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LATHAM & WATKINS LLP

June 10, 2016

VIA EDGAR AND HAND DELIVERY

Ms. Suzanne Hayes
Assistant Director
Office of Healthcare and Insurance
United States Securities and Exchange Commission
100 F Street, N.E.
Mail Stop 4720
Washington, D.C. 20549

Re: **Selecta Biosciences, Inc.**
Registration Statement on Form S-1
Filed May 24, 2016
File No. 333-211555

Dear Ms. Hayes:

On behalf of Selecta Biosciences, Inc., a Delaware corporation (the "***Company***"), we are transmitting this letter in response to comments received from the staff (the "***Staff***") of the Securities and Exchange Commission by letter dated June 8, 2016 with respect to the Company's Registration Statement on Form S-1 filed on May 24, 2016 (as amended, the "***Registration Statement***"). This letter is being submitted together with Amendment No. 1 ("***Amendment No. 1***") to the Registration Statement, which has been revised to address the Staff's comments. The bold and numbered paragraphs below correspond to the numbered paragraphs in the Staff's letter and are followed by the Company's responses. For the Staff's convenience, we are also sending, by courier, copies of this letter and marked copies of Amendment No. 1 that reflect changes made to the Registration Statement. Unless otherwise indicated, capitalized terms used herein have the meanings assigned to them in the Registration Statement.

Management's Discussion and Analysis of Financial Condition and Results of Operations

Critical Accounting Policies and Use of Estimates

Stock Based Compensation, page 96

1. **Please refer to your response to our prior comment 4 of our June 3, 2016 letter. You attribute the difference between the fair value of your common stock as of April 30, 2016 of $2.30 per share and the Preliminary Assumed IPO Price primarily to the receipt during the last few weeks of data from the Phase 1b clinical trial for your**

lead product candidate. Provide us the specifics of this data, the date received, why you believe this difference is primarily due to this data and where in your filing you disclose this information.

Response: The Company respectfully acknowledges the Staff's comment and in response has revised the disclosure on page 100 of Amendment No. 1.

In addition, the Company supplementally advises the Staff that the Company received a significant portion of the observational data for two of the cohorts of subjects in its Phase 1b clinical trial for SEL-212, the Company's lead product candidate, after April 30, 2016. SEL-212 is a biologic treatment designed to durably control uric acid in refractory gout and dissolve and remove harmful deposits of uric acid crystals in chronic tophaceous gout. As first indicated on pages 1 through 5 of Amendment No. 1, SEL-212 is a combination of SVP-Rapamycin, the Company's biodegradable nanoparticle encapsulating the immunomodulator rapamycin, co-administered with pegsitacase, the Company's proprietary pegylated uricase. As stated on pages 4 and 5 of Amendment No. 1, in clinical trials, the uricase enzyme has demonstrated the ability to significantly reduce uric acid levels in serum upon initial dosing. However, the Company believes the marketed version of pegylated uricase has not achieved broad

commercial adoption because, over time, when administered alone, the human immune system often forms uricase-specific anti-drug antibodies ("***ADAs***") that adversely affect the efficacy and safety of treatment of the uricase enzyme for gout.

As indicated on page 128 of Amendment No. 1 under the heading "Phase 1b clinical trial," the primary objective of the Phase 1b clinical trial is to evaluate the safety and tolerability of SVP-Rapamycin alone and in combination with a fixed dose of pegsiticase. A secondary clinical objective is to evaluate the ability of SVP-Rapamycin co-administered with pegsiticase to reduce serum uric acid levels and mitigate the formation of uricase-specific ADAs when compared to administration of pegsiticase alone.

As indicated under the heading "Phase 1b clinical trial" on page 128 of Amendment No. 1, the Phase 1b clinical trial includes the co-administration of a single intravenous infusion of SVP-Rapamycin at ascending dose levels to four cohorts of subjects with a fixed 0.4 mg/kg dose of pegsiticase (collectively, the "***SEL-212 Cohorts***"). By co-administering SVP-Rapamycin at ascending dose levels with a fixed dose of pegsiticase, the Company is able to observe the effect of ascending doses of SVP-Rapamycin on the serum uric acid and uricase-specific ADA levels of subjects over a specified period of time. As part of the Phase 1b clinical trial, the Company also dosed a cohort of subjects with pegsiticase alone at a fixed dose level of 0.4 mg/kg (the "***Cohort #9***"), the same fixed dose level of pegsiticase co-administered with ascending doses SVP-Rapamycin to the SEL-212 Cohorts. Accordingly, by monitoring the SEL-212 Cohorts and Cohort #9 at days 7, 14, 21 and 30 after dosing, the Company is able to observe and compare the serum uric acid and uricase-specific ADA levels of subjects who received: (i) 0.4 mg/kg of pegsiticase alone and (ii) 0.4 mg/kg of pegsiticase co-administered with ascending levels of SVP-Rapamycin. Accordingly, the organization of the cohorts in the Phase 1b clinical trial is intended to isolate the effect of ascending doses of SVP-Rapamycin co-

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administered with pegsiticase in comparison to the same dose of pegsiticase alone on subject serum uric acid and uricase-specific ADA levels.

Prior to April 30, 2016, the date of the most recent common stock valuation, the Company had only received observational data to day 30 for Cohort #2 and Cohort #4 of the Phase 1b clinical trial, the SEL-212 Cohorts receiving the lowest two of the four ascending doses of SVP-Rapamycin. Subjects in Cohort #2 and Cohort #4 received a SVP-Rapamycin dose of 0.03 mg/kg and 0.1 mg/kg, respectively, co-administered with pegsiticase. As indicated on pages 129, 130 and 131, including Figures 18 and 19, of Amendment No. 1, the Company observed that by day 30, all five of the subjects in Cohort #2 had serum uric acid levels above 6.0 mg/dl; whereas, the FDA-approved endpoint and clinical treatment goal is to bring serum uric acid levels below 6.0 mg/dl. One out of the five subjects in Cohort #4 had serum uric acid levels above 6.0 mg/dl at day 30.

Subsequent to April 30, 2016, the Company received complete 30-day serum uric acid and uricase-specific ADA level data for Cohort #6 as well as 30-day uricase-specific ADA formation data for the subjects in Cohort #9. Specifically, the Company advises the Staff that the 30-day: (i) serum uric acid level data was received for the subjects in Cohort #6 at various times between May 20 and June 2, 2016; (ii) uricase-specific ADA formation data was received for the subjects in Cohort #6 at various times between June 1 and June 3, 2016; and (iii) uricase-specific ADA formation data was received for the subjects in Cohort #9 on May 16, 2016 (collectively, the "***Post Valuation 30-Day Data***"). Additionally, the Company advises the Staff that during May 2016, it also received additional serum uric acid and uricase-specific ADA data on day 37, day 42 or day 44, as applicable, for three of the subjects in Cohort #4 that had no or very low serum uric acid and uricase-specific ADA levels at day 30 (the "***Post Valuation Cohort #4 Data***" and, together with the Post Valuation 30-Day Data, the "***Post April 30 Data***"). Subjects in Cohort #6 received 0.3 mg/kg of SVP-Rapamycin, a dose three times higher than Cohort #4, co-administered with pegsiticase. As indicated on pages 129, 130 and 131, including Figures 18 and 19, of Amendment No. 1, the Company observed that, unlike Cohort #2 and Cohort #4, each of the five subjects in the Cohort #6 maintained levels of serum uric acid less than 0.1 mg/dl through day 30. With respect to Cohort #9, the Company observed uricase-specific ADA formation at day 14 resulting in a return to baseline levels of serum uric acid for four of the five subjects by day 30. The Company also observed minimal-to-no uricase-specific ADA formation in Cohort #6 with respect to each of the five subjects, with corresponding maintenance of control of serum uric acid levels through day 30, consistent with the FDA-approved endpoint and clinical treatment goal to bring serum uric acid levels below 6.0 mg/dl.

Additionally, as set forth on page 133 of Amendment No. 1, in connection with the Post Valuation Cohort #4 Data, the Company observed that serum uric acid levels remained below 6.0 mg/dl on day 37 in all three subjects. However, with respect to the two subjects for which day 42 or day 44 data was available, serum uric acid levels approached or exceeded the 6.0 mg/dl baseline upon subsequent measurement. Accordingly, the Post Valuation Cohort #4 Data together with the observation that SEL-212 was capable of

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controlling uric acid levels for at least 30 days in all of the subjects in Cohort #6, furthered the Company's belief that SEL-212 has the potential to maintain low uric acid levels with monthly dosing, which the Company plans to test in the Phase 2 clinical trial. As indicated on page 133 of Amendment No. 1, as of June 3, 2016, on a combined basis, the Company had dosed a total of 70 subjects with either SEL-212, SVP-Rapamycin alone or pegsiticase alone in connection with the Phase 1a and Phase 1b clinical trials. As indicated on page 133 of Amendment No. 1, with receipt of the Post April 30 Data, the Company has generally observed that SEL-212 and its components, SVP-Rapamycin and pegsiticase, have been well tolerated.

The Company advises the Staff that the difference between the value of its common stock as of April 30, 2016 and the midpoint of the price range for its initial public offering is primarily attributable to the Post April 30 Data because it believes the Post April 30 Data represents meaningful positive progress towards SEL-212's proof of scientific concept. Notably, unlike Cohort #2 or Cohort #4 of the Phase 1b clinical trial, the Company

observed with all subjects in Cohort #6 that the 0.3 mg/kg of SVP-Rapamycin co-administered with pegsiticase (i) maintained levels of serum uric acid less than 0.1 mg/dl through day 30 and (ii) resulted in minimal to no uricase-specific ADA formation. Additionally, with Cohort #9, the Company observed that the same fixed dose of pegsiticase administered without SVP-Rapamycin resulted in uricase-specific ADA formation by day 14 and a correlating return to baseline levels of serum uric acid levels by day 30. Finally, the Post Valuation Cohort #4 Data further solidified the Company's expectation that monthly dosing of SEL-212 was appropriate in advance of the Phase 2 clinical trial. Accordingly, the Company respectfully advises the Staff that the Post April 30 Data is meaningful with respect to the Company's valuation because it believes the data demonstrates the translation of the SVP-Rapamycin technology in humans and opens its SVP platform to additional clinical applications.

Notes to Consolidated Financial Statements

12. Revenue arrangements

Sanofi collaboration agreement, page F-36

2. **Please refer to your proposed disclosure provided in response to our prior comment 3 of our June 3, 2016 letter. Provide additional disclosure indicating the milestone(s) that comprise a majority of the amounts in each of the two milestone sub-totals (i.e. $57 million, $70 million) given that certain milestones are significantly higher than what could be computed as an average milestone for each sub-total.**

Response: The Company respectfully acknowledges the Staff's comment and in response has revised the disclosures on pages 151 and F-37 of Amendment No. 1.

LATHAM & WATKINS LLP

We hope that the foregoing has been responsive to the Staff's comments. Please do not hesitate to contact me at 202-637-2117 or Peter Handrinos at 617-948-6060 with any questions or further comments you may have regarding this filing or if you wish to discuss the above.

Sincerely,

/s/ Brandon J. Bortner
Brandon J. Bortner
of LATHAM & WATKINS LLP

cc: (via e-mail)

Michael Gershon, Securities and Exchange Commission
Amy Reischauer, Securities and Exchange Commission
Jacob Luxenburg, Securities and Exchange Commission
James Rosenberg, Securities and Exchange Commission
Werner Cautreels, Ph.D., President and Chief Executive Officer, Selecta Biosciences, Inc.
Peter N. Handrinos, Latham & Watkins LLP