

BULLETIN



"An organization of people interested in the Natural Sciences"

April 2024; Vol. 78, #3

President's Message

The Rochester Academy of Science Annual Meeting & Spring Lecture is Thursday, April 25, 7:00 p.m.

Please join your Academy colleagues for the RAS Annual Meeting and the Spring Lecture on April 25th at the Rochester Institute of Technology's (R.I.T.) Chester F. Carlson Center for Imaging Science, Room 1125. It will also be available on Zoom. Our meeting will include the election of board members. Details on the meeting and Zoom link is on <https://rasny.org/ras-annual-meeting>. Ballot and voting instructions are on page 4.

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Directions to Annual Meeting at R.I.T.



R.I.T. is southwest of Rochester at One Lomb Memorial Drive, Rochester, NY 14623-5603, off Jefferson Road. Parking is in Lot F. Chester F. Carlson Center for Imaging Science is due south of the parking lot. Room 1125 is an auditorium on the first floor.

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Guest Speaker

Following the business meeting we have popular speaker Dr. Adam Frank. Although we printed the posters with the title "Astrobiology: The search for alien life," Dr. Frank has actually titled

his talk "Biosignatures and Technosignatures: The Telescopic Search for Life Across Interstellar Distances." The free lecture will begin at about 7:30 p.m. and we invite the public to attend.

Dr. Frank has written five popular and highly rated books. These are available at Barnes & Noble and Amazon. If you bring your copies, Dr. Frank will sign them. Titles include *The Little Book of Aliens*; *Light of the Stars: Alien Worlds and the Fate of the Earth*; *The Constant Fire: Beyond the Science vs. Religion Debate*; *About Time: Cosmology and Culture at the Twilight of the Big Bang*; and *Astronomy: At Play in the Cosmos*.

Dr. Frank provided this description of his talk: *The 2020 Astronomy Decadal Survey put a "Habitable Worlds Observatory" at the top of the community's projects for the next twenty years. I will discuss the current state of research and plans in the search for life via "biosignatures" and "technosignatures". I will review the history of the field and discuss* (Continued on page 3)

Notice

All-Academy Annual Business Meeting
7:00 p.m., Thursday, April 25
R.I.T. Carlson Center Room 1125
& on Zoom, instructions at <https://rasny.org/ras-annual-meeting>
Agenda: Welcome, Election, Induction of Academy Fellow Carol Latta, Financial Report, Lecture



Rochester Academy of Science

Free Spring Public Lecture by Dr. Adam Frank

University of Rochester Helen F. & Fred H. Gowen Professor of Physics and Astronomy. Astronomy LLE Distinguished Scientist



James Webb Space Telescope Image courtesy of NASA, book images from Dr. Frank

7:30 p.m. □ Thursday, April 25, 2024

RIT Carlson Center for Imaging Science, Room 1125

www.rasny.org for directions

Meeting of Members at 7:00 p.m.

Events for April, 2024

Apr. 2 Tues: Fossil Members Meeting

7:30 p.m. Meeting will be held in the community meeting room at the NEQALS building, 1030 Jackson Rd., Webster 14580. It will also be broadcast on Zoom and is open to all RAS members and guests. Our guest speaker is RAS member Dr. George McIntosh on "Late Devonian crinoid ghost lineages." George is emeritus Curator of Paleontology at the Rochester Museum & Science Center. He is a life-long researcher on crinoids and has numerous publications on these starfish relatives. For meeting details and Zoom login info, see the RAS April *FossilLetter* or contact Michael Grenier at paleo@frontier.com.

Apr. 3 Wed: Astronomy Board Meeting

7:00 p.m. – 9:00 p.m. ASRAS Members are welcome to attend. Contact: Anthony Golumbeck at semp@use.startmail.com.

Apr. 5 Fri: Astronomy Members Meeting

7:30 p.m. – 9:30 p.m. Farash Center, 8355 County Road 14, Ionia. Eclipse planning. Contact: Anthony Golumbeck at semp@use.startmail.com.

Apr 8 Mon: Total Eclipse of the Sun

2:06 p.m. – 3:20 p.m. Partial Eclipse as the Moon covers the Sun.
3:20 p.m. – 3:23 p.m. Total Eclipse
3:23 p.m. – 4:33 p.m. Partial Eclipse as the Sun is uncovered by the Moon

Apr. 10 Wed: Herbarium

1:00 p.m.-4:00 p.m. The Life Sciences section will hold a workshop at the RAS Herbarium, located in the basement of

the Rochester Museum and Science Center (RMSC). We will be continuing to organize plant specimens in preparation for digitizing the collection. If you plan to attend, please send an RSVP to rasherbarium@gmail.com. At RMSC go to the front desk to meet other participants. For more information, contact herbarium curators, Tim Tatakis and Steven Daniel, by emailing rasherbarium@gmail.com.

Apr. 17 Wed: RAS Board Meeting

7:00 p.m. – 9:00 p.m. Church of the Ascension, 2 Riverside Street. Zoom option available. For details, contact: Michael Grenier, mgrenier@frontiernet.net

Apr. 21 Sun: Astronomy Members Open House

12:00 p.m. – 3:00 p.m. Farash Center, 8355 County Road 14, Ionia. Contact: Anthony Golumbeck at semp@use.startmail.com.

Apr. 23 Tues: Mineral Section Virtual Meeting

7:30 p.m. Zoom only. Contact: Jutta Dudley, juttasd@aol.com.

Apr. 24 Wed: Astronomy Members Forum

7:30 p.m. Farash Center and Zoom. Contact: Anthony Golumbeck at semp@use.startmail.com.

Apr. 26 Fri: Astronomy Public Observing

7:30 p.m. – 11:00 p.m. Farash Center, public welcome. Contact: Anthony Golumbeck at semp@use.startmail.com.

Apr. 28 Sun: Life Sciences - Nature Walk - Durand Eastman Park

2:00 - 4:00 p.m. The Life Sciences section will hold a Nature Walk at the Durand Eastman Park Arboretum. This will be a guided tour by a Monroe County Cornell Cooperative Extension master gardener who will discuss historical information about the park's development, unique plants, and trees. This is a public event. You must register at https://pub.cce.cornell.edu/event_registration/main/events_landing.cfm?event=DurandTours2024-spring_226. Also, call or write Michael Grenier at (585) 671-8738 or mgrenier@paleo.net. Refreshments after the walk. Meet at the kiosk on Zoo Rd. (off Lakeshore) next to the park maintenance center. This park is similar to F.L. Olmsted's Highland, Maplewood, Seneca, and Genesee Valley Parks--with rolling terrain and scenic vistas integrated with natural water elements.

STRASENBURG OBSERVATORY:

ASRAS will operate the telescope at the Strasenburg Planetarium on mostly clear Saturday nights, dusk until 10:30. For more information, contact: Jim Seidewand at (585) 703-9876.

what advances have allowed the ancient question of "are we alone?" to finally become one which science might answer.

Dr. Frank is featured in several YouTube videos. You might particularly enjoy [The Search for Life in the Universe with Adam Frank](#).

Details about the lecture and the speaker's background can be found in the March Bulletin or at <https://rasny.org/ras-annual-spring-lecture>.

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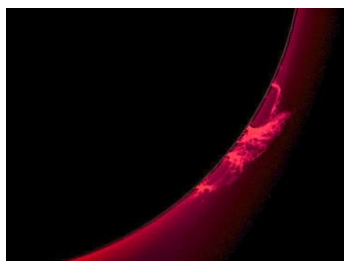
Free Eclipse Glasses for Members

It is not too late to get six FREE Eclipse glasses from the Academy. Family members get twelve pair. To get yours, send paleo@frontier.com a note that you are ordering, then send two First Class stamps for each six pair of glasses with your address to Michael Grenier, Rochester Academy of Science, 692 Maple Drive, Webster, NY 14580. Write "Glasses" in the envelope lower left-hand corner. I guarantee quick turnaround. See the March *Bulletin* for more details.



Michael Grenier, RAS President

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Solar Prominences with artificial 'moon' blocking the photosphere. Photo: Doug Kostyk, 24 March 2024

Eclipse Watch by Michael Grenier

This will be my last "Eclipse Watch" column. Have fun on April 8.



This is my favorite of Tyler Nordgren's posters. I wish you all to have the sense of wonder and joy depicted here.

You May See an Amazing Corona

I was thrilled to see our RAS Board Member Michael Richmond quoted in the *Rochester Democrat & Chronicle* in the Sunday paper on 2/25/2024. Professor Richmond's position is Professor at the School of Physics and Astronomy at Rochester Institute of Technology, and he is a frequent speaker at ASRAS events.

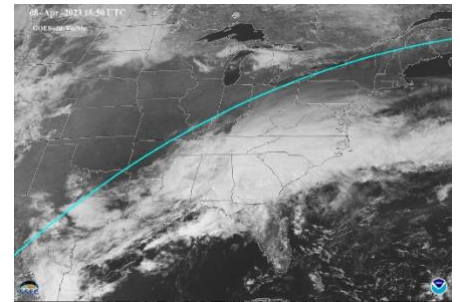
The topic was space weather and how it may affect the eclipse. The article was based on an interview by reporter Steve Howe.

During the three and a half minutes of **totality**, the sun's corona is visible glowing around the covering moon, as we have covered in past issues. Now, according to Michael, you may be in for another special treat. The sun is near its solar maximum. This means that it is particularly active with more than usual solar flares and prominences. You may see these in addition to the sun's corona being especially bright and larger than in most past eclipses. Michael Richmond said, "It's likely — no guarantees — but it's likely that people who see this eclipse may see a bigger, brighter,

more impressive corona than people who've seen other eclipses which weren't at the solar max." Thank you, Michael!

Worried About Our Weather?

I'm not. First, I quote the American Astronomical Society, "A total solar eclipse experienced under cloudy skies is more exciting than a partial solar eclipse seen under clear skies!" No matter what, Rochester is the place to be. I also offer the weather from April the 8th last year. As shown below, last year almost the entire path of this year's eclipse was under clear skies, even in Rochester. This is not unusual.



This is National Oceanic and Atmospheric Administration (NOAA)'s satellite view from April 8, 2023, with AAS eclipse path superimposed. (Courtesy of AAS)

Eclipse Weekend Events

If you have out-of-town visitors, you will want to show them around. There are many special events. Here are four. I have mentioned the RMSC's 3-day "ROC the Eclipse Festival" in past issues. I'll be there on Sunday & ASRAS will be running an exhibit table Saturday and Sunday — rmsc.org/festival-lineup/. The Rochester Philharmonic Orchestra has *The RPO Eclipse Spectacular: A symphonic celebration* at the Rochester War Memorial on April 7. The venue seats 15,000.



The AAA Rochester Red Wings will be playing baseball all weekend. They were authorized to change their name temporarily to the *Rochester Moon ROCS*. They will play the *Lehigh Valley Space Pigs* in a 6 p.m. game on Friday and 1 p.m. games on Saturday and Sunday.



Many restaurants will have eclipse theme events, such as Salena’s “Dates in the Dark” on April 7.

There will be a FREE shuttle bus in downtown Rochester from April 6th to 8th. It stops at the East End Garage, South Ave Garage, and museums around Rochester including the George Eastman House. Bus runs are 9 a.m. to 6 p.m. on Saturday & Sunday, and 8:30 a.m. to 6:30 p.m. on

Monday with the addition of the Public Market.

What About the Traffic?

At the March meeting of the Rochester Eclipse Task Force, Jim Stack of the Genesee Transportation Council reported that despite the large number of visitors, with traffic spaced out all morning, you should not have difficulties getting to your preferred viewing location. It will be heavier than usual but expect only minor delays UNLESS you wait to the last minute! However, all bets are off in the late afternoon after totality.

Everyone will be on the road in a mass exodus during the hour or two after totality, with many fighting to get out of town to get home before night to Boston, New York City, Philadelphia, and other destinations. Expressways heading east and south may be in gridlock with secondary roads also having heavy traffic. Your best bet is to bring plenty to entertain yourself and friends and wait a couple of hours before heading to your own home.

Predicted T Coronae Borealis Outburst

R. Crumrine

The recurrent nova T Coronae Borealis (T CrB) has been undergoing outbursts on an ~80 year cycle (1787, 1866, 1946) and is showing signs of another outburst in the coming months. The star is normally at a 10th magnitude quiescent state and periodically rises to 2nd magnitude, remaining visible to the unaided eye for several days.

Check the following sources for more information:

AAVSO:

<https://www.aavso.org/news/t-crb-pre-eruption-dip> (June, 2023 release)

Astronomy Magazine:

https://www.astronomy.com/observing/how-to-see-t-coronae-borealis-the-brightest-nova-of-the-generation/?utm_source=omeda&utm_medium=email&utm_campaign=KLM_BCH240319011

ROCHESTER ACADEMY OF SCIENCE BALLOT FOR JUNE 2024 – MAY 2025 OFFICERS			
OFFICE	NAME	✓	WRITE-IN CANDIDATE
President:	Michael Grenier	<input type="checkbox"/>	
Vice President:	Jeff Gutterman, P.E.	<input type="checkbox"/>	
Treasurer:	Tim Tatakis, Ph.D.	<input type="checkbox"/>	
Secretary:	Helen Downs Haller, Ph.D.	<input type="checkbox"/>	
Member, Board of Directors (2024-2027)	Michael Richmond, Ph.D.	<input type="checkbox"/>	
Member, Board of Directors (2024-2027)	Daniel Krisher	<input type="checkbox"/>	
Member, Board of Directors (2024-2025)	Robert Crumrine	<input type="checkbox"/>	

Table 1: RAS board of directors ballot

Please show us your support by printing and mailing your completed ballot to RAS, P.O. Box 92642, Rochester NY 14692-0642. You will also be able to vote at the meeting through the Zoom Chat function. **Note that you must have renewed your membership by March 31st.** We cannot take email ballots.

Undergraduate Student Research Grant Awards

The following are a few abstracts from students receiving awards for the 2023-2024 year.

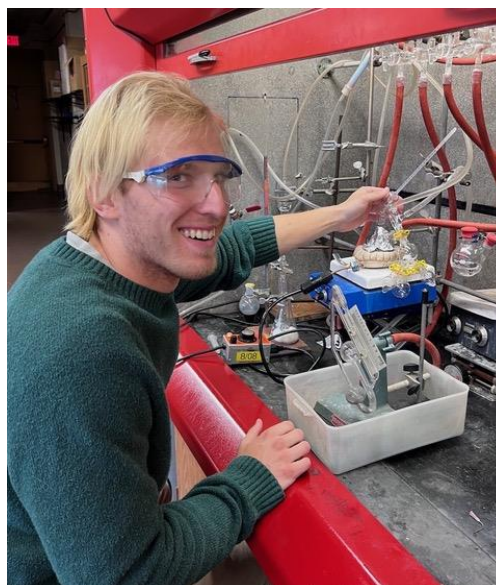


Characterization of the lower Niagara River copepod diet and phytoplankton community composition using 16S rRNA and 18S rRNA gene sequencing.

by Samantha Wrobel, Niagara University

Abstract:

Zooplankton play an integral role in freshwater and marine nutrient cycling through consumption of phytoplankton, the primary source of nitrogen and carbon in these ecosystems. These nutrients link fish and other larger organisms to the primary producers. The Niagara River is a freshwater strait connecting Lake Erie and Lake Ontario, where the plankton of the river are primarily a product of the eastern basin of Lake Erie. Here, we propose to examine zooplankton and water samples taken in the lower Niagara River over eight weeks from July to August 2023 and assess dietary preference of copepods using molecular techniques. We will extract DNA from whole copepods using the Qiagen DNeasy Blood and Tissue kit with a modified protocol, as previously developed in Fall 2023 with *Daphnia galeata* from the same samples, followed by amplification of the 16S rDNA V3-V4 and 18S rDNA V4 regions. The amplified DNA will be separated via the gel surgery and purification technique we developed for the *D. galeata*. The purified DNA will then be sequenced using Illumina MiSeq Next-Gen sequencing to determine the diet preference of copepods relative to the phytoplankton community. As this work is expanded, we will clarify trophic interactions and nutrient cycling in the Niagara River and eastern Lake Erie.

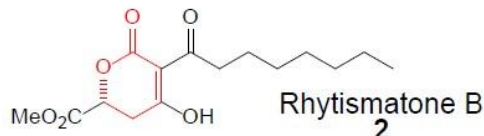
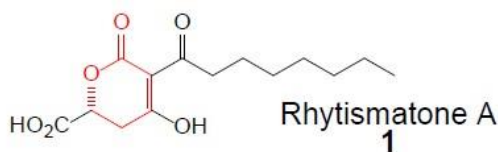


Paternity as a Driver of Post-Fledging Brood Division and Male Parental Behavior in the Socially Monogamous Black Throated Blue Warbler

by Jebadiah Braunscheidel, Canisius University.

Abstract:

Organic synthesis of natural products is the process in which a chemist uses foundational chemicals to build, step by step, a more complicated molecule that is found in the natural world. Organic synthesis of natural products is the foundation for medical chemistry and can also be used in industrial applications. Rhytismatone A and B are chiral metabolites that were isolated in 2017 from an unknown fungal species from the family of Rhytismataceae (REF 1). These endophytes live in the host species of *P. mariana* (black spruce). Rhytismatone B exhibited moderate antifungal activity. Neither of these biological molecules, although found in nature, have ever been synthesized in a lab. The objective of the research is to synthesize both Rhytismatone A and Rhytismatone B in their racemic form. Although not obvious at first thought, the objective of synthesizing both molecules entails being able to create a step-by-step synthesis scheme that is repeatable and would allow others to produce Rhytismatone A and Rhytismatone B successfully.



Rochester Research in Review.

(These are Hot Links which when clicked lead to the press release on the Science Daily website.)

[Plasma oscillations propel breakthroughs in fusion energy.](#) University of Rochester, 15 March, 2024

[Tryptophan in diet, gut bacteria protect against E. coli infection.](#) Cornell University, 13 March 2024

[3D reflector microchips could speed development of 6G wireless.](#) Cornell University, 6 March, 2024

[Harmful 'forever chemicals' removed from water with new electrocatalysis method.](#) University of Rochester. 5 March 2024.

[Ice shell thickness reveals water temperature on ocean worlds.](#) Cornell University. 29 February 2024

[Babies use immune system differently, but efficiently.](#) Cornell University. 25 February 2024



Solar Disc, white light showing several large sunspot groups. Photo: Doug Kostyk, 24 March 2024

ABOUT THE ACADEMY

The Rochester Academy of Science™, Inc. is an organization that has been promoting interest in the natural sciences since 1881, with special focus on the western New York state region. Membership is open to anyone with an interest in science. Dues are minimal for the Academy and are listed in the [membership application online](#). Each Section also sets dues to cover Section-related publications and mailings. We are recognized as a 501(c)3 organization.

For information, contact President Michael Grenier at (585) 671-8738 or by email paleo@frontier.com.

The Academy Internet website is <http://www.rasny.org> or see us on Facebook at <https://www.facebook.com/Rochester-Academy-of-Science-792700687474549>.

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