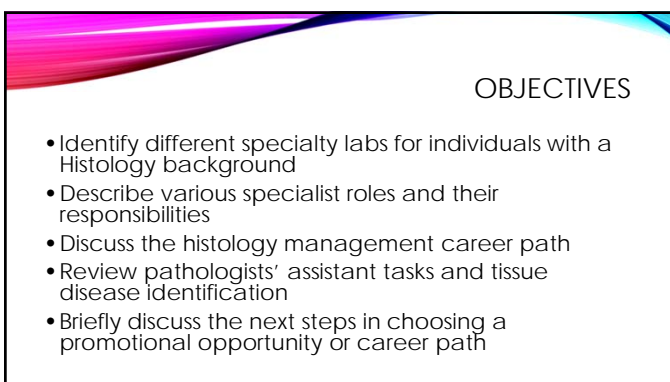


BEYOND THE BENCH: CAREER GROWTH AND DEVELOPMENT OPPORTUNITIES FOR THE HISTOLOGY TECHNICIAN

Tiffany Mainella, M.S. HTL (ASCP)^{CM}




OBJECTIVES

- Identify different specialty labs for individuals with a Histology background
- Describe various specialist roles and their responsibilities
- Discuss the histology management career path
- Review pathologists' assistant tasks and tissue disease identification
- Briefly discuss the next steps in choosing a promotional opportunity or career path



MY PATH TO BECOMING AN EDUCATION SPECIALIST


- Bachelor's of Science from the University of Minnesota Duluth
 - Class of 2010
 - Major in Biology
 - Minors in Chemistry and Psychology
- Mayo Clinic School of Health Sciences
 - Histology Technician Program
 - Class of 2012
- HTL December 2012
- Education Specialist July 2014
- Master's of Science in Higher Education from Capella University
 - Class of 2016





DISCLAIMER

- Sites vary based upon:
 - Size
 - Need
 - Roles and responsibilities
 - Qualifications



HISTOTECHNICIAN OR HISTOTECHNOLOGIST?

- Locations will often times use the terms interchangeably
- Histotechnician (HT) responsible for performing technical functions
- Histotechnologist (HTL) responsible for HT functions, as well as additional roles and responsibilities that include:
 - Training
 - Documentation of processes and procedures
 - Improvement projects
 - Other miscellaneous tasks




TECHNICIAN TO TECHNOLOGIST

- Four-year degree to obtain HTL certification
- Different options available
 - Option One: 30 semester hours of biology and chemistry along with successful completion of NAACLS histology program
 - Option Two: 30 semester hours of biology and chemistry and one year full time experience in a histopathology laboratory within the last five years (ASCP, 2017)
- Additional promotional opportunities become available*




HISTOLOGY TECHNICIAN OPPORTUNITIES



SPECIALIZED LABORATORIES

- Frozen Section
- MOHS
- Electron Microscopy (EM)
- Research




FROZEN SECTION

- Cryotomy based laboratories
- Involved with the preparation of fresh tissue
- Rapid diagnosis while patient is still in surgery

FROZEN SECTION

- Clinical freezing microtomes used in few institutions



THE ROLE OF A FROZEN SECTION TECHNICIAN

- Cutting tissue on cryostat or clinical freezing microtome
- Fast staining of sections
- Entering patient information into laboratory programs
- Assisting with other laboratory operations

FROZEN SECTION TECHNICIAN QUALIFICATIONS

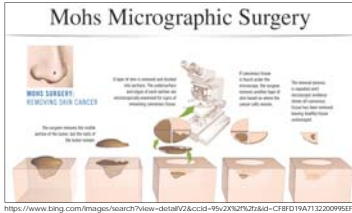
- Board certified HT or HTL
- Experience with histologic practices
- Ability to work well under pressure
- Team oriented



MOHS – WHAT IS IT?

- Removal of skin lesions and cancers


Mohs Micrographic Surgery



The diagram illustrates the Mohs Micrographic Surgery process in five stages: 1. A skin lesion is identified on a patient's face. 2. The lesion is removed, and the wound is prepared. 3. The wound is examined under a microscope to ensure complete removal of cancer. 4. The wound is closed with a flap or graft. 5. The final result is a healed wound.

https://www.bing.com/images/search?view=detail&ccid=99c2f276&id=CF8D18A713220996E3067EE3181129756&img=labortory&imgid=468045425866340&selectcdindex=21&qamt=0

MOHS



The collage includes: a petri dish with tissue samples, a microscope, and a tray of labeled slides.

THE ROLE OF A MOHS TECH

- Responsible for the cryotomy portion of the surgical process and preparing the slides for the doctors to examine
- Integral part of the diagnosis and successful surgical outcomes
- Maintaining quality control and documentation
- May also participate in routine Histology practices

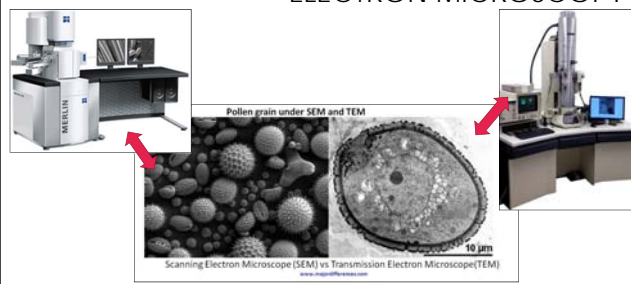
MOHS TECH QUALIFICATIONS

- Board certified HT or HTL
- One year experience working in a histology laboratory
- Familiar with anatomy and medical terminology
- Strong communication skills

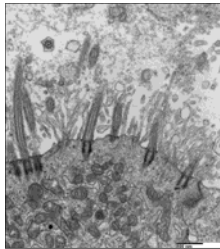
ELECTRON MICROSCOPY – WHAT IS IT?

- Technique to obtain microscopic images at a much greater magnification than traditional light microscopy
- Two types of electron microscopes:
 - Transmission – viewing thin specimens
 - Scanning – whole organisms and surface distribution

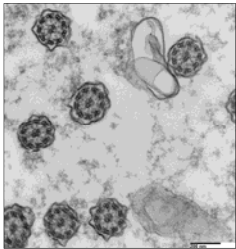
ELECTRON MICROSCOPY



ELECTRON MICROSCOPY



Coronal section of cilia



Transverse section of cilia

THE ROLE OF AN ELECTRON MICROSCOPY TECHNICIAN

- Embedding tissue into polymerized resin
- Cutting ultrathin sections with a glass or diamond knife
 - 90 nanometers versus traditional 4-5 micron thicknesses
- Operating electron microscopes to create images for diagnosis
- Also working with light microscopy or immunofluorescence


ELECTRON MICROSCOPY TECHNICIAN QUALIFICATIONS


- Associate's degree
- Board certified HT or HTL
- Ability to work in multiple areas
 - Light microscopy: grossing, cutting, staining
 - Electron microscopy: grossing, processing, cutting
 - Immunofluorescence: grossing, cutting, staining


<http://www.litca-microsystems.com/science-lab-how-to-prepare-your-specimen-for-immunofluorescence-microscopy>

RESEARCH

- Several different pathways in research including:
 - Animal
 - Clinical
 - Educational


<http://www.clipart.com/clipart-simple-mouse-dark-grey.html>


<http://clipart.com/steinmeyer-flask-clip-art>


<http://mau.edu/COE/StudentResources/Travel-and-Research-Grants/>

THE ROLE OF A RESEARCH TECH

- Varies between sites
- Histology and immunohistochemistry processes
- Preparation of reagents
- Documentation
- Troubleshooting

RESEARCH TECH QUALIFICATIONS

- Associate's degree in Histology or Bachelor's degree in the sciences
- Board certified HT or HTL
- Able to work both independently and on a team
- Strong organizational skills







TECHNICAL SPECIALIST EXAMPLES

- Writing validations that include:
 - Background of instrument or method
 - Results of testing
 - Signatures

Validation Worksheet for Validation of TITLE GOES HERE

Procedure Title: VALIDATION TITLE GOES HERE Validation Testing #

Date: _____

Prepared: _____

Approved: _____

Plan/Dev: _____

Signature: _____

Validation Worksheet for Validation of TITLE GOES HERE

Validation Testing # _____

Laboratory Qualification	Complies Met (Y/N)	Excluded (E)	None
Laboratory personnel completed the validation protocol in the validation setting			
Laboratory personnel completed the validation protocol in the specified facility			
Performance Qualification	Complies Met (Y/N)	Excluded (E)	None
The quality of the samples per the validation was equivalent to that used for routine operations as evidenced by appropriate acceptance criteria			
Validation was conducted in accordance with protocol			

Signature: _____

TECHNICAL SPECIALIST EXAMPLES

- Initiating improvement projects that include:
 - Refining existing lab processes
 - Developing new methods of practice
 - Within acceptable limits
 - Approved by management

<http://thehartlabgroup.com/dmaic-process/>

TECHNICAL SPECIALIST QUALIFICATIONS

- Bachelor's degree in the sciences
- Experience varies between locations
 - Typically one to five years of laboratory experience is required
- Strong interpersonal communication skills
- Problem solving skills

TECHNICAL SPECIALIST RESUME HIGHLIGHTS

- Include projects
 - Member and team lead
- Showcase problem solving skills
- Provide information about technical skills
- Other highlights included within the job posting

EDUCATION SPECIALIST

- Individual who is responsible for coordinating training and educational material for staff
- Manages competency bundles and continuing education
- Oversees training of students and new employees
- Assists with other activities and procedures throughout the laboratory

EDUCATION SPECIALIST EXAMPLES

- Coordinates training that includes:
 - Communicating expectations with trainers and trainees
 - Determining timelines for each bench in the laboratory
 - Managing spreadsheets with employee information
 - Handling behind-the-scenes documentation and communication

Name	Start Date	Embedding		Microtomy			
		Standardization	Initial Comp	6-month Comp	Standardization	Initial Comp	6-month Comp
Tech A	5/23/2012	6/8/2012	6/9/2012	12/15/2012	6/1/2012	6/2/2012	12/14/2012
Tech B	7/25/2013	8/29/2013	9/2/2013	2/28/2014	8/12/2013	8/12/2013	2/15/2014

EDUCATION SPECIALIST EXAMPLES

- Competencies
 - Updating each year
 - Meeting CAP and other accrediting body expectations
 - Scheduling trainer and employee time to complete
 - Entering into spreadsheets and filing appropriately
- Continuing Education (CE)
 - Creating a monthly calendar with CE opportunities
 - Entering certificates into spreadsheets and filing appropriately

EDUCATION SPECIALIST EXAMPLES

- Documents
 - Updating to reflect changes to processes and procedures
 - Ensuring spelling and grammar are correct
 - Completing in a timely manner

POOR DOCUMENT WRITING

Division of Education Division Name Division Code
Institution Name Department Name
Location Name
City State Zip
Mock Form
 Month _____ Year _____
Instructions:
 This form is used to document a change process is being completed.
 Changing processes includes:
 Section A1: Curriculum
 Section A2: _____
 Section A3: _____
 Section of Missouri Workforce

Row	Task	Message Closed	Timing Closed	Workshop Closed	Position	Workshop

Revised: _____ Date: _____

BETTER DOCUMENT WRITING

MSK History: Publication History Form 01/2011 (01) Edition Date: 01/2011

Institution Name: Department Name:
Laboratory Name:
City, State, ZIP

MSK Microscopy Workstation Cleaning Form

Month _____ Year _____

Instructions:
This form is used to document that the necessary workstations are cleaned at the end of each session.

Cleaning necessary workstations:

Section 01: Microscope
Section 02: Tabletop
Section 03: Stage rails

Item	Task	Maintenance Checked (Y/N)	Cleaning Checked (Y/N)	Wash Soln. Checked (Y/N)	Position	Available

Reviewed _____ Date _____

EDUCATION SPECIALIST QUALIFICATIONS

- Bachelor's degree in the sciences
- Experience varies between locations
 - Typically two years of laboratory experience is required
- Strong interpersonal communication skills
- Excellent organizational skills

EDUCATION SPECIALIST RESUME HIGHLIGHTS

- Include training or education leadership experience
- Creation of educational materials or programs
- Showcase organizational skills
- Other highlights included within the job posting

QUALITY SPECIALIST

- Individual responsible for implementing and maintaining quality system essentials and processes
- Manages quality programs to be in compliance with regulatory agencies
- Analyzes and prepares data for various quality reports

QUALITY SPECIALIST EXAMPLES

- Preparing quality reports that include:
 - Documentation of employees
 - Equipment changes
 - Errors from staff or equipment
 - Monitoring and assessments

Mock Quality Report May 2017 Institution Name, Laboratory Name City, State, Zip	
Department and Leadership • Staff Change	Incidents • Equipment Incidents/Event management • Audits • Change
Personnel • Training and Competencies • Continuing Education	Equipment • New or Retired • Verification or Validation
Monitoring and Assessments • Trend Models embedded • Trend Models up • Trend Internal versus external users	Action Items
Signatures	

QUALITY SPECIALIST EXAMPLES

- Manages monthly and quarterly quality meetings
 - Reviewing quality-related agenda items
 - Coordinating action items among Histology leadership and support teams
 - Completing tasks in a timely manner

Agenda Item	Discussion	Follow-up
Workload management	Seeing positive improvements	Tiffany to update board
Quality initiatives for 2017	Open discussion on X, Y, Z projects	Trent to work on X project Sean to work on Y project
Standing items	Monthly monitoring	Management to follow up with staff

QUALITY SPECIALIST QUALIFICATIONS

- Bachelor's degree in the sciences
- Experience varies between locations
- Familiarity with several information systems and programs
- Strong interpersonal communication skills

QUALITY SPECIALIST RESUME HIGHLIGHTS

- Include information system experience
 - Working in various programs to show range of skills
- Showcase template and report creations
- Provide information about maintaining compliance within the work unit
- Other highlights included within the job posting

DEVELOPMENT SPECIALIST

- Responsible for the following with tests, methods, and products:
 - Developing
 - Investigating/Evaluating
 - Installing/Implementing
 - Improving



DEVELOPMENT SPECIALIST ROLES

- Working on multiple projects simultaneously
 - Testing new protocols
 - Testing current protocols not functioning properly
 - Completing validation documents
- Communicating with regulatory agencies for permission and approval letters
- Attending clinical operational meetings


DEVELOPMENT SPECIALIST QUALIFICATIONS

- Bachelor's degree
- Two years laboratory experience required
- Involvement with project management
- Knowledge of document development and execution
- Highly organized

DEVELOPMENT SPECIALIST RESUME HIGHLIGHTS

- Include project management experience
- Showcase any tests or methodology that have been created or improved
 - Description of process or practice
 - Documentation involved
 - Maintenance
- Other highlights within the job posting

MANAGEMENT ROLES




MANAGEMENT ROLES

- Assistant Supervisor
- Supervisor
- Operations Manager

MANAGEMENT RESPONSIBILITIES


- Laboratory oversight
- Project participation
- Document management
- People and change management






MANAGEMENT TASKS

- Operational
 - Oversight of operations
 - Scheduling
 - Equipment purchase & evaluation
 - Meetings
 - Delegating
 - Accounting
 - Documentation
 - Project management



MANAGEMENT TASKS

- People management
 - Mentorship & coaching
 - Support
 - Change management
 - Hiring
 - Handling personnel issues



MANAGEMENT QUALIFICATIONS

- Bachelor's degree; some require Master's degree
- Certification preferred
- Management and/or administrative experience
- Team oriented
- Able to make decisions efficiently and effectively



MANAGEMENT RESUME HIGHLIGHTS

- Include any management and oversight of individuals, teams, projects, etc.
- Highlight both operational and soft skills
- Showcase leadership qualities
 - Good communication
 - Positive attitude
 - Confidence
 - Commitment



PATHOLOGISTS' ASSISTANT



PATHOLOGISTS' ASSISTANT (PA)

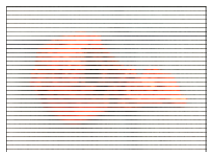
- Works under the direction of the pathologist
- Employed in many institutions and locations including:
 - Hospitals
 - Forensic laboratories and morgues
 - Government healthcare facilities
- Critical to the process of reaching a diagnosis

PATHOLOGISTS' ASSISTANT RESPONSIBILITIES

- Surgical pathology
 - Imaging
 - Grossing
- Autopsy pathology
 - Postmortem exams
 - Special techniques
 - Organ transplantation
- Administrative duties

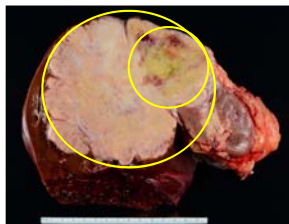
GROSSING PROSTATE TISSUE

- Inking for determining margins and cutting for representative sections to send to Histology



HEPATOCELLULAR CARCINOMA

- Tumor in the liver growing into the kidney
- Gross description would include the color and size



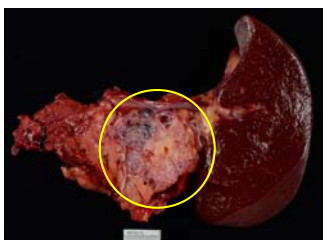
BREAST CANCER

- Breast tissue injected with blue dye in attempts to find the sentinel lymph node
- PA responsible for finding the sentinel node



SEROUS CYSTADENOMA

- Spleen on the right and pancreas on left
- Noting if any metastases have occurred



LUNG CANCER

- Responsible for noting the description of the main tumor as well as any satellite tumors



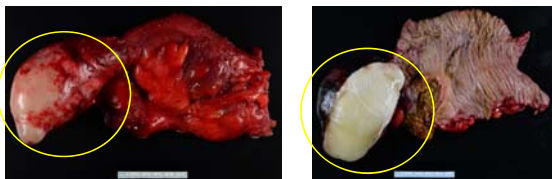
MEDIASTINAL LYMPHOMA

- Chest mass compressing aorta, superior vena cava, and trachea
- Autopsy case



MUCINOUS APPENDIX

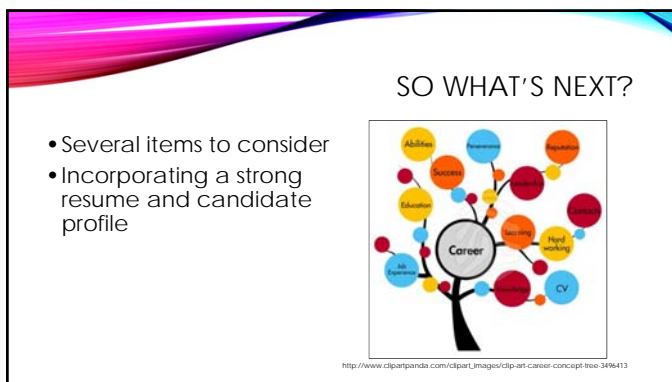
- Mucin in the appendix produced by the tumor
- Determine if cultures or smears would be needed

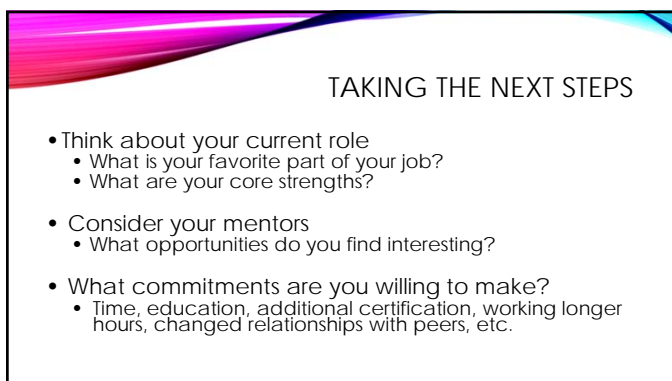


PATHOLOGISTS' ASSISTANT QUALIFICATIONS

- Master's degree through NAACLS Pathologists' Assistant program
- Certified PA through ASCP
- Proficient in human anatomy and medical terminology
- Comfortable with participating in gross examinations and autopsies







CHALLENGES OF A NEW ROLE

- Time constraints
- Failing when everyone is watching
- Causing people to be upset
- Delivering bad news
- Answering to higher expectations



<http://www.clipartkudo.com/team-challenge-clipart.html>

SUMMARY

- Several different career pathways and promotional opportunities for HTs and HTLs
- Specialty labs offer unique technical experiences
- Specialist roles have a wide range of responsibilities
- Management positions work with both operational and people management
- Pathologists' Assistants handle many different disease processes
- Several considerations are needed when thinking about the next steps for a career move

QUESTIONS?

THANK YOU!



H&E 40x Image by Tiffany Mainella

SPECIAL THANK YOU

- To those who helped with images and information:
 - E. Heidi Cheek
 - Scott Gamb
 - Amy Gunderson
 - Denise Hopkins
 - A. Danielle Johnsrud
 - Julie Vrana
 - Trenton Wirth


REFERENCES

- 12 Differences between Scanning Electron Microscope and Transmission Electron Microscope. (2016). Retrieved April 24, 2017 from <http://www.major Differences.com/2016/08/differences-between-sem-and-tem.html#WPS=0901rc>
- Capella University Logo. Retrieved April 16, 2017 from http://www.capella.edu/landing_pages/zubs/index.asp?linkID=159808
- Education Specialist. (2017). Dignity Health Job Postings. Retrieved April 15, 2017 from https://www.glassdoor.com/Job/education-specialist-jobs-SRCH_KOJ20_IP2.htm
- Education Specialist - Research Job. (2017). Mayo Clinic Job Postings. Retrieved April 15, 2017 from <https://www.mayo-clinic.jobs.com/Job/Rochester-Education-Specialist-Research-Job-MN-55901/4015/3700/>
- Histology MOHS Technician. (2017). Complete Dermatology. Retrieved April 16, 2017 from <https://www.indeed.com/cmp/Complete-Dermatology/jobs/Histology-zf92803832528ad7q=MoHS+Technician>
- Histology Technician - Derm MOHS. (2017). Eisenhower Medical Center. Retrieved April 16, 2017 from <https://www.indeed.com/cmp/Eisenhower-Medical-Center/jobs/histology-Technician-Derm-MoHS-f6e52146b83880c7sclu-0wrxKrq/3cNX5W-C9E5V0rSVLAZ-INDD-HY5K08ByOKGh0Dc17Hz7A1TH-VW09XGZ-EAYGQZ-umv56Wjpw8k7w0pnhNhmimivrcg4/>



REFERENCES

- Histotechnologist Eligibility. (2017). American Society for Clinical Pathology. Retrieved April 15, 2017 from <https://www.ascp.org/content/board-of-certification/getcertified#tabs-eligibility>
- Laboratory Applications Specialist – Histology. (2017). Thermo Fisher Scientific. Retrieved April 15, 2017 from [http://jobs.thermofisher.com/ShowJob/Id/7703/Laboratory%20Applications%20Specialist%20\(Histology\)](http://jobs.thermofisher.com/ShowJob/Id/7703/Laboratory%20Applications%20Specialist%20(Histology))
- Laboratory Quality Specialist – Molecular Pathology. (2017). Cleveland Clinic Job Postings. Retrieved April 15, 2017 from http://jobs.clevelandclinic.org/job-detail.html?9847-laboratory-quality-specialist-molecular-pathology&utm_source=indeed.com&utm_medium=Organic&utm_content=9847&utm_campaign=none
- Mayo Clinic Logo. Retrieved April 16, 2017 from <https://www.youtube.com/user/mayoclinic>
- Prive, T., (2012). Top 10 qualities that make a good leader. Forbes. Retrieved April 22, 2017 from <https://www.forbes.com/sites/tanyaprive/2012/12/19/top-10-qualities-that-make-a-great-leader/#6d85ed7d7754>



REFERENCES

- Quality Specialist. (2017). Mayo Clinic Job Postings. Retrieved April 15, 2017 from <http://www.mayo-clinic-jobs.com/job/Rochester-Quality-Specialist-Department-of-Laboratory-Medicine-and-Pathology-Job-MN-55901/390713700/>
- Quality Specialist – Anatomic Pathology. (2017). Illinois Job Link. Retrieved April 15, 2017 from <https://illinoisjoblink.illinois.gov/ada/r/jobs/4897379>
- Research Histotechnician III. (2017). Fred Hutchinson Cancer Research Center. Retrieved April 16, 2017 from <http://www.nature.com/naturejobs/science/jobs/608701-research-histotechnician-iii-temporary>
- RN Nursing Education Specialist. (2017). Johns Hopkins Health System. Retrieved April 15, 2017 from https://www.glassdoor.com/Job/education-specialist-jobs-SRCH_KO0,20.htm
- Scanning Electron Microscopes. (n.d.). Retrieved April 24, 2017 from <https://www.zeiss.com/microscopy/int/products/scanning-electron-microscopes.html>



REFERENCES

- Technical Specialist. (2017). NorthShore University HealthSystem. Retrieved April 15, 2017 from <https://northshore.taleo.net/careersection/northshore+mobile+externalcs/jobdetail.ftit?job=59546>
- Technical Specialist, Hematology, Lab Pathology. (2017). University of Maryland Medical System. Retrieved April 15, 2017 from <http://jobs.umms.org/ShowJob/Id/1083913/Technical%20Specialist%20Hematology%20Lab%20Pathology>
- Transmission Electron Microscopy. (2017). Retrieved April 24, 2017 from <http://medicine.utoronto.ca/research/transmission-electron-microscopy-tem>
- University of Minnesota Duluth Logo. Retrieved April 16, 2017 from <http://www.lasermagic.net/college/product/?upc=543261>
- What is a Pathologist's Assistant? (n.d.). American Association of Pathologists' Assistants. Retrieved April 20, 2017 from http://www.pathassist.org/?page=AboutUs_WhatIsAPA
- What is Electron Microscopy? (n.d.). University of Massachusetts Medical School. Retrieved April 16, 2017 from <http://umassmed.edu/cemf/whatisem/>
