BullFrog AI Holdings, Inc.
325 Ellington Blvd., Unit 317
Gaithersburg, MD 20878

August 15, 2022

Tyler Howes

Division of Corporation Finance
Office of Life Sciences
Securities and Exchange Commission
100 F Street, NE
Washington, D.C. 20549

Re: BullFrog AI Holdings, Inc.
Draft Registration Statement on Form S-1 Submitted June 10, 2022
CIK No. 0001829247

Dear Mr. Howes:

On behalf of BullFrog AI Holdings, Inc. (the "Company"), this letter responds to comments provided by the staff of the Division of Corporation Finance, Office of Life Sciences (the "Staff") of the Securities and Exchange Commission (the "Commission") to the undersigned on July 15, 2022 regarding the Draft Registration Statement on Form S-1 (the "Draft Registration Statement"), which was submitted to the Commission on June 10, 2022.

Concurrent with the submission of this letter, the Company is filing via EDGAR Amendment No. 1 to the Draft Registration Statement ("Amendment No. 1"), which reflects the Company's responses to the comments received by the Staff and certain updated information. We have also enclosed a courtesy copy of Amendment No. 1, marked to indicate changes from the Draft Registration Statement, as Exhibit A. For your convenience, the Company is also delivering via email a copy of this letter and its enclosures..

Draft Registration Statement on Form S-1

Prospectus Summary
Business Overview, page 1

1. ***Please revise the Business Overview section to highlight and clarify that to date you have not generated revenues from your AI/ML system and that you have not conducted clinical trials on any pharmaceutical drugs. Revise the penultimate paragraph in this section to clarify the scope of your operations to date to provide context to your disclosure that you are "preparing to ramp up" your business.***

Response: The Company respectfully acknowledges the Staff's comment and has revised the disclosure in the Business Overview section to eliminate the reference to 'preparing to ramp up our business" and to clarify that we have not generated significant revenues and that we have not conducted clinical trials on any pharmaceutical drugs to date.

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2. ***We note your statements that your platform's analyses can be used to "mitigate risk" in therapeutic development and "increase the odds-of-success" for clinical trials . Please revise to explain your basis for these statements. In this regard, we do not see disclosure in the registration statement indicating this platform has been used to identify a drug candidate that has received regulatory approval for commercialization.***

Response: The Company respectfully acknowledges the Staff's comment and has revised the disclosure on page 2 and page 32 of Amendment No. 1 in response to the Staff's comments.

3. ***Briefly explain the difference between supervised and unsupervised machine learning the first time you use these terms.***

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

Our bfLEAP Analytics Platform, page 3

4. ***Please tell us your basis for asserting that your bfLEAP Analytics Platform system is "more precise" and "proven."***

Response: In an August 2021 publication in DeepAI.org (https://deepai.org/publication/random-subspace-mixture-models-for-interpretable-anomaly-detection), the algorithms used in bfLEAP were compared to 10 of the most popular clustering algorithms in the world using 12 data sets. The end result showed that the algorithms used in bfLEAP had the highest average score when measuring speed and accuracy of prediction. The bfLEAP platform currently has more advanced versions of these algorithms and is applying them in multiple data analytics projects.

Johns Hopkins University - Mebendazole License, page 5

5. ***Please revise your statement indicating Medendazole demonstrated "long-term safety" to present objective information about trial results, rather than conclusions as to the safety of your product candidate. Conclusions as to safety and efficacy are within the sole authority of the FDA and comparable foreign regulators.***

Response: The Company respectfully acknowledges the Staff's comment and has revised the disclosure on page 5 of Amendment No. 1 in response to the Staff's comments.

Capitalization, page 23

6. ***It appears that certain of your convertible notes will automatically convert into common shares upon the completion of your IPO. Please explain why the conversion of these notes is not reflected in your pro forma capitalization.***

Response: The Company respectfully acknowledges the Staff's comment and will reflect the conversion of its convertible notes in our pro forma capitalization once it can be determined based on the offering price. Please see footnote 1 to the pro forma capitalization table which will disclose the number of shares to be issued upon the automatic conversion of the notes.

Use of Proceeds, page 23

7. ***Please revise this section to provide more specific detail regarding each purpose and the associated amounts that you intend to use for each such purpose. For any proceeds to be allocated to clinical development of your pharmaceutical product candidates, include references to how far into the development processes the proceeds will enable you to reach . Similarly disclose, if applicable, the amounts you plan to allocate toward further developing the bfLEAP™ platform and launching the contract services business.***

Response: The Company respectfully acknowledges the Staff's comment and has revised the disclosure on page 23 of Amendment No. 1 in response to the Staff's comments.

Liquidity and Capital Resources, page 30

8. ***Please revise your discussion of liquidity and capital resources to provide enhanced analysis and explanation of the sources and uses of cash and material changes in particular items underlying the major captions reported in your financial statements. Please assure that your discussion reconciles to the items and amounts presented on the face of your cash flow statements. Please also include a discussion of the conditions resulting in the going concern opinion included in the auditor's report, and, if relevant, address the fact that you are a holding company with no operations of your own and that you depend on your subsidiaries for cash.***

Response: The Company acknowledges the Staff's comment and has revised the disclosure on page 30 of Amendment No. 1 in response to the Staff's comments.

9. ***You disclose on page F-15 that during the year ended December 31, 2021, you issued common shares and shares of options to related parties for services rendered and for a subscription payable. You also disclose the sale of convertible promissory notes and warrants during the periods presented and during the subsequent interim period. Please revise your MD&A to discuss all of your equity instrument issuances. Disclose how you accounted for the instruments, including how you determined their fair value. 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 initial public offering and the estimated offering price. This information will help facilitate our review of your accounting for equity issuances including stock compensation. Please discuss with the staff how to submit your response.***

Response: We have revised our MD&A to disclose all equity issuances during the respective periods. In June 2020, the Company had a third party valuator perform a 409(A) valuation of the Company's shares. It was determined that the shares had a valuation of $0.044 per share at such time. This is the number that is utilized in the financials to expense the various issuances in 2020 and 2021. The Company has experienced significant progress on its business plan since such time, including entering into several license agreements, which it believes has significantly increased the value of the Company's shares. Accordingly, the Company is in the process of obtaining a current valuation which will affect the value of shares issued in the first half of 2022. When the interim 2022 financial statements are prepared and included in the S-1, all 2022 issuances will utilize this new valuation. At the same time, the Underwriter will determine the pricing for the IPO.

Management's Discussion and Analysis of Financial Condition and Results of Operations Results of Operations, page 30

10. ***Please revise your discussion of your results of operations to quantify and describe the reasons for changes in each line item on your Statement of Operations, rather than just in total.***

Response: The Company respectfully acknowledges the Staff's comment and has revised the disclosure on page 31 of Amendment No. 1 in response to the Staff's comments.

Business
Acquisition of Bullfrog AI, page 31

11. ***Please file the acquisition agreement with Bullfrog AI, Inc. as an exhibit to your registration statement. Refer to Item 601 of Regulation S-K for guidance.***

Response: The Company respectfully acknowledges the Staff's comment and will file the acquisition agreement with BullFrog AI, Inc. as an exhibit in an amendment to the Draft Registration Statement in response to the Staff's comments.

Our Products, page 32

12. ***We note your disclosure here of two product candidates, siRNA and Mebendazole, in addition to your bfLEAP platform. However, we do not see corresponding narrative disclosure related to these two product candidates elsewhere in your Business section. Please revise to provide a more fulsome discussion of these two product candidates, including a discussion of any targeted indications, pre-clinical studies, clinical trials conducted and current development status, or advise. For instance, please provide additional disclosure regarding the Phase I clinical trial of Mebendazole in patients with high-grade glioma, which you reference on page 33.***

Response: The Company respectfully acknowledges the Staff's comment and has revised the disclosure on page 33 of Amendment No. 1 in regard to our siRNA product candidate and on page 33 of Amendment No.1 in regard to our Mebendazole product candidate.

Our Market Opportunity, page 36

13. ***Please revise to provide narrative disclosure explaining what is depicted in the graphics shown in this section. Please balance statements claiming you are "poised to impact multiple high-growth application areas" and disclosure of a "$47.1 billion serviceable market" with your current market share and any steps that must be taken before commercializing your platform.***

Response: The Company respectfully acknowledges the Staff's comment and has revised the disclosure on page 36 of Amendment No. 1 in response to the Staff's comments.

Intellectual Property, page 37

14. ***Please revise to include the ownership status and expiration dates, or potential expiration dates if granted, for your patents and patent applications. Please also clarify which product or products your provisional patent application relates to and the current status of this application.***

Response: The Company respectfully acknowledges the Staff's comment and has revised the Intellectual Property disclosure on page 38 of Amendment No. 1 to include

ownership status and expiration dates, or potential expiration dates, in response to the Staff's comments. In addition, the Company has clarified which product or products our provisional patent application relates to as well as the current status of such application.

Licenses, page 40

15. ***Please revise the discussion of your licensing agreements to disclose the duration of the agreements, any termination provisions, the aggregate amounts paid to date and the aggregate future potential milestone payments payable. Please also file these three agreements as exhibits to the registration statement. Refer to Item 601 of Regulation S-K for guidance.***

Response No. 15.

Response: The Company respectfully acknowledges the Staff's comment and has revised the disclosure on page 40 and 41 of Amendment No. 1 in response to the Staff's comments. In addition, the Company will file the three agreements in an amendment to the Draft Registration Statement.

Competition, page 42

16. ***Please discuss the competitive business conditions your bfLEAP platform will face in the analytics industry. Please also disclose here your competitive position in the industry and any planned methods for competing.***

Response: The Company respectfully acknowledges the Staff's comment and has revised the disclosure on page 42 of Amendment No. 1 in response to the Staff's comments. The analytics industry and application of AI in healthcare is growing rapidly. Competition exists along the entire continuum of the drug development process from discovery to commercialization and beyond. Management believes that the weakness of the industry is the quality of the data.

Management believes that bfLEAP provides several competitive advantages that will position the Company for success. First of all, it is highly scalable and can process data from small to extremely large complex data sets without the need for additional code being developed. Second, it is adept at processing and analyzing incomplete data and making predictions that we do not believe other technologies are capable of doing. Since data quality is a problem that exists in the healthcare industry, we see this as a major differentiator. The ability to make predictions, find relationships and patterns and anomalies in extremely large complex data sets has been demonstrated by the Applied Physics Lab in other applications and sectors. Finally, the algorithms used by bfLEAP are proprietary and protected, having been developed at Johns Hopkins University Applied Physics Lab. Most of the competitors in our space are using open source algorithms and we have already demonstrated our superiority via the August 2021 publication in DeepAI.org.

Fast Track Designation, page 44

17. ***Please revise to explicitly state that being granted Fast Track designation does not grant any advantages in the regulatory approval process or guarantee eventual approval by the FDA.***

Response: The Company respectfully acknowledges the Staff's comment and has revised the disclosure on page 44 of Amendment No. 1 to explicitly state that being granted Fast Track designation does not grant any advantages in the regulatory approval process or guarantee eventual approval by the FDA.

Management and Board of Directors Executive
Officers and Directors, page 47

18. ***For the background disclosure of Mr. Singh and Mr. Hanson, please describe the business experience of each during the past five years including their principal occupations and the name and principal business of any corporation where they were employed. In addition, for each director, briefly discuss the specific experience, qualifications, attributes or skills that led to the conclusion that the person should serve as a director. Refer to Item 401 of Regulation S-K for guidance.***

Response: The Company respectfully acknowledges the Staff's comment and has revised the disclosure on page 47 of Amendment No. 1 in response to the Staff's comments.

Employment Agreements, page 49

19. ***Please file your employment agreement with Mr. Singh as an exhibit to this registration statement. Refer to Item 601 of Regulation S-K for guidance.***

Response: The Company respectfully acknowledges the Staff's comment and will file the employment agreement as an exhibit in an amendment to the Draft Registration Statement in response to the Staff's comments.

Certain Relationships and Related Party Transactions, page 50

20. ***With reference to Regulation S-K, Item 404(a)(1), please revise this section to disclose the name of each related person and the basis on which that person is a related person.***

Response: The Company respectfully acknowledges the Staff's comment and has disclosed the name of the related party, Tivoli Trust, our second largest shareholder, in Amendment No.1 in response to the Staff's comments. The Company notes that Tivoli Trust is the only related party that the Company has entered into a related party transaction with.

Consolidated Financial Statements
Consolidated Statements of Operations, page F-4

21. ***On page 31 you state that you classify your operating expenses into two categories: research and development (R&D), and general and administrative; however, this classification is not reflected on the face of your consolidated statements of operations. In light of the significant emphasis on R&D activities in your document, please revise your consolidated statements of operations to separately report R&D expenses, or tell us how you determined that separate presentation was not required. To the extent you are able to support your decision not to report R&D on a separate line item, revise your footnotes to provide a table of R&D by line item on which they are reflected in your income statement. Revise your MD&A discussion on page 31 to provide a breakdown of R&D expenses by type of expense as well as by product candidate.***

Response:

See comments on item 10

Operating Expenses

We plan to classify our operating expenses into two categories: research and development and general and administrative. To date our financial statements have not reflected research and development expenses as the first of our two acquired drug development programs was licensed in early 2022 and we have not yet initiated development activities. Prior to 2022, most of our activities were related to: technology evaluation, acquisition and validation, capital acquisition and business development activities which in general, have readied the Company for contract services while exploring strategic partnering and asset acquisition. These activities and related expenditures have been recorded and reported as General and Administrative in our Financial Statements. We expect this will change in 2022 as we initiate development activities directed towards conducting clinical activities.

Notes to Consolidated Financial Statements
Note 3 - Summary of Significant Accounting Policies, page F-8

22. ***Please revise your revenue recognition accounting policy to provide all of the disclosures required by ASC 606 with respect to the contract that resulted in the unearned revenue of $10,000 reported as Deferred revenue at December 31, 2021. Please clarify the performance obligations you identified, and revise to disclose how you allocated the transaction price to such performance obligations. Explain whether the timing of satisfaction of the performance obligations is over time or at a point in time; describe the methods used to recognize revenue over time, or the significant judgments involved in evaluating when the customer obtains control of the services for performance obligations satisfied at a point in time. Refer to ASC 606-50 as applicable in your response.***

Response: The Company respectfully acknowledges the Staff's comment and has revised the disclosure on page F-9 of Amendment No. 1 in response to the Staff's comments.

Alternate Page for Resale Prospectus, page Alt-1

23. ***We note your inclusion of shares underlying your convertible Bridge Notes in the Resale Prospectus. We further note you refer back to your Description of Securities section to provide a more detailed description of these private placements, however no such disclosure appears there. Please revise or advise.***

Response: The Company respectfully acknowledges the Staff's comment and has revised the disclosure on page Alt-1 of Amendment No. 1 in response to the Staff's comments to reference "Description of Capital Stock – Convertible Bridge Notes and Warrants" section. In addition, we have provided a more detailed description of these private placements in such section on page 27 of Amendment No. 1.

24. ***Please revise to identify the person or persons with voting and/or dispositive control over the shares reflected in the table.***

Response: The Company respectfully acknowledges the Staff's comment and has included in the footnotes to the Selling Stockholder table on page Alt-4 of Amendment No.1 the person or persons with voting and/or dispositive control over the shares reflected in the table.

Note 10 - Shareholder's Equity, page F-15

25. ***We note your disclosure that BullFrog Holdings, Inc. acquired BullFrog AI, Inc. via a 1:1 share exchange in June 2020. Please tell us and disclose in your financial statements how you accounted for this share exchange transaction (e.g., asset acquisition, business combination, etc.). Please also describe the composition of any net assets acquired. To the extent that you determined that this share exchange was a business combination, provide the disclosures required by ASC 805-10-50.***

Response: The Company respectfully acknowledges the Staff's comment and has revised the disclosure on page 31 of Amendment No.1. The entities are all entities under common control with Vin Singh owning in excess of 51% of the voting interest in each entity both before and after the transactions. Consistent with ASC 805-50-05-5 the financial statements reflect the transactions as of the earliest period presented as if the entity merged as of the beginning of the period. Bullfrog Holdings, Inc was incorporated in early 2020 and had no material net assets at the time of the merger. Please also see page F-7 and F-16 for the revised disclosure in the financial statements.

General

26. ***The cover page of the IPO Prospectus indicates that you intend to apply to list your common stock on the Nasdaq Capital Market while also warning that no assurance can be given that your application will be approved. Please note that prior to effectiveness the prospectus must clearly state whether Nasdaq has approved a listing application. To the extent that you have not received such approval, you should remove any references to Nasdaq from the cover page and clarify, as applicable, where your common shares are to be quoted. Also, please reconcile the disclosures on the Resale Prospectus cover page that the no assurance can be given that Nasdaq will approve the listing application and the consummation of the offering is conditioned on obtaining Nasdaq approval.***

Response: The Company respectfully acknowledges the Staff's comment and has revised the Resale Prospectus in Amendment No. 1 to reflect that no assurance can be given that Nasdaq will approve the listing application and that the consummation of the offering is conditioned on obtaining Nasdaq approval. In addition, the Company acknowledges the Staff's comment and will clearly state in the prospectus whether Nasdaq has approved its listing application prior to effectiveness of the prospectus.

27. ***To the extent that you conduct the IPO absent a Nasdaq listing, please revise to clarify whether you are registering your common stock pursuant to Section 12(g) of the Exchange Act. If you are not filing a Form 8-A in connection with the IPO, please revise the Summary to clarify that you will not be registering a class of securities under the Exchange Act and add appropriate risk factor disclosure concerning that decision. For instance, and without limitation, the risk factor disclosure should explain that you will not be subject to the proxy rules under Section 14 of the Exchange Act, the prohibition of short-swing profits under Section 16 of the Exchange Act, and the beneficial ownership reporting requirements of Sections 13(d) and (g) of the Exchange Act. Also disclose that your periodic reporting obligations under Section 13(a) will be automatically suspended under Section 15(d) of the Exchange Act to the extent that you have fewer than 300 shareholders.***

Response: The Company respectfully acknowledges the Staff's comment and notes that the Company will not conduct the IPO absent a Nasdaq listing and that the Company will be filing a Form 8-A in connection with the IPO.

28. ***With regard to the Resale Prospectus, please revise the cover page to state that the selling security holders will sell the shares of common stock at a fixed price until such time, if ever, as the common stock is quoted on the OTC Bulletin Board, the OTCQX, the OCTQB or listed on a national securities exchange. Also revise the "Explanatory Note" and Resale Prospectus cover page to clarify that any sales made pursuant to the Resale Prospectus can only occur after the firm commitment IPO is completed, or advise us how you plan to conduct simultaneous offerings and comply with Rule 415.***

Response: The Company respectfully acknowledges the Staff's comment and has revised the disclosure on page the cover page of the Resale Prospectus of Amendment No. 1 to clarify that any sales made pursuant to the Resale Prospectus can only occur after the firm commitment IPO is completed in response to the Staff's comments. The company notes that the Resale Prospectus will only go effective if the IPO is consummated which requires Nasdaq approval; accordingly, we do not believe that the fixed price language is applicable.

29. ***Please file consents for each of the director nominees. Refer to Rule 438.***

Response: The Company respectfully acknowledges the Staff's comment and will file as exhibits in an amendment to the Draft Registration Statement Amendment the consents for each of the director in response to the Staff's comments.

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30. ***Please supplementally 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 acknowledges the Staff's comments. Please note to date, the Company has not provided any written communications to any potential investors in reliance on Section5(d) of the Securities Act.

Please do not hesitate to contact our counsel Arthur Marcus at (212) 930-9700 with any questions or comments regarding this correspondence. Thank you.

Sincerely,

/s/ Vininder Singh
Chief Executive Officer

cc Arthur Marcus, Esq.
