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| QC/QA STOCK ORGANISMS – KWIK-STIK™-- Microbank™ |
| **Purpose** | This procedure provides instructions for performing QC/QA STOCK ORGANISM MAINTENANCE |
| **Principle** | Microorganisms with known and predictable growth requirements, selective and differential properties, biochemical activity or phenotypic profiles, serological, assay responses, antimicrobial susceptibility characteristics, and assay values are used in Quality Control, education and proficiency programs.A reliable source of stock QC cultures is essential for quality control of culture media, bacterial stains, biochemical and serological reagents, and antimicrobial susceptibility testing. A combination of cryopreserved bacteria in (Microbank™ vials) and reconstituted lyophilized bacterial cultures (KWIK-STIK™ (or LYFO DISK ™)) placed onto non-selective agar slants are used in Children’s Lab in order to provide an efficient and reliable mechanism for stock organism maintenance.KWIK-STIK™ (or LYFO DISK ™) microorganisms are lyophilized preparations of ATCC reference strains. The lyophilized organism preparation consists of gelatin, a carrier for the organism, skim milk, ascorbic acid, and dextrose for preservation of the cell wall during freeze-drying and storage, and charcoal, for neutralization of toxic substances formed during lyophilization.Cryopreservation is achieved utilizing the Microbank™ storage system. Microbank™ is a sterile vial containing porous, doughnut-shaped beads that serve as carriers to support bacteria and *Candida albicans*. Other fungal isolates do not tolerate cryopreservation well, and are stored differently as is explained below in item [F] of the PROCEDURE section. After inoculation, the vials can be kept indefinitely when stored at -50°C to -70°C. When a fresh isolate is required from frozen storage, a single bead is removed from the vial and used to directly inoculate suitable medium. Cryopreservation preserves the viability of fastidious bacteria and allows for long-term storage of isolates.This procedure also includes steps for obtaining weekly QC strains and can be found on page 5 of the PROCEDURE section. |
| **Policy Statements** | This procedure applies to all Clinical Laboratory personnel who perform organism microbiology QC procedures. |
| **Materials** | **Supplies** | **Media** |
|  | • KWIK-STIK™ DuoPak *E. coli* ATCC 8739* Microbank™ vials, various colors

• Cryovial cap inserts, white• Inoculating loops/needle• Sterile swabs• 9” disposable plastic pipettes | • Columbia 5% sheep blood agar• Chocolate II agar• CDC Anaerobe sheep blood agar• Sabouraud Dextrose agar• Potato agar slants |
| Sample | 1. Store unused Microbank™ vials at room temperature.
2. Keep away from direct light.
3. Stored under these conditions, Microbank™ vials may be used up to the date of expiration shown on the product label.
4. Plate and slant agar media required for isolation and storage of bacterial and fungal isolates are kept at 2-8° C until needed.
5. Inoculated agar plates and slants are stored at room temperature.
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| **Special Safety Precautions** | Microbiologists/virologists are subject to occupational risks associated with specimen handling. Refer to the safety policies:1. *Biohazard Containment*
2. *Safety in the Microbiology/Virology Laboratory*
* *Biohazardous Spills*
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| **Procedure** **Microbank™ Preparation****Recovery of Bacteria from Microbank™ Storage****Recovery of KWIK-STIK™ Microorganisms****Recovery of KWIK-STIK™ Microorganisms****(continued).****Recovery of Routine Weekly QCStrains****Biweekly recovery of Maldi Calibration Organism *E. coli* ATCC 8739****Daily QC strain subculture instructions****Daily QC strain subculture instructions****(continued).****Stock Culture****Maintenance****Daily QC Organism Subculture Schedule** |  |
| 1. | Obtain the correct color Microbank™ vial(s) according to which organisms are being readied for storage. |
| 2. | Label each new Microbank™ vial with: organism name, ATCC number or other identifying designation, and the month and year the organism is being frozen. |
| 3. | Under a microbiological safety cabinet practicing aseptic technique, open the screw cap Microbank™ vial. |
| 4. | Using a sterile swab, inoculate the cryopreservative fluid in the vial with young colonial growth (18-24 hours) picked from a pure culture to approximately a 3-4 McFarland standard. **Note: Organism should be taken from Microbank freezer sub that has been subbed one additional time.** |
| 5. | Close vial tightly and invert 4-5 times to emulsify organism. **Do not vortex.** **Note: At this point the bacteria will be bound to the porous beads.** |
| 6. | The excess cryopreservative should be well aspirated using a 9” disposable plastic disposable pipette. **Removing as much liquid as possible assists bead retrieval from cryopreservation.** Close the vial finger tight. |
| 7. | Store inoculated vials in an upright position in the microbiology -70°C freezer. |
| 8. | Organisms should be re-frozen yearly to ensure viability. |
|  **Quality Assurance** |
| 1. | For each stock bacterial isolate that is introduced into a new Microbank™ vial, an appropriate agar plate is inoculated with a bead from the new Microbank™ vial after frozen storage to ensure that a pure and viable stock of the desired organism was obtained |
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| 1. | Use a freezer block to hold the Microbank™ vials. Excessive temperature changes may reduce the viability of the bacteria. |
| 2. | Under aseptic conditions, open a selected Microbank™ vial and, using an inoculating needle, or loop remove one bead. Close the vial finger-tight. |
| 3. | Roll the obtained bead around in primary inoculation area of an appropriate nonselective agar plate or agar slant. |
| 4. | Discard the bead immediately after use into a biohazard container. |
| 5. | Streak out the agar plate for isolation and incubate overnight in an environment appropriate for the organism to grow. Label these plates **M1 (AST QC organism plates are to remain refrigerated and are not to be used for AST quality control testing)**.  |
| 6. | Return Microbank™ vials promptly to frozen storage. Excessive temperature changes reduce the viability of cryopreserved organisms. |
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| 1. | Each KWIK-STIK™ unit contains a lyophilized pellet of a single microorganism strain, a reservoir of hydrating fluid and an inoculating swab. Each device is sealed within a laminated pouch that contains a desiccator to prevent adverse moisture accumulation.  |
| 2. | Store the KWIK-STIK™ Microorganisms at 2-8ºC. in the dark, in the original, sealed pouch or vial containing the desiccator. The lyophilized microorganism may be rendered nonviable by an abnormal accumulation of moisture in the pellet, or excessive heat, due to improper storage or handling.  |
| 3. | KWIK-STIK™ Microorganisms should not be used if: * the original seal has been broken;
* there is evidence of excessive exposure to heat or moisture;
* the expiration date has passed.
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| 4. | Remove the KWIK-STIK™ unit from 2-8ºC. storage and allow the unopened pouch to equilibrate to room temperature. |
| 5. | Open the pouch and remove the KWIK-STIK™ unit. |
| 6. | Tear off the pull tab portion of the label from the KWIK-STIK™ device. The label can be attached to permanent QC Records or attached to the primary plate agar medium for identification.  |
| 7. | Take note of the position of the gelatin pellet in the bottom part of the device and the reservoir of hydrating fluid in the top (cap) part of the device. **DO NOT DISASSEMBLE THE DEVICE DURING HYDRATION.** |
| 8. | Release the hydrating fluid by pinching the very top of the ampoule in the cap of the device. **PINCH AMPOULE ONLY ONCE TO AVOID INJURY.** Allow the hydrating fluid to flow through the swab shaft and into the bottom portion of the unit containing the gelatin pellet. |
| 9. | Holding the device vertically, with the cap up, and tapping the bottom of the device on the counter can further facilitate the flow of the fluid. |
| 10. | Using a pinching action on the bottom portion of the unit, crush and mix the pellet in the fluid until the pellet particles are uniform in size and the suspension is homogenous in appearance. **DO NOT INCUBATE.**  |
| 11. | Now that the swab is saturated with the hydrated material, immediately transfer the material to an appropriate, non-selective, nutrient or enriched agar medium. With pressure, rotate the swab and inoculate a circular area (i.e. one inch or 25mm in diameter) of the agar medium. With a sterile loop, streak repeatedly through the inoculated area in order to obtain isolated colonies.  |
| 12. | Discard the remaining hydrated material in the red biohazard waste in accordance with the laboratory protocol for disposal of biohazardous materials. |
| 13. | IMMEDIATELY incubate the inoculated media at temperature and atmospheric conditions that are appropriate for the microorganism. |
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| 1. | Recovery can be performed from the Microbank™ vials at anytime. However, to reduce the chance of decreased organism viability and shifts in phenotypic expression, a schedule has been devised for the QC organisms that are used on a weekly basis. The schedule is located on page 5 under the heading: ‘Weekly QC Organism Subculture Schedule’. |
| 2. | Every fourth Wednesday, routine QC strains are recovered from Microbank™ storage on to appropriate agar plates labeled #1. Use the computer labels on the plates, all plates will be dated and initialed (or tech coded). Expiration dates (one week) will be included as required. |
| 3. | Each successive week, weeks #2, #3, #4-- routine QC organisms are inoculated to fresh agar plates using the previous Wednesday plates. Expiration dates (one week) will be included as required. |
| 4. | **\*\*** (Double starred) QC organisms must be recovered from Microbank™ frozen storage vials on a **WEEKLY** basis due to spontaneous loss of plasmid encoding the β-lactamase or carbapenemase.  **Note: Labels for these Double starred organisms have \*\* preceding the vial code number.** |
| 5. | **New lot Media / Vitek ID / MicroScan ID QC:** QC organisms for Non-Exempt medias (per CLSI M22-A3, reference1) are listed on the Media Quality Control Worksheet logs in the Media QC binder. The organisms that are not included in the weekly organism subculture schedule are subcultured as needed from the appropriate Microbank™ frozen storage vials. |
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| 1. | \*\*\*\*\*Every 2 Weeks – Make **TWO** M1 plates of LY *E. coli* 8739 (from lyophilized KWIK-STIK™) for MALDI) \*\*\*\*\*. Each plate can be used for 7 days to make the daily M2 Maldi calibration plate. |
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| 1. | **M1**=”*mother plates*” are prepared directly from the frozen ATCC organisms in the following procedure. These plates must remain refrigerated and is only used to prepare the weekly M2 plates. “Mother’s Day” happens **every 4th Tuesday**, when new M1 plates are subcultured from the frozen Microbank™ vials, and is marked on the calendar on DSK3. |
| 2. | **M2** = the first pass from the mother plate. **This plate is used to prepare subsequent M3 plates for the week and can also be used for QC testing that day.** This plate must remain refrigerated. |
| 3. | **M3** = the second pass from the mother plate. Can be used for QC testing. **No subcultures are** **prepared from this plate**. This plate can be stored at room temperature. |
| 4. | Following 18-24 hr incubation, from the M1 subculture, prepare an M2 subculture to use for testing QC strains and to prepare subsequent M3 subcultures. (Refer to the chart below.) Streak to obtain isolated colonies and always use fresh subcultures for inoculum suspension preparation. |
| 5. | Store M1 and M2 plates refrigerated at 2-80C. Always return plates to refrigerator immediately after use to limit continued growth. |
| 6. | Prepare new M2 subculture plates each week and then prepare M3 subcultures from this M2 subculture for up to 7 days; prepare a new M2 subculture on day 8 from the M1 plate. |
| 7. | Repeat starting with refrigerated M1 subculture on the agar plate for weeks 2, 3, and after 4 weeks, discard M1 subculture and subculture ATCC organism from frozen Microbank™ vial. |
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| **Sundays --**  |
| Daily bi-plate/tri-plate subs (M3) -- from the M2 plates (in frig) |
| **MRSA 43300/ MSSA 25923** | **VRE 51299/VSE 29212** | **EC 25922 / KLPN 700603** | **KLPN’s 1705 & 1706** |
| **SPNE 49619** | **EC 8739 (M2 from M1)** |  |  |
| From M1 plates: Weekly new M2 subs for Vitek, MSCN susceptibility weekly QC, Vitek MS QC |
| **SAUR 29213** | **SAUR 1026** | **SAUR 976** | **SAUR 977** |
| **EF 29212** | **EF 51299** | **SPNE 49619** | **EC 25922** |
| **EC 35218** | **KLPN 700603** | **PSAR 27853** | **CGLA MYA2950 / ENAE 13048** |
| **Mondays--** |
| Daily bi-plate/tri-plate subs (M3) -- from the M2 plates (in frig) |
| **MRSA 43300/ MSSA 25923** | **VRE 51299/VSE 29212** | **EC 25922 / KLPN 700603** | **KLPN’s 1705 & 1706** |
| **SPNE 49619** | **EC 8739 (M2 from M1)** |  |  |
| Back-up M3 plates from the AST QC organisms to repeat QC next if needed |
| **SAUR 29213** | **SAUR 1026** | **SAUR 976** | **SAUR 977** |
| **EF 29212** | **EF 51299** | **SPNE 49619** | **EC 25922** |
| **EC 35218** | **KLPN 700603** | **PSAR 27853** |  |
| **Tuesdays--**  |
| Daily bi-plate/tri-plate subs (M3) -- from the M2 plates (in frig) |
| **MRSA 43300/ MSSA 25923** | **VRE 51299/VSE 29212** | **EC 25922 / KLPN 700603** | **KLPN’s 1705 & 1706** |
| **SPNE 49619** | **EC 8739 (M2 from M1)** | **CGLA MYA2950 (from M1)** | **ENAE 13048 (from M1)** |
| **If: Every 4 Weeks** |
| Mother plates (M1) from freezer, (not to be used for QC) |
| **(Y13) MSSA 25923** | **(Y7) SAUR 29213** | **(Y18) SAUR 976** | **(Y4) EF 29212** |
| **(Y14) MRSA 43300** | **(Y16) SAUR 1026** | **(Y17) SAUR 977** | **(Y5) EF 51299** |
| **(Y6) SPNE 49619** | **(Y8) EC 25922** | **(Y10) EC 35218** | **(Y9) PSAR 27853** |
| **(Y11) KLPN 700603** | **(G16) KLPN 1705** | **(G17) KLPN 1706** |  |
| **(G33) CGLA MYA2950** | **(G31) ENAE 13048** |  |  |
| ***\*\*\*\*\*Every 2 Weeks – Make 2 M1 plates of EC 8739 from lyophilized (*KWIK-STIK™** ***For MALDI)\*\*\*\*\**** |
| **Every Tuesday ----- new M1 plates need to be made for the following organisms, due to spontaneous loss of plasmid encoding the β-lactamase or carbapenemase** |
| New Mother plates (M1) from freezer, (not to be used for QC)  |
| **(Y9) PSAR 27853** | **(Y5) EF 51299** | **(Y6) SPNE 49619** | **(Y10) EC 35218** |
| **(Y11) KLPN 700603** | **(G16) KLPN 1705** | **(G17) KLPN 1706** | **(G1) CAMJ 33291 [hold 2 days]** |
| **Wednesdays-- replace the old Mother M1 plates in frig with the weekly new Mother M1 plates** |
| Daily bi-plate/tri-plate subs (M3) -- from the M2 plates (in frig) |
| **MRSA 43300/ MSSA 25923** | **VRE 51299/VSE 29212** | **EC 25922 / KLPN 700603** | **KLPN’s 1705 & 1706** |
| **SPNE 49619** | **EC 8739 (M2 from M1)** |  |  |
| From M1 plates: Weekly new M2 subs for KBS, Dtest, ESBL, susceptibility weekly QC |
| **EF 29212** | **EF 51299** | **SAUR 25923** | **EC 25922** |
| **PSAR 27853** | **MRSA 43300** | **KLPN 1705** | **KLPN 1706** |
| **KLPN 700603** | **SPNE 49619** |  |  |
| ***Make other subcultures for media and reagent QC according to the weekly schedule—weeks 1 🡪 4*** |
| **Thursdays----** |
| Daily bi-plate/tri-plate subs (M3) -- from the M2 plates (in incubator) – toss old M2 plates |
| **MRSA 43300/ MSSA 25923** | **VRE 51299/VSE 29212** | **EC 25922 / KLPN 700603** | **KLPN’s 1705 & 1706** |
| **SPNE 49619** | **EC 8739 (M2 from M1)** | **CGLA MYA2950 (M2 from M1)** | **ENAE 13048 (M2 from M1)** |
| **NGON CDC-CLM5 x 5: 4 for incubator GC, 1 to STP Friday** |  |  |
| Back-up M3 plates from the AST QC organisms to repeat QC next if needed  |
| **Fridays-----** |
| Daily bi-plate/tri-plate subs (M3) -- from the M2 plates (in frig) |
| **MRSA 43300/ MSSA 25923** | **VRE 51299/VSE 29212** | **EC 25922 / KLPN 700603** | **KLPN’s 1705 & 1706** |
| **SPNE 49619** | **EC 8739 (M2 from M1)** |  |  |
| **Saturdays----** |
| Daily bi-plate/tri-plate subs (M3) -- from the M2 plates (in frig) |
| **MRSA 43300/ MSSA 25923** | **VRE 51299/VSE 29212** | **EC 25922 / KLPN 700603** | **KLPN’s 1705 & 1706** |
| **SPNE 49619** | **EC 8739 (M2 from M1)** |  |  |

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| **Discard Policy** |
| 1. | On Mondays discard the expired 7 day old Sunday subculture plates. |
| 2. | On Thursdays discard the previous week’s expired M2 subculture plates, and the previous week’s plates (#1, #2, #3, #4), after examining the new plates for acceptability. |
| **Fungal Isolate Storage** |
| 1. | Fungal isolates are stored at room temperature on potato dextrose agar slants and are labeled with organism name, date of inoculation, and ATCC number if applicable. |
| 2. | The isolates are stored with caps loose and therefore need to be transferred bi-annually to new slants to maintain viability as the slants lose moisture over time. |
| 3. | Isolates can be transferred directly to appropriate agar plates whenever organisms are required to QA/QC purposes. |
| **QC Organism List**

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| **SYMBOL** | **\*** | Organism is plated on each Wednesday from the previous Wednesday plates OR, if it is week #1, from Microbank™ storage. |
| **\*\*** | M1 plates EVERY Tuesday from Microbank™ storage. |
| **\_\_\_\_** | Organism plated on Sunday from previous Wednesday plates. |
| **(no symbol)** | Organism is plated as needed from Microbank™ storage for media / Vitek ID / MicroScan ID QC. |

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| **YELLOW: ID & SUSCEPTIBILITY QC ORGANISMS** |
| **Vial #** | **Organism Name** | **ATCC #** |
| Y1. | **ENCL** | \* Enterobacter cloacae | 13047 |
| Y2. | **FLOD** | \* Myroides odoratus | 4651 |
| Y3. | **PVUL** | \* Proteus vulgaris | 13315 |
| Y4. | **VSE** | \* Enterococcus faecalis – (**VSE**) | 29212 |
| Y5. | **VRE** | \* Enterococcus faecalis – (**VRE**) | 51299 |
| Y6. | **SPNE** | \*\* Streptococcus Pneumoniae | 49619 |
| Y7. | **SAUR** | \* Staphylococcus aureus – (**BLAC+**) | 29213 |
| Y8. | **EC** |  \* Eschericia coli | 25922 |
| Y9. | **PSAR** | \* Pseudomonas aeruginosa | 27853 |
| Y10. | **EC** | \*\* Eschericia coli | 35218 |
| Y11. | **KLPN** | \*\* Klebsiella pneumoniae | 700603 |
| Y12. | **HFLU** | \* Haemophilus influenzae (b) | 49247 |
| Y13. | **MSSA** | \* Staphylococcus aureus – (**MSSA**) | 25923 |
| Y14. | **MRSA** | \* Staphylococcus aureus – (**MRSA**) | 43300 |
| Y15. | **PRMI** | \* Proteus mirabilis | 7002 |
| Y16. | **SAUR** | \* Staphylococcus aureus -- **(FOX screen POS)** | BAA-1026 |
| Y17. | **SAUR** | \* Staphylococcus aureus -- **(ICR positive)** | BAA-977 |
| Y18. | **SAUR** |  \* Staphylococcus aureus -- **(ICR negative)** | BAA-976 |
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| **Isolate #** | **Organism Name** | **ATCC #** |
| **MICROSCAN ID ORGANISMS** |
| Y19. | **KLOX** | Klebsiella oxytoca | 49131 |
| Y20. | **PRVU** | Proteus vulgaris | 49132 |
| Y21. | **SBOV** | Streptococcus gallolyticus (bovis) | 49147 |
| Y22. | **MILU** | Micrococcus luteus | 49732 |
| **VITEK ID ORGANISMS** |
|  **GN-ID** |
| Y23. | **ENCL** | Enterobacter cloacae | 700323 |
| Y24. | **PSMA** | Stenotrophomonas maltophilia | 17666 |
|  **GP-ID** |
| Y25. | **ECS** | Enterococcus casseliflavus | 700327 |
| Y26. | **SSAP** | Staphylococcus saprophyticus | BAA-750 |
|  **NH-ID** |
| Y27. | **EIKC** | Eikenella corrodens | BAA-1152 |
|  **ANC-ID** |
| Y28. | **BOVA** | Bacteroides ovatus | BAA-1296 |
| Y29. | **CSEP** | Clostridium septicum | 12464 |
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| Y30. | **PSMA** | Stenotrophomonas maltophilia | 49130 |
| Y31. | **KLPN** | Klebsiella pneumoniae | 13883 |
| **GREEN: MISC. ID, TUBE & PLATE QC ORGANISMS** |
| G1. | **CAMJ** | \*\* Campylobacter jejuni subsp. jejuni – (42°C) | 33291 |
| G2. | **BPER** | \* Bordetella pertussis – Regan-Lowe | 8467 |
| G3. | **BPAR** | \* Bordetella parapertussis – Regan-Lowe | 9305 |
| G4. | **BSB** | \* Streptococcus agalactiae – group B | 13813 |
| G5. | **BSA** | \* Streptococcus pyogenes – group A | 19615 |
| G6. | **SBOV** | \* Streptococcus bovis | 9809 |
| G7. | **HITA** | Haemophilus influenzae (a) | 9006 |
| G8. | **HPAR** | \* Haemophilus parainfluenzae | 7901 |
| G9. | **HITB** | \* Haemophilus influenzae (b) – (BLAC--)  | 10211 |
| G10. | **NGON** | \*\* Neisseria gonorrhoeae | CDC-CLM5 |
| G11. | **SEPI** | \* Staphylococcus epidermidis | 12228 |
| G12. | **CALB** | \* Candida albicans | 60193 |
| **Isolate #** | **Organism Name** | **ATCC #** |
| G13. | **MCAT** | \* Moraxella catarrhalis | 25240 |
| G14. | **SSAP** | \* Staphylococcus saprophyticus | 15305 |
| G15. | **CPER** | \*\* Clostridium perfringens | 13124 |
| G16. | **KLPM** | \*\* Klebsiella pneumoniae – (**KPC +**) | BAA-1705 |
| G17. | **KLPN** | \*\* Klebsiella pneumoniae – (**KPC --**) | BAA-1706 |
| G18. | **BAFR** | Bacteroides fragilis | 25285 |
| G19. | **PSCE** | Burkholderia cepacia | 25416 |
| G20. | **PSMA** | Stenotrophomonas maltophilia | 13637 |
| G21. | **SALT** | Salmonella typhimurium | 14028 |
| G22. | **SHSO** | Shigella sonnei | 25931 |
| G23. | **AVIR** | Aerococcus viridans | 11563 |
| G24. | **ABAU** | Acinetobacter baumanii | 19606 |
| G25. | **CDIP** | Corynebacterium diphtheriae | CAP |
| G26. | **E0157** | Eschericia coli O157:H7 – 1 | 35150 |
| G27. | **SMAR** | Serratia marcescens | 13880 |
| G28. | **GVAG** | Gardnerella vaginalis | 14018 |
| G29. | **PASM** | Pasturella multocida |  |
|  | G30. | **CSOR** | Clostridium sordellii | 9714 |
| G31. | **ENAE** | Enterobacter aerogenes **(MALDI QC)** | 13048 |
| G32. | **PSST** | Pseudomonas stutzeri |  |
| G33. | **CGLA** |  Candida glabrata **(MALDI QC)** | MYA 2950 |
| **References** | 1. CLSI. Quality Assurance for Commercially Prepared Microbiological Culture Media, Second Edition; Approved Standard. June 2004. CLSI document M22-A3. CLSI, Wayne, PA 19087-1898.
2. Pro-Lab Diagnostics, Round Rock, TX 78665, Microbank™ package insert, Revised Nov/2012.
3. Microbiologics®, St Cloud, MN 56303, KWIK-STIK™ package insert, Revised 2/22/2016.
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| **Training Plan/ Competency Assessment** | All laboratory staff responsible for the maintenance of stock organisms will review this procedure as part of their training. |
| **Historical Record** | **Version** | **Written/Revised by:** | **Effective Date:** | **Summary of Revisions** |
| 1.0 | Brian Howell | 9/20/2003 | Initial version |
| 1.1 | Jessica Craig | 10/31/2012 | Initial Version. Transferred to new format. |
| 2 | Becky Carlson  | 4/4/2015 | Re-numbered from MC 802.2 |
|  | 3. | Becky Carlson | 7/14/2017 | Updated Children’s logo. Added KWIK-STIK™ instructions for use. Updated QC organism subculture Schedule. |  |  |
| 4 | Susan DeMeyere | 2/26/2018 | Biennial review 2/5/2018  |