英汉双语版

Wolf-Heidegger's

Atlas of Human Anatomy

沃氏人体解剖學图譜

·第5版· 第1卷

总主编 Petra Köpf-Maier

主 审 任惠民 曾志成

主 译 张栓才 马东亮

李月英 任卫军

Systemic Anatomy, Body Wall, Upper and Lower Limbs 系统解剖学, 体壁, 上肢和下肢

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Atlas of Human Anatomy 沃氏

人体解剖学图谱

(第5版)

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Homage to Those Who Bequeathed Their Bodies to Science

'Hic locus est ubi mors gaudet succurrere vitae'

'This is the place where death delights in helping life' (Inscription above the Anatomical Theatre of Bologna)

The present atlas of human anatomy shall not begin without paying due homage and returning thanks to those who freely bequeath their bodies to anatomy. Such donations testify to an admirable, unselfish, and idealistic sense of sacrifice and nothing can compensate for the invaluable service rendered to science and society. Anatomy and medicine owe these individuals a tremendous debt of gratitude. By bequeathing their bodies, they enable medical students to learn through real observation and direct 'grasping', and even

now, at the end of the twentieth century, there is no alternative to this. Thus, even beyond death, these altruistic people help the living — medical students, physicians, and their patients alike. This is how the above inscription should be interpreted. Students should make every endeavour to be worthy of these voluntary and generous body donations by respecting and honoring the dead as well as by working hard and learning eagerly.

向为科学捐献遗体者致敬!

'Hic locus est ubi mors gaudet succurrere vitae'

"这是一个能使死者永存的地方"

(以上是博洛尼亚解剖室前的碑铭)

在翻阅这本人体解剖学图谱前,我们首先应该感谢那些自愿捐献遗体者,并向他(她)们致以崇高的敬意。他(她)们是多么令人敬佩和大公无私,并且充满着自我牺牲的精神、理想和信念;现代医学的发展足以证明:这些捐赠的遗体者对人类社会的进步和医学科学的发展来说是一笔难以用金钱来衡量的财富。人体解剖学的发展更是离不开遗体捐献者们的巨大贡献。他(她)们的遗体使医学生能通过真实的观察和切身的体验,学习和掌握解剖学知识,这一学习方式和研究手段在二十世纪末是无法用其他方式替代的。这些无私的人们在去世后仍然热心帮助活着的人一医学生、医生和病人。这就是为什么要引用以上碑文的原因。学生们只有尊敬这些死者并竭尽全力去学习和工作,才能无愧于这些慷慨无私的遗体捐献者。

Preface to the 5th Edition

Macroscopic anatomy is a fundamental branch of medicine without which clinical facts cannot be understood.

Throughout history, the importance of anatomy for medicine – and thus for medical studies – has fluctuated considerably. Five hundred years ago, at the end of the Renaissance, Leonardo da Vinci and Andreas Vesal laid the foundation stones of modern anatomy and modern medicine. In those days, anatomy – then exclusively macroscopic – was the only fundamental speciality medical students were confronted with during their studies, along with the clinical subjects internal medicine, surgery and botany (in the meaning of use of herbal drugs).

The first half of the twentieth century saw the development of microscopic anatomy besides macroscopic anatomy; physiology became an independent speciality and physiological chemistry and biochemistry made huge progress. Research in these fields provided new knowledge on functional and molecular interactions in the mammalian organism which fundamentally altered our understanding of diseases and opened new perspectives in clinical diagnosis and therapy. As a consequence of these developments, macroscopic anatomy was somehow relegated to the background during the 1960s and 1970s, and seemed to have retained its essential importance only for surgical specialities.

Apart from these developments, new diagnostic imaging technologies have become clinically established in the second half of the twentieth century: computed tomography, magnetic resonance imaging, and ultrasonography. These imaging techniques opened up new visions of the morphology of the living organism, enabled a very detailed identification of structures and thus laid the foundation stone of rapid and unexpected progress in clinical diagnosis. However, the interpretation of normal and pathologically altered structures in two-dimensional images of the human body with all these techniques demands extremely precise anatomical knowledge. In recent years, this has led to the revival and to a considerable increase in the significance of macroscopic anatomy both for clinical medicine and the education of medical students.

Successful clinical work without well-founded knowledge in topographical and sectional anatomy is thus no longer possible. This is the reason why the editor urges present and future medical students to study macroscopic anatomy intensively.

As a matter of fact, it is the establishment of the new imaging techniques in clinical medicine that prompted this new revised version of Professor Wolf-Heidegger's Atlas of Human Anatomy, which had been continued by H. Frick, B. Kummer, and R. Putz in its 4th edition, and the supplementation of its 5th edition with numerous anatomical sections, computed and magnetic resonance imaging tomograms and ultrasonograms. Such a new design of an atlas of the anatomy of the whole human body is only possible with the collaboration of many enthusiastic forces. Thus I am deeply indebted to Dr.

R. Andresen and Priv.-Doz. Dr. D. Banzer (Berlin) for most of the new radiographs as well as the computed and magnetic resonance tomograms included in this atlas. Prof. Dr. G. Bogusch (Berlin), Prof. Dr. E. Fleck (Berlin), Dr. M. Jäckel (Göttingen), Dr. H. Kellner (Munich), Priv.-Doz. Dr. T. Riebel (Berlin), Priv.-Doz. Dr. C. Sohn (Heidelberg), Dr. D. Zeidler (Berlin) and Prof. Dr. W.G. Zoller (Munich) contributed some further radiographs, tomograms and ultrasonograms for which I would like to thank them.

I am moreover deeply indebted to Prof. Dr. M. Herrmann (Ulm) who provided the anatomical sections for most of the computed and magnetic resonance tomograms of the present atlas and thus considerably enriched it. The sections on which these illustrations are based were prepared and photographed by Mr. E. Voigt (Ulm), whom I would like to thank as well.

Valuable help in translating the Latin terms of the original Latin nomenclature version into English equivalents was contributed by Prof. A.W. English, Ph.D. (Atlanta, Georgia, USA). I thank him very much for his engagement.

I also express my thanks to Mrs. G. Heymann-Monhof, Mr. H. Jonas, Mrs. H. Heinen, Mrs. I. Tripke, Mrs. C. Naujok and Mr. F. Geisler who prepared about 230 new anatomical drawings for the present edition.

My special thanks go to Dr. h.c. Th. Karger for his constructive collaboration during the past years. Dr. Karger always lent an understanding ear to my concepts, which were often difficult and expensive to realize, and was a partner whose expert advice and understanding always helped me in my work with the atlas. Many thanks in particular to Mr. B. Pfäffli as well as to all the personnel of S. Karger Publishers and Neue Schwitter AG who helped in the production of Wolf-Heidegger's atlas.

Mrs. M. Risch, my secretary, has been a great and dependable help over the past years, which has eased my work in many respects. I would like to thank her as well.

This new edition of Wolf-Heidegger's Atlas of Systematic Human Anatomy has been supplemented by numerous new anatomical drawings, radiographs, tomograms, ultrasonograms and anatomical sections. As the editor, I am confident that this new edition will indeed 'help one to see' – one of the most difficult things, according to the quote from Goethe, which Wolf-Heidegger chose as the motto for the first edition of his atlas – and that it will give medical students better access to anatomy and clinical medicine:

'What is the hardest of aught? What seemeth the simplest to you: With your eyes to see that which is in front of your eyes.'

Johann Wolfgang von Goethe, Distichon 155 of the 'Xenien' (translated by M. Pfister, Berlin)

Berlin, Spring 1999

Petra Köpf-Maier

第5版前言

巨视解剖学是一门医学基础学科,医学科学家对许多临床表现的解释都离不开它。

纵观历史,人体解剖学对医学发展和医学研究的重要性是显而易见的。500 年前,文艺复兴末期,Leonardo da Vinci 和 Andreas Vesal 为现代解剖和现代医学奠定了基石。在那个时期,解剖学尤其巨视解剖学—是伴随医学生在学习临床科目如内科学、外科学和植物学(用于中药的应用)期间,唯一的一门基础学科。

20 世纪前 50 年, 伴随着巨视解剖学的发展, 微视解剖学在生理学的发展中担当着特殊的角色, 生理化学和生物化学也得到巨大发展。通过对这些领域的研究, 我们获得了有关哺乳动物组织功能和分子间相互作用的新知识。这不但改变了我们对疾病的认识, 而且为我们在临床诊断和治疗方面提供了新的思路。虽然如此, 但不知何故, 在 1960 年至 1970 年间, 巨视解剖学被降到次要的位置, 似乎仅保留了它对外科学专业的基本价值。

进入 20 世纪 50 年代以后,临床影像诊断学逐步建立和发展起来,CT、MRI 和超声波等技术的应用为我们提供了新的视觉图像,使我们能详细准确的识别人体结构,从而为临床诊断学的飞速的发展奠定了基石。但是,对于人体组织结构的生理变化和病理变化,通过这些技术在二维影像中予以解释,有赖于非常准确的解剖学知识。因此,巨视解剖学在临床医学中的重要性得到了恢复。

没有很好的局部解剖学和断层解剖学知识,在临床工作中要取得成功是不可能的。这正是编者极力主张: 现在和将来的临床医学学生必须深入细致的学习巨视解剖学。

由于影像诊断学的建立,从而使沃氏人体解剖学图谱有了新的修订版。第 5 版在 H.Frick、B.Kummer 和 R. Putz 编写的第 4 版基础上,增补了大量断层解剖、CT、MRI 和超声图片。对整个人体解剖学图谱内容的扩充和新的编排方式,使得许多积极因素的协同作用得到充分发挥。图谱中绝大多数新的 X 线片如 CT、MRI 图片由 R. Andresen 博士、柏林的 D. Banzer 博士提供,对此我深表感激。柏林的 G. Bogusch 教授(博士)和 E. Fleck 博士、哥廷根的 M. Jäckel 博士、慕尼黑的 H. Kellner 博士、柏林的 T. Riebel 博士、海德堡的 C. Sohn 博士、柏林的 D. Zeidler 博士和慕尼黑的 W. G. Zoller 教授(博士),提供了一些更深层次的 X 线片、断层 X 线片、超声图像,对此我深表感激。

我更深深感谢沃尔姆的 M.Herrmann 教授(博士),本书断层解剖中绝大多数 CT 和 MRI 图片由他提供,极大地丰富了本书的内容。断层图片由沃尔姆的 E.Voigt 先生拍摄并制作,对他我同样深表感谢。

在将原文拉丁术语翻译成为英文的过程中,美国 A.W. English 教授给予我们大力的协助,我非常感谢他。

我还要感谢 G. Heymann-Monhof 女士、H. Jonas 先生、H. Heinen 女士、I. Tripke 女士、C. Naujok 女士和 F. Geisler 先生,他(她)们为本书绘制了大约 230 幅新的解剖图片。

特别要感谢 Th.Karger 博士在过去对我们的鼎力协助,他总能明白我的意图,尽管有时实现起来很困难,而且花费很大。他专业性的建议和理解在我编制图谱的工作中作用很大。我还要深深感谢 B. Pfäffli 先生以及 S.Karger 出版社和新斯克怀特股份公司的全体成员,他们在沃氏图谱的出版中给予了大力支持。

我的秘书 M.Risch 女士,给予我大量的值得信赖的帮助,在许多方面简化了我的工作,我同样深表感谢。

这本新版沃氏系统人体解剖学图谱补充了大量新的解剖绘图、X线平片、断层 X线片、超声图像和断层解剖图片。作为编者,我确信,新的版本将"真正帮助每个人看到"——最难看到的东西,正如 Goethe 所说,作为沃氏第1版的座右铭:本书还将在解剖学和临床医学上为医学生提供更好的学习途径。

"什么是最难的?什么看上去最简单:用你的眼睛看你眼前的事物。"

Petra Köpf-Maier 1999 年春于柏林

Preface to the 1st Edition

«Was ist das Schwerste von allem? Was dir das Leichteste dünket: Mit den Augen zu sehn, was den Augen dir liegt. »*

Accustomed during his school years to place greater trust in the written word than in his own senses, the young medical student in his first pre-clinical term is faced with a problem which Goethe aptly describes as 'hardest of all': He has to learn how to see. To teach him to do so, by the aid of anatomical preparations and plates as the most effective means at his disposal, is the foremost task of the pre-clinical instructor. The aim of the present Atlas is to give to the medical student and to the physician wishing to revise his anatomical knowledge a picture, as true and exact as possible, of the organs of our human body. The drawings were made partly from specimens preserved in the large collection of the Basle Anatomical Institute, partly from special preparations. Nearly all the plates in the section on muscles were drawn from fresh preparations in order to exclude the deformities caused by preservation. Our aim was always to avoid individual peculiarities and, by using a larger number of similar preparations, to produce as general and universal a picture as possible. With a few exceptions, noted in the legends. the right side of the body was always chosen in all bilaterally symmetrical organs or parts.

We were for a long while undecided whether or not the illustrative material should be accompanied by a short written text. As stated above, we are of the opinion that the Atlas is the primary aid in anatomical instruction, but it neither can nor should be a substitute for the detailed textbook and the spoken word; these are indispensable in preparing the student for what he is to see and in fixing what he has seen firmly in his mind. Students tend to regard a short Atlas text as a source of information sufficient for their needs, but it can never deal exhaustively with all noteworthy and necessary aspects of the subject; we therefore decided finally to publish the present volume without text, but to pay great attention to the labelling of the separate illustrations. The Atlas can thus be used in combination with any textbook of anatomy. On the other hand, for the sake of clarity, care was taken not to overload the separate plates with too many pointers; thus, parts and details which have already been shown are not re-labelled in plates in which they are not important for purposes of instruction. Sketches of the body surface, copied partly from well-known sculptures, have been inserted beside the plates showing the superficial muscular layers; it is hoped that these will help the student and qualified doctor to fit the muscle relief into the body of the patient. X-ray photographs of all important skeletal parts and junctures have been included with the intention of preparing the student for a form of examination which is of vital importance in clinical medicine and only possible on the basis of

a sound knowledge of the normal anatomical picture. We had also planned, and partly completed, some treatment of general morphology, constitutional types, evolution, and the mechanics of joints, also a summarising survey in tabular form of the musculature; but all this had to be omitted in order to keep the volume of handy size and accessible price for the student.

Pending the establishment – we hope at a not too distant date – of a standard anatomical nomenclature, internationally recognised and scientifically and linguistically acceptable, we have made use in the present work of the Jena nomina anatomica; this is the terminology most widely used in the German-speaking countries. The Basle nomenclature has, however, been substituted for a few linguistically incorrect or in our opinion inappropriate terms.

I wish to take this oppportunity of expressing once again may sincere thanks to the publisher, Dr Heinz Karger, who by his energy and expert knowledge, his optimism and kindly, confident encouragement has made possible the wearisome and costly realisation of this work. I wish to thank further my faithful artistic collaborators: Mr Adolph Dressler (junctures), Mr Rolf Muspach (osteology), and above all Mr Robert Schlumpf (myology), who as sculptor with many years' dissecting room experience has in the course of our prolonged collaboration far surpassed his original function as artist and become a knowledgeable and indispensable scientific colleague. invaluable at every stage of the work from the preparation of muscle specimens to the typographical composition of the plates and the correction of proofs. For untiring and invaluable help I owe sincere thanks to my former Viennese assistant, Dr Arthur von Hochstetter (now Fribourg, Switzerland). Nearly all the X-ray photographs I owe to the kindness of Dr Emil A. Zimmer (Basle/Berne). For important suggestions and active help I wish to thank in particular my kind and highly esteemed anatomy instructor, Professor Eugen Ludwig, M.D. (Basle), and also Dr Walter Bejdl (Vienna/ Basle), Dr Leopold Drexler (Vienna), Mr Willy Jäggi of S. Karger Ltd., Dr Walter Krause (Vienna), Dr Kurt S. Ludwig (Basle), Dr Carl Rudolf Pfaltz (Basle), Professor Joseph Tomasch, M.D. (Kingston, Canada; formerly Vienna/Basle), Mr Armin Wolf, dissector (Basle), and Dr Wolfgang Zürcher (Basle).

In deep gratitude I wish finally to pay tribute to the memory of my mother who by her devoted and untiring energy made it possible for me, after the early death of my father, to follow the profession of my choice and thus to bring this Atlas into being.

Basle, Autumn 1953

Gerhard Wolf-Heidegger

J.W. Goethe: 'Xenien.' From the posthumous papers. Weimar Edition, Vol. 5, part 1, p. 275, No. 45, 1893.

第1版前言

多年在校学习,使 Goethe 养成了对书面文字的信任超过自己直觉的习惯,这位年轻的医学生在第一年临床实习前面临一个问题——他曾准确描述为"最困难的"是:他必须学会如何观察。临床实习前期,教师最重要的任务就是让学生学会自由使用解剖标本和解剖图谱。这本图谱的作用正是给那些希望纠正自己解剖学知识的医学生和临床医生,提供尽可能真实和准确的人体组织器官图片。部分图片是根据巴塞尔解剖学会大量收藏的标本绘制,部分标本是专门制作的。为了避免保存过程中造成的残缺,肌肉部分几乎所有图片都是根据新鲜标本绘制的。我们用大量近似的标本,绘制尽可能一般和通用的图片,目的是要避免个体差异性。个别例外的,图中有注释。在所有双侧对称的器官、系统和部分,均选择身体右侧。

我们很长一段时间都不能确定这本图谱是否需要配附简要的文字说明。正如上文所述,我们认为,图谱是用来帮助解剖学教师进行教学的,它不应该成为内容详尽的课本和讲稿的替代品,它是学生进行预习和对要看的标本加深印象不可缺少的。学生喜欢把图谱的解释性文字作为他们所学知识的主要来源。但它并不能对所有重要的、基本的各个方面都讲解的很详细。因此,最终我们决定出版这本没有解释性文字的图谱,但特别注意给每幅图片标注说明。本书可与任何解剖学教材配合使用。另外,为了清晰,我们尽量避免给每幅图片配过多的注释,所有局部和系统以前作过标注的、对于教学意义不大的部分,没有再作注释。插入浅层肌肉图中的人体体表的绘图,部分是临摹著名的雕塑,希望这些可以给学生和资格医师提供方法来缓解病人的肌肉紧张。所有重要的骨关节X线片是为学生学习X线检查方法做准备。X线检查方法是临床医学中极为重要的部分,是掌握正常解剖定位知识仅有的基础。我们的计划已完成了一些,如关节的一般形态学治疗、结构类型、进化演变和机械力学,还有肌肉系统表格形式的概括性调查。但是,为了保证本书的方便使用和学生可接受的价格,这些必须省略。

在编写过程中,我们一直希望在不久的将来,我们现用的Jena 解剖学术语能得到国际公认,并在科学上和语言学上被接受,现Jena 命名法最大范围仅用于德语国家,而Basle 命名法在语言上有一些错误和我们习惯上的不正确的用法已被替代。

借此机会,我再一次对出版商 Heinz Karger 博士表示真诚的感谢,他用自己丰富的专业知识和活动能力,乐观、友好、自信的精神鼓励我,使实现这项乏味且代价高昂的工作成为可能。我更要感谢我忠实的美工 Adolph Dressler 先生(关节部分)和 Rolf Muspach 先生(骨骼部分),同时,我要感谢最重要的 Robert Schlumpf 先生(肌学部分),他是雕刻家,有多年解剖定位的经验,在整个工作过程中,从肌肉标本的制作到图片的排版和校对,使他由最初一名美工成为一个博学而不可缺少的专业伙伴。我的前任助手维也娜的 Arthus von Hochstetter 博士(现在瑞士的 Frigourg)给了我不知疲倦的无私的帮助,我深表感谢。几乎所有的 X 线片都由 Emil A. Zimmer 博士(巴塞尔/伯尔尼)提供。我深深地感谢平易近人的解剖学教授 Eugen Ludwig 博士(巴塞尔)以及Walter Bejdl博士(维也纳/巴塞尔)、Leopold Drexler 博士(维也纳)、S. Karger 有限公司的Willy Jäggi先生、Walter Krause 博士(维也纳)、Kurt S. Ludwig 博士(巴塞尔)、Carl Rudolf Pfaltz 博士(巴塞尔)、Joseph Tomasch 博士(加拿大金斯敦,以前在维也纳/巴塞尔)、解剖工作者 Armin Wolf 先生 (巴塞尔)和 Wolfgang Zürcher 博士(巴塞尔)。

最后,将我深深的感激之情作为对我母亲纪念日的献礼。我父亲早年去世后,母亲用她真挚的爱和不断地鼓励, 使我沿着我选择的职业前进成为可能,本书才得以完成。

> Gerhard Wolf-Heidegger 1953 年秋,于巴塞尔

Concept of the New Version of the Atlas and Illustration Credits

The present 5th edition of the Atlas of Human Anatomy, published in 1954, 1960, and 1972 by Professor Dr. Gerhard Wolf-Heidegger and edited in 1990 by Prof. Dr. H. Frick, Prof. Dr. B. Kummer, and Prof. Dr. R. Putz, has been thoroughly revised in several aspects and supplemented in comparison to the previous four editions.

1. Retained Anatomical Drawings

The classical drawings of the three previous editions prepared by Wolf-Heidegger and his illustrators have been retained, recolored and – in the case of black-and-white drawings – colored didactically in order to make them clear also for beginners. Moreover, most of the figures prepared by Frick, Kummer, and Putz for the 4th edition, were revised and incorporated into the current 5th edition.

2. New Anatomical Pictures

The original illustrations of the previous four editions have been supplemented with about 230 new, mostly topographical drawings. These drawings were realized by six illustrators from Berlin, whom I would like to thank here for their enthusiasm. First of all, Mrs. Gertrud Heymann-Monhof, who possesses the talent to represent anatomical situations both true to detail and in an aesthetically convincing fashion. Mr. Hendrik Jonas drew most of the new illustrations of the locomotor apparatus and the head and succeeded very well in maintaining them in the style of the earlier editions. Mrs. Hildegard Heinen prepared numerous schematized drawings in a didactically clear manner. Other, mostly smaller drawings were done by Mrs. Ilona Tripke; three illustrations whose originals had been lost where painted in water colors by Mrs. Corinna Naujok. Mr. Frank Geisler prepared some new pictures and revised several others of the last edition.

Mrs. Gertrud Heymann-Monhof

Volume 1: Cover picture; Figs. 18, 19, 20, 21, 48b,c, 54b, 59, 60c, 75, 77a,b, 79a, 82, 83, 87a, 134a, 170, 171, 244a, 246a-c, 253, 254 Volume 2: Cover picture; Figs. 79, 95a, 107a, 113, 115b, 118a, 160c, 166, 172, 209a-c, 211b, 227, 243a, 250a,b, 251a,b, 256a-c, 285a, 336a, 342,

·Mr. Hendrik Jonas

352, 382a, 395c

Volume 1: Figs. 90a,b, 99a, 103a, 123b, 125a-c, 127a-c, 131a-d, 137b,c, 138a,b, 155a, 163a, 167c-e, 175b, 176c, 177b, 181e, 189a-c, 191a,b, 193c, 196a,b, 200b-e, 201b-e, 209b, 213b, 220b, 221a,b, 225a,b, 226b, 249b,c, 250a,b, 257a-c, 280b

Volume 2: Figs. 264a,b, 265a, 276b, 277b, 281a,b, 290a,b, 292a, 321a,b, 324b, 325b, 329a,b, 332a,b, 368a, 369a,b, 394a,b, 395a, 399a

Mrs. Hildegard Heinen

Volume 1: Figs. 40b,c, 41b,c, 67a,b, 69b,c, 71c, 73a Volume 2: Figs. 95b,c, 106b, 114c, 122b, 123b, 137a-c, 144a-c, 145a-c, 146a,c, 147a,c, 178b, 212a, 235b,c, 237b, 246b,c, 247a,b, 272a-e, 273a,b,

392a,b,d

Mrs. Ilona Tripke

Volume 1: Figs. 5c, 23b, 24, 63b, 79, 134b, 244b, 248b, 249a

Volume 2: Figs. 45b, 49b, 60a,b, 80a, 81a, 84a,b, 86b, 87b, 88b, 89b, 90b,c, 183c, 184a,b, 199b, 214b-e, 231b, 249, 293a-c, 371d, 379a, 382b, 383b

Mrs. Corinna Naujok

Volume 1: Fig. 252 Volume 2: Figs. 320a,b

Mr. Frank Geisler

Volume 1: Figs. 6a-c, 18, 19, 20, 21 Volume 2: Figs. 27b, 53a,b, 405a

Other anatomical illustrations, that is 3D reconstructions of the coronary arteries (Vol. 2, Figs. 148a–d), were contributed by Prof. Dr. Eckart Fleck and Dr. Helmut Oswald, Deutsches Herzzentrum Berlin. I acknowledge Dr. Martin Jäckel, Universitätsklinik Göttingen, for the laryngoscopic pictures in Volume 2 (Figs. 69a–d) of the present atlas, and Prof. Dr. Dieter Sasse, Universität Basel, for giving us access to the Anatomical Collection of the University of Basel and allowing Hansjörg Stöcklin to photograph the corrosion casts of the pulmonary, hepatic and renal vessels for the present atlas (Vol. 2, Figs. 115a, 119a, 183a, 213c, 214a).

3. Presentation of Imaging Techniques

The present atlas also aimed at giving imaging techniques due attention. Most radiographs, CT¹ and MRl² images published in the previous edition were technically superseded and, thus, replaced by new pictures. Besides conventional radiographs, the editor was anxious to incorporate computed and MRl tomograms of the whole human body and to represent ultrasonography by some selected images. For an anatomist, this could only be achieved by the close collaboration with enthusiastic radiologists: two radiologists from Berlin, Dr. Reimer Andresen and Priv.-Doz. Dr. Dietrich Banzer, Krankenhaus Zehlendorf, Behring-Krankenhaus Berlin. They have both untiringly searched for 'normal' anatomical images, which proved much more difficult and time-consuming than expected. Most MRI tomograms were done by use of a Philips Gyroscan ACS-NT MRI tomograph which had fortunately been installed a few years ago in the Zehlendorf Hospital.

¹ CT = Computed tomography, computed tomogram

² MRI = Magnetic resonance imaging, magnetic resonance image

Nearly 200 radiographs, CT and MRI tomograms as well as ultrasonograms were taken from Dr. Reimer Andresen's and Priv.-Doz. Dr. Dietrich Banzer's 'treasury':

Volume 1: Figs. 3a,b, 7b, 8d, 33b, 36a,b, 37b, 38a,b, 39b, 43, 45d, 51a,b, 55c, 71a,b, 73b, 85b, 87b, 91a,b, 93a,b, 97a,b, 100a,b, 101a,c, 103c, 106b, 120, 121, 123a, 129b, 137a, 139, 144b, 145b, 146b, 147b, 149a—c, 151b, 155b, 156b, 157b, 158b, 159b, 163b, 164b, 166a, 167a, 173a,b, 181f, 185, 188c, 194a,b, 195a—c, 197a,b, 202a—c, 203a—c, 204a,c,e, 205, 208b, 209a, 210a,b, 247a,b, 251, 258c,d, 259b, 260b, 261b, 262b, 263b, 264b, 265b, 269, 272b, 273b, 274b, 275b, 276a—c, 281a,b

Volume 2: Figs. 5, 7, 12b, 26c,d, 41b, 43c, 53c,d, 59a, 61a,b, 71a—c, 72a, 75a, 78, 110a, 118b, 119b, 126, 127, 128a, 129a, 130a, 131a, 156a, 157a, 159a,b, 175a—c, 182a,b, 186b,d, 188b, 189c,d, 194b, 197a,b, 198b, 201a,b, 203b, 208c, 215a—e, 217a,b, 218c, 219, 221, 223b, 224b, 229, 244b, 253a,b, 255a,b, 257a—c, 259a—c, 261a,b, 271b, 278a,b, 287a—c, 305, 336b, 339, 341, 343, 347, 349, 367b, 378b, 385a,b, 387a,b

Moreover, I gratefully acknowledge the following colleagues for other radiographs and ultrasonograms:

Prof. Dr. Eckart Fleck and Dr. Helmut Oswald, Deutsches Herzzentrum Berlin: Volume 2: Figs. 136a-c, 138a-h, 146b,d, 147b,d

Dr. Martin Jäckel, HNO-Klinik, Universität Göttingen: Volume 2: Figs. 9, 11, 395b, 406a-c, 407a-c

Dr. Herbert Kellner, Medizinische Poliklinik, Klinikum Innenstadt, Universität München: Volume 1: Fig. 173c

Priv.-Doz. Dr. Thomas Riebel, Strahlenklinik, Virchow-Klinikum, Humboldt-Universität Berlin: Volume 1: Fig. 177a

Priv.-Doz. Dr. Christof Sohn, Frauenklinik, Universität Heidelberg: Volume 2: Figs. 74a, 238b, 242a-d, 245b,c

Dr. Diethmar Zeidler, dentist, Berlin: Volume 2: Figs. 40e,f

Prof. Dr. Wolfram Zoller, Medizinische Poliklinik, Klinikum Innenstadt, Universität München: Volume 2: Figs. 185a, 186c, 199c, 210e, 218b, 236b,c

I thank Prof. Dr. Gottfried Bogusch, formerly Institut für Anatomie der Freien Universität Berlin, now Humboldt-Universität Berlin, for giving me the permission to inspect the collection of radiographs and tomograms set up by him and to use the following pictures for the atlas:

Volume 1: Figs. 194a, 199a,b, 214b, 222b Volume 2: Figs. 23c, 59b, 73a, 74a, 107a, 158a,b, 160a,b 161a,b, 176b, 213a, 222b, 225b, 278c,d, 301b, 302a,b

4. Anatomical Sections

In order to facilitate the understanding of the radiological sections (CTs and MRIs), the present atlas was designed to enable direct comparison with anatomical sections. While many institutes of anatomy pay attention to sectional anatomy, only few institutes possess complete series of sections of the whole human body. I would like to thank very much Prof. Dr. Martin Herrmann and Mr. Ernst Voigt, Abteilung Anatomie der Universität Ulm, for these illustrations; Mr. Voigt prepared and photographed all the sections.

A total of 90 anatomical sections contributed by Prof. Dr. M. Herrmann, Universität Ulm, have been included in the present new edition of Wolf-Heidegger's atlas:

Volume 1: Figs. 37a, 39a, 60b, 101b,d, 103b, 129a, 144a, 145a, 146a, 147a, 148a,b, 156a, 157a, 158a, 159a, 166b, 167b, 204b,d,f, 208a, 211, 258a,b, 259a, 260a, 261a, 262a, 263a, 264a, 265a, 272a, 273a, 274a, 275a, 277a-c

Volume 2: Figs. 62a,b, 63a,b, 68c, 72b, 73b, 74b, 75b, 128b, 129b, 130b, 131b, 156b, 157b, 158c, 159c, 164, 165, 213b, 220, 222a, 223a, 224a, 225a, 252a,b, 254a,b, 258a-c, 260a,b, 355a,b, 356a,b, 357a,b, 358a,b, 359a,b, 360a,b, 361a,b, 362a,b, 386a,b, 400b,c, 408a,b

5. Organization

The first three editions of Wolf-Heidegger's Atlas of Systematic Human Anatomy were published in three volumes organized in a somewhat modified manner according to the classical division into three parts:

Volume 1: Bones, joints, muscles

Volume 2: Viscera, skin, sensory organs

Volume 3: Nervous system, vascular system

In the 4th edition, prepared by H. Frick, B. Kummer, and R. Putz, the main contents of the previous three volumes were concentrated into one volume and reorganized according to topographical aspects.

The present 5th edition is divided into two volumes; the topographical arrangement of the illustrations has been taken over from the 4th edition, but the chapters have been arranged as follows:

Volume 1: Systemic anatomy, body wall, upper and lower limbs Volume 2: Head and neck, thorax, abdomen, pelvis, central nervous system, eye, and ear.

This arrangement is based on the organization of the dissection courses into two main parts in many institutes of anatomy:

Part 1 – dissection of the locomotor apparatus: Ventral and dorsal body wall, upper and lower limbs

Part 2 – dissection of the viscera: Thorax, abdomen, pelvis, neck, head, brain

This division of the atlas into two volumes should make it easier for students to carry the atlas around during the dissection course and should moreover facilitate future supplementations.

新版图谱及图例采撷说明

此人体解剖学图谱曾于 1954 年、1960 年和 1972 年由 Gerhard Wolf-Heidegger 教授编写出版, 1990 年由 H. Frick 教授、B. Kummer 教授和 R. Putz 教授编写出版。与前四版相比,第 5 版在若干方面进行了较大的修订并且增加了一些新的内容。

一、保留的解剖绘图

在第5版中保留了一些前三版中由 Wolf-Heidegger 等绘制的经典图片。为了方便初学者学习,我们将黑白绘图重新着色,并将第4版中由 Frick、Kummer 和 Putz 绘制的多数图片进行了修订和保留。

二、新增的解剖图片

在新版中我们补充了230张图片,其中多数为局部解剖图片。在此对这六位柏林的绘图者表示感谢。首先是Gertrud Heymann-Monhof 夫人,她对解剖学的深入研究及特有的审美观使人信服。Hendrik Jonas 先生绘制了大量的运动系统及头颅部的图片,并很好地保持了前几版的风格。Hildegard Heinen 绘制了大量示意图,格调简捷明快。另外,Ilona Tripke 夫人绘制了大量的小幅图片,三幅由 Corinna Naujok 绘制的水彩图不幸丢失。Frank Geisler 先生绘制了部分图片并对四版中被保留下的一些图片进行了修订。

Gertrud Heymann-Monhof 女士

- 第 1 卷: 封面;图 18、19、20、21、48b,c、54b、59、60c、75、77a,b、79a、82、83、87a、134a、170、171、244a、246a-c、253、254
- 第2卷: 封面; 图 79、95a、107a、113、115b、118a、160c、166、172、209a-c、211b、227、243a、250a,b、251a,b、256a-c、285a、336a、342、352、382a、395c

Hendrik Jonas 先生

- 第1卷: 图 90a,b、99a、103a、123b、125a-c、127a-c、131a-d、137b,c、138a,b、155a、163a、167c-e、175b、176c、177b、181e、189a-c、191a,b、193c、196a,b、200b-e、201b-e、209b、213b、220b、221a,b、225a,b、225a,b、226b、249b,c、250a,b、257a-c、280b
- 第 2 卷:图 264a,b、265a、276b、277b、281a,b、290a,b、292a、321a,b、324b、325b、329a,b、332a,b、368a、369a,b、394a,b、395a、399a

Hildegard Heinen 女士

- 第1卷: 图 40b,c、41b,c、67a,b、69a,b、71c、73a
- 第2卷: 图 95b,c、106b、114c、122b、123b、137a-c、144a-c、145a-c、146a.c、147a,c、178b、212a、235b,c、237b、246b,c、247a,b、272a-e、273a,b、392a,b,d

Ilona Tripke 女士

- 第 1 卷:图 5c、23b、24、63b、79、134b、244b、248b、249a
- 第2卷: 图 45b、49b、60a,b、80a、81a、84a,b、86b、87b、88b、89b、90b,c、183c、184a,b、199b、214b-e、231b、249、293a-c、371d、379a、382b、383b

Corinna Naujok 女士

第1卷:图252

第2卷:图320a,b

Frank Geisler 先生

第 1 卷:图 6a-c、18、19、20、21

第2卷:图27b、53a,b、405a

其他解剖学图片,如:冠状动脉的三维重建图片(第2卷,图 148a-d)由 Eckart Fleck 和 Helmut Oswald (德国柏林心脏病研究中心)友情提供。喉镜检查图片(第2卷,图 69a-d),由 Matin Jäckel 博士(格廷根医学专科学校)提供。Dieter Sasse 博士协助我们在巴塞尔大学解剖室对肺、肝、肾血管铸型标本由 Hansjörg Stöcklin 进行了拍

照。在此对提供帮助者一并表示感谢。

三、影像学图片

新版图谱中收录了一些常用的影像学图片。以往版本中的多数 X 线、CT 和 MRI 图片在第 5 版中更换为更新的图片。编者尽可能地把 CT 和 MRI 图片结合起来反映人体的正常结构,同时还选择性地附有一些超声波检查图片。这些工作的取得离不开提供热情帮助的放射学专家,他们是柏林的 Reimer Andresen 博士和策伦多夫医院Dietrich Banzer 博士。他们不辞劳苦地收集正常的影像图片,这是一项比预料更加艰巨和耗时的工作。多数 MRI 图片是用策伦多夫医院的 Philips Gyroscan ACSNT 型磁共振机所拍摄。

近200张X线、CT和MRI以及超声图片由Raimer Andresen's 博士和Dietrich Banzer博士提供:

- 第1卷: 图 3a,b、7b、8d、33b、36a,b、37b、38a,b、39b、43、45d、51a,b、55c、71a,b、73b、85b、87b、91a,b、93a,b、97a,b、100a,b、101a,c、103c、106b、120、121、123a、129b、137a、139、144b、145b、146b、147b、149a-c、151b、155b、156b、157b、158b、159b、163b、164b、166a、167a、173a,b、181f、185、188c、194a,b、195a-c、197a,b、202a-c、203a-c、204a,c,e、205、208b、209a、210a,b、247a,b、251、258c,d、259b、260b、261b、262b、263b、264b、265b、269、272b、273b、274b、275b、276a-c、281a,b
- 第2卷: 图 5、7、12b、26c,d、41b、43c、53c,d、59a、61a,b、71a-c、72a、75a、78、110a、118b、119b、126、127、128a、129a、130a、131a、156a、157a、159a,b、175a-c、182a,b、186b,d、188b、189c,d、194b、197a,b、198b、201a,b、203b、208c、215a-e、217a,b、218c、219、221、223b、224b、229、244b、253a,b、255a,b、257a-c、259a-c、261a,b、271b、278a,b、287a-c、305、336b、339、341、343、347、349、367b、378b、385a,b、387a,b

特别感谢以下提供X线和超声图片的合作者:

Eckart Fleck 和 Helmut Oswald 教授(德国柏林心脏研究中心)

第2卷: 图 136a-c、138a-h、146b,d、147b,d

Martin Jckel 博士(格廷根大学 HNO 门诊部)

第2卷: 图9、11、395b、406a-c、407a-c

Herbert Kellner博士(慕尼黑大学后期临床教学中心医学门诊部)

第1卷:图173c

Thomas Riebel 博士(柏林洪堡大学医学部)

第1卷: 图177a

Christof Sohn 博士(海德堡大学妇科)

第2卷: 图 74a、238b、242a-d、245b,c

Diethmar Zeidler博士(柏林, 齿科专家)

第2卷:图40e,f

Wolfram Zoller 博士(慕尼黑大学后期临床教学中心医学门诊部)

第2卷: 185a、186c、199c、210e、218b、236b,c

感谢 Gottfried Bogusch 教授(现柏林洪堡大学,前柏林大学解剖中心)提供了他多年收集的大量珍贵的 X 线和断层图片

第 I 卷: 图 194a、199a,b、214b、222b

第2卷: 图 23c、59b、73a、74a、107a、158a,b、160a,b、161a,b、176b、213a、222b、225b、278c,d、301b、302a,b

四、解剖学断层

为了便于理解,图谱中特意把CT、MRI图片和解剖断面放在一起便于比较。尽管多数解剖室都很注重断层解剖学,但仅少数研究室有完整的人体断层,在此感谢提供断层标本的Martin Herrmann 教授和Ernst Voigt

先生(乌尔姆大学解剖系)。Voigt 先生对标本进行了整理并拍照。

新版沃氏图谱中的90张解剖学断面图片,其具体排序如下:

- 第1卷: 图 37a、39a、60b、101b,d、103b、129a、144a、145a、146a、147a、148a,b、156a、157a、158a、159a、166b、167b、204b,d,f、208a、211、258a,b、259a、260a、261a、262a、263a、264a、265a、272a、273a、274a、275a、277a-c
- 第2卷: 图 62a,b、63a,b、68c、72b、73b、74b、75b、128b、129b、130b、131b、156b、157b、158c、159c、164、165、213b、220、222a、223a、224a、225a、252a,b、254a,b、258a-c、260a,b、355a,b、356a,b、357a,b、358a,b、359a,b、360a,b、361a,b、362a,b、386a,b、400b,c、408a,b

五、编排组织

前三版沃氏系统解剖学图谱按经典的分法由3卷组成:

第1卷:骨,关节,肌肉

第2卷:内脏,皮肤,感觉器官

第3卷:神经系统,脉管系统

由 H. Frick、B. Kummer 和 R. Putz编写的第 4 版把前三版 3 卷中的内容集中到 1 卷并按局部解剖学章节编排组织。

第5版由两卷组成,局部解剖学图片仍按四版组成,但章节组织如下:

第1卷:系统解剖学,体壁,上、下肢

第2卷:头颈,胸,腹,盆,中枢神经系统,眼,耳

这样安排是出于以下方面的考虑,许多解剖室把解剖操作内容分为以下的两下部分:

第1部分 运动系统解剖:腹侧和背侧体壁、上、下肢

第2部分内脏解剖:胸部,腹部,盆部,头,颈,脑

图谱分为两卷,学生在使用时仅需按其解剖内容带1卷图谱,方便携带,同时有利于以后补充增加新的内容。

Information for Users

1. Anatomical Nomenclature

In the present atlas, the designation of anatomical structures follows the most current international anatomical nomenclature, the *Terminologia Anatomica* (TA), in its latest edition of 1998. In this edition of the TA, a list of English terms in common usage was taken up for the first time. The American English variants of these terms (e.g., cecum instead of caecum, esophagus instead of oesophagus, fiber instead of fibre, gray instead of grey, tenia instead of taenia) were used throughout in the present atlas. Many of the synonyms that appear in the TA are listed in the subject index, an arrow referring to the main term given by the TA.

2. Abbreviations

In some cases, the following abbreviations were used:

Singular		Plura	Plural			
a.	=	artery	aa.	=	arteries	
br.	=	branch	brr.	=	branches	
cut.	=	cutaneous				
eth.	=	ethmoidal				
fem.	=	femoral				
inf.	=	inferior				
lig.	=	ligament	ligg.	=	ligaments	
m.	=	muscle	mm.		muscles	
n.	=	nerve	nn.	=	nerves	
bost.	=	posterior				
r.	=	ramus	rr.	=	rami	
rad.	=	radiation				
rt.	=	right				
suþ.		superior				
<i>i</i> .		vene	vv.	=	venes	

3. Brackets

Parentheses () are used to note terms also shown in parentheses in the TA, and for designating varieties, additional information, and explanations. Moreover, in the legends, the relative size of images referred to the originals is given as percentage in parentheses.

Commonly used, but not official TA terms are noted in pointed parentheses ().

Numbers of vertebrae and cranial nerves are placed in square brackets [], as in the TA.

4. Dashes

A dash following (left column) or preceding (right column) an entry indicates that one or several specific entries for the same body part will follow. The generic term is shown above it – usually without a pointer:

Examples	Body of fibula Lateral surface – Anterior border – Medial surface	or	Infraclavicular part of brachial plexus – Lateral cord	
Ir	Medial surface – nterosseous border –		– Medial cord– Posterior cord	

5. Pointers and Dots

If dots on a pointer identify two or more anatomical structures or if several dots appear on a pointer, the various designations are separated by a comma; their order follows that of the arrangement of the anatomical structures in the figure. In both columns, the labelings are arranged according to the following principle: left first, then right; in the case of branched pointers, above first, then below.

6. Notation of Sizes

Unless otherwise indicated in the legends, the anatomical drawings in the present atlas always represent the situation in adults; the percentages given in parentheses in the legends denote the relative size of the image referred to the original. With a view to the considerable biological variations in body size, the percentages have been rounded off and should only be considered as indicative.

7. MRI Tomograms

Enhancement of the tissue-specific relaxation parameters T_1 and T_2 in MRI tomograms is noted in the legends as T_1 or T_2 weighting. T_1 - and T_2 -weighted tomograms represent the various structures of the human body in different brightnesses and different contrasts. Thus, in T_1 -weighted tomograms, liquid-filled spaces are shown black, muscles dark, and the bone marrow white. In T_2 -weighted tomograms, liquid-filled spaces appear white, bones dark, and muscles light gray.

8. Tomograms and Anatomical Sections

In current clinical practice, transverse computed and magnetic resonance imaging tomograms of the human body are always viewed from caudal, that is from below and looking up. This is the reason why, in the present atlas, the anatomical sections — with the

few exceptions noted in the legends — are also viewed from caudal, that is from the feet of the patient. While this view of the tomograms and sections is doubtless difficult for beginners, it does correspond to the physician's perspective when he approaches the supine patient from the foot end of the patient's bed. The accompanying figure illustrates this view from caudal (bottom) to cranial (top) and makes clear that in this perspective the organs located on the patient's right (R) side appear on the left in the figure and the organs located on the left (L) side appear on the right side of the figure.



(Painted by G. Heymann-Monhof, Berlin)

使用指南

1.解剖学名词

新版图谱中解剖学名词以1998年的最新版的国际解剖学术语(the Terminologia Anatomica,TA)为标准。同时第一次采用许多通用的英文术语,其中包括美语中一些名词的变体拼法(如盲肠 cecum 代替 caecum、食管 esophagus 代替 oesophagus、纤维 fiber 代替 fibre、灰色 gray 代替 grey、带 tenia 替代 taenia)。许多出现在国际解剖学术语中的同义词列在名词检索目录上,带箭头的为 TA 给出的主要术语。

2.缩略词表

以下缩略词出现在部分章节中:

Singular (单数)			Plura]	(复数)		
a.	=	artery	(动脉)	аа.	=	arteries	
br.	=	branch	(分支)	brr.	=	branches	
cut.	=	cutaneous	(皮肤的)				
eth.	=	ethmoidal	(筛骨的)				
fem.	=	femoral	(股骨的)				
inf.	=	inferior	(下的)				
lig.		ligament	(韧带)	ligg.	=	ligaments	
m.	=			mm.	=	muscles	
n.	=	nerve	(神经)	nn.	=	nerves	
þost.	=	posterior	(后面的)				
r.	=	ramus	(支)	rr.	=	rami	
rad.	=	radiation	(放射)				
rt.	=	right	(右侧的)				
sup.		superior	(上的)				
v.	=	•	(静脉)	VV.	=	venes	

3.括号

圆括号()内的术语表示其在TA中也是位于括号内的,其他情况用来表示附加的信息和解释。另外,图释中()内的百分比表示图片与实物的相对比例。

尖括号 < > 内表示经常用到但不是正式TA术语的一些名词。

方括号[]内数字表示椎骨,脑神经的数目。

4.短横线

词条后面(左侧列)或前面(右侧列)的短线代表着某个相 同的躯体部位,它与短线前或后的一个或数个特殊词条限制 Examples Body of fibula (腓骨体) or Lateral surface — (外側面) Anterior border — (內側面) Medial surface — (內側面) Interosseous border — (骨间嵴) Infaction part of brachial plexus(臂丛锁骨下部) — Lateral cord (外侧束) — Medial cord (內侧束) — Posterior cord (后束)

或被限制,形成新的名词。这一相同部位的术语位于它们的上方,通常不特别标明。

5.标注和圆点

如果在一个标注中出现一个或多个圆点(用来隔开相同的一个或几个解剖结构),多种图解间使用逗号隔开。它们的顺序以图片中解剖结构的排列为依据。在两列标注中,标注的名词遵照以下原则:先左后右;在分支标注中先上后下。

6.比例大小的表示

除非在图释中注明,图谱中的图片都来自成人。图解中圆括号内的数字表示图片与原器官比较的相对大小。尽管 比例的计算相当精确,但考虑到存在较多变异,图释中的比例仅供参考。

7.MRI 成像

MRI中组织特异性释放参数T1和T2加强在图释中以T1加权,T2加权表示。T1和T2加权代表在不同亮度和对比度下人体的不同结构。于是,在T1加权成像中,液体区呈黑色,肌肉暗灰色,骨髓为白色。而在T2加权成像中,液体区呈白色,骨为灰色,肌肉为亮灰色。

8.影像和解剖断层

在目前的临床工作中, CT和MRI图片都是从尾侧向颅侧观察的,即从下往上看。这也就是图谱中多数解剖断面也是从下往上观察即从病人的脚向头部观察的原因,个别图片例外。这无疑给初学者增加了困难,但它却适合临床医生检查病人的习惯。右边的附图即表示出临床医生经常面对病人的观察角度,即从尾侧向颅侧观察。附图同时清楚地标明病人器官的左右。

译者的话

为适应当今高等医药院校双语教学的发展需要,帮助医药院校师生进一步提高英文阅读水平,我们选择并翻译了此书,希望能为广大医药院校,学生提供一本近乎原版的解剖学双语教材。

本书是当今世界上最权威的人体解剖学图谱之一,先后被翻译成英语、意大利语、西班牙语等多个语种的版本,并广泛被许多西方国家医学院校师生学习使用,书中所有解剖学名词及术语均以1998年新版的国际解剖学名词(the Terminologia Anatomica, TA)为标准。其图片质量之高为国内所有人体解剖学彩色图谱所不及,非常地道的英语表达完美无缺,为了向读者展示此书的英文版原貌,我们把中文加在英文原版的字里行间,个别位置稍有偏离请读者见谅。做了很多的翻译版图书,我们也偿试着一种新的出版方式,使读者有语言选择性地阅读,同时能更准确地领悟英文所表达的中文内涵。

本书的出版需特别感谢两位解剖学家——一位是前西安医科大学前校长、解剖学教授、博士生导师任惠民老师;另一位是中南大学湘雅医学院基础医学院院长、解剖学教授、博士生导师曾志成老师。他们在百忙之中对本书的翻译文字及本书所有图片进行了认真的审阅。

由于译者水平有限,不妥之处在所难免,请读者在使用过程中多提宝贵意见,以便及时更正。

谨以此书献给 ——

正在学习医学的人们

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