



# Newsletter

Of the

## New York Microscopical Society

130 North Mountain Avenue, Montclair, New Jersey 07042-1841



March 2007

N.Y.M.S. (973) 744-0043

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### NYMS Events at Evergreens



## Meeting Announcement

### 2007 Spring Lecture Series

#### Tracking Thymocyte Migration *in situ*: Two-photon Microscopy and Advanced Computational Methods

Kevin Frischmann, Head of Technical Support, US and Canada, Bitplane Inc

Thursday, April 5th, 2007, 7:30 pm  
American Museum of Natural History, Linder Theater,  
New York, NY

Much like confocal microscopy, two-photon imaging provides the capability to acquire three-dimensional (3D) fluorescence images which are entirely in sharp focus. Because the images are digitized in three dimensions during acquisition, they can be inspected and measured in software in three dimensions, providing great flexibility and improved accuracy for exploration and analysis. Where two-photon imaging goes beyond confocal microscopy is in the ability to reduce phototoxicity to live cells, and to

image deep into the specimen, allowing for extended time-lapse imaging and intact tissue imaging. Because the natural environment of living cells is structured in three dimensional space, and can change over time, it is ideal to study them using imaging techniques that support four dimensions, and a life-sustaining environment. Such 3D time-lapse, or "4D" images generate huge amounts of data, which require advanced software to visualize, and to extract the information of interest. This presentation will focus on how software is used to solve such challenges, highlighting an application where analysis of the migration patterns of thymocytes within an intact thymic lobe revealed behavior that was previously unknown.

Kevin Frischmann is the Head of Technical Support for Bitplane Inc., a provider of software for multidimensional microscopy. He earned his B.S. in Biology from Montclair State University, and is currently based in NJ.

NYMS Members and their guests are welcome to join the speaker for dinner (\$25.00 all inclusive) at 5:45 p.m. at Rain Restaurant (<http://rainrestaurant.com/>), 100 West 82nd St. at Columbus Ave. Please reserve your place(s) with Angela Klaus by noon on April 3<sup>rd</sup>. Angela can be contacted by email ([avklaus2@yahoo.com](mailto:avklaus2@yahoo.com)) or by phone (201-988-6251).

## Have You Sent in Your Dues for 2006-2007?

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**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).**

**Annual \$30**  
**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.**

## SCIENCE COUNCIL OF NEW YORK CITY - SCONYC

For 30 years, the Science Council of New York City has been in the forefront of offering quality professional development for the science educator. No Child Left Behind legislation still dominates teacher certification and professional development. Annual Yearly Progress will kick in with a third assessment, which in NYS might include science. These assessments are now found at all levels, elementary (ELS), intermediate (ILS) and commencement (Regents) necessitating that all science educators learn new and/or different techniques to teach science content, inquiry and pedagogical skills. Using

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Watt W. Webb is this year's (2007) Awardee. The Award presentation will be on November 15 at the EAS meeting.

**Watt W. Webb**  
**Professor of Applied Physics**  
**S.B. Eckert Professor in Engineering**  
**Cornell University, Ithaca, NY**

Professor Watt W. Webb's undergraduate studies at MIT in Business and Engineering Administration for his SB degree in 1947 led him to engineering research and development at Union Carbide Corporation Research Laboratories until 1952, then back to MIT for his ScD in Metallurgy awarded in 1955, then returning to Union Carbide for solid-state and chemical physics and as coordinator of fundamental research and then assistant director of research until he joined the Cornell University faculty of Engineering



Physics in 1961, introducing experimental research in superconductivity and in continuous phase transitions. He served as director of the School of Applied and Engineering Physics from 1983 to 1989 and is presently a member of the graduate faculties of eight fields, which indicates his interdisciplinary research focus. He has

directed the NIH Developmental Resource for Biophysical Imaging Opto-Electronics for the last 20 years. He is on the board of directors and executive committee of the Cornell *situ* measurements of the dynamics of fluorescence flicker by FCS, photobleaching, phototoxicity, and induced fluorescence are being used to discern dynamics of biological processes and molecular mechanisms of disease. Multiphoton excitation in laser scanning fluorescence microscopy provides for high resolution, high signal-to-noise imaging in living cells and deep in turbid tissues *in vivo* and significantly reduces photo-damage and minimizes image degradation due to scattering and autofluorescence. His laboratory at Cornell University continues to extend the frontiers of these technologies, now for example extending MPM and FCS to imaging molecular

the NSTA model, we are requesting workshops to align to these STRANDS: Science Content, Inquiry Skills or General Pedagogical Skills for Science Teaching. In addition, we have added a fourth one, directed to the science supervisor, Science Supervision. Please consider presenting at the 30th ANNUAL SCONYC CONFERENCE on Saturday, April 21, 2007 at Stuyvesant High School.

Please note: The deadline for workshop proposals is March 15, 2007.

Proposals received after the deadline might not be considered.

From Blanca Ching, Claudia Toback : NYBTA Programs  
[mailto:nybtaprograms@hotmail.com]

Center for Technology, Enterprise, and Commercialization, is affiliated with the university's Biophysics Program, the Cornell Center for Materials Research, the Nanobiotechnology Center and serves on the Executive Committee of the Neuroscience Focus Area. He has been a visiting scholar at Stanford University, a Guggenheim fellow, and a scholar in residence at the NIH Fogarty International Center for Advanced Study. He is a fellow of the American Physical Society (APS) and the American Association for the Advancement of Science, a founding fellow of the American Institute of Medical and Biological Engineers, and an elected member of the National Academy of Engineering, the National Academy of Science, and the American Academy of Arts and Sciences. He won the APS Biological Physics Prize in 1990, the Ernst Abbe Lecture Award of the Royal Microscopical Society (UK) and Carl Zeiss (Germany) in 1997, the Michelson-Morley Award in 1999, the Rank Prize for Opto-electronics in 2000, the Jablonski Award Lecturer in 2001, was the National Lecturer of the Biophysical Society in 2002, the MIT Lord Lecturer in 2004, the Rohm and Haas Lecturer in 2005, and the Leonardo Lecturer for the Università Vita-Salute San Raffaele in Milano, Italy in 2006 and has been selected for the Ernst Abbe award of the New York Microscopy Society in 2007. He has served as chairman of the Division of Biological Physics of APS and associate editor of Physical Review Letters. He has published over 310 papers in solid state and chemical physics and in biological physics; with 22 U.S. patents plus many foreign patents. He is active as a consultant and in various national advisory committees and professional societies.

Professor Webb pioneered the techniques of Fluorescence Correlation Spectroscopy (FCS) in 1972 and Multiphoton Microscopy (MPM) in 1990. FCS enables single-molecule detection in solutions at nanomolar concentrations and provides temporal resolution of the dynamic processes of individual molecules signaled by their fluorescence. FCS reveals molecular mobility, conformational fluctuations and chemical reactions in solutions and allows the detection of extremely sparse molecules and particles. *In*

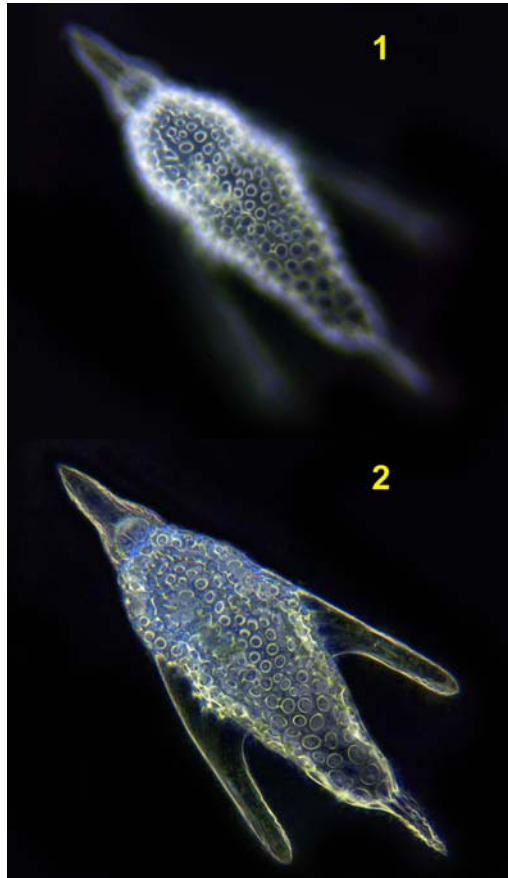
processes within the cellular nucleus for gene expression *in vivo*. Recently initiated is the development of technology for introduction of MPM into Medical Endoscopy for *in vivo*, *in situ* real time diagnostics.

Article donated by Dr. John A. Reffner, Ph.D.



## Variable Focus Digital Image Stacking

Images 1 (single image) and 2 (stack of 7 images) are of a radiolarian at 200x, taken with an Olympus BHT microscope fitted with an Olympus C-5060W digital camera. The 7 original images were stacked using CombineZM. By Mel Pollinger



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



**February 2007 Mystery photo**

Congratulations to Wiebke Hinsch for the correct answer:  
Substage mirror (on old circa 1950 child's microscope).

## Interested in Micro-Minerals/Fossils?

We hope you visited the Clifton Mineral Show, March 10-11, at the Pope John Paul II Elementary School at 775 Valley Road (North of Rt 3 at Rt 46), Clifton, NJ. Sat & Sun 10-5.

Got something you want published in the Newsletter?

- Technical article
- Images
- For sale
- Wanted to buy
- Any microscopy-related item

Write, call or send an email message to:

201-791-9826 or  
pollingmel@verizon.net

or

Mel Pollinger  
18-04 Hillery Street  
Fair Lawn, NJ 07410

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

1. Regular mail, gray scale images: Do nothing. Color may continue.
2. Email with full color images, pdf file: Needs your active email address.

*Our thanks to Ron Smeltzer for the dues reminder.*