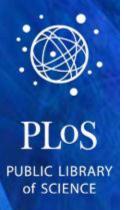
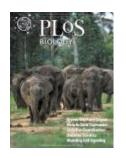
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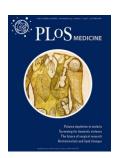




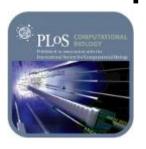


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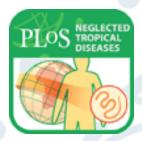


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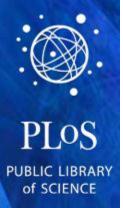
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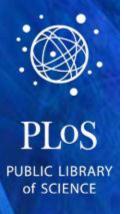
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#### RESEARCH ARTICLE



### Complete Primate Skeleton from the Middle Eocene of Messel in Germany: Morphology and Paleobiology

Article

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Jens L. Franzen<sup>1,2</sup>, Philip D. Gingerich<sup>3</sup>, Jörg Habersetzer<sup>1</sup>, Jørn H. Hurum<sup>4\*</sup>, Wighart von Koenigswald<sup>5</sup>, B. Holly Smith<sup>6</sup>

1 Forschungsinstitut Senckenberg, Frankfurt, Germany, 2 Naturhistorisches Museum Basel, Basel, Switzerland, 3 Museum of Paleontology and Department of Geological Sciences, University of Michigan, Ann Arbor, Michigan, United States of America, 4 Natural History Museum, University of Oslo, Oslo, Norway, 5 Steinmann-Institut für Geologie, Mineralogie und Paläontologie, Universität Bonn, Bonn, Germany, 6 Museum of Anthropology, University of Michigan, Ann Arbor, Michigan, United States of America

#### Abstract Top

#### Background

The best European locality for complete Eocene mammal skeletons is Grube Messel, near Darmstadt, Germany. Although the site was

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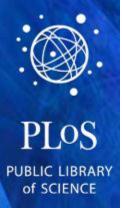
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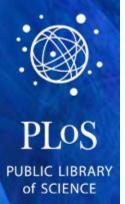




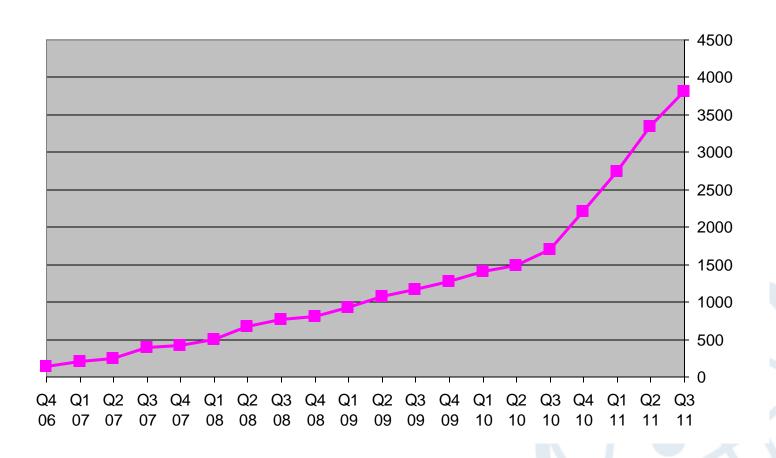
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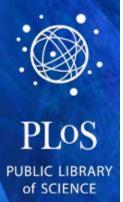
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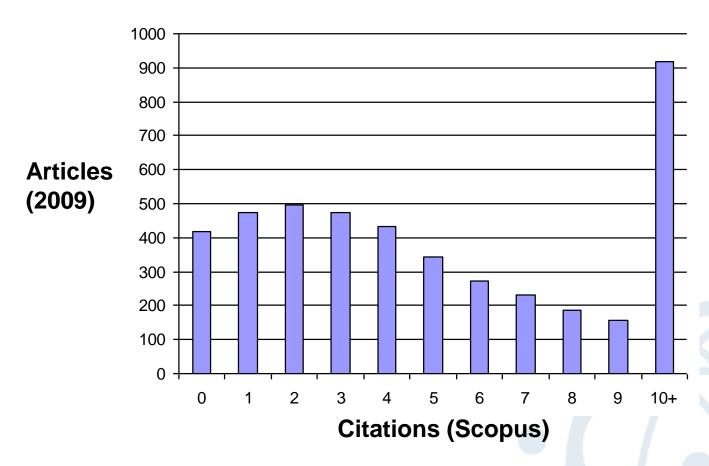
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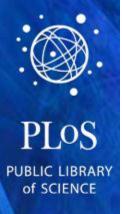
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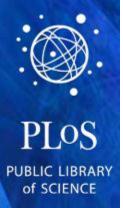
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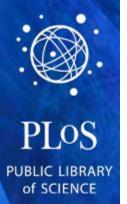
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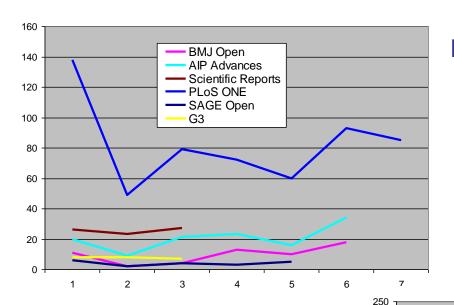
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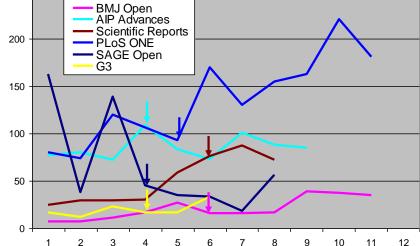
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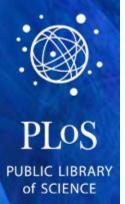
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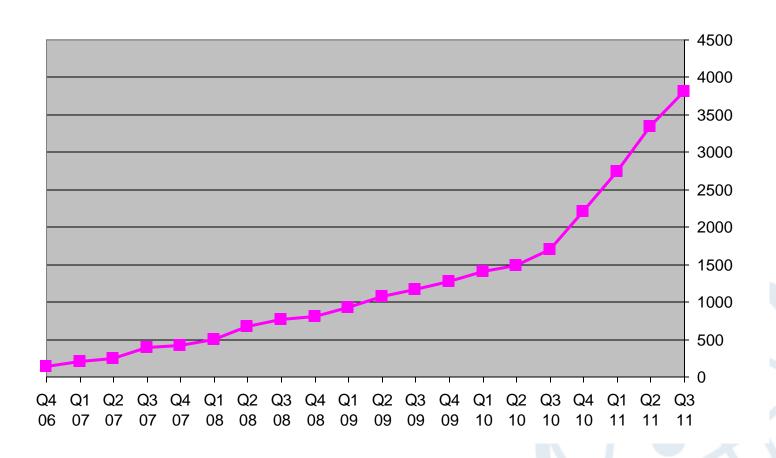


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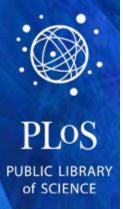
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#### Abstract Top

Brains are usually described as input/output systems: they transform sensory input into motor output. However, the motor output of brains (behavior) is notoriously variable, even under identical sensory conditions. The question of whether this behavioral variability merely reflects residual deviations due to extrinsic random noise in such otherwise deterministic systems or an intrinsic,

adaptive indeterminacy trait is central for the basic understanding of brain function. Instead of random noise, we find a fractal order (resembling Lévy flights) in the temporal structure of spontaneous flight maneuvers in tethered *Drosophila* fruit flies. Lévy-like probabilistic behavior patterns are evolutionarily conserved, suggesting a general neural mechanism underlying spontaneous behavior. *Drosophila* can produce these patterns endogenously, without any external cues. The fly's behavior is controlled by brain circuits which operate as a nonlinear system with unstable dynamics far from equilibrium. These findings suggest that both general models of brain function and autonomous agents ought to include biologically relevant nonlinear, endogenous behavior-initiating mechanisms if they strive to realistically simulate biological brains or out-compete other agents.

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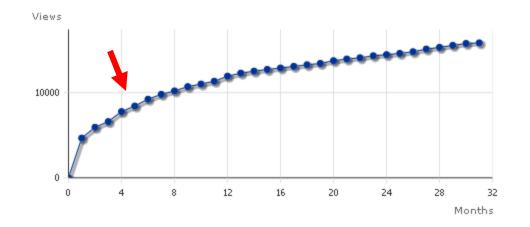
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Abbreviations: df, degree of freedom; DWI, Dirty War Index; UXO, unexploded ordnance

\* To whom correspondence should be addressed. E-mail: MJHHicks@aol.com

Madelyn Hsiao-Rei Hicks is an Honorary Lecturer with the Sections of Community Mental Health and Cultural Psychiatry, Health Service and Population Research Department, Institute of Psychiatry,

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#### Molecular and Microscopical Investigation of the Microflora Inhabiting a Deteriorated Italian Manuscript Dated from the Thirteenth Century

Astrid Michaelsen, 1 Guadalupe Piñar, 2 and Flavia Pinzari 3,4

Department of Microbial Ecology, University of Vienna, Althanstrasse 14, 1090 Vienna, Austria <sup>2</sup>Institute of Applied Microbiology, Department of Biotechnology, University of Natural Resources and Applied Life Sciences, Muthgasse 18, 1190 Vienna, Austria

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Received March 1, 2010; Accepted March 12, 2010.

Abstract Other Sections?

This case study shows the application of nontraditional diagnostic methods to investigate the microbial consortia inhabiting an ancient manuscript. The manuscript was suspected to be biologically deteriorated and SEM observations showed the presence of fungal spores attached to fibers, but classic culturing methods did not succeed in isolating microbial contaminants. Therefore, molecular methods, including PCR, denaturing gradient gel electrophoresis (DGGE), and clone libraries, were used as a sensitive alternative to conventional cultivation techniques. DGGE fingerprints revealed a high biodiversity of both bacteria and fungi inhabiting the manuscript. DNA sequence analysis confirmed the existence of fungi and bacteria in manuscript samples. A number of fungal clones identified on the manuscript showed similarity to fungal species inhabiting dry or saline environments, suggesting that the manuscript environment selects for osmophilic or xerophilic fungal species. Most of the bacterial sequences retrieved







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#### Curator's Note



I included the Gyps paper because it concerns phylogeny, genetic diversity and species distinctiveness of three

critically endangered vulture species with important ecological roles as scavengers. They have experienced extremely rapid population declines in the past decade, and the analyses presented can help inform conservation practices. The phylogenetic analyses supports recognition of Gyps tenuirostris as a distinctive species, rather than a subspecies, worthy of listing for protection. David Mindell

#### Species in This Article



- Gypohierax angolensis
- Gyps bengalensis
- Gyps indicus indicus
- Gyps indicus tenuirostris
- Gyps coprotheres

BMC Evol Biol. 2006; 6: 65. Published online 2006 August 23. doi: 10.1186/1471-2148-6-65.

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#### Systematics within Gyps vultures: a clade at risk

#### Jeff A Johnson,<sup>⊠1,2</sup> Heather RL Lerner,<sup>2</sup> Pamela C Rasmussen,<sup>3</sup> and David P Mindell<sup>2</sup>

<sup>1</sup>The Peregrine Fund, 5668 West Flying Hawk Lane, Boise, ID 83709, USA

Jeff A Johnson: jeffaj/at/umich.edu; Heather RL Lerner: hlerner/at/umich.edu; Pamela C Rasmussen: rasmus39/at/msu.edu; David P Mindell: mindell/at/umich.edu

Received May 11, 2006; Accepted August 23, 2006.

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#### Background

Populations of the Oriental White-backed Vulture (Gyps bengalensis) have declined by over 95% within the past decade. This decline is largely due to incidental consumption of the non-steroidal anti-inflammatory veterinary pharmaceutical diclofenac, commonly used to treat domestic livestock. The conservation status of other Gyps vultures in southern Asia is also of immediate concern, given the lack of knowledge regarding status of their populations and the continuing existence of taxonomic uncertainties. In this study, we assess phylogenetic relationships for all recognized species and the majority of subspecies within the genus Gyps. The continuing veterinary use of diclofenac is an unknown but potential risk to related species with similar feeding habits to Gyps

<sup>&</sup>lt;sup>2</sup>University of Michigan Museum of Zoology and Department of Ecology & Evolutionary Biology, 1109 Geddes Avenue, Ann Arbor, MI 48109, USA

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# **Biodiversity**

#### Aegypius monachus

#### Taxonomic Hierarchy

Domain : Etkaryota > Kingdom : Animalia > Subkingdom : Etmetazoa > no rank : Bilateria > Superphylum : Deuterosfom la → Phylum : Chordata → Supphylum : Vertebrata → Superclass : Tetrapoda > Class: Aues > Order: Falcontformes > Family: Acciptridae > Genus: Aegyptus













Joanulm Maceira Muchano

Joachim S. Miller

Joachim S. Miller

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#### Description

The Cibercous Vulture (Aegyptus monachus) is also known as the Black Vulture, Monk Vulture, or Eurasian Black Vulture. It is a member of the family Accipitable, which also includes many other diurnal raptors such as littles, buzzards and harriers. This bird is an Old World withre, and is only distantly related to the New World withres, which are in a separate family, Cathartidae, of the order Cicon liformes. It is therefore not directly related to the American Black Viriture despite the similar name and coloration, it breeds across southern Europe and Asia from Spain to Morea, but is endangered throughout its European range. It is resident except in those parts of its range where hard whiters cause limited movement. The Chiereous Vulture is perhaps the largest of the birds of previous white world, though nearly equalled by the Himalayan Griffon Vulture. The Andean Condor, slightly larger, is now generally considered. unrelated to the true Falconflormes. This hage bird is 98-120 cm (39-47 in) long with a 270-310 cm (99-119 in) wingspan and a weight of 7-14 kg (15.5-31 bs), and is thus one of the world's heaviest flying birds, it breeds in high mountains and large forests, nesting in ...

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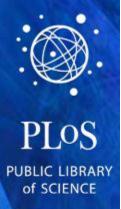
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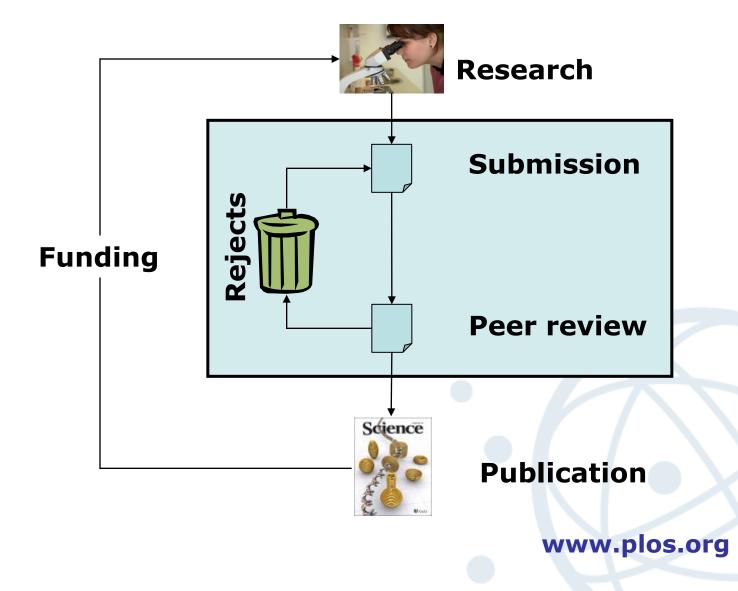


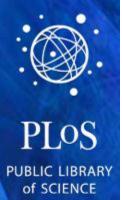
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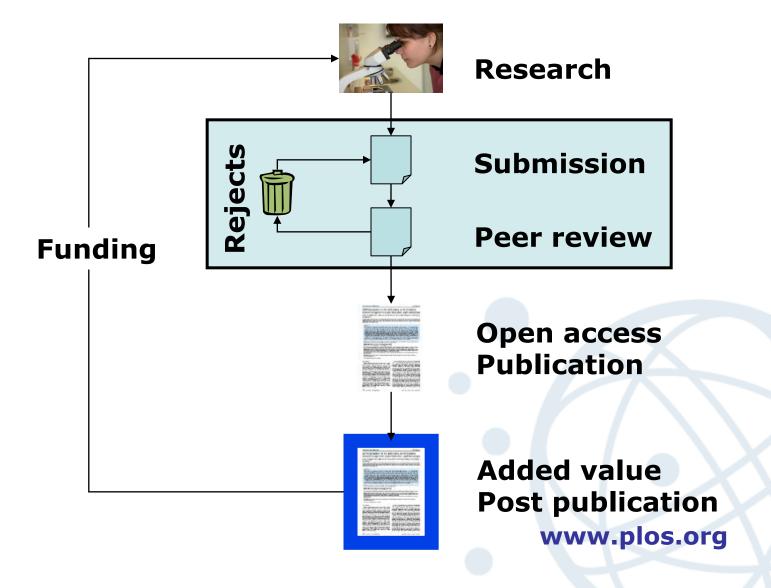


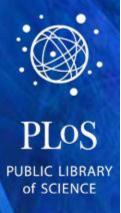
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# **Summary**

- Impact and technical assessment can be separated
- Post-publication mechanisms can be used to enhance content
- Research communication and research itself can both be accelerated