GENOME RESEARCH

THE PROMISE OF PERSONAL GENOMICS

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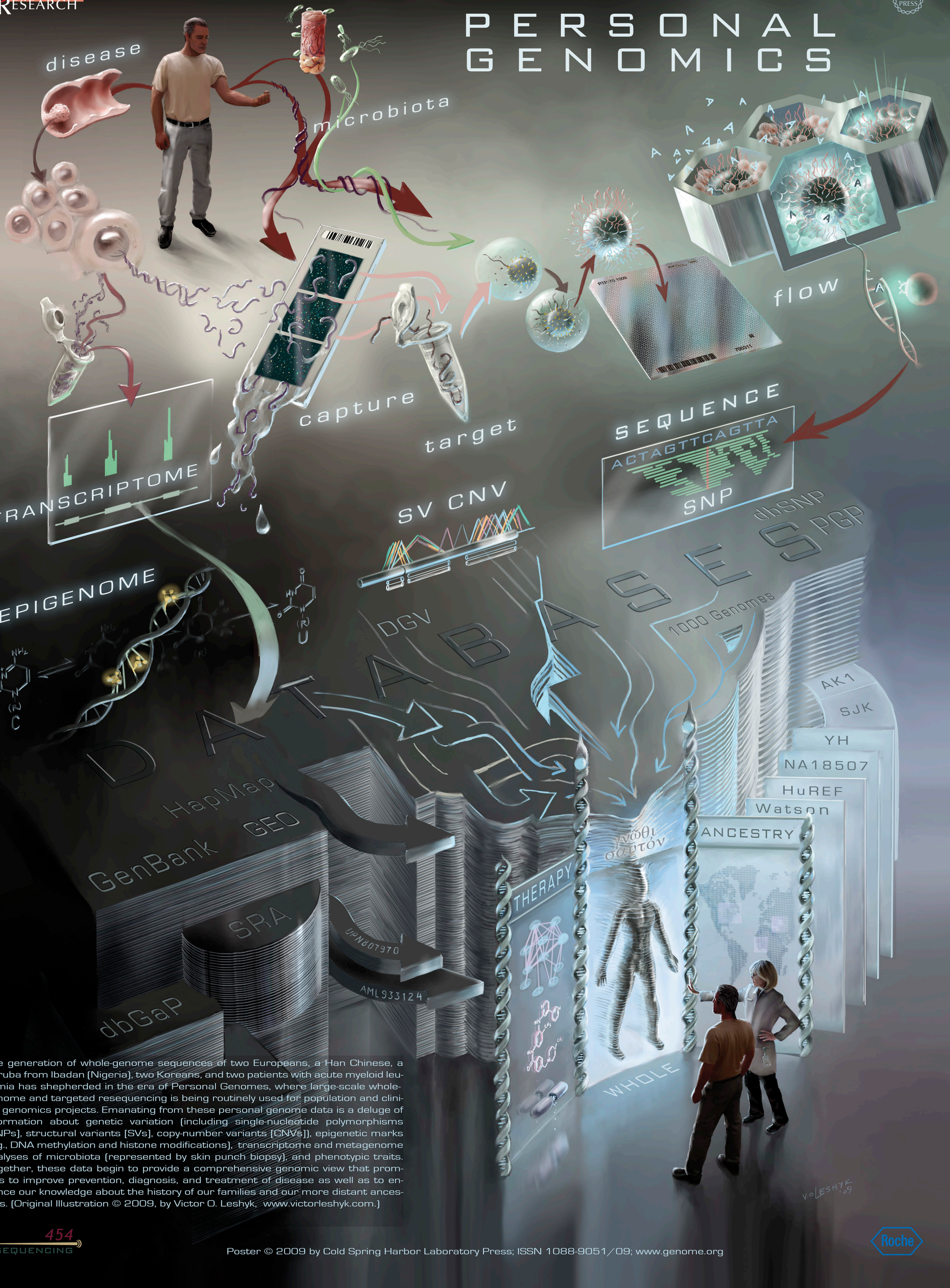

The generation of whole-genome sequences of two Europeans, a Han Chinese, a Yoruba from Ibadan (Nigeria), two Koreans, and two patients with acute myeloid leukemia has shepherded in the era of Personal Genomes, where large-scale whole-genome and targeted resequencing is being routinely used for population and clinical genomics projects. Emanating from these personal genome data is a deluge of information about genetic variation (including single-nucleotide polymorphisms [SNPs], structural variants [SVs], copy-number variants [CNVs]), epigenetic marks (e.g., DNA methylation and histone modifications), transcriptome and metagenome analyses of microbiota (represented by skin punch biopsy), and phenotypic traits. Together, these data begin to provide a comprehensive genomic view that promises to improve prevention, diagnosis, and treatment of disease as well as to enhance our knowledge about the history of our families and our more distant ancestors. (Original Illustration © 2009, by Victor O. Leshyk, www.victorleshyk.com.)