

October 17, 2022

VIA EDGAR AND FEDERAL EXPRESS

United States Securities and Exchange Commission
Division of Corporation Finance
Office of Life Sciences
100 F. Street, N.E.
Washington, D.C. 20549
Attention: Dillon Hagius, Tim Buchmiller, Tracey Houser and Angela Connell

**Re: Prime Medicine, Inc.
Amendment No. 1 to Registration Statement on Form S-1
Filed October 13, 2022
File No. 333-267579**

Dear Ladies and Gentlemen:

This letter is submitted on behalf of Prime Medicine, Inc. (the “**Company**”), in response to the comments of the staff of the Division of Corporation Finance (the “**Staff**”) of the U.S. Securities and Exchange Commission (the “**Commission**”) with respect to the Company’s amended Registration Statement on Form S-1, filed on October 13, 2022, originally publicly filed on September 23, 2022 (the “**Registration Statement**”), as set forth in the Staff’s letter, dated October 14, 2022, addressed to Keith Gottesdiener, M.D. (the “**Comment Letter**”). The Company is concurrently filing Amendment No. 2 to the Registration Statement (“**Amendment No. 2**”), which includes changes to reflect responses to the Staff’s comments and other updates.

For reference purposes, the text of the Comment Letter has been reproduced herein with responses below each numbered comment. For your convenience, we have italicized the reproduced Staff comments from the Comment Letter. Unless otherwise indicated, page references in the descriptions of the Staff’s comments refer to the Registration Statement, and page references in the responses refer to Amendment No. 2. All capitalized terms used and not otherwise defined herein shall have the meanings set forth in Amendment No. 2.

Amendment No. 2 to Form S-1

Use of Proceeds, page 86

1. *Your disclosure that your development activities are generally not allocated to specific programs does not align with your disclosure that you intend to use \$65 million of the offering proceeds for “certain of [y]our current therapeutic programs[.]” Please revise and, to the extent that you plan to use a material portion of the proceeds to fund the development of certain of your current therapeutic programs, please specify these programs and separately quantify the amounts you expect to allocate to each program. If, due to the number of programs you currently have in the discovery stage, or for other reasons, you currently are unable to specify to what stage of development the net proceeds from this offering, together with your existing cash and cash equivalents, and short-term investments, will bring any of your particular programs or product candidates, please make that clear.*

RESPONSE: The Company respectfully advises the Staff that it has revised the disclosure on pages 13 and 86 of Amendment No. 2 in response to the Staff's comment.

If you should have any questions concerning the enclosed matters, please contact the undersigned at (617) 570-1329.

Sincerely,

/s/ Gabriela Morales Rivera
Gabriela Morales Rivera, Esq.

Enclosures

cc: Keith Gottesdiener, M.D, *Prime Medicine, Inc.*
Kingsley L. Taft, Esq, *Goodwin Procter LLP*