



## Anatomical variability of the arcuate fasciculus: a systematical review

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Auteur	Bernard, Florian [1], Zemmoura, Ilyess [2], Ter Minassian, Aram [3], Lemée, Jean-Michel [4], Menei, Philippe [5]
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**PURPOSE:** The arcuate fasciculus (AF) is a white matter fibers tract that links the lateral temporal with the frontal cortex. The AF can be divided into three components: two superficial indirect short tracts (anterior and posterior) and one deep direct long tract. Both DTI and white matter dissections studies find differences regarding the anatomy of the AF, especially its cortical connections. This paper aims at providing a comprehensive anatomical classification of the AF, using the terminologia anatomica.

**METHODS:** Articles (n = 478) were obtained from a systematical PRISMA review. Studies which focused on primates, unhealthy subjects, as well as studies without cortical termination description and review articles were excluded from the analysis. One hundred and ten articles were retained for full-text examination, of which 19 finally fulfilled our criteria to be included in this review.

**RESULTS:** We classified main descriptions and variations of each segment of the AF according to fiber orientation and cortical connections. Three types of connections were depicted for each segment of the AF. Concerning the anterior segment, most of the frontal fibers (59.35%) ran from the ventral portion of the precentral gyrus and the posterior part of the pars opercularis, to the supramarginal gyrus (85.0%). Main fibers of the posterior segment of the AF ran from the posterior portion of the middle temporal gyrus (100%) to the angular gyrus (92.0%). In main descriptions of the long segment of the AF, fibers ran from both the ventral portion of the precentral gyrus and posterior part of the pars opercularis (63.9%) to the middle and inferior temporal gyrus (60.3%). Minor subtypes were described in detail in the article.

**CONCLUSION:** We provide a comprehensive classification of the anatomy of the AF, regarding the orientation and cortical connections of its fibers. Although fiber orientation is very consistent, cortical endings of the AF may be different from one study to another, or from one individual to another which is a key element to understand the anatomical basis of current models of language or to guide intraoperative stimulation during awake surgery.

## Résumé en anglais

URL de la notice	<a href="http://okina.univ-angers.fr/publications/ua19728">http://okina.univ-angers.fr/publications/ua19728</a> [11]
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## Liens

- [1] <http://okina.univ-angers.fr/publications?f%5Bauthor%5D=27513>
- [2] <http://okina.univ-angers.fr/publications?f%5Bauthor%5D=30282>
- [3] <http://okina.univ-angers.fr/publications?f%5Bauthor%5D=2019>
- [4] <http://okina.univ-angers.fr/j.lemee/publications>
- [5] <http://okina.univ-angers.fr/ph.menei/publications>
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- [12] <http://dx.doi.org/10.1007/s00276-019-02244-5>
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[14] <http://www.ncbi.nlm.nih.gov/pubmed/31028450?dopt=Abstract>

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