

# Library Stats Sheet: Gram-positive

Not for Use in Diagnostic Procedures.

**DiversiLab® Kit:** Bacterial (cat.# 270633)

**DiversiLab Library Name:** DL Gram-positive Library

**Application:** Strain-typing for all Gram-positive organisms and characterization of Gram-positive organisms at the genus/species level\*

**Reference Methods:** Phenotyping, sequencing

Library Contents Overview	
<b>Total Number of Samples represented:</b>	529
<b>Number of genera represented:</b>	42
<b>Number of species represented:</b>	161
<b>Cutoff for species match:</b>	Indistinguishable

See complete sample list on pages 4-5.

Viewable Report Fields	
<b>Sample ID</b>	Sample ID
<b>Genus</b>	Genus
<b>Species</b>	species
<b>Subspecies</b>	subspecies
<b>Strain</b>	ATCC number

## General Information:

The Gram-positive library is comprised of samples amplified using the DiversiLab® Bacterial fingerprinting kit. This kit must be used to process samples for comparison to the library and this should be the selected kit inside the DiversiLab software. The culture collection largely used to populate this library is derived from geographically-diverse clinical and industrial sources. On the clinical side, the collection houses isolates with various antimicrobial resistance mechanisms of interest. From the industrial community, isolates are included from agri-food sources as well as from the environment.

Because of the large number of samples contained in the Gram-positive library, the library should be created in a specific way for a quicker report processing speed and analysis. During report creation, the following options should be selected. Figure 1 illustrates how to select these settings in the DiversiLab Software.

- **Type** – Classification, allows use of the Top Match feature
- **Viewable Report Fields** – Sample ID, Genus, Species, fields listed above are optional
- **Color-coding** – Genus (or Species if more specific information is required)
- **Collapse (%)** – 85-90%, allows dendrogram to condense to manageable size

After you have created the report as shown above, report processing may take some time depending on the number of samples that you are comparing due to the large nature of the report. Please be patient. When first looking at the report, it is recommended to:

\* For the highest level of discrimination of a particular organism, use of the genus-specific kit is recommended when available. The use of the Bacterial fingerprinting kit is not recommended for *Mycobacteria* or fungi.

Note: The Library should be used as a guide.

**New Report**

<p><b>Report Information</b></p> <p>*Name: <input type="text" value="Bacteria"/></p> <p>*Kit: <input type="text" value="Universal"/></p> <p>Library: <input type="text" value="#43 DL Gram-positive Library"/></p> <p>Folder: <input type="text" value=""/></p> <p>*Type: <input type="text" value="Classification"/></p> <p><input type="button" value="Submit"/></p>	<p><b>Viewable Report Fields</b></p> <p>Field 1: <input type="text" value="Sample ID"/></p> <p>Field 2: <input type="text" value="Genus"/></p> <p>Field 3: <input type="text" value="Species"/></p> <p>Field 4: <input type="text" value=""/></p> <p>Color-coding: <input type="text" value="Genus"/></p>	<p><b>Similarity</b></p> <p>*Method: <input type="text" value="Pearson Correlation"/></p> <p>Scale: <input type="text" value="NA"/></p> <p>Line: <input type="text" value="NA"/></p> <p><b>Dendrogram</b></p> <p>Collapse(%): <input type="text" value="90%"/></p> <p>Virtual-gel Image: <input checked="" type="checkbox"/></p>
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\* Indicates Required Fields

Figure 1. Recommended settings for report creation

1. Check the top match section of the report: if the query sample has a number of the same organism in its match list, there may be a match.

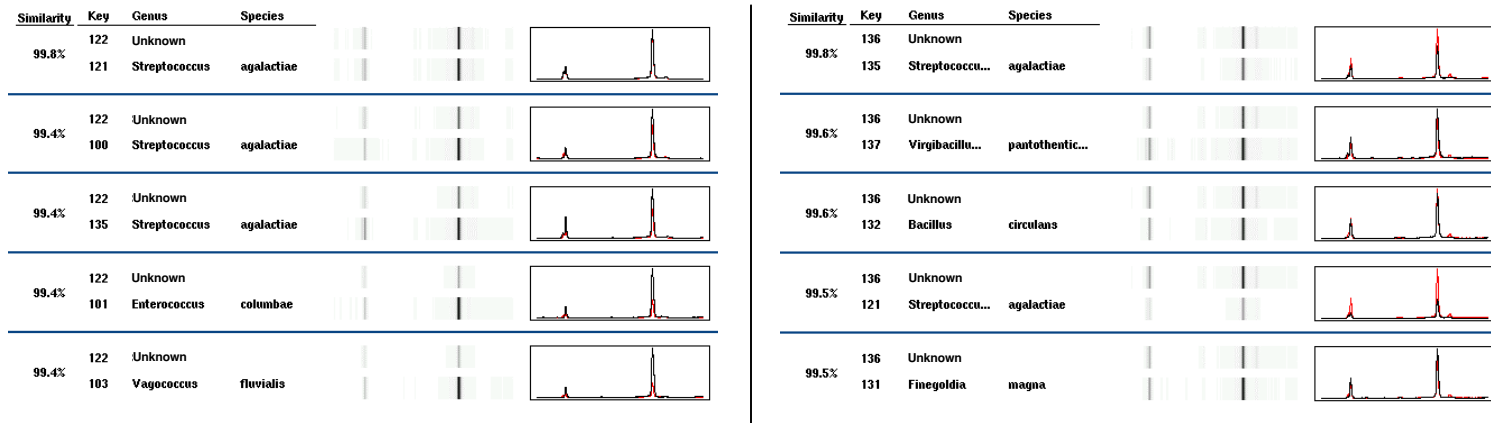


Figure 2. Top match report showing an unknown sample, key 122, with top matches to *S. agalactiae* (left). Top match report showing a different unknown sample, key 136, also with top match to *S. agalactiae*; however, other organisms are also a high match (right). Notice that the % similarity of all matches is high.

2. Examine graph overlays for indistinguishable fingerprints. It is especially important to view the sample graphs of Gram-positive fingerprints as they often have one or two large peaks with many smaller peaks. Because of this, multiple genera may cluster together on the dendrogram; however, smaller peaks will discriminate these samples from each other. Additionally, selection of the Kullback-Leibler calculation method may aid the clustering of Gram-positive data.

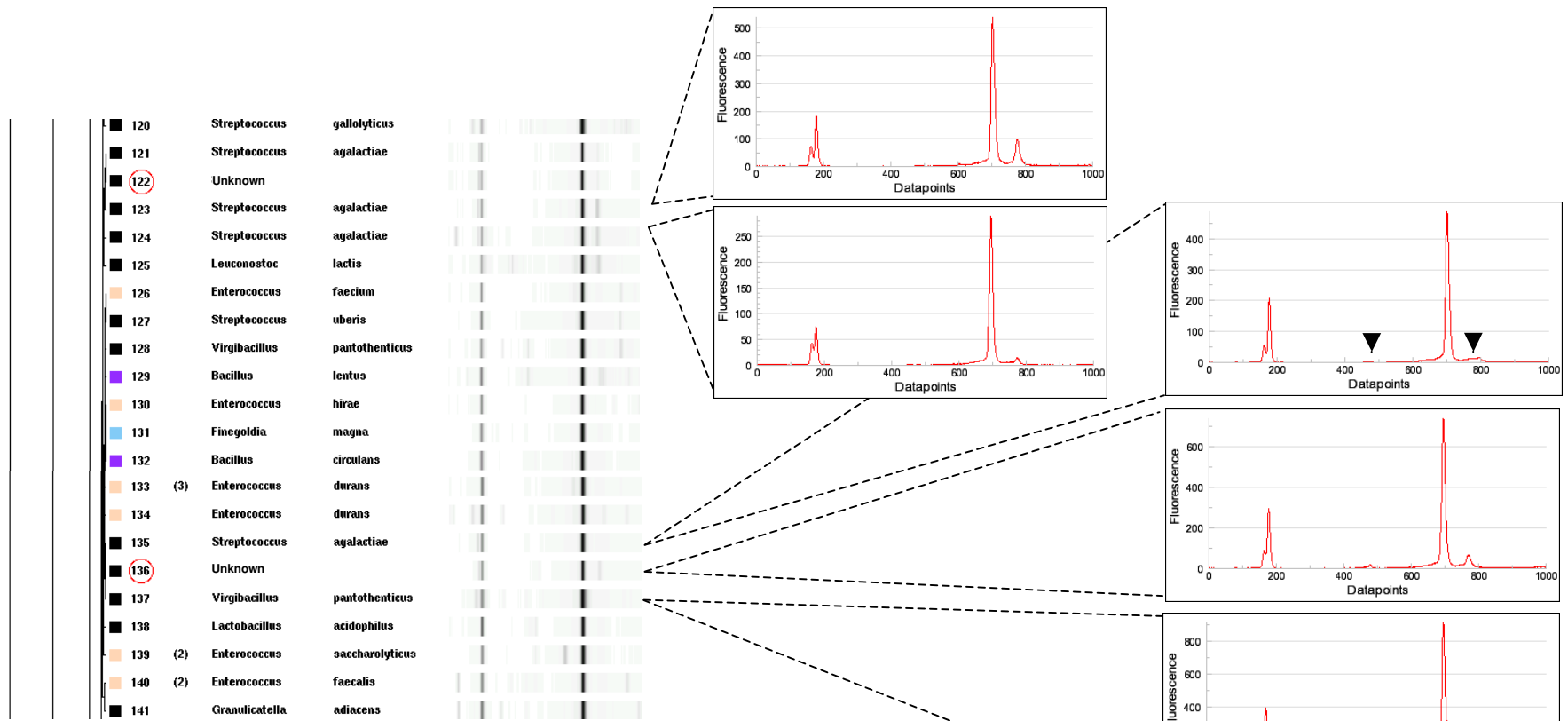


Figure 3. Dendrogram showing two query samples mentioned above. Notice that key 122 clusters within *S. agalactiae* and the sample graphs show an indistinguishable fingerprint with its closest match (upper right). Key 136 clusters near *S. agalactiae* and *V. pantothenicus*; however, its fingerprint is not indistinguishable to either of these top matches (lower right). Therefore, key 122 might be characterized as *S. agalactiae* and key 136 cannot be characterized.

In general, the library shows clustering at the genus/species level. Oftentimes, a specific genus will show a large cluster in which multiple species are contained. However, each species has a distinct fingerprint. It is important to note that dendrograms created in the DiversiLab software show the similarity between sample fingerprints; they do not indicate phylogenetic similarity between samples. Since rep-PCR can discriminate at the sub-species level<sup>1</sup>, there may be multiple fingerprint patterns (strains) for an individual species. Therefore the following are possible:

1. There may be multiple clusters for a single species represented in the library.
2. The query sample fingerprint may not have a match in the library, even though the particular species is represented.

1. Olive, D. M. and P. Bean. 1999. Principles and applications of methods for DNA-based typing of microbial organisms. J. Clin. Microbiol. 37(6): 1661-1669

<b>Genus</b>	<b>species</b>	<b>#</b>	<b>Genus</b>	<b>species</b>	<b>#</b>	<b>Genus</b>	<b>species</b>	<b>#</b>		
<i>Actinomyces</i>	<i>israelii</i>	1	<i>Erysipelothrix</i>	<i>rhusiopathiae</i>	2	<i>Staphylococcus</i>	<i>arlettae</i>	2		
	<i>meyeri</i>	2	<i>Eubacterium</i>	<i>limosum</i>	1		<i>aureus</i>	12		
	<i>naeslundii</i>	1	<i>Facklamia</i>	<i>hominis</i>	1		<i>auricularis</i>	3		
	<i>odontolyticus</i>	2	<i>Finegoldia</i>	<i>magna</i>	1		<i>capitis</i>	7		
<i>Aerococcus</i>	<i>urinae</i>	4	<i>Gemella</i>	<i>bergeri</i>	2		<i>caprae</i>	6		
	<i>viridans</i>	1		<i>haemolysans</i>	1		<i>carnosus</i>	2		
<i>Alloiococcus</i>	<i>otitis</i>	1		<i>sanguinis</i>	1		<i>chromogenes</i>	2		
<i>Arcanobacterium</i>	<i>haemolyticum</i>	5	<i>Geobacillus</i>	<i>stearothermophilus</i>	5		<i>cohnii</i>	7		
	<i>pyogenes</i>	4		<i>thermodentrificans</i>	1		<i>epidermidis</i>	2		
<i>Bacillus</i>	<i>amyloliquefaciens</i>	1	<i>Globicatella</i>	<i>sulfidifaciens</i>	2		<i>equorum</i>	5		
	<i>cereus/thuringiensis</i>	43	<i>Granulicatella</i>	<i>adiacens</i>	2		<i>gallinarum</i>	4		
	<i>circulans</i>	2		<i>elegans</i>	2		<i>haemolyticus</i>	3		
	<i>clausii</i>	2	<i>Helcococcus</i>	<i>kunzii</i>	3		<i>hominis</i>	6		
	<i>coagulans</i>	2	<i>Kocuria</i>	<i>kristinae</i>	5		<i>hyicus</i>	2		
	<i>firmus</i>	6		<i>rosea</i>	3		<i>intermedius</i>	6		
	<i>lentus</i>	1		<i>varians</i>	1		<i>kloosii</i>	4		
	<i>licheniformis</i>	3	<i>Kytococcus</i>	<i>sedentarius</i>	1		<i>lentus</i>	3		
	<i>megaterium</i>	4	<i>Lactobacillus</i>	<i>acidophilus</i>	1		<i>lugdunensis</i>	4		
	<i>mycoides</i>	4		<i>brevis</i>	1		<i>saccharolyticus</i>	3		
	<i>pumilus</i>	9		<i>fermentum</i>	1		<i>saprophyticus</i>	3		
	<i>subtilis</i>	9		<i>gasseri</i>	3		<i>schleiferi</i>	5		
<i>Bifidobacterium</i>	<i>adolescentis</i>	1		<i>plantarum</i>	1		<i>sciuri</i>	2		
	<i>dentium</i>	1		<i>reuteri</i>	2		<i>simulans</i>	5		
<i>Brevibacillus</i>	<i>agri</i>	3		<i>salivarius</i>	1		<i>vitulinus</i>	1		
	<i>laterosporus</i>	4		<i>Lactococcus</i>	<i>garvieae</i>		1	<i>warneri</i>	3	
<i>Clostridium</i>	<i>baratii</i>	4		<i>Lactococcus</i>	<i>lactis</i>		7	<i>Streptococcus</i>	<i>agalactiae</i>	7
	<i>butyricum</i>	1		<i>Leuconostoc</i>	<i>pseudomesenteroides</i>		4		<i>alactolyticus</i>	1
	<i>cadaveris</i>	3	<i>Listeria</i>	<i>grayi</i>	5		<i>canis</i>		5	
	<i>clostridioforme</i>	5		<i>innocua</i>	5	<i>cristatus</i>	3			
<i>difficile</i>	2	<i>ivanovii</i>		8	<i>dysgalactiae</i>	6				
<i>Clostridium</i>	<i>histolyticum</i>	3	<i>Listeria</i>	<i>monocytogenes</i>	5	<i>Streptococcus</i>	<i>equi</i>	10		

	<i>perfringens</i>	1		<i>seeligeri</i>	5		<i>gallolyticus</i>	3
	<i>sordellii</i>	1		<i>welshimeri</i>	2		<i>hyointestinalis</i>	1
	<i>subterminale</i>	5	<i>Lysinibacillus</i>	<i>fusiformis</i>	1		<i>hyovaginalis</i>	1
	<i>tertium</i>	2		<i>sphaericus</i>	4		<i>infantarius</i>	1
<i>Collinsella</i>	<i>aerofaciens</i>	2	<i>Macrococcus</i>	<i>caseolyticus</i>	1		<i>intermedius</i>	1
<i>Corynebacterium</i>	<i>amycolatum</i>	3	<i>Micrococcus</i>	<i>luteus</i>	2		<i>mitis</i>	5
	<i>jeikeium</i>	4		<i>lylae</i>	2		<i>oralis</i>	2
	<i>pseudodiphtheriticum</i>	5	<i>Nocardia</i>	<i>asteroides</i>	2		<i>parasanguinis</i>	2
	<i>pseudotuberculosis</i>	3		<i>brasiliensis</i>	2		'pasteuri'	1
	<i>striatum</i>	4		<i>cyriacigeorgica</i>	2		<i>phocae</i>	1
	<i>ulcerans</i>	5		<i>otitidiscaviarum</i>	1		<i>pneumoniae</i>	1
	<i>urealyticum</i>	3		<i>pseudobrasiliensis</i>	1		<i>pseudoporcinus</i>	1
<i>Eggerthella</i>	<i>lenta</i>	3		<i>puris</i>	1		<i>pyogenes</i>	2
<i>Enterococcus</i>	<i>avium</i>	6		<i>transvalensis</i>	3		<i>sobrinus</i>	3
	<i>casseliflavus</i>	3	<i>Paenibacillus</i>	<i>alvei</i>	5		<i>suis</i>	3
	<i>cecorum</i>	3		<i>lentimorbus</i>	1	<i>Vagococcus</i>	<i>fluvialis</i>	2
	<i>columbae</i>	4		<i>polymyxa</i>	6	<i>Virgibacillus</i>	<i>pantothenticus</i>	4
	<i>durans</i>	8		<i>validus</i>	4	<i>Viridibacillus</i>	<i>arvi</i>	1
	<i>faecalis</i>	6	<i>Parvimonas</i>	<i>micra</i>	4			
	<i>faecium</i>	2	<i>Pediococcus</i>	<i>acidilactici</i>	3			
	<i>gallinarum</i>	5		<i>pentosaceus</i>	1			
	<i>hirae</i>	3	<i>Peptoniphilus</i>	<i>asaccharolyticus</i>	1			
	<i>raffinosis</i>	2	<i>Propionibacterium</i>	<i>granulosum</i>	1			
	<i>saccharolyticus</i>	4	<i>Rhodococcus</i>	<i>equi</i>	1			

Note: The Library should be used as a guide.

