Final Program

22ND ANNUAL MEETING

FRIDAY, APRIL 29 - SATURDAY, APRIL 30, 2016

Rosen Shingle Creek
Orlando, Florida

22nd ASMH ANNUAL MEETING

ASMH

www.mohstech.org/annual-meeting

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ASMH

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Photos courtesy of the Rosen Shingle Creek Hotel.

American Society for Mohs Histotechnology
555 East Wells Street, Suite 1100
Milwaukee, WI 53202-3823

Phone: (414) 918-9813
Fax: (414) 276-3349
Email: info@mohstech.org
Website: www.mohstech.org

General Meeting Information

On-Site Registration

The ASMH registration desk will be open at the Rosen Shingle Creek on the following days and times (subject to change):
Thursday, April 28: 1:00 pm – 5:00 pm
Friday, April 29: 6:30 am – 5:00 pm
Saturday, April 30: 6:30 am – 4:00 pm

Contact Hours

The National Society for Histotechnology (NSH) approved the ASMH 22nd Annual Meeting for up to 14.75 Continuing Education Unit Contact Hours. Meeting attendees are responsible for signing-in on the Attendance Record form at the Registration Desk, as well as tracking their session attendance and reporting it directly to the NSH for contact hour credit. There is no fee for this service. Visit ce.nsh.org to access the contact hour portal. Additional information regarding the portal may be found on the Contact Hour Tracking Sheet in your registration packet. NSH can be reached at (443) 535-4060 or histo@nsh.org.

Certificate of Participation

Please pick up your certificate of participation at the registration desk on Saturday, April 30.

Use of Mobile Devices

Please ensure that mobile phones, pagers or other electronic devices are silenced or turned off during all sessions.

Lost & Found

Please notify staff at the ASMH Registration Desk if you have lost or found an item during the course of the meeting.

Lactation Room

Breastfeeding mothers have use of a private room, Suwannee Registration Desk, with a table, chairs and a refrigerator. The key is available at the Registration Desk.

Special Needs

The ASMH wishes to ensure that no individual with a disability is excluded, denied services, segregated, or otherwise treated differently than other individuals because of auxiliary aids and/or service(s). If you need an auxiliary aid or service(s) identified in the Americans with Disabilities Act, or if you have any health issues for which you may require special accommodations or assistance, please notify the ASMH staff at the Registration Desk.

Shuttle Schedule for DoubleTree by Hilton Orlando at SeaWorld

Shuttles between the DoubleTree and the Rosen Shingle Creek will run in a continuous loop, starting and ending according to the schedule times below.

- Pick up from the DoubleTree will be by the hour (every 60 minutes)
- Pick up from the Rosen Shingle Creek will be by the half hour (every 30 minutes)
- Check at Registration Desk for shuttle pick-up/drop-off points

Thursday, April 28:

- Pick up from DoubleTree at **6:00 AM (Start)** and drop at Rosen Shingle Creek
- Pick up from Rosen Shingle Creek **7:30 PM (End)** and drop at DoubleTree

Friday, April 29:

- Pick up from DoubleTree at **6:00 AM (Start)** and drop at Rosen Shingle Creek
- Pick up from Rosen Shingle Creek **7:30 PM (End)** and drop at DoubleTree

Saturday, April 30:

- Pick up from DoubleTree at **6:00 AM (Start)** and drop at Rosen Shingle Creek
- Pick up from Rosen Shingle Creek **7:30 PM (End)** and drop at DoubleTree

Times are subject to change.

Photography and Recording Policy

Photography or video or audio recording of sessions, materials presented in session, or exhibits without express written permission from the ASMH is strictly prohibited. Any photos, video or audio taken by or on behalf of the ASMH of the meeting activities and attendees shall be property of the ASMH.

There will be a professional photographer onsite documenting the meeting and social events. By attending the meeting, you agree to be photographed. Photos may be used in future promotional materials, ASMH publications, websites and social media, or other formats controlled by the ASMH.

General Meeting Information

Special Events

Friday, April 29

Continental Breakfast: Continental breakfast will be provided to all meeting attendees from 8:15 – 9:00 am in the General Session room (Gatlin D).

New Member and First-Time Attendee Welcome Session: If you are new to ASMH, or if this is your first Annual Meeting, plan to attend this informative session from 8:30 – 9:00 am in the General Session Room (Gatlin D) to learn more about ASMH and network with new and veteran members.

Networking Reception: A networking reception will take place from 5:00 – 6:30 pm in the Exhibit Hall (Gatlin C). Light hors d'oeuvres will be served, along with beer, wine, and soda. Please join us to meet and network with fellow attendees and exhibitors.

Saturday, April 30

Annual Business Meeting *(ASMH Members Only)*: The ASMH 2016 Annual Business Meeting will be held at 9:00 – 10:00 am in Gatlin D. Breakfast will be provided.

2015-2016 Officers and Board Members

President
Jeanie Wade, HT (ASCP)

Vice President
Linda R. Cesario, DPM, HT (ASCP)

Secretary-Treasurer
Sakina A. Sadiq, BS, HT, HTL, QIHC

Past President
Barbara S. Beck, HT (ASCP)

Board of Directors
Rodney K. Barber, HT
M. Maureen Gagnot, HT (ASCP)
Daniel H. Gong, MS
Fatat Sleiman, HT

ACMS Representative
Paul Bowman, MD, FACMS

2015-2016 ASMH Committees

Program Committee
Ebony K. Hills, BS, HT (ASCP), Chair
Barbara L. Beitia, Co-Chair
Joyce L. Bidwell, MD
Noe C. Clark, HT (ASCP), QIHC
Kathi McAdoo
Robert L. Milewski, HT
Cassandra E. Riddle, CMA
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Jeanie Wade, HT (ASCP)

MTQA Training Initiative Committee
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MTQA Trainers:
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Joyce L. Bidwell, MA
Patricia A. Brunelle, HT
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Daniel H. Gong, MS
Reginald M. Manney, HT
Marilyn McCulloch, CLT
Stephanie S. Petrow, HT
Ana I. Santos, CMA
Fatat Sleiman, HT
Thomas E. Sturm, HT (ASCP)
Lynn Whitmore, HT (ASCP)

Professional Headshots

Available FREE to all meeting attendees *(optional)*

On Saturday, April 30 from 12:00-2:00 pm in the Exhibit Hall, professional headshots will be taken by our photographer. Images will be sent electronically following the meeting for personal use. All photos will be taken on a first-come, first-served basis until 2:00 pm. Because of high demand at last year's meeting, there will be two photographers taking photos.

Whitelist info@mohstech.org

To ensure you receive important communications from the ASMH including information regarding the Annual Meeting, messages from the President, the e-Newsletter, member surveys and more, add info@mohstech.org to the Safe Senders list in your email account. If you think you may not have received messages from the ASMH, check your Spam or Junk Mail folder and 'whitelist' info@mohstech.org right away!

Welcome from the President

Dear ASMH members and colleagues,

ASMH has enjoyed another great year, and I welcome you to the 22nd Annual ASMH Meeting at the Rosen Shingle Creek in magical Orlando, Florida!

During my 15 years as a member of this Society, each and every one of you have become a member of my Mohs family. What a blessing and an honor it has been for me to serve as your President over the past four years! I am excited to see ASMH continue to grow and flourish. I would like for us to welcome our new ASMH members; if you see a new member, please introduce yourself and share information.

This year, our Annual Meeting Program Committee is led by Ebony Hills, Chair, and Barbara Beitia, Co-Chair. These two ladies, along with other members of the Program Committee have done a wonderful job putting this year's program together, which includes a variety of topics and exciting presentations.

The ASMH meeting is a great opportunity to learn valuable information about compliance, various types of skin cancer, different methods and techniques, and ultimately how to be the best technician you can be in order to offer quality patient care. It is the members of this Society that make it so special! I encourage you to take advantage of the Networking Reception in the exhibit hall Friday evening, as well as additional opportunities to network and learn about other Mohs technicians from around the globe.

I would like to express my sincere gratitude to the presenters who have graciously volunteered their time and resources this year. The meeting features several ACMS physician-led sessions. We would like to acknowledge Drs. Sherrif F. Ibrahim, Sarah T. Arron, Jeremy S. Bordeaux, Valencia D. Thomas, Vineet Mishra, and our returning CAP Representative Dr. Kenneth Klein. We greatly appreciate each of them for donating time away from their own meeting to further our knowledge base. Each year, we also have a number of ASMH technician members taking part in group presentations and volunteering to assist with the workshops.

Make sure you visit the Exhibit Hall, where you will find an array of companies present to show you their products and services. Information on all attending exhibitors can be found on page 16.

On behalf of the ASMH, welcome to the 22nd Annual Meeting!

Respectfully,

Jeanie Wade, HT (ASCP)

Jeanie Wade, HT (ASCP)
ASMH President

Welcome from the Program Chairs

Dear ASMH members and colleagues,

We are so happy to welcome you to the exciting city of Orlando for the 22nd Annual Meeting of the American Society for Mohs Histotechnology. Your suggestions have helped us create a wonderful program this year. There are several intriguing topics that our fellow technicians will present over the next two days and we are honored to have ACMS member physicians presenting as well.

Known as the Theme Park Capital of the World, Orlando is the perfect city for the kid in all of us, boasting a host of attractions just a short drive away. If you're looking to do more relaxing than mingling with Mickey and Minnie, the Rosen Shingle Creek offers luxurious amenities such as a spa, several pools and hot tubs, nature and walking trails and an award-winning golf course.

Please remember to complete the survey questionnaires at the end of each session so that we can incorporate your ideas and suggestions as we plan next year's meeting in San Francisco.

On behalf of the planning committee and the ASMH, welcome to Orlando and thank you for joining us for the 22nd Annual Meeting of the ASMH.

Sincerely,

Ebony K. Hills, BS, HT (ASCP), Program Chair
Barbara Beitia, Program Co-Chair
2016 Annual Meeting Program Committee

Welcome to our New Members

As of March 25, 2016

Donna G. Adam, RN
Jessica L. Addison, MA, CDT
Sabrina Akbar
Carol E. Baker, HT (ASCP)
Kevin J. Baker, HT
Randall S. Baker, HT (ASCP)
Karen C. Barbee, HT (ASCP)
Colleen Beale, MT
Mary F. Benoit, HT (ASCP)
Carol J. Bianchi
Alia Blankenship, MA
Geena A. Blankenship, HT (ASCP)CM
Ginny Boeckman
Felicidad R. Bueneman, RMA, CNA
Christopher P. Bungard
William F. Busch
Kimberly A. Carter, HT (ASCP)
Alex J. Christensen
Marleine Cledanor
Dorothy Sarah Cockrell Hunton, HT
Rachel A. Colella
Chrissy T. Cone, RN
Jayme L. Cook
Lisa Cordero
Denise Davis, MA
Jill A. Edwards, RMA
Malin Falck
Deneen M. Fleck
Amanda N. Freeman, HT, NCMA
Jessie C. French
Philicia R. Friedman, HT
Mary K. Gessford, HTLCM, QIHCCM
Margarita Guzman
Chelsea J. Handleman
Kyle D. Harvey
Jennifer Hepler
Luisiana Hernandez, HT
Rubbena Hernandez
Estela Holloway, HT
Trinia P. Holman, HT
Molly C. Igo
Jamaica M. Jensen
Stacey R. Klett
Stephen O. Kovacs, MD
Rikki L. Kretovic
Jessica Lopez
Marci L. Lorio, RMA
Mary M. Ludwig, CMA, RMA
Ferdinand Machica, HT
Hilary A. Magley, HT (ASCP)
Sarah E. Marcy, MA, CDT
Christina M. Matthews, HT (ASCP)
Catherine W. McCandless, HT (ASCP)
Meghan McDevitt, HT
Camille J. McKay
Cody L. Mezebish, HT
Kathryn R. Monroe
Dina P. Morgan, HT
Trenton C. Morgan
Margaret Murray
Jana B. Padilla
Joan M. Palmer, HTL
Nancy Peralta, HT
Jenny Prost, MA
Vienalyn Quinones
Katrina L. Reilly
Amanda Rickner, MA, CDT
Jane F. Rodgers-Warsaw, HT
Christina C. Rodriguez
Cynthia E. Roosevelt, HTL
Linda A. Ross, HT
Misty Sample
Valerie A. Schuh, HT
Kerry M. Seifert
Mohammad Said Shams
Tiana L. Shuster
Dezehree Solorzano
Kathleen E. Steele, HTL
Leandra Turner, HT
Lisa M. Twiggs, HT
Evelina Vasiliauskas, HT
Brigitte Velasquez
Abigail Villanueva, HT
Tami S. Votrobeck, HT
Charles Wallace, HT
Christie S. Walston, RN
Dondra L. Webb, LPN
Alicia D. White
Chrystalle T. Williams
Jeanesha S. Word
Ashley N. Wray, LPN
Kelli R. Wyatt, HT
Raquel A. Wynn
Sarah A. Yates, CMA

Program at a Glance

Thursday, April 28		
6:30 am – 5:00 pm	Speaker Ready Room	St. John's 27 (Upper Level)
9:30 am – 7:30 pm	Exhibit Hall Open	Gatlin C
1:00 – 5:00 pm	Meeting Registration/Information	Gatlin Registration 2
5:30 – 7:30 pm	Exhibit Hall Grand Opening	Gatlin C

Friday, April 29		
6:30 am – 5:00 pm	Meeting Registration/Information	Gatlin Registration 2
6:30 am – 5:00 pm	Speaker Ready Room	St. John's 27 (Upper Level)
11:30 am – 6:30 pm	Exhibit Hall Open	Gatlin C
7:00 – 8:30 am	Beginner Cryostat Workshop	Gatlin E-4
7:00 – 8:30 am	Advanced Cryostat Workshop	Gatlin E-3
7:00 – 8:30 am	Beginner Immunohistochemistry Workshop	Gatlin E-2
7:00 – 8:30 am	Advanced Immunohistochemistry Workshop	Gatlin E-1
8:15 – 9:00 am	Continental Breakfast	Gatlin D
8:30 – 9:00 am	New Member and First-Time Attendee Welcome Session	Gatlin D
9:00 – 10:15 am	**General Session 1**	Gatlin D
9:00 am	Opening Remarks and Welcome *Jeanie Wade, HT (ASCP), ASMH President*	
9:15 am	Processing Specimens Expeditiously and Producing Quality Slides *Cheryl A. Page*	
9:45 am	Record Keeping: Why is This Important? *Lindsey E. Riggs, HTL*	
10:15 – 10:30 am	Break	Gatlin C
10:30 am – 12:00 pm	**General Session 2**	Gatlin D
10:30 am	Morbidity and Mortality Due to Pathological Errors in Mohs *Valencia D. Thomas, MD, FACMS*	
11:00 am	CLIA *Barbara S. Beck, HT (ASCP)*	
12:00 – 1:00 pm	Lunch on your own Visit Exhibit Hall (complimentary beverage/snack)	Gatlin C
1:00 – 3:30 pm	**General Session 3**	Gatlin D
1:00 pm	Tangential Interference in Cut Mohs Frozen Sections *Marie A. Tudisco, PhD, HT (ASCP); Robert Tagliaferro, HT*	
1:30 pm	ASCP Certification *Melinda M. Chow, MS, HT (ASCP)*[CM]	
2:00 pm	Communication in the Lab *Sarah T. Arron, MD, PhD, FACMS; Jeremy S. Bordeaux, MD, MPH, FACMS; Sherrif F. Ibrahim, MD, PhD, FACMS; Dennison R. Hoxie, HT; Alex G. Lutz, BS; Beth Mickley*	
2:45 pm	Troubleshooting Open Forum *Ebony K. Hills, BS, HT (ASCP); Barbara L. Beitia* *Drop off questions at the Registration Desk*	

Program at a Glance

Friday, April 29		
3:30 – 5:00 pm	Beginner Cryostat Workshop	Gatlin E-4
3:30 – 5:00 pm	Advanced Cryostat Workshop	Gatlin E-3
3:30 – 5:00 pm	Advanced IHC Workshop	Gatlin E-2
3:30 – 5:00 pm	Troubleshooting Consultation	Gatlin E-1
5:00 – 6:30 pm	Networking Reception	Gatlin C

Saturday, April 30		
6:30 am – 4:00 pm	Meeting Registration/Information	Gatlin Registration 2
6:30 am – 4:00 pm	Speaker Ready Room	St. John's 27 (Upper Level)
8:00 am – 2:00 pm	Exhibit Hall Open	Gatlin C
7:00 – 8:30 am	Beginner Immunohistochemistry Workshop	Gatlin E-2
7:00 – 8:30 am	The A to Z of Mohs Procedures: Technical Guidance on Potential Pitfalls *Guy E. Orchard, PhD, MSc, FIBMS; Mohammad Shams*	Gatlin E-1
9:00 – 10:00 am	ASMH Business Breakfast Meeting - Members only	Gatlin D
10:00 am – 12:00 pm	**General Session 4**	Gatlin D
10:00 am	2016 Abstract Award Winner Facing the Block and False Positives in Mohs Surgery: A Retrospective Study of 2,198 Cases *Ashley Taylor, BS*	
10:15 am	Embedding Methods *Rodney K. Barber, HT; Fatat Sleiman, HT; Jeanie Wade, HT (ASCP)*	
11:00 am	CAP Accreditation and Mohs Surgery Labs *Kenneth M. Klein, MD, FCAP*	
12:00 – 1:00 pm	Lunch in the Exhibit Hall	Gatlin C
1:00 – 2:30 pm	**General Session 5**	Gatlin D
1:00 pm	Dermatopathology and Clinical Correlation of Cutaneous Tumors *Vineet Mishra, MD*	
1:30 pm	The SWEET Deal: Smart Working Environment Ergonomics Training *Janet Minshew, HT (ASCP), HTL*	
2:30 pm – 2:45 pm	Break	Gatlin C
2:45 pm – 4:30 pm	**General Session 6**	Gatlin D
2:45 pm	Mohs Technician Training Videos *Madison Medical Affiliates: Manish Gharia, MD, FACMS; Janet C. Schiff, BA;*	
3:30 pm	Ethics in the Mohs Lab *Alex G. Lutz, BS*	
4:00 pm	Immunohistochemistry: Basic Biochemistry and its Application in the Mohs Lab *Robert L. Milewski, HT*	
4:30 pm	Meeting Adjourned	

Hotel & Travel Information

Hotels

Rosen Shingle Creek

9939 Universal Boulevard
Orlando, FL 32819
Phone: (866) 996-9939
www.rosenshinglecreek.com

Check-in time: 3:00 pm; Check-out time: 11:00 am

Early check-in and late check-out are subject to availability and approval.

Parking
Complimentary for all registered meeting attendees
Valet: $20 all day or $21.00 overnight (subject to change)

DoubleTree by Hilton Orlando at SeaWorld

10100 International Drive, Orlando, FL 32821
Phone (407) 352-1100
www.doubletreeorlandoseaworld.com

Check-in time: 4:00 pm; Check-out time: 11:00 am

Early check-in and late check-out are subject to availability and approval.

Parking
Complimentary self-parking for all registered meeting attendees

Airport & Transportation

Orlando International Airport (MCO)
(10.7 miles West of hotel)
1 Jeff Fuqua Boulevard
Orlando, FL 32827
(407) 825-2001
www.orlandoairports.net

For links to the following shuttle and town car transportation companies with service to and from Orlando International Airport, click on the Registration/Hotel tab at www.mohscollege.org/annualmeeting

- Mears Transportation: (855) 463-2776
  $21 one way, $33 roundtrip / reservation required
- Transtar Transportation Group: (866) 888-5530
- SuperShuttle: (800) 258-3826
  $18 one way, $32 roundtrip / reservation required

Taxi: Estimated taxi fare is $43 one way.

Driving Directions: Take the north exit from the airport. Take SR 528 West (Beachline Expressway). Take Exit #2, Orangewood Blvd./Universal Blvd. At the end of the exit ramp, turn right at the light onto Universal Blvd. Rosen Shingle Creek is immediately on the right, just before the Rosen School of Hospitality Management – UCF.

Orlando Weather

During late April:
Average High: 84°F
Average Low: 64°F

Rosen Shingle Creek Onsite Recreation

- Lap pool, zero entry family pool, quiet lounging pool, kiddie wading pool
- Two hot tubs
- The Spa at Shingle Creek
- Shingle Creek Golf Club
- Brad Brewer Golf Academy
- Two lighted tennis courts
- Basketball court (available upon request)
- Olympic-regulation sand volleyball court
- Seasonal fishing (by reservation)
- Nature and walking trails
- Video game room

Restaurants & Lounges

- A Land Remembered (Steakhouse)
- Cala Bella (Italian)
- Banrai Sushi (Japanese)
- Mi Casa Tequila Taqueria (Mexican)
- Tobias Flats & Watering Hole (American pub fare)
- Café Osceola & Osceola Bar (Freshly prepared buffet and a la carte items)
- 18 Monroe Street Market (24-hour deli)
- Smooth Java (Coffees, smoothies and fresh pastries)
- Bella's Bar (Quiet piano bar inside Cala Bella)
- Cat-Tails Pool Bar & Grille (Beverages and light menu items)
- Creek Ice Creamery
- Shingle Creek Clubhouse Grille (Lunch 11:00 am – 2:30 pm)
- Headwaters Lounge

WiFi Connection Instructions

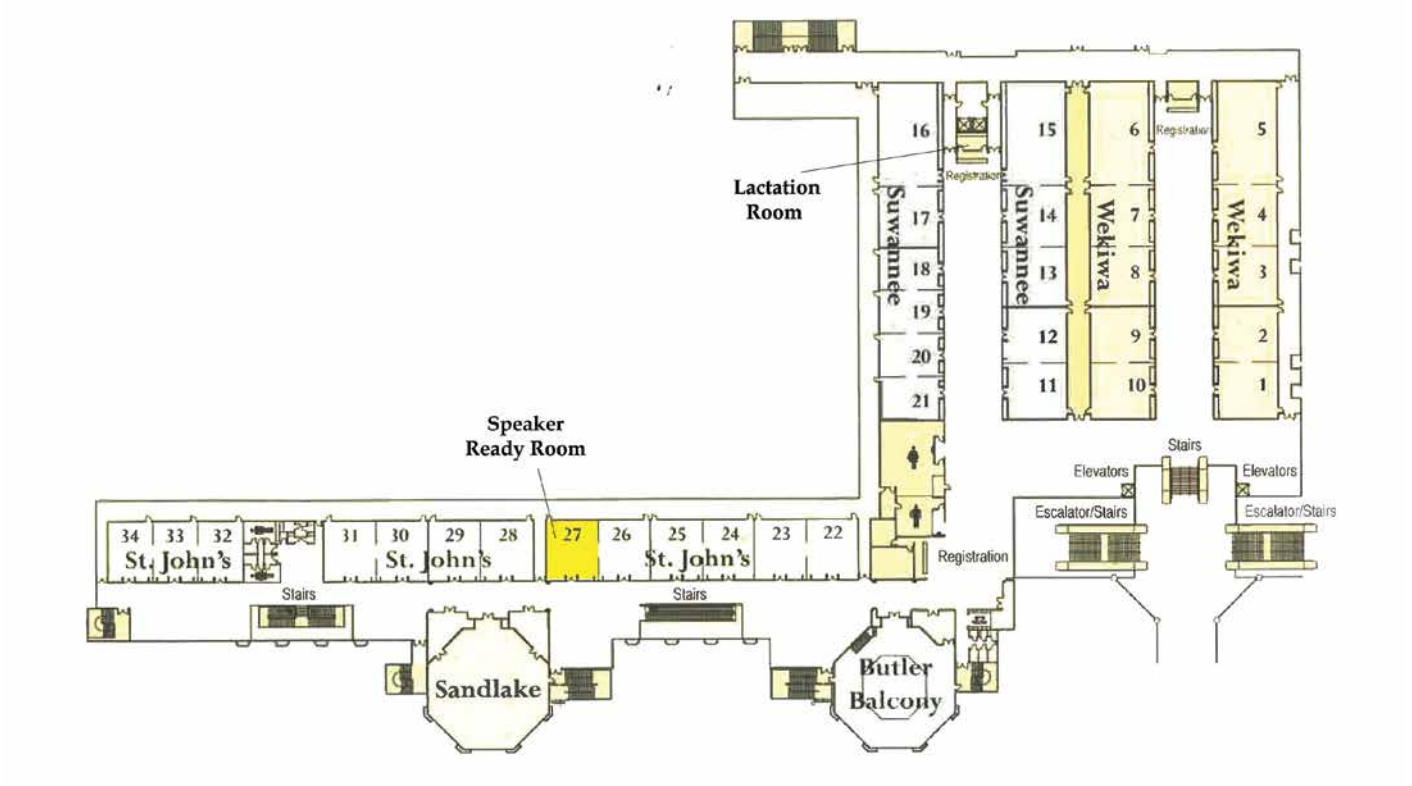
To access the Internet in meeting spaces:

1. Go to the wireless settings on your device.
2. Select the network SSID "**Mohs2016**" and connect.
   - If you are using a mobile device, a portal page will open automatically in your web browser. If you are using a laptop, you may need to launch a browser for the portal page to appear.
3. On the portal page, enter the access code "**derm**" to log in.

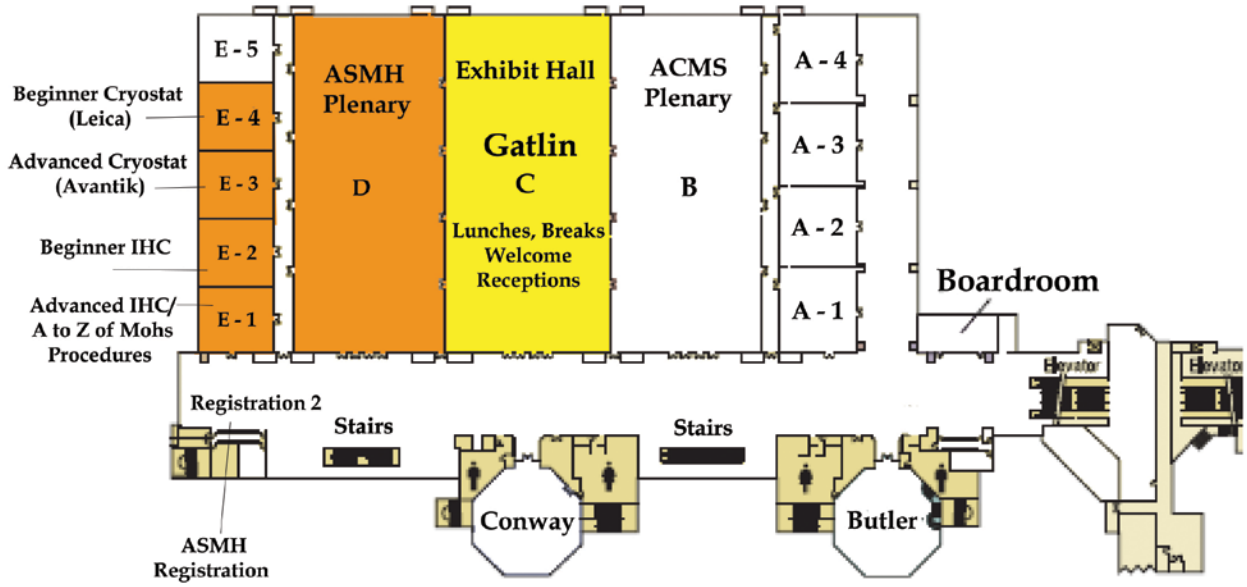
NOTE: The complimentary wireless service available in guest rooms uses a different network SSID and access code than noted above for the meeting spaces.

Rosen Shingle Creek Floor Map

Upper Level Meeting Rooms and Speaker Ready Room



Lower Level: Gatlin Ballrooms, Registration Desks and Meeting Rooms



Scientific Program – Friday, April 29

9:00 – 10:15 am Gatlin D

General Session 1

9:00 – 9:15 am

Opening Remarks and Welcome
Jeanie Wade, HT (ASCP), ASMH President

9:15 – 9:45 am

Processing Specimens Expeditiously and Producing Quality Slides
Cheryl A. Page
When preparing specimens, the goal of the Mohs tech is to process tissue in a precise and efficient manner, preparing slides that are clear and maximally revealing under the microscope.

9:45 – 10:15 am

Record Keeping: Why is this Important?
Lindsey E. Riggs, HTL
Why is record keeping so important? Which is better for keeping records, computer vs paper? These are questions we all ask at some point in our careers.

10:30 – 12:00 am Gatlin D

General Session 2

10:30 – 11:00 am

Morbidity and Mortality Due to Pathological Errors in Mohs
Valencia D. Thomas, MD, FACMS
Pathologic errors in Mohs micrographic surgery can have consequences ranging from trivial to catastrophic. This session will discuss the technical and medical aspects of Mohs histology, the clinical significance of incorrect histology and quality assurance measures that can help avoid pathologic errors in Mohs.

11:00 – 12:00 pm

CLIA
Barbara S. Beck, HT (ASCP)
This session will assist in understanding what to expect during a CLIA inspection and how to pass with zero deficiencies.

1:00 – 3:30 pm Gatlin D

General Session 3

1:00 – 1:30 pm

Tangential Interference in Cut Mohs Frozen Sections
Marie A. Tudisco, PhD, HT (ASCP); Robert Tagliaferro, HT
This session will acquaint the Mohs technician with the mechanism behind the term "tangential" within the context of Mohs frozen sectioning for the purpose of relaying relevant information to the Mohs surgeon and/or fellows, residents, students.
(See pg. 26 for handouts)

1:30 – 2:00 PM

ASCP Certification
Melinda M Chow, MS, HT(ASCP)CM
American Society of Clinical Pathology (ASCP) is recognized as the gold standard for certification of medical laboratory personnel. This talk will answer questions on why the HT (ASCP) certification is needed, how to achieve certification, and preparing for the test. Upcoming changes in the ASCP requirements that will become effective in 2017 will also be discussed.

2:00 – 2:45 pm

Communication in the Lab
Sarah T. Arron, MD, PhD, FACMS; Jeremy S. Bordeaux, MD, MPH, FACMS; Sherrif F. Ibrahim, MD, PhD, FACMS; Dennison R. Hoxie, HT; Alex G. Lutz, BS; Beth Mickley
The questions most asked on a daily basis by the Mohs surgeon and Mohs tech will be discussed, along with the most frequent answers and tips on communication. Audience participation is encouraged.

2:45 – 3:30 pm

Troubleshooting Open Forum
Ebony K. Hills, BS, HT (ASCP); Barbara L. Beitia
Meeting attendees, both new and experienced, are encouraged to attend this open-format discussion for tips, tricks, and techniques from fellow MOHS technicians. Questions and concerns can be submitted anonymously and dropped off in advance at the Registration Desk or presented in person during the forum.

Scientific Program – Saturday, April 30

9:00 – 10:00 am **Gatlin D**

ASMH Business Breakfast Meeting & Breakfast*

Business meeting to announce 2016 Board of Directors election results, ASMH year in review, as well as plans and goals for the coming year.
**Breakfast will be served during the Business Meeting only.*
ASMH Members Only

10:00 am – 12:00 pm **Gatlin D**

General Session 4

10:00 – 10:15 am

2015 Abstract Award Winner *(See p.13 for details)*
Ashley Taylor, BS
This study estimates the degree to which tissue facing causes false positives by comparing the number of stages necessary to clear tumor per Mohs case at two nearly identical surgical facilities with the same physician over a one year period. Results showed that only 138 microns of additional trimming was associated with a likely 39% false-positive rate. Seemingly innocuous variations in embedding and cutting method can have a dramatic clinical effects.

10:15 – 11:00 am

Embedding Methods
Rodney K. Barber, HT; Fatat Sleiman, HT; Jeanie Wade, HT (ASCP)
Embedding methods vary from one practice to another. Common methods consist of whole mount, pac-man, bisect and multi-sectioning of the specimen. Proper ink orientation, relaxation cuts and scores are implemented to aid in this process. Once the preparation is done – how do you embed your tissue? Three technicians will present techniques utilized to transfer the epidermis margin to the level plane of the deep margin utilizing the Heat Extractor, Reverse Slide Mount and CryoEmbedder methods.

11:00 am – 12:00 pm

CAP Accreditation and Mohs Surgery Labs
Kenneth M. Klein, MD, FCAP
This session will provide a brief overview of the CAP Accreditation process, its relationship to CLIA, and its application to Mohs Surgery Laboratories. Preparing for a CAP inspection and responding to and/or challenging deficiencies will also be discussed.

1:00 – 2:30 pm **Gatlin D**

General Session 5

1:00 – 1:30 pm

Dermatopathology and Clinical Correlation of Cutaneous Tumors
Vineet Mishra, MD
Goals for this session include the following:
- Review the pathology of skin tumors and its key features;
- Appreciate the diversity of pathology of skin cancers;
- Correlate the clinical picture with the histological features.

1:30 – 2:30 pm

The SWEET Deal: Smart Working Environment Ergonomics Training
Janet Minshew, HT (ASCP), HTL
This presentation is designed to explain ergonomic principles, identify high-risk factors that can increase the potential for developing musculoskeletal disorders and discuss the means to make the work environment safer and more comfortable.
(See pg. 27 for handouts)

2:45 – 4:30 pm **Gatlin D**

General Session 6

2:45 – 3:30 pm

Mohs Technician Training Videos
Madison Medical Affiliates: Manish Gharia, MD, FACMS; Janet C. Schiff, BA
A collection of training videos made for Mohs technicians by Mohs technicians. These videos cover the details of mapping and orientation, grossing, slicing, and collecting samples with an emphasis on safety and efficiency.

3:30 – 4:00 pm

Ethics in the Mohs Lab
Alex G. Lutz, BS
This session will discuss the high degree of autonomy Mohs technicians typically experience at their daily job. Moral and ethical decision making for tissue processing will be discussed.

4:00 – 4:30 pm

Immunohistochemistry: Basic Biochemistry and its Application in the Mohs Lab
Robert L. Milewski, HT
The requirements to perform IHC in a lab, CLIA, validation, cost estimates, supplies, and what is happening in each step of a typical protocol will be discussed.

Workshop Details

The following workshops require a separate ticket for entry.

Cryostat Workshops

Beginner Cryostat — Gatlin E-4

Friday, April 29, 7:00 – 8:30 am OR
Friday, April 29, 3:30 – 5:00 pm
Robert Tagliaferro, HT

Receive direct guidance and advice from experienced workshop volunteers to learn tips and refine techniques that will help you with cryostat use in the Mohs lab. Cryostat embedding and cutting techniques and maintenance will also be covered.

Advanced Cryostat — Gatlin E-3

Friday, April 29, 7:00 – 8:30 am OR
Friday, April 29, 3:30 – 5:00 pm
Daniel H. Gong, MS

An in-depth presentation on processing full thickness wedge specimens, provide instructions on how to acquire a complete representative section of fatty (non-cutting) type tissue, how to manipulate the contours of cartilage and to transition epidermis to an even plane with the deep margin.

Immunohistochemistry Workshops

Beginner Immunohistochemistry — Gatlin E-2

Friday, April 29, 7:00 am – 8:30 am OR
Saturday, April 30, 7:00 am – 8:30 am
Sakina A. Sadiq, BS, HT, HTL, QIH; Susan Bryant, Technical Support Specialist, Biocare Medical

A demonstration of staining for MART-1 including explanation of reagents, equipment and staining protocols. Experienced workshop volunteers will assist attendees with the technique of MART-1 staining.

Advanced Immunohistochemistry — Locations below

Friday, April 29, 7:00 – 8:30 am (Gatlin E-1) OR
Friday, April 29, 3:30 – 5:00 pm (Gatlin E-2)
Sakina A. Sadiq, BS, HT, HTL, QIH; Susan Bryant, Technical Support Specialist, Biocare Medical

A demonstration of staining for MART-1 including explanation of reagents, equipment, staining protocols, troubleshooting techniques and additional antibody options. Experienced workshop volunteers will assist the attendees with the technique of MART-1 staining.

The A to Z of Mohs Procedures:

Technical Guidance on Potential Pitfalls — Gatlin E-1

Saturday, April 30, 7:00 am – 8:30 am
Guy E. Orchard, PhD, MSc, FIBMS; Mohammad Shams

This workshop will focus on debate and discussion of participants' Mohs technical problems, along with suggested remedies. A presentation encompassing all the common artifacts seen in Mohs laboratories and how to best troubleshoot and avoid these occurring will also be given.

2016 Abstract Award Winner

Facing the Block and False Positives in Mohs Surgery: A Retrospective Study of 2,198 Cases

Ashley Taylor, BS, Brent R. Taylor, MD, and Joel Cook, MD
The Medical University of South Carolina, Charleston, South Carolina

Saturday, April 30, 10:00 – 10:15 am

Subject: The preparation of tissue by a histotechnologist is as integral to the success of Mohs surgery as the proper taking of a layer, yet a multitude of tissue processing methods are currently used. Variations exist because various methods require differing levels of technical expertise and result in varied tissue quality, turn-around times, and degrees of tissue "facing." The term "facing" is here defined as the unnecessary sacrifice of tissue from the deep or peripheral surgical margin with a microtome before sectioning. Facing includes trimming performed intentionally but unnecessarily, accidentally, or out of necessity because of one's choice of embedding and freezing method.

Methods: The present study estimates the degree to which tissue facing causes false positives by comparing the number of stages necessary to clear tumor per Mohs case at two nearly identical surgical facilities with the same physician over a one year period. The laboratories differ only with respect to their reliance on facing tissue during slide preparation: Site A intentionally faces the blocks whereas Site B does not. Tissue thickness lost during trimming and the processing times of each block was recorded for each facility.

Results: Comparing Sites A and B, stages per case were 1.92 and 1.53, respectively ($p < .01$) and trimming depths before the first section were 325 and 187 microns ($p < .01$). Facing the block is associated with 0.39 more stages per case and, by inference, a false positive rate of approximately 39%. On average, the technologists at site A face away 138 microns more tissue than do the technologists at site B.

Conclusions: That only 138 microns of additional trimming was associated with a likely 39% false-positive rate indicates that no amount of facing is advisable or acceptable. Also, we strongly suggest that the glass slide technique be adopted because of its ability to place the entire surgical margin in a single plane and allow minimal trimming before sectioning. Seemingly innocuous variations in method can have dramatic clinical effects. Tissue sparing techniques are the only options true to the goals of Mohs surgery and patients' best interests.

Thank You

ASMH expresses sincere appreciation to all speakers, session participants, and workshop volunteers for their contribution to the meeting program:

Speakers & Presenters

Sarah T. Arron, MD, PhD, FACMS
Rodney K. Barber, HT
Barbara S. Beck, HT (ASCP)
Barbara L. Beitia
Jeremy S. Bordeaux, MD, MPH, FACMS
Melinda M. Chow, MS, HT (ASCP)CM
Manish Gharia, MD, FACMS
Ebony K. Hills, BS, HT (ASCP)
Dennison R. Hoxie, HT
Sherrif F. Ibrahim, MD, PhD, FACMS
Kenneth M. Klein, MD, FCAP
Alex G. Lutz, BS
Beth Mickley
Robert L. Milewski, HT
Janet Minshew, HT (ASCP)
Vineet Mishra, MD
Cheryl A. Page
Lindsey E. Riggs, HTL
Janet C. Schiff, BA
Fatat Sleiman, HT
Robert Tagliaferro, HT
Ashley Taylor, BS
Valencia D. Thomas, MD, FACMS
Marie H. Tudisco, PhD, HT (ASCP)
Jeanie Wade, HT (ASCP)

Workshop Associate Trainers

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Joyce L. Bidwell, MA
Patricia A. Brunelle, HT
Bobbie Bruett, HT
Melinda M. Chow, HT, MS
M. Maureen Gagnot, HT (ASCP)
Kurt Hemmings
Colleen M. Kukuk, HT (ASCP)
Marilyn McCulloch, CLT
Reginald M. Manney
Kathi McAdoo
Janet Minshew, HT (ASCP), HTL
Cassandra E. Riddle, CMA
Jeanie Wade, HT (ASCP)

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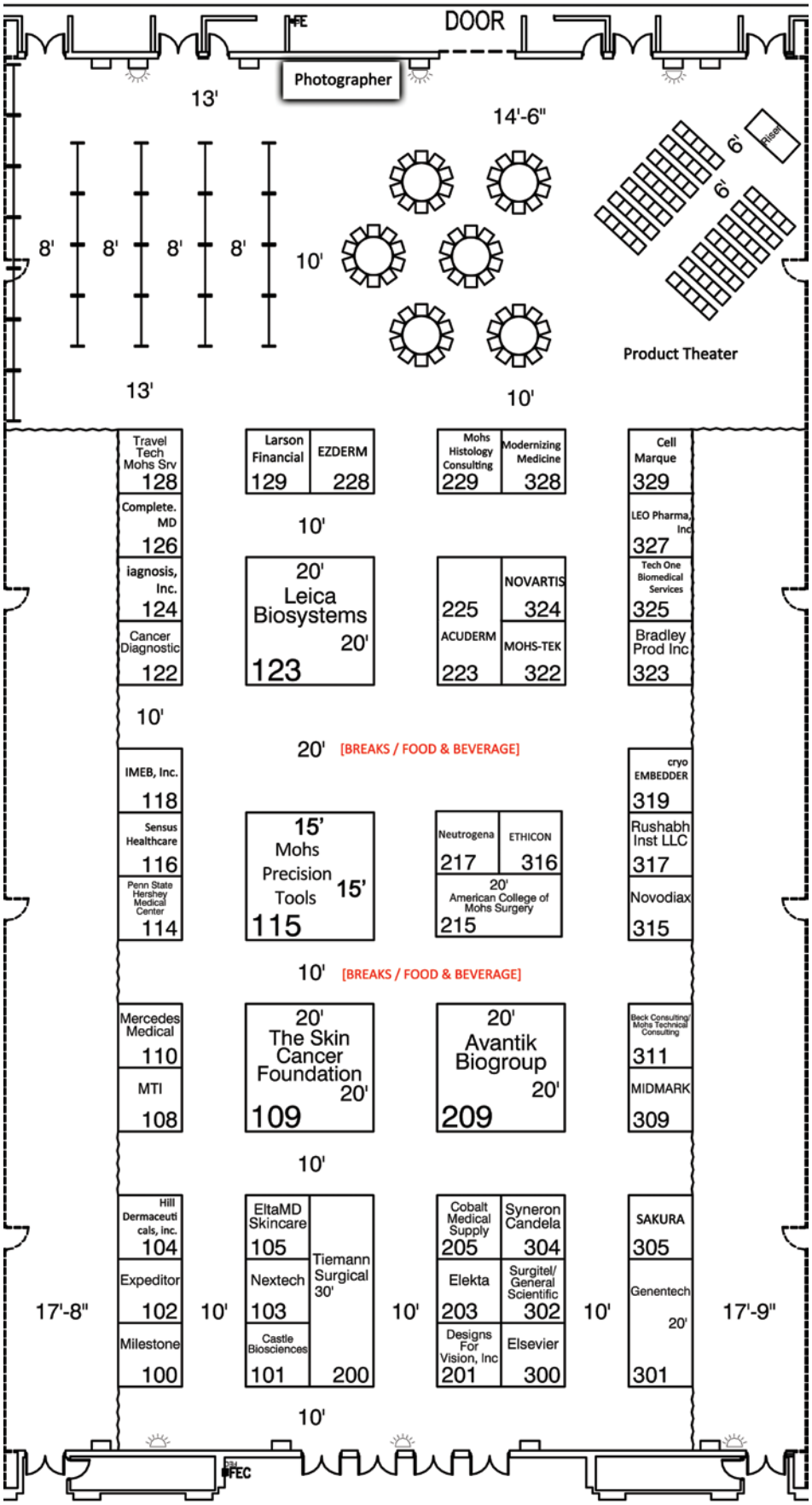

Exhibitor Listing

(As of April 1, 2016)

Attendees are encouraged to visit the technical exhibits during the ASMH Annual Meeting. A variety of companies of interest to Mohs histotechnologists and surgeons will be displaying their products, equipment, and services. Please be sure to visit the Exhibit Hall to learn about their quality offerings.

Exhibit Hall Hours

Thursday, April 28:	9:30 am – 7:30 pm
Friday, April 29:	10:00 am – 6:30 pm
Saturday, April 30:	8:00 am – 2:00 pm

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Tech One Biomedical Services has been providing on-site and in-shop repairs for hospitals, private labs, and research facilities with fifteen service technicians in the mid-west and east coast providing coverage in these areas.

Exhibitor Listing

i109 The Skin Cancer Foundation (Sponsor)

149 Madison Avenue, Suite 901
New York, NY 10016
P (646) 583-7988
bhanley@skincancer.org
www.skincancer.org

The Skin Cancer Foundation is the only global organization solely devoted to the prevention, early detection and treatment of skin cancer. The mission of the Foundation is to decrease the incidence of skin cancer through public and professional education and research. Since its inception in 1979, the Foundation has recommended following a complete sun protection regimen that includes seeking shade and covering up with clothing, including a wide-brimmed hat and UV-blocking sunglasses, in addition to daily sunscreen use.

200, 202, 205 Tiemann Surgical

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128 Travel Tech Mohs Services

1300 223rd. St., #411
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karen@gotmohs.com
www.gotmohs.com

Travel Tech Mohs Services, Inc. is a histology technician service specializing in Mohs Micrographic Surgery. We provide all the machinery as well as a skilled professional in Mohs histology. Our team of Mohs technicians have been providing the highest quality Mohs frozen sectioning available for the past 20 years.

Beginner Cryostat Lecture Handout

Specimen ink orientation:

- Apply margin ink at designated areas of the specimen to correlate with patient map (if dividing specimen into pieces, apply ink after sectioning of tissue - unless otherwise indicated).

Score and relax specimen:

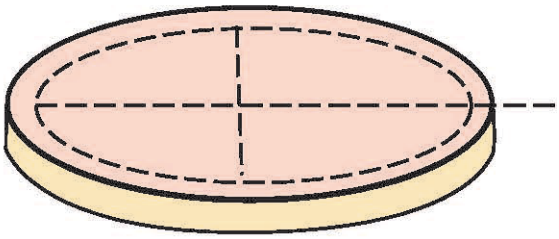
- Apply relax cuts and scores to allow epidermal edges to lay flat against the surface.

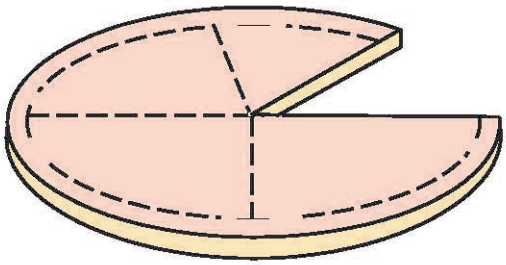
Different processing styles:

Pac-man:

Score (lightly cut into epidermis to transition epidermis) all the way around the epidermal edge, allowing enough epidermis margin for sectioning. Using an 11 blade, or other point tipped scalpel blade, implement a relax cut to create pac-man effect.

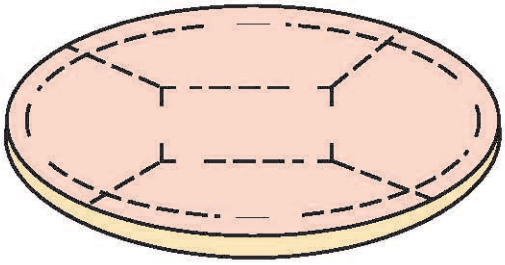
(After relax cut, specimen will open up like a pac-man)





Disc:

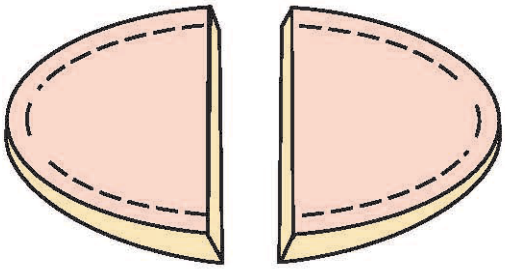
Score (lightly cut into epidermis to transition epidermis) all the way around the epidermis edge, allowing enough epidermis for sectioning. Other scores may be required.



Bisected:

Bisect specimen. If the specimen has round tips, relax cuts will aid in getting these tips down.

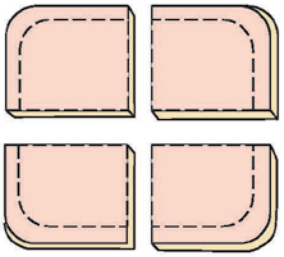
Score (lightly cut into epidermis from one relax cut to the other to transition epidermis).

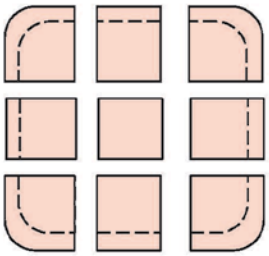


Multi-sectioned:

Score (lightly cut into epidermis from one relax cut to the other to transition epidermis) all the way around the epidermis edge, allowing enough epidermis margin for sectioning. Using an 11 blade, or other point tipped scalpel blade, implement a relax cut as needed.

**when processing a "Multi-sectioned" specimen that has pieces in the center of the tissue (not surrounding the edge), the center pieces are to show representative sections of the base only (no epidermis).





Embedding:

One of the key components to remember when embedding is that your primary goal is to show the physician the epidermis edge, and the deep margin of the specimen that that last came in contact with the patient.

There are a variety of embedding techniques. The most commonly used are the reverse slide mount method, embedding wells, and the cryoEMBEDDER® system. These forms of embedding allow the technician more control in achieving a complete representative section of epidermis and deep margin of the specimen.

If using the reverse slide mount method, you must apply a thin layer of embedding medium to the slide prior to embedding to prevent loss of tissue.

Beginner Cryostat Lecture Handout

Embed tissue of proper orientation to insure complete section on first cut

- Freeze tissue, placing all epidermal edges and deep margin on same plane.
- Place embedding medium around tissue (freeze spray will aid in rapid chilling of embedding medium to prevent lifting of epidermis).
- Place embedding medium on the embedding disc in cryostat.
- Invert specimen on to specimen disc and apply heat extractor to make final block.
- Place specimen block in holder of cryostat to begin facing tissue.
- Ensure proper angle of blade and begin trimming into block.
- Once embedding medium has been adequately trimmed, begin applying sections to your slide (the first section is of utmost importance due to the fact it is your true margin).

Proper placing of sections on slide

- If applying two or more sections to a slide, it is common to begin in the upper corner, placing two or three sections diagonally across the slide. If applying only one section per slide, place the section in the center or at the end of slide for ease in reading for the surgeon.
- Remove excess embedding medium between sections to prevent overlapping of tissue onto embedding medium from previous section. This will prevent loss of tissue during staining.

Advanced Cryostat Lecture Handout

For the Mohs specimens that challenge us

Do you ever process wedge type specimens, the dreaded double cut, dog ears (burrow's triangles), or struggle with cartilage, fat or epidermis transitioning? If so, this class is for you!

The ASMH Advanced Cryostat workshop will offer an in-depth presentation on processing full-thickness wedge specimens, provide instruction on how to acquire a complete representative section of fatty (non-cutting) tissue, how to manipulate the contours of cartilage and to transition epidermis to an even plane with the deep margin. At the end of this workshop, you will be able to provide a high-quality representative section with ease.

It is all about "Tissue Manipulation." We can learn to listen, and pay attention to what our specimen needs to create a quality representative section for our Mohs surgeon!

Wedges:

The full-thickness wedge is a specimen that has been completely excised from a free edge of tissue such as a lip, nasal ala, eyelid or ear rim. The wedge is embedded for a complete specimen representation.

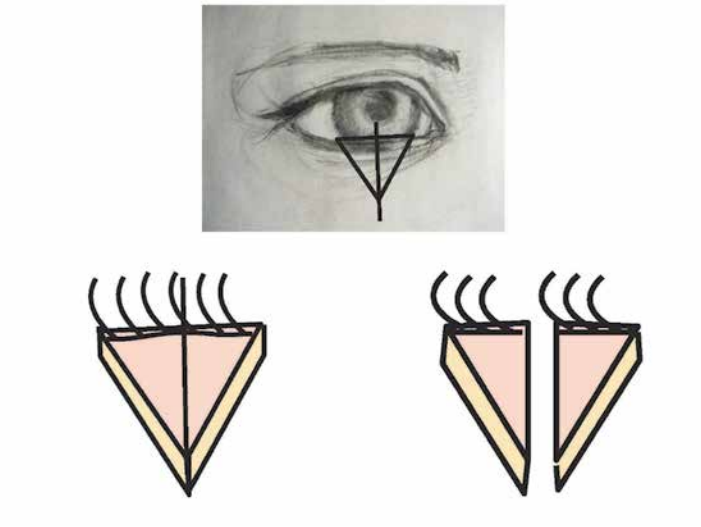
The physician must be able to identify the outer layer from the inner layer on eyelid, nose and lip tissue, and identify both the front and back side of ear tissue.

To ensure correct inking and orientation of the specimen, you will:

- Receive specimen and orient the location of the specimen on the map
- Ink margins prior to bisecting the specimen to prevent loss of orientation
- Using the reverse slide mount method, place tissue (margin side down) on the embedding slide
- Freeze tissue to the slide, ensuring that all representative margins are in contact with the slide for a complete representative section
- Process as usual

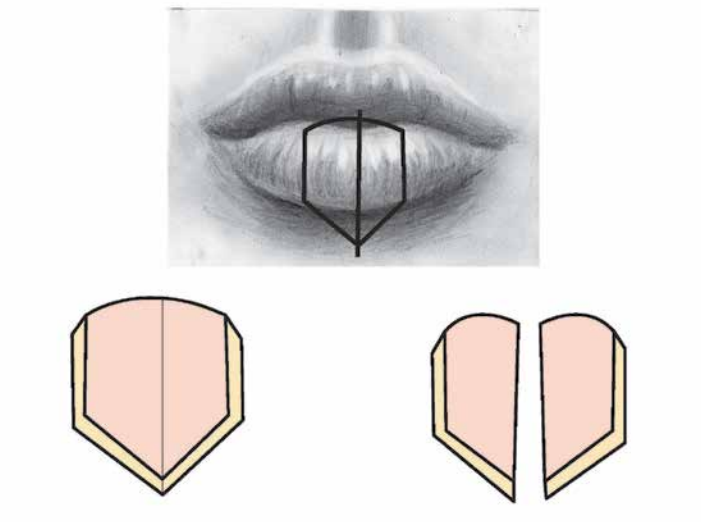
Eyelid Wedge:

A full-thickness representative section of the eyelid will enable the physician to view the epidermis margin, the eyelid, the mucosal conjunctiva and the deep margin.



Lip Wedge:

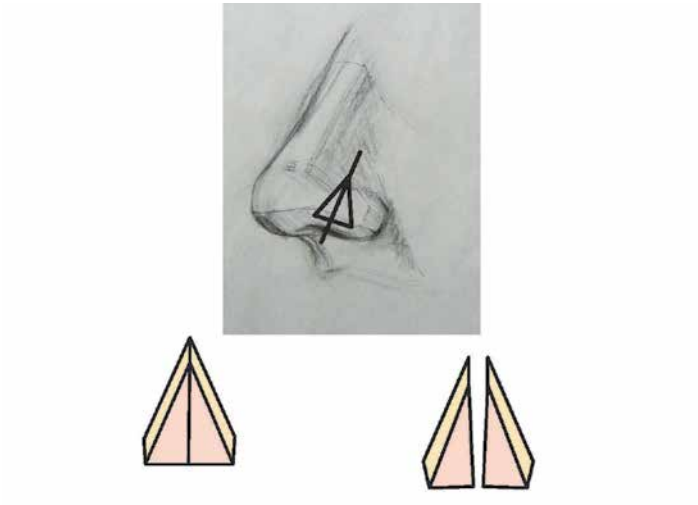
A full-thickness representative section of the lip will enable the physician to view the epidermis margin, the mucosal lining and the deep margin.



Advanced Cryostat Lecture Handout

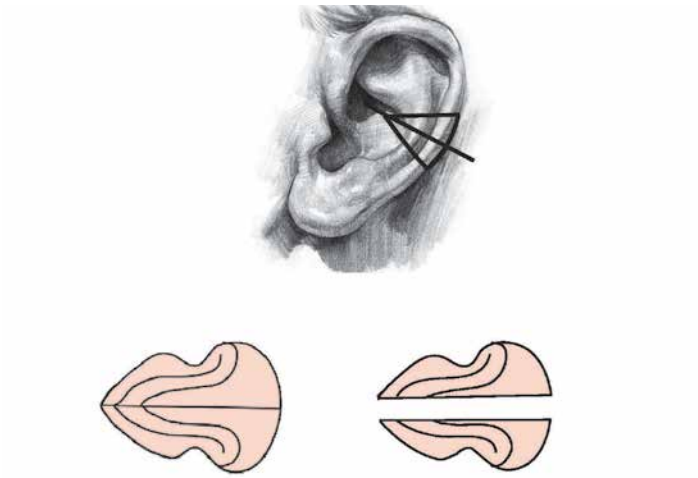
Nose Wedge:

A full-thickness representative section of the nose will enable the physician to view both the outer and inner layers of the nose.



Ear Wedge:

A full-thickness representative section of the ear will enable the physician to view both the front and back margin of the ear, as well as the deep margin including the cartilage.



Double Cut:

We have all seen them. We receive a specimen that has a cut (or two) in the epidermis margin. It is our task to miraculously repair this imperfection.

Dog Ears (Burrow's triangle):

These are routinely received as an "additional stage" specimen. Your physician will give you this type of specimen since they will need to take it out anyway as part of the repair of the surgical site. A "dog ear" can be in the shape of a V or in the shape of a check mark √. With the aid of a score and a relax cut, you can give your physician an impressive complete representative section.

Cartilage:

Cartilage is one of the most difficult tissues to flatten. When confronted by this type of tissue, unique relaxation techniques may be required. It is crucial that the cartilage be kept moist until it is processed.

Cartilage may be flattened by placing decisive hatch marks and scores within the curved areas of the cartilage to relax its concavity. Fan-like darts relax the areas within the conchal bowl, tragus and anti-tragus.

Due to the behavior characteristics of cartilage within the ear, some curling and lifting is to be expected.

Cartilage tissue is to be placed on charged slides to prevent loss of tissue during staining.

Fatty Tissue:

The physical characteristics of adipose or connective tissue make embedding fat especially challenging.

Adipose tissue exists in white and brown form, with each serving different needs in the body. Each adipocyte or fat cell is filled with a lipid droplet that is composed mainly of varying mixtures of tripalmitin, tristearin and triolein.

When adipose tissue is viewed on the slide, the cells appear empty. The nucleus may be observed towards the side of the cell.

To successfully section this type of specimen, the adipose must be brought down to a much lower temperature than that used for epidermis. Use the Spot Freeze Technique to accomplish this.

Liquid Nitrogen is very helpful in acquiring sections of fatty, non-cutting tissue. The method is found to work well is as follows:

1. Face specimen and determine which area of the tissue will be non-cutting.
2. Add a small amount of liquid nitrogen to a Styrofoam cup and place in a convenient location within the cryostat chamber.
3. Using a 4x4 piece of gauze, dip one end of the gauze into the liquid nitrogen and apply to the non-cutting area of the specimen. Apply pressure with a pair of embedding forceps.
4. Carefully and lightly reface into block (only remove the top layer where liquid nitrogen was applied to prevent freeze artifact). Sectioning should now produce quality, complete sections of the specimen. In the event of an excessively fatty specimen, you may need to increase your micron settings to acquire a complete section. Fat cells tend to stain transparent, therefore not creating a thickness issue when cutting at a higher micron setting.

General Session Handouts

Tangential Interference Artifact in Cut Mohs Frozen Sections

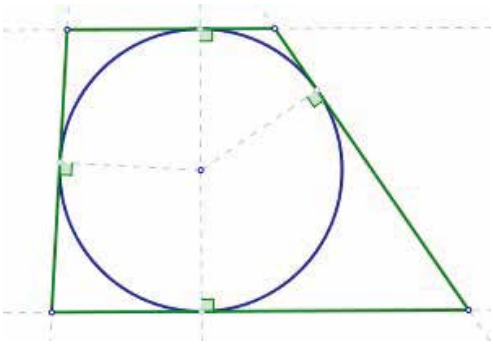
Marie Tudisco, HT and Robert Tagliaferro, HT

Objective: To acquaint the Mohs Technician with the mechanism behind the term "tangential" within the context of Mohs frozen sectioning.

Memorial Sloan Kettering Cancer Center

Tangential definition- hitting any point on a curve.

A straight line barely touching the surface plane between 2 close points.



Artifact

Something observed in a scientific investigation or experiment that is not naturally present but occurs as a result of the preparative or investigative procedure.

Ex. suture material, freeze artifact, tangential.

Causes of tangential artifact

- Surgical pitfalls
- Detached twisted epi
- Under bevel excision <30 degrees
- Thin skin (ears, scaly hands, legs) exposed undersurface
- Uneven excision (thinner corner edges) blade catching, chipping
- Folds (improper embedding), retracting elastic skin

Examples: Slide presentation – Tangential artifact mimicking carcinoma

Summary:

- Purpose:
- Define Tangential Interference Artifact
- Contributing factors and causes
- Communicating findings during processing

General Session Handouts

The SWEET Deal: Safe Working Environment Ergonomics Training

Presented by: Janet Minshew HT(ASCP)HTL; Owner; Specialized Histology Consulting, LLC; janminshew@yahoo.com

ERGONOMICS

The word "ergonomics" is derived from the Greek word *ergon,* meaning *work*, and *nomos,* meaning *principal* or *law*. It is a synonym for "human factors engineering." Ergonomics is a body of knowledge about human abilities, limitations and other characteristics that are relevant to design. It is based on one simple principle: Make the task fit the person performing it without overly stressing the person's abilities or ignoring limitations. Ergonomic design is the application of this body of knowledge to the design of tools, machines, systems, tasks, jobs, and environments for safe, comfortable and effective human use. Designs that consider human abilities often make work more productive, efficient, reliable, and safe. Ergonomic considerations should include postures, work habits, furniture, work arrangement, instrumentation, tools, lighting, noise levels, temperatures, and vibration.

Factors to Consider for Improved Ergonomics

Posture

While sitting, the spine should be against the back of the chair with the shoulders relaxed, the elbows along the sides of the body, and the wrists straight. The back needs to be resting on the backrest while working. The most prominent part of the backrest should be in the lumbar region, at waist height or slightly lower. The backrest should be high enough to support the back just above shoulder blade height. The neck should remain flexible and the head should be upright to maintain circulation and nerve function to the arms and hands.

The thighs should be well supported and the backs of the knees free from any pressure created by the seat edge. There should be comfortable clearance for the thighs in the leg well area. The feet should be supported on the floor or on a footrest in order to keep the knees level with the hips. Use caution if the feet are tucked under the chair, resting on the base or rails, because the hips tilt and move the back away from the back support. It is desirable to vary the position of the feet from time to time to spread the load on the back and leg muscles.

As many as one third of the population may be inflicted with back pain at some point in their lifetime. According to OSHA, 80% of all back injuries are the result of cumulative trauma assaults. When the cause of a minor, undetectable injury is repeated many times, the injury can worsen into a major debilitating injury. Disc deterioration, which is a natural occurrence that begins as early as age 20, also contributes to injuries. Good posture and proper lifting and bending techniques will save a lot of discomfort.

Stand with one foot propped up; change positions often. Stand with your back's three natural curves in their normal, balanced alignment. Avoid a swayback. Walk with good posture, keeping the head high, chin tucked in and toes straight ahead. Wear comfortable, low-heeled shoes.

Force

It is possible to be unaware of the force necessary to accomplish a task, and force can contribute importantly to MSD. To alleviate the effect of force on the wrist, the wrist position should be maintained in a neutral position as if the arms dangled in a relaxed manner at the sides. It is dangerous to work with the wrist deviated from side to side or to remain flexed or highly extended for long periods. Also, remember that a pinch grip (using the thumb and forefinger) requires force combined with an awkward posture. It is better to use a power grip whenever possible.

Repetition:

Spending more than 50% of the workday performing repetitive motions that take 30 seconds or less to complete is considered extremely high risk. Also, remember that your body can't tell whether you are at work or home, so if you participate in sports or hobbies that involve risk factors, your body will add those movements to what you did at work. Anyone who does repetitive tasks should begin with a short warm-up period, take frequent break periods, and avoid overexertion of the hand and finger muscles whenever possible. Tasks should be rotated and the work content should be varied. Automation should be considered if possible.

Environmental Factors

Sedentary workers are particularly susceptible to the effects of the environment. Drafts, temperature extremes, poor air quality, inadequate lighting and noise are all factors that affect comfort and performance. The ambient room temperature should be between 68°F to 73°F, and temperature variances between floor level and head level should be avoided. The humidity should be maintained between 40% and 60% to avoid dry eyes. Air movement should be kept to a minimum around workstations. Avoid working at low temperatures if possible because you will have reduced sensation in the hands and fingers.

Human Factors

Studies show that individuals have an optimal pace of work when doing tasks within their physical capacity, where the expenditure of energy is minimized and strength is conserved. A person's actual work capacity begins to decrease in the 20's, though the loss is not usually noticeable until the late 30's. The inability to pace work produces job stress and fatigue, and increases the risk of injury.

Accident rates are higher for individuals between the ages of 35 and the mid-50's and almost twice as common in males. There are also statistics that show that more accidents occur to employees who have worked for an employer for 1-5 years and the rates are slightly higher on Monday between 8AM and 12PM after 2-4 hours on their shift. Due largely to

weaker upper body strength, shoulder-neck injuries are more common among females. On average, females have less strength than similar sized males (40-70% weaker in upper body strength and 5% weaker in lower body strength).

As the "baby boomer" generation ages, ergonomic studies have focused on older workers. Even in healthy people, joint mobility tends to decrease between the ages of 20 and 60, and age-related health threats have further impact on these areas. Range of motion in the lumbar spine area is significantly reduced with age. After age 30, there is a general decline in strength for most people, which accelerates after age 40. The loss of strength in the trunk and legs is greater than the loss in the arms for both sexes, but even finger and arm strength begins to ebb for most around the age of 40. Once injured, older workers require longer periods of recovery.

Work Areas

One of the most commonly overlooked details is that workstations are designed for the "average" person (i.e. sitting workbenches are typically designed for individuals who are between 5' 8" and 5' 10" in height). Take a good look at yourself and your coworkers. Are all of you identical or "average"? Do you have the same bone structure, weight distribution, limb length, body contours and propensity for right or left-handedness? These and other physical differences cause each worker to experience a different level of comfort (or discomfort) when sharing a workstation.

To optimize comfort, work should be positioned directly in front of you and frequently used objects should be kept within easy reach. The height of the work (not counter height) should be approximately elbow height for routine tasks. Precision work can be performed slightly higher and heavy work requiring physical strength should be performed at a slightly lower level. Adjustable workstations are ideal for accommodating various people and tasks, but they are not always available. An alternative is to be able to adjust the position of the worker, using things like adjustable ergonomic chairs, platforms for the work or the worker, or adjusting the work using workbench cutouts or tilted work surfaces. Lighting, noise levels, temperatures, and vibration are also very important ergonomic considerations.

Heavy materials should be stored at low levels. Bend with your knees and lift with your legs. Hold objects close to your body and lift objects only chest high. Stand on a stool to reach something above shoulder height. Don't be afraid to ask for help if you feel that you may be injured.

Equipment

Automated equipment is gaining acceptance, but maintaining the proper balance between people and machines is sometimes hard. Although human interaction is invaluable for performing multiple tasks simultaneously and making quick decisions, automation is very beneficial. Automation of repetitive tasks relieves workers of biomechanical stresses that can lead to musculoskeletal disorders, especially those requiring force or speed. Automation is typically accurate and consistent so it is also excellent for tasks requiring standardization.

MUSCULOSKELETAL DISORDERS (MSD)

What are they?

According to the National Institute for Occupational Safety and Health (NIOSH), musculoskeletal disorders (MSDs) are defined as "injuries or disorders of the muscles, nerves, tendons, joints, cartilage, and supporting structures of the upper and lower limbs, neck, and lower back that are caused, precipitated or exacerbated by sudden exertion or prolonged exposure to physical factors such as repetition, force, vibration, or awkward posture."

In simple medical terms, musculoskeletal disorders (MSD) stem from prolonged repetitive, forceful, or awkward movements. They are not typically the result of an instantaneous or acute event, but reflect a more gradual or chronic development. They can occur in many forms in many different areas of the body and involve damage to the spinal discs, cartilage, tendons, tendon sheaths, muscles, joints, blood vessels, or nerves.

How do they happen?

MSD can occur when muscles and tendons perform repetitive motions combined with other stressors. This can cause microscopic tears. The injured muscles tend to contract, decreasing the range of motion necessary for stress-free work. Tendon sheaths run out of lubrication because they aren't given time to rest, so tendon and sheath chafe and tissues become painful and swollen. Continued overuse leads to numbness, tingling and hypersensitivity to the touch. Other conditions can contribute to individuals' susceptibility to MSD, such as genetic predisposition, previous medical history, prior surgery or trauma, fluid retention, obesity, poor posture, and gravity.

Repetitive movements, in and of themselves, are not the cause of MSD. The human body is designed for movement, much of which is repetitive, such as walking. For movement to occur, specific muscle fibers contract causing the fascia that wraps around the muscle tissue to pull on its attached ends, the tendons. The tendons, which are connected to bone, cause the bone to move. Opposing muscles and connective tissue must release or lengthen, creating a constant give and take. When everything works correctly the body exhibits strength and agility through a full range of motion. Even with overuse the body will recover if it is given enough time.

Some of the stressors mentioned above are considered "biomechanical risk factors", which include exposures to excessive force, awkward posture, repetitive movement and vibration. Each of these risk factors becomes more hazardous depending on how often you perform the movement, how

many times you repeat it, how long it takes to perform it each time and how much time per day you spend doing it. The degree of risk is proportionate to the combination of all of the risk factors.

Motions to Avoid

Some of the most common motions used in histology can cause physical problems.

- Wrists are commonly injured from repeatedly bending them up and down (trimming by rocking the handwheel of the microtome/cryostat) or inward and outward (coverslipping and keyboarding).
- Shoulder and arm injuries could be caused by holding the upper arms out to the side, above shoulder level, or in a wing position with the elbow away from the body. These are also very common movements when performing microtomy, cryotomy, coverslipping, and keyboarding.
- The neck, which supports the weight of your head, will tire quickly if you work with your head tilted backwards. This is a common position for people who wear bifocals or progressive lenses when they are looking at a monitor, using a microscope or doing close work. Bending your head to the side (holding a phone while working) is also hard on the neck.
- The lower back can be very sensitive when you do a lot of bending and twisting at the waist (laying ribbons on a water bath and staining) and may become aggravated when you bend or twist while you are lifting something or if you make sudden jarring movements.

What can be done to help you work safely?

- Work with your joints in a natural or neutral position (near the middle of your full range of motion)
- Rotate tasks often so you will not be doing the same task for long periods of time
- Plan a rest break every 20 to 30 minutes, even if the break is only for 15 seconds, so muscles can relax and circulation can be renewed
- Do strengthening exercises
- Use ergonomic tools and furniture
- Have your work space and habits evaluated by a professional

What are the risk factors for the upper extremities?

- Repetitive and /or prolonged activities
- Forceful exertions, usually with the hands (including pinch grips using thumb and forefinger)
- Prolonged static postures
- Awkward postures of the upper body, including reaching above the shoulders or behind the back, and twisting the wrists and other joints to perform tasks
- Continued physical contact with work surfaces; e.g., contact with edges
- Excessive vibration from power tools
- Cold temperatures
- Inappropriate or inadequate hand tools

What are some of the warning signs for MSD?

- Pain (may or may not have), burning, aching, or shooting anywhere in extremity
- Fatigue or lack of endurance
- Weakness in hands or forearms
- Tingling, numbness, or loss of sensation
- Clumsiness, Stiffness, Heaviness
- Difficulty using hands
- Lack of control or coordination
- Cold hands or fingertips
- Heightened awareness
- Hypersensitivity
- Frequent self-massage

What are some of the options to treat a MSD?

- Application of heat (neck tension or muscle strain) or cold (tendon or joint pain/swelling)
- Medications (non-steroidal anti-inflammatory, steroid injections, diuretics)
- Physical therapy
- Splints or supports (off job or night or occupational)
- Surgery
- CHANGE YOUR WORK HABITS

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Allsteel Ergonomics and Design Reference Guide White Paper http://www.allsteeloffice.com/SynergyDocuments/ErgonomicsAndDesignReferenceGuideWhitePaper.pdf

Government Websites for Ergonomic Information

OSHA Fact Sheet (Laboratory Ergonomics) https://www.osha.gov/Publications/laboratory/OSHAfactsheet-laboratory-safety-ergonomics.pdf

CDC – Work-Related Musculoskeletal Disorder Prevention http://www.cdc.gov/workplacehealthpromotion/implementation/topics/disorders.html

Department of Defense Ergonomic Working Group http://www.ergoworkinggroup.org/

CDC – Ergonomics and Musculoskeletal Disorders http://www.cdc.gov/niosh/topics/ergonomics/default.html

CDC – Anthropometry http://www.cdc.gov/niosh/topics/anthropometry

CDC/NIOSH -- Musculoskeletal Disorders and Workplace Factors

http://www.cdc.gov/niosh/docs/97-141/

Website References for ergonomic seating information

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Humanscale (Ergonomic design company) http://www.humanscale.com/

Nottingham Sit/Stand Seating http://nottinghamchair.com/

Human Solution (Ergonomic chairs) BizChair (Laboratory) http://www.thehumansolution.com/ergonomic-chairs.html

Notes

Leica
BIOSYSTEMS

The MARKET LEADER in Cryotomy

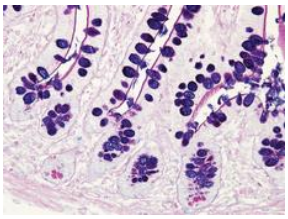
Cryostats

Scanners

Lab Supplies

Stainers

Microscopes



Special Stains

Visit us at our booth for our

New Lab Promotions!

Save the Date

ASMH

23rd Annual Meeting

SAN FRANCISCO

APRIL 28-29, 2017