**Bibliography of the Great Ape Neuroscience Project – July 2017**

(New publications since last report in June 2015 in red text)

**Journal Articles (listed chronologically)**

Nimchinsky E.A., Gilissen E., Allman J.M., Perl D.P., Erwin J.M., Hof P.R. (1999) A neuronal morphologic type unique to humans and great apes. *Proc. Natl. Acad. Sci. USA* **96**, 5268-5273.

Hof P.R., Glezer I.I., Nimchinsky E.A., Erwin J.M. (2000) Neurochemical and cellular specializations in the mammalian neocortex reflect phylogenetic relationships: evidence from cetaceans, artiodactyls, and primates. *Brain Behav. Evol*. **55**, 300-310.

Hof P.R., Nimchinsky E.A., Perl D.P., Erwin J.M. (2001) An unusual population of pyramidal neurons in the anterior cingulate cortex of hominids contains the calcium-binding protein calretinin. *Neurosci. Lett*. **307**, 139-142.

Sherwood C.C., Broadfield D.C., Holloway R.L., Gannon P.J., Hof P.R. (2003) Variability of Broca's area homologue in African great apes: implications for language evolution. *Anat. Rec*. **271**, 276-285.

Sherwood C.C., Holloway R.L., Gannon P.J., Semendeferi K., Erwin J.M., Zilles K., Hof P.R. (2003) Neuroanatomical basis of facial expression in monkeys, apes, and humans. *Ann. NY Acad. Sci.* **1000**, 99-103.

Sherwood C.C., Lee P.W.H., Rivara C.B., Holloway R.L., Gilissen E.P.E., Simmons R.M.T., Hakeem A., Allman J.M., Erwin J.M., Hof P.R. (2003) Evolution of specialized pyramidal neurons in primate visual and motor cortex. *Brain Behav. Evol*. **61**, 28-44.

Colombo J.A., Sherwood C.C., Hof P.R. (2004) Interlaminar astroglial processes in the cerebral cortex of great apes. *Anat. Embryol*. **208**, 215-218.

Sherwood C.C., Holloway R.L., Erwin J.M., Schleicher A., Zilles K., Hof P.R. (2004) Cortical orofacial motor representation in Old World monkeys, great apes, and humans. I: Quantitative cytoarchitectural analysis of primary motor cortex. *Brain Behav. Evol*. **63**, 61-81.

Sherwood C.C., Holloway R.L., Erwin J.M., Hof P.R. (2004) Cortical orofacial motor representation in Old World monkeys, great apes, and humans. II: Stereologic analysis of chemoarchitecture. *Brain Behav. Evol*. **63**, 82-106. Erratum, *Brain Behav. Evol*. **65**, 71-72, 2005.

Sherwood C.C., Cranfield M.R., Mehlman P.T., Lilly A.A., Garbe J., Rein T.R., Bruner H.J., Holloway R.L., Tang C.Y., Naidich T.P., Delman B.N., Erwin J.M., Whittier C., Nutter F., Hof P.R. (2004) Brain structure variation in great apes, with attention to the mountain gorilla (*Gorilla beringei beringei*). *Am. J. Primatol*. **63**, 149-164.

Uddin M., Wildman D.E., Liu G., Xu W., Johnson R.M., Hof P.R., Kapatos G., Grossman L.I., Goodman M. (2004) Sister-grouping of chimpanzees and humans as revealed by genome-wide phylogenetic analysis of brain gene expression profiles. *Proc. Natl. Acad. Sci. USA* **101**, 2957-2962.

Hof P.R., Sherwood C.C. (2005) Morphomolecular neuronal phenotypes in the neocortex reflect phylogenetic relationships among certain mammalian orders. *Anat. Rec.* **287**, 1153-1163.

Sherwood C.C., Hof P.R., Holloway R.L., Semendeferi K., Gannon P.J., Frahm H., Zilles K. (2005) Evolution of the brainstem orofacial motor system in primates: a comparative quantitative study of trigeminal, facial and hypoglossal motor nuclei. *J. Hum. Evol*. **48**, 45-84.

Sherwood C.C., Holloway R.L., Semendeferi K., Hof P.R. (2005) Is prefrontal white matter enlargement a human evolutionary specialization? [Correspondence] *Nature Neurosci*. **8**, 537-538.

Sherwood C.C. (2005) Comparative anatomy of the facial motor nucleus in mammals, with an analysis of neuron numbers in primates. *Anat. Rec.* **287**, 1067-1079.

Sherwood C.C., Stimpson C.D., Raghanti M.A., Wildman D.E., Uddin M., Grossman L.I., Goodman M., Redmond J.C., Bonar C., Erwin J.M., Hof P.R. (2006) Evolution of increased glia-neuron ratio in the human frontal cortex. *Proc. Natl. Acad. Sci. USA* **103**, 13606-13611.

Sherwood C.C., Raghanti M.A., Stimpson C.D., Bonar C.J., de Sousa A.A., Preuss T.M., Hof P.R. (2007) Scaling of inhibitory interneurons in areas V1 and V2 of anthropoid primates revealed by calcium-binding protein immunohistochemistry. *Brain Behav. Evol*. **69**, 176-195.

Sherwood C.C., Wahl E., Erwin J.M., Hof P.R., Hopkins W.D. (2007) Histological asymmetries of primary motor cortex predict handedness in chimpanzees (*Pan troglodytes*). *J. Comp. Neurol*. **503**, 525-537.

Raghanti M.A., Stimpson C.D., Marcinkiewicz J.L., Erwin J.M., Hof P.R., Sherwood C.C. (2008) Differences in cortical serotonergic innervation among humans, chimpanzees and macaque monkeys: a comparative study. *Cereb. Cortex* **18**, 584-597.

Raghanti M.A., Stimpson C.D., Marcinkiewicz J.L., Erwin J.M., Hof P.R., Sherwood C.C. (2008) Cholinergic innervation of the frontal cortex: differences among humans, chimpanzees, and macaque monkeys. *J. Comp. Neurol*. **506**, 409-424.

Raghanti M.A., Stimpson C.D., Marcinkiewicz J.L., Erwin J.M., Hof P.R., Sherwood C.C. (2008) Cortical dopaminergic innervation among humans, chimpanzees, and macaque monkeys: a comparative study. *Neuroscience* **155**, 203-220.

Uddin M., Opazo J.C., Wildman D.E., Sherwood C.C., Hof P.R., Goodman M., Grossman L.I. (2008) Molecular evolution of the cytochrome c oxidase subunit 5A gene in primates. *BMC Evol. Biol*. **8**, 8 (12 pp.).

Wang S.S.H., Shultz J.R., Burish M.J., Harrison K.H., Hof P.R., Towns L.C., Wagers M.W., Wyatt K.D. (2008) Shaping of white matter composition by biophysical scaling constraints. *J. Neurosci*. **28**, 4056-4047.

Caminiti R., Ghazari H., Galuske R., Hof P.R., Innocenti G.M. (2009) Evolution amplified processing with temporally dispersed slow neuronal connectivity in primates. *Proc. Natl. Acad. Sci. USA* **106**, 19551-19556.

Goodman M., Sterner K.N., Islam M., Uddin M., Sherwood C.C., Hof P.R., Hou Z.C., Lipovich L., Jia H., Grossman L.I., Wildman D.E. (2009) Phylogenomic analyses reveal convergent patterns of adaptive evolution in elephant and human ancestries. *Proc. Natl. Acad. Sci. USA* **106**, 20824-20829*.*

Hakeem A.Y., Sherwood C.C., Bonar C.J., Butti C., Hof P.R., Allman J.M. (2009) Von Economo neurons in the elephant brain. *Anat. Rec.* **292**, 242-248

Raghanti M.A., Spocter M.A., Stimpson C.D., Erwin J.M., Bonar C.J., Allman J.H., Hof P.R., Sherwood C.C. (2009) Species-specific distribution of tyrosine hydroxylase-immunoreactive neurons in the prefrontal cortex of anthropoid primates. *Neuroscience* **158**, 1551-1559.

Sherwood C.C., Stimpson C.D., Butti C., Bonar C.J., Newton A.L., Allman J.M., Hof P.R. (2009) Neocortical neuron types in Xenarthra and Afrotheria: implications for brain evolution in mammals. *Brain Struct. Funct*. **213**, 301-328.

Allman J.M., Tetreault N.A., Hakeem A.Y., Manaye K.F., Semendeferi K., Erwin J.M., Goubert V., Hof P.R. (2010) The von Economo neurons in frontoinsular and anterior cingulate cortex in great apes and humans. *Brain Struct. Funct*. **214**, 495-517.

De Sousa A.A., Sherwood C.C., Schleicher A., Amunts K., MacLeod C.E., Hof P.R., Zilles K. (2010) Comparative cytoarchitectural analyses of striate and extrastriate areas in hominoids. *Cereb. Cortex* **20**, 966-981.

De Sousa A.A., Sherwood C.C., Mohlberg H., Amunts K., Schleicher A., MacLeod C., Hof P.R., Frahm H., Zilles K. (2010) Hominoid visual brain structure volumes and the position of the lunate sulcus. *J. Hum. Evol.* **58**, 281-292.

Innocenti G.M., Caminiti R., Hof P.R. (2010) Fiber composition in the planum temporale sector of the corpus callosum in chimpanzee and human. *Brain Struct. Funct*. **215**,123-128

Raghanti M.A., Spocter M.A., Butti C., Hof P.R., Sherwood C.C. (2010) A comparative perspective on minicolumns and inhibitory GABAergic interneurons in the neocortex. *Front. Neuroanat*. **3(35)**, doi:10.3389/neuro.05.035.2010, 10 pp.

Sharma Y., Xu T., Graf W.M., Fobbs A., Sherwood C.C., Hof P.R., Allman J.M., Manaye K.F. (2010) Comparative anatomy of the locus coeruleus in humans and nonhuman primates. *J. Comp. Neurol*. **518**, 963-971.

Schenker N.M., Hopkins W.D., Spocter M.A., Garrison A.R., Stimpson C.D., Erwin J.M., Hof P.R., Sherwood C.C. (2010) Broca's area homologue in chimpanzees (*Pan troglodytes*): probabilistic mapping, asymmetry, and comparison to humans. *Cereb. Cortex* **20**, 730-742.

Sherwood C.C., Raghanti M.A., Stimpson C.D., Spocter M.A., Uddin M., Boddy A.M., Wildman D.E., Bonar C.J., Lewandowski A.H., Phillips K.A., Erwin J.M., Hof P.R. (2010) Inhibitory interneurons of the human prefrontal cortex display conserved evolution of the phenotype and related genes. *Proc. R. Soc. B* **277**, 1011-1020.

Sherwood C.C., Duka T., Stimpson C.D., Schenker N.M., Garrison A.R., Schapiro S.J., Baze W.D., McArthur M.J., Erwin J.M., Hof P.R., Hopkins W.D. (2010) Neocortical synaptophysin asymmetry and behavioral lateralization in chimpanzees (*Pan troglodytes*). *Eur. J. Neurosci*. **31**, 1456-1464.

Spocter M.A., Hopkins W.D., Garrison A.R., Bauernfeind A.L., Stimpson C.D., Hof P.R., Sherwood C.C. (2010) Wernicke's homologue in chimpanzees (*Pan troglodytes*) and its relation to the appearance of modern human language. *Proc. R. Soc. B* **277**, 2165-2174.

Meguerditchian, A., Calcutt, S., Lonsdorf, E.V., Ross, S.R., & Hopkins, W.D. (2010). Captive gorillas are right-handed for bimanual feeding. *American Journal of Physical Anthropology,***141**, 638-643.

Allman J.M., Tetreault N.A., Hakeem A.Y., Park S. (2011) The von Economo neurons in apes and humans. *Am. J. Hum. Biol*. **23**, 5-21.

Allman J.M., Tetreault N.A., Hakeem A.Y., Manaye K.F., Semendeferi K., Erwin J.M., Park S., Goubert V., Hof P.R. (2011) The von Economo neurons in the frontoinsular and anterior cingulate cortex. *Ann. of the N.Y. Acad. of Sci.*  **1225**, 59-71

Bianchi S., Bauernfeind A.L., Stimpson C.D., Bonar C.J., Manger P.R., Hof P.R., Jacobs B., Sherwood C.C. (2011) Neuronal diversity in Afrotheria: a Golgi study of the rock hyrax (*Procavia capensis*) neocortex and comparison with the African elephant (*Loxodonta africana*). *Ann. of the NY Acad of Sci.* **1225**, 37-46

Butti C., Raghanti M.A., Sherwood C.C., Hof P.R. (2011) The neocortex of cetaceans: cytoarchitecture and comparison with other aquatic and terrestrial species. *Ann. of the NY Acad. of Sci.* **1225**, 47-58

Stimpson C.D., Tetreault N.A., Allman J.M., Jacobs B., Butti C., Hof P.R., Sherwood C.C. (2011) Biochemical specificity of von Economo neurons in hominoids. *Am. J. Hum. Biol*. **23**, 22-28.

Raghanti M.A., Simic G., Watson S., Stimpson C.D., Hof P.R., Sherwood C.C. (2011) Comparative analysis of the nucleus basalis of Meynert among primates. *Neuroscience* **184**, 1-16

Sherwood C.C., Gordon A.D., Allen J.S., Phillips K.A., Erwin J.M., Hof P.R., Hopkins W.D. (2011) Aging of the cerebral cortex differs between humans and chimpanzees. *Proc Natl Acad Sci* **108**, 13029-13034

Hopkins, W.D., Phillips, K.A., Bania, A., Calcutt, S.E., Gardner, M., Russell, J., Schaeffer, J., Lonsdorf, E. V, Ross, S. R., & Schapiro, S. J. (2011). Hand preferences for coordinated bimanual actions in 777 great apes: Implications for the evolution of handedness in Hominins. *Journal of Human Evolution*, **60**, 605-611.

Russell, J. Lyn, H., Schaeffer, J.A., & Hopkins, W.D. (2011). The role of socio- communicative rearing environments on the development of social and physical cognition in apes. *Developmental Science*, **14(6)**, 1459-1470.

Hopkins, W.D., Pilger, J.F., Storz, R., Ambrose, A., Hof, P.R., & Sherwood, C.C. (2012). Planum temporale asymmetries correlate with corpus callosum axon fiber density in chimpanzees (*Pan troglodytes*). *Behavioural Brain Research*, **234**, 248-254.

Barger N., Stefanacci L., Schumann C.M., Sherwood C.C., Annese J., Allman J.M., Buckwalter J.A., Hof P.R., Semendeferi K. (2012) Neuronal populations in the basolateral nuclei of the amygdala are differentially increased in humans compared with apes: a stereological study. *The Journal of Comparative Neurology* **520,** 3035-3054.

Lewitus E., Sherwood C.C., Hof P.R. (2012) Celllular signatures in the primary visual cortex of phylogeny and placentation. *Brain Struct. Funct.* **217**, 531-547.

Lewitus E., Hof P.R., Sherwood C.C. (2012) Phylogenetic comparison of neuron and glia densities in the primary visual cortex and hippocampus of carnivores and primates. *Evolution* **66**, 2551-2563.

Spocter M.A., Hopkins W.D., Barks S.K., Bianchi S, Hehmeyer A.E., Anderson S.M., Stimpson C.D., Fobbs A.J., Hof P.R., Sherwood C.C. (2012) Neuropil distribution in the cerebral cortex differs between humans and chimpanzee. *J Comp Neurol.* **520**, 2917-2929.

Baizer J.S., Weinstock N., Witelson S.F., Sherwood C.C., Hof P.R. (2013) The nucleus pararaphales in the human, chimpanzee, and macaque monkey. *Brain Structure and Function* **218**: 389-403.

McFarlin S.C., Barks S.K., Tocheri M.W., Massey J.S., Eriksen A.B., Fawcett K.A., Hof P.R., Bromage T.G., Mudakikwa A., Cranfield M.R., Sherwood C.C. (2013) Exceptionally early brain growth cessation in wild Virunga mountain gorillas (*Gorilla beringei beringei*). *American Journal of Primatology* **75**: 450-463.

Miller D.J., Duka T., Stimpson C.D., Schapiro S.J., Baze W.B., McArthur M.J., Fobbs A.J., Sousa A.M., Sestan N., Wildman D.E., Lipovich L., Kuzawa C.W., Hof P.R., Sherwood C.C. (2012) Prolonged myelination in human neocortical evolution. *Proceedings of the National Academy of Sciences USA* **109**: 16480-16485.

Raghanti M.A., Conley T., Sudduth J., Erwin J.M., Hof P.R., Sherwood C.C. (2013) Neuropeptide Y-immunoreactive neurons in the cerebral cortex of humans and other haplorhine primates. *American Journal of Primatology* **75**: 415-424.

de Sousa A.A., Sherwood C.C., Hof P.R., Zilles K. (2013) Lamination of the lateral geniculate nucleus of catarrhine primates. *Brain, Behavior and Evolution* **81**: 93-108.

Bauernfeind A.L., de Sousa A.A., Avasthi T., Dobson S.D., M.A. Raghanti, A.H. Lewandowski, K. Zilles, K. Semendeferi, J.M. Allman, A.D. Craig, P.R. Hof, C.C. Sherwood (2013) A volumetric comparison of the insular cortex and its subregions in primates. *Journal of Human Evolution* **64**: 263-279.

Bianchi S., C.D. Stimpson, T. Duka, M.D. Larsen, W.G.M. Janssen, Z. Collins, A.L. Bauernfeind, S.J. Schapiro, W.B. Baze, M.J. McArthur, W.D. Hopkins, D.E. Wildman, L. Lipovich, C.W. Kuzawa, B. Jacobs, P.R. Hof, and C.C. Sherwood (2013) Synaptogenesis and development of pyramidal neuron dendritic morphology in the chimpanzee neocortex resembles humans. *Proceedings of the National Academy of Sciences USA* **110** (Supplement 2): 10395-10401.

Bianchi S., Stimpson C.D., Bauernfeind A.L., Schapiro S.J., Baze W.B., McArthur M.J., Bronson E., Hopkins W.D., Semendeferi K., Jacobs B., Hof P.R., Sherwood C.C. (2013) Dendritic morphology of pyramidal neurons in the chimpanzee neocortex: regional specializations and comparison to humans. *Cerebral Cortex* **23** (10): 2429-2436

Baizer J.S., N.A. Paolone, C.C. Sherwood, P.R. Hof (2013) Neurochemical organization of the vestibular brainstem in the common chimpanzee (*Pan troglodytes*). *Brain Structure and Function* **218** (6): 1463-1485

Teffer K., D.P. Buxhoeveden, C.D. Stimpson, A.J. Fobbs, S.J. Schapiro, W.B. Baze, M.J. McArthur, W.D. Hopkins, P.R. Hof, C.C. Sherwood, and K. Semendeferi (2013) Developmental changes in the spatial organization of neurons in the neocortex of humans and chimpanzees. *The Journal of Comparative Neurology* **521** (18): 4249-4259

Perez S.E., M.A. Raghanti, P.R. Hof, L. Kramer, M.D. Ikonomovic, P.N. Lacor, J.M. Erwin, C.C. Sherwood, and E.J. Mufson (2013) Alzheimer’s disease pathology in the neocortex and hippocampus of the western lowland gorilla (*Gorilla gorilla gorilla*). *The Journal of Comparative Neurology* **521** (18): 4318-4338

Barks S.K., Bauernfeind A.L., Bonar C.J., Cranfield M.R., de Sousa A.A., Erwin J.M., Hopkins W.D., Lewandowski A.H., Mudakikwa A., Phillips K.A., Raghanti M.A., Stimpson C.D., Hof P.R., Zilles K., and Sherwood C.C. (2014) Variable temporo-insular cortex neuroanatomy in primates suggests a bottleneck effect in eastern gorillas. *The Journal of Comparative Neurology* **522** (4): 844-860

Hopkins, W.D, Schaeffer, J.S., & Russell, J.L., Bogart, S. (2015). A comparative assessment of handedness and its potential neuroanatomical correlates in in chimpanzees (*Pan troglodytes*) and bonobos (*Pan paniscus*). *Behaviour*. **152** (3-4): 461-492

Butti, C., Fordyce, R.W., Raghanti, M.A., Gu, X., Bonar, C.J., Wicinski, B.A., Wong, E.W., Roman, J., Brake, A., Eaves, E., Spocter, M.A., Tang, C.Y., Jacobs, B., Sherwood, C.C., Hof, P.R. 2014. The cerebral cortex of the pygmy hippopotamus, *Haxaprotodon liberiensis* (Cetartiodactyla, Hippopotamidae): MRI, cytoarchitecture, and neuronal morphology. *The Anatomical Record*, **297**: 670-700

Duka, R., Anderson, S.M., Collins, Z., Raghanti, M.A., Ely, J.J., Hof, P.R., Wildman, D.E., Goodman, M., Grossman, L.I., Sherwood, C.C. 2014. Synaptosomal lactate dehydrogenase isoenzyme composition is shifted toward aerobic forms in primate brain evolution. *Brain Behavior and Evolution*, **83**: 216-230

Hopkins, W.D., Megueditchian, A., Coulon, O., Bogart, S., Mangin, J-F, Sherwood, C.C., Grabowski, M.W., Bennett, A.J., Pierre, P.J., Fears, S., Woods, R., Hof, P.R., Vauclair, J. 2014. Evolution of the central sulcus morphology in primates. *Brain Behavior and Evolution*, **84**: 19-30

Gilissen, E.P., Leroy, K., Yilmaz, Z., Kovari, E., Bouras, C., Boom, A., Poncelot, L., Erwin, J.E. Sherwood, C.C., Hof, P.R., Brion, J-P. 2014. A neuronal aging pattern unique to humans and common chimpanzees. Brain Structure and Function, DOI: 10.1007/s00429-014-0931-5

Jacobs, B., Johnson, N.L., Wahl, D., Schall, M., Maseko, B.C., Lewandowski, A., Raghanti, M.A., Wicinski, B., Butti, C., Hopkins, W.D., Bertelsen, M.F., Walsh, T., Roberts, J.R., Reep, R.L., Hof, P.R., Sherwood, C.C., Manger, P.R. 2014. Comparative neuronal morphology of the cerellar cortex in afrotherians, carnivores, cetartiodactyls, and primates. *Frontiers in Anatomy*, DOI: 10.3389/fnana.2014.00024

Raghanti, M.A., Edler, M.K., Meindl, R.S., Sudduth, J., Bohush, T., Erwin, J.M., Stimpson, C.D., Hof, P.R., Sherwood, C.C. 2014. Humans and great apes share increased neocortical neuropeptide Y innervation compared to other haplorrhine primates. *Frontiers in human neuroscience*, DOI: 10.3389/fnhum.201.00101

Barks, S.K., Calhoun, M.E., Hopkins, W.D., Cranfield, M.R., Mudakikwa, A., Stoinski, T.S., Patterson, F.G., Erwin, J.M., Hecht, E.E., Hof, P.R., Sherwood, C.C. 2015. Brain organization of gorillas reflects species differences in ecology. *American Journal of Physical Anthropology*, **156**: 252-262

Muntane, G., Horvath, J.E., Hof, P.R., Ely, J.J., Hopkins, W.D., Raghanti, M.A., Lewandowski, A.H., Wray, G.A., Sherwood, C.C. 2015. Analysis of synaptic gene expression in the neocortex of primates reveals evolutionary changes in glutamatergic neurotransmission. *Cerebral Cortex*, **25**: 1596-1607

Verendeev, A., Thomas, C., McFarlin, S.C., Hopkins, W.D., Phillips, K.A., Sherwood, C.C. 2015. Comparative analysis of Meissner’s corpuscles in the fingertips of primates. *Journal of Anatomy*, **227:** 72-83

Lipovich, L., Hou, Z., Jia, H., Sinkler, C., McGowen, M., Sterner, K.N., Weckle, A., Sugalski, A.B., Pipes, L., Gatti, D., Mason, C.E., Sherwood, C.C., Hof, P.R., Kuzawa, C.W., Grossman, L.I., Goodman, M., Wildman, D.E. 2016. High-throughput RNA sequencing reveals structural differences of orthologous brain-expressed genes between western lowland gorillas and humans. *Journal of Comparative Neurology*, 524 (2): 288-308. DOI: 10.1002/cne.23843

Bauernfeind, A.L., Reyzer, M.L., Caprioli, R.M., Ely, J.J., Babbitt, C.C., Wray, G.A., Hof, P.R., Sherwood, C.C. 2015. High spatial resolution proteomic comparison of the brain in humans and chimpanzees. *The Journal of Comparative Neurology*, 523 (14): 2043-2061. doi: 10.1002/cne.23777

Bauernfeind, A.L., Soderblom, E.J., Turner, M.E., Moseley, M.A., Ely, J.J., Hof, P.R., Sherwood, C.C., Wray, G.A., Babbitt, C.C. 2015. Evolutionary divergence of gene and protein expression in the brains of humans and chimpanzees. *Genome Biology and Evolution*, 7 (8): 2276-\*2288. doi: 10.1093/gbe/evv132

Butti, C., Janeway, C.M., Townshend, C., Wicinski, B.A., Reidenberg, J.S., Ridgway, S.H., Sherwood, C.C., Hof, P.R., Jacobs, B. 2015. The neocortex of cetartiodactyls: I. A comparative Golgi analtsus of neuronal morphology in the bottlenose dolphin (Tursiops truncates), the minke whale (*Balaenoptera acutorostrata*), and the humpback whale (Megaptera novaengliae). *Brain, Structure and Function*, 220 (6): 3339-3368. doi: 10.1007/s00429-014-0860-3

Gomez-Robles, A., Hopkins, W.D., Schapiro, S.J., Sherwood, C.C. 2015. Relaxed genetic control of cortical organization in human brains compared with chimpanzees. *PNAS*, 112 (48): 14799-14804. doi: 10.1073/pnas.1512646112

Hopkins, W.D., Misiura, M., Pope, S.M., Latash, E.M. 2015. Behavioral and brain asymmetries in primates: a preliminary evaluation of two evolutionary hypotheses. *Annals of NY Academy of Science*, 1359: 65-83. doi: 10.111/nyas.12936

Jacobs, B., Harland, T., Kennedy, D., Schall, M., Wicinski, B, Butti, C., Hof, P.R., Sherwood, C.C., Manger, P.R. 2015. The neocortex of cetartiodactyls. II. Neuronal morphology of the visual and motor cortices in the giraffe (*Giraffa Camelopardalis*). *Brain, Structure and Function*, 220 (5): 2851-2872. doi: 10.1007/s00429-015-0830-9

Latzman, R.D., Hecht, L.K., Freeman, H.D., Schapiro, S.J., Hopkins, W.D. 2015. Neuroanatomical correlates of personality in chimpanzees (*Pan troglodytes*): associations between personality and frontal cortex. *Neuroimage*, 123: 63-71. doi: 10.1016/j.neuroimage.2015.08.041

Latzman, R.D., Taglialatela, J.P., Hopkins, W.D. 2015. Delay of grafitication is associated with white matter connectivity in the dorsal prefrontal cortex: a diffusion tensor imaging study in chimpanzees (*Pan troglodytes*). *Proceedings Biological Science*, 282 (1809): 20150764. doi: 10.1098/rspb.2015.0764

Phillips, K.A., Stimpson, C.D., Smaers, J.B., Raghanti, M.A., Jacobs, B., Popratiloff, A., Hof, P.R., Sherwood, C.C. 2015. The corpus callosum in primates: processing speed of axons and the evolution of hemispheric asymmetry. *Royal Society Proceedings B*, 282: 20151535. doi: 10.1098/rspb.2015.1535

Bianchi, S., Reyes, L.D., Hopkins, W.D., Taglialatela, J.P., Sherwood, C.C. 2016. Neocortical grey matter distribution underlying voluntary, flexible vocalizations in chimpanzees. *Scientific Reports*, 6: 34733. doi: 10.1038/srep34733

Gilissen, E.P., Leyor, K., Yilmaz, Z., Kovari, E., Bouras, C., Boom, A., Poncelet, L., Erwin, J.M., Sherwood, C.C., Hof, P.R., Brion, J-P. 2016. A neuronal aging pattern unique to humans and common chimpanzees. *Brain, Structure and Function*, 221: 647-664. doi: 10.1007/s00429-014-0931-5

Hopkins, W.D., Hopkins, A.M., Misiura, M., Latash, E.M., Mareno, M.C., Schapiro, S.J., Phillips, K.A. 2016. Sex differences in the relationship between planum termporale asymmetry and corpus callosum morphology in chimpanzees (*Pan troglodytes*): a combines MRI and DTI analysis. *Neuropsychologia*, 93 (Pt B): 325-334. doi: 10.1016/j.neuropsychologia.2016.04.003.

Jacobs, B., Lee., L., Schall., M., Raghanti, M.A., Lewandowski, A.H., Kottwitz., J.J., Roberts, J.F., Hof, P.R., Sherwood, C.C. 2016. Neocortical neuronal morphology in the newborn giraffe (*Giraffa camelopardalis tippelskirchi*) and African elephant (*Loxodonta africana*). *The Journal of Comparative Neurology*, 524 (2): 257-287. doi: 10.1002/cne.23841

Johnson, C.B., Schall., M., Tennison, M.E., Garcia, M.E., Shea-Shumsky, N.B., Raghanti, M.A., Lewandowski, A.H., Bertelsen, M.F., Waller, L.C., Walsh, T., Roberts, J.F., Hof, P.R., Sherwood, C.C., Manger, P.R., Jabobs, B. 2016. Neocortical neuronal morphology in the Siberian Tiger (*Panthera tigris altaica*) and the clouded leopard (*Neofelis nebulos*). *The Journal of Comparative Neurology*, 524 (17): 3641-3665. doi: 10.1002/cne.24022

Liu, X., Han, D., Somel M., Jiang, X., Hu, H., Guijarra, P., Zhang, N., Mitchelle, A., Halene, T., Ely, J.J., Sherwood, C.C., Hof, P.R., Qui, Z., Paabo, S., Akbarian, S., Khatovich, P. 2016. Disruption of an evolutionarily novel synaptic expression pattern in autism. *PLoS Biology*, 14 (9): e1002558. doi: 10.1371/journal.pbio.1002558

Loh, K.K. Petrides, M., Hopkins, W.D., Procyk, E., Amiez, C. 2016. Cognitive control of vocalizations in the primate ventrolateral-dorsomedial frontal (VLF-DMF) brain network. *Neuroscience and Biobehavior Review*, pii: S0149-7634(16)30366-9. doi: 10.1016/j.neurobiorev.2016.12.001

Perez, S.E., Sherwood, C.C., Cranfield, M.R., Erwin, J.M., Musakikwa, A., Hof, P.R. Mufson, E.J. 2016. Early Alzheimer’s disease-type pathology in the frontal cortex of wild mountain gorillas (*Gorilla beringei beringei*). *Neurobiology of Aging*, 39: 195-201. doi: 10.1016/j.neurobiolagin.2015.12017

Raghanti, M.A., Edler, M.K., Stephenson, A.R., Wilson, L.J., Hopkins, W.D., Ely, J.J., Erwin, J.M., Jacons, B., Hof, P.R., Sherwood, C.C. 2016. Human-specific increase of dopaminergic innervation in a striatal region associated with speech and language: a comparative analysis of the primate basal ganglia. *The Journal of Comparative Neurology*, 524: 2117-2129. doi: 10.1002/cne.23937

Reyes, L.D., Harland, T., Reep, R.L., Sherwood, C.C., Jacobs, B. 2016. Golgi analysis of neuron morphology in the presumptive somatosensory cortex and visual cortex of the Florida manatee (*Trichechus manatus latiostris*). *Brain, Behavior and Evolution*, 87 (2): 105-116. doi: 10.1159/0004445495

Stimpson, C.D., Barger, N., Taglialatela, J.P., Gendron-Fitzpatrick, A., Hof, P.R., Hopkins, W.D., Sherwood, C.C. 2016. Differential serotonergic innervation of the amygdala in bonobos and chimpanzees. *Social Cognitive Affective Neuroscience*, 11 (3): 413-422. doi: 10.1093/scan/nsv128

Charvet, C.J., Hof, P.R., Raghanti, M.A., Van Der Kouwe, A.J., Sherwood, C.C., Takahashi, E. 2017. Combining diffusion magnetic resonance tractography with stereology highlights increased cross-cortical integration in primates. *The Journal of Comparative Neurology*, 525: 105-1093. doi: 10.1002/cne.24115

Charvet, C.J., Stimpson, C.D., Kim, Y.D., Raghanti, M.A., Leqandowski, A.H., Hof, P.R., Gomez-Robles, A., Krienen, F.M., Sherwood, C.C. 2017. Gradients in cytoarchitectural landscapes of the isocortex: dirpotodont marsupials in comparison to eutherian mammals. *The Journal of Comparative Neurology*, 525: 1811-1826. doi: 10.1002/cns.24160

Dos Santos, S.E., Porfirio, J., da Cunha, F.B., Manger, P.R., Tavares, W., Pessoa, L., Raghanti, M.A., Sherwood, C.C., Herculano-Houzel, S. 2017. Cellular scaling rules for the brains of marsupials: not as “primitive” as expected. *Brain, Behavior and Evolution*, 89: 48-63. doi: 10.1159/000452856

Duka, T., Collins, Z., Anderson, S.M., Raghanti, M.A., Ely, J.J., Hof, P.R., Wildman, D.E., Goodman, M., Grossman, L.I., Sherwood, C.C. 2017. Divergent lactate dehydrogenase isoenzyme profile in cellular compartments of primate forebrain structures. *Molecular and Cellular Neuroscience*, 82: 137-142. doi: 10.1016/j.mcn.2017.01.004

Gomez-Robles, A., Hopkins, W.D., Schapiro, S.J., Sherwood, C.C. 2017. The heritability of chimpanzee and human brain asymmetry. *Royal Society Proceedings B*, 283: 20161319. Doi: 10.1098/rspb.2016.1319

Hecht, E.E., Mahovetz, L.M., Preuss, T.M., Hopkins, W.D. 2017. A neuroanatomical predictor of mirror self-recognition in chimpanzees. *Social Cognitive Affective Neuroscience*, 12 (1): 37-48. doi: 10.1093/scan/nsw159

Hopkins, W.D., Coulon, O., Meguerditchian, A., Autry, M., Davidek, K., Mahovetz, L., Pope, S., Mareno, M.C., Schapiro, S.J. 2017. Genetic factors and orofacial motor learning selectively influence variability in central sulcus morphology in chimpanzees (*Pan troglodytes*). *Journal of Neuroscience*, 37 (22): 5475-5483. doi: 10.1523/JNEUROSCIEN.2641-16-2017

Hopkins, W.D., Li, X., Crow, T., Roberts, N. 2017. Vertex- and atlas-based comparisons in measures of cortical thickness, gyrification and white matter volume between humans and chimpanzees. *Brain, Structure and Function*, 222 (1): 229-245. doi: 10.1007/s00429-016-1213-1

Hopkins, W.D., Meguerditchian, A., Coulon, O., Misiura, M. Pope, S., Mareno, M.C., Schapiro, S.J. 2017, Motor skill for tool-use is associated with asymmetries in Broca’s area and the motor hand area of the precentral gyrus in chimpanzees (*Pan troglodytes*). *Behavior and Brain Research*, 318: 71-81. doi: 10.1016/j.bbr.2016.10.048

Li, Q., Bozek, K., Xu, C., Guo, Y., Sun, J., Paabo, S., Sherwood, C.C., Hof, P.R. Ely, J.J. Li, Y, Willmitzer, L., Giavalisco, P., Khaitovich, P. 2017. Changed in lipidome composition during brain development in humans, chimpanzees, and macaque monkeys. *Molecular Biology and Evolution*, 34 (5): 1155-1166. doi: 10.1093/molbev/msx065

Marie, D., Roth, M., Lacoste, R., Nazarian, B., Bertello, A., Anton, J.L., Hopkins, W.D., Margiotoudi, K., Love, S.A., Meguerditchian A. 2017. Left brain asymmetry of the planum temporale in a nonhominid primate: redefining the origin of brain specialization for language. *Cerebral Cortex*, 19: 1-8. doi: 10.1093.cercor/bhx096

Muntane, G., Santpere, G., Verendeev, A., Seeley, W.W., Jacobs, B., Hopkins, W.D., Navarro, A., Sherwood, C.C. 2017. Interhemispheric gene expression differences in the cerebral cortex of humans and macaque monkeys. *Brain, Structure and Function*, doi: 10.1007/s00429-017-1401-7

Smaers, J.B., Gomez-Robles, A., Parks, A.N., Sherwood, C.C. 2017. Exceptional evolutionary expansion of prefrontal cortex in great apes and humans. *Current Biology*, 27: 714-720. doi: 10.1016/j.cub.2017.05.015

Stephenson, A.R., Edler, M.K., Erwin, J.M., Jacobs, B., Hopkins, W.D., Hof, P.R., Sherwood, C.C., Raghanti, M.A. 2017. Cholinergic innervation of the basal ganglia in humans and other anthropoid primates. *The Journal of Comparative Neurology*, 525: 319-332. doi: 10.1002/cne.24067

Hopkins, W. D., Coulon, O., Megurditchian, A., Autrey, M., Davidek, K., Mahovetz, L. M., Pope, S., Mareno, M. C., & Schapiro, S. J. (in press). Genetic factors and oro-facial motor learning selectively influence variability in central sulcus morphology in chimpanzees (*Pan troglodytes*). *Journal of Neuroscience.*

**Books**

Erwin J.M., Hof P.R. (2002) Volume editors: *Aging in Nonhuman Primates*. *Interdiscipl. Top. Gerontol. Vol. 31*, P.R. Hof, C.V. Mobbs Series eds, Karger, Basel, *viii* + 240 pp.

Atsalis S., Margulis S.W., Hof P.R. (2008) Volume editors: *Primate Reproductive Aging: Cross-Taxon Perspectives*. *Interdiscipl. Top. Gerontol. Vol. 36*, P.R. Hof, C.V. Mobbs Series eds, Karger, Basel, *viii* + 200 pp.

**Book chapters**

Allman J.M., Hakeem A., Erwin J.M., Nimchinsky E.A., Hof P.R. (2001) The anterior cingulate cortex: the evolution of an interface between emotion and cognition. **In**: *Unity of Knowledge: the Convergence of Natural and Human Science*, A.R. Damasio, A. Harrington, J. Kagan, B. McEwen, H. Moss, R. Shaikh eds, *Ann. N.Y. Acad. Sci*. **935**, 107-117.

Erwin J.M., Nimchinsky E.A., Gannon P.J., Perl D.P., Hof P.R. (2001) The study of brain aging in great apes. **In**: *Functional Neurobiology of Aging*, P.R. Hof, C.V. Mobbs eds, Academic Press, San Diego, pp. 447-456.

Erwin J.M., Bloomsmith M., Boysen S.T., Perl D., Zihlman A., Maple T.L., Hof P.R. (2001) The great ape aging project: caring and learning from apes. **In**: *The Apes: Challenges for the 21st Century*, Compiled by the Brookfield Zoo, Chicago Zoological Society, Chicago, pp. 344-346.

Gannon P.J., Kheck N.M., Hof P.R. (2001) Language areas in the hominoid brain: a dynamic communicative shift on the Upper East Side planum. **In**: *Evolutionary Anatomy of the Primate Cerebral Cortex*, D. Falk, K. Gibson eds, Cambridge University Press, Cambridge, pp. 216-240.

Erwin J.M., Hof P.R., Ely J.J., Perl D.P. (2002) One gerontology: advancing understanding of aging through studies of great apes and other primates. **In**: *Aging in Nonhuman Primates*. *Interdiscipl. Top. Gerontol. Vol. 31*, J.M. Erwin, P.R. Hof eds, Karger, Basel, pp. 1-21.

Erwin J.M., Bloomsmith M., Boysen S., Hof P.R., Holloway R., Lowenstine L., McManamon R., Perl D.P., Young W.G., Zihlman A. (2002) The Great Ape Aging Project: a resource for comparative study of behavior, cognition , health and neurobiology. **In**: *All Apes Great and Small, Vol. 1*, *Chimpanzees, Bonobos, and Gorillas*, B.M.F. Galdikas, N. Briggs, L. Sheeran, G. Shapiro, J. Goodall eds, Kluwer Academic-Plenum, New York, pp. 195-200.

Hof P.R., Gilissen E.P., Sherwood C.C., Duan H., Lee P.W.H., Delman B.N., Naidich T.P., Gannon P.J., Perl D.P., Erwin J.M. (2002) Comparative neuropathology of brain aging in primates. **In**: *Aging in Nonhuman Primates*. *Interdiscipl. Top. Gerontol. Vol. 31*, J.M. Erwin, P.R. Hof eds, Karger, Basel, pp. 130-154.

Perl D.P., Hof P.R., Nimchinsky E.A., Erwin J.M. (2002) Studies of age-related neuronal pathology in great apes. **In**: *All Apes Great and Small, Vol. 1*, *Chimpanzees, Bonobos, and Gorillas*, B.M.F. Galdikas, N. Briggs, L. Sheeran, G. Shapiro, J. Goodall eds, Kluwer Academic-Plenum, New York, pp. 207-216.

Sherwood C.C., Holloway R.L., Gannon P.J., Semendeferi K., Erwin J.M., Zilles K., Hof P.R. (2003) Neuroanatomical basis of facial expression in monkeys, apes, and humans. **In**:  *Emotions Inside Out 130 Years after Darwin's The Expression of the Emotions in Man and Animals*, P. Ekman, J.J. Campos, R.J. Davidson, F.B.M. de Waal eds, *Ann. N.Y. Acad. Sci*. **1000**, 99-103.

Hof P.R., Sherwood C.C. (2007) The evolution of neuron classes in the neocortex of mammals. **In**: *Evolution of Nervous Systems, Vol. 3*, J. Kaas, G. Striedter, T. Bullock, T. Preuss, J. Rubenstein, L. Krubitzer eds, Academic Press, San Diego, pp. 113-124.

Schenker N.M., Sherwood C.C., Hof P.R., Semendeferi K. (2007) Microstructural asymmetries of the cerebral cortex in humans and other mammals. **In**: *The Evolution of Hemispheric Specialization in Primates*, *Special Topics in Primatology Vol. 5*, W.D. Hopkins ed., American Society of Primatologists, Norman, pp. 93-118.

Sherwood C.C., Hof P.R. (2007) The evolution of neuron types and cortical histology in apes and humans. **In**: *Evolution of Nervous Systems, Vol. 4*, J. Kaas, G. Striedter, T. Bullock, T. Preuss, J. Rubenstein, L. Krubitzer eds, Academic Press, San Diego, pp. 355-378.

Erwin J.M., Hof P.R. (2008) Menopause and reproductive senescence in comparative context. **In:** *Primate Reproductive Aging: Cross-Taxon Perspectives*. *Interdiscipl. Top. Gerontol. Vol. 36*, S. Atsalis, S.W. Margulis, P.R. Hof eds, Karger, Basel, pp. 4-16.

Sherwood C.C., Rilling J.K., Holloway R.L., Hof P.R. (2009) Evolution of the brain: in humans - Specializations in a comparative perspective. **In**: *Encyclopedia of Neuroscience*, M.D. Binder, N. Hirokawa, U. Windhorst, M.C. Hirsch eds, Springer Verlag, New York, pp. 1334-1338.

Raghanti M.A., Hof P.R., Sherwood C.C. (2010) The evolution of cortical neurotransmitter systems among primates and their relevance to cognition. In: *The Human Brain Evolving: Paleoneurological Studies in Honor of Ralph L. Holloway*, D. Broadfield, M. Yuan, N. Toth, K. Schick eds, Stone Age Institute Press. pp. 195-211.

Sherwood C.C., Bauernfeind A.L., Bianchi S., Raghanti M.A., Hof P.R. (2012) Human brain evolution writ large and small. In: *Evolution of the Primate Brain: from Neuron to Behavior*, M.A. Hoffman and D. Falks eds, Elsevier Science, London, pp 237-254

Hopkins, W. D., Pika, S., Liebal, K., Bania, A., Meguerditchian, A., Gardner, M., & Schapiro, S. J. (2012). Handedness for manual gestures in great apes: A meta-analysis. In: *Gestural Communication Humans, Apes, and Monkeys,* S. Pika & K. Liebel eds, Amsterdam: John Benjamins Publishing. pp. 93-111

Spocter M.A., Raghanti M.A., Butti C., Hof P.R., and Sherwood C.C. (2015) The minicolumn in comparative context. In: *Recent Advances on the Modular Organization of the Cortex.* M.F. Casanova, I. Opris (eds.) Springer Publishing. pp. 63-80.

Raghanti M.A., Spurlock L.B., Uppal N., Sherwood C.C., Butti C., and Hof P.R. (2015) Von Economo neurons. In: *Brain Mapping: An Encyclopedic Reference, Vol. 2: Anatomy and Physiology, Systems*. A. Toga (ed.), Elsevier Press. pp. 81-91.

Reyes L.D. and Sherwood C.C. (2015) Neuroscience and human brain evolution. In: *Human Paleoneurology.* E. Bruner (ed.) Springer Series in Bio-/Neuroinformatics Vol. 3. pp. 11-37.

Verendeev A., Sherwood C.C., and Hopkins W.D. (2016) Organization and evolution of the neural control of the hand in primates: motor systems, sensory feedback, and laterality. In: *The Evolution of the Primate Hand: Anatomical, Developmental, Functional, and Paleontological Evidence.* T.L. Kivell, P. Lemelin, B.G. Richmond, D. Schmitt (eds.) Springer-Verlag Publishing. pp. 131-153.

Sherwood C.C., Bauernfeind A.L., Verendeev A., Raghanti M.A., and Hof P.R. (2017) Evolutionary specializations of human brain microstructure. In: *Evolution of Nervous Systems, Vol. 4, 2nd Edition.* J.H. Kaas, T.M. Preuss (eds.), Elsevier Press. pp. 121-139.

Passingham R.E., Smaers J.B., and Sherwood C.C. (2017) Evolutionary specializations of the human prefrontal cortex. In: *Evolution of Nervous Systems, Vol. 4, 2nd Edition.* J.H. Kaas, T.M. Preuss (eds.), Elsevier Press. pp. 207-226.

Almécija S. and Sherwood C.C. (2017) Hands, brains, and precision grips: origins of tool use behaviors. In: *Evolution of Nervous Systems, Vol. 3, 2nd Edition.* J.H. Kaas, L.A. Krubitzer (eds), Elsevier Press. pp. 299-315.

Hopkins, W. D., Stimpson, C. D., & Sherwood, C. C. (in press). Social cognition and brain organization in chimpanzees (*Pan troglodytes*) and bonobos (*Pan paniscus*). In B. Hare & S. Yamamoto (Eds), Bonobos: Unique in Mind, Brain and Behavior. Oxford: Oxford University Press.