Newsletter
Of the
New York Microscopical Society

1 Prospect Village Plaza
(66F Mt. Prospect Avenue)
Clifton, New Jersey 07013-1918

October 2008 **N.Y.M.S. (973) 470-8733** **Volume 2 (22)* Number 8**

Meeting Announcement For New Location
New York Microscopical Society 2008 Fall Lecture Series

Phase contrast and fluorescence imaging of sperm production in fruit flies

Angela Klaus, Biological Sciences at Seton Hall University.

Sunday October 26th, 2008, 2:00 pm
New York Microscopical Society, in Clifton, New Jersey

Fruit fly species in the genus *Drosophila* are characterized by possessing very long spermatozoa. In some species (e.g. *Drosophila bifurca*) sperm can reach up to six centimeter in length. In this presentation, I will describe the use of phase contrast and fluorescence microscopy to study the development of sperm (i.e. spermatogenesis) in four species of *Drosophila* fruit flies. Additionally, I will discuss a method for *in vitro* culturing of *Drosophila* spermatogenic cells under development in my lab.

Angela Klaus is currently an Assistant Professor of Biological Sciences at Seton Hall University. Her previous appointments include Director of the Microscopy and Imaging Facility at the American Museum of Natural History, and Program Director in the Directorate of Biological Sciences at the National Science Foundation. She holds a PhD in Cell and Developmental Biology from Rutgers University and is currently serving as Vice President of NYMS.

NYMS Members and their guests are welcome to join us at our new headquarters for a tour and refreshments before, and following, the lecture.

****

First day of the Use of the Microscope course

****

First Meeting at the New York Microscopical Society in Clifton, New Jersey

(see page 2 for alternate meeting notifications)

Save a Tree: Get The Newsletter By Email – It's Faster!

N.Y.M.S. BOARD OF MANAGERS

President
Peter Diaczuk, exp. 2010
John Jay College
445 W 59th Street
New York, NY 10019
Department of Sciences
212-237-8896
pdiaczuk@jjay.cuny.edu

Vice President
Angela V. Klaus, Ph.D., exp. 2009
Department of Biology
Seton Hall University
400 South Orange Ave
South Orange, NJ 07079
klausang@shu.edu

Treasurer, Librarian & Newsletter Editor
Mel Pollinger, 2011
18-04 Hillery Street
Fair Lawn, NJ 07410-5207
(201) 791-9826, pollingmel@verizon.net

Secretary & Assistant Curator
Joseph Orosz, exp. 2009
29 Kings Road
Rockaway, NJ 07866
(973) 625 5988
j1orosz@aol.com

Past President
Pauline Leary, 2011
Smiths Detection
21 Commerce Drive
Danbury, CT 06810
(203) 207-9754
Pauline.Leary@smithsdetection.com

Past President
John A. Reffner, Ph.D., exp. 2011
John Jay College CUNY
97 Ocean Drive East
Stamford, CT 06902
(203) 348-8098, jareffner@cs.com

Curator & Education Chair
Don O'Leary, exp. 2010
10 Sampson Street, Unit 113
Saddle Brook, NJ 07663
(201) 368-8849
dkoleary@verizon.net

Membership Chair
Mary McCann, exp. 2009
McCann Imaging
161 Claflin Street
Belmont MA. 02478
(617) 484-7865 Fax (617) 484-2490
mccanns@tiac.net

Webmaster
Roland Scal, Ph.D., exp. 2010
Dept. Biological Sciences & Geology, M-213
Queensborough Community College
222-05 56th Avenue
Bayside, NY 11364-1497
Tel 718-631-6071
Fax 718-631-6678
rscal@qcc.cuny.edu

Board Member
Gary Mayer, exp. 2011
mayer@co.somerset.nj.us

Board Member
Seymour Perlowitz, exp. 2010
perlowitz@hotmail.com

Board Member
Craig Huemmer, exp. 2009
craig.huemmer@jjay.cuny.edu

Archivist & Associate Curator
John Scott

The Mission of the New York Microscopical Society is the promotion of theoretical and applied microscopy and the promotion of education and interest in all phases of microscopy.

Dues and Addresses

Please remember to mail in your Dues to Mary McCann, Membership Chair (see this page for address).

Junior (less than 18 years old) $10
Annual $30 (students >=18 years old $20)
Supporting $60
Life $300 (payable within the year)
Corporate $175 (includes one advertisement in NYMS News)

To avoid missing notices:
Notify Mary if you have changed your address, phone or email.

Alternate Meeting Notifications

Please note that due to time constraints in publishing, some meeting notices may be available by calling Mel Pollinger at 201-791-9826, or by visiting the NYMS website.

Buy and Read a Good Book on Microscopy.

A Short History of Ultraviolet Microscopy

by CLINTON FELTON
(excerpted from NYMS 1961 Yearbook)

The first microscope optics for use in ultraviolet radiation were developed by Kohler and VonRohr around 1900.[1] Several complete microscope systems for the ultraviolet were made by the Zeiss firm about 1904. The original purpose behind the application to microscopy of the invisible, short wavelength portion of the spectrum stemmed from the desire to reveal specimen structure finer than that seen in the normal visible range.

Very little work was done with this early, complicated equipment and only within the last 30 years (1934 to date) have investigations in the biological fields exploited the ultraviolet microscope. However, it was no longer the gain in resolution that was sought, for its importance had diminished somewhat with the advent of the electron microscope. Rather, it was the fact that various biochemicals demonstrate marked absorptions at various wavelengths throughout the UV region. For example, 10% nucleic acid (purine and pyrimidine) in a thickness of 5 μ has an absorption of 90% at 260mu while 10% protein under the same circumstances has an absorption of 2%. It proved to be possible, by selecting appropriate wavelengths, to study and photograph freshly prepared, unstained sections, live materials, tissue cultures, etc., by virtue of their differential absorption characteristics. For example, subtle changes in the balance of certain biochemicals within the living cell, which may be linked to carcinogenesis, may be determined by measuring the ultraviolet transmission of the individual cell parts at different wavelengths through the ultraviolet microscope.

Instrumentation has progressed far and the literature abounds with successful applications in the biological and medical fields, yet applications in a comparable field such as polymer chemistry have been limited. This is true despite the fact that many synthetic polymers that are indistinguishable in visible light have differential absorption spectra in the ultraviolet region of the spectrum.

****

Advanced Techniques in Fluorescence Microscopy

NEW! - Laser Scanning Confocal Microscope Simulator - Perhaps the most significant advance in optical microscopy during the past decade has been the refinement of mainstream laser scanning confocal microscope (LSCM) techniques using improved synthetic fluorescent probes and genetically engineered proteins, a wider spectrum of laser light sources coupled to highly accurate acousto-optic tunable filter control, and the combination of more advanced software packages with modern high-performance computers. This interactive tutorial explores multi-laser fluorescence and differential interference contrast (DIC) confocal imaging using the Olympus FluoView FV1000 confocal microscope software interface as a model.

Introduction to Confocal Microscopy - Confocal microscopy offers several advantages over conventional optical microscopy, including controllable depth of field, the elimination of image degrading out-of-focus information, and the ability to collect serial optical sections from thick specimens. The key to the confocal approach is the use of spatial filtering to eliminate out-of-focus light or flare in specimens that are thicker than the plane of focus. There has been a tremendous explosion in the popularity of confocal microscopy in recent years, due in part to the relative ease with which extremely high-quality images can be obtained from specimens prepared for conventional optical microscopy, and in its great number of applications in many areas of current research interest.

Live-Cell Imaging - An increasing number of investigations are using live-cell imaging techniques to provide critical insight into the fundamental nature of cellular and tissue function, especially due to the rapid advances that are currently being witnessed in fluorescent protein and synthetic fluorophore technology. As such, live-cell imaging has become a requisite analytical tool in most cell biology laboratories, as well as a routine methodology that is practiced in the wide ranging fields of neurobiology, developmental biology, pharmacology, and many of the other related biomedical research disciplines. Among the most significant technical challenges for performing successful live-cell imaging experiments is to maintain the cells in a healthy state and functioning normally on the microscope stage while being illuminated in the presence of synthetic fluorophores and/or fluorescent proteins.

With permission of the Webmaster, Molecular Expressions website

Tardigrades Surviving in the Vacuum of Space
Sent in by Jean D. Portell

You might enjoy the article on page 21 of the Sept. 26, 2008, issue of a weekly news magazine, The Week. A color-enhanced SEM (?) image of 2 tardigrades accompanies an item by an anonymous reporter, which I quote in full for your convenience:

[start of quote]
The tiny "water bear" is the first animal ever to survive the deadly vacuum of space, says *LiveScience*.

(*Continued on page 4*)

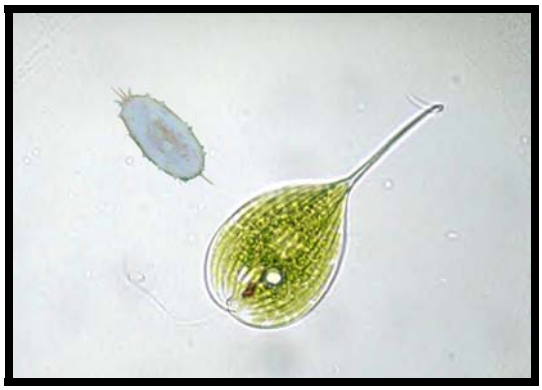
(Continued from page 3)
Water bears, also called tardigrades, are eight-legged, worm-like animals that usually live on wet mosses and lichens. Like their cousins the sea monkeys (brine shrimp), water bears are able to survive months-long dry periods by going into a death-like dormant state, reawakening upon introduction to water. To see if they could survive in space, European scientists put a colony of tardigrades on a recent spacecraft launched by the European Space Agency, exposing them to the vacuum of space. The water bears survived, despite encountering temperatures hundreds of degrees below zero, the complete absence of air and atmospheric pressure, and a bombardment by deadly UV radiation. In fact, back on Earth, the hardy little beasties began reproducing again. Now scientists will try to figure out how the water bears' DNA escaped damage from radiation or repaired the damage, says Swedish scientist K. Ingemar Jonsson. That knowledge could help humans survive long space flights, or more immediately, help cancer patients cope with radiation therapy. [end of quote]

****

Answer to September 2008 Mystery photo

Winner is Dave Bulloch, who forwarded the following:

It's a ventral view of a late stage megalops of a brachyuran (true) crab. I don't know when the pleopods transform into swimmerets (which they apparently haven't in this critter), otherwise the critter has some of the characteristics of the blue crab (C.sapidus) at that stage and a "jimmy" (male) at that. Nice going, Dave.



Mystery Photo – Do you think you know what it is? Email or phone me your answer. > Mel

****

Microscopical Surplus Available

Remember the "good ol' days" when we could obtain a microscope or parts for one at a "user" show, like the Baltimore show, or the Antique Scientific Instrument Show at the Doubletree in Somerset, N.J. Well, NYMS has brought back those days in its basement surplus area. Contact Don O'Leary for details (see page 2).

****

Need a Microscope or part?

Visit NYMS' Surplus Department when you vsit NYMS at our new home in Clifton, New Jersey.

****

***Historical Volume Numbering for NYMS' Newsletters will be continued.**

Got something you want to sell, trade or publish in the Newsletter?
Write, call or send an email message to:
201-791-9826 or pollingmel@verizon.net
or
Mel Pollinger, Editor
NYMS Newsletter
18-04 Hillery Street
Fair Lawn, NJ 07410

****

Regarding how you can receive future newsletters, you may choose one of the following methods:

1. **Regular mail, folding may damage images: Do nothing.**
2. **Email with undamaged full color images, pdf file: Needs your active email address.**

For Sale by Peter Schofield, (603) 827-3768
Olympus BH2 trinocular microscope, 4 SPlan objectives (10x, 20x, 40x and FL2x), fliptop Abbe condenser, stage clip, functioning illumination system, no case. All in good working order. Asking $1200.00 obo. Also Olympus PM6 35mm camera, little used, for the BH2, $100.00. Also Vibratome 1000 sectioning system. Also extensive microscopy library with several Victorian era illustrated books. I will email a listing of these to anyone interested. Call for more details on any of these items.