NEWS

New tool lays out links between genes, mice, behavior

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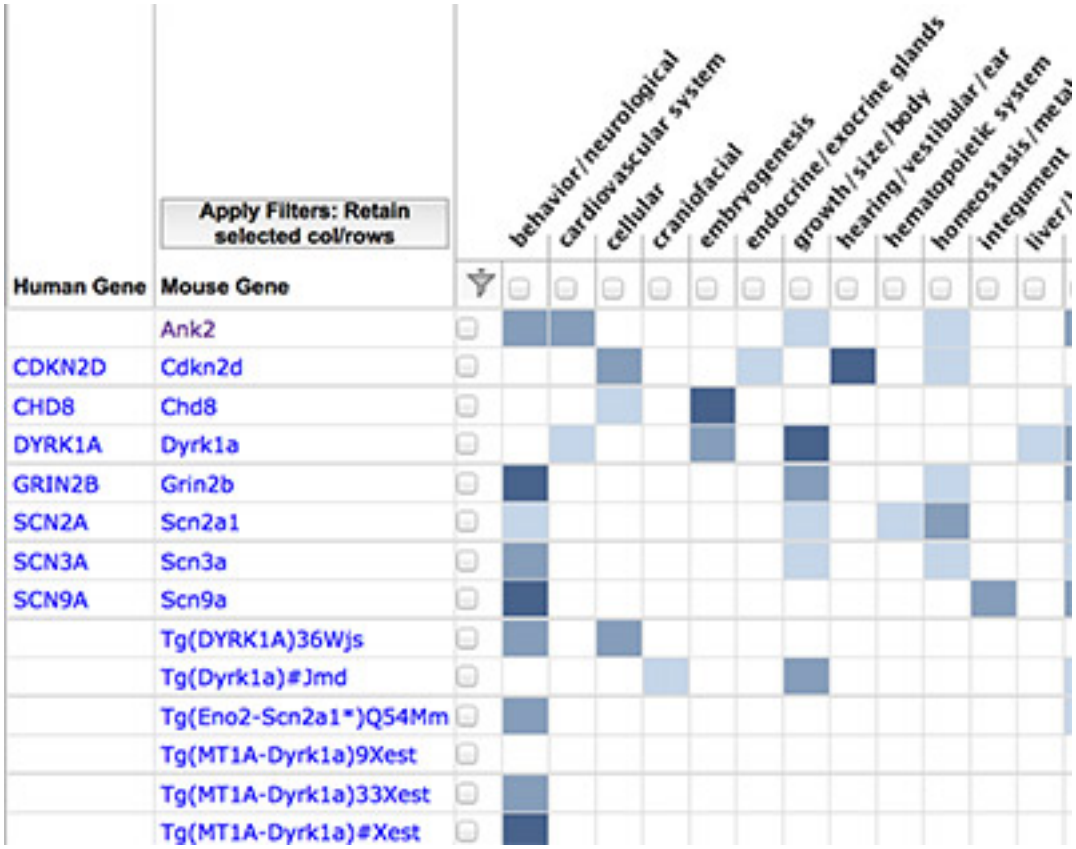

Role model: The new tool details specific mutations seen in people and mice and is updated weekly by a team of curators.

A new database bridges the gap between candidate genes identified by sequencing studies and mouse models that can help reveal the genes' role in various disorders. Researchers presented the tool — an interactive database called **Human-Mouse: Disease Connection** — today at the **2014 Society for Neuroscience annual meeting** in Washington, D.C.

The tool is part of the Mouse Genome Informatics database, a catalog of 50,000 mouse models curated by Jackson Laboratories in Bar Harbor, Maine. Researchers can enter a list of genes or genomic regions into the database to see a color-coded grid of associated mouse models and their outward characteristics, or phenotypes. The darker the color, the more annotations in the database linking a mouse model to a particular gene.

"There's been a lot of genomic data collected, but it's very difficult to sift out the signal from the noise," says Joanne Berghout, outreach coordinator for **Mouse Genome Informatics** at Jackson

Laboratories, who presented the work. “We think using mouse phenotypes allows people to make cleaner gene-disease associations that can be valuable when examining genomic data.”

Being able to easily find existing information can save time and energy, Berghout adds, and it can suggest new hypotheses and research directions.

In the case of autism research, for example, the tool could help scientists home in on the role of candidate genes that emerged from **two large sequencing studies** of exomes — the coding regions in genomes — published last month. A search for one of the more mysterious genes, **ANK2**, reveals that mice missing ANK2 show behavioral and neurological deficits, such as impaired balance and structural abnormalities in the brain.

Vann Bennett, professor of neurobiology at Duke University in Durham, North Carolina, developed the mice lacking ANK2 in 1998 and says the tool is a great resource.

“There are so many exome-sequencing studies now that we’re being overwhelmed with candidates,” he says. “I think we’re a little like mapmakers in Europe in 1450. Much of the planet is yet to be explored.”

In addition to showing available mouse models, the tool provides information about the gene’s sequence and location and details specific mutations seen in people and mice. Researchers can also search the database by a specific feature, such as autism or intellectual disability. A team of curators updates the information each week.

A beta version is available online, and the researchers are welcoming feedback about how it can be improved. “Finding variants in these large-scale screens gives a lot of novel associations, which is a wonderful thing,” says Berghout. “But it can lead to a lot of questions.”

*For more reports from the 2014 Society for Neuroscience annual meeting, please **click here**.*