Uterine Fibroid Research: A Work in Progress

James H. Segars, MD¹

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Uterine fibroids are the most common disease of reproductive-age women, affecting 25% of African American women at the age of 25¹ and up to 80% African American women by the age of menopause.^{2,3} Although it is clear that uterine fibroids are a health disparity issue⁴, they affect women of all races and add billions of dollars in cost each year to the US health care system. Globally as well, uterine fibroids are among the most significant diseases of reproductive-age women. Despite the magnitude of the problem, nonsurgical and medical options for treatment are extremely limited.

One reason for the limited treatment options is that funding for research on uterine fibroids has been sparse in comparison to the scope of the problem. Uterine fibroids are wholly deserving of research effort because investments will also inform the disciplines and fields of: tumor biology, angiogenesis, mechanical signaling, fibrosis, and genetics. Consider for a moment that uterine fibroids frequently grow many centimeters in size but only very rarely will metastasize. Thus, investment of resources will pay dividends not only for the understanding of uterine fibroids but also for many pathophysiologic states and other fields of medicine. Recently, PCORI has launched an initiative to address this disparity of research funding. This issue of *Reproductive Sciences* is significant because it reflects a dividend of investment of resources and investigator effort to address this prevalent disease.

Specifically, 5 of the articles in this issue address the disordered pathophysiology of uterine fibroids, the root cause, and/or growth of fibroids. Studies examine collagen-binding $\alpha 11$ integrin, nicotinamide adenine dinucleotide phosphate oxidase, telomerase, PLZF and H1.5, and mechanical signaling. These studies shed light on the disordered mechanisms of this disease. Although the etiology of commonly occurring spontaneous fibroids remains unclear, some tenets have emerged through the lens of current research that begin to provide a view of fibroid formation, albeit “through a glass, darkly.” One factor that likely contributes to the conflicting views of fibroid formation is that all fibroids are not the same: some are growing, some are static, and others are regressing³; a fact that is now clear but is not always considered in the analysis of specimens by investigators.

As noted previously, a particular problem is the absence of medical approaches for treatment. Five of the studies from this issue address the response of fibroids to new treatment strategies, including Paricalcitol, Ulipristal acetate, Fasudil,

Flavopiridol, and Celecoxib a cyclooxygenase inhibitor. These innovative studies provide the important and necessary first step in the clinical continuum toward drug development and new therapeutic strategies for the treatment of uterine fibroids. Additionally, 3 of the studies examine diagnosis and clinical manifestations of disease. Proper diagnosis is increasingly important, as illustrated by the current controversy that surrounds morcellation of fibroid tissue.

Thus, this issue of *Reproductive Sciences* is an important step toward improved care for women with uterine fibroids but more is needed. As scientists, we need to understand the mechanisms involved in fibroid formation and growth, the different types of fibroids and the genetic underpinnings of this disease. As clinicians and researchers, we need to develop robust methods to measure outcomes other than bleeding, currently the primary metric used for approval of drugs for this condition. As a society, we need to go beyond treatment to focus on prevention of uterine fibroids since this is the most effective method, not only from a cost perspective but also for the health of women. As readers of the journal, we celebrate this focused issue and thank the editor and erstwhile renew our continued commitment for additional research for the millions of women affected by this significant and disabling disease.

Author's Note

The views expressed in this article are those of the author and do not reflect the official policy or position of the US Government.

Declaration of Conflicting Interests

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¹ Program in Reproductive and Adult Endocrinology, Eunice Kennedy Shriver National Institute of Child Health and Human Development, National Institutes of Health, Bethesda, MD, USA

Corresponding Author:

James H. Segars, Program in Reproductive and Adult Endocrinology, Eunice Kennedy Shriver National Institute of Child Health and Human Development, National Institutes of Health, 10 CRC Room 1E-3140, 10 Center Drive, MSC 1109, Bethesda, MD 20892, USA.
Email: segarsj@mail.nih.gov

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