

PROGRAM AND ABSTRACTS



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5th International Symposium on Palaeohistology
July 31st–August 4th, 2019 – Cape Town, South Africa

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5th International Symposium on Palaeohistology
July 31st–August 4th, 2019 – Cape Town, South Africa



Host

Palaeobiology Research Group
University of Cape Town



Symposium Convenor

Prof. Anusuya Chinsamy-Turan

Organizing committee

Dr. Carmen Nacarino-Meneses
Dr. Debarati Mukherjee
Dr. Alberto Valenciano
Dr. Mohd Shafi Bhat
Dr. Emil Krupandan

Germán Montoya-Sanhueza, M. Sc.
Megan Woolley, B. Sc. Hons
Carla Du Toit, B. Sc. Hons
Caitlin Smith, B. Sc. Hons
Iyra Maharaj, M. Sc.

WELCOME ADDRESS

It is my pleasure to welcome you to South Africa for the **5th International Symposium on Palaeohistology**. South Africa is renowned for its rich palaeontological heritage, which includes the diverse fauna of nonmammalian therapsids, an array of basal sauropodoform dinosaurs, as well as many of our closest human relatives. Our welcome function at Iziko South African Museum will give us the wonderful opportunity to view the “Stone Bones”, “African Dinosaurs” and “Human origins” exhibitions where we will catch a glimpse of some of the iconic creatures that lived during the Permian and Mesozoic times, as well as provide some fresh perspectives about the origins of Early Sapiens behaviour.

I am delighted to inform you that here at ISPH2019 we have a total of 67 presentations by delegates from 18 countries and 35 cities from the northern and southern hemispheres. This meeting will showcase cutting edge palaeohistology research from many different areas including growth and development, biomechanics and novel techniques.

We are very grateful to the Centre of Excellence in Palaeosciences for financial support that has enabled us to invite two distinguished plenary speakers: Dr. Sophie Sanchez from Sweden and Dr. Shannon McFarlin from the USA. Unfortunately, Dr. McFarlin was unable to travel to South Africa for health reasons, and we were not able to secure another speaker at such short notice. The academic programme will run over three days, and it will be followed by a daylong fieldtrip to the West Coast Fossil Park – home to the world famous Pliocene locality, Langebaanweg. Here, we will explore the recently opened Visitor Centre and we will visit the dig site where fossils have been left in situ.

We hope that ISPH2019 will give you the platform to share your research and engage with established colleagues, as well as with the up and coming younger generation in our discipline. I wish you many stimulating discussions, and I hope that ISPH2019 will be fertile ground for new collaborations that will take your research endeavours even further.

Besides a highly successful conference, I sincerely hope that you will find time to enjoy our beautiful city. Hopefully you’ve added some time to walk or take the cable car up Table Mountain, to go wine tasting, to visit the Victoria and Alfred Waterfront and to see some of South Africa’s incredible biodiversity.

Have fun and enjoy ISPH2019!



Prof. Anusuya Chinsamy-Turan

(Symposium Convenor)

Program and Scientific Sessions

Day 1 (Wednesday-31 July 2019)						
		Venue	Time			
Registration		Iziko SA Museum	17H00			
Welcome	Prof. Anusuya Chinsamy-Turn		17H30 – 20H00			
	Prof. Roger Smith					
Day 2 (Thursday- 1 st August 2019)						
Welcome	08H45	09H00	Prof. Anusuya Chinsamy-Turn			
			Session Theme		Presenting Author	Moderators
Keynote	09H00	09H30	Keynote	How to make a limb bone?	Sanchez, S	(Angst, D, and Mukherjee, D)
	09H30	09H45	Fish & Amphibians	Microscopic study of Silurian fishes from New Jersey	Pellegrini, R A	
	09H45	10H00		Long bone histology of a metoposaurid temnospondyl from India: ontogenetic variations, palaeobiology and taxonomic implication	Rakshit, N	
	10H00	10H15	Non-dinosaurian Reptilia	Osteohistology of Hupehsuchia and developmental process of their unique body skeleton	Nakajima, Y	
	10H15	10H30		The giant “mystery bones” from European Rhaetic bone beds: a histological test of ichthyosaurian affinity	Sander, P M	
Tea	10H30	11H00				

	11H00	11H15		Life history and sexual dimorphism revealed by humeral histology in a Mesozoic marine reptile	Sander, P M	
	11H15	11H30		Microstructure of a giant soft-shelled egg from the Late Cretaceous of Antarctica	Legendre, L J	
	11H30	11H45		Environment and biology – an expression of the environmental signal observed in the histology of a faunal assemblage from the Late Triassic Krasiejów locality	Teschner, E M	
	11H45	12H00		Characterization at a micron scale of the mineralization of bone growth layers in a rib and an osteoderm of <i>Piscogavialis jugaliperforatus</i> (Gavialidae, Crocodylia)	Gomez, S	
	12H00	12H15		Long bone histology of <i>Chersina angulata</i> from South Africa: Comments on inter-elemental variation and life history strategy of the species	Bhat, M S	
Lunch	12H15	13H30				
	13H30	13H45	Dinosauria	Osteohistology of <i>Lesothosaurus diagnosticus</i> from the upper Elliot Formation of South Africa	Botha, J	Chinsamy, A and Dabee- Petersen V P
	13H45	14H00		Taxonomic utility of femoral long bone robusticity in Sauropoda and Stegosauria	Strachan, S	
	14H00	14H15		A new tool for individual age estimation: erecting rib histologic ontogenetic stages (RHOS) for archosaurs using the example of sauropods	Sander, P M	
	14H15	14H30		Inter-elemental osteohistological variation in <i>Massospondylus carinatus</i> : implications for locomotor ontogeny, developmental plasticity and environmental variation	Chapelle, K E J	
	14H30	14H45		Eggshell structure of Early Jurassic basal sauropodomorph dinosaurs and the convergent origin of dinosaur eggshells	Stein, K	
Tea	14H45	15H15				
	15H15	15H30		Changes in growth strategies from Sauropodiformes to Basal Sauropoda	Krupadan, E	
	15H30	15H45		Detailed histology in a case of appendicular osteomyelitis in a titanosaur	Aureliano, T	
	15H45	16H00		First report of limb histology of Jurassic sauropod dinosaur from India	Mukherjee, D	
	16H00	16H15		Growth strategy of dwarf titanosaurs from Southeast Brazil	Aureliano, T	
	16H15	16H30		Osteohistological variability, growth reconstruction, and trend in the evolution of the theropod gigantism	Cullen, T M	

Day 3 – (Friday- 2nd August 2019)

Special Lecture	09H00	09H30		Vertebral column in vertebrates with special reference to advanced actinopterygians	Arratia, G	
	09H30	09H45	Humans	Human osteon variants in ancient human bone	Cooke, K M	
	09H45	10H00		First record of femoral bone histology in human remains from Taumako, Southeast Solomon Islands (ca. 700–300 BP)	Miskiewicz, J J	
	10H00	10H15		Microanatomy of the petrous part of the temporal bone in perinatal human individuals	Molina Moreno, M	
	10H15	10H30		Ancient human occipital bone histology in four male crania of different robusticities	Morgan, C	
Tea	10H30	11H00				
	11H00	11H15	Mammals & their ancestors	Comparative cranial histology of the pachyostotic and non-pachyostotic skull roof in Permian burnetiamorphs (Therapsida: Biarmosuchia) and gorgonopsians (Therapsida: Gorgonopsia)	Kulik, Z	
	11H15	11H30		Femoral and humeral histology of the Western Grey Kangaroo, <i>Macropus fuliginosus</i>	Chinsamy, A	
	11H30	11H45		Ontogenetic histological assessment in the limb bones of the giraffe <i>Giraffa camelopardalis</i>	Smith, C	
	11H45	12H00		Osteogenesis and modularity of the appendicular skeleton of the largest subterranean mammal (<i>Bathyergus</i>): implications for analysis of bone microstructure	Montoya-Sanhueza, G	
	12H00	12H15		The impact of weaning on bone tissue	Calderon, T	
	12H15	12H30		How birth and weaning affect bone growth in leverets of European brown hare (<i>Lepus europaeus</i>): a labelling experiment	Calderon, T	
Lunch	12H30	13H30				
	13H30	13H45		What about long bone nutrient canal(s)? – A 3D investigation in mammals	Houssaye, A	
	13H45	14H00		Microanatomy and histology of bone pathologies of extant and extinct phocid seals	Wooley, M	

(Ray, S and Nacarino-Meneses, C)

(Montoya-Sanhueza, G and Smith, C)

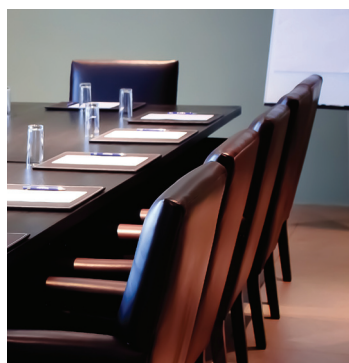
	14H00	14H15		Bone histology of the smallest horse breed, the Falabella	Scheyer, T M	
	14H15	14H30		Domestication and Stress: Palaeohistological observations on chalcolithic ovicaprids from Chalcolithic contexts in Maharashtra, Western India.	Sathe, V	
	14H30	14H45	Histotechniques	When to cut: difference between histological data obtained using virtual (microCT) vs thin section analyses	Anné, J	
	14H45	15H00		(High) pressure vs. vacuum in the resin impregnation of thin-section samples, part deux	Pellegrini, R A	
Bus	15H15	Departure to Kirstenbosch Botanical Gardens				
Conference Dinner	18H00	Moyo Restaurant, Kirstenbosch National Botanical Gardens				
Day 4 (Saturday 3 rd August 2019)						
	09h00	09h15	Birds	First histological examination of ovarian follicles in a Cretaceous enantiornithine	Bailleul, A M	(Maharaj, I and Woolley, M)
	09H15	09H30		Skeletal distribution of medullary bone in Neornithes - implications for the identification of reproductive tissues in extinct Avemetatarsalia	Canoville, A	
	09H30	09H45		Do female penguins form medullary bone?	Canoville, A	
	09H45	10H00		Sex and ontogenetic variation in the crest of <i>Numida meleagris</i> : Implications for crested vertebrates	Angst, D	
	10H00	10H15		A link between the soft tissue histology and bone microstructure of the bill-tip organ in probe-foraging birds	du Toit, C J	
	10H15	10H30		Fused wrist and ankle bones in birds develop like long-bone secondary ossification centers	Estefa, J	
Tea	10H30	11H00				
	11H00	11H15	Dental histology	Differences in dental histology of <i>Lystrosaurus</i> (Therapsida: Dicynodontia) and <i>Diictodon</i> (Therapsida: Dicynodontia) reveals first true tusks	Fong, R	(du Toit, C J and Bhat MS)
	11H15	11H30		Enamel microanatomy of Miocene giant mustelids (Mammalia, Carnivora)	Valenciano, A	

	11H30	11H45		Were hipparionins running faster through life than <i>Equus</i> ? Insights from dental and bone histology	Orlandi-Oliveras, G	
	11H45	12H00		Inferring the life history of European Pleistocene <i>Equus</i> from bone and dental histology	Nacarino-Meneses, C	
	12H00	12H15		Horse in Harrapan Civilisation: Myth or reality?	Sathe, V	
Lunch	12H15	13H30				
	13H30	13H45	Biomechanics	May the force be with you: determining the load cases in extant turtles	Plasse, M	(Krupadan, E and Valenciano, A)
	13H45	14H00		Evaluating the extent to which rib microstructure reflects its macro-anatomical form	Stewart, T J	
	14H00	14H15		Morphology, histology and biomechanical adaptation of the <i>Hyperodapedon</i> (Archosauromorpha, Rhynchosauria) premaxillae	Ray, S	
	14H15	15H15	Poster Session & Tea			
Closing	15H15	15H30				
ISPH Meeting	15H30	16H00				
Day 5 (Sunday 4 August 2019) West Coast Fossil Park Field Trip (Bus Time: 09h00)						



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MAP & DIRECTIONS

TO PAARL →

N1

Voortrekker Rd

Albert Rd

Salt River

Liesbeek Parkway

Black River
Park

the
River
club

Observatory Rd

Observatory

Hartleyvale
Stadium

Mowbray
Protea
Hotel

M5

N2

Settlers Way

N2

Airport →

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FROM CAPE TOWN INTERNATIONAL AIRPORT

- ▶ As you leave the airport, take the N2, direction Cape Town
 - ▶ Continue on the N2 to Liesbeek Parkway in Observatory
- ▶ Take Exit 8 turn right under the bridge onto Liesbeek Parkway - toward Salt River
 - ▶ Pass the Circus School & Hartleyvale stadium on the left
- ▶ At the next set of traffic lights, turn right into Observatory road, then immediately left into the entrance of the River Club

FROM THE N1 - COMING FROM PAARL / CENTURY CITY

- ▶ Take the M5 exit towards Maitland
 - ▶ Keep right at the fork and merge onto M5
 - ▶ Take exit 9B to merge onto N2 toward Cape Town
 - ▶ Continue on the N2 to Liesbeek Parkway in Observatory
- ▶ Take Exit 8 and turn right under the bridge onto Liesbeek Parkway - toward Salt River
 - ▶ Pass the Circus School & Hartleyvale stadium on the left
- ▶ At the next set of traffic lights, turn right into Observatory road, then immediately left into the entrance of the River Club

FROM THE CITY CENTRE

- ▶ Get on to Nelson Mandela Blvd and follow signs for N2/M3/Muizenberg/Somerset West
- ▶ When the road forks, keep left heading on N2 and follow signs to Cape Town International Airport/Somerset West
 - ▶ Take exit 8 for M57 Liesbeek Parkway
 - ▶ Veer left onto Liesbeek Parkway towards Salt River
 - ▶ Pass the Circus School & Hartleyvale stadium on the left
- ▶ At the next set of traffic lights, turn right into Observatory road, then immediately left into the entrance of the River Club



Growth strategy of dwarf titanosaurs from Southeast Brazil

Tito Aureliano^{1,2*}, Aline M. Ghilardi², Bruno A. Navarro², Marcelo A. Fernandes² and Fresia S. Ricardi-Branco¹

¹University of Campinas, Institute of Geosciences, Campinas, 13083855, Brazil,
*aureliano.tito@gmail.com; ²Federal University of São Carlos, Laboratório de
Paleoicnologia e Paleoecologia, São Carlos, 13565905, Brazil

The Upper Cretaceous Bauru Basin of Brazil is worldwide known to provide abundant crocodilian and titanosaurian remains. Despite the local sauropod diversity, a new morphotype is distinguished from the rest due its dwarf proportions (phylogenetic nanism). These specimens represent a new species, which is being described at this point. Here we characterize the appendicular histology of two of the individuals from distinct fossil sites within the Adamantina Formation. Individual A (LPP-PV-201) encompasses a nearly complete ulna (preserved length ~ 45 cm). Individual B (LPP-PV-0043) comprises a fragmentary fibula (diaphysis; preserved volume = 16 x 22 cm). In both individuals, the extent and type of vascularization maintains its pattern across the thin sections. The entire cortex has been secondarily remodeled by osteons of multiple generations, and lacks any interstitial laminar primary bone. At least three generations of secondary osteons overlap one another. These latter are chaotically arranged and present remarkable varying sizes and shapes. Each secondary osteon contains up to six layers of centripetally deposited lamellar bone. No LAGs (Lines of Arrested Growth) or annuli have been identified. There is no evidence of an EFS (External Fundamental System), which is a common feature of mature titanosaurs. Extreme remodeling activity completely obliterating the primary bone tissue suggests that these individuals had long ceased their growth by the time of death (Type G bone tissue and HOS stage 13). Furthermore, by applying the three-front model to the anteromedial areas of shafts, the 'senescent' status is reinforced. It is known in literature that titanosaurs present a more secondarily remodeled cortical bone tissue when compared to basal neosauropods. Therefore, it is no surprise that we found this character in specimens A and B. The cortex of the distal appendicular bones are more secondarily remodeled than the humerus or femur within the same individual. A similar pattern was also observed both in the ulna and the humerus of the dwarf *Lirainosaurus*. We expected that the proximal limb bones of A and B would also present this tissue adaptation. Similarly to what can be observed in *Magyarosaurus*, the strong remodeling in the specimens A and B was caused by the slow down of the resorption front (RF). By reducing the speed of the RF, this dwarf-taxon adapted their long bones with a thick cortex and small medullary volume as an adaptation to support the axial loading regime similar to *Magyarosaurus* and *Lirainosaurus*. This feature has not been observed in the dwarf macronarian *Europasaurus*, which rather presents a predominantly fibrolamellar bone tissue. It is true that titanosaurs such as *Ampelosaurus* and *Alamosaurus* present a greater amount of Haversian bone than other neosauropods, such as *Apatosaurus*. Nonetheless, the extreme abundance of this type of tissue observed in the Brazilian dwarf is more similar to the condition found in *Lirainosaurus* and *Magyarosaurus* than to any other previously sampled titanosaurs, including the small-bodied *Neuquensaurus*. We suggest that this may correspond to a phylogenetically decreased apposition growth in such clade.