User Study - Mouse

Evaluation of the 2D-visualization of spatial brain networks in the adult mouse

We developed a tool that visualizes brain connectivity data as a Node-Link diagram to map neurobiological 3D networks in 2D while maintaining spatial relations and minimizing occlusions and clutter. A node represents a specific brain region. It is labeled with an abbreviation of the region's name, including its brain hemisphere (left or right). The colour encoding is derived from the Allen Brain Atlas, where every brain structure is assigned a distinct colour based on its hierarchical position in the brain. The links represent structural connections between regions as described by Oh SW. et al [1].

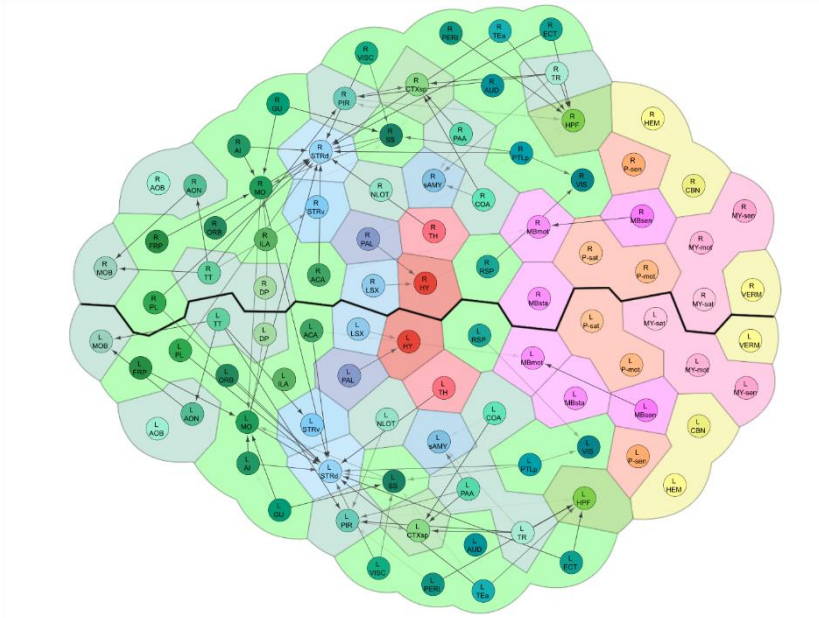
The strength of a connection is represented by its opacity, making weak connections more transparent. The background represents the overlaying hierarchy. Its colours are again derived from the Allen Mouse Brain Reference Atlas [2]. This survey consists of 4 parts, while the first 2 parts focus on the overall orientation and aesthetics of the visualizations the 3rd part aims mainly on the representation of the edges. Questions include the evaluation of clarity - meaning the orientation within the anatomical structures, quick recognition of connections - as well as aesthetics of the visualization. Part 4 includes demographic questions.

[1] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5102064/
[2] https://atlas.brain-map.org/atlas?atlas=2

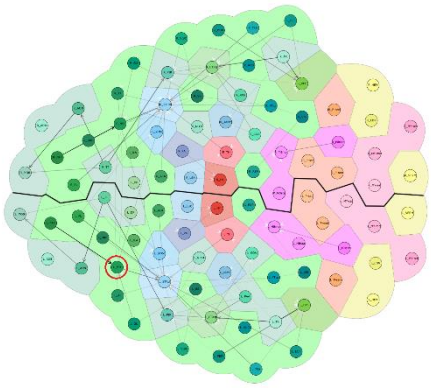
1. Identifying Nodes/Connections:

This is an image of a mouse brain from the transversal view.

1.1. Find the left Frontal pole, cerebral cortex (L_FRP) and click on its target node with the strongest connection.

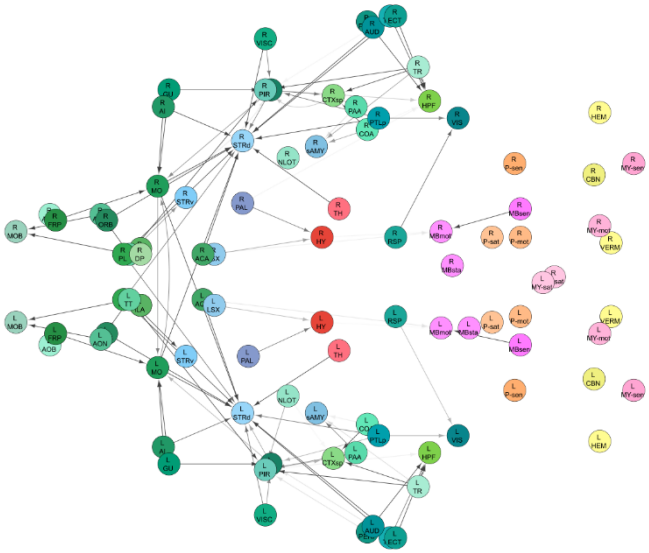


Solution:

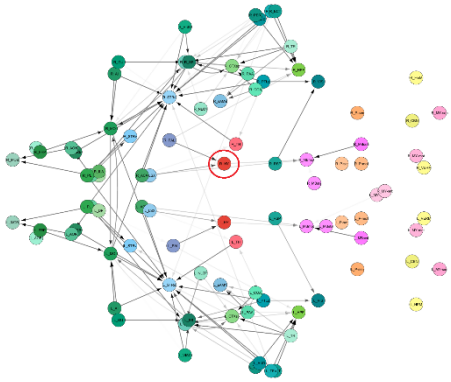


x: 430(+-25) y: 734(+-25)

1.2. **Find the right Palladium (R_PAL) and click on its target node with the strongest connection.**

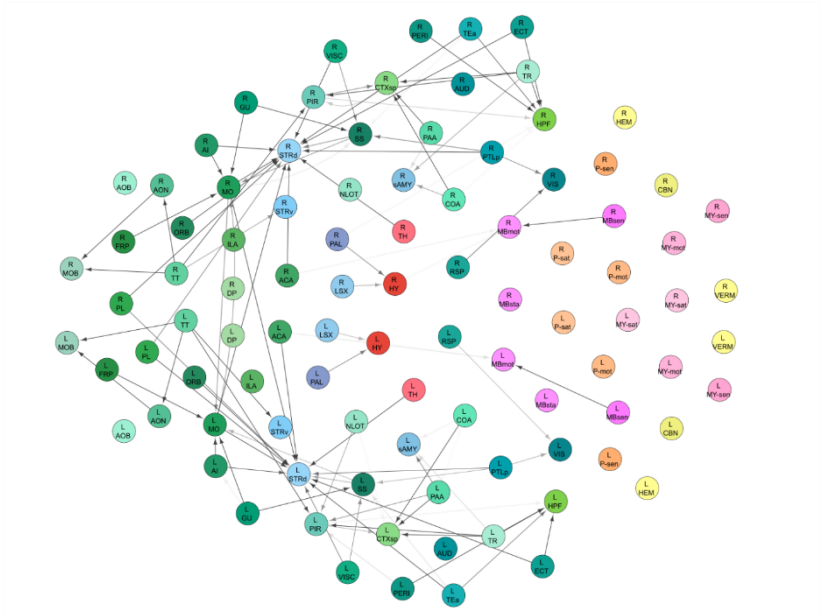


Solution:

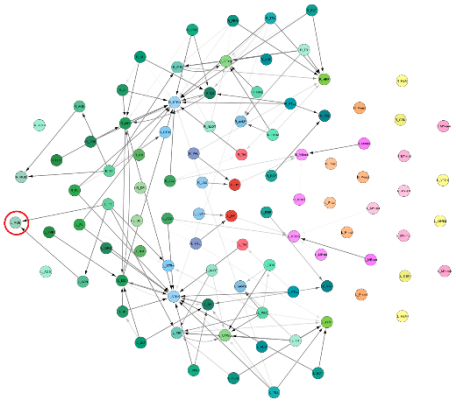


x: 713 (+-25) y: 460(+-25)

1.3. **Find the left anterior olfactory nucleus (L_AON) and click on its target node with the strongest connection.**

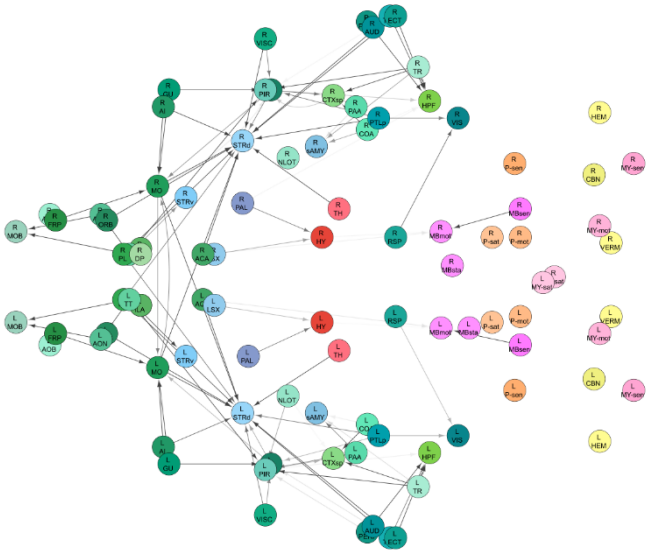


Solution:

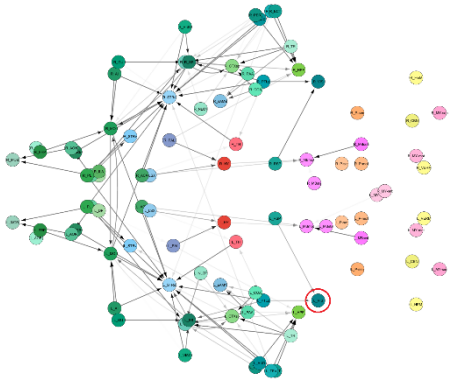


x: 285 (+-25) y: 721 (+-25)

1.4. **Find the left Retrosplenial area (L_RSP) and click on its target node with the strongest connection.**

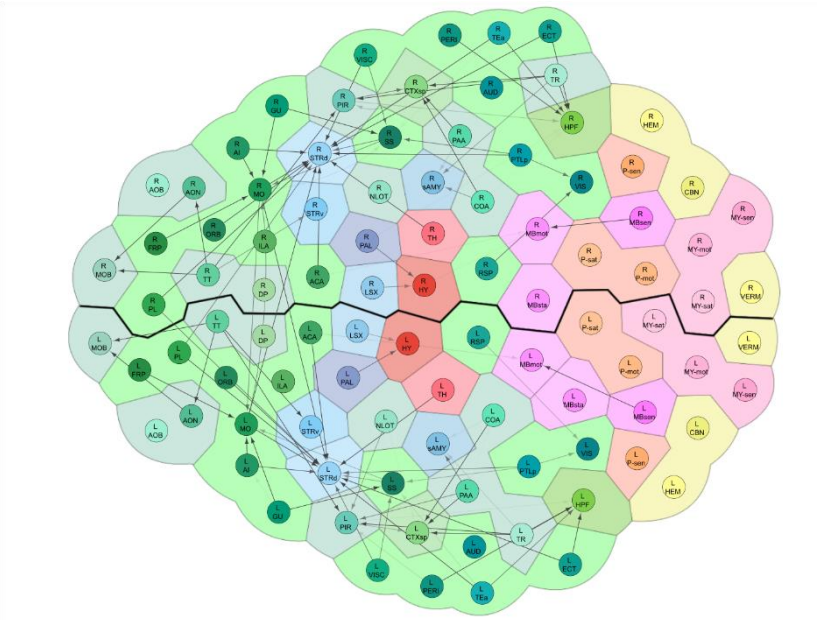


Solution:

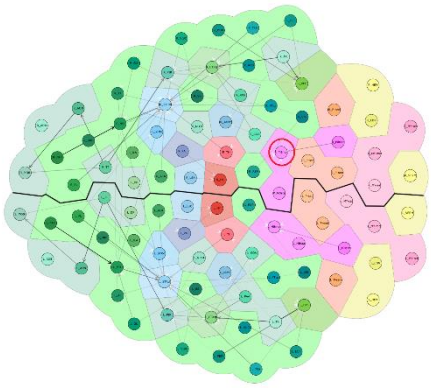


x: 950(+-25) y: 806(+-25)

1.5. **Find the right sensory related Midbrain (R_MBsen) and click on its target node with the strongest connection.**

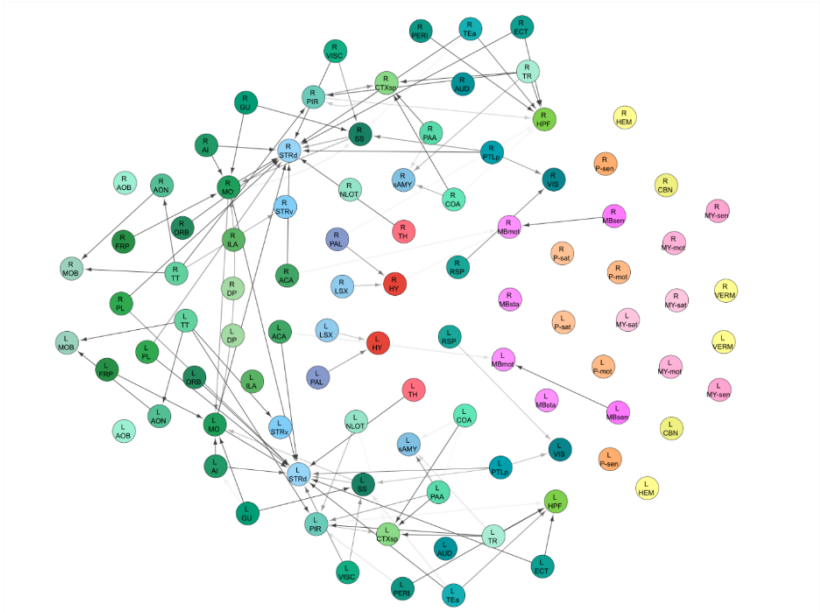


Solution:

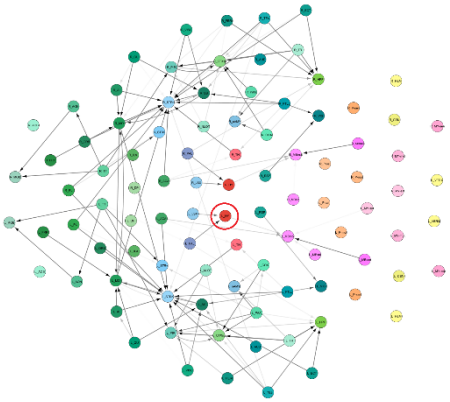


x: 934 (+-25) y: 397(+-25)

1.6. **Find the left Lateral sepal complex (L_LSX) and click on its target node with the strongest connection.**



Solution:



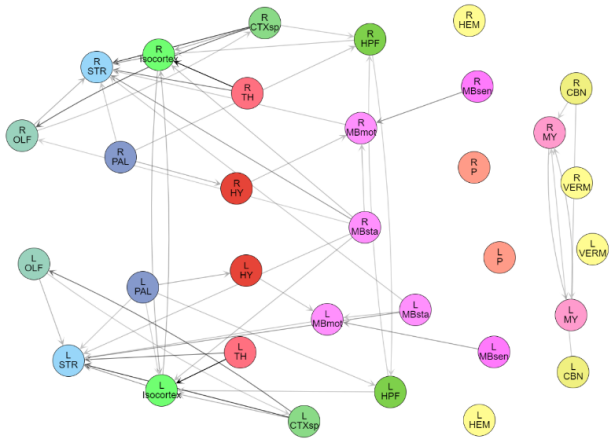
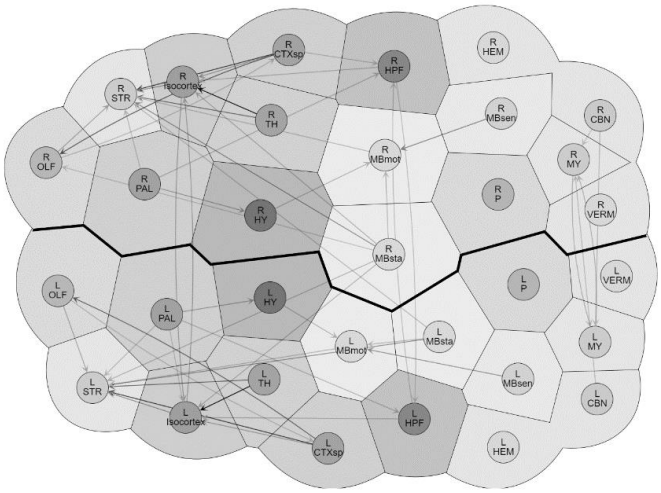
x: 663(+-25) y: 595(+-25)

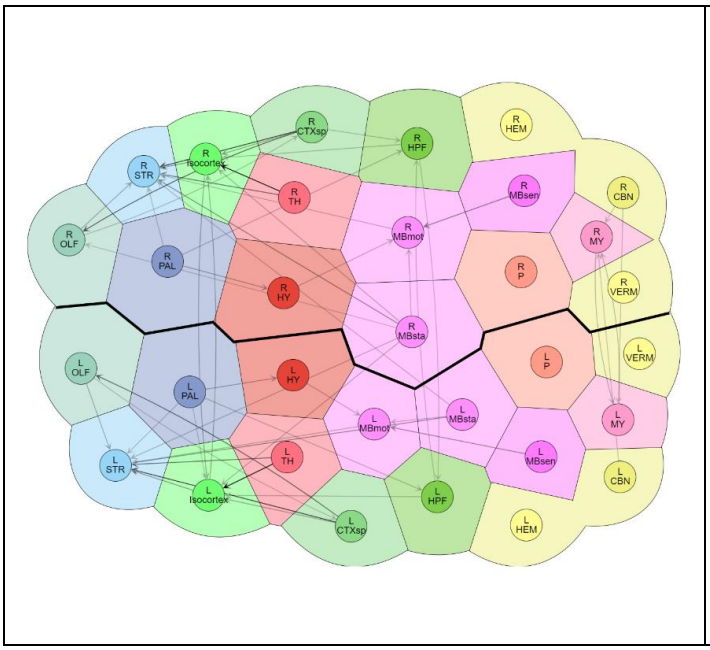
2. Visualization of Anatomical Context

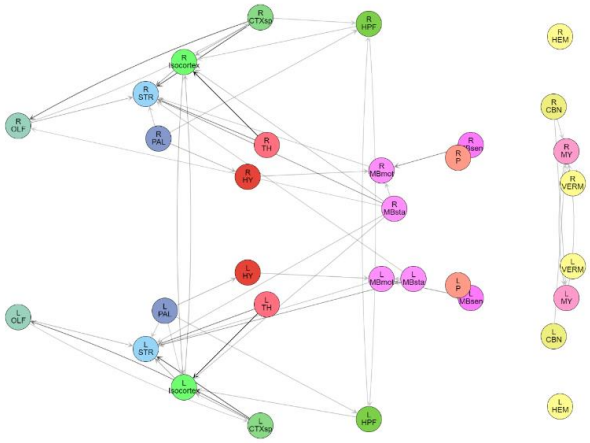
2.1. Full networks

Following figures show visualizations of networks on different hierarchical levels of the mouse brain.

Per hierarchy, choose the visualization that you prefer in terms of clarity and aesthetics.

a	**b**
	
c	**d**





2.1.1. Rank those visualisations in terms of clarity (e.g. easy orientation, quick finding of strong connections), one being the best result for you.

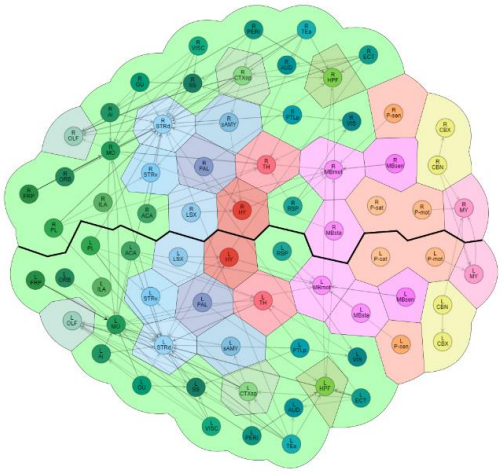
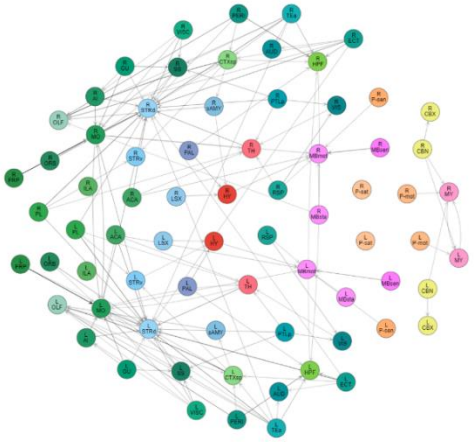
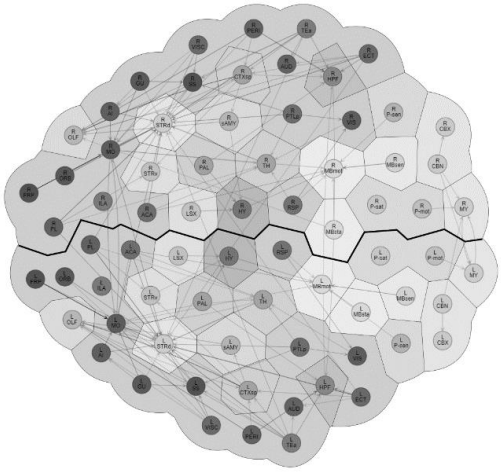
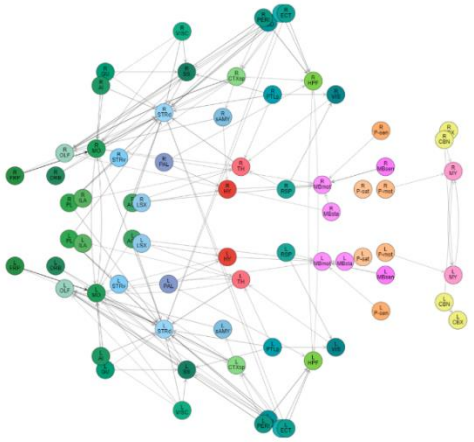
- a
- b
- c
- d

2.1.2. Which of those visualisations would be best suited for a figure in a paper?

- a
- b
- c
- d
- none

2.1.3. Which of those visualisations would be best suited for educational purpose or demonstration?

- a
- b
- c
- d
- none

a	b
	
c	**d**
	

2.1.4. Rank those visualisations in terms of clarity (e.g. easy orientation, quick finding of strong connections), one being the best result for you.

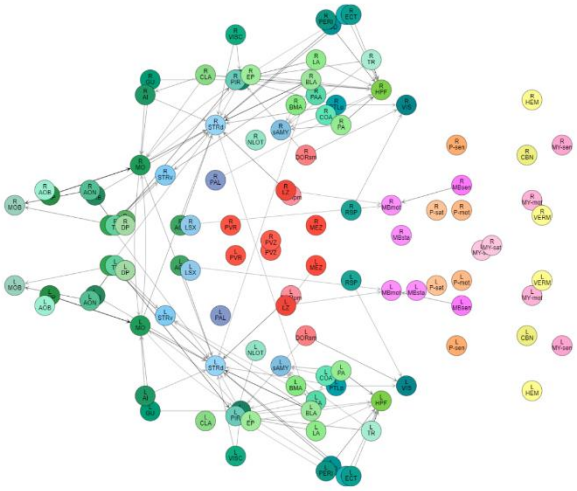
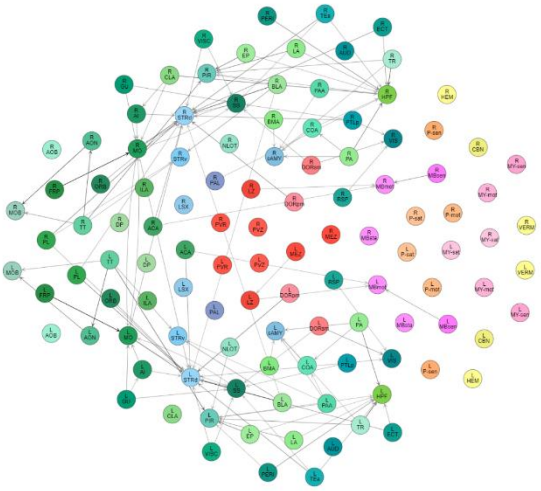
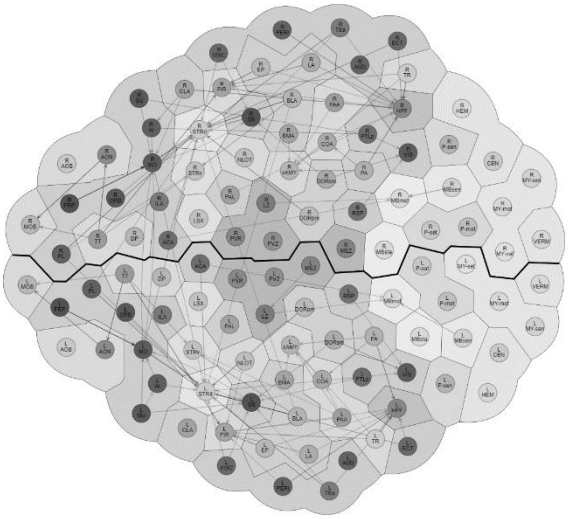
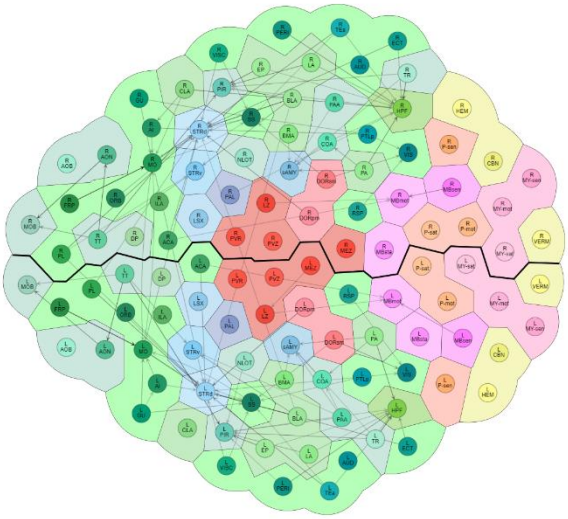
- a
- b
- c
- d

2.1.5. Which of those visualisations would be best suited for a figure in a paper?

- a
- b
- c
- d
- none

2.1.6. Which of those visualisations would be best suited for educational purpose or demonstration?

- a
- b
- c
- d
- none

a	b
	
c	**d**
	

2.1.7. Rank those visualisations in terms of clarity (e.g. easy orientation, quick finding of strong connections), one being the best result for you.

- a
- b
- c
- d

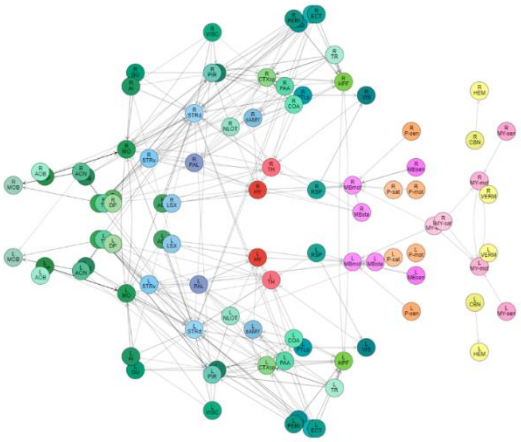
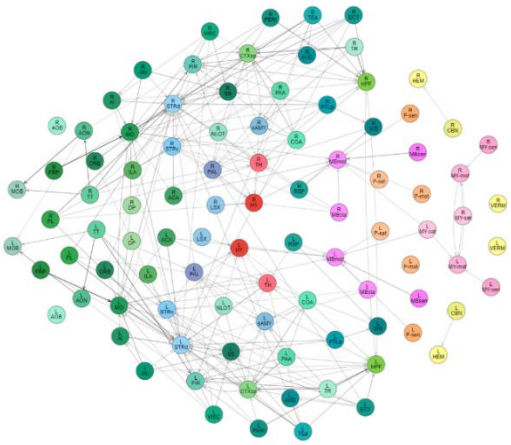
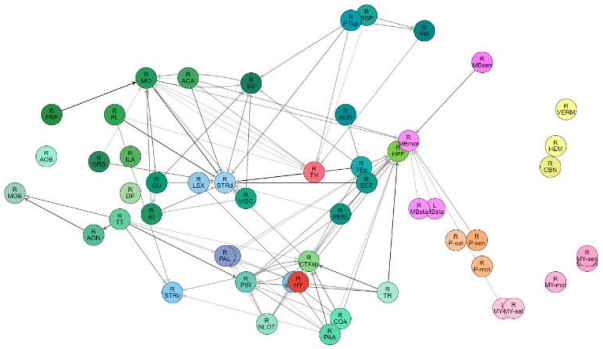
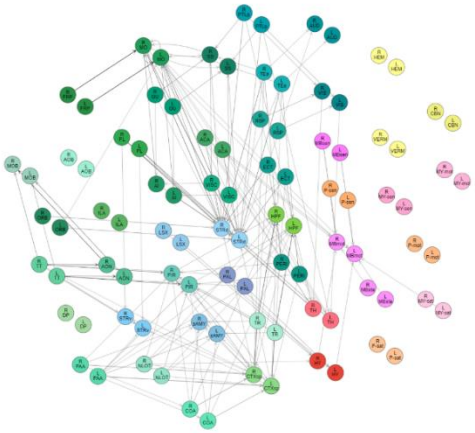
2.1.8. Which of those visualisations would be best suited for a figure in a paper?

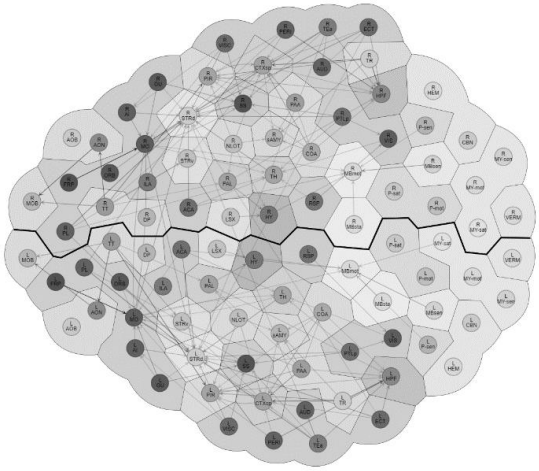
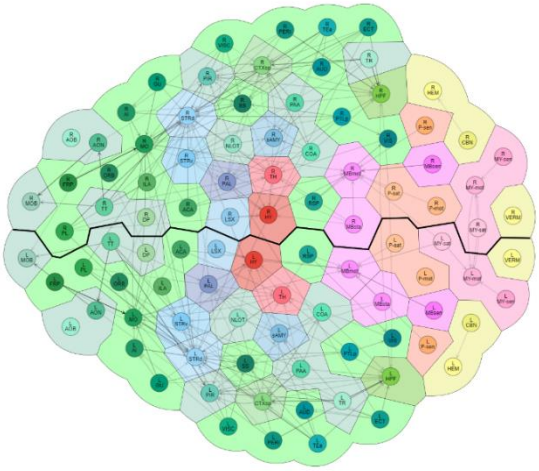
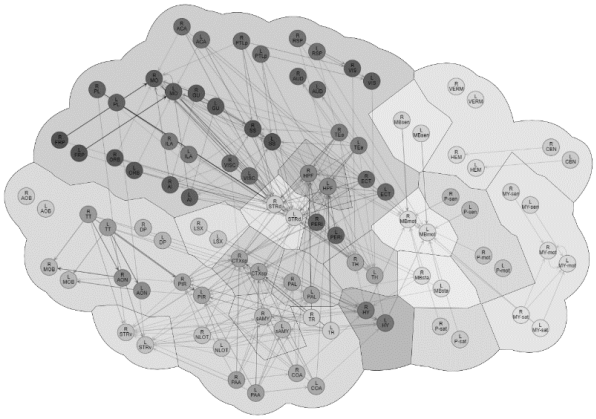
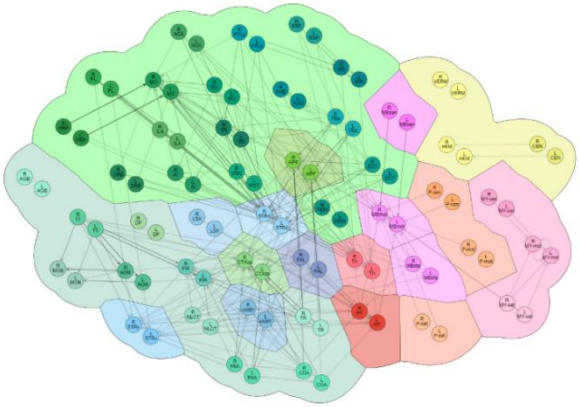
- a
- b
- c
- d
- none

2.1.9. Which of those visualisations would be best suited for educational purpose or demonstration?

- a
- b
- c
- d
- none

Following figures show pairs of the same network the transversal and sagittal view.

view	a	b
transversal		
sagittal		

	c	d
transversal		
sagittal		

2.1.10. In which pair of figures is it easiest to relate brain regions in the sagittal and transversal view?

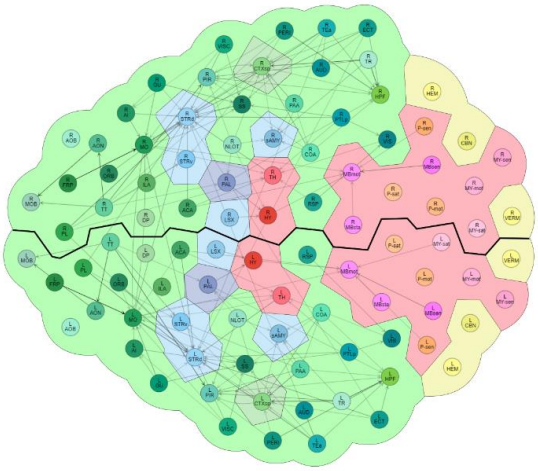
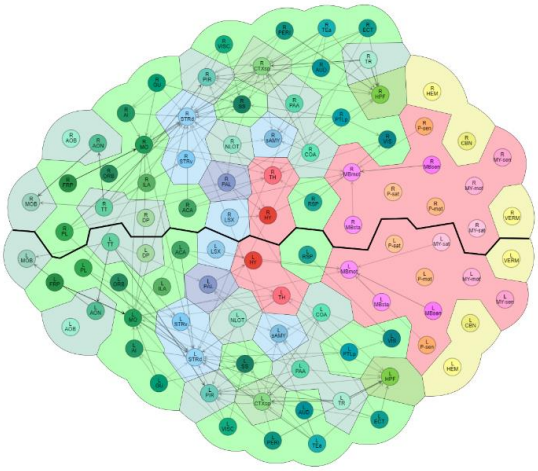
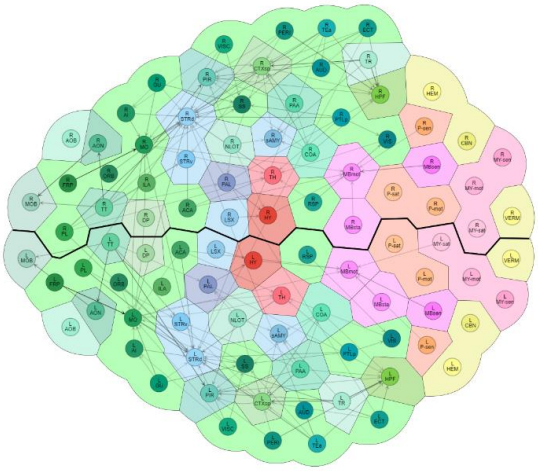
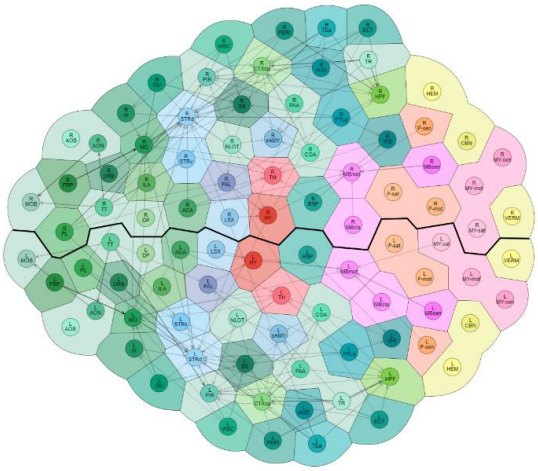
- a
- b
- c
- d

2.1.11. Rank those visualisations in terms of clarity (e.g. easy orientation, quick finding of strong connections), one being the best result for you.

- a
- b
- c
- d

Parcellation

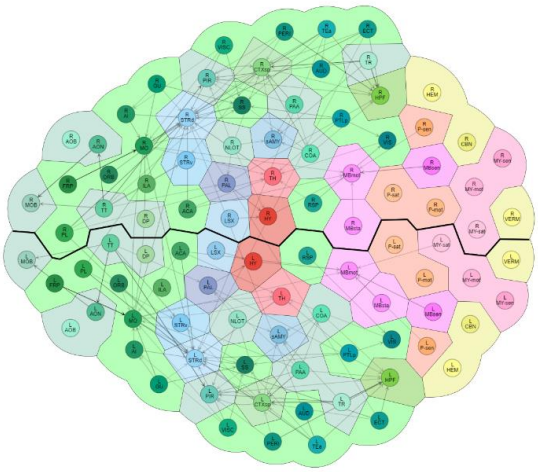
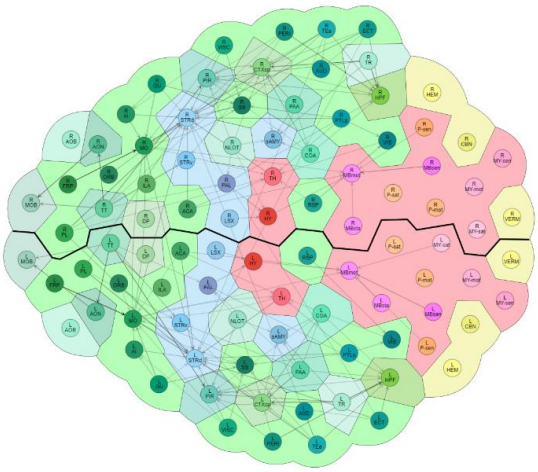
Following figures show the same brain network, but the amount of parcellations, respectively, the colours in the background differ.

a	**b**
	
c	**d**
	

2.1.12. Rank those visualisations in terms of clarity (e.g. easy orientation, quick finding of strong connections), one being the best result for you.

- a
- b
- c
- d

Compare following figures. One of them shows more detail in anatomical bigger regions, while the other shows more detail in highly connected regions.

a	**b**
	

2.1.13. Which one do you think focuses on highly connected regions?

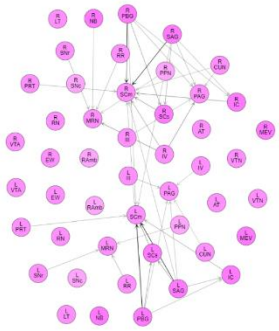
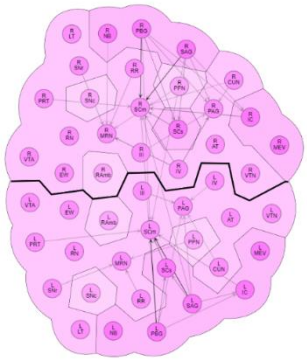
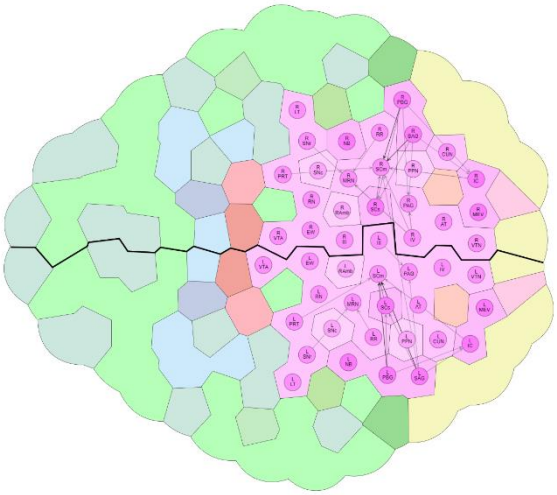
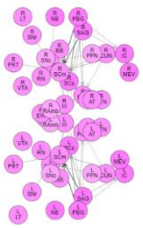
- a
- **b**

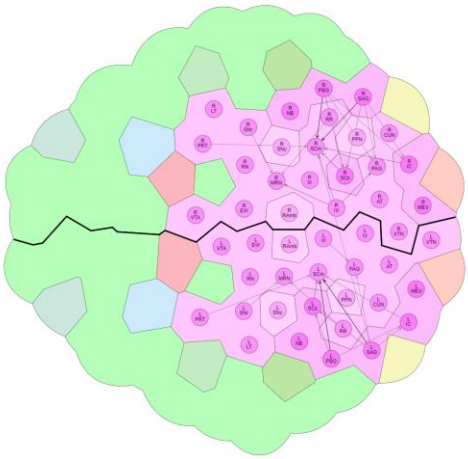
2.1.14. Which of those visualisations would you prefer in terms of clarity (e.g. easy orientation, quick finding of strong connections)?

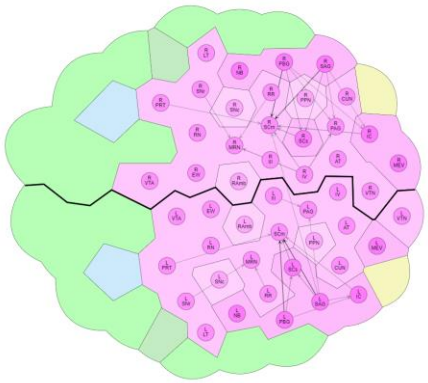
- a
- b

2.2. Subnetworks

Following figures represent different visualizations of the same network in the **midbrain**.

a	B
3.partialNetworks/mouse_midbrain_tran_lay.png 	3.partialNetworks/mouse_midbrain_tran_inr0.png 
c	**d**
	
e	**f**





2.2.1. Rank those visualisations in terms of clarity (e.g. easy orientation, quick finding of strong connections), one being the best result for you.

- a
- b
- c
- d
- e
- f

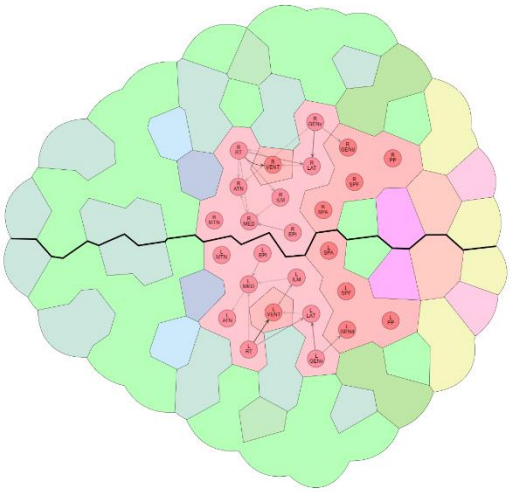
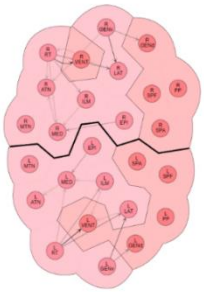
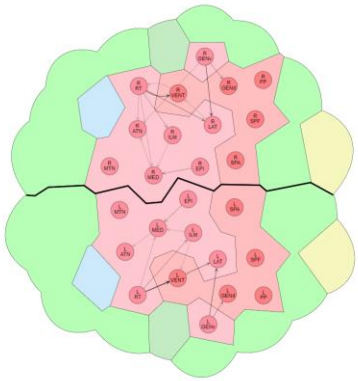
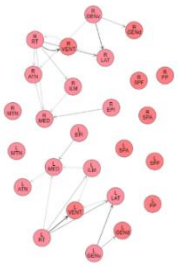
2.2.2. Which of those visualisations would be best suited for a figure in a paper?

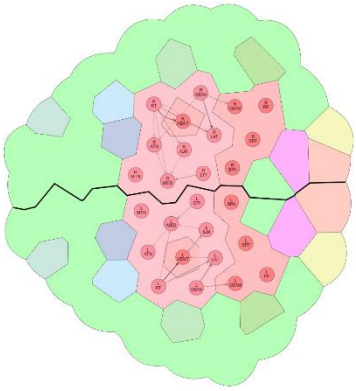
- a
- b
- c
- d
- e
- f
- none

2.2.3. Which of those visualisations would be best suited for educational purpose or demonstration?

- a
- b
- c
- d
- e
- f
- none

Following figures represent different visualizations of the same network in the **thalamus**.

a	**b**
	
c	**d**
	

e	**f**
	

2.2.4. Rank those visualisations in terms of clarity (e.g. easy orientation, quick finding of strong connections), one being the best result for you.

- a
- b
- c
- d
- e
- f

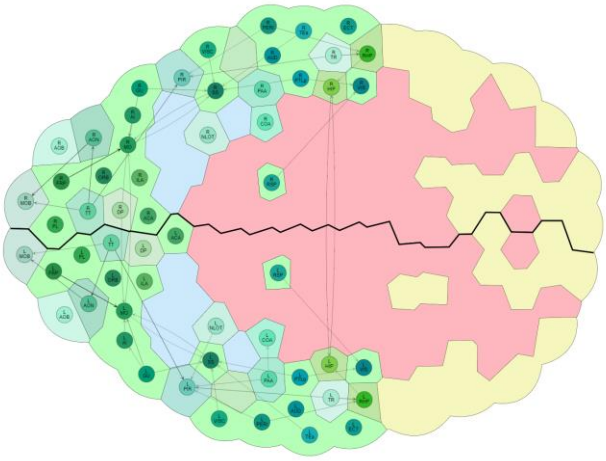
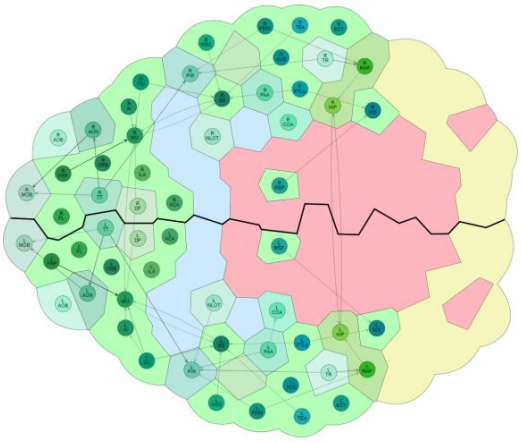
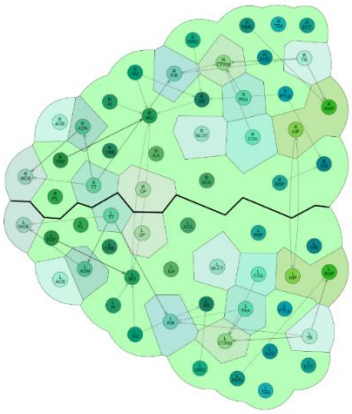
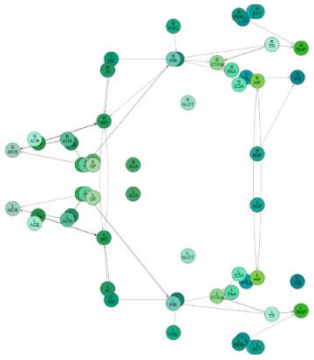
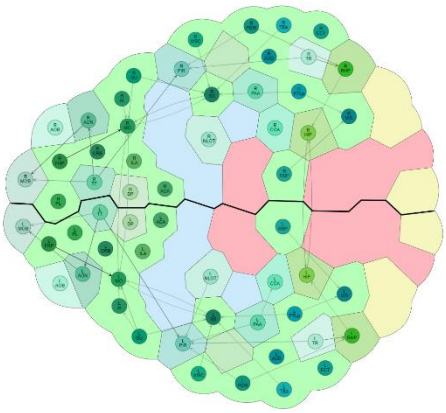
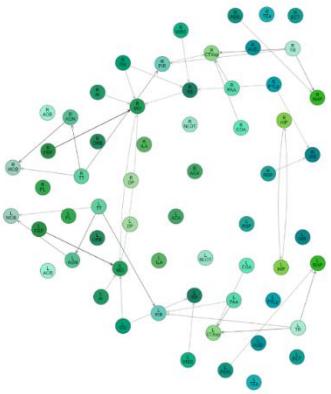
2.2.5. Which of those visualisations would be best suited for a figure in a paper?

- a
- b
- c
- d
- e
- f
- none

2.2.6. Which of those visualisations would be best suited for educational purpose or demonstration?

- a
- b
- c
- d
- e
- f
- none

Following figures represent different visualizations of the same network in the **cortex**.

a	**b**
	
c	**d**
	
e	**f**
	

2.2.7. Rank those visualisations in terms of clarity (e.g. easy orientation, quick finding of strong connections), one being the best result for you.

- a
- b
- c
- d
- e
- f

2.2.8. Which of those visualisations would be best suited for a figure in a paper?

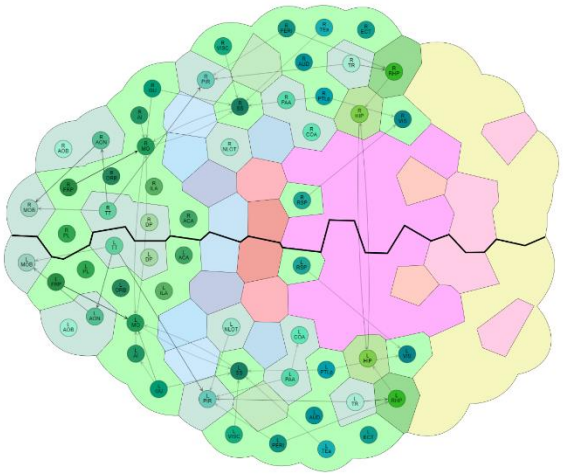
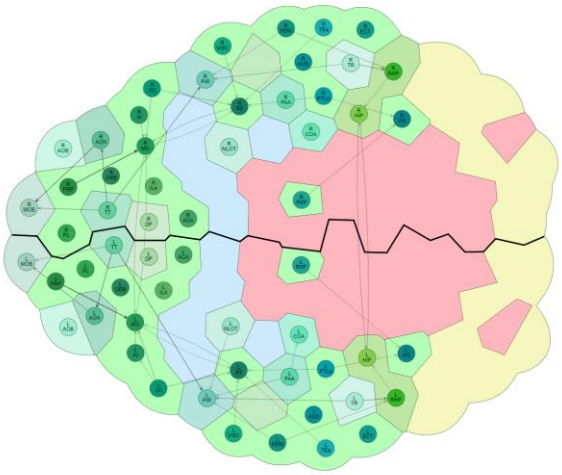
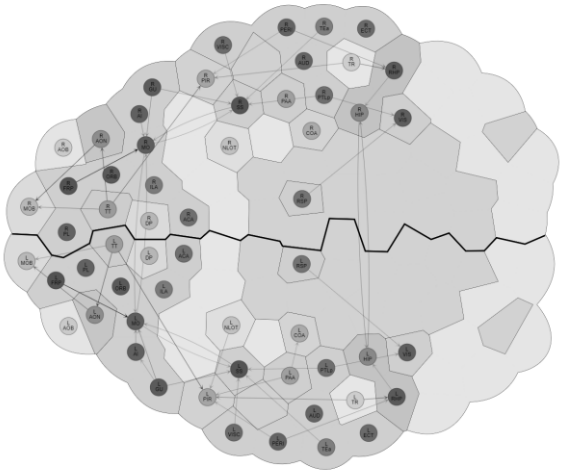
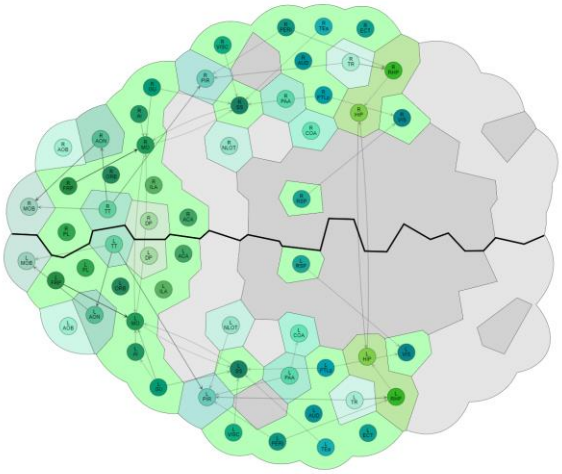
- a
- b
- c
- d
- e
- f
- none

2.2.9. Which of those visualisations would be best suited for educational purpose or demonstration?

- a
- b
- c
- d
- e
- f
- none

2.3. Coloring

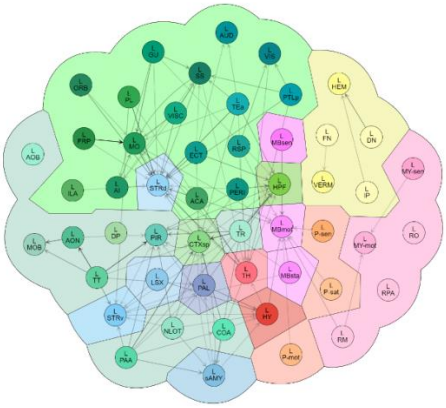
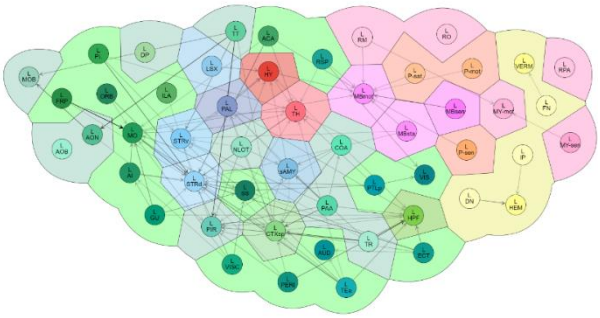
Following figures show the same brain network of the **cortex** with different background coloration.

a	b
	
c	**d**
	

2.3.1. Rank those visualisations in terms of clarity (e.g. easy orientation, quick finding of strong connections), one being the best result for you.

- a
- b
- c
- d

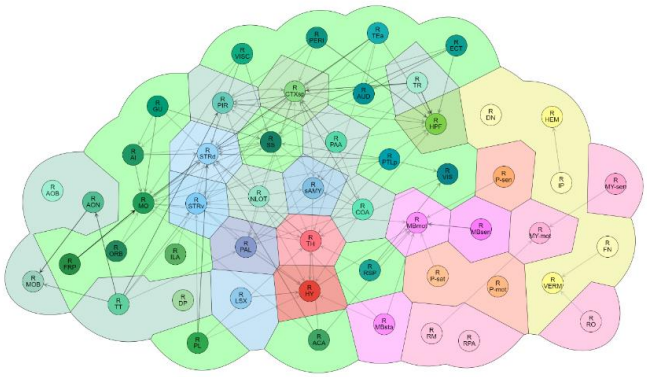
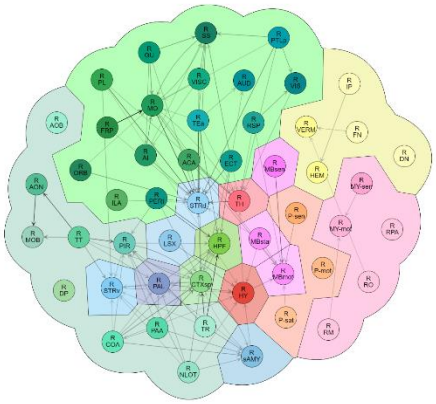
There two figures show a network of the left hemisphere of the mouse brain in the sagittal and the tansversal view.

a	**b**
	

2.3.2. Which one is sagittal?

- **a**
- b

There two figures show a network of the right hemisphere of the mouse brain in the sagittal and the tansversal view.

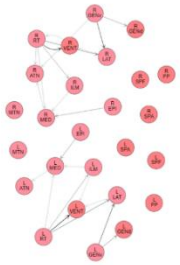
a	**b**
	

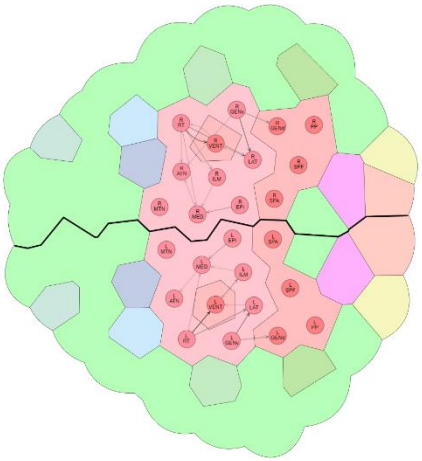
2.3.3. Which one is sagittal?

- a
- **b**

These two figures represent a network in the **thalamus** from the transversal perspective.

2.3.4. How helpful is the background of the right figure regarding your general orientation?



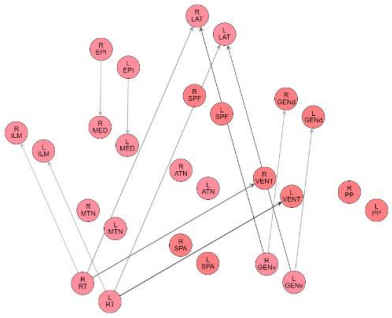


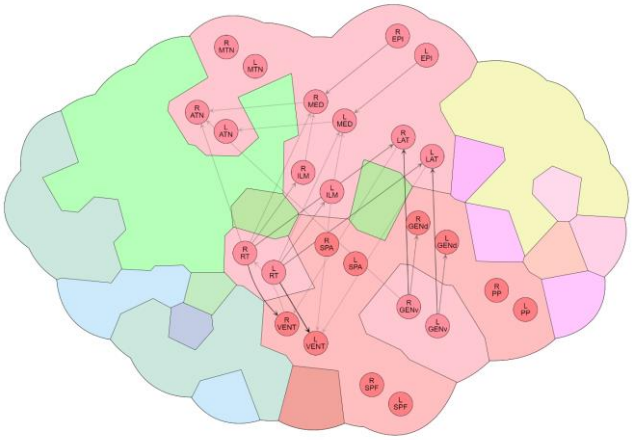
not at all very helpful

1 2 3 4 5

These two figures represent a network in the **thalamus** from the sagittal perspective.

2.3.5. How helpful is the background of the right figure regarding your general orientation?



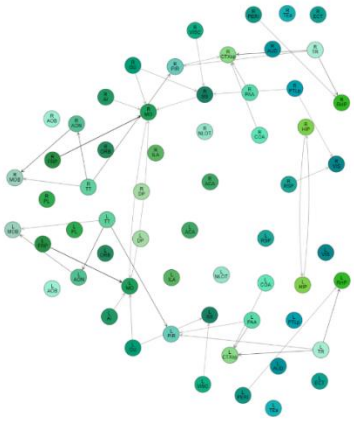


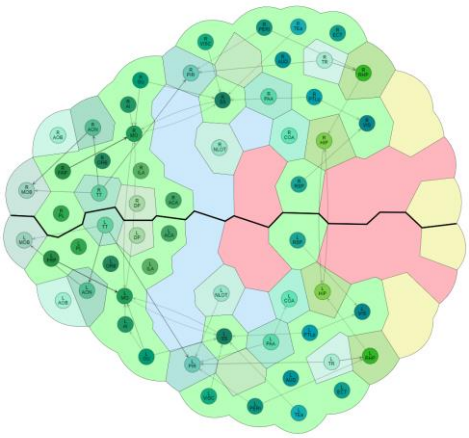
not at all very helpful

1 2 3 4 5

These two figures represent a network in the **cortex** from the transversal perspective.

2.3.6. How helpful is the background of the right figure regarding your general orientation?





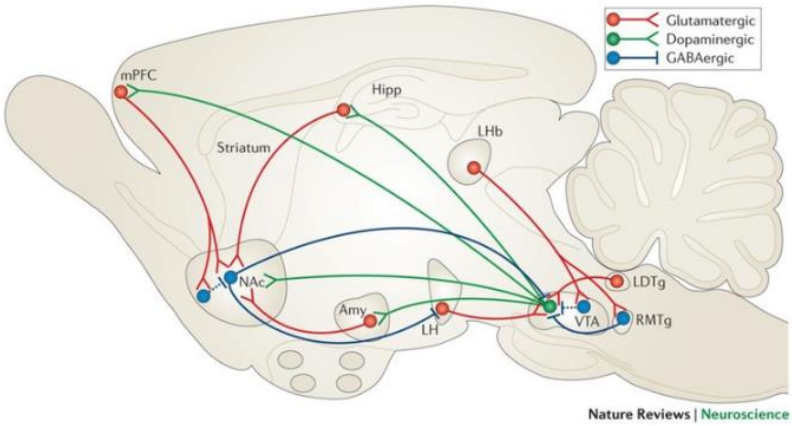
not at all very helpful

1 2 3 4 5

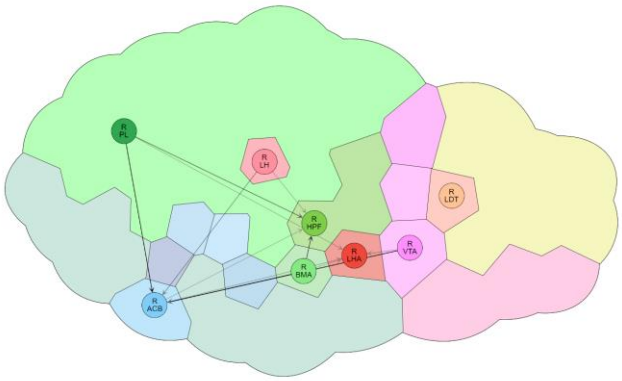
2.4. Comparison to literature

The figure on the left shows the dopaminergic pathay in sagittal view. We recreated this network on the right side. Note that the edges have different meanings.

Compare the overall aesthetics and structure.



S. J. Russo and E. J. Nestler. The brain reward circuitry in mood disorders. *Nature Reviews Neuroscience*, 14(9):609–625, 2013.

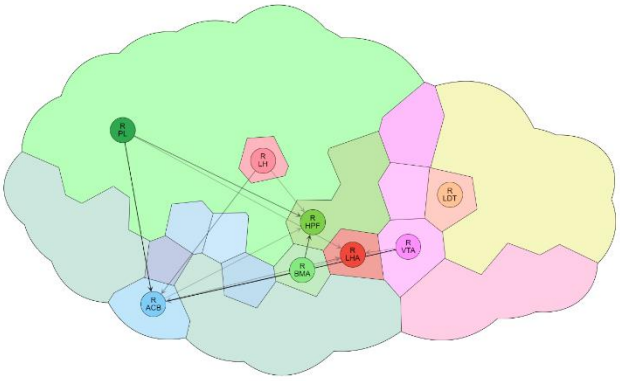
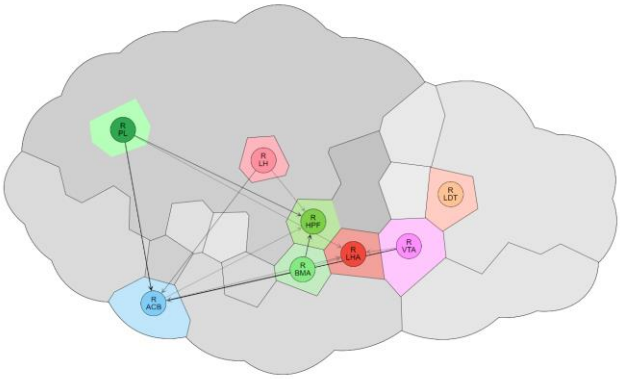


2.4.1. How comparable are the anatomical structures in both figures?

not at all very

1 2 3 4 5

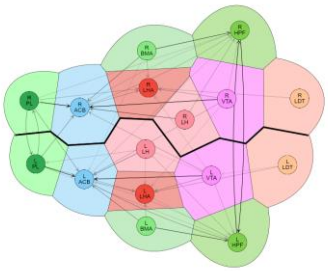
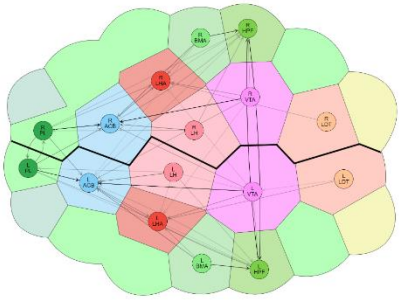
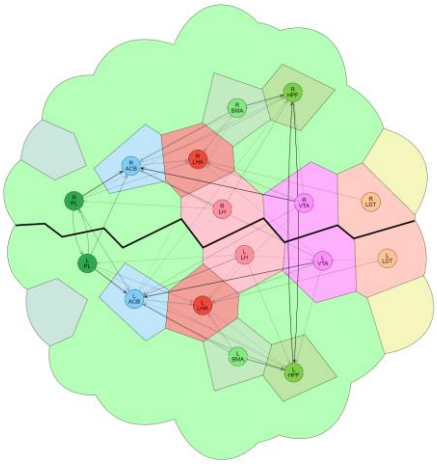
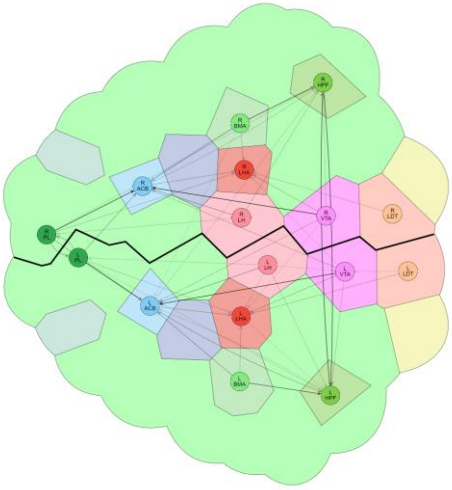
Following figures show the dopaminergic network in sagittal view.

a	**b**
	

2.4.2. Which of those visualisations would you prefer in terms of <u>clarity</u> (e.g. easy orientation, quick finding of strong connections)?

- a
- b

Following figures show the dopaminergic network in transversal view with varying amount of context in the background.

a	**b**
	
c	**d**
	

2.4.3. Rank those visualisations in terms of clarity (e.g. easy orientation, quick finding of strong connections), one being the best result for you.

- a
- b
- c
- d

2.4.4. Which of those visualisations would be best suited for a figure in a paper?

- a
- b
- c
- d
- none

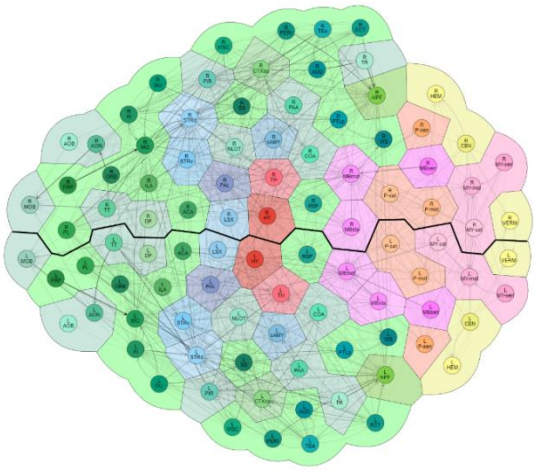
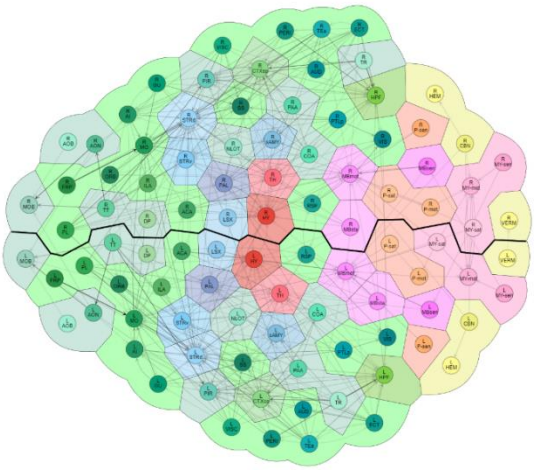
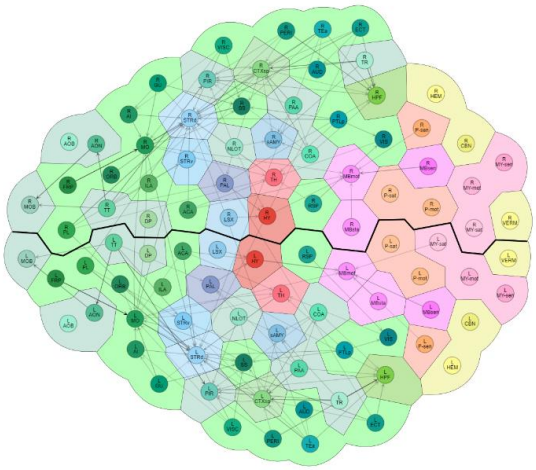
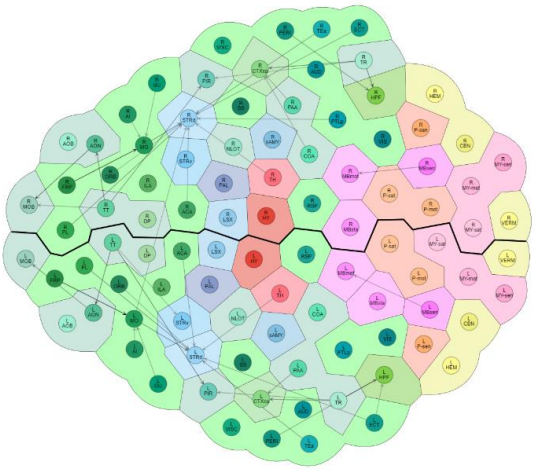
2.4.5. Which of those visualisations would be best suited for educational purpose or demonstration?

- a
- b
- c
- d
- none

---

3. Edge Visualization

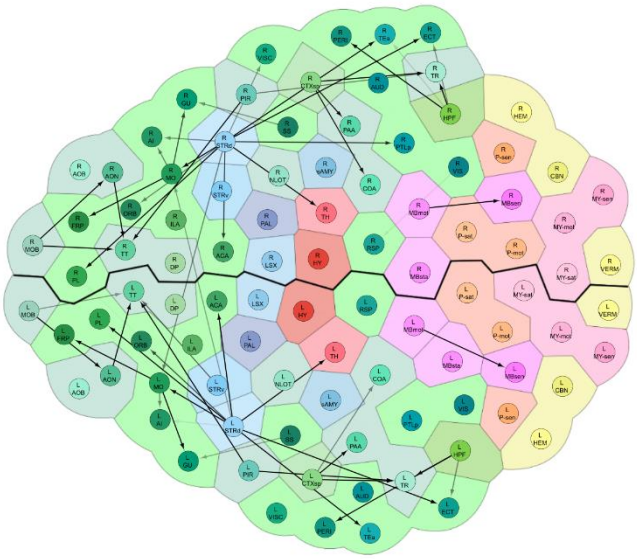
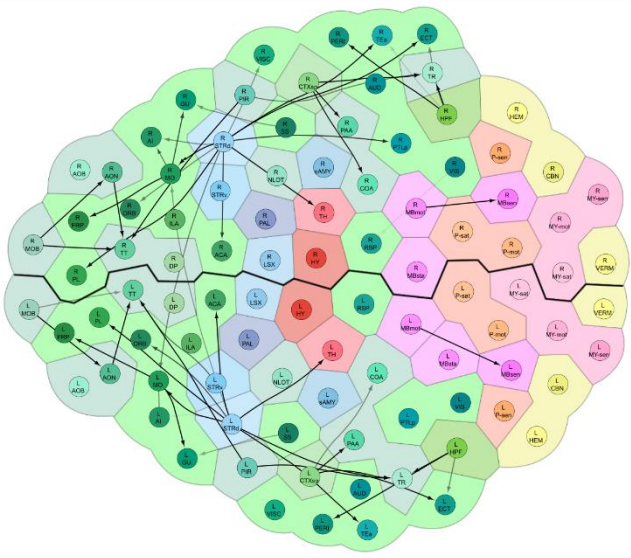
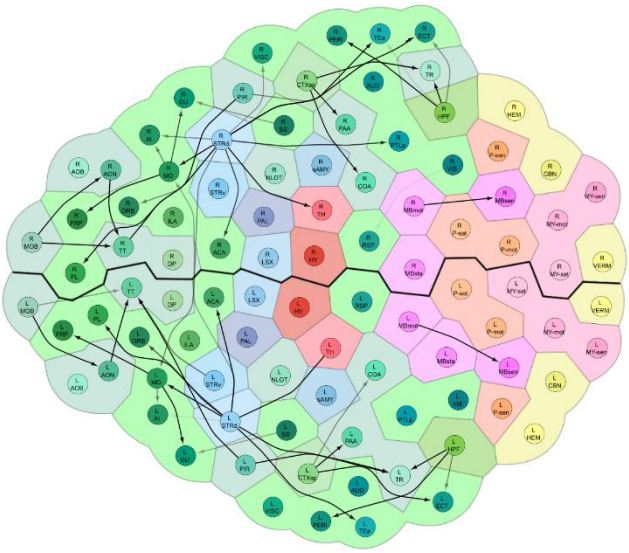
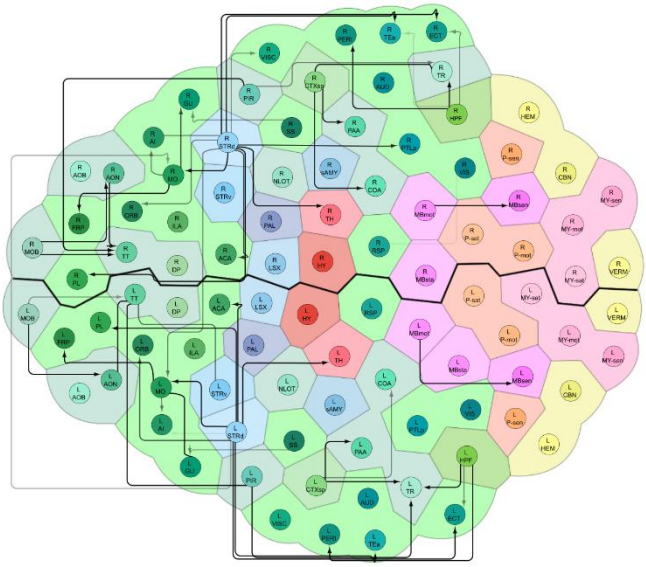
Following figures show the same network using different amounts of edges.

a	**b**
	
c	**d**
	

3.1. Which of those visualisations has the best balance between clarity and information content?

- a
- b
- c
- d

Following figures show the same network using different edge layouts.

a	**b**
	
c	**d**
	

3.2. Rank those visualisations in terms of clarity (e.g. easy orientation, quick finding of strong connections), one being the best result for you.

- a
- b
- c
- d

3.3. Which of those visualisations would be best suited for a figure in a paper?

- a
- b
- c
- d
- none

3.4. Which of those visualisations would be best suited for educational purpose or demonstration?

- a
- b
- c
- d
- none

4. Demographic Data

4.1. What is your current position?

- Professor
- Principle Investigator (Research Group Leader)
- Postdoc Researcher
- PhD Student
- Master Student
- Bachelor Student
- Amateur

4.2. What is your expertise?

- Neuroscience
- Computational Biology
- Bioinformatics
- Computer Science
- Others

4.3. Are you familiar with the Allan Brain Atlas of the adult mouse and its colour scheme?

- yes
- no

4.4. Are you colour-blind or do you have a colour weakness?

- red-green weakness/blindness
- yellow-blue weakness/blindness
- both
- none

4.5. What is your gender?

- female
- male
- other

User Study - Human

Evaluation of the 2D-visualization of spatial brain networks in the human

We developed a tool that visualizes brain connectivity data as a Node-Link diagram to map neurobiological 3D networks in 2D while maintaining spatial relations and minimizing occlusions and clutter. A node represents a specific brain region. It is labeled with an abbreviation of the region's name, including its brain hemisphere (left or right). The colour encoding is derived from the Allen Brain Atlas, where every brain structure is assigned a distinct colour based on its hierarchical position in the brain. The links represent functional resting-state connectivity between regions as published in the WU-Minn Human Connectome Project Data [1].

The strength of a connection is represented by its opacity, making weak connections more transparent. The background represents the overlaying hierarchy. Its colours are again derived from the Allen Human Brain Reference Atlas [2]. This survey consists of 4 parts, while the first 2 parts focus on the overall orientation and aesthetics of the visualizations the 3rd part aims mainly on the representation of the edges. Questions include the evaluation of clarity - meaning the orientation within the anatomical structures, quick recognition of connections - as well as aesthetics of the visualization. Part 4 includes demographic questions.

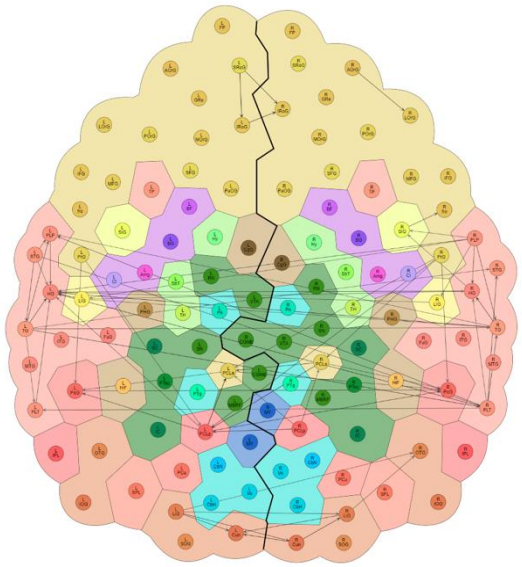
[1] db.humanconnectome.org

[2] https://atlas.brain-map.org/atlas?atlas=265297125

1. Identifying Nodes/Connections:

This is an image of a human brain from the transversal view.

Find x and click on its target node with the strongest connection.



1.1. **Find the left superior rostral gyrus (L SRoG) and click on its target node with the strongest connection.**

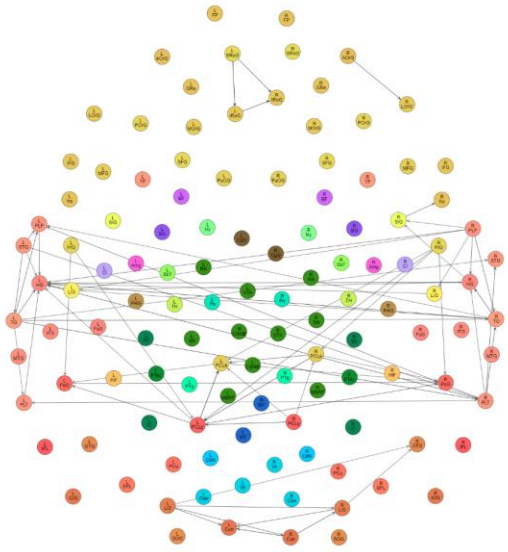
Solution: L IRoG

X: 685, Y: 254

1.2. **Find the right short insular gyri (R SIG) and click on its target node with the strongest connection.**

Solution: R fro

X: 1054, Y: 406



1.3.**Find the left lingual gyrus (R AOrG) and click on its target node with the strongest connection.**

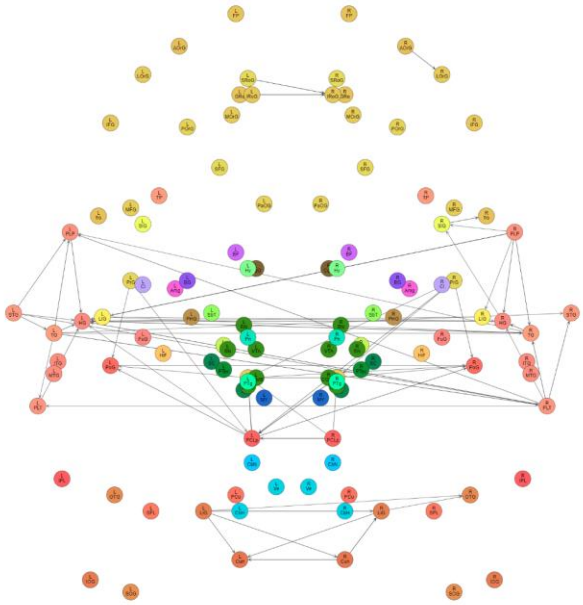
Solution: R LOrG

X: 992, Y: 237

1.4.**Find the left paracentral lobule, posterior part (L PCLp) and click on its target node with the strongest connection.**

Solution: L PCLa

X: 660, Y: 699



1.5.**Find the left lingual gyrus (L LiG) and click on its target node with the strongest connection.**

Solution: L Cun

X: 630, Y: 984

1.6.**Find the right planum temporale (R PLT) and click on its target node with the strongest connection.**

Solution: R HG

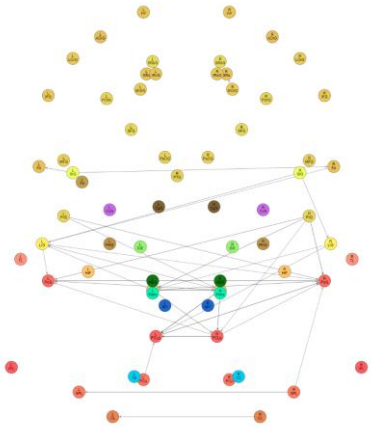
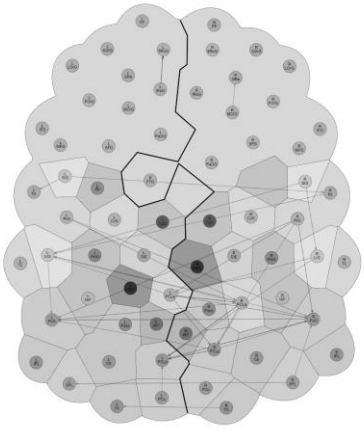
X: 1081, Y: 574

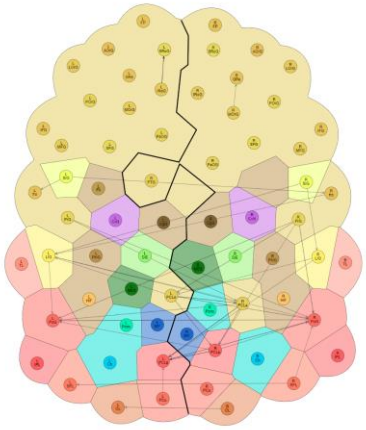
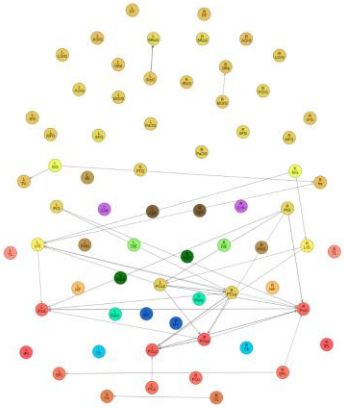
2. Visualization of Anatomical Context

2.1. **Full networks**

Following figures show visualizations of networks on different hierarchical levels of the human brain.

Per hierarchy, choose the visualization that you prefer in terms of clarity and aesthetics.

a	**b**
	
c	**d**

2.1.1. Rank those visualisations in terms of clarity (e.g. easy orientation, quick finding of strong connections), one being the best result for you.

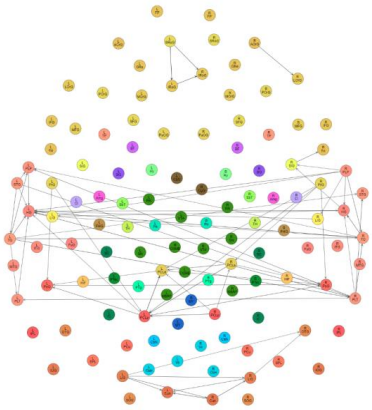
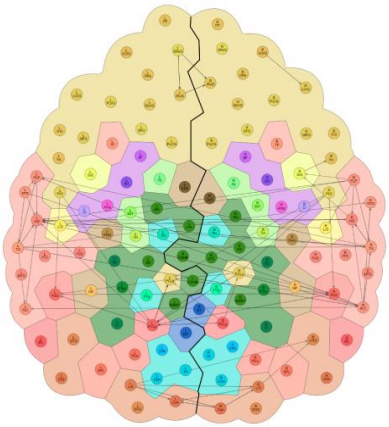
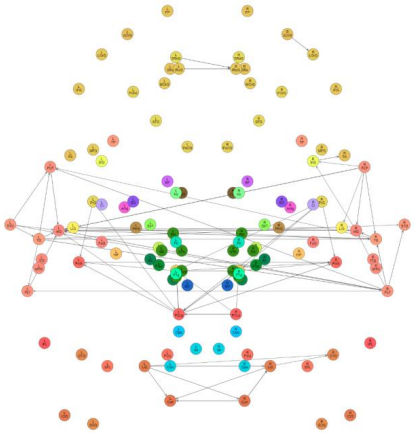
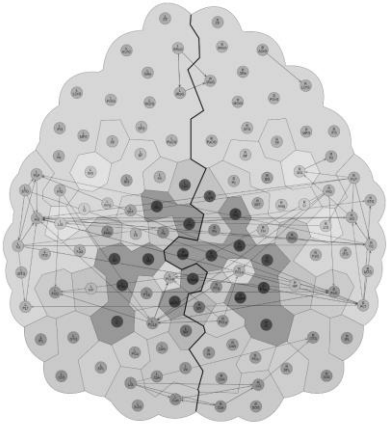
- a
- b
- c
- d

2.1.2. Which of those visualisations would be best suited for a figure in a paper?

- a
- b
- c
- d
- none

2.1.3. Which of those visualisations would be best suited for educational purpose or demonstration?

- a
- b
- c
- d
- none

a	**b**
	
c	**d**
	

2.1.4. Rank those visualisations in terms of clarity (e.g. easy orientation, quick finding of strong connections), one being the best result for you.

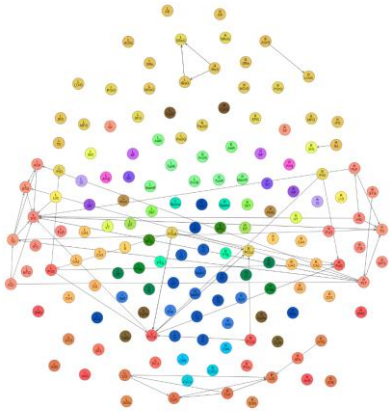
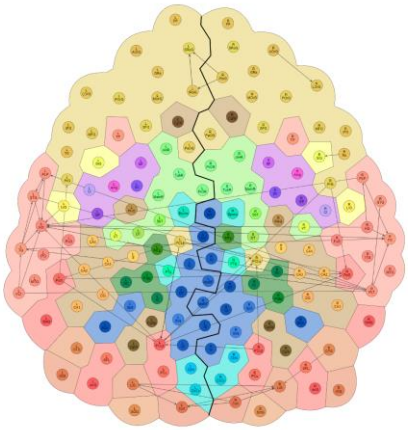
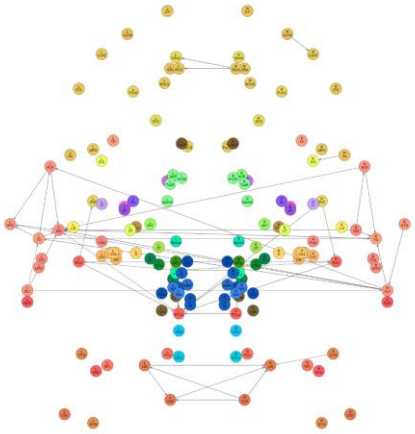
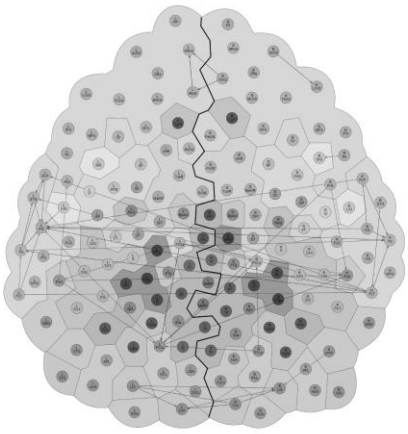
- a
- b
- c
- d

2.1.5. Which of those visualisations would be best suited for a figure in a paper?

- a
- b
- c
- d
- none

2.1.6. Which of those visualisations would be best suited for educational purpose or demonstration?

- a
- b
- c
- d
- none

a	**b**
	
c	**d**
	

2.1.7. Rank those visualisations in terms of clarity (e.g. easy orientation, quick finding of strong connections), one being the best result for you.

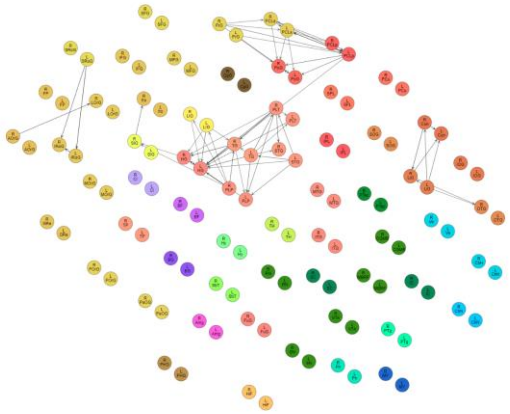
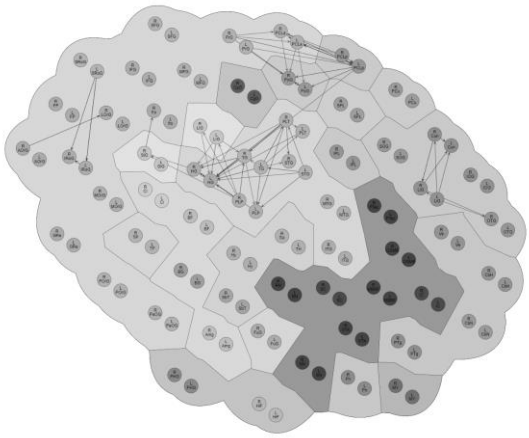
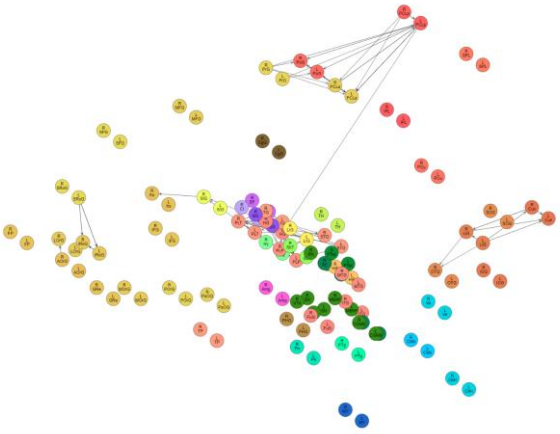
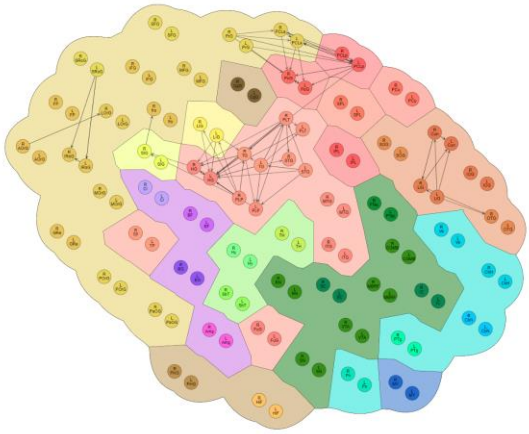
- a
- b
- c
- d

2.1.8. Which of those visualisations would be best suited for a figure in a paper?

- a
- b
- c
- d
- none

2.1.9. Which of those visualisations would be best suited for educational purpose or demonstration?

- a
- b
- c
- d
- none

a	**b**
	
c	d
	

2.1.10. Rank those visualisations in terms of clarity (e.g. easy orientation, quick finding of strong connections), one being the best result for you.

- a
- b
- c
- d

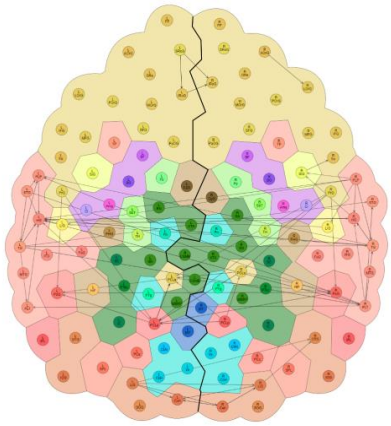
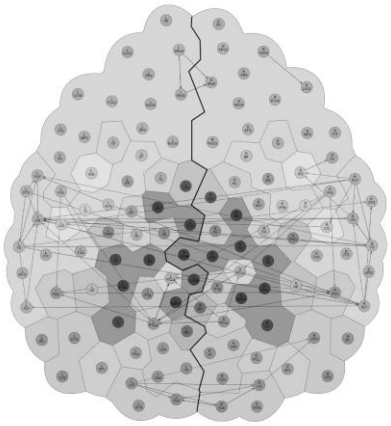
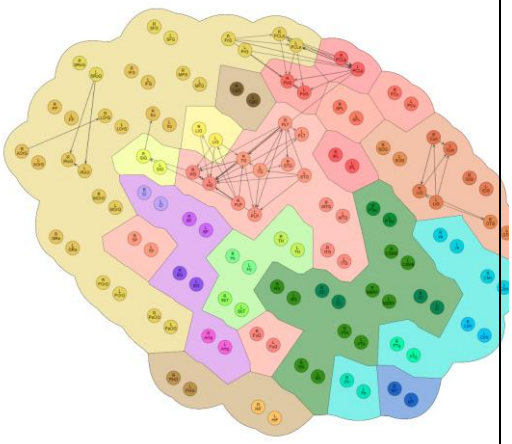
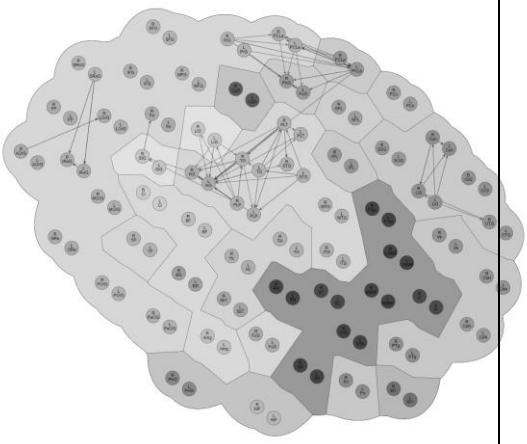
2.1.11. Which of those visualisations would be best suited for a figure in a paper?

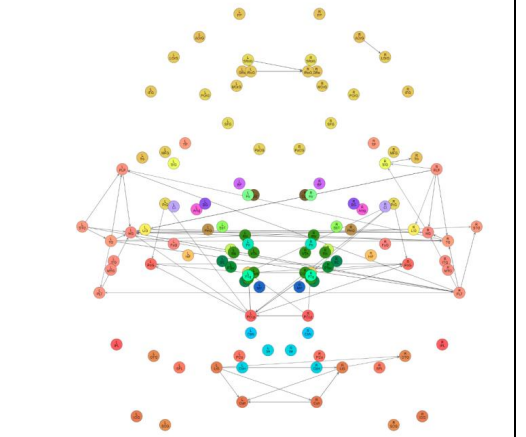
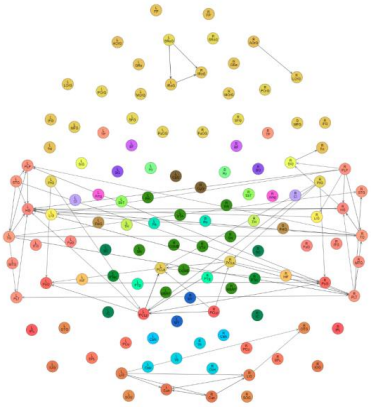
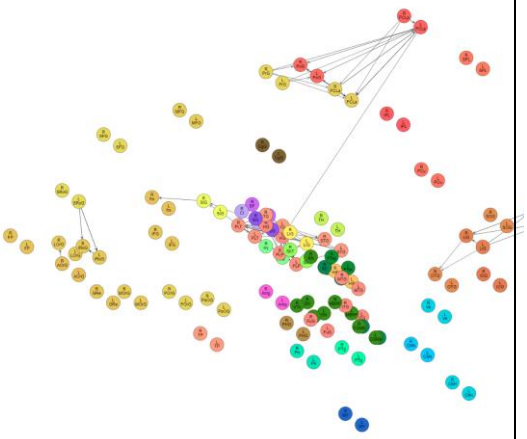
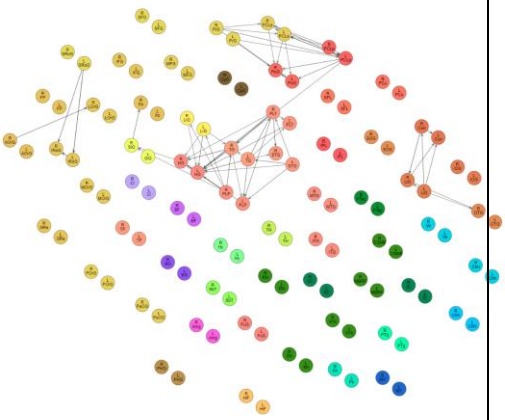
- a
- b
- c
- d
- none

2.1.12. Which of those visualisations would be best suited for educational purpose or demonstration?

- a
- b
- c
- d
- none

Following figures show pairs of the same network the transversal and sagittal view.

view	a	b
transversal		
sagittal		

	c	d
transversal		
sagittal		

2.1.13. In which pair of figures is it easiest to relate brain regions in the sagittal and transversal view?

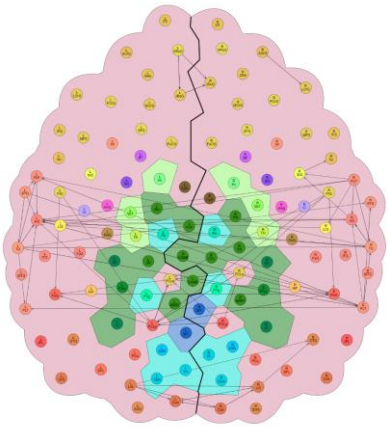
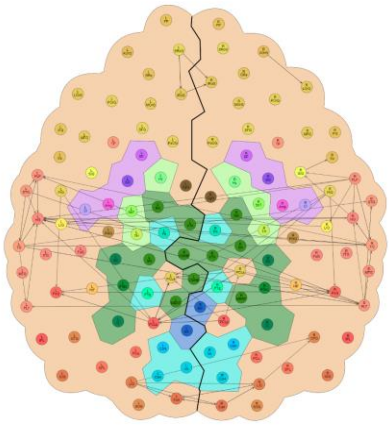
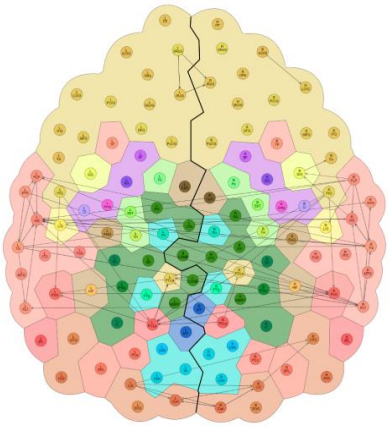
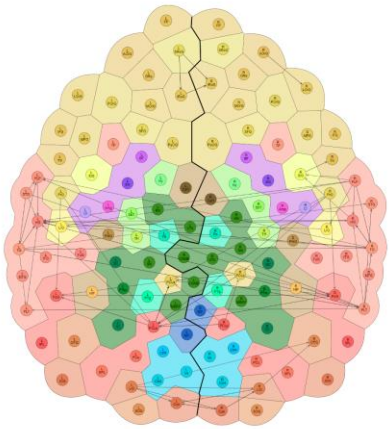
- a
- b
- c
- d

2.1.14. Rank those visualisations in terms of clarity (e.g. easy orientation, quick finding of strong connections), one being the best result for you.

- a
- b
- c
- d

Parcellation

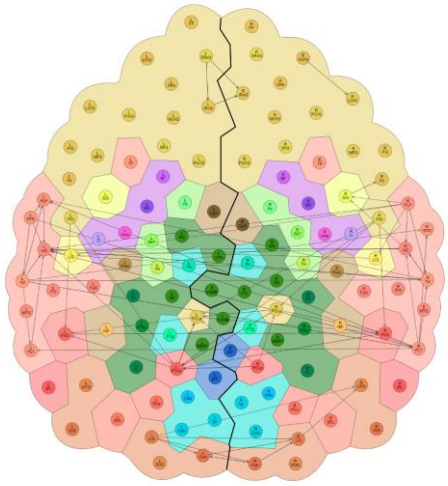
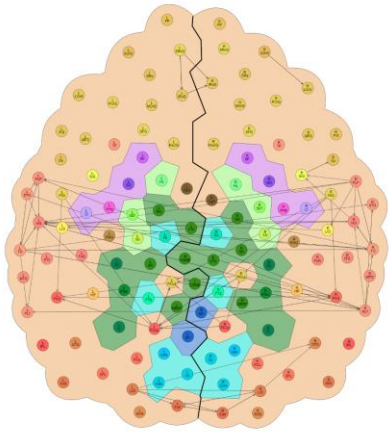
Following figures show the same brain network, but the amount of parcellations, respectively, the colours in the background differ.

a	**b**
	
c	**d**
	

2.1.15. Rank those visualisations in terms of clarity (e.g. easy orientation, quick finding of strong connections), one being the best result for you.

- a
- b
- c
- d

Compare following figures. One of them shows more detail in anatomical bigger regions, while the other shows more detail in highly connected regions.

a	**b**
	

2.1.16. Which one do you think focuses on highly connected regions?

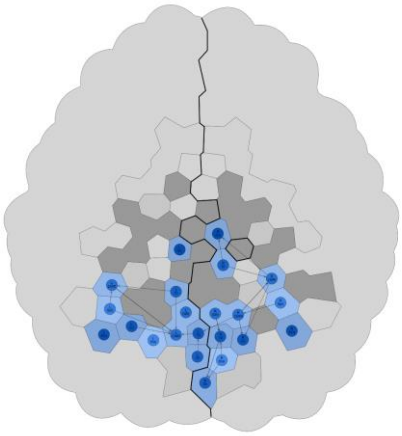
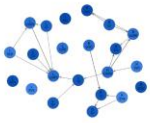
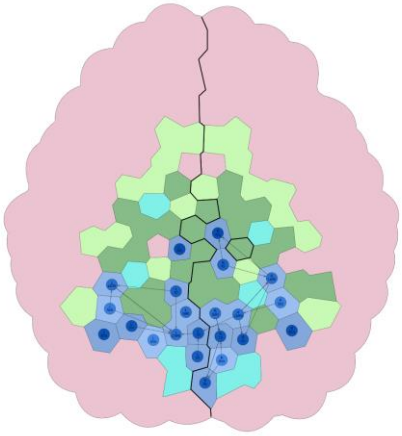
- a
- **b**

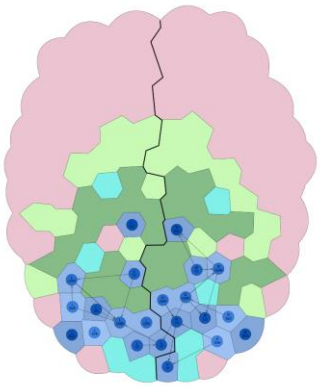
2.1.17. Which of those visualisations would you prefer in terms of clarity (e.g. easy orientation, quick finding of strong connections)?

- a
- b

2.2. **Subnetworks**

Following figures represent different visualizations of the same network in the **Myencephalon**.

a	**b**
	
c	**d**
	
e	**f**

2.2.1. Rank those visualisations in terms of clarity (e.g. easy orientation, quick finding of strong connections), one being the best result for you.

- a
- b
- c
- d
- e
- f

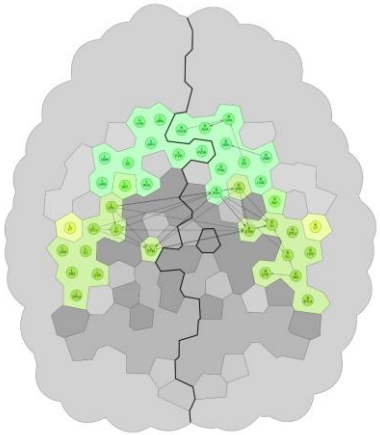
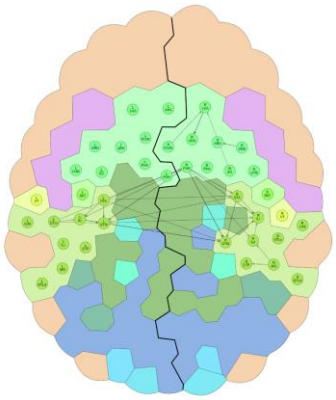
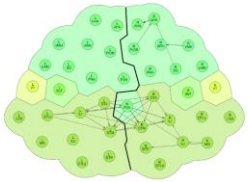
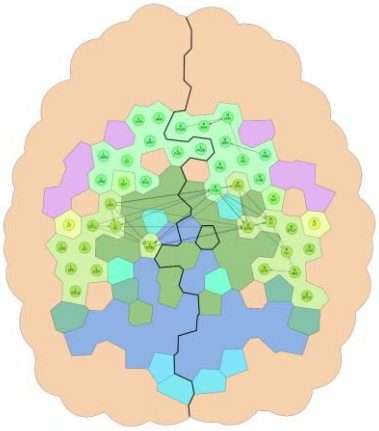
2.2.2. Which of those visualisations would be best suited for a figure in a paper?

- a
- b
- c
- d
- e
- f
- none

2.2.3. Which of those visualisations would be best suited for educational purpose or demonstration?

- a
- b
- c
- d
- e
- f
- none

Following figures represent different visualizations of the same network in the **Diencephalon**.

a	**b**
	
c	**d**
	
e	**f**
	

2.2.4. Rank those visualisations in terms of clarity (e.g. easy orientation, quick finding of strong connections), one being the best result for you.

- a
- b
- c
- d
- e
- f

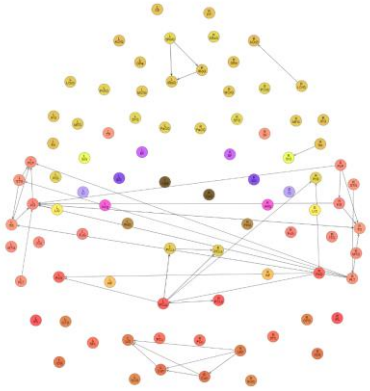
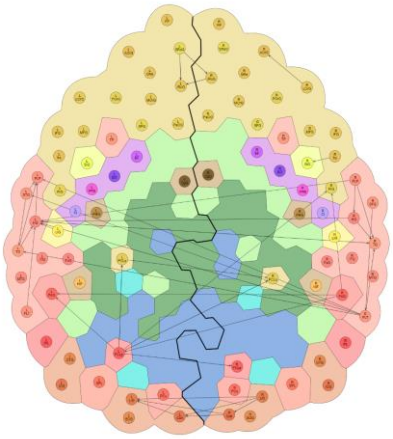
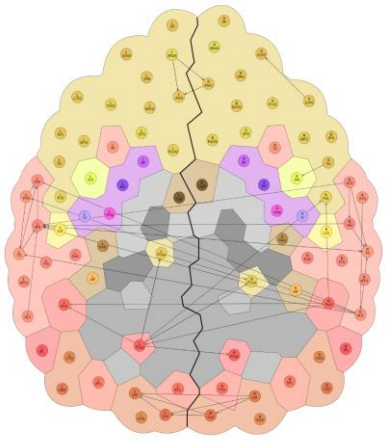
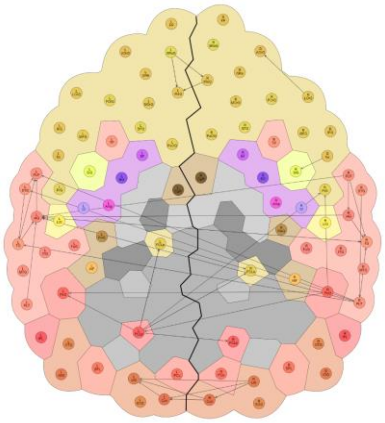
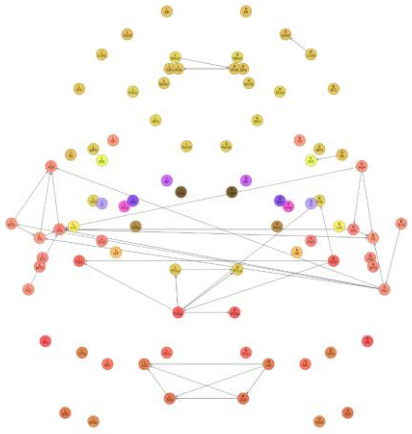
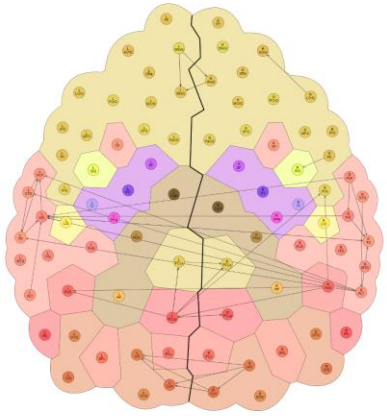
2.2.5. Which of those visualisations would be best suited for a figure in a paper?

- a
- b
- c
- d
- e
- f
- none

2.2.6. Which of those visualisations would be best suited for educational purpose or demonstration?

- a
- b
- c
- d
- e
- f
- none

Following figures represent different visualizations of the same network in the **Telencephalon**.

a	**b**
	
c	**d**
	
e	**f**
	

2.2.7. Rank those visualisations in terms of clarity (e.g. easy orientation, quick finding of strong connections), one being the best result for you.

- a
- b
- c
- d
- e
- f

2.2.8. Which of those visualisations would be best suited for a figure in a paper?

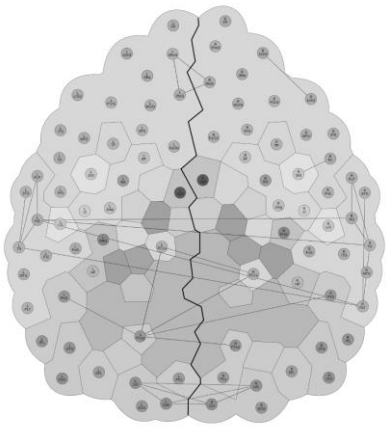
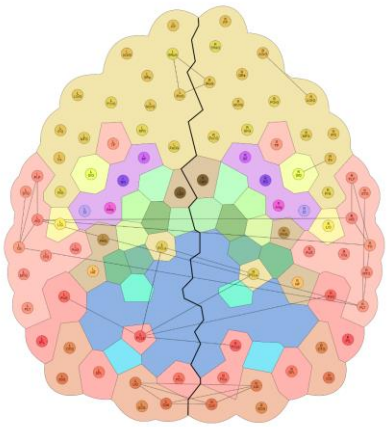
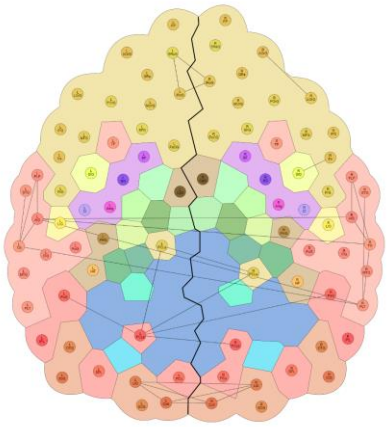
- a
- b
- c
- d
- e
- f
- none

2.2.9. Which of those visualisations would be best suited for educational purpose or demonstration?

- a
- b
- c
- d
- e
- f
- none

2.3. **Coloring**

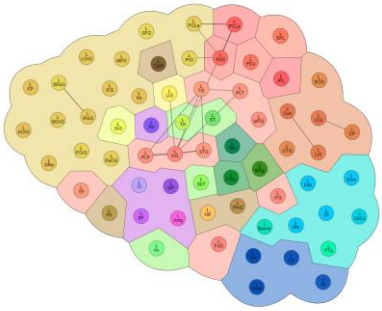
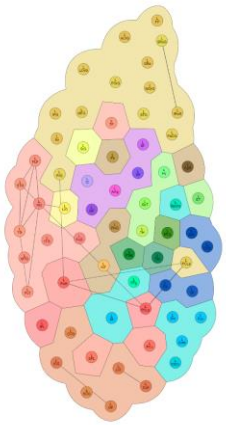
Following figures show the same brain network of the **telencephalon**.

a	**b**
	
c	
	

2.3.1. Rank those visualisations in terms of clarity (e.g. easy orientation, quick finding of strong connections), one being the best result for you.

- a
- b
- c

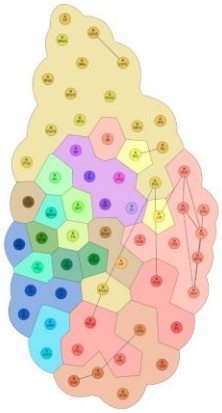
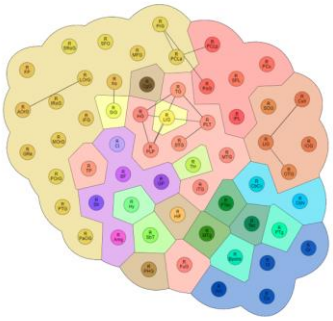
There two figures show a network of the left hemisphere of the human brain in the sagittal and the tansversal view.

a	**b**
	

2.3.2. Which one is sagittal?

- **a**
- b

There two figures show a network of the right hemisphere of the human brain in the sagittal and the tansversal view.

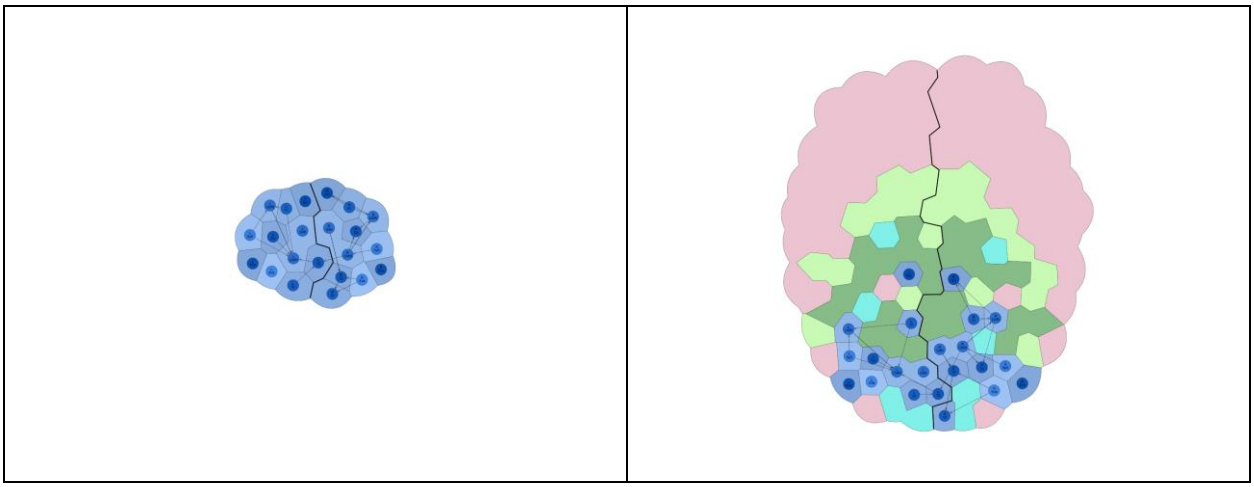
a	**b**
	

2.3.3. Which one is sagittal?

- a
- **b**

These two figures represent a network in the **myencephalon**.

2.3.4. How helpful is the background of the right figure regarding your general orientation?

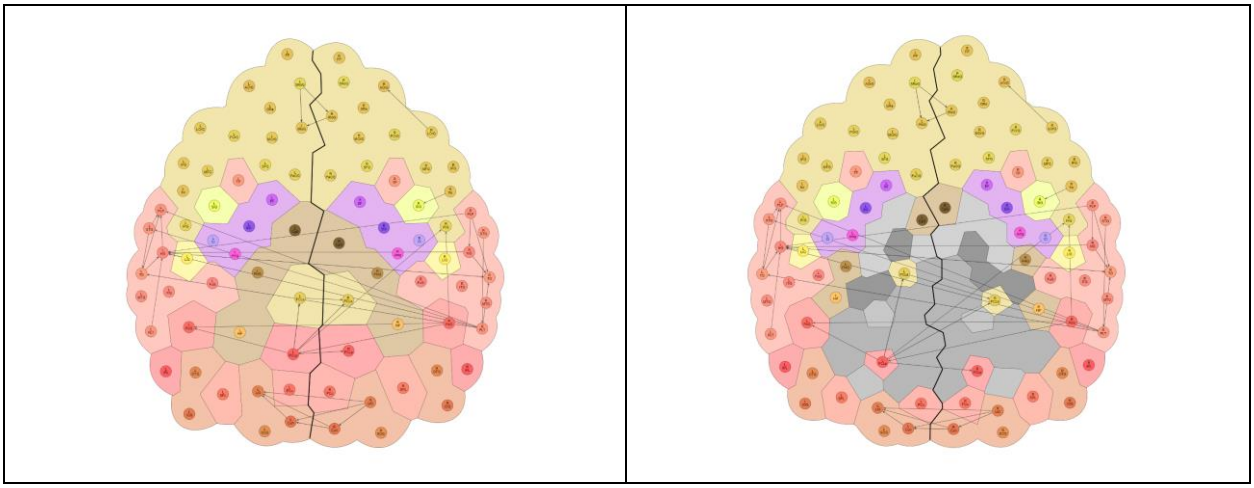


not at all very helpful

1 2 3 4 5

These two figures represent a network in the **telencephalon**.

2.3.5. How helpful is the background of the right figure regarding your general orientation?



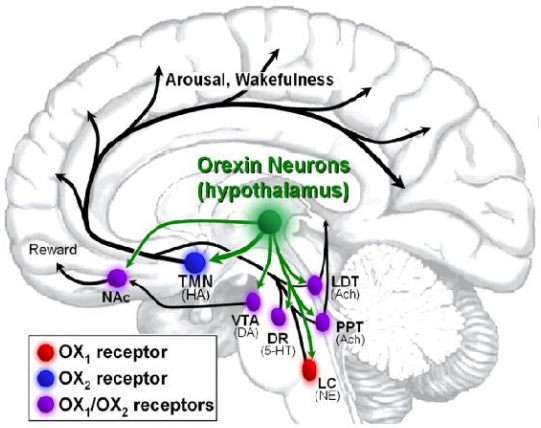
not at all very helpful

1 2 3 4 5

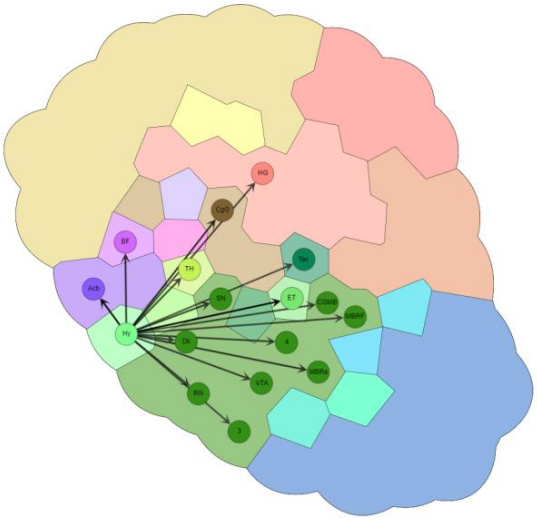
2.4. **Comparison to literature**

The figure on the left shows connections from the Hypothalamus in sagittal view. We recreated this network on the right side. Note that the edges have different meanings.

Compare the overall aesthetics and structure.



A. L. Gotter, A. L. Webber, P. J. Coleman, J. J. Renger, and C. J. Winrow Dr. International union of basic and clinical pharmacology. LXXXVI. Orexin receptor function, nomenclature and pharmacology. *Pharmacological Reviews*, 64(3), 2012. doi: 10.1124/pr.111.005546

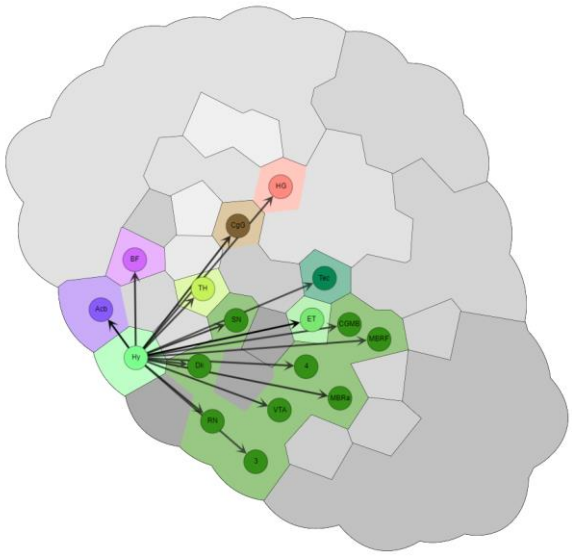
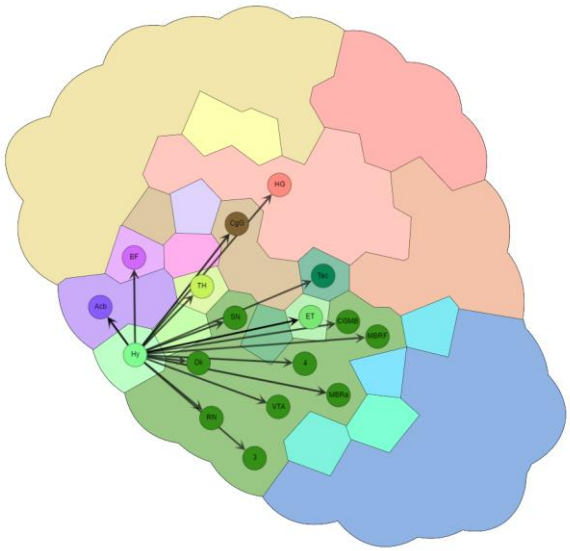


2.4.1. How comparable are the anatomical structures in both figures?

not at all very

1 2 3 4 5

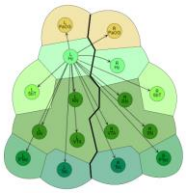
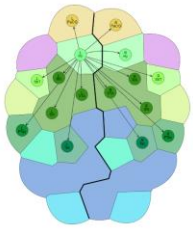
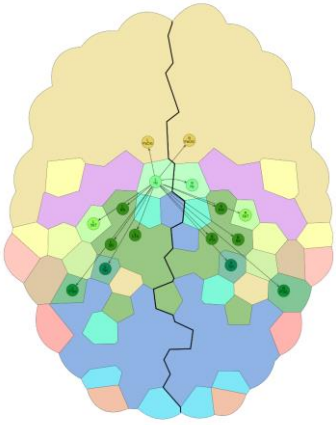
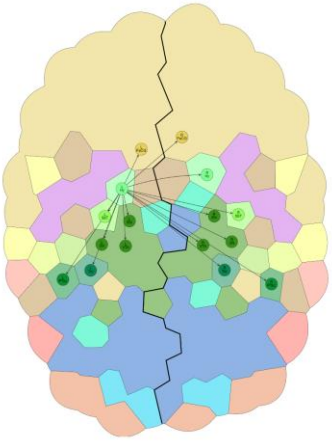
Following figures show connections from the Hypothalamus in sagittal view.

a	**b**
	

2.4.2. Which of those visualisations would you prefer in terms of <u>clarity</u> (e.g. easy orientation, quick finding of strong connections)?

- a
- b

Following figures show the connections from the Hypothalamus in transversal view with varying amount of context in the background.

a	**b**
	
c	**d**
	

2.4.3. Rank those visualisations in terms of clarity (e.g. easy orientation, quick finding of strong connections), one being the best result for you.

1. a
2. b
3. c
4. d

2.4.4. Which of those visualisations would be best suited for a figure in a paper?

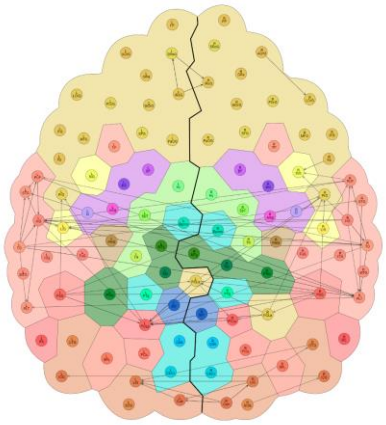
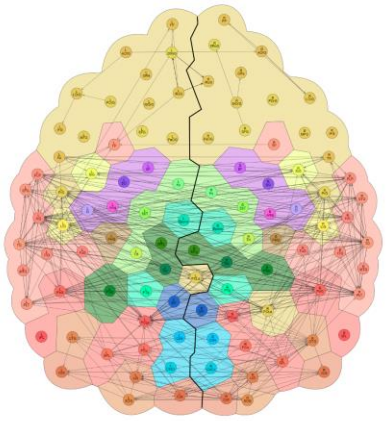
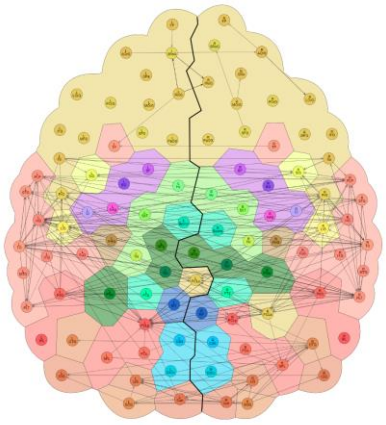
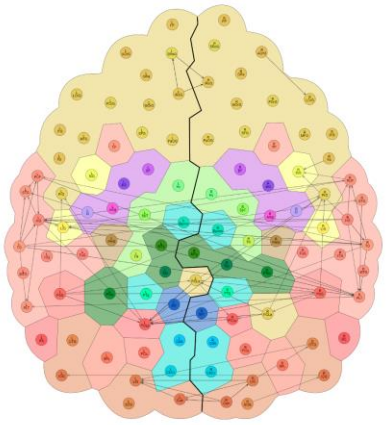
- a
- b
- c
- d
- none

2.4.5. Which of those visualisations would be best suited for educational purpose or demonstration?

- a
- b
- c
- d
- none

3. Edge Visualization

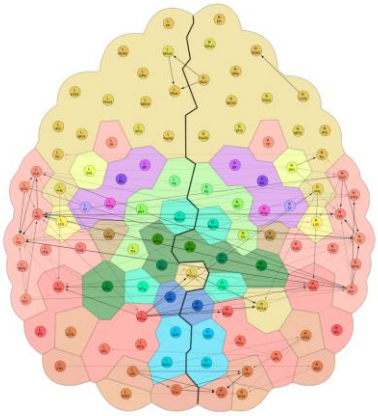
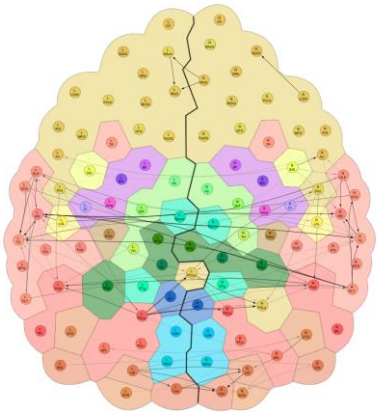
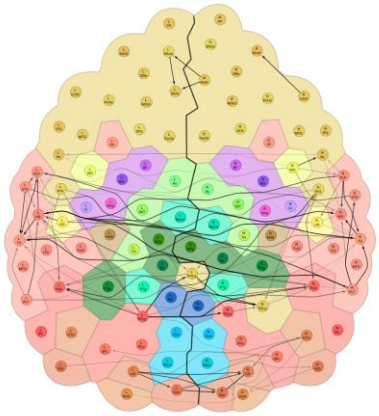
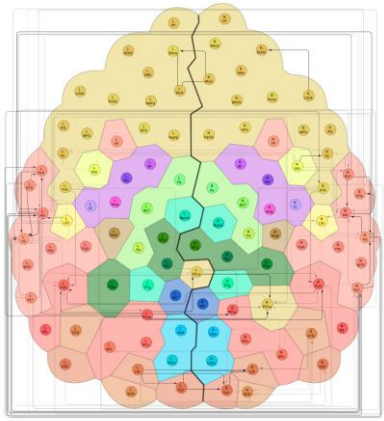
Following figures show the same network using different amounts of edges.

a	**b**
	
c	**d**
	

3.1.Which of those visualisations has the best balance between clarity and information content?

- a
- b
- c
- d

Following figures show the same network using different edge layouts.

a	**b**
	
c	**d**
	

3.2. Rank those visualisations in terms of clarity (e.g. easy orientation, quick finding of strong connections), one being the best result for you.

- a
- b
- c
- d

3.3.Which of those visualisations would be best suited for a figure in a paper?

- a
- b
- c
- d
- none

3.4.Which of those visualisations would be best suited for educational purpose or demonstration?

- a
- b
- c
- d
- none

4. Demographic Data

4.1.What is your current position?

- Professor
- Principle Investigator (Research Group Leader)
- Postdoc Researcher
- PhD Student
- Master Student
- Bachelor Student
- Amateur

4.2.What is your expertise?

- Neuroscience
- Computational Biology
- Bioinformatics
- Computer Science
- Others

4.3.Are you familiar with the Allan Brain Atlas of the human and its colour scheme?

- yes
- no

4.4.Are you colour-blind or do you have a colour weakness?

- red-green weakness/blindness
- yellow-blue weakness/blindness
- both
- none

4.5.What is your gender?

- female
- male
- other