National Journal of Clinical Anatomy
An Official Publication of Society of Clinical Anatomists, India.

Editor-In-Chief
Kumar Satish Ravi
Professor (Additional) Anatomy
Ex. Sub Dean (Academics) & Assistant Dean (Academics)
All India Institute of Medical Sciences
Rishikesh Uttarakhand, India
drksravi.jipmer@gmail.com

Joint Editors
Bertha Rathinam
Professor & Head of Anatomy
All India Institute of Medical Sciences
Bhopal Madhya Pradesh, India
bertharathinam@gmail.com

Vandana Mehta
Director-Professor & Head
Vardhman Mahavir Medical College & Safdarjang Hospital
New Delhi, India
drvandanamehta@gmail.com

Associate Editors
Mukesh Singla
Professor (Additional)
Department of Anatomy
All India Institute of Medical Sciences
Rishikesh Uttarakhand, India
muksheashimsrishikesh@gmail.com

Mehandi Mahajan
Associate Professor of Anatomy
Sri Muthukumaran Medical College
Hospital and Research Institute Chennai, Tamilnadu, India
mm1710@gmail.com

Shaikh Jasmeen Vajir
Associate Professor of Anatomy
RVM Institute of Medical Sciences and Research Center
Siddipet, Telangana, India
drshaikhjasmeen@gmail.com

Assistant Editors
Pushpa N. B.
Assistant Professor of Anatomy
JSS Medical College, Mysuru
Karnataka, India
pushpanb@jssuni.edu.in

Apurba Patra
Assistant Professor of Anatomy
All India Institute of Medical Sciences
Bathinda Punjab, India
apurba.cnmc03@gmail.com

E. Mohana Priya
Assistant Professor of Anatomy
Madras Medical College, Chennai
Tamilnadu, India
drmohanapriya30@gmail.com

Krishnaveni Sharath
Assistant Professor of Anatomy
Sree Balaji Medical College, Chennai
Tamilnadu, India
krishnavenibadikillaya@gmail.com

Section Editors
Gross Anatomy
Virender Kumar Nim
Professor of Anatomy
Pondicherry Institute of Medical Sciences, Puducherry, India
vknim@rediffmail.com

S. Viveka
Professor of Anatomy
Azeedia Institute of Medical Sciences, Kollam, Kerala, India
vivekabharathi@gmail.com

Neuroanatomy
Ranjit Guha
Principal & Professor of Anatomy
Indira Gandhi Institute of Medical Sciences, Patna, Bihar, India
guharanjit45@gmail.com

Anjali Aggarwal
Professor (Additional)
Postgraduate Institute of Medical Education and Research,
Chandigarh, India
anjili_doc@yahoo.com

Developmental Anatomy
Sabita Mishra
Professor & Head of Anatomy
Maulana Azad Medical College
New Delhi, India
sabitamishra12@gmail.com

Pratheepa Shivsankari
Professor of Anatomy
SRM Medical College and Research Centre, Chengalpattu, Tamilnadu, India
drpratheepa88@gmail.com

Genetics
Rima Dada
Professor of Anatomy,
All India Institute of Medical Sciences
New Delhi, India
rima_dada@rediffmail.com

Anjali S. Sabnis
Professor & Head of Anatomy
MGM Medical College, Mumbai
Maharashtra, India
dranjus2003@yahoo.com

Comparative Anatomy
Joy A. Ghosal
Dean, Professor & Head of Anatomy
All India Institute of Medical Sciences
Mangalagiri, Andhra Pradesh, India
drjoyaghosal@rediffmail.com

Subhash K. Deshpande
Professor & Head of Anatomy
SDM College of Medical Sciences and Hospital Dharwad Karnataka, India
subhashd21@gmail.com

Microanatomy
Biswaabina Ray
Professor & Head of Anatomy
All India Institute of Medical Sciences
Kalyani West Bengal, India
biswabina.ray@gmail.com

T.S. Gugapriya
Professor (Additional) of Anatomy
All India Institute of Medical Sciences
Nagpur, Maharashtra, India
gugapriyats@aiimsnagpur.edu.in
Clinical Anatomy

C.S. Vidya
Professor of Anatomy
JSS Medical College, Mysuru, Karnataka, India
Vidyacs@jssuni.edu.in

M.S. Ansari
Professor (Additional)
Department of Anatomy
All India Institute of Medical Sciences
Rishikesh Uttarakhand, India
msalahuddin.ansari12@gmail.com

Medical Education

Ghulam Mohammad Bhat
Professor of Anatomy
Government Medical College, Srinagar
Jammu & Kashmir, India
gmbhat144@gmail.com

Anu Sharma
Professor of Anatomy
Dayanand Medical College
Ludhiana, Punjab, India
anuashwani@gmail.com

Imaging Anatomy

Priti Chaudhary
Professor (Additional) of Anatomy
All India Institute of Medical Sciences
Bhatinda Punjab, India
dpriritiarora@gmail.com

Rosemol Xaviour
Faculty of Anatomy
Government Medical College
Thrissur, Kerala, India
rosemolkaviour@gmail.com

Osteology

Kalpana Ramachandran
Professor & Head of Anatomy
Sri Muthukumaran Medical College
Hospital and Research Institute
Chennai, Tamilnadu, India
kalpanasriram1@gmail.com

Mahindra Kumaranand
Professor & Head of Anatomy
G.S. Medical College & Hospital,
Hapur Uttar Pradesh, India
manandk@hotmail.com

Immunohistochemistry & Electron Microscopy

J. Suganthy
Professor & Head of Anatomy
Christian Medical College, Vellore
Tamilnadu, India
suganthyrabi@cmcvellore.ac.in

Tulika Gupta
Associate Professor of Anatomy,
Post Graduate Institute of Medical Education & Research,
Chandigarh, India
tulikag11@yahoo.com

National Editorial Board

Ravichandran Doraisamy
Professor & Head of Anatomy
KMCH Institute of Health Sciences and Research,
Coimbatore Tamilnadu, India
dravanatatmd@gmail.com

G.P. Pal
Dean & Professor of Anatomy
Modern Institute of Medical Sciences,
Indore Madhya Pradesh, India
Gp_pal50@rediffmail.com

Vishram Singh
Adjunct Professor
Kasturba Medical College Mangalore
Manipal Academy of Higher Education
Kamataka, India
drvishramsingh@gmail.com

Suresh Gangane
Professor of Anatomy
Terna Medical College
Mumbai, Maharashtra, India
gangane@gmail.com

Sohinder Kaur
Director & Professor of Anatomy
Lady Harding Medical College
New Delhi, India
drskaurin@yahoo.co.in

W.M.S. Johnson
Dean
Sree Balaji Medical College and Hospital,
Chennai Tamilnadu, India
deanjohnson@bharathuniv.ac.in

Patnaik V.V. Gopichand
Dean & Professor of Anatomy
Manasa Academy of Medical sciences
Hyderabad Telangana, India
dr@live.in

S.L. Jethani
Chief Med Superintendent & Professor of Anatomy
Himalayan Institute of Medical Sciences,
Dehradun Uttarakhand, India
sljethani2107@gmail.com

Sudha Rao
Ex. Director-Professor & Head of Anatomy
Jawaharlal Institute of Postgraduate Medical Education and Research,
Puducherry, India
sudharao46@gmail.com

Surajit Ghatak
Professor & Head of Anatomy
All India Institute of Medical Sciences
Jodhpur Rajasthan, India
ghatak@aiimsjodhpur.edu.in

Shailaja Shetty
Professor & Head of Anatomy
MS Ramaiah Medical College,
Bengaluru Karnataka, India
drshailajashetty@rediffmail.com

Sneh Agarwal
Director-Professor & Head of Anatomy
Lady Harding Medical College
New Delhi, India
snehagarwallmc@gmail.com

Shashi Raheja
Professor & Head of Anatomy
Dr.B.R. Ambedkar Medical College & Hospital New Delhi, India
drshashiraheja@gmail.com

Pushpalatha K.
Professor & Head of Anatomy
JSS Medical college, Mysuru
Karnataka, India
pushpalathak@jssuni.edu.in

Jyoti Arora
Director-Professor & Head of Anatomy
Postgraduate Institute of Medical Education and Research
Dr RML Hospital
New Delhi, India
jyotiarora2005@gmail.com

Sushil Kumar
Professor & Head of Anatomy
Armed Forces Medical College, Pune
Maharashtra, India
drsushilkumar@rediffmail.com
Founder Members

Wms Johnson  
Dean  
Sree Balaji Medical College & Hospital  
Chennai, Tamilnadu, India  
johnsonmoses@gmail.com

Daksha Dixit  
Professor of Anatomy  
Jawaharlal Nehru Medical College  
Belagaum, Karnataka, India  
daksha4974@gmail.com

D. Ravichandran  
Professor & Head of Anatomy  
KMCH Institute of Health Sciences and Research Coimbatore, Tamilnadu, India  
drravianatmd@gmail.com

N. Muthukumaravel  
Professor & Head of Anatomy  
Sri Venkateshwara Medical College and Hospital Puducherry, India  
muthukumaravel@yahoo.in

Deepti Shastri  
Deputy Dean & Professor of Anatomy  
Vinayaka Mission’s Kirupananda Vargyar Medical College and Hospital  
Salem, Tamilnadu, India  
deepthirahul@yahoo.co.in

Gunapriya Raghunath  
Professor & Head of Anatomy  
Saveetha Medical College, Chennai Tamilnadu, India  
gunapriyar@yahoo.com

Hirak Das  
Assistant Professor of Anatomy  
Gauhati Medical College and Hospital, Gauhati Assam, India  
ripples2006@rediffmail.com

Office Bearers

President

Gunapriya Raghunath  
Professor & Head of Anatomy  
Saveetha Medical College, Chennai Tamilnadu, India  
gunapriyar@yahoo.com

Vice President

M. Sivakumar  
Professor & Head of Anatomy  
JIPMER, Puducherry, India  
sivakumar96@yahoo.co

General Secretary

N. Muthukumaravel  
Professor & Head of Anatomy  
Sri Venkateshwara Medical College and Hospital Puducherry, India  
muthukumaravel@yahoo.in

Associate Secretary

V. Gladwin  
Additional Professor of Anatomy  
Jawaharlal Institute of Postgraduate Medical Education and Research Puducherry, India  
drgladwin@gmail.com

Dipali Jayesh Trivedi  
Professor of Anatomy  
B J Medical College, Ahmedabad Gujarat, India  
pandyadm@yahoo.co.in

Joint Secretary

Jitendra Patel  
Professor and Head (In-Charge) of Anatomy  
Smt. NHL Municipal Medical College, Ahmedabad Gujarat, India  
jpgadhia@yahoo.com

Treasurer

M. Kavimani  
Professor & Head of Anatomy  
Sree Balaji Medical College & Hospital, Chennai Tamilnadu, India  
dr.kavimani@gmail.com

Joint Treasurer

S. Karthick  
Professor of Anatomy  
Melmaruvathur Adiparasakthi Institute Medical Sciences & Research  
Chennai, Tamilnadu, India  
drkarthick.anat@gmail.com

Web Master

G. Durga Devi  
Associate Professor of Anatomy, Sree Balaji Medical College and Hospital  
Chennai, Tamilnadu, India  
durgadevi2781@gmail.com

Copyright ©2020 Society of Clinical Anatomists. All rights, including the rights of publication, distribution, and sales, as well as the right to translation, are reserved. No part of this work covered by the copyrights hereon may be reproduced or copied in any form or by any means – graphic, electronic, or mechanical, including photocopying, recording, taping, or information and retrieval systems – without written permission of the publisher.

National Journal of Clinical Anatomy is published 4 times a year in January, April, July, and October by Thieme Medical and Scientific Publishers Private Limited, A – 12, Second Floor, Sector – 2, Noida - 201301, Uttar Pradesh, India. Tel: +91-120-4556600, Fax: +91-120-455-6649.

Subscription: Open access journals available online for free at http://open.thieme.com.

Advertisers contact: Marketing, Thieme Publishers Delhi, A-12, Second Floor, Sector -2, Noida-201301, Uttar Pradesh, marketing@thieme.in.

Typesetting: DiTech Process Solutions Pvt. Ltd. Mumbai, India

Printing and Binding: Avantika Printers Pvt. Ltd.

Printed in India