Maintenance of Bacterial Cultures

1. SCOPE AND APPLICATION

    1.1. Bacterial cultures are grown from certified reference stocks for use in quality control tests. Cultures are used as positive and negative controls to verify the response of each new batch of media. Other QC tests that require the use of cultures include rinse water check, water suitability, and the Use Test.

2. EQUIPMENT AND SUPPLIES – Record any equipment repairs or maintenance in LIMS Laboratory Logbook *Maintenance_Log*

    2.1. Heratherm IMH 60 (S/N 42511812), maintained at 35˚C ± 0.5°C

    2.2. Fisher Isotemp Incubator 650 F (S/N 303N0034), maintained at

    35˚C ± 0.5°C

    Biology Refrigerator, maintained at 1˚C-5˚C

    2.3. Sterile inoculating loops or sterile cotton swabs.

    2.4. Parafilm®

3. REAGENTS AND STANDARDS

    3.1. TSA Plates

        3.1.1. Prepare TSA per SOP MB-02.33. If prepared on day of use, pour autoclaved media directly into plates and let cool. If using refrigerated media, melt agar using a boiling water bath on day of use. Pour melted agar into petri dishes and let cool. Discard unused melted agar.

    3.2. BHI broth

        3.2.1. Prepare per SOP MB-02.33.

    3.3. Microbiologics® Kwik-Stik™ Reference Culture Microorganisms

        3.3.1. *Enterobacter aerogenes* ATCC 13048

        3.3.2. *Pseudomonas aeruginosa* ATCC 10145

        3.3.3. *Escherichia coli* ATCC 11775

        3.3.4. *Aerococcus viridans* ATCC 10400

        3.3.5. *Enterococcus faecalis* ATCC 19433

        3.3.6. *Enterococcus faecium* ATCC 35667

        3.3.7. *Serratia marcesens* ATCC 43862

4. REFERENCE CULTURE RECONSTITUTION

    4.1. Allow Kwik-Stik™ to warm to room temperature before removing from pouch.

    4.2. Document cultures in LIMS Standard Preparation Tracker

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(**Laboratory/Technical/Standard Preparation Tracker**). Enter the expiration date as 90 days from date of preparation. Make sure to include media batch# and incubation temperature and duration in the description. Print two labels for each strain. Initial each label and mark the first set as "Stock" and the second set as "Working". On the stock labels, record the next transfer date (maximum of two weeks). Place labels on TSA plates.

4.3. Remove the Kwik-Stik™ from the pouch. Tear off the pull-tab label and place on the "Stock" dish. Squeeze the cap of the Kwik-Stik™ to break the ampoule and release the hydrating fluid. Tap the bottom of the Kwik-Stik™ to help move the fluid down to the pellet. Once hydrated, pinch the bottom of the Kwik-Stik™ to crush the pellet and mix it with the fluid.

4.4. Use the saturated swab from the Kwik-Stik™ to streak onto one quarter of the "working" and "stock" TSA plates. Using a sterile inoculating loop or sterile cotton swab, streak three additional areas of decreasing concentration, using a fresh loop or swab for each area. This ensures the growth of isolated colonies. Incubate at 35 °C ± 0.5 °C for 24-48 hours. After incubation, seal with Parafilm® and store in the Biology Refrigerator.

4.5. Always use the "Working" dishes (or tubes) for quality control procedures. Use the untouched "Stock" dishes (or tubes) for subculture transfers.

5. WORKING STOCK SUBCULTURES

5.1. Within two weeks after reference culture reconstitution, transfer a well isolated "Stock" colony onto two new TSA plates. Record this as subculture #1 in LIMS **Standard Preparation Tracker**. Leave the expiration date as 90 days from preparation date, otherwise there will be an issue linking the cultures to one another. Label the plates as "Stock" and "Working" respectively, and manually write out the expiration date on the plate as 14 days from preparation date.

5.2. For each subsequent subculture use the "Stock" plate to transfer growth to two new TSA plates (working and stock). Increment the subculture # when documenting in LIMS. After five transfers, start with a new reference culture as in Section 4. Minimizing the number of transfers to no more than five helps prevent creating lab strains that may produce different phenotypic characteristics from the reference strain.

6. QUALITY CONTROL

6.1. After every transfer, check for purity and viability by checking the TSA spread plate and observing for growth and uniform colonies. Document purity and viability of the colonies by adding the comment: "Pure growth and uniform isolated colonies observed" in the Sample comment section of LIMS Preparation LogBook-Micro_QC worksheets.

7. SAFETY/HAZARDOUS WASTE MANAGEMENT

7.1. Always autoclave any expired or unused bacterial cultures for 45 minutes before

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discarding in the trash.

7.2. Refer to the Laboratory Health and Safety Plan for safety equipment, use of laboratory hoods, and chemical storage policies.

7.3. Refer to MSDS information and the Laboratory Health and Safety Plan for reagent handling and disposal.

8. REFERENCES

8.1 Standard Methods Online Edition (2017), 9020B

8.2 NELAC Quality Systems Manual Appendix D.3.7

8.3 Microbiologics® Kwik-Stik™ Product Insert

8.4 FDEP Laboratory Quality Manual https://floridadep.gov/dear/florida-dep-laboratory/content/dep-laboratory-quality-assurance-manual-and-sops

8.5 FDEP Laboratory Health and Safety Plan

https://floridadep.sharepoint.com/dear/Shared%20Documents/FDEP%20Health%20%20Safety%20Plan%20B%20-%20June%202021.pdf

8.6 DEP SOP MB-02.33 *Preparation of Dehydrated Culture Media*

APPENDIX OF CHANGES

11/05/2009	Updated documentation procedure for QC of cultures.
10/28/2010	Updated reference to health and safety plan.
10/22/2012	Made more specific references to incubators; added Parafilm to Equipment and Supplies; corrected spelling of “Standard” in Sec 4.2; corrected subculture transfer from slant tubes to broth tubes and procedure for viability/purity checks.
10/14/2013	Updated procedure to include a Stock TSA plate for subcultures.
10/24/2014	Clarified instructions in section 4.4 and added sterile cotton swabs to the Equipent and Supplies section.
01/22/2015	Formatted for 508 compliance.
12/23/2016	Updated incubator information and references to the Quality Manual and Healthand Safety Plan.
12/14/2017	Revised information in section 5.
01/03/2019	Updated list of bacteria in section 3, and 8.1 from 1997 to 2017 version.
01/29/2020	Modified biology refrigerator used.
12/20/2021	Updated incubator and refrigerator information. Updated links to Quality Manualand FDEP Laboratory Health and Safety Plan. Section 6.2 was removed due to procedure no longer used as a quality control check.
12/15/2022	Added the Fisher Isotemp Incubator to the Equipment and Supplies section. Changed

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the expiration date of all cultures to 90 days in LIMS, and mentioned to manually write out the expiration date on the label, updated link to FDEP Laboratory Health and Safety Plan.

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