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May 16, 2019

Dear Editors,

We are submitting the revision of our manuscript titled “Front-end Weber-Fechner gain control enhances the fidelity of combinatorial odor coding” for publication in *eLife* as an eLife Advance to our previous paper (Gorur-Shandilya et al *eLife* 2017).

We believe we have fully addressed the reviewers’ and Editors’ concerns. We have amended our text to unpack the technical details, making the work more accessible for the broad readership of *eLife*. In particular:

1) We rewrote the description of the model to make it more accessible to a broad readership.
2) We better motivate the use of t-SNE projections, explain the procedure in more depth, and added a figure illustrating what the t-SNE plots portray.
3) We discussed compressed sensing in more detail – why it might be useful for the decoding task and how it works in words.
4) We extended the section on coding to examine the implications of relaxing Weber’s Law for odor coding.

These changes and others in response to the reviewer comments are discussed in our response letter, and are reflected changes to the text as well as additions to the figures.

We thank the Editors and reviewers for their thoughtful and constructive comments and hope that the revision is now suitable for publication.

Sincerely yours,

Thierry Emonet

Associate Professor of Molecular, Cellular and Developmental Biology & Physics