

# William L. Hylander, Professor of Biological Anthropology & Anatomy



## Contact Info:

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## Education:

- M.D., Duke University School of Medicine, 1976
- Ph.D., University of Chicago, 1972
- D.D.S., University of Illinois College of Medicine, 1963

## Research Interests:

My current research interests are related to the functional and evolutionary significance of craniofacial form in human and non-human primates, as well as in African bovids. The long-range goal of my research is to gain a better functional understanding of the morphological diversity of the mammalian craniofacial region. As the mammalian face is dominated by the masticatory apparatus, I have concentrated on analyzing, in fully alert primates during mastication and incision, using cinefluorographic, electromyographic, strain gage and force transducer techniques, (1) how internal forces are countered or resisted throughout various facial bones, and (2) the nature of the external forces (jaw-muscle forces and reaction forces along the teeth and temporomandibular joints) associated with these internal forces. These data are then used to test various hypotheses as to the functional and evolutionary significance of craniofacial form in primates.

## Representative Publications [\(More Publications\)](#)

1. "Hylander, W.L. and K.R. Johnson. 1994. Jaw muscle function and wishboning of the mandible during mastication in macaques and baboons. *Am. J. Phys. Anthrop.* 94:523-547.." ()
2. W.L. Hylander. "The adaptive significance of eskimo craniofacial morphology." *Orofacial Growth and Development*. Ed. A.A. Dahlberg and T.M. Graber. Mouton, 1977
3. "Hylander, W.L., K.R. Johnson and A.W. Crompton. 1992. Muscle force recruitment and biomechanical modeling: An analysis of masseter muscle function in *Macaca fascicularis*. *Am. J. Phys. Anthrop.* 88:365-387.." ()
4. W.L. Hylander. "Mandibular function and biomechanical stress and scaling." *American Zoologist* 25 (1985): 315-330.
5. "Hylander, W.L., K.R. Johnson and A.W. Crompton. 1987. Loading patterns and jaw movements during mastication in *Macaca fascicularis*: A bone-strain, electromyographic, and cineradiographic analysis. *Am. J. Phys. Anthrop.* 72:287-314.." ()
6. with K.R. Johnson and A.W. Crompton. "Loading patterns and jaw movements during mastication in *Macaca fascicularis*: A bone-strain, electromyographic, and cineradiographic analysis." *American Journal of Physical Anthropology* 72 (1987).

7. with K.R. Johnson. "In vivo bone strain patterns in the zygomatic arch of macaques and the significance of these patterns for functional interpretations of craniofacial form." *American Journal of Physical Anthropology* 102 (1997): 203-232.
8. "Hylander, W.L. 1985. Mandibular function and biomechanical stress and scaling. *Am. Zoologist* 25:315-330.." ().
9. with K.R. Johnson. "Jaw muscle function and wishboning of the mandible during mastication in macaques and baboons." *American Journal of Physical Anthropology* 94 (1994): 523-547.
10. "Hylander, W.L. The adaptive significance of eskimo craniofacial morphology. 1977. In: *Orofacial Growth and Development*, A.A. Dahlberg and T.M. Graber (eds.), Mouton.." ().
11. with W.L., Ravosa, M.J., Ross, C.F., and K.R. Johnson. "Mandibular corpus strain in Primates: Further evidence for a functional link between symphyseal fusion and jaw-adductor muscle force." *American Journal of Physical Anthropology* 107 (1998): 257-271.
12. Ravosa, M.J., Johnson, K.R., and W.L. Hylander. "Strain in the galago facial skull." *Journal of Morphology* 245 (2000): 51-66.
13. with Ravosa, M.J., Ross, C.F., Wall, C.E., and K.R. Johnson. "Symphyseal fusion and jaw-adductor muscle force: An EMG study." *American Journal of Physical Anthropology* 112 (2000): 469-492.