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Dick and Gene?

Growing up in the 1950s, my classmates and I learned to read using the *Dick and Jane* series of kindergarten and elementary school primers. As standard texts of the day, these books, with simplistic phrases such as "We look and see" and "See Spot run", were used to teach more than 85 million people to read from the 1930s to the 1960s. The previously drilled A B C D E F, etc., of the alphabet magically became words, albeit small ones. We moved from recognition of mere letters to recognition of patterns of letters, and through that process, to the recognition of meaning. With constant repetition, we learned to distinguish the words "see" from "saw" and "boy" from "girl". This, to me, is where we are with our understanding of the human genome. We're just beginning to be able to read.

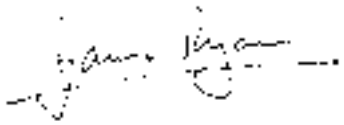
Last month all the major newspapers carried, generally on their front pages, the story that a rough draft of the *Mus musculus* mouse genome had been completed and its sequence published in *Nature* (*www.nature.com/nature/mousegenome*). The point of the stories was that science now has a vehicle on which to experiment, whereas with the human genome, our ability to experiment is at best restricted, if not precluded.

In addition to providing an experimental vehicle, the mouse genome means that we have the genetic sequence for another vertebrate, an excellent surrogate that we can compare with ourselves. With the technologies available these days, any of the 30,000 mouse genes can be modified or disabled, and the functional genetic consequences observed. For virtually every gene in the human chromosomes, there is a counterpart in the mouse. Hairless mice, cardiac mice, cancer-prone mice—all can be bred and studied with the knowledge that the genetic information we find in the mouse has meaning for us.

The press coverage also pointed out that many "junk DNA" areas of the sequence are identical between man and mouse, and in fact might require that we stop calling them by that unlovely sobriquet. These sequences of DNA do not code for the development of a protein, but they might code for such things as the number of brain cells that are generated and whether the end product of animal development is a small mouse or a large person. As one newspaper article put it, these noncoding regions might well be the user's manual of the genome. It will take some work to figure out the recipes.

In this issue of *Modern Drug Discovery*, we look at some of the results that can come from detailed genomic knowledge. Our cover feature by Randall Willis explores the promising medical uses of microbial genomes (p 16); Mark Lesney's feature on gene therapy (p 23) gives an update on new in vivo targeting methods.

To make these new therapies work, we need to know how to read the words that are in front of us. Right now, we're just beginning to read the genome at the Dick and Jane level. But the future is clear. Shakespeare is out there.



Note: In this issue (p 15), we begin a new quarterly feature, The Executive Interview, consisting of personal vignettes of key executives in the drug development and biotech industry. My thanks to Bill Linton, CEO of Promega Corporation, for graciously agreeing to be our first interviewee.

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