

# **Exam Success Review**

**MCQ's for MBBS 1st Prof & PG Entrance**

# **ANATOMY**

**Embryology & Histology**

**Volume - 4**

**Dr. Brijendra Singh**

MBBS, MS, DNB, MNAMS

Additional Professor

Department of Anatomy

All Indian Institute of Medical Sciences (AIIMS)

Jodhpur - 342 005 (India)

 **SCIENTIFIC**  
PUBLISHERS (INDIA)

*Published by:*

Scientific Publishers (India)  
5 A, New Pali Road, P.O. Box 91  
Jodhpur 342 001 (India)

E-mail: [info@scientificpub.com](mailto:info@scientificpub.com)  
Website: [www.scientificpub.com](http://www.scientificpub.com)

© 2016, Dr. Brijendra Singh

All rights reserved. No part of this publication or the information contained herein may be reproduced, adapted, abridged, translated, stored in a retrieval system, computer system, photographic or other systems or transmitted in any form or by any means, electronic, mechanical, by photocopying, recording or otherwise, without written prior permission from the authors and the publishers.

Disclaimer: Whereas every effort has been made to avoid errors and omissions, this publication is being sold on the understanding that neither the author nor the publishers nor the printers would be liable in any manner to any person either for an error or for an omission in this publication, or for any action to be taken on the basis of this work. Any inadvertent discrepancy noted may be brought to the attention of the publishers, for rectifying it in future editions, if published.

ISBN: 978-81-7233-950-0 (Vol. 4)  
978-81-7233-910-4 (Vol. 1)  
978-81-7233-911-1 (Vol. 2)  
978-81-7233-912-8 (Vol. 3)  
978-81-7233-942-5 (Set)

eISBN: 978-93-8730-759-9

Typeset by Rajesh Ojha  
Printed in India

***Dedicated to***

**My children**

**Vyomika Singh & Kostubh Singh**

for helping me in preparing and editing this book

**my wife**

**Dr. Ritu Singh**

for positive suggestions, ideas and continuous encouragement

**My teachers**

**Prof Vinod Kumar, Prof R.J. Thomas, Prof. G.S. Longia  
& Prof P.N. Jain**

for making me believe that yesterday's young student one day will become very good teacher, person, friend, mentor and author....

**My parent college**

**Teachers, Students & Staff of MLB Medical College, Jhansi**

**My students past & present**

for appreciating my way of teaching - ABC of life that is - Aim, Basics & Competition ... and expecting more simpler & interesting way of Anatomy teaching from my side...

**My friends & well wishers**

from

**All India Institute of Medical Sciences (AIIMS),  
Jodhpur, India**



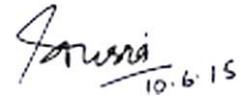
## FOREWORD

---

Every education system is based on two important domains first-teaching/learning and preparation of subject, second important domain is - evaluation of the knowledge acquired by the candidate during first domain i.e. teaching and learning. Nowadays latest and the most scientific approach to evaluate the subjective knowledge is by multiple choice questions, i.e. MCQs. Nowadays MCQs are standard part of evaluation in MBBS and BDS Professional examinations as well as in semesters and they make about 25% to 40% of total marks at various levels during these course at all medical institutes including AIIMS across the country. More important to know is that MCQs are the only questions asked in the Medical PG Entrance exams at state, national and international level.

It gives me great pleasure that Dr. Singh has already prepared and published much needed books in anatomy subject, in three volumes, concise, handy and student friendly - **Exam Success Review - Anatomy MCQ's for 1st Prof. MBBS & PG Entrance - by Dr. Brijendra Singh**, in three volumes - **Volume -1 Head, Neck & Brain, Volume - 2 Thorax & Upper Limb & Volume -3 Abdomen & Lower Limb** having more than 1100 MCQs in each volume. I hope that these books will certainly help the MBBS and BDS students to secure desired merit in their exams and will also be useful for their preparations for PG Entrance examinations and help them to get the PG of their choice.

I appreciate the efforts and hard work put in by Dr. Singh writing another book in anatomy dedicated specifically for Embryology & Histology having more than 1250 Multiple Choice Questions as **Exam Success Review - Anatomy MCQ's for 1st Prof. MBBS & PG Entrance - by Dr. Brijendra Singh, Volume - 4. Embryology & Histology**. I wish him as well as readers a great success ahead.



10.6.15

**Dr. Sanjeev Misra**  
MBBS, MS, Mch, FRCS (England & Glasgow)  
FICS, FACS (USA), FAMS  
Director & CEO  
AIIMS, Jodhpur, India



## PREFACE

---

First of all I am thankful to all of my students present and past who kept me reminding continuously about the need of small, simple, handy and really concise book of anatomy subject as per their new syllabus and as per latest guidelines of **Medical Council of India**. The ultimate aim of any teaching system or educational institute is to produce the best scholars and the best professionals in the today's scenario alongwith futuristic approach that is when given a chance they must be able to exhibit their past knowledge. To verify or quantify this knowledge the student/scholar has to undergo certain set of exam. **Now-a-days the best exams are supposed to be those which are having Multiple Choice Questions ie MCQ's as integral part** because of two important reasons, First easy to conduct and uniform evaluation for all students, that is no bias, Second **MCQ's** checks memory/recall memory/ reasoning & ability to be precise in terms of reading/ understanding and speed with ability to record answers with accuracy too. The book on this subject "**Exam Success Review ANATOMY MCQ's-Volume-4, Embryology & Histology for Medical Students – MBBS-1<sup>st</sup> Prof & PG Entrance**" will be helpful as a companion for **fast revision during examination** and will certainly help them to secure full marks in the **Multiple Choice Questions** section of their examination paper. I must let you know that **MCQ's** make about 20% to 40% of total marks in the **1<sup>st</sup> Professional exam** and any student who knows the concepts and art to answer the **Multiple Choice Questions** is going to be winner not only at **MBBS** but also at various **Postgraduate Entrance Examinations** at national & state level. One shall remember that **MCQ's are the only questions which are asked in PG Entrance Examinations** so practice MCQ's from **1<sup>st</sup> year of MBBS** will be the best bet for any **MBBS** student for not only securing the best score in **MBBS** exams but also in **PG Entrance Examinations**. Keeping all

this in mind and realizing the need of this type of systematic and authentic book on subject as well as continuous demand from various groups of students, this **MCQ** book “**Exam Success Review ANATOMY MCQ - Volume-4, Embryology & Histology for Medical Students – MBBS-1<sup>st</sup> Prof & PG Entrance**” is crafted for you all, to make your dreams of getting best marks in **MBBS** and **PG Entrance Exam** success a reality.

I will be thankful for your evaluation of morethan **1250 MCQ's** of this volume and your suggestions, feedbacks will be of very much value for making this book more useful to the students in future.

All the best for your future ventures.....

Good luck & Happy reading .....

**Dr. Brijendra Singh**  
MBBS, MS, DNB, MNAMS  
Additional Professor of Anatomy  
AIIMS Jodhpur India  
E-mail: drbrijendrasingh@gmail.com  
Mobile No.: 08003996900

## ACKNOWLEDGEMENT

---

First of all I would like to say my sincere thanks from the core of my heart to **Prof Dr. Sanjeev Misra CEO & Director of AIIMS, Jodhpur, India**, for his inspiration, unconditional support & continuous encouragement to create & complete my third book “**Exam Success Review ANATOMY MCQ's-Volume-4, Embryology & Histology for Medical Students – MBBS-1<sup>st</sup> Prof & PG Entrance**”.

I am grateful and pay my sincere regards and thanks to my anchors and motivators, Prof Sanjeev Misra Director AIIMS Jodhpur, Prof MC Mishra Director AIIMS New Delhi, Prof GK Singh Director AIIMS Patna, Prof Raj Kumar Director AIIMS Rishikesh, Prof Nitin Nagarkar Director AIIMS Raipur, Prof Sandeep Kumar Director AIIMS Bhopal, Dr. Sunil Khattri Director Rajeev Gandhi Super Speciality Hospital New Delhi, Dr. AK Bhatt, Director GNMU Greater Noida & Prof Ravi Kant Vice Chancellor King George Medical University, Lucknow.

I am also thankful to my colleagues Prof. S Ghatak, Dr. Shilpi Gupta Dixit, Dr. Renu Gupta, Dr. Dushyant Agrawal & Dr. Ashish Kumar Nayyar all from the department of Anatomy at AIIMS, Jodhpur for their continuous and positive criticism for making this book better and student friendly.

I am really thankful to my colleagues Prof Latika Mohan, & Prof Saurabh Varshneye from AIIMS Rishikesh, Prof DK Sharma, Dr. Vijya Kumar & Dr. Abu Siddique of AIIMS Raipur, Prof. Bertha Rathinam of AIIMS Bhopal, Prof TS Roy & Prof A Sarif, from AIIMS, New Delhi.

I am also thankful to Prof G N Quazi, Vice Chancellor of Jamia Hamdard New Delhi & Prof Raj D Mehra, Department of Anatomy, HIMSR, Jamia Hamdard New Delhi, for their support and encouragement.

I also thank my senior colleagues Prof Rani Kumar, Dean Hindu Rao Medical College Delhi, Prof. Vishram Singh & Dr. Ruchira Sethi, Santosh Medical College, Ghaziabad, Prof. Gayatri Rath, Prof. Vandana Mehta, Prof RK Suri, Prof Hitendra Kumar & Dr. Prabhat Goel of VMCC Medical College & Safdarjang Hospital, New Delhi, Prof. Veena Bharihoke, UCMS, New Delhi, Prof. Sneh Agarwal, LHMC, New Delhi & Prof Dinesh Arya from MAMC, New Delhi.

My sincere thanks to Prof. Daisy Shahni & Dr. Anjali, PGI-Chandigarh, Prof. Kanchan Kapoor, Govt Medical College Chandigarh, Prof. Patnaik Gopichand VV, Dean, MMIMSR, Mullana Ambala, for their continuous encouragement.

My thanks are due for Prof. V. Kumar, Dr. Nitya Nand & Dr. Adil ashgar of RIMSR Safai, Prof. R.K. Srivastava, Rama Medical College Kanpur, Prof A K Singh MLN Medical College, Allahabad, Dr. Pramod Kumar, Dr. Hamid Ansari of GSVM, Medical College Kanpur, Prof. Ashok Garg, Saraswati Medical College, Hapur, Prof Shobha Bhatnagar & Dr. Gyan Prakash Mishra of Carrier Medical College, Lucknow, Prof. Kamlesh Khatri, Sharda University, Greater Noida.

I would also like to say words of thanks to Prof. SL Jethani & Prof RK Rohatgi from HIMS, Dehradun, Prof DN Sinha, Prof AK Singh of GMC Haldwani, Prof. SK Jain, Teerthankar University, Moradabad, Prof. Ramesh Babu & Prof. Kuldeep singh, Muzaffarnagar Medical College, Muzaffarnagar, Prof. Archana Sharma & Dr. GL Nigam of LLRM Medical College Meerut, Prof. DR Singh, Prof. Ashok Sahai, Prof. PK Sharma, Prof. AK Srivastava, Prof. Punita Manik & Prof. Navneet Chohan from KGMU, Lucknow, Prof. MS Siddiqui of Era's Medical College, Lucknow, Prof. Biswa Bina Ray of ESIC Medical College, Bengaluru, Prof. Zora Singh & Dr. Poonam of Baba Farid University of Health Sciences Faridkot, Punjab, Prof. Rajan Singla & Dr. Gaurav Agnihotri from GMC, Amritsar, Prof. Sushma Kataria & Dr. Anoop, of SN Medical College, Jodhpur, Prof. Vasundhra Kulshrestha, SN Medical College, Agra, Prof. NK Goyal, Hind Medical College, Barabanki, Prof. Nafish Faruqi and Prof. SM Yunis of AMU, Prof. SK Pandey from IMS BHU.

I will remain thankful to all senior faculty members as well as colleagues, staff and students of AIIMS, JODHPUR for their support, encouragement & feedback given time to time.

My full regards & thanks to my beloved teachers, mentors and guide Prof RK Gandhi, Prof Mridula Kapoor, Prof SP Singh, Prof DP Singh & Prof RJ Thomas for their guidance and support. My special

thanks are due for my mentors/seniors Dr. Niraj Garg & Dr. Indu GARG from Meerut.

My special thanks are due for my friends Dr. Sudhir Kumar, Dr. D.K. Sirohi & Dr. Ramkumar Ashoka for their motivation and well wishes.

My special thanks are due for Mr. Vishan Lal Ji, Librarian at MLB Medical College, and Kasif Khan Librarian at Era Medical College for assistance & valuable suggestions.

My special thanks to my family for their full support in completion of third volume of this book as well as for sacrificing their demands and time from my side which is invested in this noble work. I am thankful to my daughter Vyomika Singh and son Kostubh Singh for being patient and non-demanding as well as helping me to complete this book in many aspects. I will fail if I forget to appreciate and to say words of thanks to my best friend and wife Dr. Ritu Singh for her continuous support and every help at every small step in preparing this book & continuous encouragement which she extended at times when it was needed the most.

I am very much thankful to Mr. Tanay Sharma, Managing Director, Scientific Publishers (India), Jodhpur for timely workup editing and final printing even less than the expected time period.

I am and will remain indebted to almighty **God Lord Krishna** with folded hands for his blessings so that my third book “**Exam Success Review ANATOMY MCQ's-Volume-4, Embryology & Histology for Medical Students – MBBS-1<sup>st</sup> Prof & PG Entrance**” could become a reality and will prove to be useful for readers today, tomorrow & ever.

Thanks & All the best....

**Dr. Brijendra Singh**  
MBBS, MS, DNB, MNAMS  
Additional Professor of Anatomy  
AIIMS Jodhpur India  
E-mail: drbrijendrasingh@gmail.com



# CONTENTS

---

<i>Foreword</i>	<i>v</i>
<i>Preface</i>	<i>vii</i>
<i>Acknowledgement</i>	<i>ix</i>

## **Part - 1 Embryology**

1.	Chromosomes and Cell Divisions	1
	Answer Sheet	4
	Explanations	4
2.	Male Sex Glands – Testes and Spermatogenesis	6
	Answer Sheet	9
	Explanations	9
3.	Female Sex Gland - Ovaries Öogenesis and Menstrual Cycle	10
	Answer Sheet	13
	Explanations	13
4.	Fertilisation, Early Development of Embryo and Implantation	14
	Answer Sheet	19
	Explanations	20
5.	Further Development of Embryo and Foetus	21
	Answer Sheet	26
	Explanations	26
6.	Placenta Fetal Membranes Birth Defects and Twinning	28
	Answer Sheet	31
	Explanations	31

---

7.	Musculo-Skeletal System	33
	Answer Sheet	37
	Explanations	37
8.	Body Cavities and Diaphragm	38
	Answer Sheet	40
	Explanations	40
9.	Pharyngeal Arches	41
	Answer Sheet	45
	Explanations	45
10.	Face, Nose and Palate	46
	Answer Sheet	48
	Explanations	49
11.	Digestive System-I Three Parts of Gut	50
	Answer Sheet	58
	Explanations	59
12.	Cardio-Vascular System	61
	Answer Sheet	66
	Explanations	66
13.	Respiratory System	68
	Answer Sheet	70
	Explanations	70
14.	Integumentary System	71
	Answer Sheet	73
	Explanations	73
15.	Urogenital System-I : Kidney, Ureter Urinary Bladder, Urethra	75
	Answer Sheet	78
	Explanations	79
16.	Urogenital System-II : Genital System-Male and Female	80
	Answer Sheet	84
	Explanations	85
17.	Nervous System	86
	Answer Sheet	92
	Explanations	92

---

18.	Special Sense organs: Eye and Ear	94
	Answer Sheet	97
	Explanations	97
19.	Endocrine Glands	99
	Answer Sheet	101
	Explanations	102

**Part - 2**  
**Histology**

1.	Epithelial Tissue	105
	Answer Sheet	109
2.	Connective Tissue	110
	Answer Sheet	114
3.	Cartilage & Bone	115
	Answer Sheet	119
4.	Lymphoid Tissue	120
	Answer Sheet	124
5.	Muscular Tissue	125
	Answer Sheet	128
6.	Nervous Tissue	129
	Answer Sheet	132
7.	Integumentary System - Skin	133
	Answer Sheet	137
8.	Digestive System	138
	Answer Sheet	145
9.	Urinary System	146
	Answer Sheet	148
10.	Male Reproductive System	149
	Answer Sheet	152
11.	Female Reproductive System	153
	Answer Sheet	158

12.	Respiratory System	159
	Answer Sheet	161
13.	Blood Vessels	162
	Answer Sheet	165
14.	Endocrine Glands	166
	Answer Sheet	169
15.	Special Senses	170
	Answer Sheet	173

**Part - 1**  
**Embryology**

