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**Evolution of brain lateralization: a shared hominid pattern of endocranial asymmetry is much more variable in humans than in great apes**

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Figure captions

**Neubauer-brainasymmetry-01.tif**

The shared brain asymmetry pattern is visualized on endocasts (casts of the internal bony braincase) of a human, a chimpanzee, a gorilla, and an orangutan (from left to right). This pattern includes a more backwards projecting left hemisphere and a more forward projecting right hemisphere with localized larger surface areas (orange) in one hemisphere as compared to corresponding smaller regions (blue) in the other hemisphere. Figure by Simon Neubauer, CC BY-NC-ND 4.0

**Neubauer-brainasymmetry-02.tif**

Humans, chimpanzees, gorillas, and orangutans (from left to right) have differently shaped endocasts and brains (see top row). But they share an asymmetry pattern, as visualized in the bottom row. This pattern includes a more backwards projecting left hemisphere and a more forward projecting right hemisphere with localized larger surface areas (orange) in one hemisphere as compared to corresponding smaller regions (blue) in the other hemisphere. Figure by Simon Neubauer, CC BY-NC-ND 4.0

**Neubauer-brainasymmetry-03.tif**

The shared brain asymmetry pattern is visualized on endocasts (casts of the internal bony braincase) of a human (top left), a chimpanzee (top right), a gorilla (bottom right), and an orangutan (bottom left). This pattern includes a more backwards projecting left hemisphere and a more forward projecting right hemisphere with localized larger surface areas (orange) in one hemisphere as compared to corresponding smaller regions (blue) in the other hemisphere. It also includes differential projections of the cerebellar lobes and the temporal poles as can be seen from the lower side of an endocast (center). Figure by Simon Neubauer, CC BY-NC-ND 4.0

**Neubauer-brainasymmetry-04.tif**

The shared brain asymmetry pattern is visualized on endocasts (casts of the internal bony braincase) of a human, a chimpanzee, a gorilla, and an orangutan (from left to right). This pattern includes a more backwards projecting left hemisphere, a more forward projecting right hemisphere, differential projections of the cerebellar lobes and the temporal poles, as well as localized larger surface areas (orange) in one hemisphere as compared to corresponding smaller regions (blue) in the other hemisphere. Figure by Simon Neubauer, CC BY-NC-ND 4.0

**Neubauer-brainasymmetry-05.tif**

The shared brain asymmetry pattern is visualized on a human endocast (cast of the internal bony braincase) in lateral view (left) and from the lower side (right). This pattern includes a more backwards projecting left hemisphere and a more forward projecting right hemisphere with localized larger surface areas (orange) in one hemisphere as compared to corresponding smaller regions (blue) in the other hemisphere. It also includes differential projections of the cerebellar lobes and the temporal poles. Figure by Simon Neubauer, CC BY-NC-ND 4.0

**Neubauer-brainasymmetry-01.mpg**

The movie demonstrates that an endocast is the cast of the internal bony brain case approximating brain size and shape and then oscillates between a symmetric and asymmetric shape to emphasize the asymmetry pattern that is shared in humans, chimpanzees, gorillas, and orangutans. This pattern includes a more backwards projecting left hemisphere, a more forward projecting right hemisphere, differential projections of the cerebellar lobes and the temporal poles. Movie by Simon Neubauer, CC BY-NC-ND 4.0

**Neubauer-brainasymmetry-02.mpg**

The movie demonstrates that an endocast is the cast of the internal bony brain case approximating brain size and shape and then oscillates between a symmetric and asymmetric shape to emphasize the asymmetry pattern that is shared in humans, chimpanzees, gorillas, and orangutans. This pattern includes a more backwards projecting left hemisphere, a more forward projecting right hemisphere, differential projections of the cerebellar lobes and the temporal poles. Movie by Simon Neubauer, CC BY-NC-ND 4.0