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CATALOGUE CULTURE COLLECTION OF BACTERIA
U.S. ARMY NATICK LABORATORIES

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TECHNICAL REPORT

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CATALOGUE
CULTURE COLLECTION OF BACTERIA
U. S. ARMY NATICK LABORATORIES

by

Hillel S. Levinson

and

Florence E. Feeherry

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The bacterial strains currently carried as active cultures in the U. S. Army Natick Laboratories' Culture Collection of Bacteria are listed. The list constitutes a partial revision of the original catalogue of strains published in 1950 as the Quartermaster Culture Collection. The listed strains are available for distribution for specification testing of military materiel, and for educational and investigational purposes.

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May 1973

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U. S. ARMY NATICK LABORATORIES
Natick, Massachusetts 01760

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Foreword

The Culture Collection of Bacteria, U. S. Army Natick Laboratories, is maintained by the Bacteriology Group, Pioneering Research Laboratory, and includes strains useful in specifications testing and strains with biochemical characteristics related to areas of interest to various groups at NLABS. Based primarily on demand for cultures, a number of strains originally in the Collection were deleted and others were added. The present work represents a revision of the list of bacterial strains in the Collection, the first such revision since the original publication of the list in 1950.

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Abstract

The strains currently carried as active cultures in the U. S. Army Natick Laboratories' Culture Collection of Bacteria are listed. The list constitutes a partial revision of the original catalogue of strains published in 1950 as the Quartermaster Culture Collection. The listed strains are available for distribution for specification testing of military materiel, and for educational and investigational purposes.

1. Introduction.

A catalogue of cultures included in the Quartermaster Culture Collection was first published in 1950 (17) and listed 168 strains of bacteria, yeasts, and actinomycetes. In the main, these were isolated from deteriorating military materiel collected in tropical and subtropical locales. Many of the original cultures were identified by Reuszer (19) and by W. C. Haynes (Northern Regional Research Laboratory, U. S. Department of Agriculture). The spore-forming bacteria, which comprised about 40% of the bacterial isolates, were identified by N. R. Smith and his collaborators (28, 29).

The present list of bacteria constitutes a revision of a portion of the 1950 catalogue. The cultures included in the list are all maintained both as active and as lyophilized cultures. With minor exceptions, the strains included in the original list are still available, but only as lyophilized cultures.

2. Modifications of the 1950 catalogue.

The revisions of the Reese et al. (17) list include both additions and deletions. The major deletions are of (i) yeast cultures which have been transferred to the Fungus Collection in the custody of Dr. E. G. Simmons, and of (ii) those bacterial strains for which there has been no evident demand. However, at least one representative of each species has been retained. Major additions to the list have been the result of the transition from the limited interests of the original Tropical Deterioration Laboratory to the broader concerns of the presently constituted Pioneering Research Laboratory. The main interests of the Bacteriology Group (which has responsibility for maintenance of the bacterial culture collection) have centered on bacterial spore-formers and, for this reason, the types or neotypes of the genus *Bacillus*, as proposed by Smith et al. (25) have been added to the Collection. Indeed, cultures of *Bacillus* comprise 42% of the Collection.

In addition, several bacterial species and strains with properties making them useful in investigations of concern to various groups at the U. S. Army Natick Laboratories and to others have also been included. The presently revised catalogue of bacteria in the Quartermaster Collection lists 113 strains, a reduction from the 168 strains of the original list. The designation, "Quartermaster Culture Collection", has been dropped, reflecting the current organizational status of these Laboratories. The bacterial and fungal components of the original Quartermaster Culture Collection continue to be maintained as special research facilities of the U. S. Army Natick Laboratories.

Occasionally, nomenclature in the 1950 list has been changed to conform to present practice. It has become evident with use that supplementation of the alphabetically arranged original list with a numerical list would be advantageous. Therefore, the bacterial strains have now been catalogued in two separate lists: alphabetic and numeric.

3. Information in the list.

The alphabetic list (section 5) gives the information available for each culture in the Collection. The identity of the culture corresponding to any strain number may be determined from the numeric list (section 6).

Such of the following information as is available has been included in the alphabetic list:

A. Name of culture.

B. Strain number. All bacterial strains are carried under numbers prefixed by the letters QM B.

C. Cultures which were included in the 1950 List (17) are indicated as Reese et al. (+); cultures not included in the 1950 list are indicated as Reese et al. (-).

D. The laboratory affiliation and person supplying the culture; the substratum from which isolated; and the person making the identification are all included, when available. Abbreviations are

used when there is no doubt as to clarity. State names are abbreviated in accordance with Webster's New Word Dictionary, College Edition. Many cultures were received from Rutgers University, New Brunswick, N. J., and this is indicated only as Rutgers Univ.

E. When nomenclature has been changed to conform to current practice, the previous listing has been indicated.

F. Where bacterial strains are also maintained in other culture collections, their accession numbers in these collections are indicated. The following abbreviations are used:

(i) AMS = Army Medical Service Graduate School, Army Medical Center, Washington, D. C. 20012.

(ii) NCIB = National Collection of Industrial Bacteria, Torry Research Station, 135 Abbey Road, Aberdeen, Scotland.

(iii) NRRL = Northern Marketing and Nutrition Research Division (formerly Northern Regional Research Laboratory), U. S. Department of Agriculture, Peoria, Ill. 61604.

(iv) ATCC = American Type Culture Collection, 12301 Parklawn Drive, Rockville, Md. 20852.

(v) NRS = Collection of Dr. Nathan R. Smith, formerly at Bureau of Plant Industry, U. S. Department of Agriculture, Beltsville, Md. 20705.

G. Special properties of the strain, such as enzymatic capabilities, synthetic capabilities, etc. Where applicable, the ability of a strain to attack grey cotton duck (C) or autoclaved wool (W) is indicated as + (active) or - (inactive). Literature references to the strains are given, but these are not exhaustive. Although not specifically referred to in the list, the Smith et al. (27) monograph on the genus Bacillus was indispensable.

H. Medium on which the strain is maintained.

(i) NA = nutrient agar. Beef extract, 3.0 g; peptone, 5 0 g; agar, 15 g, per liter. The commercially available, dehydrated product is suitable.

(ii) SX-NA = soil extract nutrient agar. Nutrient agar prepared with 25% soil extract, according to the method of Gordon and Rynearson (5).

(iii) U-NA = urea nutrient agar. SX-NA supplemented with 1% filter-sterilized urea.

(iv) S-YX = Streptomyces yeast extract agar. Prepared according to Pridham et al. (16).

(v) FP = filter paper strip medium. $NaNO_3$, 2.0 g; $MgSO_4.7H_2O$, 0.5 g; KCl, 0.5 g; $Fe_2(SO_4)_3.H_2O$, 0.01 g; 0.5 M KH_2PO_4, 2.0 ml; 0.5 M K_2HPO_4, 8.0 ml; yeast extract, 0.02 g; peptone, 2.0 g; agar, 7.5 g; H_2O, ad 1 liter. Tube; autoclave 121 C, 15 min; slant. Add strip of dry-heat sterilized Whatman No. 1 filter paper to surface of each slant.

(vi) TJA = tomato juice agar. Tryptone, 10 g; yeast extract, 10 g; filtered tomato juice (juice of canned tomatoes), pH 7.0, 200 ml; agar, 15 g; per liter.

(vii) AM = Acetobacter medium. Tryptone 5.0 g; liver extract (extract of 250 g ground beef liver/liter of water), 100 ml; distilled water, 900 ml; agar, 20 g. After melting agar, add glucose, 20 g, and $CaCO_3$, 10 g. Dispense while stirring (formulation of NCIB, personal communication).

4. Requests for cultures.

Requests for bacterial cultures should be sent to:

Head, Bacteriology Group
Pioneering Research Laboratory
U. S. Army Natick Laboratories
Natick, Mass. 01760

While requests from qualified investigators for any of the listed cultures will be honored, we cannot undertake to send unreasonably large numbers of strains. All requests should indicate the specific strains required. Further, once received, the responsibility for maintenance of a culture rests with the requestor. Repeated requests for the same culture cannot be honored. In general, requestors, whose requirements are considered to tax our limited facilities unreasonably, will be referred to other Collections such as The American Type Culture Collection.*

* Catalogue of Strains, 10th edition, 1972, is available from The American Type Culture Collection, 12301 Parklawn Dr., Rockville, Md. 20852, at a cost of $4.50.

5. The alphabetic list.

Acetobacter acetigenus (Henneberg) Bergey et al.

QM B1562

Reese et al. (-).

From T. K. Walker, Univ. of Manchester, England (originally from Univ. of Pisa, Italy).

ATCC 11142; NCIB 5346.

Produces levan; mutants which do not produce extracellular cellulose have growth characteristics different from wild-type cellulose producers (30, 31).

Medium: AM

Acetobacter xylinum (Brown) Holland

QM B1548

Reese et al. (-).

From R. Vaughn, Univ. of Calif., Berkeley.

ATCC 10245; NCIB 8034.

Synthesizes cellulose; helical non-cellulosic microfibrils of which monomer may be a long-chain aliphatic ester or ketone - these fibrils not produced by A. acetigenus QM B1562 (1).

Medium: AM

QM B1550

Reese et al. (-).

From T. K. Walker, Univ. of Manchester, England, as A. acetigenum (East Africa strain)

ATCC 14851; NCIB 8132.

Cellulose-less mutants as for A. acetigenus QM B1562 (30, 31).

Medium: AM

Aerobacter mannanolyticus

QM B1612

Reese et al. (-).

From E. T. Reese, U. S. Army Natick Labs., Natick, Mass.

Hydrolyzes mannan.

Medium: NA

Agrobacterium tumefaciens (Smith and Townsend) Conn.

QM B1581

Reese et al. (-).

From D. Feingold, Univ. of Calif., Berkeley.

Produces β1,2-glucan.

Medium: NA

QM B1582

Reese et al. (-).

From A. C. Hildebrandt, Univ. of Wisc., as strain A6.

Medium: NA

Alcaligenes bookeri (Ford) Bergey et al.

QM B1484

Reese et al. (+).

ATCC 9128 (no longer carried by ATCC).

C-, W-.

Medium: NA

Alcaligenes faecalis Castellani and Chalmers

QM B1483

Reese et al. (+).

ATCC 8749 (no longer carried by ATCC).

C-, W-.

Medium: NA

Arthrobacter sp.

QM B1631

Reese et al. (-).

From D. Eveleigh, Rutgers Univ., as strain GJM-1.

Produces α-mannosidase (9, 10).

Medium: NA

Bacillus alvei Cheshire and Cheyne

QM B1574

Reese et al. (-).

From R. E. Gordon, Rutgers Univ.

NRS 1141.

Medium: SX-NA

Bacillus alvei Cheshire and Cheyne (continued)

QM B1593

Reese et al. (-).
From R. E. Gordon, Rutgers Univ.
ATCC 6344; NRS 662; NCIB 9371; NRRL B-383.
Suggested neotype (25); foul brood of bees.
Medium: SX-NA

Bacillus amylolyticus Kellerman and McBeth

QM B529

Reese et al. (+).
NRS 120.
C-, W-.
Medium: SX-NA

Bacillus anthracis Cohn emend. Koch

QM B1594

Reese et al. (-).
From R. E. Gordon, Rutgers Univ.
ATCC 14578; NCIB 9388.
Suggested neotype (25).
Medium: SX-NA

Bacillus badius Batchelor emend. Saghafi and Appleman

QM B1595

Reese et al. (-).
From R. E. Gordon, Rutgers Univ.
ATCC 14574; NRS 663; NCIB 9364.
Type strain (25).
Medium: SX-NA

Bacillus brevis Migula emend. Ford

QM B1570

Reese et al. (-).
From R. E. Gordon, Rutgers Univ.
NRS 622.
Medium: SX-NA

QM B1596

Reese et al. (-).
From R. E. Gordon, Rutgers Univ.
ATCC 8246; NRS 604; NCIB 9372.
Suggested neotype (25).
Medium: SX-NA

Bacillus cereus Frankland and Frankland

QM B476

Reese et al. (+).

Isolated by H. W. Reuszer from tentage, Panama Canal Zone. Identified by N. R. Smith.

C-, W+.

Medium: SX-NA

QM B1565

Reese et al. (-).

From R. E. Gordon, Rutgers Univ.

NRS 867.

Medium: SX-NA

QM B1590

Reese et al. (-).

From V. R. Srinivasan, Univ. of Illinois, Urbana.

Strain T; strain "terminalis" (26).

Widely used in studies of spore germination (6).

Medium: SX-NA

QM B1597

Reese et al. (-).

From R. E. Gordon, Rutgers Univ.

ATCC 14579; NCIB 9373.

Suggested neotype (25).

Medium: SX-NA

Bacillus cereus subsp. mycoides (Flügge) Smith et al.

QM B1579

Reese et al. (-).

From R. E. Gordon, Rutgers Univ.

NRS 911.

Medium: SX-NA

Bacillus circulans Jordan emend. Ford

QM B1569

Reese et al. (-).

From R. E. Gordon, Rutgers Univ.

NRS 375.

Medium: SX-NA

Bacillus circulans Jordan emend. Ford (continued)

QM B1598

Reese et al. (-).
From R. E. Gordon, Rutgers Univ.
ATCC 4513; NCIB 9374: NRS 726.
Suggested neotype (25).
Medium: SX-NA

Bacillus coagulans Hammer

QM B1599

Reese et al. (-).
From R. E. Gordon, Rutgers Univ.
ATCC 7050; NRS 609; NCIB 9365.
Type strain (25); coagulation of evaporated milk (22).
Medium: SX-NA

QM B1624

Reese et al. (-).
From R. E. Gordon, Rutgers Univ.
NRS 14.
Medium: SX-NA

Bacillus firmus Werner

QM B1567

Reese et al. (-).
From R. E.Gordon, Rutgers Univ.
NRS 860.
Medium: SX-NA

QM B1600

Reese et al. (-).
From R. E. Gordon, Rutgers Univ.
ATCC 14575; NRS 613; NCIB 9366.
Type strain (25).
Medium: SX-NA

Bacillus firmus-circulans intermediate

QM B988

Reese et al. (+)
Isolated by H. W. Reuszer from tentage, New Guinea.
Identified by N. R. Smith.
C-, W-.
Medium: SX-NA

Bacillus laterosporus Laubach

QM B1601

Reese et al. (-).
From R. E. Gordon, Rutgers Univ.
ATCC 64; NCIB 9367; NRS 882.
Type strain (25).
Medium: SX-NA

QM B1623

Reese et al. (-).
From R. E. Gordon, Rutgers Univ.
NRS 340.
Medium: SX-NA

Bacillus lentus Gibson

QM B1602

Reese et al. (-).
From R. E. Gordon, Rutgers Univ.
ATCC 10840; NCIB 8773; NRS 670.
Type strain (25).
Medium: SX-NA

QM B1625

Reese et al. (-).
From R. E. Gordon, Rutgers Univ.
NRS 883.
Medium: SX-NA

Bacillus licheniformis (Weigmann) Chester emend. Gibson

QM B1603

Reese et al. (-).
From R. E. Gordon, Rutgers Univ.
ATCC 14580; NCIB 9375; NRS 1264.
Suggested neotype (25).
Medium: SX-NA

Bacillus macerans Schardinger

QM B1576

Reese et al. (-).
From R. E. Gordon, Rutgers Univ.
NRS 649.
Medium: SX-NA

Bacillus macerans Schardinger (continued)

QM B1587

Reese et al. (-).
From Evelyn B. Tilden, U. S. National Institutes of Health, as NIH strain 583.
ATCC 8517; NRS 1101.
Produces Schardinger dextrins (34).
Medium: SX-NA

QM B1604

Reese et al. (-).
From R. E. Gordon, Rutgers Univ.
ATCC 8244; NCIB 9368; NRS 888.
Produces Schardinger dextrins (34).
Type strain (25).
Medium: SX-NA

Bacillus megaterium De Bary

QM B1551

Reese et al. (-).
From M. G. Sevag, Univ. of Penna., Philadelphia.
ATCC 12872.
Cytological studies (3, 7); spore germination studies (13, 23).
Medium: SX-NA

QM B1566

Reese et al. (-).
From R. E. Gordon, Rutgers Univ.
NRS 872.
Medium: SX-NA

QM B1584

Reese et al. (-).
From L. J. Rode, Univ. of Texas, Austin.
ATCC 19213.
Spore germination studies (20). J. W. Foster "Texas" strain.
Medium: SX-NA

QM B1605

Reese et al. (-).
From R. E. Gordon, Rutgers Univ.
ATCC 14581; NCIB 9376.
Suggested neotype (25).
Medium: SX-NA

Bacillus megaterium De Bary (continued)

QM B1615

Reese et al. (-).
From M. R. J. Salton, New York Univ.
ATCC 13632.
C. Weibull KM strain, susceptible to lysis by lysozyme (35). Asporogenic.
Medium: SX-NA

Bacillus pantothenticus Proom and Knight

QM B1606

Reese et al. (-).
From R. E. Gordon, Rutgers Univ.
ATCC 14576; NRS 1321; NCIB 8775.
Type strain (25).
Medium: SX-NA

QM B1626

Reese et al. (-).
From R. E. Gordon, Rutgers Univ.
NRS 1320.
Medium: SX-NA

QM B1633

Reese et al. (-).
Isolated by H. S. Levinson as a culture contaminant of Bacillus megaterium QM B1551. Identified by R. E. Gordon, Rutgers Univ.
High heat resistance.
Medium: SX-NA

Bacillus pasteurii (Miquel) Migula

QM B1614

Reese et al. (-).
From R. E. Gordon, Rutgers Univ.
ATCC 11859; NRS 929; NCIB 8219.
Produces urease (12).
Suggested neotype (25).
Medium: U-NA

Bacillus polymyxa (Prazmowski) Migula

QM B1577

Reese et al. (-).
From R. E. Gordon, Rutgers Univ.
ATCC 7070; NRS 279.
Medium: SX-NA

Bacillus polymyxa (Prazmowski) Migula (continued)

QM B1607

Reese et al. (-).
From R. E. Gordon, Rutgers Univ.
ATCC 842; NRS 1105; NCIB 8158.
Suggested neotype (25).
Medium: SX-NA

Bacillus pumilus Gottheil

QM B1568

Reese et al. (-).
From R. E. Gordon, Rutgers Univ.
NRS 577.
Medium: SX-NA

QM B1608

Reese et al. (-).
From R. E. Gordon, Rutgers Univ.
ATCC 7061; NRS 272; NCIB 9369.
Type strain (25).
Medium: SX-NA

Bacillus sphaericus Neide

QM B1573

Reese et al. (-).
From R. E. Gordon, Rutgers Univ.
ATCC 12300; NRS 866.
Medium: SX-NA

QM B1609

Reese et al. (-).
From R. E. Gordon, Rutgers Univ.
ATCC 14577; NCIB 9370.
Type strain (25).
Medium: SX-NA

Bacillus sphaericus var. fusiformis Gottheil

QM B1082

Reese et al. (+).
Isolated from shoe, New Guinea. Identified by N. R. Smith.
C-, W-.
Medium: SX-NA

Bacillus stearothermophilus Donk

QM B1610

Reese et al. (-).

From R. E. Gordon, Rutgers Univ.

ATCC 12980; NRS T18; NCIB 8923.

Type strain (25).

Medium: SX-NA (Incubate at 50C)

Bacillus subtilis Cohn emend. Prazmowski

QM B942

Reese et al. (+).

Isolated from shoe, New Guinea. Identified by N. R. Smith.

C-, W+.

Medium: SX-NA

QM B1546

Reese et al. (-).

From F. L. Davis, Univ. of Texas, Austin, as B. globigii - normal strain (2).

Medium: SX-NA

QM B1547

Reese et al. (-).

From F. L. Davis, Univ. of Texas, Austin, as B. globigii - heat resistant strain (2).

Medium: SX-NA

QM B1564

Reese et al. (-).

From R. E. Gordon, Rutgers Univ.

NRS 619.

Produces β-mannanase.

Medium: SX-NA

QM B1583

Reese et al. (-).

From I. Slotnick, Univ. of Florida.

ATCC 6051.

Sporulates, germinates, and grows in chemically defined media (4).

Medium: SX-NA

Bacillus subtilis Cohn emend. Prazmowski (continued)

QM B1611

Reese et al. (-).

From R. E. Gordon, Rutgers Univ.

ATCC 6051; NCIB 3610; NRS 1315. May be the same as B. subtilis QM B1583.

Type strain (25).

Medium: SX-NA

Bacterium sp.

QM B1589

Reese et al. (-).

From D. Eveleigh, Univ. of Wisconsin.

Degrades fungal cell walls.

Medium: NA

Cellulomonas biazotea (Kellerman et al.) Bergey et al.

QM B525

Reese et al. (+).

ATCC 486; NRS 127.

C+, W-.

Medium: NA

Cellulomonas cellasea (Kellerman and McBeth) Bergey et al.

QM B526

Reese et al. (+).

NRS 124.

C-, W-.

Medium: NA

Cellulomonas fimi (McBeth and Scales) Bergey et al.

QM B527

Reese et al. (+).

ATCC 484; NRS 133.

C+, W-.

Medium: NA

QM B1535

Reese et al. (-).

From F. E. Clark, Iowa State Univ. as strain C-13.

Previously listed as C. liquata.

Medium: NA

Cellulomonas flavigena (Kellerman and McBeth) Bergey et al.

QM B528

Reese et al. (+).
ATCC 482; NRS 134.
C+, W-.
Medium: NA

QM B1536

Reese et al. (-).
From F. E. Clark, Iowa State Univ. as strain C-17.
Medium: NA

Cellulomonas gelida (Kellerman et al.) Bergey et al.

QM B1537

Reese et al. (-).
From F. E. Clark, Iowa State Univ. as strain C-19.
Medium: NA

Cellulomonas uda (Kellerman et al.) Bergey et al.

QM B1534

Reese et al. (-).
From F. E. Clark, Iowa State Univ. as strain C-7.
Medium: NA

Cellvibrio fulvus Stapp and Bortels

QM B18

Reese et al. (+).
Isolated from soil, Panama Canal Zone by H. W. Reuszer. Identified by W. C. Haynes.
NRRL B-670.
C+.
Medium: FP

Cellvibrio vulgaris Stapp and Bortels

QM B2

Reese et al. (+).
Isolated from cotton duck, Panama Canal Zone by H. W. Reuszer. Identified by W. C. Haynes.
C+.
Medium: FP

QM B122

Reese et al. (-).
Isolated from cotton duck, Panama Canal Zone by H. W. Reuszer. Identified by W. C. Haynes.
C+, W-.
Medium: FP

Corynebacterium sp.

QM B493

Reese et al. (+)

Isolated from tentage, New Hebrides. Identified by H. W. Reuszer.

C+.

Medium: FP

Enterobacter aerogenes (Kruse) Hormaeche and Edwards

QM B1463

Reese et al. (+).

From G. E. Wolf, J. T. Baker Chemical Co. as Aerobacter aerogenes strain B29.

C-, W-.

NRRL B562.

Medium: NA

QM B1591

Reese et al. (-).

From K. Wallenfels, Royal Free Hospital, Univ. of London.

Produces pullulanase.

Medium: NA

Enterobacter liquefaciens (Grimes and Hennerty) Ewing

QM B1622

Reese et al. (-).

From W. H. Ewing, Dept. of HEW, Atlanta, Georgia, as strain CDC-2149-57.

Produces chitinase (14).

Medium: NA

Escherichia coli (Migular) Castellani and Chalmers

QM B1557

Reese et al. (-).

From M. G. Sevag, Univ. of Penna., Philadelphia.

ATCC 11303.

Strain B.

Medium: NA

Lactobacillus casei (Orla-Jensen) Holland
QM B1474
Reese et al.(+).
From R. Gillespie, AMS.
AMS strain 31-E-1.
Medium: TJA

Lactobacillus fermenti Beijerinck
QM B1476
Reese et al. (+)
From R. Gillespie, AMS.
AMS strain 31-1L-1.
Medium: TJA

Lactobacillus helveticus (Orla-Jensen) Holland
QM B1616
Reese et al. (-).
ATCC 12046.
Assay of pantethine (11).
Medium: TJA

Lactobacillus leichmanii Bergey et al.
QM B1538
Reese et al. (-).
From L. D. Wright, Sharp and Dohme.
ATCC 4797.
Assay of vitamin B12.
Medium: TJA

Lactobacillus plantarum (Orla-Jensen) Holland
QM B1475
Reese et al. (+).
From R. Gillespie, AMS.
AMS strain 31-O-1.
Previously listed as L. arabinosus.
Medium: TJA

Leuconostoc mesenteroides (Cienkowski) van Tieghem
QM B1617
Reese et al. (-).
ATCC 11449; NRRL B-1299.
Produces dextrans (8).
Medium: TJA

Paracolobactrum intermedium Borman et al.

QM B1621

Reese et al. (-).

From D. McClendon, Army Tank-Automotive Command, Warren, Mich.

Used in stagnation tests for evaluating in-tank fuel pumps; specification MIL-P-62011A (MO).

Medium: NA

Proteus vulgaris Hauser

QM B1563

Reese et al. (-).

From R. Woodside, J. T. Baker Chemical Co., as strain B61.

ATCC 9920.

H form (21).

Medium: NA

Pseudomonas aeruginosa (Schroeter) Migula

QM B1468

Reese et al. (+).

From M. Landy, Wyeth Inst., Philadelphia, as P. pyocyaneus strain 60.

ATCC 13388.

C-, W-.

Testing susceptibility of plastics to deterioration.

Medium: NA

QM B1592

Reese et al. (-).

From R. Allred, Continental Oil Co., Ponca City, Okla. Isolated from water bottoms of fuel storage tanks.

Used as test organism for petroleum deterioration.

Medium: NA

QM B1619

Reese et al. (-).

From D. McClendon, Army Tank-Automotive Command, Warren, Mich.

Used in stagnation tests for evaluating in-tank fuel pumps; specification MIL-P-62011A (MO).

Medium: NA

Pseudomonas arvilla

QM B1618

Reese et al. (-).

From D. McClendon, Army Tank-Automotive Command, Warren, Mich.

Used in stagnation tests for evaluating in-tank fuel pumps; specification MIL-P-62011A (MO).

Medium: NA

Pseudomonas putida (Trevisan) Migula

QM B1620

Reese et al. (-).

From D. McClendon, Army Tank-Automotive Command, Warren, Mich.

Used in stagnation tests for evaluating in-tank fuel pumps; specification MIL-P-62011A (MO).

Medium: NA

Sarcina sp.

QM B1518

Reese et al. (-).

Isolated by H. S. Levinson as contaminant in culture of Sporocytophaga myxocoocoides QM B482.

C-, W-.

Previously listed as Micrococcus sp.

Medium: NA

Serratia marcescens Bizio

QM B1455

Reese et al. (+).

From M. Landy, Wyeth Inst., Philadelphia.

C-, W-.

Small size makes it useful in testing bacterial filters.

Medium: NA

QM B1466

Reese et al. (+).

From G. E. Wolf, J. T. Baker Chem. Co., as strain B45.

Heavily pigmented strain BF from Amer. Museum of Natural History, through R. S. Breed from Rice, Bucknell Univ., who made original isolation in 1924. W. H. Ewing found it atypical.

Previously carried as ATCC 990.

Nitrates reduced; produces chitinase (14).

Medium: NA

Sporocytophaga myxococcoides (Krzemieniewska) Stanier

QM B482

Reese et al. (+).
Gray's strain, U. S. Dept. of Agriculture.
C+.
Medium: FP

QM B1558

Reese et al. (-).
From N. R. Smith, U. S. Dept. of Agriculture.
ATCC 10010; NRS 142.
Medium: FP

QM B1559

Reese et al. (-).
From N. R. Smith, U. S. Dept. of Agriculture.
ATCC 10011; NRS 143.
Medium: FP

Staphylococcus aureus Rosenbach

QM B1458

Reese et al. (+).
From Univ. of Penna.
C-, W-.
FDA strain for phenol coefficient test.
Medium: NA

Staphylococcus sp.

QM B398

Reese et al. (+).
Isolated from binocular lens, Panama Canal Zone.
Previously listed as Micrococcus sp.
C-, W-.
Medium: NA

QM B821

Reese et al. (+).
Isolated from tentage, India.
Previously listed as Micrococcus sp.
C-, W-.
Medium: NA

Streptococcus faecalis Andrewes and Horder

QM B1539

Reese et al. (-).

From Wyeth Inst., Philadelphia, as S. lactis R.

Medium: NA

Streptococcus lactis (Lister) Löhnis

QM B1467

Reese et al. (+).

From G. E. Wolf, J. T. Baker Chemical Co. as strain B78.

NRRL B-446.

Medium: TJA

Streptomyces albidoflavus (Rossi Doria) Waksman and Henrici

QM B1588

Reese et al. (-).

From G. Terui, Japan, through D. Eveleigh, Univ. of Wisc.

Degrades fungal and yeast cell wall; produces protease and β-1,3-glucanase (32, 33).

Medium: S-YX

QM B1634

Reese et al. (-).

From D. Eveleigh, Rutgers Univ.

Lyses yeast cell walls (32).

Medium: S-YX

Streptomyces albus (Rossi Doria, emend. Krainsky) Waksman and Henrici

QM B1478

Reese et al. (+).

From Bur. Nutrition and Home Economics, U. S. Department of Agriculture. Identified by S. Waksman.

Previously carried in Quartermaster Fungus Collection as QM 190.

C-, W+.

Medium: S-YX

Streptomyces parvus (Krainsky) Waksman and Henrici

QM B1632

Reese et al. (-).

From R. Monahan, Rutgers Univ.

Produces β1 → 6 endoglucanase (15). May lyse fungal cell walls.

Medium: S-YX

Streptomyces phaeochromogenes (Conn) Waksman and Henrici

QM B1629

Reese et al. (-).
From C. W. Hesseltine.
NRRL B-1131.
Produces glucose isomerase.
Medium: S-YX

QM B1630

Reese et al. (-).
From C. W. Hesseltine.
NRRL B-3559.
Produces glucose isomerase (better than QM B1629).
Medium: S-YX

Streptomyces ruber (Krainsky) Waksman and Henrici

QM B1628

Reese et al. (-).
From NRRL.
NRRL B-3265.
Medium: S-YX

Streptomyces scabies (Thaxter) Waksman and Henrici

QM B1627

Reese et al. (-).
From NRRL.
NRRL B-3262.
Cause of potato scab disease.
Medium: S-YX

Streptomyces sp.

QM B814

Reese et al. (+).
Isolated from tarpaulin, New Guinea.
ATCC 11238.
C+, W+. Actively cellulolytic (18).
Medium: S-YX

QM B1359

Reese et al. (+).
Isolated from canvas by G. F. Weber, Florida. Identified by H. W. Reuszer.
C+, W+.
Medium: S-YX

Streptomyces sp. (continued)

QM B1553

Reese et al. (-).

Isolated from soil by E. T. Reese, J. T. Baker Chemical Co., strain 2604.

Cellulolytic activity of cell-free filtrates inhibited by cellobiose.

Medium: S-YX

QM B1613

Reese et al. (-).

From H. Pfaff, Univ. of Calif., Davis, as strain 6WL.

Activity on α-mannan.

Medium: S-YX

QM B1635

Reese et al. (-).

From D. Eveleigh, Rutgers Univ.

Lyses yeast cell walls (24).

Medium: S-YX

6. The numerical list.

QM B No.	Organism
2	Cellvibrio vulgaris
18	Cellvibrio fulvus
122	Cellvibrio vulgaris
398	Staphylococcus sp.
476	Bacillus cereus
482	Sporocytophaga myxococcoides
493	Corynebacterium sp.
525	Cellulomonas biazotea
526	Cellulomonas cellasea
527	Cellulomonas fimi
528	Cellulomonas flavigena
529	Bacillus amylolyticus
814	Streptomyces sp.
821	Staphylococcus sp.
942	Bacillus subtilis
988	Bacillus firmus-circulans intermediate
1082	Bacillus sphaericus var. fusiformis
1359	Streptomyces sp.
1455	Serratia marcescens
1458	Staphylococcus aureus
1463	Enterobacter aerogenes
1466	Serratia marcescens
1467	Streptococcus lactis
1468	Pseudomonas aeruginosa
1474	Lactobacillus casei
1475	Lactobacillus plantarum
1476	Lactobacillus fermenti
1478	Streptomyces albus
1483	Alcaligenes faecalis
1484	Alcaligenes bookeri
1518	Sarcina sp.
1534	Cellulomonas uda
1535	Cellulomonas fimi
1536	Cellulomonas flavigena
1537	Cellulomonas gelida
1538	Lactobacillus leichmanii
1539	Streptococcus faecalis
1546	Bacillus subtilis
1547	Bacillus subtilis
1548	Acetobacter xylinum
1550	Acetobacter xylinum
1551	Bacillus megaterium
1553	Streptomyces sp.
1557	Escherichia coli
1558	Sporocytophaga myxococcoides
1559	Sporocytophaga myxococcoides

QM B No.	Organism
1562	Acetobacter acetigenus
1563	Proteus vulgaris
1564	Bacillus subtilis
1565	Bacillus cereus
1566	Bacillus megaterium
1567	Bacillus firmus
1568	Bacillus pumilus
1569	Bacillus circulans
1570	Bacillus brevis
1573	Bacillus sphaericus
1574	Bacillus alvei
1576	Bacillus macerans
1577	Bacillus polymyxa
1579	Bacillus cereus subsp. mycoides
1581	Agrobacterium tumefaciens
1582	Agrobacterium tumefaciens
1583	Bacillus subtilis
1584	Bacillus megaterium
1587	Bacillus macerans
1588	Streptomyces albidoflavus
1589	Bacterium sp.
1590	Bacillus cereus
1591	Enterobacter aerogenes
1592	Pseudomonas aeruginosa
1593	Bacillus alvei
1594	Bacillus anthracis
1595	Bacillus badius
1596	Bacillus brevis
1597	Bacillus cereus
1598	Bacillus circulans
1599	Bacillus coagulans
1600	Bacillus firmus
1601	Bacillus laterosporus
1602	Bacillus lentus
1603	Bacillus licheniformis
1604	Bacillus macerans
1605	Bacillus megaterium
1606	Bacillus pantothenticus
1607	Bacillus polymyxa
1608	Bacillus pumilus
1609	Bacillus sphaericus
1610	Bacillus stearothermophilus
1611	Bacillus subtilis
1612	Aerobacter mannanolyticus
1613	Streptomyces sp.
1614	Bacillus pasteurii
1615	Bacillus megaterium
1616	Lactobacillus helveticus
1617	Leuconostoc mesenteroides
1618	Pseudomonas arvilla
1619	Pseudomonas aeruginosa
1620	Pseudomonas putida
1621	Paracolobactrum intermedium

QM B No.	Organism
1622	Enterobacter liquefaciens
1623	Bacillus laterosporus
1624	Bacillus coagulans
1625	Bacillus lentus
1626	Bacillus pantothenticus
1627	Streptomyces scabies
1628	Streptomyces ruber
1629	Streptomyces phaeochromogenes
1630	Streptomyces phaeochromogenes
1631	Arthrobacter sp.
1632	Streptomyces parvus
1633	Bacillus pantothenticus
1634	Streptomyces albidoflavus
1635	Streptomyces sp.

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