

Gram Negative Cocci Examples

Lipopolysaccharide In current terminology, the term endotoxin is often used synonymously with LPS, although there are a few endotoxins (in the original sense of toxins that are inside the bacterial cell that are released when the cell disintegrates) that are not related to LPS, such as the so-called delta endotoxin proteins produced by *Bacillus thuringiensis*. term for components of the outermost membrane of the cell envelope of Gram-negative bacteria, such as *E. coli* and *Salmonella* with a common structural architecture

Lipopolysaccharide (LPS), now more commonly known as endotoxin, is a collective term for components of the outermost membrane of the cell envelope of Gram-negative bacteria, such as *E. coli* and *Salmonella* with a common structural architecture.

Lipopolysaccharides are large molecules consisting of three parts: an outer core polysaccharide termed the O-antigen, an inner core oligosaccharide and lipid A (from which toxicity is largely derived), all covalently linked

Betaproteobacteria are economically important, with roles in maintaining soil pH and in elementary cycling. Some economically important members of the Betaproteobacteria use nitrate as their terminal electron acceptor and can be used industrially to remove nitrate from wastewater by denitrification. A number of Betaproteobacteria... Description ==

Some genera have been divided based upon the presence or absence of motility. Motility is determined by using a motility medium. The ingredients include motility test medium, nutrient broth powder, NaCl and distilled water. An inoculating needle (not a loop) is used to insert the bacterial sample... Generally, the basic morphologies are spheres (coccus) and round-ended cylinders or rod shaped (bacillus). But, there are also other morphologies such as helically twisted cylinders (example *Spirochetes*), cylinders curved in one plane (selenomonads) and unusual morphologies (the square, flat box-shaped cells of the Archaean genus *Haloquadratum*). Other arrangements include pairs, tetrads, clusters, chains and palisades.

Staphylococcus Cells occur singly, in pairs, tetrads, short chains, and characteristically in irregular, grape-like clusters. Alexander Ogston first described clustered cocci in pus from a surgical abscess, and Friedrich Julius Rosenbach subsequently *Staphylococcus* is a genus of Gram-positive, spherical bacteria in the family *Staphylococcaceae*. characteristic cellular arrangement. Most species are non-motile, non-spore-forming, and facultatively anaerobic

Broad-spectrum antibiotic This is in contrast to a narrow-spectrum antibiotic, which is effective against only a specific group of bacteria. **Empiric** A broad-spectrum antibiotic is an antibiotic that acts on the two major bacterial groups, Gram-positive and Gram-negative, or any antibiotic that acts against a wide range of disease-causing bacteria. These medications are used when a bacterial infection is suspected but the group of bacteria is unknown (also called empiric therapy) or when infection with multiple groups of bacteria is suspected. The most commonly encountered groupings of bacteria include gram-positive cocci, gram-negative bacilli, atypical bacteria, and anaerobic bacteria. Although powerful, broad-spectrum antibiotics pose specific risks, particularly the disruption of native, normal bacteria and the development of antimicrobial resistance. An example of a commonly used broad-spectrum antibiotic is ampicillin 2c81916759

== Taxonomy == 2c81916759 The nomenclature used here follows the List of Prokaryotic names with Standing in Nomenclature (LPSN). The type species is *Staphylococcus aureus*, and LPSN recognizes... 2c81916759 Lipopolysaccharides can have substantial impacts on human health, primarily through interactions with the immune system. LPS is a potent activator of the immune system and is a pyrogen (agent that causes fever). In severe cases, LPS can trigger a brisk host response and multiple types of acute organ failure which can lead to septic shock. In lower levels and over a longer time period... 2c81916759 **== Bacterial targets ==** 2c81916759 To perform the test, blood is drawn into bottles containing a liquid formula that enhances microbial growth, called a culture medium. Usually, two containers are collected during one draw, one of which is designed for aerobic organisms that require oxygen, and one of which is for anaerobic organisms, that do not. These two containers are referred to as a set of blood cultures. Two sets of blood cultures are sometimes collected from two different blood draw sites. If an organism only appears in one of the two sets, it is more likely to represent contamination with skin flora than a true bloodstream infection. False negative results can occur if the sample is collected after the person has received antimicrobial drugs or if the bottles are... 2c81916759

Gram stain The name comes from the Danish bacteriologist Hans Christian Gram, who developed the technique in 1884. It may also be used to diagnose a fungal infection. and gram-negative bacteria. It may also be used to diagnose a fungal infection. The name comes from the Danish bacteriologist Hans Christian Gram, who Gram stain (Gram staining or Gram's method) is a method of staining used to classify bacterial species into two large groups: gram-positive bacteria and gram-negative bacteria 2c81916759

Antibiotics are often grouped by their ability to act on different bacterial groups. Although bacteria are biologically classified using taxonomy, disease-causing bacteria have historically been classified by their microscopic appearance and chemical function. The morphology of the organism may be classified as cocci, diplococci, bacilli (also known as "rods"), spiral-shaped or pleomorphic. Additional classification... 2c81916759 The Betaproteobacteria comprise over 75 genera and 400 species. Together, they represent a broad variety of metabolic strategies and occupy diverse environments, ranging from obligate pathogens living within host organisms to oligotrophic groundwater ecosystems. Whilst most members of the Betaproteobacteria are heterotrophic, deriving both their carbon and electrons from organocarbon sources, some are photoheterotrophic, deriving energy from light and carbon from organocarbon sources. Other genera are autotrophic, deriving their carbon from bicarbonate or carbon dioxide and their electrons from reduced inorganic ions such as nitrite, ammonium, thiosulfate or sulfide — many of these chemolithoautotrophic. 2c81916759 == Metabolism == 2c81916759 Gram-positive bacteria retain the crystal violet stain used in the test, resulting in a purple color when observed through an optical microscope. The thick layer of peptidoglycan in the bacterial cell wall retains the stain after it has been fixed in place by iodine. During the decolorization step, the decolorizer removes crystal violet from all other cells. 2c81916759 Though the lack of motility might be regarded a disadvantage, some non-motile bacteria possess structures that allow their attachment to eukaryotic cells, like GI mucosal cells. 2c81916759 A *Gemella* species was first described as *Neisseria hemolysans* in 1938. It was reclassified as a new genus in 1960 when strains were found to be distinct enough from *Neisseria* to require a new genus. The name was suggested based on the organism being a diplococcus and *gemellus* is the diminutive of *geminus*, which is Latin for twin. They are facultatively anaerobic and give negative reactions to both oxidase and catalase tests. They are obligately fermentative, producing either a mixture of acetic and lactic acids or an equimolar molar mixture of acetic acid and CO₂. For example, *G. haemolysans* ferments glucose forming a mixture of acetic and lactic acids in the absence of oxygen, whereas when oxygen is present, it forms acetic acid and CO₂. 2c81916759 == Types == 2c81916759 Gram staining is almost always the first step in the identification of a bacterial group. While Gram staining is a valuable diagnostic tool in both clinical and research settings, not all bacteria can be definitively classified by this technique. This gives rise to gram... 2c81916759 The name derives from the Ancient Greek words σταφυλή (*staphylē*), meaning "bunch of grapes", and κόκκος (*kokkos*), meaning "berry" or "grain", referring to the characteristic cellular arrangement. Alexander Ogston first described clustered cocci in pus from a surgical abscess, and Friedrich Julius Rosenbach

subsequently established the genus and distinguished *S. aureus* from the organism now known as *S. epidermidis*. 2c81916759 The genus contains commensal organisms of the skin and mucous membranes of humans and other animals, as well as opportunistic pathogens. *S. aureus* can cause community- and healthcare-associated infections, and antibiotic-resistant strains such as methicillin-resistant *Staphylococcus aureus* (MRSA) can cause serious disease. 2c81916759

Gram-positive bacteria gram-negative bacteria cannot retain the violet stain after the decolorization step; alcohol used in this stage degrades the outer membrane of gram-negative Gram-positive bacteria are bacteria that give a positive result in the Gram stain test, which is traditionally used to quickly classify bacteria into two broad categories according to their type of cell wall. Gram-positive bacteria have a thick layer of peptidoglycan in their cell wall which retains the stain, unlike the thin layer of peptidoglycan in gram-negative bacteria that does not retain the stain 2c81916759

Gemella International Bulletin of Bacteriological Nomenclature Gemella is a genus of Gram-positive bacteria from the order Caryophanales. "A proposed new genus of gram-negative cocci: Gemella" BERGER, U. 37: 527-531. Members of the genus thrive best at high partial pressure of CO₂. (1961-01-01) 2c81916759

Gram staining differentiates bacteria by the chemical and physical properties of their cell walls. Gram-positive cells have a thick layer of peptidoglycan in the cell wall that retains the primary stain, crystal violet. Gram-negative cells have a thinner peptidoglycan layer that allows the crystal violet to wash out on addition of ethanol. They are stained pink or red by the counterstain, commonly safranin or fuchsin. Lugol's iodine solution is always added after addition of crystal violet to form a stable complex with crystal violet that strengthens the bonds of the stain with the cell wall. 2c81916759

Betaproteobacteria Betaproteobacteria are a class of Gram-negative bacteria, and one of the six classes of the phylum Pseudomonadota (synonym Proteobacteria). The Betaproteobacteria Betaproteobacteria are a class of Gram-negative bacteria, and one of the six classes of the phylum Pseudomonadota (synonym Proteobacteria) 2c81916759

Conversely, gram-negative bacteria cannot retain the violet stain after the decolorization step; alcohol used in this stage degrades the outer membrane of gram-negative bacteria, making the cell wall more porous and incapable of retaining the crystal violet stain. Their peptidoglycan layer is much thinner and sandwiched between an inner cell membrane and a bacterial outer membrane, causing them

to take up the counterstain (safranin... 2c81916759

Blood culture Under normal conditions, the blood does not contain microorganisms: their presence can indicate a bloodstream infection such as bacteremia or fungemia, which in severe cases may result in sepsis. or Gram-negative and provides information about their shape—whether they are rod-shaped (referred to as bacilli), spherical (referred to as cocci), or A blood culture is a medical laboratory test used to detect bacteria or fungi in a person's blood. By culturing the blood, microbes can be identified and tested for resistance to antimicrobial drugs, which allows clinicians to provide an effective treatment 2c81916759

Bacterial cellular morphologies Examples of gram-negative diplococci are *Neisseria* spp. Their direct examination under a light microscope enables the classification of these bacteria (and archaea). and *Moraxella catarrhalis*. Diplococci are pairs of cocci. Examples of gram-positive diplococci are Bacterial cellular morphologies are the shapes that are characteristic of various types of bacteria and often key to their identification 2c81916759

Non-motile bacteria If the bacteria are mobile, the line will appear diffuse and extend into the medium. "Identification, classification, and clinical relevance of catalase-negative, gram-positive cocci, excluding the streptococci and enterococci". The cell structures that provide the ability for locomotion are the cilia and flagella. Clin Microbiol Non-motile bacteria are bacteria species that lack the ability and structures that would allow them to propel themselves, under their own power, through their environment. Coliform and Streptococci are examples of non-motile bacteria as are *Klebsiella pneumoniae*, and *Yersinia pestis*. When non-motile bacteria are cultured in a stab tube, they only grow along the stab line. Motility is one characteristic used in the identification of bacteria and evidence of possessing structures: peritrichous flagella, polar flagella and/or a combination of both 2c81916759

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