

# PD Dr. Philipp Gunz · *Curriculum vitae*

\*7th October 1975, LINZ · Citizenship: Austrian



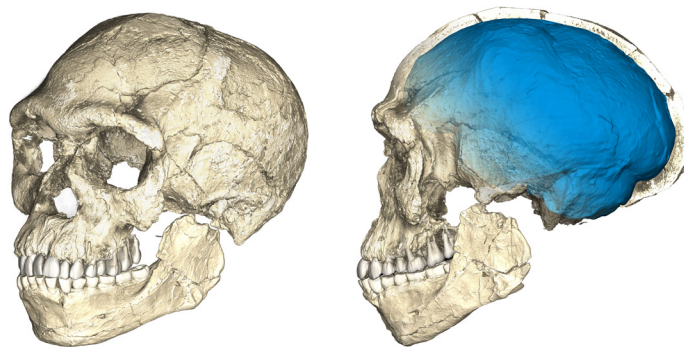
Max Planck Institute for Evolutionary Anthropology  
*Department of Human Evolution*

## RESEARCH BRIEF

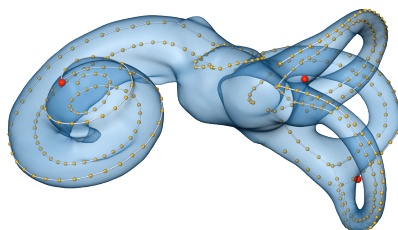
I AM A BIOLOGICAL ANTHROPOLOGIST with a primary research interest in the evolution of developmental patterns. My aim is to understand what makes us human by comparing our own species with our closest living and fossil relatives.

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 — in particular the evolution and development of the brain and the imprint it leaves in the bony braincase. Alteration of endocranial shape in the hominin lineage is likely to reflect evolutionary changes in the organisation of structures of the human brain. However, brain tissue doesn't fossilize, so the underlying biology has remained elusive. My research addresses this challenging question through an interdisciplinary approach that brings together analysis of fossil skulls, ancient genomes, brain imaging and gene expression.



**The first of our kind.** Two views of a composite reconstruction of the earliest known *Homo sapiens* fossils from Jebel Irhoud (Morocco), dated to 300 thousand years ago. The archaic-looking virtual imprint of the braincase (blue) indicates that brain shape, and possibly brain function, evolved within the *Homo sapiens* lineage.



Quantifying the shape of the bony labyrinth using hundreds of semilandmarks.

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04103 Leipzig — Germany  
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### CURRENT ACADEMIC POSITIONS

- Since 2015 Senior Scientist (W2) — Research Group Leader  
Max Planck Institute for Evolutionary Anthropology, Leipzig — Germany.
- Since 2019 Fellow of the Max Planck School of Cognition — Germany.
- Since 2017 Affiliated Researcher — Max Planck Institute for Psycholinguistics, Nijmegen — The Netherlands.
- Since 2001 Lecturer, Department of Anthropology, University of Vienna — Austria.

### 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.

### PAST ACADEMIC POSITIONS

- Since 2017 Extended Faculty — KLI Institute for the Advanced Study of Natural Complex Systems — Austria.
- 2011–2017 Associate Professor (Status-Only Appointment),  
Department of Anthropology; University of Toronto — Canada.
- 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

Since 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)

Since 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.

## 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
- Prize for best oral presentation, *European Anthropological Association* — Cambridge 2000

## RESEARCH GRANTS

Since 2019 *Evolution of Hominoid Brain connectomics* (PIs: C. Crockford, P. Gunz, D. Haun, N. Weiskopf, A.D. Friederici, A. Anwander) — Phase 1: 1.9 Mio €.

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».

## FIELD WORK

2001–2007 Member of the *Paleoanthropological Research Team*; fieldwork in the Ethiopian Galili-Region.

## STUDENT SUPERVISION

### PH.D. DISSERTATIONS

- Christoph Kulemeyr — Graduated in 2009
- Simon Neubauer — Graduated with highest honors in 2010
- Sarah Freidline — Graduated with honors in 2012
- Stephanie Kozakowski — Graduated in 2013
- Stefanie Stelzer — Graduated in 2018
- Nadia A. Scott
- Inga Bergmann

- Alexandra Schuh
- Thomas Davies
- Julia van Beesel

#### DIPLOMA THESES

- Caroline Fenes (University of Vienna, Supervisor: Katrin Schäfer)
- Simon Neubauer (University of Vienna, Supervisor: Gerhard Weber)
- Martin Schöfnagl (University of Vienna, Supervisor: Horst Seidler)

#### BACHELOR THESES

- Paulina Dittmann (University of Leipzig)

#### SERVICE

- Since 2019 Scientific Advisory Board — KLI Institute for the Advanced Study of Natural Complex Systems  
 Since 2017 Elected Representative to the Scientific Council (Human Science Section) of the Max Planck Society  
 Since 2013 Board member European Society for the Study of Human Evolution (ESHE)  
 2012–2015 Editorial Board, Journal of Human Evolution  
 2005–2007 Elected representative for the fellows (graduate students and postdocs) of the Marie Curie Research Training Network «EVAN»

#### INVITED TALKS & ACADEMIC LECTURES

1. Panel discussion: Salon Sophie Charlotte (Berlin) — January 2020
2. Monash University, Melbourne, Keynote lecture — November 2019
3. Erice, Evolution of Brain & Behaviour in Primates — September 2019
4. Cologne University, Keynote Lecture — May 2019
5. New York University, CSHO Lecture — October 2018
6. Collège de France (Energetics of the *Hominins*), Paris — June 2018
7. Biologisches Kolloquium, University Siegen — January 2018
8. Studienstiftung des deutschen Volkes, Cologne — September 2017
9. Donders Cognomics Conference, Nijmegen — September 2017
10. Karolinska Institute Nobel Forum, Stockholm — August 2017
11. Keynote lecture: Swedish Society for Anatomy, Gothenburg — August 2017
12. Keynote lecture: MORPH2017 conference, Aarhus — May 2017
13. Genderperspektiven in der Medizin, Leipzig — January 2017
14. Max Planck Institute for the Science of Human History, Jena — November 2016
15. Collège de France, Paris — October 2016
16. Studienstiftung des deutschen Volkes, Cologne — March 2016
17. Hessisches Landesmuseum, Darmstadt — October 2015
18. Keynote lecture German Society of Pediatrics & Adolescent Medicine (*DGKJ Jahrestagung*) — September 2014
19. American Association of Physical Anthropologists' Annual Meeting, Invited Symposium, Calgary — April 2014
20. Center for Organismal Systems Biology, Vienna — June 2013
21. Morphometrics Workshop, La Plata — June 2013
22. Centre de Recherches Interdisciplinaires, Paris — March 2013
23. Centro Nacional de Investigación sobre la Evolución Humana, Burgos — October 2012
24. Zoom Museum for Children, Vienna — March 2012
25. Natural History Museum, Paris — February 2012
26. Senckenberg Museum, Görlitz — February 2012
27. Natural History Museum, Paris — March 2011
28. University of Zürich — November 2010
29. University of Tübingen — November 2010

30. Institut Pasteur, Paris — April 2010
31. Natural History Museum, Paris — April 2010
32. Medical University, Leiden — Nov 2009
33. Keynote, Graduation Day MPI CBG, Dresden — November 2009
34. Department of Theoretical Biology, University of Vienna — November 2009
35. Wellcome Trust, Cambridge — Sept. 2009
36. Natural History Museum, Paris — April 2009
37. Croation Academy of Sciences, Zagreb — January 2009
38. University of Vienna — December 2008
39. Neurospin — March 2008
40. «Morphofest 2008» Vienna — July 2008
41. Harvard University, Cambridge — October 2007
42. Weizmann Institute, Tel Aviv (Rehovot) — May 2007
43. «Morphofest 2006» Vienna — July 2006
44. Max Planck Inst. for Evolutionary Anthropology, Leipzig — Jan 2005
45. Konrad Lorenz Institute for Evolution & Cognition, Altenberg — Nov 2003

#### REFEREE FOR JOURNALS

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

#### GRANT REFEREE

- National Science Foundation, Leakey foundation, Natural Environment Research Council—United Kingdom, Deutsche Forschungsgemeinschaft, Swiss National Science Foundation, Studienstiftung des deutschen Volkes, European Science Foundation.

#### MENTORING

- |           |   |
|-----------|---|
| 2014–2016 | Emilie Grallert, student, Leipzig, Germany. Training in virtual anthropology.   |
| 2013      | Elisa Kasbohm, undergraduate student, Greifswald University, Germany. Training in geometric morphometrics.  |
| 2011      | Wataru Yano, student, Primate Research Institute, Kyoto University, Japan. Training in geometric morphometrics.                                   |
| 2011      | Franziska Wiencke, undergraduate student, Leipzig University. Training in virtual anthropology.   |
| 2009–2013 | Stephanie Kozakowski, Doctoral candidate, University of Toronto, Canada. Training in virtual anthropology and geometric morphometrics.            |
| 2009      | Habiba Chirchir, Doctoral candidate, George Washington University, Washington, USA. Training in virtual anthropology and geometric morphometrics. |
| 2007      | Ivor Jankovic, Doctoral candidate, Zagreb University, Croatia. Training in geometric morphometrics.   |
| 2004      | Ekaterina Stansfield (nee Bulygina), Doctoral candidate, University College London, UK. Training in geometric morphometrics.                      |

## COMPUTER PROGRAMMING EXPERIENCE

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

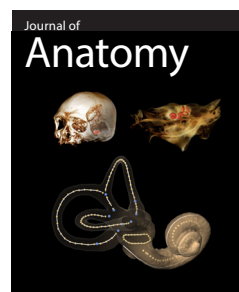
## CONTRIBUTIONS TO EXHIBITIONS IN MUSEUMS

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

## Publications

### PUBLICATION METRICS

Peer-reviewed manuscripts	96
Total citations (Google Scholar)	>8000
h-index	44



### PAPERS IN REFEREED JOURNALS

[CE] Contributed Equally

#### 2020

1. GUNZ, P.\*, NEUBAUER, S.\*, FALK, D., TAFFOREAU, P., LE CABEC, A., SMITH, T.M., KIMBEL, W.H., SPOOR, F., ZERESENAY, A. 2020. *Australopithecus afarensis* endocasts suggest ape-like brain organization and prolonged brain growth. *Science Advances* [CE]
2. NEUBAUER, S., GUNZ, P., SCOTT, N.A., HUBLIN, J.J., MITTEROECKER, P. 2020. Evolution of brain lateralization: a shared hominid pattern of endocranial asymmetry is much more variable in humans than in great apes. *Science Advances*.
3. PEREIRA-PEDRO, A.S., BRUNER, E., GUNZ, P., NEUBAUER, S. 2020. A morphometric comparison of the parietal lobe in modern humans and Neanderthals. *J Hum Evo*.
4. RICHMOND, B.G., GREEN, D.J., LAGUE, M.R., CHIRCHIR, H., BEHRENSMEYER, A.K., BOBE, R., BAMFORD, M.K., GRIFFIN, N.L., GUNZ, P., MBUA, E., MERRITT, S.R., POBINER, B., KIURA, P., KIBUNJIA, M., HARRIS, J.W.K., BRAUN, D.R. . 2020. The upper limb of *Paranthropus boisei* from Ileret, Kenya. *J Hum Evo*.
5. GUNZ, P., KOZAKOWSKI, S., NEUBAUER, S., LE CABEC, A., BENAZZI, S., KULLMER, O., HUBLIN J.-J., BEGUN, D.R. 2020. Skull reconstruction of the late Miocene ape *Rudapithecus hungaricus* from Rudabánya, Hungary. *J Hum Evo*.

#### 2019

6. DAVIES, T., DELEZENE, L., GUNZ, P., HUBLIN J.-J., SKINNER, M.M. 2019. Endostructural morphology in hominoid mandibular third premolars: Discrete traits at the enamel-dentine junction. *J Hum Evo*.
7. WEBER, G.W., HERSHKOVITZ, I., GUNZ, P., NEUBAUER, S., AYALON, A., LATIMER, B., BAR-MATHEWS, M., YASUR, G., BARZILAI, O., MAY, H., 2019. Before the massive modern human dispersal into Eurasia: A 55,000-year-old partial cranium from Manot Cave, Israel. *Quaternary International*.
8. DAVIES, T., DELEZENE, L., GUNZ, P., HUBLIN J.-J., SKINNER, M.M. 2019. Endostructural morphology in hominoid mandibular third premolars: Geometric morphometric analysis of dentine crown shape. *J Hum Evo*.
9. SCHUH, A., KUPCZIK, K., GUNZ, P., HUBLIN, J.-J., FREIDLIN, S.E. 2019. Ontogeny of the human maxilla: a study of intra-population variability combining surface bone histology and geometric morphometrics. *Journal of Anatomy*.
10. JANSSENS, LA, GUNZ, P., STENGER, TE., FISCHER, MS., BOONE, M., STOESSEL, A. 2019. Bony labyrinth shape differs distinctively between modern wolves and dogs. *Zoomorphology*, 1-9.

11. MELILLO, S., GUNZ, P., COQUEUGNIOT, H., RESKE, S., HUBLIN, J.J. 2019. Structural effects of variation in the human clavicle. *AJPA*.
12. GUNZ, P.\*, TILOT, A.K.\*, WITTFELD, K., TEUMER, A., SHAPLAND C.Y., VAN ERP, T.G.M., DANNEMANN, M., VERNOT, B., NEUBAUER, S., GUADALUPE, T., FERNÁNDEZ, G., BRUNNER, H.G., ENARD, W., FALLON, J., HOSTEN, N., VÖLKER, U., PROFICO, A., DI VINCENZO, F., MANZI, G., KELSO, J., ST. POURCAIN, B., HUBLIN, J.J., FRANKE, B., PÄÄBO, S., MACCIARDI, F., GRABE, H.J., FISHER, S.E. 2019. Neandertal introgression sheds light on modern human endocranial globularity. *Current Biology* 29 (1), 120-127 [CE] [featured on cover]

#### 2018

13. SCOTT, N., STRAUSS, A., HUBLIN, J.J., GUNZ, P., NEUBAUER, S. 2018. Covariation of the endocranium and splanchnocranium during great ape ontogeny. *PLoS ONE* 13 (12), e0208999.
14. STELZER, S., NEUBAUER, S., SPOOR, F., GUNZ, P. 2018. Morphological trends in arcade shape and size in Middle Pleistocene *Homo*. *AJPA*. 168 (1), 70-91.
15. SCERRI EML, THOMAS M, MANICA A, GUNZ P, STOCK J, STRINGER C, GROVE M, GROUCUTT HS, TIMMERMANN A, RIGHTMIRE GP, D'ERRICO F, TRYON C, DRAKE N, BROOKS A, DENNELL RW, DURBIN R, HENN B, LEE-THORP J, DEMENOCAL P, PETRAGLIA MD, THOMPSON JC, SCALLY A, CHIKHI L. 2018. Did Our Species Evolve in Subdivided Populations across Africa, and Why Does It Matter? *Trends in Ecology & Evolution*.
16. NEUBAUER S, GUNZ P, LEAKEY L, LEAKEY M, HUBLIN JJ, SPOOR F. 2018. Reconstruction, endocranial form and taxonomic affinity of the early *Homo calvaria* KNM-ER 42700. *J Hum Evo*.
17. WEAVER TD, GUNZ P. 2018. Using geometric morphometric visualizations of directional selection gradients to investigate morphological differentiation. *Evolution* 72 (4), 838-850
18. NEUBAUER, S., HUBLIN, J.J. & GUNZ, P., 2018. The evolution of modern human brain shape. *Science Advances* 4(1): eaa05961.
19. STELZER, S., GUNZ, P., NEUBAUER, S. & SPOOR, F., 2018. Using the covariation of extant hominoid upper and lower jaws to predict dental arcades of extinct hominin. *J Hum Evo*. 114, pp. 154-175.

#### 2017

20. HUBLIN, J.J., BEN-NCER, A., BAILEY, S.E., FREIDLINE, S.E., NEUBAUER, S., SKINNER, M.M., BERGMANN, I., LE CABEC, A., BENAZZI, S., HARVATI, K. & GUNZ, P., 2017. New fossils from Jebel Irhoud, Morocco and the pan-African origin of *Homo sapiens*, *Nature* 546(7657), pp. 289-92 [featured on cover]
21. STELZER, S., GUNZ, P., NEUBAUER, S. & SPOOR, F., 2017. Hominoid arcade shape: Pattern and magnitude of covariation. *J Hum Evo*. 107, pp. 71-85.
22. 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.

#### 2016

23. STOESSEL, A., DAVID, R., GUNZ, P., SCHMIDT, F., SPOOR, F., HUBLIN, J.J. 2016. Morphology and function of Neandertal and modern human ear ossicles. *PNAS* 113 (41), 11489-11494.
24. 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.
25. 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.
26. 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.
27. 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.
28. 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.

29. 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.

#### 2015

30. FREIDLINE, S., GUNZ, P., HUBLIN, J.J. 2015. Ontogenetic and static allometry in the human face: Contrasting Khoisan and Inuit. *AJPA.* 158 (1), pp. 116-131.
31. SPOOR\*, F., GUNZ\*, P., NEUBAUER, S., STELZER, S., SCOTT, N., KWEKASON, A., DEAN, C., 2015. Reconstructed *H. habilis* type OH 7 suggests deep-rooted species diversity in early *Homo*. *Nature* 519(7541):83-86 [CE] [featured on cover]
32. 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.
33. 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.
34. HUBLIN, J.J., NEUBAUER, S., GUNZ, P. 2015. Brain Ontogeny and Life History in Pleistocene Hominins. *Philosophical Transactions B.* 370:20140062.
35. GREEN, D., SERRINS J.D., SEITELMAN, B., MARTINY, A.R., GUNZ, P. 2015. Geometric morphometrics of hominoid infrapinous fossa shape. *The Anatomical Record.* 289(1):180-194.

#### 2014

36. 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.
37. 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.

#### 2013

38. 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.
39. 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
40. 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
41. 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.
42. 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.

#### 2012

43. 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.
44. 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]
45. 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.
46. GUNZ, P. 2012. Evolutionary relationships among robust and gracile australopiths: an «evo-devo» perspective. *Evolutionary Biology*. 39(4):472-487.
47. 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.
48. 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]
49. 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.
50. 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.
51. 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.
52. 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.

#### 2011

53. 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.
54. 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]
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