

Expanding the swimmer's itch pool: a first record of *Trichobilharzia regenti* in Belgium



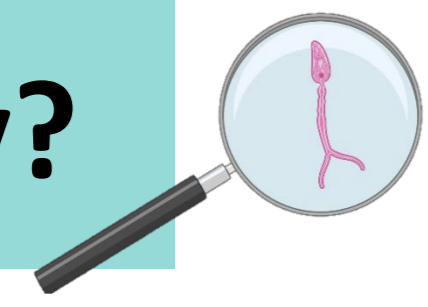
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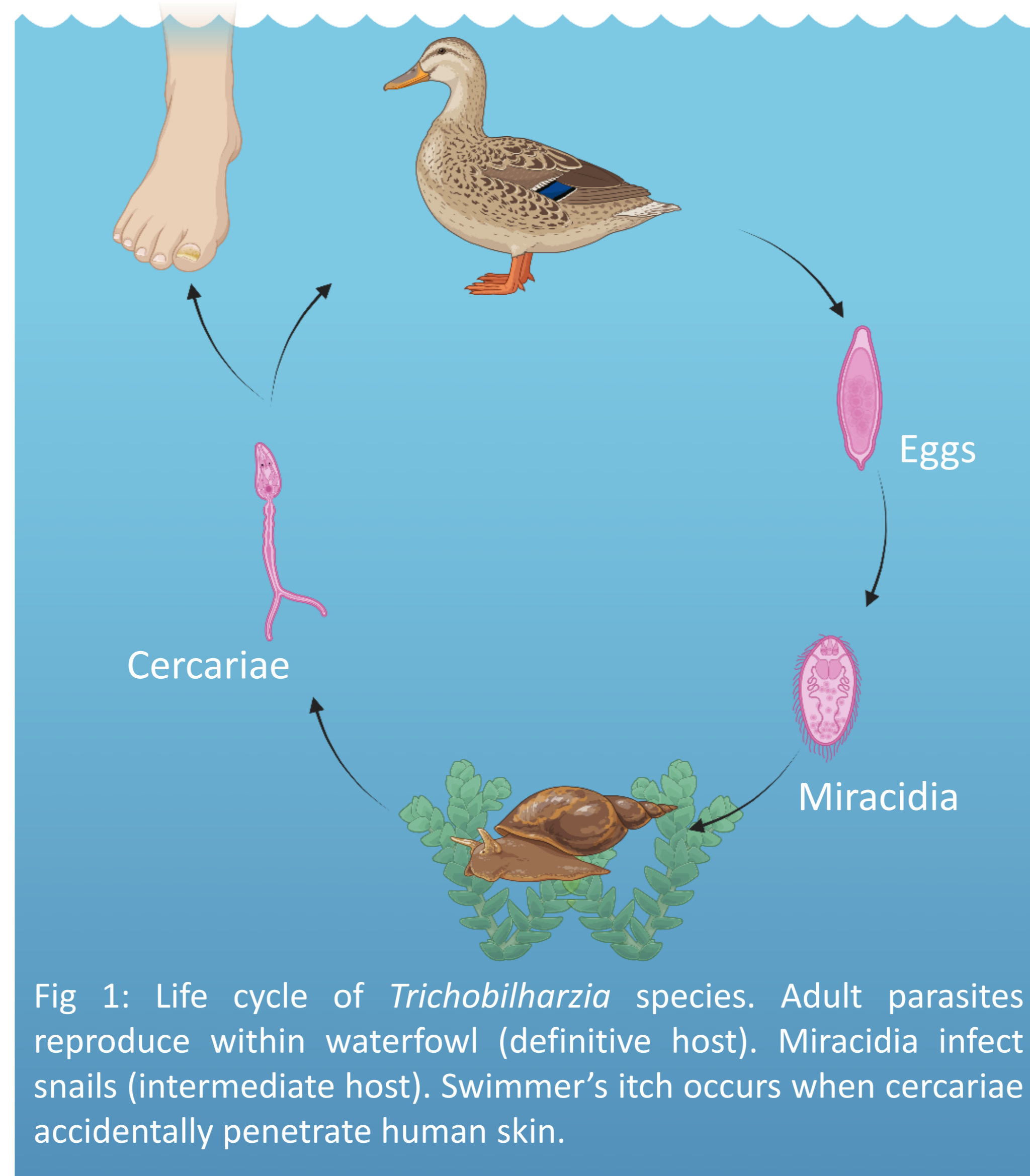
What & Why?



Swimmer's itch, also known as cercarial dermatitis, is a painful skin condition caused by larval stages of *Trichobilharzia* species attempting to penetrate human skin¹ (Fig 1).

Swimmer's itch is a re-emerging cosmopolitan disease with increased reports across Europe, including Denmark, since the recent hot summers^{1,2}. The first outbreaks in Belgium were reported in 2012 and could be attributed to *Trichobilharzia franki*³.

This study focuses on a private pond located in Belgium, following complaints of extremely painful and itchy skin lesions after swimming in the summer of 2022.



How?

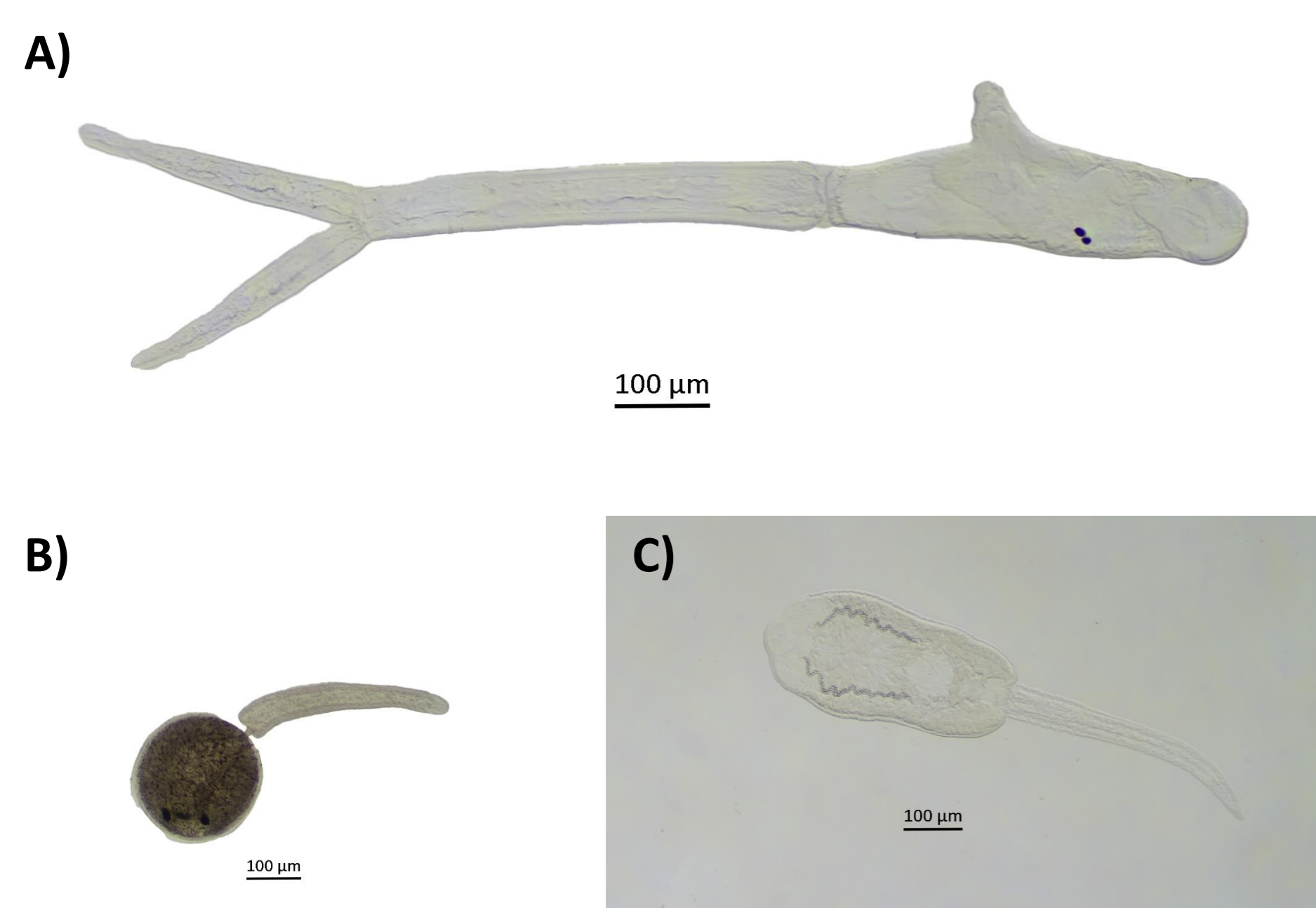
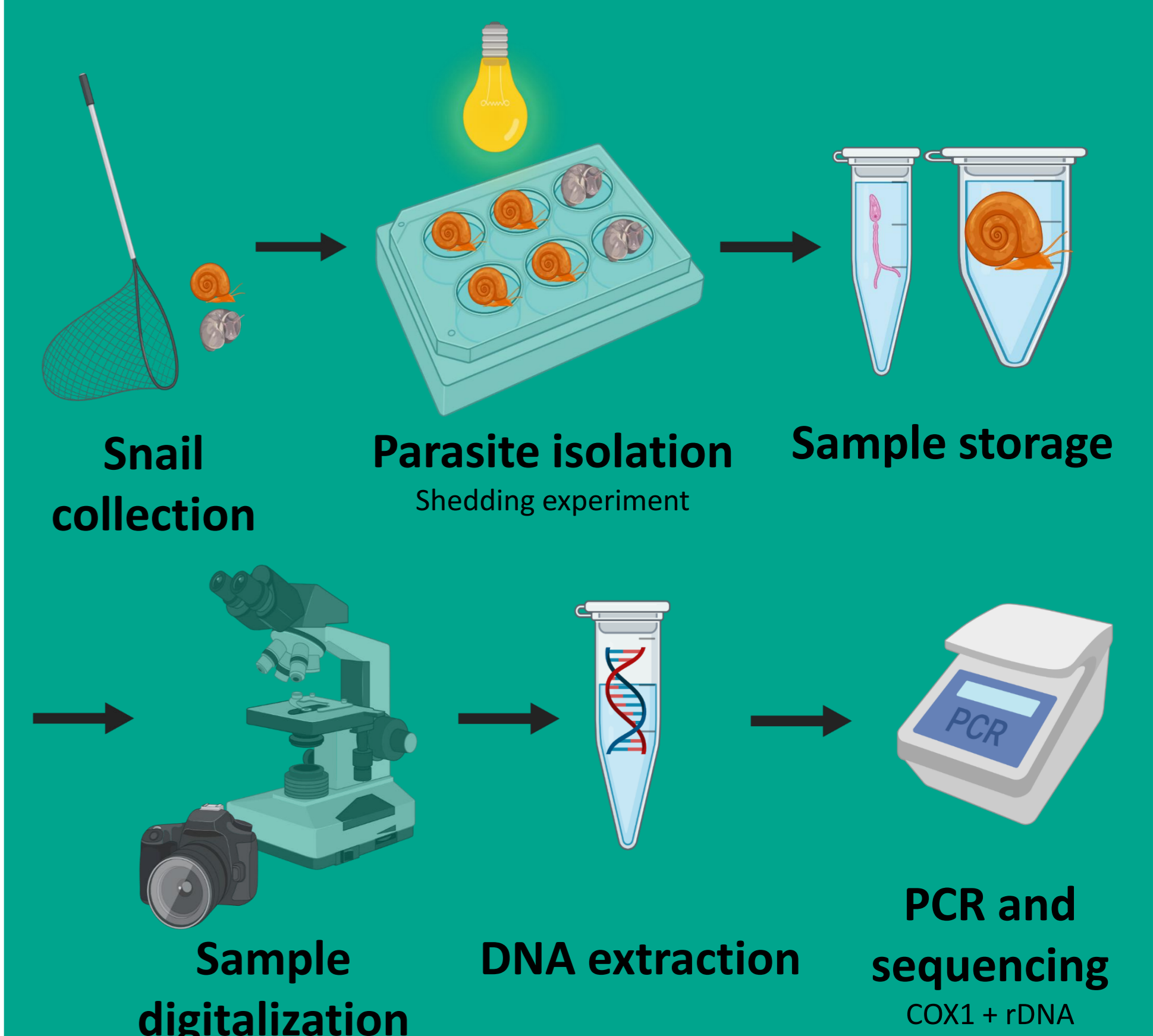


Fig 2: Cercariae released by 3 individual *Ampullaceana balthica* during the shedding experiment. A) *Trichobilharzia regenti*, B) *Notocotylus* sp. and C) *Echinostoma* sp.



Fig 3: *Ampullaceana balthica*, a snail host of various trematodes, including *Trichobilharzia regenti*.

Results

- Six snail species molecularly validated: *Ampullaceana balthica* (n=11), *Lymnaea stagnalis* (n=108), *Stagnicola fuscus* (n=3), *Physella acuta* (n=30), *Planorbella corneus* (n=16) and *Gyraulus albus* (n=1).
- Three *A. balthica* specimens (27%) released cercariae (Fig 2 & 3).
- First detection of *Trichobilharzia regenti*, isolated from *A. balthica*.
- Trematode DNA detected: one *P. corneus* (Echinostomatidae sp.), one *S. palustris* (Strigeidae sp.) and one *A. balthica* (Haematoloechidae sp.).

Conclusion

First record of the nasal schistosome *Trichobilharzia regenti* in Belgium. Potentially dangerous, especially for immunocompromised persons, due to its migration through to the central nervous system⁴.

Global climatic and ecological changes (see inset "Ecological factors") affects habitat suitability for snails, *Trichobilharzia* species and waterfowl. Consequentially, swimmer's itch incidence will most likely continue to **increase** in Northern and Western Europe **in the future**^{1,2}.

References

1. Soldánová M *et al.* Swimmer's itch: etiology, impact, and risk factors in Europe. *Trends Parasitol* 2013.
2. Christiansen AØ *et al.* Molecular diversity of avian schistosomes in Danish freshwater snails. *Parasitol Res* 2016.
3. Caron Y *et al.* Swimmer's Itch in Belgium: First Recorded Outbreaks, Molecular Identification of the Parasite Species and Intermediate Hosts. *Vector Borne Zoonotic Dis* 2017.
4. Kourilová P *et al.* The severity of mouse pathologies caused by the bird schistosome *Trichobilharzia regenti* in relation to host immune status. *Parasitol Res* 2004



Ecological factors

Ecological factors affecting swimmer's itch incidence¹

Temperature: Trematodes are especially sensitive to temperature change. Cercarial dermatitis outbreaks are often linked to heat waves.

Nutrients: Eutrophication increases snail abundance and bird visits.

Suitable snail hosts: Dilution effect only has limited effect in this trematode system.

Co-infections: Some *Trichobilharzia* species preferentially infect already infected snails.