The City University of New York

CREATION OF A NEW PROGRAM

Preliminary Proposal

<table>
<thead>
<tr>
<th>College:</th>
<th>The City College of New York</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department Sponsoring the Program:</td>
<td>The Sophie Davis School of Biomedical Education</td>
</tr>
<tr>
<td>Name of the Program:</td>
<td>The Sophie Davis School of Biomedical Education Medical Degree Program</td>
</tr>
<tr>
<td>Degrees To Be Awarded:</td>
<td>B.S., M.D.</td>
</tr>
<tr>
<td>Anticipated Implementation:</td>
<td>Fall 2016</td>
</tr>
<tr>
<td>Dates of Governance Approvals:</td>
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<tr>
<td>Sophie Davis School Faculty Council:</td>
<td>May 3, 2013 26 – 0 – 1 – 10</td>
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<tr>
<td>Sophie Davis School Executive Faculty Committee:</td>
<td>May 3, 2013 5 – 0 – 0 – 2</td>
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Abstract

This letter of intent is a proposal for a Doctor of Medicine Degree Program within the Sophie Davis School of Biomedical Education (SDSBE) at the City College of New York (CCNY). The M.D. degree will be awarded by the SDSBE at CCNY. Courses will be taught by faculty from the Sophie Davis School of Biomedical Education. The target enrollees will be the same as for the current Sophie Davis students—high school students from diverse backgrounds within the New York City area who are interested in practicing primary care in underserved communities.

Students will apply in their senior year of high school and once accepted, will obtain a combined BS and M.D. degree over 7 years. The required courses for their BS degree will be integrated with courses for their M.D. degree over the 7 year time frame with an expectation that they will be awarded their BS degree by the end of the 5th year and their M.D. degree at the end of the 7th year. Enrollment is anticipated to be 70 students each year. The M.D. portion of the program will be developed in consultation with the Liaison Committee on Medical Education (LCME), which accredits M.D. granting programs and will comply with all LCME requirements for course work, clinical experiences and evaluations, and will require that students successfully pass 3 national board examinations offered by the National Board of Medical Examiners: USMLE Step 1, Step 2 Clinical Knowledge and Step 2 Clinical Skills, in order to obtain the M.D. degree.

Courses for the M.D. program will be based at CCNY within the Sophie Davis School for the majority of the first two years of medical school (years 4 and 5) and then at clinical sites for years 6 and 7. Some of these clinical sites have already been established and are used to train our current students in the 5 year BS/M.D. program, while for other sites, we are in the process of establishing affiliation agreements.

The M.D. program will benefit CCNY in several ways. It will enhance research and scholarship opportunities; it will strengthen partnerships with the community and other New York City health care centers that will serve as sites for our students clinical experiences; it will enhance the reputation of CCNY and promote interprofessional relationships with other CCNY programs and departments including the Department of Clinical Psychology and the Colin Powell School for Civic and Global Leadership.
I. Purpose and Goal

The faculties of the Sophie Davis School of Biomedical Education propose to transform the Sophie Davis School of Biomedical Education at the City College of New York (CCNY) into a full M.D. degree-granting program accredited by the Liaison Committee on Medical Education (LCME) and a national model for training primary care physicians.

The mission of The Sophie Davis School of Biomedical Education at The City College of New York is to produce broadly-educated, highly-skilled primary care practitioners to provide quality services to underserved communities.

We recruit and educate a diverse, talented pool of students to the BS-M.D. program, expanding access to medical education to individuals from underserved communities, of limited financial resources, and of ethnic backgrounds underrepresented in the medical profession.

We increase medical services in historically underserved areas, and increase the availability of primary care physicians.

We achieve academic excellence through rigorous curricula in clinically-oriented basic sciences, population health, research, exposure to a variety of health care settings, and professional development.

The City College of New York and its Sophie Davis School of Biomedical Education have been innovators in medical education for nearly forty years. Through our exemplary community-based medical education program, we continue to educate a significant number of physicians who dedicate their careers to practicing primary care medicine in underserved communities. To date, the BS-M.D. program has trained more than 1,800 physicians and made significant contributions to the numbers of underrepresented minority (URM) physicians in New York State. Yet despite its extraordinary mission and record of accomplishments, the School’s current cooperating school model places the future of the program at significant risk. As the School does not have a clinical campus, the program has been wholly dependent on cooperating medical schools to accept its students in their final two years of their medical education. In recent years, a variety of external forces have resulted in a substantive decrease in the number of slots available for graduating Sophie Davis students within the cooperating schools – a trend that is likely to continue and severely jeopardize the sustainability of the program and the School’s ability to effectively pursue its mission. This would ultimately lead to further erosion of access to quality primary care for the State’s neediest populations.

As the nation faces a dire shortage of primary care physicians, City College seeks to transform the Sophie Davis School’s existing model to address the urgent needs of both the community and the nation. To catalyze this vision, City College seeks to expand the current 5 year BS/M.D. degree program in order to establish the School of Medicine, pioneering a full Doctor of Medicine degree program with the same quality mission of increasing the numbers of URM physicians and educating primary care physicians for underserved areas throughout New York State. With this mission, and the added feature of endowing students with the skills to demonstrate leadership in human rights
and community care, the Sophie Davis School is poised to be a leader in medical education for the 21st century.

II. Need and Justification

The Association of American Medical Colleges (AAMC) and other leading experts have forewarned of an emerging national health care crisis: an acute shortage of primary care physicians at a time when the demand for primary care is at its highest, as an estimated 30 million previously uninsured persons gain insurance coverage under the Affordable Care Act, and millions more of the growing aging population become eligible for Medicare. (Jolly, 2013; COGME 2010) According to the Healthcare Association of New York State, many New York communities, particularly the traditionally underserved urban and rural populations, are severely threatened with physician shortages. (HANYS, 2012) While the demands of an influx of newly insured patients are the main drivers of this crisis, there is no shortage of challenges on the physician supply side.

General practitioners are typically patients' first line of care but, for a variety of economic and pragmatic reasons, very few physicians graduating from US medical schools are choosing careers in primary care, where low salaries diminish the ability to repay the accumulated debt of a medical education, making the option to subspecialize far more attractive. (Philips, 2009) The Association of American Medical Colleges (AAMC) reports that the number of US physicians that are likely to become primary care practitioners has decreased 31 percent since 2000, and this decline will likely continue. It is further estimated that one-quarter of practicing primary care physicians are near or above retirement age (COGME 2010).

The Sophie Davis School of Biomedical Education presently offers a unique integrated BS-M.D. program whose mission is to provide access to medical education for youth from social, ethnic and racial backgrounds historically underrepresented in medicine, and to develop primary care physicians committed to practicing in underserved communities. In its current structure, the Sophie Davis School operates under a Cooperating School Model. During the first five years of the program, students complete the requirements for a baccalaureate degree together with the didactic components of the first two years of traditional medical school. Students then transfer as 3rd year medical students to one of six Cooperating Medical Schools to complete two years of clinical education (clerkships). Thus, the B.S. degree is conferred by CCNY and the M.D. degree by the Cooperating School.

The Sophie Davis School has been extraordinarily successful under this model, but emerging pressures challenge the ability to continue this model. Financial pressures and space constraints are making it harder for the School to rely on our cooperative medical schools. Responding to a national call for more physicians, many of the cooperating schools have increased their own class sizes, limiting the number of spots reserved for Sophie Davis students. Additionally, relaxed federal regulations permit off-shore medical schools to purchase clerkship spots for their 3rd and 4th year students. This has decreased the available clinical slots for our cooperating schools’ students, making it more difficult to accommodate their own students, let alone adding our
students. Furthermore, with many schools placing greater emphasis on specialty training over careers in primary care, the potency of Sophie Davis' curriculum and commitment to primary care for the underserved is being attenuated in our students' final years of medical education. This is resulting in a greater number of our graduates selecting non-primary care specialty practices.

To overcome the challenge to the Sophie Davis School’s sustainability and address the emerging crisis in primary care physician shortages, we are applying to be a Doctor of Medicine-granting program accredited by the Liaison Committee on Medical Education (LCME). By controlling the full continuum of our students’ medical education, this combined BS/M.D. program will provide the transformational path for New York City and State to educate and train primary care physicians to practice in communities with the highest need for basic medical care and services.

Presently, the State’s medical schools do not produce the number of primary care physicians desperately needed to provide preventive and primary health care to New York’s aging and economically disadvantaged populations. Further, a recent study revealed that three of the Sophie Davis School’s co-operating schools ranked among the 20 lowest performing US medical schools with regard to social mission, as determined by the percentage of graduates who are under-represented minorities and practicing primary care in health professions shortage areas. (Mullan, 2010) The Sophie Davis School has an opportunity to build upon our 40-year tradition of excellence to address the forthcoming health care challenges facing the nation and become a national model for innovations in the education, practice and delivery of high quality medical care, by combining cutting edge urban undergraduate and medical education with training for underrepresented students to specialize in primary care and human rights who then embark upon careers in underserved communities. By adapting our medical education program to a seven-year model, our students will be able to earn both their undergraduate and medical degrees at CCNY. The School will continue to train our students in community health care settings and prepare them specifically for careers in primary care medicine, thus reinforcing our founding mission.

The Sophie Davis School represents a unique opportunity for many young men and women from populations historically underrepresented in medicine to access medical education, and can serve as a critically important source of primary care providers for underserved communities in New York. An added advantage is that the success of the proposed CCNY M.D. program will profoundly enhance the reputation and research portfolio of both City College and the CUNY system. By enhancing cross-disciplinary research and collaboration across the University, CCNY and CUNY will become leaders in health professions education and innovation, generating substantial research activity and grant funding in new clinical areas, and contributing to advances in health care.
III. Student Interest and Enrollment

Admission to the CCNY M.D. Program/ Sophie Davis School of Biomedical Education will follow the model established over the past 40 years for the BS/M.D. Program. Students will be admitted from high school to the BS portion of the program with expected continuation to the M.D. portion. A second screen for entry into the M.D. portion of the program will be conducted after 3 years of matriculation. Admission to the current Sophie Davis program is highly competitive, with more than 700 applicants annually for 75 positions. Increases in the numbers of applicants to the program have generally paralleled those seen in application to traditional medical schools.

Applications peaked in 2010 with modest decreases since that time, attributable to the peak of baby boomers’ children’s admission to college. Among students admitted to the program in the 2013 academic year, 53% are URM (African American/Black or Hispanic), versus 13% URM admission to medical schools throughout New York State and 15% nationally. (AAMC, 2012) Overall, URM students account for 53% of students admitted to the program since 2009 and approximately 40% of the program’s graduates. The ability to enroll a much higher percentage of URM students than nationally is a combination of the applicant pool recruited primarily throughout the New York City metropolitan area, which is typically approximately 45% URM, and the holistic admissions procedures used in the selection of the entering class.

Five-year Summary of Admissions by Ethnicity: 2009-2013

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Cohort</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>5 Year Average</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2009</td>
<td>2010</td>
<td>2011</td>
<td>2012</td>
<td>2013</td>
<td></td>
</tr>
<tr>
<td>African American</td>
<td>32%</td>
<td>36%</td>
<td>33%</td>
<td>41%</td>
<td>34%</td>
<td>35%</td>
</tr>
<tr>
<td>Hispanic / Latino</td>
<td>17%</td>
<td>23%</td>
<td>13%</td>
<td>18%</td>
<td>21%</td>
<td>18%</td>
</tr>
<tr>
<td>Asian American</td>
<td>25%</td>
<td>22%</td>
<td>33%</td>
<td>31%</td>
<td>30%</td>
<td>28%</td>
</tr>
<tr>
<td>White</td>
<td>23%</td>
<td>14%</td>
<td>17%</td>
<td>10%</td>
<td>15%</td>
<td>16%</td>
</tr>
<tr>
<td>Other / Unspecified</td>
<td>3%</td>
<td>5%</td>
<td>3%</td>
<td>0%</td>
<td>0%</td>
<td>4%</td>
</tr>
</tbody>
</table>
After an initial academic screen, applicant files are reviewed for other factors including activities, volunteer work and letters of recommendation. Of the 700-plus applicants, approximately 225 are chosen for interview. Each applicant is interviewed by one member of the Admissions Committee, one member of the faculty/staff Interviewing Committee and one current student. The interviewer ratings combined with the Admissions Committee review of the applicant folders results in ratings of each applicant by the Admissions Committee; those ratings are used to select the group of students offered admission to the school. This process selects students from high school. The CCNY M.D. Program will employ a second screen in the second semester of the third year. At that time, the Admissions Committee will meet with each member of the class to discuss their progression, including academic performance and engagement in school and community activities. Satisfactory progress in all these areas will result in admission to the M.D. portion of the program. It is anticipated that any student with a GPA below 3.0 will be most carefully screened. Without evidence that there has been significant improvement in academic performance from the first to the third year, that student may be denied admission to the M.D. portion of the program.

It is anticipated that attrition in the proposed BS/MD combined program will parallel that seen in the current Sophie Davis School, which is approximately 20% over the 5-year BS portion, with most attrition occurring in the first 3 years. Studies have reported comparable attrition rates (ranging 13% to 26%) in combined Baccalaureate-MD degree programs across the country, with highest attrition frequently occurring during the early undergraduate portion of these programs. (Thomson, 2010; Drees, 2007; Smith, 1993) The School will continue to refine and enhance support services to identify students at risk, for whatever reason, to help them improve their academic performance. Support services include both academic and personal/psychological services, aimed at reducing overall attrition to 15% over the first five years of the program. Enrollment will be increased incrementally to 85-90 students per entering class with anticipated attrition rates of 15-20% annually, yielding a mean of 70 continuing students per year.

The admissions process to the CCNY Medical School, as currently for the BS/M.D. Program, will embrace the concepts of holistic admissions advocated by the AAMC. (AAMC, 2010) These concepts include the ideas, supported by data, that diverse classes improve the educational environment for all students and result in the education of culturally competent physicians better able to serve the increasingly diverse populations of the country. Studies also show that URM physicians are more likely to practice in underserved areas, an important component of our school’s mission. The multi-year AAMC Holistic Review Project wholly aligns with that which the Sophie Davis School has sought to accomplish over its 40-year history.
### Projected Student Enrollment

<table>
<thead>
<tr>
<th>Mean Full Time Enrollment a</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016*</th>
<th>2017*</th>
<th>2018*</th>
<th>2019*</th>
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</thead>
<tbody>
<tr>
<td>New Students</td>
<td>70</td>
<td>70</td>
<td>70</td>
<td>70</td>
<td>70</td>
<td>70</td>
<td>70</td>
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<tr>
<td>Continuing Students</td>
<td>280</td>
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<td>280</td>
<td>280</td>
<td>350</td>
<td>420</td>
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<td>Total Enrollment</td>
<td>350</td>
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<td>350</td>
<td>350</td>
<td>350</td>
<td>420</td>
<td>490</td>
</tr>
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</table>

*a The program will admit full-time students, only. The actual numbers will vary based upon attrition and increasing initial enrollment, yielding a mean of 70 students per graduating cohort

* It is expected that 1st year students admitted to the Sophie Davis School (SD) in fall 2013 will become the charter class of the proposed medical education program in Fall 2016. Thus, the shaded cells represent projected student enrollment the proposed MD degree component (e.g. Years 4-7) of the curriculum. The un-shaded (white) cells represent enrollment in the undergraduate component (Years 1-3) of the curriculum.

From the College’s existing 5-year Sophie Davis School of Biomedical Education program, we plan to create a dual degree award with a BS and M.D. The BS (HEGIS code 0499.0, NYS Education Department Program Code 77808) will be retained as a self-standing program and the M.D. program (HEGIS code 1206.00) will be created and accredited by the LCME and the Middle States Council on Higher Education.

### IV. Curriculum Program Description:

The seven year BS/M.D. program offers qualified students the opportunity to earn both a Bachelor of Science degree and a Doctor of Medicine degree which can be completed in as little as seven years. The curriculum is composed of the common core for the current BS degree that is part of the Sophie Davis School of Biomedical Education (92 credits for the first three years) with additional credits from the M.D. portion of the program fulfilling the required minimum of 120 credit hours. Students minimally qualify for continuing in the M.D. portion of the program by maintaining a GPA of 3.0 in the BS major through the first three years of study and passing an admission screen of the Admissions Committee. This process will ensure that students entering the M.D. portion of the program are prepared for graduate level work.

The BS/M.D. Program follows the CUNY and AAMC general guidelines for undergraduate and graduate school requirements. The first three years of the curriculum fulfill the CUNY requirements for General Education / Pathways and for
Liberal Arts, emphasize the social mission of the Program, and provide the fundamental knowledge as well as professional development and foster the attitudes and skills in preparation for the M.D. phase of the Program.

The course requirements (including the CUNY General Education/Pathways and Liberal Arts requirements, as indicated) that precede the LCME-accredited (M.D.) phase of the curriculum are listed in the table below. Note: All Pathways course designations have been approved by the appropriate committees (e.g. Sophie Davis Curriculum Committee and Executive Faculty Committee, and the CCNY General Education Committee), and are published in the Chancellor’s University Report.

<table>
<thead>
<tr>
<th>Year</th>
<th>Course code</th>
<th>Description</th>
<th>Credits</th>
<th>Notes</th>
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<tbody>
<tr>
<td></td>
<td>BIO20700</td>
<td>Biology of Organisms</td>
<td>4</td>
<td>P; L</td>
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<tr>
<td></td>
<td>MED10200</td>
<td>Principles of General Chemistry</td>
<td>5</td>
<td>L</td>
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<tr>
<td></td>
<td>PHYS20300</td>
<td>General Physics I</td>
<td>4</td>
<td>P (CO); L</td>
</tr>
<tr>
<td></td>
<td>PHYS20400</td>
<td>General Physics II</td>
<td>4</td>
<td>P (CO); L</td>
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<tr>
<td></td>
<td>FIQWS</td>
<td>Freshman Inquiry Writing Seminar in Narrative Medicine</td>
<td>6</td>
<td>P; L</td>
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<tr>
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<td>WCIV 10100 / 10200</td>
<td>World Civilizations</td>
<td>3</td>
<td>P; L</td>
</tr>
<tr>
<td></td>
<td>USSO 10100</td>
<td>The Development of the United States and Its People</td>
<td>3</td>
<td>P; L</td>
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<tr>
<td></td>
<td>NSS10000</td>
<td>New Freshman Seminar</td>
<td>0</td>
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<tr>
<td></td>
<td>ENG21003</td>
<td>Writing for the Sciences</td>
<td>3</td>
<td>P; L</td>
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<tr>
<td></td>
<td>Elective</td>
<td></td>
<td>3</td>
<td>L</td>
</tr>
<tr>
<td>2</td>
<td>MED20300</td>
<td>Bio-Organic Chemistry</td>
<td>5</td>
<td>L</td>
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<tr>
<td>Course Code</td>
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<td>Credits</td>
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<tr>
<td>MATH17700</td>
<td>Introduction to Biostatistics</td>
<td>3</td>
<td>P; L</td>
<td></td>
</tr>
<tr>
<td>BIO20600</td>
<td>Introduction to Genetics</td>
<td>4</td>
<td>P; L</td>
<td></td>
</tr>
<tr>
<td>PSY 10200</td>
<td>Applications of Psychology in the Modern World</td>
<td>3</td>
<td>P; L</td>
<td></td>
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<tr>
<td>MED20400</td>
<td>Molecules to Cells I</td>
<td>4</td>
<td>P (CO)</td>
<td></td>
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<tr>
<td>MED22401</td>
<td>Health, Medicine &amp; Society I – Culture, Health &amp; Illness / Community Oriented Primary Care</td>
<td>3</td>
<td>P (CO)</td>
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<tr>
<td>MED22401</td>
<td>Health, Medicine &amp; Society II – Practicum in Community Health Assessment</td>
<td>2</td>
<td>P (CO); L</td>
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<tr>
<td>MED23400</td>
<td>Health, Medicine &amp; Society III – Field Work in Community Medicine</td>
<td>5</td>
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<tr>
<td>TBD</td>
<td>2nd Year Longitudinal Clinical Experience: Intro. to Primary Care</td>
<td>1</td>
<td>P (CO)</td>
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<tr>
<td></td>
<td>Elective</td>
<td>3</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>MED30500</td>
<td>Molecules to Cells II</td>
<td>3</td>
<td>P</td>
</tr>
<tr>
<td>MED33501</td>
<td>Health, Medicine &amp; Society IV – Fundamentals of Epidemiology</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MED33602</td>
<td>Human Gross Anatomy, Human Development, and Organ Imaging</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MED47802</td>
<td>Behavioral Medicine</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHIL10200</td>
<td>Introduction to Philosophy</td>
<td>3</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td>MED36500/MED36600</td>
<td>3rd Year Longitudinal Clinical Experience: Introduction to Primary Care I &amp; II</td>
<td>1</td>
<td>P (CO)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Elective</td>
<td>3</td>
<td>L</td>
<td></td>
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</table>
The curriculum for years 4 and 5 constitutes the first two years of the LCME-accredited portion of the M.D. program, and consists of integrated Organ Systems-based as well as clinical curriculum elements:

<table>
<thead>
<tr>
<th>Year</th>
<th>Course Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Fundamentals of Organ System Structure and Function</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>Organ Systems I, II, III: Cardiovascular; Pulmonary; GI/Liver</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>Patient – Doctor</td>
<td>8</td>
</tr>
<tr>
<td>5</td>
<td>Organ Systems IV - X: Endocrine; Renal/GU; Reproductive Health; Hematology and Oncology; Neurology; Psychiatry; Musculoskeletal</td>
<td>32 (16 / semester)</td>
</tr>
<tr>
<td></td>
<td>Patient – Doctor</td>
<td>8</td>
</tr>
</tbody>
</table>

See below ("Clinical Curriculum" section) for years 6 and 7.

Note: Waiver of customary charges for exceeding the maximum number of credits per semester will be required. A different tuition structure will be implemented for years 4 and 5.

The curriculum being developed for this dual degree program for the BS/M.D. degree is integrated both horizontally and vertically. While the school of medicine will place an emphasis on primary care, it recognizes that not all students will choose that career pathway, so the curriculum will also produce students who are competent to enter postgraduate training in any specialty area. In fact, this is a requirement for medical school accreditation from the LCME. Students will have the opportunity to explore careers in a broad array of specialties through the electives offered at the affiliated hospitals. The school will use several hospitals and ambulatory practices in the region for delivery of the required and elective clinical rotations in years three and four of the M.D. portion of curriculum (Years 6 and 7 of the BS/M.D. Program).

All academic programs at CUNY are assessed on a regular basis according to the guidelines established by the Middle States Commission for Higher Education. In
addition, the M.D. portion of this dual degree program will be assessed according to the guidelines established by the Liaison Committee on Medical Education (LCME). In the LCME document “FUNCTIONS AND STRUCTURE OF A MEDICAL SCHOOL: Standards for Accreditation of Medical Education Programs Leading to the M.D. Degree, June 2013 (http://www.lcme.org/functions.pdf), standard ED 1 states, “The faculty of an institution that offers a medical education program must define the objectives of its program. The objectives must serve as guides for establishing curriculum content and provide the basis for evaluating the effectiveness of the program”; ED 4 states, “A medical education program must include at least 130 weeks of instruction” and ED 5, “The curriculum of a medical education program must provide a general professional education and prepare medical students for entry into graduate medical education”. However, the LCME does not require specific courses or credit hours.

Clinical Curriculum - Pre-clerkship clinical instruction (prior to years 6 and 7):

Prior to the required LCME experiences in the third and fourth years of the M.D. curriculum, students will acquire the necessary clinical skills in the Longitudinal Clinical Experience course which will begin in the second year of the 7-year program and continue through year 5, after which they will be in the required clerkship experiences. This course will teach students’ interviewing/history taking and physical examination skills, cultural competency and allow them to longitudinally follow patients over 3.5 years to develop an understanding of how their health and illness impacts their lives. It will also allow students to observe the natural history and evolution of disease and the effect of socioeconomic and cultural factors on disease prevention and treatment. This longitudinal clinical experience will also integrate and apply basic science concepts learned throughout their education to the diagnosis and management of their patients. During the 6th and 7th years, the LCME mandates specific clinical experiences (clerkships), which include Internal Medicine, Family Medicine, Surgery, Obstetrics-Gynecology, Psychiatry, Emergency Medicine and Pediatrics. These clerkships will occur both in the inpatient and outpatient settings at hospitals and regional clinics and physicians’ offices. In the preliminary plan for the clinical clerkships, the students will spend 2 weeks with a focused experience in Neurology; 4 weeks each in Pediatrics, Obstetrics and Gynecology, Psychiatry and on elective time; 8 weeks in Internal Medicine and 12 weeks in Family Medicine (which will include clinical exposure to Pediatric, Obstetric and Gynecologic and Psychiatric and Geriatric care). In addition to 3 weeks of vacation, students will spend 7 weeks on campus reviewing basic science concepts and integrating interdisciplinary concepts, and participating in narrative medicine experiences, scholarly reflection and service learning projects. These 7 weeks will be spread between and amongst the clerkship experiences.

During the 7th year, students will have a 4-week mandatory experience in Emergency Medicine and two 4-week sub-internship experiences on hospital wards. They will also have a capstone project in an area of scholarly concentration for 8 weeks, 4 weeks for interviewing for residency programs, 4 weeks of vacation, plus 14 weeks of elective time and 2 weeks for an Introduction to Internship/Skills building course. Aside from the
LCME required content/subjects that will be taught throughout the medical school years, the LCME mandates elective time where students can concentrate in specific areas of medical interest (both clinical and research focused). In addition to taking the NBME subject test examinations in each medical specialty to demonstrate competence in the specific specialties of medicine (Internal Medicine, Pediatrics, Neurology, Surgery, Family Medicine and Obstetrics-Gynecology), students will consistently interact with standardized patients, both at the Simulation Facility jointly owned by CUNY and NYU (NYSIM), and on the CCNY campus. These required encounters will be used for teaching, as well as formative and summative feedback of students’ clinical skills. In order to graduate from medical school and start postgraduate residency training, students will be required to pass standardized national exams provided by the National Board of Medical Examiners (NBME), that include the United States Medical Licensing Examination (USMLE) Step 1 (basic science application), Step 2 Clinical Knowledge (CK) and Step 2 Clinical Skills (CS-Standardized Patient Encounters) exams. In order for physicians to be licensed to practice, they must also pass the Step 3 exam generally taken at the end of the first postgraduate year; examinees must pass Step 1, Step 2CK and 2CS prior to taking Step 3. Students will also be required to pass an Observed Structured Clinical Examination (OSCE) at the end of year 5 in order to demonstrate preparedness for beginning the clinical clerkships, and again in year 7 in order to be eligible to sit for Step 2 CS and to obtain an M.D. degree.

IV. FACULTY

The model for the BS/M.D. program is one in which the faculty emphasis will be on medical student education, with a concomitant research focus for many faculty, especially the basic scientists. For the clinical faculty, clinical service will be a relatively minor aspect of the full-time clinical faculty’s academic activities. This is consistent with the university’s emphasis on high-quality student-centered education. There are no plans to develop a clinical facility or a faculty practice plan. The proposed model includes having a “Principal Clinical Partner”, St. Barnabas Medical Center, where full time and voluntary faculty will be the primary clinicians teaching our students in the clinical courses (LCE, Patient-Doctor and the clinical components of the Organ Systems courses) and required clerkships. In addition, the school will have other affiliates, such as Harlem Hospital and other New York City Health and Hospital Corporation (HHC) facilities that will provide clinical training experiences for the medical students.

The School of Medicine will rely on private physicians, ambulatory clinics and hospitals for delivery of the clinical portions of the curriculum. Based on discussions with physician practice groups affiliated with St. Barnabas (our primary affiliated hospital) and individual physicians practicing in the region who currently teach our students for their clinical courses, we believe the St. Barnabas network will provide sufficient clinical settings and patients to accommodate all Sophie Davis students for this portion of the curriculum, thereby eliminating the School’s reliance upon the current cooperating medical school structure and related clerkship training slots. A formal affiliation agreement with St. Barnabas is under negotiation, whereby the Sophie Davis School would assume full responsibility for creating and monitoring the structure, content and
assessment methodologies of the education program of students assigned to St. Barnabas Hospital. It is anticipated that St. Barnabas Hospital will coordinate and implement the curriculum for the clinical courses and clerkships and provide clinical instruction under the supervision of Sophie Davis’ Office of Academic Affairs and provide professional supervision of students assigned to its facilities.

The LCME requires that medical schools have adequate fulltime basic science and clinical faculty to provide medical education. The Sophie Davis School will be required to have sufficient full time faculty to provide basic science instruction in areas such as gross anatomy, physiology, pharmacology, histology, pathology and biochemistry, as well as sufficient fulltime clinical faculty to provide clinical education in areas such as physical diagnosis and introduction to clinical medicine. The School currently has adequate fulltime faculty to teach in some of these areas, but not enough to teach the 130 weeks mandated by LCME or to accommodate the 140% increase in class size and the increase of 2 years of clinical content (Medicine, Neurology, pediatrics, etc.). Medical schools are also required to provide close to 50% of students’ education in small group formats which require greater numbers of expert faculty to facilitate these sessions. In addition, the current recommended curricular structure for enhancing students’ learning and application of content is a curriculum design based upon organ systems, such as the heart, lungs, kidneys, nervous system etc. This curricular structure requires that subjects such as anatomy, physiology and histology be integrated into each of these organ systems and taught longitudinally throughout the year. As medicine is a highly specialized and dynamic field, a broad range of content experts are required for teaching.

The School currently has two basic science departments (Department of Pathobiology and Department of Physiology, Pharmacology & Neuroscience) and a Department of Community Health and Social Medicine, and plans to establish a 4th Department of Medical Education for faculty whose primary responsibility is teaching, with research and clinical practice being secondary. In addition, we will establish a Department of Clinical Medicine to oversee the clinical faculty whose primary responsibility is to teach our medical students.

A number of part-time faculty, primarily physicians, will be involved in teaching clinical components of the curriculum in years two through five, and full time clinical faculty of St Barnabas Medical Center will serve as “clerkship directors” for years six and seven of the curriculum. The School anticipates having 100-200 clinical faculty members by the time the charter class matriculates in the fall of 2016. The majority of the clinical faculty will be volunteers, and unpaid. However, some will be employed part-time to provide classroom instruction for components of years 2 through 5 of the curriculum; others will receive a stipend for precepting students in their offices. The LCME mandates that all faculty teaching in a medical school have appointments at the medical school. These faculty will have appointments in the Department of Clinical Medicine. We are requesting the creation of an additional faculty non-tenure track, modeled after the ROTC Professor of Military History track, where faculty who are salaried by other institutions, can have faculty appointments to teach Sophie Davis students. This will
incur no additional cost to CCNY or CUNY, but will allow us to fulfill the LCME requirements for faculty appointments for our clinical partners.

VI. Cost Assessment

The Sophie Davis accredited MD degree granting program is anticipated to begin operating in fall 2016 (FY17). The LCME mandates that medical education programs have adequate resources to provide a minimum of 130 weeks of medical education over four years. The Sophie Davis School is required to have sufficient resources in place prior to the February 2015 LCME site visit in order to obtain preliminary accreditation and prior to the inaugural class in August of 2016.

To meet the LCME standards, the school will be required to have an extensive relevant library collection of medical and health related electronic books, journals, reference and database information resources as well as have national consortia and licensing agreements. The LCME also requires that medical schools have adequate administrative resources to support the infrastructure for medical education, and specifies that medical schools have professional, technical, and other support staff lines in areas such as curriculum management, evaluation and programmatic assessment, library services, educational technology services and development, health and wellness services, career services, clinical advisement, diversity, compliance, clerkship management, student research, etc. The Sophie Davis School will recruit staff for positions in areas where existing staff cannot fulfill or lack expertise.

Outlined below are the minimum resources the school requires to be eligible for LCME accreditation.
## Projected Revenue Related to the Proposed Program

### In Millions of Dollars

<table>
<thead>
<tr>
<th>Academic Year</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
</tr>
</thead>
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<tr>
<td><strong>Tuition Revenue</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>From Existing Sources</td>
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<td>$</td>
<td>$</td>
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</tr>
<tr>
<td>New Source - Student Activity Fees</td>
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<td>$ 0.21</td>
<td>$ 0.21</td>
<td>$ 0.21</td>
<td>$ 0.21</td>
</tr>
<tr>
<td>New Source - Medical School Tuition</td>
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<td>$ 8.0</td>
<td>$ 10.6</td>
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<tr>
<td><strong>Total Tuition Revenue</strong></td>
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<td><strong>State Appropriations</strong></td>
<td></td>
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<tr>
<td>From Existing Sources</td>
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<td>$ 11.0</td>
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<tr>
<td>New Source - Compact</td>
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<td>$ 0.65</td>
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<tr>
<td>New Source - State Aid</td>
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<td>$ 4.2</td>
<td>$ 6.3</td>
<td>$ 8.4</td>
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<tr>
<td>New Source - One-Time State Aid</td>
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<td>$ -</td>
<td>$ -</td>
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<tr>
<td><strong>Total State Appropriations</strong></td>
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<td>$ 15.9</td>
<td>$ 18.0</td>
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<td><strong>Other Revenue</strong></td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>From Existing Sources</td>
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<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>New Source - St. Barnabas</td>
<td>$ 1.5</td>
<td>$ 1.5</td>
<td>$ 1.5</td>
<td>$ 1.5</td>
<td>$ 1.5</td>
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<tr>
<td><strong>Total Other Revenue</strong></td>
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<td>$ 1.5</td>
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<tr>
<td><strong>Grand Total</strong></td>
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</tr>
<tr>
<td>From Existing Sources</td>
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<tr>
<td>From New Sources</td>
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<td><strong>Total</strong></td>
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<td>$ 22.5</td>
<td>$ 27.6</td>
<td>$ 32.4</td>
<td>$ 32.4</td>
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</table>
Footnotes to Projected Revenues to Proposed Plan

Tuition Revenue

Line 5: Medical school tuition is set at exactly the same level of the four SUNY medical schools, which, with projected 9% per year increases approved by the SUNY Board of Trustees, is calculated to be approximately $38,000 per year by 2016. Therefore the 70 students in the medical school in 2016 at this $38,000 tuition level will generate $2.66m in tuition revenue.

Tuition for 2016 and 2017 has to be discounted by the loss of $6,000 of tuition for the class entering in 2013, which substitutes fourth and fifth year medical tuition for fourth and fifth year Sophie Davis School of Biomedical Education (SDBE) tuition; hence the reduction of $420,000 in 2016 and 2017.

In addition, Students in the first three years of SDBE will be charged a student activity fees in the amount of $1,000 per student to cover supplies, equipment, materials and clinically-related expenses. This will generate approximately $2100,000 per year.

When the full complement of students – 280 – are enrolled starting in 2020, the tuition revenue will increase to $10.9 million.

State Appropriations

Line 8: The Sophie Davis School of Biomedical Education is currently funded with tax levy funds at $11 million. This level of funding will continue in 2016 and beyond.

Line 9: The CUNY Compact is expected to generate $13 million for City College from FY 2014 – FY 2016. SDBE should receive a cumulative 5% of that amount or $650,000.

In addition State Aid, which is expected to be $30,000 per FTE is expected to grow from $2.1 million in 2016 to $8.4 million in 2020. In 2016, the total State funding is $5.3 million, this includes the aid per student and $3.2 million in one-time startup costs.

Other Revenues

Line 12: An affiliated partnership with Saint Barnabas Medical Center will yield $1.5 million starting in 2016.
<table>
<thead>
<tr>
<th>Academic Year</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
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<td></td>
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<tr>
<td>Year 3</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Year 4</td>
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<td></td>
<td></td>
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<tr>
<td>Year 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating Expenses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instructional</td>
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<td>9.5</td>
<td>11.8</td>
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<tr>
<td>Institutional Support</td>
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<td>Student Services</td>
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<td>4.2</td>
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<tr>
<td>Academic Support</td>
<td>3.1</td>
<td>3.8</td>
<td>4.6</td>
<td>5.3</td>
<td>5.3</td>
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<tr>
<td>Student Financial Aid</td>
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<td>1.5</td>
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<tr>
<td>Research, Training and Other</td>
<td>0.6</td>
<td>0.6</td>
<td>0.8</td>
<td>0.9</td>
<td>0.9</td>
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<tr>
<td>Total</td>
<td>21.0</td>
<td>22.5</td>
<td>27.6</td>
<td>32.4</td>
<td>32.4</td>
</tr>
</tbody>
</table>
Footnotes to Projected Expenses to Proposed Plan

Line 1-7: Included in these categorized activity expenses are 20-30 new faculty and 25-30 new staff the school anticipates to hire. By year 5, full time faculty is projected to increase by $5.6 million and full time staff by $1.7 million. The average salary for medical faculty is $150,000 for basic science and $275,000 for clinical science. The average anticipated salary for staff is $65,000.

In addition, the school expects to pay fringe at 41.6% for full time and 24.3% for part time on all faculty and staff above the school’s $11 million base budget.

Line 4: An average of $200,000 per year is budgeted for OSCEs and standardized patients.

Line 5: Excluding personnel, curriculum management system and evaluation database is projected to be $1.2 million per year. IT infrastructure to support these systems is expected to be about $100,000 per year.

In addition, the school will implement a school-wide IT maintenance plan projected costs to average $300,000 per year.

Line 6: Excluding personnel, student services costs include an average of $500,000 per year in student transportation costs to shuttle medical students to and from hospitals and health center site rotations.

Student events such as white coat ceremony, career counseling and services, mentoring program, etc. is projected at $500,000 per year.

Line 7: Library expenses (excluding personnel) are expected to be in excess of $1 million per year. The school expects to purchase 100-125 annual subscription site licenses typically used in medical schools at an average rate of $8,000 per subscription per year.

In addition, the school expects to upgrade the Learning Resource Center, including increasing staff, expanding services and extending hours (includes the student study hall).

Line 8: The school expects to provide student scholarship and a student incentive program funded by the clinical partner contribution.

Line 9: The school budget is $650,000 for implementation of a robust faculty development initiative for Sophie Davis and clinical partner faculty that focuses on medical teaching and research and includes conferences, seminars, workshops and certificate programs.
REFERENCES


Smith SR. Retention of traditional premedical students in a medical career pathway compared with students in a combines baccalaureate-medical degree program. JNMA. 1993; 85(7):529-532.