Journal of Biological Rhythms

Clock Gene Wikis Available: Join the "Long Tail"

John B. Hogenesch and Andrew I. Su

The online version of this article can be found at:

Published by:

⑤SAGE

On behalf of:

Society for Research on Biological Rhythms

Additional services and information for *Journal of Biological Rhythms* can be found at:

Email Alerts: http://jbr.sagepub.com/cgi/alerts

Subscriptions: http://jbr.sagepub.com/subscriptions

Reprints: http://www.sagepub.com/journalsReprints.nav

Permissions: http://www.sagepub.com/journalsPermissions.nav

Citations: http://jbr.sagepub.com/content/23/5/456.refs.html

>> Version of Record - Oct 6, 2008

What is This?

LETTER

Clock Gene Wikis Available: Join the "Long Tail"

John B. Hogenesch[*] and Andrew I. Su[†]

[*]*Department of Pharmacology and the Institute for Translational Medicine and Therapeutics,*
University of Pennsylvania School of Medicine, Philadelphia, PA, [†]The Genomics
Institute of the Novartis Research Foundation, San Diego, CA

The Internet has had a remarkable impact on the accessibility, storage, manipulation, visualization, and sharing of data and ideas. One of the most powerful publication mediums for the Internet has been *Wikipedia*, a free and open online encyclopedia that has been built ground up by contributors all over the world. One of us, AIS, has set out to accelerate the annotation of gene function in *Wikipedia* by creating gene stubs containing links to public information including the Gene Atlas, Entrez, and Swissprot (Maglott et al., 2005; O'Donovan et al., 2002; Su et al., 2004) and by recruiting voluntary, expert annotation from the public (Huss et al., 2008). Here we report the availability of gene stubs for all mammalian circadian genes on *Wikipedia*, so that our community can benefit from the "Long Tail" model of information sharing and extension.

Why use *Wikipedia* for this? First, *Google* and *Wikipedia* have already become scientific research tools. When you Google an unfamiliar gene you usually end up at common sites of gene annotation such as the National Center for Biotechnology Information. Although these sites have expert curators who do the best they can, they are usually not domain experts and are so overloaded that they frequently fall behind in accurately summarizing the literature. (It is actually amazing what they accomplish, given available resources.) For confirmation, research your favorite gene. Using *Wikipedia* will allow our community to build and evolve living, up-to-date summaries on the function of important genes in the circadian network. Check out the pages on Arntl (http://en .wikipedia.org/wiki/ARNTL) and Rev-erb-alpha (http://en.wikipedia.org/wiki/Rev-ErbA_alpha). Second, in part due to *Wikipedia*'s past success, its pages appear near the top of search engine lists such as *Google*, and consequently attract viewers. Finally, our field competes with other disciplines for the best and the brightest young scientists. These people use *Wikipedia*. High-quality pages on annotated clock genes will attract their attention and attract them to our field.

What's the downside? The major criticism is poor annotation. Actually, we argue that no annotation is worse than poor annotation, because the latter tends toward self-correction by provoking experts to intervene. In fact, a recent study concluded that *Wikipedia* was as accurate as *Encyclopedia Britannica*, and unlike *Britannica*, growing at a rate of 1500 articles per day (Giles, 2006). Another potential downside is nonconsensual or controversial entries. We would argue that these are better addressed in real time via *Wikipedia* than in journal articles, where they remain fixed for years. *Wikipedia* even has tools to deal with controversial topics (for examples, see entries on "Intelligent Design," evolution, "Swift-boating," or climate change).

Here's how you can contribute. Go to *Wikipedia*, http://en.wikpedia.org, and type in your favorite gene name, preferably the official symbol (e.g., Arntl for Bmal1). Next, click "edit" at the top of the page, find an appropriate section (or create a new one), and add relevant information and references. Then click "save." Now, the next time someone looks up that

---

gene, either on *Wikipedia* or *Google*, chances are they will be looking at your latest entry. There are also several tools that can help. For example, *Wikipedia* template filling (available at http://diberri.dyndns .org/cgi-bin/templatefiller/) allows you to convert PubMed identifications (PMIDs) into formatted references for *Wikipedia*. Already, in the few months that this project has been extant on *Wikipedia*, the rate of gene annotation there has doubled. Preliminary work on annotation of Rev-erb-alpha and Arntl has resulted in their becoming the second and third links on Google, respectively. The manuscript describing this project is published in *PLoS Biology* (Huss et al., 2008). Over the next year, we expect considerable expansion of high-quality annotation in *Wikipedia*, provided largely by the "Long Tail" of researchers all over the globe. Let the circadian field lead the pack.

REFERENCES

Giles J (2006) Wikipedia rival calls in the experts. Nature 443:493.

Huss JW III, Orozco C, Goodale J, Wu C, Batalov S, Vickers TJ, Valafar F, and Su AI (2008) A gene wiki for community annotation of gene function. PLoS Biol 6:e175; DOI:10.1371/journal.pbio.0060175.

Maglott D, Ostell J, Pruitt KD, and Tatusova T (2005) Entrez gene: Gene-centered information at NCBI. Nucleic Acids Res 33:D54-D58.

O'Donovan C, Martin MJ, Gattiker A, Gasteiger E, Bairoch A, and Apweiler R (2002) High-quality protein knowledge resource: Swiss-Prot and TrEMBL. Brief Bioinform 3:275-284.

Su AI, Wiltshire T, Batalov S, Lapp H, Ching KA, Block D, Zhang J, Soden R, Hayakawa M, Kreiman G, et al. (2004) A gene atlas of the mouse and human protein-encoding transcriptomes. Proc Natl Acad Sci U S A 101:6062-6067.