

BULLETIN

"An organization of people interested in the Natural Sciences"



June 2026; Vol. 80, #5

President's Message

RAS Gets New Members from JCC —More Speakers Needed

All five Sections—ASRAS, Anthro, Fossil, Life Sciences, and Mineral—have gotten new members from the Rochester Academy of Science / Jewish Community Center Speakers series that we have run monthly at the JCC since February. That first session had the subject of the end-Cretaceous extinction with Michael Grenier, followed by Dan Krisher in March speaking on the Geology of New York State. Next came Alex Smith describing the archaeological excavation of Frost Town, NY in April, and then David Bishop in May with his highly regarded take on the year in astronomy for 2025. Tim Tatakis will be speaking on birds to round out this year's series in June. The series has gotten great reviews from attendees, most of whom have attended several sessions, and they have cried out for us to repeat the series again starting in the fall with daytime meetings.

Here is an opportunity to share your expertise and interests with an enthusiastic and friendly audience. We typically have about 40 people at a meeting and their appetite is for all the sciences that we cover, so most any topic on which you could speak for 30-40 minutes with some slides would be a winner there. Contact Michael Grenier <mgrenier@frontiernet.net> if you might consider participating.

* * *

Annual Meeting

Our Annual Meeting was held on April 20, and I thank all of you who gave a vote of confidence in your

Board of Directors and Academy Officers. You reelected the incumbent officers and directors as shown on the last page of this Bulletin. I am very happy to have these hard-working and effective members in these positions with your approbation. Thank you. I look forward to continuing to work with your Board and Officers to deliver on the important programs of the Academy.

* * *

The 27th Annual **ADK Outdoor Expo** is featured on our calendar on page 2 for Saturday, June 13 in Mendon Ponds Park, Pittsford. Our ASRAS, Fossil, and Mineral sections will be set up with displays. Help is needed to talk with potential members on behalf of the Rochester Academy of Science. Volunteer and you can both assist at our tables and see everything there is at the Expo. Contact your section leader if you can help. We will show and give away educational materials and specimens. You'll sit in the shade.

Presented by the Genesee Valley Chapter of the Adirondack Mountain Club and Monroe County Parks, the Outdoor Expo is a celebration of the great outdoors. They will have many workshops and demos. Try out a kayak or canoe on the 100-Acre Pond, go for a short hike on the park's beautiful trails, visit the Wild Wings birds of prey facility and the Mendon Ponds Park Nature Center, explore camping, bicycling and bike repair, backpacking, crafts, the petting zoo, live music by the Golden Link Folk Singing Society, many other events and displays, and food/ice cream for purchase from Dave's Sidewalk Café, Molly V's, and Edgemere Coffee. For the full schedule of events, see:

<https://adk-gvc.org/play/outdoor-expo-before/>



Follow the path to the pond & you will find us under some pop-ups.

This event is free, open to the public, and fun for the entire family. *Get Outside... It's for Everyone!*

* * *

2026 Scientific Paper Session Announced

We sent the First Call for Abstracts to department chairs throughout the Upstate NY region for our annual Fall Paper Session. It will be held at St. John Fisher on Saturday, November 7, 2026. RAS members are encouraged to attend and will have benefits.



The purpose of this event is to provide an opportunity for local college and university science students and faculty to gather and share their research interests and research results.

This will be our **52nd Annual Session**.

For more information on the Paper Session and to register go to rasny.org/paper-session.

We need members as volunteers to help organize the Paper Session and to help run it on the day.

Michael Grenier, RAS President

Events for June 2026

June 2 Tues: Joint Fossil and Mineral Section Picnic and Meeting

6:00 p.m. Farash Center, 8355 County Road 14, Ionia, NY, Wolk Education Building. Attendees are asked to bring a dish to pass as well as their own beverage. After the picnic, David Bishop will present his Astronomy Year in Review lecture. If attending, contact Dan Krisher at (585) 698.3147 or DLKFossil@gmail.com no later than Monday, June 1.

June 3 Wed: Astronomy Board Meeting

7:00 p.m. – 9:00 p.m. Zoom only. Members welcome to attend. Contact Craig Kaplan at President@rochesterastronomy.org for details.

June 5 Fri: Astronomy Members Meeting

7:00 p.m. – 9:00 p.m. Farash Center. Simon Thrill from the Adirondack Sky Center Group will speak about the History of Cosmology. Contact Craig Kaplan at President@rochesterastronomy.org for details.

June 10 Wed: Herbarium

12:00 p.m. - 3:00 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.

June 12 Fri: Public Observing

8:00 p.m. – 11:00 p.m. Farash Center. Contact Craig Kaplan at President@rochesterastronomy.org for details.

June 13 Sat: ADK Outdoor Expo Outreach Event

9:30 a.m. – 3:30 p.m. Mendon Ponds Beach Area (Canfield Woods). RAS will be represented by Astronomy, Fossil & Mineral Sections. Volunteers needed at the RAS booths! Questions? Contact your section leaders.

June 13 Sat: Member Observing

8:00 p.m. – 11:00 p.m. Farash Center. Contact Craig Kaplan at President@rochesterastronomy.org for details.

June 16 Tues: Astronomy on Tap

7:00 p.m. – 9:00 p.m. Location: McGinny's, 2246 East River Road. For more Information see <https://astronomyontap.org/locations/rochester-ny>.

June 17 Wed: RAS Board Meeting

Picnic 6:00 p.m. Meeting 7:00 p.m. - 9:00 p.m. Farash Center. Zoom option available. For details, contact Michael Grenier at mgrenier@frontiernet.net.

June 20 Tues: Fossil Section Field Trip

Watertown/Rodman Area: This will be a long day trip. We will visit a series of Ordovician sites some of which are detailed in the 2014 New York State Geological Association Guidebook. For details, see the latest RAS Fossilletter or contact Dan Krisher at (585) 698.3147 or DLKFossil@gmail.com.

June 24 Wed: Astronomy Forum

7:30 p.m. – 9:00 p.m. Pat Cosgrove will speak about Curating the Cosmos. Zoom only. Contact Craig Kaplan at President@rochesterastronomy.org for details.

STRASENBURGH OBSERVATORY:

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

EXTERNAL EVENTS:

June 25 Thurs: Solar Viewing sponsored by The Bird House

5:00 p.m. – 7:00 p.m. Location: White Haven Memorial Park, 210 Marsh Road, Pittsford. Drive back to the Chapel area. For more information, contact Patti Pirz at patti@thebirdhouseny.com or (585) 264-1550.

Michael Grenier Inducted as RAS Fellow

According to our ByLaws, Fellows shall be chosen from the active membership in recognition of scientific attainment or distinguished service to the Academy, by recommendation of a member and election by the Board of Directors. This is a rare honor bestowed by the Academy. This year two candidates were nominated, and both were elected by our Board. At the Annual Meeting they were recognized for their achievements and inducted as our newest Fellows—Daniel Krisher and Michael R. Grenier. Here we report on Michael Grenier’s induction.



The Fellow award to Michael Grenier (right) was made by David Bishop (left) at our Annual Meeting on behalf of the Board of Directors. Photo credit: Robert Grenier.

MICHAEL R. GRENIER.

FELLOW

April 20, 2026

Michael Grenier’s childhood fascination with dinosaurs led to a lifetime as an avocational field paleontologist. He earned his Bachelor’s degree in Geology from the University of Rochester and has worked with various teams from many museums, collecting Late Jurassic and Cretaceous fossils in western states. In 2019 he received a Master’s Degree in Geology from the University at Buffalo. His research led to a thesis on “A Phylogenetic Analysis of Darriwilian Graptolites” and to his becoming an authority in the admittedly narrow field of the biserial graptolites of the Darriwilian stage of the Middle Ordovician.

It was in 2012 that Michael joined the Rochester Academy of Science, and ever since then he has been engaged in Academy affairs, making significant contributions. Michael immediately joined the Fossil Section and offered to become editor of the section newsletter. He continues this service today and composes interesting and educational articles in every published issue. In 2020 he was elected Vice President

and began instituting a virtual speaker program via Zoom in response to the Covid pandemic. Using Zoom has enabled hybrid meetings and motivated Michael to build a coalition among several fossil clubs across the country to share their programs online.

It was not long before Michael was elected to the Academy BOD, as Director in 2016, and then as the Vice President, a position he held until 2019, when he became President. During this time and since then, Michael has enthusiastically supported the Academy’s programs that encourage and reward research by undergraduate students. He volunteered to serve on the committee that selects students applying for Undergraduate Student Grants and has chaired the committee since 2023. During his presidency, he has been instrumental in growing the annual fall Scientific Paper Session program in the number of presenters and the colleges participating.

Michael has generously given his time and shared his expertise with the various Academy sections. Some examples are: providing Zoom setup for the Mineral Section meetings, providing a virtual speaker program for Life Sciences, and taking his Scout troop to the Astronomy Section’s site in Ionia, NY.

Michael’s skill at writing and transmitting information is seen in the prolific contribution of topical and scientific articles to the Academy Bulletin. He enjoyed reporting on the developments leading up to the total solar eclipse of April 2024 and served as one of the RAS representatives to the Rochester area Solar Eclipse Task Force.

Michael encourages community outreach by Academy members, and he frequently gives invited presentations and participates at events in the community.

In recognition of his dedication and contributions to the Academy, the Fossil Section, and the community, we welcome Michael Grenier as a Fellow of the Rochester Academy of Science.



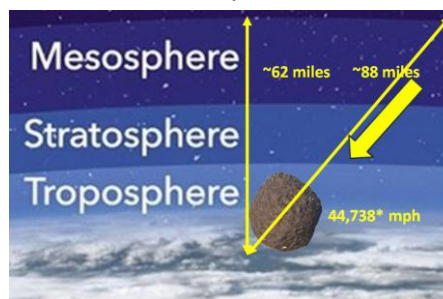
Image from <https://preachthestory.com>

Forget all the artistic images you have ever seen of the Chicxulub asteroid impact crater blast. Had you been standing there 66,038,000 years ago²² even 900 miles away to see it, the first and only thing you would have seen was a huge blinding meteor streak brighter than the sun for less than seven seconds followed by a flash of light for an instant as your eyes exploded and your flesh and bones were vaporized.

The effects of the impact—bad luck for most of the life on Earth—were largely caused not by the size of the asteroid, but by where it struck the Earth. Twenty minutes earlier and it would have hit into the Caribbean Sea with two miles depth of water, an hour later and it would have landed in the Pacific Ocean. Effects would have been dramatic but negligible to life long-term. Where it struck, as reported last month, was partially on land and partly onto off-shore continental shelf carbonate rock, the worst possible material.

Chicxulub is the most pristine, best studied crater on earth. Scientists have examined the crater features to determine the impact trajectory and speed. Impact direction and angle to the target plane affect the volume and depth of origin of vaporized target, as well as the trajectories of ejected material. By comparison of 3D computer simulations with geophysical observations, they found that the Chicxulub crater was formed by a 45° to 60° to horizontal impact from the northeast²³. A steeply inclined impact like this produces a nearly symmetric distribution of ejected rock and releases more climate-changing gases per asteroidal impactor mass than either a very

shallow or near-vertical impact. The impact speed was about 20 km/sec, or about 44,738 mph²³.

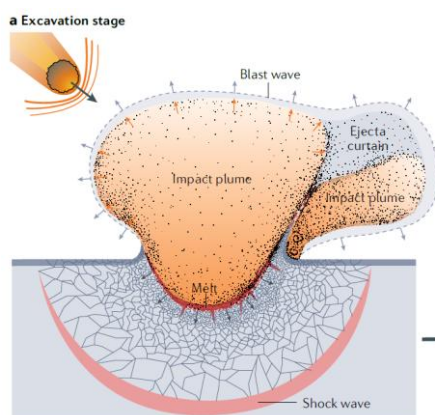


Asteroid entry based on Collins (2020) (by author).

The scales of fish in Montana killed at that time show that the asteroid hit in the springtime²⁴.

As the asteroid entered Earth's atmosphere, it compressed the sky in front of it with such immense force that it created a cone of superheated plasma, causing the air to reach temperatures of 10,000°C or more, destroying all life on the ground ahead of it even before impact.

The impact blasted a cavity 100 km (62 miles) wide and 30 km (19 miles) deep into the magma of the mantle. The incomprehensible impact energy is estimated as equivalent to 72 trillion tons of TNT or about 5 billion Hiroshima atomic bombs. Several thousand gigatonnes of asteroidal and earth rock material were ejected at velocities exceeding 5 kilometres per second, forming a fast-moving cloud that transported dust, soot and sulfate aerosols around the Earth within hours²⁵.



Model of initial moments of impact (from Morgan 2022).

An impact plume composed of vaporized matter, melted rock, rock fragments and dust was blasted from the impact crater. The plume was surrounded by an ejecta curtain composed mostly of shattered rock with more solid material than the plume. The plume's initial temperature is several thousand degrees and the thermal radiation traveling at the speed of light from it incinerates every living thing within about 1500 km. The plume expands and ascends hundreds of kilometers above the Earth. Rock fragments, steam and gases from the asteroid, and vaporized rocks within the plume and upper part of the ejecta curtain are ejected from the impact site with so high a velocity that some leaves Earth²⁶ with the rest raining down all over the globe.

After thermal radiation from the impact plume, the second hazard is the blast wave propagating through the atmosphere at the speed of sound and knocking down everything in its path²⁷. At the Earth's surface and close to the crater, the blast wave is closely followed by the arrival of material from the ejecta curtain.

Next month—what happened in the next few minutes?

REFERENCES

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23. Collins, Gareth S., et al. "A steeply-inclined trajectory for the Chicxulub impact." *Nature communications* 11.1 (2020): 1480.
24. During, Melanie AD, et al. "The Mesozoic terminated in boreal spring." *Nature* 603.7899 (2022): 91-94.
25. Morgan, Joanna V., et al. "The Chicxulub impact and its environmental consequences." *Nature Reviews Earth & Environment* 3.5 (2022): 338-354.
26. Artemieva, N. et al. Quantifying the release of climate-active gases by large meteorite impacts with a case study of Chicxulub. *Geophys. Res. Lett.* **44**,10180–10188 (2017).
27. Pierazzo, E. & Artemieva, N. Local and global environmental effects of impacts on Earth. *Elements* **8**, 55–60 (2012).

Undergraduate Student Research Grant Award



Isabella Sanchez. Photo credit: Amaal Bahnas

Isabella Sanchez: Assessing Aloe Vera-Derived Extracellular Vesicles in a Cellular Model of Lung Fibrosis

Rochester Institute of Technology. Isabella was awarded an RAS research grant for the 2025-2026 school year for her project.

Abstract

Lung fibrosis is a progressive and often fatal disease characterized by persistent fibroblast activation, chronic inflammation, and excessive deposition of extracellular

matrix (ECM), which together stiffen lung tissue and impair gas exchange. Transforming growth factor- β (TGF- β) is a key profibrotic cytokine that drives fibroblast-to-myofibroblast differentiation and increased expression of fibrotic markers such as collagen type I (COL1) and α -smooth muscle actin (α -SMA). Plant-derived extracellular vesicles (EVs) have recently emerged as a potential therapeutic approach due to their reported anti-inflammatory and antifibrotic effects, but their impact on lung fibroblast activation remains incompletely understood. The goal of this project is to establish an in vitro model of lung fibrosis using hTERT-immortalized human lung fibroblasts and to evaluate whether Aloe vera derived extracellular vesicles (Av-EVs) can reduce fibrotic activation. Fibrosis will be induced by TGF- β treatment, and cells will subsequently be exposed to Av-EVs at defined concentrations. Fibrotic activation and EV effects will be assessed by quantitative PCR analysis of COL1 and α -SMA expression, and by qualitative immunofluorescence staining to evaluate changes in cell morphology and cytoskeletal organization. Reduced expression of fibrotic markers following EV treatment would suggest an anti-fibrotic effect of Av-EVs in this cellular model.

RAS Member Images



Moon craters Aristoteles and Eudoxus, taken with iPhone. Kevin Lyons; May, 2026.



Supernova in NGC 6070. Kevin Lyons; May 10, 2026.

Proposed By-Law Changes for 2027

By-Laws Changes Proposed at 2026 Annual Meeting

At our 2026 Annual Meeting, we adopted three changes that were required by changes in New York State Law. These were simple, high priority changes regarding meetings. At that Annual Meeting on April 20, 2026, as required by our By-Laws, I read three more proposed changes.

The By-Laws and Constitution of the Academy can be found on our web site at <https://rasny.org/about-us>.

In each case, the proposed deletions are indicated by ~~strikethrough~~ and the additions to be made are in **red font**.

First proposed change: The first is required by New York State Law and modifies how we notify members of meetings—adding email in addition to postal mail—and how we conduct voting—allowing in-person and electronic voting in addition to voting by mail.

CHAPTER XI. Elections. “1. The annual election of officers and directors shall be conducted as follows: The President shall appoint a nominating committee of not less than three members on or before November first of each year. The committee shall nominate one or more candidates for each office and vacancy on the Board, obtain the consent of the nominees and report such nominations (together with a short sketch of the candidate's qualifications) to the Board at its January meeting.

“Nominations for any office or Board vacancy made in writing and endorsed by not less than ten Active Members shall be included on the ballot if received by the Secretary before February 1st. Ballots containing all nominations shall be ~~mailed~~ **given, by mail or by electronic mail**, to each Active Member of the Academy at least twenty-one days before the annual meeting. This ballot may also contain

proposed amendments to the By-laws recommended by the Board.

“The official ballot shall be cast **in person at the annual meeting or electronically if attending by electronic communication**, or by mail, returned to the Secretary, and opened and counted on the day of the annual meeting by two tellers appointed by the President. A plurality of the votes cast shall be sufficient to elect.”

Second proposed change: This will eliminate the fixed price of Life members in the By-Laws and allow for flexibility in setting the rate. No other membership level has a fixed price in the By-Laws. Also, we do not hold elections for our highest membership level, it is automatic. **CHAPTER I. Membership and Dues.**

To be: “6. Any Active member ~~who shall at one time contribute the sum of \$180 to the Academy, may be elected to~~ **may purchase a Life membership at a fee to be established annually by the Board of Directors.**”

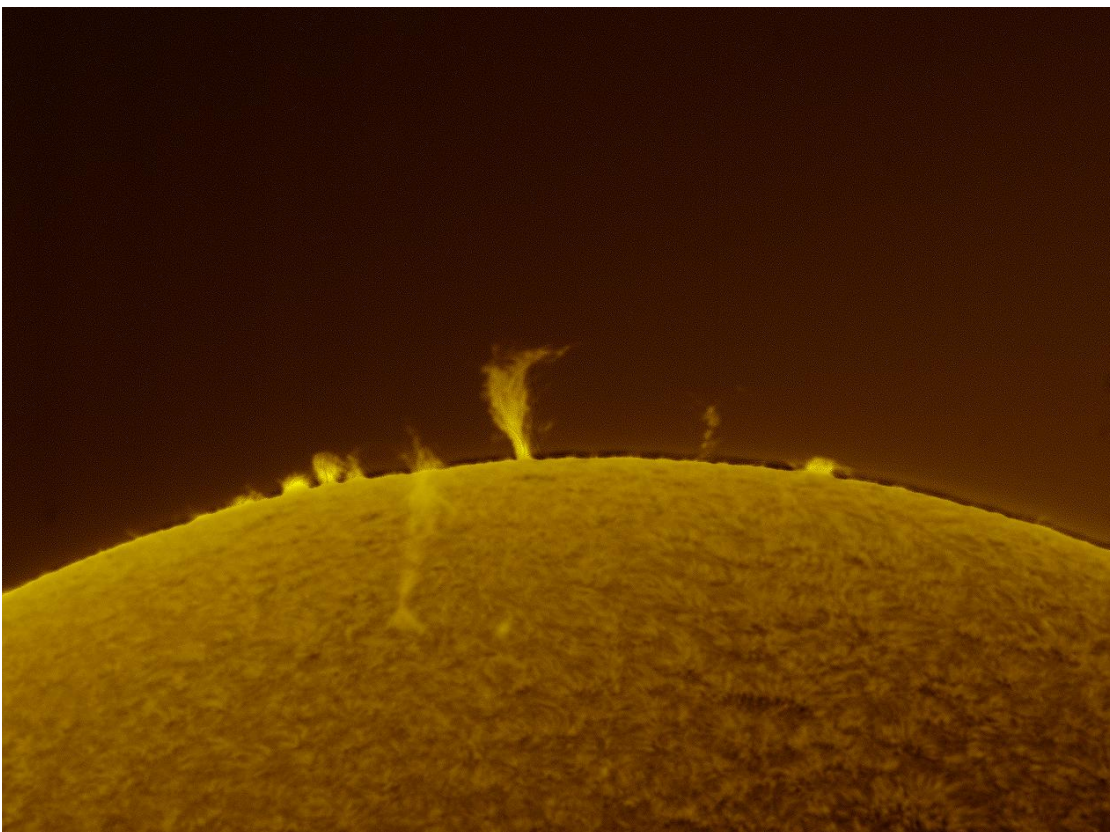
Third proposed change: This will allow Section Chairpersons (titled as presidents in some sections) to appoint a representative to the Board in lieu of serving themselves, as we currently allow. It also fixes a minor point on who elects directors, as required by New York State Law. **CHAPTER IV. The Board of Directors.**

To be: “1. The elected directors shall serve for a term of three years — two to be elected each year by the **Active Members of the Academy**. The Chairpersons of the active sections **or their designee** shall **also** serve on the Board **but only for** as long as they chair their respective sections.”

RAS Member Images



M81 in Ursa Major. Francis Kalenja; May, 2026.



Solar prominences in H-Alpha. May 17, 2026. Doug Koystk.

Rochester Research in Review.

(These are Hot Links which when clicked lead to the press release on the Science Daily and other science websites.)

[Scientists successfully transfer longevity gene and extend lifespan. University of Rochester; May 10, 2026](#)

[This simple strength test could predict how long you live. University at Buffalo; May 11, 2026.](#)

[Scientists boosted one protein and aging mice became stronger and healthier. University at Buffalo; May 19, 2026.](#)

[New Study Finds Claude Pushes Back, Gemini and DeepSeek Cave In: How AI Handles Its Own Lies. Rochester Institute of Technology; February 19, 2026.](#)

[Conventional Oil Drilling Leaves Deeper Mark on Waterways. Syracuse University; March 25, 2026.](#)



M66 Leo Triplet; Pat Cosgrove, 2026.

[New method turns ocean water into drinking water, without waste. University of Rochester; May 27, 2026](#)

[While you were sleeping: URochester reshapes the science of sleep. University of Rochester; May 24, 2026](#)

[AI reveals how the brain clears harmful waste. University of Rochester; May 27, 2026](#)

[Improved embryo freezing technique could preserve endangered species. Cornell University, May 28, 2026](#)

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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