



SUP Electronic Newsletter: May 2007

President's Message

[Josep Lloreta](#)

Broadening the Society's Scope and Horizons

The invention of the electron microscope represented a major step towards the better understanding of cell structure and function. Not long after, the possibilities presented by this new tool were also applied towards the understanding of disease. Consequently, electron microscopy lay at the cutting edge in the advancement of Pathology. In the last decade, the decrease in the use of the electron microscope in Pathology departments has been more a cliché than a reality: one has only to survey the major journals devoted to diagnosis and research to realize that electron microscopy (EM) is still frequently used by scientists, whenever it is indicated. Nevertheless, we cannot deny that the number of operative labs and trained electron microscopists is steadily, albeit slowly, decreasing.

It is feasible that a lower number of EM units can still have significant impact in diagnosis and research through centralization, referral, and networking. The Society for Ultrastructural Pathology, as a whole, must answer these challenges. For this reason, it is urgent that we attempt to identify all of the individuals involved in EM, even if EM is not their primary dedication. We must invite them to join the Society and contribute their knowledge to our meetings and our website. This is not a rhetorical statement. It is an effective summons for all members to actively seek out and contact these individuals, to put them in touch with the Councilors for the Americas, for Europe and for Australia & Asia (or with any other member of the Executive Committee), and ideally to convince them to become members of the Society themselves.

In addition, the Society must broaden its scope to encompass many other fields of biomedical research in which EM is actively being used, such as cell and molecular biology, stem cell and developmental research, targeted therapies, etc. Thus, we should survey general and specialty hospitals, and research institutions, in a quest for new members and new topics. Please let us know the names and addresses of all those individuals known to you who may not yet have joined the Society for Ultrastructural Pathology. The window to the microcosmos opened by the introduction of the electron microscope has not yet been fully explored. A long journey of opportunities and discovery still lies ahead of us and the new generations of enthusiastic electron microscopists, who will join us in our mission.

Society for Ultrastructural Pathology (SUP) Companion Meeting

[John Hicks](#) MD, DDS, PhD

Differentiating Undifferentiated and Poorly Differentiated Sarcomas: A Multidisciplinary Approach: The 2007 Society for Ultrastructural Pathology Companion Meeting

The theme for the 2007 Society for Ultrastructural Pathology (SUP) Companion Meeting was a multidisciplinary approach to diagnosis of undifferentiated and poorly differentiated sarcomas. The SUP organizing committee, led by Dr. Josep Lloreta-Trull, had set the mission to provide up-to-date practical information and the current translational research that impacts the day-to-day practice of surgical pathology. It is well known that sarcomas, often time, present diagnostic challenges, and both therapy and prognosis rely upon accurate diagnosis and assessment of histopathologic predictive

factors. With this in mind, the stage was set for an intriguing companion meeting that brought together internationally recognized experts in soft tissue tumor pathobiology.

The symposium was kicked off by the always enthusiastic and engaging Dr. Christopher Fletcher from Brigham and Women's Hospital in Boston Massachusetts. His presentation, entitled "Undifferentiated Sarcomas: What to Do? And, Does It Matter?" rapidly reviewed and updated the attendees on factors that have significant impact on whether or not to label a sarcoma as undifferentiated or not. A wide variety of diagnostic techniques were extensively illustrated, and pearls of wisdom were disseminated with respect to round cell, spindle cell, pleomorphic, and epithelioid sarcomas.

The recognition of hidden phenotypes in sarcomas, as revealed by ultrastructural evaluation, was impeccably presented by Dr. Marco Santucci from the University of Florence Medical School in Florence Italy (SUP Councilor for Europe, SUP Past President). This lecture provided a comprehensive review of ultrastructural tumor-defining features in neoplasms that by light microscopic and immunocytochemical studies would be classified only as undifferentiated sarcomas. The importance of electron microscopy in rendering a definitive diagnosis was evident following Dr. Santucci's well-conceived and thoughtful presentation.

A difficult dilemma for any practicing surgical pathologist is when soft tissue tumors mimic one another in light microscopic features and immunocytochemical profiles. Also, differentiation of a sarcoma from sarcomatoid carcinoma and spindled and pseudosarcomatous reactions can be particularly perplexing to even the best of surgical pathologists. Dr. Guillermo Herrera from St Louis University School of Medicine in St. Louis Missouri (SUP President-Elect) took on the challenge of clearing the muddy waters surrounding sarcoma look-alikes. The integration of light microscopy, immunocytochemistry, diagnostic molecular pathology and electron microscopy in sorting out sarcoma look-alikes was presented thoroughly and adroitly by an exceptional, highly knowledgeable surgical pathologist - Dr. Herrera. Of particular interest was a discussion of expense and time that may be involved in arriving at a definitive diagnosis. The myth regarding "the too expensive to use electron microscope" was debunked effectively by this presentation. Also, recovery of tissue from formalin-fixed, paraffin-embedded tissue blocks for electron microscopic study was demonstrated and found in many tumors to reveal tumor-defining ultrastructural features, which allowed a tumor to be properly classified and avoid the moniker of "sarcoma undifferentiated" or "sarcoma not otherwise specified". Take home messages for soft tissue sarcomas included: 1) immunocytochemical profiles tend to be nonspecific; 2) electron microscopy may provide crucial diagnostic information; 3) electron microscopy is superior to immunocytochemistry with fine needle aspirates and biopsies of soft tissue masses; 4) proper fixation for ultrastructural evaluation is important; and 5) a multimodal approach utilizing more than one ancillary diagnostic tool is highly recommended.

Cytogenetics has contributed greatly to the understanding and management of poorly differentiated sarcomas. A thorough update of the role of cytogenetics (karyotypes, FISH, CISH, RT-PCR, CGH, SKY techniques) was presented by an internationally recognized expert in this field, Dr. Julia Bridge from the University of Nebraska Health System in Omaha Nebraska. Tumor specific abnormalities, especially tumor-defining translocations using conventional karyotypes, FISH, CISH and RT-PCR methodology, were reviewed and beautifully illustrated. In addition, recurrent chromosomal patterns in soft tissue tumors were discussed. A comprehensive list of characteristic and variant aberrations and the associated affected genes provided the attendees with an understanding of the contribution of cytogenetics in the diagnosis and therapy of soft tissue tumors.

A rapidly developing and quickly changing arena in soft tissue tumors is molecular profiling. The task of updating the audience in molecular pathology diagnostics was assumed by Dr. Cristina Antonescu from Memorial-Sloan Kettering Cancer Center in New York, New York. DNA microarray technology, including cDNA spotted microarrays, oligonucleotide microarrays, and array-based comparative genomic hybridization, were presented in a very understandable and knowledgeable manner. Perhaps, the most difficult concepts to comprehend with molecular profiling are those associated with data analyses. Hierarchical clustering (cluster analysis) can be confusing to those unfamiliar with this form of data analysis. Dr. Antonescu guided the audience through the maze of statistical analyses, and provided the audience with both an appreciation and understanding of how meaningful data is captured and employed for diagnosis, prognosis and treatment of soft tissue tumors. The session included applications of DNA microarray technology to sorting out

undifferentiated sarcomas, based on gene expression differences among various sarcomas. Of interest is that several novel immunocytochemical markers for specific tumors have been identified via microarray technology (DOG1 in gastrointestinal stromal tumors, TLE1 in synovial sarcoma).

The 2007 SUP Companion Meeting ended with a flurry of questions from the audience and knowledgeable answers from the lecturers. Each of the attendees went away with pearls of wisdom to use in their day-to-day practice of surgical pathology, as well as increased understanding of the pathobiology of the "so-called" undifferentiated sarcoma group of tumors. For those not in attendance, the handouts from the 2007 SUP Companion Meeting can be viewed at the USCAP website (www.uscap.org). In addition, the resulting manuscripts are published in Ultrastructural Pathology as proceedings from the 2007 SUP Companion Meeting. Please mark your calendars for the 2008 SUP Companion Meeting in Denver Colorado in March 2nd 2008.

Announcements

Society Historian

After many years of dedicated service, Charles S. Faulkner, M.D. has resigned from his position as Society Historian. We would like to thank Dr. Faulkner for his outstanding service in this capacity. Dr. Gary Mierau, from The Children's Hospital in Denver, has agreed to fill the vacant post. Look for features chronicling the history of our society in future newsletter editions.

Pathologist In-Training Award

The 2007 Pathologist-in-Training Award (PITA) winner from the USCAP meeting is Dr. Carmen D. Sarita-Reyes, a fellow from New York University School of Medicine. Her abstract was entitled: *Mesenchymal-epithelial transformation of adamantinoma of long bones: an immunohistochemical and ultrastructural study*. Her poster can be viewed through the USCAP. Once there, click on "View Posters Online" on the column at the right (or go directly to <http://www.posters2view.com/uscap07/> , then register and go to Tuesday posters, then Ultrastructural - poster 1658).

[Current Winner](#)

Pathologist-In-Training CD-ROM

Available again! *Primer of Diagnostic Electron Microscopy for Pathologists-in-Training*. Published by [Pathology Images Inc.](#) and the Society for Ultrastructural Pathology. This CD-ROM can be ordered (\$60 USD) online at: [Pathology Images Inc.](#)

Journal Subscription Discount

A discounted personal subscription to Ultrastructural Pathology is offered to all members of the Society for 45% off the regular subscription price. Follow the subscription directions in the journal, but inform the publisher of your membership and request the 45% discount.

Call for Manuscripts

[Allan Tucker](#), M.D.

Ultrastructural Pathology

Ultrapath XIII Presentations-There's Still Time to Publish!

All presenting authors at Ultrapath XIII are strongly encouraged to submit manuscripts of their work to be considered for

publication in Ultrastructural Pathology. These manuscripts will be given special review, and accepted manuscripts will be published together in groups.

The absolute final deadline (extended from July 1) is **August 1, 2007**. Please see the journal for [instructions for authors](#).

Time is running out, so please hurry and send your excellent work to press! Copyright transfers may be faxed, sent by snail mail or sent by email as a PDF file. Manuscripts can be sent by mail (CD ROM. Manuscript - MSWORD. Images - TIFF or JPEG) or email (preferred, note file size limitation) to:

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Upcoming Events

2008 Pathologist-in-Training Award

The Society for Ultrastructural Pathology in conjunction with the United States/Canadian Academy of Pathology (USCAP), has established an award for the poster presentation, based on an ultrastructural study or using electron microscopy to a major extent, judged to be the most outstanding during the three day poster exhibition at the annual USCAP meeting.

[More ...](#)

Contact: [Allan Tucker](#), M.D.

Future SUP Meetings

- USCAP/SUP [Companion Meeting](#): Denver, Colorado USA (March 2, 2008; Morning)
- Ultrapath XIV: Aghia Pelaghia, Crete Greece (July 6-11, 2008)
- Ultrapath XV: Richmond, Virginia, USA (Summer, 2010)

From the Editors' Desk

[Luann Goin](#)

Logo Contest / Rocco Agostini Memorial Award - Final Call!

It has been one year since the new logo design contest was announced. As mentioned in the previous newsletter, the contest will award a \$1,000 travel stipend to the winner, to be used to observe the affairs of another EM lab of the winners choosing. The contest will close on July 1, 2007. We encourage everyone to submit a design, which will be forwarded to the council for selection of the winner.

[Eric Wartchow](#)

New TEM Evaluations

The Children's Hospital in Denver, as part of the retooling associated with our move to a new hospital, has recently completed the evaluation of various new 120kV TEMs. It was suggested to us that others may be interested in these data, so we have reproduced the vendor's specifications below. The editors cannot guarantee our findings to be true and current, as specifications are occasionally modified, however at the time of publication all data are thought to be accurate. We

should note that [Carl Zeiss SMT](#) manufactures the 120kV LIBRA Energy Filtering TEM which, after an initial consideration, was deemed to be not as suitable for our purposes. If anyone has questions about the results of our evaluation, please feel free to [contact](#) us.

	Hitachi H-7650	JEOL JEM-1400	FEI Tecnai BioTWIN
Accelerating Voltage:	40 - 120 kV	40 - 120 kV	20 - 120 kV
Resolution:	0.2 nm (lattice)	0.2 nm (lattice)	0.34 nm (lattice)
Magnification:	50 - 1,000 X	50 - 1,000 X	20 - 490 X
	700 - 200,000 X	1,000 - 600,000 X	390 - 300,000 X
Field Rotation:	1,000 - 40,000 X (± 90°, 15° steps)	2,500 - 30,000 X (± 90°, 15° steps)	Available, but affects magnification
Auto-focus/Stigmatism	700 - 100,000 X	300 - 200,000 X	100 - 150,000 X
Anti-contamination:	Auto-bakeout	Auto-bakeout	Auto-bakeout
	Cold trap	Cold trap	Cold trap
Specimen Protection:	Low dose function	Low dose function	Low dose function
Illumination Lens:	2-stage lens	2-stage lens	4-stage lens
Training:	On site (4 days)	On site (4 days)	On site (4 days)
Warranty:	1 year	1 year	1 year
Service Contract in USD (est.)	\$ 15,918/year (full*)	\$ 20,000 /year (full*)	\$ 20,307/year (full*)
* Unlimited emergency service calls; 2 preventative maintenance visits; all non-expendable parts.			
On-Site Service	48 hours guaranteed	48 hours guaranteed	48 hours guaranteed

Newsletter Editor Successors Needed

One year ago your current editors agreed to resurrect the formal SUP newsletter and distribute it in an e-format. In doing so, we agreed to produce a new issue quarterly for a period of two years. It has truly been a rewarding privilege for us to serve the society in this role; however, we are quickly approaching the end of our term. Personally, as a newer member of SUP, this position has been an excellent way to become more familiar with our esteemed membership, and has perhaps, as my own career progresses, opened doors for future involvement. As a result, for someone in a similar situation or someone interested in becoming more involved with the society, I can highly recommend this position as a means to that end, and would encourage them to volunteer.