

AASP – The Palynological Society

Promoting the Scientific Understanding of Palynology since 1967



NEWSLETTER September 2023 Volume 56, Number 3

Published Quarterly



AASP - TPS NEWSLETTER

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September 2023, Volume 56, Number 3

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The American Association of Stratigraphic Palynologists, Inc. - AASP – The Palynological Society - was established in 1967 by a group of 31 founding members to promote the science of palynology. Today AASP has a world-wide membership of about 200 and is run by an executive comprising an elected Board of Directors and subsidiary boards and committees. AASP welcomes new members.

The AASP Foundation publishes the journal Palynology (quarterly), the AASP Newsletter (quarterly), and the AASP Contributions Series (mostly monographs, issued irregularly), as well as several books and miscellaneous items. AASP organises an Annual Meeting which usually includes a field trip, a business luncheon, social events, and technical sessions where research results are presented on all aspects of palynology.

AASP-TPS Scientific Medal recipients

Professor William R. Evitt (awarded 1982) Professor William G. Chaloner (awarded 1984) Dr. Lewis E. Stover (awarded 1988) Dr. Graham Lee Williams (awarded 1996) Dr. Hans Gocht (awarded 1996) Professor Svein B. Manum (awarded 2002) Professor Barrie Dale (awarded 2004) Dr. David Wall (awarded 2004) Dr. Robin Helby (awarded 2004) Dr. Satish K. Srivastava (awarded 2006) Professor Estella B. Leopold (awarded 2013) Professor Vaughn M. Bryant (awarded 2016) Professor David Batten (awarded 2018)

AASP-TPS Honorary Members

Professor Dr. Alfred Eisenack (elected 1975) Dr. William S. Hoffmeister (elected 1975) Professor Leonard R. Wilson (elected 1975) Professor Knut Faegri (elected 1977) Professor Charles Downie (elected 1982) Professor William R. Evitt (elected 1989) Professor Lucy M. Cranwell (elected 1989) Dr. Tamara F. Vozzhennikova (elected 1990) Professor Aureal T. Cross (elected 1991) Dr. Robert T. Clarke (awarded 2002) Professor Vaughn Bryant (awarded 2005) Professor Alfred Traverse (awarded 2005) Professor Bernard Owens (awarded 2011) Dr. John E. Williams (awarded 2013) Mr. Paul W. Nygreen (awarded 2013) Professor Norman Norton (awarded 2016) Professor George F. Hart (awarded 2020)

AASP-TPS Board of Directors Award recipient

Dr. Robert T. Clarke (awarded 1994) Dr. Thomas D. Demchuk (awarded 2014)

AASP-TPS Medal for Excellence in Education

Professor Aureal T. Cross (awarded 1999) Professor Alfred Traverse (awarded 2001) Professor Bill Evitt (awarded 2006) Professor Vaughn M. Bryant (awarded 2013) Professor Geoffrey Clayton (awarded 2016) Professor Sophie Warny (awarded 2021) Dr. Francisca Oboh-Ikuenobe (awarded 2023)

AASP-TPS Distinguished Service Award recipients

Dr. Robert T. Clarke (awarded 1978) Dr. Norman J. Norton (awarded 1978) Dr. Jack D. Burgess (awarded 1982) Dr. Richard W. Hedlund (awarded 1982) Dr. John A. Clendening (awarded 1987) Dr. Kenneth M. Piel (awarded 1990) Dr. Gordon D. Wood (awarded 1993) Dr. Jan Jansonius (awarded 1995) Dr. D. Colin McGregor (awarded 1995) Professor John H. Wrenn (awarded 1998) Professor Vaughn M. Bryant (awarded 1999) Dr. Donald W. Engelhardt (awarded 2000) Dr. David T. Pocknall (awarded 2005) Dr. David K. Goodman (awarded 2005) Professor Owen K. Davis (awarded 2005) Dr. Thomas Demchuk (awarded 2009) Professor Reed Wicander (awarded 2014) Professor Fredrick Rich (awarded 2016) Dr. James B. Riding (awarded 2016) Professor Martin B. Farley (awarded 2019) Dr. Jennifer O'Keefe (awarded 2023)



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Niall Paterson: 2021 – 2023

Sophie Warny: 2022 - 2023

Stephen Stukins: 2022 - 2023

Julia Gravendyck: 2021 - 2023

Martha Gibson: 2022 - 2024

Opeyemi Taiwo: 2022 - 2024

Vladimir Torres: 2022-2023

James Riding: 2022-2023

Fabienne Marret

Nordic Countries United Kingdom

Black Sea region

French-speaking Belgium

Flemish-speaking Belgium

United States

India

Asia

Germany

North Africa

South Africa

South America

Australia

Jan Hennissen

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AASP BOOK REVIEW EDITOR

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To express interest in open positions, please send an email to: aaspnews@gmail.com

AASP WEBMASTER

Fabienne Marret, aaspwebmaster@gmail.com, website: http://www.palynology.org

AASP NEWSLETTER EDITOR

Jan Hennissen, aaspnews@gmail.com, Keyworth, UK

AASP NEWSLETTER GRAPHIC DESIGN (From December 2021 Issue)

Filipe Barreira, Laboratório Nacional de Energia e Geologia (LNEG), S. Mamede Infesta, Portugal

The AASP — TPS Newsletter is published four times annually. Members are encouraged to submit articles, "letters to the editor," technical notes, meetings reports, information about "members in the news," new websites and information about job openings. Every effort will be made to publish all information received from our membership. Contributions which include photographs should be submitted two weeks before the deadline. Deadline for submission for the next issue of the newsletter is May 15. All information should be sent by email. If possible, please illustrate your contribution with art, line drawings, eye-catching logos, black & white photos, colour photos, etc. We DQ look forward to contributions from our members.

Volume 56, Number 3 Jan Hennissen, Editor

A Message From Our President

Dear AASP-The Palynological Society members,

I am writing to you from the University of Montpellier where I will be staying for 6 weeks. One of the goals of this exchange is to get the AASP Annual Meeting details organized. We really hope there will be many of you joining us. The lead organizer, Dr. Severine Fauquette, is preparing a wonderful meeting with her colleagues.

All technical talks will take place in the "Amphitheatre Charles Flahaut" of the former University of Montpellier's Botanical Institute which is listed as a Historical Monument of France (picture below).

The conference will take place from June 24th – 28th, 2024. Presentations will be from Tuesday the 25th to Thursday the 27th, with preand post-conference field trips on Monday and Friday.

The tram system in Montpellier is excellent, there are two tram stops at a walking distance to the venue, either Place Albert 1er or Arc de Triomphe. We recommend that you take a hotel in the city historic center. We will provide more details and recommendations in the next newsletter (Volume 56, Nr. 4; December





2023). Please see the conference flier at the end of this Newsletter for details. Contact me or Severine if you would like to see a session on a specific topic.

In other news, we successfully transferred our website to a new host company, WP Maintain. It was a massive undertaking, and I want to extend my gratitude to Past-President Niall Paterson for reviewing various companies. Thank you to Gareth Davies for his long-time management of our website. Fabienne Marret and Julia Gravendyck are currently doing edits to our website, Fabienne is focusing on our Society's website while Julia is focusing on the foundation shop site. Let them know if you have any issues while we are in the midst of this major transition.

As always, please help us promote our conference and society with your peers, we couldn't exist without all of you.

Sophie Warny

Professor of Palynology & Curator, CENEX Director, Louisiana State University.

Managing Editor's Report

This year's impact factors were released in late June 2023. Unfortunately, Palynology has dropped from 1.949 to 1.500. Fluctuations such as this are quite normal, and we hope that this metric increases next year. Our main 'rival' journal decreased by exactly the same amount, and the 'other' journal in our subject area was unchanged. In terms of where Palynology sits among our peers, we are ranked 26th out of 54 in 'Palaeontology' and 154th from 238 in 'Plant Sciences'.

Part three of Palynology for this year was published online in August (<u>https://www.tand-fonline.com/toc/tpal20/current</u>). This issue comprises 201 pages; it includes 10 research articles plus one Editorial and one Obituary.

All the research papers are excellent, but 1 would like to highlight a major 59-page monograph on Paleogene pollen and spores from the Niger Delta by Luke Mander and two colleagues. There is also a fascinating article on small carbonaceous fossils from the Cambrian and Ordovician of northeast China by Longlong Shan and colleagues, and a very interesting study on the melissopalynology of the Greater Kruger National Park in South Africa by Nikiwe Ndlovu and four others.

The full contents of Volume 47/3 are listed below. The next issue, number four, will be published online and in print during November 2023. This part is complete at the time of writing this report, and we will finalise the running order shortly.

Please keep submitting manuscripts and supporting the journal generally.

James B. Riding

Managing Editor, AASP – The Palynological Society, jbri@bgs.ac.uk.

The contents of Palynology Volume 47, Part 3 (August 2023)

Editorial

1. Riding, J.B. Please write obituaries for your palynological heroes. Article number 2230017, 3 pp.

Obituary

2. lakovleva, A.I. Aida Sergeevna Andreeva-Grigorovich (1935–2022). Article number 2197479, 4 pp.

Research articles

3. Shan, L., Harvey, T.H.P., Yan, K., Li, J., Zhang, Y. and Servais, T. Palynological recovery of small carbonaceous fossils (SCFs) indicates that the late Cambrian acritarch *Goniomorpha* Yin 1986 represents the teeth of a priapulid worm. Article number 2157504, 11 pp.

4. Torrati-Guiotia, P.G., Bellonzi, T.K. and Gasparino, E.C. Contribution to Celastraceae palynology from Cerrado forest fragments: a focus on shape, amb and exine ornamentation. Article number 2163315, 12 pp.

5. Pimentel, A.D.A., De Abreu, V.H.R., Krug, C. and Miranda, I.S. A review of pollen types foraged by *Melipona* in the Brazilian Amazon. Article number 2175064, 10 pp.

6. Esposito, F., Morgado, L.N., Nunes, T., Rego, C., Fernandes, F. and Boieiro, M. Pollen morphology of the endemic genera of the Madeira archipelago, Portugal. Article number 2189319, 9 pp.

7. Ndlovu, N., Neumann, F., Henley, M., Cook, R. and Reynolds, C. Melissopalynological in-

vestigations of seasonal honey samples from the Greater Kruger National Park, Savanna biome of South Africa. Article number 2179679, 10 pp.

8. Samal, P., Singarasubramanian, S.R., Srivastava, J., Jena, P.S., Shivam, A. and Bhushan, R. Coastal vegetation dynamics in response to climatic and relative sea level changes in Mahanadi River delta, NE coast of India. 11 p./70 p. Article number 2134937, 11 pp.

9. Mander, L., Jaramillo, C. and Oboh-Ikuenobe, F. Descriptive systematics of Upper Paleocene–Lower Eocene pollen and spores from the northern Niger Delta, southeastern Nigeria. Article number 2200525, 59 pp.

10. Fuentes, S.N. Miocene dinoflagellate cyst biostratigraphy of the Península Valdés, Patagonia, Argentina. Article number 2212276, 15 pp.

11. Heidarian, M., Nematian, M.A. and Masoumi, S.-M. Taxonomical notes of the genus *Gagea sensu lato* including *Lloydia* based on palynological issues. Article number 2211148, 23 pp.

12. Ghavidel-Syooki, M. and Piri-Kangarshahi, M.H. Peri-Gondwanan acritarchs and chitinozoans from the Lower–Middle Ordovician Lashkarak Formation in the Alborz Mountain Ranges, northern Iran: Regional stratigraphical significance and palaeogeographical implications. Article number 2214191, 34 pp.

(201 pages)



AASP – TPS 50th Anniversary Jewelry Collection

Exclusive, Custom-made 50th Anniversary Jewelry Limited-Edition and availability



Special thanks to John Firth and Ingrid Romero for palynomorph images.

Celebrate the 50th anniversary of AASP – The Palynological Society with a beautiful, sterling silver palynomorph necklace. The Society board worked with jeweler and designer, 'Science-inspired jewelry', to create these one-of-a-kind, unique necklaces in honor of our golden anniversary. There are a limited number available of two designs, a pollen grain *Macrolobium multijugum* (a) and a dinoflagellate cyst of *Diphyes recurvatum* (b).

Each necklace comes with a commemorative information card that includes a picture and description of the palynomorph. **The society is selling them now for \$60.00 OR one** *M. mul-tijugum* **+ one** *D. recurvatum* **for \$100.00**. This is a wonderful way to support AASP-TPS and is a great conversation starter!

Payment can be arranged by contacting the AASP-TPS Treasurer, Vladimir Torres, at vladimir.torres@exxonmobil.com.

Awards Committee News

By Marie Thomas

AASP-The Palynological Society has several awards that recognize outstanding service to the Society or to the discipline of palynology.

The basic nomination procedure is similar for most awards (main letter of nomination accompanied by letters of support, which include documentation of the accomplishment).

Details of the procedures for each award can be found at <u>https://palynology.org/student-</u> <u>support/professional-awards/award-proce-</u> <u>dures/.</u>

The deadline for submission of society awards nominations is March 1 of each year. A complete list of previous winners can be found on page 3 of this newsletter.

Society Awards for 2024

Distinguished Service Award

This award recognizes individuals who have generously supported the AASP-TPS with their work and resources over several years, and whose efforts have advanced the Society. Typically, recipients have held society office, participated in committees, or dealt with publications or meetings. There have been twenty recipients of this award, most recently Jen O'Keefe in 2023.

Honorary Life Membership

This is the oldest AASP-TPS award, with the first awards dating to 1975. This award is either bestowed upon individuals who have made a fundamental contribution to the discipline of palynology, or to people who have given devoted service to the AASP-TPS (or both). Honorary Life Membership has been awarded to seventeen individuals, most recently to George Hart in 2020.

Medal for Excellence in Education

This medal recognizes leaders in palynological education. Nominees are expected to have considerable experience and accomplishment in aspects of academic education involving palynology. The medal has been awarded six times, most recently to Francisca Oboh-Ikuenobe in 2023.

Medal for Scientific Excellence

The Society's highest award for achievement in the science of palynology is the Medal for Scientific Excellence. The official description lists "fundamental contributions to the development of the science of palynology" as the main criterion. Recipients should have a substantial research history in the field. The medal has been awarded thirteen times in the history of the Society, most recently to David Batten in 2018.

Medal for Scientific Merit and Outstanding Promise

This newly established award recognizes individuals in their mid-career who have made important contributions to the science of palynology and who show the promise of continued excellence in the discipline. Typically, nominees will have no more than 15 years' experience beyond their M.Sc. or Ph.D. graduation (excluding time spent in industry or on leave).

Society Awards for 2023

Distinguished Service Award

AASP – The Palynological Society bestowed upon **Dr. Jen O'Keefe** the Distinguished Service Award at the 55th Annual Meeting in Lexington, Kentucky.



Jen was nominated by her former student, Ingrid Romero. Multiple society members contributed letters of support, including Niall Paterson and Martha Gibson. The Awards Committee (Marie Thomas, Annette Göetz, and Jan Hennissen) endorsed her nomination, and the entire Board of Directors were in support of Dr. O'Keefe receiving this award from our society.

As Dr. O'Keefe served as the co-chair of our society's Annual Meeting, everyone in attendance was excited to see her receive this award, which was given as a surprise to commemorate Jen's third(!) time serving as conference organizer. On behalf of the entire society – thank you, Jen!

The following letter from Dr. Ingrid Romero details how deserving Jen is of this award:

"Jen O'Keefe is a passionate geologist and palynologist that has supported the Society with her work since she became a member. Throughout the past 20 years, she has held Society office positions, participated in committees, and has dealt with publications and meetings. In addition, she currently is one of the AASP Foundation Trustees and Publication Production officers.

Since 2006, she has been a committee member and chair in AASP-TPS. She has participated in the following committees: Committee for Professional Outreach and Increasing Membership (2006-2008), Balloting Committee (2010, 2011, 2014), and Nominating Committee (2006-2007, 2019-2020). She has served as a board member since 2009. She was Director-at-Large from 2009 to 2011. She was President-Elect in 2013, President in 2014, and Past-President in 2015. She was also a Newsletter Editor from 2015 to 2018.

Dr. O'Keefe was also the chair and co-chair in the organization for three annual Society Meetings. From 2010-2012, she was co-chair of the 2012 Annual Meeting held in Lexington, KY. She was also co-chair of the 2016 Annual Meeting held in Houston, TX. Currently, she is one of the organizers for the 2023 Annual Meeting that will be held again in Lexington, KY.

In addition, Dr. O'Keefe has served on multiple L.R. Wilson and V.M. Bryant judging panels. She served as the GSA liaison, and during this time she designed the current booth, which debuted at the 2015 GSA meeting.

Outside of AASP- The Palynological Society, Dr. O'Keefe has been an asset in the development of palynology in different fields, such as petrography, stratigraphy, melissopalynology, and mycology. She has also been instrumental in the development of new methods for the extraction and study of palynomorphs. She has been an inspiration to younger palynologists, like me, to continue serving this society and promoting the importance of palynology. Thus, I highly recommend Dr.O'Keefe to be nominated for the Distinguished Service Award to recognize her service to the AASP-TPS."

Ingrid C. Romero, Ph.D. Postdoctoral Research Fellow Smithsonian National Museum of Natural History Smithsonian Tropical Research Institute

Medal for Excellence in Education

AASP – The Palynological Society bestowed upon **Dr. Francisca Oboh-Ikuenobe** the Medal for Excellence in Education at the 55th Annual Meeting in Lexington, Kentucky.



Dr. Oboh-Ikuenobe was nominated by her former Ph.D. student, Dr. Carlos Jaramillo. Multiple society members, former students, and colleagues contributed letters of support, including Lucy Edwards, Mohamed Zobaa, Damián Cárdenas Loboguerrero, Carlos Andrés Sánchez Botero, Robert Haselwander, Onema Adojoh, and Oscar Yepes.

All supported Franca's nomination and believe her to be fully deserving of the Medal for Excellence in Education. After reviewing the letters of support, the Awards Committee found Dr. Oboh-Ikuenobe's nomination acceptable, and the Board of Directors approved her receiving the Medal for Excellence in Education for 2023.

At the Awards Ceremony at our Annual Meeting, Dr. Oboh-Ikuenobe prepared a beautiful acceptance speech detailing her gratitude for the award and advice for the next generation of palynologists. Several of her former and current students attended the conference, and it was wonderful to see such a large turnout of her supporters. On behalf of AASP-TPS, thank you to Dr. Franca for inspiring so many to continue in the field of palynology and keeping our discipline thriving with fresh ideas and new minds.

The following letter from Dr. Carlos Jaramillo details how deserving Dr. Oboh-Ikuenobe is of this award:

"I dedicate the AASP Medal For Excellence in Education to Dr. Francisca Oboh-Ikuenobe. She is a Professor in the Department of Geosciences and Geological and Petroleum Engineering, and the Associate Dean for Academic Affairs in the College of Engineering and Computing at Missouri University of Science and Technology in Rolla, Missouri (USA).

She holds a Ph.D. in geology from the University of Cambridge in England and a B.S. in geology and an M.S. in applied geology, both from the Obafemi Awolowo University in Nigeria. Dr. Oboh-Ikuenobe is a fellow of the American Association for the Advancement of Science (AAAS), a fellow of the Geological Society of America, a past co-chair of that organization's Diversity in the Geosciences Committee and a member of the Public Service Awards Committee, and past director of the Association for Women Geoscientists Foundation.

She was a Fulbright Specialist Scholar and a member of UNESCO's International Geoscience Programme (IGCP) Scientific Board (Global Change Group). She was named Missouri S&T Woman of the Year in 2004 in recognition of her student mentoring efforts, especially for girls and young women. She has been very active within AASP-TPS being President-Elect, President, and Past-President, as well as participating in most of the AASP-TPS Committees, being on the editorial board of Palynology, and hosting an AASP-TPS annual meeting. This has been a long introduction that underscores the prolific career of Dr. Oboh-Ikuenobe.

Dr. Oboh-Ikuenobde deserves the Medal for her outstanding efforts in educating several generation of palynologists. I was her first graduate student back in 1994, almost three decades ago. She made a difference in my life, and I will always be grateful to her and her family. She really cares about her students, not only at the academic level but also, at a personal level.

When I came to the USA for my M.S. at MS&T, I did not know anybody in the whole country, anything about American culture, or even what a real winter was. I arrived in Rolla on January 4, 1994, during a very rough winter. She took me to her house until I found a place to live and helped me with the basic rules to live in the USA (opening a bank account, driver's license, utilities, etc...).

I remember one day I told her I needed to buy dishes, because I had to eat out of my pots. She was horrified and immediately went to her home and came back with a set of dishes, cups, and every basic thing I needed for my kitchen. Her help made a tremendous difference in my academic life, because I felt supported despite living so far away from home. This taught me that academic life is not just about doing research; it is also about people. I will always be thankful to her for that.

In her classes, she always stressed the importance of making contacts with the industry and applying our research to the real world. For example, I had been working in palynofacies for a while, but I never realized how they could be used in the petroleum industry. One day she told me that what I did had applications for the oil industry. Then she called people in Mobil, introduced me to them, and had me working for them during the summer using palynofacies applied to a particular problem that Mobil had around my Master thesis. After I finished my Ph.D., I worked full-time for a petroleum company, and I saw the usefulness of what Dr. Oboh-Ikuenobe taught me.

For a foreign student whose first language is not English, scientific writing is one of the most difficult tasks of graduate school. Dr. Oboh-Ikuenobe took all the time in the world to correct my papers and manuscripts. I have been in touch with her over the years, still doing research together. I even have sent my own students to pursue graduate degrees with her at MS&T.

Dr. Oboh-Ikuenobe has had a long career at MS&T teaching several generations of palynologists that are in academia and industry all over the world. Several colleagues and former students also supported this award including Lucy Edwards, Mohamed Zobaa, Damián Cárdenas, Carlos Sanchéz, Robert Haselwander, Onema Adojoh, and Oscar Yepes.

In summary, Dr. Oboh- Ikuenobe exemplifies what the AASP Medal for Excellence in Education is for. She truly deserves it. "

Carlos Jaramillo Staff Scientist Smithsonian Tropical Research Institute Center for Tropical Paleoecology and Archeology (CTPA)

Dr. Franca prepared and delivered a beautiful acceptance speech at the Awards Ceremony, and we are pleased to include it in our news-letter:

"When I tell people that I am a palynologist, they stare at me and go "what?" Yes, there are even geologists and paleobotanists who have no idea that palynology is a sub-discipline of paleontology. It was in my junior year at the

University of Ife (now Obafemi Awolowo University) in Nigeria that a newly minted Cambridge PhD Babajide Salami, introduced my classmates and I to this fascinating field. Since all the courses in our geology and geophysics curriculum were compulsory, we all found ourselves in his new palynology course. I became Jide Salami's first research student - he supervised both my undergraduate and master's theses. At Cambridge University, Jenny Chapman supervised my PhD thesis on the middle Miocene sediments of the Niger Delta. Peter Friend, Norman Hughes, Ian Harding, Rachel Wood, Simon Conway-Morris, Rosina Abudulai, and Buki Otulana also provided intellectual and emotional support to me during my time there. Peter ensured that I accomplished my desire to integrate several aspects of sedimentology in my dissertation, while Ian's counsel when I struggled with how to handle the tons of organic debris in my slides led to my discovery of palynofacies as a powerful tool.

It is indeed an honor to receive this medal for excellence in education from a professional society that has meant so much to me. My association with AASP - The Palynological Societv dates to 1991 when I moved to the United States from Cambridge to embark on my academic journey at the then University of Missouri-Rolla (now Missouri University of Science and Technology, Missouri S&T). A University of Nebraska-Lincoln professor whom I met at a paleobotany conference in London just before completing my PhD, Margaret (Peg) Bolick, suggested that I contact a Quaternary palynologist at the University of Missouri-Kansas City upon my arrival in Rolla. This was before emails became the standard form of communication, so I called this female professor at UMKC to introduce myself as a new palynologist in a sister University of Missouri campus. Deborah advised me to join the membership of the AASP and attend the annual conference later that year to meet the good people who ran the association. She specifically mentioned Gordon Wood who was the Secretary/ Treasurer at that time.

So, in fall of 1991, I found myself in San Diego where both the Geological Society of America and AASP conferences were held. I presented my dissertation work on the Niger Delta during the AASP technical session. Deborah was correct in her assessment - this newbie met several wonderful and kind palynologists during this first and subsequent meetings, such as Lucy Edwards, Dave Pocknall, Vaughn Bryant, Al Traverse, Jan Jansonius, Chris Denison, Doug Nichols, Stephen Louwye, Daniel Michoux, Stefano Torricelli, Thomas Demchuk, and Larry Fearn, many of whom encouraged and mentored me without knowing how much impact they had on my career. Specifically, Lucy introduced me to Norm Frederikson, who was a brilliant, kind, and unselfish scientist. Norm and Lucy freely shared with me their knowledge about the Cenozoic palynology of the U.S. Gulf Coast and the Atlantic coastal plain. They also taught me how to write successful research grants even though they were non-academics working at the the U.S. Geological Survey. Larry Fearn enabled me to consult for Mobil Oil, and this partnership generated thesis material for my first graduate student, Carlos Jaramillo, my primary nominator for this award.

During my 32+ years at Missouri S&T, I have been privileged to teach and mentor the best graduate and undergraduate students (some of these students have been visitors from other institutions), in addition to postdoctoral associates as members of my research team; some of my mentees have worked on non-palynological research projects and expanded my knowledge base. While there were occasional challenges while working with some students, it's been a rewarding experience overall. Those who have graduated have gone on to use their talents in various forms of employment to improve their communities. These graduate students and early professionals are the reason I stand before you all today - please permit me to list their names: Carlos Jaramillo, Oscar Yepes, Tambra Eifert, Chioma Udeze, Hernan Antolinez, Stacy Story, Mohamed Zobaa, Carlos Sanchez, Guillermo Rodriguez Forero, Lutfia Grabel, Michael Corbett, Brandon Overstreet, Sarah de La Rue, Janet Raymer, Robert Haselwander, Adam Barron, Walaa Awad, Feyi Ilesanmi, Damián Cárdenas, Marissa Spencer, Erdoo Mongol, Ahmed El Manharawy, Linus Victor Anyanna, Onema Adojoh, Sebastian Zapata, Joel Edegbai, Yunis Valdon, Gordon Adams, Flavio Lorente, and Ninsin Shamoun. The undergraduates are just too many to mention.

I am saddened by the untimely death two weeks ago of one of these students, Ahmed El Manharawy. Ahmed was a brilliant PhD student from Egypt who brought joy, energy, and enthusiasm to my research lab. He was scheduled to attend this meeting with me and fellow students to witness this award ceremony, and I dedicate it to him.

The multi-faceted nature of my career can be attributed to a number of factors: God's blessings, support of family, friends and colleagues, and opportunities that arose at the right time. I am grateful for the opportunity to sail aboard the JOIDES Resolution on ODP 159 and for interdisciplinary research collaborations with numerous colleagues at several institutions. These collaborators have included other palynologists, a microbiologist, geochemists, sedimentogists, stratigraphers, micropaleontologists, and others. These collaborators accepted my idiosyncrasies and are now my friends.

My husband Thomas and children Ordia, Aita, and Ami have been my biggest supporters in this journey. As my duties at Missouri S&T have expanded to include university administration, from program chair to interim department chair and associate Dean, they have been the targets of some of my frustrations but remained my cheer leaders. I acknowledge the numerous babysitters who have made it easier for me to balance my work life with raising children. My extended family members, friends, present and former colleagues at Missouri S&T, and other paleontologists who I met at various professional meetings have also supported my throughout my academic journey. In particular, thank you to my in-laws the Ikuenobe's; aunts Elizabeth Atiomo and Dupe Atiomo; my cousins, especially the Olear's, William Atiomo, and Dora Edughele; my sister and brother inlaw, Pat and Chima Diaku; and friends and colleagues Estella Atekwana, Toyin Akinola, Evelyn Ofili Adelehin, Shade Magare, John Hogan, Jay Gregg, Dick and Rachael Hagni, Melanie Mormile, Kathy Benison, Irina Ivliyeva, John Holbrook, Robert Scott, Carl Campbell, Patricia Kelley, and Anne Raymond.

To everyone who supported my nomination for this medal for excellence in education, I am very grateful."

Cortland Eble captured a photograph of almost all of our 2023 Awards Winners after Business Luncheon at our Annual Meeting (next page).





2023 AASP-TPS Awards Winners (above). Left to right: Jamie Alumbaugh (Honorable Mention for the Vaughn Bryant Award); Dr. Francisca Oboh-Ikuenobe (Medal for Excellence in Education); Dr. Jen O'Keefe (Distinguished Service Award); Shaan Heydenrych (L.R. Wilson Award); Jessica McCoy (Honorable Mentioned for L.R. Wilson Award). Not pictured: Valerii Pimenov (Vaugh Bryant Award).

2022 Student Research Awards Update

Emily Ellefson - Ph.D. Student at Stanford University

The goal of my PhD thesis is to connect and evaluate the effects of plant evolution on the marine redox record through palynology, paleobotany, and geochemistry. Sampling efforts will be focused on stratigraphic successions spanning the Silurian-Devonian transition, particularly the Tatonduk River and McCann Hill sections, Alaska, USA, Although remote, the Tatonduk River and McCann Hill sections provide an exceptional opportunity to characterize both marine and terrestrial processes across the Silurian-Devonian transition and to explore the impact of land plant evolution on Earth systems. I applied for the AASP Student Research Award to aid with field costs for my 2022 field season in interior Alaska (USA). With the help of the AASP award my field season was extremely successful, two stratigraphic sections were targeted with >600 meter of section measured and logged and >200 rock samples collected for palynology, conodont biostratigraphy, Re-Os geochronology, and organic (biomarkers) and inorganic geochemical analyses. Sample processing and analysis are still ongoing but initial results are exciting.



Susy Velásquez-Franco – Ph.D. Student at University of Utah

The project "Listening to Las Lagunas: a long-term disturbance perspective applied to environmental management in the Equatorial Andes" focuses on the question, how can long-term ecological knowledge be integrated into Ecological Main Structure (EMS) planning and future management strategies?

The goal of this research is to provide new insights from lake-sediment archives, spanning hundreds of years, into more specific management strategies of the EMS. Laguna de San Diego (SDL), located in the central range of Colombian Andes, is home to undiscovered biodiversity as well as communities of victims subjected to decades of violence.

I am pleased to share that, with the invaluable support of the AASP-TPS Student Research Award - 2022, this project has achieved two significant milestones:

1. A successful field expedition to collect botanical reference materials from around the Laguna de San Diego protected area. The SDL botanical collection is providing novel insights into species diversity and was built with the purpose of serving as a foundation for the area's plant diversity.

Additionally, my research is providing timely information for the area's update management plan and new biological species that may serve as a reference collection for current and future studies of Neotropical diversity. The botanical reference collection was made in collaboration with Julio Andres Sierra-Giraldo (M.Sc. candidate) on a collaborative network between our home institutions, the FAUC and Garrett Herbariums.

The SDL botanical survey allowed us to estimate that SDL is home to ~138 plant species distributed across 90 genera and 55 families. We generated more than 60 voucher collections, 120 specimen duplicates as well as 135 pollen microscope slides as a reference collection of the area.

Currently, the SDL botanical reference collection is securely stored at the University of Caldas FAUC herbarium and duplicates will be donated to the Garrett Herbarium -Natural History Museum of Utah in the near future.

The manuscript entitled "Structure, composition, floristic diversity, and deforestation trends at Laguna de San Diego (Samaná, Colombia)' documents the results of the botanical survey and was submitted for peer review during the summer 2023.



A second manuscript describing SDL modern palynoflora, is under preparation, titled "Pollen and fern spore morphology of San Diego Volcano (Caldas, Colombia)."

2. **Lightning hands-on course about SDL biodiversit**y. Additionally, community outreach activity happened during the 2022 field expedition and had two learning sessions, one for a local school audience and a second, for the local ecotourism guides association.

In total more than 45 people attended, in re-

sponse to our invitation to learn about Laguna de San Diego's natural history. The lightning course had three parts, during the first part attendees learned about the uniqueness of SDL using 3D printed models capturing the basin shape and general geomorphology of the protected area. During the second part the community education event, we explored why and how scientists study plant communities using previously collected specimens and emphasizing the importance of native Flora and ecosystem services.

Lastly, the schoolers had the opportunity to explore microscopic biological communities from lake-water samples and pollen samples using portable microscopes. Ecotourism guides were engaged on a discussion about the future restoration efforts of the protected area and the consequences of deforestation.

2023 Student Research Award Winner

Calla Marie Ward Olson – Ph.D. Student at the University of Wisconsin-Madison

In our last issue, we introduced Talita Bellonzi, one of two winners of the 2023 Student Research Award. In this issue, we are pleased to introduce you to our second 2023 winner – Calla Marie Ward Olson! A student at the University of Wisconsin-Madison, she received \$3000 USD to support the purchase of chemicals and lab supplies to prepare modern and fossil pollen samples from lake sediments in Minnesota. A summary of her project in her own words follows:

The tallgrass aspen parkland (TAP) is an ecotone biome located in northwestern Minnesota where the tallgrass prairie, Laurentian mixed forest, and aspen parkland meet. The Nature Conservancy's Resilient and Connected Network Landscapes project noted it contains "resilience, flow, and recognized biodiversity" compared to other ecosystems across the Midwest, and designated it a conservation priority.

However, Living Blended Drought Atlas records indicate it is a climatically sensitive area. It is currently unclear how it may respond to future climate changes because few palynological studies have been done. The relationship between TAP pollen assemblages and the plant communities they represent is poorly understood, making it difficult to identify changes in pollen assemblages indicative of major vegetation shifts or test for correlations between such changes and past climatic shifts.



This research will determine how modern pollen assemblages represent current vegetation in the TAP, and use this to improve interpretation of fossil pollen records. Since the dominant arboreal species is Populus tremuloides, this research will also clarify how representative Populus pollen levels, which have poor preservation in lake sediments, are of Populus abundance.

Pollen samples are being gathered from all herbaceous and arboreal taxa in the TAP to create a pollen reference collection. In summer 2023 surface samples will be collected to analyze reference pollen assemblages for each of the major plant communities present in the TAP: 10 surface samples per site, 3 sites per community type.

Vegetation data will also be collected at each site. Pollen assemblages will be correlated with distance-weighted vegetation data to estimate relevant pollen source distances. These data will guide interpretation of pollen records found in sediment cores obtained from Thief Lake, a 3007-hectare shallow mesotrophic lake located in the center of the TAP. This lake is a known remnant of Lake Agassiz and is thus likely to contain pollen records spanning much of the Holocene.

Exploratory short cores taken from it in Summer 2022 showed promising stratigraphy, and in December 2022 a pair of 2-meter sediment cores were obtained from the center. An additional transect of 3 shallow-water cores will be collected in December 2023.

Cores will be split lengthwise, described, and archived at the Continental Scientific Drilling Facility at the University of Minnesota following standard procedures. They will undergo pollen and charcoal analysis and loss-on-ignition estimates of carbon content. ²¹⁰Pb and radiocarbon dating of terrestrial plant macrofossils will be used to determine sedimentation rate and develop preliminary age-depth models.

Temporal resolution of pollen analysis will be increased at points of stratigraphic change in the core, and at dates surrounding known regional shifts in climate. Fossil pollen assemblages will be compared to the modern pollen assemblages using multivariate distances and the modern analog technique. Using modern pollen assemblages as a guide, changes in fossil pollen assemblages will be tested for temporal correlation with evidence of local drought and known regional climate shifts. This research may shed light on how vegetation of the TAP will respond to future climate changes, aiding in the development of conservation strategies.



Student Research Awards 2024

Call for Applications

AASP-The Palynological Society is pleased to announce its program of Student Research Awards. For 2023, there will be two awards of \$3000 (US) each, to support research in any area of palynology. Student Research Awards are to be used for costs directly connected to carrying out research, such as fieldwork and laboratory expenses, but not for travel expenses to attend a meeting. Typically, these awards are provided to students in the preliminary stages of their doctoral research, but MSc. and advanced undergraduate students may also apply.

Basis of awards: The qualification of the student, the novelty and imagination of the proposed project, and the likelihood of significant contribution to the science of palynology are factors that will be weighed in the selection process.

Application procedure

The application form can be downloaded from this webpage:

https://palynology.org/student-support/student-awards/student-research-grants/

Part A of this form is to be completed by the student, and Part B by the student's faculty supervisor. Applications must be accompanied by a photograph of the student (.jpeg format) for publication in the society's newsletter.

Additional material will not be considered.

The applicant's supervisor must submit both parts A and B of the form to the Awards Committee Chair, either as Word document or as a PDF:

Dr. Marie L. Thomas AASP–TPS Awards Committee Chair aaspawards@gmail.com

Please ensure that you have completed both parts A and B of this application form. The deadline for applications is April 15, 2024. Late or incomplete applications, as well as those that exceed the stated word limits in sections A or B will be disqualified.

As per society awards policy only students who are registered AASP-TPS members are eligible to apply (<u>https://palynology.org/join/#join</u>). Applications from non-members will not be accepted.

Undergraduate Student Awards

To support the teaching of palynology at the undergraduate level and to encourage and reward student achievement, AASP–The Palynological Society offers the Undergraduate Student Award. Each award consists of one year's free membership to the Society. This free membership includes access to digital issues of the Society's publications, the journal Palynology, and the quarterly newsletter; discounted registration fees at Society meetings; and eligibility for Society awards.

The awards are made annually to students nominated by faculty members teaching courses with significant palynological content. One student with meritorious achievement in some aspect of the course can be nominated per year, per institution.

The following institutions have approved courses from which undergraduate students may be selected: University of Southampton, Louisiana State University, University of Tennessee-Knoxville, University of Portsmouth and Morehead State University.

Additionally, course instructors who are members in good standing of AASP–TPS, and who teach an appropriate course, may nominate their course using the Registration Format found below. This should be cut-and-pasted into a word document and sent to the Awards Committee Chair at: aaspawards@gmail.com

Upon course approval, instructors may nominate a student to receive the award by sending the name, institutional address, and email address of the recipient to the Awards Committee Chair and Society Secretary (s.stukins@nhm.ac.uk) at any time of the year. Additionally, faculty must send the name of the winner, a paragraph about their achievements, and a photograph to the newsletter editor (aaspnews@gmail.com) for inclusion in the March (awards between July and December) or June newsletter (awards between January and June) each year.

Undergraduate Student Award, Course Registration Form

- Nominating faculty member:
- University/Higher Education Institution:
- Course Name:
- Course Description and level:
- Average number of students registered in the course annually:
- Number of hours of palynological instruction:
- Criteria used to determine the winning student:
- Date:

We are pleased to announce our first Undergraduate Student Award winner in four years! Dani Ahuatzin Gallardo received this award from Ian Harding and John Marshall for the 2021-2022 course "Microfossils, Environments, and Time" at the University of Southampton. Congratulations, Dani!

AASP FOUNDATION CENTURY CLUB



What?

The Century Club of the American Association of Stratigraphic Palynologists Foundation is an organization founded by the Trustees of the Foundation in order to provide persons with the opportunity to support activities of the AASP Foundation.

Why?

1. To develop an established level of giving that will continue to provide a solid financial base for the Foundation.

2. To provide unrestricted funds to support the various publishing activities of the Foundation.

3. To provide a meaningful organization and method of recognition of dedicated "friends" of the AASP Foundation.

How?

Your tax-deductible contribution of \$100 or more to the AASP Foundation entitles you to belong to the Century Club. The 2023. "membership" drive is on now. Your contribution may be made by personal check or by a pledge which is **payable on or before December 31, 2023.**

Join!

To join the Century Club, simply complete the attached Contribution/Pledge Form and mail to the address listed below.

The AASP Foundation is a 501 (c)(3) not-for-profit, public organization registered in the United States. This means that contributions to the AASP Foundation are fully deductible on your U.S. Federal Income Tax return. Also, many employers have a matching gift program whereby they match your personal gift to not-for-profit organizations. It is well worth the effort to explore this possibility concerning your gift to the AASP Foundation.

2023 AASP Foundation Century Club Contribution Form

Mail to: Thomas D. Demchuck AASP Foundation Chair and Trustee 14419 Lotusbriar Ln. Houston, TX 77077

Nama.	
iname.	-

Address: _

Contribution Enclosed: \$_____ I wish to pledge: \$____

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News from...

The United States of America

by Scott Wing, Ingrid Romero, Farley Fleming, and Carlos Jaramillo

During the depths of the recent pandemic, many activities slowed to a stop at the Smithsonian National Museum of Natural History (NMNH). One project that kept moving was the transfer of all remaining fossil collections from the USGS-Denver to Washington, DC. There were 23 semi-loads of fossils, with the last arriving on April 21, 2021. A volumetrically small but scientifically mighty part of the shipment was the collection of fossil palynological samples, residues, and slides that had been made by USGS geologists and palynologists over much of the 20th century. The USGS-Denver pollen collection, founded in the early 1960s, is a treasure trove for the field of palynology. It contains more than 19,000 slides from up and down the stratigraphic column and all over North America as well as photographs, documents, and illustrations that reveal the history of the field of palynology at one of its most influential international research centers. The specimens and records document the work of many researchers and support staff. Staff palynologists who worked in the laboratory included Bob and Bernadine Tschudy, Estella Leopold, Bob Kosanke, Douglas Nichols, Ray Christopher, Farley Fleming, Tom Ager, Bob Thompson, and David Pocknall. Palynology technicians included Genie Doher, Sharon Van Loenen, Wendy Fife, Kathy Dieterich, and John Scholten. Graduate students included Terry Okumura, Bob Cushman, and Bruce Rueger.





The slide collection, which we are digitizing, is not only of the greatest scientific interest, but there is also a great deal of the history of science contained in original photos, type specimens (contained on 238 type slides), morphological descriptions, pollen sketches, and counting sheets as well as reports, papers, maps, and field notebooks. For almost a century, the USGS collection was built to provide basic information to determine the geological ages of rock units, to understand plant evolution, and to detect past changes in climate. As the collection is unpacked and reorganized at the Smithsonian, we hope it will become once again a resource that can be used by the entire scientific community.



Close-up of slides in metal filing cabinet (above)

If anyone is interested in getting more information on the collection or visiting it, you can contact: Scott Wing, Curator of Paleobotany (wings@si.edu); Jonathan Wingerath, Deputy Collection Manager of Paleobotany (wingerat@si.edu); or Ingrid Romero, Postdoctoral Research Fellow (romeroic@si.edu).



Plates with palynomorph types of biostratigraphic importance. (above)



5mm slides of several pollen holotypes and paratypes, described by Karl Newman (Colorado School of Mines) in 1965. Top-left: Operculites carbonis; top-right: Kuylisporites scutatus; bottom-left: Umbosporites callosus; bottom-right: Myrtaceoipollenites peritus.



35mm slides from field trip taken by Douglas J. Nichols. (above)



Portrait of Robert H. Tschudy found in the collection. (above)

Call to Serve: Newsletter open positions

Not sure that you want to run for office but want to help the society?

Become a newsletter correspondent, either formally or informally! We welcome student and professional news, book reviews, reports on meetings, workshops, etc. Submissions are due on February 15, May 15, August 15, and November 15 annually.

The AASP - The Palynological Society Newsletter is a publication with an ISSN number (ISSN 0732-6041), which helps your CV!

Our newsletter is only as good as the news we receive.

Please stay in touch!

Jan Hennissen - aaspnews@gmail.com Newsletter Editor



Obituary: Dick Hedlund 1935-2022

by David Pocknall & Merrell Miller

It is with sadness that we heard of Dick Hedlund's passing on December 4th, 2022, in Richland, Washington, at the age of 86. Dick was born on December 11th, 1935, in Lowell, Massachusetts. He is survived by Donita, his wife of 62 years, three sons, Richard, Phillip, and Karl, and their wives and children. Dick and Donita have 11 grandchildren, living in McMinnville, OR, Roswell, GA, Austin, TX, and Richland, WA.



Dick graduated from Classical Highschool in Worcester, MA in 1953. He received a Bachelor of Science from the University of Massachusetts-Amherst and an MS and PhD in Geology from the University of Oklahoma (OU), Norman, Oklahoma, where he studied under Leonard R. Wilson.

For his MS, he collected and studied the palynology of the Sylvan Shale in southern Oklahoma, completing it in 1960 entitled "Microfossils of the Sylvan Shale (Ordovician) of Oklahoma."

For his Ph.D., he collected and studied the Woodbine Formation from southeastern Oklahoma, completing it in 1962 entitled "Palynology of the Red Branch Member of the Woodbine Formation (Upper Cretaceous) in Bryan County, Oklahoma." Many of Dick's Oklahoma specimens (especially those from his thesis and dissertation) are in the L. R. Wilson Paleobotany and Micropaleontology Collection, Sam Noble Museum of Natural History, Norman, Oklahoma.

Dick was a staff research scientist for Amoco at the Tulsa Research Center (TRC) in Oklahoma, except for a short hiatus when he worked for Arco in Plano, TX; after which he returned to Amoco. His research focused on terrestrial palynomorphs from the upper Mesozoic and Cenozoic which contributed to Amoco's composite standards. He studied primarily the US Gulf Coast, Central and South America. The results of these studies and frequently technical service jobs (non-research) were documented in Amoco internal research reports – informally called Green Backs because of their color.

Outside his time at the microscope, he was the gatekeeper for Amoco's internal palynological taxonomic documentation. Individual species were illustrated, described, and archived in folders which were then distributed to Amoco's Regional paleontology offices. This procedure allowed for consistency in identification. He represented Amoco on the Board of Directors of Palynodata – an industry/geologic survey sponsored palynological bibliographic database.

Dick, for a time, supervised the TRC Cenozoic Team that dealt with palynological and micropaleontological projects of that age. He worked closely with the palynology laboratory technicians and documented processing procedures. Every day at lunch time, Dick could be found in the palynology lab playing a game of Pitch with Charlie Upshaw and others.



Dick with David Jarzen (L) and the late Al Traverse (R), taken at the 7th International Palynological Congress, Brisbane, Australia, September 1988. (above)

Dick played a prominent role in the planning and formation of the American Association of Stratigraphic Palynologists (AASP), serving as president in 1975. During Dick's presidency he oversaw the publication of the first volume of Palynology and Contribution Series #1 (by George F. Hart). He served as Managing Editor from 1970 to 1973 and Editor and Trustee of the AASP Foundation from 1976 until his retirement in 1998. In 1983, Dick was deservedly awarded the AASP Distinguished Service Award for his long service to the association.

Dick's life work was not just devoted to science. He was also an accomplished and widely respected church musician. His love of music led him to become an organist and choirmaster for three different Episcopal churches during his lifetime (in Dallas TX, and Tulsa, OK).

Dick was an example of a man anchored in faith with kindness in his heart for others. He was a quiet man, one of truth, conscious, commitment, discernment, and unconditional love for his family. AASP extends its heartfelt condolences to Donita and the family. He will be missed by all. We thank Dick's son Karl for sharing Dicks obituary, and we have used parts of that in this article. Also, the list of publications was obtained from the Sam Noble Museum of Natural History website in Norman, Oklahoma.

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Palynomorph focus: Acritarchs

by Paul Strother

During our website update (as mentioned in the President's Letter), Julia Gravendyck asked specialists of individual palynomorph groups to update the respective section on the AASP-TPS website.

Paul Strother kindly volunteered a contribution on acritarchs we gladly share with you in the Newsletter.

If you'd like to author an introduction to your favorite palynomorph group, please don't hesitate to reach out to gravendyck@uni-bonn.de for more information!

Introduction

The Acritarchs are the fossilized remains of unicellular protists that are preserved as organic-walled microfossils (OWMs). They are vesicular, always preserved as hollow balls, formed by a resistant wall, which may be variously ornamented with superficial sculptural elements or extensions of the wall itself, such as spines or muri. The original term, acritarch, is a combination of acri (unknown) and arche (origin) that was constructed by Evitt (1963) and others (Downie et al. 1963; Downie and Sarjeant 1963) to accommodate hystrichospheres that could not be transferred to the dinoflagellates.

The intention of these authors was that, in the future, when the systematic affiliations of particular acritarchs became known, those taxa would be transferred (re-classified) as biological species. Acritarchs are most abundant in fine-grained, siliciclastic sedimentary rocks of Ordovician to Devonian age, where they are thought to largely represent the cysts of marine phytoplankton (Downie 1973; Martin 1993; Servais 1996). They are especially important for the study of Precambrian life in both marine (Timofeev 1966; Vidal and Knoll 1983; Jankauskas et al. 1989; Porter 2004; Huntley et al. 2006) and non-marine settings (Strother et al. 2011) as they represent the bulk of the fossil record prior to the occurrence of the Ediacaran biota beginning around 635 Ma.

Evolution of acritarchs

The earliest acritarchs in the fossil record are from the 3.4 Ga Pilbara Block (NW Australia) (Sugitani et al. 2010) and the 3.2 Ga Moodies Group (South Africa) (Javaux et al. 2010). These Archaean granular organic spheroids, some of which may be quite large > 100 μ m, are problematic systematically as they occur long before the origin of the eukaryotic cell around 1.9 to 1.8 Ga.

Peng (2009) described ovoidal and spherical acritarchs from the ca. 1.7 Ga Chuanlinggou Fm in North China which they show convincingly to be the earliest fossil eukaryotes. But the fossil record of acritarchs begins in earnest, during the Mesoproterozoic, after 1600 Ma where acritarchs like *Valeria lophostriata* and *Shuiyousphaeridium macroreticulatum* represent some of the earliest differentiated eukaryotes (Javaux and Knoll 2016).

Precambrian acritarchs are fundamentally different from their Phanerozoic counterparts because assemblages of Precambrian acritarchs include both vegetative and encysted forms, all of which remain completely problematic, both in terms of their ecology and systematic position. The vast majority of Neoproterozoic acritarchs fall into the category of sphaeromorphs, simple smooth-walled vesicles often classified as Leiosphaeridia Eisenack, although Grey (2005) has recognized an assemblage of Large Ornamented Ediacaran Microfossils (LOEMs) as characteristic of the later Ediacaran.

Acritarchs are important elements of the Paleozoic marine ecosphere because they are the sole fossil proxy for primary producers in the ancient water column. Acritarch morphological diversity and species richness explodes beginning in the latest Cambrian through to the Siluro-Devonian, but they almost completely disappear from the fossil record in the Early Carboniferous (Tappan 1980).

Acritarch species-richness appears to track the Great Ordovician Biological Diversification Event (GOBE) (Servais et al. 2010), which enhances support for their interpretation as largely marine phytoplankton. Their somewhat mysterious decline at the end of the Devonian has not been solved: Strother et al. (2008) discussed global pCO_2 as a possible cause of phytoplankton extinction, whereas Martin & Servais (2020) consider global patterns of nutrient availability as controlling Phanerozoic phytoplankton diversity.

In any case, acritarchs persist today in somewhat diminished numbers, but, except for the ongoing of the recognition of their inclusion in NPPs, their role in marine ecosystems was effectively replaced by the dinoflagellates beginning in the Triassic.

Classification of acritarchs

The informal group, Acritarcha Evitt 1963, was originally divided into the Subgroups: Acanthomorphitae, Polygonomorphitae, Prismatomorphitae, Oömorphitae, Netromorphitae, Dinetromorphitae, Stephanomorphitae, Pteromorphitae, Herkomorphitae, Platymorphitae, Sphaeromorphitae, and Disphaeromorphitae. Realistically, few authors use these categories as an aide to the characterization and classification of the acritarchs, instead, typically resorting to an alphabetical list of generic names in systematic treatments. The number of taxa transferred out of the acritarchs since 1963 is remarkably sparce, which is a testament to the difficulty in determining phylogenetic affinities of fossilized protists. Many palynologists have recognized that some acritarchs (e.g. Tasmanities, Halosphaera and Pterospermella) are Prasinophycean green (a+b) algae. Other forms of freshwater chlorophytes, including members of the Zygnematophyceae and Hydrodictyaceae have been acknowledged as such in recent publications (Mays et al. 2021). The distinctive acritarch Moyeria Thusu 1973, is now considered to belong to the Euglenophyceae, a photosynthetic protist group unrelated to marine phytoplankton (Gray and Boucot 1989; Strother et al. 2020).

Resources for further study

Acritarch taxonomy is not particularly difficult, but, as with many fossil groups, a thorough understanding of morphological variation at the population level is important for gaining an appreciation of how to describe new taxa. There several reviews of acritarchs in the literature (Martin 1993; Strother 1996; Playford 2003), and even older ones (e.g. (Downie 1973) can be quite useful. These works all contain introductions to morphological terminology used to describe acritarchs, in addition to more information about the biostratigraphic applications of acritarchs. The index by Fensome et al. (1990) is the single most important reference for taxonomic work on acritarchs, but the online reference database, Acritax, based on the John Williams card index and the Jansonius & Hill (1976) card index are also essential resources for acritarch study.



Acritarchs. Scale bars =10µm. A, B. Precambrian acritarchs from the Nonesuch Fm (1.05 Ga) Michigan. A. Valeria lophostriata an early acritarch with striated wall structure (arrow). B. Leiosphaeridia, a basic sphaeromorph acritarch showing fungal (chytrid) damage (arrow). C-E, Lower Ordovician acritarchs from the Prague Basin. C. Arbusculidium filamentosum a diacrodioid (bipolar) form. D. Micrhystridium sp, a common acanthamorph acritarch E. Veryachium lairdi with a preformed opening (epityche). F. Hoegklintia a large polygonomorph with digitately branching tips, from the Silurian (Wenlock) of New York State.

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56th Annual Meeting AASP-The Palynological Society 24-28 June 2024

We are pleased to announce that the next annual meeting will take place at the University of Montpellier, France





Organising committee:

S. Fauquette, V. Montade, A. Ejarque, V.Girard (ISEM, CNRS, Univ. Montpellier, France) J.-P. Suc (ISTeP, CNRS, Univ. Paris Sorbonne, France)

- Y. Miras (HNHP, Muséum National d'Histoire Naturelle, Paris, France)
- S. Warny (CENEX, Louisiana State Univ., US)

Location: the famous Botanical Institute of Montpellier

Conferences will take place in the "Amphitheatre *Charles Flahaut*" of the former University of Montpellier's Botanical Institute which is listed as a Historical Monument of France. This building houses the Montpellier Herbarium.



Scientific themes

Here are some scientific themes we can focus on, but others may also be presented:

- o From palynological data (pollen, dinoflagellate cysts etc...) to climate reconstructions and model simulations
- o Human-environmental interactions and vegetation change in and out of America
- Vegetation dynamics beyond the Quaternary as a source of information about mountain uplift, sea-level fluctuations, plate tectonics, etc...

Field trips

A pre-conference (on Monday) and a post-conference (on Friday) field trips will be organised

Scientific visits

- Visits to the ISEM palynological reference collection may be organised. Accounting with more than 30000 taxons, this
 is certainly one of the world largest and collections.
- Visits to the Montpellier Herbarium may be organised for those who would like to sample flowers of some species to
 extract and observe the pollen grains.

Tourists visits

Visits to the **Botanical Garden** "Jardin des plantes", right next to the Botanical Institute, are possible Visits to the **Fabre Museum**, located in the city center, can be organized

Conference Dinner on Wednesday evening

The Dinner will be held at **Château de Flaugergues**. This château, listed as a Historic Monument, was built at the late 17th century in the Montpellier countryside. Flaugergues is one of the so-called "folies", an aristocrat/bourgeoise reception mansion. Around the Château, the park and gardens are a place of charm and harmony. In front of the château, the "à la française" garden has been classified as a "remarkable garden".

