

## The Educational Legacy of the UPR School of Tropical Medicine: Curricula, Faculty, Students (1926-1949)

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This essay discusses the educational evolution of the University of Puerto Rico-School of Tropical Medicine (UPR-STM) under the auspices of Columbia University. It takes a closer look to what was taught, who taught it and who were the students benefitting from the educational, learning and advanced research activities. It highlights some characteristics of the educational environment that aimed to harvest a well-trained group of scientists, academicians, and practitioners. It examines the characteristics of the faculty and graduates and their role in the teaching and dissemination of knowledge in tropical medicine and closely related fields. The curricula was characterized for its flexibility to accommodate the students' clinical and research interests. With the advent of the 1940s the School started offering public health professionals degrees in addition to the former research-based training. This brought tensions associated to professionalization, the diversification of purposes, the expansion without sufficient resources, and the opening to different levels of students. Maintaining a cadre of well-trained prestigious faculty was always a struggle. Strategies such as visiting professors and joint and ad-honorem appointments were used. Agreements with universities around the world, philanthropic institutions, professional associations, and with different branches of the local and federal government supplemented the resources of the School. In return, the School offered an environment committed to educational standards, networking and a wealth of data for study and discovery. [*PR Health Sci J* 2016;35:125-133]

*Key words:* Public health training, Medical education in Puerto Rico, History of education, History of medical education

The main purpose of the University of Puerto Rico School of Tropical Medicine (UPR-STM) when inaugurated in October 1926 was to offer educational and advanced research opportunities in tropical medicine. Prior to the establishing of such a school, the teaching of tropical medicine in the Americas had its presence mainly in academic units within leading medical schools in North and South America. Hence, the UPR-STM became one of the first schools in the Americas founded in a tropical setting exclusively devoted to the advanced study of tropical diseases (1).

The UPR-STM was created by a Legislative Act enacted on June 23, 1924, through a Joint Resolution which transferred resources and properties of the former Institute of Tropical Medicine and Hygiene to the School. The law also provided for the construction of laboratories, a library and a self-standing building that were completed in May 1926 (2). It was conceived as part of the University of Puerto Rico, but under the auspices of Columbia University. The collaborative plan between the two institutions delegated powers to Columbia University. Columbia University had the authority to determine the educational policy of the School and to nominate its faculty, subject to the approval of the Special Board of Trustees that consisted of five members, three from the University of Puerto Rico and two from Columbia University (3).

During the two decades that followed, there were significant evolutions and trends in the School which can be attributed to a group of scholars, academic administrators and students that engaged in investigating, teaching, learning and delivering sanitary and clinical care. These changes stemmed from the transformation of the dynamics in the relationship between Columbia University and the University of Puerto Rico; the public health and clinical workforce needs of the Island; and the advancement and discoveries in the basic, clinical and social sciences. This second article of a series of five historical articles on the scientific and educational contributions of the UPR-STM (4), published in this journal, analyzes those evolutions and unveils details of the educational enterprise by highlighting the contextual forces that contributed to its singularity.

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## Elements of the School's Intellectual and Educational Foundation

### A. The UPR-STM and the golden era of teaching tropical medicine worldwide

The UPR-STM belonged to a select group of institutions that contributed to the consolidation of tropical medicine as an academic discipline at the beginning of the 20th century. Leading this movement was the foundation of the Liverpool School of Tropical Medicine and the London School of Tropical Medicine in England, both in 1899 (5). Patrick Manson, founder of the London School, and a renowned pathologist responsible for discovering that an insect can be host to a developing parasite that causes a disease, has been credited as the “father of tropical medicine”. This recognition has been debated because the practice of this discipline has an extensive history attributable to many devoted scientists (6). However, acknowledging that he is responsible for the establishment of tropical medicine as a separate medical specialty has been less controversial (7).

Manson played a major role in the creation of the foundation for the teaching of tropical medicine by identifying its body of knowledge. Following his memorable lectures on the teaching of tropical medicine, published in the *Lancet* in 1897 and in the *Journal of Tropical Medicine* in 1899, he fueled a well-conceived apparatus, following the academic and scholarly traditions of the time. This included scientific journals, professional societies, conferences, and a strong network of academicians and experts; providing credibility and authority to the discipline (8).

During the first decade of 20<sup>th</sup> century, schools of tropical medicine flourished rapidly. These schools, modelled after the two British institutions, facilitated the consolidation of tropical medicine as an academic discipline. They provided a distinct curriculum and field experiences to physicians and other medical personnel who were expected to work in colonies or were attending persons who returned to the United Kingdom and had become ill in warm climate countries. Besides teaching about the diseases, the schools disseminated ways to conduct laboratory and clinical investigations using materials gathered or observed in the colonies. In the years that followed, schools and institutes devoted to the study of tropical diseases and its consequences opened in major European countries and in their colonies; notably, the *Institute für Schiffs-und Tropenkrankheiten* in Hamburg (1900), the *Calcutta School of Tropical Medicine* (1914), the *Oswaldo Cruz Institute* in Rio de Janeiro (1900), the *Instituto de Higiene e Medicina Tropical*, in Portugal (1902), *Koninklijk Instituut voor de Tropen* (KIT) in Amsterdam (1910), and the *Australian Institute of Tropical Medicine* (1910), among others (9). The UPR-STM was inaugurated borrowing from this paradigm. Even under the strain and constraints of financial resources, it was set up with the basic elements that characterized previously established institutions for the study and training in tropical diseases. The facilities included laboratories, classrooms, a specialized library, a hospital in its making, and agreements with clinical and other health related facilities.

Tropical medicine as a medical and scientific specialty was conceived unequivocally in Europe and the United States for the very specific needs of colonialism and imperial expansion. The development of the discipline and its teaching was intimately, but not exclusively, related to diseases defined geographically. It also had been defined by the geopolitical occurrences of the end of the 19th century and the beginning of the 20th century. Europeans and developed nations usually preferred underdeveloped regions in warm climates to spread Christianity, to colonize and then profit from local resources, to expand agricultural industries, pay for wars, or to conduct all four simultaneously (10). Several events and scientific advancements contributed to the pertinence and growth of the medical discipline, among them the discoveries at the time that left behind the miasma theories of disease, the need to maintain a healthy military workforce, mainly in warm climates, and the increasing responsibility and self-interest that the empire assumed over the health and productivity of the colonized territories (11). The colonial expansion was the force that facilitated the transnational nature of the discipline (12). It attracted scientists with pioneer and adventurous spirit eager to be part of the environment for discovery and prevention of diseases based on the parasite-vector model (13).

The institutions in the metropolis and colonies also attracted scientists that had been working in the various localities. On the one hand, we have many documented instances in which there was an evident clash of power and science between the Western scientific traditions and motives, and the local struggles with health and disease (14). In clear contrast, positive collaborations, scientific synergy, discoveries and even profound friendships resulted from the interactions (15). In 1926, the UPR-STM pioneered in the American tropics under the auspices of Columbia University in New York, and it exhibited many of these seemingly contradictory interactions and outcomes. As stated by Annette Ramirez de Arellano, for Columbia the venture signified having access to a population whose diseases were not readily available in New York (16). The Dean of Columbia Medical School at the time, William Darrach, publicly lauded the value of the School for Columbia University and through Columbia to the whole world. He believed that “the institution [UPR-STM] should play a great asset by offering training to our young men who intend to teach, practice and carry on public health work in other tropical countries” (17).

### B. A singular position within the development of the University of Puerto Rico

While the School of Tropical Medicine was being conceived as a semi-autonomous entity within the University of Puerto Rico, the latter was in the midst of a massive transformation. At the onset of the twenties, several reports about the educational system in Puerto Rico agreed that “neither in faculty, nor in building, equipment and curricula did the University come close to the standards of an institution of higher learning” (18).

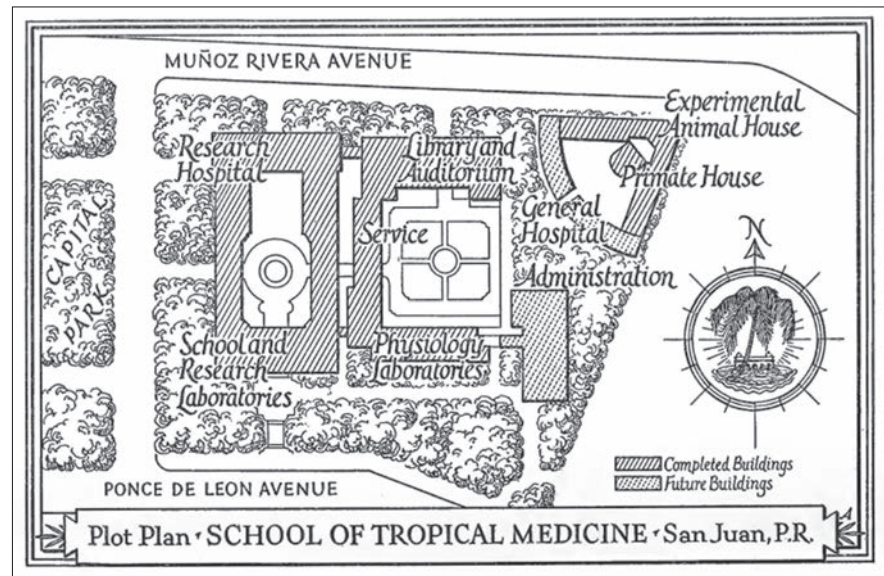
The University was founded in 1903, only five years after the United States assumed control of Puerto Rico. The 1903 Organic Law explicitly supported a university with strong liberal arts and professional components. Initially, the Puerto Rico legislature only provided funds for the Normal School for teacher training (1903) and an Agriculture Department (1904).

During the same decade the University also established the College of Liberal Arts (1910), the School of Law (1913), and the School of Pharmacy (1913). Despite this expansion, the University remained underdeveloped (19).

When President Warren G. Harding appointed Horace M. Towner as governor in 1923, Puerto Rico and the University of Puerto Rico entered a new era. Towner favored statehood and encouraged initiatives to provide the Island's government with more autonomy (20). Also, he created the conditions in Puerto Rico to launch a program to facilitate initiatives between the United States and the Caribbean, Central and South American countries. Pan-Americanization initiatives envisioned the union of the best elements of Anglo-Saxon and Spanish cultures through commerce, liberal arts, and diplomacy. It had obvious benefits for defense and for the United States' commercial expansion. Puerto Rico acquired importance within these initiatives because of its strategic geographical location, its Americanized government, and its strong Hispanic cultural background. Puerto Rico benefited from the attention and resources that were channeled through the Island (21).

Towner identified the University of Puerto Rico as a vehicle for the Pan-Americanization project. During the period, Antonio R. Barceló, President of the Puerto Rican Senate, became a special sponsor of the University. He included university issues in the legislative agenda, and important legislation was enacted to promote autonomy, which included the creation of the Office of the Chancellor, a mandated tax-formula budget system to benefit the University, and the creation of the School of Tropical Medicine under the auspices of Columbia University (22). He became personally involved in all the collaborative efforts that lead to their successful implementation (23).

In 1924, Thomas E. Benner was appointed as the first Chancellor of the University. He was charged with the implementation of the Pan-Americanization project within the University and to raise the University's standard and prestige (24), among others. It is not surprising that he supported the plans for the creation of the UPR-STM. Even considering the



*Plot Plan, University of Puerto Rico School of Tropical Medicine.* The UPR-STM was inaugurated with the basic facilities to become a leading institution of higher learning in Tropical Medicine with emphasis in advanced research. Source: School of Tropical Medicine of the University of Porto Rico under the auspices of Columbia University, Report of the Director 1938-39; San Juan, PR; University of Porto Rico and Columbia University; 1939. (Archives and Special Collections, A.C. Long Health Science Library, Columbia University).

administrative challenges, and that the University had to share its power, the School provided a platform and framework to achieve many of the elements that he had envisioned, such as: collaboration with a University with high standards, the influx of visiting scholars, the projection to provide health services to the Puerto Rican population, insertion in the research enterprise, and the potential to attract foreign students. The School, following the tradition of other schools of Tropical Medicine, benefited from scholarly networks, including those inherent to the discipline of tropical medicine and related fields, the medical practice, the higher education Ivy League community, and the worldwide medical philanthropy that was at its pinnacle. The School, as part of the University of Puerto Rico, was readily showcased in the scientific and lay press as an institution committed to high scientific international standards and responsive to the needs of Puerto Ricans (25).

### Evidence of Evolution, Growth and Legacy

The School evolved in the context of a dynamic University environment, and within political turmoil and lack of resources that stemmed from the Second World War and the Great Depression. It prevailed amid the tensions created by the neocolonial environment in which it was established; it also had to withstand the challenges that emanated from two institutions with different missions, purposes, traditions, administrative structures and educational priorities. The School operated and became a significant academic enterprise for twenty three years. It ceased its activities in 1949. Its resources, facilities and activities were redefined when the University of Puerto Rico

School of Medicine was created. Its growth and legacy can be assessed through its curricular offering, student body and faculty pursuits.

#### A. Curricula and student body

The UPR-STM aimed to attract students for independent studies in the core fields associated with Tropical Medicine, including bacteriology and immunology, mycology, pathology and chemistry. It also wanted students willing to pursue advanced clinical skills in the “so-called” tropical diseases and to conduct population-based sanitary and epidemiological investigations. A 1926-27 School announcement conveyed a clear message of curricular flexibility based on a self-discovery and self-paced curricular model. The students, depending on the time that they wanted to spend on campus, could configure a plan of study which included intense research activities. Even within the flexible framework, the courses and areas of study were formally institutionalized and registered for further credentialing. Each area of study had a senior faculty member in charge, and at least one junior faculty to support the students’ work. Every department offered a series of courses that were described in the announcements published yearly for recruitment and orientation purposes. A point system was used to indicate the intensity of the course and number of hours that the student needed to spend in the course. Starting with the first announcement for the entering class of 1926-27, the course descriptions highlighted the practical and interactive nature of the learning experience. They also emphasized the opportunity for individual and personal contact with the professors. Courses in bacteriology and immunology, mycology and pathology offered “individual instruction by experimental method, assigned readings, seminar and practical work” (26). The chemistry courses required prior training in organic, quantitative and biological chemistry, and emphasized that students pursuing advanced graduate level were expected to conduct research in food and nutrition topics. Medical zoology was added a few years later.

The courses were mainly designed for graduate students or graduates in medicine or public health. All the courses had a predetermined number of points based on the hours of dedication. They usually lasted one semester. In some cases the courses were offered in a concentrated time frame to accommodate the needs of the students or to incorporate visiting professors of renowned expertise who came to the School. Recognizing the fact that individual interests widely varied, it was the “policy of the School to allow as much freedom as possible in the choice of studies” (27). It should be highlighted that this flexible curricular platform remained unchanged and continued until 1948-49, when the UPR STM transitioned to the School of Medicine (28).

Field work was an integral part of the educational experience required of students and investigators. The sites for field work changed over the years as a reflection of where the Puerto Rico Department of Health had active locations or needs. These

sites were supplemented with locations not directly under the Department of Health, but that could offer unique experiences and relevant samples and data to conduct studies of tropical disease and afflictions. The Announcement of the Second Session (1927-28) described the opportunity for students to conduct field work “in one of the districts... in which intensive campaigns against uncinariasis are being carried on” or “in another district where a demonstration of malaria-prevention measures has been in progress for two years in cooperation with the International Health Division of the Rockefeller Foundation.” The students also were offered the opportunity to study infections that were present in sugar cane districts using the hospitals in the sugar ‘centrals’(mills) as a practice site (29). Starting in 1929, students received clinical instruction on aspects of Tropical Medicine in the University Hospital built by the Department of Health. It was built adjacent to the School, and its faculty was responsible for the operation. The University Hospital had 52 beds, and became the main site for teaching and clinical research. Clinical instruction also was given at the Presbyterian Hospital, the Quarantine Hospital for Transmissible Diseases and the Leper Hospital. Affiliations with these clinical institutions were in place at the inauguration of the School, and many others were added throughout the island during the upcoming academic years. The School established a comprehensive network of affiliations that supplemented the limited training and clinical sites for which it could directly finance or operate (30).

The School awarded different types of credentialing, which were consonant with the flexibility and different training modalities it provided. A *Certificate in Tropical Medicine* was awarded to physicians upon completion of at least one year’s work in residence and finalizing an approved course of study with a minimum of thirty points, ten of which were towards the preparation of a thesis. A special examination was required to obtain the certificate, in addition to the usual course tests. The Certificate was awarded by the University of Puerto Rico. Students that participated in individual courses or short trainings received certificates of completion. Those students who pursued studies in other institutions could receive credit for their work in their institution of origin. Because of the agreement with Columbia University, credits for courses taken in the School were accepted by that university, and were credited for pursuing a Master of Arts and Doctor of Philosophy degrees. These platforms for credentialing evidenced the scholarly nature and the recognition of the School had within the established medical training institutions, especially in the United States (31).

For the first decade and a half since the UPR-STM’s creation, the academic offerings remained practically the same. Although recruitment material for the school reflected the wish to attract international students and those enrolled in graduate and medical training in the United States, the student body was composed mainly of Puerto Ricans. We can ascertain that eighty five percent of the students enrolled at the School were involved in the United States Public Health Service, the

## DEPARTMENTAL STATEMENTS

The various courses which appear under the different departmental statements are planned for the graduate student having had previous satisfactory training in the biological sciences and for graduates in medicine and public health. Elementary instruction in these sciences will not be offered. Candidates presenting themselves as applicants for graduate instruction will be required to satisfy the instructor in the course or courses, in which he desires to enroll, that he is prepared to go on with graduate work.

Individual instruction is offered by the experimental method as well as through assigned reading, practical field work and personal contact with the instructor. In special courses the formal lecture method of instruction will be employed.

### BACTERIOLOGY

*Associate Professor:* P. MORALES-OTERO.

*Instructor:* A. POMALES-LEBRON.

*Assistant:* L. GONZÁLEZ.

*Technician:* A. LUGO.

**Tropical Medicine 1—General medical bacteriology and immunology. 5 points First Term. Professor MORALES-OTERO.**

Individual instruction by experimental methods, assigned readings, seminars, and practical work in bacteriology and immunology.

Prerequisite: A course in general bacteriology.

**Tropical Medicine 2a—Bacteriology as applied to tropical medicine. 3 points Second Term. Professor MORALES-OTERO.**

Course of lectures, laboratory exercises, assigned readings, and practical demonstrations in the bacteriology of tropical diseases.

Prerequisite: A course in medical bacteriology.

**Tropical Medicine 3a—Bacteriology as applied to hygiene and medicine. 3 points Second Term. Professor MORALES-OTERO.**

Systematic instruction and practical training in bacteriology as applied to hygiene and medicine.

Prerequisite: *Bacteriology 1* or equivalent.

**Tropical Medicine 4a—Research in problems of bacteriology, infection, immunity, and immuno-chemistry. 4 to 10 points Second Term. To be given under the direction of the staff.**

Prerequisite: *Tropical Medicine 1* or its equivalent. Rating individually determined at the time of registration.

*Excerpt of Courses of Studies (Bacteriology). 1937-38. Eleventh Session.* The UPR-STM announcement conveyed a clear message of curricular flexibility based on a self-discovery and self-paced curricular model. Source: School of Tropical Medicine of the University of Porto Rico under the auspices of Columbia University, Announcement 1938-39; San Juan, PR; University of Porto Rico and Columbia University; 1939. (Archives and Special Collections, A.C. Long Health Science Library, Columbia University).

Puerto Rico Department of Health or had a particular interest in conducting epidemiological studies related to specific health issues such as tuberculosis, leprosy, malaria, and nutrition. They worked closely with faculty and visiting scholars, and their work was published frequently in the journal issued by the School (32). Many of the students later became leaders in their fields, joined the faculty of the UPR-STM and were part of its transition to the UPR School of Medicine. Among those leaders were Conrado Asenjo, Luis Hernández and Trinita Rivera in Chemistry; Américo Pomales, Oscar Costa Mandry and Pablo Morales Otero in Bacteriology; José Rodríguez Pastor in Communicable Diseases; Enrique Koppisch and Francisco Hernández in Pathology; and Américo Serra and Jenaro Suárez in Medicine (33). This might be one of the most important legacies of the UPR-STM that proved to be foundational as it transitioned to a School of Medicine.

There was at least one international student enrolled in each entering class, starting with the class of 1926. During its first decade the School had enrolled students from Spain, Brussels, China, India, the Philippines, Dominican Republic, Haiti, Brazil and the British Virgin Islands. During the summer session it

also attracted a group of students under the tutelage of visiting professors from universities in major cities of the United States, including Washington, D.C., New York, Rochester, Baltimore, Boston, and Cincinnati (34). However, the international linkages that the School aimed to have through its student body was not fulfilled. When Carlos Chardón, Chancellor on the University of Puerto Rico, was approached to increase funding for the School, he wrote a letter dated April 24, 1934 to Willard C. Rappleye, dean of the Columbia College of Medicine, in which he rejected the possibility of further monetary contributions and pointed out his perception that the School had a limited international impact, especially in Latin America.

The situation in the future, insofar as Puerto Rico is concerned, needs to be seriously considered, not because of our interest in the School shall be less, but because we have now reached a point in which further monetary contributions from our University funds are impossible. However, we realize that the School of Tropical Medicine needs to grow, in order to meet the increasing demands for service to the countries in Latin America. Here is a great and practically unexplored field which stands as a challenge to our mutual efforts. Sooner or later, we shall have to meet this service, if the School is to attain the high international objectives for which it was founded (35).

As the 1940s approached, the UPR-STM, conceived as a research institute for biomedical and epidemiological investigation rather than a degree granting institution, experienced a dramatic transformation. In 1939 negotiations began for the offering of public health degrees. This was a definitive step toward professionalization of the School's activities. The School's administration and faculty was faced with the challenge of partaking in the training of the public health workforce.

The new training venture brought tensions associated with the transformation of higher education institutions, including the professionalization of a mainly scholarly institution, the diversification of missions and purposes, the expansion without sufficient resources, and the acceptance of different levels of students. These transformational forces had been identified in higher learning institutions, especially after the Great Depression (36). There was an overall general trend in universities worldwide to expand its scope and be more accountable to the environment in which they were located. In the UPR-STM case, it was charged with cooperating with the Puerto Rico Department of Health in training health related professionals to immediately engage in selected skilled jobs upon graduation. Accepting this challenge came with numerous controversies that stemmed and evolved from internal battles and external expectations and events. A division of Public Health (later renamed as the Department of Hygiene) was created within the UPR-STM to design and implement the new offerings. Sponsoring for the activities of the Division came from the Puerto Rico Health Department, the U.S. Public Health Service, the Children's Bureau, the University of Puerto Rico

and Columbia University. According to Ramírez de Arellano, each of these institutions “had a different concept of aims, scope and character of the training.” There were different points of view regarding the types of programs, at what level and who should be trained. Also, as discussed by Ramírez de Arellano, issues of personality, power struggles and financial support in times of war resulted in an uncertain start of the public health training programs (37).

Starting in February of 1941, a total of 33 students were enrolled in courses for sanitarians leading to a *Certificate in Public Health Practice*, courses for nurses leading to the *Certificate of Public Health Nursing* and courses for laboratory assistants leading to a *Certificate in Medical Technology*. Although the number of offerings and students fell short of expectations, as the years progressed, the School experienced a transformation in its training mission that was well established by 1949 (38). This full expression of this new training mission became clear when the STM was absorbed and transformed into the University of Puerto Rico-School of Medicine for the training of medical doctors. It shifted towards a prescriptive, professional and skills-based curricular model.

After the 1943-44 academic year, the student body at the UPR-STM increased by at least a hundred students per year. From having 10 to 20 students in the premises, the School now had to handle at least 100 students. Resources were devoted to expand the scope of work of the Registrar's Office. A Credentialing Committee with faculty participation formulated policies to handle admissions, classifications, grades and academic records using guidelines established by institutions of higher learning in the United States. The academic administration also pursued other actions indicative of their pledge to quality and accountability of the academic programs. For example, in Dr. Pablo Morales Otero, the School's director reported that during the 1944-1945 academic year, the school submitted an application to the Council of Medical Education and Hospitals of the American Medical Association and to the American Society of Clinical Pathologists for accreditation of its Medical Technology program. He announced that “after making certain changes in this curriculum, namely, an increase in the number of hours devoted to practical work recommended by the above agencies, the latter sent due recognition and approval of the course in question.” This action seemed consonant with a long term commitment to continue offering degrees and other training opportunities for the public health workforce (39). Pursuing professional accreditation of offerings became a practice that continued when the UPR-STM ceased its operation and the School of Medicine was created.

#### **B. Faculty: Recruitment, sponsorship and development**

Financing the faculty and its work was a struggle for the School since its establishment. The academic administrators of both institutions had to pursue different strategies and modalities to attract and sustain a cadre of well-trained faculty for two decades. Even before the School was opened, the

inadequacy of financial guarantees became evident. For the initial session in 1926, Columbia University agreed to assume the salaries of four resident professors who joined the School from the United States and to cover traveling expenses of three visiting professors. Appropriations from the University of Puerto Rico were mainly devoted to facilities and administrative costs. These were independent from tuition revenues (40).

In 1926, The faculty was organized in a) four basic sciences departments: Bacteriology, Mycology and Immunology; Pathology; Chemistry; and Medical Zoology, b) a clinical department called Tropical Medicine and Surgery, and c) a department of Public Health and Communicable Diseases. No major changes were made to this structure until the 1940s when the School started to offer public health degrees. Academic appointments were conferred by Columbia University and faculty was initially recruited through the Columbia's scholarly connections (41). The faculty was classified in different ways, which illustrates the diverse roles and the articulation with the hospital.

Throughout the years, the faculty affiliated to the School grew substantially, and their scholarly fields diversified. However, there were challenging moments for sustaining the number of faculty to conduct all the activities for which the School had committed. For example, at the beginning of the 1940s, with the advent of the Second World War, maintaining the cadre of faculty became a challenge. Many of the members of the clinical faculty were drafted to service by the United States Army and Navy. As a strategy to staff the hospital, young female graduates of the Medical School were hired at the University Hospital (42). Also of preoccupation to the administration was the steadiness of the faculty since very few permanent positions were available (43).

The School relied heavily on visiting professors. The School seemed to prosper and to welcome the potential collaboration and networks that could result from the visits, as reported by the different directors throughout the years. Besides Columbia University, the University of Chicago, New York University, Harvard University and the Rockefeller Foundation established sustained collaborations throughout the existence of the School by sending faculty for prolonged periods. Many remained for a few months to conduct investigations and offer lectures to students, local physicians and practicing health professionals. They also were responsible for some lectures that were open to the public and, on many occasions, they recommended and brought students to participate in summer sessions and in special courses. To these we can add hundreds of other scholars from a wide range of institutions that visited the School with different purposes and for shorter periods of time. Mainly they came to the School to see how it was set up and to meet with specific scholars (44).

Members of the faculty were expected to have a significant scientific production. Throughout the years the scientific work of the faculty increasingly received external funding, sponsorship and resources in staffing or assistantship. The scope of the clinical and service work of the clinical faculty also

escalated to a significant health enterprise after the first decade of the School's operation. Opportunities for development and specialization were available to the faculty. Many spent time pursuing additional training in collaboration with the visiting scholars that came to the School (45). As the operation of the UPR-STM came to an end, and the collaboration of Colombia faded, it could be safe to say that the faculty was at its peak in teaching, scholarly production and clinical service. This could be considered an important legacy for the future development of medical education in Puerto Rico.

### Conclusions

The UPR-STM was inaugurated with the basic elements in place to become a leading institution of higher learning in Tropical Medicine with emphasis in advanced research. It was a well thought enterprise based on existing models. Even considering its fiscal instability and the challenges of articulating an administrative structure within two different institutions- Columbia University and the University of Puerto Rico, it became a venue for dissemination of knowledge and scientific production at different levels. The School provided the environment for the training of health sciences scholars on the Island. Many started as students, transitioned to faculty and were further supported through fellowships to conduct additional studies in the field.

The School's activities also provided training and continuing education opportunities for practitioners. Regular weekly lectures were offered during the academic year and were open to practicing physicians for more than two decades. The impact of such activity could be the subject of further exploration. The interaction created by the different collaborating institutions and associations with roots on the island and elsewhere that used the School as a venue to meet, consolidate support and establish further collaborations was a fascinating finding. A more systematic analysis of the involvement and the collaboration of these institutions could be an interesting subject to study from a historical and sociological perspective. These collaborations had an impact on how different health professions were established and credentialed in the Island.

During the two decades of its existence, activities and events occurred within the School that were foundational for the professionalization of the health sciences in Puerto Rico, including medical education. Other than its singular place in the history of the teaching of tropical medicine, the UPR-STM left behind important legacies that are evident in the way the University of Puerto Rico approaches health sciences education. Firstly, it has embraced and preserved its duality of purpose by offering accredited professional programs while its faculty and students pursue basic, clinical and public health research. Secondly, it supplements its resources with networks and collaborations with other academic institutions. And, thirdly, its endeavors are an integral part of the health care system of the Island.

### Resumen

Este ensayo presenta la evolución de la Escuela de Medicina Tropical de la Universidad de Puerto Rico (EMT-UPR) bajo los auspicios de la Universidad de Columbia. Examina qué se enseñaba, quién lo enseñaba y quiénes eran los estudiantes que se beneficiaron de las actividades educativas y de investigación. Se presentan algunas de las características del ambiente educativo. Examina las contribuciones de la facultad y de sus graduados a la medicina tropical y campos relacionados. El currículo se caracterizó por su flexibilidad para responder a los intereses individuales de los estudiantes en temas clínicos y de investigación. En la década del 40, la EMT-UPR comenzó a ofrecer grados profesionales en salud pública en adición a los adiestramientos de investigación que venía ofreciendo desde sus inicios. Estos nuevos ofrecimientos trajeron consigo las tensiones inherentes a la profesionalización de un ambiente académico, la diversificación de propósitos, la expansión sin los recursos suficientes, y la apertura a estudiantes de diversos niveles. Mantener un grupo de facultad bien adiestrada y de prestigio fue una lucha constante. Se utilizaron estrategias como profesores visitantes y nombramientos conjuntos y ad-honorem. Acuerdos con universidades alrededor del mundo, instituciones filantrópicas, asociaciones profesionales y con agencias del gobierno local y federal suplementaron los recursos de la Escuela. A cambio, la Escuela ofrecía un ambiente comprometido con altos estándares académicos, una red de colaboradores y datos para estudio y descubrimientos.

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