NEUROSCIENCE

A new resource for rat brain MRI researchBarrière, D.A. et al. *Nat. Commun.* **20**, 5699 (2019)

No two brains are exactly the same—the organ can vary in shape and volume from individual to individual. To make comparisons between unique brains and aggregate data from multiple magnetic resonance imaging (MRI) studies, researchers rely on standardized brain templates and atlases to normalize those differences.

A number of clinical templates, atlases, and other tools for studying the human brain have been developed over the years, but rodent resources for basic and preclinical work are a bit fewer and farther between. Writing in *Nature Communications*, David Andre Barrière, Ricardo Magalhães and colleagues at the NeuroSpin laboratory in France describe their efforts to build a new resource for researchers working with rats: the SIGMA Rat Brain Template and Atlases.

Existing resources for those interested in analyzing rat MRI data have their limitations. *The Waxholm Space Atlas* of the Sprague Dawley Rat Brain, for example, is a

high coverage, ultra-high spatial resolution resource, but its file sizes are large and it was constructed from *ex vivo* imaging of a single Sprague Dawley rat. Another, *the Tohoku University Atlas*, includes *in vivo* MRI data from more animals—Wistar rats, in its case—but at lower resolution and with less brain coverage.

Barrière et al. combine both *in vivo* and *ex vivo* MRI images from 47 eight-week old male Wistar rats to create anatomical templates that distinguish between gray matter, white matter, and cerebrospinal fluid across the brain. Combining both the Waxholm and Tohoku atlases with their new template, the team created an anatomical atlas that provides full brain coverage. They also describe a functional atlas built from resting state fMRI data from anesthetized animals.

Altogether, the goal was to provide a more comprehensive resource and suite of tools for use in preclinical MRI imaging. “The SIGMA template and rat brain

atlases were created to bridge the gap between the basic and clinical neurosciences by providing to the preclinical neuroimaging community specific resources built to be used in conjunction with the neuroinformatic tools and methodologies commonly used in human MRI studies,” the authors write in their Discussion section. “It is our hope that these resources will help basic neuroscientists to conduct their analyses of anatomical and functional datasets in a more standardized way, with the goal of reaching more reproducible conclusions.”

The SIGMA Rat Brain Template and Atlases resources can be found online on at the [NeuroImaging Tools and Resources Collaboratory website \(NITRC\)](#).

Ellen P. Neff

Published online: 13 January 2020
<https://doi.org/10.1038/s41684-020-0480-x>

INSTECH

Oral gavage, refined.

Our plastic feeding needles have flexible tubes with soft tips to reduce trauma, and they're disposable to eliminate the hassle of cleaning.

Available in a range of sizes for mice, rats and other rodents.

www.instechlabs.com

Not sure which size you need?
 Request free samples at www.instechlabs.com

3R