

Review Article

Eponymous laboratory stains in dermatology

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An eponym is the name of a person, whether real or fictitious, which has or is thought to have given rise to the name of a particular place, tribe, era, discovery or substances.^{1,2} Notwithstanding debates about their continuing use in medical literature.^{3,4} Eponyms, describing stains used in pathology are less affected by changes overtime and their uses are still in vogue.⁵ The history of such persons is diverse, often

many specialties, and thus makes reading interesting. The recent comprehensive review published in this journal by Bari and Farooq stimulated us to write this communication that elaborates more on the eponymous laboratory stains used in dermatology and highlights those whose observations have led to better delineation of pathogenesis of the disease leading to correct diagnosis.

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Table 1 Different stains, their uses and principle of staining.

<i>Eponym</i>	<i>Main use</i>	<i>Principle</i>	<i>Other applications/remarks</i>
Giemsa stain Gustav Giesma, German chemist (1867-1948) ⁶	Demonstration of parasites, e.g. <i>Plasmodium</i> , <i>Trypanosoma</i> and <i>Chlamydia</i> .	A mixture of methylene blue and eosin prepared from a powder. It attaches to regions of DNA where there are high amounts of adenine-thymine bonding. It is used in Giesma banding, commonly called G-banding, to stain chromosomes and often to create a karyotype. It can identify chromosomal aberrations such as translocations and interchanges.	Giemsa stain is a classical blood film stain. ⁵ Also a differential stain used to study the adherence of pathogenic bacteria to human cells. Also used in Wolbach's tissue stain. In 1904 Giesma published an essay on the staining procedure for flagellates, blood cells, and bacteria. Giesma improved the Romanowsky stain (eosin Y and methylene blue) by stabilizing this dye solution with glycerol. This allowed for reproducible staining of cells for microscopy purposes.
Gram's stain, Hans Christian Gram, Danish bacteriologist (1853-1938) ⁷	Distinguishes bacteria into Gram-positive and Gram-negative.	The technique developed in 1884, is an empirical method of differentiating bacterial species into two large groups (Gram-positive and Gram-negative) based on the chemical and physical properties of their cell walls.	The method is still of great use though Gram had modestly remarked during his time, "I have published the method, although I am aware that as yet it is very defective and imperfect; but it is hoped that also in the hands of other investigators it will turn out to be useful."
Leishmans stain ^{8,9} Lieutenant- General Sir William Boog Leishman, Scottish pathologist and British Army medical officer (1865 -1926).	Used in microscopy for staining blood smears. It is used to differentiate and identify leucocytes, malarial parasites, and trypanosomas.	It is based on a mixture of methylene blue and eosin. It is similar to and partially replaceable with Giesma stain, Jenner's stain, and identical to Wright's stain. Like them, it is a version of Romanowsky stain 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. Charles Donovan of the Indian Medical Service independently found such bodies in other kala azar patients, and they are now known as Leishman-Donovan bodies, and recognized as the protozoan which causes kala azar, <i>Leishmania donovani</i> . ⁹	Leishman also helped elucidate the life cycle of <i>Spirochaeta duttoni</i> , which causes African tick fever, and, with Almroth Wright, helped develop an effective anti-typoid inoculation.

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<i>Eponym</i>	<i>Main use</i>	<i>Principle</i>	<i>Other Applications/Remarks</i>
Wade-Fite stain ^{10,11} Herbert Windsor Wade (1886-1968) & Dr. George Liddle Fite (1933-1993) American pathologists	Technique for demonstration of leprosy bacillus	Modification of the Ziehl-Neelsen method	Wade was the founding editor of the International Journal of Leprosy.
Wright's stain ¹² , James Homer Wright (1869-1928), American pathologist	It is used in the examination of peripheral blood smears and bone marrow aspirates.	A technique in histology that makes the differences between cells visible under light microscopy.	Wright's stain is also used in cytogenetics to stain chromosomes on slides for visualization and diagnosis of syndromes and disease. ¹² It is named for James Homer Wright, who devised the stain, a modification of the Romanowsky stain, ¹³ in 1902. There are related stains known as the buffered Wright stain, the Wright-Giemsa stain, and the buffered Wright-Giemsa stain.
Ziehl-Neelsen (ZN) stain ¹⁴ , named after Frank Ziehl (1857-1926) a German bacteriologist & Friedrich Nelson (1854-1894) German Pathologist	To identify acid-fast organisms	It is based on capacity of mycobacteria to take up strong phenol-dye solutions; organisms stain magenta and the background blue.	Modified later as Wade-Fite stain (vide supra)

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