

SOUNDS

Musical Genes

It may seem more like fun than science, but some folks enjoy turning genetic code into music. The idea goes back to at least 1979, when writer Douglas Hofstadter mused about how mRNA being read by a ribosome is much like magnetic tape moving through a tape player. Then in 1983, biologist David Deamer recorded a tape called *DNA Suite* that assigned each of the four bases a distinct tone. Not surprisingly, genetic music has a presence on the all-encompassing Web, where several sites feature sound bites based on sequences of protein and DNA.

Although renditions share one attribute—a few tones played somewhat randomly—the choice of instruments, interpretations, and artistic embel-

ishments can make them sound very different. NetWatch encountered snippets reminiscent of everything from a rudimentary piano exercise to a repetitive Philip Glass piece to eerie background music from an *X-Files* episode. The Nucleic Acid Database* features some orchestral-sounding compositions based on DNA; mismatches take the form of a clashing dissonant chord. At this educational site,[†] which favors the xylophone, you can try to hear the difference between mouse and human trypsin. To sample the work of a hard-core genetic composer, go to this commercial site where the sounds include collagen, slime mold DNA, and a mutating HIV sequence.[‡]

^{*}ndbserver.rutgers.edu/NDB/archives/MusicAtlas/index.html

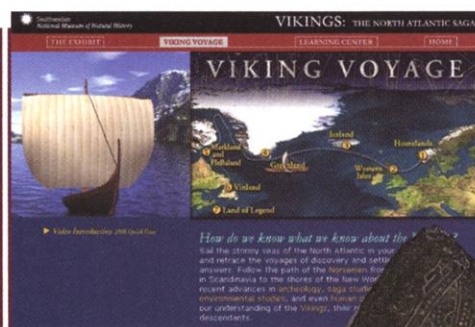
[†]education.llnl.gov/msds/music/midi-dna.html

[‡]geneticmusic.com/dnamusic

EXHIBITS

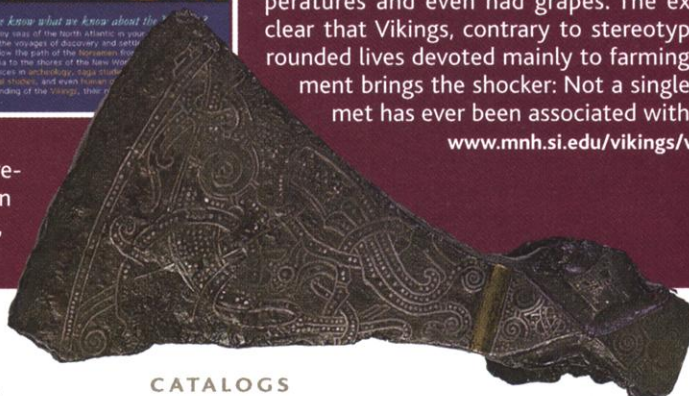
Virtual Vikings

The Smithsonian Institution's much touted Viking exhibit, currently at the American Museum of Natural History in New York City, now has an expanded presence online. The new Viking Voyage site packs archaeology, sagas, and environmental and genetics research into a multimedia extravaganza. You can see an animation showing how a Viking ship is put together, twist and turn a 3D runestone, and listen to Viking



tales told in an imitation-Old Norse accent. The site escorts you from the Vikings' homelands in Scandinavia through Britain, Iceland, Greenland, Labrador, and finally to bounteous Vinland, now Newfoundland, which at the time enjoyed warmer temperatures and even had grapes. The exhibit makes clear that Vikings, contrary to stereotypes, led well-rounded lives devoted mainly to farming. A final segment brings the shocker: Not a single horned helmet has ever been associated with a Viking.

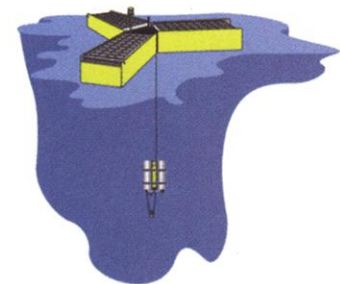
www.mnh.si.edu/vikings/voyage



EDUCATION

Lab on the Lake

Earth-gouging glaciers retreating northward at the end of the last ice age blessed Minnesota with its 12,000 lakes. Several of those lakes now form the centerpiece of Water on the Web, a site for teaching high



school and first-year college students science and math concepts through lessons on limnology, or the study of lakes, rivers, and streams.

A 21-page primer covers topics such as lake formation, food webs, and eutrophication (nutrient overload). It also explains such basics as the seasonal turnover of lake waters and a device, called the Secchi disk, used to measure water clarity. After boning up, students can download and analyze spreadsheets of near-real-time data collected from stations floating in four lakes and the St. Louis River. There are also a glossary, interactive Geographic Information Systems maps, and a good set of lake ecology links.

wow.nrri.umn.edu/wow/index.html

CATALOGS

Cancer Rolodex

To help cancer researchers find what they need fast, the National Cancer Institute has assembled a directory of more than 100 resources. You'll find genomic maps, drug molecule databases, tissue banks, clinical trials, stats on cancer incidence, and much more. Each entry includes a brief description, a contact person, and a Web link.

resresources.nci.nih.gov

Science ONLINE

Looking for practical solutions to postdoc issues? Then check out the new Postdoc Network launching this week on *Science's* Next Wave. The site offers how-to advice on topics such as postdoc status, benefits, and career development. It also features a large database of links to postdoc associations, offices, and programs across the United States. It's supported by the Sloan Foundation, and access will be free.

nextwave.sciencemag.org/feature/postdocnetwork.shtml

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