

Package: ggsegFreeSurfer (via r-universe)

October 14, 2026

Title FreeSurfer Brain Atlases for the 'ggseg' Ecosystem

Version 1.0.1.9000

Description FreeSurfer cortical and subcortical brain atlases for the 'ggseg' ecosystem. Provides unified 'ggseg_atlas' objects with 2D polygon geometry and 3D mesh or vertex data, for use with 'ggseg' and 'ggseg3d'.

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Encoding UTF-8

Depends R (>= 3.5)

Imports ggseg.formats

Suggests ggseg, ggseg3d, ggplot2, knitr, rmarkdown, testthat (>= 3.0.0), vdiffr

Remotes ggsegverse/ggseg

URL <https://github.com/ggsegverse/ggsegFreeSurfer>

BugReports <https://github.com/ggsegverse/ggsegFreeSurfer/issues>

Roxygen list(markdown = TRUE)

RoxygenNote 7.3.3

Config/testthat/edition 3

Config/Needs/website ggsegverse/ggseg.docs

Repository <https://ggsegverse.r-universe.dev>

Date/Publication 2026-08-08 10:08:14 UTC

RemoteUrl <https://github.com/ggsegverse/ggsegFreeSurfer>

RemoteRef HEAD

RemoteSha 46030ca399a49a9dbd6202f03d4d95649eb7ad15

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brainstem	<i>Brainstem Substructures Atlas</i>
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Description

Atlas of the four FreeSurfer brainstem substructures (midbrain, pons, medulla oblongata and superior cerebellar peduncle), as implemented in FreeSurfer’s segment_subregions brainstem (Iglesias et al. 2015). Built from the cvs_avg35 template segmentation embedded in its full-brain aseg, so slice views show the brainstem inside cerebral cortex and white matter (rendered grey as anatomical context). Substructure colours come from FreeSurfer’s official LUT.

Usage

brainstem()

Value

A `ggseg.formats::ggseg_atlas` object (subcortical).

References

Iglesias JE, Van Leemput K, Bhatt P, Casillas C, Dutt S, Schuff N, Truran-Sacrey D, Boxer A, Fischl B (2015). "Bayesian segmentation of brainstem structures in MRI." *NeuroImage*, 113:184-195. doi:10.1016/j.neuroimage.2015.02.065

See Also

- Other ggseg_atlases: `destrieux()`, `dkt()`, `hcpa()`, `hippoamyg()`, `hypothalamus()`, `thalamus()`
- Other subcortical_atlases: `hcpa()`, `hippoamyg()`, `hypothalamus()`, `thalamus()`
- Other freesurfer_atlases: `destrieux()`, `dkt()`, `hcpa()`, `hippoamyg()`, `hypothalamus()`, `thalamus()`

Examples

brainstem()

`destrieux`*Destrieux Cortical Atlas*

Description

Brain atlas for the Destrieux cortical parcellation (aparc.a2009s) with 75 regions per hemisphere. Contains 2D polygon geometry for `ggseg::geom_brain()`.

Usage

```
destrieux()
```

Value

A `ggseg.formats::ggseg_atlas` object (cortical).

References

Destrieux C, Fischl B, Dale A, Halgren E (2010). Automatic parcellation of human cortical gyri and sulci using standard anatomical nomenclature. *NeuroImage*, 53(1), 1-15. doi:[10.1016/j.neuroimage.2010.06.010](https://doi.org/10.1016/j.neuroimage.2010.06.010)

See Also

Other `ggseg_atlases`: `brainstem()`, `dkt()`, `hcpa()`, `hippoamyg()`, `hypothalamus()`, `thalamus()`

Other `cortical_atlases`: `dkt()`

Other `freesurfer_atlases`: `brainstem()`, `dkt()`, `hcpa()`, `hippoamyg()`, `hypothalamus()`, `thalamus()`

Examples

```
destrieux()
plot(destrieux())
```

`dkt`*Desikan-Killiany-Tourville Cortical Atlas*

Description

Cortical parcellation with 32 regions per hemisphere based on the Desikan-Killiany-Tourville labeling protocol. Contains both 2D polygon geometry for `ggseg::geom_brain()` and 3D vertex indices for `ggseg3d::ggseg3d()`.

Usage

```
dkt()
```

Value

A `ggseg.formats::ggseg_atlas` object (cortical).

References

Klein A, Tourville J (2012). 101 labeled brain images and a consistent human cortical labeling protocol. *Frontiers in Neuroscience*, 6:171. doi:[10.3389/fnins.2012.00171](https://doi.org/10.3389/fnins.2012.00171)

See Also

Other `ggseg_atlas`s: `brainstem()`, `destrieux()`, `hcpa()`, `hippoamyg()`, `hypothalamus()`, `thalamus()`

Other cortical_atlas: `destrieux()`

Other `freesurfer_atlas`s: `brainstem()`, `destrieux()`, `hcpa()`, `hippoamyg()`, `hypothalamus()`, `thalamus()`

Examples

```
dkt()
plot(dkt())
```

hcpa

Anterior/Posterior Hippocampus Atlas

Description

Atlas of the hippocampus split into an anterior (head) and a posterior (body and tail) part per hemisphere, after the common HCP-style long-axis subdivision. The boundary is the midpoint of each hippocampus's own anterior-posterior extent in the FreeSurfer aseg. Built from the fsaverage5 aseg, so slice views show the hippocampus inside cerebral cortex and white matter (rendered grey as anatomical context).

Usage

```
hcpa()
```

Value

A `ggseg.formats::ggseg_atlas` object (subcortical).

See Also

Other `ggseg_atlas`s: `brainstem()`, `destrieux()`, `dkt()`, `hippoamyg()`, `hypothalamus()`, `thalamus()`

Other subcortical_atlas: `brainstem()`, `hippoamyg()`, `hypothalamus()`, `thalamus()`

Other `freesurfer_atlas`s: `brainstem()`, `destrieux()`, `dkt()`, `hippoamyg()`, `hypothalamus()`, `thalamus()`

Examples

```
hcpa()
```

hippoamyg

Hippocampal Subfields & Amygdala Nuclei Atlas

Description

FreeSurfer segmentation of the hippocampal subfields (Iglesias et al. 2015) and the nuclei of the amygdala (Saygin et al. 2017), as produced by `segment_subregions` hippo-amygdala. Built from the `cvs_avg35` template segmentation embedded in `fsaverage5`'s full aseg, so slice views show the subregions inside cerebral cortex and white matter (rendered grey as anatomical context), surrounded by the neighbouring subcortical structures. Region colours come from FreeSurfer's official LUT.

Usage

```
hippoamyg()
```

Value

A `ggseg.formats::ggseg_atlas` object (subcortical).

References

Iglesias JE, Augustinack JC, Nguyen K, Player CM, Player A, Wright M, Roy N, Frosch MP, McKee AC, Wald LL, Fischl B, Van Leemput K (2015). "A computational atlas of the hippocampal formation using ex vivo, ultra-high resolution MRI: Application to adaptive segmentation of in vivo MRI." *NeuroImage*, 115:117-137. doi:10.1016/j.neuroimage.2015.04.042

Saygin ZM, Kliemann D, Iglesias JE, van der Kouwe AJW, Boyd E, Reuter M, Stevens A, Van Leemput K, McKee A, Frosch MP, Fischl B, Augustinack JC (2017). "High-resolution magnetic resonance imaging reveals nuclei of the human amygdala: manual segmentation to automatic atlas." *NeuroImage*, 155:370-382. doi:10.1016/j.neuroimage.2017.04.046

See Also

Other `ggseg_atlas`s: [brainstem\(\)](#), [destrieux\(\)](#), [dkt\(\)](#), [hcpa\(\)](#), [hypothalamus\(\)](#), [thalamus\(\)](#)

Other `subcortical_atlas`s: [brainstem\(\)](#), [hcpa\(\)](#), [hypothalamus\(\)](#), [thalamus\(\)](#)

Other `freesurfer_atlas`s: [brainstem\(\)](#), [destrieux\(\)](#), [dkt\(\)](#), [hcpa\(\)](#), [hypothalamus\(\)](#), [thalamus\(\)](#)

Examples

```
hippoamyg()
```

hypothalamus

Hypothalamic Subunits Atlas

Description

Atlas of the five FreeSurfer hypothalamic subunits per hemisphere (anterior-inferior, anterior-superior, posterior, tubular-inferior and tubular-superior), as implemented in FreeSurfer's `mri_segment_hypothalamic_subunits` (Billot et al. 2020). Built from the `cvs_avg35` template segmentation embedded in its full-brain `aseg`, so slice views show the hypothalamus inside cerebral cortex and white matter (rendered grey as anatomical context). Subunit colours come from FreeSurfer's official LUT.

Usage

```
hypothalamus()
```

Value

A `ggseg.formats::ggseg_atlas` object (subcortical).

References

Billot B, Bocchetta M, Todd E, Dalca AV, Rohrer JD, Iglesias JE (2020). "Automated segmentation of the hypothalamus and associated subunits in brain MRI." *NeuroImage*, 223:117287. doi:10.1016/j.neuroimage.2020.117287

See Also

Other `ggseg_atlas`s: `brainstem()`, `destrieux()`, `dkt()`, `hcpa()`, `hippoamyg()`, `thalamus()`

Other `subcortical_atlas`s: `brainstem()`, `hcpa()`, `hippoamyg()`, `thalamus()`

Other `freesurfer_atlas`s: `brainstem()`, `destrieux()`, `dkt()`, `hcpa()`, `hippoamyg()`, `thalamus()`

Examples

```
hypothalamus()
```

thalamus

Thalamic Nuclei Atlas

Description

Probabilistic atlas of the 26 thalamic nuclei per hemisphere combining ex vivo MRI and histology, as implemented in FreeSurfer's `segmentThalamicNuclei.sh` (Iglesias et al. 2018). Built from the `cvs_avg35` template segmentation embedded in its full-brain `aseg`, so slice views show the thalamus inside cerebral cortex and white matter (rendered grey as anatomical context). Nucleus colours come from FreeSurfer's official LUT — the published Iglesias palette.

Usage

```
thalamus()
```

Value

A `ggseg.formats::ggseg_atlas` object (subcortical).

References

Iglesias JE, Insausti R, Lerma-Usabiaga G, Bocchetta M, Van Leemput K, Greve D, van der Kouwe A, Caballero-Gaudes C, Paz-Alonso P (2018). "A probabilistic atlas of the human thalamic nuclei combining ex vivo MRI and histology." *NeuroImage*, 183:314-326. doi:[10.1016/j.neuroimage.2018.08.012](https://doi.org/10.1016/j.neuroimage.2018.08.012)

See Also

Other `ggseg_atlases`: [brainstem\(\)](#), [destrieux\(\)](#), [dkt\(\)](#), [hcpa\(\)](#), [hippoamyg\(\)](#), [hypothalamus\(\)](#)

Other `subcortical_atlases`: [brainstem\(\)](#), [hcpa\(\)](#), [hippoamyg\(\)](#), [hypothalamus\(\)](#)

Other `freesurfer_atlases`: [brainstem\(\)](#), [destrieux\(\)](#), [dkt\(\)](#), [hcpa\(\)](#), [hippoamyg\(\)](#), [hypothalamus\(\)](#)

Examples

```
thalamus()
```

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