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Omics in the Postgenomic Era

This year marks the 10th anniversary of the completion of the draft sequence of the human genome. Technological advances over the past decade now allow genomes to be sequenced at breathtaking speed for a fraction of the cost required even a few years ago.

Side by side, the number of *-omic* terms signifying the study of respective *-omes* has exploded to the point that it is difficult to keep track of the scientific terminology. Even a cursory search of academic bibliographic databases reveals numerous examples. And indeed, there is even *OMICS: A Journal of Integrative Biology* dedicated to the *-omes*.

The original *-ome*, the *genome*, was derived 90 years ago from German botanist Hans Winkler's *genom*. The word *genome*, a portmanteau of *gene* and *chromosome*, defines the sum of genes in a particular set (1). Curiously, even though the term *genome* is widely accepted in scientific circles, many media outlets avoid using it, preferring to use "genetic code" instead. For example, in discussing research on somatic rearrangements in the cancer genome, the BBC erroneously declared that scientists had cracked the "entire 'genetic code' of cancer" (2).

Nonetheless, because *genomics*, the study of genomes, was etymologically unrelated to other similar words (such as *economics*), for many years, it was in a class of its own.

All that changed in the early 1990s. The *proteome*, a term analogous to the *genome*, was coined to describe the sum of proteins. Within years, scientists started talking about *glycomes*, *lipidomes*, *RNomes*, and *metabolomes*. From *genomics* came terms such as *metagenomics*, *toxicogenomics*, and *pharmacogenomics*. The study of specific proteins led to the creation of words such as *kinomics*, *degradomics*, and *metalloproteomics* (not to be confused with *metallomics*). Soon scientists were well aware of the differences between *proteomics* and *peptidomics*, and *metabolomics* and *metabonomics*. But there were less clear distinctions between other terms such as *transcriptomics* and *expressomics*.

Recently, the number of *-omes* has increased at an astonishing pace. For example, the entire set of molecular interactions in a cell was known as the *interactome*: earlier this year, the term *negatome* was coined for proteins unlikely to interact (3). Other scientific articles published recently described *-omic* disciplines such as *N-terminomics* (4) and *seromics* (5).

Coining new terms that end in *-omics* is not limited to the realm of biology, though. Other fields also have neologisms that sound somewhat biological. Take, for example Joel Wald-fogel's *Scroogenomics* which is a book containing insight on the economics of parsimony and holiday gift-giving (6).

We have not even begun to construct a comprehensive list of all *-omes* here. But as a sign of the postgenomic times, just as there are repositories that store *-omic* data, there are also Web sites that list and define *-omic* fields. Even after taking a quick look through a couple of these databases, I found it hard to verify if all of the listed terms had received the blessings of the scientific community. Now, here's a thought: perhaps, what we really need is a *pseudonome* containing all the bogus ones.

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