



# Umgang mit wissenschaftlicher Literatur

*the scientific, the fashionable, and the untruthful*



*'critical reading'*

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PhD Seminar Göttingen 2021*



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Zurich**<sup>UZH</sup>



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*a first dialogue with chatgpt*





*‘publish or perish !’*



# Career steps

Clauss M (1998) Feeding Giraffe (*Giraffa camelopardalis*). MSc Thesis, Zoological Society of London/Royal Veterinary College (copy available on request) [Qualification thesis](#)

Clauss M, Suedmeyer WK, Flach EJ (1999) Susceptibility to cold in captive giraffe (*Giraffa camelopardalis*). Proceedings of the American Association of Zoo Veterinarians, 183-186  
[Conference contribution](#)

Clauss M, Lechner-Doll M, Flach EJ, Tack C, Hatt JM (2001) The comparative use of four marker systems for the estimation of digestibility, and low food intake, in a group of captive giraffe (*Giraffa camelopardalis*). Zoo Biology 20: 315-329 [Journal article](#)



How academic work is evaluated ...



# How is academic work evaluated ?

The ***number of peer-reviewed publications*** (as such or in combination with a weighting for impact factor, h-factor, authorship position etc.) is currently the most important evaluation criterium in academia.

Acquiring grant money is the second most important criterium – or the most important one in some places!

Other potential criteria revolve around media presence or the influence on ‘policy making’.

This is something one has to know, even if one need not welcome it.



Getting used to lying ...





# Teeth out of proportion: Smaller horse and cattle breeds have comparatively larger teeth

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**Funding information**

Schweizerischer Nationalfonds zur Förderung der Wissenschaftlichen Forschung, Grant/Award Number: 31003A\_169395; SYNTHESYS, Grant/Award Number: AT-TAF-5786

**Abstract**

There are different descriptions of allometric relationships between important components of the mammalian skull. Craniofacial evolutionary allometry describes a pattern of increasing facial cranium in larger skulls. Another body of literature describes disproportionately larger teeth in smaller species or specimens, matching anecdotal observations with dental problems in dwarf breeds whose teeth appear "too large for their skulls." We test the scaling of tooth row length with body size and skull length in a data set comprising 114 domestic horses (representing 40 breeds) and in another data set of 316 domestic cattle (of >60 breeds). We demonstrate that smaller skulls have a relatively longer tooth row in both horses and cattle; larger specimens have relatively shorter tooth rows. Whereas in horses, larger skulls have a relatively longer diastema, the distance of the mesial maxillary premolar to the premaxilla was proportional to cranium length in cattle. While the reasons for these patterns remain to be detected, they support the hypothesis that tooth size might be less "evolvable," in terms of time required for changes, than body size. The pattern may affect (i) the selective breeding for dwarf breeds by setting minimum constraints for skull size, as described previously for domestic horses with the same data set; (ii) the susceptibility of small breeds for dental problems; and (iii) differences in chewing efficiency between breeds of different sizes. The findings support the existing concept that scaling of tooth to body size across taxa becomes more isometric the longer these taxa are separated in evolutionary time.

**KEYWORDS**

allometry, bovid, chewing, development, equid, molars, skull

**1 | INTRODUCTION**

It has been known for a long time that many dwarfed forms of mammals have, compared to their nondwarfed conspecifics or ancestors, comparatively larger teeth. This means that while they, of course, have absolutely smaller teeth, their teeth are not as small as

expected from the reduction of body size. For nondomestic mammals, this has been suggested for dwarfed species in proboscids (Davies & Lister, 2001; Maglio, 1972), hippopotamids (Gould, 1975; Prothero & Sereno, 1982), and in human pygmies (Shea & Gomez, 1988), but not in rhinocerotids (Prothero & Sereno, 1982). The same has been suggested for smaller individuals within a species

with a length measure implies a scaling exponent of 1.0 (linearity) in the 95% CI. A 'proportional', 'geometric', or 'isometric' scaling of an area measure with a length measure implies a scaling exponent of 2.0 (quadratic scaling) in the 95% CI. A 'proportional', 'geometric', or 'isometric' scaling of a length measure with an area measure implies a scaling exponent of 0.5 (square root scaling) in the 95% CI. Note that in this strict definition, the term 'allometric scaling' must not be used for any geometric (=isometric) scaling. We refer to lower exponents as either 'less-than-linear' (negative allometry) or 'more-than-linear' (positive allometry) if linearity is the geometric expectation for proportional changes, and as 'less-than-geometrically' (negative allometry) and 'more-than-geometrically' (positive allometry) in scaling relationships in which the *Foramen magnum* area was involved. Analyses were performed using ordinary least squares linear regressions of log-transformed data. The 'dwarf' horse breeds Falabella and Shetland pony have already been described as constituting an exception from the ordinarily observed cranial length to withers height ratio among horses because they were found to exhibit particularly large crania relative to withers height (Heck et al., 2019). A similar peculiarity was also evident in the present study for these breeds and the Skyros and Rhodes horses, that is, all breeds with a withers height of 78–110 cm, with a 13 cm gap to the next breed. To account for the unusual proportions of these breeds, all analyses were repeated after excluding these specimens from the data sets. Analyses were performed in R (R Core Team, 2017). Scaling was considered significant if the 95% CI of *b* excluded zero, which was always the case; therefore, no *p* values are given. For ease of reading, only results for *b* are displayed in the main text, but the Supporting Information Material contains the full set of *a* estimates.

**5 | CONCLUSION**

In conclusion, horse data clearly show that in smaller skulls of domestic breeds, the tooth row is relatively larger and the diastema relatively smaller. In domestic cattle, the same pattern applies for the tooth row but not the diastema. This trend may well limit the degree of dwarfism that can be reached by selective breeding, and may be responsible for the trend in very small horse breeds to have disproportionately large skulls. However, even in those horse breeds where skull size scales in proportion with withers height, the tooth row is out of proportion in the described manner. As this pattern mirrors other reports within and across species, we follow previous propositions that this is an indication of different evolvability, where tooth size is more refractory to evolutionary changes than body size. With respect to the cranial evolutionary allometry hypothesis, the results suggest that the dental and nondental portions of the facial cranium should be further investigated in their scaling with body size across species.

**ACKNOWLEDGMENTS**

We thank the many institutions and people giving L. H. and K. V. access to their collections (in alphabetical order of collection names):

Alfredo Carlini, Adriana Itatí Olivares, and Diego H. Verzi (Museo de La Plata, Argentina), Renate Schafberg (Museum für Haustierrkunde "Julius Kühn", University of Halle, Germany), Joséphine Lesur (Muséum National d'Histoire Naturelle Paris, France), Christiane Funk, Frieder Mayer, and Detlef Willborn (Museum für Naturkunde, Berlin, Germany), Kristian Murphy Gregersen and Daniel Klingberg Johansson (Natural History Museum of Denmark), Loïc Costeur (Naturhistorisches Museum Basel, Switzerland), Frank Zichos, Alexander Bibl, Konstantina Saliari, and Erich Pucher (Naturhistorisches Museum Wien, Austria), Heinz Furrer and Christian Klug (Paleontological Institute and Museum University of Zurich, Switzerland), Renate Lucht (Zoologisches Institut/Populationsgenetik (former Institut für Haustierrkunde), Christian-Albrechts-Universität zu Kiel, Germany), and Barbara Oberholzer and Marianne Haffner (Zoologisches Museum, University of Zurich, Switzerland). We thank Christine Janis, Andrea Cardini, and an anonymous reviewer for their comments on the earlier version of the manuscript. This study was part of project 31003A\_169395 funded by the Swiss National Science Foundation. Support for the collection visit at the NHW Vienna, Austria was granted by SYNTHESYS funding AT-TAF-5786 "Morphological disparity and ontogenetic allometry in domesticated horses" to Laura Heck. Open access funding provided by Universität Zurich.

**CONFLICTS OF INTEREST**

The authors declare no conflicts of interest.

**ETHICS STATEMENT**

Not applicable—only work with museum specimens.

**AUTHOR CONTRIBUTIONS**

Marcus Clauss, Laura Heck, and Madeleine Geiger designed the study. Laura Heck, Kristof Veitschegger, and Madeleine Geiger took the measurements. Marcus Clauss analyzed the data. Marcus Clauss wrote the first draft of the manuscript, and then received input from all coauthors.

**DATA AVAILABILITY STATEMENT**

The data that supports the findings of this study are available in the Supporting Information Material of this article.

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**PEER REVIEW**

The peer review history for this article is available at <https://publons.com/publon/10.1002/jez.b.23128>.

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# When Discontinuing SSRI Antidepressants Is a Challenge: Management Tips

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*Am J Psychiatry 175:12, December 2018*

Dr. Jha has received contract research funding from Acadia Pharmaceuticals and Janssen Research. Dr. Rush has received consulting fees from Akili, Brain Resource, Compass, Curbstone Consultant, Eli Lilly, the Emmes Corporation, Johnson & Johnson (Janssen), LivaNova, MindLinc, Sunovion, Takeda USA, and Taj Medical; he has received speaking fees from LivaNova and royalties from Guilford Press and the University of Texas Southwestern Medical Center, Dallas (for the Inventory of Depressive Symptoms and its derivatives); and he is named co-inventor on two patents (7,795,033 and 7,906,283, on methods to predict outcome and risk of side effects with antidepressant treatment). Dr. Trivedi has served as a consultant or on advisory boards for Alkermes, Akili Interactive, Allergan Pharmaceuticals, Acadia Pharmaceuticals, Avanir Pharmaceuticals, Brintellix Global, Bristol-Myers Squibb, Caudex, Cerecor, Forest Pharmaceuticals, Global Medical Education, Health Research Associates, Insys, Johnson & Johnson Pharmaceutical Research and Development, Lilly Research Laboratories, Lundbeck Research USA, Medscape, Merck, Mitsubishi Pharma, MSI Methylation Sciences–Pamlab, Navitor, One Carbon Therapeutics, Otsuka America Pharmaceutical, Pfizer, and Takeda Global Research; he has received royalties from Janssen Research and Development; he has author agreements from Janssen Asia Pacific and Oxford University Press; and he has received grants from the Agency for Healthcare Research and Quality, the Cancer Prevention and Research Institute of Texas, the National Institute of Diabetes and Digestive and Kidney Diseases, the National Center for Advancing Translational Sciences, NIMH, NIDA, Johnson & Johnson, and the Patient-Centered Outcomes Research Institute.





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## Cholesterol paradox: a correlate does not a surrogate make

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10.1136/ebmed-2016-110602

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### Abstract

The global campaign to lower cholesterol by diet and drugs has failed to thwart the developing pandemic of coronary heart disease around the world. Some experts believe this failure is due to the explosive rise in obesity and diabetes, but it is equally plausible that the cholesterol hypothesis, which posits that lowering cholesterol prevents cardiovascular disease, is incorrect. The recently presented ACCELERATE trial dumbfounded many experts by failing to demonstrate any cardiovascular benefit of evacetrapib despite dramatically lowering low-density lipoprotein cholesterol and raising high-density lipoprotein cholesterol in high-risk patients with coronary disease. This clinical trial adds to a growing volume of knowledge that challenges the validity of the cholesterol hypothesis and the utility of cholesterol as a surrogate end point. Inadvertently, the cholesterol hypothesis may have even contributed to this pandemic. This perspective critically reviews this evidence and our reluctance to acknowledge contradictory information.

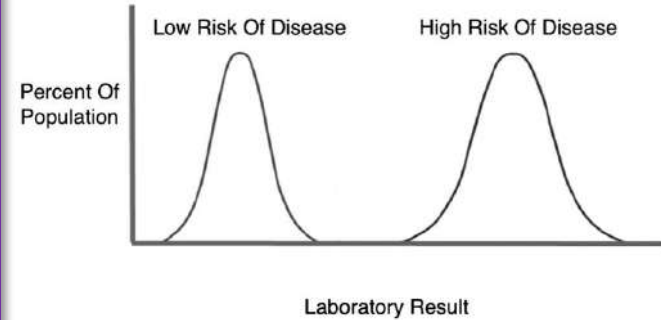
Nobel laureates Brown and Goldstein published an editorial in 1996 predicting that "Exploitation of recent breakthroughs ... may well end coronary disease as a major public health problem early in the next century."<sup>1</sup> They based their optimism largely on 'proof of the cholesterol hypothesis' which posits that lowering serum cholesterol reduces the risk of coronary heart disease (CHD). Paradoxically, CHD is now pandemic. Some may argue that this pandemic is secondary to the global explosion of obesity and diabetes, but it is equally plausible that the cholesterol hypothesis is incorrect. The results of the recently presented ACCELERATE trial may hold the key to understanding this paradox.<sup>2</sup>

The cholesterol hypothesis has been debated for years, but in light of recent clinical trial results, a reappraisal of the evidence is warranted. Cholesterol is an ostensibly ideal surrogate target: it is present in atherosclerotic plaque; cholesterol is an established risk factor for CHD; Mendelian randomisation studies suggest benefit from lifelong reduced cholesterol levels and cholesterol-lowering drug trials have reduced the risk of cardiovascular (CV) events. Consequently, it seemed impossible that the gold standard of modern medical research—a large, double-blind, randomised

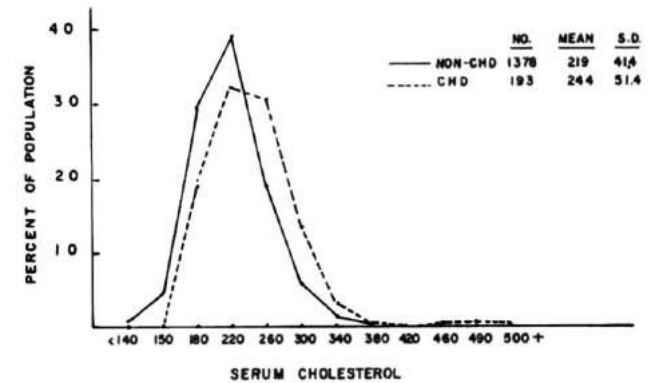
controlled trial (RCT)—could undermine, rather than confirm, this theory. Yet the ACCELERATE trial reported that evacetrapib, a novel cholesteryl ester transfer protein inhibitor, reduced low-density lipoprotein (LDL) cholesterol by 37%, raised high-density lipoprotein (HDL) cholesterol by 130%, but produced no discernible reduction in CV events or mortality in high-risk patients. I believe the ACCELERATE trial adds to the chorus that cholesterol is not a valid surrogate end point.

Rudolf Virchow first described the microscopy of the atherosclerotic plaque, but Nikolay Anichkov is credited with elucidating the central role of cholesterol in atherosclerosis. Ironically, cholesterol is also essential for life as a key component of cell membranes, steroid hormones and bile acids. The Framingham Heart Study further clarified the role of cholesterol as a major risk factor for CHD.<sup>3</sup> Ideally, a risk factor should help us distinguish those individuals who will develop a disease from those who will not. Figure 1 illustrates this concept and the original Framingham cholesterol data. The cholesterol levels of Framingham participants who did and did not develop CHD are remarkably similar except when the cholesterol level was extremely low (<150 mg/dL) or extremely high (>380 mg/dL). For the vast majority of patients, cholesterol levels do not help us differentiate those who will and will not develop CHD.

Mendelian randomisation studies are often cited in support of the cholesterol hypothesis. Conceptually, individuals born with genetically low LDL cholesterol should be protected from CHD since their cholesterol levels are reduced throughout life. Yet the report of PCSK9 sequence variations associated with low LDL cholesterol illustrates many of the shortcomings of this model.<sup>4</sup> This study reported that 2.6% of 3363 black patients in the Atherosclerosis Risk in Communities study had nonsense mutations in PCSK9 associated with a 28% reduction in LDL cholesterol. The authors calculated an 88% reduction in the risk of CHD by statistically comparing one fatal myocardial infarction in the PCSK9 group with 319 composite CHD events in the control group (unspecified, but defined as "definite or probable myocardial infarction, a silent myocardial infarction detected by electrocardiographic interval changes consistent with an intercurrent ischemic event, death due to CHD, or a coronary-revascularization



Ideal Risk Factor



Framingham Heart Study



# Serotonin and Depression: A Disconnect between the Advertisements and the Scientific Literature

PLoS Medicine December 2005 | Volume 2 | Issue 12 | e392

Jeffrey R. Lacasse, Jonathan Leo\*

**Table 1.** Selected Quotations Regarding Serotonin and Antidepressants

Quotation	Source
"Although it is often stated with great confidence that depressed people have a serotonin or norepinephrine deficiency, the evidence actually contradicts these claims" [50].	Professor Emeritus of Neuroscience Elliot Valenstein, in <i>Blaming the Brain</i> (1998), which reviews the evidence for the serotonin hypothesis.
"Given the ubiquity of a neurotransmitter such as serotonin and the multiplicity of its functions, it is almost as meaningless to implicate it in depression as it is to implicate blood" [11].	Science writer John Horgan, in his critical examination of modern neuroscience, <i>The Undiscovered Mind</i> (1999).
"A serotonin deficiency for depression has not been found" [51].	Psychiatrist Joseph Glenmullen, clinical instructor of psychiatry at Harvard Medical School, in <i>Prozac Backlash</i> (2000).
"So far, there is no clear and convincing evidence that monoamine deficiency accounts for depression; that is, there is no "real" monoamine deficit" [44].	Psychiatrist Stephen M. Stahl, in a textbook used to teach medical students about psychiatric medications, <i>Essential Psychopharmacology</i> (2000).
"Some have argued that depression may be due to a deficiency of NE [norepinephrine] or 5-HT [serotonin] because the enhancement of noradrenergic or serotonergic neurotransmission improves the symptoms of depression. However, this is akin to saying that because a rash on one's arm improves with the use of a steroid cream, the rash must be due to a steroid deficiency" [52].	Psychiatrists Pedro Delgado and Francisco Moreno, in "Role of Norepinephrine in Depression," published in the <i>Journal of Clinical Psychiatry</i> in 2000.
"...I wrote that Prozac was no more, and perhaps less, effective in treating major depression than prior medications. ... I argued that the theories of brain functioning that led to the development of Prozac must be wrong or incomplete" [53].	Brown University psychiatrist Peter Kramer, author of <i>Listening to Prozac</i> , which is often credited with popularizing SSRIs, in a clarifying letter to the <i>New York Times</i> in 2002.
"I spent the first several years of my career doing full-time research on brain serotonin metabolism, but I never saw any convincing evidence that any psychiatric disorder, including depression, results from a deficiency of brain serotonin. In fact, we cannot measure brain serotonin levels in living human beings so there is no way to test this theory. Some neuroscientists would question whether the theory is even viable, since the brain does not function in this way, as a hydraulic system" [54].	Stanford psychiatrist David Burns, winner of the A.E. Bennett Award given by the Society for Biological Psychiatry for his research on serotonin metabolism, when asked about the scientific status of the serotonin theory in 2003.
"Indeed, no abnormality of serotonin in depression has ever been demonstrated" [55].	Psychiatrist David Healy, former secretary of the British Association for Psychopharmacology and historian of the SSRIs, in <i>Let Them Eat Prozac</i> (2004).
"We have hunted for big simple neurochemical explanations for psychiatric disorders and have not found them" [56].	Psychiatrist Kenneth Kendler the coeditor-in-chief of <i>Psychological Medicine</i> , in a 2005 review article.





How academic work is evaluated ...



# h-factor

HF = mathematical parameter (calculated!)

The number of publications of a researcher which have been cited as least as often as this number.

Example: 7 publications, one is cited 5 times, one is cited 2 times, the other ones are cited once or not at all => HF=2

HF should increase with age and has to be corrected for age if different people are compared.

Note that the HF can never go down even if you don't work any more.





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Subject: Environmental Sciences & Ecology; Evolutionary Biology

Keywords: stable isotopes; mammal herbivores; animal ecology; palaeoecology

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Primary Institution: National Museum

Sub-org/Dept: Florisbad Quaternary Research

Role: Researcher (Academic)

Joint Affiliation: University of Zurich

Sub-org/Dept: Clinic for Zoo Animals, Exotic Pets and Wildlife

Role: Postdoctoral Fellow

Past Institutions: University of KwaZulu-Natal

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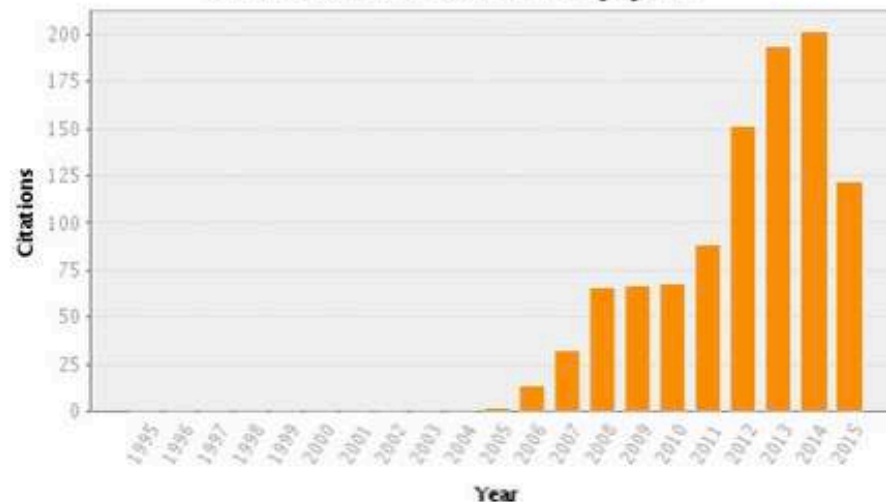
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## My Publications: Citation Metrics

This graph shows the number of times the articles on the publication list have been cited in each of the last 20 years.

Note: Only articles from Web of Science Core Collection with citation data are included in the calculations. [More information about these data.](#)

### Citation Distribution by year



Total Articles in Publication List: 53

Articles With Citation Data: 51

Sum of the Times Cited: 1009

Average Citations per Article: 19.78

h-index: 20

Last Updated: 09/25/2015 06:17  
GMT



Incentives are temptations



# Integrity

*buying publications*



# Field Data on the Little Known and Endangered *Lepilemur*

Leslie Wilmet<sup>1,2\*</sup>, Christoph Schwitzer<sup>3</sup>, Roseline C. Beudels-Jamar<sup>2</sup>, Gontran Sonet<sup>4</sup>, Pierre Devillers<sup>2</sup> and

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### Abstract

*Lepilemur mittermeieri* is a very little known sportive lemur of the Ampasindava penins presently regarded as endangered. On the basis of genetic material only, obtained from three individuals collected at the same locality. No observation confidently allocated to the species has been reported since. The objectives of our research were to verify that the sportive lemurs found in forests of the Ampasindava peninsula beyond the type locality of *Lepilemur mittermeieri* belonged to the same species as the type, to provide morphological and behavioral data for populations confidently attributed to *L. mittermeieri* and to obtain for these populations preliminary evaluations of density variations within the peninsula. Our surveys were undertaken in remnant forest patches of the western part of the Ampasindava peninsula. Linear transect observations by day were conducted. A total of 54 animals were seen along nine transect forest patches, two at low altitude and two at high altitude. All animals examined and photographed and the impression was gained that a single taxon was involved. Genetic material collected from one dead specimen proved identical to the type of *L. mittermeieri* which confirmed the identity of the populations we observed. It thus appears that *L. mittermeieri* is indeed the only sportive lemur present on the peninsula and that it occurs in several forest remnants. We endeavored to get evaluations of the density and abundance of the species in the four forest patches we studied. We used KAIs (Kilometric Abundance Indices) to evaluate and compare relative densities, and Buckland's distance sampling method to evaluate absolute densities. The latter suggested a density of 1.9 animals/ha, a result that must, however, be taken with caution.

**Keywords:** *Lepilemur mittermeieri*; Ampasindava peninsula; Madagascar; Distance sampling; Endangered species

### Introduction

Sportive lemurs (genus *Lepilemur*) are medium-sized, mostly folivorous, forest-dwelling, mostly nocturnal primates, confined, like the rest of the infraorder Lemuriformes, to Madagascar [1,2]. They are placed by most recent authors in the monotypic family Lepilemuridae [3,4]. As a genus, the sportive lemurs are widely distributed, in discrete populations, in low- and mid-altitude evergreen and deciduous forests of Madagascar [5-8]. The diversity of the genus has only recently been fully appreciated [4]. Until the 1970's all populations were included in two or one species. Between 1977 and the 1990's seven species were recognised. Groves [3] recognised eight species. Recent genetic and cytogenetic studies have identified 26 species, with more likely to be discovered [4]. The cryptic character of the now-recognised species, the long ignorance of their identity and the fact that many of them have only been characterised through genetic analyses mean that very few eco-ethological data can be specifically attributed to most of them. Thus, by 2013, data on behaviour and ecology were only available for six of the 26 species [4]. The genus is very homogenous: species are morphologically similar and are not sexually dimorphic. The reproductive cycle of individual species and the social behaviour of individuals are poorly known but some sportive lemurs, at least, show a seasonal reproductive cycle and individuals appear to be mostly solitary [5,8-11].

Concern for the conservation status of sportive lemurs had long been expressed, in spite of their supposed large range and occasional local abundance, because of fragmented distribution and severe threats to many isolated populations, risk factors which increase with the current intensification of deforestation and habitat degradation [12-14]. The new understanding of the diversity of the genus has

considerably increased this concern. Some of them, small total populations, are considered as critically endangered. Effective conservation actions are required. A minimum understanding of the life history and habitat requirements, of the behavior and social organization of each species are required.

Our fieldwork addresses one species, *Lepilemur mittermeieri*. It was described in 2006 by Rabarivola *et al.* on the basis of genetic material only, obtained from three individuals collected at the same locality. No observation confidently allocated to the species has been reported since. The objectives of our research were to verify that the sportive lemurs found in forests of the Ampasindava peninsula beyond the type locality of *Lepilemur mittermeieri* belonged to the same species as the type, to provide morphological and behavioral data for populations confidently attributed to *L. mittermeieri* and to obtain for these populations preliminary evaluations of density variations within the peninsula. Our surveys were undertaken in March and April 2014 in remnant forest patches of the western part of the Ampasindava peninsula. Linear transects by night and punctual observations by day were conducted. A total of 54 animals were seen along nine transects situated in four forest patches, two at low altitude and two at high altitude. All animals examined and photographed appeared similar, and the impression was gained that a single taxon was involved. Genetic material collected from one dead specimen proved identical to the type of *L. mittermeieri* which confirmed the identity of the populations we observed. It thus appears that *L. mittermeieri* is indeed the only sportive lemur present on the peninsula and that it occurs in several forest remnants. We endeavored to get evaluations of the density and abundance of the species in the four forest patches we studied. We used KAIs (Kilometric Abundance Indices) to evaluate and compare relative densities, and Buckland's distance sampling method to evaluate absolute densities. The latter suggested a density of 1.9 animals/ha, a result that must, however, be taken with caution.

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Received August 06, 2015; Accepted November 24, 2015

**Citation:** Wilmet L, Schwitzer C, Beudels-Jamar R, Sonet G, Devillers P (2015) Field Data on the Little Known and Endangered *Lepilemur mittermeieri*. *Primates* 4: 130. doi:10.4172/2167-6801

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# Field Data on the Little Known and Endangered *Lepilemur mittermeieri*\*

Leslie Wilmet<sup>1,2</sup>, Christoph Schwitzer<sup>3</sup>, Roseline C. Beudels-Jamar<sup>2</sup>, Gontran Sonet<sup>4</sup>, Pierre Devillers<sup>2</sup> and Cédric Vermeulen<sup>1</sup>

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**Abstract:** *Lepilemur mittermeieri* is a very little known sportive lemur of the Ampasindava peninsula of Madagascar, presently regarded as Endangered. It was described in 2006 by Rabarivola *et al.* on the basis of genetic material only, obtained from three individuals collected at the same locality. No observation confidently allocated to the species has been reported since. The objectives of our research were to verify that the sportive lemurs found in forests of the Ampasindava peninsula beyond the type locality of *Lepilemur mittermeieri* belonged to the same species as the type, to provide morphological and behavioral data for populations confidently attributed to *L. mittermeieri* and to obtain for these populations preliminary evaluations of density variations within the peninsula. Our surveys were undertaken in March and April 2014 in remnant forest patches of the western part of the Ampasindava peninsula. Linear transects by night and punctual observations by day were conducted. A total of 54 animals were seen along nine transects situated in four forest patches, two at low altitude and two at high altitude. All animals examined and photographed appeared similar, and the impression was gained that a single taxon was involved. Genetic material collected from one dead specimen proved identical to the type of *L. mittermeieri* which confirmed the identity of the populations we observed. It thus appears that *L. mittermeieri* is indeed the only sportive lemur present on the peninsula and that it occurs in several forest remnants. We endeavored to get evaluations of the density and abundance of the species in the four forest patches we studied. We used KAIs (Kilometric Abundance Indices) to evaluate and compare relative densities, and Buckland's distance sampling method to evaluate absolute densities. The latter suggested a density of 1.9 animals/ha, a result that must, however, be taken with caution.

**Key Words:** *Lepilemur mittermeieri*, Ampasindava peninsula, Madagascar, distance sampling, endangered species

### Introduction

Sportive lemurs (genus *Lepilemur*) are medium-sized, mostly folivorous, forest-dwelling, mostly nocturnal primates, confined, like the rest of the infraorder Lemuriformes, to Madagascar (Wilmet *et al.* 2014). They are placed by most recent authors in the monotypic family Lepilemuridae (Groves 2005; Schwitzer *et al.* 2013). As a genus, the sportive lemurs are widely distributed, in discrete populations, in low and mid-altitude evergreen and deciduous forests of Madagascar (Andriaholinirina *et al.* 2006; Mittermeier *et al.* 2010; Mittermeier 2013; Drösher and Kappeler 2014). The diversity of the genus has only recently been fully appreciated (Schwitzer *et al.* 2013). Until the 1970s, all populations were included in two or one species. Between 1977 and the 1990s seven species

were recognised. Groves (2005) recognised eight species. Recent genetic and cytogenetic studies have identified 26 species, with more likely to be discovered (Schwitzer *et al.* 2013). The cryptic character of the now-recognized species, the long ignorance of their identity and the fact that many of them have only been characterised through genetic analyses mean that very few eco-ethological data can be specifically attributed to most of them. Thus, by 2013, data on behaviour and ecology were only available for six of the 26 species (Schwitzer *et al.* 2013). The genus is very homogenous; species are morphologically similar and are not sexually dimorphic. The reproductive cycle of individual species and the social behaviour of individuals are poorly known but some sportive lemurs at least show a seasonal reproductive cycle and individuals appear to

\* Previously published in *J. Primatol.* 2015, 4:2. <http://dx.doi.org/10.4172/2167-6801.1000130>.



# Forscher zahlen für obskure Publikationen

Um die wissenschaftliche Karriere zu fördern, publizieren viele Schweizer Forscher ihre Studien in zwielichtigen Fachzeitschriften. **Von Martin Amrein**



## Recherche im Internet

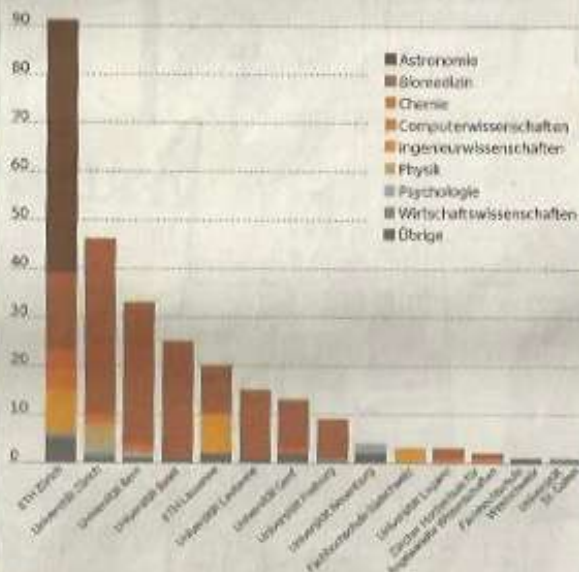
### So sind wir zu den Daten gekommen

Die in diesem Artikel verwendeten Zahlen zu Schweizer Forschern, die in Pseudo-Journals publiziert haben, stammen aus einer datenjournalistischen Recherche, für die wir mit dem Forschungsinstitut Sotomo zusammengearbeitet haben. Aus dem Internet haben wir die Publikationslisten von 9565 Wissenschaftlern, die über ein Profil bei der Suchmaschine Google Scholar verfügen, zusammengetragen. Bedingung war, dass die Forscher auf ihrem Profil angaben, bei einer Schweizer Universität oder Fachhochschule angestellt zu sein, oder über eine E-Mail-Adresse einer solchen Institution verfügten. Die Publikationen haben wir mit einer Liste verglichen (=Beall's List), auf der zweifelhafte Zeitschriften verzeichnet sind, deren Vorleger eingereichte Studien nicht richtig prüfen.

Auf diese Weise sind wir auf 222 Artikel von 146 verschiedenen Autoren gestossen. Die effektive Zahl von Artikeln in Pseudo-Journals mit Schweizer Autorenschaft dürfte noch höher sein, denn nur etwa jeder vierte Forscher besitzt ein Profil auf Google Scholar. Die Daten stammen aus dem vergangenen November. Weil das Jahr 2017 nicht vollständig erfasst ist, haben wir es in Grafik 2 ausgelassen. Der anonymisierte Datensatz ist über diesen Link verfügbar: [nzz.ch/pseudo-journals](http://nzz.ch/pseudo-journals)

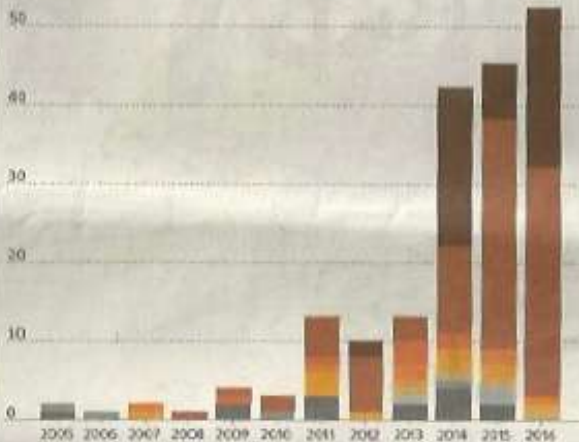
### 1 Universitäten vor Fachhochschulen

Anzahl Artikel in Pseudo-Journals pro Institution (2005–2017)



### 2 Massiver Anstieg

Anzahl Artikel von Schweizer Forschern in Pseudo-Journals pro Jahr



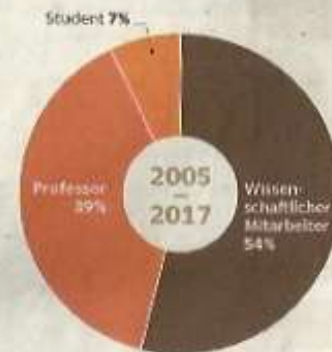
### 3 Unrühmlicher Rekord

Schweizer Forscher mit den meisten Artikeln in Pseudo-Journals



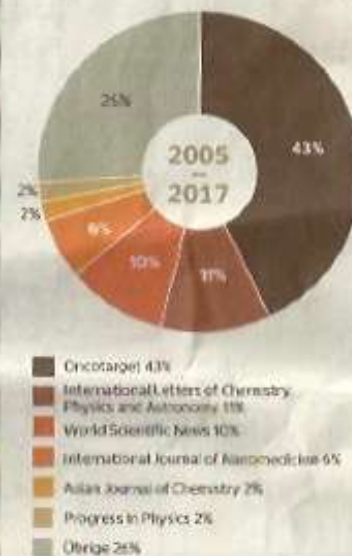
### 4 Viele Professoren betroffen

Universitäre Position der Autoren



### 5 Krebsmagazin liegt vorne

Meistgenutzte Pseudo-Journals





# MDPI story



*animals*



Journal of  
*Zoological and  
Botanical Gardens*



*nutrients*



*ruminants*





# Paper mills



# Fake Publications in Biomedical Science: Red-flagging Method Indicates Mass Production

Bernhard A. Sabel<sup>1\*</sup>, Ph.D., Emely Knaack<sup>1</sup>, Gerd Gigerenzer<sup>2</sup>, Ph.D., Mirela Bilc<sup>1</sup>, Ph.D.



medRxiv preprint doi: <https://doi.org/10.1101/2023.05.06.23289563>; this version posted May 8, 2023. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted medRxiv a license to display the preprint in perpetuity. It is made available under a [CC-BY-ND 4.0 International license](#).



# An investigation into the impact and implications of published papers from retracted research: systematic search of affected literature

*BMJ Open* 2019;**9**:e031909.

---

Alison Avenell,<sup>1</sup> Fiona Stewart,<sup>1</sup> Andrew Grey ,<sup>2</sup> Greg Gamble,<sup>2</sup>  
Mark Bolland <sup>2</sup>



# Vitamin K and the Prevention of Fractures

## *Systematic Review and Meta-analysis of Randomized Controlled Trials*

*Sarah Cockayne, MSc; Joy Adamson, PhD; Susan Lanham-New, PhD; Martin J. Shearer, PhD, MRCPATH;  
Simon Gilbody, DPhil; David J. Torgerson, PhD*

*Arch Intern Med. 2006;166:1256-1261*



# Integrity

*buying methods*



# Gut Microbiota enabled Goitered Gazelle (*Gazella subgutturosa*) to Adapt to Seasonal Changes

Wen Qin<sup>1,2</sup>, YanGan Huang<sup>1</sup>, Lei Wang<sup>1</sup>, Gonghua Lin<sup>1</sup>, Jundong Yang<sup>1,2</sup>, Pengfei Song<sup>1,2</sup>, Hongmei Gao<sup>1,2</sup>, Jingjie Zhang<sup>1,2</sup> and Tongzuo Zhang<sup>1,3,\*</sup>





# Incentives are temptations

*... mainly in 'human-relevant' areas like biomedicine?*

*Surely not in basic biological research on non-domestic species?*



# Academic niche construction

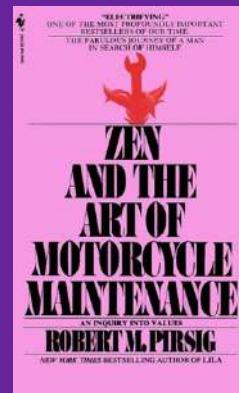
*a case example (1996-2020)*







# Science is like anything else



*you can tell whether it is good or not*





# Potential Mechanisms for Cancer Resistance in Elephants and Comparative Cellular Response to DNA Damage in Humans

Lisa M. Abegglen, PhD; Aleah F. Caulin, PhD; Ashley Chan, BS; Kristy Lee, PhD; Rosann Robinson, BS; Michael S. Campbell, PhD; Wendy K. Kiso, PhD; Dennis L. Schmitt, DVM, PhD; Peter J. Waddell, PhD; Srividya Bhaskara, PhD; Shane T. Jensen, PhD; Carlo C. Maley, PhD; Joshua D. Schiffman, MD



# Cancer risk across mammals

**Orsolya Vincze<sup>1,2,3,4</sup>✉, Fernando Colchero<sup>5,6,7</sup>, Jean-Francois Lemaître<sup>8</sup>, Dalia A. Conde<sup>6,7,9</sup>, Samuel Pavard<sup>10</sup>, Margaux Bieuville<sup>10</sup>, Araxi O. Urrutia<sup>11,12</sup>, Beata Ujvari<sup>13</sup>, Amy M. Boddy<sup>14</sup>, Carlo C. Maley<sup>15</sup>, Frédéric Thomas<sup>1</sup> & Mathieu Giraudeau<sup>1,2</sup>**

Nature | Vol 601 | 13 January 2022 | **263**



THE  
COAL QUESTION;

AN INQUIRY  
CONCERNING THE PROGRESS OF THE NATION,  
AND THE  
PROBABLE EXHAUSTION OF OUR COAL-MINES.

W. STANLEY JEVONS, M.A.

FELLOW OF UNIVERSITY COLLEGE, LONDON;  
LORDSLEY PROFESSOR OF POLITICAL ECONOMY IN QUEEN'S COLLEGE, BANGOR.

SECOND EDITION, REVISED.

London:  
MACMILLAN AND CO.

1866.

5

GB

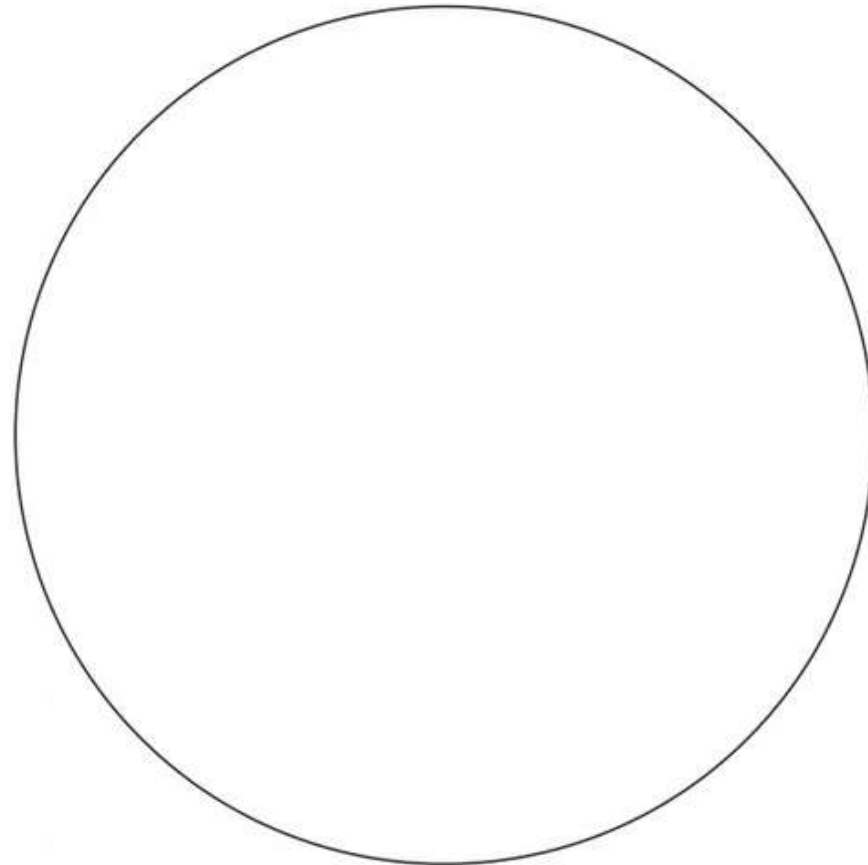


# The knowledge universe:

*a story of constant expansion*



# The knowledge universe





# Referencing

*scientific texts are edifices built on  
previous science*

*and the link is made by the citation*





# Not everything needs a citation

**Journal of Animal Husbandry and Dairy Science**  
Volume 5, Issue 1, 2021, PP 1-9  
ISSN 2637-5354  
DOI: <https://doi.org/10.22259/2637-5354.0501001>



## **Effects of Allium Sativum Powder on in Vitro Digestibility of Maize Stover in Cattle**

**Lemoufouet Jules<sup>1\*</sup>, Kana Jean Raphael<sup>1</sup>, Taboumda Evariste<sup>1</sup>, Mube Kuitche Hervé<sup>1</sup>, Mekuiko Watsop Hippolyte<sup>2</sup>, Miégoué Emile<sup>1</sup>, Tendonkeng Fernand<sup>1</sup>, Mouchili Mama<sup>1</sup>, Matumuini Ndzani Essie Ference<sup>3</sup> et Pamo Tedonkeng Etienne<sup>1</sup>**

According to Meyer *et al.* (2010), animals ingest food to meet their energy needs.

Meyer K and Hummel J, Clauss M: 2010. The relationship between forage cell wall content and voluntary food intake in mammalian herbivores. *Mammal Review* 40: 221-245.

# ... but many claims do need one !

© 1997 Blackwell Wissenschafts-Verlag, Berlin  
ISSN 0005-9366

Eingegangen am 3. 12. 1996

Institut für Biometrie und Informationsverarbeitung Fachbereich Veterinärmedizin, Freie Universität Berlin

## Epidemiologische Studien zur Übertragung der Bovinen Spongiformen Enzephalopathie (BSE) – Anmerkungen aus biometrischer Sicht

Epidemiological studies on the transmission of bovine spongiform encephalopathy (BSE) – some remarks from a biometrical point of view

Susanne Dahms

**Zusammenfassung:** Anhand einer Fall-Kontroll-Studie zur Übertragung der Bovinen Spongiformen Enzephalopathie (BSE) werden biometrische Aspekte der Planung und Auswertung solcher epidemiologischer Studien diskutiert. Bei dem Beispiel handelt es sich um eine retrospektive Untersuchung der Hypothese, daß BSE-Fälle als Kälber durch Fleisch- und Knochenmehl enthaltende Kraftfuttermittel infiziert worden sind. Dazu wurde als Studientyp eine Fall-Kontroll-Studie gewählt, deren Studiendesign und Datenerhebung zunächst vorgestellt werden. Zur Auswertung der Studie wurden rohe und mit Hilfe logistischer Regressionen adjustierte Odds-Ratios für den Risikofaktor „Fleisch- und Knochenmehl“ geschätzt. Diese Auswertungsstrategie wird hier diskutiert und der gewählte Regressionsansatz mit einem alternativen Ansatz verglichen. Dabei zeigt sich, daß bei der Auswahl der Studienherden Probleme aufgetreten sind, die zu einem unausgewogenen Verhältnis von Kontroll- zu Fallherden geführt haben. Dieses Mißverhältnis und die unterschiedliche Datenqualität bei Fällen und Kontrollen erschweren die Interpretation der Studienergebnisse.

Schlüsselwörter: Biometrie, Epidemiologie, Fall-Kontroll-Studie, Bovine Spongiforme Enzephalitis (BSE)

**Summary:** This contribution discusses biometrical aspects of the design and analysis of epidemiological case-control studies. The study chosen as an example was undertaken to investigate the transmission of bovine spongiform encephalopathy (BSE) to calves and the role of the inclusion of meat and bonemeal in proprietary feedstuffs. The hypothesis was examined by means of a case-control study which is summarized with emphasis on its study design and the collection of data. The analysis included the estimation of raw odds-ratios for the inclusion of meat and bonemeal in proprietary feedstuffs for calves as well as adjusted odds-ratios using logistic regression. This strategy is discussed and the chosen regression model is compared with an alternative one. Results show that problems occurred when recruiting herds for the study leading to uneven proportions of cases and controls. Because of these misproportions and due to different data quality for cases and controls the interpretation of the study results is difficult.

Key words: biometry, epidemiology, case control studies, bovine spongiform encephalopathy (BSE)

### Einleitung

Die Erforschung der Herkunft und Übertragung der Bovinen Spongiformen Enzephalopathie – oder kurz BSE – stellt ein Problem mit vielfältigen Teilaspekten dar, die in unterschiedliche Gebiete der Veterinärmedizin fallen. Eine Aufgabe der Epidemiologie kann darin gesehen werden, das Erscheinungsbild der Krankheit insgesamt zu erfassen, um daraus Fragestellungen und Hypothesen für weiterführende, speziellere Studien abzuleiten. Dazu gehört aber auch, die einzelnen Forschungsergebnisse und die verschiedenen Erklärungsansätze dann wieder zusammenzuführen und kritisch zu prüfen, wie sie zueinander und zur Gesamterscheinung der Krankheit passen.

Die Arbeit eines Epidemiologen ist damit nicht primär auf die individuelle Erkrankung gerichtet, sondern auf das Geschehen in einer Population und die Randbedingungen, unter denen es zu beobachten ist. Daher gehören statistisches Denken und biometrische Methoden zum unverzichtbaren Handwerkszeug der Epidemiologie. Es erfordert allerdings eine sorgfältige Studienplanung, einen sachgerechten Umgang mit statistischen Methoden und eine Abstimmung auf die zu bearbeitende Fragestellung, damit epidemiologische Studien interpretierbare Ergebnisse liefern können.

Mit diesem Beitrag soll am Beispiel der BSE ein Eindruck davon vermittelt werden, wie sich die zu untersuchende Frage-

stellung auf die Planung epidemiologischer Studien auswirken kann, welche Probleme bei der Durchführung auftreten können und was dann bei der Interpretation der Ergebnisse zu beachten ist. Dazu soll zunächst kurz auf die beschreibenden epidemiologischen Untersuchungen der ersten BSE-Fälle eingegangen werden. Den Schwerpunkt wird dann eine Fall-Kontroll-Studie zu einer spezifischen Übertragungshypothese des BSE-Erregers bilden.

Nachdem Mitte der achtziger Jahre in Großbritannien die ersten BSE-Erkrankungen aufgefallen waren, führte ihre zunehmende Verbreitung bald zu umfangreichen epidemiologischen Untersuchungen, die ihre Herkunft klären sollten. Im Juni 1987 wurde mit einer deskriptiven Studie aller bis dahin in Großbritannien aufgetretenen BSE-Fälle begonnen, deren Ergebnisse 1988 von Wilesmith et al., (1988) veröffentlicht wurden.

Das Ziel dieser Studie war einmal, das klinische Bild und die Pathologie der BSE-Erkrankung genauer zu beschreiben. Vor allem ging es aber auch darum, anhand der bekannten Fälle die epidemiologischen Merkmale der BSE herauszuarbeiten, das heißt zu klären, wo, wann, unter welchen Umständen und bei welcher Art von Tieren die Krankheit auftritt, um anhand dieser Merkmale mögliche ätiologische Arbeitshypothesen zu entwickeln. Die Datenerhebung konzentrierte sich daher auf BSE-betroffene Tiere bzw. Herden. Zur ihrer Charakterisierung wurde



## Notes

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MARINE MAMMAL SCIENCE, 33(1): 386–388 (January 2017)  
© 2016 Society for Marine Mammalogy  
DOI: 10.1111/mms.12364

The blue whale brain misrepresented by an alcohol dehydrated brain of  
3,636 grams

SAM H. RIDGWAY<sup>1</sup> AND KAITLIN R. VAN ALSTYNE, National Marine Mammal Founda-  
tion, 2240 Shelter Island Drive, Suite 200, San Diego, California 92106, U.S.A.



CONCEPT  
PAPER



# Flawed citation practices facilitate the unsubstantiated perception of a global trend toward increased jellyfish blooms

Marina Sanz-Martín<sup>1,2\*</sup>, Kylie A. Pitt<sup>3</sup>, Robert H. Condon<sup>4</sup>,  
Cathy H. Lucas<sup>5</sup>, Charles Novaes de Santana<sup>6</sup> and Carlos M. Duarte<sup>7</sup>



Oikos 126: 1523–1532, 2017

doi: 10.1111/oik.04400

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Subject Editor: Christopher Swan. Editor-in-Chief: Dustin Marshall. Accepted 10 April 2017

## **Avoiding erroneous citations in ecological research: read before you apply**

**Martin Šigut, Hana Šigutová, Petr Pyszko, Aleš Dolný, Michaela Drozdová and Pavel Drozd**



How do you know what you read is true?



RESEARCH

Open Access



# Identification of novel inhibitors for TNF $\alpha$ , TNFR1 and TNF $\alpha$ -TNFR1 complex using pharmacophore-based approaches

Madhu Sudhana Saddala and Hu Huang\*

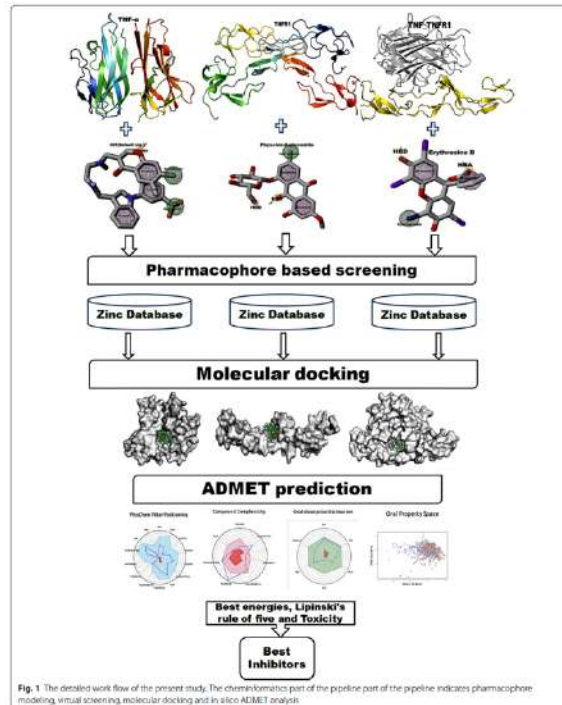


Fig. 1 The detailed work flow of the present study. The cheminformatics part of the pipeline part of the pipeline indicates pharmacophore modeling, virtual screening, molecular docking and in silico ADMET analysis.

interest. Docking was performed using the AutoDock in PyRx Virtual Screening tool [28, 29]. The hit molecules

- Schwarm A, Ortmann S, Wolf C, Streich WJ, Clauss M. More efficient mastication allows increasing intake without compromising digestibility or necessitating a larger gut: comparative feeding trials in banteng (*Bos javanicus*) and pygmy hippopotamus (*Hexaprotodon liberiensis*). *Comp Biochem Physiol A*. 2009;152(4):504–12.



# The Time Allometry of Mammalian Chewing Movements: Chewing Frequency Scales with Body Mass in Mammals

ROBERT E. DRUZINSKY†  
*J. theor. Biol.* (1993) **160**, 427–440

TABLE 1

*Body mass ( $M_b$ ) and masticatory cycle period ( $T_{CHEW}$ ) in mammals*

Species	$M_b$ (g)	$T_{CHEW}$ (msec)	Source
<i>Myotis lucifugus</i>	7	250	Hiiemäe (1978)
<i>Suncus murinus</i>	41	183	Dotsch (1986)
<i>Tupaia glis</i>	150	238	Hiiemäe (1978)
<i>Rattus norvegicus</i>	200	192	Hiiemäe (1978)
<i>Pteropus giganteus</i>	480	581	De Gueldre & De Vree (1984)
<i>Saimiri sciurus</i>	550	357	Hiiemäe (1978)
<i>Aplodontia rufa</i>	583	207	Druzinsky (1989)
<i>Tenrec ecaudatus</i>	700§	381	Oron & Crompton (1985)
<i>Cavia porcellus</i>	900	163	Byrd (1981)
<i>Mustela putorius</i>	1 350§	218	Druzinsky (1993)
<i>Galago crassicaudatus</i>	1 500	314	Hiiemäe (1978)
<i>Pedetes capensis</i> †	2 300	317	Offermans & De Vree (1990)
<i>Oryctolagus cuniculus</i>	2 500	277	Weijs & Dantuma (1981)
<i>Didelphis marsupialis</i>	2 500	390	Hiiemäe (1978)
<i>Felis domesticus</i>	2 500	308	Hiiemäe (1978)
<i>Macaca mulatta</i>	3 500	334	Hiiemäe (1978)
<i>Marmota monax</i>	3 790	583	Druzinsky (1989)
<i>Ateles</i> sp.	6 000	326	Hiiemäe (1978)
<i>Capra hircus</i>	20 000	417	Hiiemäe (1978)
<i>Sus scrofa</i>	22 300	330	Hiiemäe (1978)
<i>Canis familiaris</i>	36 287	316	Dessem, D.†
<i>Homo sapiens</i>	60 000	772	Hiiemäe (1978)
<i>Tapirus terrestris</i>	272 155	689	Druzinsky (1993)
<i>Bos taurus</i>	476 272	690	Druzinsky (1993)
<i>Equus caballus</i>	650 905	785	Druzinsky (1993)
<i>Loxodonta africana</i>	2 812 273	1034	Druzinsky (1993)





**Citation:** Visscher DR, Merrill EH (2018) Functional connectivity in ruminants: A generalized state-dependent modelling approach. PLoS ONE 13(6): e0199671. <https://doi.org/10.1371/journal.pone.0199671>

RESEARCH ARTICLE

# Functional connectivity in ruminants: A generalized state-dependent modelling approach

Darcy R. Visscher<sup>1\*</sup>, Evelyn H. Merrill<sup>2</sup>



# Nonlinearity in the predation risk of prey mobility

**Peter B. Banks<sup>\*</sup>, Kai Norrdahl and Erkki Korpimäki**

*Proc. R. Soc. Lond. B* (2000) 267, 1621–1625

*Department of Biology, Section of Ecology, University of Turku, FIN-20014, Finland*



# Life cycle period and activity of prey influence their susceptibility to predators

A. Molinari-Jobin, P. Molinari, A. Loison, J.-M. Gaillard and U. Breitenmoser

ECOGRAPHY 27: 323–329, 2004

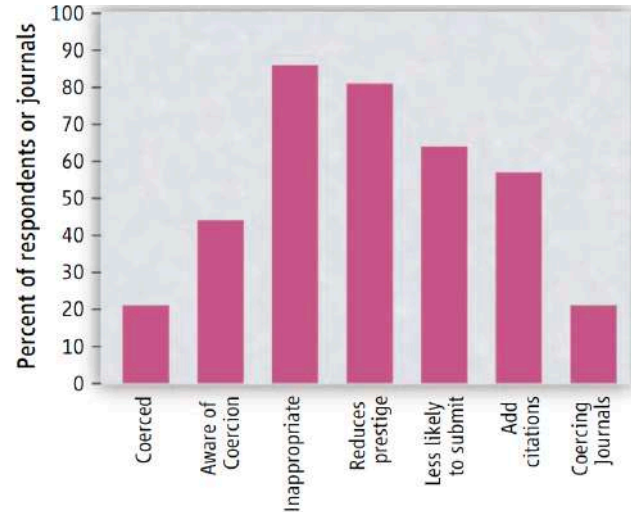


Many journal editors appear to strategically target authors and papers to pressure them into citing the editors' journals.

3 FEBRUARY 2012 VOL 335 SCIENCE

# Coercive Citation in Academic Publishing

Allen W. Wilhite\*† and Eric A. Fong\*



**Survey results reflecting the extent, and opinions, of coercion.** Percentages of respondents who (i) have been coerced, (ii) are aware of coercion, (iii) think coercion is inappropriate, and agree or strongly agree that (iv) coercion reduces the prestige of a journal, (v) they are less likely to submit to a coercive journal, and (vi) they are likely to add journal-specific citations before submission. The percentage of journals in the study identified as coercers is also shown. See SOM for details.

PERCENT CHANGE IN PROBABILITY OF COERCION (SE)

Hypothesized effect	Survey data	Journal data
<b>Academic rank</b>		
Associate professor	4.3** (1.4)	
Assistant professor	5.5** (1.5)	
Lecturer	-5.6 (3.1)	
Graduate student	-0.4 (2.55)	
<b>Confrontation avoidance</b>		
Number of coauthors	-2.0** (0.5)	
<b>Academic discipline</b>		
Sociology	-5.7** (2.1)	-6.5 (9.6)
Psychology	-9.0** (1.9)	1.6 (8.2)
Marketing	20.1** (2.1)	43.1** (11.2)
Management	15.9** (2.0)	31.9** (7.8)
Finance	18.6** (2.7)	37.7** (11.4)
Information systems	18.9** (2.2)	71.8** (13.8)
Accounting	4.4 (2.8)	29.3* (13.5)
<b>Publisher type</b>		
Commercial		9.2* (4.5)
Academic society		12.4* (5.5)

\* P < 0.05, \*\* P < 0.01

Somewhat surprisingly, the results (tables S2 and S4) suggest that more highly ranked journals are more likely to coerce.



# Integrity

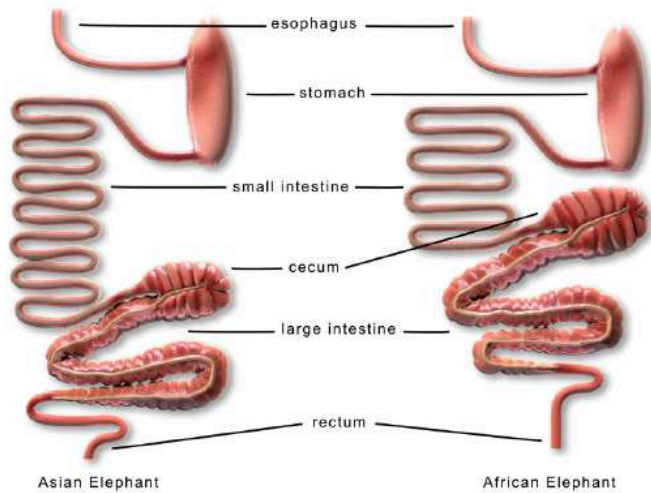
*honouring those who had an idea first or  
whose data you use*



## A review of Asian and African elephant gastrointestinal anatomy, physiology and pharmacology

Whitney Greene<sup>1</sup>, Ellen S. Dierenfeld<sup>2</sup>, Susan Mikota<sup>3</sup>

Journal of Zoo and Aquarium Research 7(1) 2019

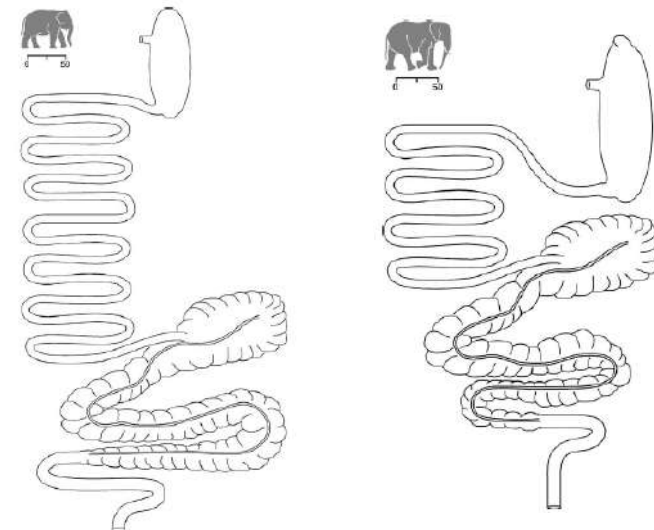


**Figure 1:** African and Asian elephant gastrointestinal anatomical comparison.

Marcus Clauss · Hanspeter Steinmetz ·  
Ulrike Eulenberger · Pete Ossent · Robert Zingg ·  
Jürgen Hummel · Jean-Michel Hatt

## Observations on the length of the intestinal tract of African *Loxodonta africana* (Blumenbach 1797) and Asian elephants *Elephas maximus* (Linné 1735)

Eur J Wildl Res (2007) 53: 68–72





# THE COLONIC SEPARATION MECHANISM IN THE GUINEA-PIG (*CAVIA PORCELLUS*) AND THE CHINCHILLA (*CHINCHILLA LANIGER*)

KJELL HOLTENIUS and GÖRAN BJÖRNHAG

*Comp. Biochem. Physiol.* Vol. 82A, No. 3, pp. 537-542, 1985



Fifteen guinea-pigs were provided with a cannula in the proximal colon in order to study the distribution and transport of labelled bacteria.

Eleven of the 15 animals infused with labelled bacteria had measurable amounts of the marker in the caecal contents. The average recovery value in the caecal contents was 15% (2-50%).

Twelve of the animals had measurable amounts of labelled bacteria in the colon proximal to the cannula. The mean concentration was 2.1 times higher in the furrow contents, compared to the contents of the main lumen. This difference was significant ( $P < 0.02$ ).

Toru Takahashi · Ei Sakaguchi

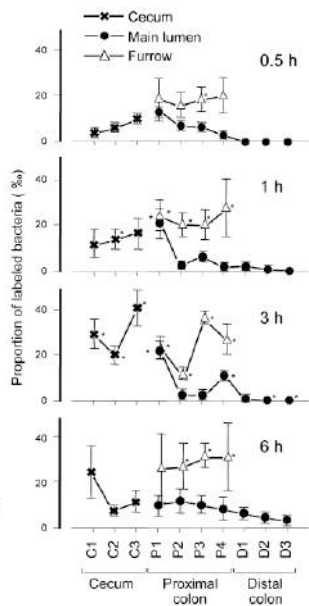
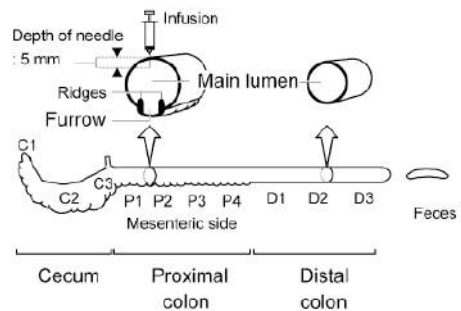
## Transport of bacteria across and along the large intestinal lumen of guinea pigs

*J Comp Physiol B* (2006) 176: 173-178

Animals retain bacteria within the large intestinal lumen by means of a colonic separation mechanism (Hörnigke and Björnhag 1980; Sakaguchi et al. 1987). This mechanism is thought to involve the separation of bacteria from dietary residue, the accumulation of bacteria, and the retrograde transport of bacteria to the caecum (Björnhag 1994); however, there is no direct evidence for this. We have suggested previously that there may be a distinct transport mechanism that is responsible for the accumulation of bacteria within the caecum (Takahashi and Sakaguchi 2000).

In the present study, we investigated the transport of bacteria in the intestine of guinea pigs by using flow cytometry to detect fluorescently labelled bacteria that were injected into the proximal colon. We also

Horan PK, Slezak SE (1989) Stable cell membrane labelling. *Nature* 340:167-168  
Hörnigke H, Björnhag G (1980) Coprophagy and related strategies for digesta utilization. In: Ruckebusch Y, Thivend P (eds) Digestive physiology and metabolism in ruminants. MTP press, Lancaster, pp 707-730  
Hukuhara T (1973) Syoukakan undo no Mekanizumu. Bunkosya, Tokyo





# Are fast-moving elephants really running?

Despite their unseemly bulk, elephants can hit high speeds — but use an unusual style.

It is generally thought that elephants do not run<sup>1–3</sup>, but there is confusion about how fast they can move across open terrain and what gait they use at top speed. Here we use video analysis to show that Asian elephants (*Elephas maximus* L.) can move at surprisingly high speeds of up to 6.8 m s<sup>-1</sup> (25 km h<sup>-1</sup>) and that, although their gait might seem to be a walk even at this speed, some features of their locomotion conform to definitions of running.

Elephants moving rapidly have been estimated<sup>1–4</sup> to reach speeds of about 4 m s<sup>-1</sup>

(15 km h<sup>-1</sup>), although anecdotal evidence<sup>1</sup> claims that they can reach 11 m s<sup>-1</sup> (40 km h<sup>-1</sup>). To investigate the gait used by elephants at top speeds, we used video analysis to study 42 healthy, active Asian elephants throughout Thailand (for details, see supplementary information). The skin was marked with non-toxic tempera paint dots over the limb-joint centres of the elephants (right fore- and hindlimbs; Fig. 1), estimated by palpation and manipulation of the joints; these dots were used for later video digitizing. Mahouts guided the elephants along a 30-metre course, parallel to the field of view of the video camera (60 Hz). Elephants had at least 10 m to accelerate or decelerate before and after this 30-m course. A total of 188 trials were carried out; trials with sudden accelerations or decelerations in the 10-m videotaped stretch of the course were omitted.

Our digitization of the hip-joint markers (using Peak Motus, Peak Performance, Colorado) measured the average velocity along the central 10 m of the track. We used the length of the thigh segment (between the centres of hip- and knee-joint markers) to scale the digitized video coordinates to real dimensions. Photocell timers at either end of the track gave an average velocity across the entire 30 m, which was used as a preliminary gauge of which elephants were the fastest, as well as for comparison with the 10-m velocity to monitor speed changes. Speeds over the 10-m and 30-m courses were generally similar, indicating that the elephants did not suddenly speed up or slow down.

Of the elephants, 32 reached top speeds of over 4.0 m s<sup>-1</sup>, 20 exceeded 5.0 m s<sup>-1</sup>, and three attained speeds greater than 6.0 m s<sup>-1</sup>. The fastest gait used by elephants has been variously described as a walk, amble, trot, pace, rack or a running walk<sup>1–3</sup>, but — given that these speeds are relatively fast — how well does this gait of the fastest elephants fit the definitions of running?

Several kinematic factors distinguish quadrupedal walking from running. First, trotting and galloping are running gaits with footfall patterns that are distinct from walking<sup>5</sup>. Second, an aerial phase (a period during which no foot touches the ground) often marks the transition from walking to running<sup>5</sup>. Third, a run has been defined as any gait with a duty factor (the fraction of a complete sequence of footfalls for which a given foot is in contact with the ground) of less than 0.50 (ref. 5). Our elephants maintained the same walking footfall pattern (Fig. 2a) and always kept at least one foot in contact with the ground, although they used duty factors as low as 0.37.



Figure 1 An Asian elephant marked with dots for gait analysis.

Walking and running can also be distinguished by the forces involved. The Froude number (Fr) is a dimensionless speed<sup>6</sup> calculated as velocity<sup>2</sup>/(acceleration of gravity × hip height). At speeds beyond Fr 1.0, the force needed to keep the body mass on a circular arc during stance exceeds the force of gravity. Theoretically, this requires a walking animal to leave the ground and run. Most animals usually switch from a walk to a run at Fr ≈ 0.50, presumably because of an energetic or mechanical trigger<sup>7</sup>, and quadrupeds switch from a trot to a gallop at Fr ≈ 2.5 (ref. 6). The elephants routinely exceeded Fr 1.0, reaching Fr values as high as 3.4 — speeds that are inconsistent with a quadrupedal walking gait. Other animals, such as running birds<sup>8</sup>, also have non-aerial gaits at high Froude numbers.

It is the exchange of gravitational potential and kinetic energy that fundamentally distinguishes walking and running<sup>9–11</sup>. The centre of mass is highest at mid-stance in walking, but lowest at mid-stance in running<sup>12</sup>. Our analysis shows that at low speeds, as expected for walking, elephants' shoulder and hip joints rise and then fall (indicating vertical motion of the centre of mass) during the stance phase. At the highest speeds, the vertical movements of the shoulder indicate walking, but hip motion indicates running (Fig. 2b). During the stance phase of the forelimb, shoulder motion resembles walking, moving upwards and then downwards while the front foot is on the ground, whereas the hip's motion during the stance phase of the hindlimb is characteristic of running, moving downwards and then upwards.

Usually, the various criteria for walking and running are consistent, making it relatively easy to distinguish walking from running, but this is not true in the case of elephants. Our observations suggest that, at greater speeds, elephants do more than merely walk. Ground-reaction-force data are needed to demonstrate conclusively whether the elephants' gait involves spring-

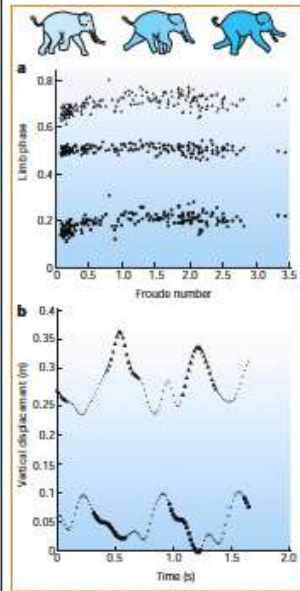


Figure 2 Biomechanics of rapid movement by Asian elephants (*Elephas maximus* L.). a, Relative limb phase (fraction of stride time for which each foot comes into contact with the ground after the left hind foot) plotted against dimensionless speed (Froude number). At all speeds, the left hind foot, then the left front (squares), then the right hind (circles), then the right front foot (triangles) contact the ground in the same sequence. Images of elephants moving at 6.6 m s<sup>-1</sup> (Froude number, 3.1; see movie in supplementary information) illustrate these footfall patterns, which are typical of quadrupedal walking<sup>5</sup>. b, Vertical displacements of the hip (circles) and shoulder (triangles) joints plotted against time for one individual moving at 6.8 m s<sup>-1</sup> (Froude number, 2.8). Large symbols indicate stance phase; small symbols indicate swing phase. This downward hip movement was typical of all fast-moving elephants; many showed a downward-then-upward pattern during stance. Roughly 2.5 strides are shown, beginning just before and ending just after the 10-m section of the observation course.





# Integrity

*an obsession with being first*



# Hibernation in a tropical primate

Even in the wound-down hibernating state, this lemur can warm up without waking up.

The Madagascan fat-tailed dwarf lemur, *Cheirogaleus medius*, hibernates in tree holes for seven months of the year, even though winter temperatures rise to over 30 °C. Here we show that this tropical primate relies on a flexible thermal response that depends on the properties of its tree hole: if the hole is poorly insulated, body temperature fluctuates widely, passively following the ambient temperature; if well insulated, body temperature stays fairly constant and the animal undergoes regular spells of arousal. Our findings indicate that arousals are determined by maximum body temperatures and that hypometabolism in hibernating animals is not necessarily coupled to a low body temperature.

Temperate and Arctic hibernators in deep burrows are buffered against fluctuations in cold winter temperatures<sup>1</sup>. Tropical animals, on the other hand, may use poorly insulated sites such as tree holes<sup>2</sup> and so face the problems of recurrent high temperatures and wide daily fluctuations in temperature during the tropical winter.

Our field study of *C. medius* reveals that its body temperature ( $T_b$ ) during hibernation varies to an extent previously unknown in mammals (for methods, see supplementary information). Most lemurs showed a wide daily fluctuation in  $T_b$  of almost 20 °C, which closely followed the air temperature of their tree holes ( $T_h$ ) in range and rate of change (Fig. 1a); the greatest fluctuation was 24.9 °C, the lowest recorded  $T_b$  was 9.3 °C and the highest was 35.9 °C.

The daily ranges and heating rates of  $T_b$  and  $T_h$  were not significantly different (Table 1), and the difference between  $T_b$  and  $T_h$  was usually very small ( $1.81 \pm 0.91$  °C;  $N = 15$ ,  $n = 16,560$  where  $N$  was the number of animals tested and  $n$  the number of data points). This passive thermal response to  $T_h$  continued over many weeks or even months and the lemurs remained ectothermic as long as  $T_h$  regularly exceeded 30 °C. At no point was hibernation interrupted by periodic euthermic arousals. Such arousals are energetically very expensive, last for 12–24 hours<sup>3,4</sup>, and were previously considered

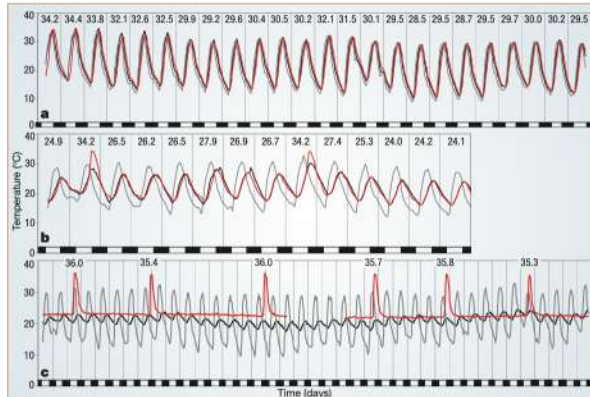


Figure 1 Body temperature of *Cheirogaleus medius* during the hibernation period. The animal's temperature (red traces) was monitored continuously in tree holes that were a, poorly insulated, measured over 24 d; b, moderately well insulated, measured over 14 d; or c, well insulated (*Commiphora guillauminii*), 18 d and 17 d; tree-hole temperature was measured nearer the edge of the hole and so shows greater fluctuations than animal temperature. Vertical lines, midnight; black bars, dark phase. Black traces, tree-hole temperature; grey, ambient temperature. Numbers (top) give the daily maximum body temperature (a, b) or the maximum body temperature during arousals (c).

to be obligatory during hibernation<sup>5,6</sup>.

Some lemurs hibernated in tree holes that were better insulated; their  $T_b$  stayed below 30 °C because the ambient temperature fluctuated less. Occasionally, these animals actively raised their  $T_b$  above 30 °C after the  $T_h$  had increased  $T_b$  to its daily maximum (Fig. 1b).

Other lemurs hibernated in well insulated holes in large, thick-walled (over 20 cm) trees (*Commiphora guillauminii*) where there were only minor fluctuations in  $T_h$  during the day and  $T_b$  stayed at about 25 °C for many days (Fig. 1c). Unlike the other lemurs, these animals had an arousal with an increase in  $T_b$  about once a week ( $6.7 \pm 3.9$  d). Compared with arousals in temperate and Arctic hibernators, however, these were short:  $T_b$  was maintained above 33 °C for less than 6 h.

The amplitude of  $T_b$  during arousals was comparable to the daily  $T_b$  amplitude of passively thermoregulating lemurs in poorly

insulated tree holes (Table 1). However, the spontaneous arousals must have been induced by endogenous heat production because the rate of warming was more than double that caused by  $T_h$ . Endogenous heating becomes unnecessary when ectothermic fluctuations in  $T_b$  reach 30 °C. This indicates that arousal is determined by body temperature; 30 °C must be exceeded, at least episodically, for physiological homeostasis.

These alternative patterns of thermoregulation are not specific to individual lemurs. Some changed their hibernaculum from well to poorly insulated tree holes within the same hibernation season. They could switch from a constant  $T_b$  with weekly arousal to the normal pattern of a fluctuating  $T_b$  without arousal, or from a fluctuating  $T_b$  to a constant one.

*Cheirogaleus medius* seem to make the best of their tropical situation by suspending endogenous thermogenesis and accommodating ambient temperatures as ectothermic reptiles do. They continue to hibernate even at, or rather because of, temperatures above 30 °C. By minimizing the difference between  $T_b$  and  $T_h$ , they reduce their metabolism and energy expenditure while avoiding the energetic costs of arousals. This makes hibernation efficient, despite the high  $T_b$  attained each day.

To our knowledge, our findings are the first physiological confirmation of prolonged hibernation by a tropical mammal

	N	n	Amplitude (°C)	Heating time (h:min)	Heating rate (°C per h)
$T_b$	24	1,003	12.4 ± 4.1	8:49 ± 0:52	1.4 ± 0.6
$T_h$	30	1,423	12.5 ± 3.3	9:09 ± 0:44	1.4 ± 0.4
$T_b - T_h$	5	25	12.0 ± 1.8	3:42 ± 0:43†	3.4 ± 1.0†
$\chi^2$			0.22	15.34	13.08
P			>0.05	<0.01	<0.01

Features of heating phases are shown with daily fluctuations, measured from daily minima to daily maxima during the hibernation period, for tree-hole temperature ( $T_h$ ) and body temperature ( $T_b$ ) of *Cheirogaleus medius*, both in poorly insulated tree holes, and for the body temperature of *C. medius* ( $T_b$ ) in well insulated tree holes during arousal. N, number of different animals tested; n, number of data points analysed, pooled for all animals tested. †Post-hoc multiple comparisons following Kruskal–Wallis test showed  $T_b$  differed significantly from  $T_h$  and  $T_b - T_h$ .



Omitting sources ?

Vol. XV. November, 1908. No. 6.

# BIOLOGICAL BULLETIN

## THE HOMING OF THE BURROWING-BEES (ANTHOPHORIDÆ).

C. H. TURNER.

### INTRODUCTION.

The researches about to be described were conducted for the purpose of determining how the burrowing bees compare with the ants and the mud-dauber wasps in their method of finding the way home. During most of the month of August, 1908, from five to ten hours a day were devoted to this study. This made it possible to conduct several series of experiments. Since all of the series led to similar conclusions, only two of them will be recorded. The majority of the experiments were conducted upon a species of *Melissodes* Latr., many nests of which existed in an abandoned garden of the Haines Normal School.

### SERIES A. EXPERIMENTS ON MELISSODES.

These experiments were conducted in a deserted garden. Before beginning the experiments proper, numerous preliminary observations were made for the purpose of obtaining information that would be helpful in conducting and interpreting the experiments.

Bearing in mind Bohn's assertion that the flights of certain Lepidoptera are anemotropisms and phototropisms,<sup>1</sup> much attention was given to the flight of these bees.

When these anthophorids are busy at work, the flight is certainly neither an anemotropism nor a phototropism, for neither the movements nor the orientation of the body bear any constant relation to either the direction of the wind or to the rays of the sun.

<sup>1</sup> M. Bohn, "Observations sur les Papillons du Rivage de la Mer," *Bull. de L'Institut Général Psychologique*, 1907, pp. 285-300.

(Aus dem Zoologischen Laboratorium der Universität Leiden.)

## ÜBER DIE ORIENTIERUNG DES BIENENWOLFES (PHILANTHUS TRIANGULUM FABR.).

Von

N. TINBERGEN.

Mit 19 Textabbildungen.

(Eingegangen am 15. Januar 1932.)

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### I. Die Lebensweise von *Philanthus triangulum* Fabr.

Obwohl wir an verschiedenen Stellen (BOUVIER [6], BOUWMAN [7], BISCHOFF [3, 4], FABRE [9], VERHOEFF [28], HAMM a. RICHARDS [16] u. a.) Angaben über die Lebensweise des „Bienenwolfes“ finden, scheint es mir angebracht, der Beschreibung meiner Versuche eine kurze Schilderung der normalen Lebensweise voranzuschicken, erstens weil dieses zum besseren Verständnis der Versuche nützlich sein wird, zweitens weil ich einige ergänzende Tatsachen mitteilen kann.

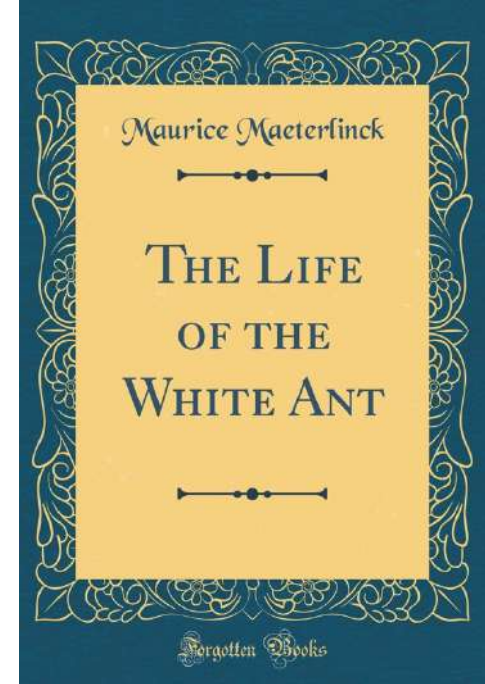
Der Bienenwolf, *Philanthus triangulum* FABR., ein zu den Grabwespen gehöriges Hymenopteron, ist in Holland ein wahres Sommertier; man sieht die Imagines vom Anfang Juli bis zum Ende September; die



Eugène N. Marais



Maurice Maeterlinck





# Integrity

*justifying your work*



# Conceptualizing science: two types

## storytellers

historians of all scales: history of mankind, **all life, the universe**

**explainers of all scales:**

**function of atoms, concepts, organs, organisms, ecosystems, the universe**

## engineers

applied sciences

& preparing basic research  
patents, solutions, products,  
procedures

medicine, pharmacists,  
engineers, architects,  
agriculturists, lawyers,  
conservationists

*this is not a distinction between humanities/arts and natural sciences*



# Effects of diet, habitat, and phylogeny on the fecal microbiome of wild African savanna (*Loxodonta africana*) and forest elephants (*L. cyclotis*)

Kris Budd<sup>1</sup>  | Joe C. Gunn<sup>1</sup>  | Tabitha Finch<sup>1,2</sup> | Katy Klymus<sup>1,3</sup> | Noah Sitati<sup>4</sup> |  
Lori S. Eggert<sup>1</sup> 

*Ecology and Evolution*. 2020;10:5637–5650.



# Counting the books while the library burns: why conservation monitoring programs need a plan for action

David B Lindenmayer<sup>1\*</sup>, Maxine P Piggott<sup>1</sup>, and Brendan A Wintle<sup>2</sup>

Conservation monitoring programs are critical for identifying many elements of species ecology and for detecting changes in populations. However, without articulating how monitoring information will trigger relevant conservation actions, programs that monitor species until they become extinct are at odds with the primary goal of conservation: avoiding biodiversity loss. Here, we outline cases in which species were monitored until they suffered local, regional, or global extinction in the absence of a preplanned intervention program, and contend that conservation monitoring programs should be embedded within a management plan and characterized by vital attributes to ensure their effectiveness. These attributes include: (1) explicit articulation of how monitoring information will inform conservation actions, (2) transparent specification of trigger points within monitoring programs at which strategic interventions will be implemented, and (3) rigorous quantification of the ability to achieve early detection of change.

*Front. Ecol. Environ.* 2013; 11(10): 549–555, doi:10.1890/120220 (published online 11 Nov 2013)

The continuing loss of biodiversity is a serious global problem (Batchart et al. 2010). Of the 63 837 species assessed worldwide using the International Union for Conservation of Nature (IUCN) Red List criteria, 865 are extinct or extinct in the wild and 19 817 are listed as critically endangered, endangered, or vulnerable to extinction (IUCN 2012). Since the start of the 21st century alone, at least 10 species of vertebrates are known to have gone extinct, although this is likely to be a substantial underestimate. The only way to know whether populations of a species are declining is by monitoring them, thus

making monitoring an essential conservation activity.

There are a variety of reasons to monitor biodiversity, including learning about a species' ecology and population biology, reporting on the state of biodiversity, and estimating the state of (or detecting changes in) populations so that appropriate actions can be taken (Yoccoz et al. 2001). However, when a monitoring program is funded under the specific objective of conserving a species that has been identified as imperiled, it would seem reasonable to expect that the monitoring would, at the very least, aim to detect population changes that trigger specific and timely conservation actions, and/or clarify aspects of the species' ecology or population biology that are most immediately relevant to improving the effectiveness of conservation actions. Unfortunately, conservation monitoring programs commonly (1) track the state of a population without any plan for what will be done if a given change is observed or (2) collect information on the species' ecology or population biology that has no immediate relevance to decisions about the most appropriate course of action to prevent extinction. The end result may be that the decline and extinction of species is accurately recorded without any effective attempts at mitigation.

Monitoring a species until it becomes extinct is clearly not a conservation policy that would ever be earnestly proposed. Yet the conservation literature contains many examples of threatened or endangered species being monitored until they went locally, regionally, or globally extinct (WebTable 1). This unfortunate phenomenon may become more frequent in the future, given both the large number of imperiled species globally (IUCN 2012) and the prevalence of poorly designed and implemented biodiversity monitoring programs (Nichols and Williams 2006; Lindenmayer and Likens 2010) that lack a sound

### In a nutshell:

- Monitoring is a critical part of effective species conservation, but many species are being monitored until they go extinct.
- Management intervention should be triggered when it becomes apparent that a monitored species is in decline.
- Most conservation monitoring programs lack preplanned interventions and a clear statement about how the information derived from monitoring will help to conserve the species.
- Conservation monitoring programs and management plans should identify trigger points for proscribed management interventions.

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# Integrity

*language*

# Use of positive and negative words in scientific PubMed abstracts between 1974 and 2014: retrospective analysis

 OPEN ACCESS

Christiaan H Vinkers *assistant professor*<sup>1</sup>, Joeri K Tijdink *psychiatrist*<sup>2</sup>, Willem M Otte *assistant professor*<sup>3,4</sup>









# Integrity

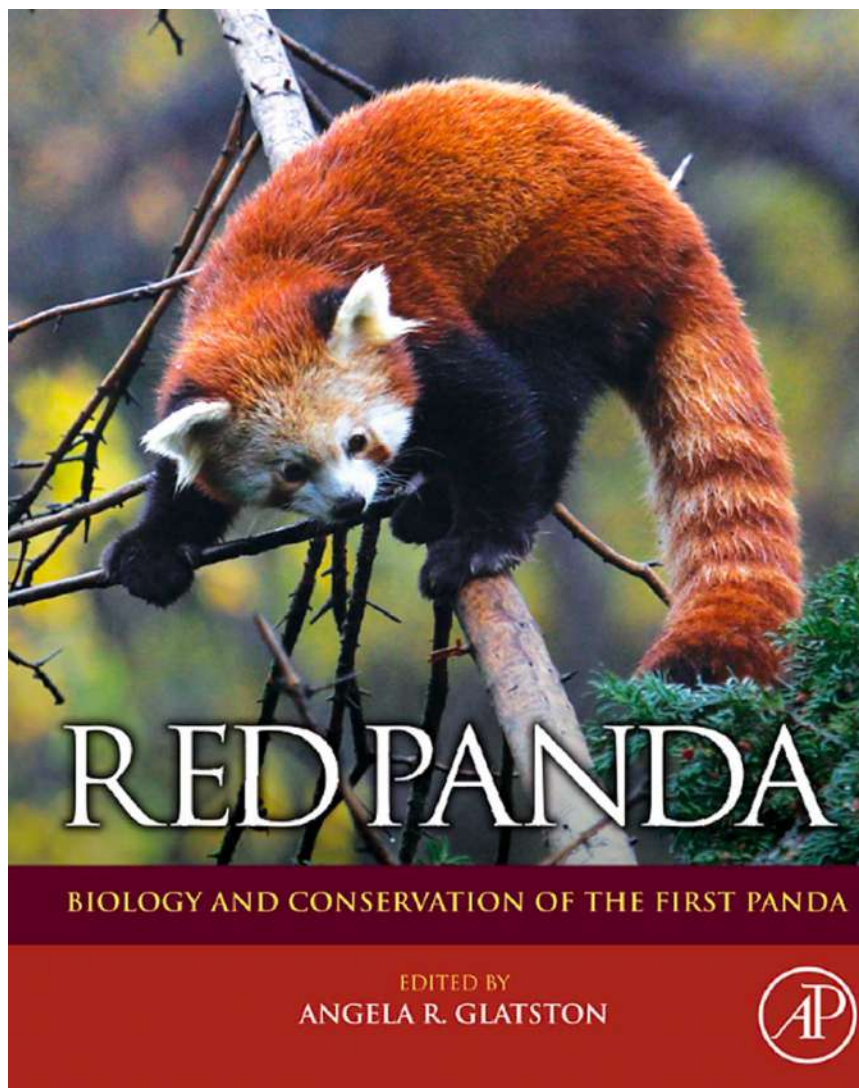
*a language of superlatives*



[Palaeontology, 2022, e12599]

## Relative skull size evolution in Mesozoic archosauromorphs: potential drivers and morphological uniqueness of erythrosuchid archosauriforms

by JORDAN BESTWICK<sup>1\*</sup> , PEDRO L. GODOY<sup>2,3</sup> ,  
SUSANNAH C. R. MAIDMENT<sup>1,4</sup> , MARTÍN D. EZCURRA<sup>1,5</sup> , MIA WROE<sup>1</sup>,  
THOMAS J. RAVEN<sup>4,6</sup> , JOSEPH A. BONSOR<sup>4,7</sup>  and RICHARD J. BUTLER<sup>1</sup> 



# Advanced Members of the Ailuridae (Lesser or Red Pandas – Subfamily Ailurinae)

*Steven C. Wallace*





# A hyper-robust sauropodomorph dinosaur ilium from the Upper Triassic–Lower Jurassic Elliot Formation of South Africa: Implications for the functional diversity of basal Sauropodomorpha

Blair W. McPhee <sup>a, b, \*</sup>, Jonah N. Choiniere <sup>a, b</sup>

[Journal of African Earth Sciences 123 \(2016\) 177–184](#)



# Achieving Landscape-Scale Deer Management for Biodiversity Conservation: The Need to Consider Sources and Sinks

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*The Journal of Wildlife Management* 77(4):726–736; 2013;



# A global carbon and nitrogen isotope perspective on modern and ancient human diet

PNAS 2021 Vol. 118 No. 19 e2024642118

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# Integrity

*blatantly insulting the readerships'  
intelligence*



<https://www.frontiersin.org/journals/ecology-and-evolution>



# How Can Termites Achieve Their Unparalleled Postembryonic Developmental Plasticity? A Test for the Role of Intermolt-Specific High Juvenile Hormone Titer

*Judith Korb<sup>1\*</sup>, Carolin Greiner<sup>2</sup>, Marion Foget<sup>2</sup> and Adrian Geiler<sup>1</sup>*



# Characterising the Gut Microbiomes in Wild and Captive Short-Beaked Echidnas Reveals Diet-Associated Changes

Tahlia Perry<sup>1,2\*</sup>, Ella West<sup>1</sup>, Raphael Eisenhofer<sup>2</sup>, Alan Stenhouse<sup>1</sup>, Isabella Wilson<sup>1</sup>, Belinda Laming<sup>3</sup>, Peggy Rismiller<sup>1,4</sup>, Michelle Shaw<sup>1,5</sup> and Frank Grützner<sup>1,2\*</sup>

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### Specialty section:

This article was submitted to  
Microbial Symbioses,  
a section of the journal  
Frontiers in Microbiology

Received: 29 March 2021

Accepted: 16 May 2022

Published: 30 June 2022

### Citation:

Perry T, West E, Eisenhofer R,  
Stenhouse A, Wilson I, Laming B,  
Rismiller P, Shaw M and  
Grützner F (2022) Characterising the  
Gut Microbiomes in Wild and Captive  
Short-Beaked Echidnas Reveals  
Diet-Associated Changes.  
Front. Microbiol. 13:687115.  
doi: 10.3389/fmicb.2022.687115

The gut microbiome plays a vital role in health and wellbeing of animals, and an increasing number of studies are investigating microbiome changes in wild and managed populations to improve conservation and welfare. The short-beaked echidna (*Tachyglossus aculeatus*) is an iconic Australian species, the most widespread native mammal, and commonly held in zoos. Echidnas are cryptic animals, and much is still unknown about many aspects of their biology. Furthermore, some wild echidna populations are under threat, while echidnas held in captivity can have severe gastric health problems. Here, we used citizen science and zoos to collect echidna scats from across Australia to perform the largest gut microbiome study on any native Australian animal. Using 16S rRNA gene metabarcoding of scat samples, we characterised and compared the gut microbiomes of echidnas in wild ( $n = 159$ ) and managed ( $n = 44$ ) populations, which were fed four different diets. Wild echidna samples were highly variable, yet commonly dominated by soil and plant-fermenting bacteria, while echidnas in captivity were dominated by gut commensals and plant-fermenting bacteria, suggesting plant matter may play a significant role in echidna diet. This work demonstrates significant differences between zoo held and wild echidnas, as well as managed animals on different diets, revealing that diet is important in shaping the gut microbiomes in echidnas. This first analysis of echidna gut microbiome highlights extensive microbial diversity in wild echidnas and changes in microbiome composition in managed populations. This is a first step towards using microbiome analysis to better understand diet, gastrointestinal biology, and improve management in these iconic animals.

**Keywords:** EchidnaCSI, Australia, captive, herbivore, insects, nutrition, digestive physiology

## INTRODUCTION

The influence of the gut microbiome on host health has been well established in humans, with many diseases and health problems associated with microbial dysbiosis, including obesity, diabetes, and bowel disease (Turnbaugh et al., 2006; Frank et al., 2007; Wen et al., 2008; Cho and Blaser, 2012). How microbiomes affect the health in non-human animals has only recently



# The tongue of the red panda (*Ailurus fulgens fulgens* Cuvier, 1825)—a stereoscopy, light microscopy and ultrastructural analysis

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Joanna Klećkowska-Nawrot<sup>1</sup> and Petr Čížek<sup>3</sup>

(2021), *PeerJ*, DOI 10.7717/peerj.12559



# Who is adjusting to whom?: Differences in elephant diel activity in wildlife corridors across different human- modified landscapes

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and Marlee A. Tucker<sup>3</sup>

*Front. Conserv. Sci.* 3:872472. 2022



## Influence of breed, milk yield, and temperature-humidity index on dairy cow lying time, neck activity, reticulorumen temperature, and rumination behavior

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### ABSTRACT

The objective of this study was to compare weekly mean lying time (LT), neck activity (NA), reticulorumen temperature (RT), and rumination time (RU) among 3 breed groups, milk yield (MY), and temperature-humidity index (THI). Cows ( $n = 36$ ; 12 Holstein, 12 crossbred, and 12 Jersey) were blocked by parity group (primiparous or multiparous), days in milk, and MY. Lying time, NA, RT, RU, and MY were recorded and averaged by day and then by week for each cow. For study inclusion, each cow was required to have 10 wk of LT, NA, RT, and RU data. Maximum THI were recorded and averaged daily. Mean ( $\pm$ SE) days in milk, LT, MY, RT, RU, NA, and maximum THI were  $159.0 \pm 6.0$  d,  $11.1 \pm 0.1$  h/d,  $28.7 \pm 0.5$  kg/d,  $38.8 \pm 0.0^\circ\text{C}$ ,  $6.4 \pm 0.1$  h/d,  $323.8 \pm 3.8$  activity units, and  $56.5 \pm 0.6$ , respectively. The MIXED Procedure of SAS (SAS Institute Inc., Cary, NC) was used to evaluate fixed effects of breed, MY, parity, THI, and their interactions on LT, NA, RT, and RU with cow nested within breed as subject. All main effects remained in each model regardless of significance level. Stepwise backward elimination was used to remove nonsignificant interactions. The interactions of breed  $\times$  parity group and maximum THI  $\times$  parity group were associated with RT. Increasing THI coincided with increasing RT. Least squares means LT for multiparous cows was significantly greater than LT for primiparous cows ( $11.4 \pm 0.3$  and  $10.5 \pm 0.5$  h/d, respectively). Least squares means NA for primiparous cows was greater than for multiparous cows of all breeds ( $372.1 \pm 10.9$  and  $303.4 \pm 7.8$ , respectively). The CORR Procedure of SAS was used to evaluate relationships among RT, RU, LT, NA, and MY. Rumination time was positively correlated with MY ( $r = 0.30$ ) and negatively correlated with LT ( $r = -0.14$ ). Reticulorumen temperature was negatively correlated with MY ( $r = -0.11$ ). Rumination time was positively

correlated with NA ( $r = 0.18$ ) and negatively correlated with LT ( $r = -0.14$ ). Lying time and NA were negatively correlated ( $r = -0.43$ ). Neck activity was positively correlated with MY ( $r = 0.14$ ). Lying time was negatively correlated with MY ( $r = -0.25$ ). Milk yield was associated with RU, which may be related to cows with greater MY also having a greater feed intake. Lying time increased and NA decreased with increasing parity, which may be effects of social hierarchy, where primiparous cows are more susceptible to being pushed away from the feed bunk and freestalls. Milk yield was positively associated with RU. Greater milk production requires greater feed intake, which may result in longer RU than for low-yielding cows. Lying time decreased as milk yield increased. The behavioral and physiological differences observed in this study provide new insight into the effects that breed, parity, MY, and THI have on cows.

**Key words:** breed, precision dairy farming



# Integrity

*selling the evident as new insight*



RESEARCH ARTICLE

# Bacteria isolated from Bengal cat (*Felis catus* × *Prionailurus bengalensis*) anal sac secretions produce volatile compounds potentially associated with animal signaling

**Citation:** Yamaguchi MS, Ganz HH, Cho AW, Zaw TH, Jospin G, McCartney MM, et al. (2019) Bacteria isolated from Bengal cat (*Felis catus* × *Prionailurus bengalensis*) anal sac secretions produce volatile compounds potentially associated with animal signaling. PLoS ONE 14(9): e0216846. <https://doi.org/10.1371/journal.pone.0216846>

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# Integrity

*getting used to lying*



# Questionable research practices in ecology and evolution

PLOS ONE | <https://doi.org/10.1371/journal.pone.0200303> July 16, 2018

Hannah Fraser<sup>1\*</sup>, Tim Parker<sup>2</sup>, Shinichi Nakagawa<sup>3</sup>, Ashley Barnett<sup>1</sup>, Fiona Fidler<sup>1,4</sup>

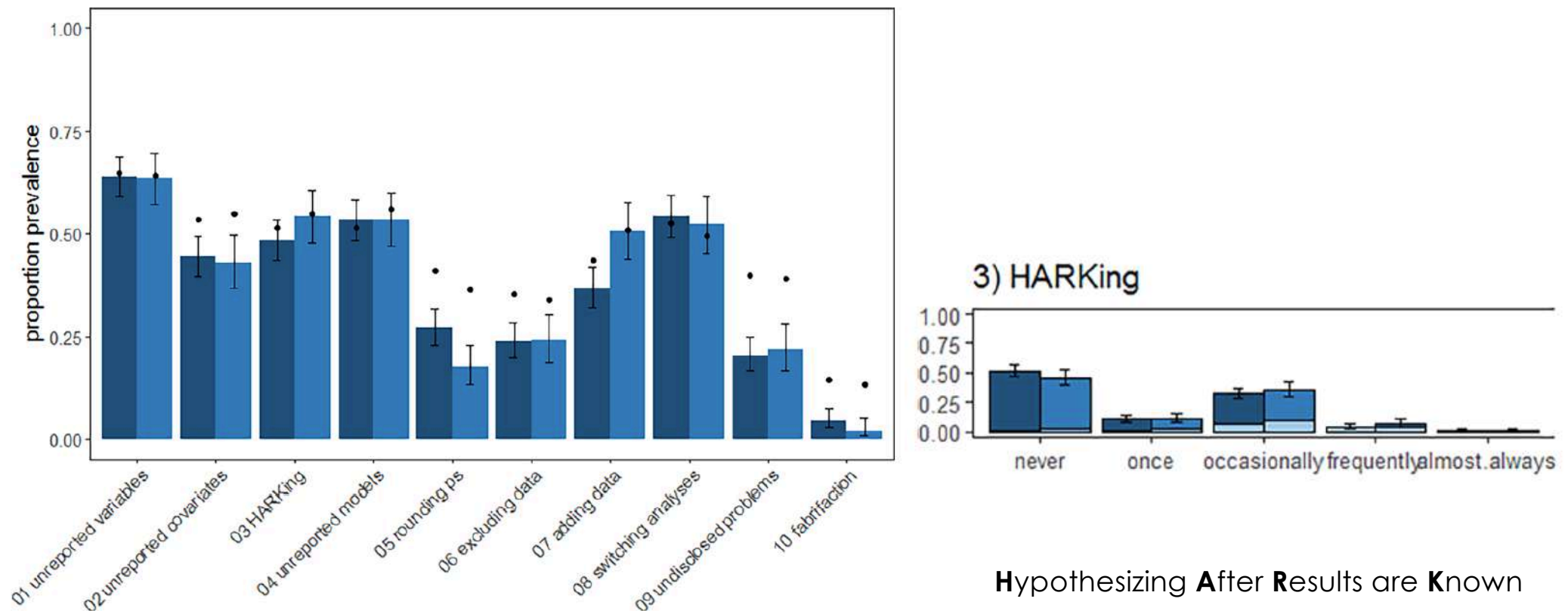


Fig 1. The prevalence of Questionable Research Practices in ecology and evolution. Light columns represent the proportion of evolution researchers and dark columns represent the proportion of ecology researchers who reported having used a practice at least once. The dots show researchers' mean estimates of suspected use by colleagues in their field. Dots that are much higher than bars may suggest that the QRP is considered particularly socially unacceptable [17]. Error bars are 95% confidence intervals.



# Integrity

*understanding your data and statistics*



***Significance is not  
automatically  
relevance.***



A significant, linear relationship:  
the more hair you have, the smaller you are!



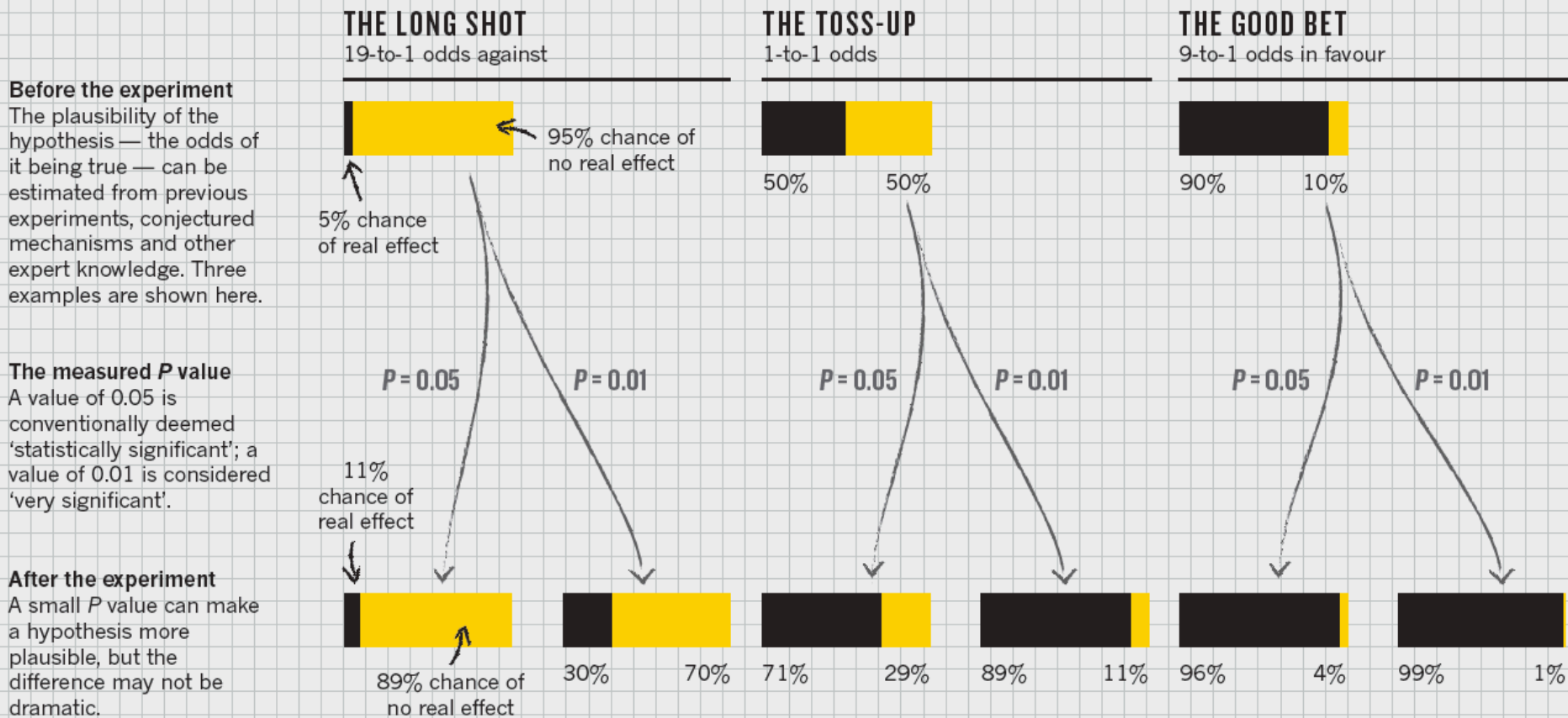
R. NUZZO; SOURCE: T. SELLKE ET AL. AM. STAT. 55, 62-71 (2001)



## PROBABLE CAUSE


A *P* value measures whether an observed result can be attributed to chance. But it cannot answer a researcher's real question: what are the odds that a hypothesis is correct? Those odds depend on how strong the result was and, most importantly, on how plausible the hypothesis is in the first place.

■ Chance of real effect  
 ■ Chance of no real effect





# Visitors and observers otter-ly influence the behavior and enclosure use of zoo-housed giant otters

James E. Brereton<sup>1,2</sup>  | Edward M. L. Jones<sup>1,2</sup> | Connor McMillan<sup>2,3</sup> |  
Kerry Perkins<sup>1,2</sup>



# Wise words on literature use





**‘publish and flourish !’**



*Science is not about control.*

*It is about cultivating a perpetual condition of wonder  
in the face of something that forever grows  
one step richer and subtler  
than our latest theory about it.*

*It is about reverence, not mastery.*

Richard Powers (1991) *The gold bug variations*. William Morrow & Co, New York