BBL™ CHROMMagar™
Family of Products

A colorful approach to efficient testing

BD
Helping all people live healthy lives
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BD Diagnostics has been manufacturing BBL™ prepared media products for almost 50 years. In that time we have gained a wealth of knowledge that remains the cornerstone of the high quality BBL brand. From the first introduction of Thioglycollate medium and proprietary peptones such as Tryptase™, to the development of media products such as Mycobactosel™ L-J, all the way to our patented Stacker™ Petri dish designs and formulations, like GC-Lect™ and ssA™, our history as leaders in microbiology is without equal. These are just a few of the many great milestones that BD Diagnostics and BBL can point to with pride.

1895 Ray Chemical (later Difco Laboratories) was founded.
1897 Maxwell W. Becton and Fairleigh S. Dickinson met and later founded Becton, Dickinson and Company.
1913 Introduced first line of peptones - Bacto™ Peptone.
1935 Baltimore Biological Laboratory (BBL) founded.
1955 BD enters the microbiology field with the acquisition of BBL.
1960 Introduction of commercially-prepared plated media.
1956 Prepared plated media production start at BD Heidelberg plant.
1976 Prepared plated media production start at BD Heidelberg plant.
1977 BD enters the microbiology field with the acquisition of BBL.
1991 Central Distribution Center opened in Temse, Belgium, to serve Europe, Middle East and Africa.
1997 BD acquires Difco Laboratories.
1998 Prepared bottled media production began at BD Heidelberg plant.
2004 BD launches BBL™ CHROMagar™ Family of Products.
2008 Latest addition to the BBL™ CHROMagar™ Family of Products with the launch of BBL™ CHROMagar™ MRSA II.

BBL™ CHROMagar™ products are designed to streamline identification, provide enhanced differentiation of pathogens and allow microbiologists to realize material and labor reductions in the laboratory. This highly differentiated product family combines the patented CHROMagar technology for organism identification with the high quality BBL proprietary peptones and media ingredients that microbiologists have counted on for decades, resulting in exclusive formulations available only from BD. Stay tuned because there are more formulations to come.

The BBL™ CHROMagar™ family of media products
• **Enhanced Differentiation of Pathogens**
• **Reduced Material Usage**
• **Reduced Costs**

The BBL™ CHROMagar™ family of products utilize a chromogen mix that consists of artificial substrates (chromogens) that release differently colored compounds upon degradation by specific microbial enzymes, thus assuring the direct differentiation of certain species or the detection of certain groups of organisms with only a minimum of confirmatory tests.

BBL Formulations - Available exclusively from BD.

* Compared to traditional culture plate methods.
BBL™ CHROMagar™ Orientation

BBL™ CHROMagar™ Orientation medium is a nonselective, differential medium for presumptively identifying bacterial isolates from primary clinical specimens. Specially selected peptones supply the nutrients in BBL CHROMagar Orientation medium. Clinical studies have demonstrated that CHROMagar Orientation medium is an ideal medium for use in differentiation and enumeration of urinary tract infection pathogens.

- Increases laboratory efficiency and decreases material costs by reducing the number of plates to inoculate, incubate and read.
- Enhances visual differentiation of colonies, resulting in less time spent sub-culturing mixed infections.
- Allows for earlier set up of susceptibility testing.
- Improves detection of mixed urine cultures for quicker assessment of contaminated samples, decreasing work-up time.
- Identifies E. coli and Enterococcus from the primary plate – confirmatory testing is not required.
- Immediately resolves approximately 80% of positive urines.
- Provides presumptive identification of *Staphylococcus saprophyticus* for more efficient screening of suspect urine samples.
- Allows isolation and presumptive identification of both gram-positive and gram-negative pathogens with a single plate.
- Inhibits the swarming of *Proteus* spp. with a unique BBL formulation.

1. In accordance with CLSI document M35. Abbreviated Identification of Bacteria and Yeast approved guideline.

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<tr>
<th>Cat. No.</th>
<th>Description</th>
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<tr>
<td>257481</td>
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<tr>
<td>254107</td>
<td>BBL™ CHROMagar™ Orientation</td>
<td>120 Plates</td>
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Identify *E. coli* and *Enterococcus* sp. from the primary plate – confirmatory testing is not required.1

These two organisms represent approximately 80% of urinary tract infections.

1. In accordance with CLSI document M35. Abbreviated Identification of Bacteria and Yeast approved guideline.
BBL™ CHROMagar™ Orientation / Columbia CNA Agar (Biplate)

BBL™ CHROMagar Orientation Medium / Columbia CNA Agar (Biplate) is used for isolation of bacteria commonly involved in urinary tract infections. While CHROMagar Orientation medium is a non-selective medium for the isolation, identification, or differentiation of urinary tract pathogens, Columbia CNA Agar is a selective medium for the isolation of Gram positive bacteria. As today's laboratories are challenged to do more with less, this new format supports lean microbiology processes in the following ways:

- Reduces reagent and identification panel usage\(^1\) by resolving up to 80% of positive urine cultures without performing additional confirmatory testing.
- Faster, visual identification of common urinary pathogens (Escherichia coli and Enterococcus) improving turnaround time for positives.
- Colorimetric detection of mixed cultures allows for faster assessment of sample integrity and detection of improperly collected samples.
- Standardizes urine culture processing to a single catalog number.

\(^1\) CHROMagar Orientation is in accordance with CLSI document M35. Abbreviated Identification of Bacteria and Yeast approved guideline.

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BBL™ CHROMagar™ O157

Escherichia coli serotype O157:H7 is a human pathogen associated with hemorrhagic colitis. Traditionally, this organism has been differentiated from its nonpathogenic counterparts using media containing sorbitol. E. coli O157: H7 will ferment sorbitol slowly, or not at all. BBL™ CHROMagar™ O157 was developed to meet the needs of microbiologists requiring a better medium for isolation and differentiation of E. coli O157. This medium has been designed for use as a primary plate for stool cultures and is an ideal medium for screening food samples for E. coli O157. BBL CHROMagar O157 provides additional benefits:

- Reduces costs of sub-culturing, biochemical identification and latex testing of false-positive organisms isolated from MacConkey Agar with Sorbitol and SMAC CT media.
- Is compatible with latex agglutination testing for confirmation, reducing turnaround time and saving valuable technician time.
- Provides more efficient use of technologist time when screening stool cultures.
- Detects E. coli O157 using a highly specific chromogenic reaction, limiting false results associated with detection of E. coli O157 by sorbitol fermentation.
- Distinguishes E. coli O157 (mauve colonies) from E. coli non-O157 (blue colonies) with a color reaction for clearer differentiation of toxigenic strains.
- Inhibits most Proteus, Pseudomonas and Aeromonas strains using specialized selective agents.
- Sensitivity 98% Specificity 100% (Compared to Sorbitol-MacConkey (SMAC) and Sorbitol-MacConkey Cefixime Tellurite (SMAC-CT).

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<td>254105</td>
<td>BBL™ CHROMagar™ O157</td>
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**BBL™ CHROMagar™ Staph aureus**

BBL™ CHROMagar™ Staph aureus, is a chromogenic medium which utilizes an enzymatic reaction that produces easy-to-identify mauve-colored colonies with the growth of *Staphylococcus aureus*. Other staphylococcal isolates produce cream-colored to white colonies on this medium.

BBL CHROMagar Staph aureus is highly effective in differentiating organisms with atypical appearance or weak hemolysis making it an ideal medium for *Staphylococcus aureus* surveillance.1 Traditionally, *S. aureus* isolates have been identified using Mannitol Salt agar to determine mannitol fermentation and TSA II Sheep Blood Agar to exhibit a zone of beta hemolysis. BBL CHROMagar Staph aureus is designed for use as a primary plate when testing for *S. aureus* in clinical or industrial specimens. BBL CHROMagar Staph aureus is highly effective in differentiating organisms with atypical appearance or weak hemolysis making it an ideal medium for *Staphylococcus* surveillance.1 Additional benefits include:

- Isolates and identifies *Staphylococcus aureus* from clinical sources without the use of confirmatory testing.1
- Showed increased recovery by 11% when compared to conventional media, as demonstrated in a clinical study.
- Allows for performance of susceptibility testing directly from the BBL CHROMagar Staph aureus plate, reducing turnaround time and saving valuable tech time.
- Eliminates the need for subculture to a nonselective medium, reducing consumable material costs and improving workflow.
- Sensitivity 99.5%.
- Specificity 99.2%.

1 In accordance with CLSI document M35. Abbreviated Identification of Bacteria and Yeast approved guideline.

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**BBL™ CHROMagar™ MRSA II**

New, improved medium for the direct detection of MRSA from a wide range of clinical specimen types

The new BBL™ CHROMagar™ MRSA II* is a selective and differential medium for the direct detection of methicillin resistant *Staphylococcus aureus* (MRSA) from clinical specimens.

- Large, intensely colored MRSA colonies.
- Improved sensitivity, specificity and selectivity. BBL™ CHROMagar™ MRSA II was evaluated in a study** in four different clinical laboratories in Germany and the U.S. Overall recovery of MRSA on BBL™ CHROMagar™ MRSA II was higher at 95.6% (744/778) compared to a recovery of 79.8% (621/778) on traditional culture plates for all specimen types combined. The combined overall agreement of BBL™ CHROMagar™ MRSA II compared to the cefoxitin disk diffusion test for all specimen types was 99.3% (5015/5051).
- Wide range of clinical specimen types. The BBL™ CHROMagar™ MRSA II test can be performed on:
  - respiratory (e.g. nares, throat and sputum),
  - lower gastrointestinal (e.g. rectal and stool),
  - skin (e.g. groin/vailla and perineum/perianal), and
  - wound specimens, and
- positive blood culture bottles containing the gram-positive cocci.

* European, U.S. & Canadian Patents Pending. Product is not available for sale in US or Canada.
** BD data on file. For more information please refer to the instructions for use.

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**So easy to read.**

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<td>257099</td>
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<tr>
<td>257435</td>
<td>BBL CHROMagar™ MRSA II</td>
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**BBL™ CHROMagar™ Candida**

BBL™ CHROMagar™ Candida is a nutritive medium for isolating and differentiating yeasts from primary culture of clinical specimens. BBL™ CHROMagar™ Candida has gained wide acceptance through the years by many leading mycologists. BBL™ CHROMagar™ Candida differentiates selected yeasts by color morphology, most other yeast isolates will appear in their natural white/cream colony color. This ability to isolate, identify and differentiate mixed yeast cultures has provided many microbiology laboratories the opportunity to operate more cost effectively.

Additional benefits:
- Unrivaled accuracy for the isolation and direct identification of Candida albicans, C. tropicalis and C. krusei (which may be fluconazole resistant) without the need for additional confirmation tests.
- Differentiates mixed yeast isolates usually not differentiated on other fungal isolation media from clinical specimens.
- Inhibits normal bacterial flora (using chloramphenicol) making it an ideal medium for primary yeast culture of urine, genital and throat samples.
- Decreases turnaround time for yeast isolates by up to 48 hours when used as a primary plate.
- Reduces the amount of yeast identification panels used in the lab, thereby increasing workflow efficiency and lowering overall costs of yeast workup.

**BD™ Sabouraud GC Agar / BBL™ CHROMagar™ Candida Medium (Biplate)**

BD™ Sabouraud GC Agar / BBL™ CHROMagar™ Candida Medium (Biplate) is used for the selective isolation of fungi and for the isolation and identification of Candida albicans, C. tropicalis and C. krusei from clinical specimens. Sabouraud Agar with glucose is a widely used medium which, due to its low pH and the high glucose concentration, is partially selective for fungi. As many bacteria tolerate the low pH and the high glucose concentration and will grow on Sabouraud agar, especially during the prolonged incubation period often necessary for fungal isolation, several formulations containing antibacterial inhibitors have been developed. Antimicrobials like penicillin, chloramphenicol, aminoglycosides, or combinations of these have been shown to be effective in inhibiting bacteria without affecting fungal growth.

BBL™ CHROMagar™ Candida Medium is a selective and differential medium for the isolation of fungi. With the inclusion of chromogenic substrates in the medium, the colonies of C. albicans, C. tropicalis and C. krusei produce different colors, thus allowing the direct detection of these yeast species on the isolation plate.

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<td>254515</td>
<td>BD™ Sabouraud GC Agar / BBL™ CHROMagar™ Candida Medium (Biplate)</td>
<td>20 plates</td>
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**BBL™ CHROMagar™ Salmonella**

BBL™ CHROMagar™ Salmonella was developed for use in Salmonella screening of either clinical or industrial samples. BBL™ CHROMagar™ Salmonella can be used with or without pre-enrichment broth media. As with any Salmonella isolation procedure, pre-enrichment with a broth (i.e., Selenite F or GN Broth) will increase recovery of Salmonella spp. Additional benefits of BBL™ CHROMagar™ Salmonella are:

- Detects Salmonella with a highly specific chromogenic reaction.
- Salmonella detection not based on H₂S or glucuronidase production, or on negative lactose fermentation, thus minimizing interference from hydrogen sulfide (H₂S)-producing colonies such as Proteus and Citrobacter spp. This results in a significant reduction of false positives.
- Allows for slide agglutination and serotyping directly from the plate for more efficient use of technologists’ time.
- Reduces consumable costs associated with biochemical identification and agglutination testing of false-positive isolates.
- Reduces the time needed for confirmatory biochemical and serological tests by up to one day as compared to Hektoen Enteric Agar.
- Differentiates low levels of Salmonella in cultures containing mixed coliform bacteria, which helps to streamline detection of pathogenic organisms.

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<td>254104</td>
<td>BBL™ CHROMagar™ Salmonella</td>
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**BBL™ CHROMagar™ Salmonella / XLD Agar (Biplate)**

BBL™ CHROMagar™ Salmonella is a selective differential medium for the isolation and presumptive identification of Salmonella, and XLD Agar (Xylose Lysine Desoxycholate Agar) is a moderately selective and differential medium for the isolation of Salmonella and Shigella. The combination of both media in a biplate allows simultaneous detection of Shigella and Salmonella. The presence of BBL™ CHROMagar™ Salmonella and XLD Agar in a biplate combines the highly selective chromogenic medium which allows rapid presumptive identification of Salmonella by colony color with the moderate selectivity of XLD Agar which increases the chance of recovery when the bacterial population is low and provides an indication of the presence of Shigella in the specimen. Additionally, the biplate satisfies the requirement to use two different media for isolation of Salmonella.
We make a continuous effort to support our customer’s daily practices. Our key goal is to provide solutions which help our clients design their workflow in an efficient and effective way.


New equipment, machines or repairs undergo established qualification and validation steps according to the BD validation toolkit. Each process is carried out under controlled conditions. All machines and equipment are subject to ongoing preventive maintenance.

This ensures that our machines and equipment are always ready for operation. As part of our validation initiatives, all production processes undergo a risk analysis which allows us to identify critical process steps and control them so that deviations do not occur from the outset.

The Heidelberg plant has introduced the Six Sigma and Lean Management programs as tools for continuous improvement. This program ensures that our processes are regularly tested for improvement potential and errors can be prevented from occurring in the first place, or problems that do occur can be quickly recognized and corrected. All of our employees are requested to identify improvement potentials and work on them. With those activities we achieve high product quality and a predictable product supply. To react to specific customer requests our local R&D department - together with the customer, production, regulatory affairs - will develop a solution that will both satisfy the customer’s request and (also) meet the regulatory requirements.
BBL™ CHROMagar™ Orientation


2005 ASM poster. Bronzinoff et al., Medical Microbiology Laboratory, University of Alberta Hospital, Edmonton, Alberta, Canada. Isolation of uropathogens on chromogenic agar versus standard discipiles from urine collected with and without preservative.

2004 ASM poster. Cruz et al., Toronto Medical Laboratories and Mount Sinai Hospital, Toronto, ON, Canada. Cost effectiveness of BBL™ CHROMagar™ Orientation medium for routine urine cultures.

2004 ASM poster. Delulius et al., Cleveland Clinic Foundation, Cleveland, Ohio. Use of BBL™ CHROMagar™ Orientation media for the identification and enumeration of urinary tract pathogens: Comparison to routine culture techniques.

2004 ASM poster. Ritter et al., BD Diagnostics, Sparks, MD. The ability of BBL™ CHROMagar™ Orientation to recover Corynebacterium urealyticum.

2004 ASM poster. Skulnick et al., Department of Microbiology, TML/Mount Sinai Hospital, University of Toronto, ON, Canada. Cost effectiveness of BBL™ CHROMagar™ Orientation medium for routine urine cultures.

2005 ASM poster. Whittier and Della-Latta, Columbia University Medical Center, New York, NY. Evaluation of BBL™ CHROMagar™ Orientation agar for routine urine cultures in a high volume clinical laboratory.

BBL™ CHROMagar™ Staph aureus


2003 ICAAC poster. D’Souza and Baron, Stanford University Medical School. BBL™ CHROMagar™ Staph aureus is superior to manitol salt for detection of Staphylococcus aureus in complex mixed infections.

BBL™ CHROMagar™ MRSA II

2008 ICAAC poster. S. Mahanta-Kumar et al., on behalf of the MOSAR WP2 team, University of Antwerp, Antwerp, Belgium. Evaluation of Chromogenic Media for MRSA Detection Using a Combined Bayesian-Penalized Likelihood Approach.

2008 ASM poster. Ritter et al, BD Diagnostics, Cockeysville, MD, USA. Recovery and Identification of Community-Acquired MRSA using BBL™ CHROMagar™ MRSA II and BBL™ CHROMagar™ MRSA.

BBL™ CHROMagar™ Candida


2003 ASM poster. Laneone et al., Weill Cornell Medical Center. BBL™ CHROMagar™ Candida as the sole primary medium for the isolation of yeasts and as a source medium for the rapid assimilation of trehalose (RAT) test.

2004 ASM poster. Morhaime et al., Cornell Medical Center, New York-Presbyterian Hospital, New York, NY. Growth characteristics of moulds on CHROMagar Candida medium.

2005 ASM poster. Partipakee et al., Section of Clinical Microbiology, Department of Clinical Pathology, The Cleveland Clinic Foundation, Cleveland, Ohio. Rapid identification of yeast isolates using BBL™ CHROMagar™ Candida.

2004 ASM poster. Scognamiglio et al., Cornell Medical Center, New York-Presbyterian Hospital, New York, NY. Evaluation of a new commercially available rapid assimilation otrhalose (RAT) test for the identification of Candida glabrata.

BBL™ CHROMagar™ Salmonella


BBL™ CHROMagar™ O157

2004 ASM poster. Vetterli, Children's Hospital & Research Center at Oakland, Oakland, CA. Comparison of BBL™ CHROMagar™ O157 to Sorbitol MacConkey for recovery of E. coli O157 in stool cultures.