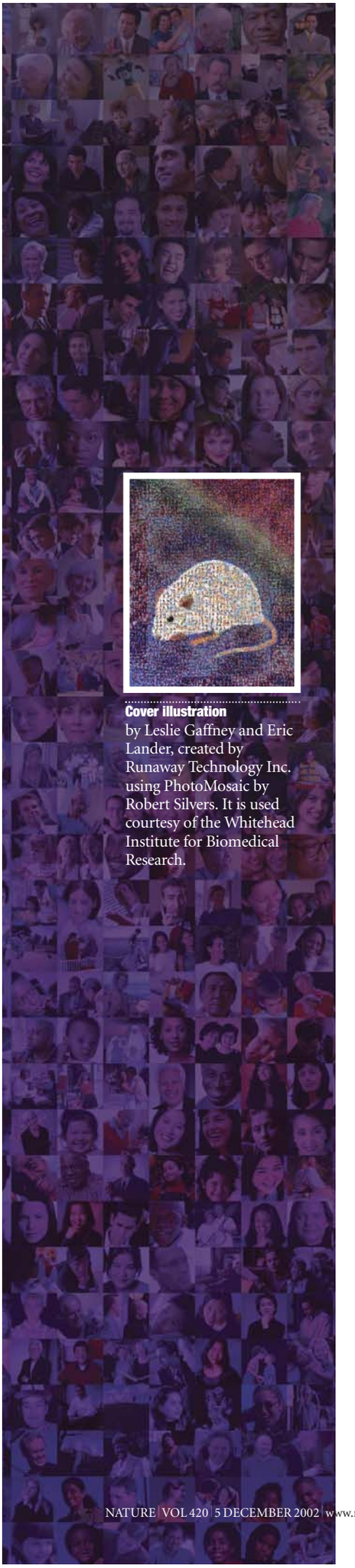

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nature

the mouse genome

Human biology by proxy

Since the publication of the human genome, the scientific community has been eagerly awaiting the results of the mouse genome sequencing project. This week's issue contains a landmark publication from the Mouse Genome Sequencing Consortium that many say holds more promise for our future than even the human genome itself. But why? The laboratory mouse is hailed as holding the experimental key to the human genome. Working on mouse models allows the manipulation of each and every gene to determine their functions, and this will give us detailed insights into many aspects of human disease as well as basic human biology. It is our pleasure to present this special section of *Nature* on the mouse genome. We hope it will provide a comprehensive overview of the future of mouse, and by extension human, genetics and genomics.

The 2.5-Gb mouse genome sequence reported on page 520, from the C57BL/6J strain, reveals about 30,000 genes, with 99% having direct counterparts in humans. To further understand physical gene structures, a second consortium describes in a companion paper 37,086 individual 'transcriptional units' (page 563). This cDNA resource is freely available as physical clones and will advance the pace of research. Humans appear to have about the same number of genes, with similar sequence, and we both like cheese. So why aren't mice more like us? The answer probably lies in the regulation of those genes.

In a third paper, Dermitzakis *et al.* directly compare sequences on human chromosome 21 with their counterparts in mice (page 578). Surprisingly, even gene-poor regions of the chromosome show extensive similarity between the two organisms, suggesting that further exploration into the non-coding regions of both genomes will be required to explain the differences between us. In a separate study, Wade *et al.* compare two inbred mouse strains to map regions of high and low polymorphism (page 574). Distinguishing areas of high polymorphism will be extremely useful for mapping quantitative trait loci, and thus possibly identifying genes that contribute to the inheritance of complex diseases. Finally, in an effort to gain functional information, two groups report large-scale analyses of gene expression in both adult and embryonic tissues of mouse orthologues of the genes on human chromosome 21 (pages 582 and 586). The expression patterns of these genes provide a first step in generating information on specific gene function.

As the sequence has been deposited in public databases, the mouse genome and resources included here provide a huge boost to genetic researchers. Given the bonanza of information they have just received, scientists may now consider the laboratory mouse to be 'man's best friend'.

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