

Program Review

Bachelor of Science in Cytotechnology

College of Health Professions

November 2008



MARSHALL UNIVERSITY

Program Review
Marshall University

Date: November 2008

Program: Bachelor of Science in Cytotechnology
Degree and Title

Date of Last Review: 2003

Recommendation

Marshall University is obligated to recommend continuance or discontinuance of a program and to provide a brief rationale for the recommendation.

Recommendation

Code (#):

- 1. Continuation of the program at the current level of activity; or
- 2. Continuation of the program with **corrective action**: Corrective action will apply to programs that have deficiencies that the program itself can address and correct. **Progress report due by November 1 next academic year**; or
- 3. Identification of the program for **resource development**: Resource development will apply to already viable programs that require additional resources from the Administration to help achieve their full potential. This designation is considered an investment in a viable program as opposed to addressing issues of a weak program. **Progress report due by November 1 next academic year**; or
- 4. Continuation of the program at the current level of activity, with the designation as a program of excellence (See Series 11 Statement from the Policy Commission); or
- 5. Discontinuance of the program (Procedures outlined in HEPC Administrative Bulletin 23).

Rationale for Recommendation: (Deans, please submit the rationale as a separate document. Beyond the College level, any office that disagrees with the previous recommendation must submit a separate rationale and append it to this document with appropriate signature.)

Recommendation: _____ Signature of person preparing the report: _____ Date: _____

Recommendation: _____ Signature of Program Chair: _____ Date: _____

Recommendation: _____ Signature of Academic Dean: _____ Date: _____

Recommendation: _____ Signature of Chair, Academic Planning Committee: (Baccalaureate pgms only) _____ Date: _____

Recommendation: _____ Signature of President, Faculty Senate/ Chair, Graduate Council: _____ Date: _____

Recommendation: _____ Signature of the Provost and Senior Vice President for Academic Affairs: _____ Date: _____

Recommendation: _____ Signature of the President: _____ Date: _____

Recommendation: _____ Signature of Chair, Board of Governors: _____ Date: _____

College/School Dean's Recommendation

Deans, please indicate your recommendation and submit the rationale.

Recommendation:

Continuation of the Program at the current level of activity.

Rationale:

The Department of Clinical Lab Sciences (CLS) provides a vitally important service to the regional healthcare system. The graduates of the program are highly skilled and are a vital resource in supporting diagnostic procedures critical to accurate interpretation of medical symptoms. One unique contribution is the BS in Cytotechnology.

Cytotechnologists are the experts who evaluate and characterize cells as normal or abnormal. Anytime a laboratory assessment is done on tissues to support a diagnosis, particularly related to cancer or other cell diseases, a cytotechnologist has reviewed the cells and at least one double check verification has been done. Cytotechnologist are probably the most highly regulated allied health profession and their diagnostic skills are essential to the health care system.

Cytotechnologists are trained in a closely supervised hospital-based program. Marshall is fortunate to partner with Cabell Huntington Hospital (CHH) in providing the BS in Cytotechnology. CHH provides the accredited Cytotechnology training component and Marshall provides the academic coursework needed for the BS degree. Due to clinical training limitations, this program is quite small; the one-on-one nature of the clinical training is critical to the level of accuracy required for cytotechnologists.

The Cytotechnology degree provides the foundation in scientific principals and diagnostic procedures in the classroom and teaching lab as well as clinical experience. Cytotechnology is a very small program with no more than 4 students graduating in any year. The accreditation for the Cytotechnology program resides with the clinical facility, which in Marshall's case is CHH. Students complete three years at Marshall and take their Cytotechnology courses and laboratory training at CHH. Without the accredited Cytotechnology program at CHH, this degree would not be available at Marshall. Continuance of this partnership is essential to providing qualified cytotechnologists to the region.

Similar to the MLT and MT degrees, clinical experiences at a qualified accredited facility is essential to maintain this program and to keep enrollment at a viable level. If CHH were to close the Cytotechnology training program, Marshall would have limited options and the program would not be able to admit students. The Program Director has been successful in working with CHH to maintain our partnership to allow sufficient placements for Cytotechnology students, and we will continue to work to maintain this vital relationship.

CLS is in the third year searching for a qualified faculty member. This field has a 20% shortage of faculty nationwide, particularly faculty with doctoral degrees. The department has one senior full professor, one 4th year assistant professor and one temporary faculty member. Success in hiring additional permanent faculty will be an important factor for the department.

The Cytotechnology program is a vitally important resource for the region and the faculty are successful in graduating qualified practitioners in partnership with CHH. I recommend the program for continuation at the current level.

Signature of the Dean

Date

Marshall University Program Review

Program: Bachelor of Science in Cytotechnology

College: College of Health Professions

Date of Last Review: 2003

I PROGRAM DESCRIPTION

Cytotechnology is the third program offered by the Clinical Laboratory Sciences (CLS) Department. This program is significantly different from the other two programs offered. The first difference is that the Bachelor Degree in Cytotechnology is a “3+1” model program. A student completes 3 years of prerequisite courses and then completes a 12 month clinical component in a hospital-based School of Cytotechnology. During the past five years, students could have obtained the final practicum year at either Cabell Huntington Hospital (CHH) or Charleston Area Medical Center (CAMC). The program at CAMC has been inactive since spring 2004; therefore, currently students attend their final year at Cabell Huntington Hospital.

During the first three years of the curriculum, the pre-cytotechnology student takes the prerequisite courses required for entrance into the fourth year clinical component. These courses include basic chemistry, organic chemistry, introductory biology, anatomy, physiology, cell biology, histology, genetics and microbiology as well as other non-science courses required to graduate with a bachelor’s degree. These science courses are necessary for understanding the cytotechnology courses taken during the senior clinical year. These courses provide the background necessary for the students to develop the complete independent judgment required for the profession.

The second difference is that in cytotechnology, the area of study is the anatomical pathology sections of the medical laboratory; The MLT and MT programs are both in the clinical sections of the medical laboratory. Cytotechnologists work closely with pathologists, and work mostly in hospitals or commercial laboratories. The anatomical pathology sections, and in particular, cytotechnology examine cells for changes that may indicate disease processes, including tumor cells or certain microbiological agents. The specimens that are first screened by a cytotechnologist may be pap smears, abnormal fluids producing infection or cancer, or fine needle aspirations. Fine needle biopsies may be obtained from any organ or tissue in the body.

The cytotechnologist appropriately stains specimens for examination, and looks for abnormal changes that may be present using independent critical thinking skills that have been obtained during the first three years at Marshall University and the fourth year practicum. Cytotechnologists also determine if any appropriate sample has been obtained by examining the other tissue cells that may be present. It is important that the specimen be appropriate to ensure accurate examination of cells.

Some Pap smear specimens are being examined using new instrument technology capable of determining changes in the cells in each specimen. However, if abnormal changes are detected by the instrumentation, it is the responsibility of the Cytotechnologist to make critical decisions to confirm the abnormal findings.

Genetic molecular techniques are also being used in the Cytotechnology laboratory since many viruses cause cellular changes that can be identified using these techniques. Another use for molecular diagnostics is that amounts of DNA in cells can be determined. The cytotechnologist can quantitate the amount of DNA present in the average cell, and using molecular techniques determine abnormalities that aid in initiating earlier treatment for many cancers.

II ACCREDITATION INFORMATION

- A** The Cytotechnology (CT) program is accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP) in conjunction with the Cytotechnology Program Review Committee (CPRC). The accreditation procedures are fully prepared and all necessary fees paid by the School of Cytotechnology at Cabell Huntington Hospital.

Address: 35 East Wacker Drive Suite 1970
Chicago, IL 60601

- B** Accreditation conferred on April 18, 2006 through 2012. See attached copy of letter conferring accreditation (**Scanned Documents**).
- C** Accreditation status: Regular
- D** See attached scanned copy of the Accreditation Report.
- E** In April 2006, the CT program at Marshall University was granted regular accreditation through 2012. There were no deficiencies noted during the site visit.
- F** The most recent Self Study report is available upon request.

III PROGRAM STATEMENT on Adequacy, Viability, Necessity and Consistency with University/College Mission

A. ADEQUACY

1. Curriculum:

The Cytotechnology curriculum is a 3+1 model, where in the first three years cytotechnology students take courses that are required to enter the practicum year, as well as all of the Marshall Plan and College of Health Professions courses. The minimum requirements include 20 credit hours of biological science, 8 credit hours of chemistry and 3 credit hours of mathematics. The American Society for Clinical Pathology (ASCP) requires graduates of an accredited School of Cytotechnology to have a bachelor's degree to be eligible to take the certification examination. The complete listing of the specific courses is included as well as a schedule of when the courses should be taken. These prerequisite courses provide the students with the necessary information required to integrate the material that was learned at Marshall University with the specific material required for the field of Cytotechnology (**See Appendix I**).

2. Faculty:

Currently, there are three full time faculty members in the Clinical Laboratory Sciences Department. None of the faculty members are certified Cytotechnologists. The only courses taught in the CLS department that the Cytotechnology students take are CLS 100: Introduction to Health Professions, and CLS 460: Laboratory Management and Supervision. In CLS 100, the Education Coordinator/Cytotechnology Section Supervisor at Cabell Huntington Hospital gives a lecture on the field of Cytotechnology. One of the CLS faculty members is responsible for coordinating the course and all three faculty members have been course coordinators in the past. The CLS 460 course is taught by CLS faculty members who have had experience in the clinical laboratory in management and supervision.

The Marshall University CLS faculty advise the pre-cytotechnology students during the first three years of the curriculum and aid in the student application process into the fourth year clinical practicum.

The Education Coordinator of Cabell Huntington Hospital School of Cytotechnology is an employee of the hospital. The Education Coordinator is a certified Cytotechnologist and maintains the

appropriate continuing education and screening qualifications to hold the position of education coordinator by the accrediting body. **(See Appendix II for Detailed Faculty Data Sheets).**

3. Students:

a. Entrance Standards:

Entry into the Cytotechnology program requires formal application by the student and competitive selection by an admissions committee. This admission committee is comprised of the Chair of the Marshall University CLS Department and the Education Coordinator for the School of Cytotechnology.

Successful completion of the pre-clinical academic program does not automatically assure admission to the Cytotechnology program. The enrollment at the hospital-based program is limited and independent of Marshall University. Cabell Huntington Hospital is approved for 4 students per year, and priority admission is given to Marshall University students.

An applicant for the Cytotechnology program must have an overall 2.5 GPA. Applicants for the final year of Cytotechnology training provide a letter of application, a completed transcript review form and two letters of reference to the CLS department between January 1 and February 15 of the year they seek admission. Late applications are accepted on a space available basis. Copies of applications and transcript review applications are available in the CLS department and on the CLS department website. The admissions committee selects qualified applicants to fill available student positions on the basis of grade point average, letters of reference and personal interviews conducted at the hospital facility.

b. Entrance Abilities:

There is not a clear relationship between a student ACT score, SAT score, or GPA and the success rate in the Cytotechnology program. Some students with lower GPAs may do well if they are highly motivated to succeed in the program. It is important that students meet prerequisite course guidelines for admission into the program as this is the best predictor of academic success. The course work is

very demanding and heavy in upper level science courses. **Table 1** outlines data available for average ACT and SAT scores of new freshmen pre-cytotechnology students.

*Denotes number of students for which data is available

**In Fall 2005 there were no students admitted to the School of Cytotechnology at Cabell Huntington Hospital due to School restructuring activities.

Table 1: New Freshmen

Year	ACT Composite	SAT Verbal	SAT Math
Fall 2003	23.6 *(3)	620.0 *(1)	500.0 *(1)
Fall 2004	18.5 *(2)	No data available	No data available
Fall 2005**	NA	NA	NA
Fall 2006	20.0 *(2)	510.0 *(1)	460.0*(1)
Fall 2007 (one transfer student admitted)	No data available	No data available	No data available

c. Exit Abilities:

Once a CT student has entered the fourth year of the Cytotechnology program, the success rate is very high. Students can take the national certification examination through the American Society for Clinical Pathology (ASCP) and pass rates are above national averages.

Table 2 displays students average GPA for the five year period graduating with a Bachelor of Science in Cytotechnology. The overall five year average was 3.14, which is slightly above the five year College of Health Professions average GPA of 3.13.

Table 2: Average GPA

	2003-4	2004-5	2005-6	2006-7	2007-8
Average GPA	2.75	3.29	2.85	3.18	3.61
# Graduates	3	3	4	3	2

There is a 100% job placement rate for all CT graduates seeking employment in the clinical laboratory, and most find jobs in the tri-state area. In addition to hospital laboratories,

some graduates of the program are employed by Labcorp, which is a commercial laboratory that has an office in South Charleston, WV. According to the U.S. Department of Labor Bureau of Labor Statistics Occupational Outlook Handbook for 2008-2009, CT jobs are projected to have a higher than average employment growth and excellent job opportunities.

4. Resources:

a. Financial:

The CLS department budget is supported entirely through university allocations and student fees. Marshall University CLS department does not financially support the Cytotechnology program; the School of Cytotechnology at Cabell Huntington Hospital is responsible for funding the clinical curriculum of the program. The department budget is approximately \$13,000 and the CLS department does not have a secretary, but does get administrative support from an administrative assistant in the Dean's office who is shared with two other College of Health Professions Departments.

The School of Cytotechnology at Cabell Huntington Hospital charges tuition of \$5000.00 for the fourth year curriculum. Students who have completed at least 24 credit hours at Marshall University may apply for a tuition waiver for the clinical year. Cytotechnology students pay the health professions fees, program specific fees, and CLS department fees for CLS courses to Marshall University.

If the CT program were eliminated, there would be no cost savings to the CLS department. The faculty members would still provide the CLS courses offered to CT students to both MLT and MT students. The School of Cytotechnology admits Marshall University students as their top priority, and would suffer a great loss if Marshall eliminated this program.

b. Facilities:

Since the pre-cytotechnology students primarily take general university courses, the facilities of the University are adequate. The hospital-based program is required to comply with the facility requirements of the accrediting body.

5. **Assessment Information:**

- a. The School of Cytotechnology at Cabell Huntington Hospital is affiliated with the Department of Clinical Laboratory Sciences at Marshall University as the degree granting institution. All instruction and assessment activities for Cytotechnology students are performed at the hospital site. The primary goals for the BS in Cytotechnology are: 1) Select quality applicants from Marshall University for internships at the Cabell Huntington Hospital School of Cytotechnology, 2) Provide undergraduates with access to internships that prepare them with knowledge and experiences necessary for national certification as cytotechnologists, and 3) Prepare graduates to meet proficiency requirements for general science, computer literacy, intensive writing, capstone experiences, international, multicultural, and other requirements established at Marshall University. See the attached **Chart I Assessment Summary**.

- b. **Improvements in Program Quality:** (Cytotechnology Self Study Report): The ASC listserv is an excellent source of timely information for the evaluation of course content of the program and how it is or is not meeting the needs of our students and their employers. Oral and written comments from students led to a change in our 3-month evaluation forms. The publication of the latest Bethesda terminology led to a revision of our daily screening forms. The following changes were instituted as result of the evaluation process: 1) The addition of lectures on Immunostaining, HPV DNA typing, and flow cytometry, 2) new employer faculty evaluation forms were instituted, 3) three month student evaluation forms were revised to better reflect the feedback needed for students to progress, 3) new daily screening forms to reflect the new Bethesda system terminology, 4) the completion of a capstone experience was added to every degree requirement, 5) the addition of a course in laboratory management at the university level.

- c. **Graduate and Employer Satisfaction:** All students who apply for graduation for the Bachelor in Cytotechnology are given a graduate survey; however, the response rate has not been high. From the very few respondents, they were all very satisfied with the instruction and support that they received while in the CT program. Since our program is small, many of the students keep in touch with the

department and are mainly employed at local hospitals after graduation. During clinical site visits at these hospitals, all employers are generally satisfied with the graduates of the Marshall University CT program, and often contact the department to inquire about the number of anticipated graduates each year. There is a 100% job placement rate for all CTs seeking employment in the field, and most are employed in the Tri-State region.

- d. **Office of Assessment Summary Reports:** Previous summary reports from the past five years are attached (**See Scanned Documents**).

6. Previous Reviews:

The previous program review recommended that the Bachelor of Science in Cytotechnology program be continued at the current level of activity. There were no deficiencies or further recommendations from the committee.

7. Strengths/Weaknesses:

Strengths:

- **Atmosphere Conducive to Learning:** Cabell Huntington Hospital School of Cytology has been operating for 35 years. The staff of Cytologists has many years of experience in screening and in working with students. They each have a genuine desire to see students excel while enjoying their learning experience. The students and staff have a relationship in which students feel comfortable asking questions and giving feedback. There is a one to one student-instructor ratio facilitating this process.
- **Employment is available locally for graduates:** most of the graduates of this school are local students and have strong ties to the area. Cytotechnology is one of the few employment opportunities for students to remain in West Virginia. Laboratory Corporation of America has transferred much of their northeastern cytology work to West Virginia because of the availability of technologists. An additional bonus for the students is that Pathologists they trained under also give the final validation to abnormal slides reviewed by the lab, which provides

students with the additional knowledge of this important process.

- Pathologists who genuinely care about students personally and have a desire to see that students learn.
- The addition of the Joan C. Edwards Comprehensive Cancer Center will add a larger variety of specimens and offer students an opportunity to experience more of the clinical aspect of cancer diagnosis.
- Good tissue correlation with Cytology specimens: the majority of abnormal cytology diagnoses have biopsies and surgeries performed at Cabell Huntington Hospital.
- The addition of three interventional radiologists who have added to the variety of fine needle aspiration specimens.
- After several years and the failure of three previous renovation attempts to materialize, remodeling of the Cytology department has begun. When finished, students will have their own room, with ergonomic cubicles, in close proximity to the screening room for techs. All specimen processing will be centralized in one room. Currently, specimen processing is separated from staining and cover slipping.

Weaknesses:

- An undercurrent of uncertainty as to the continued financial support of the hospital for this program: in 2001, the program was targeted by Ernst and Young to be eliminated. It was only through the efforts of the Medical Director of the laboratory that it was spared. At that time, tuition was raised to \$5000.00 and the stipulation that the program must have 4 students was added. When one student withdrew from the program during the first week, there was uncertainty as to whether the program would continue. Because a class had been accepted and had already started, approval was given to continue. Although no indication has been given that funds will not be forthcoming in future years, neither has assurance been received that they will. The director of the Cytotechnology program at Cabell feels that as long as the hospital is doing well financially then the Cytotechnology program will continue.

- The need for a new multi-head microscope: although adequate for now, the resolution of the system is declining. A new system was denied on the last hospital budget.
- The inclusion of students within the same room as techs: while this is advantageous in some ways, the noise factor does not always facilitate learning; renovations will aid in removing this weakness.

B. VIABILITY

1. Articulation Agreements:

Currently there are no articulation agreements for the CT program.

2. Off-Campus/Distance Delivery Classes:

Not Applicable

3. Service Courses:

Not Applicable

4. Program Course Enrollment:

Appendix V provides a summary of all courses taken in the CT program over the past five years.

5. Program Enrollment:

A summary of program enrollment is provided in **Appendix VI**.

6. Enrollment Projections:

According to the U.S. Department of Labor Bureau of Labor Statistics Occupational Outlook Handbook for 2008-2009, CT jobs are projected to have a higher than average employment growth and excellent job opportunities. The Cytotechnology program has a capacity for only four students under the present circumstances, however, due to the projected availability of jobs, it is predicted that more students from Marshall University will apply for entry into the program.

C. NECESSITY:

1. **Advisory Committee:** The advisory committee for the CT program is composed of Linda Brown, MD, Medical Director of Cabell Huntington Hospital School of Cytotechnology, Margene Smith, SCT, education coordinator, Carla Prater, CT, graduate of the program and employee of Cabell Huntington Hospital, Sue Boyd, CT, regional director of cytology for Lab Corps, David McIlvain, Director of Volunteer Services, Cabell Huntington Hospital, and Jennifer Perry, Chair and Program Director, Marshall University CLS Department. The committee meets once per academic year at Cabell Huntington Hospital. Problems with the clinical rotations, examination content and passage rates and other student issues are discussed as well as possible solutions to problems. If there are any curriculum changes, this is discussed and the clinical faculty has an opportunity for input.

2. **Graduates:**

All of the students that have graduated from the Cytotechnology Program are employed as a Cytotechnologist, and the majority of them are employed in the Tri-State region, Charleston, and in the state of West Virginia. There are also many positions open nationwide for cytotechnologists, which is appealing to student in the program. Additionally, the Labcorp facility in South Charleston often holds positions open in anticipation of new graduates.

According to the U.S. Department of Labor Bureau Occupational Outlook Handbook, in 2005 the median hourly wage for Cytotechnologists ranged from \$25.69 to \$31.64.

3. **Job Placement:**

There is a 100% job placement rate for students graduating from the CT program that seek employment in the field. Many are employed locally and nationwide.

D. CONSISTENCY WITH UNIVERSITY MISSION:

Part of the mission of Marshall University is to educate health personnel for the state of West Virginia and the Tri-State region. The CT program is providing health care providers. As previously mentioned, most CT graduates practice in the Tri-State region. Since graduates received the clinical component of their education at local area hospitals, often these hospital vacancies are filled by Marshall University CT graduates.

The Clinical Laboratory Science Department CT Program does not have any unique relationships with other departments at Marshall. There are some shared courses that are taken with the nursing, dietetics, and communication disorders students including pre-requisites of human anatomy, human physiology, microbiology and general chemistry. The courses in the College of Health Professions are specific to their disciplines.