Hanns-Christian GUNGA
Prof. Dr. med. Dipl. Geol.

Born 08 August, 1954 in Soest, Germany
Nationality: German
Married, 3 children

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Education

1973-1980	Studies of Geology and Paleontology at Westphalian Wilhelm University, Münster: Diploma Degree.
1978	Scholarship by DAAD (German Academic Exchange Service) for geological studies in central Spain for stratigraphic, sedimentological and photogeological investigations based on remote sensing data taken by LANDSAT 2.
1979-1987	Studies of Human Medicine at Westphalian Wilhelm University, Münster, and *Freie Universität Berlin*.
1987	State exams at *Freie Universität Berlin*: License to practise medicine.
1989	Doctoral degree with thesis on “The life and works of the Berlin physiologist, Nathan Zuntz (1847-1920) with particular reference to his importance for the early history of high-altitude physiology and aviation medicine”.
1997	*Habilitation* (German post-doctoral lecturing qualification) with treatise on “The regulation of erythropoietin in man under extreme laboratory and field conditions”.
2000	*Facharzt für Physiologie* (Qualification „Specialist in Physiology“).

Record of Employment

1980-1982	Assistant at the Department of Geology, Westphalian Wilhelm University Münster, in the Planetology Research group „Earth-Moon System“ (Director: L. Bischoff). Project: Photogeological studies on the faults in the lunar highland surface, sponsored by the German Research Council (DFG), Bonn.
1987-1992 1992-1997 1997-2004	Assistant, Assistant Lecturer, and Associate Professor at the Department of Physiology, *Freie Universität Berlin*, in the applied physiology research group (Head: K. Kirsch).
Since 2004	Full Professor (tenure track) at the Department of Physiology at Charité – Faculty of Medicine Berlin, Campus Benjamin Franklin. Research focus: space medicine, blood physiology, cardio-vascular

	physiology, renal physiology, comparative physiology in extreme environments.
2008-2014 01/15-07/16 08/2016-09/22	Deputy Director, Acting Director, and Deputy Director of the Institute of Physiology at Charité – Faculty of Medicine Berlin.

Memberships and Additional Activities

1987	German Society for Aerospace Lilienthal – Oberth (*Deutsche Gesellschaft für Luft- und Raumfahrt Lilienthal-Oberth e. V.*)
1992	German Physiological Society *(Deutsche Physiologische Gesellschaft*).
2000	Speaker, Center for Space Medicine Berlin and Extreme Environments.
	Life Science Working Group (ESA).
2001	Exobiology Working Group (ESA).
2003	Chairman, Life Science Working Group (ESA).
	Research and Technology Office (NATO).
2004	German Council on Foreign Relations (*Deutsche Gesellschaft für Auswärtige Politik*).
2004-2009	Nathan-Zuntz-Professorship.
2004-2010	Scientific Committee at the Austrian Ministry of Defense (*Wissenschafts-kommission beim Bundesministerium für Landesverteidigung (BMLV*).
2005	NATO expert council „Man in Extreme Environments”.
2007	Berlin Medicinal Society (*Berliner Medizinische Gesellschaft*).
2007-2013	Expert, GoSpace-Team on Industrial Research under Microgravity in Life Science.
2008	Chairman, Scientific Program Board of the German Aerospace Center (Programmausschuß “Forschung unter Weltraumbedingungen”, DLR).
	Medical Advisory Board of the Military Medical Service of the German Federal Ministry of Defense (*Wissenschaftlicher Beirat für das Sanitäts- und Gesundheitswesen beim Bundesminister für Verteidigung - Wehrmedizinischer Beirat*).
	International Academy of Astronautics (IAA).
2009	European Space Sciences Committee (ESSC) in the European Science Foundation (ESF).
	Advisory Editor, European Journal of Applied Physiology.
2010	Authorization by the Medical Association Berlin (*Ärztekammer Berlin*) for the supervision of advanced training for consultants in physiology.
	Personal tutor at Charité for the German National Merit Foundation (*Vertrauensdozent der Studienstiftung des Deutschen Volkes*).
2012	“High-End Foreign Experts Recruitment Program” by the State Administration of Foreign Experts Affairs, China.
	Guest Professor at Northwestern Polytechnical University, Xi’an, China.

2013	Program Council, German Aerospace Center, (*Programmkommission, DLR*).
2015	DAAD Guest Professor at University Antofagasta, Chile.
2017	Guest Professor at Northwestern Polytechnical University, Xi'an, China.
	DAAD Guest Professor at University Antofagasta, Chile
2018	Guest Professor at Northwestern Polytechnical University, Xi'an, China.
	DAAD Guest Professor at University Antofagasta, Chile
2022	Nomination Seniorprofessor at the Charité University Medicine, Berlin

(Co-) Organisation of Congresses and Meetings (selected)

2005	Organizer, 13th AKP Meeting 2005 (Working Group Applied and Clinical Physiology and Pathophysiology of the German Physiological Society), Berlin (Germany), November 26, 2005.
2006	Co-initiator, Sino-German Symposium on Space Life Sciences, Xi'an (China), April 17-22, 2006.
	Organizer, 3rd Germany-China Workshop on Microgravity and Space Life Sciences, Berlin (Germany), October 07-11, 2006.
2007	Meeting of NATO Expert Group RTG 132, Berlin (Germany), March 19-20, 2007.
	Co-organizer, 4th International Congress on Space Medicine and Biology, Berlin (Germany), October 24-26, 2007.
2009	Member of the Advisory Board, World Health Summit "The Evolution of Medicine", Berlin (Germany), October 14-18, 2009.
2010	Co-organizer, 5th International Congress on Medicine in Space and Extreme Environments (ICMS), Berlin (Germany), October 18-21, 2010
2011	Co-organizer, 1st International Workshop on Safety in Extreme Mining "Space Technology for Safety of Human Work in Extreme Environments on Earth", Copiapó and Río Blanco/Portillo (Chile), May 2-6, 2011
2011	Member of the International Advisory Board, 1st International :envihab Symposium, German Aerospace Center, Cologne (Germany), May 23-24, 2011.
2014	Co-initiator of the 6th International Congress on Medicine in Space and Extreme Environments (ICMS), Berlin (Germany), September 16-19, 2014.
2015	Chairman Scientific Committee, 6th Germany-China Workshop on Microgravity and Space Life Sciences, Hangzhou (China), September 26-28, 2015.

Referee/Reviewer (journals selected)

Acta Physiologica
Aviation Space and Environmental Medicine
European Journal of Physiology
High Altitude Medicine
Journal of Applied Physiology
Journal of Experimental Zoology
Journal of Physiology (London)
Journal of Thermal Biology
Journal of Zoology
NSBRI
Physiological Measurement
Respiratory Physiology & Neurobiology
Scandinavian Journal of Medicine and Science in Sports
Sleep and Breathing
Nature Scientific Reports

Editor

Chief Field Editor of Frontiers in Physiology (Environment, Aviation, and Space)

Participation Co-Investigator or Principal Investigator (PI/CO-I) in space physiology oriented missions (selection)

ISEMSI'90: Autonomic Nervous System (PI: K. Kirsch)
EXEMSI'92: Autonomic Nervous System (PI: K. Kirsch)
MIR'92: Tissue Thickness (PI: K. Kirsch)
MIR'92: Volume Regulating Hormones (PI: L. Röcker)
D-2: Tissue Thickness (PI: K. Kirsch)
D-2: Volume Regulating Hormones (PI: L. Röcker)
ALTAIR: Tissue Thickness (PI: K. Kirsch)
EUROMIR'94: CVP-Erythropoietin(PI
EUROMIR'94: Tissue Thickness (PI: K. Kirsch)
ESA-CNES L-TBR'94: Erythropoietin (PI)
HUBES'94: AutonomicNervous System (PI: K. Kirsch)
MIR'97: Erythropoietin-Serum Transferrin Receptor (PI)
Neurolab 2000: Psycho-Physiology (PI)
Berlin Bed Rest Study 2003/2004: Red blood cells (PI)
Parabolic Flight Campaign 2005: Thermoregulation (PI)
Parabolic Flight Campaign 2006: Thermoregulation (PI)
Parabolic Flight Campaign 2007: Fluid Shift and Thermoregulation (PI)
Berlin Bed Rest Study 2007/2008:Thermoregulation, Red Blood Cells (PI)
Parabolic Flight Campaign 2008: Thermoregulation and Cardiovascular Adaptation (PI)
NASA Bed Rest Study 2008, Galveston, U.S.A.
Mars500 2010-2011, Moscow (PI Gunga)
Controlled Ecological Life Support Systems (CELSS) 2012, (Co-Investigator, Circadian Rhythms) ACC, Beijing
Core temperature and circadian rhythms in humans during long term spaceflights (Circadian Rhythms)" 2013-2017, (Principal Investigator, DLR/ESA)
Core temperature and circadian rhythms (HERA)" 2016, (Principal Investigator, DLR/NASA)

Core temperature and circadian rhythms (CELSS)" 2016, (Principal Investigator, DLR/ACC, Shenzhen)
NSCOR for Evaluating Risk Factors and Biomarkers for Adaptation and Resilience to Spaceflight: Emotional Valence and Social Processes in ICC/ICE Environments. NASA/DLR – Co-I) (PI: D. Dinges)
Thermo-Mini - Core temperature and circadian rhythms in Space 2023-2025, (Principal Investigator, DLR/NASA)

Grants (Selection)

2007-2010	"Cardiovascular functions and thermoregulation under real and simulated micro-g conditions (FluidShift – ThermoLab)", DLR/ESA/NASA (PI)
2010-2016	"Core temperature and circadian rhythms in humans during long term spaceflights (Circadian Rhythms)", 2010-2016, DLR/ESA/NASA (PI)
2017-2019	"Circadian Rhythms and temperature regulation of humans under simulated and real micro-g conditions" 2017-2019, DLR/ESA/NASA (PI)
2020-2022	„Temperaturregulation und zirkadiane Rhythmik des Menschen unter simulierten und realen Mikro-g Bedingungen - SLEDRA III" - 50WB2030, DLR (PI)
2020-2022	Klimawandel und Gesundheit in Afrika südlich der Sahara: Teilprojekt P4. „Climate change, heat stress and its impact on health and work capacity." 2020-2022, DFG-FOR 2936 (PI)
2023-2025	Klimawandel und Gesundheit in Afrika südlich der Sahara: Teilprojekt P4. „Climate change, heat stress and its impact on health and work capacity." 2023-2025, DFG-FOR 2936 (PI)

Honors

2010	Life Sciences Book Award by the IAA for the monograph "Nathan Zuntz. His Life and Work in the Fields of High Altitude Physiology and Aviation Medicine. American Physiological Society, Elsevier 2009"
2015	Life Sciences Book Award by the IAA for the publication "Human Physiology in Extreme Environments". American Physiological Society, Elsevier 2015"
2017	Life Sciences Book Award by the IAA for the publication "Cardiovascular System, Red Blood Cells, and Oxygen Transport in Microgravity"
2019	Appointment to Académico Titular de Academia National de Sciences - Peru
2022	Medal of Honour 1. Grade with a Band of the Federal Republic of Germany – the highest civil honour in Germany

Selection of Publications 2004-2021

Books

Gunga HC. Human physiology in extreme environments. American Academic Press, Elsevier, 2021. 2. Edition

Gunga HC. Extrem – Was unser Körper zu leisten vermag. Fischer-Verlag, 2021.

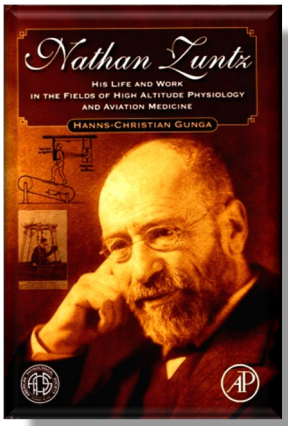
Gunga HC. Am Tag zu hell und nachts zu heiß. Rowohlt-Verlag, 2019.

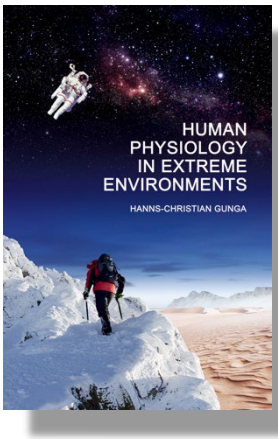
Gunga HC. Human physiology in extreme environments (Translation into Chinese). Science Press, 2018.

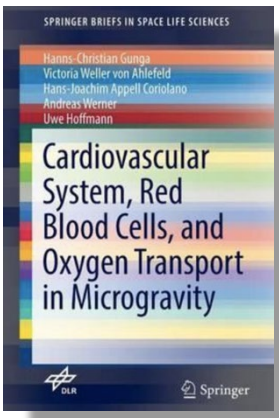
Gunga, HC. Weller-Ahlefeld, V., Appell Coriolano, H. J., Werner, A., Hoffmann, U. The Cardiovascular System, Red Blood Cells and Oxygen Transport in Space. Springer Briefs, 2016.

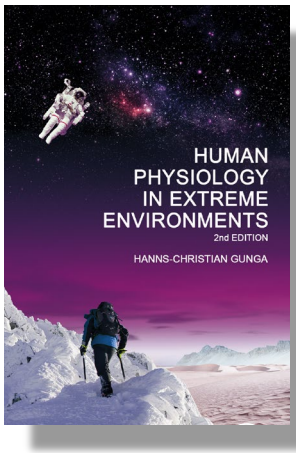
Gunga HC. Human physiology in extreme environments. American Academic Press, Elsevier 2014. 1. Edition

Gunga HC. Nathan Zuntz. His Life and Work in the Fields of High Altitude Physiology and Aviation Medicine. American Physiological Society, Elsevier, 2009.









Peer reviewed Journals (Selection last 5 years)

Huhn S, Axt M, **Gunga HC,** Maggioni MA, Munga S, Obor D, Sié A, Boudo V, Bunker A, Sauerborn R, Bärnighausen T, Barteit S. The Impact of Wearable Technologies in Health Research: Scoping Review. JMIR Mhealth Uhealth. 2022 Jan 25;10(1):e34384. doi: 10.2196/34384.

Barteit S, Boudo V, Ouedraogo A, Zabré P, Ouremi L, Sié A, Munga S, Obor D, Kwaro D, Huhn S, Bunker A, Sauerborn R, **Gunga HC**, Maggioni MA, Bärnighausen T. Feasibility, acceptability and validation of wearable devices for climate change and health research in the low-resource contexts of Burkina Faso and Kenya: Study protocol. PLoS One. 2021 Sep 30;16(9):e0257170.

Werner A, Brauns K, **Gunga HC**, Kühn S. Exercise-induced changes in brain activity during memory encoding and retrieval after long-term bed rest. NeuroImage 2020 Dec;223:117359. doi: 10.1016/j.neuroimage.2020.117359. Epub 2020 Sep 10.

Maggioni MA, Rundfeldt LC, **Gunga HC,** Joerres M, Merati G, Steinach M. The advantage of supine and standing heart rate variability analysis to assess training status and performance in a walking ultramarathon. Front Physiol. 24 July 2020 | https://doi.org/10.3389/fphys.2020.00731

Stahn AC, Maggioni MA, **Gunga HC**, Terblanche E. Combined protein and calcium β-hydroxy-β-methylbutyrate induced gains in leg fat free mass: a double-blinded, placebo-controlled study. J Int Soc Sports Nutr. 17(1):16, 12 Mar 2020

Brauns K, Werner A, **Gunga HC**, Maggioni MA, Dinges DF, Stahn A. Electrocortical Evidence for Impaired Affective Picture Processing after Long-Term Immobilization. Sci Rep. 9(1):16610, 12 Nov 2019

Stahn AC, **Gunga HC**, Kohlberg E, Gallinat J, Dinges DF, Kühn S: Brain Changes In Response To Long-Duration Antarctic Expeditions. NEJM. 2019, 381(23):2273-2275

Clement G, Boyle RD, **Gunga HC**. The Effects of Altered Gravity on Physiology. Front Physiol. 2019;10:1447.

Maggioni MA, Castiglioni P, Merati G, Brauns K, **Gunga HC**, Mendt S, Opatz O, Rundfeldt LC, Steinach M, Werner A, Stahn A. High-intensity exercise mitigates cardiovascular deconditioning during long-duration bed rest. Front Physiol. 2018 Nov 19;9:1553.

Opatz O, Nordine M, Habazettl H, Ganse B, Petricek J, Dosel P, Stahn A, Steinach M, **Gunga HC**, Maggioni MA. Limb Skin Temperature as a Tool to Predict Orthostatic Instability. Front Physiol. 2018, Sep 5;9:1241.

Masatli Z, Nordine M, Maggioni MA, Mendt S, Hilmer B, Brauns K, Werner A, Schwarz A, Habazettl H, **Gunga HC**, Opatz OS. Gender-Specific Cardiovascular Reactions to +Gz Interval Training on a Short Arm Human Centrifuge. Front Physiol. 2018 Jul 31;9:1028.

Rundfeldt LC, Maggioni MA, Coker RH, **Gunga HC**, Riveros-Rivera A, Schalt A, Steinach M. Cardiac Autonomic Modulations and Psychological Correlates in the Yukon Arctic Ultra: The Longest and the Coldest Ultramarathon. Front Physiol. 2018, Feb 12:9:35.

Stahn A, Werner A, Opatz O, Maggioni M, Steinach M, Weller von Ahlefeld V, Moore A, Crucian B, Smith S, Zwart S, Schlabs T, Mendt S, Trippel T, Koralewski E, Koch J, Choukèr A, Reitz G, Shang P, Röcker L, Kirsch K, **Gunga HC**. Increased core body temperature in astronauts during long-duration space missions. Sci Rep. 2017, 7: 16180.

Clauss M, Nurutdinova I, Meloro C, **Gunga HC**, Jiang D, Koller J, Herkner B, Sander PM, Hellwich O. Reconstruction of body caviy volume in terrestrial tetrapods. J Anat. 2017 Feb; 230(2):325-36.

Gambara G, Salanova M, Ciciliot S, Furlan S, Gutsmann M, Schiffl G, Ungethuem U, Volpe P, **Gunga HC**, Blottner D. Gene expression profiling in slow-type calf soleus muscle of 30 days space-flown mice. PLoS One. 2017 Jan 11;12(1):e0169314.

Coker RH, Weaver AN, Coker MS, Murphy CJ, **Gunga HC**, Steinach M. Metabolic responses to the Yukon Arctic Ultra: Longest and coldest in the world. Med Sci Sports Exerc. 2017 Feb;49(2):357-62.

Mendt S, Maggioni MA, Nordine M, Steinach M, Opatz O, Belavý D, Felsenberg D, Koch J, Shang P, **Gunga HC**, Stahn A. Circadian rhythms in bed rests: Monitoring core body temperature via heat-flux approach is superior to skin surface temperature. Chronobiol Int. 2017;49(2):357-362.

Persson PB, Wenger RH, Lundby C, **Gunga HC**. Did you know?: Neocytolysis, how to halt EPO? Acta Physiol (Oxf). 2016 Sep;218(1):5-6.

Steinach M, Kohlberg E, Maggioni MA, Mendt S, Opatz O, Stahn A, **Gunga HC**. Sleep quality changes during overwintering at the german antarctic stations Neumayer II and III: The gender factor. PLoS One. 2016 Feb 26;11(2):e0150099.

Habazettl H, Stahn A, Nitsche A, Nordine M, Pries AR, **Gunga HC**, Opatz O: Microvascular responses to (hyper-) gravitational stress by short-arm human centrifuge: arteriolar vasoconstriction and venous pooling. Eur J Appl Physiol. 2016 Jan;116(1):57-65.

Steinach M, Kohlberg E, Maggioni MA, Mendt S, Opatz O, Stahn A, Tiedemann J, **Gunga HC**. Changes of 25-OH-vitamin D during overwintering at the german antarctic stations Neumayer II and III. PLoS One. 2015 Dec 7;10(12):e0144130.

Nordine M, Maggioni MA, Stahn A, Mendt S, Brauns K, **Gunga HC**, Habazettl H, Nitsche A, Opatz O: Form influences function: Anthropometry and orthostatic stability during sustained acceleration in a short arm human centrifuge. Acta Astronautica. 2015 May 27; 115:138-46.

Peer reviewed Journals (Selection 2005-2015)

Haider T, **Gunga HC**, Matteucci-Gothe R, Sottara E, Griesmacher A, Belavý DL, Felsenberg D, Werner A, Schobersberger W: Effects of long-term head-down-tilt bed rest and different training regimes on the coagulation system of healthy men. Physiol Rep. 2013 Nov;1(6):e00135.

Opatz O, Trippel T, Lochner A, Werner A, Stahn A, Kuhring M, Steinach M, Lenk J, Kuppe H, Kirsch K, **Gunga HC**. Temporal and spatial dispersion of human body temperature during deep hypothermia. The nonlinearity of physiological recordings. British Journal of Anaesthesia, 2013;111:768-775.

Steinach, M., **Gunga HC**.Circadian rhythm and stress. In: Choukèr, A. (Ed.), Stress Challenges and Immunity in Space. Berlin, Heidelberg: Springer-Verlag, 2012, pp. 87-106.

Werner A, **Gunga HC**. Monitoring of body core temperature in humans. In: Choukèr, A. (Ed.), Stress Challenges and Immunity in Space. Berlin, Heidelberg: Springer-Verlag, 2012, pp. 309-326.

Sander PM, Christian A, Clauss M, Fechner R, Gee CT, Griebeler E-M, **Gunga HC,** Hummel J, Mallison H, Perry SF, Preuschoft H, Rauhut OWM, Remes K, Tütken T, Wings O, Witzel U. Biology of the sauropod dinosaurs: the evolution of gigantism. Biological Reviews 2011;86:117-155.

Opatz O, Stahn A, Werner A, **Gunga HC**. Determining core body temperature via heat flux - a new promising approach. Resuscitation 2010;81:1588-1589.

Lipnicki DM, **Gunga HC**, Belavy DL, Felsenberg D. Decision making after 50 days of simulated weightlessness. Brain Res 2009;1280:84-89.

Gunga HC, Werner A, Stahn A, Steinach M, Schlabs T, Koralewski E, Kunz D, Belavy DL, Felsenberg D, Sattler F, Koch J. The Double Sensor – A non-invasive device to continuously monitor core temperature in humans on earth and in space. Respir. Physiol. Neurobiol. 2009;169S:S63-S68.

Ragna F, Hummel J, Kienzle E, Kölle P, **Gunga HC**, Clauss M. Allometry of visceral organs in living amniotes and its implications for sauropod dinosaurs. Proc R Soc B 2009;276:1731-1736.

Gunga HC, Steinach M, Kirsch K**.** Space Medicine and Biology. In: Ley, Wittmann, Hallmann (Eds.), Handbook of Space Technology, chapt. 7.6, p. 606-621, West Sussex, UK.: Wiley & Sons, 2009 .

Werner A, **Gunga HC**. Physiologie und Pathophysiologie des Wärmehaushalts und der Temperaturregulation des Menschen in extremen Umwelten und operationelle Konsequenzen für den militärischen Einsatz, Wehrmed Mschr 52, Heft 8/2008

Gunga HC, Sandsund M, Reinertsen, RE, Sattler F, Koch J. A non-invasive device to continuously determine heat strain in humans. J Thermal Biol 2008:33;297-307.

Schobersberger W, Toff WD, Eklöf B, Fraedrich G, **Gunga HC**, Haas S, Landgraf H, Lapostolle F, Partsch H, Perschler F, Schnapka J, Schobersberger B, Scurr JH, Watzke H; Hall consensus development group. Traveller's thrombosis: international consensus statement. VASA 2008;37:311-317.

Frassl W, Kowoll R, Katz N, Speth M, Stangl A, Brechtel L, Joscht B, Boldt LH, Meier-Buttermilch R, Schlemmer M, Roecker L, **Gunga HC**. Cardiac markers (BNP, NT-pro-BNP, Troponin I, Troponin T, in female amateur runners before and up until three days after a marathon. Clin Lab 2008:54;81-87.

Boldt LH, Fraszl W, Röcker L, Steinach M, Noack T, **Gunga HC**. Changes in the haemostatic system during after thermoneutral and hyperthermic water. Eur J Appl Physiol 2008;102:547-554.

Gunga HC, Suthau T, Bellmann A, Stoinski S, Friedrich A,Trippel T, Kirsch K, Hellwich O. A new body mass estimation of Brachiosaurus brancai Janensch, 1914 mounted and exhibited at the Museum of Natural History (Berlin, Germany). Fossil Record. 2008;11:28-33.

Gunga HC, Suthau T, Bellmann A, Stoinski S, Friedrich A,Trippel T, Kirsch K, Hellwich O. A new body mass estimation of Brachiosaurus brancai Janensch, 1914 mounted and exhibited at the Museum of Natural History (Berlin, Germany). Fossil Record 2008;11:28-33.

Gunga HC, Steinach M, Kirsch K. Weltraummedizin und -biologie. In: Ley, Wittmann, Hallmann (Eds.), Handbuch für Raumfahrttechnik, Kap. 7.6, p. 575-588 , München: Hansaverlag, 2007.

Gunga HC, Kirsch KA, Roecker L, Kohlberg E, Tiedemann J, Steinach M, Schobersberger W. Erythropoietin regulations in humans under different environmental and experimental conditions. Respir Physiol Neurobiol 2007;158:287-297.

Gunga HC, Suthau T, Bellmann A, Friedrich A, Schwanebeck T, Stoinski S, Trippel T, Kirsch K, Hellwich O. Body mass estimations for Plateosaurus engelhardti using laser scanning and 3D reconstruction methods. Naturwissenschaften. 2007;94:623-630.

Mittermayr M, Fries D, Gruber H, Peer S, Klingler A, Fischbach U, **Gunga HC**, Koralewski E, Faulhaber M, Simmer M, Schobersberger W. Leg edema formation and venous blood flow velocity during a simulated long-haul flight. Thromb Res 2007;120:497-504.

Schobersberger W, Mittermayr M, Fries D, Innerhofer P, Klingler A, Faulhaber M, **Gunga HC**, Streif W. Changes in blood coagulation of arm and leg veins during a simulated long-haul flight. Thromb Res 2007;119:293-300.

Roecker L, Kowoll R, Fraszl W, Battal K, Brechtel L, Brachmann S, Meier-Buttermilch R, **Gunga HC**, Stangl A, Kiesewetter H. Observation of serum erythropoietin concentrations in female athletes for up to eight days after a marathon run. Clin Lab 2006;52:511-513.

Greie S, Humpeler E, **Gunga HC**, Koralewski E, Klingler A, Mittermayr M, Fries D, Lechleitner M, Hoertnagl H, Hoffmann G, Strauss-Blasche G, Schobersberger W. Improvement of metabolic syndrome markers through altitude specific hiking vacations.J Endocrinol Invest 2006;29:497-504.

Valenti G, Fraszl W, Addabbo F, Tamma G, Procino G, Satta E, Cirillo M, De Santo NG, Drummer C, Bellini L, Kowoll R, Schlemmer M, Vogler S, Kirsch KA, Svelto M, **Gunga HC**. Water immersion is associated with an increase in aquaporin-2 excretion in healthy volunteers. Biochim Biophys Acta 2006;1758:1111-1116.

Kirsch KA, Schlemmer M, De Santo NG, Cirillo M, Perna A, **Gunga HC**. Erythropoietin as a volume-regulating hormone: an integrated view. Semin Nephrol 2005;25:388-391.

De Santo NG, Cirillo M, Kirsch KA, Correale G, Drummer C, Frassl W, Perna AF, Di Stazio E, Bellini L, **Gunga HC**. Anemia and erythropoietin in space flights. Semin Nephrol 2005;25:379-387.

Schobersberger W, Greie S, Humpeler E, Mittermayr M, Fries D, Schobersberger B, Artner-Dworzak E, Hasibeder W, Klingler A, **Gunga HC**. Austrian Moderate Altitude Study (AMAS 2000): erythropoietic activity and Hb-O(2) affinity during a 3-week hiking holiday at moderate altitude in persons with metabolic syndrome. High Alt Med Biol 2005;6:167-177.

Schobersberger W, Hoffmann G, **Gunga HC**. Interaction of hypoxia and haemostasis – hypoxia as a prothrombotic factor at high altitude? Wien Med Wochenschr 2005;155:157-162.

Appenzeller O, **Gunga HC**, Qualls C, Furlan R, Porta A, Lucas SG, Heckert AB, Kirsch K, Costa-Junqueira MA, Guillén SE, Sander M, Schneider T, Blottner B. A hypothesis: autonomic rhythms are reflected in growth lines of teeth in humans and extinct archosaurs. Auton Neurosci 2005;117:115-119.