Goodwin Procter LLP
100 Northern Avenue
Boston, MA 02210

goodwinlaw.com
+1 617 570 1000

June 24, 2020

Securities and Exchange Commission
Division of Corporation Finance
Office of Life Sciences
100 F Street, N.E.
Washington, D.C. 20549
Attention: Jeffrey Gabor
Christine Westbrook
Rolf Sundwall
Terence O'Brien

Re: Relay Therapeutics, Inc.
Draft Registration Statement on Form S-1
Submitted May 22, 2020
CIK No. 0001812364

Ladies and Gentlemen,

On behalf of our client, Relay Therapeutics, Inc. (the "**Company**"), we are responding to the comments from the Staff (the "**Staff**") of the Securities and Exchange Commission (the "**Commission**") relating to the Company's confidential draft Registration Statement on Form S-1 (the "**Draft Registration Statement**") contained in the Staff's letter dated June 18, 2020 (the "**Comment Letter**"). In response to the comments set forth in the Comment Letter, the Company has revised the Draft Registration Statement and is publicly filing a revised Registration Statement (the "**S-1 Registration Statement**") together with this response letter. The S-1 Registration Statement also contains certain additional updates and revisions.

Set forth below are the Company's responses to the Staff's comments in the Comment Letter. The responses and information below are based on information provided to us by the Company. For convenience, the Staff's comments are repeated below in italics, followed by the Company's response to the comments as well as a summary of the responsive actions taken. We have included page numbers to refer to the location in the S-1 Registration Statement submitted herewith where the revised language addressing a particular comment appears. Capitalized terms used but not defined herein are used herein as defined in the S-1 Registration Statement.

Draft Registration Statement on Form S-1

Overview, page 1

1. *We note your statements regarding your differentiated approach and how it enables you to select product candidates with a "potentially higher probability of clinical success." Given the stage of your product candidates and the length of time and uncertainty involved in product candidate development, please revise throughout the prospectus to remove any implication that your product candidates are more likely than others to receive approval from the U.S. Food and Drug Administration (FDA) or comparable regulators.*

   RESPONSE: The Company respectfully advises the Staff that it has revised the disclosure on pages 1 and 92 of the S-1 Registration Statement in response to the Staff's comment to remove any implication that its product candidates are more likely than others to receive approval from the FDA or comparable regulators.

2. *Given the status of your development programs, please tell us the basis for your claim on page 1 that RLY-1971 and RLY-4008 are potent and selective inhibitors of SHP2 and FGFR2, respectively.*

   RESPONSE: The Company respectfully advises the Staff that it has removed references that RLY-1971 and RLY-4008 are potent and selective inhibitors of SHP2 and FGFR2, respectively, on pages 1, 74, 92, and 103 of the S-1 Registration Statement in response to the Staff's comment.

3. *Please revise to balance your Summary presentation by highlighting the challenges you face in advancing your novel Dynamo Platform. In this regard, we note your dependence on your collaboration with D. E. Shaw Research LLC, the limitations on that collaboration by its terms, which are discussed beginning on page 129, and the lack of alternative to the Anton 2 supercomputer.*

   RESPONSE: The Company respectfully advises the Staff that it has revised the disclosure on pages 2 and 93 of the S-1 Registration Statement in response to the Staff's comment to balance its Summary presentation by highlighting the challenges the Company faces in advancing its novel Dynamo platform.

   The Company also respectfully advises the Staff that it has recently entered into an Amended and Restated Collaboration and License Agreement with D. E. Shaw Research LLC, on June 15, 2020 (the "Amended License Agreement"), pursuant to which, among other items, the term of the collaboration was extended to August 16, 2025. The Company previously filed the Amended License Agreement as Exhibit 10.10 to its Amendment No. 1 to the Draft Registration Statement on June 22, 2020.

4. *Please revise to include a brief definition here of what you mean by "genetically validated target proteins."*

RESPONSE: The Company respectfully advises the Staff that it has revised the disclosure on page 92 of the S-1 Registration Statement in response to the Staff's comment to include a brief definition of what was meant by "genetically validated target proteins."

5. *The illustration provided in Figure 1 on pages 2 and 97 contains text that is illegible. Please revise this figure accordingly.*

RESPONSE: The Company respectfully advises the Staff that it has replaced the graphics on pages 2 and 98 of the S-1 Registration Statement to remove the illegible text.

Our Programs, page 3

6. *We refer to the program tables on pages 3, 92, and 103. Please revise these tables to remove the discovery-stage programs (i.e., rows 4 through 6). In this regard, it is premature to prominently highlight each of these programs given that you do not identify a specific molecule that you seek to develop and you do not discuss IND-enabling studies. Additionally, please include a column for each of Phase 1, Phase 2, and Phase 3. Please also remove the footnote indicating that a Phase 3 trial may not be required if Phase 2 is registrational as this statement is also premature.*

RESPONSE: The Company respectfully advises the Staff that it has replaced the program tables on pages 3, 93, and 103 of the S-1 Registration Statement to remove the discovery-stage programs.

7. *We note your references to your product candidates as "first-in-class" or "best-in-class" on page 4 and throughout the registration statement. These terms suggest that the product candidates are effective and likely to be approved. Please delete these references throughout your registration statement. If your use of these terms was intended to convey your belief that the products are based on a novel technology or approach and/or is further along in the development process, you may discuss how your technology differs from technology used by competitors and, if applicable, that you are not aware of competing products that are further along in the development process. Statements such as these should be accompanied by cautionary language that the statements are not intended to give any indication that the product candidates have been proven effective or that they will receive regulatory approval.*

RESPONSE: The Company respectfully advises the Staff that it has revised the disclosure throughout the S-1 Registration Statement in response to the Staff's comment to remove references to its product candidates as "first-in-class" or "best-in-class."

Implications of Being an Emerging Growth Company and a Smaller Reporting Company, page 7

8. *Please provide us with copies of all written communications, as defined in Rule 405 under the Securities Act, that you, or anyone authorized to do so on your behalf, present to potential investors in reliance on Section 5(d) of the Securities Act, whether or not they retain copies of the communications.*

RESPONSE: The Company respectfully advises the Staff that it will provide the Staff, on a confidential basis under separate cover, copies of all written communications presented to potential investors in reliance on Section 5(d) of the Securities Act, whether or not they retain copies of such communications.

Use of Proceeds, page 65

9. *Please revise to disclose an estimate of how far in the development of your "drug discovery and clinical development efforts" the proceeds from this offering will allow you to reach with respect to each product candidate. Also, please disclose the total estimated cost of each of the specified purposes for which the net proceeds are intended to be used, and, if material amounts of other funds are necessary to accomplish the specified purposes, provide an estimate of the amounts of such other funds and the sources thereof.*

RESPONSE: The Company respectfully advises the Staff that it has revised the disclosure on page 65 of the S-1 Registration Statement in response to the Staff's comment to disclose an estimate of how far in the development of its "drug discovery and clinical development efforts" the proceeds from this offering will allow it to reach with respect to each product candidate.

The Company also respectfully acknowledges the Staff's comment regarding the total estimated cost of each of the specified purposes and will supplementally provide the requested information once the estimated net proceeds for the offering are determined.

Management's Discussion and Analysis of Financial Condition and Results of Operations
Critical Accounting Policies and Use of Estimates
Determination of Fair Value of Common Stock, page 89

10. *Once you have an estimated offering price or range, please explain to us how you determined the fair value of the common stock underlying your equity issuances and the reasons for any differences between the recent valuations of your common stock leading up to the IPO and the estimated offering price. This information will help facilitate our review of your accounting for equity issuances including stock compensation and beneficial conversion features.*

RESPONSE: The Company respectfully acknowledges the Staff's comment and will supplementally provide the requested information once the estimated offering price or range has been determined.

Business, page 91

11. *We refer to your disclosures throughout this section concerning numerous pre-clinical studies/models/assays. For each study that you reference, please revise to include information about the nature, design and results of that particular study so that investors have a basis to assess the applicable observation that you present, rather than state your conclusion, e.g., that your product candidate acts as a potent inhibitor. Without limitation, your discussion should identify the type of cells and methods utilized in the referenced study. Your disclosure also should indicate whether the results were or were not statistically significant and you should include all p-values.*

RESPONSE: The Company respectfully advises the Staff that it has revised the disclosure on pages 92 through 130 of the S-1 Registration Statement to expand the information about the nature, design, and results of its numerous preclinical studies, models and assays. The Company has also clarified whether the results were or were not statistically significant and provided p-values for the relevant experiments.

Our solution, RLY-1971, page 105

12. *We note your discussion of the experimental and computational techniques used to identify RLY-1971 where you conclude that simulations enabled your medicinal chemists the ability to design a more potent inhibitor of SHP2. Please expand your disclosure to briefly explain why this simulation (revealing that the loop flips downwards, close to where the small molecule binds) enabled a "more potent inhibitor of SHP2."*

RESPONSE: The Company respectfully advises the Staff that it has revised the disclosure on pages 105 and 106 of the S-1 Registration Statement to remove references that this simulation would enable a more potent inhibitor of SHP2.

RLY-1971 as a monotherapy, page 107

13. *Please tell us how many times you tested the inhibitors in the studies described in Figures 10, 12, and 14 on pages 107 to 110 and whether the graphs or charts illustrate the average or mean of the studies conducted.*

RESPONSE: The Company respectfully advises the Staff that it has revised the figure descriptions, including those of Figures 10, 12 and 14, on pages 108 to 112 of the S-1 Registration Statement to describe the experiments further and to specifically address whether such graphs or charts illustrate an average or mean. These were all generally triplicate experiments with the mean being reported.

Our clinical development plan, page 110

14. *For RLY-1971, please disclose the current size and the anticipated size of the clinical trial population.*

RESPONSE: The Company respectfully advises the Staff that it still plans to enroll approximately 52 patients in its Phase 1 clinical trial of RLY-1971 and has accordingly updated the disclosure on page 113 of the S-1 Registration Statement.

Our solution, RLY-4008, page 113

15. *We note your comparison of RLY-4008 to other inhibitors in pre-clinical models on pages 114-118. As you have not conducted head-to-head clinical trials, please tell us why you believe it is appropriate to include these comparisons. Include in your response whether you expect to be able to rely on this data to support an application for marketing approval from the FDA or comparable regulatory body for commercialization of RLY-4008.*

RESPONSE: The Company respectfully advises the Commission that there are currently two FDA-approved pan-FGFR inhibitors, erdafitinib and pemigatinib. The FDA has publicly provided extensive review documents of each outlining the progression of their pre-clinical data and how such data translated into the clinical data that ultimately was the basis for approval. Given that in both cases the pre-clinical data generated by erdafitinib and pemigatinib translated to the clinical studies Janssen Pharmaceuticals, Inc. and Incyte Corporation, respectively, conducted and presented in the public domain, the Company believes that a comparison of pre-clinical studies of RLY-4008 to those agents and others in development can be useful both for investors and for the Company. The clinical data the Company expects to generate from its clinical studies will ultimately constitute the bulk of the data needed to support any application for marketing approval. The Company has revised the disclosure on pages 116 through 121 of the S-1 Registration Statement to clarify this presentation.

Collaboration and License Agreement with D. E. Shaw Research, LLC, page 129

16. *Please revise to clarify whether any of your product candidates are currently co-owned with D. E. Shaw Research. To the extent that any of your product candidates are co-owned, please also revise the Summary accordingly. Please also reconcile your disclosure on page 102 that states you retain worldwide development and commercialization rights to all of your programs.*

RESPONSE: The Company respectfully advises the Staff that it has revised the disclosure on pages 134 and 136 of the S-1 Registration Statement in response to the Staff's comment to clarify whether any of its product candidates are currently co-owned with D. E. Shaw Research.

The Company respectfully advises the Staff that it has revised the disclosure on pages 2 and 92 of the S-1 Registration Statement in response to the Staff's comment to clarify that it has not entered into collaborations to clinically develop or commercialize any of its product candidates.

Item 16. Exhibits and Financial Statement Schedules, page II-3

17. *To the extent that you are redacting information pursuant to Item 601(b)(10)(iv) of Regulation S-K, please mark the exhibit index to indicate that portions of your exhibits have been omitted and remove reference to "confidential treatment." See Item 601(b)(10)(iv) of Regulation S-K.*

RESPONSE: The Company respectfully advises the Staff that it has revised the exhibit index on page II-4 of the S-1 Registration Statement in response to the Staff's comment to indicate that portions of its exhibits have been omitted and removed references to "confidential treatment."

Sincerely,

/s/ Gabriela Morales-Rivera
Gabriela Morales-Rivera

cc: Sanjiv K. Patel, *Relay Therapeutics, Inc.*
Brian Adams, *Relay Therapeutics, Inc.*
Mitchell S. Bloom, *Goodwin Procter LLP*
William D. Collins, *Goodwin Procter LLP*