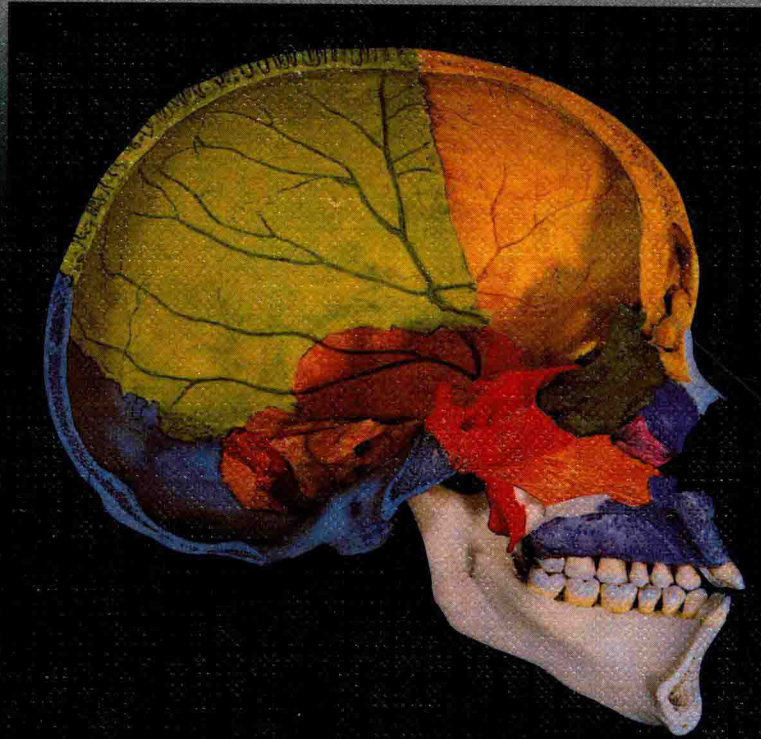


Johannes W. Rohen
Chihiro Yokochi
Elke Lütjen-Drecoll

Color Atlas of Anatomy

A Photographic Study of the Human Body



Fifth Edition



LIPPINCOTT WILLIAMS & WILKINS
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Johannes W. Rohen
Chihiro Yokochi
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Color Atlas of Anatomy



Fifth Edition

with 1158 Figures,
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Prof. em. Dr. med. Dr. med. h. c. Johannes W. Rohen
Anatomisches Institut II der Universität Erlangen-Nürnberg
Universitätsstr. 19, D-91054 Erlangen, Germany

Chihiro Yokochi, M.D.

Professor Emeritus, Department of Anatomy
Kanagawa Dental College, Yokosuka, Kanagawa, Japan
Correspondence to:
Prof. Chihiro Yokochi, c/o Igaku-Shoin Ltd., 5-24-3 Hongo,
Bunkyo-ku, Tokyo 113-8719, Japan

Prof. Dr. med. Elke Lütjen-Drecoll

Anatomisches Institut II der Universität Erlangen-Nürnberg
Universitätsstr. 19, D-91054 Erlangen, Germany

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Last but not least, we would like to express our sincere thanks to all scientists, students, and other coworkers, particularly to the ones at the publishing companies themselves.

J. W. Rohen, C. Yokochi, E. Lütjen-Drecoll

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J. W. Rohen
C. Yokochi
E. Lütjen-Drecoll

Color Atlas of Anatomy
A Photographic Study of the Human Body

Fifth Edition



Coeditions in 14 Languages

A Photographic Study of the Human Body

Preface to the Fifth Edition



Eighteen years after its first edition the *Atlas* was again thoroughly revised and modernized. Numerous new figures were incorporated. Nearly 40 new photographs taken from newly dissected specimens and several new drawings were added. To avoid an undesirable increase in volume size we omitted all figures of minor quality from the previous editions and revised thoroughly the layout of the book. To provide a more detailed outline on cross-sectional and regional anatomy which becomes increasingly important to clinical work, we added a number of CT and MRI scans taken with latest modern techniques.

Each chapter of this edition consists of two parts. The first part describes the anatomical structure of the organs in a systemic manner, e.g., in the case of an extremity: bones, joints, ligaments, muscles, blood vessels, and nerves. In the second part, the regional anatomy is depicted, so that the description of the superficial layers is followed by the deeper and deepest layers; thus the student in the lab can find the orientation needed for the dissection of the cadaver. When viewing the photographs, the use of a magnifier is strongly recommended in order to identify more precisely the three-dimensional structure of the tissues and organs depicted.

While preparing this new edition, the authors were reminded of how precisely, beautifully, and admirably the human body is constructed. If this book helps the student or medical doctor to appreciate the overwhelming beauty of the anatomical architecture of tissues and organs in the human, then it greatly fulfills its task. Deep interest and admiration of the anatomical structures may create the “love for man,” which alone can be considered of primary importance for daily medical work.

We would like to express our great gratitude to all coworkers for their skilled work. Without their help the improvement of the *Atlas* would not have been possible. We would also like to express our sincere thanks to those at Schattauer GmbH, Stuttgart, Germany, Lippincott, Williams & Wilkins, Baltimore, Maryland, USA, and Igaku-Shoin, Tokyo, Japan, who always listened to our suggestions and invested again a great deal of their effort into improving this book.

Erlangen, January 2002

J. W. Rohen
C. Yokochi
E. Lütjen-Drecoll

Preface to the First Edition



Today there exist any number of good anatomic atlases. Consequently, the advent of a new work requires justification. We found three main reasons to undertake the publication of such a book. First of all, most of the previous atlases contain mainly schematic or semischematic drawings which often reflect reality only in a limited way; the third dimension, i.e., the spatial effect, is lacking. In contrast, the photo of the actual anatomic specimen has the advantage of conveying the reality of the object with its proportions and spatial dimensions in a more exact and realistic manner than the “idealized”, colored “nice” drawings of most previous atlases. Furthermore, the photo of the human specimen corresponds to the student’s observations and needs in the dissection courses. Thus he has the advantage of immediate orientation by photographic specimens while working with the cadaver.

Secondly, some of the existing atlases are classified by systemic rather than regional aspects. As a result, the student needs several books each supplying the necessary facts for a certain region of the body. The present atlas, however, tries to portray macroscopic anatomy with regard to the regional and stratigraphic aspects of the object itself as realistically as possible. Hence it is an immediate help during the dissection courses in the study of medical and dental anatomy.

Another intention of the authors was to limit the subject to the essential and to offer it didactically in a way that is self-explanatory. To all regions of the body we added schematic drawings of the main tributaries of nerves and vessels, of the course and mechanism of the muscles, of the nomenclature of the various regions, etc. This will enhance the understanding of the details seen in the photographs. The complicated architecture of the skull bones, for example, was not presented in a descriptive way, but rather through a series of figures revealing

the mosaic of bones by adding one bone to another, so that ultimately the composition of skull bones can be more easily understood.

Finally, the authors also considered the present situation in medical education. On one hand there is a universal lack of cadavers in many departments of anatomy, while on the other hand there has been a considerable increase in the number of students almost everywhere. As a consequence, students do not have access to sufficient illustrative material for their anatomic studies. Of course, photos can never replace the immediate observation, but we think the use of a macroscopic photo instead of a painted, mostly idealized picture is more appropriate and is an improvement in anatomic study over drawings alone.

The majority of the specimens depicted in the atlas were prepared by the authors either in the Dept. of Anatomy in Erlangen, Germany, or in the Dept. of Anatomy, Kanagawa Dental College, Yokosuka, Japan. The specimens of the chapter on the neck and those of the spinal cord demonstrating the dorsal branches of the spinal nerves were prepared by Dr. K. Schmidt with great skill and enthusiasm. The specimens of the ligaments of the vertebral column were prepared by Dr. Th. Mokrusch, and a great number of specimens in the chapter of the upper and lower limb was very carefully prepared by Dr. S. Nagashima, Kurume, Japan.

Once again, our warmest thanks go out to all of our co-workers for their unselfish, devoted and highly qualified work.

Erlangen, Spring 1983

J.W. Rohen
C. Yokochi

List of Figures



The schematic drawings have been performed by the following graphic designers:

Bruno Bradt, figure on page 1.

Gunther Felmerer, figures on pages: 3, 62, 147, 171, 202.

Evelyn Ott-Freiberger, figures on pages: 20, 46, 49, 65, 70, 73, 74, 76, 92, 93, 95, 105, 106, 109, 113, 115, 117, 130, 131, 150, 152, 154, 155, 158, 160, 181, 214, 237, 244, 261, 271, 272, 281, 282, 284, 287, 291, 294, 296, 303, 309, 314, 325, 375, 376, 377, 378, 382, 399, 444, 447, 449.

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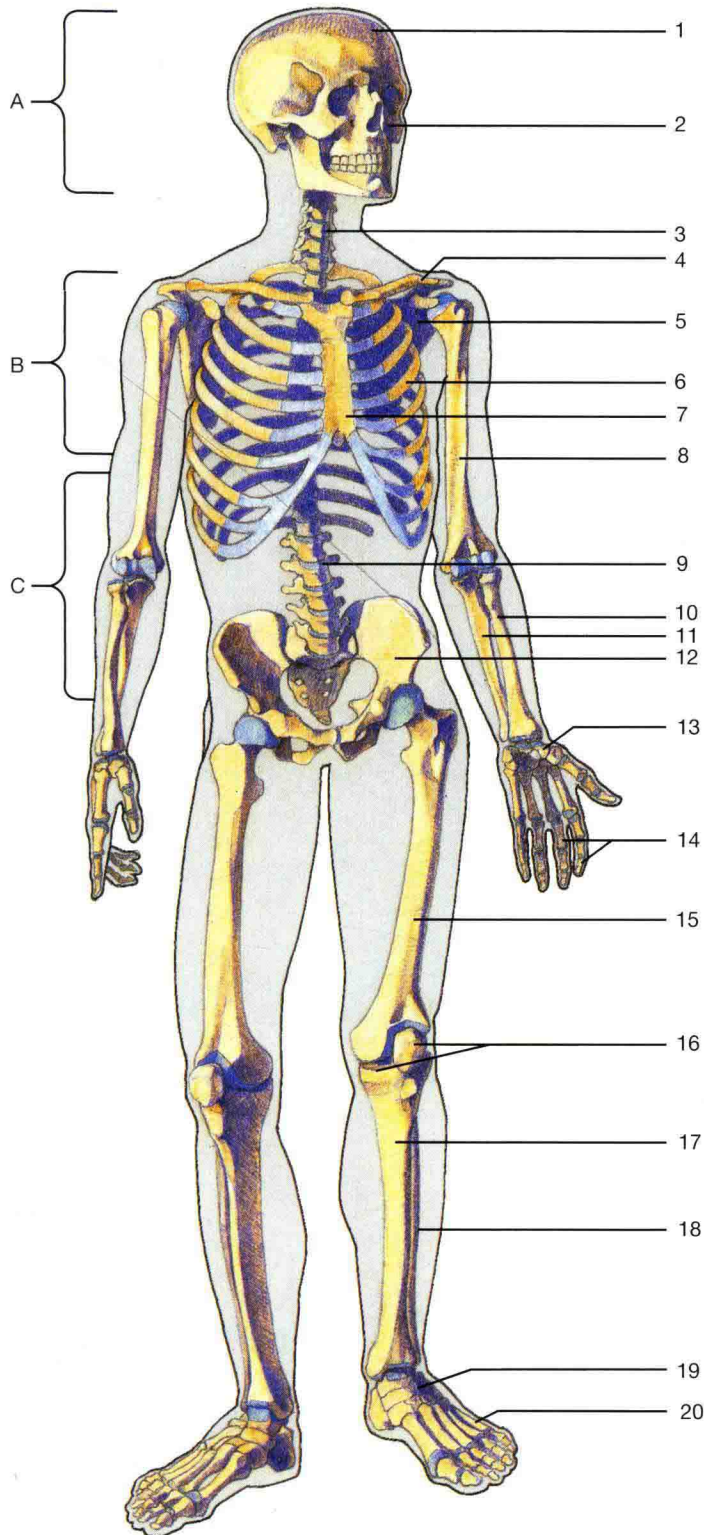


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General Anatomy



Structure of the human body and the skeleton. Blue = joints.

A Head (caput) B Thorax (thoracic cavity) C Abdominal and pelvic cavities

In contrast to most other mammals the human body is adapted for bipedal locomotion. Three general principles in the architecture of the human organism are recognizable:

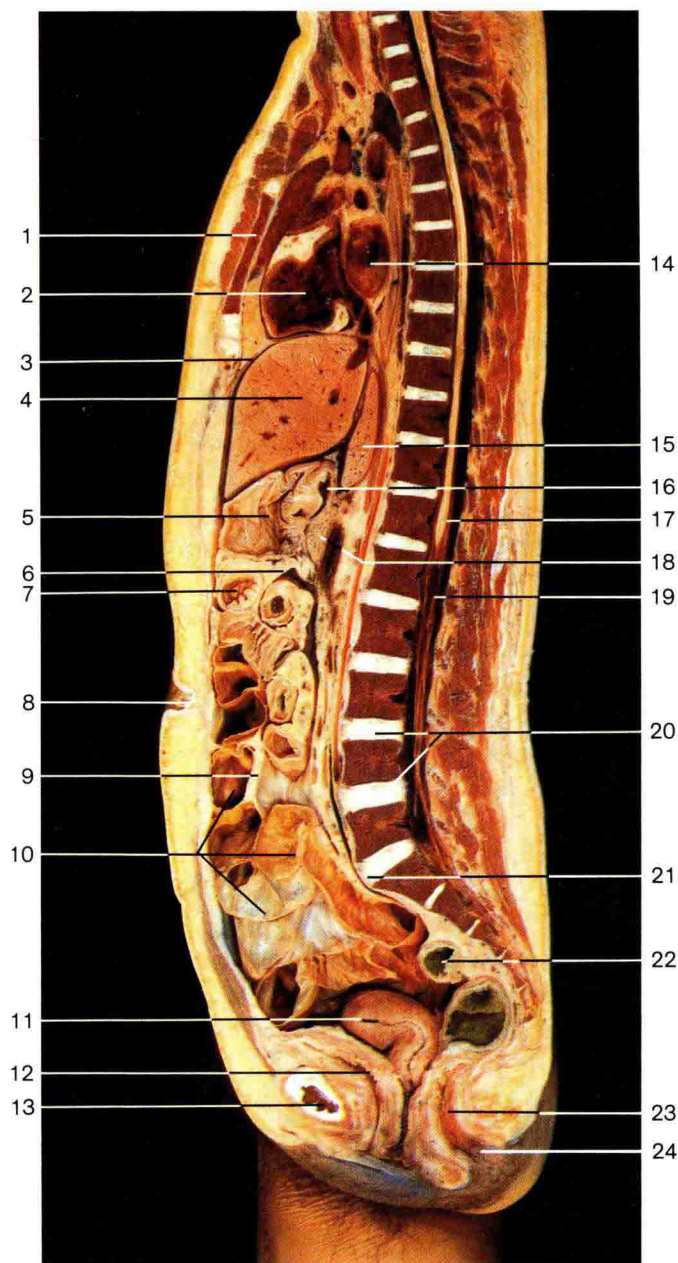
1. The principle of **segmentation**, which dominates in the trunk. The vertebral column and the thorax consist of relatively equal, segmentally arranged elements.
2. The principle of **bilateral symmetry**. Both sides of the body are separated by a midsagittal plane and resemble each other like image and mirror-image.
3. The principle of **polarity** between the head at one end of the body and the lower extremities at the other. As the center of the information system the head contains the main sensory organs and the brain. The head has a predominantly spherical form, while the extremities consist of radially formed skeletal elements, the number of which increases distally.

A. The **skull** consists of two parts: 1. a **cranial part** containing mainly the brain and the sensory organs and 2. a **facial part** which contains the nasal and oral cavity and the chewing apparatus. The cranial cavity is continuous with the vertebral canal which contains the spinal cord.

B. The **thorax** contains the respiratory and circulatory organs (lung, heart, etc.) but also some of the abdominal organs which are located underneath the diaphragm.

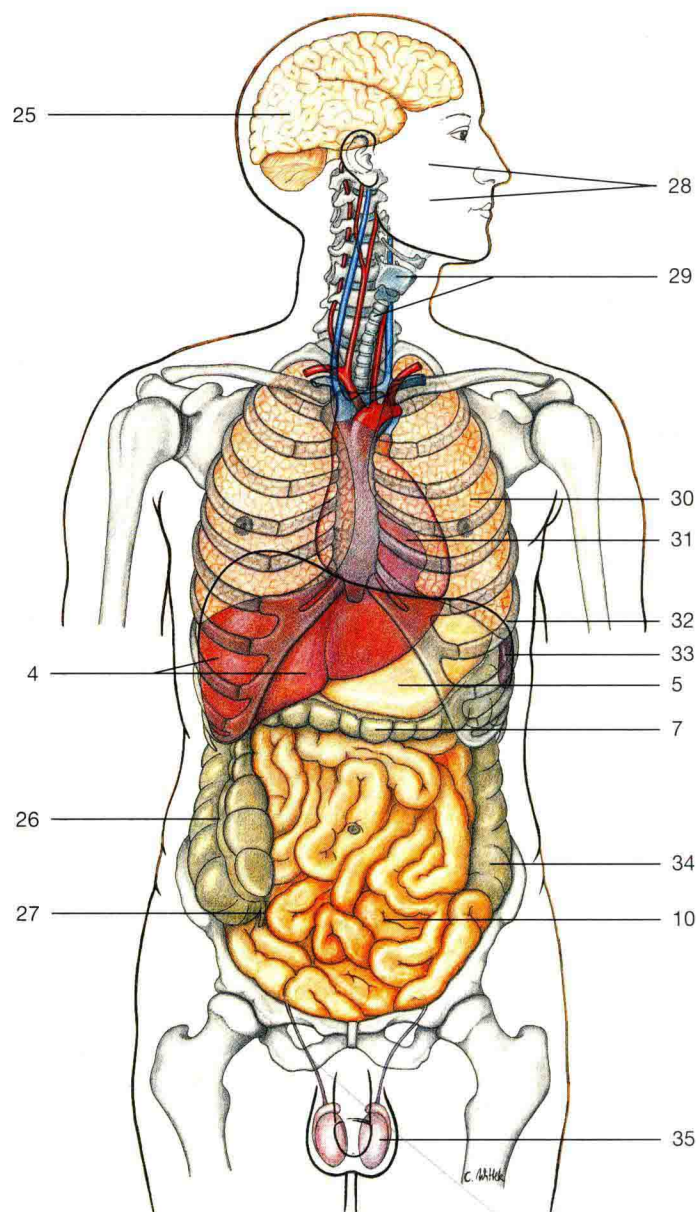
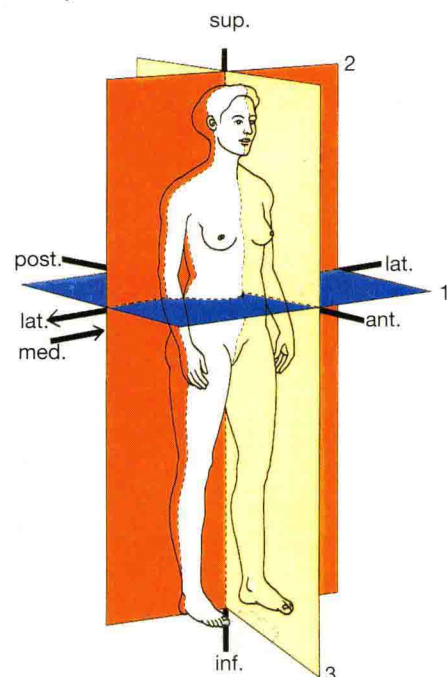
C. The **abdominal cavity** contains the organs of metabolism such as the liver, the stomach and the intestinal tract as well as the excretory and genital organs (kidney, uterus, urinary bladder, etc.). The latter are located primarily in the **pelvic cavity** with the exception of the testes.

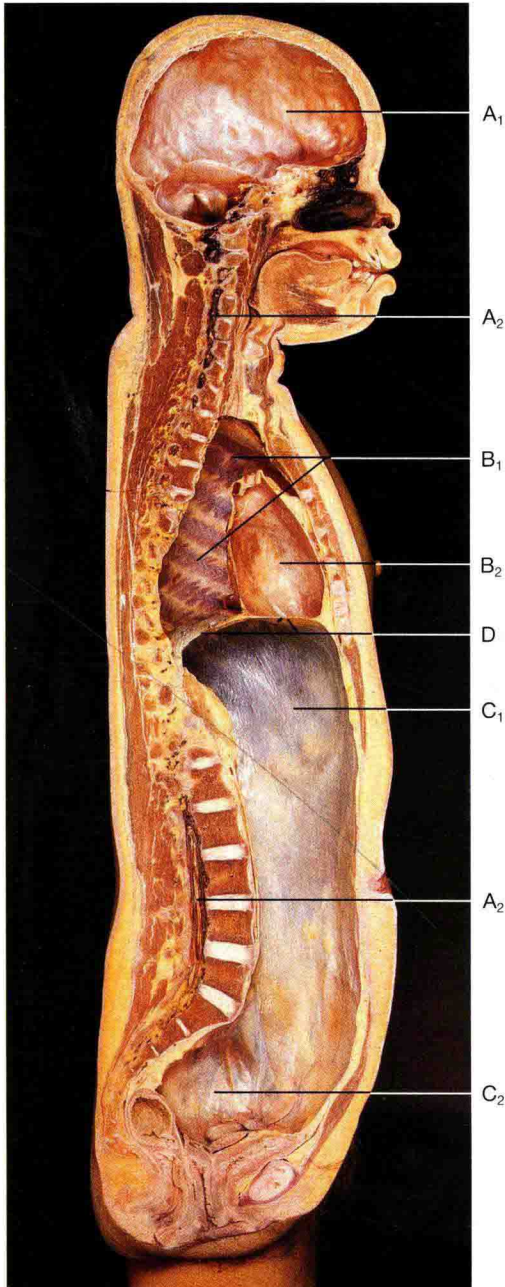
- | | | | |
|------------------------------------|----------------|---------------------------|-----------|
| 1 Cranial part | } of the skull | 10 Radius | } forearm |
| 2 Facial part | | 11 Ulna | |
| 3 Vertebral column (cervical part) | | 12 Pelvis | |
| 4 Clavicle | | 13 Wrist (carpals) | } hand |
| 5 Scapula | | 14 Fingers (phalanges) | |
| 6 Ribs | | 15 Thigh (femur) | |
| 7 Sternum | | 16 Patella and knee joint | |
| 8 Arm (humerus) | | 17 Tibia | } leg |
| 9 Vertebral column (lumbar part) | | 18 Fibula | |
| | | 19 Tarsals | } foot |
| | | 20 Metatarsals | |



Median section through the trunk (female).

- | | |
|---|--|
| 1 Sternum | 21 Sacral promontory |
| 2 Right ventricle of heart | 22 Sigmoid colon |
| 3 Diaphragm | 23 Anal canal |
| 4 Liver | 24 Anus |
| 5 Stomach | 25 Head (neurocranium) with brain |
| 6 Transverse mesocolon | 26 Ascending colon |
| 7 Transverse colon | 27 Appendix |
| 8 Umbilicus | 28 Facial region (viscerocranium) with oral and nasal cavities |
| 9 Mesentery | 29 Trachea and larynx |
| 10 Small intestine | 30 Thorax with the lungs |
| 11 Uterus | 31 Heart |
| 12 Urinary bladder | 32 Surface projection of the diaphragm |
| 13 Pubic symphysis | 33 Spleen |
| 14 Left atrium of heart | 34 Descending colon |
| 15 Caudate lobe of liver | 35 Testis |
| 16 Omental bursa or lesser sac | |
| 17 Conus medullaris | |
| 18 Pancreas | |
| 19 Cauda equina | |
| 20 Intervertebral discs (lumbar vertebral column) | |

Position of the inner organs of the human body (anterior aspect).
The main cavities of the body and their contents.



Sagittal section through the human body (female).
Demonstration of the main cavities of the body.
Internal organs are removed.

- A₁ Cranial cavity
- A₂ Vertebral canal
- B₁ Thoracic cavity
- B₂ Pericardial cavity
- C₁ Abdominal cavity
- C₂ Pelvic cavity
- D Diaphragm

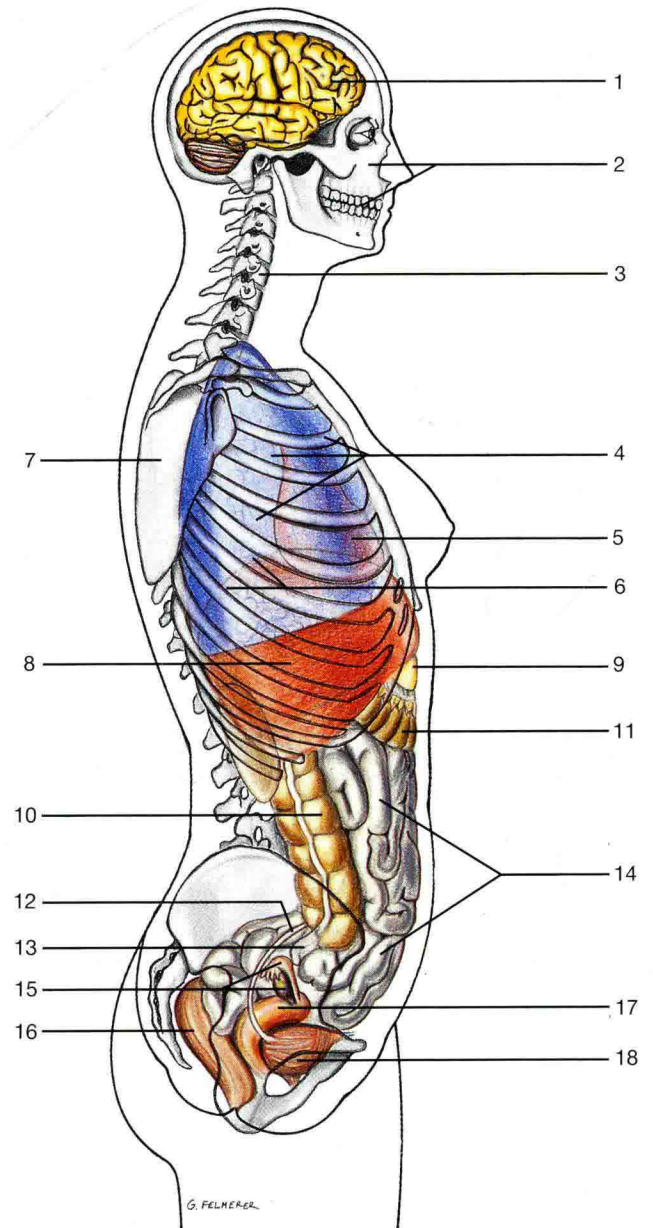


Planes of the body

- 1 Transverse plane
- 2 Frontal plane
- 3 Sagittal plane (midsagittal)

Lines of direction

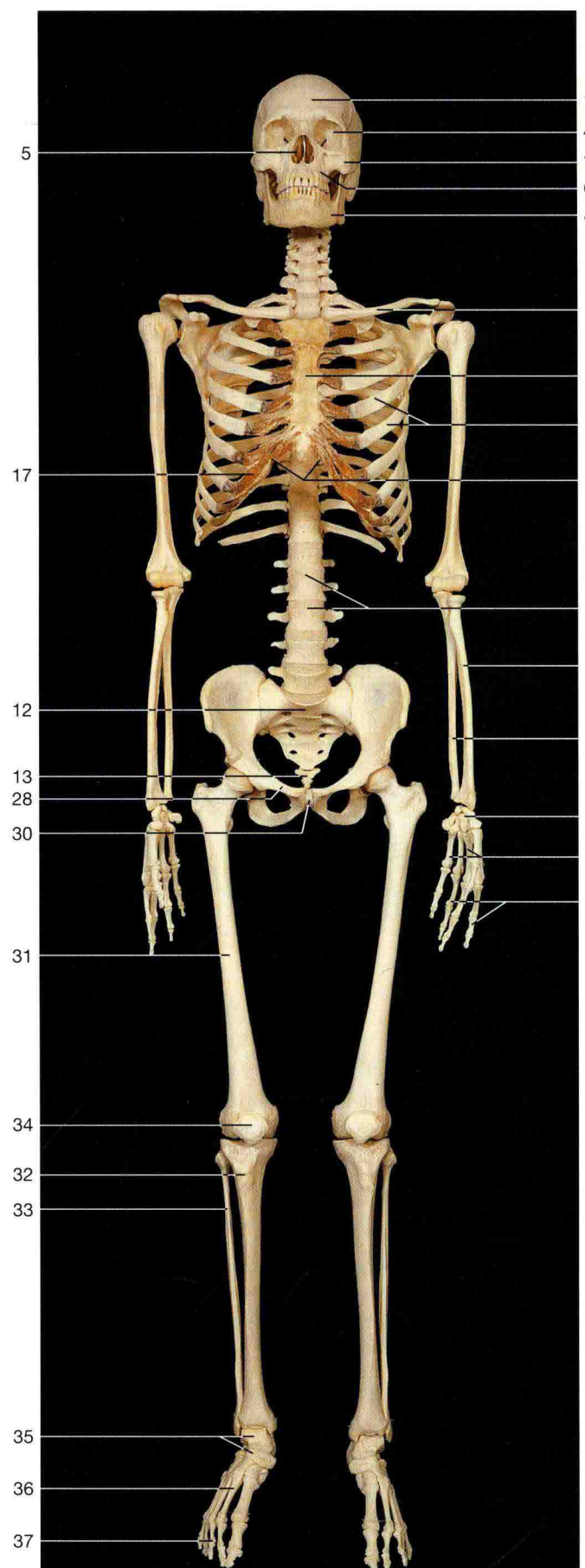
- ant. = anterior
- inf. = inferior
- lat. = lateral
- med. = medial
- post. = posterior
- sup. = superior



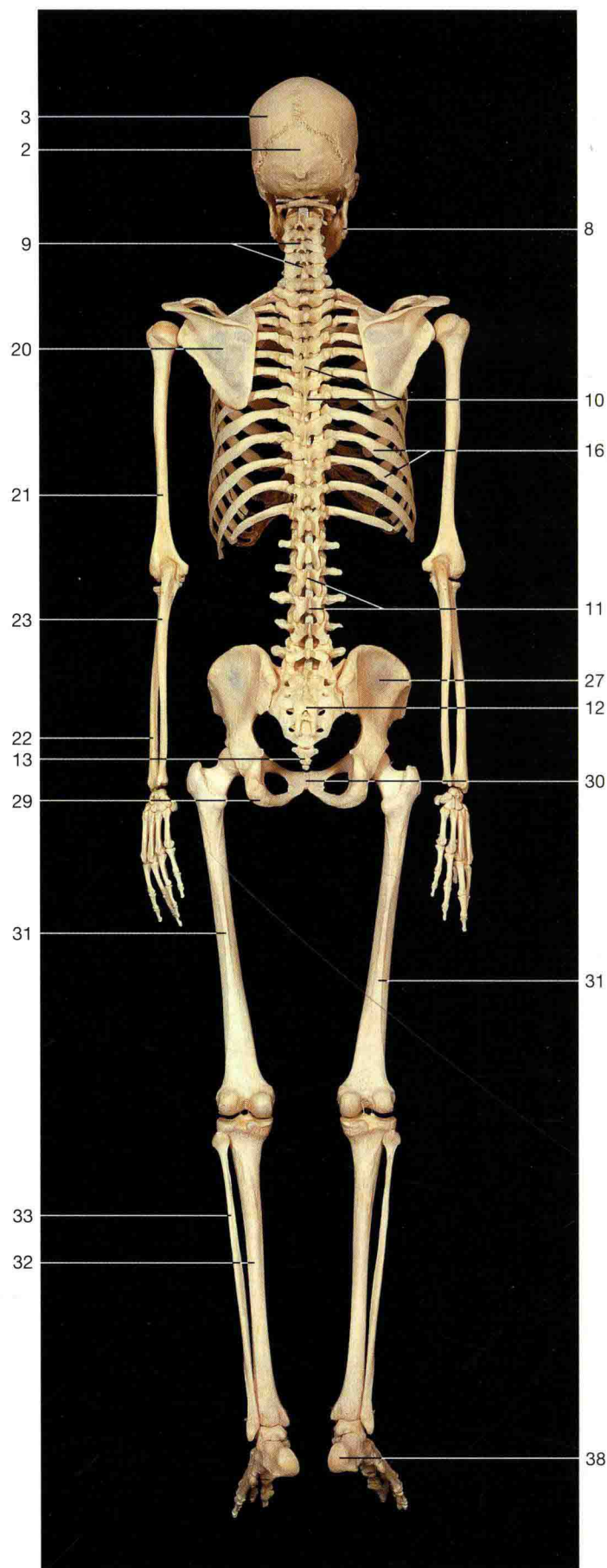
Position of the inner organs of the human body
(lateral aspect).

The three main cavities of the body and their contents.

- 1 Head (neurocranium) with the brain
- 2 Facial bones with oral and nasal cavities
- 3 Vertebral column (cervical part)
- 4 Thorax with the lungs
- 5 Heart
- 6 Surface projection of the diaphragm
- 7 Scapula
- 8 Liver
- 9 Stomach
- 10 Ascending colon
- 11 Transverse colon
- 12 Ureter
- 13 Appendix
- 14 Small intestine
- 15 Ovary, uterine tube
- 16 Rectum
- 17 Uterus
- 18 Urinary bladder



Skeleton of a female adult (anterior aspect).



Skeleton of a female adult (posterior aspect).