



DIVISION OF  
CORPORATION FINANCE

UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION  
WASHINGTON, D.C. 20549

January 12, 2011

Antony Rogers  
Vice President and Chief Financial Officer  
Senomyx, Inc.  
4767 Nexus Centre Drive  
San Diego, CA 92121

**Re: Senomyx, Inc.**  
**Form 10-K for the Fiscal Year Ended December 31, 2009**  
**Form 10-Q for the Quarterly Period Ended September 30, 2010**  
**File No. 000-50791**

Dear Mr. Rogers:

We have reviewed your December 17, 2010 response to our December 3, 2010 letter and have the following comments. In our comments, we ask you to provide us with information so we may better understand your disclosure.

Please respond to this letter within ten business days by providing the requested information or by advising us when you will provide the requested response. Where a comment requests you to revise disclosure, the information you provide should show us what the revised disclosure will look like and identify the quarterly or annual filing, as applicable, in which you intend to first include it. If you do not believe a comment applies to your facts and circumstances, please tell us why in your response. Please furnish us a letter on EDGAR under the form type label CORRESP that keys your response to our comments.

After reviewing the information provided, we may raise additional comments and/or request that you amend your filings.

Form 10-K for the fiscal year ended December 31, 2009

Notes to Financial Statements

4. Product Discovery and Development Collaborations, page 68

1. Please refer to your response to comment one and your revised disclosures. On page 62 of the 2009 10-K you disclose that revenues from the three largest collaborators accounted for 71% of total revenue. Please revise your disclosure to include all amounts recognized for each significant collaboration agreement for each period presented and confirm the amounts recognized from the three largest collaborators for each period presented. In addition, please confirm that you have disclosed the amount from each collaborator that contributed 10% or more of total revenue for each period presented in accordance with ASC 280-10-50-42.

Antony Rogers  
Senomyx, Inc.  
January 12, 2011  
Page 2

Form 10-Q for the quarterly period ended September 30, 2010

Management's Discussion and Analysis of Financial Condition and Result of Operations  
Nine Months Ended September 30, 2010 and 2009  
Revenue Under Collaboration Agreements, page 13

2. Please refer to your response to comment two and your revised disclosures. Your proposed disclosure quantifies the amount of the decrease during the period in research and development funding for the agreements but does not quantify the dollar impact on results of operations for the agreements that expired. Please revise your proposed disclosure to quantify the impact of the expired contracts on your results of operations from each material agreement, and in the aggregate, for each period presented. Disclose the anticipated effect on future results of operations.

You may contact Vanessa Robertson, Staff Accountant, at (202) 551-3649 or Mary Mast, Senior Staff Accountant, at (202) 551-3613 if you have any questions regarding the comments. In this regard, do not hesitate to contact me, at (202) 551-3679 with any other questions.

Sincerely,

Jim B. Rosenberg  
Senior Assistant Chief Accountant