Minnesota State University, Mankato

Curriculum Proposal

Please type or select the requested information. Print completed forms, add appropriate paper attachments, and route through MSU's curricular process for recommendations and decisions.

<table>
<thead>
<tr>
<th>College: Science, Engineering and Technology</th>
<th>Department: Biological Sciences</th>
<th>Program: Biology: Cytotechnology/Cyngenetics</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Check all that apply):</td>
<td>(Check all that apply):</td>
<td>(Check all that apply):</td>
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<tr>
<td>Proposal #: 78</td>
<td>Effective Date of Change:</td>
<td>Academic Year 2006-2007</td>
</tr>
<tr>
<td>(For Office Use Only)</td>
<td>Course Designator and Number</td>
<td>Number of Credits</td>
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<tr>
<td></td>
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<tr>
<td>Type of Change: Program Redesign</td>
<td>Title Current: Biology: Cytotechnology Option</td>
<td>(if applicable)</td>
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<tr>
<td>Proposed: Redesign - See Rationale</td>
<td>Title Proposed: Biology: Cytotechnology / Cyngenetics</td>
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<tr>
<td>24-Char. Abbrev:</td>
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</tbody>
</table>

Include a course or program description for the Bulletin (30-40 words maximum for courses, 100 for programs):

The Cytotechnology / Cytogenetics option consists of two tracks leading to certification in two unique areas of expertise. The first three years of the program curriculum is the same, but the fourth year internship at an affiliated institution is highly specialized for each track.

Rationale or Justification for change:

Please see attached.

***For General Education or Cultural Diversity Courses Only***

| General Education Course:                  | Cultural Diversity Course:       |
| GE Category # N/A                          | (Please check one.)              |
| GE Category Name (Maximum of 3 Categories) | Core (At least 75% devoted to topics |
|                                            | of race, gender, sexual orientation, |
|                                            | age, class, and disabilities as they |
|                                            | occur in United States Society.)   |
|                                            | Related (At least 25% devoted to the |
|                                            | above topics or to a global perspective |
|                                            | on topics related to African American, |
|                                            | Asian, Hispanic, and Native American |
|                                            | inhabitants of the United States.)  |

For Writing Intensive Courses, attach a description of the kind and quantity of writing.

For Upper Division Courses, include a description of the respects in which it is broad and general rather than narrow and specific, and so suitable as GE.

Attach paper copies of the following:

a. Syllabus or course outline.

b. Course's student learning outcomes associated with each GE competency or CD designation.

c. List of strategies to be used to assess students' achievement of each GE competency or CD designation.

***For New Courses***

<table>
<thead>
<tr>
<th>Instructional Type: Lecture</th>
<th>Course will be offered:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade</td>
<td>Fall Semester</td>
</tr>
<tr>
<td>P/N</td>
<td>Spring Semester</td>
</tr>
<tr>
<td>Pre- or Co-requisites:</td>
<td>Summer Session</td>
</tr>
</tbody>
</table>

Other courses are being changed or eliminated. (Explain.)

Course content or title is similar to courses in other departments. (Attach copy of letter of agreement with other program(s) contacted. Indicate the nature of the discussions and/or resolution of differences or potential conflicts.)

Attach paper copies of the following:

a. Syllabus or course outline.

b. Course's student learning outcomes.

c. A list of resources required to offer and support this course.

d. A description of how teaching this course will affect department staffing.

e. If 400/500 level course, an explanation of added expectations of graduate students.

Revised September 2002
# Signature Page

**Department**

- **Recommended**
- **Not Recommended**

Comments:

**College Curriculum Committee**

- **Recommended**
- **Not Recommended**

Comments:

**College Dean**

- **Recommended**
- **Not Recommended**

Comments:

**General Education Subcommittee**

- **Recommended**
- **Not Recommended**

Comments:

**Undergraduate Curriculum and Academic Policy Committee**

- **Recommended**
- **Not Recommended**

Comments:

**Faculty Association Graduate Committee**

- **Recommended**
- **Not Recommended**

Comments:

**Graduate Dean**

- **Recommended**
- **Not Recommended**

Comments:

**Academic Affairs Council**

- **Recommended**
- **Not Recommended**

Comments:

**Senior Vice President and Vice President for Academic Affairs**

- **Approved**
- **Not Approved**

Comments:
Rationale for Cytotechnology/cytogenetics option redesign.

The following courses in biology (422, 423, 424, 425, 427, 428, 429, 447, 448 & 450) are being consolidated into the new courses (422, 423, 424, & 425). Biology 420 has been removed from the required electives and replaced with BIOL 479 and BIOL 430 to better prepare the students for their internships. The result of these changes simplifies the two options and emphasizes that the differences exist in the fourth year internships. Thus, the name of the program was modified to reflect both tracks.
Program Proposals- B.S. Biology: Cytotechnology / Cytogenetics

A. See attachment
B. See attachment
C. See attachment
D. See attachment
E. Affiliation contract agreements to provide the clinical internship training have been completed with Mayo Clinic in Rochester, MN for Cytotechnology and Cytogenetics and with Mercy Medical Center in Des Moines, IA for Cytotechnology.
F. Department staffing will not be affected.
G. No additional library holdings will be required.
## Sample Student Learning Outcomes Assessment Plan

Program: **Cytotechnology / Cytogenetics**  Department: **Biology**

<table>
<thead>
<tr>
<th>Student Learning Outcomes</th>
<th>Method(s) of Assessment</th>
<th>Standard of Mastery/Criterion of Achievement</th>
<th>Persons Responsible for Conducting Assessment</th>
<th>Frequency of Assessment</th>
<th>Plan for Dissemination and Use of Assessment Results</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LO 1:</strong> Demonstrate basic understanding of cytotechnology or cytogenetics</td>
<td>Method 1: Student Survey administered during senior exit interview</td>
<td>70% or more of students had a satisfaction rating 3.0 or greater on a scale of 0-5</td>
<td>Lois Anderson</td>
<td>Per year</td>
<td>Reports will be used to evaluate and improve programs in cytotechnology and cytogenetics</td>
</tr>
<tr>
<td></td>
<td>Method 2: Core Exam and Survey given during clinical site visit</td>
<td>See attachment</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Method 3: National Certification Exam</td>
<td>70% or more of the students have passed the national certification exam</td>
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<tr>
<td><strong>LO 2:</strong> Demonstrate cognitive and technical competencies and knowledge in the major</td>
<td>Method 1: Student Survey administered during senior exit interview</td>
<td>70% or more of students had a satisfaction rating 3.0 or greater on a scale of 0-5</td>
<td>Lois Anderson</td>
<td>Per year</td>
<td>Reports will be used to evaluate and improve programs in cytotechnology and cytogenetics</td>
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<tr>
<td></td>
<td>Method 3:</td>
<td>70% or more of</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>LO 3: Demonstrate analytical, problem-solving, and decision-making skills</td>
<td>Method: 1 Student Survey administered during senior exit interview</td>
<td>70% or more of students had a satisfaction rating 3.0 or greater on a scale of 0-5</td>
<td>Lois Anderson</td>
<td>Per year</td>
<td>Reports will be used to evaluate and improve programs in cytotechnology and cytogenetics</td>
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</tbody>
</table>

| LO 4: Necessary core courses and competencies were provided to prepare students and allow them to successfully participate and complete the cytotechnology or cytogenetics program | Method: 1 Student Survey administered during senior exit interview | 70% or more of students had a satisfaction rating 3.0 or greater on a scale of 0-5 | Lois Anderson | Per year | Reports will be used to evaluate and improve programs in cytotechnology and cytogenetics |
|Method: 2: Core Exam and Survey given during clinical site visit | See attachment |
|Method: 3: National Certification Exam | 70% or more of the students have passed the national certification exam |
BS Biology: Cytotechnology
2004-2005 Report on Program and Curriculum Assessment

Method 1: Student survey administered during senior exit interview
Number of Students 2
100% of students gave at least a 3.0 on a scale of 5 satisfaction rating on all statements.
No action needs to be taken since 70% or more of students had a satisfaction rating 3.0 or greater.

Method 2: Core exam and survey given during clinical site visit during spring semester of senior year.
Number of Students 2
See attachment

Method 3: ASCP Board of Registry National Certification Exam
Number of Students 2
100% of students have passed the national certification exam.
No action needs to be taken since 70% or more of the students have passed the national certification exam.

Outcomes:
1. Demonstrate a basic understanding of cytotechnology.
2. Demonstrate cognitive and technical competencies and knowledge in the major area of cytotechnology.
3. Demonstrate analytical, problem-solving, and decision-making skills.
4. Necessary core courses and competencies were provided to prepare students and allow them to successfully participate and complete a cytotechnology program.

Person responsible for conducting and reviewing assessment report:
Lois C. Anderson, MA,MT(ASCP)
Cytotechnology Program Director
BS Biology, Cytotechnology option

BS Biology, Cytotechnology option students HAVE NOT achieved mastery of the basic biological knowledge outcomes (knowledge #1). 0% of the students scored 70% or better on the basic biology knowledge test (core test items 1-40) (avg = 23.5/40, n = 2). 50% of the students averaged a score of "I missed a bit" (3) or better on survey items asking them about their biology knowledge (n = 2).

BS Biology, Cytotechnology option students HAVE achieved mastery of the in-depth biological knowledge outcomes (knowledge #2). 100% of the students scored passed on the in-depth biology test (ASCP Board of Registry Examination) (n=2).

BS Biology, Cytotechnology option students HAVE NOT achieved mastery of the science skills outcomes (skills #1). 0% of the students scored 70% or better on the science skills test items (core test items 41-48) (avg = 3.5/8, n = 2). 50% of students averaged a score of "agree" (3) or better on survey items related to science skills (n = 2).

BS Biology, Cytotechnology option students HAVE NOT achieved mastery of the science attitudes outcomes (attitudes #1). 50% of the students averaged a score of "agree" (3) or better on survey items related to science attitudes (n = 2). The baseline data for participation in BIOL 448, Undergraduate Research Conference, and grant applications are 100%, 0%, and 0% of all of this option's students (not just seniors), respectively.

What will the program do as a result of that information?

_X_ We do not plan to make changes in this option.

Students passed the ASCP Board of Registry Examinations and completed certification requirements which are the true measures of mastery in their chosen field.
Justification for Change of BS Biology: Cytotechnology to BS Biology: Cytotechnology / Cytogenetics

The Cytotechnology / Cytogenetics option consists of two tracks leading to certification in two unique areas of expertise. The first three years of the program coursework is the same, but the fourth-year internship at an affiliated institution is highly specialized for each track. The students will enroll in Biology 422, 423, 424, and 425 with the understanding that they will be serving internships specifically designed for the tracks they have chosen. In changing the option, it was necessary to consolidate the following courses Biology 422, 423, 424, 425, 427, 428, 429, 444, 447, 448, & 450 into Biology 422, 423, 424, & 425. Therefore, Biology 422, 423, 424, & 425 have changed course descriptions with variable credits that would accommodate each internship site and each track.

<table>
<thead>
<tr>
<th>Revised</th>
<th>Current</th>
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<tbody>
<tr>
<td>Required for Option: (11 credits)</td>
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</tr>
<tr>
<td>Biology 105  General Biology I (4)</td>
<td>Biology 105  General Biology I (4)</td>
</tr>
<tr>
<td>Biology 106  General Biology II (4)</td>
<td>Biology 106  General Biology II (4)</td>
</tr>
<tr>
<td>Biology 211  Genetics (3)</td>
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</tr>
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</table>

<table>
<thead>
<tr>
<th>Core Courses (16 credits)</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Biology 220  Human Anatomy (4)</td>
<td>Biology 220  Human Anatomy (4)</td>
</tr>
<tr>
<td>Biology 230  Human Physiology (4)</td>
<td>Biology 230  Human Physiology (4)</td>
</tr>
<tr>
<td>Biology 270  General Microbiology (4)</td>
<td>Biology 270  General Microbiology (4)</td>
</tr>
<tr>
<td>Biology 320  Cell Biology (4)</td>
<td>Biology 320  Cell Biology (4)</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Required Courses (3-4 credits)</th>
<th>Required Courses (3-4 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biology 434  Development and Human Embryology (3)</td>
<td>Biology 420  Diagnostic Parasitology (3)</td>
</tr>
<tr>
<td>Biology 435  Histology (4)*</td>
<td>Biology 434  Development and Human Embryology (3)</td>
</tr>
<tr>
<td>Biology 479  Molecular Biology(4)**</td>
<td>Biology 479  Histology (4)</td>
</tr>
<tr>
<td>Biology 430  Hematology/ Intro. To Immunology (4)</td>
<td>**Highly recommended for Cytogenetics Track</td>
</tr>
</tbody>
</table>

- *Highly recommended for Cytotechnology Track
- **Highly recommended for Cytogenetics Track
Required General Education (4 credits)
Math 112, 113, 115, 121

Required Support Courses (18 credits) (#Highly recommended)
Choose from the following to total at least 18 credits in Chemistry:
Chemistry 201 General Chemistry I (5)
Chemistry 202 General Chemistry II (5)
Chemistry 305 Analytical Chemistry (4)
Chemistry 320 Organic Chemistry (5)
Chemistry 360 Principles of Biochemistry (4)

Professional Education (32 credits)
Biology 422 Cytotechnology / Cytogenetics Clinical Internship I (1-12 credits)
Biology 423 Cytotechnology / Cytogenetics Clinical Internship II (1-12 credits)
Biology 424 Cytotechnology / Cytogenetics Clinical Internship III (1-12 credits)
Biology 425 Cytotechnology / Cytogenetics Clinical Internship IV (1-12 credits)

Required General Education (4 credits)
Math 112, 113, 115, 121

Required Support Courses (18 credits)
Choose from the following to total at least 18 credits in Chemistry:
Chemistry 201 General Chemistry I (5)
Chemistry 202 General Chemistry II (5)
Chemistry 305 Analytical Chemistry (4)
Chemistry 320 Organic Chemistry (5)
Chemistry 360 Principles of Biochemistry (4)

Professional Education (32 credits)
Biology 422 General Principles of Cytology (2)
Biology 423 Gynecologic Cytology (4)
Biology 424 Advanced gynecologic Cytology (3)
Biology 425 Pulmonary Cytology (3)
Biology 427 Urinary cytology (3)
Biology 428 Gastrointestinal Cytology (1)
Biology 429 Body Cavity and Misc. Secretion Cytology (3)
Biology 444 Fine Needle Aspiration Cytology (3)
Biology 447 Cytology Preparation Techniques (2)
Biology 448 Independent Projects (3)
Biology 450 Clinical Cytology (5)
Proposed: Biology BS: Cytotechnology / Cytogenetics Option (85 credits)

Cytotechnology Track
A cytotechnologist is an allied health professional and who is involved in the microscopic study of cells for evidence of disease or cancer. Cytotechnologists are trained to accurately identify precancerous, malignant, and infectious conditions using cytological techniques. The “Pap test” (an evaluation of cells from the uterine cervix) is the best known test in this field. The four-year curriculum consists of three years spent at the university completing the required courses and the fourth year is a 32-credit internship spent in professional education at Mayo School of Health Sciences in Rochester, MN or Mercy Medical Center in Des Moines, IA. The BS degree is awarded by the University after successful completion of the internship year. Graduates are then eligible to take the certifying examination. Cytotechnologists are employed in hospital laboratories, universities, and private laboratories.

Cytogenetics Track
Cytogenetics is the specialized area of laboratory medicine involving the study of normal and abnormal chromosomes and their relationship to human disease. Analysis of chromosomes can aid in the diagnosis, prognosis, and monitoring of treatment of many diseases. Cytogenetic technologists analyze chromosomes using tissue cultures and preparations from peripheral blood, bone marrow, amniotic fluid, products of conception, and tumor samples. They make microscopic evaluations of the chromosome number and morphology, and prepare reports of the findings for the physicians. Cytogenetic technologists use fluorescent-labeled DNA to detect chromosome abnormalities associated with birth defects, retardation, infertility, miscarriage, and cancers. Fluorescence In Situ Hybridization or FISH has become the most rapidly growing area in cytogenetics. The four-year curriculum consists of three years spent at the University completing the required courses and the fourth year is a 32-credit internship spent in professional education at Mayo School of Health Sciences in Rochester, MN. The BS degree is awarded by the university after successful completion of the internship year. Graduates are then eligible to take the certifying examination. Cytogenetic technologists are employed in hospitals, clinical laboratories, research laboratories, and cytogenetic-related biotechnology companies.

Students should contact the university program director early in their college career for admission to the program, for academic and career counseling, and for information on the process and standards for admission to the professional curriculum, including registration procedures. Admission into the fourth-year hospital clinical internship is competitive. Therefore, admission to the program does not ensure placement into the fourth-year internship.
Required for Option: (11 credits)
Biology 105  General Biology I (4)
Biology 106  General Biology II (4)
Biology 211  Genetics (3)

Core Courses (16 credits)
Biology 220  Human Anatomy (4)
Biology 230  Human Physiology (4)
Biology 270  General Microbiology (4)
Biology 320  Cell Biology (4)

Required Courses (3-4 credits)
Biology 434  Development and Human Embryology
Biology 435  Histology (4)*
Biology 479  Molecular Biology(4)**
Biology 430  Hematology/ Intro. To Immunology (4)

- *Highly recommended for Cytotechnology Track
- **Highly recommended for Cytogenetics Track

Required General Education
Math 112 College Algebra or any higher numbered math (4 credits)

Required Support Courses (18 credits) (#Highly recommended)
Choose from the following to total at least 18 credits in Chemistry:
Chemistry 201 General Chemistry I (5)
Chemistry 202 General Chemistry II (5)
Chemistry 305 Analytical Chemistry (4)
Chemistry 320 Organic Chemistry (5)
Chemistry 360 Principles of Biochemistry (4)#
Required Minor: None

Professional Education (32 credits) Special permission required for enrollment
Clinical Internship at Mayo School of Health Sciences in Rochester, MN or Mercy Medical Center in Des Moines, IA

**Biology 493**: Cytotechnology / Cytogenetics Clinical Internship I (1-12 credits)
Permission Required. (F,S)
The clinical internship and training includes lectures, demonstrations, laboratory sessions, and clinical practicum in the respective areas of cytotechnology or cytogenetics.
The cytotechnology track will include principles in cytology, gynecologic cytology, pulmonary cytology, urinary cytology, gastrointestinal cytology, body cavity and secretion cytology, fine needle aspiration cytology, cytopreparation, independent projects, and clinical cytology practicum.
The cytogenetics track will include an introduction to cytogenetics, pre-analytic cytogenetics, congenital disorders and prenatal cytogenetics, hematology / oncology cytogenetics, culturing and harvesting cytogenetics, fluorescent in situ hybridization (DNA probes), post-analytic cytogenetics, legal and ethical issues in cytogenetics, and clinical cytogenetics practicum.

**Biology 494**: Cytotechnology / Cytogenetics Clinical Internship II (1-12 credits)
Permission Required. (F,S)
Continuation of Clinical I

**Biology 495**: Cytotechnology / Cytogenetics Clinical Internship III (1-12 credits)
Permission Required. (F,S)
Continuation of Clinical II

**Biology 496**: Cytotechnology / Cytogenetics Clinical Internship IV (1-12 credits)
Permission Required. (F,S)
Continuation of Clinical III
### COURSE DESCRIPTION

<table>
<thead>
<tr>
<th>Course &amp; Hours</th>
<th>Title &amp; Description</th>
</tr>
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</table>
| CT 401 (1 hour)| BASIC CYTOTECHNOLOGY  
Introduction to the field of cytology as a health profession (historical background, medical ethics and professional development). Also encompasses the principles and practice of microscopy and an introduction to cell structure and function. |
| CT 406 (2 hours)| LABORATORY OPERATIONS  
Principles and practice of specimen preparation, staining and fixation, record keeping and data processing in the cytology laboratory. Also includes principles of management and supervision. |
| CT 421 (6 hours)| GYNECOLOGIC CYTOLOGY  
Study of conditions related to the female genital tract. Includes normal and abnormal anatomy, histology, microbiology and cytology of the FGT. In depth study of microscopic cytologic finding of the normal FGT and all related inflammatory, reactive, precancerous and cancerous conditions. |
| CT 431 (2 hours)| RESPIRATORY CYTOLOGY  
Study of conditions related to the upper and lower respiratory tracts. Includes normal and abnormal anatomy, histology, microbiology and cytology of the RT. In depth study of microscopy of the normal RT and all related inflammatory, reactive, precancerous and cancerous conditions. |
| CT 441 (1 hour)| GASTROINTESTINAL CYTOLOGY  
Study of conditions related to the gastrointestinal tract. Includes normal and abnormal anatomy, histology, microbiology and cytology of the GI tract. In depth study of microscopy of the normal GI tract and all related inflammatory, reactive, precancerous and cancerous conditions. |
| CT 451 (1 hour)| GENITOURINARY CYTOLOGY  
Study of conditions related to urinary and male genital tracts. Includes normal and abnormal anatomy, histology, microbiology and cytology of the GU tract. In depth study of microscopy of the normal GU tract and all related inflammatory, reactive, precancerous and cancerous conditions. |
CT 461 (1 hour)  EFFUSION CYTOLOGY
Study of conditions related to body cavity effusions. Includes normal and abnormal anatomy, histology, microbiology and cytology of body cavities. In depth study of microscopy of effusions and all related inflammatory, reactive and cancerous conditions.

CT 471 (1 hour)  CENTRAL NERVOUS SYSTEM CYTOLOGY
Study of conditions related to the central nervous system. Includes normal and abnormal anatomy, histology, microbiology and cytology of the CNS. In depth study of microscopy of the normal CNS and all related inflammatory, reactive and cancerous conditions.

CT 481 (3 hours)  SUPRADIAPHRAGMATIC FINE NEEDLE ASPIRATION CYTOLOGY
Study of conditions related to organs and tissues located above the diaphragm that may be studied using FNA cytology. Includes normal and abnormal anatomy, histology, microbiology and cytology of all supradiaphragmatic organs (breast, thyroid, head and neck, eye, ear, etc.). In depth study of microscopy of normal supradiaphragmatic organs and all related inflammatory, reactive and cancerous conditions.

CT 491 (3 hours)  SUBDIAPHRAGMATIC FINE NEEDLE ASPIRATION CYTOLOGY
Study of conditions related to organs and tissues located below the diaphragm that may be studied using FNA cytology. Includes normal and abnormal anatomy, histology, microbiology and cytology of all subdiaphragmatic organs (kidney, adrenal gland, bone, soft tissue, lymph node, etc.). In depth study of microscopy of normal subdiaphragmatic organs and all related inflammatory, reactive and cancerous conditions.

CT 507 (3 hours)  MEDICAL WRITING/RESEARCH
Includes Journal Club article presentations, one group research project and one individual research project.

CT 601 (8 hours)  CLINICAL PRACTICUM
Diagnostic microscopy under the supervision of pathologists and cytotechnologists. Includes gynecologic and non-gynecologic specimens prepared with various methods, with an emphasis on detection, identification, differential diagnosis and reporting of all conditions and entities previously studied.
GENERAL PRINCIPLES OF CYTOLOGY

This course consists of a series of lectures, demonstrations, and laboratory sessions designed to teach the principles of cytology. This includes basic (ultra and light microscope) cell structures, cellular biology, including cell division and growth, and general mechanisms of pathologic changes.

CREDITS: 3 quarter; 2 semester

GYNECOLOGIC CYTOLOGY

This course involves a study of the normal and abnormal anatomy, physiology, histology, and cytology of the female genital tract. Lectures, demonstrations, and laboratory sessions are given. Normal and abnormal cytology is emphasized. Non-neoplastic changes such as hormonal abnormalities and inflammatory conditions are discussed.

CREDITS: 6 quarter, 4 semester

ADVANCED GYNECOLOGIC CYTOLOGY

This course is a continuation of Gynecologic Cytology to include malignant conditions of the endocervix, endometrium, ovary, and vagina. Lectures will also be given on special areas of the topics including cytology of pregnancy and therapeutic changes.

CREDITS: 4 quarter, 3 semester

PULMONARY CYTOLOGY

This course consists of a series of lectures, demonstrations, and laboratory sessions of the gross and microscopic anatomy, physiology, pathology and cytology of the respiratory tract. Particular areas covered include benign and infectious conditions, malignancies, and alterations due to therapy. Fine needle aspiration of the lung is also discussed.

CREDITS: 4 quarter; 3 semester
URINARY CYTOLOGY

This course consists of a series of lectures, demonstrations, and laboratory sessions of the gross, microscopic anatomy, physiology, pathology and cytology of the urinary tract. Areas covered include benign conditions, inflammatory disorders, malignancies, and therapeutic effects.

CREDITS: 4 quarter, 3 semester

GASTROINTESTINAL CYTOLOGY

This course consists of a series of lectures, demonstrations, and laboratory sessions of the gross and microscopic anatomy, physiology, pathology and cytology of the GI tract.

CREDITS: 2 quarter, 1 semester

BODY CAVITY AND MISCELLANEOUS SECRETION CYTOLOGY

This course consists of a series of lectures, demonstrations, and laboratory sessions of the gross and microscopic anatomy, physiology, pathology and cytology of the body cavity fluids (pleural, peritoneal, and pericardial) and other sites including the cerebrospinal fluid and eye.

CREDITS: 5 quarter, 3 semester

FINE NEEDLE ASPIRATION CYTOLOGY

This course consists of a series of lectures, demonstrations, and laboratory sessions of the gross and microscopic anatomy, pathology, and cytology of various areas sampled using fine needle aspiration.

CREDITS: 3 quarter, \( \frac{3}{2} \) semester

CYTOPREPARATION TECHNIQUES

Lectures, demonstrations, and laboratory sessions will be given in the various procedures carried out in the cytology laboratory. Collection and preparatory techniques are described throughout the course series. Assignments in laboratory techniques continue through the year.

CREDITS: 5 quarter, 8 semester
INDEPENDENT PROJECTS

This course includes Check Sample and Journal Club presentations; projects involving literature research, cytopreparation, quality control/assurance, and cytology/histology correlation.

CREDITS: 4 quarter, 3 semester

CLINICAL CYTOLOGY

This portion of the program includes graded daily screening exercises. Students screen four hours a day for approximately 80 days. A management series is presented at the end of the didactic portion of the program, with two projects to be completed during the clinical segment.

CREDITS: 8 quarter, 5 semester
APPENDIX V

1. Introduction to Cytogenetics: This module will focus on general knowledge about cytogenetics including chromosome structure and banding techniques, karyotyping, relating chromosome anomalies to syndromes/diseases, quality issues and safety, professionalism, and reagent preparation, and Mayo policies and procedures.

Goals: The student will
- learn the basic function and structure of human chromosomes.
- learn the relationship of chromosome banding to chromosome structure.
- learn cell division.
- develop proficiency in the identification of human chromosomes.
- learn to assign correct International System of Cytogenetic Nomenclature to normal and abnormal karyotypes.
- learn the chromosome anomalies associated with various medical conditions.
- demonstrate an understanding of Mayo policies, missions and core principles.
- demonstrate an understanding of quality control, quality assurance and quality system functions.
- demonstrate knowledge about appropriate safety and emergency preparedness programs.

2. Accessioning Cytogenetic Specimens: This module is designed to familiarize the student with the pre-analytic requirements for cytogenetic specimens and to teach the student how to assess type and quality of specimen submitted to the laboratory.

Goals: The student will learn
- the computer databases associated with genetic studies including the Laboratory Information System and the Mayo Genetic System.
- the Mayo Access database associated with specimen requirements, test limitations, etc.
- the medical terminology related to cytogenetic/genetic testing.
- to correlate reasons for referral with specimen type and appropriate chromosome analysis
- to recognize inadequate specimens (volume, type, and condition).
- to determine if sufficient information is provided to perform the appropriate chromosome analysis.

3. Peripheral Blood Analysis: This module will familiarize the student with chromosome analysis, computer imaging, and appropriate banding techniques for peripheral blood specimens.

Goals: The student will
- learn how to safely obtain a peripheral blood specimen
- learn to select suitable metaphase spreads for chromosome analysis.
  a) appropriate staining techniques
  b) appropriate band resolution
  c) well spread chromosomes
- learn to recognize
  a) numeric abnormalities
  b) structural anomalies
  c) artifactual gains/losses of chromosomes
  d) breakage syndromes
  e) true mosaicism
  f) true chimerism
- perform microscopic analysis of a sufficient number of metaphases to determine the modal karyotype of the specimen.
- learn to produce high quality computer images of metaphases and prepared karyotypes.

4. **Prenatal Cytogenetics**: This module will familiarize the student with the analysis, computer imaging, and appropriate banding techniques for prenatal chromosome analysis. The student will gain experience with fetal cells from amniotic fluid and chorionic villus sampling and from fibroblasts from spontaneous abortions.

**Goals**: The student will
- learn to select suitable metaphase spreads for chromosome analysis.
- analyze and karyotype a sufficient number of metaphases to establish the correct karyotype (both in situ and flask methods will be analyzed).
- learn to recognize colony formation in banded microscope preparations.
- learn the value of prenatal chromosome findings to patient’s other family members, reproductive history, and future pregnancies.

5. **Hematology/Oncology Cytogenetics**: This module will familiarize the student with the analysis, computer imaging, and appropriate banding techniques for oncology specimens. The student will gain experience with bone marrow and solid tumor specimens.

**Goals**: The student will
- learn to select suitable metaphase spreads for chromosome analysis.
- learn to select a sufficient number of metaphases to establish the presence or absence of a clone.
- learn the chromosome anomalies associated with specific types of hematologic disorders and malignant solid tumors.
- learn to distinguish neoplastic anomalies from congenital anomalies in these specimens.
- learn to distinguish the mainline, stemlines and sidelines.

6. **Culturing and Harvesting Cytogenetic Specimens**: This module will provide the student experience in processing all types of specimens for chromosome analysis. The student will learn aseptic techniques, specimen preparation, media and mitogen selection, microscope slide preparation techniques, and other aspects of culturing and harvesting.

**Goals**: The student will
- learn aseptic techniques and solution preparations
- learn appropriate techniques for preparing each specimen type for culturing
- learn the selection of appropriate media and culture components for the tissue type and clinical indications
• correlate appropriate harvest techniques to the tissue type
• learn the appropriate environmental conditions for making microscope slides
• learn differences between flask and in situ culture and harvest procedures
• learn differences between suspension and monolayer cultures
• learn safety precautions associated with culturing and harvesting

7. FISH Technology: This module will provide the student experience in processing all types of specimens for chromosome analysis. The student will learn techniques for pretreatment, hybridization, analysis, imaging, and reporting of FISH specimens.

Goals: The student will
• learn the history of FISH and how it relates to current FISH methodology.
• learn to select the appropriate probe(s) for analysis.
• learn the appropriate pretreatment for the FISH probe and specimen type.
• select the appropriate hybridization procedure for optimum results.
• understand the appropriate analysis, application, methodology and limitations for all types of FISH probes.
• be able to distinguish true probe signals from artifact.
• demonstrate the ability to produce good images.
• demonstrate the ability to interpret and report the results appropriately.

8. Submitting Cases for Reviewing and Reporting: This module is designed to provide the student with the skills necessary to assess case work for completeness, karyotypes for correct chromosome alignment and interpretation, and the report for complete and accurate entries.

Goals: The student will learn
• to assess submitted cases for chromosome and breakpoint accuracy, adequacy and completeness of analysis, and appropriateness of comments and interpretations.
• when and how to present questions regarding interpretation, the need for further studies, and/or the need for additional analysis.
• to assess case documents for contents and accuracy.
• to verify that internal and external regulations/standards are met.

9. Legal and Ethical Issues: This module is designed to familiarize the student with policies and protocols designed to avoid legal/ethical problems.

Goals: The student will
• demonstrate an understanding of legal and ethical issues related to Cytogenetic.
• demonstrate an understanding of confidentiality and Health Insurance Portability and Accountability Act of 1996 (HIPAA) regulations.
• learn about the role of the Internal Review Board in research and clinical practice.
10. Clinical Rotation: This module is designed to provide a clinical approach to processing, analyzing, and reporting clinical specimens

Goals: The student will
- learn to systematically make appropriate cytogenetic preparations for chromosome analysis. This includes accessioning, culturing, harvesting and slide making.
- learn to systematically analyze specimens from a wide variety of clinical cytogenetic specimens using appropriate banding and/or FISH techniques.
- learn to interpret the results and correct cytogenetic nomenclature for cytogenetic studies using actual clinical cases.
- apply what they have learned to properly read and write official documents associated with their work in actual clinical practice.
- develop an understanding of the relationship of chromosome analysis to quality indicators in the clinical laboratory. This includes turnaround time, productivity, and success rate.
- understand the relationship of cytogenetic analysis to each patient’s clinical indications.
- learn how to prioritize specimens based on the urgency for the clinician to receive the results.
PROGRAM REDESIGN APPLICATION

Completion of the Program Redesign Application is the means by which most program modifications can be made. The various kinds of modifications are shown below. Program redesigns may be considered at any time of the year. In most cases, the review and approval of the application will be handled by Academic Programs Unit staff, and will not require formal Board review and approval.

PROGRAM REDESIGN POSSIBILITIES

1. Change program name
2. Change program CIP at the 6-digit level
3. Change credit length within policy limitations
4. Change credit length beyond policy limitations
5. Add program alternative:

   Emphases (baccalaureate, AAS/diploma only)
   Option (baccalaureate or master’s programs only)

6. Change or delete program emphasis or option
7. Redesign of a degree or diploma to add or convert an award

   - AAS to add or convert to an AS (Creation of an AS award requires a formal articulation agreement with a baccalaureate degree-granting institution)
   - AAS or AS to include a diploma or certificate
   - Diploma to add or convert to an AAS or AS degree or certificate (AS requires articulation agreement; diploma must be at least 42 credits)
   - AS to add or convert to an AAS
   - BA to add or convert to a BS or other baccalaureate degree
   - MA to add or convert to an MS or other master’s degree

8. Delete an award related to an existing program
9. Redesign or addition of a program within the same or a related 6-digit CIP classification (check with Academic Program staff for approved list of related CIP classifications)

Questions regarding the redesign application process and completion of this form should be addressed to the staff member working with your application. Submit one electronic copy of the completed application via e-mail, and one paper copy via fax or mail to the following address:

Academic Program Review Unit
Colleges: JoAnn Simser, 651-297-2285, joann.simser@so.mnscu.edu
State Universities: Mitchell Rubinstein, 651-296-5793, mitchell.rubinstein@so.mnscu.edu
Minnesota State Colleges and Universities
500 World Trade Center 30 E. Seventh Street
Saint Paul, MN 55101
FAX: (651) 296-3214

MnSCU Board Policy - 3.19 ACADEMIC PROGRAM REDESIGN POLICY
**Program Redesign Application**

**Related Policy or Statute:** MS 1996, Ch. 368, Sec. 33; MS 1995, Ch. 248, Article 11, Sec. 10; and MS 1996, Ch. 398, Sec. 38; Board Policy 3.14, 3.17, 3.19

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[This form is designed for electronic use. You should have some familiarity with the Word table-making function. Enter your information in the correct box on the Tables below.] Please submit an individual form for each program you are redesigning. Multiple changes to the same program may be made on the same form. You may delete all the tables that do not apply to your redesign request.

### Section I: Description of Currently Approved Program

<table>
<thead>
<tr>
<th>8-Digit CIP #</th>
<th>Program Name</th>
<th>Award</th>
<th>Cr Length</th>
<th>Location/s</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Biology: Cytotechnology Option</td>
<td>B.S.</td>
<td>84-85</td>
<td></td>
</tr>
</tbody>
</table>

Name of affiliated educational institution that offers one or more credits in this program:

Is this award jointly offered: Yes No

### Section II: Proposed Changes to Program

Effective start date(s): Fall 2006

Rationale for Proposed Change(s): The Cytotechnology / Cytogenetics option would consist of two tracks leading to certification in two unique areas of expertise. The first 3 years of the program curriculum is the same, but the 4th year internship is highly specialized for each track.

### Section IIIA: Name Change

Current: BS Biology: Cytotechnology Option

Proposed: BS Biology: Cytotechnology / Cytogenetics

### Section IIIB: CIP Change

Current:

Proposed:

Current Program Outcome:

Proposed Program Outcomes:

*Contact staff to determine whether change is permitted as a redesign, or whether a new program proposal is required.

### Section IIC: Change Credit Length Within Policy

Previous:

Proposed:

### Section IID: Change Credit Length to Exceed Policy

Credit length beyond the policy limits will be approved only if one or more of the following conditions exist: a) the length is required by a state or national licensing body or other regulatory agency, accrediting association, or board; b) the program is employer-sponsored where the employer specifies the required credits as a condition for conferring the award; or c) a formal task analysis has been conducted within the last three years and the results endorsed by an advisory committee. Request for a program length in excess of policy from a professional association or advisory committee is not sufficient for approval.

Previous Length:

Proposed Length:
State Rationale for Exceeding Policy Limits (Attach evidence as appropriate in an appendix):

### Section IIE: ADD CURRICULUM ALTERNATIVE/S*

| Name: BS Biology: Cytotechnology / Cytogenetics | CIP Code: | Total Credits: 84-85 |

Option or Emphasis or certificate that is a subcredential of existing award (choose one): Option

Courses unique to this alternative:

<table>
<thead>
<tr>
<th>COURSE TITLE/NUMBER</th>
<th>Number of Credits</th>
<th>EXISTING COURSE/S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under Required Courses: ADD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biology 430: Hematology / Introduction to Immunology</td>
<td>4</td>
<td>Yes</td>
</tr>
<tr>
<td>Biology 479: Molecular Biology</td>
<td>4</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*Change in Curriculum Alternative/s: If you are adding multiple alternatives to a single program, please identify each separately and list courses separately by copying and pasting this section as many times as necessary.

### Section IIF: DELETE EXISTING CURRICULUM ALTERNATIVE/S*

<table>
<thead>
<tr>
<th>Name of Alternative:</th>
<th>CIP:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biology 420: Diagnostic Parasitology (under required courses)</td>
<td></td>
</tr>
<tr>
<td>Biology 427: Urinary Cytology</td>
<td></td>
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<tr>
<td>Biology 428: Gastrointestinal Cytology</td>
<td></td>
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<tr>
<td>Biology 429: Body Cavity and Misc. Secretion Cytology</td>
<td></td>
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<tr>
<td>Biology 444: Fine Needle Aspiration Cytology</td>
<td></td>
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<tr>
<td>Biology 447: Cytology Preparation Techniques</td>
<td></td>
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<tr>
<td>Biology 448: Independent Projects</td>
<td></td>
</tr>
<tr>
<td>Biology 450: Clinical Cytology</td>
<td>$493, 494, 495, 496$</td>
</tr>
<tr>
<td>(These 7 internship courses will be combined into Biology 422, 423, 424, 425)</td>
<td></td>
</tr>
</tbody>
</table>

*Delete Curriculum Alternative/s: If you are deleting multiple alternatives, identify each separately. Add additional lines as necessary.
## Section IIG: AWARD CHANGE

<table>
<thead>
<tr>
<th>Current Award:</th>
<th>Proposed Award:</th>
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<tr>
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</table>

List courses for both current award and proposed award

<table>
<thead>
<tr>
<th>CURRENT AWARD:</th>
<th>COURSE TITLE/NUMBER</th>
<th>Number of Credits</th>
<th>EXISTING COURSE/S</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td>Yes</td>
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<td>Yes</td>
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</table>

<table>
<thead>
<tr>
<th>PROPOSED AWARD:</th>
<th>COURSE TITLE/NUMBER</th>
<th>Number of Credits</th>
<th>EXISTING COURSE/S</th>
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</thead>
<tbody>
<tr>
<td></td>
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<td>Yes</td>
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<td>Yes</td>
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<td>Yes</td>
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<td>Yes</td>
</tr>
</tbody>
</table>

## Section IIIH: CREATE NEW AWARD IN RELATED ACADEMIC AREA

<table>
<thead>
<tr>
<th>Name:</th>
<th>6-digit CIP:</th>
<th>Total Credits:</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

Please list all courses for the new award below:

<table>
<thead>
<tr>
<th>COURSE TITLE/NUMBER</th>
<th>Number of Credits</th>
<th>EXISTING COURSE/S</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Yes</td>
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<tr>
<td></td>
<td></td>
<td>Yes</td>
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<tr>
<td></td>
<td></td>
<td>Yes</td>
</tr>
</tbody>
</table>
*Creating new awards in related academic areas:* Before completing this section, contact Academic Program staff to verify that you can make these proposed changes as redesigns. If you are adding awards in multiple related areas, identify each separately and list courses separately by replicating this table.

**SECTION III: REDESIGNED PROGRAM SUMMARY**

**Program Requirements:**

Complete this section if the number of credits in the award has increased from the previous design, or if it is a new award.

Use the following headings to provide information on each of the components in the program. List all credit totals required for the students to graduate, including prerequisites. If this application is for multiple awards (AAS and/or diplomas and/or certificates) duplicate this table and list requirements for each award separately.

<table>
<thead>
<tr>
<th>Program Name:</th>
<th>Award:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Program Component</th>
<th>Previous Credits</th>
<th>Proposed Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Education/Liberal Studies</td>
<td></td>
<td></td>
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<tr>
<td>Prerequisites</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Major-Core</td>
<td></td>
<td></td>
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<tr>
<td>Major-Alternative (see above)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Major-Restricted Electives</td>
<td></td>
<td></td>
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<tr>
<td>Required Minor (or est. 20 credits)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Free Electives</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL PROGRAM CREDITS**

**SECTION IV: APPROVAL VERIFICATION**

Application Author: **GREGG MARX, Asst. Prof.**

Title: **Chairperson, Dept. of Biol. Sci.**
SECTION V: APPENDICES/SUPPORTING DOCUMENTATION

A. Institution Curriculum Committee Membership and Minutes showing recommendations (required)
B. Occupational/Professional Demand Data (required, if adding a certificate or AAS to an AS)
C. Copies of Agreements with Institutions (Joint and Articulated degrees) (required, if applicable)
D. Justification for Exceeding Program Credit Lengths set in Policy (required, if applicable)
E. Evidence of business/industry support (required for occupational programs, optional for others)
F. Letters of Support (optional)
Clinical Education Agreement
between
Mayo School of Health Sciences
and the
Minnesota State University, Mankato

The Agreement shall be effective as of the 1st day of July, 2005. The parties to this Agreement are MAYO FOUNDATION, with an address of 200 First Street, S.W., Rochester, MN 55905, MAYO CLINIC ROCHESTER, with an address of 200 First Street, S.W., Rochester, MN 55905, (collectively, “Clinical Facility”) and Minnesota State University, Mankato, with an address of 242 Tafton Science Center S., Mankato MN., 56001 ("University").

WHEREAS, the University is a duly licensed and accredited educational institution providing a program in Medical Technology/Cytotechnology ("Program") which requires clinical experiences of its students (hereinafter "Students"); and

WHEREAS, the Clinical Facility is a health care facility which has the resources in equipment and staff to provide the clinical experiences required by the University's Medical Technology/Cytotechnology program; and

WHEREAS, it is to the benefit of both the University and the Clinical Facility to cooperate in the educational preparation of Students, so as to promote excellence in patient care, to ensure professional competence, and to provide maximum utilization of community resources;

NOW THEREFORE, the parties agree as follows:

1. **Education Program.**
   
a) University shall be fully responsible for organizing, establishing and administering the academic education program.

   (b) The number of Students accepted for clinical experiences and the dates of each Student's clinical experience shall be arranged by the mutual agreement of the University and Clinical Facility. All students shall be subject to Clinical Facility’s admission standards. In the event it becomes necessary to cancel a reserved space or change a student assignment, University will immediately notify Clinical Facility.

   (c) University shall ensure that all Students have satisfied appropriate academic prerequisites, are in good standing with University, have passed a physical examination, have had all required immunizations including a hepatitis B series, shall maintain health insurance throughout the entire term of their participation in the Program, and, when appropriate for the specific arrangement, have completed criminal background studies and drug screening. The costs for all pre-rotation screenings (including criminal background reports and
drug tests) are the responsibility of the Students and/or University. University shall provide Clinical Facility with evidence of each Student's health insurance coverage prior to such Student's participation in the Program. University shall also provide the clinical facility with documentation establishing that each Student has undergone the appropriate pre-screening and a background study within the last 12 months, and is eligible to have direct contact with hospital patients. University shall maintain all personnel and academic records relating to Students.

(d) University shall perform annual background studies on University faculty who supervise Students at Clinical Facility and ensure that all such faculty are eligible to have direct contact with Clinical Facility’s patients and students.

(e) Students shall be instructed by University prior to beginning the Program concerning the confidentiality of medical information of Clinical Facility's patients and standard precautions. For purposes of compliance with the Health Insurance Portability and Accountability Act and associated privacy regulations (“HIPAA”), Students shall be considered part of Clinical Facility’s work force as that term is defined in HIPAA to include trainees and students. Students are not considered work force or employees of Clinical Facility for other purposes, including but not limited to tax or employment law. Clinical Facility shall provide the necessary training specific to HIPAA.

(f) Students shall be subject to and follow all the Clinical Facility’s rules, regulations, policies and procedures including standard precautions.

(g) Clinical Faculty at University and Students agree to participate in education and training of the electronic medical record. University Faculty and Students shall be subject to and follow all the Clinical Facility’s rules, regulations, policies and procedures for the electronic medical record. The electronic medical record policies, procedures, rules and regulations are subject to change and Facility agrees to provide prior notice of any change.

(h) Clinical Facility may terminate the participation of a Student in a clinical experience if the Student's work, conduct or health may, in Clinical Facility's judgment, have a detrimental effect on its patients, staff or operations. A Student generally will not be removed from a clinical experience until Clinical Facility has discussed its concerns with a representative of the University. However, Clinical Facility reserves the right to take immediate action to suspend a Student's participation in response to concerns of patient care or the safety and respect of its staff.

(i) Clinical Facility agrees:

(i) To provide direct supervision of Students by qualified clinicians who are on staff at the Clinical Facility ("Supervising Clinicians");

(ii) That all notes or charting concerning a patient's treatment or progress, if written by a Student, will be signed by the Student and countersigned by a Supervising Clinician; and
(iii) To complete written evaluations on each Student on forms provided by the University.

(j) Clinical Facility shall plan, administer, and retain responsibility for all aspects of patient care.

(k) Students shall be furnished emergency medical care and treatment, if needed, while on duty at Clinical Facility with the associated expense to be the responsibility of the Student.

(l) By this Agreement, payment to the Clinical Facility from the University shall be made in the amount of 75% of tuition collected from the Student. One-half of the total amount will be paid by the University within sixty (60) days following the final day of University registration for each of the academic semesters in which the Student is enrolled. In the event the tuition policy changes by either the Clinical Facility or the University, written notification of the change will be sent to the other party not later than ninety (90) days preceding the next Program year.

2. **Insurance.**

   (a) Clinical Facility shall provide and maintain for each Student Professional Liability Insurance and General Comprehensive Liability Insurance with both policies providing coverage for occurrences during the term of this Agreement with limits no less than $1 million per occurrence and $3 million annual aggregate.

   (b) The insurance required in Section 2(a) above shall be in full force and effect prior to the commencement of the Program Year. It shall not be modified or terminated except upon thirty (30) calendar days prior written notice to University. In the event any "claims made" policy is procured to meet the insurance requirements hereunder, "tail" coverage shall also be procured for a period of four (4) years after termination of such policy.

   (c) Prior to the effective date hereof, Clinical Facility shall provide University with a Certificate of Insurance evidencing the above-stated coverage.

3. **Notices.**

   Whenever written notice is required or permitted to be given by any party to the other, such notice shall have been deemed to have been sufficiently given if personally delivered or deposited in the United States Mail in a properly stamped envelope, certified or registered mail, return-receipt-required, addressed to:
(a) For Mayo: Dean
Mayo School of Health Sciences
200 First Street, S.W.
Rochester, MN 55905

With a copy to: Program Director
Cytogenetic Technology Program
Mayo School of Health Sciences
200 First Street, S.W.
Rochester, MN 55905

(b) For University: Advisor
Medical Technology/Cytotechnology Program
Minnesota State University, Mankato
242 Trafton Science Center S.
Mankato, MN 56001

4. Term.

This agreement shall be effective as of July 1, 2005. This agreement is in effect for the initial Program term and is automatically renewed for subsequent Program terms from July 1 to June 30 unless terminated by either party by written notice provided at least ninety (90) days prior to the commencement of the ensuring Program term.

5. Independent Contractors. Each party is a separate and independent institution, and this Agreement shall not be deemed to create a relationship of agency, employment, or partnership between or among them. Each party understands and agrees that this Agreement establishes a bona fide training relationship and that the agents or employees of each respective party are not employees or agents of the other party.

6. Termination. Either party may terminate this Agreement for any reason by giving at least ninety (90) days written notice to the other party.

7. Amendments. This Agreement may be amended from time to time in writing by the written agreement of the parties.

8. Use of Name. No party shall use the name, logo, or likeness of another party, or another party’s employee or agent, in any publicity or advertising material without such other party’s express prior written consent; however, the existence and scope of the programs available via this Agreement may be made known to Residents as a means of assistance in completing their training requirements.
9. **Assignment.** No party has the right or the power to assign this Agreement, in whole or in party, without the prior written consent of the other parties, and any purported assignment in contravention of this provision shall be null and void.

10. **Governing Law.** This Agreement shall be construed in accordance with the law of the State of Minnesota.

11. **Enforceability and Waiver.** The invalidity or unenforceability of any term or provision of this Agreement shall in no way affect the validity or enforceability of any other term or provision. The waiver by a party of a breach of any provision of this Agreement shall not operate as or be construed as a waiver of any subsequent breach thereof.

12. **Non-exclusive Agreement.** Each party may enter into similar agreements with other training institutions, provided that such agreements do not materially interfere with the ability of each party to carry out its obligations hereunder.

13. **Compliance with Laws.** Each party shall comply with all federal, state and local laws and regulations applicable to their respective operations, including, but not limited to, those dealing with employment opportunity, immigration and affirmative action such as 42 U.S.C. Sec. 2000 (e) et seq., The Civil Rights Act of 1964, Sections 503 and 504 of the Rehabilitation Act of 1973, Section 402 of the Vietnam Era Veterans' Readjustment Assistance Act of 1974, the Immigration Reform Act of 1986, the Americans with Disabilities Act of 1990 and any amendments and applicable regulations pertaining thereto.

14. **Entire Agreement.** This Agreement represents the entire agreement between the parties with respect to the subject matter hereof, and supersedes all prior agreements and representations.

15. **Authority.** The persons signing this Agreement warrant that they have full authority to do so and that their signatures shall bind the parties for which they sign.

IN WITNESS WHEREOF, the parties have executed this Agreement as of the respective dates written below.

**UNIVERSITY**

By: [Signature]
Title: [Title]
Date: 8/31/05

[Additional signatures and dates]
MAYO FOUNDATION
By: Jonathan J. Oviatt
Title: Secretary
Date: 7-11-05

Agreed and Accepted by:

MAYO SCHOOL OF HEALTH SCIENCES
By: Jami E. Lundell
Title: Dean, Mayo School of Health Sciences
Date: July 13, 2005

By: Peggy Sykes
Title: Program Director, Mayo School of Health Sciences
Date: July 14, 2005

MAYO CLINIC ROCHESTER
By: Sherry L. Hubert
Title: Assistant Secretary
Date: 7-11-05
Education Agreement
between
Mayo Foundation
and
Minnesota State University, Mankato

The Agreement is entered into effective July 7, 2003, by and between Mayo Foundation through its School of Health Sciences, Program in Cytotechnology (hereinafter referred to as the "Clinical Facility") and Minnesota State University, Mankato, (hereinafter referred to as the "University").

WHEREAS, the University is a duly licensed and accredited educational institution providing a program in Cytotechnology which requires didactic and clinical experiences of its students (hereinafter "Students"); and

WHEREAS, the Clinical Facility, which is accredited by the Joint Review Committee on Education Programs in Cytotechnology, is a health care facility which has the resources in equipment and staff to provide the educational experiences required by the University’s Cytotechnology Program ("Program"); and

WHEREAS, it is to the benefit of both the University and the Clinical Facility to cooperate in the educational preparation of Students, so as to promote excellence in patient care, to ensure professional competence, and to provide maximum utilization of community resources;

NOW THEREFORE, the parties agree as follows:

1.0 Clinical Education Program.

1.1 University shall be responsible for organizing, establishing and administering the clinical education program. Directors of the Cytotechnology Program at the Clinical Facility shall plan and implement the curriculum for the clinical year of internship at the Clinical Facility.

1.2 Students from the University interested in attending the clinical education program shall submit applications for admissions and shall be interviewed by the Clinical Facility Interview Committee of the Cytotechnology Program. All students shall be subject to Clinical Facility’s admission standards. In the event it becomes necessary to cancel or change a student assignment, University will immediately notify Clinical Facility.

1.3 The Clinical Facility shall be free to accept students on a selective, nondiscriminatory basis and the students shall have the opportunity to choose any accredited Cytotechnology clinical education program.

1.4 University shall ensure that all Students have satisfied appropriate academic prerequisites, are in good standing with University, have completed background studies as required by Minn. Stat. §144.057 and §245A.04, have had all required immunizations including a hepatitis B series and maintain health insurance throughout the entire term of their participation in the Program. University shall provide Clinical Facility with evidence of each Student’s health insurance coverage prior to such Student’s participation in the Program. Each student shall pass Clinical Facility’s physical examination. University shall also provide the Clinical Facility with documentation establishing that each Student has had a background study completed within the last 12 months, and is eligible to have direct contact with hospital patients. University shall maintain all personnel and academic records relating to Students.
1.5 Students shall be subject to and follow all of the Clinical Facility’s rules, regulations, policies and procedures including universal precautions.

1.6 Students shall be instructed by University prior to beginning the Program concerning the confidentiality of medical information of Clinical Facility’s patients and universal precautions. For purposes of compliance with the Health Insurance Portability and Accountability Act and associated privacy regulations ("HIPAA"), Students shall be considered part of Clinical Facility’s work force as that term is defined in HIPAA to include trainees and students. Students are not considered work force or employees of Clinical Facility for other purposes, including but not limited to tax or employment law. Clinical Facility shall provide the necessary training specific to HIPAA.

1.7 Clinical Facility may terminate the participation of a Student in a clinical experience if the Student’s work, conduct or health may, in Clinical Facility’s judgment, have a detrimental effect on its patients, staff or operations. A Student generally will not be removed from a clinical experience until Clinical Facility has discussed its concerns with a representative of the University. However, Clinical Facility reserves the right to take immediate action to suspend a Student’s participation in response to concerns of patient care or the safety and respect of its staff.

1.8 Clinical Facility agrees:

(a) The Cytotechnology Program at the Clinical Facility shall provide teaching faculty responsible for the training program at the Clinical Facility.

(b) To provide direct supervision of Students by qualified staff from Clinical Facility ("Supervising Staff").

(c) Conduct the physical examination required by Clinical Facility.

(d) To complete written evaluations on each Student.

1.9 Clinical education courses may be taken for grade only. At the completion of the clinical year, the Director of the Cytotechnology Program shall submit, to the Registrar at the University, a transcript of each student. Posting of final grades with the University shall be the responsibility of the Registrar at the University. The Registrar at the University may request, from the Director of the Cytotechnology Program, a report on the progress of each student during the clinical year. The Clinical Facility Program Director shall complete this form and return it to the Registrar as soon as is practical.

1.10 By this agreement, payment to the Clinical Facility from the University shall be made in the amount of 85% of tuition collected from the student. In the event the tuition charged by the Clinical Facility is higher than the 85% collected from the University, the Clinical Facility will bill the student for the difference. One-third of the total amount will be paid by the University within 60 days following the final day of University registration for each of the three (fall, winter, spring) academic quarters. In the event of tuition policy changes by either the Clinical Facility or University, written notification of the change will be sent to the other party not later than December preceding the next internship year.
2.0 **Insurance.**

2.1 Clinical Facility shall provide and maintain for each Student Professional Liability Insurance and General Comprehensive Liability Insurance with both policies providing coverage for occurrences during the term of this Agreement with limits no less than $1 million per occurrence and $3 million annual aggregate.

3.0 **Claims and Liability.**

3.1 Each party shall be responsible for claims, losses, damages and expenses which may arise out of the acts or omissions of that party, its employees or agents in performance of this Agreement.

4.0 **Notices.**

Whenever written notice is required or permitted to be given by any party to the other, such notice shall have been deemed to have been sufficiently given if personally delivered or deposited in the United States Mail in a properly stamped envelope, certified or registered mail, return-receipt-required, addressed to:

1) For University
   Geri McCarthy
   334 Wigley Administration Center
   Mankato, MN 56001

2) For Clinical Facility
   Jill L. Caudill
   200 First Street SW
   Rochester, MN 55905

5.0 **Term.**

5.1 The term of this Agreement shall be for the one (1) year period from July 7, 2003 through June 30, 2004 ("Program Year"), unless terminated earlier as provided herein. Either party may terminate this Agreement for material breach immediately upon delivery of written notice of termination to the other party, or, without cause, upon ninety (90) calendar days prior written notice to the other party. Upon the completion of the Program Year, this Agreement shall continue in effect for the initial term and shall be automatically renewed from year to year thereafter until terminated by either party by written notice provided at least ninety (90) days prior to the commencement of the ensuing Program Year.

5.2 In the event that Clinical Facility exercises its option to terminate this Agreement, Clinical Facility hereby agrees that no Students participating in an ongoing clinical affiliation will be denied the opportunity to complete the affiliation, even when the effective date of termination occurs prior to the completion date of the clinical affiliation. In such event, all applicable provisions of this Agreement, including the right to terminate any Student pursuant to section 1.7, shall remain in force during the extension period from the effective date of termination, until the end of the academic term in which the Student is enrolled.

6.0 **Miscellaneous.**

6.1 This Agreement shall be governed by the laws of the State of Minnesota.

6.2 The University and Clinical Facility agree that in the performance of this contract there will be no discrimination in violation of federal or Minnesota state law.
6.3 A determination by a court of competent jurisdiction that any provision of this Agreement, or any part thereof, is void or unenforceable shall not cancel or invalidate the remainder of this Agreement, which shall remain in full force and effect.

6.4 This Agreement contains the entire Agreement between the parties pertaining to the subject matter hereof; and supersedes all prior agreements and representations. No modification or amendment shall be effective unless in writing, executed by both parties, and expressly referencing this Agreement.

6.5 This Agreement shall not be deemed to create a relationship of agency, employment or partnership between the Clinical Facility and either the University or its students.

6.6 The persons signing this Agreement warrant that they have full authority to do so and that their signatures shall bind the parties for which they sign.

6.7 Neither party has the right or the power to assign this Agreement, in whole or in part, without the prior written consent of the other party, and any purported assignment in contravention of this provision shall be null and void.

6.8 Neither party shall use the names, trademarks, or service marks of the other party or its staff in any publicity, public announcement, advertising or promotion without the express prior written approval of the other party.

IN WITNESS WHEREOF, the parties have executed this Agreement as of the date written above.

MINNESOTA STATE UNIVERSITY, MANKATO

By: [Signature]
Title: Program Director

By: [Signature]
Title: V.P. for Finance & Administration
MAYO FOUNDATION
Program in Cytotechnology

By: ____________
Program Director

By: ____________
Dean, Mayo School of Health Sciences

By: ____________
Secretary, Mayo Foundation

L:\Dept\Alcott\Education\Cytotechnology\Agreement (MSU-Mankato)
AFFILIATION AGREEMENT FOR CYTOTECHNOLOGY MEDICAL CENTER

Affiliation Agreement Between:

Minnesota State University, Mankato (Hereinafter referred to as the UNIVERSITY)

and

Mercy School of Cytotechnology (Hereinafter referred to as the MEDICAL CENTER)
Mercy Medical Center – Des Moines

WHEREAS, the UNIVERSITY, which is accredited by North Central Association of Colleges and Schools, desires to place students in the Cytotechnology Program for clinical education, and

WHEREAS, the MEDICAL CENTER, which is accredited by the Commission on Accreditation of Allied Health Education Programs (“CAAHEP”), has agreed to affiliate and cooperate with the UNIVERSITY in granting the Bachelor of Science degree in Clinical Cytotechnology.

NOW, THEREFORE, IT IS AGREED THAT:

I. GENERAL TERMS

A. Students, to be qualified for the year of clinical education, shall have completed three years (90 semester hours) of the UNIVERSITY degree program, with a minimum grade point average of 2.5 on a 4.0 scale.

B. Students from the UNIVERSITY who have already completed the requirements for and have been awarded any Bachelor degree shall be eligible for entrance into the year of clinical education in Cytotechnology provided they have fulfilled the admission requirements.

C. Transfer students from other accredited universities or colleges shall be eligible for the Bachelor of Science Degree in Clinical Cytotechnology by successfully undertaking 30 semester credits while in residence at the UNIVERSITY and completing both the requirements of the major and curricular area distribution requirements.

D. The course of studies pursued by the students in the Cytotechnology Program at the UNIVERSITY shall be set forth in the catalog. Any change made must conform to the UNIVERSITY requirements for a Bachelor of Science degree and the requirements of the Accrediting Agency.

E. Students from the UNIVERSITY interested in attending the clinical education program shall submit applications for admission and shall be interviewed by the MEDICAL CENTER Interview Committee of the Cytotechnology Program. All students shall be subject to MEDICAL CENTER admission standards.

F. The MEDICAL CENTER shall be free to accept students on a selective, nondiscriminatory basis and the students shall have the opportunity to choose any accredited Cytotechnology clinical education Program.
G. The granting of the academic credit by the UNIVERSITY for the clinical year internship shall not be contingent upon the student’s passing the certifying examination from the American Society of Clinical Pathologists.

H. By this Agreement, eighty-five (85%) of the total College Board approved tuition paid by the student while participating in the professional experience at the MEDICAL CENTER shall be paid to the MEDICAL CENTER. The UNIVERSITY shall retain fifteen percent (15%) of the tuition paid during the professional experience to defray internal costs. The UNIVERSITY shall make payment within 30 days following the final day of UNIVERSITY registration each academic term. In the event of tuition policy changes by either the MEDICAL CENTER or the UNIVERSITY, written notification of the change will be sent to the other party not later than six months prior to the next year of professional experience. The refund policy will be that of the UNIVERSITY as stated in the catalog of the UNIVERSITY. In the event that the eighty-five (85%) of the total College Board approved tuition paid by the UNIVERSITY to the MEDICAL CENTER does not cover the minimum published tuition of the MEDICAL CENTER the student will be responsible for covering the difference. The amount the student owes will be paid directly to the MEDICAL CENTER.

I. Students shall be subject to and follow all of the MEDICAL CENTER’S rules, regulations, policies and procedures including universal precautions. Situations requiring probation and/or termination during the clinical experience will be managed according to the practices of Mercy School of Cytotechnology. In addition, students shall also be required to comply with all policy rules of Mercy Medical Center – Des Moines.

J. Communication between appropriate faculty members at the UNIVERSITY and the MEDICAL CENTER shall be held at least annually to discuss current curriculum effectiveness, proposed curriculum changes, and other matters of mutual concern.

K. Neither party shall use the names, trademarks, or service marks of the other party or its staff in any publicity, public announcement, advertising or promotion without the express prior written approval of the other party.

L. This Agreement shall be governed by the laws of the State of Minnesota and the State of Iowa.

II. TERMS OF THIS AGREEMENT:

A. This agreement shall be in effect from May 1, 2004 through April 30, 2005. This agreement shall be automatically renewed after annual review unless either party makes notification. Either the UNIVERSITY or the MEDICAL CENTER may cancel this agreement by giving at least one year’s written notice. Termination of this agreement will not affect enrolled students’ participation in the program, and they shall be entitled to complete their clinical education.
B. The UNIVERSITY makes no agreement to provide any specific number of students to the Cytotechnology Program at the MEDICAL CENTER, nor does the MEDICAL CENTER agree to accept any specific number of students from the UNIVERSITY.

C. The MEDICAL CENTER and the UNIVERSITY may establish affiliations with other institutions.

III. UNIVERSITY'S ADDITIONAL DUTIES

A. The UNIVERSITY shall grant academic credit in transfer for satisfactory completion of the clinical internship as measured by the student’s successful completion of the MEDICAL CENTER'S Program. The maximum number of semester hours assigned is to be 32.

B. Students successfully completing the Cytotechnology Program shall be awarded a Bachelor of Science Degree in Clinical Cytotechnology.

C. Policies concerning UNIVERSITY academic standards including grading, other educational procedures and student health policies, shall be set forth in the UNIVERSITY Basic Student Handbook.

D. UNIVERSITY shall ensure that all students have satisfied appropriate academic prerequisites in the program. UNIVERSITY shall ensure that all students are in good standing with the UNIVERSITY, have passed a physical examination, have had all required immunizations including a Hepatitis B series and maintain health insurance through the entire term of their participation in the program. UNIVERSITY shall ensure that all students have completed background studies as required by Minn. Statutes § 144.057 and § 245A.04. UNIVERSITY shall maintain all personnel and academic records relating to students.

IV. MEDICAL CENTER'S ADDITIONAL DUTIES:

A. The MEDICAL CENTER provides general liability protection, including malpractice, for cytotechnology students in training during the time that they participate in the clinical education at the MEDICAL CENTER. This protection includes: claims, demands, losses, costs, damages, and expenses of every kind and description (including death), or damage to persons or property arising out of or in connection with the clinical education program at the MEDICAL CENTER, where such liability is founded upon or grows out of the acts or omissions of any of the Cytotechnology Program students.

B. The training program at the MEDICAL CENTER shall meet all the Accreditation standards of the Commission on Accreditation of Allied Health Education Programs (CAAHEP) and shall include a curriculum of practical work and regular didactic lectures.

C. The Cytotechnology Program at the MEDICAL CENTER shall provide teaching faculty responsible for the training program at the MEDICAL CENTER.

D. The Steering Committee of the Cytotechnology Program at the MEDICAL CENTER shall plan and implement the curriculum for the clinical year of internship.
at the MEDICAL CENTER, and shall notify the UNIVERSITY of proposed major curriculum changes at least four months before they are effected. If it is the judgment of the UNIVERSITY'S Academic Dean that such changes would adversely affect the UNIVERSITY'S academic program, the UNIVERSITY shall be free to cancel this agreement within 30 days written notification at any time prior to the date of implementation of such changes, notwithstanding any other provisions herein pertaining to cancellation or termination. Written notification of cancellation is required. The MEDICAL CENTER shall have responsibility for the quality of instruction.

E. Should a student encounter difficulties or fail to complete the program, the director of the MEDICAL CENTER shall notify the UNIVERSITY.

F. Clinical education courses may be taken for grade only. At the completion of the clinical year, the Director of the Cytotechnology Program shall submit, to the Registrar at the UNIVERSITY, a transcript for each student. Posting of final grades with the UNIVERSITY shall be the responsibility of the Registrar at the UNIVERSITY. The Registrar at the UNIVERSITY may request, from the Director of the Cytotechnology Program, a report on the progress of each student during the clinical year. The MEDICAL CENTER Program Director shall complete this form and return it to the Registrar as soon as is practical.

V. NOTICES:

Whenever written notice is required or permitted to be given by any party to the other, such notice shall have been deemed to have been sufficiently given if personally delivered or deposited in the United States mail in a properly stamped envelope, certified or registered mail, return-receipt-required addressed to:

1. For UNIVERSITY
   Lois C. Anderson, MS, MT (ASCP)
   Director, Clinical Laboratory Sciences
   242 Trafon Science Center S
   Mankato, MN  56001

   With a copy to:
   Finance and Administration
   334 Wigley Administration Center
   Mankato, MN  56001

2. For MEDICAL CENTER
   Marty Boesenberg, SCT(ASCP)
   Program Director Mercy School of Cytotechnology
   1111 6th Avenue
   Des Moines, IA  50314-2611

VI. LIABILITY

Each party agrees that it will be responsible for its own acts and the results thereof to the extent authorized by law and shall not be responsible for the acts of the other party and the results thereof. The UNIVERSITY'S liability shall be governed by the provisions of the Minnesota Tort Caim Act, Minnesota Statutes, Section 3.732 et seq., and other applicable law.

VII. AMENDMENTS
Any amendments to this Agreement shall be in writing and signed by authorized officers of each party.

VIII. ASSIGNMENT

Neither the UNIVERSITY nor the MEDICAL CENTER shall assign or transfer any rights or obligations under this Agreement without the prior written consent of the other party.

IX. AMERICANS WITH DISABILITIES ACT (ADA) COMPLIANCE

The MEDICAL CENTER agrees that in fulfilling the duties of the Agreement, the MEDICAL CENTER is responsible for complying with the Americans with Disabilities Act, 42 U.S.C. Chapter 12101, et seq., and any regulations promulgated to the Act. The UNIVERSITY IS NOT responsible for issues or challenges related to compliance with the ADA beyond its own routine use of facilities, services, or other areas covered by the ADA.

X. MINNESOTA DATA PRACTICES ACT

The UNIVERSITY and the MEDICAL CENTER agree to comply with the terms of the Minnesota Data Practices Act, Minnesota Statutes, Chapter 13, in handling all data related to this Agreement.

XI. EXCLUDED PROVIDER

UNIVERSITY represents and warrants that it is not and at no time has it been excluded from participation in any state or federally funded health care program, including Medicare and Medicaid ("government health care programs"). UNIVERSITY agrees to immediately notify MEDICAL CENTER of any threatened, proposed or actual exclusion from any governmental health care program. Notwithstanding anything to the contrary contained herein, in the event UNIVERSITY is excluded from participation in any governmental health care program during the term of this Agreement or if at any time after the effective date of this Agreement it is determined that UNIVERSITY is in breach of this Section, this Agreement shall, as of the effective date of such exclusion or breach, automatically terminate.
IN WITNESS WHEREOF, the parties have caused this Agreement to be duly executed intending to be bound thereby.

APPROVED:

Mercy School of Cytotechnology

Marty Boeseberg
Signature

By: Marty Boeseberg
Program Director
Date: 4/26/04

Joy Trueblood, M.D.
Medical Director
Date: 4/26/04

As to Form and Execution

Harold Schumacher
Signature

By: Larry P Schumacher
Chief Operating Officer
Date: 4/29/04

Minnesota State University, Mankato

Lois C. Anderson
Signature

By: Lois C. Anderson
Program Director
Date: 5/24/04

John E. Frey
Signature

By: John E. Frey
Dean of Science, Engineering and Technology
Date: 6/14/04

25 De An Truager
Signature

By: H. De An Truager
Vice President for Finance & Administration
Date: 6/27/04