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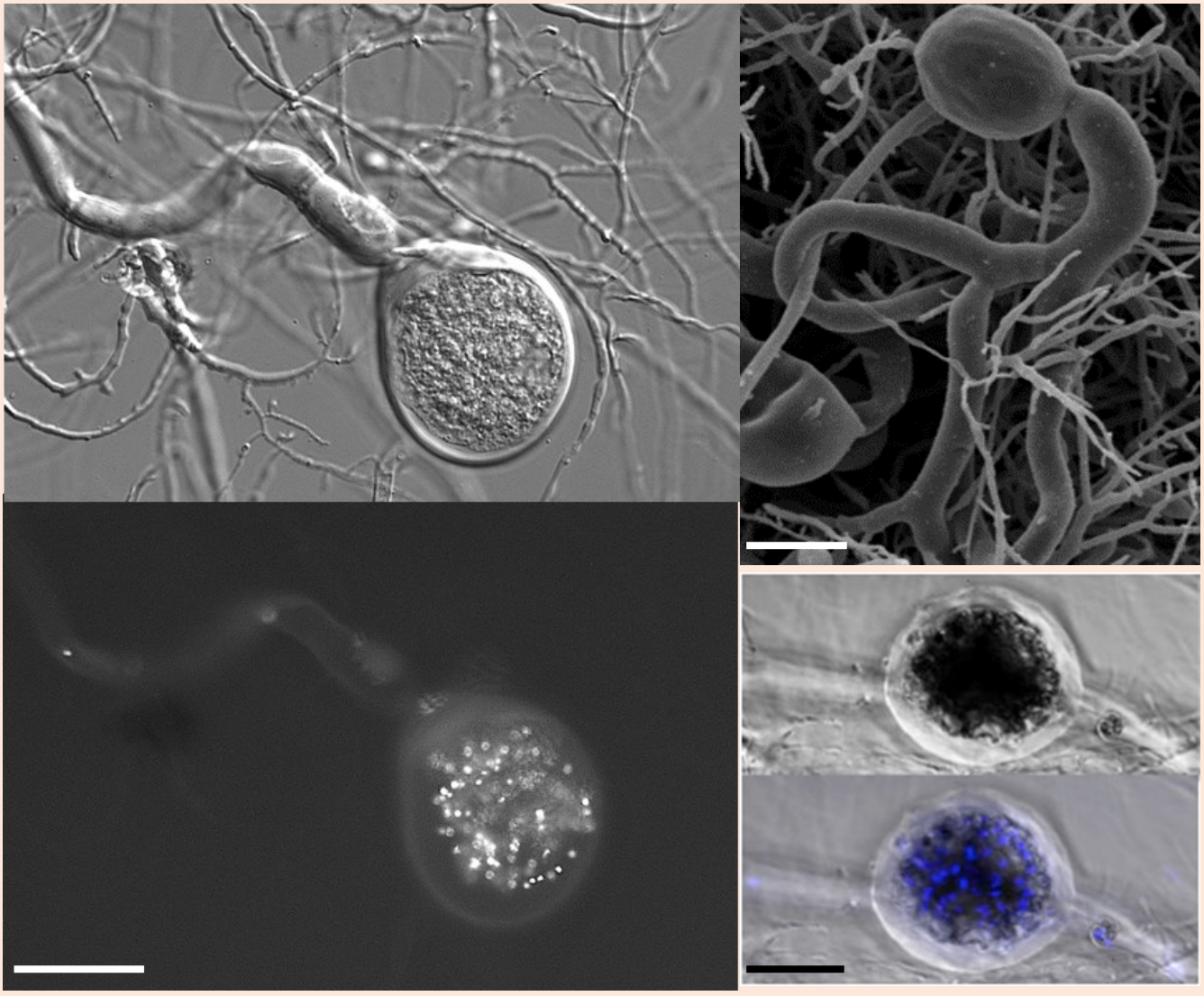
FALL NEWSLETTER

Oklahoma Microscopy Society

Established 1977



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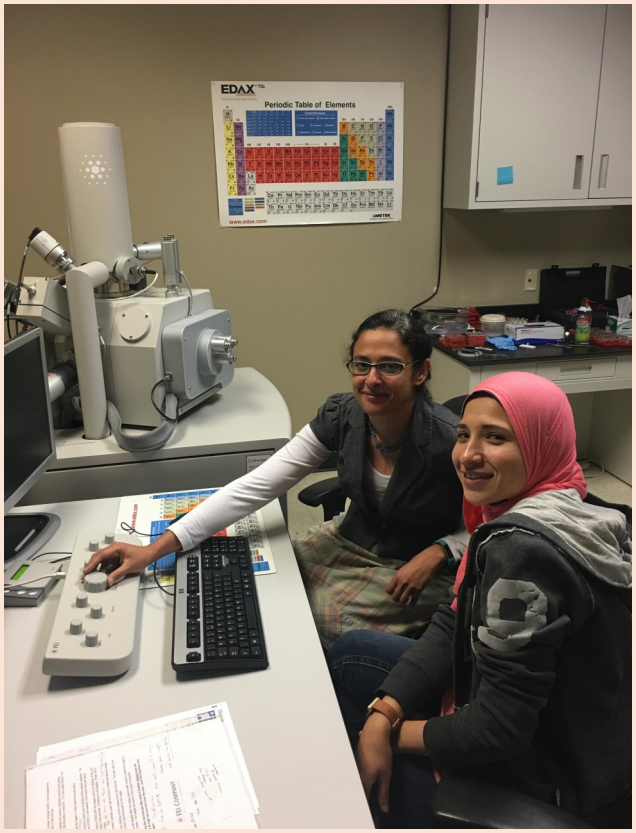
About the cover . . .

A new genus of anaerobic fungi.

Dr. Noha Youssef and graduate student Radwa Hanafy, Oklahoma State University Department of Microbiology and Molecular Genetics, isolated a novel anaerobic fungal genus from rumen and fecal samples of a wild Barbary sheep (*Ammotragus lervia*) and a wild fallow deer *(Dama dama)* in Texas, USA. All representative isolates had morphological, physiological, and phylogenetic distinct characteristics which justified their placement in a new genus, *Feramyces* (derived from the Latin word for "wild" to reflect their isolation and apparent distribution in undomesticated herbivores), and a new species, *F. austinii* (in recognition of Mr. Jim Austin who provided the feces and rumen samples for this study). The type strain (F3a) demonstrated robust and fast growth on sugars and plant biomass, as well as the capability to metabolize a wide range of mono-, oligo-, and polysaccharides including galactose, arabinose, alginate, and pectin. These isolates are the first cultured representatives of the anaerobic fungal clade AL6, originally identified in culture-independent surveys of fecal samples from captive wild animals. Morphologically, the isolates displayed monocentric thalli (nuclei only present in the sporangia but absent from the hyphae) and produced poly-flagellated zoospores, both characteristics similar to members of the genus *Neocallimastix*. The study is in press in Mycologia Journal.



Images show Monocentric thallus (DAPI stained; DIC) - scale bar 100 microns; globose pseudo-intercalary sporangium, between two main rhizoidal systems with nuclei located in the sporangium, but not the rhizoids (DAPI stained; CLSM) - scale bar 100 microns; young globose sporangium with single rhizoidal system, SEM - scale bar 20 microns.

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Dear OMS Members and Friends,

Spring is finally here, and as you know in Oklahoma, it has a difficult time of getting started.

Hopefully we can start off the Oklahoma Microscopy Society year in full swing and continue with a great meeting in the fall of 2018 on November 2nd at Southwestern Oklahoma State University. But who wants to think about fall when they can think about spring? Well, just keep it somewhere in the back of your mind.

We are only days away from our spring get-together at the OSU Center for Health Sciences, and we are looking forward to two great speakers, Dr. Edana Stroberg and Dr. Bob Price. Dr. Stroberg is an osteopathic physician and worked as a student in the OSUCHS electron microscopy lab during her first years of medical school. She was involved in fluorescent microscopy in her undergraduate work at the University of Central Oklahoma in Edmond. She brings strong feelings toward microscopy to the meeting and what it can do for the career of a forensic pathologist. Dr. Price is the current president of the Microscopy Society of America and is an expert in the area of confocal microscopy. The "Kid's Night with a Scanning Electron Microscope" should be exciting for a number of elementary students, and I am thankful for all those that will be helping in this effort.

We have almost completed are 21st year with the Ugly Bug Contest, and it remains a good educational experience for Oklahoma schools. We always have several schools that are anxious to hear the winners.

Consider this year how you can be more active in the society and how we can enrich our membership. My special thanks to those that Keep the Beam on Oklahoma, including members and sponsors. If I listed them, I would miss someone, but know that you are all appreciated.

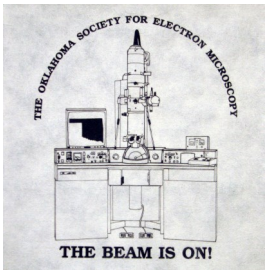
Thank you for the opportunity to serve as your president.

Sincerely,

Bill Meek

Bill Meek, Ph.D.

April 10, 2018



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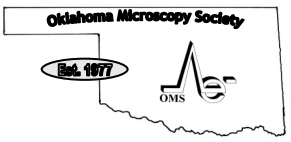

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OMS ANNUAL SPRING MEETING

The Oklahoma Microscopy Society Presents

KID'S NIGHT WITH A SCANNING ELECTRON MICROSCOPE

Thursday, April 12, 2018 | 5:30-8 p.m.

OSU Center for Health Sciences
A.R. and Marylouise Tandy Medical Academic Building
1111 W. 17th Street | Tulsa, OK

- Bring your parent and your own specimen (bug, snake skin, finger nail, bug part, blade of grass, etc.)
- You will operate an actual Scanning Electron Microscope
- The specimen can be almost anything since the microscope is variable pressure SEM that can look at non-conductive samples
- All participants will receive an Ugly Bug poster
- To RSVP, contact Dr. Billy Meek by April 9, 2018 at **bill.meek@okstate.edu** or **918-561-8258**
- Pizza and drinks will be provided

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MARINE REEF INTERNATIONAL
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OMS ANNUAL SPRING MEETING

Oklahoma Microscopy Society

Spring Meeting 2018

OSU Center for Health Sciences
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Medical Academic Building
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Room 171

Thursday, April 12, 2018

- 5:30 - 8:00 p.m. **Kid's Night with a Scanning Electron Microscope**
- 8:00 p.m. **OMS Executive Committee Meeting**

Friday, April 13, 2018

- 11:00 - 11:50 a.m. **The Road to Becoming a Forensic Pathologist**
  Edana Stroberg, D.O., Forensic Pathologist, Office of the Chief Medical Examiner, Oklahoma City
- 12:00 - 12:50 p.m. **Fajita Bar Lunch** (included with OMS Registration)
  Lunch with Dr. Stroberg in Tandy Building, Room 114
  Vote for Best Student Micrograph
- 1:00 – 2:00 p.m. **Some Basics of Confocal Imaging: How Deep is Deep and Are They Really Colocalized?**
  Bob Price, Ph.D., Research Professor, Department of Cell Biology and Anatomy, Director of Instrument Resource Facility, University of South Carolina School of Medicine, Columbia.

Registration for Meeting and Fajita Bar Lunch at Eventbrite.com

Registration for Meeting/Lunch is due by April 10 at Noon.

MSA Microscopy Society of America — Advancing Microscopy and Microanalysis

The 2018 Oklahoma Microscopy Society Kid's Night and the Friday speakers will be located in the A.R. and Marylouise Tandy Medical Academic Building on the OSU Center for Health Sciences campus.

The OSU Center for Health Sciences is located at **1111 W. 17 St., Tulsa,** near Highway 75 and Highway 244 The campus is bordered by Southwest Blvd and 17th Street.

From Cimarron Turnpike

The Cimarron Turnpike becomes the Keystone Expressway as you approach Tulsa from the west. Exit on I-244 West (Oklahoma City), immediately merge to the left and continue on I-244. As you approach the I-244 Arkansas River Bridge, merge right. After you cross the river, take the first exit 17th Street and Southwest Blvd (4A). Turn left (east) onto 17th Street, continue east. Turn left (east) on 17th St., continue east through the stoplight. Turn left into the first entrance and make your way to the Parking Garage.

From US 75/244 from the North

Going south on US 75/244, pass over North Peoria Avenue. Exit I-244 West to Oklahoma City. After crossing the river, exit on 17th Street and Southwest Blvd (4A). At the bottom of the exit ramp, turn left on 17th Street. Turn left (east) on 17th St., continue east through the stoplight. Turn left into the first entrance and make your way to the Parking Garage.

From US 75/244 from the South

Proceed north on US 75. Pass over I-44 and continue north (about 1 mile). Exit on Southwest Blvd. (3A). Turn left onto Southwest Blvd. At the second stoplight, which is 17st, you will see the campus on your right. To park in Lots C or D, turn right 17th and go down about a half block to the parking lot entrance. To park in the Parking Garage or Lot B, proceed through the 17th Street signal and take the first right. You will see the entrance to the Parking Garage on your left and Lot B may be available. Your best choice would be the Parking Garage with quick access to the A.R. and Maylouise Tandy Medical Academic Building.

From 21st West

Head west on 21st Street and cross the 21st St. Arkansas River Bridge. 21st Street becomes 23rd Street At the first stoplight, turn right onto Jackson Ave. Jackson Ave. curves west and becomes 17th St. Turn right onto SW Blvd and then take the first right and you will see the Parking Garage on you left, and Lot B may be available. Your best choice would be the Parking Garage with quick access to the A.R. and Maylouise Tandy Medical Academic Building.

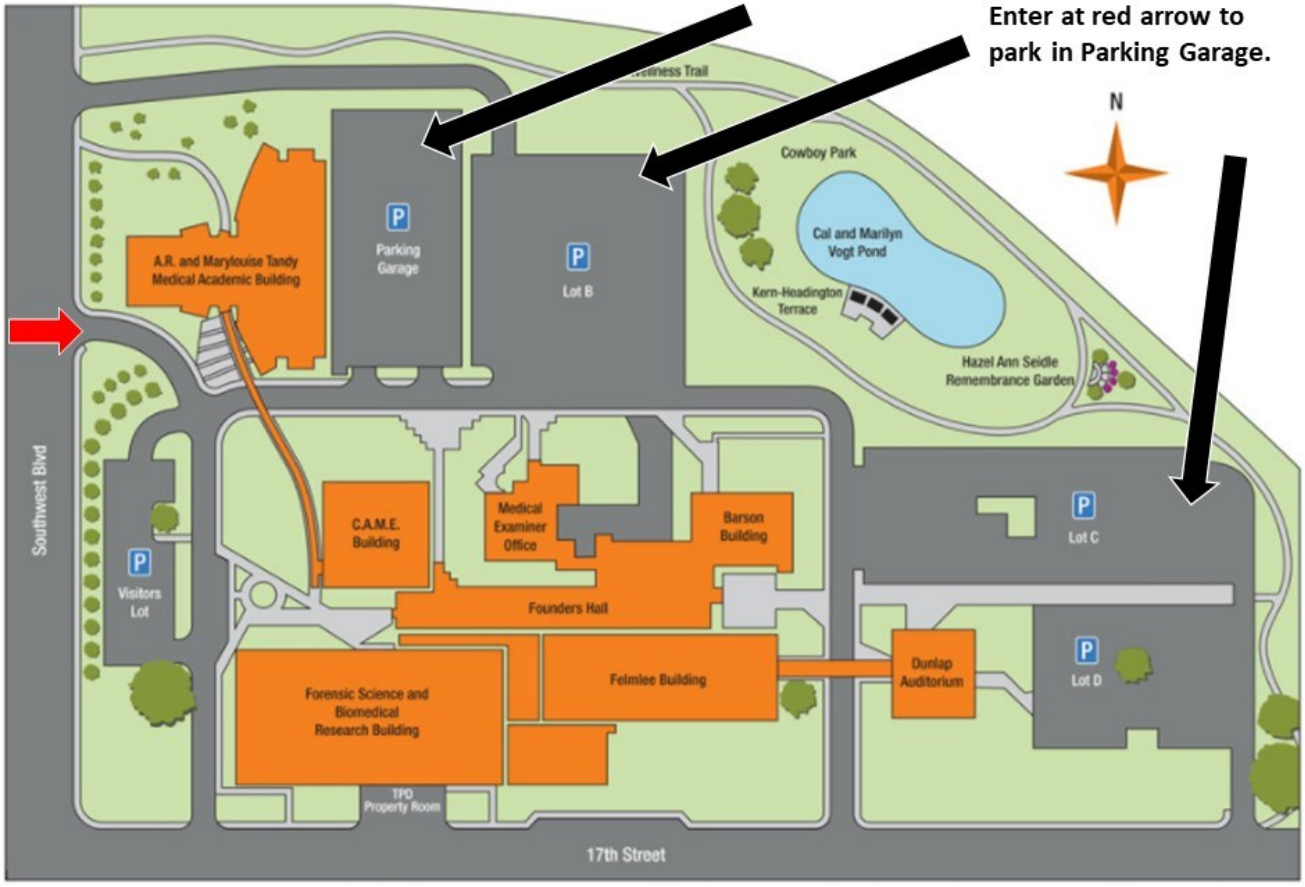
From BA Expressway (SH 51, US 64)

Travel west on the Broken Arrow Expressway (SH 51, US 64). Go past the exit for Houston Avenue. Exit left on I-244 West to Oklahoma City. Immediately merge into the far right lane. Exit on 17th St and Southwest Blvd (4A). Turn left (east) on 17th St., continue east through the stoplight. Turn left into the first entrance and make your way to the Parking Garage.

From the Turner Turnpike/I-244

After leaving the Turner Turnpike, proceed north toward Tulsa Downtown (left road of the intersection of I 44 and I 244) on I 244. Exit on Southwest Blvd (3A). Turn left onto Southwest Blvd. At the second stoplight, which is 17st, you will see the campus on your right. To park in Lots C or D, turn right 17th and go down about a half block to the parking lot entrance. To park in the Parking Garage or Lot B, proceed through the 17th Street signal and take the first right. You will see the entrance to the Parking Garage on your left, and Lot B may be available. Your best choice would be the Parking Garage with quick access to the A.R. and Maylouise Tandy Medical Academic Building.

Parking Map for
OMS Spring Meeting 2018



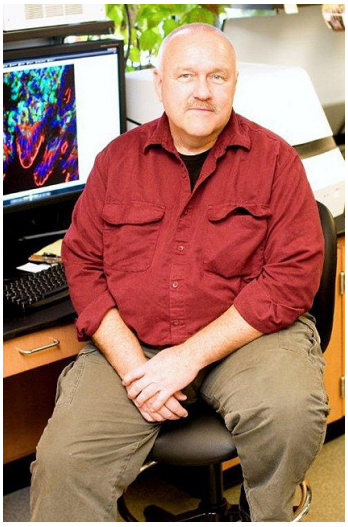
It would be best to park in the Parking Garage and then make your way out of the garage and come around to the entrance to the Tandy Medical Building. Parking also in B, C, & D.

Spring 2018 OMS Speakers and Abstracts

Presentation Title: **The Road to Becoming a Forensic Pathologist**

Presenter: **Edana Stroberg, D.O.**
Forensic Pathologist
Office of the Chief Medical Examiner-Central Division
Oklahoma City, OK

This presentation will introduce the audience to pathology, a lesser known and vast medical specialty, and address the myths and misconceptions about the field. It will include a brief overview of anatomic pathology and clinical pathology, including approximately 20 subspecialties, and the residency and fellowship training options. This will be followed by a more in-depth description of the subspecialty of forensic pathology. Inherent in the field of pathology is the importance of microscopic findings and integrating those findings with other information to arrive at a diagnosis which will be highlighted with some case examples.



Presentation Title:

Some Basics of Confocal Imaging: How Deep is Deep and are They Really Colocalized?

Presenter: **Robert Price, Ph.D.**
Research Professor, Department of Cell Biology & Anatomy, Director of Instrument Resource Facility, University of South Carolina School of Medicine, Columbia.
President Microscopy Society of America

Among the most frequently asked questions in confocal microscopy are: 1) Can I measure the size or volume of a structure; 2) Are these fluorochromes co-localized; 3) How deep can I image into my sample; and 4) Can I quantify the fluorescence. While the software is certainly present and capable of determining the size and volume, coefficients of co-localization, and the intensity of fluorescence, many factors can affect the analysis and result in artifacts in the data if the operator does not have a full understanding of the instrument parameters. For instance, a pinhole that is open too far can result in out of focus data being collected that can affect measurements and intensity of fluorescence. Similarly, laser intensity, detector settings and many more factors can affect the measurement of these values. For determination of co-localization, optics and diffraction limiting effects of confocal microscopy may also affect the final decision. For instance, Fluor objectives are typically only corrected for green and red emission and if working in blue or far red channels images may be shifted up to 1.2 microns in the Z-direction leading to incorrect determination of co-localization. In addition, super resolution techniques such as Stimulated Emission Depletion (STED) microscopy are revealing that many or our previous results showing co-localization of molecules with standard confocal microscopy may be incorrect.

How deep into a sample images can be collected are also affected by a number of factors. One of the primary limitations is refractive index mismatch resulting in spherical aberration. For this reason it is important to match the refractive indices of the components in the optical path, including the specimen, as closely as possible if deep imaging is required. For this purpose water immersion optics and long wavelengths of light may be the optimum choice. Tissue clearing techniques such as CLARITY are also potential mechanisms to increase the depth of imaging. In addition, tissue density is a major determining factor and less dense tissues such as embryos or brain can often be imaged much deeper into the sample than dense tissue such as heart. Images showing the effects of all of these factors will be presented.

2018 OMS SPRING WORKSHOP

FOR STUDENTS . . .

BEST MICROGRAPH CONTEST

- Submit your best **"Prize-Winning"** micrograph to the OMS Student Micrograph Contest
- Student does not have to present to win
- Please prepare a label for the back of micrograph that describes the subject in the micrograph, how the sample was prepared and the conditions under which the image was taken, ie., KV, MAG

1ST PRIZE $100 AND COVER OF FALL NEWSLETTR

2ND PRIZE $50

Upcoming microscopy meetings . . .

Oklahoma Microscopy Society

Fall Meeting 2018

The 107th Annual Technical Meeting of the Oklahoma Academy of Science will be held on Friday, November 2, 2018 at Southwestern Oklahoma State University in Weatherford . Registration and call for presentations will take place in late summer 2018.

International Meetings

Microscopy and Microanalysis

M&M 2018
MICROSCOPY & MICROANALYSIS
August 5-9, 2018 • Baltimore, MD

Microscopy & Microanalysis 2019

August 4-8, 2019

Portland, OR

Research Activities in the Anatomy and Cell Biology Department at OSU-CHS

The Department of Anatomy and Cell Biology is dedicated to the mission of OSU through teaching, research, and service.

We support the continued success of the Biomedical Sciences Department by offering core courses for the medical program and courses for the Biomedical Sciences Graduate Program (Ph.D., M.S., D.O.-PhD. dual degree, D.O.-M.S. dual degree, including the Anatomy and Vertebrate Paleontology Track.

Our faculty members are extensively involved in the teaching program for osteopathic medical students and graduate students. Each faculty member is involved in some aspect of state, university, college, and/or community service.

All faculty are members of the OSU Graduate Faculty and their areas of research include:

- Application of gene therapy in strategies to induce tolerance by intrathymic cellular transplantation
- Cytoskeleton in cell regulatory mechanisms;role of cAMP in cell morphology; gap junction changes in arthritis
- Role of glutamate metabolism during chronic pain and spinal injury
- Modulation of AMPA subtype of glutamate receptors by endogenous and exogenous factors; AMPA receptors in neurodegenerative diseases
- Biogeography, systematics, and faunal studies of mammals including fossil rodents and insectivores.
- Route of amebic infection to the central nervous system

Research Areas in the Paleontology Track include:

Holly Woodward Ballard, Ph.D.
Assistant Professor, Department of Anatomy and Cell Biology
918-561-8263
holly.ballard@okstate.edu

Research interests: Using large-sample osteohistology to assess growth dynamics, individual variability, and survivorship in dinosaurs and other extinct vertebrates, while utilizing the bone microstructure of extant vertebrates to provide a framework for paleohistologic inferences.

Paul Gignac, Ph.D.
Assistant Professor, Department of Anatomy and Cell Biology
918-561-8265
paul.gignac@okstate.edu

Research interests: Musculoskeletal and dental biomechanics, cranial evolution and paleobiology of feeding in crocodilians and theropod dinosaurs, and contrast-enhanced micro-CT imaging techniques.

Research Activities in the Anatomy and Cell Biology Department at OSU-CHS Continued

Haley O'Brien, Ph.D.
Assistant Professor of Anatomy

Research interests: Paleophysiology, or how unique thermoregulatory capabilities have influenced the evolution of large mammals across Cenozoic climate change. She uses a phenomenon called “selective brain cooling,” which is common to many large, Laurasiatherian mammals, as a model system for generating inferences regarding the interface between an organism’s physiology and its environment over geological time. Her primary data collection involves radiopaque latex injection of ungulate cranial vasculature and CT-scan examination. The osteological correlates established through these methods can then be sought in fossil skulls to directly infer evolution of this physiology from the fossil record.

Kent S. Smith, Ph.D.
Associate Dean for the Office for the Advancement of American Indians in Medicine and Science
Associate Professor, Department of Anatomy and Cell Biology
918-561-8246
kent.smith@okstate.edu

Research interests: Paleobiology, biogeography, and systematics of late Neogene and Quaternary mammals of the North American southern Great Plains, Colorado Plateau, and Great Basin.

Anne Weil, Ph.D.
Associate Professor, Department of Anatomy and Cell Biology
918-561-8266
anne.weil@okstate.edu

Research interests: Early mammalian evolution, phylogeny & biogeography of multituberculate mammals, terrestrial recovery after the end-Cretaceous mass extinction, and evolutionary constraints on biotic response to extinction at large spatiotemporal scales

Lindsey T. Yann, Ph.D.
Senior Research Assistant, Vertebrate Paleontology Volunteer Coordinator
Office: 918-561-1429
lindsey.yann@okstate.edu

OMS Ugly Bug Microscope Deliveries

At left, Sara Kemp, teacher of the Adair Bernita Hughes Elementary 5th grade class is with Ross Crutchfield from Magellan Midstream Partners , an Ugly Bug Sponsor and Dr. Bill Meek of OMS. The class received their Leica Stereomicroscope in March for their prize winning centipede.

Above: the 5th grade class together displaying the Ugly Bug Poster.

Some members of the Temple Christian School in Tulsa view objects with their new Leica stereomicroscope. Michelle Holmes holds the weevil that she found and was entered in the Ugly Bug Contest.

Teachers Deanna Holmes and Johnathan Penick are present, as well as, Ross Crutchfield, one of our sponsors from Magellan Midstream Partners in Tulsa. Five of these students will be attending the “Kid’s Night Out with a Scanning Electron Microscope”.

Constitution & Bylaws of the OMS

Article I. NAME

The name of this organization shall be the Oklahoma Microscopy Society. The acronym shall be OMS. OMS is a non-profit organization.

Article II. PURPOSE

The purpose of OMS shall be the advancement of the science of microscopy in Oklahoma and nationally by:

encouraging the dissemination of knowledge of microscopy including its technology and instrumentation.

promoting the free exchange of ideas and data among interested individuals and

encouraging interdisciplinary interaction between microscopists.

Article III. MEMBERSHIP

Section 1. Types:

Regular membership shall be open to any person who has an interest in microscopy.

Corporate membership shall be open to any commercial or non-profit organization that has an interest in microscopy. A member organization may designate one representative to receive all privileges of membership. Other members of the same organization may become regular members.

Honorary membership may be given to a person named an Honorary member by vote of the Executive Committee.

Section 2. Enrollment: Any eligible person or organization may make application for membership to the Executive Committee of OMS. Completed application forms shall be submitted to the Secretary-Treasurer of OMS with one year's dues.

Section 3. Privileges: All members have the right to vote at any business meetings held by OMS and to hold elective office.

Section 4. Dues:

Annual dues shall be five dollars for Regular membership for students, fifteen dollars for Regular membership for non-students, and fifty dollars for Corporate membership.

Dues shall become payable on July 1 of each year for the following twelve months.

Any member that is delinquent in payment of dues for a period of six months shall be dropped from membership. Members thus dropped may be reinstated thereafter by paying one year's delinquent dues and the current year's dues.

Article IV. MEETINGS

At least one business meeting per year shall be held. The time(s) and place(s) of such meetings shall be designated by the Executive Committee and duly announced. Business meetings shall be conducted according to Robert's Rules of Order.

Article V. OFFICERS

Section 1. The officers of OMS shall be a President, a President-Elect, a Secretary-Treasurer, a Member-at Large for Biological Sciences, a Member-at Large for Physical Sciences, and a Member-at Large for student members. These officers shall perform the duties prescribed by these bylaws and by the parliamentary authority adopted by the Society.

Section 2. Duties:

a. The President shall preside at all meetings of the Executive Committee and business meetings of the OMS and promote the interests of OMS both within the state and nationally.

b. The President-Elect shall assist the President, substitute for him/her when necessary, perform any duties assigned by the President and be responsible for organizing the regular spring workshop/seminar.

c. The Secretary-Treasurer shall maintain records of OMS and communicate with members. This officer shall be custodian of OMS funds, collect all dues, notify members delinquent in membership and account for OMS funds in accordance with accepted business practice.

d. Members-at-Large shall represent their respective constituents.

Section 3. Term of Office:

The President, President-Elect, and Members-at-Large shall each serve for one year beginning July 1 and ending June 30 of the following year.

The Secretary-Treasurer shall serve for two consecutive years beginning July 1 and ending July 30 of the second following year.

Section 4. Election: Officers shall be elected as prescribed in Article VII of these bylaws.

Section 5. Vacancies: If the President cannot serve, the President-Elect shall immediately succeed to that office. If the President-Elect or any other officer cannot serve for any reason, the Executive Committee shall appoint a person to serve pro tem in the vacant office. Any such appointed officer shall be replaced by one duly elected at the next annual election in May.

Article VI. EXECUTIVE COMMITTEE

Section 1. Composition: The Executive Committee shall consist of the officers of OMS, plus the Newsletter Editor ex officio who shall be without vote.

Section 2. Duties:

The Executive Committee shall conduct the business of OMS as specified herein and otherwise as neces-

sary, and shall advise the membership on matters concerning the management of OMS. It shall appoint the Newsletter Editor.

The Executive Committee shall hold not fewer than two meetings annually, on call of the President or a majority of its members.

Article VII. ELECTIONS

Section 1. Nominations of officers except the President shall be made by a nominating Committee appointed by the President and approved by the Executive Committee. This Committee shall consist of five persons, at least one of whom is from the field of Biological Sciences and one from the field of Physical Sciences. Nominations may be solicited from the membership at any time.

Section 2. The Nominating Committee shall present a slate of consenting candidates (two for each office) to the President prior to the spring general business meeting. The President and Secretary-Treasurer shall announce this list to the membership at the spring general business meeting. Additional nominations of persons willing to serve may be solicited from the floor at this time.

Section 3. The Secretary-Treasurer shall prepare and mail ballots to all members by May 15 and shall accept ballots until May 31.

Section 4. Ballots shall be counted by at least two Executive Committee members and may be reviewed by the entire board if deemed necessary. In each case the candidate receiving the largest number of votes shall be declared elected. Any tie shall be resolved by vote of the combined Executive and Nominating Committees. Results shall be announced by the Secretary-Treasurer at the next business meeting or by mail to all members.

Article VIII. AD HOC COMMITTEE

The President shall appoint ad hoc committees as necessary or helpful in managing affairs of OMS. Committee members shall be considered automatically discharged at the end of the appointing President's term of office unless the new President specifically requests that they continue. The committee itself shall continue until its purpose has been fulfilled or it is dissolved by vote of the executive board or the membership at large.

Article IX. AMENDMENTS

Section 1. Amendments may be suggested at any OMS business meeting. However, amendments to these bylaws may be formally proposed in only two methods:

By the Executive Committee or

By petition of ten percent of the members.

Section 2. The proposed amendment shall then be promptly submitted by mail to the membership by the Secretary-Treasurer, along with the signed statement of reasons for support and/or opposition. Returned ballots shall be ac-

cepted by the Secretary-Treasurer for three weeks after the date of mailing. The Executive Committee shall count the ballots and the amendment(s) shall be declared ratified if a two-thirds majority of the votes cast is favorable.

Section 3. Any member who so desires may be present at the counting of such ballots.

Article X. DISSOLUTION

In the event of the dissolution of the OMS, upon the discharge of all its debts and obligations, any remaining assets shall be given to such tax-exempt scientific organization as the Executive Committee may determine. In no case shall any assets be used for the direct benefit of any member of OMS.

Oklahoma Microscopy Society

Membership Application/Renewal Form

for 2018-2019

NOTE: For snailmail, please return this form with a check. (for Paypal option see bottom of page.)

Name: _____

Business Phone: _____

FAX: _____

Email: _____

Institution: _____

Address: _____

_____

Check here if Address is New/Revised: _____

Membership in Affiliated Societies:

MSA _____

MAS _____

OAS _____

Microscopy Interests:

Physical Sciences _____

Biological Sciences _____

Other _____

Membership Dues:

Type:

Corporate ($50.00) _____

Professional ($15.00) _____

Student ($5.00) _____

Amount Enclosed: _____

Please enclose a check for one year's dues (**July 1, 2016 - June 30, 2017**) made out to: "Oklahoma Microscopy Society" and mail to address below:

Scott Russell, OMS Secretary-Treasurer
Samuel Roberts Noble Microscopy Lab
770 Van Vleet Oval, GLCH rm 136
University of Oklahoma
Norman, OK 73019
Email: srussell@ou.edu (use also for any address or membership information updates)

A special thank you to the following for their support of the 2017 OMS Ugly Bug Contest

Phillips 66

For providing grants to fund the contest and printing of posters delivered to classrooms

Magellan Midstream Partners, L.P.

For providing grant to fund the contest and printing of posters delivered to classrooms

Justin Meek

For his work designing the beautiful OMS Ugly Bug Contest logo and posters

Leica

For providing generous subsidies toward the purchase of stereomicroscopes given away to schools as a part of the contest

and

the Microscopists

who make the images that are the heart of the contest

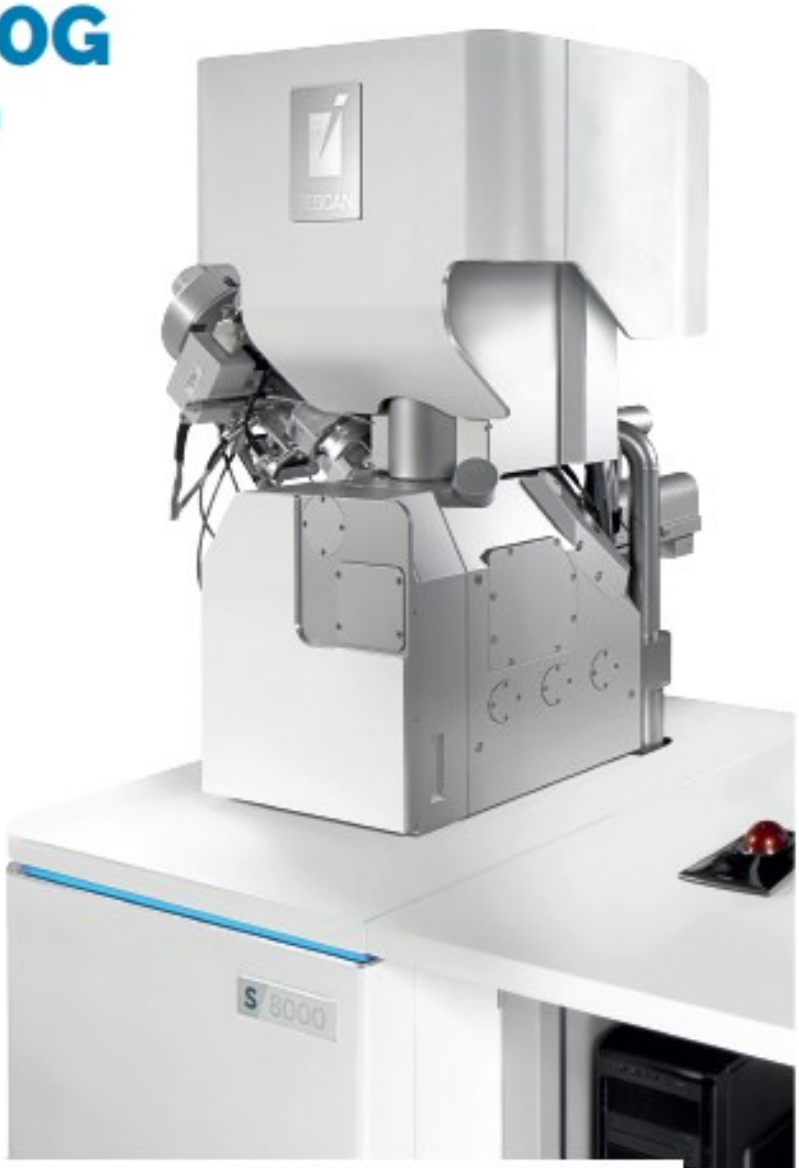
Phillips 66 — Matt Lundwall

Oklahoma State University—Brent Johnson

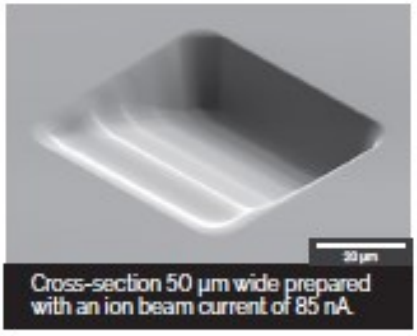
University of Oklahoma—Preston Larson

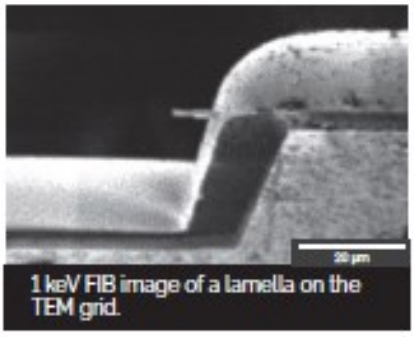
We thank the following for their generous contributions to the Oklahoma Microscopy Society Spring Meeting 2018

TESCAN S8000G
and novel Orage™ FIB column



- Next generation of Ga source FIB column and a guarantee of world-class quality in sample preparation
- Cutting-edge ion beam optics delivering improved resolution at low beam energies for damage-free ultra-thin TEM specimens
- High ion beam currents up to 100 nA enabling fast sputtering rates for maximum throughput and minimum time-to-result


Cross-section 50 µm wide prepared with an ion beam current of 85 nA.


1 keV FIB image of a lamella on the TEM grid.


50 µm-long cross-section prepared in a Li-ion battery cathode

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