**Atlas of Black Scholarship for Inclusive and Racially Diverse STEM Curricula – Volume I**

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**ABSTRACT**

Black scientists are major contributors to the advancement of Science, Technology, Engineering, and Mathematics (STEM). Yet, most of us know very little about these accomplishments. Here, we provide the first volume of the Atlas of Black Scholarship (A.B.S.) for inclusion to help science educators in the Life Sciences and Chemistry integrate the work of Black scientists into their curricula.

**INTRODUCTION**

The education system is filled with names of White scientists who have contributed much to our current scientific understanding. However, so have a plethora of underrepresented minorities, from slavery until now. For instance, in the 1700s, a slave named Onesimus in Boston introduced Cotton Mather to the practice of variolation against smallpox [1]. Onesimus is but one example of a Black person who made major contributions to STEM fields and medical practices. Yet, the paucity of Black scientists in the existing STEM textbooks and curricula would have one believe otherwise. The systematic exclusion of the work of Black scientists furthers racist perceptions and racism in our world and contributes to the achievement gap of Blacks and underrepresented minorities in STEM [2].

Studies have shown that Blacks and other underrepresented minorities report that the lack of representation and educational opportunities has hindered their ability to pursue careers in STEM fields [2,3]. These reports underscore the need for a more racially responsive and culturally inclusive pedagogy, especially in STEM. Scientists of color have contributed and continue to provide novel and diverse perspectives that enrich scientific endeavors [4] both in research laboratories, in hospitals, and in the classroom.

The desire to increase representation of Black scholars in STEM courses was the cornerstone on which the present work was built. This first volume of Atlas of Black Scholarship (A.B.S.) comprises over 100 Black scientists and their contributions to the Biological sciences and related fields, Chemistry, and Biochemistry, mapped onto applicable courses and potential lecture contents. This reference manual should facilitate the integration of Black scientists into the course content and provide opportunities for meaningful, more culturally diverse, and inclusive exchanges in the classroom.

**DATA ACQUISITION AND COMPILATION OF A.B.S**

To address the lack of diversity in STEM curricula, we compiled a list of Black biologists, chemists, and physicians into a reference manual that allows students, professors, and administrators faster access to a brief biography and contributions of Black scientists to their respective fields. Each scientist’s work is provided using their publications, whenever available. We used the search engine “Google” using the following terms: “African scientists” and “Black scientists”. This search yielded over 235,000,000 results; thus, we determined to use the free online encyclopedia Wikipedia. Specifically, we compiled our initial list from Wikipedia’s “List of African educators, scientists and scholars” [5], “List of African-American women in STEM fields” [6], and “List of African-American inventors and scientists” [7]. We initially gathered a list of 145 scientists from fields, such as Microbiology, Biochemistry, and Ecology. We then organize these scientists in four main categories based on their expertise, namely Biology, Microbiology, Biochemistry, and Chemistry. We have unlisted 25 scientists for lack of available supporting materials as well as scholars for which we could not find any publications (except for those born before publications were standard practice). Ultimately, our A.B.S comprises 120 scientists and physicians whose work can be easily integrated into courses-.

Each scientist listed in A.B.S has a brief biography (as this was not the primary focus and could be obtained elsewhere), a list of publications and relevant sources from which we gathered our information (beyond Wikipedia). The publications included research papers, books, and/or patents authored by the individual. These publications were retrieved from databases, such as Google Scholar and PUBMED. Based on their published work, scientists were assigned to applicable courses in the specified fields and others related to them (Supplemental Materials). We proposed broad course topics and lecture content in which these Black scientists’ work could be integrated. A scientist’s work could be applicable to various fields and we tried to show it; however, it falls upon the user to ultimately decide how they would like to use this resource.

For easy access, we added a matrix that readers can use to find scientists, listed in alphabetical order, that relate to their specific courses or applications (Supplemental Materials).

**DISCUSSION**

In this first volume, we have compiled a list of 120 Black scientists, primarily from the United States and Africa, whose scholarships range from Biology to Biochemistry to Chemistry. This is the first manual, as far as we know, that gives instructors the ability to incorporate the contributions of Black scientists in their course materials. Our list is the first of its kind, as it does not merely list the scientists, their biographies, and their accomplishments but also guides the instructor toward ways to integrate their work into course content. The assignment of each scientist’s work to an applicable course is just a suggestion; thus, each instructor is welcome to review the attached articles and adapt them as they see fit.

A.B.S. is by no means exhaustive; it is a starting point for the development of a racially responsive STEM curriculum. It is our hope that the scientists featured are presented in the same way that one refers to Louis Pasteur or Isaac Newton. These scholars’ work should be evaluated and critiqued to the same extent as any other scientific work.

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**SUPPLEMENTAL MATERIALS**

A.B.S. matrix and manual