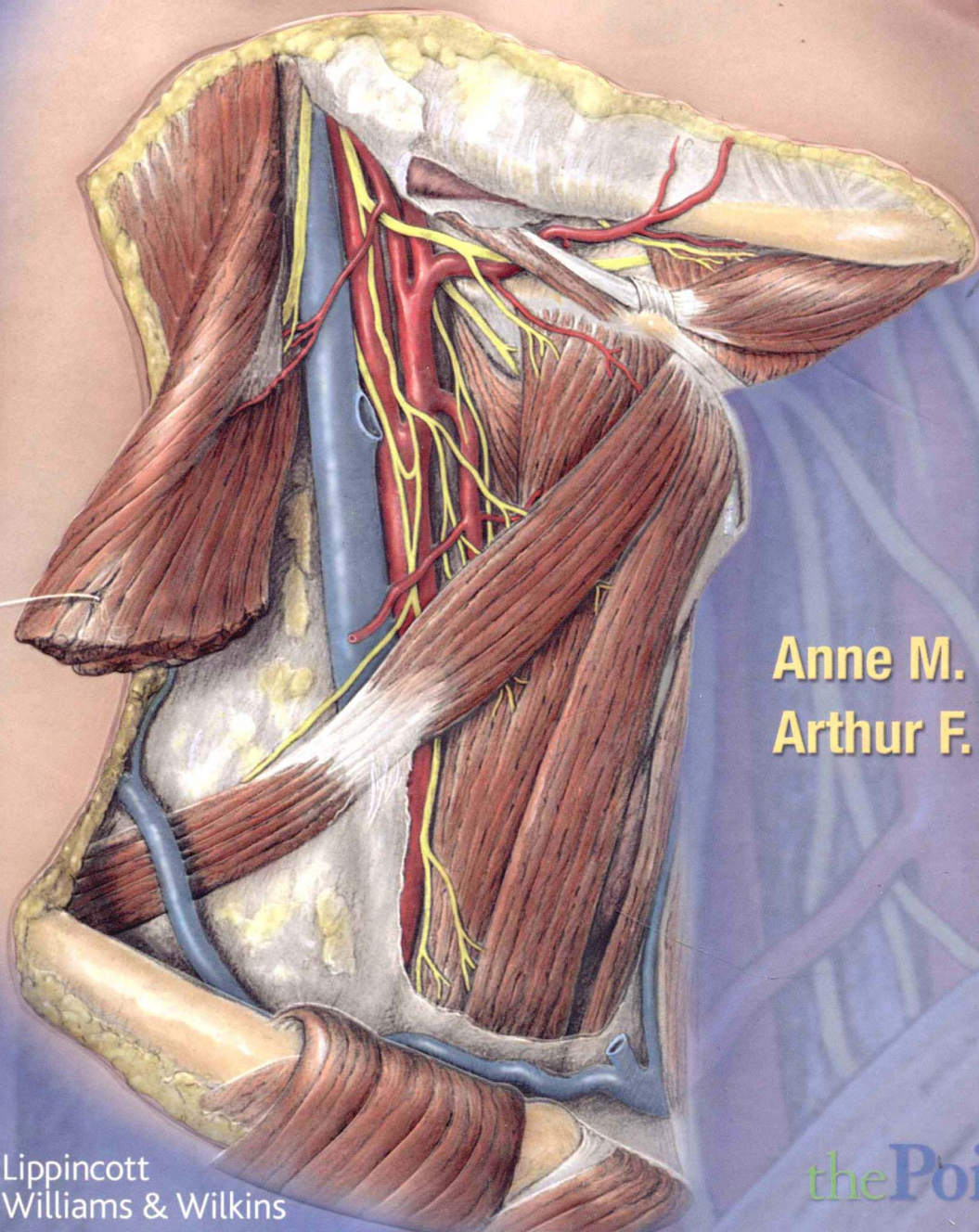


Grant's

Atlas of Anatomy **Twelfth Edition**



Anne M. R. Agur
Arthur F. Dalley



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Anne M.R. Agur, B.Sc. (OT), M.Sc.

Professor, Division of Anatomy, Department of Surgery, Faculty of Medicine
Department of Physical Therapy, Department of Occupational Therapy,
Division of Biomedical Communications, Institute of Medical Science
Graduate Department of Rehabilitation Science, Graduate Department of Dentistry
University of Toronto
Toronto, Ontario, Canada

Arthur F. Dalley II, Ph.D.

Professor, Department of Cell & Developmental Biology
Adjunct Professor, Department of Orthopaedics and Rehabilitation
Vanderbilt University School of Medicine
Adjunct Professor of Anatomy
Belmont University School of Physical Therapy
Nashville, Tennessee, U.S.A.



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Compositor: Maryland Composition, Inc.
Printer: C&C Offset Printing

Twelfth Edition

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By *J.C.B. Grant*:

First Edition, 1943 Second Edition, 1947

Third Edition, 1951 Fourth Edition, 1956

Fifth Edition, 1962 Sixth Edition, 1972

By *J.E. Anderson*:

Seventh Edition, 1978 Eighth Edition, 1983

By *A.M.R. Agur*:

Ninth Edition, 1991 Tenth Edition, 1999

Eleventh Edition, 2005

351 West Camden Street
Baltimore, Maryland 21201-2436 USA

530 Walnut Street
Philadelphia, Pennsylvania 19106-3621 USA

Printed in Hong Kong

9 8 7 6 5 4 3 2 1

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Library of Congress Cataloging-in-Publication Data

Agur, A. M. R.

Grant's atlas of anatomy/Anne M.R. Agur, Arthur F. Dalley II.—12th ed.

p. ; cm.

Includes bibliographical references and index.

ISBN 978-0-7817-9604-0 (hardcover ed.)—ISBN 978-0-7817-7055-2 (softcover ed.) 1. Human anatomy—Atlases. I. Dalley, Arthur F. II. Title. III.

Title: Atlas of anatomy.

[DNLM: 1. Anatomy, Regional—Atlases. QS 17 A284g 2009]

QM25.A38 2009

611.0022'2—dc22

2007043565

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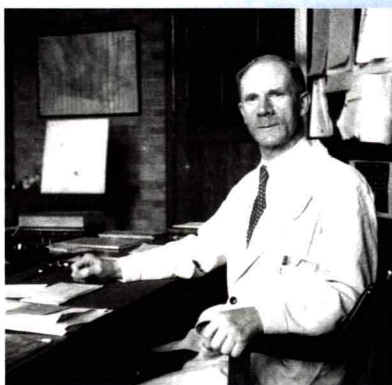
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*To my husband Enno and my children Erik and Kristina
for their support and encouragement
(A.M.R.A.)*

*To Muriel
My bride, best friend, counselor, and mother of our sons;
To my family
Tristan, Lana, Elijah Grey, and Finley
Denver and Skyler
With great appreciation for their support, humor and patience
(A.F.D.)*

DR. JOHN CHARLES BOILEAU GRANT

1886—1973



Dr. J.C.B. Grant in his office, McMurrich Building, University of Toronto, 1946. Through his textbooks, Dr. Grant made an indelible impression on the teaching of anatomy throughout the world.

by **Dr. Carlton G. Smith, M.D., Ph.D.**
(1905–2003)

Professor Emeritus, Division of
Anatomy, Department of Surgery
Faculty of Medicine
University of Toronto, Canada

The life of J.C. Boileau Grant has been likened to the course of the seventh cranial nerve as it passes out of the skull: complicated, but purposeful.¹ He was born in the parish of Lasswade in Edinburgh, Scotland, on February 6, 1886. Dr. Grant studied medicine at the University of Edinburgh from 1903 to 1908. Here, his skill as a dissector in the laboratory of the renowned anatomist, Dr. Daniel John Cunningham (1850–1909), earned him a number of awards.

Following graduation, Dr. Grant was appointed the resident house officer at the Infirmary in Whitehaven, Cumberland. From 1909 to 1911, Dr. Grant demonstrated anatomy in the University of Edinburgh, followed by two years at the University of Durham, at Newcastle-on-Tyne in England, in the laboratory of Professor Robert Howden, editor of *Gray's Anatomy*.

With the outbreak of World War I in 1914, Dr. Grant joined the Royal Army Medical Corps and served with distinction. He was mentioned in dispatches in September 1916, received the Military Cross in September 1917 for “conspicuous gallantry and devotion to duty during attack,” and received a bar to the Military Cross in August 1918.¹

In October 1919, released from the Royal Army, he accepted the position of Professor of Anatomy at the University of Manitoba in Winnipeg, Canada. With the frontline medical practitioner in mind, he endeavored to “bring up a generation of surgeons who knew exactly what they were doing once an operation had begun.”¹ Devoted to research and learning, Dr. Grant took interest in other projects, such as performing anthropometric studies of Indian tribes in northern Manitoba during the 1920s. In Winnipeg, Dr. Grant met Catriona Christie, whom he married in 1922.

Dr. Grant was known for his reliance on logic, analysis, and deduction as opposed to rote memory. While at the University of Manitoba, Dr. Grant began writing *A Method of Anatomy, Descriptive and Deductive*, which was published in 1937.²

In 1930, Dr. Grant accepted the position of Chair of Anatomy at the University of Toronto. He stressed the value of a “clean” dissection, with the structures well defined. This required the delicate touch of a sharp scalpel, and students soon learned that a dull tool was anathema. Instructive dissections were made available in the Anatomy Museum, a means of student review on which Dr. Grant placed a high priority. Many of these illustrations have been included in *Grant's Atlas of Anatomy*.

The first edition of the *Atlas*, published in 1943, was the first anatomical atlas to be published in North America.³ *Grant's Dissector* preceded the *Atlas* in 1940.⁴

Dr. Grant remained at the University of Toronto until his retirement in 1956. At that time, he became Curator of the Anatomy Museum in the University. He also served as Visiting Professor of Anatomy at the University of California at Los Angeles, where he taught for 10 years.

Dr. Grant died in 1973 of cancer. Through his teaching method, still presented in the Grant's textbooks, Dr. Grant's life interest—human anatomy—lives on. In their eulogy, colleagues and friends Ross MacKenzie and J. S. Thompson said: “Dr. Grant's knowledge of anatomical fact was encyclopedic, and he enjoyed nothing better than sharing his knowledge with others, whether they were junior students or senior staff. While somewhat strict as a teacher, his quiet wit and boundless humanity never failed to impress. He was, in the very finest sense, a scholar and a gentleman.”¹

This edition of *Grant's Atlas* has, like its predecessors, required intense research, market input, and creativity. It is not enough to rely on a solid reputation; with each new edition, we have adapted and changed many aspects of the *Atlas* while maintaining the commitment to pedagogical excellence and anatomical realism that has enriched its long history. Medical and health sciences education, and the role of anatomy instruction and application within it, continually evolve to reflect new teaching approaches and educational models. The health care system itself is changing, and the skills and knowledge that future health care practitioners must master are changing along with it. Finally, technologic advances in publishing, particularly in online resources and electronic media, have transformed the way students access content and the methods by which educators teach content. All of these developments have shaped the vision and directed the execution of this twelfth edition of *Grant's Atlas*, as evidenced by the following key features:

Classic “Grant’s” images updated for today’s students. A unique feature of *Grant's Atlas* is that, rather than providing an idealized view of human anatomy, the classic illustrations represent actual dissections that the student can directly compare with specimens in the lab. Because the original models used for these illustrations were real cadavers, the accuracy of these illustrations is unparalleled, offering students the best introduction to anatomy possible. Over the years we have made many changes to the illustrations to match the shifting expectations of students, adding more vibrant colors and updating the style from the original carbon-dust renderings. In this edition, at the suggestion of reviewers, we have continued this trend by introducing more lifelike skin tones to provide a more realistic—but no less accurate—depiction of anatomy. In addition, almost all of these dissection figures were carefully analyzed to ensure that label placement remained effective and that the illustration’s relevance was still clear. Almost every figure in this edition of *Grant's Atlas* was altered, from simple label changes to full-scale revision.

Schematic illustrations to facilitate learning. Full-color schematic illustrations supplement the dissection figures to clarify anatomical concepts, show the relationships of structures, and give an overview of the body region being studied. Many new schematic illustrations have been added to this edition; others have been revised to refine their pedagogical aspects. All conform to Dr. Grant’s admonition to “keep it simple”: extraneous labels were deleted, and some labels were added to identify key structures and make the illustrations as useful as possible to students. In addition, many new, simple orientation drawings were added for ease of identifying dissected regions.

Legends with easy-to find clinical applications. Admittedly, artwork is the focus of any atlas; however, the *Grant's* legends have long been considered a unique and valuable feature of the *Atlas*.

The observations and comments that accompany the illustrations draw attention to salient points and significant structures that might otherwise escape notice. Their purpose is to interpret the illustrations without providing exhaustive description. Readability, clarity, and practicality were emphasized in the editing of this edition. For the first time, clinical comments, which deliver practical “pearls” that link anatomic features with their significance in health care practice, are highlighted in blue within the figure legends. The clinical comments have also been expanded in this edition, providing even more relevance for students searching for medical application of anatomical concepts.

Enhanced diagnostic and surface anatomy and images.

Because medical imaging have taken on increased importance in the diagnosis and treatment of injuries and illnesses, diagnostic images are used liberally throughout the chapters, and a special imaging section appears at the end of each chapter. Over 100 clinically relevant magnetic resonance images (MRIs), computed tomography (CT) scans, ultrasound scans, and corresponding orientation drawings are included in this edition. We have also increased the number of labeled surface anatomy photographs and introduced greater ethnic diversity in the surface anatomy representations.

Tables—updated, expanded, and improved. Another feature unique to *Grant's Atlas* is the use of tables to help students organize complex information in an easy-to-use format ideal for review and study. The eleventh edition saw the introduction of muscle tables. In this edition, we have expanded the tables to include those for nerves, arteries, veins, and other relevant structures. The table format in this edition also received a substantial update; a consistent color code is used to clearly demarcate columns. Many tables are also strategically placed on the same page as the illustrations that demonstrate the structures listed in the tables.

Logical organization and layout. The organization and layout of the *Atlas* has always been determined with ease-of-use as the goal. Although the basic organization by body region was maintained in this edition, the order of plates within every chapter was scrutinized to ensure that it is logical and pedagogically effective. Sections within each chapter further organize the region into discrete subregions; these subregions appear as “titles” on the pages. Readers need only glance at these titles to orient themselves to the region and subregion that the figures on the page belong to. All sections also appear as a “table of contents” on the first page of each chapter.

Helpful learning and teaching tools. For the first time in its history, the twelfth edition of *Grant's Atlas* offers a wide range of electronic ancillaries for both student and teacher on Lippincott Williams & Wilkins’ online ancillary site “thePoint” (<http://thepoint.lww.com/grantsatlas>). Students are given access to an interactive electronic atlas containing all of the atlas images

with full search capabilities as well as zoom and compare features, as well as selected video clips from the best-selling *Acland's DVD Atlas of Human Anatomy* collection. Students can test themselves with 300 multiple choice questions, 95 “drag-and-drop” labeling exercises, and a sampling of *Clinical Anatomy Flash Cards*. For instructors, electronic ancillaries include an interactive atlas with slideshow and image-export functions, an image bank, and selected “dissection sequences” of plates.

We hope that you enjoy using this twelfth edition of *Grant's Atlas* and that it becomes a trusted partner in your educational experience. We believe that this new edition safeguards the *Atlas's* historical strengths while enhancing its usefulness to today's students.

Anne M.R. Agur
Arthur F. Dalley II

ACKNOWLEDGMENTS

Starting with the first edition of this *Atlas* published in 1943, many people have given generously of their talents and expertise and we acknowledge their participation with heartfelt gratitude. Most of the original carbon-dust halftones on which this book is based were created by **Dorothy Foster Chubb**, a pupil of Max Brödel and one of Canada's first professionally trained medical illustrators. She was later joined by **Nancy Joy**, who is Professor Emeritus in the Division of Biomedical Communications, University of Toronto. Mrs. Chubb was mainly responsible for the artwork of the first two editions and the sixth edition; Miss Joy for those in between. In subsequent editions, additional line and half-tone illustrations by **Elizabeth Blackstock**, **Elia Hopper Ross**, and **Marguerite Drummond** were added. In recent editions, the artwork of Valerie Oxorn, Caitlin Duckwall, and Rob Duckwall, and the surface anatomy photography of Anne Rayner of Vanderbilt University Medical Center's Medical Art Group, have augmented the modern look and feel of the atlas.

Much credit is also due to Charles E. Storton for his role in the preparation of the majority of the original dissections and preliminary photographic work. We also wish to acknowledge the work of Dr. James Anderson, a pupil of Dr. Grant, under whose stewardship the seventh and eighth editions were published.

The following individuals also provided invaluable contributions to previous editions of the atlas, and are gratefully acknowledged: C.A. Armstrong, P.G. Ashmore, D. Baker, D.A. Barr, J.V. Basmajian, S. Bensley, D. Bilbey, J. Bottos, W. Boyd, J. Callagan, H.A. Cates, S.A. Crooks, M. Dickie, J.W.A. Duckworth, F.B. Fallis, J.B. Francis, J.S. Fraser, P. George, R.K. George, M.G. Gray, B.L. Guyatt, C.W. Hill, W.J. Horsey, B.S. Jaden, M.J. Lee, G.F. Lewis, I.B. MacDonald, D.L. MacIntosh, R.G. MacKenzie, S. Mader, K.O. McCuaig, D. Mazierski, W.R. Mitchell, K. Nancekivell, A.J.A. Noronha, S. O'Sullivan, W. Pallie, W.M. Paul, D. Rini, C. Sandone, C.H. Sawyer, A.I. Scott, J.S. Simpkins, J.S. Simpson, C.G. Smith, I.M. Thompson, J.S. Thompson, N.A. Watters, R.W. Wilson, B. Vallecoccia, and K. Yu.

Twelfth Edition

We are indebted to our colleagues and former professors for their encouragement—especially Dr. Keith L. Moore for his expert advice and Drs. Daniel O. Graney, Lawrence Ross, Warwick Gorman, and Douglas J. Gould for their invaluable input.

We extend our gratitude to the medical artists who worked on this edition: Valerie Oxorn, and Caitlin and Rob Duckwall of Dragonfly Media Group, who contributed new and modified illustrations. We would also like to acknowledge Wayne Hubbel, former Art Coordinator at Lippincott Williams & Wilkins and now a freelancer, who helped size and label art for this edition.

Special thanks go to everyone at **Lippincott Williams & Wilkins**—especially Crystal Taylor, Acquisitions Editor; Kathleen Scogna, Senior Developmental Editor; and Eve Malakoff-Klein, Managing Editor, Production. All of your efforts and expertise are much appreciated.

We would like to thank the hundreds of instructors and students who have over the years communicated via the publisher and directly with the editor their suggestions for how this *Atlas* might be improved. Finally, we would like to acknowledge the reviewers who reviewed previous editions of the *Atlas* as well as the following reviewers who reviewed the eleventh edition and provided expert advice on the development of this edition in particular:

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Gary Allen, PhD, Dalhousie University, Halifax, Nova Scotia, Canada

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We hope that readers and reviewers will find many of their suggestions incorporated into the twelfth edition and will continue to provide their valuable input.

*Anne M.R. Agur
Arthur F. Dalley II*

TABLE AND FIGURE CREDITS

Note: A list of the table and figure sources for this book from previous editions of *Clinically Oriented Anatomy*, *Grant's Atlas*, and *Essential Clinical Anatomy* can be found online at <http://thepoint.lww.com/grantsatlas>.

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- 1.5C** Dean D, Herbener TE. Cross-Sectional Human Anatomy, 2000:25 (Plate 2.9).
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- 1.58B** Feigenbaum H, Armstrong WF, Ryan T. Feigenbaum's Echocardiography. 5th ed, 2005:116.
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CHAPTER 2

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CHAPTER 3

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CHAPTER 5

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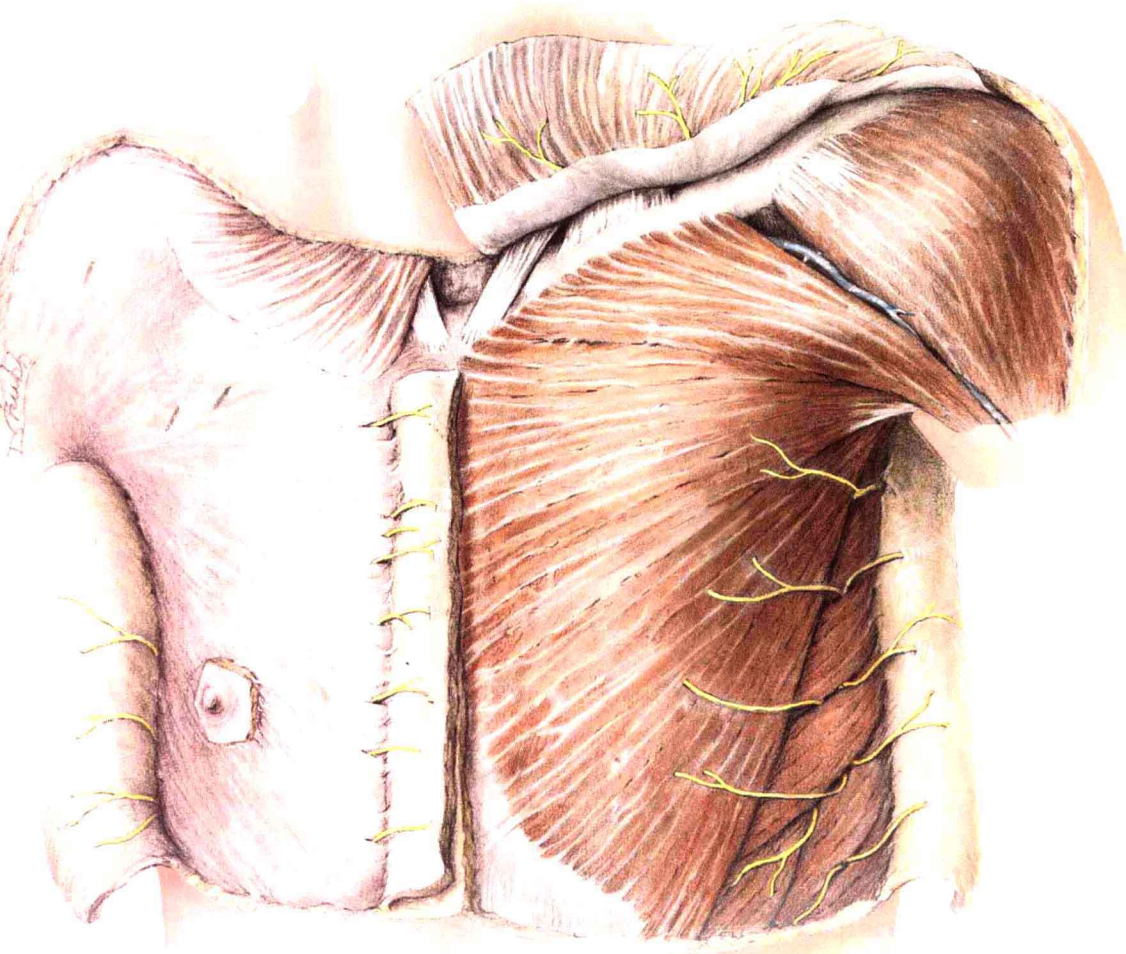
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