**UW Medicine - Pathology**

400-09-01-05

Clinical Cytogenetics Technologist Trainee Policy

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| Adopted Date: 09/1991Review Date: 09/2005Revision Date: 04/03/13 |

PURPOSE

To define the role of the Cytogenetics Trainee in the laboratory.

POLICY

### Clinical Cytogenetic Technologist Trainee

Higher Education Personnel Board

Specification for Class Class Code: 6450

Clinical Cytogenetic Technologist Trainee

**Class Series Concept**

Perform cytogenetic laboratory procedures and analysis, utilizing general genetics and the basic biology of the mitotic cell cycle.

**Basic Function**

Participate in on-the-job training in cytogenetic laboratory procedures and analyses, using general genetics and the basic biology of the mitotic cell cycle.

**Distinguishing Characteristics**

Under direct supervision, participate in on-the-job training to learn and perform cytogenetic laboratory procedures and analyses.

**Typical Work**

Participate in structured training modes to perform the following:

* Scan slides for analyzable spreads; count and analyze selected spreads and evaluate acceptable quality;
* Karyotype chromosomes using the standard format - Cytovision;
* Stain slides of chromosome spreads utilizing a variety of banding techniques, including G, R, C, Q, and NOR, etc.;
* Review patient request forms for accuracy of information and determine if previous cytogenetic studies were performed;
* Set up cultures for chromosome analysis on blood, bone marrow, solid tumor tissue, amniotic fluid or fibroblasts from skin, lung, etc.; harvest cultures on these specimens;
* Use Cytovision to capture selected chromosome spreads and enhance banding
* Maintain documentation of the steps performed in preparation with appropriate labeling of test tubes and slides;
* Maintain records of all lab procedures;
* Summarize test results using the International System for Cytogenetic Nomenclature and write reports to present to faculty for approval;
* Maintain a safe work environment following health and safety regulations and laboratory policies;
* Attend and participate in laboratory staff meetings, journal clubs, continuing education and in-service education;
* Perform related duties as required.

**Minimum Qualifications**

A Bachelor's Degree with at least fifteen credit hours in a biological or physical science OR an equivalent combination of education and experience.

New Class: 3-21-88

### Internal Job Description

**Clinical Technologist Trainee, Cytogenetics--Anatomic Pathology**

1. Tissue culture skills

 Learn sterile techniques

 Learn how to set up cultures of bloods, bone marrow, solid tissues, amniotic fluid, and chorionic villi

 Prepare primary cultures or cultures to be subcultured before being harvested

 Learn to recognize when specimens are ready for harvesting

 Learn how to harvest different specimens using in-situ techniques, or suspension techniques

 Demonstrate mastery of the above techniques within 2 years

1. Microscope skills

 Learn how to prepare slides with metaphase spreads using a variety of techniques

 Scan slides for analyzable spreads, evaluate acceptable quality and count and analyze selected spreads

 Capture selected spreads

 Karyotype cells using imaging computers

 Complete case report to be presented to the faculty in charge of signing out, using most current ISCN (International System for Cytogenetic Nomenclature)

 Demonstrate mastery of the above techniques within 2 years

1. Quality control

 Review patient request forms for accuracy of information and determine if previous cytogenetic studies were performed

 Maintain documentation of the steps performed in preparation with appropriate labeling of test tubes and slides

 Keep records of results of cases done

 Keep performance records of equipment used

 Learn proper use and maintenance of all necessary laboratory equipment

 Implement laboratory safety procedures

 Assist the supervisor in preparing for CAP and PacNoRGG inspections

1. Training activities

 Attend all orientation and training sessions for new technologists

 Attend and participate in: journal clubs, continuing education, local meetings and in-service education

 Become certified by the NCA as a Clinical specialist in cytogenetics within 2 years

1. Interpersonal skills and ethics

 Maintain confidentiality of patient information, including final diagnosis

 Demonstrate professionalism in physician and patient interactions

 If necessary, answer phone calls to physicians or other laboratory personnel about procedures for collecting and handling specimens

1. Contribute to a pleasant working atmosphere

## Example Curriculum for Cytogenetic Tech Trainee

## Week 1

* Cut 15 karyotypes (short)
* Laboratory General and Safety Orientations
* Chapters 9 and 10 in *Genetics in Medicine* and all problems at the end of the chapters
* Chapters 1 and 5 in *Human Cytogenetics-Constitutional Analysis,* Rooney 3rd Edition
* Chapters 1, 2 and 6 in *AGT Cytogenetics Lab Manual,* 3rd Ed.
* Set up of Amniotic Fluid (AF) (observe at least 6 cases before trying)

Pay particular attention to:

* + Location of materials
	+ Proper labeling of slides, vessels, etc.
	+ Media preparation
	+ Computer login
	+ Sterile technique
		- Training of slide staining (G-banding)

## Week 2

* Continue training of AF setup
* Continue training of staining—stain 5 slides (G-banding)
* Set up of Solid Tissue (ST) (observe at least 3 cases before trying)
	+ - Location of materials
		- Media preparation
		- Computer login
		- Sterile technique
* Cut 15 karyotypes (longer)
* Chapters 17 and 18 in *Genetics in Medicine* (+ problem)
* Chapters 4 and 8 in *Human Cytogenetics - Constitutional Analysis*, Rooney 3rd Edition
* Chapters 4 and 5 in *AGT Cytogenetics Lab Manual*, 3rd Ed.

## Week 3

* Continue training of AF setup
* Continue training of ST setup
* Identify quality and variables in slide making/staining
* Cut 10 karyotypes (mixed length)
* Training on Applied Imaging system
	+ - Do 5 karyotypes
* Set up of Tumors (TR) (observe at least 3 cases before trying)
	+ Location of materials
	+ Media preparation
	+ Computer login
	+ Sterile technique
		- In *Genetics in Medicine*—Case studies: 5, 18, 22, 24
		- Chapter 3 in *Human Cytogenetics - Constitutional Analysis*, Rooney 3rd Edition
		- Chapters 9, 10 and 11 in *AGT Cytogenetics Lab Manual,,* 3rd Edition

## Week 4

* Cut 5 karyotypes
* Continue training of AF, ST and TR setups
* Training of IFISH protocol
* Start analysis training—AF cells
	+ Drawing cells
	+ Drawing on prints
	+ Microscope analysis
		- Training on Applied Imaging system
			* Do 10 karyotypes
				+ Chapters 7, 13, 14 in *AGT Cytogenetics Lab Manual,* 3rd Ed.
				+ Chapters 5 and 6 in *Human Cytogenetics - Constitutional Analysis*, Rooney 3rd Edition

## Week 5

* Continue training of AF, ST, TR setups
* Analyze 2 or 3 AF cases—10 cells each
* Continue training of IFISH
* Training on Applied Imaging system
	+ Do 10 karyotypes
	+ Do 10 FISH captures
		- Chapters 1-10 in *Human Chromosomes*, 4th Edition
		- Chapters 1-8 ISCN (2005)

## Week 6

* Continue training of AF, ST, TR setups
* Train CS AF harvesting (watch 3 harvests before trying)
* Analyze 5 or so AF cases—10 cells each
* Continue training of IFISH
* Training on Applied Imaging system
	+ Do 5 karyotypes
	+ Do 5 FISH captures
		- Chapters 11-20 in *Human Chromosomes,* 4th Edition.
		- Chapters 9-16 ISCN (2005)

## Week 7

* Continue training of AF, ST, TR setups
* Harvest CS AFs (1 harvest)
* Train on Flask harvests
* Analyze 5 or so AF cases—10 cells each
	+ Capture and karyotype for 2 cases
		- Chapters 21-31 in *Human Chromosomes*, 4th Edition

## Week 8

* Observe PB and Bone Marrow (NE) *set-ups*
* Observe PB and NE *harvests*
* Learn how to make Hypotonic for all areas, Media for all areas and special chemicals: MTX, collagenase, Fungizone, etc.
* Harvest CS AFs (2 harvests)
* Set up at least one AF or ST or TR as needed
* Observe sign-out 1 day
* Analyze 2 AF and 1 PB cases (10 cells each)
* Capture and karyotype for 3 cases (1 blood)
* Chapters 1 and 2 in *Human Cytogenetics – Malignancy and Acquired Abnormalities,* Rooney 3rd Edition
* Chapter 2 in *Human Cytogenetics - Constitutional Analysis,* Rooney, 3rd Edition

## Week 9

* Set up your own Blood
* Harvest your own Blood
* Observe sign-out 2 days
* Observe NE and PB harvests
* Analyze 2 blood cases (10 cells)
* Log out and finalize at least 2 cases
* Chapters 7 and 9 in *Human Cytogenetics – Malignancy and Acquired Abnormalities*, Rooney 3rd Edition

## Week 10

* Continue to train in PBs
* Harvest PB 1x this week
* Prepare a microdeletion FISH probe and score and capture.
* Analyze 2 PB cases and 2 AF cases (do at least 10 cells and/or capture and finalize).
* Continue to observe NP harvests

## Week 11-12

* Begin to work in home area, receive and work on assigned cases. (Begin special training for NPs if home area)
* Review any areas of concern

## Take CTT Test

Written By: Director Approval:

(Signature and Date) (Signature and Date)

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 Cytogenetics Supervisor