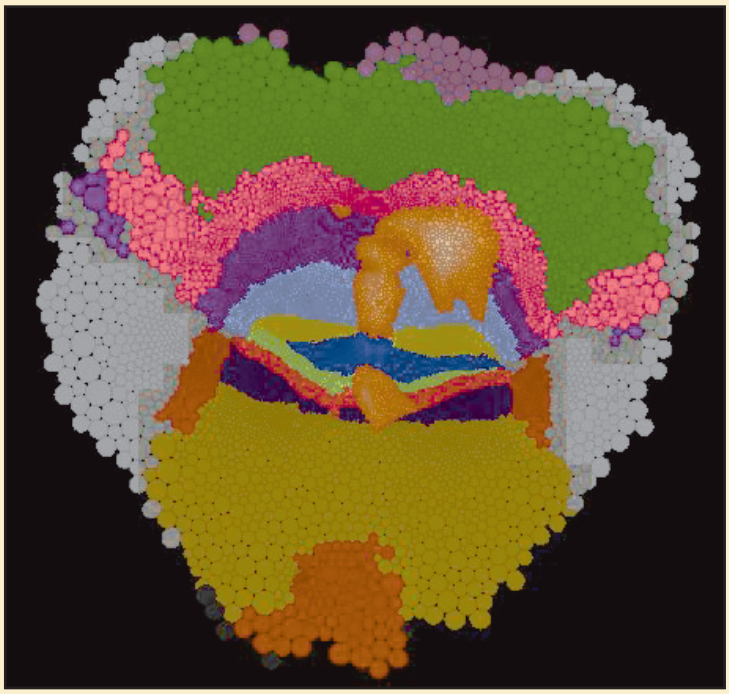
Mapping the Brain

Mathematics is used to understand how to precisely identify the parts of the brain that correspond to specific functions. Current research involves mapping our three-dimensional brain to two dimensions, similar to translating a globe to a map. Yet because of the many fissures and folds in the surface of the brain, mapping our brains is more complex than converting a globe to a map.

Points of the brain that are at different depths can appear close in a conventional image. To develop maps of the brain that distinguish such points, researchers use topology and geometry, including hyperbolic and spherical geometry. Conformal mappings — correspondences between the brain and its flat map that don't distort angles between points — are especially important to accurate representations of the brain. Just as a map of the earth aids navigation, conformal mappings serve as a guide for researchers in their quest to understand the brain.

For More Information:

http://www.math.fsu.edu/~mhurdal/research/flatmap.html



Photograph courtesy of Dr. Monica K. Hurdal (mhurdal@math.fsu.edu)
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