

Dr. Philipp Gunz · *Curriculum vitae*

*7th October 1975, LINZ · Citizenship: Austrian



Max Planck Institute for Evolutionary Anthropology
Department of Human Evolution

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RESEARCH BRIEF

I AM A PHYSICAL ANTHROPOLOGIST with a primary research interest in palaeoanthropology. I study the evolution of developmental patterns. My aim is to understand what makes us human by comparing our own species with our closest living and fossil relatives. As fossils are usually found broken into many pieces, and only partially complete, a central topic of my work is the virtual reconstruction of fossils using computed tomographic scans. I am a specialist for fossil reconstruction, and the statistical analysis of shape — a set of methods called «geometric morphometrics». My publications explore different aspects of ontogenetic and phylogenetic shape changes — the evolution and development of the braincase and its «endocast», the evolution of the face, as well as subtle shape differences among teeth, and the bony labyrinth.

THESES

- 2013 Habilitation at the Dept. of Anthropology, University of Vienna — Austria.
THESIS TITLE: *Evolution & Development of the hominin skull.*
- 2005 Ph.D. (*doctor rerum naturalium*) at the Department of Anthropology, University of Vienna – Austria (with honors). THESIS TITLE: *Statistical and geometric reconstruction of hominid crania: reconstructing australopithecine ontogeny*, supervised by G.W. Weber, F.L. Bookstein and H. Seidler.
- 2001 Master's Degree (Mag. rer. nat.) in Anthropology at the Institute for Human Biology (now Dept. of Anthropology), University of Vienna –Austria (with honors).
THESIS TITLE: *Using Semilandmarks on surfaces and curves in three dimensions to model human neurocranial shape*, supervised by H. Seidler and F.L. Bookstein.

CURRENT ACADEMIC POSITIONS

- Since 2015 Senior Scientist (W2) — Research Group Leader
Max Planck Institute for Evolutionary Anthropology, Leipzig — Germany.
- Since 2011 Associate Professor (Status-Only Appointment),
Department of Anthropology; University of Toronto — Canada.
- Since 2001 Lecturer, Department of Anthropology; University of Vienna — Austria.

PAST ACADEMIC POSITIONS

- 2007–2015 Research Fellow, Department of Human Evolution;
Max Planck Institute for Evolutionary Anthropology, Leipzig — Germany.
- 2005–2007 Postdoctoral Marie Curie Fellow at the Max Planck Institute for Evolutionary Anthropology,
Department of Human Evolution; Leipzig — Germany.
- 2005 Post-Doc Stipend at the Max Planck Institute for Evolutionary Anthropology,
Department of Human Evolution; Leipzig — Germany.
- 2004–2005 Ph.D. research fellowship funded by a grant of the Ministry of Culture Science & Education Austria,
and the Austrian Council for Science and Technology.
- 2001–2004 Ph.D. research fellowship funded by the project «Parameterised reference models for
hominoid skulls», the Austrian Science Foundation (FWF).

TEACHING EXPERIENCE

- 2005– LECTURER at the «International Max Planck Research School» in Leipzig.
- Advanced topics in geometric morphometrics (graduate seminar)
 - Multivariate statistics (graduate seminar)
 - Virtual Anthropology (graduate level lecture)
 - Plio-Pleistocenes hominins (graduate level lecture)
 - The first humans (graduate level lecture)
- 2001– LECTURER, University of Vienna
- The evolution of hominids
 - Virtual Anthropology
 - Human Evo·Devo: The evolution of human development
 - Multivariate Statistics for Biologists
 - Techniques of Scientific Presentation
- 1999–2005 TEACHING ASSISTANT, Introduction to Human Biology — University of Vienna.

WORKSHOP TEACHING

- Morphometrics Workshop — La Plata, Argentina; June 2013
- Geometric Morphometrics Summer School — Vienna, July 2006 & 2008
- Dental Tissues Workshop — Leipzig, September 2006
- Advanced Imaging Tools — Vienna, November 2007
- Craniofacial Growth & Development — Madrid, May 2008
- EVAN Toolbox workshops — Vienna, October 2010; Leipzig September 2011 & March 2012
- Geometric Morphometrics Workshop — Tübingen, November 2010

WORKSHOP & CONFERENCE ORGANISATION

- European Society for the Study of Human Evolution (ESHE), Inaugural meeting 2011, Leipzig.
- Human Evo·Devo — Konrad Lorenz Institute Altenberg, September 2009. With Philipp Mitteröcker.
- Marie Curie Fellow meeting (RTN EVAN), July 2007, Leipzig.

ACADEMIC AWARDS & RECOGNITIONS

- ISI Highly Cited Researcher — Thompson Reuters Essential Science Indicators (<http://highlycited.com>) — 2014
- Poster prize, *150 years of Neanderthal discoveries conference* — Bonn 2006
- Student prize for best oral presentation, *European Anthropological Association* — Cambridge 2000

FIELD WORK

2001– Member of the *Paleoanthropological Research Team*; fieldwork in the Ethiopian Galili-Region.

RESEARCH GRANTS

2010 MaxNet Cognition: *Phenotypic analysis of 1000 human brains*: 47 000 €
2008 Minerva Foundation Research Grant (with Alon Barash): *Virtual reconstruction of fossil crania*
2004–2007 Austrian Council for Science and Technology
New Perspectives in Anthropological Studies (PI Horst Seidler).
Co-PI on the geometric morphometrics section: 522 000 €
2001, 2004 Travel Grants of the «Österreichische Forschungsgemeinschaft».

INVITED TALKS & ACADEMIC LECTURES

1. Genderperspektiven in der Medizin, Leipzig — January 2017
2. Max Planck Institute for the Science of Human History, Jena — November 2016
3. Collège de France, Paris — October 2016
4. Studienstiftung des deutschen Volkes, Cologne — March 2016
5. Hessisches Landesmuseum, Darmstadt — October 2015
6. Keynote lecture German Society of Pediatrics & Adolescent Medicine (*DGKJ Jahrestagung*) — September 2014
7. American Association of Physical Anthropologists' Annual Meeting, Invited Symposium, Calgary — April 2014
8. Center for Organismal Systems Biology, Vienna — June 2013
9. Morphometrics Workshop, La Plata — June 2013
10. Centre de Recherches Interdisciplinaires, Paris — March 2013
11. Centro Nacional de Investigación sobre la Evolución Humana, Burgos — October 2012
12. Zoom Museum for Children, Vienna — March 2012
13. Natural History Museum, Paris — February 2012
14. Senckenberg Museum, Görlitz — February 2012
15. Natural History Museum, Paris — March 2011
16. University of Zürich — November 2010
17. University of Tübingen — November 2010
18. Institut Pasteur, Paris — April 2010
19. Natural History Museum, Paris — April 2010
20. Medical University, Leiden — Nov 2009
21. Keynote, Graduation Day MPI CBG, Dresden — November 2009
22. Department of Theoretical Biology, University of Vienna — November 2009
23. Wellcome Trust, Cambridge — Sept. 2009
24. Natural History Museum, Paris — April 2009
25. Croatia Academy of Sciences, Zagreb — January 2009
26. University of Vienna — December 2008
27. Neurospin — March 2008
28. «Morphofest 2008» Vienna — July 2008
29. Harvard University, Cambridge — October 2007

30. Weizmann Institute, Tel Aviv (Rehovot) — May 2007
31. «Morphofest 2006» Vienna — July 2006
32. Max Planck Inst. for Evolutionary Anthropology, Leipzig — Jan 2005
33. Konrad Lorenz Inst. for Evolution & Cognition, Altenberg — Nov 2003

SERVICE

- 2013– Board member European Society for the Study of Human Evolution (ESHE)
- 2012–2015 Editorial Board, Journal of Human Evolution
- 2011– Editorial Board, Human Origins Research
- 2005–2007 Elected representative for the fellows (graduate students and postdocs) of the Marie Curie Research Training Network «EVAN»
- 2002 Student member of the «Habilitation» committee for Prof. Hermann Prossinger, University of Vienna

REFEREE FOR JOURNALS

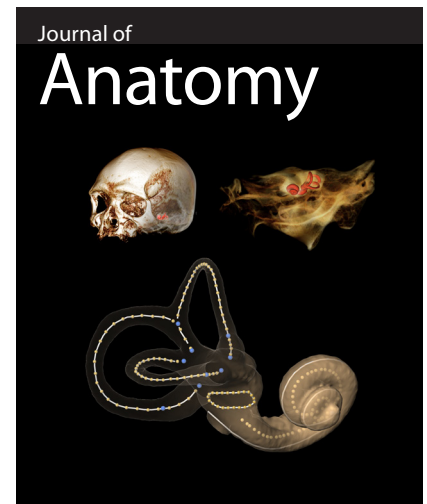
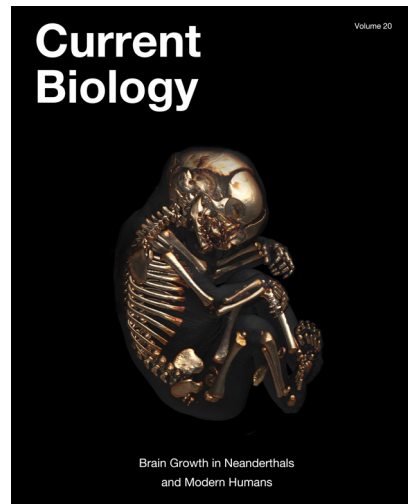
- Annals of Anatomy
- American Journal of Physical Anthropology
- American Journal of Human Biology
- American Journal of Orthodontics & Dentofacial Orthopedics
- Current Biology
- Frontiers in Human Neuroscience
- Journal of Anatomy
- Journal of Human Evolution
- Nature
- Nature Communications
- PLoS One
- Palaeontologia Electronica
- PNAS
- Proceedings of the Royal Society B
- Systematic Biology
- The Anatomical Record
- Transactions of the Royal Society of South Africa

COMPUTER PROGRAMMING EXPERIENCE

MATHEMATICA & «R» In collaboration with Philipp Mitteröcker, Univ. of Vienna, I have developed an extensive toolkit for geometric morphometric data processing, multivariate analysis and visualization.

CONTRIBUTIONS TO EXHIBITIONS IN MUSEUMS

- Naturhistorisches Museum, Wien
- Haus der Archäologie & Geschichte, Chemnitz
- Technisches Museum Wien
- Neanderthal Museum, Mettmann
- Senckenberg Museum, Frankfurt
- «EVAN Exhibit» at the Max Planck Institute, Leipzig
- Wissenschaftssommer 2008 Leipzig



Publications

[CE] Contributed Equally · [S] Papers with Ph.D. students that I have supervised

1. MARTIN, R.B.G., HUBLIN, J.J., GUNZ, P., SKINNER, M.M., 2017. The morphology of the enamel–dentine junction in Neanderthal molars: Gross morphology, non-metric traits, and temporal trends. *J Hum Evo.* 103, 20–44.
2. STOESSEL, A., DAVID, R., GUNZ, P., SCHMIDT, F., SPOOR, F., HUBLIN, J.J. 2016. Morphology and function of Neanderthal and modern human ear ossicles. *PNAS* 113 (41), 11489–11494.
1. RITZMAN, T.B., TERHUNE, C.E., GUNZ, P., ROBINSON, C.A., 2016. Mandibular ramus shape of *Australopithecus sediba* suggests a single variable species. *J Hum Evo.* 100, 54–64.
2. ARCHER, W., POP, C., GUNZ, P., MCPHERRON, S., 2016. What is Still Bay? Human biogeography, behavioural variability and bifacial points. *J Hum Evo.* 97, 58–72.
3. GREEN, D., SPIEWAK, T.A., SEITELMAN, B., GUNZ, P., 2016. Scapular shape of extant hominoids and the African ape/modern human last common ancestor. *J Hum Evo.* 94, 1–12.
4. STOESSEL, A., GUNZ, P., DAVID, R., SPOOR, F., 2016. Comparative anatomy of the middle ear ossicles of extant hominids — Introducing a geometric morphometric protocol. *J Hum Evo.* 91, pp. 1–25.
5. SKINNER, M.M., DE VRIES, D., GUNZ, P., HUBLIN, J.J., KLASSEN, P., ROKSANDIC, M., 2016. A dental perspective on the taxonomic affinity of the Balanica mandible (BH-1). *J Hum Evo.* 93, pp. 63–81.
6. ARCHER, W., GUNZ, P., VAN NIEKERK, K.P., HENSHILWOOD, C.S., MCPHERRON, S., 2015. Diachronic change within the Stillbay at Blombos Cave, South Africa. *PLoS ONE* 10 (7), e0132428.
7. FREIDLIN, S., GUNZ, P., HUBLIN, J.J. 2015. Ontogenetic and static allometry in the human face: Contrasting Khoisan and Inuit. *Am. J. Phys. Anthropol.* 158 (1), pp. 116–131.
8. SPOOR*, F., GUNZ*, P., NEUBAUER, S., STELZER, S., SCOTT, N., KWEKASON, A., DEAN, C., 2015. Reconstructed *Homo habilis* type OH 7 suggests deep-rooted species diversity in early *Homo*. *Nature* 519(7541):83–86 [CE] [featured on cover]
9. GREEN, D., SUGIURA, Y., SEITELMAN, B., GUNZ, P. 2015. Reconciling the convergence of supraspinous fossa shape among hominoids in light of locomotor differences. *AJPA.* 156(4):498–510.
10. HERSHKOVITZ, I., MARDER, O., AYALON, A., BAR-MATHEWS, M., YASUR, G., BOARETTO, E., CARACUTA, V., ALEX, B., FRUMKIN, A., GODER-GOLDBERGER, M., GUNZ, P., HOLLOWAY, R., LATIMER, B., LAVI, R., MATTHEWS, A., SLON, V., BAR-YOSEF MAYER, D., BERNA, F., BAR-OZ, G., YESHURUN, R., MAY, H., WEBER, G., BARZILAI, O., 2015. Levantine cranium from Manot Cave (Israel) foreshadows the first European modern humans. *Nature* 520(7546):216–219.
11. HUBLIN, J.J., NEUBAUER, S., GUNZ, P. 2015. Brain Ontogeny and Life History in Pleistocene Hominins. *Philosophical Transactions B.* 370:20140062.

12. GREEN, D., SERRINS J.D., SEITELMAN, B., MARTINY, A.R., GUNZ, P. 2015. Geometric morphometrics of hominoid infrapinnous fossa shape. *The Anatomical Record*. 289(1):180-194.
13. SCOTT, N., NEUBAUER, S., HUBLIN, J.J., GUNZ, P. 2014. A shared pattern of postnatal endocranial development in extant hominoids. *Evolutionary Biology*. 41:572-594. [S]
14. CREVECOEUR, I., SKINNER, M.M., BAILEY, S.E., GUNZ, P., BORTOLUZZI, S., BROOKS, A.S., BURLET, C., CORNELISSEN, E., DE CLERCK, N., ET AL., 2014. First early hominin from central Africa (Ishango, Democratic Republic of Congo). *PLoS One* 9, e84652.
15. FREIDLINE, S.E., GUNZ, P., HARVATI, K., HUBLIN, J.J., 2013. Evaluating developmental shape changes in *Homo antecessor* subadult facial morphology. *J Hum Evol* 65, 404-423.
16. GUNZ, P., MITTEROECKER, P. 2013. Semilandmarks: a method for quantifying curves and surfaces. *It Journal of Mammalogy*. 24(1) DOI: 10.4404/hystrix-24.1-6292
17. MITTEROECKER, P., GUNZ, P., WINDHAGER, S., SCHAEFER, K., 2013. Shape, form, and allometry in geometric morphometrics, with applications to human facial morphology. *It Journal of Mammalogy*. 24(1) DOI: 10.4404/hystrix-24.1-6369
18. LE CABEC, A., GUNZ, P., KUPCZIK, K., BRAGA, J., HUBLIN, J.J. 2013. Anterior Tooth Root Morphology and Size in Neanderthals: Taxonomic and Functional Implications. *J Hum Evol*. 64(3):169-93. [S]
19. KULLMER, O., BENAZZI, S., SCHULZ, D., GUNZ, P., KORDOS, L., BEGUN, D. 2013. Dental arch restoration using tooth macrowear patterns with application to *Rudapithecus hungaricus*, from the late Miocene of Rudabánya, Hungary. *J Hum Evol*. 64(2):151-60.
20. LE CABEC, A., KUPCZIK, K., GUNZ, P., BRAGA, J., HUBLIN, J.J. 2012 Long anterior mandibular tooth roots in Neanderthals are not the result of their large jaws. *J Hum Evol*. 63(5):667-81. [S]
21. GUNZ*, P., BULYGINA*, K. 2012. The Mousterian child from Teshik-Tash is a Neanderthal: A geometric morphometric study of the frontal bone. *AJPA*. 149(3):365-79. [CE]
22. FREIDLINE, S., GUNZ, P., HARVATI, K., HUBLIN, J.J. 2012. Middle Pleistocene human facial morphology in an evolutionary and developmental context. *J Hum Evol*. 63(5):723-40. [S]
23. GUNZ, P. 2012. Evolutionary relationships among robust and gracile australopiths: an «evo-devo» perspective. *Evolutionary Biology*. 39(4):472-487.
24. MITTEROECKER, P., GUNZ, P., NEUBAUER, S., MUELLER, G.B. 2012. How to explore morphological integration in human evolution and development? *Evolutionary Biology*. 39(4):536-553.
25. GUNZ, P., RAMSIER, M., KUHRIG, M., HUBLIN, J.-J., SPOOR, F. 2012. The mammalian bony labyrinth reconsidered, introducing a new geometric morphometric approach. *J Anatomy*. 220 (6): 529–543. [featured on cover]
26. NEUBAUER, S., GUNZ, P., WEBER, G.W., HUBLIN, J.J. 2012. Endocranial volume of *Australopithecus africanus*: New CT-based estimates and the effects of missing data and small sample size. *J Hum Evol*. 62 (4): 498–510. [S]
27. GUNZ, P., NEUBAUER, S., GOLONOVA, L., DORONICHEV, V., MAUREILLE, B., HUBLIN, J.J. 2012. A uniquely modern human pattern of endocranial development. Insights from a new cranial reconstruction of the Neandertal newborn from Mezmaiskaya. *J Hum Evol*. 62 (2): 300–313.
28. FREIDLINE, S., GUNZ, P., HARVATI, K., JANKOVIC, I., HUBLIN, J.J. 2012. 3D Geometric Morphometric Analysis on the Frontal and Zygomatic Bone of the Zuttiyeh Fossil from Israel. *J Hum Evol*. 62 (2): 225–541. [S]
29. NEUBAUER, S., GUNZ, P., SCHWARZ, U., HUBLIN, J.-J., BOESCH, C. 2012. Endocranial Volumes in an Ontogenetic Sample of Chimpanzees From the Tai Forest National Park, Ivory Coast. *AJPA*. 147 (2): 319–325. [S]
30. BASTIR, M., ROSAS, A., GUNZ, P., PENA-MELIAN, A., MANZI, G., HARVATI, K., HUBLIN, J.J. 2011. Brain base evolution in highly encephalised human species. *Nature Communications*. doi: 10.1038/ncomms1593.
31. GUNZ, P., NEUBAUER, S., MAUREILLE, B., HUBLIN, J.J. 2011. Virtual Reconstruction of the Le Moustier 2 newborn. Implications for Neandertal ontogeny. *Paleo* 22. 155–172. [featured on cover]
32. BULYGINA, E., GUNZ, P. 2011. Skhodnya, Satanay and Podkumok cranial remains and Upper Paleolithic population of the European territory of Russia. *J Hum Evol*. 60 (2): 129–144. [S]
33. GUNZ*, P., NEUBAUER*, S., MAUREILLE, B., HUBLIN, J.J. 2010. Brain development after birth differs between Neanderthals and modern humans. *Current Biology*. 20 (21): R921-922. [CE] [S] [featured on cover]
34. NEUBAUER, S., GUNZ, P., HUBLIN, J.J. 2010. Endocranial shape changes in chimpanzees and humans: a morphometric analysis of unique and shared aspects. *J Hum Evol*. 59 (5): 555–566. [S]

35. SKINNER*, M., GUNZ*, P. 2010. The presence of accessory cusps in chimpanzee lower molars is consistent with a patterning cascade model of development. *J Anat.* 217: 245–253. [CE]
36. HARVATI K., HUBLIN, J.J., GUNZ, P. 2010. Evolution of Middle-Late Pleistocene human cranio-facial form: a 3D approach. *J Hum Evol.* 59 (5): 445–464.
37. GRINE, F.E., GUNZ, P., BETTI-NASH, L., NEUBAUER, S., MORRIS, A.G. 2010. Reconstruction of the Late Pleistocene human skull from Hofmeyr, South Africa. *J Hum Evol.* 59 (1): 1–15.
38. HUBLIN, J.J., WESTON, D., GUNZ, P., RICHARDS, M., ROEBROEKS, W., GLIMMERVEEN, J., ANTHONIS, L. 2009. Out of the North Sea: the Zeeland Ridges Neanderthal. *J Hum Evol.* 57 (6): 777–785.
39. SKINNER, M., GUNZ, P., WOOD, P., HUBLIN, J.J. 2009. How Many Landmarks? Assessing the Classification Accuracy of *Pan* Lower Molars Using a Geometric Morphometric Analysis of the Occlusal Basin as Seen at the Enamel-Dentine Junction. *Front Oral Biol* 13: 23–29. [S]
40. NEUBAUER, S., GUNZ, P., HUBLIN, J.J. 2009. The pattern of endocranial ontogenetic shape changes in humans. *J Anat.* 215 (3): 240–255. [S]
41. GUNZ, P., P. MITTEROECKER, NEUBAUER, S., WEBER G.W., F. L. BOOKSTEIN. 2009. Principles for the virtual reconstruction of hominin crania. *J Hum Evol* 57 (1): 48–62.
42. GUNZ, P., BOOKSTEIN, F.L., P. MITTEROECKER, A. STADLMAYR, H. SEIDLER, WEBER, G.W. 2009. Early modern human diversity suggests subdivided population structure and a complex out-of-Africa scenario. *PNAS* 106: 6094–6098.
43. SKINNER, M., GUNZ, P., WOOD, B., BOESCH, C., HUBLIN, J.J. 2009. Discrimination of extant *Pan* species & subspecies using the EDJ morphology of lower molars. *Am. J. Phys. Anthropol.* 140: 234–243 [S] [featured on cover]
44. MITTEROECKER, P., GUNZ, P. 2009. Advances in Geometric Morphometrics. *Evol. Biol.* 36: 235–247.
45. KULEMEYER, C., ASBAHR, K., GUNZ, P., FRAHNERT, S., BAIR, F. 2009. Functional morphology and integration of corvid skulls — a 3D geometric morphometric approach. *Frontiers in Zoology* 6:2. [S]
46. SKINNER, M., GUNZ, P., WOOD, P., HUBLIN, J.J. 2008. Enamel-dentine junction (EDJ) morphology distinguishes the lower molars of *Australopithecus africanus* and *Paranthropus robustus*. *J Hum Evol.* 55: 979–988. [S]
47. HARVATI K., GUNZ P., GRIGORESCU D. 2007. Cioclovina (Romania): morphological affinities of an early modern European. *J Hum Evol.* 56 (6): 732–746.
48. GUNZ, P., & K. HARVATI. 2007. The Neanderthal «chignon»: Variation, integration, and homology. *J Hum Evol* 52: 262–274.
49. SCHAEFER, K., B. FINK, K. GRAMMER, P. MITTEROECKER, P. GUNZ, AND F. L. BOOKSTEIN. 2006. Female attractiveness: Physical Appearance as Shape. *Psychology Science*: 48 (2): 178–205.
50. FINK, B., K. GRAMMER, P. MITTEROECKER, P. GUNZ, K. SCHAEFER, F. L. BOOKSTEIN, AND J. T. MANNING. 2005. Second to fourth digit ratio and face shape. *Proceedings of the Royal Society B* 272: 1995–2001.
51. MITTEROECKER, P., P. GUNZ, AND F. L. BOOKSTEIN. 2005. Heterochrony and geometric morphometrics: a comparison of cranial growth in *Pan paniscus* versus *Pan troglodytes*. *Evolution & Development* 7: 244–58.
52. SCHAEFER, K., T. LAUC, P. MITTEROECKER, P. GUNZ, AND F. L. BOOKSTEIN. 2005. Dental Arch Asymmetry in an Isolated Adriatic Community. *Am. J. Phys. Anthropol.* 129: 132–142.
53. BOOKSTEIN, F. L., D. E. SLICE, P. GUNZ, AND P. MITTEROECKER. 2004. Anthropology takes control of morphometrics. *Coll Antropol* 28 Suppl 2: 121–32.
54. MITTEROECKER, P., P. GUNZ, M. BERNHARD, K. SCHAEFER, AND F. L. BOOKSTEIN. 2004. Comparison of cranial ontogenetic trajectories among great apes and humans. *J Hum Evol* 46: 679–97.
55. MITTEROECKER, P., P. GUNZ, G. W. WEBER, AND F. L. BOOKSTEIN. 2004. Regional dissociated heterochrony in multivariate analysis. *Ann Anat* 186: 463–70.
56. NEUBAUER, S., P. GUNZ, P. MITTEROECKER, AND G. W. WEBER. 2004. Three-dimensional digital imaging of the partial *Australopithecus africanus* endocranium MLD 37/38. *Canadian Assoc Radiologists J* 55: 271–8.
57. SCHAEFER, K., P. MITTEROECKER, P. GUNZ, M. BERNHARD, AND F. L. BOOKSTEIN. 2004. Craniofacial sexual dimorphism patterns and allometry among extant hominids. *Ann Anat* 186:471–8.
58. BOOKSTEIN, F. L., P. GUNZ, P. MITTEROECKER, H. PROSSINGER, K. SCHAEFER, AND H. SEIDLER. 2003. Cranial integration in *Homo*: singular warps analysis of the midsagittal plane in ontogeny and evolution. *J Hum Evol* 44: 167–87.

59. WEBER, G. W., K. SCHAEFER, H. PROSSINGER, P. GUNZ, P. MITTEROECKER, AND H. SEIDLER. 2001. Virtual anthropology: the digital evolution in anthropological sciences. *J Physiol Anthropol Appl Human Sci* 20: 69-80.

PEER-REVIEWED CHAPTERS IN EDITED VOLUMES

60. GUNZ, P. In Press. «Geometric Morphometrics» in *Introduction to Archaeological Sciences*, Edited by M. RICHARDS & K. BRITTON. Cambridge University Press.
61. GUNZ, P., 2016. «Growing up fast, maturing slowly. The evolution of a uniquely modern human pattern of brain development» in *Evolutionary Developmental Anthropology*, Edited by J. BOUGHNER & C. ROLIAN. Hoboken: John Wiley & Sons.
62. STOESEL, A., GUNZ, P., KUHRIG, M., HUBLIN, J.J., SPOOR, F., 2015. «The bony labyrinth of the Oberkassel hominins» in *The late glacial burial from Oberkassel revisited*, Edited by LIANE GIEMISCH & RALF W. SCHMITZ. Verlag Phillip von Zabern, Darmstadt. pp 175-180.
63. GUNZ, P., 2015. «Computed tools for paleoneurology» in *Human Paleoneurology*, Edited by E. BRUNER. New York: Springer.
64. SCHILLACI, M.A., GUNZ, P. 2013. «Multivariate Quantative Methods in Paleoanthropology» in *Companion to Paleoanthropology*, Edited by D. BEGUN. Blackwell Publishing Ltd, Oxford.
65. WEBER G.W., GUNZ P., NEUBAUER S., MITTEROECKER P., BOOKSTEIN F.L. 2012. «Digital South African Fossils: Morphological studies using reference-based reconstruction and electronic preparation», in *African Genesis: Perspectives on Hominin Evolution*. Edited by S. REYNOLDS & A. GALLAGHER. Cambridge University Press.
66. GUNZ, P., HARVATI, K. 2011. «Integration and homology of “chignon” and “hemibun” morphology» in *Continuity and Discontinuity in the Peopling of Europe: One Hundred Fifty Years of Neanderthal Study*, Edited by S. CONDEMI & G.C. WENIGER. New York: Springer.
67. WEBER, G. W., P. GUNZ, P. MITTEROECKER, A. STADLMAYR, F.L. BOOKSTEIN, AND H. SEIDLER. 2006. «External geometry of Mladec neurocrania compared with anatomically modern humans and Neanderthals,» in *Early Modern Humans at the Moravian Gate: Mladec Caves and their Remains*. Edited by M. TESCHLER-NICOLA. Wien, New York: Springer, pp. 453–471.
68. GUNZ, P., P. MITTEROECKER, F. L. BOOKSTEIN. 2005. «Semilandmarks in Three Dimensions,» in *Modern Morphometrics in Physical Anthropology*. Edited by D. E. SLICE, pp. 73–98. New York: Kluwer Academic/Plenum Publishers. [\[featured on cover\]](#)
69. SCHAEFER, K., P. GUNZ, P. MITTEROECKER, I. SZIKOSSY, H. PROSSINGER, G. W. WEBER, W. RECHEIS, AND H. SEIDLER. 2005. «The frontal cranial profile of Le Moustier 1,» in *The Neandertal Adolescent Le Moustier 1 – New Aspects, New Results*. Edited by H. ULLRICH. Berlin: Berliner Beiträge zur Vor- und Frühgeschichte.
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