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EPONYMS IN THE DERMATOLOGY LITERATURE LINKED TO „BODIES", SEEN IN SKIN BIOPSIES

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In dermatology practice, it is very common to hear about „Bodies'', which refer to a pthological structure with a particular features.

Most of them are large and can be seen by light microscopy, but there are few very tiny bodies which can only be seen by electron microscopy.

Examples for the latter are comma-shaped body, and the worm-shaped body, seen in histiocytoses like benign cephalic histiocytosis (however; they are not specific), and zebra body, seen in mucopolysaccharidoses.

Some of the bodies were seen in one disease and they are characteristic for one disease whereas others can be seen in multiple conditions.

As an example for the former group, is caterpillar body, which is pale amorphous pink linear structures in the epidermis of porphyria cutanea tarda. Another example is the papillary mesenchymal body which is structure thought to be an abortive attempt of fibroblasts to form mesenchyme necessary for hair induction, reminiscent of early hair germ. They are seen in trichoblastoma and trichoepithelioma.

Examples for the bodies which can be seen in multiple conditions include ,asteroid body for example might be seen in several conditions like sarcoidosis and berylliosis.

Also, psammoma body is a concentric laminated, calcified bodies seen in papillary thyroid carcinoma, benign nevi, meningiomas, and other conditions.

Most of the „bodies'' are known by a single term. As an exception medlar bodies which are seen in chromoblastomycosis are also called sclerotic bodies and copper penny bodies.

Eponyms are very common in the nomenclature of „bodies''. In Table I [1-21], we are highlighting on Eponyms in the dermatology literature linked to „Bodies'', seen in skin biopsies.

Eponyms in the dermatology literature linked to „Bodies", seen in skin biopsies	Remarks
Birbeck Granules [1]	These are Tennis-racquet-shaped cytoplasmic bodies seen by electron microscopy in Langerhans cells. They were discovered by Michael Stanley Clive Birbeck (1925-2005), a British scientist and electron microscopist. Langerhans cells are dendritic cells (antigen-presenting immune cells) of the skin and mucosa. It is named for Paul Langerhans (1847-1888), who was a German pathologist.
Civatte Bodies [2]	These might be referred as colloid Bodies. However, some references refer to colloid Bodies as apoptotic cell remnants in papillary dermis, whereas Civatte bodies as apoptotic cell remnants in epidermis. They appeared as an eosinophilic hyaline ovoid structures. They are usually seen in lichen planus and lupus erythematosus. They can also be found in several dermatoses such as erythema multiforme, bullous pemphigoid and diseases with suprabasal clefts. Achille Civatte (1877-1956), (Fig. 1), was a French physician. He was the director of the Musée d'Histologie de Saint-Louis.

Table I. Selected Eponyms in the dermatology literature linked to „Bodies'', seen in skin biopsies.

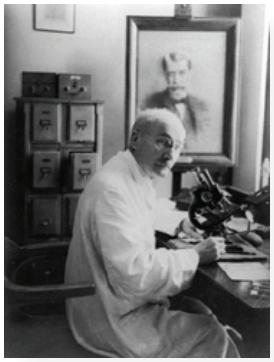

Figure 1. Achille Civatte (1877-1956).

Figure 2. Edmund Vincent Cowdry (1888-1975).

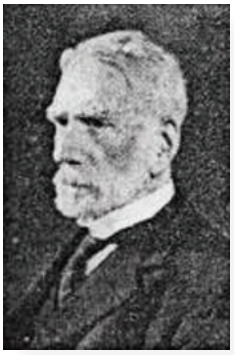

Figure 3. William Russell (1852-1940).

Eponyms in the dermatology literature linked to „Bodies", seen in skin biopsies	Remarks
Cowdry A and B Bodies [3]	Cowdry A Body (Lipschutz Body), is intranuclear eosinophilic globules seen in herpes infection. Cowdry B Body is intranuclear inclusions seen in adenovirus and poliovirus infection. They are named for, Edmund Vincent Cowdry (1888-1975), (Fig. 2), who was Canadian-American biologist. An interesting page about him in the internet, can be accessed at; http://beckerexhibits.wustl.edu/mig/bios/cowdry.html
Donovan Bodies [4]	Donovan bodies are rod-shaped, oval organisms that can be seen in the cytoplasm of mononuclear phagocytes or histiocytes in tissue samples from patients with granuloma inguinale. They were discovered by Charles Donovan (1863-1951). In 1905 he identified the microorganism responsible for the disease granuloma inguinale. This also bears his name Donovania granulomatosis. Donovan was born in Calcutta. At the age of thirteen he was sent to Cork City to live with his grandfather to advance his secondary and university education.
Dutcher Bodies [5]	Dutcher bodies are PAS-positive, diastase-resistant nuclear pseudoinclusions of eosinophilic cytoplasm found in plasma cells described by Dutcher and Fahey in Waldenstrom macroglobulinemia. Dutcher bodies are a feature of clinically indolent, mucosa-associated lymphoid tissue (MALT) lymphomas. There are no essential differences between Dutcher bodies, single or multiple Russell bodies, and the inclusions of Mott cells. They are all aspects of the same phenomenon, representing spherical cytoplasmic inclusions that are either clearly within the cytoplasm or are overlying the nucleus or invaginated into it. Russell bodies, is named after William Russell (1852-1940), (Fig. 3), Scottish pathologist and physician.Mott cell is named after Mott, who described it in 1905. Dutcher bodies may rarely occur in a benign reactive condition, such as synovitis. While Dutcher bodies may be a clue to the presence of low-grade lymphoma, they are not a definitive feature, particularly in unusual contexts.
Guarnieri Bodies [6]	These are eosinophilic cytoplasmic inclusions seen in smallpox. They are named after the Italian physician Giuseppe Guarnieri (1856-1918).
Henderson-Paterson Bodies [7]	These are large intracytoplasmic inclusion bodies seen in molluscum contagiosum. They were reported by Henderson and Paterson, in 1841.Also, called molluscum bodies.
Kamino Bodies [8]	Kamino bodies named after contemporary American dermatopathologist, Hideko Kamino, (Fig. 4). They are dull pink areas of trapped basement membrane material within the epidermis seen in Spitz nevi.
Lafora bodies [9]	These are inclusion bodies within neurons and the cells of the heart, liver, muscle, and skin, seen in Lafora disease. Lafora disease also called Lafora progressive myoclonic epilepsy is a fatal autosomal recessive disorder. The disease is named after Gonzalo Rodriguez Lafora (1886–1971), (Fig. 5), a Spanish neuropathologist who first recognized small inclusion bodies in Lafora patients in 1911.

Table I. Selected Eponyms in the dermatology literature linked to „Bodies", seen in skin biopsies (continued).

Figure 4. Hideko Kamino.

Figure 5. Gonzalo Rodriguez Lafora (1886-1971).

Figure 6. William Boog Leishman (1865-1926).
A courtesay of National Library of Medicine.

Eponyms in the dermatology literature linked to „Bodies", seen in skin biopsies	Remarks
Leishman-Donovan Bodies [4]	Intracytoplasmic, nonflagellated parasites seen in leishmaniasis. Leishmaniasis is a zoonotic infection caused by protozoa that belong to the genus Leishmania. The disease is named after Leishman, who first described it in London in May 1903. Lieutenant-General Sir William Boog Leishman (1865-1926), (Fig. 6), was a Scottish pathologist and British Army medical officer. In 1901, while examining pathologic specimens of a spleen from a patient who had died of kala azar he observed oval bodies and published his account of them in 1903. Captain Charles Donovan confirmed the finding of what became known as Leishman-Donovan bodies in smears taken from patients in Madras in southern India.
Lipschutz Bodies (Cowdry A Body) [10]	Eosinophilic nuclear inclusions in epithelial or neuronal cells. Most often seen in herpes simplex or zoster infections. It is named after Benjamin Lipschütz (1878-1931), who was an Austrian dermatologist and microbiologist.
Michaelis-Gutman Bodies [11]	Concentric, laminated, calcified bodies within and external to the cells seen in Malakoplakia, an inflammatory condition that affects the genitourinary tract. Leonor Michaelis (1875-1949), (Fig. 7), was a German-American biochemist. Carl Gutmann, was a German physician, born 1872.
Negri Bodies [12]	Cytoplasmic Inclusion bodies found in the purkinje cells of the brain in cases of rabies. It can be seen in the skin.It is named for, Adelchi Negri (1876-1912), (Fig. 8), who was an Italian pathologist, and microbiologist. His teacher was, the Nobel Prize winning Camillo Golgi (1843-1926).

Table I. Selected Eponyms in the dermatology literature linked to „Bodies'', seen in skin biopsies (continued).

Figure 7. Leonor Michaelis (1875-1949).

Figure 8. Adelchi Negri (1876-1912).

Figure 9. George Odland (1922-1997).

Figure 10. Jörgen Nilsen Schaumann (1879-1953).
A courtesy of the Hagströmer Medico - Historical Library, Karolinska Institutet, Stockholm, Sweden.

Figure 11. Jose Juan Verocay (1876-1927).

Eponyms in the dermatology literature linked to „Bodies", seen in skin biopsies	Remarks
Odland bodies [13]	This is another name for lamellar granules (otherwise known as membrane-coating granules (MCGs), lamellar bodies, or keratinosomes). They are secretory organelles found in type II pneumocytes and keratinocytes. They are oblong structures, appearing about 300-400 nm in width and 100-150 nm in length in transmission electron microscopy images. Lamellar granules fuse with the cell membrane and release their contents into the extracellular space. Named after, George Odland (1922-1997), (Fig. 9), who was a world expert in skin research and longtime head of the dermatology division at the University of Washington School of Medicine.
Pustulo-ovoid bodies of Milian [14-16]	This name is used recently to refer to the aggregations of granules in granular cell tumor, which is also known as Abrikossoff tumor, after Aleksei Ivanovich Abrikossoff (1875-1955), who was a Russian/Soviet pathologist.
Russell bodies [5]	Inclusions secondary to collections of immunoglobulin in the cytoplasm of plasma cells. Seen in rhinoscleroma, granuloma inguinale, syphilis, (See above, in Dutcher bodies).
Schaumann Bodies [17]	Calcium-containing inclusion bodies found in the cytoplasm of giant cells in sarcoidosis, berylliosis and uncommonly, in Crohn's disease and tuberculosis. These bodies were first described by the German physician Oscar von Schüppel (1837-1881) in 1871, and by Max Askanazy (1865-1940) in 1921 as Kalkdrusen. But it is named for Jörgen Nilsen Schaumann (1879-1953),(Fig. 10), a Swedish dermatologist. It is to be mentioned that, a number of cytoplasmic structures/inclusions can be identified within the granulomas of sarcoidosis, including asteroid bodies, Schaumann's bodies, calcium oxalate crystals, and Hamazaki-Wesenberg bodies; the last two of these can cause difficulties in differential diagnosis. Hamazaki-Wesenberg bodies (alternatively termed yellow-brown bodies, yellow bodies, Hamazaki corpuscles) are structures of unknown significance, which have been periodically documented in the sinuses of lymph nodes in numerous anatomic locations and myriad medical conditions, including appendicitis, cirrhosis, lymphoid tumours, colon carcinoma and numerous others, most famously sarcoidosis. Initially described by Hamazaki in 1938 in mesenteric lymph nodes, 6 and later noted by Menne in 1952 in 70% of mesenteric lymph nodes removed during appendectomies.
Verocay Body [18]	A peculiar microscopic pattern seen in schwannomas, consisting of palisading cell around a cellular area. It is named after, Jose Juan Verocay (1876-1927), (Fig. 11). He was a Uruguayan physician who trained and worked for most of his adult life in Europe in the late nineteenth and early twentieth century.

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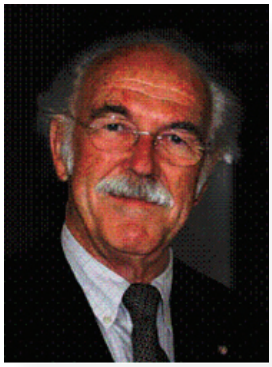

Figure 12. Ewald Rudolf Weibel.

Figure 13. George Emil Palade (1912-2008).

Eponyms in the dermatology literature linked to „Bodies", seen in skin biopsies	Remarks
Weibel-Palade Bodies (WPBs) [19-21]	WPBs are elongated secretory organelles specific to endothelial cells that contain von Willebrand factor (VWF) and a variety of other proteins that contribute to inflammation, angiogenesis, and tissue repair. Weibel–Palade bodies were initially described, by the Swiss anatomist and biologist, Ewald Rudolf Weibel, born 1929, (Fig. 12), and the Romanian physiologist George Emil Palade (1912-2008), (Fig. 13). Palade was described as „the most influential cell biologist ever". In 1974 he was awarded the Nobel Prize in Physiology and Medicine, for his work on the function of organelles in cells together with Albert Claude and Christian de Duve.

Table I. Selected Eponyms in the dermatology literature linked to „Bodies", seen in skin biopsies (continued).

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