

高等医药院校精品教材

供临床、基础、预防、口腔、护理、麻醉、影像、药学、检验等专业使用

英汉

皮肤性病学

English-Chinese
Dermatovenereology

主编 黄长征



华中科技大学出版社

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内 容 简 介

本书是高等医药院校精品教材。全书分为两部分:第一部分共4章,为皮肤病学基础知识、基本理论、技术和方法,包括皮肤的基本结构、皮肤的功能、皮肤病的症状和体征以及基本诊断方法、皮肤组织病理的基本知识;第二部分共22章,介绍皮肤科常见的、部分少见的及疑难的皮肤病和性传播疾病,包括病因、发病机制、临床表现、诊断与鉴别诊断、预防和治疗。全书共有图片338幅,其中彩色照片330幅、彩色示意图4幅、黑白照片1幅,电镜照片3幅。

本书为华中科技大学立项精品课程教材,适合五年制、六年制、七年制和八年制医学生英文教学使用,也适合中文教学和皮肤科专科医师使用。

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非常感谢 Ernest Allen 对本教材中的英文用词、拼写和语法提出的宝贵意见!

序

近几年来,专业英语教学在我国高等医学院校中普遍开展,专业英语教学日益受到重视,但是,目前国内尚没有一本适合专业英文教学的皮肤性病学英文教材或皮肤性病学英汉教材。鉴于此,我们组织了国内 13 个单位的相关专家编写了这本皮肤性病学英汉教材,多数作者曾在国外学习或工作 1 年以上,具有比较好的英文基础及丰富的临床经验。同时,我们邀请了美国华盛顿特区乔治城大学微生物和免疫系的李冬梅教授和加拿大不列颠哥伦比亚大学皮肤科的周育文教授作为本教材的英文主审,请 Firas A. Hamze 为本教材的英文副主审,并请 Ernest Allen 先生对英文用词进行把关,以保证本教材的质量。

示意图图 1-1、图 1-2、图 1-9 和图 1-22 由华中科技大学同济医学院附属协和医院影像科的鲁永康女士制作;图 6-9 由西安交通大学医学院第二附属医院皮肤科彭振辉教授提供;图 17-1、图 24-2 由第四军医大学皮肤科提供;图 4-23、图 21-3、图 21-5、图 21-11 和图 21-12 由北京大学第一医院皮肤科陈喜雪教授提供,各参编单位均提供了精美的临床和免疫病理照片,华中科技大学同济医学院附属协和医院皮肤科李家文教授和王椿森教授提供了部分临床照片,各参编单位缺如的照片由黄长征教授提供。在本教材的编写过程中,全体编写人员付出了大量的心血和辛勤劳动,同时得到华中科技大学各级领导的关心和支持,以及华中科技大学同济医学院附属协和医院皮肤科各位同仁的帮助与鼓励,本科室的许多博士研究生和硕士研究生参与了校对,在此一并表示感谢!

虽然我们竭尽全力,但是,毕竟对所有作者而言,英文都不是我们的母语,同时,也是第一次进行这样的尝试,疏漏谬误之处在所难免,敬请各位同仁和读者指正和谅解!

黄长征

2009 年 11 月 18 日

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Part One 第一部分

Chapter One Basic Structure of the Skin

第一章 皮肤的基本结构

The skin is the largest organ in the human body and covers the body completely. It accounts for about 15 per cent of a human's weight, and has an area of approximately 1.6 m^2 for an adult and no more than about 0.2 m^2 for a newborn. It performs many vital functions and is an important component of the immune system.

The entire surface of the skin is covered by alternating sets of fine grooves and ridges which are known respectively as the sulci cutis and the cristae cutis. The orientation of these dermal ridges and valleys varies across various sections of the body. The openings for the sweat pores are located exclusively in the ridges. Although it is unknown precisely how the conditions of human development determine the orientation of these ridges it is well known that the swirled pattern on the palms and soles, and especially on the fingertips (the "fingerprints" of modern crime dramas), are not only unique but also unchanging over a person's life. The true hairs or tiny vellus hairs also cover most parts of the body. In addition, some characteristic lines known as "Blaschko line" can manifest themselves in cutaneous mosaicism as a symptom of certain skin diseases.

The color of the skin is determined by race, age, gender, nutrition and environment, and even varies with specific location on the body.

The skin is composed of three anatomically distinct layers. From the surface inward, these are the epidermis, dermis, and subcutaneous tissue (fat) (Fig. 1-1).

Section One Epidermis

The epidermis is the outmost layer of the skin, which interacts directly with the external environment. The thickness of the epidermis varies from less than 0.1 mm on the eyelids to 1.5 mm on the palms and soles. The epidermis is composed of keratinocytes, Langerhans cells, α -dendritic cells, melanocytes and Merkel cells.

1. Keratinocytes

The epidermis is composed primarily of well-ordered cells called keratinocytes (or squamous cells). The name is derived from

皮肤覆盖于人体表面, 是人体最大的器官, 约占总体重的 15%, 成人和新生儿的皮肤总面积约分别为 1.6 m^2 和 0.2 m^2 。皮肤具有许多重要功能, 是人体的重要免疫器官之一。

皮肤表面有呈网状深浅不一和方向不同的沟和嵴, 分别称为皮沟和皮嵴。身体上不同部位的皮嵴和皮沟的起始方向不同, 汗孔开口于皮嵴。虽然还不清楚人类在发育时是如何决定这些不同皮嵴的起始的, 但众所周知的是, 掌跖部位的皮沟和皮嵴的漩涡状形态, 特别是手指球部的 (即现代犯罪案例分析中的所谓指纹), 不仅对每个人而言是独特的, 并且终生不变。皮肤表面大多被覆有毛发和毳毛。此外, 皮肤表面可有呈许多特殊分布和走向的不规则分界线, 称为 Blaschko 线。某些具有镶嵌特征的皮肤病可以呈现 Blaschko 线分布。

皮肤的颜色因种族、年龄、性别、营养以及外在环境而异, 甚至同一个人不同部位的颜色也有深浅的差别。

在解剖学上, 皮肤都是由表皮 (epidermis)、真皮 (dermis)、皮下组织 (subcutaneous tissue) 或皮下脂肪 (subcutaneous fat) 三层所组成 (图 1-1)。

第一节 表皮

表皮位于最外层, 直接与外界接触。不同部位的皮肤其相对厚度有显著差异, 掌跖部位的表皮最厚, 约为 1.5 mm , 眼睑部位则不到 0.1 mm 。表皮由角质形成细胞、朗格汉斯细胞、 α -树枝状细胞、黑素细胞及 Merkel 细胞构成。

一、角质形成细胞

表皮由有规则排列的细胞即角质形成细胞 (keratinocyte) 构成, 角质形成细

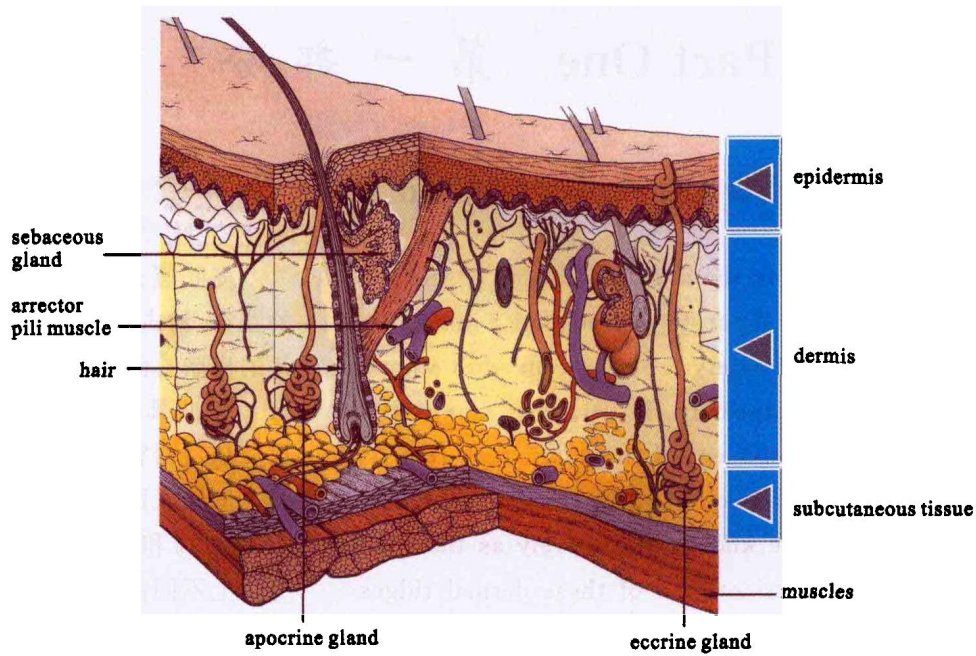


Fig. 1-1 Illustration of the skin structure(皮肤的组织结构示意图)

the fact that the basic function of such cells is to synthesize keratin. Keratinocytes account for 95% of the epidermal cell mass and the remaining five percent includes Langerhans cells, α -dendritic cells (also known as indeterminate cells), melanocytes, Merkel cells, and unmyelinated axons.

At the microscopic level, if we were to slice into the epidermis, we would see the epidermis to be divided into four layers. From the innermost layer to the outmost, these are known as the basal cell layer (*stratum basalis*), the prickly cell layer (suprabasal cell layer, or *stratum spinosum*), the granular cell layer (*stratum granulosum*), and the horny cell layer (*stratum corneum*) (Fig. 1-2, Fig. 1-3). Sometimes a pink layer can be found between granular cell layer and horny cell layer in palms and soles. This layer is called the *stratum lucidum*.

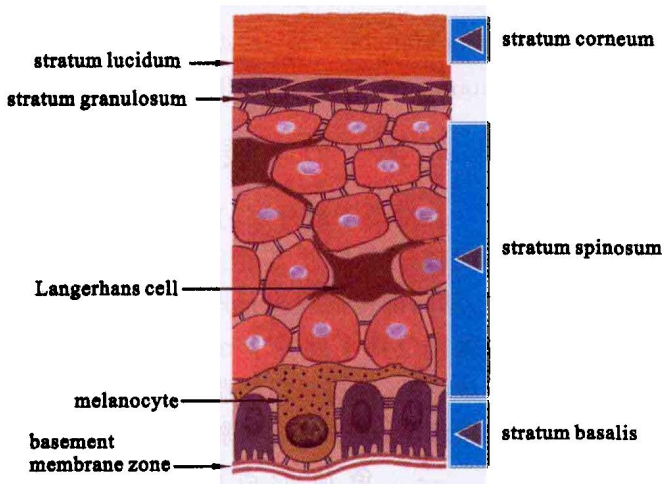


Fig. 1-2 Illustration of the epidermal layers
(表皮的层次示意图)

胞又称为鳞状细胞,其基本功能是合成角蛋白。表皮的细胞 95% 是角质形成细胞,其余的包括朗格汉斯细胞、 α -树枝状细胞(未定类细胞)、黑素细胞、Merkel 细胞及无髓鞘神经元。

显微镜下,在二维切片中,表皮由内到外可以分为四层:基底细胞层(或基底层)、棘细胞层(或基底上细胞层,或棘层)、颗粒细胞层(或颗粒层)和角质细胞层(或角质层)(图 1-2,图 1-3)。在掌跖部位,颗粒层与角质层之间尚有一粉红色的透明层。

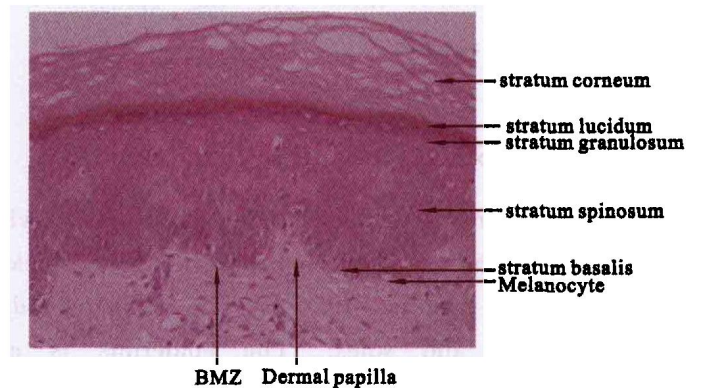


Fig. 1-3 The epidermal layers, HE staining
(表皮的层次, HE 染色)

The plane of contact between the epidermis and dermis is not smooth and flat, but is an undulant interface. The rete ridges of the epidermis grow down into the dermis and alternate with complementary digitate projections of the dermal connective tissue (the latter are the so-called dermal papilla). The basement membrane zone is situated just between the epidermis and the dermis.

1) Basal cell layer (*stratum basalis*)

(1) Basal cells: the basal cells are also called epidermal matrix cells or epidermal germinative cells. They proliferate, differentiate, and then move upward through the full thickness of the epidermis, layer by layer. The time span from differentiation of keratinocytes in the basal cell layer to the exfoliation process in the horny cell layer is known as the epidermal transit time or epidermal turnover time. In normal skin, this is about 28 days.

The epidermal stem cells are predominately located at the tips of epidermal rete ridges, but also in the bulge regions of the hair follicles. These cells are characterized by their high expression of β_1 -integrin, low expression of desmoglein 3 and by the lack of markers for terminal differentiation of epidermal cells.

The basal cell layer is grouped into a series of rectangular or columnar shaped keratinocytes, which contain relatively large round-oval nuclei dominated with chromatin and slightly more basophilic cytoplasm than for the keratinocytes above it. By aligning in the manner of a series of palisades, the basal cells keep their long axes perpendicular to the plane of the basal membrane. The melanin pigment in basal cells is obtained from adjacent melanocytes that govern the color and shades of the skin.

The cytoplasm of basal cells and the keratinocytes above it are packed with intermediate keratin filaments arranged as bundles of threads (tonofilaments). This structure runs from the periphery area of the nuclei to the specialized attachment plaques, desmosomes or hemidesmosomes, which are described below.

(2) Desmosome, hemidesmosome, and gap junction: epidermal cells are joined to one another by *desmosomes* (specialized intercellular bridges as shown in Fig. 1-4), between adjacent basal cells, between basal cells and keratinocytes above prickly cells and also between prickly cells themselves. The detailed view of desmosome structure reveals an electron-lucent space in the central part of the desmosomes, and an electron-dense central lamina (Fig. 1-4 inset) just in middle of this intercellular matrix. The hemidesmosomes attach the basal-cell membrane to the basal membrane. The gap junctions also allow communication between adjacent epidermal cells.

表皮的最内侧高低不平并伸入真皮内称为表皮嵴, 相邻的表皮嵴之间有真皮间充质成分呈指状突入其内, 称为真皮乳头, 基膜带位于表皮与真皮之间。

(一) 基底细胞层(基底层)

(1) 基底细胞 基底细胞又称为表皮母质细胞(epidermal matrix cells)或表皮生发细胞(epidermal germinative cells)。基底层细胞发生增殖、分化, 并逐步向表皮上部移行于表皮全层。基底细胞从基底层发生增殖到表皮角质层直至脱落的时间称为表皮通过时间(epidermal transit time)或表皮更替时间(epidermal turnover time), 正常人约为 28 天。

表皮干细胞主要位于表皮嵴的顶端, 在毛囊的隆突处也有类似的细胞。这些细胞的特征是高表达 β_1 整合素, 而桥粒芯糖蛋白 3 的表达水平低, 并缺乏终末分化标记。

基底细胞呈长立方形或圆柱形, 胞浆嗜碱性, 核呈椭圆形, 深染色质。基底层由单排呈栅栏状排列的基底细胞构成, 其长轴与表皮和真皮间的分界线垂直。基底细胞胞浆内含有从临近的黑素细胞输送而来的黑素颗粒, 其含量的多少与肤色相匹配。

基底细胞及其上面的角质形成细胞的胞浆内含有角蛋白中间丝, 即张力细丝, 张力细丝呈束状聚集在核周, 并终止于胞浆膜的特异化结构附着板, 即桥粒或半桥粒。

(2) 桥粒、半桥粒、缝隙连接 相邻的基底细胞之间以及基底细胞与其上面相邻的棘细胞之间、相邻的棘细胞之间通过细胞间桥(intercellular bridges)即桥粒(desmosome)(图 1-4)联系, 桥粒中央为电子透明间隙, 间隙内细胞间黏合物质的中央为电子密度致密的中央层(图 1-4 插入图)。基底层与其下的基底膜则通过半桥粒(hemidesmosome)相互联系, 基底细胞之间尚有用于细胞通讯的间隙连接(gap junction)。

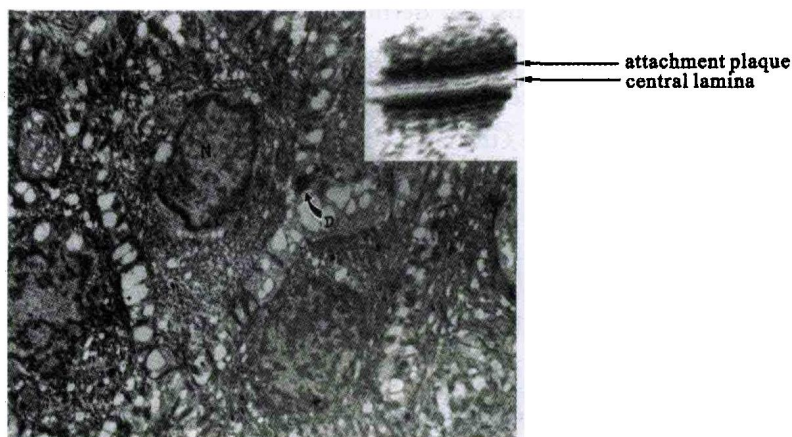


Fig. 1-4 Electron microcopy of desmosome; D: desmosome; insertion is the magnification of desmosome
(桥粒电镜照片; D: 桥粒; 插入处为桥粒放大)

① Desmosomes: desmosomes are composed of attachment plaque and transmembrane proteins that set up a bridge between cell surface and intracellular filaments. The attachment plaque is where desmoplakin attaches to the keratin fibers, and is also the place for transmembrane proteins, desmogleins and desmocollins to attach to desmoplakin via plakoglobin and plakophilin. Then the extracellular domains of desmogleins and desmocollins bind to each other in order to bridge the space between adjacent epidermal cells. In general, desmoglein 3 is common (and easily detected) in suprabasal keratinocytes and desmoglein 1 is in the group of keratinocytes just beneath the horny cell layer.

With the use of electron microscopy, each desmosome is seen to be made of the trilaminar plasma membrane structure, the electron-dense attachment plaque in each side of plasma membrane of adjacent cells, with an intercellular matrix between the two.

This trilaminar plasma, 8 nm in width, shows up as three layers of differing density under electron microscopy. The inner layer (inner leaflet) is a fine electron-dense line along the cytoplasmic side of the plasma membrane; an electron-lucent central lamina stands in middle, and finally the electron-dense outer layer (outer leaflet) interfaces to the intercellular matrix between the epidermal cells. The densest material of such intercellular matrix tends to be deposited on the surface of outer leaflet, and is known as cell surface coat. However, it is not easy to clarify the boundary between the cell surface coat and outer leaflet of the plasma membrane because of their similar density.

② Hemidesmosomes, as the name implies, hemidesmosomes

① 桥粒 由附着板和跨膜蛋白构成,在细胞表面与细胞内的细丝之间起桥梁作用。前者的主要成分是桥粒斑蛋白(desmoplakin),并与角蛋白纤维相连。后者主要是桥粒芯糖蛋白(desmoglein)和桥粒黏蛋白(desmocollin)。桥粒芯糖蛋白和桥粒黏蛋白通过桥粒斑珠蛋白(plakoglobin)和桥粒斑非素蛋白(plakophilin,血小板亲和蛋白)连接到桥粒斑蛋白。桥粒芯糖蛋白和桥粒黏蛋白的细胞外域彼此以相邻的表皮细胞间隙相连接。正常情况下,桥粒芯糖蛋白3位于基底层上的角质形成细胞间,而桥粒芯糖蛋白1主要位于角质细胞层下的角质形成细胞间。

电镜下,每一个桥粒包括两个相邻的角质形成细胞的三层浆膜(trilaminar plasma membrane)及各自胞浆内的1个电子致密的附着板以及细胞间黏合物质。

浆膜:浆膜厚约8 nm,显示有三层结构,内层或内小叶(inner leaflet)表现为一道纤细的电子致密线,与附着板紧密相邻,中层为一电子透明线,外层或外小叶(outer leaflet)也为一电子致密线,表面直接与细胞间黏合物接触,这一覆盖于外小叶表面的黏合物最致密的部分称为细胞表衣(cell surface coat),因细胞表衣和外小叶的致密度相差不多,所以通常不易在二者之间分出界限。

② 半桥粒 顾名思义,是桥粒的一

are half desmosomes. They set up a connection between epidermal cells and the laminae densae of the basal membrane. It has been known that the intermediate filaments which are responsible for the insertion into hemidesmosomes are keratin 14 and keratin 5. Also a few important molecules or antigens are known; bullous pemphigoid antigen 1 (BPAG1, 230 kD), bullous pemphigoid antigen 2 (BPAG2, 180 kD), integrin $\alpha 6 \beta 4$, and other molecules with unknown functions have been linked to hemidesmosomes.

③ Gap junctions; these are roughly 2-4 nm wide intercellular spaces between adjacent cells composed of connexin units on the cell membrane. They directly connect the cytoplasm of adjacent cells by transporting small molecules and ions freely between the cells. Usually the upper size limit of such channels for passing molecules is about 1.5 kD.

(3) Basement membrane zone (BMZ); the BMZ is usually not evident with hematoxylin-eosin (HE) stain. However, it can be exhibited as a violaceous homogenous band of 0.5 μm to 1 μm thickness when stained with PAS (Periodic acid-Schiff) (Fig. 1-5). The main components of the basement membrane zone are neutral mucopolysaccharides.

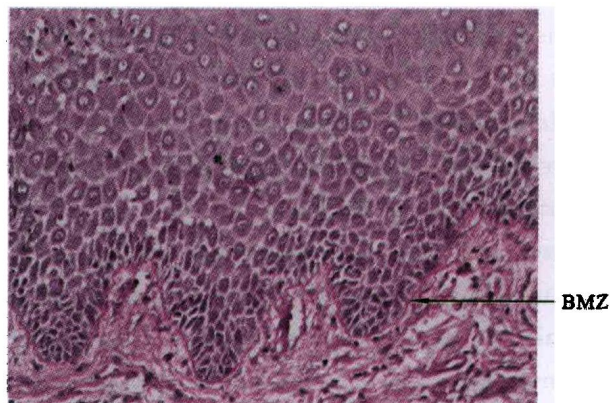


Fig. 1-5 Basement membrane zone, PAS staining
(基膜带: PAS 染色)

With the electronic microscope, the BMZ is divided into four layers (Fig. 1-6).

① The lower border of the basal-cell plasma membrane; the attachment plaque on the plasma membrane, and the cytoplasmic tonofilaments that attach to the attachment plaque are well illustrated in a hemidesmosome.

② lamina lucida; this is a 20 nm to 40 nm thick electron-lucent zone beneath the plasma membrane of the basal cells. The additional electron-dense band, about 7-9 nm in width, paralleling the attachment plaque of hemidesmosomes, is seen within the lamina lucida area running underneath the attachment plaque of hemidesmosomes. The main component

半,是连接基底细胞与致密板的重要结构。基底层角质形成细胞内插入到半桥粒内的细胞骨架中间丝主要是角蛋白 14 和角蛋白 5。半桥粒含有大疱性类天疱疮抗原 1 (BPAG1, 230 kD)、大疱性类天疱疮抗原 2 (BPAG2, 180 kD)、整合素 $\alpha 6 \beta 4$ 及其他尚未确定的分子。

③ 间隙连接 在间隙连接处相邻细胞间有 2~4 nm 的缝隙,间隙连接的主要成分是间隙连接蛋白,其主要功能是连接细胞和转运小分子和离子。间隙连接的通道可以允许分子量小于 1.5 kD 的分子通过。

(3) 基膜带 (basement membrane zone, BMZ) 基膜带在 HE 染色切片中通常看不见,但用 PAS (过碘酸-雪夫) 染色在表皮与真皮连接处则可以见到厚 0.5~1 μm 、呈紫红色均质性的条带 (图 1-5),其主要成分是中性的黏多糖。

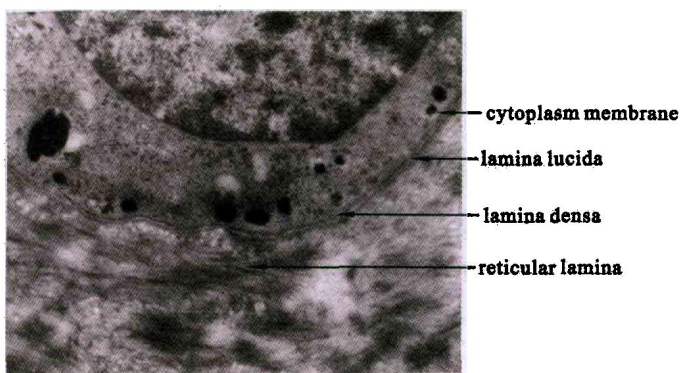


Fig. 1-6 Electron microscopy of the basement membrane zone
(基膜带电镜照片)

在电镜下基膜带分为四层 (图 1-6)。

① 基底细胞真皮侧的胞浆膜 胞浆膜上有一个附着板,附着板上附着有张力细丝 (tonofilaments) 构成半桥粒 (hemidesmosome)。

② 透明板 (lamina lucida) 是一厚 20~40 nm,位于基底细胞的胞浆膜层下方的电子密度比较透明的区域。在每一个半桥粒附着板下方的透明板内可见与附着板平行的厚 7~9 nm 的基底细胞下致密板。透明板的主要成分是层粘

of the lamina lucida is laminin 332.

③ lamina densa; also known as basal lamina, it is a 60-80 nm wide band-like structure. It is synthesized by the basal cells of the epidermis. The main components of the lamina densa include type IV collagens, fibronectins, heparan sulfate proteoglycan, and laminin 5 (including laminin 332). It has been observed that Type XVII collagen (or BP180), a 180 kD bullous pemphigoid antigen, spans the lamina lucida and then connects to the lamina densa and the hemidesmosomes.

④ reticular lamina; Beneath the basal lamina are fibers derived from the papillary dermis layer underneath that include anchoring filaments, dermal microfibrils, and collagen fibers. It is well known that the so-called PAS-positive BMZ is composed of fibrous components. The anchoring filaments are 5-7 nm thick fibrils that are believed, at least in part, to originate from the dermis, and its main components are type VII collagen. The anchoring fibrils form the semi-circular loop structure that promotes the linkage with type I, type III collagens of the dermis layer with both ends of anchoring fibril inserted into the lamina densa. As a result, a strong bond is effectively formed between the epidermis and dermis.

The BMZ permits the exchanges of cells and fluids between the epidermis and dermis.

2) Prickle cell layer (suprabasal cell layer, or *stratum spinosum*)

The prickle cell layer, also known as the squamous cell layer, is composed of five to ten layers of cells which are larger than the basal cells, characterized by vacuolar nuclei, one or several nucleoli and eosinophilic cytoplasm. The prickle cells are named due to the delicate "spine" that may be seen, with light microscopy, to cross the narrow intercellular spaces. Towards the surface, polygonal-shaped cells of the suprabasal spinous layer assume a gradually more flattened aspect and the cells' long axes are correspond transformed from a vertical to a horizontal orientation as they get closer to the surface of the skin.

As mentioned above in desmosome structure, the tonofilaments in prickle cells are shown as loose bundles of thread which are highly electron-dense under electron microscopy. The abundant tonofilaments in prickle cells surround the nucleus with one end inserted into the nearby cytoplasm and the other ends converging upon the attachment plaque of the desmosomes.

The prickle cells are separated by intercellular spaces and connected to each other by intercellular bridges named desmosomes. The intercellular spaces contain glycoproteins and lipids.

连蛋白 332。

③ 致密板 (lamina densa) 又称为基板 (basal lamina), 厚 60~80 nm 的带状结构。致密板由表皮的基底细胞合成。其主要成分包括 IV 型胶原、纤维连接素 (或称为纤维连接蛋白或粘连蛋白)、硫酸乙酰肝素蛋白聚糖、层粘连蛋白 5 (包括层粘连蛋白 332)。XVII 型胶原, 即 BP180 是一种 180 kD 的大疱性类天疱疮抗原, 横跨透明板, 并连接致密板和半桥粒。

④ 网板 (reticular lamina) 由位于基板下方、来自乳头真皮的纤维成分组成, 包括锚丝、真皮微纤维和胶原纤维。特殊需要注意的是光学显微镜下 PAS 染色阳性的基膜带是由纤维成分组成的。锚丝是 5~7 nm 厚的纤维, 锚纤维至少部分是来源于真皮, 其主要成分是 VII 型胶原。锚纤维呈半环形, 其两端插入致密板, 而其弧形端围绕 I 型和 III 型胶原并与后者紧密连接。锚纤维的主要功能是有效地锚定表皮和真皮。

基膜带能允许表皮和真皮间进行细胞和液体的交换。

(二) 棘细胞层 (或基底上细胞层, 或棘层)

棘细胞层又称为鳞状细胞层, 由 5~10 层细胞构成, 细胞较基底细胞大, 胞浆嗜伊红, 具有泡状核和一至数个核仁。棘细胞有此称谓是因为在光学显微镜下, 通过狭窄的细胞间隙可以看到很细的“棘”。下面的细胞呈多角形, 上部的细胞相对扁平, 其长轴与表皮平行。

棘细胞的胞浆内含有张力细丝 (tonofilaments), 为疏松束状的电子致密细丝, 这些张力细丝的一端游离于细胞核附近的胞浆内, 另一端附着在桥粒的附着板上。

棘细胞之间有一定的间隙并由细胞间桥即桥粒联系。相邻的棘细胞之间的间隙内有糖蛋白和脂质。