Rotifer News

A newsletter for rotiferologists throughout the world

Happy Claudia Ricci (left) with her husband Giulio Melone (right) during IRS VII, 6-11 June 1994, Mikolajki, Poland. Source: Bob Wallace

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Editorial: *Claudia Ricci in memoriam*

One of the world's renowned bdelloid Rotiferologists, Claudia Ricci, passed away on March 7, 2023, in Milan (Italy). She was the face of bdelloid research for almost 5 decades.

Soon after the news of her death, rotiferologists from around the world expressed their condolences to Giulio and others through rotifer-family list server. Although I included many of those messages in this issue, some may have been missed; such as it is with email.

Claudia's research started with her first publication on bdelloids with full citation as: Ricci C 1978 Some aspects of the biology of *Philodina roseola* (Rotifera). *Memorie dell'Istituto Italiano di Idrobiologia* 36: 109-116 (This journal is continued as *Journal of Limnology*).

Claudia's contributions to rotifer research reached beyond bdelloids. For example, she permanently put at rest invalid names (synonyms) and argued for the name Rotifera representing the entire phylum (Ricci C 1983. Rotifera or rotatoria? Hydrobiologia 104: 1-2). Together with Giulio and Cristina, she also commented on other less known rotifers, seisonids (Ricci C, G. Melone & C. Sotgia 1993 Old and new data on Seisonidea (Rotifera). Hydrobiologia 255: 495-511). Her contribution to space biology is no less important (Ricci C & C. Boschetti 2003 Bdelloid rotifers as model system to study developmental biology in space. Advances in space biology and medicine 9: 25-39). Besides, being the main organizer of the 5th IRS (Gargnano, Italy, Sep. 11–18, 1988), she co-edited the proceedings of this meeting and co-authored a well-cited (ca. 500 times!) volume on the biology of Rotifera (2006 Guides to the Identification of the Microinvertebrates of the Continental Waters of the World 23).

Claudia's last meeting was at the Czech Republic where she received standing ovation for her lifetime contributions on Bdelloidea.

Those who missed to send tributes to Claudia have still a chance to send their views to the RN which will be included in the next issue.

The present issue of RN also carries regularly featured issues such as the change of email account, biographical sketch, Virtual Rotifer Collaboratorium (VRC), recent literature, personal reflections of some prominent rotifer workers etc.

An updated information (final flyer) on the workshop: Advances in Rotifer Phylogeny with a focus on Reproductive Traits (at the University of Texas at El Paso, July 31 – Aug 4, 2023) is also included in this issue.

Progress on the proceedings of Rotifer XVI in Hydrobiologia is impressive and already some articles from this special issue are available online.

S.S.S. Sarma
Editor

Affectionate tributes to Claudia Ricci

On Tuesday, March 7, 2023, Claudia Ricci, a talented student and investigator on Bdelloid Rotifers, passed away at the age of 76.

She passed away in Milan, Italy, after a long battle against Alzheimer's desease and leaves behind her husband, Giulio and her two tortoises, Zola and Uga.

Photo left: Claudia Ricci (October 2021, Gorgonzola); right: Claudia Ricci and Giulio Melone (June 2017, Vernazza, Cinque Terre) (Source: Giulio Melone)

She grew up in Como and received her degree in Biology from the State University of Milan, where she later served as a professor of Zoology.

Claudia Ricci started studying bdelloid rotifers after few weeks of traineeship under the guide of Father Josef Donner, in 1976. By her students, friends and colleagues, she was considered one of the most esteemed specialist in bdelloid biology. Claudia's field of investigation: Biology, ecology and phylogeny of Rotifera Bdelloidea; Experimental population biology with emphasis on genetic, physiological and behavioral components of adaptation to environmental variation; Life-history evolution of Bdelloids; Anhydrobiosis and demographical response to desiccation; Comparative functional morphology of rotifers; Bdelloid biology in space (Shuttle and International Space Station experiments).

Claudia Ricci was invited for seminars and/or for research in different places: Oregon State University, USA; University of Nevada, USA; University of Warsaw, Poland; University of Sevilla, Spain; University of Milan, Italy; University of Valencia, Spain; University of Parma, Italy; Max-Plank-Institute of Ploen, Germany; University of Torino, Italy; Murray-Darling Freshwater Research Centre, CSIRO (Australia); Cambridge (GB). Claudia Ricci published more than 100 papers and chapters of books.

Giulio Melone <giulio.melone@unimi.it>

Photo: John J Gilbert (left), Claudia Ricci (centre) and Bob Wallce (right) during the IRS- 16-23 Jan. 2000, Khon Kaen, Thailand (Source Bob Wallace)

There will be, I have no doubt, tributes to Claudia in several venues. She was a founding member of what Henri Dumont termed the 'Rotifer Family;' she will be missed.

I met Claudia at the international rotifer symposium in Lunz am See, Austria; this became known as IRS-1 when the rotifer family held IRS-2 in Gent, Belgium. At that congress, Claudia and I offered up a very poor imitation of the "Charleston" at the mid-conference dinner. Our scientific interactions included papers where Claudia, Giulio, and I collaborated on some morphologically based phylogeny work when we saw the very beginning of the genetic revolution entering our field. And as part of that, I stayed in their home where Giulio taught me how to make several pasta dishes and Claudia introduced me to her turtles. The last time I saw Claudia was at the Czech meeting (IRS-14) where I had the honor and privilege to introduce her -- a lover of turtles and, of course, bdelloids -- to the audience when she presented a retrospective of her life's work.

Best wishes to Giulio, their family, and close friends, and to the 'Rotifer Family' at this time of sorrow. Let us celebrate a scientific life well lived.

Robert (Bob) L. Wallace
<wallacer@ripon.edu>

My Claudia Ricci

The first time I met Claudia was in Gent, at the second rotifer symposium. It was about one year after I started to study rotifers at the Israel Oceanographic and Limnological Research in Haifa, Israel. My most memorable event during this meeting was the heated arguments (discussion?) on how to taxonomically classify a species and how to distinguish between closely related species. At that time, the tools included mainly morphological characteristics. Claudia impressed me with her passionate reasoning. The arguments did not reach final conclusions.

one of the most memorable ones (Rotifer Symposium V, 1988), which she organized in a villa at Gargnano in Northern Italy and the beautiful shores of Lake Garda.

Her talk on “Dormancy patterns in rotifers” (Rotifera IX, in Khon Kae, Thailand in 2000) is the most memorable for me. The topic of dormancy was very close to my heart as one of the main aims of my studies was to produce rotifer resting eggs for use in aquaculture that will replace, at least partially, the reliance on the successful daily production of live rotifers as food for farmed fish larvae. Claudia took this topic of dormancy as a leading theme in many studies. She

Photo: Giulio Melone (left), Maria Rosa Miracles (centre) and Claudia Ricci (right) during the IRS- XIV, České Budějovice, Czech Republic, Aug. 30 - Sep 4, 2015 (Source Esther Lubzens)

As my interest lay in using rotifers (mainly *Brachionus plicatilis*) in aquaculture, we only had a few common scientific discussions. Nevertheless, we met at all the other rotifer meetings I attended, including

used the term “sleeping beauties” to convey the long-term dormancy of bdelloid rotifers.

Her deep understanding that bdelloids are exceptional models for studying

asexual reproduction ("evolutionary scandals") and dormancy in response to habitat desiccation ("sleeping beauties") led to the adaptation of her model organism for intensive molecular investigations by leading scientists at Harvard and Woods Hole in the USA (Mathew Meselson, David Mark Welch), Cambridge University (Alan Tunnacliffe, Chiara Boschetti) and their students. She pioneered investigating the effect of space conditions on development of bdelloids (published in 2003 with Chiara Boschetti). These studies continue today by Karine Van Doninck, in Belgium. Her outstanding contributions to science go far more than her pioneer personal investigations.

In addition to meeting Claudia and Giulio at the rotifer meetings, they kindly hosted me at their home. It was around 2003, when I first became aware of her space adventures. This is just one example of her great imagination. At that visit, we visited the wonderful exhibition of Joan Miro, the Catalan artist, we both adore, which was near her mother's apartment. A long drive from her home.

At times, Claudia was curious whether bdelloids could serve as food in aquaculture. I told her that it would be challenging even to carry out a preliminary experiment, as thousands, if not millions, of rotifers are needed for this task. However, we discussed this intensively, and the question remained open.

We last met at the XIV meeting in České Budějovice, Czech Republic. She was as vibrant as before, and I cannot imagine that I would not see her again.

Esther Lubzens
<elubzens@gmail.com>

Condolence messages from *rotifer family*

Claudia was impressively productive and active as a scientist. I have great fond memories working with her. Always proactive, positive, curious, and prone to interact with and discuss about anything that involved her beloved bdelloid rotifers. I am honoured that I had the opportunity of working with and learning from her. The rotifer family will not be the same without Claudia.

Diego Fontaneto
<diego.fontaneto@cnr.it>

I will always remember her musical voice, stating firmly her views and her great whole hearted laughter. She was a great and respected person and a great contributor to us rotiferologists and to the study of rotifer biology. Her pioneer studies on dormancy lead us all.

Here are some additional words: she raised awareness on the importance of studies on asexual reproduction in bdelloids. Her and her colleagues' studies on dormancy are a landmark on revealing the secrets of cryptobiosis.

She adored the artist Miro (as I do).

Esther Lubzens
<elubzens@gmail.com>

With regret I inform you that dear professor Claudia Ricci passed away a week ago. Our Rotifer family was left without an eminent expert, as well as a kind and cheerful person.

This sad news was sent via Rotifer Family email, and with this email I would like to inform those who are not on that list, but knew her personally or from the literature.

I apologize for the delay in forwarding this information.

It was a privilege to know her.

Maria Špoljar
<maria.spoljar@biol.pmf.hr>

My deep and sincere condolences. Claudia is a role model and commitment for all current and future bdelloid people and I did my first steps in bdelloid determination under Claudia's supervision. She will be missed by rotifer family...

Miloslav Devetter
<devetter@upb.cas.cz>

My thoughts are with you in this difficult time. I fondly remember all the exchanges I had with Claudia and you, during rotifer symposia and at home with you in Gorgonzola “working” on trophi and discussing all things bdelloid. I will remember her as one of the great minds in rotiferology, with a legacy that rivals any of our successors in this. I’ll also fondly remember her energy, her kindness and hospitality.

Going through a loss like this is hard; there are no words that can fill the emptiness that is left with her passing. Saying that I pass you my condolences doesn’t come close to expressing the depth of my feelings of sympathy for your loss.
Kind regards,

Hendrik Segers
<hsegers@naturalsciences.be>

Giulio,
I am terribly sorry to hear this sad news. Claudia was a wonderful person and will be missed. I wish you and your family the best. When you lose someone you love, You never get over it, but over time, you get used to it.

James Garey
<garey@usf.edu>

Claudia welcomed two lost students to their first rotifer conference in Mikołowski, Poland and was a warm, wonderful mentor to Jessica and I for many years afterwards. It was her generous spirit as much as her deep knowledge that fostered the current renaissance in bdelloid biology. A remarkable legacy. She is an example to us all.

David Mark Welch
<dmarkwelch@mbl.edu>

Claudia was a very vital scientist with a great enthusiasm for the bdelloid rotifers, in particular, who aroused our interest for this group. It was always a great pleasure to come together with her. We will never forget her.

Dear Giulio, we are together with you in your mourning.

Norbert Walz
<norbert.walz@t-online.de>

I know words are not enough.
I offer my deepest condolences and my thoughts for you.
I will always remember, Claudia, as a student reading her articles and admiring this lady.

Evangelia (Litsa) Michaloudi
<tholi@bio.auth.gr>

Dear Giulio,
I send my deepest condolences and regrets from bottom of my heart.

Agnieszka Pociecha
<pociecha@iop.krakow.pl>

My sincere condolences.
She was a wonderful person who helped me a lot when I was at the very beginning in the study of rotifers.

Orhideja Tasevska
<orhidejat@hio.edu.mk>

Sincere condolences to the family of Claudia Ricci.
Claudia was a handsome Rotifero-logist with friendship personality.

Moshe Gophen
<gophen@migal.org.il>

I met Claudia many years ago at a conference and during a time when I was uncertain if I would pursue research on rotifers. She was a very kind and thoughtful person who encouraged me to continue on because these beautiful animals were worth pursuing. I'll never forget her passion for them or her incredible achievements as a scientist. She will be sorely missed but her spirit as a kind woman with a beautiful scientific mind will never be forgotten.
With deepest sympathy,

Rick Hochberg
<Rick_Hochberg@uml.edu>

My deepest condolences and regrets.
Rotifer family and myself will never forget her.

Maria Špoljar
<maria.spoljar@biol.pmf.hr>

My deepest condolences to Giulio. Claudia was an enthusiastic and inspiring rotiferologist. She will be missed by the rotifer community.

Taavi Virro
<taavi.virro@ut.ee>

Dear Giulio,
I offer my deepest condolences and my thoughts for you. In my daily work on the ultrastructure of the Rotifera, Claudia is a constant companion in my mind and that will not change. She will be greatly missed by all of us.

Wilko Ahlrichs
<wilko.ahlrichs@uni-oldenburg.de>

Yes, very sad.
I recommend that the editors of the IRS-16 volume include an "In memoriam: C. Ricci."

Robert (Bob) L. Wallace
<wallacer@ripon.edu>

I agree that it is a great loss and we should include a tribute in the volume.

Walsh, Elizabeth
<ewalsh@utep.edu>

So sad Giulio, my thoughts are with you.

I knew Claudia many years ago and she helped me with my work on the Bdelloides. She was a fine professional woman.

Paul Turner
<hexarthra@netscape.net>

My deepest condolences to Giulio during this difficult period. We will truly miss Claudia, who was a fantastic and amazing scientist.

Laorsri Sanoamuang
<la_orsri@kku.ac.th>

Notes and News

Change of contact address

Esther Lubzens of Israel has a new e-mail address:

elubzens@gmail.com

Rotiferologists are advised to contact her at the above e-mail account.

Biographical Sketches:
Prof. Esther Lubzens

Professor at the Department of Biology, Faculty of Biology, Technion, Haifa, Israel (2011-2017) and remained as a volunteer until the breakout of COVID 19 in 2020. Since then, I have retired, working at home, writing manuscripts, and carrying out small-scale experiments.

During my research years, I studied *Brachionus plicatilis* as food in aquaculture and investigated the production of resting eggs and the phenomenon of dormancy, using transcriptome, proteome, and metabolome tools. In addition, my research also included investigations on vitellogenesis and egg development in fish and marine shrimp, as well as methods for cryopreservation of fish sperm, oocytes, and eggs.

Contact: **elubzens@gmail.com**

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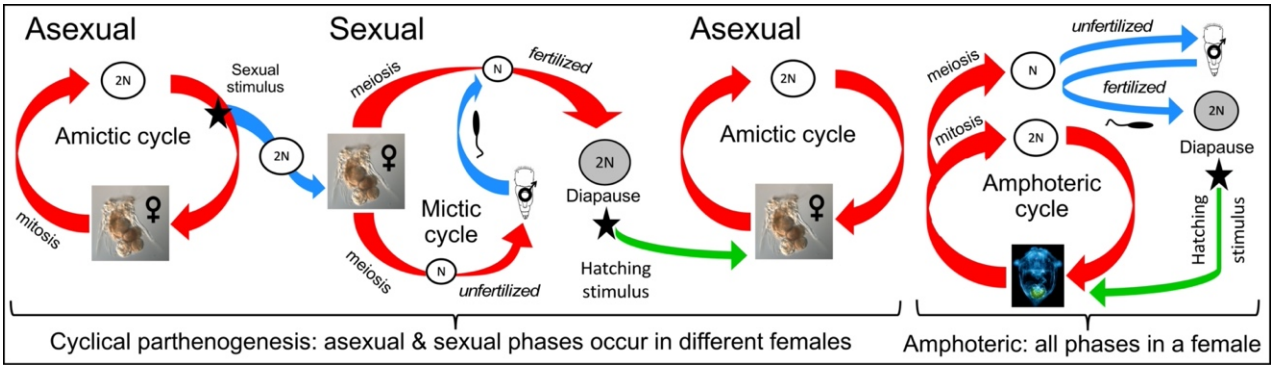
Workshop: Advances in Rotifer Phylogeny with a focus on Reproductive Traits

Hosted by the University of Texas at El Paso
July 31 – Aug 4, 2023



Registration: Now Open, 2023: students: $50, faculty: $75

Use this link to register. If there are questions that are not applicable (e.g., Miner ID number, car details), please enter N/A.

Housing: Dorms and local hotels

Meals: on your own unless indicated below

More details to follow.

Hosts: Liz Walsh (University of Texas at El Paso), Jon Mohl (UTEP), Rick Hochberg (University of Massachusetts Lowell), Bob Wallace (Ripon College)

Guest Presenters: Diego Fontaneto (Water Research Institute, Verbania, Italy), Francesca Leasi (University of Tennessee at Chattanooga), Thiago Quintão Araújo (University of Massachusetts Lowell)

Schedule of Events

Monday, July 31st
Morning:
8:30 – 9:00 Welcome to UTEP and Introductions (Liz Walsh)
9:00 – 12:30 Field trip: Leave UTEP at 9:00 am, lunch, & water provided.

Afternoon:
1:00 – 2:00 Introduction to Rotifera (Bob Wallace)

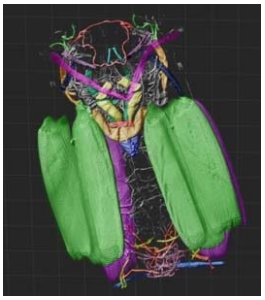
2:00 – 3:30 Lab work on samples
3:15 – 3:30 Coffee break
3:30 – 4:30 Culture and Egg Collection (Liz Walsh, Bob Wallace)
5:00 – 6:30 Museum opening of Rotifers: What Lies Beneath

Tuesday, Aug 1st
Morning:
9:00 – 10:00 Lecture: DNA extraction & marker analysis, UCE (Liz Walsh, Jon Mohl)
10:00 –10:30 Coffee break
10:30 –11:30 Lecture: Bioinformatic pipeline (Jon Mohl)
11:30 – 1:00 Lunch Break
Tuesday, Aug 1st
Afternoon:
1:00 – 3:00 Lab work: Preparing specimens for DNA extraction
3:00 – 4:00 Lecture: Molecular phylogenomics (Phil Lavretsky)
4:00 – 4:15 Coffee break
4:20 – 6:00 Dry Lab: Linux, python, pipelines

Wednesday, Aug 2nd
Morning:
8:30 – 9:30 Lecture: Cryptic species (Diego Fontenato)
9:30 – 12:30 Lab work: Genomic DNA extraction, PCR
12:30 – 2:00 Lunch

Afternoon
2:00 – 6:00 Lab work: Genomic DNA extraction, PCR

Thursday, Aug 3th
Morning:
9:00 – 10:00 Lecture: Mapping evolution of reproductive traits (Rick, Liz, Bob, Jon)
10:00 – 10:30 Coffee Break
10:30 – 12:00 Dry Lab: Cryptic species delimitation software
12:00 – 1:30 Lunch Break



Afternoon:
1:30 – 2:30 Lecture: Microscopical techniques (Rick Hochberg)
2:30 – 3:30 Tour: Visualization Core, Coffee Break
3:30 – 4:30 Lecture: Using illustrating software (Thiago Quintão Araújo)
4:30 – 6:00 Lab work: Preparing illustrations for publication (GIMP, Photoshop, etc.)

Friday Aug 4th
Morning:
9:00 – 10:00 Lecture: Microbiome and ecology of rotifers (Francesca Leasi, Diego Fontaneto)
10:00 – 10:30 Coffee Break
10:30 – 12:00 Microbiome DNA preparation
12:00 – 1:30 Lunch

Afternoon:
1:30 – 5:00 Dry Lab: Phylogenetic analysis (alignment tree building)
6:30 – Closing dinner (Liz and Jamie's home)

Saturday Aug 5th
Departure or Optional field trip TBA

Informal Zoom Meeting

Meeting with Hendrik Segers

Nandini arranged an informal zoom meeting with Hendrik Segers on the 9th of April, 2023. Three other invitees (Dumont, Bob and Sarma) also attended the meeting (see sceenshots below). The meeting identified lacunae in our understanding of certain areas of rotifer research. Dumont commented on the problems of publishing new identification guides on Rotifer and other zooplankton groups. Segers expressed his willingness to complete descriptions of some genera of Gnesiotrocha. Bob identified the need to incorporate different tools (e.g. Atomic Force Microscopy) in rotifer research. Both Nandini and Sarma, emphasized the importance of culturing different genera of rotifers for understanding the life history strategies of Rotifera.

S. Nandini
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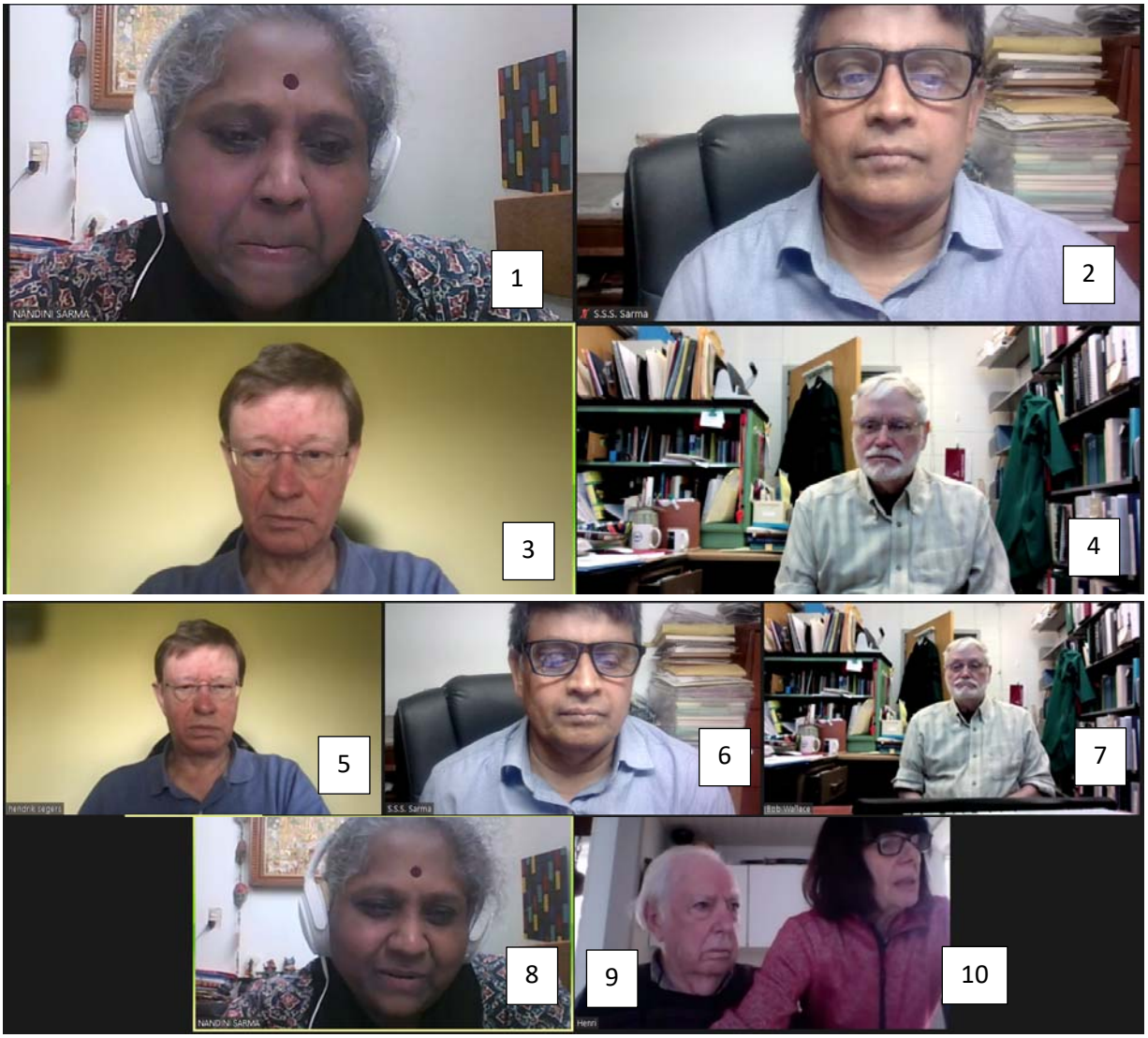


Photos. 1, 8: S. Nandini; 2,6: S.S.S. Sarma; 3,5: Hendrik Segers; 4,7: Bob Wallace; 9: Henri Dumont; 10. Simonne Wellekens

Opinion
Remembering Influential Teachers

My experiences with CH Fernando

This is a tribute to the late Dr. C. H. Fernando of the University of Waterloo (UWat), in Ontario, Canada. He was originally from Sri Lanka.

Starting in the Fall Term in September 1975, Dr. Fernando taught me about freshwater zooplankton, including rotifers (which were almost entirely new to me). He told me to collect plankton samples in the Philippines, preserve the samples in weak formaldehyde, and bring them over to the UWat in special handy plastic bags. He made available references on rotifers such as those by L. A. Kutikova (1970) and by his former MSc student Ramachandran Chengalath.

He made Augustus love rotifers.

Prof. Dr. CONSTANTINE HERBERT FERNANDO
(1929–2018)
Professor in the Department of Biology
University of Waterloo, Ontario, Canada

In 1976, he looked for funds to send me to Dr. David G. Frey's lab in Indiana University in Bloomington, IN, for me to go over plankton samples Frey himself collected in the Philippines (Mindanao, Baguio, etc.)

Before I left Waterloo, Herbert made sure I had photocopies of major references on freshwater zooplankton and plankton nets, too. He was very quiet and sad when I said goodbye to him in his office.

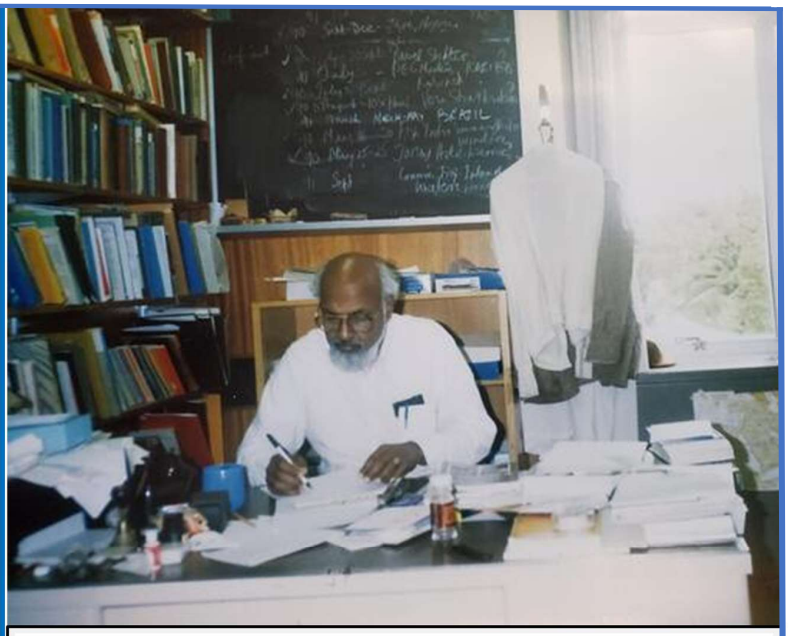
After I had left Waterloo (UW), he arranged for the cache of samples of zooplankton in his lab in the biology department to be brought over to the natural history museum in the National University of Singapore (NUS) for better safekeeping and access.

C H Fernando or 'Herbert' was my MSc Biology thesis adviser on freshwater zooplankton of the Philippines and also my professor in two year-long graduate courses: *Entomology* and *Advanced Limnology* at the University of Waterloo. In September 1975 through April 1977, Herbert 'guarded' me, man-to-man, while I examined the plankton samples I brought over from the Philippines. I was his only Filipino student, was sent to him by the eminent fish parasitologist Dr. Carmen Camacho Velasquez, who was later named National Scientist. Herbert's other graduate students were from Malaysia (Richard Lim and Guat Lian Chan), India (Reginald 'Regi' Victor), Sri Lanka (Ramachandran 'Rama' Chengalath), Canada (Beverly 'Bev' Hicks and Brenda Hahn) and postdocs (Dr. Hoi Chaw Lai of Malaysia for calanoids and Dr. Tamas Hamor, a refugee from Hungary, for reservoir fish studies). He gleefully served us the spiciest foods he could come up with (*but which burned my tongue*). [He was originally from Sri Lanka.]

Herbert visited me twice here in the Philippines to see how I was doing. He used to send me handwritten letters, postcards wherever he travelled, and later emails. He sent me hardbound books. In his second visit, he gifted me with a special kind of microscope which was turned over to the university.

He was the principal reason why there are two species of freshwater microcrustaceans that bear my name: *Strandesia mamarilorum* (Crustacea: Ostracoda) and *Filipinodiaptomus insulanus* Lai, Mamaril, and Fernando (Crustacea: Copepoda, Calanoida).

A third species of freshwater microcrustacean has the name *Mesocyclops augusti* (Crustacea: Copepoda, Cyclopoida). This was made possible by **Dr. Rey Donne Papa**, now in his second term as Dean of the College of Science of UST. Rey is my successor in studying freshwater zooplankton in the Philippines and looking after Lake Taal. *Thank you very much, Rey.*



Herbert was at work in his office-library in the second floor even on Sundays. He gave his students a key so they could photocopy references using his xerox cartridge.

If ever I make it back to North America, I shall first visit his resting place in Guelph, Ontario, Canada, to pay Herbert my deepest respects and to show my eternal gratitude for all what he had done for a novice like me. My almost two years in Canada were my coldest and loneliest days.

February 7, 2023 ACMamaril

Augustus C. Mamaril
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Authors are encouraged to submit contributions to *Rotifer News*.
Contact email account: **rotifernews@gmail.com**

For details, please visit the website:
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