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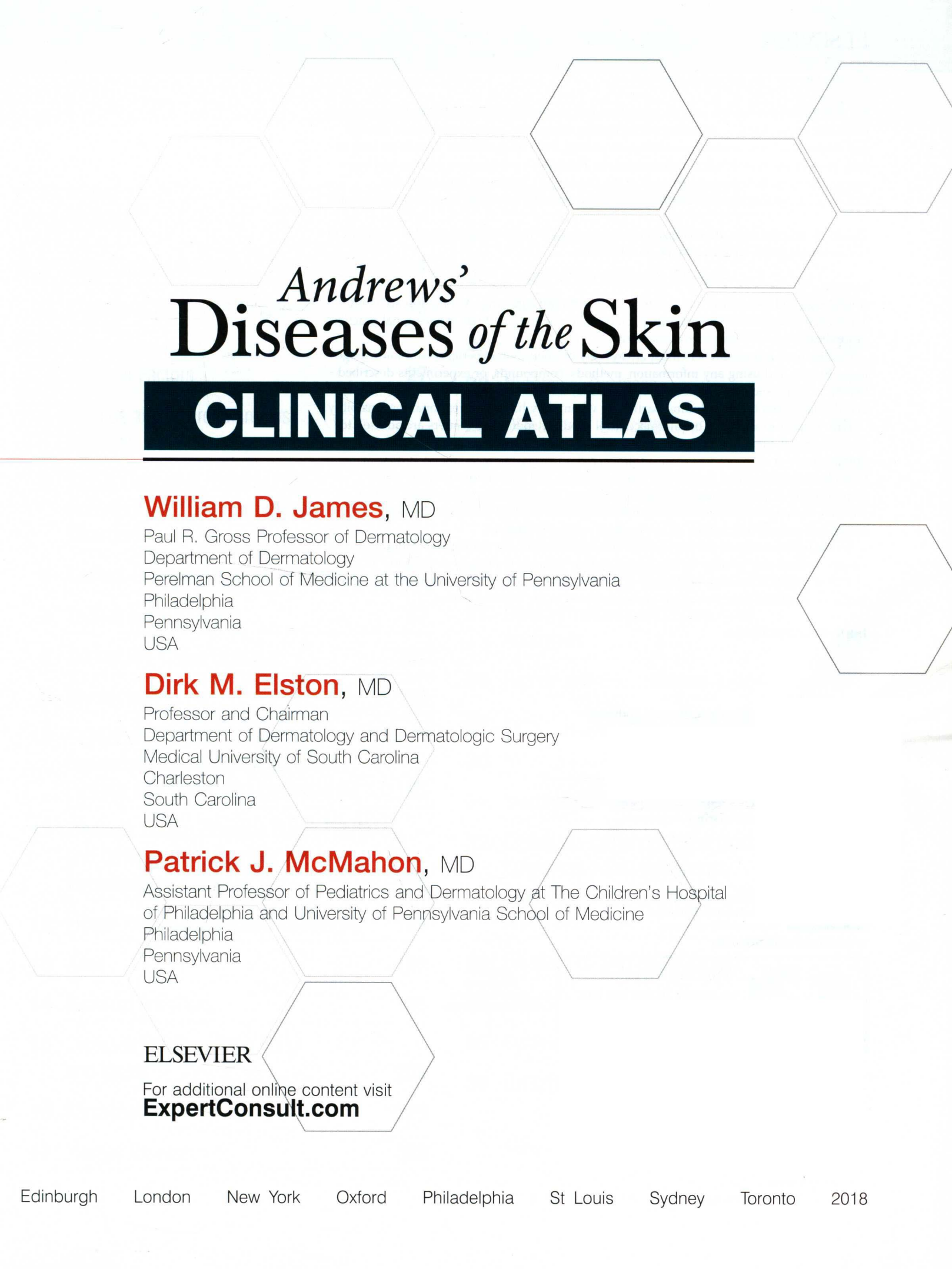
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Andrews' Diseases *of the* Skin **CLINICAL ATLAS**

William D. James • Dirk M. Elston • Patrick J. McMahon



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Andrews' **Diseases of the Skin**

CLINICAL ATLAS

William D. James, MD

Paul R. Gross Professor of Dermatology
Department of Dermatology
Perelman School of Medicine at the University of Pennsylvania
Philadelphia
Pennsylvania
USA

Dirk M. Elston, MD

Professor and Chairman
Department of Dermatology and Dermatologic Surgery
Medical University of South Carolina
Charleston
South Carolina
USA

Patrick J. McMahon, MD

Assistant Professor of Pediatrics and Dermatology at The Children's Hospital
of Philadelphia and University of Pennsylvania School of Medicine
Philadelphia
Pennsylvania
USA

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Executive Content Strategist: Russell Gabbedy
Content Development Specialist: Carole McMurray
Project Manager: Julie Taylor
Design: Christian Bilbow
Illustration Manager: Karen Giacomucci
Illustrator: Graphic World
Marketing Manager: Kristin Koehler

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Andrews' Diseases of the Skin
Clinical Atlas

PREFACE

It is our pleasure to bring to you this atlas of skin disorders. We are hopeful that by seeing this wide array of images you may better recognize and diagnose skin conditions in your own patients. If our efforts result in a better outcome of one patient, then this was worthwhile. Our atlas is an accompanying volume to *Andrews' Diseases of the Skin*. The chapters and entities follow the organization of our *Andrews'* text, making explanatory text unnecessary, allowing you to simply enjoy the superior photographs in an uncluttered fashion.

Dermatologic diagnostic abilities are learned through repetitive exposures to patient presentations. The present volume of over 3000 pictures, combined with the main textbook, will be an outstanding resource to learn the depth and breadth of our specialty.

The three authors have benefitted by spending a combined 50 years in academic medicine, taking photographs along the journey. Additionally the resources of our institutions and many friends made this a book that allows a stunning array and variety of presentations to be represented. Bill James recognizes Richard Odom, MD, my teaching chief, who allowed myself and fellow resident Robert Horn to make copies of his best slides. Tim Berger has shared photographs from his experiences at the University of California at San Francisco. The faculty and residents at both Walter Reed Army Medical Center and the University of Pennsylvania have also generously shared their expertise. Dirk thanks those members of Brooke Army Medical Center who have contributed to the image collection in San Antonio, as well as the faculty and residents at the Rutgers Robert Wood Johnson School of Medicine. Finally, Pat wishes to gratefully recognize that the considerable resources of Drs. Paul Honig and Walter Tunnessen's personal collections were made fully available. Additionally, the combined image database of the current pediatric dermatology faculty at The Children's Hospital of Philadelphia (Albert Yan, MD; James Treat, MD; Leslie Castelo, MD; Melinda Jen, MD; and Marissa Perman, MD) was utilized to enhance this atlas considerably. Finally, James Fitzpatrick, MD, also generously shared photographs taken by the faculty and staff of Fitzsimmons Army Medical Center. We call out all of these wonderful people as they are not recognized individually in most of the photographs. In some cases where a specific photograph was obtained from a specific faculty or resident, their names appear in a "Courtesy" line under the image.

You will find over 50 individuals recognized in the figure legends. These range from institutions in Brazil and Japan, to individuals in Singapore, India, and the Philippines, to the National Institutes of Health, the University of Pennsylvania School of Dental Medicine, and faculty from a variety of

academic centers around the country. Several individuals deserve special mention: Steven Binnick, MD, is a superb dermatologist practicing in Plymouth Meeting, Pennsylvania. When Bill asked if he would make available some of his excellent photographs for this atlas, he simply donated his collection and was happy they would be used to educate others. Curt Samlaska, MD, trained at Walter Reed with Bill. He is an outstanding dermatologic photographer and contributed many photos of his patients from Hawaii and his practice in Henderson, Nevada. The late Don Adler, MD, was a friend who shared with Bill many photos over the years. Some of his superior images are part of this work. Shyam Verma, MD, a close friend from India, shared many of his wonderful images from his private practice. Debabrata Bandyopadhyay, MD, also provided special pictures of rare conditions from the Medical College in Kolkata. Scott Norton, MD, shared many photographs from his wide experience at Fitzsimmons, Walter Reed, and the Children's National Health System. Len Sperling, MD, has always generously contributed images of hair disorders, both for this volume and for prior *Andrews'* textbooks.

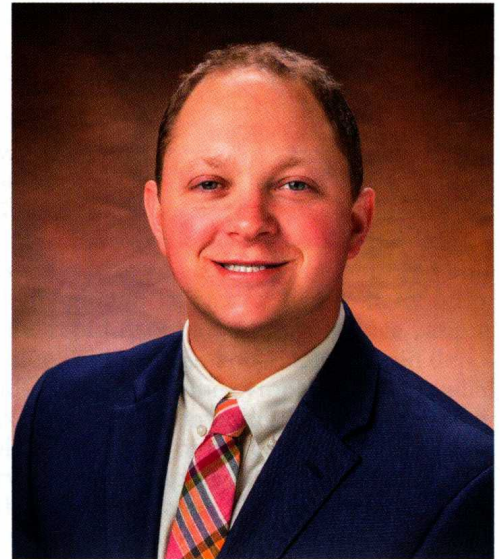
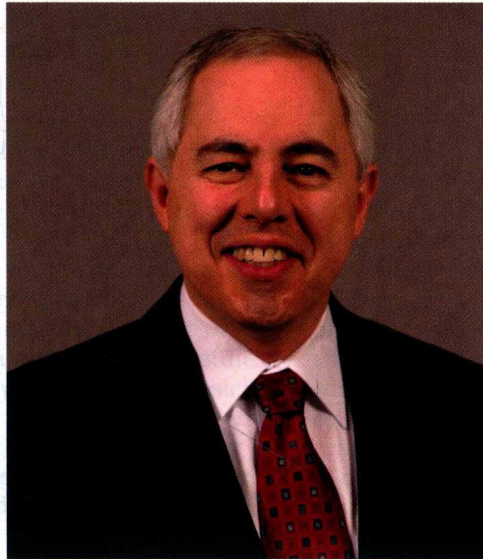
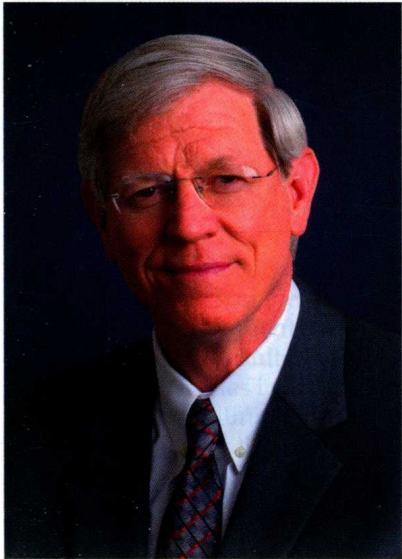
This wide array of altruistic physicians and many others individually recognized in the atlas under their photos allows us to demonstrate entities rarely or never seen in the United States. More importantly is the full spectrum of ages, skin types, subtypes of diseases, morphologies, and highly representative classic examples that were available for us to choose only the best 3000+ images that make up this volume.

Bill, Dirk, and Pat also want to highlight the steadfast, expert assistance of Barbara Lang in bringing this volume to fruition. She made the work move along in an organized manner, paying attention to all the details along the way. The images were expertly handled by Elsevier through Graphic World, as many photos were in slide form and needed scanning. Mark Lane, Patty Bassman, and Cindy Geiss deserve special recognition, and Karen Giacomucci with Elsevier in Philadelphia assumed overall responsibility for coordinating this aspect of the work. Carole McMurray and Julie Taylor from the British offices of Elsevier assumed primary roles in the compilation of the book. Russell Gabbedy has been our now-constant companion from Elsevier in not only enabling this atlas to be supported, but also working with us on prior editions of the main text *Andrews' Diseases of the Skin*.

No words of thanks could be complete without acknowledging the personal sacrifices of our families in allowing us the opportunity to pursue our professional dreams. Those include all of the individuals listed in the dedication.

Bill James, Dirk Elston and Patrick McMahon

DEDICATION



Bill James, Dirk Elston, Patrick McMahon

To my loving family:

My wife Ann, son Dan, daughter Becca, daughter-in-law Wynn, grandsons Declan and Driscoll, and sister Judy and her husband Cal.

You have given me a wonderful life!

Bill James

To my wife Kathy and my children, Carly and Nate. You make the world a wonderful place.

Dirk Elston

To my amazing wife, Kate, and wonderful children, Bridget, Brendan, Colin, and Molly.

Thank you for the love, the laughs, and the support.

You fill every day with joy!

Patrick McMahon

To all of our past patients, we hope this work fulfills your desire to help future sufferers of skin disease to recover more rapidly through early recognition of their condition.

Bill, Dirk, and Pat

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Structure and Function

1

The diagnosis of skin disease is based on color, morphology, and distribution of cutaneous lesions. The structure of the skin and associated appendages relates directly to these characteristics.

Folliculitis presents with papules or pustules. Follicular accentuation is characteristic of any eruption in darker-skinned races. In patients with miliaria, involvement of the sweat gland ostia results in erythematous papules, pustules, or superficial vesicles in areas of heavy sweating. The vesicles of miliaria crystallina are irregular in shape because the stratum corneum fails to impede the spread of the blister in random directions. This is in stark contrast to spongiotic and subepidermal blisters, which are distinctly round—as in acute dyshidrotic eczema or bullous pemphigoid.

The color of a cutaneous eruption relates to various pigments. Brown pigments include melanin, lipofuscin, and

hemosiderin. Brown pigments located deeper in the dermis impart a blue hue because of diffraction of light. This is evident in blue nevi as a result of deep melanin and as a result of lipofuscin present in the sweat within nodular hidradenomas. Red pigment relates to oxygenated hemoglobin and blue to deoxygenated hemoglobin. Dilatation or proliferation of blood vessels and the rapidity of blood flow produce various shades of red and blue. Yellow pigments relate to lipid deposition or carotenoids dissolved in the cytoplasm of epithelial cells and histiocytes. In granulomatous disease, diascopy removes the visible appearance of oxygenated hemoglobin, allowing the observer to see the apple jelly yellow appearance of carotenoids within the cytoplasm. This section of the atlas will focus on the structure of the skin and how that structure translates to clinical manifestations of disease.

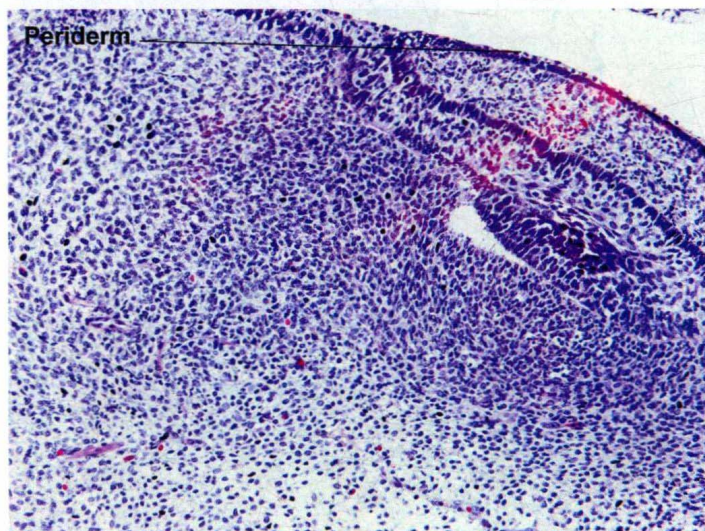


Fig. 1.1 In early fetal life, a cuboidal periderm is present, rather than an epidermis. Fetal skin, H&E $\times 40$.

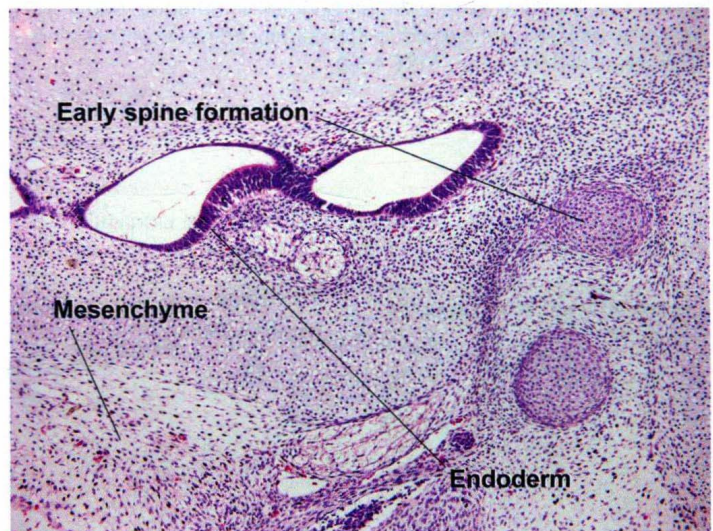


Fig. 1.2 In early fetal life, the spine is composed of cartilage, and mesenchyme is present rather than a dermis. Mesenchyme heals without scar formation. Once dermis forms, scars will occur after injury. Fetal skin, H&E $\times 40$.



Fig. 1.3 Skin in young children is characterized by small adnexal structures and fine dermal collagen bundles that stain deep red in contrast to the thick, pink collagen bundles of an adult. Many plump fibroblasts are present in the dermis, actively synthesizing collagen. Childhood skin, H&E $\times 20$.

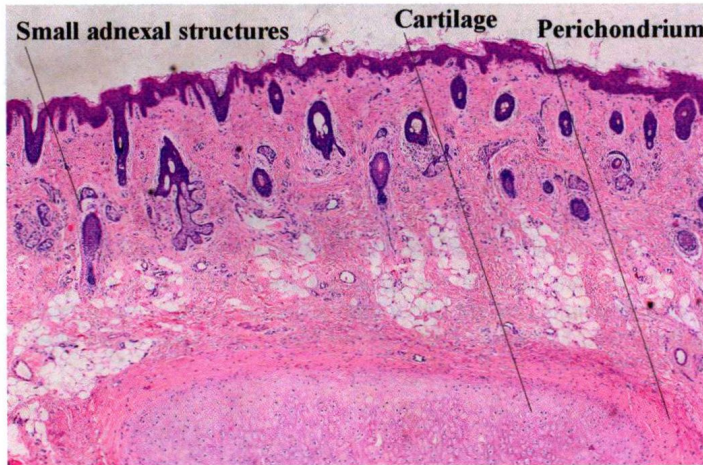


Fig. 1.5 Skin of the ear demonstrates small adnexal structures with an elastic cartilage surrounded by a red perichondrium. Ear skin, H&E $\times 20$.

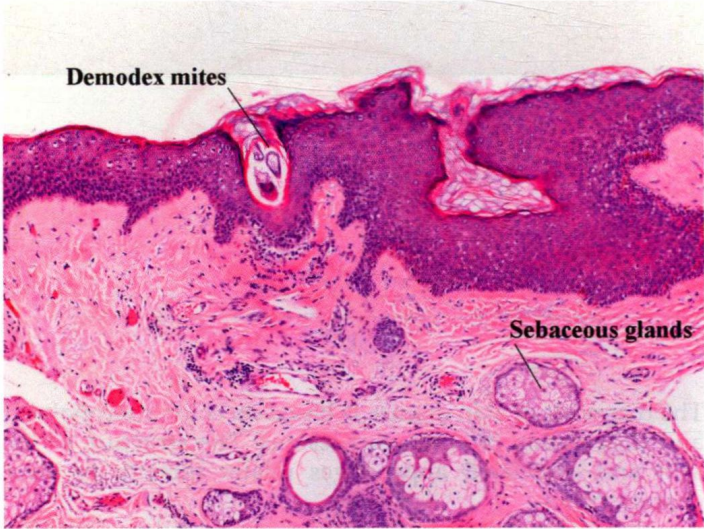


Fig. 1.4 Facial skin is characterized by prominent sebaceous follicles, often containing *Demodex* mites. Facial skin, H&E $\times 40$.



Fig. 1.6 The structure of the ear canal is similar to other parts of the ear, except for the presence of ceruminous glands, which represent modified apocrine glands. Ear canal skin, H&E $\times 20$.

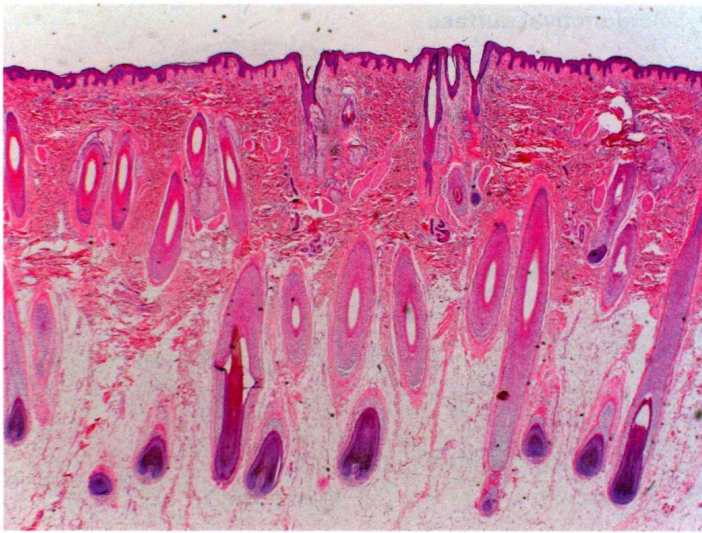


Fig. 1.7 Scalp skin demonstrates many terminal hair follicles. The inferior segment of each follicle sits within the subcutaneous fat. Scalp skin, H&E $\times 40$.



Fig. 1.8 Axillary skin is rugose and demonstrates large apocrine glands. Axillary skin, H&E $\times 40$.

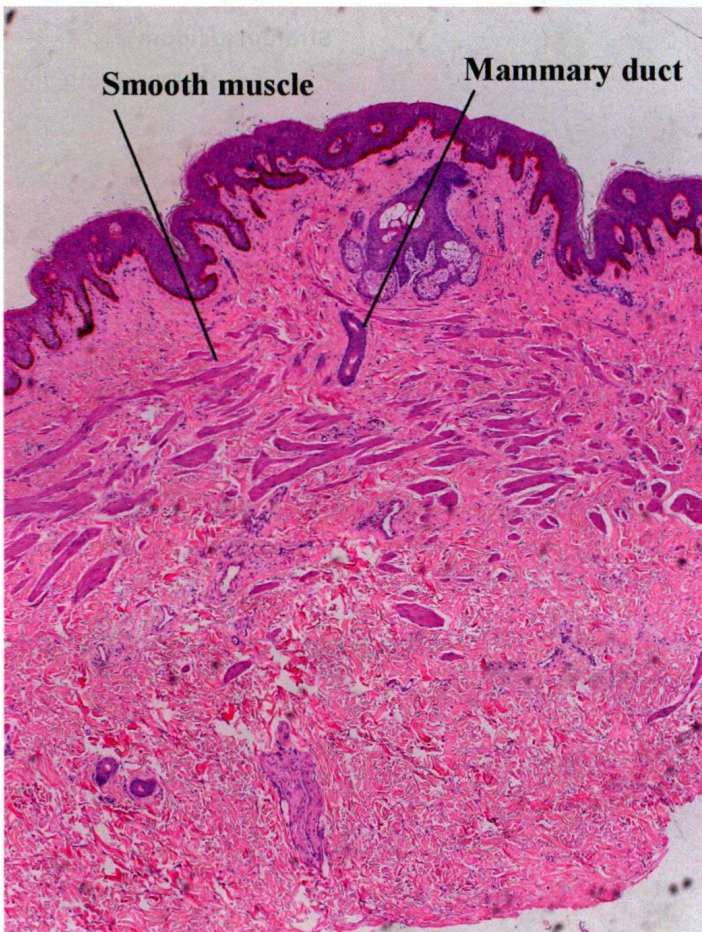


Fig. 1.9 Breast skin demonstrates numerous smooth muscle bundles. Breast skin, H&E $\times 20$.

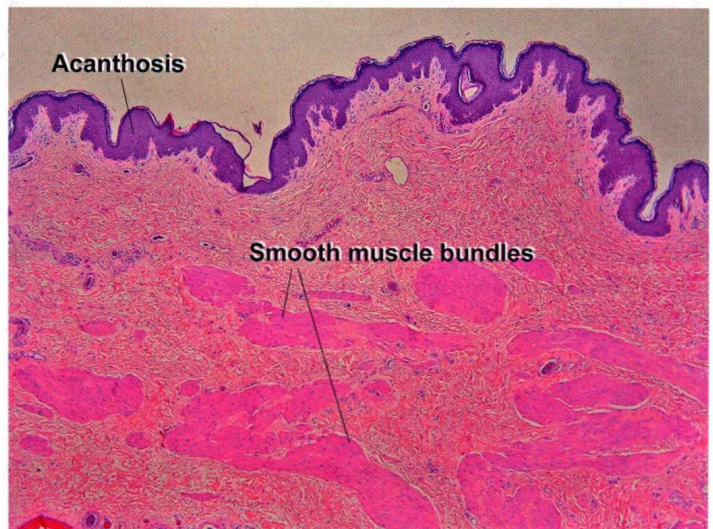


Fig. 1.10 Nipple skin demonstrates smaller smooth muscle bundles. The mammary duct resembles a large sweat duct. Breast skin, H&E $\times 20$.



Fig. 1.11 The secretory portion of mammary glands demonstrates columnar epithelium forming complex lumens. Breast skin, H&E $\times 100$.

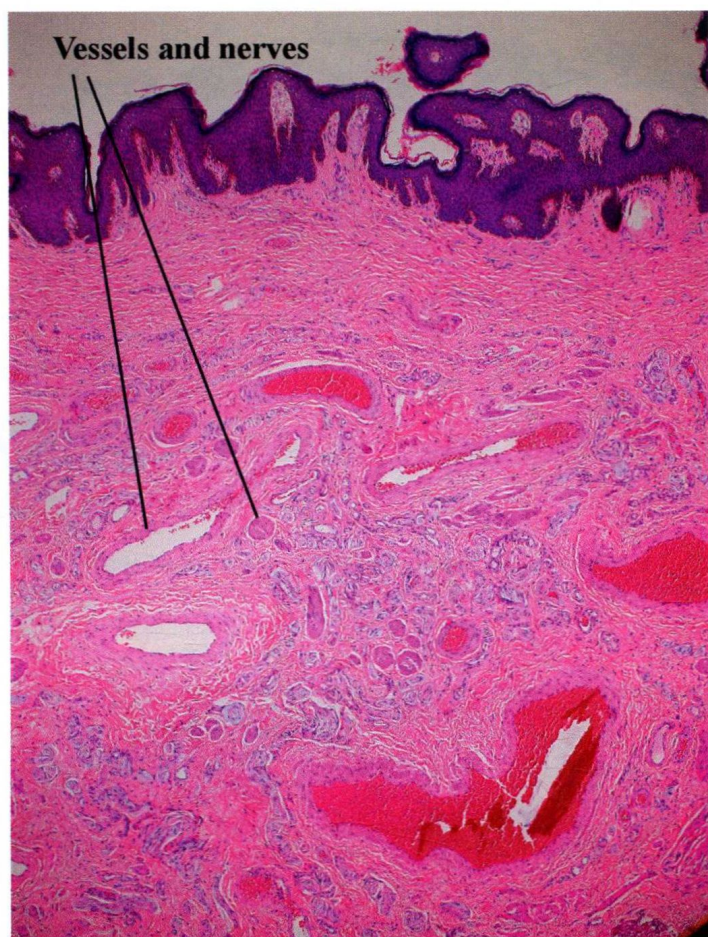


Fig. 1.12 Prepuce demonstrates a rugose appearance with many smooth muscle fascicles and high vascularity. Prepuce, H&E $\times 20$.

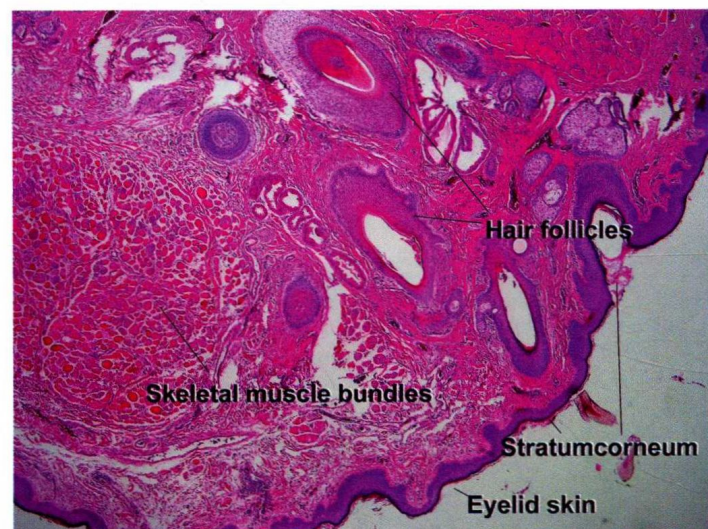


Fig. 1.14 The lid margin; on the cutaneous surface of the lid, a layer of striated muscle is present below the epidermis, H&E $\times 10$.

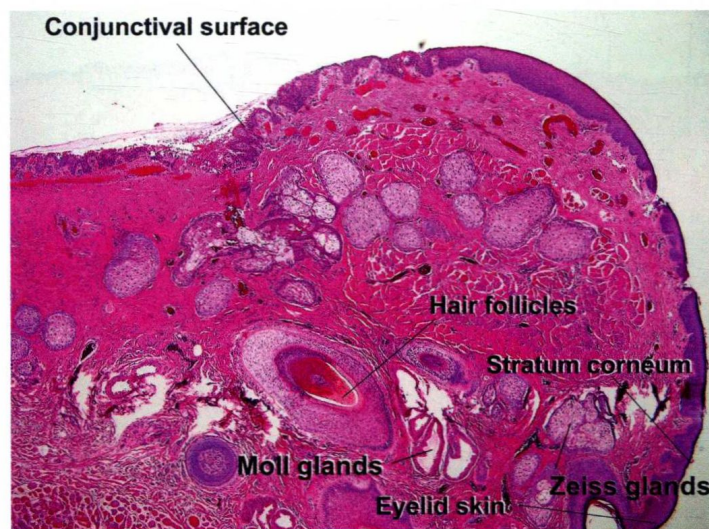


Fig. 1.13 Eyelid anatomy, below the conjunctiva; the densely fibrous tarsal plate contains sebaceous glands (meibomian glands), H&E $\times 100$.

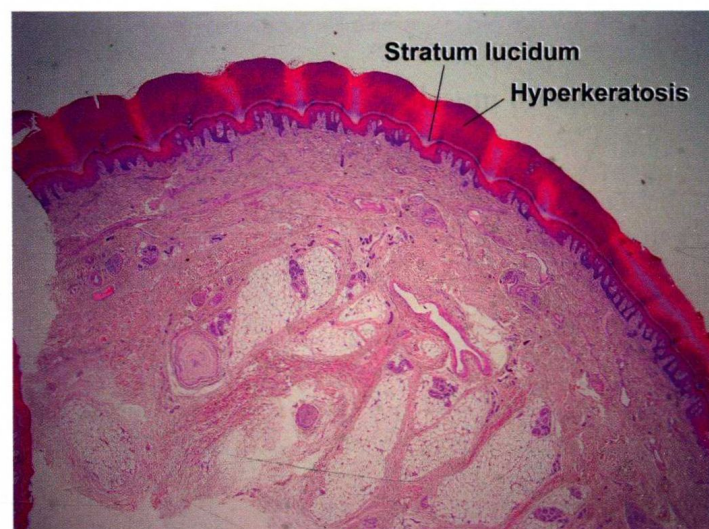


Fig. 1.15 Volar skin demonstrates a thick stratum corneum and lack of hair follicles, low power, H&E $\times 40$.

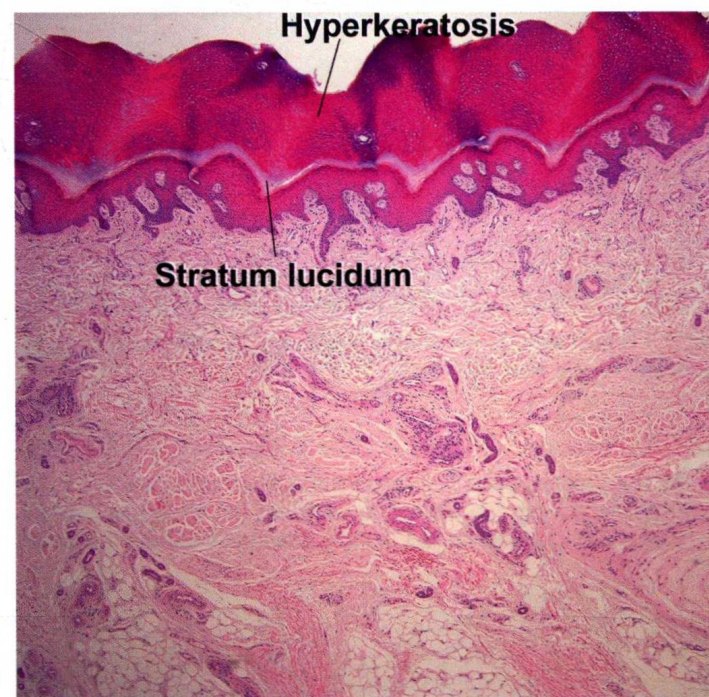


Fig. 1.16 Volar skin demonstrating a thick corneum and dermis, H&E $\times 100$.

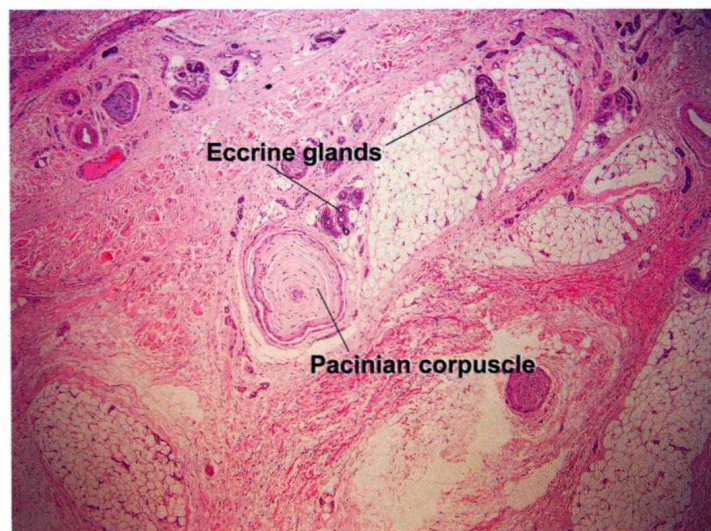


Fig. 1.17 Volar skin, with deep tissue demonstrating Pacinian corpuscles, H&E $\times 100$.

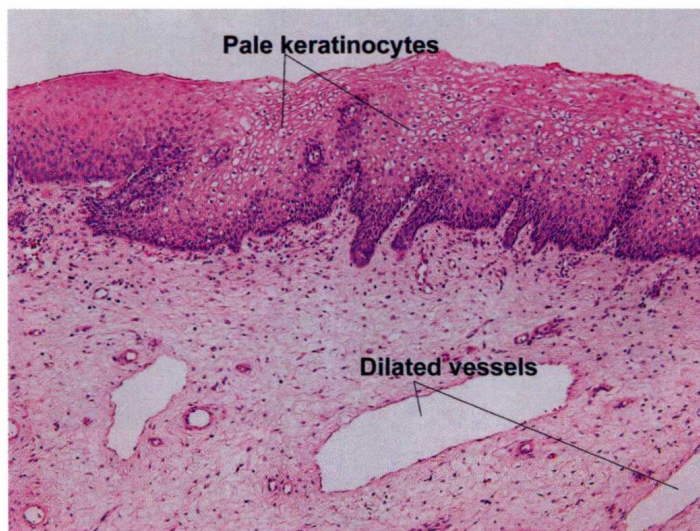


Fig. 1.18 Mucosal surface demonstrating nonkeratinizing epithelium and submucosa, H&E $\times 200$.

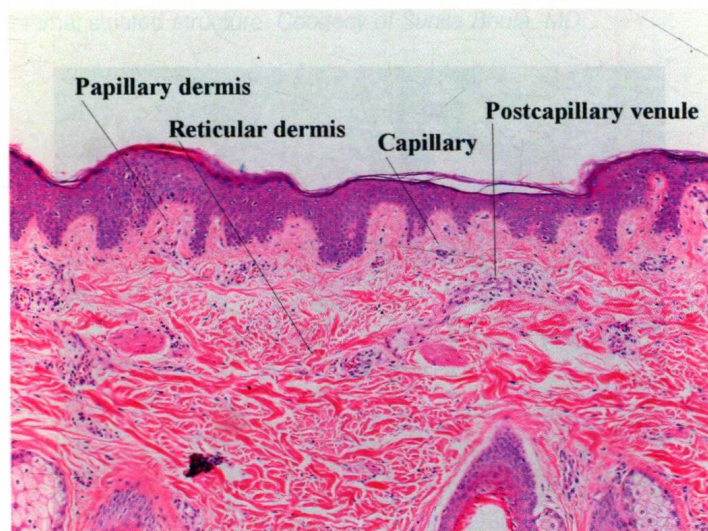


Fig. 1.19 Below the epidermis, the papillary dermis is composed of fine, nonbundled collagen. Capillaries are present within the papillary dermis, and the postcapillary venule sits at the junction of the papillary and reticular dermis. H&E $\times 40$.

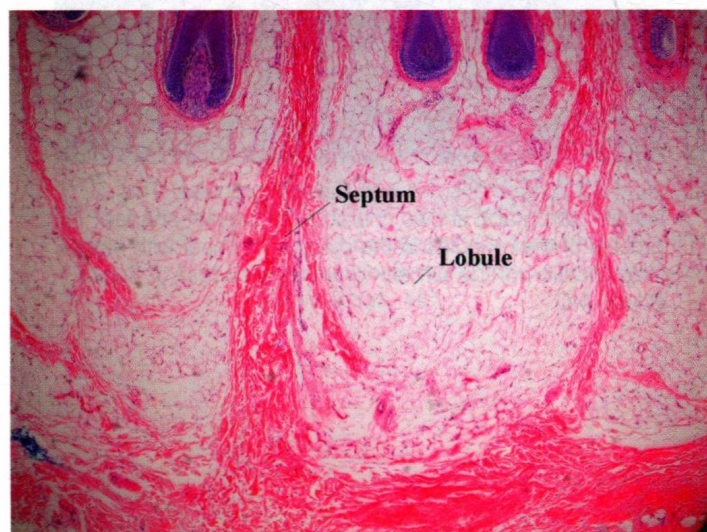


Fig. 1.20 The lobules of the subcutaneous fat are separated by fibrous septae. H&E $\times 40$.

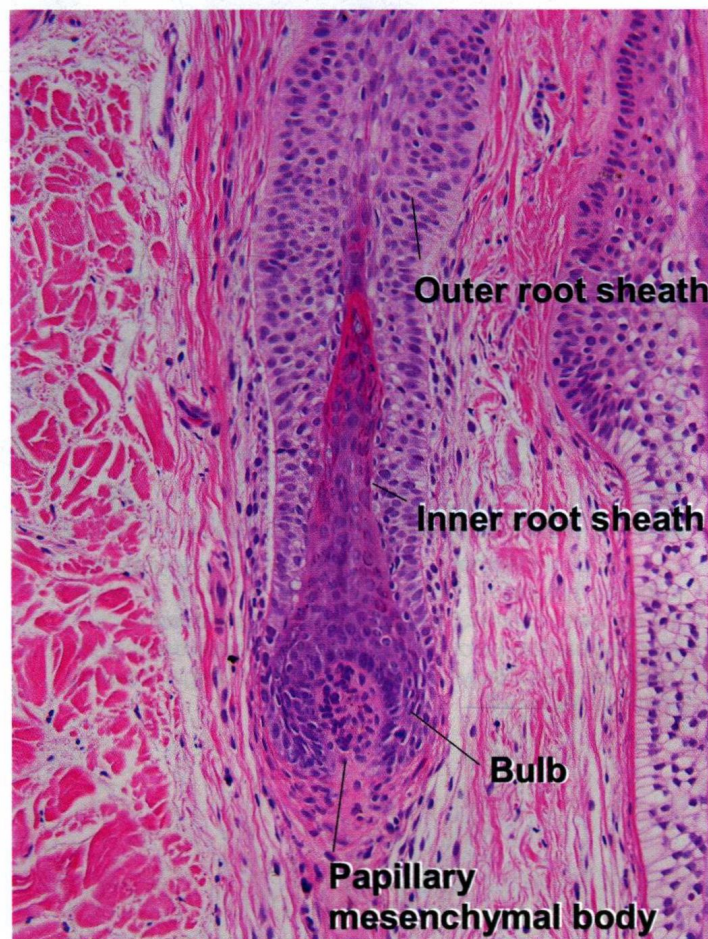


Fig. 1.21 Hair anatomy, vertical, H&E $\times 200$.



Fig. 1.22 In the inferior segment, the hair bulb gives rise to the inner and outer root sheath, H&E $\times 200$.



Fig. 1.23 Hair anatomy, transverse, H&E $\times 200$.

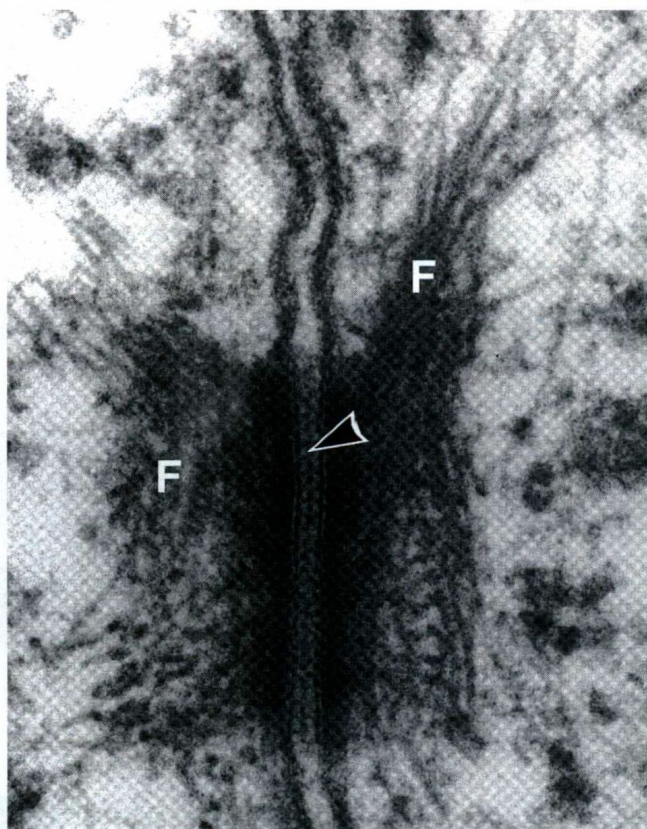


Fig. 1.24 Desmosome: A classic desmosome showing the following features: (i) Uniform gap of 20 to 30 nm between the apposed trilaminar plasma membranes with an intermediate line (arrow) in this gap. (ii) Sharply delineated dense plaques into which tonofibrils (F) converge. *Courtesy of Sunita Bhuta, MD.*

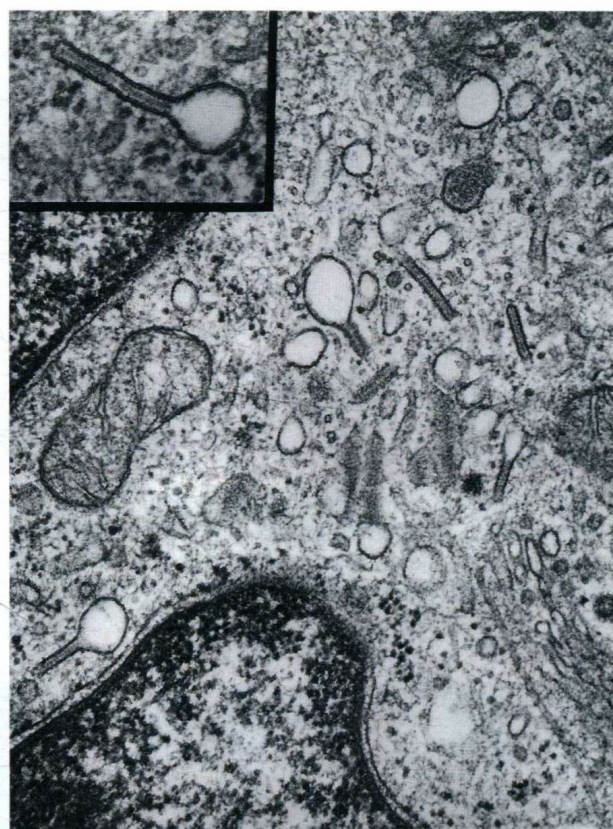


Fig. 1.25 Langerhans cell with Birbeck granules. This electromicrograph shows characteristic racket-shaped profiles of the granules in the cytoplasm (inset with higher magnification of the Birbeck granule). *Courtesy of Sunita Bhuta, MD.*

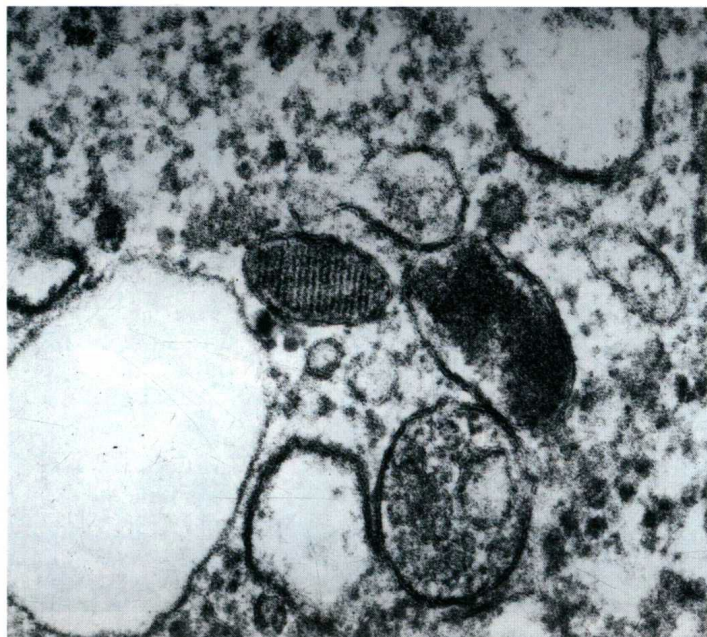


Fig. 1.26 Premelanosome: Solitary melanosome with characteristic internal striated structure. *Courtesy of Sunita Bhuta, MD.*



Fig. 1.27 Tonofibrils: Tonofibrils (intermediate filaments) lying free in the cytoplasm of a squamous cell. *Courtesy of Sunita Bhuta, MD.*

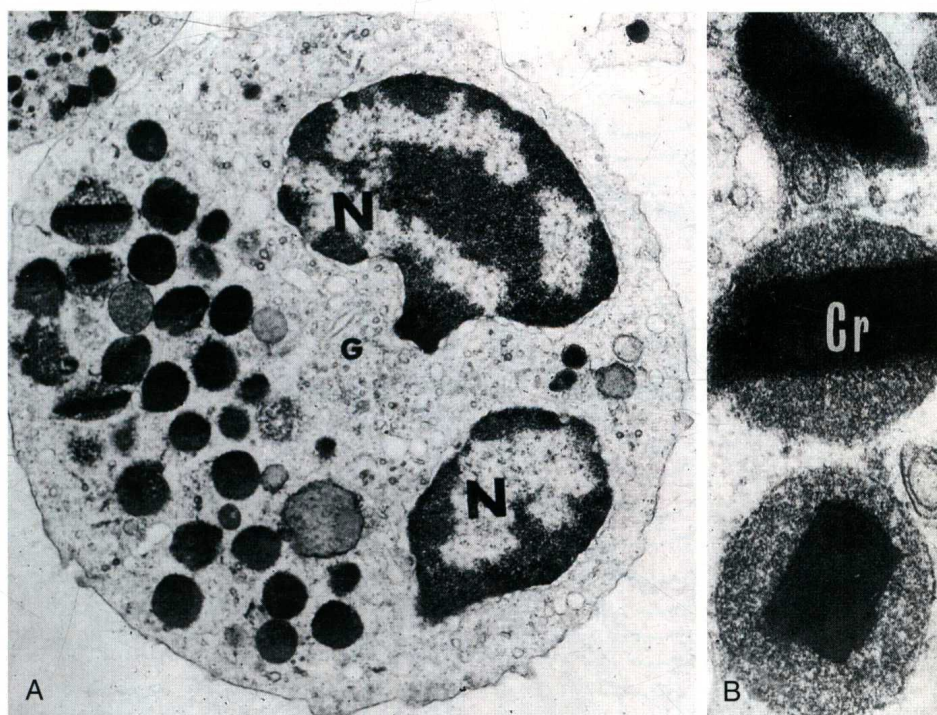


Fig. 1.28 Eosinophil: (A) Binucleate (N) with intracytoplasmic specific granules. (B) Specific granules have a finely granular matrix and a crystalline core. *Courtesy of Sunita Bhuta, MD.*



Fig. 1.29 Mast cell: Mast cell with numerous electron-dense granules. The inset shows internal structure of granules with membranous whorls (scrolls). *Courtesy of Sunita Bhuta, MD.*

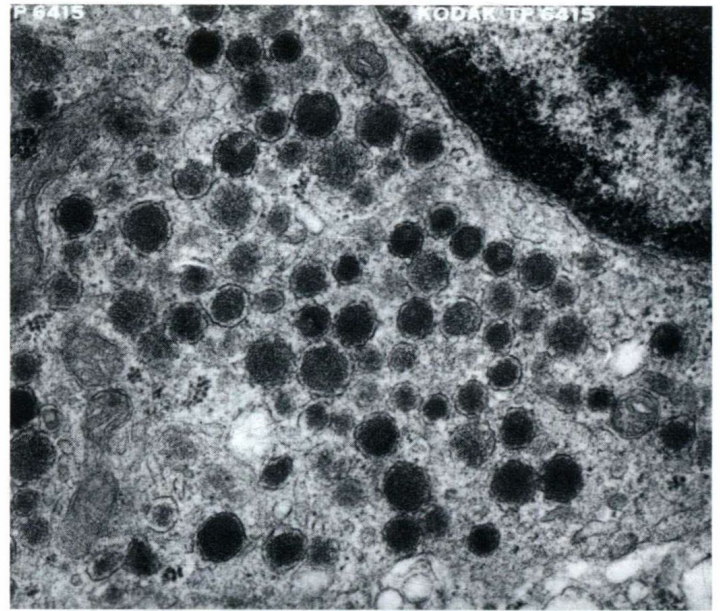


Fig. 1.30 Merkel cell: Merkel cell with intracytoplasmic membrane bound, electron-dense granules with a halo (neurosecretory granules). *Courtesy of Sunita Bhuta, MD.*

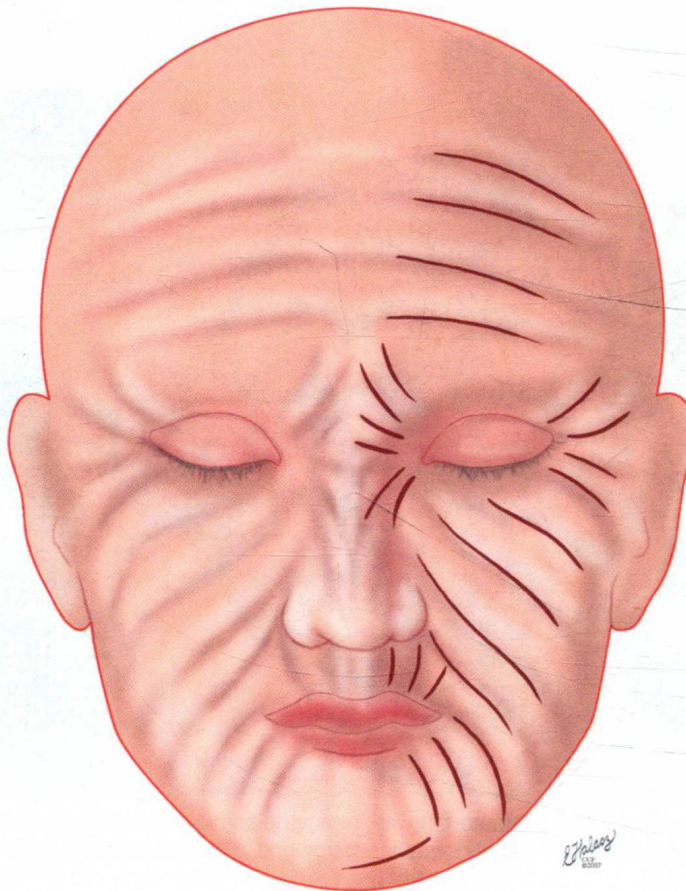


Fig. 1.31 Skin tension lines relate to creases visible in older skin. They relate to passive skin tension, as well as active contraction of superficial muscular aponeurotic system muscle. Optimal surgical results can be achieved by aligning incisions along these lines.

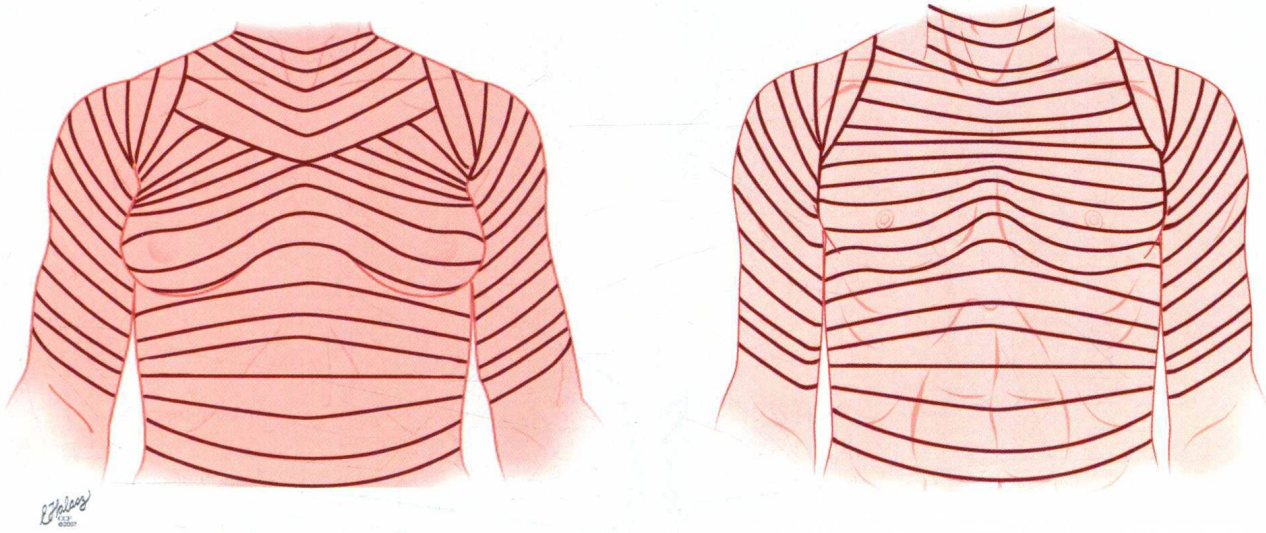


Fig. 1.32 Skin tension lines on the trunk.

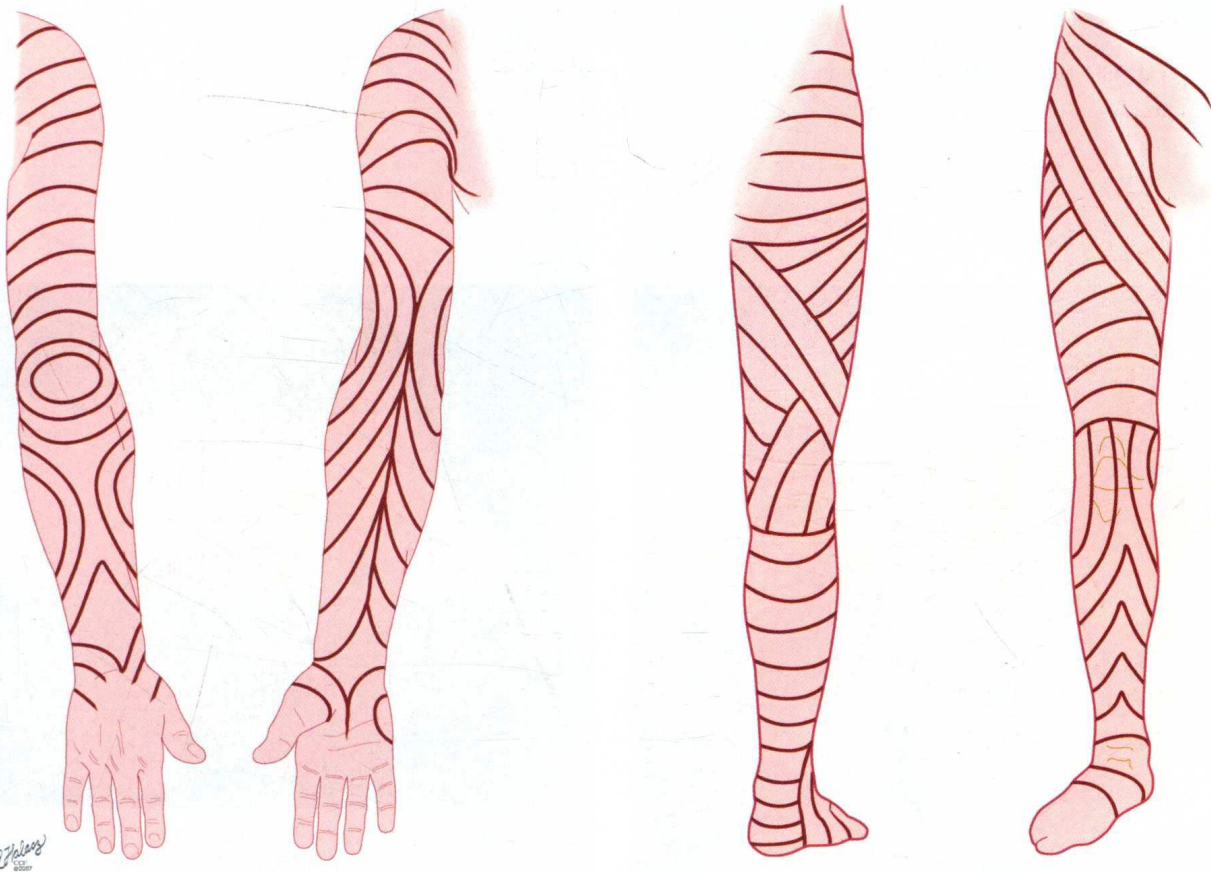


Fig. 1.33 Skin tension lines on the extremities.

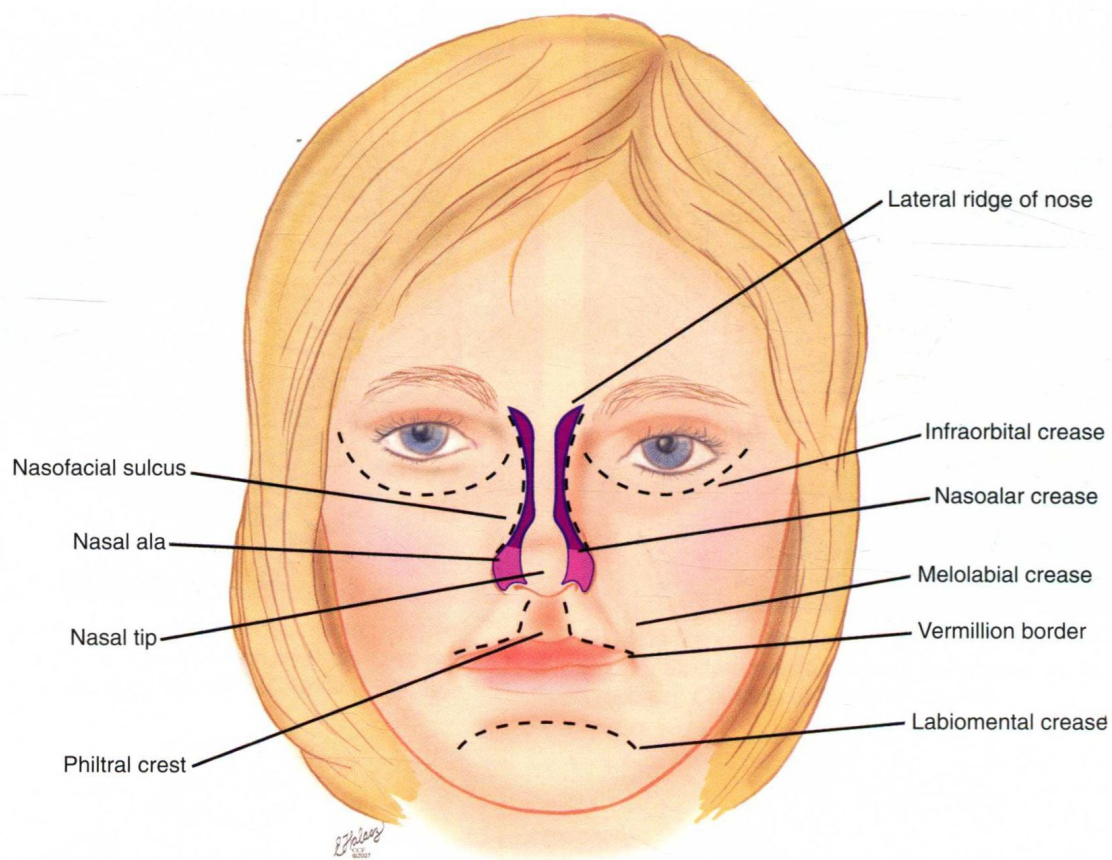


Fig. 1.34 Major anatomic landmarks.

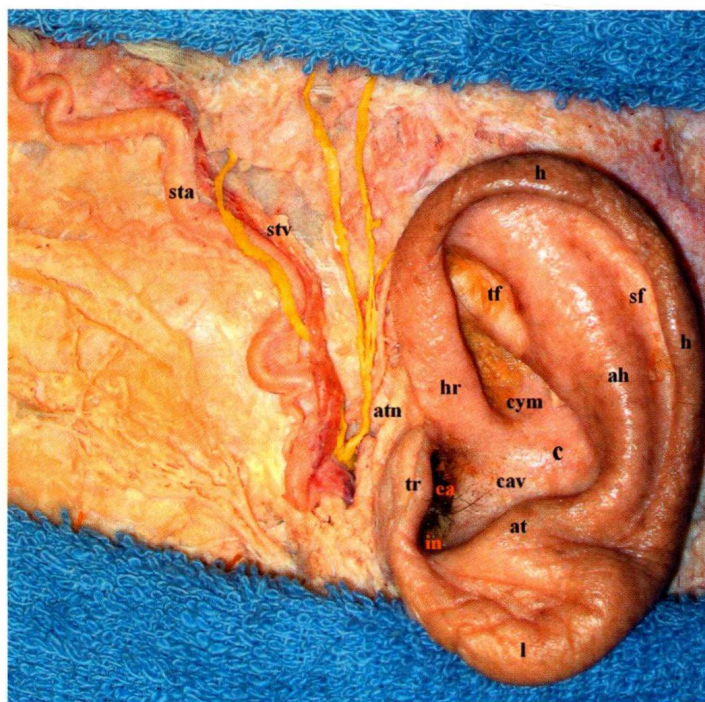


Fig. 1.35 Anatomy of the ear, superficial temporal artery, and auriculotemporal nerve. Courtesy Joseph F. Greco, MD and Christopher Skvarka, MD.



Fig. 1.36 Anatomy of the parotid gland and related structures. Courtesy Joseph F. Greco, MD and Christopher Skvarka, MD.