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21 July 2026

Dear Committee Members,

I am writing to express my strongest support for Dr. Jillian Detwiler's nomination for a CCUBC Science Promotion award. Jillian is the resident parasitologist in the Department of Biological Sciences here at the University of Manitoba and has spent the last 3-4 years developing engaging content for kids in STEM with a focus on Indigenous students through support from the Vera J. Kirkness program.

She has worked with numerous undergraduate and graduate students in our Department to make the program the success it is. All of the students involved had opportunity to develop their own mentoring and teaching skills working closely with Dr. Detwiler. She also included folks from Government and NGO's who have made a career in professions involving parasitology. She uses innovative techniques to engage the students in the material building toward hands on exercises with toys familiar to the students. Perhaps engagement is made easier with the often disgusting and frequently gross nature of parasites but Dr. Detwiler was able to get beyond the shock factor and really engage the students in the biology and science of parasitology.

Dr. Detwiler's work was recognised in May of this year by the Canadian Society of Zoologists where she received the Science Communication and Outreach award. I fully support this nomination. Dr. Detwiler has worked hard to develop a stimulating and fun exercise designed to attract and engage 12-14 year olds to STEM. She has disseminated her work broadly through publication to the QUBES community and receives rave reviews from the students every year she has organised these events,

Sincerely,

W. Gary Anderson,

Professor and Department Head,

Department of Biological Sciences,

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The communication or activity must be to or with a general audience.

We designed and led microscope demonstrations and hands-on activities to engage and teach people about parasites, their life cycles, and their importance to human health. Our activities were initially created for Indigenous BSc undergraduates majoring in Science and then we modified the same activities for 12-14 yr old kids enrolled in a week-long science-themed summer camp. We also created hands-on activities specifically aimed at engaging the public (all ages) at a Science Literacy event held at a museum. Most recently, these activities were used to illustrate the diversity of parasites to Grade 11 Indigenous students in the Verna J. Kirkness Program. The content is intentionally crafted for accessibility and engagement, using relatable language and clear, compelling visuals and specimens to promote learning and spark curiosity in non-expert audiences.

The quality and significance of the individual's or team of individuals' contributions to dissemination and/or advocacy of science.

Student members of the team improved their ability to disseminate science to different audiences and ages. Over the course of 3 years, the outreach team has included 1 PhD (Audrey Moizan), 5 MSc (Abigail Finch, Cameron Hodinka, Sidney Mann, Joshita Sehgal, Valeria Pobirohin), and 6 BSc (Steven Ajibi, Ness Dalling, Amy Gudmundson, Lena Klassen, Aden Tobin, and Trina White). Some of these students helped develop the activities. Each student member chose a parasite to develop activity cards for 2 microscope demonstrations. The students reviewed each other's activity cards, provided suggestions, and then worked 1:1 with Dr. Detwiler on the final revisions. The outreach team then led the participants through the stations during the outreach events. After each outreach event, students made revisions to the activity cards based on discussions with and questions from participants. This experience helped them use less jargon and more effectively explain common terms in parasitology such as complex life cycles as well as concepts like zoonoses.

Participants also interacted with professionals who have careers that involve parasitology. A scientist from the Department of Fisheries and Oceans (Dr. Olwyn Friesen) led demonstrations on parasites in the Arctic that can infect humans or wildlife. Further, a veterinarian from the Assiniboine Park Zoo (Dr. Charlene Berkvens) brought live parasites from infected zoo animals to show the diversity of protozoans and helminths that even highly regulated animals can have.

Activities were high quality because they were question driven, relevant to One Health, hands-on, and included unique specimens. The activity cards for each microscope demonstration provided a brief amount of information about a parasite group, and then asked 1-2 questions. In outreach involving invertebrates, Salvador et al. (2021) found that the public had a strong interest in learning weird/disturbing facts. Thus, for the activity cards for *Ascaris*, we emphasized that their eggs stick to money and that as a consequence greater than 50% of bills in a study in Nigeria were infested potentially leading to human transmission. The back of the cards had answers accompanied by figures such as more detailed pictures of parasites, their life cycles, and

distribution maps. Participants gained experience using compound and stereomicroscopes and learned about parasites that are of global importance like malaria and schistosomiasis. We also emphasized the risk of transmission locally by asking and then answering whether people in Manitoba were at risk of contracting the parasite (i.e., from travel, from imported food, from shifting distributions of hosts due to climate change, etc.).

Activities were high quality because they involved eye-catching, memorable specimens. Participants shuddered at the size of the human roundworm, especially because it was a specimen obtained locally! Also, they kept coming back to the tapeworm cysts that were bulging out of the organs of a lab-infected and locally field-caught rodent. To emphasize how parasites use both humans and other animals in their life cycles (a principle of One Health), participants applied their new knowledge of parasite life cycles and tried to build life cycles using stuffies and Barbies. We had Barbies that dressed for a safari vacation (malaria life cycle), Barbie's younger friend Skipper in a swimsuit (schistosomiasis is a big concern for kids), and Hunting Barbie (might encounter *Echinococcus* tapeworms while hunting wolves). Lots of debates and fun was had while participants tried to recall what life cycles involved the snail stuffie.

For the museum event, we created two imaging stations where participants can image parasites using a cellphone attached to an eye piece adaptor. Following the event, we upload the pictures to a Google Drive so they can share with their family and friends. The public can image a variety of different ectoparasites like fleas, ticks, and lice as well as endoparasites including tapeworms, trematodes, and nematodes. Each parasite has a card associated with it that features an amazing feat. For example, fleas can jump up to 100 times their body lengths using their spring-like legs and juvenile lancet flukes make ants behave like zombies.

Further, participants can take a Parasite Personality Quiz (developed by Li et al. 2025) and receive a sticker that depicts the parasite that best matches their personality. Among the parasite-related outreach activities performed by Li and her team, this quiz was one of the more popular outreach materials that is available for parasites (Li et al. 2025). We also found that people were intrigued by the quiz and delighted to walk away with a parasite sticker. They often asked more follow-up questions about the parasites they matched to. We also hope the sticker creates a conversation with more people as they notice the odd animal on the sticker.

Activities were high quality because they included live animals. In the study on outreach with invertebrates, Salvador et al. (2021) found that a large proportion of the public enjoyed live animals the most. Thus, participants in our outreach saw live tapeworm eggs and marveled at the small size of the flour beetle hosts. In the "Find a Parasite Egg" activity, participants pipetted the live tapeworm eggs onto microscope slides and then searched for live, moving eggs using a compound microscope.

Dissemination was increased by publishing the activities in an open education resource (non-peer reviewed). We published our outreach materials in the QUBES community: Host-Parasite Interactions (Summers et al. 2023). We describe the activities, provide a materials list, and

shared the activity cards so that other groups interested in parasite outreach could use our materials or re-develop them to work for their own group. Steven Ajibi created the drafts, Amy Gudmundson and Jillian Detwiler edited, and the other co-authors were acknowledged for their work in developing the activities. As of 6/16/2026, our work has been viewed 610 times with 812 downloads.

Ajibi S, Gudmundson AC, Hodinka C, Mann SC, Friesen OC, Detwiler JT (2025) [Outreach in parasitology: Parasites and their amazing diversity, complex life cycles, and impacts on humans](#). Host Parasite Interactions Network, *Qubes Educational Resources* doi:10.25334/3YFH-0V73.

The reach of the activities in terms of the size and diversity of the audience and the likelihood of reaching an audience that might not otherwise be exposed to Zoology.

Over the past 3 years, our outreach has engaged >600 people through hands-on parasitology activities, including ~300 people Manitoba Museum event, 294 12-14 kids from the 2024 and 2025 Mini U summer programs (University of Manitoba), 30 Indigenous undergraduate students from the Wawatay Program (University of Manitoba), and 2 Grade 11 Indigenous students in the Verna J. Kirkness program. These initiatives bring zoological education to diverse and often underserved audiences, many of whom may have limited prior exposure to topics like parasite biology. By using adaptable and engaging materials across these programs, our team ensures consistent, meaningful interaction with learners from varied backgrounds and educational levels, significantly expanding the reach of zoological science beyond traditional classroom settings.

The impact of the activities on the target audience.

Participant feedback collected from thank you cards and emails highlights the excitement, curiosity, and a new appreciation for parasitology that follows the activity (Figures 1-4). Many kids and Indigenous students expressed surprise at how interesting and relevant parasites were to human and animal health. Although we have not performed a before- and after- survey, similar outreach with parasites has demonstrated positive shifts in participants' perceptions of parasites (Li et al. 2025).

Future outcomes of the educational activities beyond the immediate

We have been asked to provide outreach to Mini U for a third year. We are currently developing a new set of activity cards that feature different parasites as some children attend Mini U year after year.

Additionally, we are exploring a collaboration with the Manitoba Museum around Halloween, where we'll display some of the microscope demonstrations, activity cards, and parasite specimens to engage a broader public audience in a unique, seasonally relevant context. These efforts highlight our lab's ongoing dedication to creative, accessible, and memorable science education, with the goal of fostering lasting interest and awareness in parasitology across diverse age groups and communities.

References

Li C, Wang YR, Lesack K, Xiao X, Pollo SMJ, Jonsdottir TJ, Charrier E, Poulin R (2025) Perceptions of parasites: reflections from a new parasitology outreach initiative. *Trends in Parasitology*. <https://doi.org/10.1016/j.pt.2025.05.006>

Summers MM, Kong N, Nykyforuk C, Finney CAM (2023) Collaborative parasitology: student partnerships in open education. *Trends in Parasitology* 39(9): 711-715.

Salvador RB, Tomotani BM, O'Donnell KL, Cavallari DC, Tomotani JV, Salmon RA, Kasper J (2021) Invertebrates in Science Communication: Confronting Scientists' Practices and the Public's Expectations. *Frontiers in Environmental Science* 9:606416.

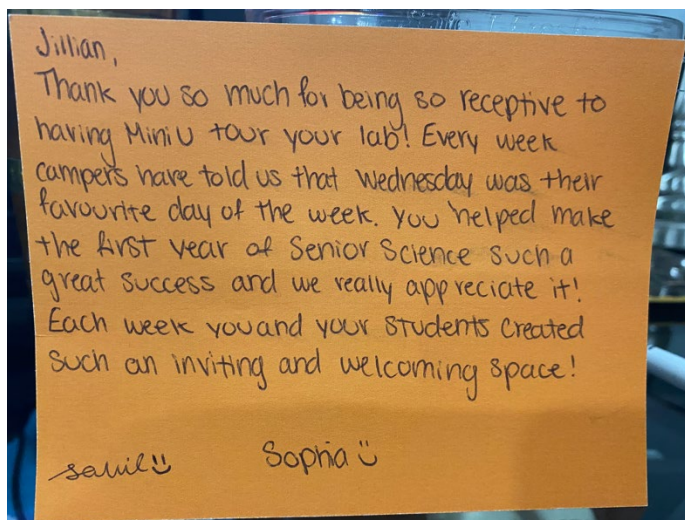


Figure 1. Thank you note from Mini U Leader, Sophia Detillieux, summer 2024.

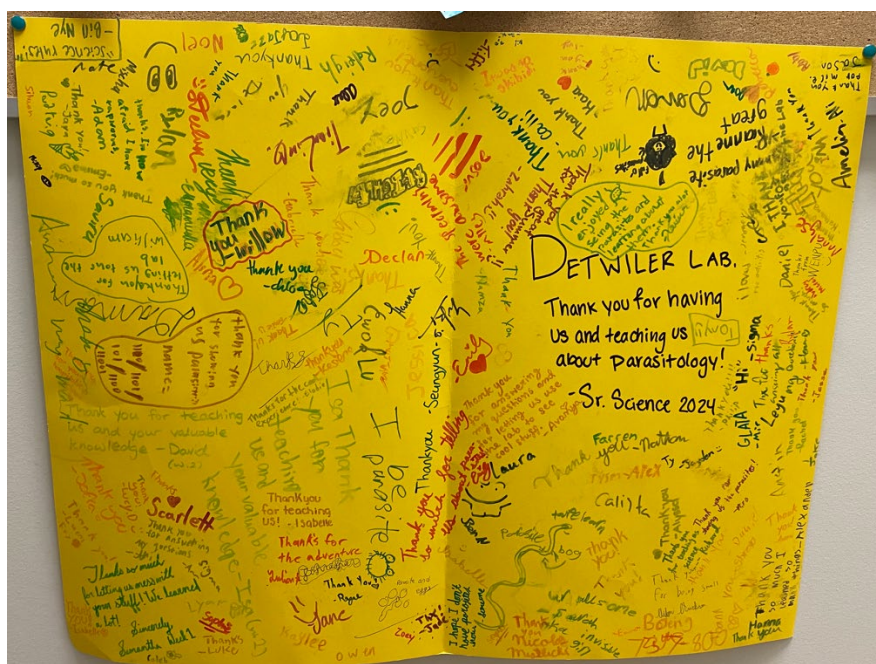


Figure 2. Thank you card from 12-14 yr olds in weekly Senior Scientist group for Mini U (July – August 2024).

Figure 3. Thank you note from Melanie Lalonde, Wawatay Program Development Specialist, March 2023 to outreach team leader, Jillian Detwiler, and professionals, Dr. Olwyn Friesen and Dr. Charlene Berkvens

From: Melanie Lalonde <Melanie.Lalonde@umanitoba.ca>
Sent: Tuesday, January 23, 2024 3:46 PM
To: Jillian Detwiler <Jillian.Detwiler@umanitoba.ca>; Melanie Lalonde <umlalond@myumanitoba.ca>; Carrie Selin <Carrie.Selin@umanitoba.ca>
Subject: Re: Question for you about an outreach event

Hello Jillian,

It is so nice to hear from you! I hope you are doing well, and you are having a productive semester.

The students loved this activity last year and we would be very happy and honoured to have the opportunity to attend again. If Thursday mornings work for you, this would work best for the students as this is when we have our laboratory time and we could use some of this time to be able to do attend. I will provide some dates and times that will work for us and I can coordinate so we can have all the students in the class (there are 13 right now and 7 additional students who I will also invite) attend at the same time. Please let me know which dates work best for you!

Thursday February 29th from 10AM to 11:20AM
Thursday March 21st from 10AM to 11:20AM
Thursday March 28th from 10AM to 11:20AM

Marsii, *Thank you*

Melanie

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Figure 4. Confirming a second outreach event with the Wawatay program in March 2024.