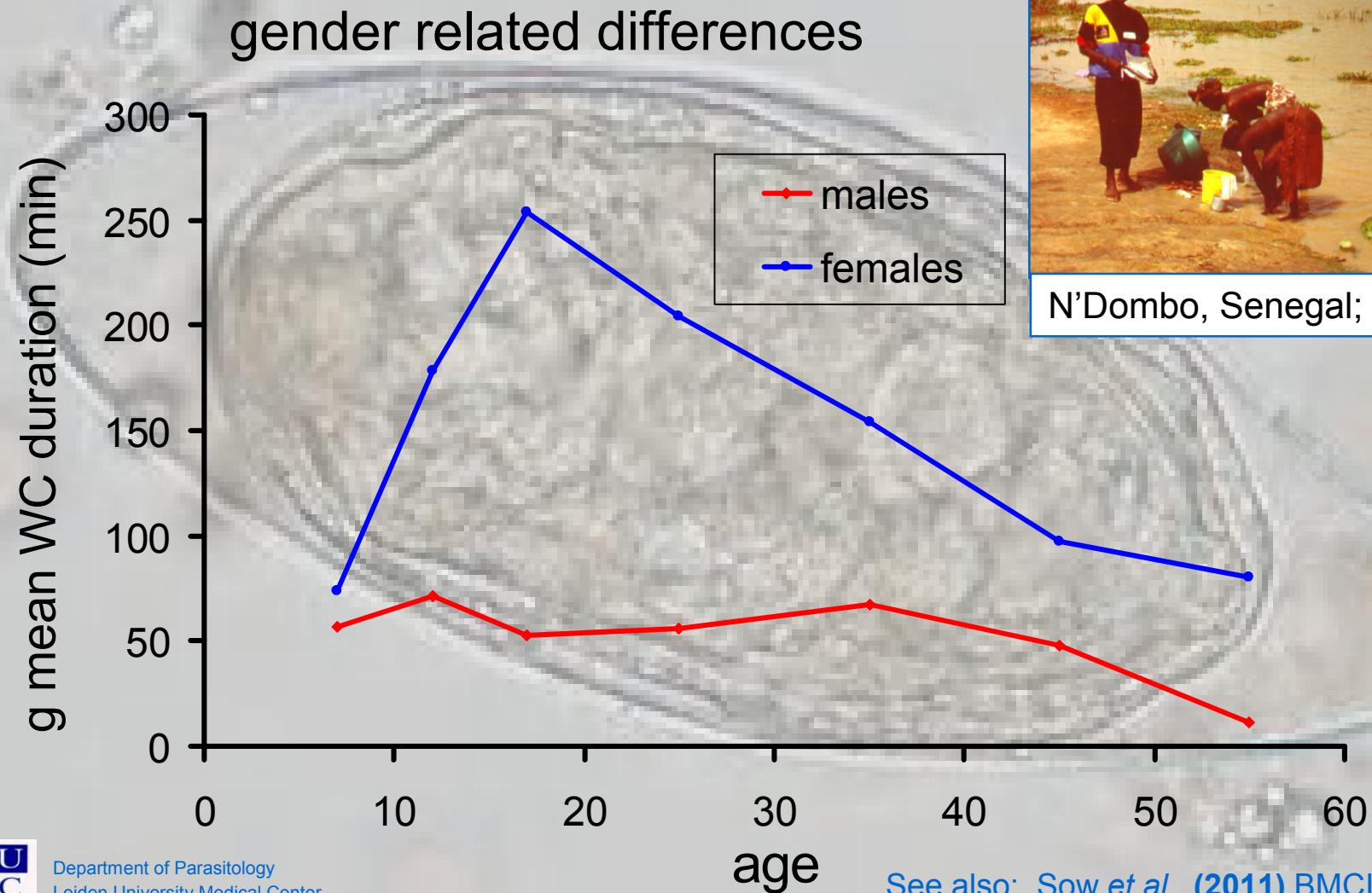
# *Schistosoma* - diagnostics



Sero-conversion ≈ 3-6 weeks  
Low sens/spec in endemic regions

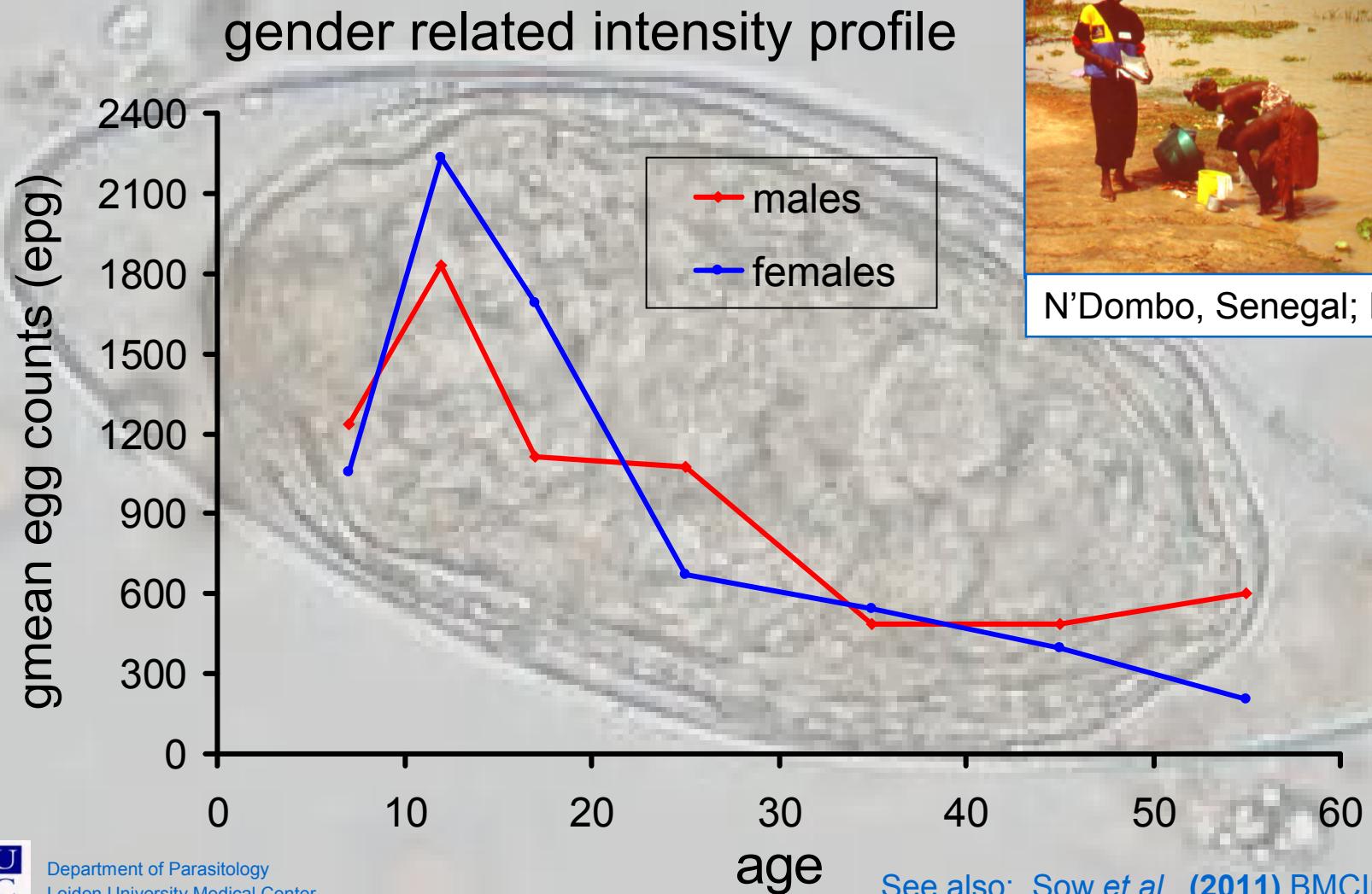


# Water contact observations



N'Dombo, Senegal; N=279

# Water contact observations



N'Dombo, Senegal; N=279



# Special *Schistosoma* case

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Dutch student, 26 years

- Africa travel, 6 weeks, a.o. Lake Malawi

5-12 weeks:

- period of fatigue, mild fever, cough
- followed by clotted and bloody semen
- serum, semen, stool, urine for diagnosis

Dutch student,  $\approx$  12 weeks after exposure Lake Malawi



# Male Genital Schistosomiasis

Netherlands  
The Journal of Medicine

2007

CASE REPORT

## Cough and alterations in semen after a tropical swim

F. van Delft<sup>1</sup>, L. Visser<sup>2</sup>, A. Polderman<sup>3</sup>, L. van Lieshout<sup>3\*</sup>

<sup>1</sup>Department of Internal Medicine, Academic Medical Centre, Amsterdam, the Netherlands,  
Departments of <sup>2</sup>Infectious Diseases and <sup>3</sup>Parasitology, Leiden University Medical Centre, Leiden,  
the Netherlands, \*corresponding author: e-mail: LvanLieshout@lumc.nl

Journal of Travel Medicine, Volume 14, Issue 3, 2007, 197–199

## Genital Schistosomiasis in a Traveler Coming Back From Mali

Alice Pérignon, MD, Marie Pelicot, MD and Paul Henri Consigny, MD

Pasteur Institut Medical Center, Paris, France

CID (2002) 35:1420

## Hematospermia Due to Schistosome Infection in Travelers: Diagnostic and Treatment Challenges

Eli Schwartz,<sup>1</sup> Neora Pick,<sup>2</sup> Gila Shazberg,<sup>3</sup> and Israel Potasman<sup>2</sup>

Table 1 Genital schistosomiasis in travelers

References	N	Symptoms	Diagnosis
Corachan et al <sup>1</sup>	10	Hematospermia	Semen microscopy
McKenna et al <sup>18</sup>	7	Change in ejaculate	Semen microscopy
Torresi et al <sup>19</sup>	1	Change in ejaculate	Semen microscopy
Whitty et al <sup>20</sup>	52	Hematospermia, change in ejaculate	Not precise
Schwartz et al <sup>21</sup>	4	Hematospermia, testicular or pelvic pain	Semen microscopy, prostate biopsy
Durand et al <sup>22</sup>	1	Testicular pain	Semen microscopy

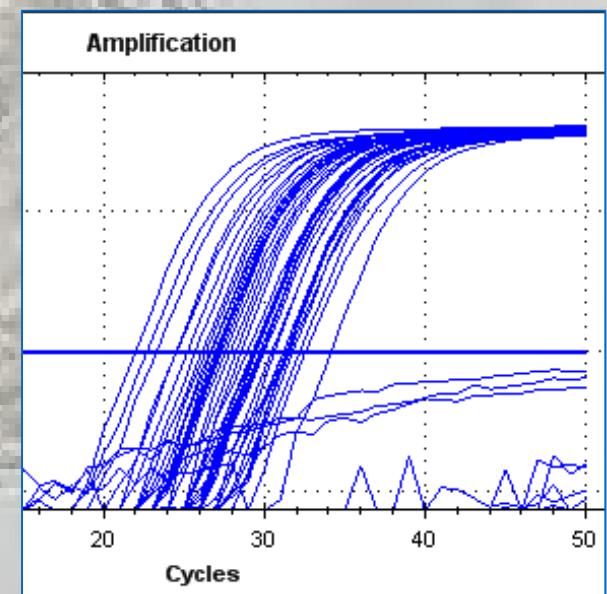
# Real-time PCR Schistosoma

## In house tests (LUMC)

- Multiplex real-time PCR
- Internal control (PhHV)

Obeng *et al.*, (2008)

- ITS, genus (S.m./S.h.)
- specificity  $\geq 100\%!!!!$
- sensitivity  $\approx$  microscopy
- $C_t \approx$  DNA load  $\approx$  intensity
- Validated for stool, urine
- Implemented >2007
- Follow-up after therapy



# Male Genital Schistosomiasis

**Table 2.** Treatment protocols, recurrence of symptoms, and outcomes for 4 travelers who returned to Israel with hematospermia due to schistosome infection acquired in an area of endemicity.

Patient	Initial treatment	Time of recurrence <sup>a</sup>	Second treatment	Third treatment	Outcome
1	Prz, 40 mg/kg	1 month	Prz, 40 mg/kg weekly for 3 weeks	Not given	Asymptomatic at 1 year
2	Prz, 40 mg/kg	3 months	Prz, 40 mg/kg	Prz, 60 mg/kg; Prd, 40 mg/day for 10 days	Asymptomatic at 2 years
3	Prz, 40 mg/kg	3 months	Prz, 40 mg/kg	Not given	Asymptomatic at 3 years
4	Prz, 60 mg/kg	None	Not given	Not given	Asymptomatic at 1 year

NOTE. Prd, prednisone; Prz, praziquantel.

<sup>a</sup> As measured from the time of the initial treatment.

Schwartz et al., CID 2002

PZQ 2x dd 20 mg/kg; 3d

(N=407); Lancet (2000) 355:117

## Community-based study of genital schistosomiasis in men from Madagascar

Peter Leutscher, Charles-Emile Ramarokoto, Claus Reimert,  
Hermann Feldmeier, Philippe Esterre, Birgitte J Vennervald

**Detection of *Schistosoma haematobium* eggs in 43% of semen**



# Female Genital Schistosomiasis

Case report

European Journal of Obstetrics & Gynecology and  
Reproductive Biology 108 (2003) 106–108

## Schistosomiasis of the uterus in a patient with dysmenorrhoea and menorrhagia

Kim E. Boers<sup>a,\*</sup>, Prapto H. Sastrowijoto<sup>b</sup>, Erika P.M. Elzakker van<sup>c</sup>,  
Marinus P.M. Hermans<sup>a</sup>

<sup>a</sup>Department of Obstetrics and Gynecology, Reinier de Graaf Hospital, Reinier de Graafweg 3-11, 2625 AD Delft, The Netherlands

<sup>b</sup>Department of Pathology, Reinier de Graaf Hospital, Reinier de Graaf Hospital, Reinier de Graafweg 3-11, 2625 AD Delft, The Netherlands

<sup>c</sup>Department of Medical Microbiology, Reinier de Graaf Hospital, Reinier de Graaf Hospital,  
Reinier de Graafweg 3-11, 2625 AD Delft, The Netherlands

Dutch woman, 37 years

Dysmenorrhoea, menorrhagia

Increasing complaints

Laboratory result normal

LUMC (2004)

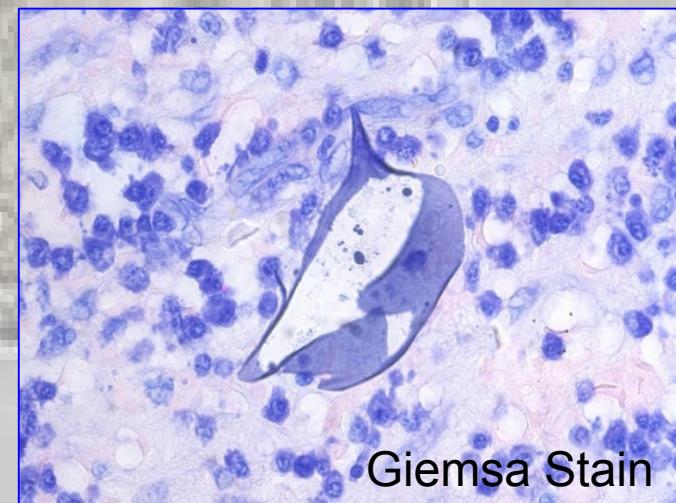
Surinam woman, 51 years

Hysterectomy

Hysterectomy

Pathology: *Schistosoma* eggs

Lake Malawi



Giemsa Stain

# Female Genital Schistosomiasis

*Am. J. Trop. Med. Hyg.*, 81(4), 2009, pp. 549–550  
doi:10.4299/ajtmh.2009.08-0498  
Copyright © 2009 by The American Society of Tropical Medicine and Hygiene

## Case Report: Cervical Schistosomiasis as a Risk Factor of Cervical Uterine Dysplasia in a Traveler

Arnaud Dzeing-Ella, Frédéric Mechaï, Paul-Henri Consigny, Laurent Zerat, Jean-Paul Viard,  
Marc Lecuit, and Olivier Lortholary\*

*Faculté de Médecine, Paris Descartes, Centre d'Infectiologie Necker Pasteur, Hôpital Necker Enfants-malades, Service des Maladies Infectieuses et Tropicales, Paris Cedex, France; Laboratoire d'Anatomopathologie Lavergne, Paris, France*

## CASE REPORT

### Genital schistosomiasis as a cause of female sterility and acute abdomen

Andrea Schanz, M.D.,<sup>a</sup> Joachim Richter, M.D.,<sup>b</sup> Ines Beyer, M.D.,<sup>a</sup> Stephan Ernst Baldus, M.D.,<sup>c</sup> Alexandra Petra Hess, M.D.,<sup>a</sup> and Jan Steffen Krüssel, M.D.<sup>a</sup>

<sup>a</sup> University Hospital for Gynecology and Obstetrics; <sup>b</sup> Tropical Medicine Unit, University Hospital for Gastroenterology, Hepatology and Infectious Diseases; and <sup>c</sup> Institute of Pathology Universitätsklinikum Düsseldorf, Heinrich-Heine-Universität, Düsseldorf, Germany

*Acta Tropica* 79 (2001) 193–210

## Review Article

### Female genital schistosomiasis: facts and hypotheses

Gabriele Poggensee <sup>a,\*</sup>, Hermann Feldmeier <sup>b</sup>

# Female Genital Schistosomiasis

Review

Trends in Parasitology, February 2012, Vol. 28, No. 2

## A review of female genital schistosomiasis

Eyrun F. Kjetland<sup>1,2</sup>, Peter D.C. Leutscher<sup>3</sup> and Patricia D. Ndhlovu<sup>4</sup>

- Hypertrophic and ulcerative lesions of vulva, vagina and cervix
- Pelvic pain, itching, discharge / sandy patches, contact bleeding
- Lesions of the ovaries and the fallopian tubes can lead to infertility
- Prevalence: 33-75% in *S. haematobium* regions
- Case definition FGS? Diagnosis?

# FGS study Tanzania

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N=422 females; 15-50 year; 2011

(Van Lieshout & Downs; manuscript in preparation)

- *S. haematobium* vs *S. mansoni* region
- cross sectional survey
- Stool & urine & vaginal lavage
- Sensitivity PCR >> microscopy
- >> Lavage PCR positives in S.h. region

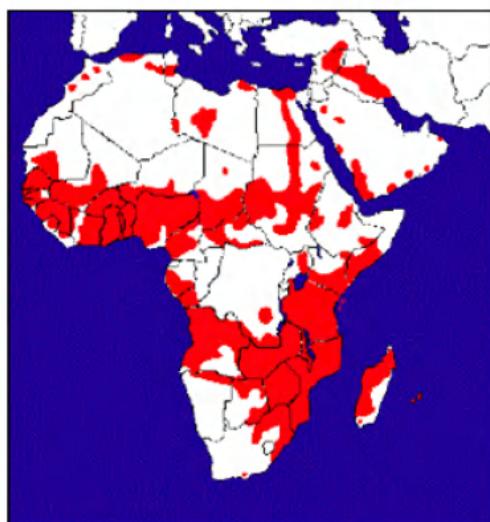
# FGS and HIV transmission

## Examining the Relationship between Urogenital Schistosomiasis and HIV Infection

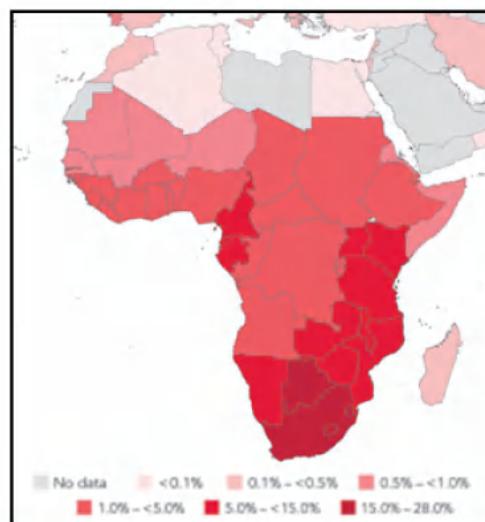
Pamela Sabina Mbabazi<sup>1</sup>, Olivia Andan<sup>1</sup>, Daniel W. Fitzgerald<sup>2</sup>, Lester Chitsulo<sup>1</sup>, Dirk Engels<sup>1</sup>, Jennifer A. Downs<sup>2\*</sup>



December 2011 | Volume 5 | Issue 12



Urogenital Schistosomiasis  
King C, 2001



HIV Prevalence in Adults Aged 15-49  
UNAIDS, 2010

Figure 1. Geographical overlap of *S. haematobium* and HIV infections [14-15].

- ↑genital lesions (childhood)
- ↑shedding HIV in males
- ↑co-receptors HIV
- ↑Th2-type immune response
- ↑progression AIDS



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# Take home's Travel Medicine

Schistosomiasis haematobium

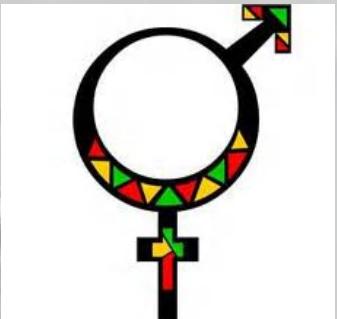
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Urogenital schistosomiasis

(WHO, 2009)

Genital (M/F) presentation, SS-Africa

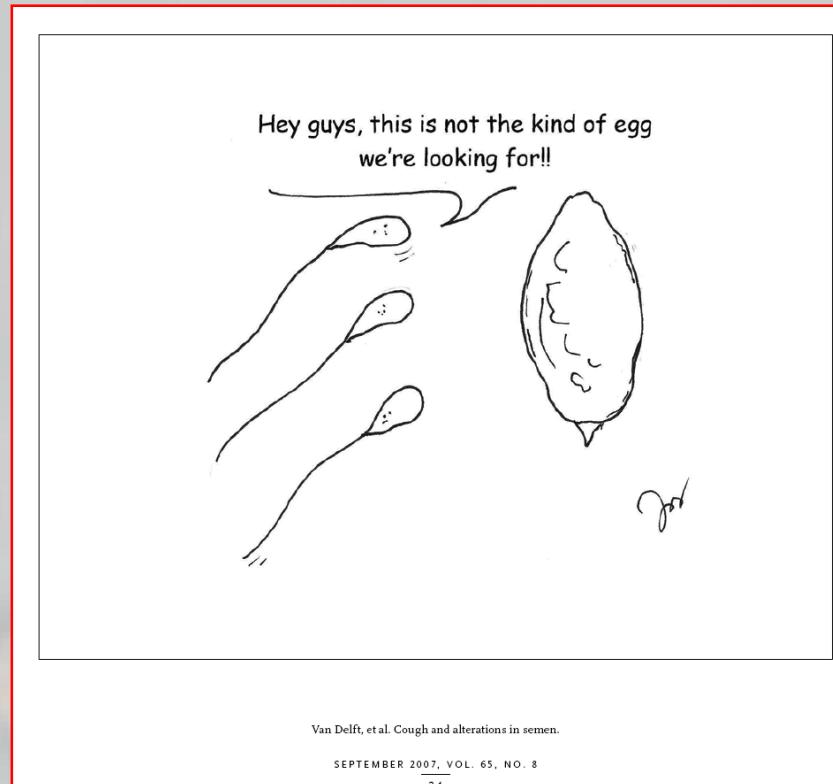
- ⇒ think of schistosomiasis
- proper clinical samples



Serology (travellers, not for monitoring therapy)

PCR promising alternative (small volume, single sample)

# Contributions



A screenshot of the LUMC website. At the top is the LUMC logo and the text "LEIDS UNIVERSITAIR MEDISCH CENTRUM". Below this is a navigation bar with links: "Patient en zorg", "Research", "Onderwijs en opleidingen", and "Werken bij". Under "Research", the "Epidemiology en diagnostics" page is shown. The URL in the address bar is "LUMC Home &gt; Organisatie A - Z &gt; Parasitologie &gt; Research &gt; Epidemiology en diagnostics". To the left of the text is a red male/female symbol. To the right is a photo of four people standing together.

*FGS-Tanzania data:*  
Jen Downs  
Pytsje Hoekstra  
Marlous Sneuboer

Leo Visser  
*Infectious Diseases, LUMC*

Marianne Erkens *et al.*  
Diagnostic team  
*Clinical Microbiology Laboratory, LUMC*