Dear Rosalind,

Thank you for your interest in pursuing this further. We are attaching the PDF of our paper as well as a revised version of our comment addressing your suggestions.

We appreciate your suggestion to clarify our strategy to distinguish the cultural and scientific impact of gene names. In matter of fact, this is the object of study of our paper. We compare the cultural impact of gene names by search engines hits, and the scientific impact by PubMed hits. Using the correlation of these metrics, we discuss the causes and implications of “overloaded” gene names. We made our previous comments clearer in that regard. Additionally, we also included a small excerpt discussing alternative cases of gene popularity by discussing genes such as ADH.

cheers, marK and Fabio

Dear Rosalind,

We enjoyed reading the recent news focus in *Nature* on “The most popular genes in the human genome” 1. We wanted to point out a related fact: it is possible to plot the number of citations that a gene gets in PubMed relative to its occurrence on the web in terms of Search Engine hits 2. While the former captures the scientific influence of gene name, the latter captures its cultural impact. For most genes, this reveals a rough proportionality. However, a number of exceptional genes significantly deviate off this line, often being much more popular in the mainstream world (i.e., via Yahoo, Google) than on PubMed. These genes usually have “overloaded” names, where the name means something in the popular world that is of higher impact than the gene’s actual use in the biomedicine, for example, the *Superman* gene in Arabidopsis. This distortion is particularly pronounced for organisms that have long gene names, such as in fly and human. We also find interesting how some genes have remarkable cultural influence but do not have “overloaded” names. Such genes have Search Engine hits comparable to scientifically popular genes (i.e. TP53) but are not mentioned nearly as much in the scientific literature. Alcohol dehydrogenase (ADH), which encodes the enzyme responsible for metabolizing alcohol, is a good representative this category.

References

1. The most popular genes in the human genome. Nature 551, 427–431 (2017).
2. Seringhaus, M. R., Cayting, P. D. & Gerstein, M. B. Uncovering trends in gene naming. Genome Biol. 9, 401 (2008).

Mark B. Gerstein 1,2,3
mark@gersteinlab.org

Fabio C. P. Navarro 1,2
fabio.navarro@yale.edu

1 Program in Computational Biology & Bioinformatics,
2 Department of Molecular Biophysics & Biochemistry, and
3 Department of Computer Science
Yale University, Bass 432, 266 Whitney Avenue, New Haven, CT 06520