

University Senate

Proposed: February 2, 2018

Adopted: Unanimously by voice vote

**RESOLUTION TO ESTABLISH A PROGRAM
LEADING TO AN M.S. IN GENETIC COUNSELING (P&S)**

WHEREAS, with continuing advances in human genetics, there is an increasing need and demand for health care professionals with expertise and skills in clinical genetics, including genetic counselors; and

WHEREAS, precision medicine demands more health care professionals with advanced training in genetic counseling to assist patients and the larger health care system with the integration of genetic information into the management of both common and rare diseases, and

WHEREAS, the proposed program will provide students with a strong foundation in genetic mechanisms, research and direct exposure to the process of applying a laboratory finding to the patient: clinical laboratory diagnostics, bioinformatics and analytics, variant interpretation, reinterpretation of previous findings, discovery and translational science, as well as the economic, ethical, legal, and societal issues involved in genomics, and

WHEREAS, the program will also focus on new genomic technologies, including whole exome and whole genome sequencing, treatments, and the integration of this information into the management of disease, disease risk assessment and health care decision-making, and

WHEREAS, Columbia University and New York Presbyterian Hospital have clinical rotation placements in prenatal, pediatric, neurology, cancer, cardiology, and specialty clinics that provide a broad and deep training in this field, and

WHEREAS, this program supports and extends ongoing work within the Precision Medicine Initiative and the Institute of Genomic Medicine at Columbia, and will not replace or duplicate any existing programs but will complement existing training, making courses in precision medicine, genetics and genomics more available to students within the Medical Center and across the University,

NOW, THEREFORE BE IT RESOLVED that the Senate approve the creation of a program leading to an M.S. in Genetic Counseling.

BE IT FURTHER RESOLVED that the Education Committee review the program five years after its inauguration.

Proponent:
Education Committee

1) Purpose

The MS Genetic Counseling program is being established to train genetic counselors who will be leaders in clinical genetics and genomics, precision medicine, and research. This will be a two-year (21 month) full-time program with didactic curriculum, clinical practicums, and a scholarly project. Coursework will include medical, scientific, counseling, clinical, laboratory, research, and ethical aspects of human genetics and genomics. The program will also offer a unique focus on new genomic technologies, including whole exome and whole genome sequencing, treatments, and the integration of this information into the management of disease, disease risk assessment and healthcare decision-making.

The MS Genetic Counseling program will recruit and train top students who will be able to advance the field of genetic counseling, and who will create a well-trained pool of candidates for the genetic counseling needs in research, clinical practice and education in New York State. The program will target students interested in precision medicine, the application of genetics and genomics to human health, and those desiring a strong foundation in both genetic and genomic technologies and their use in healthcare. This new program dovetails with the rigorous clinical training currently offered at Columbia in the medical, nursing and dental schools, as well as the research training offered in the School of Public Health and the rich humanities work in a variety of other schools within the University. Additionally, this program supports and extends ongoing work within the Precision Medicine Initiative and the Institute of Genomic Medicine at Columbia. This program will not replace or duplicate any existing programs but instead will complement existing training, making courses in precision medicine, genetics and genomics more available to students within the Medical Center and across the University. The proposed program will offer unique courses and will fulfill the educational requirements for students to be eligible to sit for the national certification exam to become genetic counselors.

2) Need

With recent and continuing advances in human genetics, there is an increasing need for additional healthcare professionals with expertise and skills in clinical genetics, including genetic counselors. The national emphasis on precision medicine demands more healthcare professionals with advanced training in genetic counseling to assist patients and the larger healthcare system with the integration of genetic information into the management of both common and rare diseases, so that this information can improve an individual's chances of preventing disease and maintaining health throughout life. There is currently a workforce shortage of genetic counselors, with recent predictions indicating that the shortage will continue well into the next decade.

To date, there are 37 accredited Master's degree programs in genetic counseling in the United States that combined graduate approximately 300 new trainees per year. These programs are quite competitive with acceptance rates under 6% at most programs, indicating that there is quite a bit of interest among potential students but not enough spots in existing training programs. As existing programs are limited in their ability to expand class sizes and unable to meet the expanding workforce needs, new programs are needed.

Within New York, there are three accredited programs (Icahn School of Medicine at Mount Sinai, Long Island University and Sarah Lawrence College) that train approximately 50 students per year. However, there are shortages of genetic counselors within the State of New York, and specifically

the Columbia healthcare system. Currently, despite the training programs already existing in New York, there are 7 open positions for genetic counselors at Columbia University Medical Center alone and even more open across the state. In fact, Albany ranks as one of the bottom 10 metropolitan areas in the US in terms of residents per genetic counselor. As demand for genetic and genomic services increase in healthcare, and other medical professionals require training in the delivery of this information to patients, genetic counselors will be in even higher demand.

While most training programs have rotations focused on the patient-oriented aspects of genomics (consent, results return, and ongoing care of patients with genetic conditions) supplemented by didactic courses, the Columbia program will also provide students with strong foundation in genetic mechanisms, research and direct exposure to all of the steps in the process of moving a finding in the laboratory to the patient: clinical laboratory diagnostics, bioinformatics and analytics, variant interpretation, reinterpretation of previous findings, discovery and translational science, as well as the economic, ethical, legal, and societal issues involved in genomics. In addition, Columbia University and New York Presbyterian Hospital have clinical rotation placements in prenatal, pediatric, neurology, cancer, cardiology, and specialty clinics that provide a broad and deep training platform for these students. As the application of genetics and genomics moves rapidly into all aspects of healthcare, genetic counselors with this specific skillset will be in great demand.

3) Curriculum

The Columbia University Genetic Counseling Master's Program is a 21-month program that includes didactic courses, clinical practicums, and a scholarly research project. Coursework will cover topics relevant to the medical, scientific, counseling, clinical, laboratory, research, and ethical aspects of human genetics and genomics. Students will participate in practicums in a variety of clinics, including general genetics, prenatal genetics, cardiogenetics, neurogenetics, and cancer genetics to obtain the skills and expertise needed to provide high quality patient-centered care consistent with best practices in an array of settings. The development of research and scholarly skills is emphasized throughout both years. Additionally, the program will also offer a unique focus on precision medicine and new genomic technologies, including whole exome and whole genome sequencing, targeted treatments, and the integration of this information into the management of disease, disease risk assessment and healthcare decision-making.