

What now...

# POTENTIAL NEXT STEPS FOR CYTOTECHNOLOGISTS

KATHY L. GRANT, PHD, CT(ASCP)  
DUKE UNIVERSITY HEALTH SYSTEM

# Conflict of Interest

- I have no relevant conflicts of interest in regards to the content of this presentation.

## Thank you

- Amy Clayton, MD  
Mayo Clinic  
Rochester, MN

# The Duke Experience



© KURT JONES 2003

# 2005 – 2013 Duke's Progression

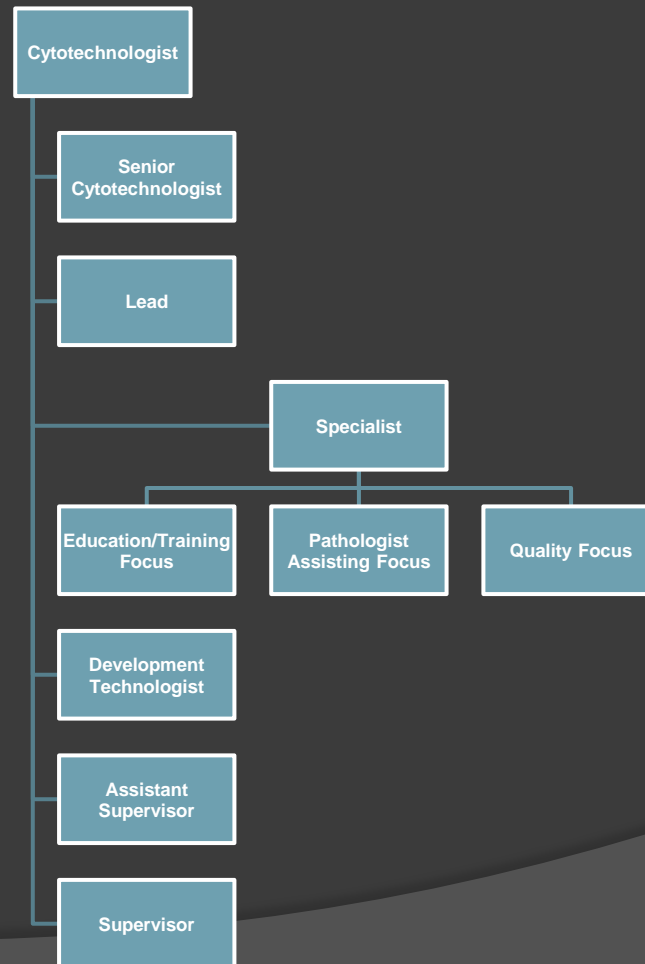
## (Areas of Concentration)

- 2005 – Screening
- 2006 – Supervisor Cytopreparatory Area, Resident Training Coordinator, CE Coordinator, QA Coordinator, Safety Officer, CT Student Coordinator (CT's expand areas of responsibility)
- 2007 – Academic involvement
- 2008 – HPV Testing performed by cytology
- 2009 – International Cytology involvement – Peru
- 2010 – Pap volume decline begins; Amy Clayton, MD – Mayo Experience
- 2011 – Developed CT Career Ladder (based on Mayo Model with help of Dr Clayton)
- 2012 – Developed Career Ladder for Cytoprep Staff
- 2013 – Developed FNA Specialist position

Following slides from Amy Clayton, MD with permission

# MAYO MODEL REVIEW

# Mayo Career Ladder



# Career Ladder Specifics (to include CT FTE's by category)

- ⦿ Supervisor- General Cytology (1)
- ⦿ Supervisor- Molecular Cytology (1)
- ⦿ Asst Supervisors (2)
  - General
  - Molecular Cytology
- ⦿ Cytology Specialists (7)
  - QA GYN
  - QA NonGYN
  - Pathology sign-out room: “Cytopathologist Assistant”
  - Education: Training for new tests, Continuing Ed
  - Float (back up for sign out and extra projects)
  - Molecular- FISH and DIA

# Career Ladder Specifics (cont'd)

## ⦿ Leads (3)

- Preparation
- General Cytology
- FISH

## ⦿ Senior Cytotechnologists (12)

- Cytology emphasis (Gyn & Non-Gyn screening)
- Molecular emphasis (Non-Gyn Screening only)

## ⦿ Cytotechnologists (12)



# Career Ladder Specifics (cont'd)

## ● Test Development

- Cytopathology Development Technologist Coordinator (1)
- Development Technologists (5)

## ● Program Director Cytology School (1)

- Education Specialist (shared with lab) (1)

# Position Requirements

## **Cytotechnologist**

- Cytology screening; exposure to ancillary testing
- CT certification

## **Senior Cytotechnologist** *(Rewards for development of additional expertise and broader testing responsibility)*

- Screening; additional ancillary testing; emphasis based
- 3 years experience
- Required to pass SCT(ASCP) or MB(ASCP) exam

## **Lead**

- Troubleshooting; point person for CT's
- 3 years experience

# Position Requirements

## Specialist

- **Education/Training Focus**
  - Trains new CT's; provides education to CT's, pathologists and residents
- **Pathologist assisting focus**
  - Prescreens FNA specimens; problem solves
- **Quality focus**
  - Tracks quality metrics; prepares lab for inspections

◎ **3 years experience**

◎ **Required to pass SCT(ASCP) or MB(ASCP) exam**

# Position Requirements (cont'd)

## **Assistant Supervisor**

- Assists managing personnel
- 5 years experience

## **Supervisor**

- Manages lab workflows and personnel
- 6 years experience

## **Program Director Cytology School**

Career Ladder

# DUKE MODEL

# Cytopreparatory Staff

- Clinical Laboratory Technician I
  - entry level
  - no experience
- Clinical Laboratory Technician II
  - 1-2 years laboratory experience
- Cytoprep Technician/Histotechnician I
  - 2 years experience in cytopreparation
  - Completion of ASCT Cytoprep online course

# Cytotechnologist – Level I

- ⦿ Evaluate gynecologic &/or non-gynecologic slides for the presence or absence of disease
- ⦿ Provide differential diagnoses & discuss cytologic criteria
- ⦿ Accurately record diagnoses in the computer
- ⦿ Submit appropriate slides to the pathologist for review
- ⦿ Review patient history related to diagnoses
- ⦿ Review specimen requisition/slide for completeness & accuracy of labeling
- ⦿ Review individual statistics with manager on a monthly basis
- ⦿ Participate in semi-annual CLIA diagnostic review with manager & medical director
- ⦿ Help in the cytopreparation area as necessary
- ⦿ Recognize cytologic (diagnostic /preparatory) issues of concern & address with appropriate CT staff member
- ⦿ Regularly participate in CE activities

# Cytotechnologist (Senior) - Level II

- Mentor & instruct cytotechnology students
- Assist in training new junior cytotechnologists
- Identify cases for educational resources & share with the Coordinator of Resident Education
- Participate in one (1) laboratory or hospital committee
- Participate in interim CAP inspections



# Cytotechnologist (Lead) - Level III

- Perform 10% QC & 5-year look back re-screen (CLIA required  $\geq$  5 years)
- Plan, develop, present, &/or participate in workshops, scientific papers, & posters
- Help collect & maintain cases for educational resources under the direction of the Coordinator of Resident Education
- Participate in resident teaching under the direction of the Coordinator of Resident Education
- Participate & lead journal club
- Participate in at least one (1) committee & one (1) rotation
- Participate as CAP inspector (on-site mock inspections)

# Cytotechnologist (Specialist) - Level IV

- Prescreen FNA's, order/evaluate immunohistochemistry stains
- IHC stain – manual quantitation (preview) for ER/PR/HER2NEU
- Prepare interesting case presentation once per quarter for peers
- Provide technical/cytologic instruction to medical students/residents/fellows
- Oversee technical/education areas – independent problem solving, reporting problems & solutions to manager
- Supervise technical area (Molecular, FNA, Cytopreparatory)
- Oversee training of new personnel
- Oversee the development of new procedures
- Oversee research projects
- Attend management/supervisor meetings as needed
- Participate in various personnel actions including hiring, performance appraisals, promotions, transfers; & vacation & daily work schedules of technical staff.
- Participate in at least two (2) committees/projects & one (1) rotation
- Participate as outside CAP inspector

# Required Qualifications

## **Education:**

Bachelor of Science degree in cytotechnology or related field or a Bachelor of Arts degree with 20 semester hours of required science coursework. Successful completion of an accredited cytotechnology program.

# Required Qualifications

## **Experience:**

Level I : 0 – 3 years

Level II: >3 years

Level III: >/=5 years

Level IV: >/= 10 years

# Required Qualifications

## Degrees, Licensure, &/or Certification:

- ① BS/BA
- ① CT(ASCP) certification or eligible (or equivalent)
- ① Passing the board certification examination is a condition of continued employment.
  
- ① Level IV: SCT(ASCP) &/or MB(ASCT) (or equivalent) &/or advanced degree
- ① Supervisory experience in cytopathology desirable

# Required Qualifications

## **Knowledge, Skills, & Abilities:**

- Must be able to screen  $\geq 50$  slides/day.
- Must be able to distinguish colors
- Good communication skills
- Good computer skills
- Good organization skills
  
- Level IV: High level & understanding of cytology theory & practice through evidence of continuing education

# Required Qualifications

## **Distinguishing Characteristics:**

Level II, III, and IV: Positive role model & mentor to new, less-experienced staff

# FNA Specialist

## **General Description of the Job Class**

Oversee & participate in specialized and complex technical tasks involved in FNA procurement, sample preparation, screening & evaluation for the detection of cancer and/or other pathologic conditions along with specific specialist responsibilities.



# Duties & Responsibilities

- Participate in interventional FNA procedures to prepare the sample, including triage for ancillary studies
- Perform the immediate assessment for adequacy.
- Evaluate permanent FNA slides for the presence or absence of disease
- Provide differential diagnoses & discuss cytologic criteria
- Accurately record diagnoses in the computer
- Submit appropriate slides to the pathologist for review

# Duties & Responsibilities (cont'd)

- ⦿ Review patient history related to diagnoses
- ⦿ Provide any pertinent additional clinical information to pathologists
- ⦿ Review specimen requisition/slide for completeness & accuracy of labeling
- ⦿ Triage FNA immediate assessment specimens to include: flow cytometry, special stains, molecular markers
- ⦿ Order/preview immunohistochemistry stains

# Duties & Responsibilities (cont'd)

- Review associated histology selecting tumor area on H&E for micro dissection for molecular testing.
- Provide technical/cytologic instruction to medical students/ residents/fellows
- Employ independent problem solving, reporting problems & solutions to Medical Director of FNA Service
- Oversee training of new personnel including pathology residents, medical students and cytotechnologists
- Oversee the development of new procedures

# Duties & Responsibilities (cont'd)

- Oversee research projects
- Plan, develop, present, &/or participate in workshops, scientific papers, & posters
- Recognize cytologic (diagnostic /preparatory) issues of concern & address with cytology manager or supervisor of preparatory laboratory.
- Regularly participate in CE activities
- Perform other related duties incidental to the work described here.
- Maintain all aspects of FNA clinics & independent FNA locations
- Act as Safety Officer for FNA Service locations

# Required Qualifications

## **Education:**

Bachelor of Science degree in cytotechnology or related field or a Bachelor of Arts degree with 20 semester hours of biological science coursework. Successful completion of an accredited cytotechnology program.

# Required Qualifications

## **Experience:**

Minimum of 10 years

## **Degrees, Licensure, &/or Certification:**

- BS/BA
- CT(ASCP) certification (or equivalent)
- SCT(ASCP) &/or advanced degree

# Required Qualifications

## **Knowledge, Skills, & Abilities:**

- Must be able to screen  $\geq 50$  slides/day.
- Must be able to distinguish colors
- Good communication skills
- Good computer skills
- Good organization skills
- High level & understanding of cytology theory & practice through evidence of continuing education

# Required Qualifications

## **Distinguishing Characteristics:**

- ⦿ Positive role model & mentor to new, less-experienced staff
- ⦿ Experience in supervisory level management, research capabilities, & project management.



# At the end of the day...

- Modified CT Career Ladder to 3 Levels
- FNA Specialist position will substitute for Level IV
- FNA Specialist will dual report to Medical Director (diagnostics/management of FNA areas) & Cytology Manager (regulatory)
- FNA Specialist on par with Pathology Assistants (salary/exempt status)

# Opportunities...



# Clinical Cytotechnologist...

## Practitioner? Specialist?

- Still about morphology, but with the addition of molecular analysis.
- Triaging specimens for ancillary testing
- Digital Image Analysis (DIA)
- Quantitative immunohistochemistry
- FISH
- Tumor Identification for Oncology Testing
- Circulating Tumor Cells (CTC)
- Identification of microbiologic agents

# Triaging Specimens

At time of FNA & during cellular evaluation

- Flow Cytometry
- Special Stains
- IHC
- Molecular Tests

# Digital Image Analysis

- ⦿ Determining DNA ploidy
- ⦿ Performed on invasive breast & prostate ca
- ⦿ **CT selects** sufficient number & appropriate feulgen stained cells for analysis
- ⦿ Instrument analyzes cells producing histogram
- ⦿ CT analyzes histogram & renders **preliminary tumor ploidy status for pathologist**

# Quantitative Immunohistochemistry

- Requires instrumentation
- Assessment performed on tissue
- **CT selects** appropriate areas of slide once in instrument for analysis
- Render **preliminary interpretation for pathologist**

# FISH

- Urovysion
- Diagnosis & monitoring for recurrent bladder cancer by detecting aneuploidy in certain chromosomes.
- Because of morphologic background, CT's play important role in this technology as they use a scanning technique equivalent to screening to identify abnormal cells.
- Using CT provides for more rapid & accurate assessment
- Prepare preliminary report for pathologist

# Tumor Identification

- ◎ EGFR, KRAS, BRAF...
- ◎ **CT examines** tissue slides for areas of tumor, marks the areas, & makes sure enough material is available for genetic testing.
- ◎ **Pathologist reviews** for final determination before testing takes place.



# Circulating Tumor Cells

- Used for metastatic colorectal, breast, & prostate cancers.
- Cells presented in a gallery format
- **CT identifies, marks,** & counts cells that fit definition according to manufacturer guidelines
- **Pathologist reviews** cell gallery & **CT's findings**

# Identification of Microbiologics

- Special stains are performed on tissue specimens specific to agents needing identification, such as acid fast bacilli
- **CT examines** the tissue section for the microbiologic agent, identifies it, marks it, & **issues a preliminary report** (positive or negative; present or absent) **for the pathologist.**

# It's still about the cells!

