

LIST OF CULTURES OF MICRO-ORGANISMS HELD

IN NEW ZEALAND AND

METHODS FOR THEIR PRESERVATION

COLLECTIONS:

FOREST RESEARCH INSTITUTE

NATIONAL HEALTH INSTITUTE

NEW ZEALAND DAIRY RESEARCH INSTITUTE

UNIVERSITY OF OTAGO

UNIVERSITY OF WAIKATO

WALLACEVILLE ANIMAL RESEARCH CENTRE

NOTE: D.S.I.R. Plant Diseases Division
catalogue is published separately.

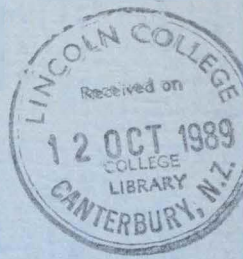
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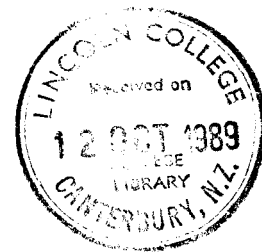
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PART I

INTRODUCTION

In August 1947 a specialist conference on Culture Collections of Micro-organisms was held in London. This meeting recommended the formation of a Commonwealth Organisation to be known as "The British Commonwealth Collections of Micro-organisms". The organisation was charged with:

1. Establishing a Permanent Committee
2. Preparing a Directory of Collections
3. Establishing National Committees
4. Preparation of Catalogues by each Collection
5. Distribution of Cultures (freely and without charge)

As a result of the formation of the Commonwealth Committee a New Zealand Committee was set up under the aegis of the New Zealand Department of Science and Industrial Research. This Committee set about obtaining from culture collections in New Zealand lists of their holdings.

At first it was proposed to publish one directory for the whole Commonwealth, however, this proved impractical and so lists were issued country by country as the material became available. A list prepared by the New Zealand Committee was finally dispatched to London in 1965 and was published in 1968 as the "Commonwealth Collection of Micro-organisms Directory of Collections and List of Species Maintained in New Zealand, HMSO London".

In the introduction it was stated that a revised Directory and List would be produced before 1970, however, the disappearance of the central organisation in London as a result of dissolution of the Commonwealth resulted in a breakdown of the system.

At its meeting in October 1967, the New Zealand Committee on Culture Collections of Micro-organisms discussed the establishment of a national reference collection which would provide a source of authentic cultures. In November 1968 the proposal was approved by the Minister of Science and four National depositories were established, (New Zealand Reference Culture Collection of Micro-organisms, R.H.Thornton, N.Z.D.S.I.R., Information Series No. 82, 1971).

- | | | |
|----|---|---|
| 1. | National Health Institute,
Wellington. | Human, ie. organisms pathogenic
to man or of human origin. |
| 2. | Plant Diseases Division,
Dept of Scientific and
Industrial Research,
Auckland. | Soil, Plant and Industrial (except
Dairy). |
| 3. | New Zealand Dairy
Research Institute,
Palmerston North. | Dairy |
| 4. | Wallaceville Animal
Research Centre,
Wellington. | Animal, ie. organisms pathogenic
to animals or of animal origin. |

In 1975 the Centre for the Collection of Industrial Micro-organisms was moved to the Applied Biochemistry Division, D.S.I.R., Palmerston North making it the fifth official depository.

These collections have from time to time issued lists of cultures held, however, no consolidated New Zealand list has appeared since 1968.

Some of the original collections have been considerably enlarged and now publish their own catalogues, however many of the smaller collections have not considered it worthwhile to publish separate lists and some no longer wish to have their holdings listed. In an endeavour to make up-to-date information about cultures held in this country more generally available. to microbiologists a new list and directory have been prepared in the Microbiology Department, Lincoln College.

A.P. Mulcock
Professor of Microbiology
Lincoln College
Canterbury
New Zealand

Chairman
New Zealand Committee on Culture Collections of Micro-organisms

I gratefully acknowledge the co-operation of my colleagues who are Curators of the culture collections listed in the preparation of the list and directory, and the authors of the papers on preservation and resuscitation methods. I also wish to record my appreciation of the work of Mrs S.J. Johnson, Secretary to the Department for the preparation of the manuscript. I would be pleased to receive corrections and additional material for future revisions.

PART II

DIRECTORY OF CULTURE COLLECTIONS IN NEW ZEALAND

1. National Health Institute Type Culture Collection

Curator: Mrs P.F.M. Cawley
National Health Institute,
Department of Health,
P.O. Box 50-348,
Porirua,
WELLINGTON.

The collection contains mostly organisms of medical and public health significance. Some isolates of veterinary, dairy and industrial interest are held. There are approximately 3,000 cultures in the collection. The collection also holds over 1,000 strains of similar types as above isolated in New Zealand.

2. New Zealand Dairy Research Institute Culture Collection

Curator: Dr L.E. Pearce
Dairy Section,
New Zealand Dairy Research Institute,
Private Bag,
PALMERSTON NORTH.

The Institute maintains stock of more than 2,000 lactic streptococci and several hundred other bacteria. In addition more than 1,000 bacteriophage strains are held. Most strains are maintained both freeze dried and frozen.

3. **New Zealand Forest Research Institute Culture Collection**

Curator: Dr P.D. Gadgil
New Zealand Forest Research Institute,
Private Bag,
ROTORUA.

The Institute keeps a collection of 175 fungi of significance to the forest industry, both pathogens and saprophytes. Some industrially useful species are included.

4. **Plant Diseases Division, Culture Collection (PDDCC)**

Curator: Dr J.M. Young
Mt. Albert Research Centre,
D.S.I.R.,
Mt. Albert,
Private Bag,
AUCKLAND.

More than 7,000 cultures of bacteria and fungi associated with plants are kept, most are lyophilised.

NOTE: ORGANISMS IN THIS COLLECTION ARE NOT INCLUDED IN THIS LIST.

A catalogue is available, PDDCC Catalogue Culture Collection, Plant Diseases Division, New Zealand Department of Scientific and Industrial Research (1981) 114 pp. includes 3,500 records. A second edition including 2,200 fungal records and 4,800 bacterial records will be available in 1987.

5. University of Otago Microbiology Department

Curator: Dr G.W. Tannock
Microbiology Department,
University of Otago,
P.O. Box 56,
DUNEDIN.

This small collection is made up of 19 species of *Bacillus* together with numerous mutant strains of *Pseudomonas aeruginosa* about which further information can be obtained from the Curator.

6. University of Waikato Thermophile Research Group

Curator: Ms Yvonne Casey,
Thermophile Research Group,
University of Waikato,
Private Bag,
HAMILTON.

This Research Group maintains some 64 cultures of thermophilic bacteria, originating from a number of collections.

7. Wallaceville Animal Research Centre Culture Collection

Curator: Dr T.M. Skerman
Ministry of Agricultural and Fisheries,
Private Bag,
WELLINGTON.

This laboratory is the national centre of the New Zealand Ministry of Agriculture and Fisheries for research on diseases of livestock. Wallaceville Animal Research Centre is a member of the Federation for Culture Collections (WFCC Word Data Centre, Brisbane) Collection No. 376. The organisms held are mostly bacteria (139 strains) there are some cell lines (15) held.

PART III

METHODS FOR PRESERVATION OF CULTURES

AND THEIR RESUSCITATION

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SECTION 1

D.S.I.R. INFORMATION SERIES NO. 82, 1971

STANDARD METHODS FOR LYOPHILISATION AND STORAGE OF CULTURES

The following is the preferred method of preservation and should be used whenever the culture can be preserved satisfactorily by this method:

Ampoules

The ampoule selected for the Collection is a tube 100 x 7.5 mm with 6 mm neck and nominal capacity of 0.5 ml (Johnsen and Jorgensen, London, S.E.7, 9/H/9101).

This type of ampoule can be used with most of the freeze-drying equipment available.

Preparation of Ampoules

Thirty or more ampoules should be prepared for each culture to allow for testing at least two ampoules, faulty ampoules, and storing 25 ampoules in the Collection.

Labelling

In each ampoule is placed a filter paper strip approximately 25 x 4 mm on which is stamped the accession number of the culture. As some numbers may be misread if inverted (eg. 18098 --> 86081) an asterisk should mark the beginning of a number and the filter paper strip should be inserted so that the number is read from the bottom of the tube:

The ampoules are plugged with teased non-absorbent cottonwool (loose plug) and sterilised *either* by autoclaving at 121°C for 15 minutes followed by thorough drying in a drying cabinet *or* by heating in the hot air oven for 1 hour at 160°C.

Notes

1. Whether ampoules are pre-constricted (ie. before filling) and whether covers replace cottonwool plugs will depend on the type of freeze-drying equipment and whether centrifugation or pre-freezing or evaporation of liquid foam is used.
2. Absorbent cottonwool, alginate wool, or peptone plugs may be used.
3. The filter paper strip is essential for identification.
4. External labelling with glass ink should not be necessary. Ampoules may be dated with month and year, if desired, for batch record purposes.

Constriction and Sealing of Ampoules

At some stage (before filling, after filling, or after primary drying) the ampoules must be constricted before final drying and sealing under vacuum. The plug should be pushed down to about the middle of the ampoule and the ampoule constricted just sufficiently above the plug not to char it. In constricting the tube it is best to allow the flame to constrict and thicken the glass with minimum drawing out of the ampoule so that a short thickened neck is produced. The ampoules are sealed by cutting off with a flame under vacuum. The aim is to have a strong even seal about the middle of the constriction; the ampoule should be cut off with the flame and not pulled off, but may be gently rotated.

For convenience of storage *the overall length of the sealed ampoule should not exceed 70 mm.*

Cultures

Many factors (growth medium, temperature and time of drying, suspending medium, residual moisture content, residual oxygen, storage conditions, recovery medium, etc.) affect survival rates, and it is not possible to specify standard methods for all of these. However, it is suggested that:

1. The largest convenient number of viable organisms harvested shortly after the end of the logarithmic growth phase should be the starting material.
2. A limited variety of suspending media should be used. Four are suggested:

Suspending media

- (i) **7% Glucose/Peptone Mixture**
14% glucose and 14% peptone are prepared and sterilised separately.
Equal quantities are mixed just before use.
- (ii) **Sterile Skim Milk**
Skim milk is reconstituted from low-heat, spray-dried skim milk powder to 9.5% w/v.
- (iii) **Sterile inactivated horse serum (or bovine serum), 3 parts; 30% glucose in trypticase soy broth 1 part.**
- (iv) **1% Bovine Albumen (for viruses)**
Solution A 13.6g Na_2HPO_4 in 100 ml distilled water.
Solution B 2.0g KH_2PO_4 in 100 ml distilled water.
Bovine plasma albumen Fraction V.
Mix 10 ml Solution A, 10 ml Solution B, 10g bovine albumen Fraction V, with 980 ml distilled water containing 7.0g NaCl. sterilised by filtration.

Volume

0.1 to 0.25 ml of suspension per ampoule is a suitable initial volume for drying.

Freeze-Drying Equipment and Procedures

Standard procedures are not possible with the different equipment used at the four depositories. To ensure adequate drying it is recommended that total drying time should be at least 4 hours and that where primary drying over a mechanically refrigerated vapour trap is used, secondary drying time over desiccant should be at least 25% of the primary drying time.

The final pressure should be as low as possible and should be less than 0.01 mm Hg.

Temperature of drying will not be controllable with most equipment and after initial evaporative cooling will be at or near ambient temperature.

High-Frequency Tester

Sealed ampoules should be tested with a High-frequency Tester and ampoules not under vacuum discarded.

Testing

At least two ampoules should be tested for viability and purity.

Storing of Ampoules

Ampoules should be stored in the dark. Refrigerated storage improves survival but is not essential.

SECTION 2

PRESERVATION OF CULTURES FOR THE
PLANT DISEASES DIVISION CULTURE COLLECTION

J.M. Young and M.J. Fletcher
Plant Diseases Division, D.S.I.R.,
Mt. Albert, Auckland.

Criteria for accession to PDDCC take account of the importance or potential importance of strains. Thus, hitherto unidentified putative pathogens may be acceded with minimal characterization and their identification confirmed subsequently. Strains of known pathogens from known hosts are acceded if the strain is well characterized and represents an expansion of the geographic representation of the organism.

Method

From plates, spread to produce single colonies of the characterized strain, at least 10 colonies are selected and sub-cultured into a single tube. This step aims to maintain the wild type characteristics of the strain and avoid selection of mutations.

Slopes of media, selected to give copious growth, are incubated to late log phase.

Densely turbid suspensions are prepared from the slopes in a broth containing 7% glucose, 7% peptone and are dispensed aseptically into prepared sterile ampoules. These ampoules have an absorbent cotton wool pellet at the bottom, a paper strip with accession number and date and a non-absorbent cotton-wool bung. About 0.2 ml suspension wets the pellet.

Numbers of ampoules prepared depend on the priority allocated to the strain. Eight to ten ampoules are prepared for routine preservation. Larger numbers are held of type strains and of those for which there is a demand.

Lyophilization follows the procedure laid down in Section 1. A final pressure of 0.003 millibars (water equivalent), measured on a Pirani gauge is aimed at. This or a lower pressure is considered important for the long term survival of bacteria. Tests indicate that a survival of $1:10^2$ cells occurs following lyophilization.

Ampoules are stored at 4°C. Lyophilized strains are re-cultured routinely after 20 years. A small number of labile organisms are re-lyophilized at shorter intervals.

Accession data are stored in files on computer. This data includes the source of strains and their history prior to accession. Data about individual strains can readily be obtained and catalogues of all data can be generated. Profiles of the state of the collection in terms of rates of accession and of ageing can be obtained. Removal of strains is also logged so that re-lyophilization can be done in good time.

SECTION 3

RESUSCITATION OF CULTURES

Plant Diseases Division Culture Collection

Identify the culture by the number on the paper inside the ampoule, reading from the round end of the tube. Cultures from the NZRCC have the number preceded by an asterisk. If two figures are added at the end following a dash, eg. -69 they refer to the year the culture was preserved.

In FREEZE DRIED cultures, the organism is found mainly in or on the label paper and the cotton wool pellet at the bottom of the tube (if present).

Prepare sterile empty test tubes with cottonwool bungs and sterile petri dishes - one for each ampoule to be opened. Hold ampoule in forceps, dip in alcohol, flame, then place in a sterile petri dish. Wash hands well or using sterile gloves swab down the work area - a smooth clean surface, preferably a glass slab. With a file nick ampoule half way down the cottonwool bung. Open either by snapping with file mark facing away from operator, or by touching with red hot wire on the file mark. If possible do this in a transfer cabinet (not the type with forced air flow). Drop the half vial containing label and cottonwool pellet, open end upwards, into a sterile test tube. Place discarded top part of ampoule with cottonwool bung into a covered dish to be autoclaved.

When all vials of a batch have been opened in this way, swab down the working area again. With a sterile Pasteur pipette and rubber bulb, add approximately 0.5 ml of nutrient broth slowly to each ampoule within the test tube taking care that broth does not run down the outside of the ampoule. Agitate the label and pellet with a sterile loop and replace the cotton wool bung in the test tube. Use a fresh sterile pipette for every ampoule of the batch being opened. Take care not to contaminate the supply of broth between additions to ampoules or use a separate tube of sterile broth for each ampoule.

After 5-10 minutes streak small loops of broth from the ampoules onto suitable agar plates. Incubate plates and tubes containing ampoules overnight at the appropriate temperature. Hold the latter at 4°C until the streak cultures have grown - if there is no suitable growth on the plates, restreak from the incubated broth. Finally autoclave tubes and vials.

For SILICA GEL dried fungi DO NOT ADD LIQUID. Cultures exist as a string of shrivelled discs above silica gel and can be removed with a sterile micro-spatula directly to a suitable medium.

For fungi under MINERAL OIL, transfer agar discs directly to agar plates with as little oil as possible.

SECTION 4

ANAEROBIC BACTERIA; CULTURE PRESERVATION AND STORAGE METHODS

G.W. Tannock
Microbiology Department, University of Otago,
Dunedin.

Anaerobic Bacteria

- (a) Small labelled rectangles of Whatman Number 1 filter paper are placed within glass ampoules which have a slight constriction about halfway along their length.
- (b) The open ends of the ampoules are closed with kitchen foil and autoclaved.
- (c) A liquid culture (pre-reduced, anaerobically sterilised medium) of the anaerobic bacterium to be stored is placed under a flow of an oxygen-free gas mixture (eg. 10% carbon dioxide in argon). A glass ampoule is placed under a flow of oxygen-free gas in the same manner. A pasteur pipette, flushed several times with oxygen-free gas, is used to transfer a few drops of culture into the glass ampoule.
- (d) The foil cover is placed on the ampoule as it is removed from the flow of oxygen-free gas. The ampoule is placed immediately in a beaker of ethanol maintained at $\sim -70^{\circ}\text{C}$. Most of the culture is absorbed by the filter paper. Flushing the ampoule with oxygen-free gas prevents oxidation of the culture and the resazurin E_n indicator in the medium should remain colourless.
- (e) Ampoules containing the frozen culture are placed on a freeze-drying apparatus for approximately 24 hours. Freeze-dried cultures are stored at room temperature. Clinical isolates of bacteroides, fusobacteria, clostridia and anaerobic cocci can be preserved successfully using this method.

Gastrointestinal strains of bacteroides, clostridia and lactobacilli can also be stored as freeze-dried cultures. Cultures of *Campylobacter faecalis*-like organisms, or fusobacteria from the murine intestinal tract using this method have not been stored successfully.

Storage in Skim Milk

- (a) Approximately two millilitres of a liquid culture of the organism to be stored are added to an equal volume of sterile skim milk. Manipulations are performed under a flow of oxygen-free gas as described above.
- (b) The skim milk mixtures are stored at -20 or -70°C .

Clinical isolates of bacteroides, fusobacteria, clostridia, anaerobic cocci and *Mobiluncus* sp. can be stored successfully using this method.

Skim milk storage is the method of choice for storing gastrointestinal strains of bacteroides, fusobacteria, clostridia, lactobacilli, and eubacteria. *Campylobacter faecalis*-like organisms do not survive.

Storage in Chopped Meat Media

- (a) Clinical isolates of clostridia (eg. *Clostridium difficile*) remain viable in prereduced chopped meat broth held at room temperature for long periods. This is presumably due to the prolific production of spores by the bacteria.
- (b) Chopped meat agar slants initially incubated at 30°C for 3 weeks and then held at room temperature also provide good conditions for the storage of clostridia.

Methods for preparing prereduced, anaerobically sterilised media (including chopped meat media) are given in: Anaerobe Laboratory Manual, 4th Edn, L.V. Holdeman *et al.*, 1977, Virginia polytechnic Institute and State University.

Storage in Agar Stabs

Lactobacilli can be stored in screw cap tubes containing a column of Lactobacilli MRS agar (Difco). Colonies from agar cultures are stabbed deeply into the agar column, incubated at 37°C for 24 hours and then stored at -20 or -70°C.

Wadsworth Anaerobic Laboratory Methods

(see Anaerobic Bacteriology Manual, Sutter V.L., Citron D.M., Finegold S.M., Third Edn, 1980, C.V. Mosby Co.)

Supplemented thioglycollate medium can be used to prepare stock cultures. Add 0.5 ml of the liquid culture to an equal volume of sterile skim milk (20% powdered milk in distilled water) prepared in a screwcapped vial. Freeze and maintain the stock culture at -70°C.

If stock cultures are prepared from solid media, the growth taken from the plate or slant must be suspended carefully and mixed thoroughly in the skim milk.

CDC Laboratory Methods

(See Laboratory Methods in Anaerobic Bacteriology, Dowell V.R., Hawkins T.M., 1974, Centre for Disease Control).

Storage of Non-spore Forming Anaerobes

- (a) Transfer actively growing chopped meat-dextrose or thioglycollate cultures to infusion agar slants and incubate at 35-37°C in an anaerobe jar for 48 hours or until confluent growth is obtained.
- (b) Add about 0.35 ml of sterile defibrinated rabbit blood to each slant, suspend growth in the blood, and transfer the suspension to a sterile cotton plugged tube. Cut off excess cotton and flame the lip of the freezing tube.
- (c) Quickly freeze the suspension in an ethanol-dry ice bath and store at -20 or -70°C.

Storage of Spore Forming Anaerobes

- (a) Transfer actively growing chopped meat-dextrose cultures to brain storage medium and incubate at 35-37°C.
- (b) Prepare Gram stained smears daily and check for spores. Cultures are stored in the freezer at -20°C as soon as spores develop or after 5 days incubation if spores are not observed.

Freeze-drying of Anaerobic Cultures

- (a) Suspend the growth on a blood agar slant in 0.5 - 0.75 ml of sterile skim milk and dispense about 0.25 ml quantities into ampoules.
- (b) Freeze the suspensions in a dry ice-ethanol bath.
- (c) Place ampoules on a freeze drying apparatus for 5-6 hours.
- (d) Store the freeze-dried cultures at room temperature or under refrigeration.

Shipment of Anaerobic Cultures

Anaerobic cultures can be shipped in tubes of liquid or semisolid media. Plates or slants are not satisfactory. Cultures can best be shipped in a carbohydrate-free medium containing 0.3-1.0% agar such as motility medium. The medium should be freshly prepared and tubed 5-8 cm deep in screw cap tubes. *Clostridium* cultures in plain chopped meat medium or cultures of nonsporeformers in thioglycollate broth can also be used for shipment.

Before shipment a 20 to 25 mm overlay of melted paraffin or 5% agar should be added to actively growing cultures in either semisolid or liquid media. The screwcaps should be tightened and sealed with waterproof tape.

Media Used in the Storage of Anaerobic Cultures

Supplemented thioglycollate. Use thioglycollate medium without indicator prepared according to the manufacturer's instructions. Add Hemin, 5µg/ml, and vitamin K₁ 0.1µg/ml. Dispense in tubes each containing a marble chip, filling the tubes 2/3 to 3/4 full. Autoclave as directed. Just prior to use, boil or steam for 5 minutes, cool, and supplement with normal rabbit or horse serum (10% v/v) or peptic digest of sheep blood (Fildes enrichment, 5% v/v).

Infusion Agar Slants. Use blood agar base or another comparable medium. Dispense in tubes, autoclave and slant.

Brain Storage Medium. Add small amount of water to beef or calf brains and mix in blender. Prepare peptone solution using 20gm peptone in 1 litre distilled water. Adjust pH to 7.2 - 7.4. Dispense into tubes, using one part brain and two parts peptone solution. Tubes should be over half full. Autoclave at 121°C for 15 minutes.

Motility Medium. Use Motility Test Medium (BBL) or Motility Medium (Difco) diluted to a final concentration of 0.4% agar as follows:

Motility medium	16 g
Nutrient broth	4 g
NaCl	1 g
Distilled water	1 litre

Blood Agar (CDC). Base: Add 0.5 g yeast extract to 100 ml trypticase soy agar base. Adjust pH to 7.3-7.5. Autoclave. Cool to 48°C.

Add one ml sterile vitamin K-hemin solution per 100 ml.

Add 5 ml sterile defibrinated rabbit or sheep blood per 100 ml.

Skim Milk (Difco). Prepare according to the manufacturers's instructions.

Chopped Meat (VPI).

Ground beef (fat free)	500 g
Distilled water	1 litre
1 N NaOH	25 ml

Use lean beef or horse meat. Remove fat and connective tissue before mincing. Mix meat, water and NaOH and bring to a boil, stirring. Cool to room temperature, skim fat off surface, and filter, retaining both meat particles and filtrate. To filtrate, add sufficient distilled water to restore 1 litre original volume. to this filtrate add:

Trypticase	30 gm
Yeast extract	5 gm
Potassium phosphate (dibasic)	5 gm
Resazurin solution	4 ml

Boil, cool, add 0.5 gm cysteine, 10 ml vitamin K-hemin solution. dispense into tubes containing meat particles (1 part meat to 4 parts fluid).

Chopped Meat Agar Slants. Add 6 ml of chopped meat broth to tubes containing chopped meat particles and 0.12 g agar. After autoclaving, mix and cool on slant.

Chopped Meat-dextrose (CDC). Add 3 g glucose per litre of chopped meat filtrate (see above) before dispensing.

Vitamin K-Hemin Solution. Vitamin K: Add 100 mg menadione to 20 ml 95% ethanol. Filter sterilise.

Hemin solution: Dissolve 50 mg hemin in 1 ml 1 N NaOH; make to 100 ml with distilled water.

Autoclave.

Working solution: Add 1 ml sterile menadione stock solution to 100 ml hemin stock solution. Use 1 ml of this working solution in 100 ml of medium.

Resazurin Solution. Dissolve 25 mg resazurin in 100 ml distilled water.

SECTION 5

PRESERVATION OF FUNGAL CULTURES

P.D. Gadgil

New Zealand Forest Research Institute,
Rotorua.**Methods of Preservation**

All cultures are maintained on malt agar slants under sterile paraffin oil - the majority on 3% malt agar, *Dothistroma pini* on 10% malt agar and *Armillaria* spp. on an enriched malt medium. A duplicate set of cultures is kept on the same media at 4° and resubbed at approximately 10 monthly intervals. This second set is sealed against mite invasion with cigarette paper seals (see below).

Trials with agar blocks in sterile water were carried out some years ago, however contamination was a problem using this method - unless the lids of the McCartney bottles were very tightly screwed down, mites found a way into the bottles. Difficulty was also experienced in retrieving cultures from the agar blocks. The paraffin oil method has been found generally satisfactory with a high recovery rate even after 25 years.

Bacteria and Mites in Fungal Cultures

From Hawksworth, D.L. (1974): *Mycologist's Handbook*, CMI, Kew.

Cultures which are not preserved under oil or by lyophilization or liquid nitrogen storage are subject to contamination by mites and bacteria. Mites present particular problems as they are liable to move from one culture to another carrying spores of various fungi with them. Acaricides such as paradichlorobenzene which are used to keep insects away from herbarium specimens may be kept with cultures to act as deterrents. Crystals of paradichlorobenzene added to infected cultures may kill mites but may also cause the fungus to deteriorate. For a review of acaricidal treatments see Smith, R.S. 1967 *Control of tarsonemial mites in fungal cultures. Mycologia* 59: 600-609).

The most satisfactory way to keep mites out of tubes and bottles is by sealing them with cigarette papers which allow air to pass through them but have pores too small to allow mites through. About 25 ml of an adhesive, made up of 20 g gelatine in 100 ml distilled water to which 2 g copper sulphate have been added, are poured into a petri dish and allowed to solidify. The cotton wool plug in the tube is flamed, pushed down, flamed again and while the rim of the tube is hot it is pushed into the gelatine mixture, removed, and immediately pressed on to the centre of half a cigarette paper (sterilized with propylene oxide). When the gelatine mixture has set the surplus paper can be flamed off to leave an unobtrusive seal.

Where bacterial contamination has occurred it is necessary to subculture the fungus on to a medium containing an antibacterial antibiotic (eg. aureomycin, chloramphenicol). Details of the composition of some antibacterial media which permit the growth of fungi are included in Booth, C. 1971c Fungal culture media. In Booth, C. (ed) *Methods in Microbiology* 4: 49-94. Academic Press: London and New York.

SECTION 6

PRESERVATION METHODS USED BY NEW ZEALAND DAIRY RESEARCH INSTITUTE

L.E. Pearce

New Zealand Dairy Research Institute,
Palmerston North.

It is recommended that cultures for the New Zealand Reference Culture College for Micro-organisms (NZRCCM) are freeze-dried according to the standard procedures outlined by Thornton (1971) DSIR Information Series No. 82.

Additional details are as follows:

- (a) Growth conditions. Appropriate milk or broth cultures are used to inoculate 120 ml M17 broth (Terzaghi & Sandine, 1975, Applied & Environmental Microbiology 29: 807). Cells are harvested by centrifugation and resuspended in 2 ml M17 broth.
- (b) Drying conditions. An Edwards EF03D Model, freezer dryer is used with P_2O_5 as the desiccant. The pump is turned on 40 minutes before the ampoules are placed in the centrifuge carrier plate assembly. The pressure is reduced to 0.01 - 0.001 mm Hg and drying continued for five hours (Primary Drying Time).

The air is admitted slowly to the chamber, and the ampoules removed. They are then heated in a blow pipe at one-third from the top end, and drawn out to a narrow constriction. The ampoule header is joined to the freeze dryer and the ampoules are attached to this header. Fresh P_2O_5 is placed on one tray in the freeze dryer and the pump turned on for two hours (Secondary Drying Time). The ampoule neck constrictions are then flame collapsed, using a special micro-burner. The ampoules are stored in the refrigerator at 4°C.

Laboratory Stocks

The Institute maintains stocks of >2,000 lactic streptococci and several hundred other bacteria. There are in addition >1,000 bacteriophage strains active on the lactic acid bacteria. Important industrial strains are maintained both freeze dried (as above) and as frozen stocks (-75°C).

Laboratory cultures are not normally freeze dried but are maintained as both working and master frozen stocks. Late log phase cultures in 10% reconstituted skim milk are frozen directly in 0.5 ml ampoules (gamma sterilised) as master stocks (usually three) and in 1.5 ml screw cap vials as working stocks. Strains that do not grow in milk are prepared in broth media and frozen with glycerol (10% final concentration). Working stocks are prepared from master stocks as required. Strains of lactic acid bacteria from the genera *Streptococcus*, *Lactobacillus*, *Pediococcus* and *Leuconostoc* have been frozen by this method and have retained excellent viability. Some of these stocks are now >15 years old.

Bacteriophages active against the Group N streptococci are prepared on their appropriate host either in milk or in a rich broth medium, freed from bacteria by membrane filtration and frozen to -75°C without additives. Working stocks for most phages retain infectivity for long periods at 4°C. Phage purified by density gradient centrifugation may also be satisfactorily stored in CsCl₂ at 4°C.

Commercial Cultures

Strains of *Streptococcus cremoris* are currently used as starters for Cheddar and related cheese types in New Zealand. These strains are now prepared by the New Zealand Dairy Research Institute as seed cultures for direct bulk culture vessel inoculation. Strains are grown in pH controlled (pH 6.05) batch fermentation at 30°C. The medium comprises (w/v); 2% hydrolysed rennet whey powder, 0.99% yeast extract and 3% skim milk powder. When acid production ceases due to lactose limitation in mid-late logarithmic growth phase, the cells are chilled, an equal volume of sterile 21% lactose added, and appropriate volumes are aseptically dispensed and frozen at -40°C.

This procedure not only maintains 100% viability of *S. cremoris* for >6 months, but also prevents an increase in the log phase when the culture is thawed and inoculated into the bulk culture milk. (N.Z. J. Dairy Sci. Technol. 14, 16-22, 1979).

SECTION 7

PRESERVATION OF CULTURES

K.A. Bettelheim and P.F.M. Cawley

National Health Institute,
Wellington.

Lyophilisation is the method of choice for long-term storage and preservation with additional back-up storage of many strains at -90°C in 15% glycerol trypticase soy broth*.

Lyophilisation Method

A heavy bacterial suspension in the appropriate suspending medium is prepared from plate cultures and dispensed into prepared sterile ampoules. The cultures are identified with an accession number stamped onto a strip of blotting paper, different coloured blotting papers being used for subsequent batches of an organism. Several different cultures can be processed at any one time.

The ampoules (up to 96) are loaded onto the centrifuge head, plugs discarded and a sterile lint cap fixed over the whole load.

The ampoules are centrifuged for 15 minutes on an Edwards DF03 refrigerated freeze drier, with vacuum pump and refrigerator on, then left overnight to complete primary drying.

Each ampoule is plugged with a sterile plug of non-absorbent cotton wool and constricted in a fish tail gas/air burner. They are then attached to the nipples of the secondary drying head and drying is completed using phosphorous pentoxide. The ampoules are sealed by cutting off with a flame under vacuum.

The majority of cultures are stored in the dark at room temperature, a few less hardy species are stored in the refrigerator. A single ampoule of each batch is checked for viability, purity and correct characteristics. Before issue each ampoule is checked for intact vacuum using a high frequency tester.

Suspending Media

1. 5% Inositol Serum** (Most non enteric bacteria)
5 g inositol dissolved in 100 ml horse serum, seitz or membrane filtered to sterilise.

2. 5% Inositol Broth** (Enteric gram negative bacteria)
5 g inositol in 100 ml Oxoid Nutrient Broth No. 2.
pH adjusted to 7.6. Sterilised 115°C for 10 minutes.

3. Skim milk, double strength *** (Fungi, *Legionella* spp)
Skim milk powder (eg, Oxoid, Difco) dissolved in distilled water to concentration of 20% w/v. Sterilised 121°C for 5 minutes.

* Am. J. Clin. Pathol, 66, 1976, 927-8.

** NCTC Methods, Methods in Microbiology vol 3A, p. 130.
Norris and Ribbons. Redway and Lapage, Cryobiology 11,
1974, 73-9.

*** ATCC Methods

ABBREVIATIONS

FRI	New Zealand Forest Research Institute	NHI	National Health Institute
NZDRI	New Zealand Dairy Research Institute	OU	University of Otago
WAIK	University of Waikato	WARC	Wallaceville Agricultural Research Centre
ATCC	American Type Culture Collection		
CCM	Czechoslovak Collection of Micro-organisms, JE Purkyne University, Brno, Czechoslovakia		
CDC	Center for Disease Control, Atlanta, Georgia, USA		
CIP	Collection of the Institute Pasteur, Paris, France		
CN	Wellcome Collection of Bacteria, Burroughs Wellcome Research Laboratories, Beckenham, Kent, England.		
Col. FH	Food Hygiene Laboratory, Central Public health Laboratory, Colindale, London, England.		
Col. Sal	Division of Enteric Pathogens, Central Public Health Laboratory, Colindale, London, England.		
DSM	Deutsche Sammlung von Mikroorganismen, Gottingen, Federal Republic of Germany		
FAO	Food and Agriculture Organisation		
FDA	Food and Drug Administration, Washington DC, USA		
FH	See Col FH.		
FHP	American Hoechst Corp., USA		
HSC	Hospital for Sick Children, Toronto, Canada		
IFO	Institute for Fermentation, Osaka, Japan		
LSHTM	London School of Hygiene and Tropical Medicine, London, England.		
NCDO	National Collection of Dairy Organisms, Reading, England		
NCIB	National Collection of Industrial Bacteria, Aberdeen, Scotland		
NCTC	National Collection of Type Cultures, UK		

PCI Pencillin Control and Immunology Section, FDA, USA.
 PI Pasteur Institute, Paris, France
 RARC Ruakura Animal Research Centre
 SRL Staphylococcus Reference Laboratory, Central Public health Laboratory, Colindale, London, England.
 TMC Trudo Mycobacterial Culture Collection, New York, USA
 USDA US Department of Agriculture, Washington DC, USA
 VPI Virginia Polytechnic Institute and State University, Blacksburg, Virginia, USA
 WHO World Health Organisation

Not for Distribution - Will not be distributed as they are the causative organisms of diseases exotic to New Zealand livestock.

CHARGES

National Health Institute: Charge of \$30.00 plus GST per ampoule, inclusive of post and packing.

New Zealand Dairy Research Institute: Culture respects are either by personal favour to non-profit making institutions or by charge to commercial companies.

New Zealand Forest Research Institute: No charge for supplying sub-cultures to research or teaching organisations, but a charge of \$30.00 per sub-culture if the culture is to be used for commercial purposes.

University of Otago: Refer to the Curator

University of Waikato: Refer to the Curator

Wallaceville Animal Research Centre: Refer to the Curator

B A C T E R I A

Acinetobacter	anitratus see Acinetobacter calcoaceticus	NHI
Acinetobacter	calcoaceticus (Beijerinck) Baumann, Doudoroff & Stanier NZ Isolate 65/5318	NHI 150
Acinetobacter	calcoaceticus (Beijerinck) Baumann, Doudoroff & Stanier CDC C1796	NHI 835
Acinetobacter	calcoaceticus (Beijerinck, Doudoroff & Stainier NHI 835	WARC
Acinetobacter	lwoffii (Audureau) Brisou & Prevot NZ Isolate 76/0617	NHI 1218
Acinetobacter	lwoffii (Audureau) Brisou & Prevot ATCC 15309, NCTC 5866, NCDC KC765	NHI 2581
Acinetobacter	lwoffii (Audureau) Brisou & Prevot ATCC 23221	NHI 2727
Actinobacillus	actinomycetemcomitans (Klinger) Topley & Wilson NCTC 9709	NHI 809
Actinobacillus	equuli (van Straaten) Haupt NCTC 8529, ATCC 19392	NHI 1080
Actinobacillus	equuli (van Straaten) Haupt ATCC 19392, NHI 1080	WARC
Actinobacillus	lignieresii Brumpt NCTC 4976, ATCC 19393	NHI 1081
Actinobacillus	suis van Dorssen & Haartsveld CDC KC561	NHI 838
Actinomyces	bovis Harz NCTC 9431	NHI 1005
Actinomyces	israelii (Kruse) Lachner-Sandoval NCTC 4860	NHI 978
Actinomyces	naeslundii Thompson & Lovstedt NCTC 10301, ATCC 12104	NHI 1004
Actinomyces	odontolyticus Batty NCTC 9931, ATCC 17982	NHI 1003
Aeromonas	formicans (Crawford) Pivnick & Sabina) NCTC 10362	NHI 806
Aeromonas	hydrophila (Chester) Stanier ATCC 7966, NHI 804	WARC
Aeromonas	hydrophila (Chester) Stanier NCTC 8049, ATCC 7966, NCIB 9240	NHI 804
Aeromonas	liquefaciens (Beijerinck) Kluyver & van Neil NCTC 9744	NHI 807
Aeromonas	punctata (Zimmerman) Sniesko CDC B4989	NHI 1029
Aeromonas	salmonicida (Lehmann & Neumann) Griffin, Snieszko & Friddle <u>Distribution restricted</u> NCTC 10402	NHI 808
Aeromonas	salmonicida (Lehmann & Neumann) Griffin, Snieszko & Friddle NCTC 10402	WARC

Alcaligenes	denitrificans Leifson & Hugh CDC B7042	NHI 837
Alcaligenes	faecalis Castellani & Chambers NCTC 415, NHI 697	WARC
Alcaligenes	faecalis Castellani & Chalmers NCTC 415, ATCC 19018	NHI 697
Alcaligenes	odorans (Malek & Kazdova-Koziskova) Malek et al. CDC KC 675	NHI 836
Arachnia	propionica (Buchanan & Pine) Pine & Georg CDC 14705, ATCC 14157, VPI 0026	NHI 902
Archromobacter	Group Vd NZ Isolate 76/3045	NHI 1259
Archromobacter	xylosoxidans Yabuchi et al. CDC B7176	NHI 832
Archromobacter	xylosoxidans Yabuchi et al. CDC A 8450	NHI 833
Aspergillus	niger ATCC 16404	NHI 2578
Bacillus	acidocaldarius NCIB11725; ATCC27009; Type strain	WAIK 74
Bacillus	anthracis Cohn <u>Distribution restricted</u> NCTC 8234	NHI 4
Bacillus	anthracis Cohn <u>Distribution restricted</u> CDC 1014	NHI 1014
Bacillus	anthracis Cohn <u>Distribution restricted</u> NCTC 10340, ATCC 14578, NCIB 9388	NHI 1028
Bacillus	caldolyticus DSM405; YPT Type Strain	WAIK 82
Bacillus	caldotenax DSM406; Strain YT-G	WAIK 64
Bacillus	caldovelox DSM411; Strain YT-F	WAIK 65
Bacillus	cereus Frankland & Frankland NCTC 8035, ATCC 10702, FDA 5, NCIB 8122	NHI 5
Bacillus	cereus Frankland & Frankland NCTC 9945, ATCC 10876a	NHI
Bacillus	cereus Frankland & Frankland NCTC 10320, ATCC 11778, PCI 213	NHI 984
Bacillus	cereus Frankland & Frankland ATCC 19637, FHP 1161	NHI 992
Bacillus	cereus Frankland & Frankland ATCC 66331	WARC
Bacillus	coagulans DSM 459; Phenetic Group IV	WAIK 83
Bacillus	coagulans Hammer NCTC 10334, ATCC 7050, NCIB 9365	NHI 2569
Bacillus	globigii	OU

Bacillus	laterosporus Laubach NCTC 6357, ATCC 64, NCIB 8213, 9367	NHI 1013
Bacillus	licheniformis (Weigmann) Chester NCTC 6346, ATCC 9789, NCIB 6346	NHI 6
Bacillus	licheniformis CCM2145; NCIB9375; DSM13; IF012200; NCTC 10341, Type strain	WAIK 25
Bacillus	megaterium de Bary NCTC 10342, ATCC 14581	NHI 1077
Bacillus	polymyxa (Prazmowski) Migula ATCC 10401	NHI 2505
Bacillus	polymyxa (Prazmowski) Migula ATCC 842, NCTC 10343, NCIB 8158	NHI 2589
Bacillus	pumilus Meyer & Gottheil NCTC 8241, ATCC 14884, CIP 76.18, NCIB 8982	NHI 802
Bacillus	pumilus Meyer & Gottheil NCTC 10327	NHI 960
Bacillus	psychrosaccharolyticus DSM 6 ATCC 23296, Strain T258	WAIK 5
Bacillus	schlegelii DSM2000; Type Strain	WAIK
Bacillus	sphaericus DSM461; Phenetic Group IA	WAIK 84
Bacillus	sphaericus	OU
Bacillus	stearothermophilus Donk NCTC 10007, ATCC 7953, NCIB 8157	NHI 111
Bacillus	stearothermophilus Donk NZ Dairy Research Institute	NHI 1002
Bacillus	stearothermophilus (var <i>calidolactis</i>) C 953	NZDRI 20048
Bacillus	subtilis (Ehrenberg) Cohn NCTC 6276, ATCC 9799, NCIB 6276	NHI 142
Bacillus	subtilis (Ehrenberg) Cohn NCTC 3610, ATCC 6051, NCIB 3610	NHI 143
Bacillus	subtilis (Ehrenberg) Cohn NCTC 10073, NCIB 8649	NHI 294
Bacillus	subtilis (Ehrenberg) Cohn NCTC 8236, ATCC 11774, NCIB 8739	NHI 698
Bacillus	subtilis (Ehrenberg) Cohn ATCC 6633 NCIB 8054, NCTC 10400, PCI 219	NHI 766
Bacillus	subtilis (Ehrenberg) Cohn NCTC 10452	NHI 1012
Bacillus	subtilis (Ehrenberg) Cohn ATCC 19659	NHI 2240
Bacillus	stearothermophilus CCM2062; IAM11062; IF012550; NCIB8923; DSM22; ATCC12980; NCTC10339; TP	WAIK 85
Bacillus	stearothermophilus var. <i>calidolactis</i> DSM1550; Test Strain	WAIK 88

Bacillus	stearothermophilus DSM2334; No growth factions required	WAIK 89
Bacillus	subtilis NH1143; NCTC3610; ATCC6051; NCIB3610; Type Strain (Marburg)	WAIK 32
Bacillus	thermocatenulatus SM730; Strain 178	WAIK 87
Bacillus	thermodenitrificans DSM465; ATCC29492; Strain L2-65	WAIK 86
Bacillus	thuringiensis var alesti	OU
Bacillus	thuringiensis var darmstadiensis	OU
Bacillus	thuringiensis var entomocidus	OU
Bacillus	thuringiensis var fimitimus	OU
Bacillus	thuringiensis var galleriae	OU
Bacillus	thuringiensis var israelensis	OU
Bacillus	thuringiensis var morosoni	OU
Bacillus	thuringiensis var nigeriae	OU
Bacillus	thuringiensis var sotto	OU
Bacillus	thuringiensis var subtoxicus	OU
Bacillus	thuringiensis var tolworthi	OU
Bacillus	thuringiensis var thompsoni	OU
Bacillus	tusciae DSM2912 ^T ; Type strain	WAIK
Bacterium	typhiflavum see Enterobacter agglomerans	
Bacteroides	asaccharolyticus (Holdeman & Moore) Finegold & Barnes NCTC 9337	NHI 1007
Bacteroides	capillosus (Tissier) Kelly VPI 10874	NHI 1738

Bacteroides	clostridiiformis see Clostridium clostridiiforme	NHI
Bacteroides	corrodens see Bacteroides ureolyticus	NHI
Bacteroides	fragilis (Veillon & Zuber) Castellani & Chalmers NZ Isolate 73/2766	NHI 964
Bacteroides	fragilis (Veillon & Zuber) Castellani & Chalmers NCTC 8560	NHI 1098
Bacteroides	fragilis (Veillon & Zuber) Castellani & Chalmers NCTC 10581, ATCC 23745	NHI 1141
Bacteroides	fragilis (Veillon & Zuber) Castellani & Chalmers NCTC 9343, ATCC 25285, VPI 2553	NHI 1705
Bacteroides	fragilis (Veillon & Zuber) Castellani & Chalmers NCTC 8560, NHI 1098	WARC
Bacteroides	fragilis sub sp. vulgatus see Bacteroides vulgatus	NHI
Bacteroides	intermedius (Holdeman & Moore) Comb nov NZ Isolate 77/2452	NHI 2396
Bacteroides	melaninogenicus sub sp. asaccharolyticus see Bacteroides asaccharolyticus	NHI
Bacteroides	melaninogenicus sub sp. intermedius see Bacteroides intermedius	NHI
Bacteroides	nodosus (Beveridge) Mraz ATCC 25549	WARC
Bacteroides	species	OU
Bacteroides	ureolyticus Jackson & Goodman CDC 19280	NHI 2009
Bacteroides	vulgatus Eggerth & Gagnon Wadsworth strain no. 1887, ATCC 29327	NHI 1960
Beneckea	natrigens see Vibrio natrigens	
Bifidobacterium	bifidus ATCC 11863	NZDRI 20071
Bordetella	bronchiseptica (Ferry) Moreno-Lopez NCTC 8344 NHI 298	WARC
Bordetella	bronchiseptica (Ferry) Moreno-Lopez NCTC 8344, ATCC 4617, NCIB 9935, PCI 1701, WHO 11	NHI 298
Bordetella	parapertussis (Eldering & Kendrick) Moreno-Lopez NCTC 5952, NHI 13	WARC
Bordetella	parapertussis (Eldering & Kendrick) NCTC 5952, ATCC 15311	NHI 13
Bordetella	pertussis Bergey et al. Moreno-Lopez	NHI 2642
Bordetella	pertussis Bergey et al. Moreno-Lopez	NHI 2643
Bordetella	pertussis Bergey et al. Moreno-Lopez	NHI 2644

Branhamella	catarrhalis (Frosch & Kolle) Catlin NCTC 3622	NHI 1094
Branhamella	catarrhalis (Frosch & Kolle) Catlin ATCC 25238, NCTC 11020	NHI 2565
Branhamella	catarrhalis (Frosch & Kolle) Catlin NCTC 3622, NHI 1094	WARC
Brevibacterium	albidum Komagata & Iizuka ATCC 15831	NHI 2521
Brucella	abortus (Schmidt) Meyer & Shaw <u>Distribution restricted</u> NCTC 8200	NHI 9
Brucella	abortus (Schmidt) Meyer & Shaw <u>Distribution restricted</u> NCTC 8038	NHI 128
Brucella	abortus (Schmidt) Meyer & Shaw <u>Distribution restricted</u> NCTC 11363	NHI 129
Brucella	abortus (Schmidt) Meyer & Shaw <u>Distribution restricted</u> ATCC 23448	NHI 2394
Brucella	canis Carmichael & Bruner ATCC 23365, NHI 800	WARC
Brucella	canis Carmichael & Bruner <u>Distribution restricted</u> RM6/66, ATCC 23365, NCTC 10854	NHI 800
Brucella	melitensis (Hughes) Meyer & Shaw <u>Not for Distribution</u> NCTC 8223	NHI 10
Brucella	melitensis (Hughes) Meyer & Shaw <u>Not for Distribution</u> NCTC 1065	NHI 11
Brucella	ovis Buddle NCTC 8223, NHI 1105	WARC
Brucella	ovis Buddle <u>Distribution restricted</u> NCTC 10037	NHI 1105
Brucella	suis Huddleson <u>Not for Distribution</u> NCTC 5061,	NHI 12
Campylobacter	coli (Doyle) Veron & Chatelain NCTC 11353	NHI 2606
Campylobacter	coli (Doyle) Veron & Chatelain NCTC 11366	NHI 2607
Campylobacter	fetus sub sp. fetus (Smith & Taylor) Veron & Chatelain CDC D1278	NHI 1084
Campylobacter	fetus sub sp. fetus (Smith & Taylor) Veron & Chatelain WARC	NHI 1214
Campylobacter	fetus sub sp. fetus (Smith & Taylor) Veron & Chatelain NCTC 10842, ATCC 27374, CIP 5396	NHI 2398
Campylobacter	fetus sub sp. fetus (Smith & Taylor) Veron & Chatelain NHI 1214	WARC
Campylobacter	fetus sub sp. fetus (Smith & Taylor) Veron & Chatelain NHI 1214	WARC
Campylobacter	fetus sub sp. intestinalis Smibert see Campylobacter fetus sub sp. fetus	
Campylobacter	fetus sub sp. venerealis (Florent) Veron & Chatelain WARC	NHI 1095

<i>Campylobacter</i>	<i>fetus</i> sub sp. <i>venerealis</i> (Florent) Veron & Chatelain NCTC 10354, ATCC 19438, CIP 6829	NHI 2399
<i>Campylobacter</i>	<i>fetus</i> sub sp. <i>venerealis</i> (Florent) Veron & Chatelain NHI 1095	WARC
<i>Campylobacter</i>	<i>fetus</i> sub sp. <i>venerealis</i> (Florent) Veron & Chatelain ATCC 19483, NCTC 10354, NHI 2399	WARC
<i>Campylobacter</i>	<i>jejuni</i> (Jones, Orcutt & Little) Veron & Chatelain NCTC 11168	NHI 1958
<i>Campylobacter</i>	<i>jejuni</i> (Jones, Orcutt & Little) Veron & Chatelain NCTC 11351, CIP 702	NHI 2397
<i>Campylobacter</i>	<i>jejuni</i> (Jones, Orcutt & Little) Veron & Chatelain NCTC 11168, NHI 1958	WARC
<i>Campylobacter</i>	<i>jejuni</i> (Jones, Orcutt & Little) Veron & Chatelain NCTC 11351	WARC
<i>Campylobacter</i>	<i>laridis</i> Benjamin et al. NCTC 11352,	NHI 2622
<i>Candida</i>	<i>albicans</i> (Robin) Berkhout ATCC 10231	NHI 1212
<i>Candida</i>	<i>albicans</i> (Robin) Berkhout CDC S-24	NHI 2228
<i>Candida</i>	<i>albicans</i> (Robin) Berkhout ATCC 2091	NHI 2646
<i>Candida</i>	<i>tropicalis</i> (Castellani) Berkhout ATCC 13803, FDA PC1 M-59	NHI 2389
<i>Capnocytophaga</i>	sp. NZ Isolate 80/0788	NHI 2760
<i>Cardiobacterium</i>	<i>hominis</i> Slotnick & Dougherty CDC C4237	NHI 840
CDC	Group IIc NZ Isolate 76/0886	NHI 1220
CDC	Group II f NZ Isolate 75/0770	NHI 1231
CDC	Group IVc-2 NZ Isolate 82/0306	NHI 2655
CDC	Group Ve NZ Isolate 78/0735	NHI 2027
CDC	Group Ve NZ Isolate 78/3511	NHI 2199
<i>Cellulomonas</i>	<i>flavigena</i> (Kellerman, McBeth) Bergey et al. NCIB 8073	NHI 1176
<i>Chloroflexus</i>	<i>aurantiacus</i> ATCC29366; Type Strain	WAIK 112
<i>Chromobacterium</i>	<i>lividum</i> see <i>Janthinobacterium lividum</i>	
<i>Chromobacterium</i>	<i>violaceum</i> Bergonzini NCTC 9757, ATCC 12472, NCIB 9131	NHI 1082
<i>Citrobacter</i>	<i>amalonaticus</i> see <i>Levinia amalonatica</i>	

Citrobacter	ballerupensis see Citrobacter sp.	
Citrobacter	diversus (Burkey) Werkman & Gillen NCTC 10849, ATCC 27156	NHI 868
Citrobacter	freundii (Braak) Werkman & Gillen ATCC 8090, NCTC 9750, NHI 982	WARC
Citrobacter	freundii (Braak) Werkman & Gillen NCTC 9750, ATCC 8090	NHI 982
Citrobacter	sp. NCTC 6021	NHI 39
Citrobacter	sp. NCTC 6848	NHI 41
Citrobacter	sp. NCTC 7820	NHI 8
Clostridium	bifermentans (Winberg & Seguin) Bergey et al. NCTC 1340	NHI 1006
Clostridium	botulinum (van Ermengem) Bergey et al. <u>Distribution restricted</u> CDC 4997	NHI 876
Clostridium	botulinum (van Ermengem) Bergey et al. <u>Distribution restricted</u> CDC 75-3074	NHI 877
Clostridium	botulinum (van Ermengem) Bergey et al. <u>Distribution restricted</u> CDC 5295	NHI 878
Clostridium	botulinum (van Ermengem) Bergey et al. <u>Distribution restricted</u> CDC 35KA29	NHI 879
Clostridium	botulinum (van Ermengem) Bergey et al. <u>Distribution restricted</u> CDC 46KA160	NHI 880
Clostridium	botulinum (van Ermengem) Bergey et al. <u>Distribution restricted</u> CDC 834304	NHI 881
Clostridium	botulinum (van Ermengem) Bergey et al. <u>Distribution restricted</u> ATCC 9633	NHI 2385
Clostridium	chauvoei (Arloing et al.) Scott NCTC 8070, ATCC 19399	NHI 99
Clostridium	clostridiiforme (Burri & Ankersmit), Kaneuchi et al. NCTC 7155	NHI 45
Clostridium	clostridiiforme (Burri & Ankersmit), Kaneuchi et al. CDC 15862	NHI 1245
Clostridium	cochlearium (Douglas, Fleming & Colebrook) Bergey et al. NCTC 2909, ATCC 19407	NHI 1957
Clostridium	difficile (Hail & O'Toole) Pravot NCTC 11382, NZ Isolate 74/1351	NHI 2377
Clostridium	difficile (Hail & O'Toole) Pravot ATCC 9689, NCTC 11298	NHI 2390
Clostridium	fervidus ATCC43204; Strain Rt4B.1	WAIK 221
Clostridium	hastiforme MacLennan ATCC 25772, VPI 2461	NHI 1215
Clostridium	histolyticum (Weinberg & Seguin) Bergey et al. CDC 1942	NHI 871

<i>Clostridium</i>	<i>innocuum</i> Smith & King CDC 3415	NHI 882
<i>Clostridium</i>	<i>limosum</i> Andre CDC 8173	NHI 872
<i>Clostridium</i>	<i>novyi</i> (Migula) Bergey et al. NCTC 277, NHI 484	WARC
<i>Clostridium</i>	<i>novyi</i> (Migula) Bergey et al. NCTC 277	NHI 484
<i>Clostridium</i>	<i>novyi</i> (Migula) Bergey et al. NCTC 6736	NHI 1009
<i>Clostridium</i>	<i>novyi</i> (Migula) Bergey et al. NCIB 10626, ATCC 25758, VPI 5273-1	NHI 2218
<i>Clostridium</i>	<i>oedematiens</i> see <i>Clostridium novyi</i>	
<i>Clostridium</i>	<i>paraputrificum</i> (Bienstock) Snyder CDC 13593	NHI 883
<i>Clostridium</i>	<i>perfringens</i> (Veillon & Zuber) Hauduroy et al. NCTC 8237, ATCC 13124	NHI 20
<i>Clostridium</i>	<i>perfringens</i> (Veillon & Zuber) Hauduroy et al. NCTC 8359, ATCC 12915	NHI 21
<i>Clostridium</i>	<i>perfringens</i> (Veillon & Zuber) Hauduroy et al. NCTC 8081	NHI 22
<i>Clostridium</i>	<i>perfringens</i> (Veillon & Zuber) Hauduroy et al. NCTC 8533, NCIB 8693	NHI 132
<i>Clostridium</i>	<i>perfringens</i> (Veillon & Zuber) Hauduroy et al. NCTC 3227	NHI 133
<i>Clostridium</i>	<i>perfringens</i> (Veillon & Zuber) Hauduroy et al. NCTC 8504	NHI 134
<i>Clostridium</i>	<i>perfringens</i> (Veillon & Zuber) Hauduroy et al. NCTC 8084	NHI 135
<i>Clostridium</i>	<i>perfringens</i> (Veillon & Zuber) Hauduroy et al. CDC Type A, NCTC 8797, FH 2985/50	NHI 887
<i>Clostridium</i>	<i>perfringens</i> (Veillon & Zuber) Hauduroy et al. CDC Type A, ATCC 12916, NCTC 8238, FH 281/50	NHI 888
<i>Clostridium</i>	<i>perfringens</i> (Veillon & Zuber) Hauduroy et al. CDC Type A, ATCC 14810, NCTC 10240, FH 2274/59	NHI 889
<i>Clostridium</i>	<i>perfringens</i> (Veillon & Zuber) Hauduroy et al. CDC Type A, ATCC 12918, NCTC 8247, FH 1690/50	NHI 890
<i>Clostridium</i>	<i>perfringens</i> (Veillon & Zuber) Hauduroy et al. CDC Type A, ATCC 12919, NCTC 8678, FH 167/51	NHI 891
<i>Clostridium</i>	<i>perfringens</i> (Veillon & Zuber) Hauduroy et al. CDC Type A, ATCC 12920, NCTC 8679, FH 3756/50	NHI 892
<i>Clostridium</i>	<i>perfringens</i> (Veillon & Zuber) Hauduroy et al. CDC Type A, ATCC 12921, NCTC 8449, FH 1826/51	NHI 893
<i>Clostridium</i>	<i>perfringens</i> (Veillon & Zuber) Hauduroy et al. CDC Type A, ATCC 12922, NCTC 8235, Strain 2204/51	NHI 894
<i>Clostridium</i>	<i>perfringens</i> (Veillon & Zuber) Hauduroy et al. CDC Type A, NCTC 8798, FH 263/52	NHI 895

Clostridium	perfringens (Veillon & Zuber) Hauduroy et al. CDC Type A, ATCC 12924, NCTC 8799, FH 1546/52	NHI 896
Clostridium	perfringens (Veillon & Zuber) Hauduroy et al. CDC Type A, ATCC 12925, NCTC 9851, FH 4235/55	NHI 897
Clostridium	perfringens (Veillon & Zuber) Hauduroy et al. CDC Type A, ATCC 14809, NCTC 10239, FH 5012/58	NHI 898
Clostridium	perfringens (Veillon & Zuber) Hauduroy et al. CDC Type A, ATCC 12917, NCTC 8239, FH 3653/50	NHI 899
Clostridium	perfringens (Veillon & Zuber) Hauduroy et al. Seattle strain No. 1, MIC (mcg/ml) 1.6-3.1	NHI 1224
Clostridium	perfringens (Veillon & Zuber) Hauduroy et al. NCTC 10611, FH 7857/66	NHI 1701
Clostridium	perfringens (Veillon & Zuber) Hauduroy et al. NCTC 10612, FH 10209/66	NHI 1702
Clostridium	perfringens (Veillon & Zuber) Hauduroy et al. NCTC 10613, FH 1544/67	NHI 1703
Clostridium	perfringens (Veillon & Zuber) Hauduroy et al. NCTC 10614, FH 2063/67	NHI 1704
Clostridium	perfringens (Veillon & Zuber) Hauduroy et al. Col. FH 1539/68	NHI 2258
Clostridium	perfringens (Veillon & Zuber) Hauduroy et al. ATCC 13124, NCTC 8237, NHI 20	WARC
Clostridium	perfringens (Veillon & Zuber) Hauduroy et al. NCTC 8504, NHI 134	WARC
Clostridium	perfringens (Veillon & Zuber) Hauduroy et al. Col. FH 3663/73	NHI 2259
Clostridium	perfringens (Veillon & Zuber) Hauduroy et al. NCTC 8239	NHI 2621
Clostridium	ramosum (Veillon & Zuber) Holdeman, Cato & Moore CDC 8179	NHI 873
Clostridium	sordellii (Hall & Scott) Prevot CDC 14337	NHI 884
Clostridium	species	OU
Clostridium	sphenoides (Douglass, Fleming & Colebrook) Bergey et al. CDC 6616	NHI 874
Clostridium	sphenoides (Douglass, Fleming & Colebrook) Bergey et al. NCTC 507, ATCC 19403, NCIB 10627	NHI 1135
Clostridium	sporogenes (Metchnikoff) Bergey et al NZ Isolate 1966	NHI 254
Clostridium	sporogenes (Metchnikoff) Bergey et al NCTC 532, ATCC 19404, NCIB 532	NHI 1097
Clostridium	sporogenes (Metchnikoff) Bergey et al Wadsowrth strain No. 2253	NHI 1221
Clostridium	subterminale (Hall & Whitehead) Spray, CDC 13869-1	NHI 885
Clostridium	septicum (Mace) Ford NCTC 547, ATCC 12464, NCIB 547	NHI 18

Clostridium	tertium (Henry) Bergey et al. CDC 14338	NHI 875
Clostridium	tetani (Flugge) Bergey et al. NCTC 279, ATCC 19406	NHI 19
Clostridium	tetani (Flugge) Bergey et al. NZ Isolate 63/4875	NHI 253
Clostridium	tetani (Flugge) Bergey et al. NZ Isolate 66/4475	NHI 252
Clostridium	thermoaceticum DSM 521, Type strain	WAIK 2
Clostridium	thermocellum DSM1237; ATCC27405; NCIB10682; Type strain	WAIK 66
Clostridium	thermocellum DSM2360; Strain LQRI	WAIK 61
Clostridium	thermohydrosulfuricum DSM 570; Type strain E100.69	WAIK 23
Clostridium	thermohydrosulfuricum ATCC33223; Strain 39E	WAIK 219
Clostridium	tyrobutyricum NCDO 1715	NZDRI 20079
Clostridium	tyrobutyricum NCDO 1753	NZDRI 20083
Clostridium	welchii see Clostridium perfringens	
Corynebacterium	aquaticum Leifson NCIB 9460, ATCC 14665	NHI 1118
Corynebacterium	bovis Bergey et al. NCTC 3224	WARC
Corynebacterium	bovis Bergey et al. NCTC 3224, ATCC 7715	NHI 817
Corynebacterium	diphtheriae (Kruse) Lehmann & Newmann <u>Distribution restricted</u> NCTC 3984, ATCC 19409	NHI 23
Corynebacterium	diphtheriae (Kruse) Lehmann & Newmann <u>Distribution restricted</u> NCTC 3987	NHI 24
Corynebacterium	diphtheriae (Kruse) Lehmann & Newmann <u>Distribution restricted</u> NCTC 3989	NHI 25
Corynebacterium	diphtheriae (Kruse) Lehmann & Newmann <u>Distribution restricted</u> NCTC 1523	NHI 26
Corynebacterium	diphtheriae (Kruse) Lehmann & Newmann <u>Distribution restricted</u> NZ Isolate - Whangarei	NHI 96
Corynebacterium	diphtheriae (Kruse) Lehmann & Newmann <u>Distribution restricted</u> NCTC 3544	NHI 108
Corynebacterium	diphtheriae (Kruse) Lehmann & Newmann <u>Distribution restricted</u> Public Health Lab, Manchester	NHI 247
Corynebacterium	diphtheriae (Kruse) Lehmann & Newmann <u>Distribution restricted</u> Public Health Lab, Manchester	NHI 248
Corynebacterium	diphtheriae (Kruse) Lehmann & Newmann <u>Distribution restricted</u> Public Health Lab, Manchester	NHI 249

<i>Corynebacterium</i>	<i>diphtheriae</i> (Kruse) Lehmann & Newmann <u>Distribution restricted</u> NCTC 10681, ATCC 14779	NHI 1096
<i>Corynebacterium</i>	<i>equi</i> Magnusson NCTC 4219	WARC
<i>Corynebacterium</i>	<i>equi</i> Magnusson RARC	NHI 869
<i>Corynebacterium</i>	<i>granulosum</i> see <i>Propionibacterium granulosum</i>	
<i>Corynebacterium</i>	<i>haemolyticum</i> MacLean et al. NCTC 9697	NHI 816
<i>Corynebacterium</i>	<i>hofmannii</i> see <i>Corynebacterium pseudodiphtheriticum</i>	
<i>Corynebacterium</i>	<i>kutscheri</i> (Migula) Bergey et al. NCTC 949	NHI 819
<i>Corynebacterium</i>	<i>minutissimum</i> (von Barenprung) Sarkany et al. NCTC 10288	NHI 1079
<i>Corynebacterium</i>	<i>ovis</i> see <i>Corynebacterium pseudotuberculosis</i>	
<i>Corynebacterium</i>	<i>parvum</i> see <i>Propionibacterium acnes</i> , accession 2588	
<i>Corynebacterium</i>	<i>petrophilum</i> ATCC 19080	NHI 2522
<i>Corynebacterium</i>	<i>pseudodiphtheriticum</i> Lehmann & Newmann NCTC 231	NHI 27
<i>Corynebacterium</i>	<i>pseudotuberculosis</i> (Buchanan) Ebersson NCTC 3450	WARC
<i>Corynebacterium</i>	<i>pseudotuberculosis</i> (Buchanan) Ebersson NCTC 4655	WARC
<i>Corynebacterium</i>	<i>pseudotuberculosis</i> (Buchanan) Ebersson NCTC 4656	WARC
<i>Corynebacterium</i>	<i>pseudotuberculosis</i> (Buchanan) Ebersson NCTC 4657	WARC
<i>Corynebacterium</i>	<i>pseudotuberculosis</i> (Buchanan) Ebersson NCTC 4681	WARC
<i>Corynebacterium</i>	<i>pseudotuberculosis</i> (Buchanan) Ebersson ATCC 809	WARC
<i>Corynebacterium</i>	<i>pseudotuberculosis</i> (Buchanan) Ebersson RARC	NHI 870
<i>Corynebacterium</i>	<i>pyogenes</i> (Glage) Ebersson NCTC 6448, ATCC 8104	NHIU 92
<i>Corynebacterium</i>	<i>pyogenes</i> (Glage) Ebersson) ATCC 8164	WARC
<i>Corynebacterium</i>	<i>pyogenes</i> (Glage) Ebersson) ATCC 9731	WARC
<i>Corynebacterium</i>	<i>pyogenes</i> (Glage) Ebersson) ATCC 9733	WARC
<i>Corynebacterium</i>	<i>renale</i> (Migula) Ernst NCTC 7449	WARC

Corynebacterium	renale (Migula) Ernst RARC	NHI 915
Corynebacterium	renale (Migula) Ernst NHI 915	WARC
Corynebacterium	sp. NZ isolate SB 79/0064, CDC Group JK	NHI 2761
Corynebacterium	ulcerans Gilbert & Stewart NCTC 7907	NHI 818
Corynebacterium	xerosis Lehmann & Neumann NCTC 7243	WARC
Corynebacterium	xerosis Lehmann & Neumann NCTC 84841	NHI 28
Cytophaga	heparina (Payza & Korn) comb. nov. NCIB 9290, ATCC 13125	NHI 1153
Dermatophilus	sp. NHI 857	WARC
Dermatophilus	sp. RARC	NHI 857
Desulfotomaculum	nigrificans ATCC19858; DSM574; NCIB8395; Type Strain	WAIK 258
Desulfovibrio	baculatus DSM2555; Strain HL21	WAIK 328
Desulfovibrio	desulfuricans DSM642; NCIB8307; Type Strain	WAIK 257
Desulfovibrio	thermophilus DSM1276; Type Strain	WAIK 256
Desulfurococcus	mobilis DSM2161 ^T ; Type strain	WAIK 76
Desulfurococcus	mucosus DSM2162 ^T ; Type strain	WAIK 78
Desulfurococcus	sp. DSM2770; Strain ANI	WAIK 57

DF-2	CDC Group NZ Isolate SB 83/0523	NHI 2706
Edwardsiella	tarda Ewing & McWhorter NCTC 10396	WARC
Edwardsiella	tarda Ewing & McWhorter NCTC 10396, ATCC 15947	NHI 867
EF-4a	CDC sp. NZ Isolate 74/1403	NHI 1072
Bikenella	corrodens (Eiken) Jackson & Goodman NCTC 10596, ATCC 23834	NHI 1008
Enterobacter	aerogenes Hormaeche & Edwards ATCC 13048, NCTC 10006, NHI 798	WARC
Enterobacter	aerogenes Hormaeche & Edwards NCTC 10006, ATCC 13048	NHI 798
Enterobacter	aerogenes Hormaeche & Edwards CDC 659-66	NHI 859
Enterobacter	agglomerans Ewing & Fife CDC C1977	NHI 1092
Enterobacter	cloacae (Jordan) Hormaeche & Edwards Unknown source	WARC
Enterobacter	cloacae (Jordan) Hormaeche & Edwards CDC 5932-70, ATCC 29006	NHI 858
Enterobacter	cloacae (Jordan) Hormaeche & Edwards HSC 18410/61	NHI 2236
Enterobacter	cloacae (Jordan) Hormaeche & Edwards NCTC 10005, ATCC 13047	NHI 2375
Enterobacter	gergoviae Brenner et al. CDC 604/77, ATCC 33028, CIP 76.01	NHI 2030
Enterobacter	hafniae see <i>Hafnia alvei</i>	
Enterobacter	liquefaciens see <i>Serratia liquefaciens</i>	
Enterobacter	sakazaki Farmer et al. NCTC 8155	NHI 50
Enterobacter	sakazaki Farmer et al. CDC 4562/70, ATCC 29544, NCTC 11467	NHI 2029
Enterobacter	sp. USA	NHI 2235
Erwinia	sp. see <i>Enterobacter agglomerans</i>	
Erysipelothrix	insidiosa see <i>Erysipelothrix rhusiopathiae</i>	
Erysipelothrix	rhusiopathiae (Migula) Buchanan NCTC 8163, ATCC 19414	NHI 45
Erysipelothrix	rhusiopathiae Buchanan ATCC 19414, NCTC 8163, NHI 45	WARC
Escherichia	aurescens (Parr) Malligo et al CDC 448-77	NHI 1285

Escherichia	alkalescens see Escherichia coli		
Escherichia	coli (Migula) Castellani & Chalmers NCTC 8196	NHI	29
Escherichia	coli (Migula) Castellani & Chalmers NCTC 4174	NHI	31
Escherichia	coli (Migula) Castellani & Chalmers NCTC 122	NHI	32
Escherichia	coli (Migula) Castellani & Chalmers NCTC 86; ATCC 4157, NCIB 86	NHI	33
Escherichia	coli (Migula) Castellani & Chalmers NCTC 8008	NHI	36
Escherichia	coli (Migula) Castellani & Chalmers NCTC 8603	NHI	37
Escherichia	coli (Migula) Castellani & Chalmers NCTC 8620	NHI	38
Escherichia	coli (Migula) Castellani & Chalmers NCTC 7921	NHI	40
Escherichia	coli (Migula) Castellani & Chalmers NCTC 7925	NHI	43
Escherichia	coli (Migula) Castellani & Chalmers K12 W3110	NHI	250
Escherichia	coli (Migula) Castellani & Chalmers K12 W3110	NHI	251
Escherichia	coli (Migula) Castellani & Chalmers NCTC 10418, ATCC 10536, NCIB 8879, PCI 540, WHO 5	NHI	480
Escherichia	coli (Migula) Castellani & Chalmers	NHI	730
Escherichia	coli (Migula) Castellani & Chalmers	NHI	731
Escherichia	coli (Migula) Castellani & Chalmers	NHI	732
Escherichia	coli (Migula) Castellani & Chalmers	NHI	733
Escherichia	coli (Migula) Castellani & Chalmers	NHI	734
Escherichia	coli (Migula) Castellani & Chalmers NCTC 9111	NHI	735
Escherichia	coli (Migula) Castellani & Chalmers	NHI	736
Escherichia	coli (Migula) Castellani & Chalmers NCTC 9114	NHI	737
Escherichia	coli (Migula) Castellani & Chalmers NCTC 9119	NHI	738
Escherichia	coli (Migula) Castellani & Chalmers	NHI	739
Escherichia	coli (Migula) Castellani & Chalmers	NHI	740

Escherichia	coli (Migula) Castellani & Chalmers	NHI 741
Escherichia	coli (Migula) Castellani & Chalmers	NHI 742
Escherichia	coli (Migula) Castellani & Chalmers	NHI 743
Escherichia	coli (Migula) Castellani & Chalmers ATCC 25922, CDC F2	NHI 916
Escherichia	coli (Migula) Castellani & Chalmers CDC SU 4411-41, ATCC 19110, NCTC 9014	NHI 962
Escherichia	coli (Migula) Castellani & Chalmers NCTC 8164, NCIB 10115	NHI 979
Escherichia	coli (Migula) Castellani & Chalmers NCTC 7152	NHI 993
Escherichia	coli (Migula) Castellani & Chalmers CDC 99-70	NHI 1145
Escherichia	coli (Migula) Castellani & Chalmers CDC 1773-68	NHI 1146
Escherichia	coli (Migula) Castellani & Chalmers CDC 5636-64	NHI 1147
Escherichia	coli (Migula) Castellani & Chalmers CDC 774-56	NHI 1148
Escherichia	coli (Migula) Castellani & Chalmers CDC 3121-63	NHI 1149
Escherichia	coli (Migula) Castellani & Chalmers CDC 4878-54	NHI 1150
Escherichia	coli (Migula) Castellani & Chalmers CDC 1868-62	NHI 1151
Escherichia	coli (Migula) Castellani & Chalmers CDC 1143-51	NHI 1152
Escherichia	coli (Migula) Castellani & Chalmers CDC 3111-76	NHI 1241
Escherichia	coli (Migula) Castellani & Chalmers CDC 3441-76	NHI 1242
Escherichia	coli (Migula) Castellani & Chalmers NCTC 9001, ATCC 11775	NHI 1301
Escherichia	coli (Migula) Castellani & Chalmers Univ. of Texas Medical School Strain H10407	NHI 2011
Escherichia	coli (Migula) Castellani & Chalmers Univ. of Texas Medical School Strain H10407-p	NHI 2012
Escherichia	coli (Migula) Castellani & Chalmers ATCC 29214	NHI 2220
Escherichia	coli (Migula) Castellani & Chalmers CDC S-29	NHI 2227
Escherichia	coli (Migula) Castellani & Chalmers USA Shellfish Sanitation Section	NHI 2234
Escherichia	coli (Migula) Castellani & Chalmers ATCC 29891	NHI 2246

<i>Escherichia</i>	<i>coli</i> (Migula) Castellani & Chalmers CDC 711	NHI 2282
<i>Escherichia</i>	<i>coli</i> (Migula) Castellani & Chalmers Dr K Neilsen, Canada Strain 4216 5A2. 0116 : H21	NHI 2394
<i>Escherichia</i>	<i>coli</i> (Migula) Castellani & Chalmers CDC K-380	NHI 2570
<i>Escherichia</i>	<i>coli</i> (Migula) Castellani & Chalmers ATCC 8739	NHI 2577
<i>Escherichia</i>	<i>coli</i> (Migula) Castellani & Chalmers ATCC 11229	NHI 2582
<i>Escherichia</i>	<i>coli</i> (Migula) Castellani & Chalmers ATCC 15224	NHI 2690
<i>Escherichia</i>	<i>coli</i> (Migula) Castellani & Chalmers ATCC 23226	NHI 2717
<i>Escherichia</i>	<i>coli</i> (Migula) Castellani & Chalmers ATCC 13706	NHI 2718
<i>Escherichia</i>	<i>coli</i> (Migula) Castellani & Chalmers Prof. Wadstrom, Uppsala, Sweden, Strain 1628-15	MHI 2745
<i>Escherichia</i>	<i>coli</i> (Migula) Castellani & Chalmers Prof. Wadstrom, Uppsala, Sweden, Strain C921b-1	NHI 2746
<i>Escherichia</i>	<i>coli</i> (Migula) Castellani & Chalmers NCTC 11560	NHI 2749
<i>Escherichia</i>	<i>coli</i> (Migula) Castellani & Chalmers ATCC 14169, NCIB 9270	NHI 2750
<i>Escherichia</i>	<i>coli</i> (Migula) Castellani & Chalmers ATCC 14169, NHI 2750	WARC
<i>Escherichia</i>	<i>coli</i> (Migula) Castellani & Chalmers ATCC 23226, NHI 2717	WARC
<i>Escherichia</i>	<i>coli</i> (Migula) Castellani & Chalmers ATCC 25922, NHI 916	WARC
<i>Escherichia</i>	<i>coli</i> (Migula) Castellani & Chalmers NCTC 8196, NHI 29	WARC
<i>Escherichia</i>	<i>coli</i> DSM301; ATCC4157; NCTC86; NCIB86 Isolation of decarboxylases	WAIK 37
<i>Eubacterium</i>	<i>alactolyticum</i> (Prevot & Taffanel) Holdeman & Moore ATCC 23263	NHI 1988
<i>Ewingella</i>	<i>americana</i> Grimont et al. ATCC 33852, CDC 1468-78, CIP 8194	NHI 2766
<i>Fervidobacterium</i>	<i>nodosum</i> ATCC35602, Strain Rtl7B.1	WAIK 31
<i>Flavobacterium</i>	<i>aquatile</i> DSM1132; ATCC11947; NCIB8694, Type strain	WAIK 58
<i>Flavobacterium</i>	<i>heparinum</i> see <i>Cytophaga heparina</i>	
<i>Flavobacterium</i>	<i>indologenes</i> sp. nov. CDC B3707, CDC Group IIB	NHI 848
<i>Flavobacterium</i>	<i>meningosepticum</i> King CDC 3552	NHI 847

Flavobacterium	multivorum see Sphingobacterium multivorum	
Flavobacterium	odoratum Stutzer NZ isolate 75/0423, CDC M-4f	NHI 1229
Flavobacterium	spiritivorum see Sphingobacterium spiritivorum	
Franciscella	tularensis (McCoy & Chapin) Dorofeev <u>Not for Distribution</u> NCTC 10857	NHI 1101
Fusobacter	necrophorum (Flugge) Moore & Holdeman NCTC 10575	NHI 1109
Fusobacterium	mortiferum (Harris) Moore & Holdeman ATCC 25557, VPI 4123A	NHI 2573
Fusobacterium	necrophorum (Flugge) Moore & Holdeman NCTC 10575	WARC
Gardnerella	vaginalis (Gardner & Duke) Greenwood & Pickett NCTC 10287, ATCC 14018	NHI 810
Gardnerella	vaginalis (Gardner & Duke) Greenwood & Pickett CDC CV165	NHI 2303
Gardnerella	vaginalis (Gardner & Duke) Greenwood & Pickett CDC CV3-7	NHI 2304
Gardnerella	vaginalis (Gardner & Duke) Greenwood & Pickett CDC CV208	NHI 2305
Gardnerella	vaginalis (Gardner & Duke) Greenwood & Pickett CDC CV594	NHI 2306
Gluconobacter	oxydans (Henneberg) de ley ATCC 19357	NHI 2574
Haemophilus	aphrophilus Khairat NCTC 5886	WARC
Haemophilus	aphrophilus Khairate NCTC 5886, ATCC 19415	NHI 1213
Haemophilus	gallinarum Delaplane et al ATCC 14385, NCTC 3438	NHI 2523
Haemophilus	haemoglobinophilus (Lehmann & Neumann) Murray NCTC 1659, NHI 2524	WARC
Haemophilus	haemoglobinophilus (Lehmann & Neumann) Murray ATCC 19416, NCTC 1659	NHI 2524
Haemophilus	haemolyticus Bergey et al. NCTC 10659, NHI 2308	WARC
Haemophilus	haemolyticus Bergey et al NCTC 10659	NHI 2308
Haemophilus	influenzae (Lehmann & Neumann) Winslow et al. NCTC 4560, NHI 481	WARC
Haemophilus	influenzae (Lehmann & Neumann) Winslow et al NCTC 4560, ATCC 19418	NHI 481
Haemophilus	influenzae (Lehmann & Neumann) Winslow et al NCTC 8465	NHI 696
Haemophilus	influenzae (Lehmann & Neumann) Winslow et al NCTC 7279	NHI 811

Haemophilus	influenzae (Lehmann & Neumann) Winslow et al NCTC 8469, ATCC 9007	NHI 812
Haemophilus	influenzae (Lehmann & Neumann) Winslow et al NCTC 8470, ATCC 9332	NHI 813
Haemophilus	influenzae (Lehmann & Neumann) Winslow et al NCTC 7918	NHI 814
Haemophilus	influenzae (Lehmann & Neumann) Winslow et al NCTC 10479	NHI 1108
Haemophilus	influenzae (Lehmann & Neumann) Winslow et al CDC SMU-4	NHI 1190
Haemophilus	influenzae (Lehmann & Neumann) Winslow et al CDC GB-3291	NHI 1191
Haemophilus	influenzae (Lehmann & Neumann) Winslow et al CDC SM-72	NHI 1192
Haemophilus	influenzae (Lehmann & Neumann) Winslow et al CDC SM-6	NHI 1193
Haemophilus	influenzae (Lehmann & Neumann) Winslow et al CDC SM-7	NHI 1194
Haemophilus	influenzae (Lehmann & Neumann) Winslow et al CDC SM-8	NHI 1195
Haemophilus	influenzae (Lehmann & Neumann) Winslow et al CDC 74-64148	NHI 1196
Haemophilus	influenzae (Lehmann & Neumann) Winslow et al CDC 73-340	NHI 1197
Haemophilus	influenzae (Lehmann & Neumann) Winslow et al ATCC 9833, NCTC 8473	NHI 2526
Haemophilus	influenzae (Lehmann & Neumann) Winslow et al CDC 83-063137	NHI 2709
Haemophilus	parahaemolyticus Pittman NHI 839	WARC
Haemophilus	parahaemolyticus Pittman CDC KC421	NHI 839
Haemophilus	parahaemolyticus Pittman ATCC 10014, NCTC 8479	NHI 2527
Haemophilus	parainfluenzae Rivers NCTC 4101	NHI 1011
Haemophilus	paraphrophilus Zinnemann et al. NCTC10557	WARC
Haemophilus	paraphrophilus Zinneman et al NCTC 10557, ATCC 29241	NHI 2309
Haemophilus	segnis Kilian NCTC 10977	WARC
Haemophilus	segnis Kilian NCTC 10977, ATCC 33393	NHI 2374
Haemophilus	suis Hauduroy et al ATCC 19417, NCTC 4557	NHI 2525
Hafnia	alvei Moller CDC 5190-70	NHI 860

Hafnia	alvei Moller NZ Isolate 63/4800	NHI 109
Halobacterium	halobium DSM670; Strain R.1	WAIK 67
Halobacterium	mediterranei DSM1411T; Type strain;	WAIK 383
Halobacterium	saccharovorum DSM137; ATCC29252; Type Strain	WAIK 68
Hb-5, CDC sp.	CDC B6841	NHI 1089
Herpetosiphon	geysericola ATCC3076; Type Strain	WAIK 99
Kingella	denitrificans NZ Isolate SB80/0334	NHI 2386
Kingella	indologenes Snell & Lapage ATCC 25869, NCTC 1071	NHI 2586
Kingella	indologenes Snell & Lapage NZ Isolate SB83/0434	NHI 2710
Kingella	kingae (Henriksen & Bovre) Henriksen & Bovre CDC 5530, ATCC 23332, NCTC 10746	NHI 2010
Klebsiella	aerogenes see Klebsiella pneumoniae	
Klebsiella	edwardsii see Klebsiella pneumoniae	
Klebsiella	oxytoca (Flugge) Lautrop ATCC 13183	NHI 2301
Klebsiella	ozaenae (Abel) Bergey et al NCTC 5051, ATCC 11297	NHI 779
Klebsiella	ozaenae (Abel) Bergey et al Australian isolate 1	NHI 782
Klebsiella	ozaenae (Abel) Bergey et al Australian isolate 2	NHI 783
Klebsiella	pneumoniae (Schroeter) Trevisan) NCTC 9633, NHI 482	WARC
Klebsiella	pneumoniae (Schroeter) Trevisan) NCTC 8172 NHI 744	WARC
Klebsiella	pneumoniae (Schroeter) Trevisan NCTC 5054, ATCC 13886	NHI 51
Klebsiella	pneumoniae (Schroeter) Trevisan NCTC 9633, ATCC 13884	NHI 482

Klebsiella	pneumoniae (Schroeter) Trevisan NCTC 8172, ATCC 13882	NHI 744
Klebsiella	pneumoniae (Schroeter) Trevisan NCTC 5056	NHI 777
Klebsiella	pneumoniae (Schroeter) Trevisan NCTC 5055	NHI 778
Klebsiella	pneumoniae (Schroeter) Trevisan NCTC 9496, ATCC 13887	NHI 780
Klebsiella	pneumoniae (Schroeter) Trevisan NCTC 10896	NHI 1030
Klebsiella	pneumoniae (Schroeter) Trevisan NCTC 7427, PCI 602, ATCC 10031, NCIB 9111	NHI 1208
Klebsiella	pneumoniae (Schroeter) Trevisan NCTC 7242	NHI 1257
Klebsiella	pneumoniae (Schroeter) Trevisan ATCC 4352, NCIB 10341	NHI 2719
Klebsiella	rhinoscleromatis Trevisan NCTC 5046, ATCC 13884	NHI 781
Klebsiella	sp. Southland Hospital, New Zealand	NHI 822
Kluyvera	ascorbata Farmer et al. ATCC 33433, CDC 0648-74	NHI 2626
Kluyvera	cryocrescens Farmer et al. ATCC 33435, CDC 2065-78	NHI 2627
Lactobacillus	acidophilus (Moro) Hansen & Mocquot NCTC 1899, ATCC 11975	NHI 52
Lactobacillus	arabinosus see Lactobacillus plantarum	
Lactobacillus	brevis NCDO 1749	NZDRI 20070
Lactobacillus	bulgaricus (LB10), ATCC 9223	NZDRI 20069
Lactobacillus	bulgaricus (Orla-Jensen), Rogosa & Hansen, NCDO 1489	NHI 1031
Lactobacillus	bulgaricus NCDO 1489	NZDRI 20056
Lactobacillus	casei (subsp. casei) NCDO 161	NZDRI 20094
Lactobacillus	casei sub sp. rhamnosus Hansen ATCC 7469, NCDO 243, NCIB 6375, 8010, NCTC 6375	NHI 299
Lactobacillus	casei sub sp. rhamnosus Hansen NCIB 10463, ATCC 27773	NHI 1042
Lactobacillus	casei subsp. rhamnosus ATCC 7469	NZDRI 20047
Lactobacillus	fermentum ATCC 6991	NZDRI 20063
Lactobacillus	fermentum ATCC 9338	NZDRI 20050

Lactobacillus	helveticus (Orla-Jensen) Bergey et al NCDO 1846	NHI 991
Lactobacillus	helveticus ATCC 15009	NZDRI 20081
Lactobacillus	helveticus NCDC 1844	NZDRI 20055
Lactobacillus	helveticus NCDO 261	NZDRI 20064
Lactobacillus	lactis NCDC 1438	NZDRI 20057
Lactobacillus	leichmannii (Hennenberg) Bergey et al. ATCC 7830, NCIB 8118, NCDO 302	NHI 153
Lactobacillus	leichmannii ATCC 4797	NZDRI 20065
Lactobacillus	leichmannii ATCC 7830	NZDRI 20046
Lactobacillus	plantarum (Orla-Jensen) Bergey et al. ATCC 8014, NCDO 82, NCIB 6376, 8014, 8030	NHI 1100
Lactobacillus	plantarum ATCC 8014	NZDRI 20049
Lactobacillus	species	OU
Lactobacillus	viridesens ATCC 12706	NZDRI 20045
Legionella	bozemanii Brenner et al. <u>Distribution restricted</u> ATCC 33217	NHI 2701
Legionella	dumoffi Brenner et al. <u>Distribution restricted</u> ATCC 33279	NHI 2702
Legionella	jordanis Cherry et al. <u>Distribution restricted</u> ATCC 33623	NHI 2703
Legionella	micdadei Hebert et al. <u>Distribution restricted</u> CDC BC-1752	NHI 2609
Legionella	pneumophila Brenner et al. <u>Distribution restricted</u> CDC BC-1639, ATCC 33156, NCTC 11233	NHI 2008
Legionella	pneumophila Brenner et al. <u>Distribution restricted</u> CDC BC-1636, ATCC 33152, NCTC 11192	NHI 2245
Legionella	pneumophila Brenner et al. <u>Distribution restricted</u> CDC BC-2638, ATCC 33155, NCTC 11232	NHI 2263
Legionella	pneumophila Brenner et al. <u>Distribution restricted</u> CDC BC-1637, ATCC 33154, NCTC 11230	NHI 2392
Legionella	pneumophila Brenner et al. <u>Distribution restricted</u> ATCC 33215, NCTC 11406	NHI 2501
Legionella	pneumophila Brenner et al. <u>Distribution restricted</u> ATCC 33216, NCTC 11405	NHI 2502
Leuconostoc	cremoris NCDO 543	NZDRI 20053
Leuconostoc	dextranicum NCDO 529	NZDRI 20095

Leuconostoc	dextranicum ATCC 8082	NZDRI 20051
Leuconostoc	lactis NCDO 533	NZDRI 20097
Leuconostoc	mesenteroides NCDO 523	NZDRI 20082
Leuconostoc	paramesenteroides NCDO 803	NZDRI 20096
Levinia	amalonatica Young et al. CDC 9020-77	NHI 2302
Listeria	grayi Errebo, Larsen & Seeliger CDC KC697, ATCC 19120	NHI 1088
Listeria	ivanovii sp. nov RARC	NHI 797
Listeria	monocytogenes (Murray et al) Pirie NCTC 7973	NHI 44
Listeria	monocytogenes (Murray et al) Pirie NZ isolate 73/1887	NHI 801
Listeria	monocytogenes (Murray et al) Pirie NZ isolate 77/2986	NHI 1966
Listeria	monocytogenes (Murray et al) Pirie NZ isolate 75/2764	NHI 1986
Listeria	monocytogenes (Murray et al) Pirie NZ isolate 76/2697	NHI 1987
Listeria	monocytogenes (Murray et al) Pirie NZ isolate 78/1264	NHI 2024
Listeria	monocytogenes (Murray et al) Pirie ATCC 19112, NCTC 5348	NHI 2726
Microbacterium	lacticum Orla-Jensen NCIB 8540, ATCC 8180, NCDO 747	NHI 1154
Microbacterium	lacticum NCDO 747	NZDRI 20067
Microbacterium	species NCDO 1320	NZDRI 20066
Micrococcus	flavus see Micrococcus luteus	
Micrococcus	kristinae Kloos Tornabene & Schleifer ATCC 27570, DSM 20032, NCTC 11038	NHI 2206
Micrococcus	luteus NCIB 9278	NZDRI 20068
Micrococcus	luteus (Schroeter) Cohn ATCC 9341	WARC
Micrococcus	luteus (Schroeter) Cohn NCTC 7743, ATCC 10240, NCIB 8166, PCI 1216	NHI 296
Micrococcus	luteus (Schroeter) Cohn NCTC 2665, ATCC 15307, 4698, CIP A270, NCIB 9278	NHI 799
Micrococcus	luteus (Schroeter) Cohn NCIB 10418, ATCC 14452	NHI 1205

Micrococcus	luteus (Schroeter) Cohn ATCC 9341a,	NHI 121
Micrococcus	luteus (Schroeter) Cohn ATCC 9341, NCTC 8340	NHI 1216
Micrococcus	luteus (Schroeter) Cohn ATCC 7468, PCI 1009, WHO 1	NHI 2214
Micrococcus	luteus (Schroeter) Cohn ATCC 15957	NHI 2747
Micrococcus	luteus ATCC 9341	NZDRI 20080
Micrococcus	lylae ATCC 27566, DSM 20315, NCTC 11037	NHI 2208
Micrococcus	lysodeikticus see Micrococcus luteus	
Micrococcus	roseus Flugge ATCC 186, NCTC 7523	NHI 2563
Micrococcus	sedentarius ZoBell & Upham ATCC 27573	NHI 2207
Micrococcus	species (freudenreichii)	NZDRI 20042
Micrococcus	varians Migula ATCC 15306, NCTC 7564	NHI 2564
Micropolyspora	faeni Cross, Maciver & Lacey LSHTM 1156	NHI 1027
Microsporium	gypseum (Bodin) Guartet & Grigorakis ATCC 14683, PCI M-82	NHI 2242
Mima	polymorpha see Acinetobacter lwoffii	
Moraxella	anatipestifer (Hendrickson & Hilbert) Burner & Fabricant <u>Distribution restricted</u> CDC KC534	NHI 1083
Moraxella	bovis (Hauduroy et al.) Murray NHI 830	WARC
Moraxella	bovis Hauduroy et al, Murray CDC KC745, ATCC 10900, NCTC 11013	NHI 830
Moraxella	group M-6 see Neisseria parelongata	
Moraxella	group M-6 see Neisseria elongata	
Moraxella	kingae see Kingella kingae	
Moraxella	lacunata (Eyre) Lwoff CDC KC750(1), ATCC 17956	
Moraxella	nonliquefaciens ATCC 17954	NHI 2528
Moraxella	osloensis Bovre & Henriksen CDC A1920, ATCC 19976, NCTC 10465	NHI 827
Moraxella	osloensis Bovre & Henriksen trp E55, ATCC 29721	NHI 2387

Moraxella	phenylpyruvica Bovre & Henriksen CDC A9911	NHI 828
Moraxella	urethralis Lautrop et al NZ isolate SB80/0594	NHI 2758
Morganella	morganii (Winslow, Klinger & Rothberg) Brenner et al NCTC 235, ATCC 25830	NHI 65
Mycobacterium	bovis Karlson & Lessel TMC 410	WARC
Mycobacterium	chelonei sub sp. abscessus (Moore & Frerichs) Kubica et al. ATCC 19977	WARC
Mycobacterium	chelonei sub sp. chelonei (Bergey et al.) Kubica et al. NCTC 946	WARC
Mycobacterium	flavescens Bojalil, Cerbon & Trujillo ATCC 14474	WARC
Mycobacterium	fortuitum da Costa Cruz TMC 1457, ATCC 14467	WARC
Mycobacterium	gastri Wayne TMC 1456	WARC
Mycobacterium	gordonae Bojalil, Cerbon & Trujillo ATCC 14470	WARC
Mycobacterium	intracellulare (Cuttino & McCabe) Runyon TMC 1406	WARC
Mycobacterium	kansasii Hauduroy TMC 1204	WARC
Mycobacterium	marinum Aronson TMC 1218	WARC
Mycobacterium	paratuberculosis Bergey et al.	WARC
Mycobacterium	paratuberculosis Bergey et al. TMC 1613	WARC
Mycobacterium	phlei Lehmann & Neumann	WARC
Mycobacterium	phlei Lehmann & Neumann TMC 1523	WARC
Mycobacterium	smegmatis (Trevisan) Lehmann & Neumann ATCC 14468	WARC
Mycobacterium	terrae Wayne TMC 1450	WARC
Mycobacterium	triviale Kubica TMC 1453, ATCC 23292	WARC
Mycobacterium	tuberculosis (Zopf) Lehmann & Neumann TMC 301	WARC
Mycobacterium	tuberculosis (Zopf) Lehmann & Neumann TMC 201	WARC
Mycobacterium	vaccae Bonicke & Juhasz TMC 1526, ATCC 15483	WARC
Mycobacterium	xenopi Schloabacher ATCC 19276	WARC

Mycoplasma	arginini Barile et al.	WARC
Mycoplasma	ovipneumoniae Carmichael et al.	WARC
Neisseria	catarrhalis see Branhamella catarrhalis	
Neisseria	elongata Bovre & Holten NZ isolate SB79/0263	NHI 2376
Neisseria	flava Bergey et al. CDC KC808	NHI 844
Neisseria	flavescens Branham NCTC 3191, ATCC 13119	NHI 59
Neisseria	gonorrhoeae (Zopf) Trevisan NCTC 8375, ATCC 19424	NHI 1040
Neisseria	gonorrhoeae (Zopf) Trevisan CDC F-14	NHI 1035
Neisseria	gonorrhoeae (Zopf) Trevisan CDC F-18	NHI 1036
Neisseria	gonorrhoeae (Zopf) Trevisan CDC F-29	NHI 1037
Neisseria	gonorrhoeae (Zopf) Trevisan WHO Reference Centre	NHI 1246
Neisseria	gonorrhoeae (Zopf) Trevisan WHO Reference Centre	NHI 1247
Neisseria	gonorrhoeae (Zopf) Trevisan WHO Reference Centre	NHI 1248
Neisseria	gonorrhoeae (Zopf) Trevisan CDC 76-061782	NHI 2221
Neisseria	gonorrhoeae (Zopf) Trevisan CDC 76-073389	NHI 2222
Neisseria	gonorrhoeae (Zopf) Trevisan CDC 77-036430	NHI 2223
Neisseria	gonorrhoeae (Zopf) Trevisan CDC Ng-115	NHI 2224
Neisseria	gonorrhoeae (Zopf) Trevisan CDC Ng-111	NHI 2225
Neisseria	lactamica Hollis et al. CDC C4872,	NHI 845
Neisseria	lactamica Hollis et al. ATCC 23970, NCDC A 7515, NCTC 10617	NHI 2590
Neisseria	meningitidis (Albrecht & Ghon) Murray NCTC 3372	NHI 61
Neisseria	meningitidis (Albrecht & Ghon) Murray NCTC 10025, ATCC 13077	NHI 154
Neisseria	meningitidis (Albrecht & Ghon) Murray NCTC 10026, ATCC 13080	NHI 155
Neisseria	meningitidis (Albrecht & Ghon) Murray NCTC 8554, ATCC 13102	NHI 156

Neisseria	meningitidis (Albrecht & Ghon) Murray Pub. Health Lab. Manchester Strain S-1079	NHI 158
Neisseria	meningitidis (Albrecht & Ghon) Murray Pub. Health Lab. Manchester Strain S-1105	NHI 159
Neisseria	meningitidis (Albrecht & Ghon) Murray NCTC 9714, ATCC 13113	NHI 160
Neisseria	meningitidis (Albrecht & Ghon) Murray CDC	NHI 286
Neisseria	meningitidis (Albrecht & Ghon) Murray CDC	NHI 287
Neisseria	meningitidis (Albrecht & Ghon) Murray CDC	NHI 288
Neisseria	meningitidis (Albrecht & Ghon) Murray Internat. Ref. Cent. Marseilles, France 0.184.4.13	NHI 592
Neisseria	meningitidis (Albrecht & Ghon) Murray Internat. Ref. Cent. Marseilles, France 0.450.2.3	NHI 593
Neisseria	meningitidis (Albrecht & Ghon) Murray Internat. Ref. Cent. Marseilles, France 0638.1.2	NHI 594
Neisseria	meningitidis (Albrecht & Ghon) Murray CDC F-8	NHI 1033
Neisseria	meningitidis (Albrecht & Ghon) Murray CDC F-10	NHI 1034
Neisseria	meningitidis (Albrecht & Ghon) Murray CDC 962	NHI 1043
Neisseria	meningitidis (Albrecht & Ghon) Murray CDC 1027	NHI 1044
Neisseria	meningitidis (Albrecht & Ghon) Murray CDC 1894	NHI 1045
Neisseria	meningitidis (Albrecht & Ghon) Murray CDC 997	NHI 1046
Neisseria	meningitidis (Albrecht & Ghon) Murray CDC 2091	NHI 1047
Neisseria	meningitidis (Albrecht & Ghon) Murray CDC 2092	NHI 1048
Neisseria	meningitidis (Albrecht & Ghon) Murray CDC 1166	NHI 1049
Neisseria	meningitidis (Albrecht & Ghon) Murray CDC 1054	NHI 1050
Neisseria	meningitidis (Albrecht & Ghon) Murray CDC 1628	NHI 1051
Neisseria	meningitidis (Albrecht & Ghon) Murray CDC 158	NHI 1052
Neisseria	meningitidis (Albrecht & Ghon) Murray CDC KC660	NHI 1053
Neisseria	meningitidis (Albrecht & Ghon) Murray CDC KC661	NHI 1054
Neisseria	meningitidis (Albrecht & Ghon) Murray CDC KC662	NHI 1055

Neisseria	meningitidis (Albrecht & Ghon) Murray CDC KC870	NHI 1283
Neisseria	meningitidis (Albrecht & Ghon) Murray CDC KC795	NHI 1963
Neisseria	meningitidis (Albrecht & Ghon) Murray CDC Nm-2	NHI 2226
Neisseria	mucosa Veron, Tult & Second CDC C2186	NHI 842
Neisseria	parelongata NZ isolate SB81/0708	NHI 2759
Neisseria	perflava Bergey et al. CDC KC649	NHI 846
Neisseria	sicca (von Lingelsheim) Bergey et al CDC C620	NHI 841
Neisseria	subflava (Flugge) Trevisan CDC KC645	NHI 843
Nocardia	asteroides (Eppinger) Blanchard NHI 149	WARC
Nocardia	asteroides (Eppinger) Blanchard) NZ iolsate 1967	NHI 149
Nocardia	brasiliensis (Lindenberg) Pinoy NCTC 10300, ATCC 19295	NHI 1038
Pasteruella	haemolytica sub sp. ureae see Pasteurella ureae	
Pasteurella	aerogenes McAllister & Carter ATCC 27883	WARC
Pasteurella	aerogenes McAllister & Carter ATCC 27883	NHI 2575
Pasteurella	anatipestifer see Moraxella anatipestifer	
Pasteurella	haemolytica Newsome & Cross NCTC 10609	WARC
Pasteurella	haemolytica Newsome & Cross NCTC 10621	WARC
Pasteurella	haemolytica Newsome & Cross NCTC 10624	WARC
Pasteurella	haemolytica Newsome & Cross NCTC 10627	WARC
Pasteurella	haemolytica Newsome & Cross NCTC 10630	WARC
Pasteurella	haemolytica Newsome & Cross NCTC 10632	WARC
Pasteurella	haemolytica Newsome & Cross NCTC 10634	WARC
Pasteurella	haemolytica Newsome & Cross NCTC 10637	WARC
Pasteurella	haemolytica Newsome & Cross NCTC 10639	WARC

<i>Pasteurella</i>	<i>haemolytica</i> Newsome & Cross NCTC 10640	WARC
<i>Pasteurella</i>	<i>haemolytica</i> Newsome & Cross NCTC 10643	WARC
<i>Pasteurella</i>	<i>haemolytica</i> Newsome & Cross NCTC 10644	WARC
<i>Pasteurella</i>	<i>haemolytica</i> Newsome & Cross NCTC 10609, ATCC 29696	NHI 863
<i>Pasteurella</i>	<i>multocida</i>	WARC
<i>Pasteurella</i>	<i>multocida</i> (Lehmann & Newmann) Rosenbusch & Merchant NCTC 8565	NHI 104
<i>Pasteurella</i>	<i>multocida</i> (Lehmann & Newmann) Rosenbusch & Merchant ATCC 15742	NHI 2708
<i>Pasteurella</i>	<i>N. sp. I</i> NZ isolate S.43 (1973)	NHI 959
<i>Pasteurella</i>	<i>pestis</i> see <i>Yersinia pestis</i>	
<i>Pasteurella</i>	<i>pneumotropica</i> Jawetz NCTC 8141	NHI 815
<i>Pasteurella</i>	<i>ureae</i> Jones NCTC 10219, ATCC 25976	NHI 864
<i>Pediococcus</i>	<i>pentosaceus</i> ATCC 8042	NZDRI 20041
<i>Pediococcus</i>	<i>pentosaceus</i> NCDO 1220	NZDRI 20061
<i>Pediococcus</i>	<i>pentosaceus</i> NCDO 1850	NZDRI 20060
<i>Pediococcus</i>	<i>pentosaceus</i> NCDO 559	NZDRI 20059
<i>Pediococcus</i>	<i>pentosaceus</i> NCDO 990	NZDRI 20098
<i>Pediococcus</i>	<i>pentosaceus</i> ATCC 8081	NZDRI 20052
<i>Peptococcus</i>	<i>magnus</i> see <i>Peptostreptococcus magnus</i>	
<i>Peptostreptococcus</i>	<i>magnus</i> (Prevot) Smith comb. nov. ATCC 14956	NHI 2382
<i>Pleisomonas</i>	<i>shigelloides</i> (Bader) Habs & Schubert NCTC 10360	WARC
<i>Plesiomonas</i>	<i>shigelloides</i> (Bader) Habs & Schuber NCTC 10360, ATCC 10429, NCIB 9242	NHI 805
<i>Propionibacterium</i>	<i>acidipropionic</i> NCDO 563	NZDRI 20072
<i>Propionibacterium</i>	<i>acnes</i> (Gilchrist) Douglas & Gunter ATCC 6919, NCTC 737, NHI 1078	WARC
<i>Propionibacterium</i>	<i>acnes</i> (Gilchrist) Douglass & Gunter NCTC 737, ATCC 6919, VPI 0389	NHI 1078

Propionibacterium	acnes (Gilchrist) Douglass & Gunter ATCC 11829, NCTC 10387, VPI 0210	NHI 2588
Propionibacterium	freudenreichii NCDO 1073	NZDRI 20073
Propionibacterium	freudenreichii sub sp. shermanii NCDO 566	NZDRI 20076
Propionibacterium	granulosum (Prevot) Moore & Holdeman (CDC 9055) NHI 907	WARC
Propionibacterium	granulosum (Prevot) Moore & Holdeman CDC 9055	NHI 907
Propionibacterium	jensenii NCDO 572	NZDRI 20074
Propionibacterium	species (wentii) NCDO 1083	NZDRI 20078
Propionibacterium	theonii NCDO 568	NZDRI 20077
Propionibacterium	theonii NCDO 571	NZDRI 20075
Proteus	mirabilis Hauser NCTC 5887	NHI 64
Proteus	mirabilis Hauser NCTC 8309, OXK	NHI 69
Proteus	mirabilis Hauser NCIB 10823, BS711, NCTC 10975	NHI 1136
Proteus	morganii see Morganella morganii	
Proteus	rettgeri (Hadley et al) Rustigian & Stuart NCTC 7475	NHI 66
Proteus	sp. CDC s-17	NHI 2229
Proteus	vulgaris Hauser ATCC 13315, NCTC 4175, NHI 67	WARC
Proteus	vulgaris Hauser NCTC 4175. ATCC 13315, NCIB 4175	NHI 67
Proteus	vulgaris Hauser NCTC 8313 OX19	NHI 68
Proteus	vulgaris Hauser NCTC 8311, OX2	NHI 70
Proteus	vulgaris Hauser NCTC 4635, OXL	NHI 996
Providencia	alcalifaciens (de Salles Gomes) Ewing CDC B4513	NHI 1091
Providencia	alcalifaciens (de Salles Gomes) Ewing ATCC 9886, NCTC 10287	NHI 2529
Providencia	sp. NCTC 6932	NHI 7
Providencia	stuartii (Buttiaux et al) Ewing CDC B8847	NHI 1090

<i>Pseudomonas</i>	<i>acidovorans</i> den Dooren de Jong (CDC B4634) NHI 850	WARC
<i>Pseudomonas</i>	<i>acidovorans</i> den Dooren de Jong CDC B4634	NHI 850
<i>Pseudomonas</i>	<i>acidovorans</i> den Dooren de Jong ATCC 11299a, NCIB 9289	NHI 2021
<i>Pseudomonas</i>	<i>aeruginosa</i> (Schroeter) Migula (CDC F32) NHI 918	WARC
<i>Pseudomonas</i>	<i>aeruginosa</i> (Schroeter) Migula NCTC 10662, NHI 981	WARC
<i>Pseudomonas</i>	<i>aeruginosa</i> (Schroeter) Migula NZ isolate 63/2809	NHI 107
<i>Pseudomonas</i>	<i>aeruginosa</i> (Schroeter) Migula ATCC 14502	NHI 692
<i>Pseudomonas</i>	<i>aeruginosa</i> (Schroeter) Migula CDC F32, ATCC 27853	NHI 981
<i>Pseudomonas</i>	<i>aeruginosa</i> (Schroeter) Migula NCTC 10701	NHI 980
<i>Pseudomonas</i>	<i>aeruginosa</i> (Schroeter) Migula NCTC 10662, ATCC 25668, NCTC 8059	NHI 981
<i>Pseudomonas</i>	<i>aeruginosa</i> (Schroeter) Migula NCTC 6749, ATCC 19582	NHI 997
<i>Pseudomonas</i>	<i>aeruginosa</i> (Schroeter) Migula ATCC 25619, PCI 852	NHI 2260
<i>Pseudomonas</i>	<i>aeruginosa</i> (Schroeter) Migula ATCC 9027	NHI 2576
<i>Pseudomonas</i>	<i>aeruginosa</i> (Schroeter) Migula ATCC 15442, NCIB 10421	NHI 2584
<i>Pseudomonas</i>	<i>aeruginosa</i> (Schroeter) Migula NCTC 6750, ATCC 19429, NCIB 6750	NHI 2711
<i>Pseudomonas</i>	<i>aeruginosa</i> Mutant strains	OU
<i>Pseudomonas</i>	<i>aeruginosa</i> DSM1707; Strain PAO	WAIK 36
<i>Pseudomonas</i>	<i>alcaligenes</i> Monias CDC B296	NHI 851
<i>Pseudomonas</i>	<i>cepacia</i> Palleroni & Holmes (CDC KC 984) NHI 849	WARC
<i>Pseudomonas</i>	<i>cepacia</i> Palleroni and Holmes CDC KC984	NHI 849
<i>Pseudomonas</i>	<i>cepacia</i> Palleroni and Holmes NCTC 10743, ATCC 35416	NHI 2768
<i>Pseudomonas</i>	<i>diminuta</i> Leifson and Hugh CDC B7211	NHI 856
<i>Pseudomonas</i>	<i>fluorescens</i> Migula NCTC 10038, ATCC 13525	NHI 862
<i>Pseudomonas</i>	<i>fluorescens</i> Migula NZ isolate 76/1757	NHI 1219

<i>Pseudomonas</i>	<i>fragi</i> (Eicholz) Huss NCTC 10689, ATCC 4973, NCIB 8542	NHI 2744
<i>Pseudomonas</i>	<i>fragi</i> NCDO 752	NZDRI 20040
<i>Pseudomonas</i>	<i>mallei</i> (Zopf) Redfearn et al. <u>Not for distribution</u> NCTC 10230, ATCC 15310	NHI 1102
<i>Pseudomonas</i>	<i>maltophilia</i> Hugh CDC B7057	NHI 824
<i>Pseudomonas</i>	<i>mesophilica</i> Austin and Goodfellow CDC B8949	NHI 1087
<i>Pseudomonas</i>	<i>paucimobilis</i> Holmes et al. NZ isolate 75/1250	NHI 1230
<i>Pseudomonas</i>	<i>pickettii</i> Ralston et al. NZ isolate 76/2641	NHI 1233
<i>Pseudomonas</i>	<i>pickettii</i> Ralston et al. NZ isolate 76/3915	NHI 2020
<i>Pseudomonas</i>	<i>pseudomallei</i> (Whitmore) Haynes <u>Not for distribution</u> NCTC 4845, ATCC 15682, NCIB 9674	NHI 1103
<i>Pseudomonas</i>	<i>putida</i> (Trevisan) Migula CDC KC1074	NHI 852
<i>Pseudomonas</i>	<i>putrefaciens</i> (Derby and Hammer) Long and Hammer CDC B5944	NHI 825
<i>Pseudomonas</i>	sp. CDC B6500(1)	NHI 853
<i>Pseudomonas</i>	<i>stutzeri</i> (Lehmann & Neumann) Sijderius NHI 1217	WARC
<i>Pseudomonas</i>	<i>stutzeri</i> (Lehmann and Newmann) Sijderius NZ isolate 76/0642	NHI 1217
<i>Pseudomonas</i>	<i>stutzeri</i> (Lehmann and Newmann) Sijderius CDC KC1077	NHI 2007
<i>Pseudomonas</i>	<i>syringae</i> pv. <i>syringae</i> van Hall	FRI
<i>Pseudomonas</i>	<i>testosteroni</i> Marcus and Talalay CDC B6475	NHI 854
<i>Pseudomonas</i>	<i>vesicularis</i> (Busing et al) Galarneault and Leifson CDC KC1099	NHI 823
<i>Ramibacterium</i>	<i>alactolyticum</i> see <i>Eubacterium alactolyticum</i>	
<i>Ruminococcus</i>	<i>pasteurii</i> DSM2381; Type Strain	WAIK 364
<i>Saccharomonospora</i>	<i>viridis</i> (Schuurmans et al) Nonomura and Ohara ATCC 15345	NHI 2530
<i>Saccharomyces</i>	<i>cerevisae</i> Hansen ATCC 2601, PCI M-53	NHI 2241
<i>Saccharomyces</i>	<i>cerevisae</i> Hansen NCTC 10716, ATCC 9763, PCI M-50	NHI 1207
<i>Salmonella</i>	<i>arizonae</i> (Bormann) Kauffmann NCTC 7293	NHI 91

Salmonella	cholerae-suis (Smith) Weldin NCTC 5738	WARC
Salmonella	cholerae-suis (Smith) Weldin <u>Distribution restricted</u> NZ isolate/33	NHI 335
Salmonella	cholerae-suis (Smith) Weldin <u>Distribution restricted</u> Strain E179	NHI 336
Salmonella	cholerae-suis (Smith) Weldin <u>Distribution restricted</u> NCTC 5737	NHI 338
Salmonella	cholerae-suis (Smith) Weldin <u>Distribution restricted</u> CDC 1350	NHI 926
Salmonella	cholerae-suis (Smith) Weldin <u>Distribution restricted</u> CDC 37, 5120	NHI 927
Salmonella	cholerae-suis (Smith) Weldin <u>Distribution restricted</u> NCTC 5738	NHI 1069
Salmonella	cholerae-suis (Smith) Weldin <u>Distribution restricted</u> NCTC 5735 ATCC 13312	NHI 1112
Salmonella	cholerae-suis (Smith) Weldin <u>Distribution restricted</u> NCTC 5737	NHI 1113
Salmonella	cholerae-suis (Smith) Weldin <u>Distribution restricted</u> ATCC 10708	NHI 2639
Salmonella	enteritidis (Gaertner) Castellani and Chalmers Strain 1891, NCTC 5765	NHI 351
Salmonella	enteritidis (Gaertner) Castellani and Chalmers NZ isolate 64/3686	NHI 352
Salmonella	typhi (Schroeter) Warren and Scott <u>Distribution restricted</u> USA, NCTC 8394	NHI 442
Salmonella	typhi (Schroeter) Warren and Scott <u>Distribution restricted</u> UK, NCTC 8393, ATCC 10749, 14901	NHI 443
Salmonella	typhi (Schroeter) Warren and Scott <u>Distribution restricted</u> ATCC 19430, NCTC 8385	NHI 444
Salmonella	typhi (Schroeter) Warren and Scott <u>Distribution restricted</u> UK, NCTC 8384	NHI 445
Salmonella	typhi (Schroeter) Warren and Scott <u>Distribution restricted</u> UK	NHI 446
Salmonella	typhi (Schroeter) Warren and Scott <u>Distribution restricted</u> NCTC 786	NHI 449
Salmonella	typhi (Schroeter) Warren and Scott <u>Distribution restricted</u> NCTC 8382	NHI 468
Salmonella	typhi (Schroeter) Warren and Scott <u>Distribution restricted</u> CDC 115	NHI 955
Salmonella	typhi (Schroeter) Warren and Scott <u>Distribution restricted</u> NCTC 5764	NHI 1111
Salmonella	typhi (Schroeter) Warren and Scott <u>Distribution restricted</u> ATCC 6539, NCTC 10787, PCI 413	NHI 2583
Salmonella	typhi (Schroeter) Warren and Scott <u>Distribution restricted</u> P.I. 8083/80	NHI 2675
Salmonella	typhimurium (Loeffler) Castellani & Chalmers	WARC

Salmonella	typhimurium (Loeffler) Castellani and Chalmers USA 450, Strain 1406	NHI 450
Salmonella	typhimurium (Loeffler) Castellani and Chalmers NCTC 5712	NHI 451
Salmonella	typhimurium (Loeffler) Castellani and Chalmers NCTC 5714	NHI 452
Salmonella	typhimurium (Loeffler) Castellani and Chalmers NZ isolate 63/443	NHI 453
Salmonella	typhimurium (Loeffler) Castellani and Chalmers CDC 3988-65	NHI 1138
Salmonella	Serotype Aberdeen NCTC 5791	NHI 301
Salmonella	Serotype Abony NCTC 6017	NHI 2712
Salmonella	Serotype Abortus-equi Col. Sal. 26	NHI 302
Salmonella	Serotype Abortus-equi NCTC 5727	NHI 303
Salmonella	Serotype Abortus-equi CDC 26	NHI 920
Salmonella	Serotype Abortus-ovis NCTC 10241	NHI 1209
Salmonella	Serotype Adelaide Col. Sal. 125	NHI 304
Salmonella	Serotype Agona NZ isolate 74/0834	NHI 1076
Salmonella	Serotype Ahmadi NZ isolate 67/6850	NHI 712
Salmonella	Serotype Albany NZ isolate 72/1880	NHI 724
Salmonella	Serotype Anatum NCTC 5779	NHI 305
Salmonella	Serotype Arechavaleta NZ isolate 1955	NHI 307
Salmonella	Serotype Artis NCTC 10253	NHI 309
Salmonella	Serotype Atlanta CDC 2416-52	NHI 943
Salmonella	Serotype Atlanta Col. Sal. 250	NHI 310
Salmonella	Serotype Bareilly Col. Sal. 44, NCTC 5745	NHI 312
Salmonella	Serotype Bareilly NZ isolate 69/3746	NHI 713
Salmonella	Serotype Basel NCTC 10310	NHI 313
Salmonella	Serotype Bere NZ isolate 74/2116	NHI 1032

Salmonella	Serotype Bergen NCTC 9798	NHI 314
Salmonella	Serotype Berkeley NCTC 8260	NHI 315
Salmonella	Serotype Berta Col. Sal. 69; NCTC 5770	NHI 316
Salmonella	Serotype Betioky NCTC 10311	NHI 317
Salmonella	Serotype Blegdam NCTC 5769	NHI 717
Salmonella	Serotype Blockley NZ isolate 66/1115	NHI 470
Salmonella	Serotype Bonariensis USA no. C 12	NHI 319
Salmonella	Serotype Bonariensis NCTC 6481	NHI 716
Salmonella	Serotype Bovis-morbificans Col. Sal. 43	NHI 320
Salmonella	Serotype Bovis-morbificans NCTC 5754	NHI 1070
Salmonella	Serotype Braenderup NZ isolate 58/13327	NHI m 322
Salmonella	Serotype Brandenburg NZ isolate 66/5140	NHI 469
Salmonella	Serotype Bredeney NCTC 5731	NHI 323
Salmonella	Serotype Budapest	NHI 324
Salmonella	Serotype Bulawayo CDC 541	NHI 921
Salmonella	Serotype Bunnik CDC 800	NHI 922
Salmonella	Serotype Canoga Col. Sal. 248, NCTC 7899	NHI 325
Salmonella	Serotype Cardiff CDC 167	NHI 923
Salmonella	Serotype Carrau Col. Sal. 93, NCTC 5794	NHI 327
Salmonella	Serotype CDC 1529 - 74 SC	NHI 1137
Salmonella	Serotype Cerro CDC 100	NHI 924
Salmonella	Serotype Cerro Col. Sal. 100, NCTC 5801	NHI 328
Salmonella	Serotype Cerro NCTC 5801	NHI 339
Salmonella	Serotype Cerro NZ isolate 75/2499	NHI 1160

Salmonella	Serotype Champaign Col. Sal. 166	NHI 329
Salmonella	Serotype Chandans NCTC 7403	NHI 718
Salmonella	Serotype Chester CDC 17	NHI 925
Salmonella	Serotype Chester Col. Sal. 17, NCTC 5718	NHI 330
Salmonella	Serotype Chester NZ isolate 1962	NHI 331
Salmonella	Serotype Chittagong Col. Sal. 225, NCTC 7374	NHI 332
Salmonella	Serotype Coleypark NZ isolate 68/7286	NHI 477
Salmonella	Serotype Cook CDC 877, 364.61	NHI 928
Salmonella	Serotype Cook Col. Sal. SC 859	NHI 340
Salmonella	Serotype Cubana CDC 3237-71	NHI 1178
Salmonella	Serotype Cubana CDC 207	NHI 1284
Salmonella	Serotype Cubana NZ isolate 67/0480	NHI 476
Salmonella	Serotype Dahlem NCTC 9949	NHI 341
Salmonella	Serotype Dakar CDC 444	NHI 929
Salmonella	Serotype Dar-es-salam Col. Sal. 72, NCTC 5773	NHI 343
Salmonella	Serotype Dar-es-salam CDC 72	NHI 1142
Salmonella	Serotype Derby Col. Sal. 20., NCTC 5721	NHI 344
Salmonella	Serotype Derby NZ isolate 63/3437	NHI 345
Salmonella	Serotype Dessau NZ isolate 76/2034	NHI 1223
Salmonella	Serotype Deversoir NCTC 9792	NHI 346
Salmonella	Serotype Deversoir CDC 364	NHI 930
Salmonella	Serotype Djakarta CDC 467	NHI 932
Salmonella	Serotype Dublin Col. Sal. 65	NHI 349
Salmonella	Serotype Dublin NZ isolate 64/3744 (WARC)	NHI 348

Salmonella	Serotype Dublin USA 215	NHI 347
Salmonella	Serotype Duesseldorf Col. Sal. 120	NHI 350
Salmonella	Serotype Dugbe CDC 518	NHI 931
Salmonella	Serotype Eimsbuettel NZ isolate 75/2347	NHI 1201
Salmonella	Serotype Emek NZ isolate 72/3278	NHI 1085
Salmonella	Serotype Essen Col. Sal. 22, NCTC 5723	NHI 353
Salmonella	Serotype Fanti Col. Sal. JT 1224	NHI 708
Salmonella	Serotype Flint NZ isolate 75/2607	NHI 1144
Salmonella	Serotype Florida CDC 162, C. 1672	NHI 933
Salmonella	Serotype Gallinarum USA	NHI 354
Salmonella	Serotype Gaminara Col. Sal. 96, NCTC 5797, ATCC 8324	NHI 355
Salmonella	Serotype Gaminara NZ isolate 67/0990	NHI 711
Salmonella	Serotype Give NZ isolate 65/4386	NHI 356
Salmonella	Serotype Glostrup Col. Sa. 56, NCTC 5757	NHI 357
Salmonella	Serotype Gombe NZ isolate 74/0593	NHI 999
Salmonella	Serotype Greenside NCTC 9936	NHI 358
Salmonella	Serotype Grumpensis Col. Sal. JT 191	NHI 709
Salmonella	Serotype Haarlem NCTC 9906	NHI 359
Salmonella	Serotype Hadar NZ isolate 70/0943	NHI 723
Salmonella	Serotype Havana NZ isolate 70/-238	NHI 478
Salmonella	Serotype Humber NCTC 10078	NHI 363
Salmonella	Serotype Hvittingfoss NZ isolate 65/6611	NHI 361
Salmonella	Serotype Hvittingfoss NCTC 5796	NHI 2497
Salmonella	Serotype Illinois USA 38260	NHI 364

Salmonella	Serotype Indiana NZ isolate 75/1935	NHI 1198
Salmonella	Serotype Infantis Col. Sal. SC 894	NHI 365
Salmonella	Serotype Infantis CDC 906.2784/61	NHI 934
Salmonella	Serotype Infantis NZ isolate 65/10810	NHI 706
Salmonella	Serotype Inverness Col. Sal. 145, NCTC 6591	NHI 366
Salmonella	Serotype Isangi NZ isolate 74/0032	NHI 1093
Salmonella	Serotype Italiana CDC 186	NHI 935
Salmonella	Serotype Java Col. Sal. 6	NHI 409
Salmonella	Serotype Java NZ isolate 74/2076	NHI 1071
Salmonella	Serotype Javiana Col. Sal. 157 (N112), NCTC 6496	NHI 367
Salmonella	Serotype Javiana NZ isolate 61/5908	
Salmonella	Serotype Kaolack NCTC 10214	NHI 369
Salmonella	Serotype Kapemba USA	NHI 370
Salmonella	Serotype Karamoja NCTC 9958	NHI 371
Salmonella	Serotype Karamoja NZ isolate 66/207	NHI 710
Salmonella	Serotype Kentucky Col. Sal. 98, NCTC 5799	NHI 372
Salmonella	Serotype Kimpese NZ isolate 75/2077	NHI 1203
Salmonella	Serotype Kirkee Col. Sal. 97, NCTC 5798	NHI 373
Salmonella	Serotype Leewarden NZ isolate 73/2399	
Salmonella	Serotype Leonga CDC 571	NHI 936
Salmonella	Serotype Lexington NZ isolate 61/5711 A	NHI 374
Salmonella	Serotype Lille NCTC 9885	NHI 375
Salmonella	Serotype Litchfield NZ isolate 74/0395	NHI 919
Salmonella	Serotype Locarno NCTC 10272	NHI 376

Salmonella	Serotype London Col. Sal. 76, NCTC 5777	NHI 377
Salmonella	Serotype London NCTC 5777	NHI 378
Salmonella	Serotype Luciana NCTC 7105	NHI 720
Salmonella	Serotype Luton NCTC 10346	NHI 379
Salmonella	Serotype Madelia CDC 163, Minn 611	NHI 937
Salmonella	Serotype Madelia CDC 164, Minn 611-3015	NHI 938
Salmonella	Serotype Madelia NZ isolate 65/010288	NHI 308
Salmonella	Serotype Manchester NZ isolate 1958	NHI 380
Salmonella	Serotype Maricopa NCTC 10312	NHI 381
Salmonella	Serotype Meleagridis NZ isolate 1966	NHI 382
Salmonella	Serotype Menston Col. Sal. 226	NHI 383
Salmonella	Serotype Mikawasima Col. Sal. SC 855	NHI 384
Salmonella	Serotype Mikawasima Col. Sal. SC 944	NHI 385
Salmonella	Serotype Mikawasima US	NHI 386
Salmonella	Serotype Mikawasima CDC 2212/59	NHI 939
Salmonella	Serotype Milwaukee CDC 276	NHI 940
Salmonella	Serotype Minneapolis CDC 378	NHI 941
Salmonella	Serotype Minnesota Col. Sal. 99, NCTC 5800	NHI 388
Salmonella	Serotype Mississippi CDC 154. 53	NHI 942
Salmonella	Serotype Mississippi NZ isolate	NHI 387
Salmonella	Serotype Montevideo Col. Sal. 46, NCTC 5747	NHI 389
Salmonella	Serotype Montevideo NZ isolate	NHI 693
Salmonella	Serotype Moscow NCTC 10480	NHI 390
Salmonella	Serotype Muenchen NZ isolate 1963	NHI 393

Salmonella	Serotype Muenster NCTC 5780	NHI 1187
Salmonella	Serotype Muenster NZ isolate 74/3019	NHI 1073
Salmonella	Serotype Newbrunswick RARC	NHI 725
Salmonella	Serotype Newington Col. Sal. 84, NCTC 5785	NHI 394
Salmonella	Serotype Newington NZ isolate	NHI 395
Salmonella	Serotype Newington CDC 322 - 74 SC	NHI 1139
Salmonella	Serotype Newport CDC 1315 - 75	NHI 1140
Salmonella	Serotype Newport CDC	NHI 1179
Salmonella	Serotype Newport Col. Sal. 50, NCTC 57851	NHI 396
Salmonella	Serotype Newport NZ isolate 63/8845	NHI 397
Salmonella	Serotype Niarenbe Col. Sal. 308	NHI 392
Salmonella	Serotype Niarenbe CDC 339	NHI 944
Salmonella	Serotype Onderstepoort Col. Sal. 94, NCTC 5795	NHI 467
Salmonella	Serotype Oranienburg USE	NHI 399
Salmonella	Serotype Oranienburg NZ isolate 63/6277	NHI 400
Salmonella	Serotype Orion NZ isolate 1955	NHI 401
Salmonella	Serotype Oslo NZ isolate 64/3713	NHI 402
Salmonella	Serotype Panama USA	NHI 403
Salmonella	Serotype Papuana NZ isolate 60/4294	NHI 404
Salmonella	Serotype Paratyphi A <u>Distribution restricted</u> NCTC 5702	NHI 405
Salmonella	Serotype Paratyphi A <u>Distribution restricted</u> NZ isolate 74/2113	NHI 1074
Salmonella	Serotype Paratyphi A <u>Distribution restricted</u> NCTC 8387	NHI 1180
Salmonella	Serotype Paratyphi B <u>Distribution restricted</u> UK NCTC 8390	NHI 410
Salmonella	Serotype Paratyphi B <u>Distribution restricted</u> NZ isolate 1958	NHI 411

Salmonella	Serotype Paratyphi C <u>Distribution restricted</u> NCTC 96	NHI 1110
Salmonella	Serotype Pensacola NZ isolate 1957	NHI 412
Salmonella	Serotype Pomona NZ isolate 65/10286	NHI 472
Salmonella	Serotype Poona Col. Sal. 91, NCTC 5792	NHI 413
Salmonella	Serotype Poona NZ isolate 74/2387	NHI 1068
Salmonella	Serotype Potsdam NZ isolate 75/1253	NHI 1117
Salmonella	Serotype Pullorum CDC 75 . 971	NHI 945
Salmonella	Serotype Pullorum NZ isolate 1955	NHI 414
Salmonella	Serotype Quimbamba CDC 611	NHI 1202
Salmonella	Serotype Quinhon NCTC 10076	NHI 415
Salmonella	Serotype Reading Col. Sal. 19, NCTC 5720	NHI 416
Salmonella	Serotype Reading NZ isolate 76/0059	NHI 1143
Salmonella	Serotype Reading USA	NHI 417
Salmonella	Serotype Richmond NZ isolate 76/2508	NHI 975
Salmonella	Serotype Riogrande Col. Sal. 209	NHI 418
Salmonella	Serotype Rostock Col. Sa. 66, NCTC 5767	NHI 419
Salmonella	Serotype Rubislaw Col. Sal. 285, NCTC 8497	NHI 421
Salmonella	Serotype Rubislaw USA	NHI 420
Salmonella	Serotype Rutgers NCTC 9794	NHI 422
Salmonella	Serotype Saintpaul NZ isolate 1955	NHI 423
Salmonella	Serotype Salinatis CDC 266. PC 230	NHI 946
Salmonella	Serotype Sandiego Col. Sal. 18	NHI 424
Salmonella	Serotype Schleissheim Col. Sa. 31, NCTC 5732	NHI 425
Salmonella	Serotype Schwarzengrund NZ isolate 1966	NHI 426

Salmonella	Serotype Selandia NCTC 5786	NHI 722
Salmonella	Serotype Sendai <u>Distribution restricted</u> NZ isolate 64/1721	NHI 471
Salmonella	Serotype Senftenberg Col. Sal. 87, NCTC 5788	NHI 427
Salmonella	Serotype Senftenberg NZ isolate 1955 (RARC)	NHI 428
Salmonella	Serotype Senftenberg NCTC 10079	NHI 429
Salmonella	Serotype Senftenberg NCTC 10081	NHI 430
Salmonella	Serotype Senftenberg CDC 87	NHI 947
Salmonella	Serotype Senftenberg CDC 735	NHI 948
Salmonella	Serotype Senftenberg CDC 2282. 58	NHI 949
Salmonella	Serotype Senftenberg CDC 840. 59	NHI 950
Salmonella	Serotype Simsbury Col. Sal. 122	NHI 432
Salmonella	Serotype Singapore NZ isolate 70/0551	NHI 705
Salmonella	Serotype Springs NCTC 9854	NHI 433
Salmonella	Serotype Stanley Col. Sal. 15, NCTC 5716	NHI 434
Salmonella	Serotype Stanley NZ isolate 70/1901	NHI 479
Salmonella	Serotype Sternschanze CDC 1377	NHI 951
Salmonella	Serotype Tallahassee Col. Sal. 249	NHI 435
Salmonella	Serotype Tallahassee CDC 196	NHI 952
Salmonella	Serotype Tel-Aviv Col. Sal. 106, NCTC 6020	NHI 436
Salmonella	Serotype Tennessee Col. Sal. 119, NCTC 6388	NHI 437
Salmonella	Serotype Tennessee NZ isolate 68/8451	NHI 707
Salmonella	Serotype Thompson Col. Sal. 40, NCTC 5741	NHI 439
Salmonella	Serotype Thompson NZ isolate 74/1251	NHI 998
Salmonella	Serotype Thompson USA 94368	NHI 438

Salmonella	Serotype Tokai CDC 1182	NHI 953
Salmonella	Serotype Tranoroa NCTC 10252	NHI 440
Salmonella	Serotype Treforest NCTC 10075	NHI 441
Salmonella	Serotype Tulear CDC 978	NHI 954
Salmonella	Serotype Uccle NCTC 10251	NHI 454
Salmonella	Serotype Uganda Col. Sal. 101, NCTC 6015	NHI 455
Salmonella	Serotype Urbana Col. Sal. 124	NHI 456
Salmonella	Serotype Utrecht NCTC 10077	NHI 457
Salmonella	Serotype Victoria NZ isolate 56/382	NHI 458
Salmonella	Serotype Virchow NCTC 5742	NHI 2498
Salmonella	Serotype Virchow NZ isolate 65/5492	NHI 459
Salmonella	Serotype Virginia NCTC 6947	NHI 460
Salmonella	Serotype Wangata NCTC 8276	NHI 461
Salmonella	Serotype Warragul NZ isolate 71/0781	NHI 695
Salmonella	Serotype Wassenaar CDC 866	NHI 956
Salmonella	Serotype Waycross Col. Sal. 211, NCTC 7401	NHI 462
Salmonella	Serotype Wayne CDC 814	NHI 957
Salmonella	Serotype Weltevreden NZ isolate 1955	NHI 463
Salmonella	Serotype Weslaco Col. Sal. 221, NCTC 7411	NHI 464
Salmonella	Serotype Westerstede NZ isolate 67/13760	NHI 475
Salmonella	Serotype Wichita NCTC 6019	NHI 465
Salmonella	Serotype Worthington NCTC 9941	NHI 473
Salmonella	Serotype Worthington NZ isolate 71/1528	NHI 704
Salmonella	sp. CDC 875. 6370/60	NHI 958

Sarcina	lutea see Micrococcus luteus	
Sarcina	subflava see Micrococcus luteus	
Serratia	liquefaciens (Grimes and Hennerty) Bascomb et al CDC 1869-59	NHI 861
Serratia	liquefaciens (Grimes and Hennerty) Bascomb et al CDC 1912-57	NHI 1175
Serratia	liquefaciens (Grimes and Hennerty) Bascomb et al ATCC 27592	NHI 2885
Serratia	marcescens Bizio NCTC 10211, ATCC 13880, NCIB 9155	NHI 1188
Serratia	rubidaea (Stapp) Ewing et al CDC 2199-72, ATCC 27593	NHI 1174
Shigella	boydii Ewing NCTC 8576	NHI 2611
Shigella	boydii Ewing NCTC 8592	NHI 2617
Shigella	boydii Ewing NCTC 8590	NHI 2618
Shigella	boydii Ewing NCTC 9327	NHI 965
Shigella	boydii Ewing NCTC 9328	NHI 966
Shigella	boydii Ewing NCTC 9329	NHI 967
Shigella	boydii Ewing NCTC 9330	NHI 968
Shigella	boydii Ewing NCTC 9331	NHI 969
Shigella	boydii Ewing NCTC 9332	NHI 970
Shigella	boydii Ewing NCTC 9333	NHI 971
Shigella	boydii Ewing NCTC 9355	NHI 2612
Shigella	boydii Ewing NCTC 9357	NHI 2613
Shigella	boydii Ewing NCTC 9321	NHI 2614
Shigella	boydii Ewing NCTC 9772	NHI 2615
Shigella	boydii Ewing NCTC 9361	NHI 2616
Shigella	dysenteriae (Shiga) Castellani and Chalmers NCTC 8218	NHI 79
Shigella	dysenteriae (Shiga) Castellani and Chalmers NZ isolate 63/7169	NHI 139

Shigella	dysenteriae (Shiga) Castellani and Chalmers	<u>Distribution restricted</u> NCTC 4837, ATCC 13313	NHI 1015
Shigella	dysenteriae (Shiga) Castellani and Chalmers	NCTC 6340	NHI 2507
Shigella	dysenteriae (Shiga) Castellani and Chalmers	NCTC 9759	NHI 2508
Shigella	dysenteriae (Shiga) Castellani and Chalmers	NCTC 9721	NHI 2509
Shigella	dysenteriae (Shiga) Castellani and Chalmers	NCTC 9762	NHI 2510
Shigella	dysenteriae (Shiga) Castellani and Chalmers	NCTC 9763	NHI 2511
Shigella	dysenteriae (Shiga) Castellani and Chalmers	NCTC 8599	NHI 2512
Shigella	dysenteriae (Shiga) Castellani and Chalmers	NCTC 9347	NHI 2513
Shigella	dysenteriae (Shiga) Castellani and Chalmers	NCTC 9351	NHI 2514
Shigella	flexneri Castellani and Chalmers	NCTC 8192	NHI 80
Shigella	flexneri Castellani and Chalmers	NZ isolate 63/6807	NHI 127
Shigella	flexneri Castellani and Chalmers	NZ isolate 63/10267	NHI 136
Shigella	flexneri Castellani and Chalmers	NZ isolate 63/10271	NHI 137
Shigella	flexneri Castellani and Chalmers	NCTC 8296	NHI 300
Shigella	flexneri Castellani and Chalmers	NCTC 99729	NHI 866
Shigella	flexneri Castellani and Chalmers	NCTC 5	NHI 972
Shigella	flexneri Castellani and Chalmers	NCTC 4	NHI 973
Shigella	flexneri Castellani and Chalmers	NCTC 7	NHI 974
Shigella	flexneri Castellani and Chalmers	NCTC 8336	NHI 976
Shigella	flexneri Castellani and Chalmers	NCTC 8523	NHI 977
Shigella	flexneri Castellani and Chalmers	NCTC 1	NHI 983
Shigella	flexneri Castellani and Chalmers	NCTC 4720	NHI 1016
Shigella	flexneri Castellani and Chalmers	NCTC 9780	NHI 1017
Shigella	flexneri Castellani and Chalmers	NCTC 8525	NHI 1018

Shigella	flexneri Castellani and Chalmers NCTC 2	NHI 1019
Shigella	flexneri Castellani and Chalmers NCTC 8597	NHI 1020
Shigella	flexneri Castellani and Chalmers CDC 2852 - 75	NHI 1181
Shigella	flexneri Castellani and Chalmers CDC 2384 - 75	NHI 1182
Shigella	flexneri Castellani and Chalmers CDC 2930 - 71	NHI 1183
Shigella	flexneri Castellani and Chalmers CDC 1483 - 71	NHI 1184
Shigella	flexneri Castellani and Chalmers CDC 731 - 75	NHI 1185
Shigella	flexneri Castellani and Chalmers CDC 6063 - 72	NHI 1186
Shigella	sonnei (Levine) Weldin NCTC 8220, NHI 86	WARC
Shigella	sonnei (Levine) Weldin NCTC 8220	NHI 86
Shigella	sonnei (Levine) Weldin NZ isolate 63/3545	NHI 140
Shigella	sonnei (Levine) Weldin ATCC 29029, CDC 4382-74, NHI 2728	
Sphingobacterium	multivorum (Holmes, Owen and Weaver) Comb. nov NZ isolate 75/1026	NHI 1228
Sphingobacterium	spiritivorum (Holmes, Owen and Hollis) Comb. nov, NZ isolate 79/1314, CDC E6209, ATCC 33869	NHI 2645
Staphylococcus	aferrmentans see Micrococcus luteus	
Staphylococcus	aureus Rosenbach	WARC
Staphylococcus	aureus Rosenbach USA	NHI 2307
Staphylococcus	aureus Rosenbach (CDC F-1) ATCC 25923, NHI 917	WARC
Staphylococcus	aureus Rosenbach 78/5620	NHI 2566
Staphylococcus	aureus Rosenbach ATCC 27217, NCTC 10804	NHI 195
Staphylococcus	aureus Rosenbach ATCC 29608	NHI 2200
Staphylococcus	aureus Rosenbach ATCC 29213	NHI 2243
Staphylococcus	aureus Rosenbach ATCC 13150, PCI 1241	NHI 2261
Staphylococcus	aureus Rosenbach CDC F-1, ATCC 25923	NHI 917

Staphylococcus	aureus Rosenbach NCTC 6571, NHI 87	WARC
Staphylococcus	aureus Rosenbach NCTC 8530, NHI 865	WARC
Staphylococcus	aureus Rosenbach NCTC 6571, ATCC 9144, NCIB 6571	NHI 87
Staphylococcus	aureus Rosenbach NCTC 7447, ATCC 6538P, FDA 209P, NCIB 8625, PCI 1209	NHI 297
Staphylococcus	aureus Rosenbach NCTC 8530, ATCC 12598	NHI 865
Staphylococcus	aureus Rosenbach NCTC 4163	NHI 995
Staphylococcus	aureus Rosenbach NCTC 10345	NHI 1258
Staphylococcus	aureus Rosenbach NCTC 11561	NHI 2729
Staphylococcus	aureus Rosenbach NZ isolate 58/1639, NCIB 9518, NCTC 10788	NHI 147
Staphylococcus	aureus Rosenbach RARC	NHI 803
Staphylococcus	aureus Rosenbach SRL 62.537	NHI 1056
Staphylococcus	aureus Rosenbach SRL 68.2162	NHI 1057
Staphylococcus	aureus Rosenbach SRL 66.7256	NHI 1058
Staphylococcus	aureus Rosenbach SRL 66.3711	NHI 1059
Staphylococcus	aureus Rosenbach SRL 67.10271	NHI 1060
Staphylococcus	aureus Rosenbach SRL 67.2445	NHI 1061
Staphylococcus	capitis Kloos and Schleifer ATCC 27840	NHI 2202
Staphylococcus	cohnii Schleifer and Kloos DMS 20260, ATCC 29974	NHI 2211
Staphylococcus	epidermidis (Winslow & Winslow) Evans ATCC 12228	WARC
Staphylococcus	epidermidis (Winslow and Winslow) Evans ATCC 12228	NHI 1210
Staphylococcus	epidermidis (Winslow and Winslow) Evans ATCC 14990, NCTC 11047	NHI 2205
Staphylococcus	epidermidis (Winslow and Winslow) Evans CDC S-59	NHI 2230
Staphylococcus	haemolyticus Schleifer & Kloos	WARC
Staphylococcus	haemolyticus Schleifer and Kloos DSM 20263, ATCC 29970, NCTC 11042	NHI 2210

Streptococcus	agalactiae Lehmann & Neumann NHI 961	WARC
Streptococcus	agalactiae Lehmann & Neumann	WARC
Streptococcus	agalactiae NCDO 1348	NZDRI 20084
Streptococcus	anginosus Andrews and Horder NCTC 8037	NHI 90
Streptococcus	bovis Group D Orala-Jensen NCTC 8133	NHI 1234
Streptococcus	bovis Group D Orala-Jensen ATCC 33317, NCDO 597, NCTC 8177	NHI 2720
Streptococcus	cremoris AM1	NZDRI 20020
Streptococcus	cremoris AM2	NZDRI 20021
Streptococcus	cremoris AM3	NZDRI 20022
Streptococcus	cremoris C13	NZDRI 20023
Streptococcus	cremoris E8	NZDRI 20024
Streptococcus	cremoris H2	NZDRI 20025
Streptococcus	cremoris HP	NZDRI 20027
Streptococcus	cremoris KH	NZDRI 20028
Streptococcus	cremoris ML1	NZDRI 20029
Streptococcus	cremoris P2	NZDRI 20032
Streptococcus	cremoris R1	NZDRI 20033
Streptococcus	cremoris R6	NZDRI 20034
Streptococcus	cremoris TR	NZDRI 20037
Streptococcus	cremoris US3	NZDRI 20038
Streptococcus	durans Group D Sherman and Wing NCTC 8307, ATCC 19432, NCDO 596	NHI 1235
Streptococcus	dysgalactiae Group C NCTC 4335	NHI 2268
Streptococcus	equi Group C Sand and Jensen NCTC 9682	NHI 2269
Streptococcus	equinus Andrewes and Horder NCTC 10386	NHI 2265

Streptococcus	equisimilis Group C Frost and Engelbrecht NCTC 8543	NHI 94
Streptococcus	equisimilis Group C Frost and Engelbrecht NCDC SS 957	NHI 914
Streptococcus	equisimilis Group C Frost and Engelbrecht ATCC 9542	NHI 2722
Streptococcus	faecalis (subsp. liquefaciens) NCIB 7432	NZDRI 20044
Streptococcus	faecalis Andrewes & Horder NCTC 775, NHI 1106	WARC
Streptococcus	faecalis ATCC 14508	NZDRI 20062
Streptococcus	faecalis ATCC 8043	NZDRI 20043
Streptococcus	faecalis Group D Andrewes and Horder NCTC 370	NHI 89
Streptococcus	faecalis Group D Andrewes and Horder NZ isolate 64/10636	NHI 152
Streptococcus	faecalis Group D Andrewes and Horder NCTC 775, ATCC 19433, NCDO 581	NHI 1106
Streptococcus	faecalis Group D Andrewes and Horder NCTC 2705	NHI 1239
Streptococcus	faecalis Group D Andrewes and Horder NCTC 5957, ATCC 6055	NHI 1240
Streptococcus	faecalis Group D Andrewes and Horder ATCC 29212	NHI 2244
Streptococcus	faecalis Group D Andrewes and Horder ATCC 14506, PCI 1325	NHI 2262
Streptococcus	faecalis NCDO 581	NZDRI 20088
Streptococcus	faecium (durans) NCDO 596	NZDRI 20087
Streptococcus	faecium Group D Orla-Jensen NCTC 7171, ATCC 19434, NCDO 942	NHI 1236
Streptococcus	faecium Group D Orla-Jensen ATCC 8043, NCIB 6459	NHI 1177
Streptococcus	faecium Group D Orla-Jensen ATCC 10541, PCI 1341, NCIB 8192	NHI 2215
Streptococcus	faecium Group E NCTC 10228	NHI 1039
Streptococcus	faecium Group F NCTC 5389	NHI 2271
Streptococcus	faecium Group G NCTC 9603	NHI 95
Streptococcus	faecium Group G NZ isolate 64/3632	NHI 116
Streptococcus	faecium Group G Prague 22/58	NHI 1985

Streptococcus	faecium NCDO 942	NZDRI 20086
Streptococcus	garvieae NCDO 2155	NZDRI 20090
Streptococcus	intermedius Prevot ATCC 27335, VPI 3372A	NHI 2391
Streptococcus	lactis (subsp. diacetylactis) NCDO 1007	NZDRI 20085
Streptococcus	lactis 145	NZDRI 20039
Streptococcus	lactis ATCC 7962	NZDRI 20054
Streptococcus	lactis Group N NCTC 6681, ATCC 19435, NCDO 604, NCIB 6681	NHI 2274
Streptococcus	lactis Group O NCTC 8031	NHI 2714
Streptococcus	lactis Group P NCTC 9824, ATCC 14024	NHI 2276
Streptococcus	lactis Group Q NCTC 9938, ATCC 14025	NHI 2277
Streptococcus	lactis Group R NCTC 10234	NHI 2278
Streptococcus	lactis Group S NCTC 10237	NHI 2279
Streptococcus	lactis Group T NCTC 10446	NHI 2280
Streptococcus	lactis H1	NZDRI 20026
Streptococcus	lactis ML3	NZDRI 20031
Streptococcus	lactis ML8	NZDRI 20030
Streptococcus	lactis NCDO 604	NZDRI 20089
Streptococcus	lactis SK1	NZDRI 20035
Streptococcus	lactis SK3	NZDRI 20036
Streptococcus	milleri NCTC 10708	NHI 1237
Streptococcus	mitis Andrewes and Horder NCTC 10712	NHI 1238
Streptococcus	mutans	NHI 986
Streptococcus	mutans Clarke	NHI 985
Streptococcus	mutans Clarke, NCTC 10449, ATCC 25175	NHI 987

Streptococcus	plantarum NCDO 1869	NZDRI 20091
Streptococcus	pneumoniae (Klein) Chester ATCC 33400, NCTC 7465	WARC
Streptococcus	pneumoniae (Klein) Chester NCTC 7465	NHI 100
Streptococcus	pneumoniae (Klein) Chester NCTC 7466	NHI 101
Streptococcus	pneumoniae (Klein) Chester NCTC 7978	NHI 102
Streptococcus	pneumoniae (Klein) Chester ATCC 9163	NHI 2725
Streptococcus	pneumoniae (Klein) Chester CDC 78-008101	NHI 2762
Streptococcus	pneumoniae (Klein) Chester CDC 78-008102	NHI 2763
Streptococcus	pneumoniae (Klein) Chester CDC 78-008107	NHI 2764
Streptococcus	pyogenes Group A Rosenbach USA ATCC 21546	NHI 1198
Streptococcus	pyogenes Group A Rosenbach NCTC 8322	NHI 93
Streptococcus	pyogenes Group A Rosenbach NCTC 8198, ATCC 12344	NHI 2264
Streptococcus	pyogenes Group A Rosenbach ATCC 19615	NHI 2723
Streptococcus	pyogenes Group A Rosenbach ATCC 21547	NHI 2724
Streptococcus	pyogenes Rosenbach NCTC 8322, NHI 93	WARC
Streptococcus	raffinolactis NCDO 617	NZDRI 20092
Streptococcus	salivarius Group K Andrewes and Horder ATCC 13419	NHI 990
Streptococcus	salivarius Group L Andrewes and Horder NCTC 10321	NHI 2272
Streptococcus	salivarius Group M Andrewes and Horder NCTC 6400	NHI 2713
Streptococcus	sanguis Group H White and Niven ATCC 10556, NCTC 7863	NHI 988
Streptococcus	sanguis Group H White and Niven OPAI	NHI 989
Streptococcus	sp. NCTC 1080	NHI 1107
Streptococcus	sp. strain MG see Streptococcus anginosus	
Streptococcus	species	OU

Streptococcus	thermophilus Orla-Jensen NCTC 10353	NHI 2281
Streptococcus	uberis Diernhofer	WARC
Streptococcus	uberis Diernhofer NCTC 3858, ATCC 19436, NCDO 2038	NHI 22
Streptococcus	zooepidemicus NCTC 6176	NHI 2270
Streptomyces	griseus (Kraus) Waksman and Henrici NCTC 7807, ATCC 13440	NHI 98
Sulfolobus	acidocaldarius DSM639; ATCC33909; Type Strain	WAIK
Sulfolobus	acidocaldarius Type 7	WAIK 305
Sulfolobus	brierleyi DSM1651; Type Strain	WAIK
Sulfolobus	solfataricus DSM1616; ATCC35091; Type Strain	WAIK 367
Tatumella	ptyseos Hollis et al ATCC 33301, NCTC 11468	NHI 2504
Thermoactinomyces	vulgaris L.S.H.T.M. 1150	NHI 1026
Thermoanaerobacter	ethanolicus ATCC31550; Patent strain	WAIK 28
Thermobacteroides	acetoethylicus ATCC 33265, Strain HTB.2	WAIK 19
Thermococcus	celer DSM2476 ^T ; Type strain	WAIK 77
Thermodesulfotobacterium	commune DSM2178; Type Strain	WAIK 262
Thermonema	sp. ATCC43542; Strain 23/9	WAIK 304
Thermonema	sp. ATCC43543; Strain 19/15	WAIK 303
Thermoplasma	acidophilum DSM1728; ATCC25905; Type Strain	WAIK 366
Thermopolyspora	polyspora see <i>Micropolyspora faeni</i>	
Thermoproteus	tenax DSM2078 ^T ; Kra. 1; Type strain;	WAIK 102

Thermus	aquaticus ATCC 25104; Type strain YT.1	WAIK 21
Thermus	filiformis ATCC43280; Strain Wai33A.2	WAIK 80
Thermus	flavus DSM674; Strain AT-62	WAIK 254
Thermus	lacteus ATCC31557; Patent Strain	WAIK 261
Thermus	rubens ATCC31556; Patent Strain	WAIK 260
Thermus	ruber DSM1279; Strain 21	WAIK 259
Thermus	sp. ATCC 31674, Strain T351	WAIK 8
Thermus	sp. ATCC27737; Strain T2	WAIK 109
Thermus	sp. NCIB11245; Strain NH	WAIK 70
Thermus	sp. NCIB11246	WAIK 71
Thermus	sp. NCIB11247; Strain B	WAIK 72
Thermus	sp. ATCC 27978; Strain Ramaley X-1	WAIK 63
Thermus	thermophilus ATCC 27638, Strain HV.8	WAIK 20
Veillonella	parvula sub sp. Parvula Rogosa ATCC 10790	NHI 2384
Vibrio	alginolyticus (Miyamoto, Nakamura & Takizawa) Sakazaki NHI 745	WARC
Vibrio	alginolyticus (Miyamoto et al) Sakazaki NCTC 10675	NHI 745
Vibrio	anguillarum Bergeman ATCC 19264	WARC
Vibrio	anguillarum Bergeman NZ isolate 76/3077	NHI 1222
Vibrio	anguillarum Bergeman ATCC 19264, CDC 9063-79	NHI 2028
Vibrio	cholerae Pacini <u>Distribution restricted</u> CN 3636	NHI 595
Vibrio	cholerae Pacini <u>Distribution restricted</u> NZ isolate 72/3529	NHI 776
Vibrio	cholerae Pacini <u>Distribution restricted</u> NZ isolate 73/2103	NHI 1099
Vibrio	cholerae Pacini <u>Distribution restricted</u> Strain B53-3	NHI 1204
Vibrio	cholerae Pacini <u>Distribution restricted</u> NCTC 10954	NHI 2515

Vibrio	cholerae Pacini <u>Distribution restricted</u> NCTC 8457, ATCC 14033	NHI 2516
Vibrio	cholerae Pacini <u>Distribution restricted</u> NCTC 7270	NHI 2517
Vibrio	cholerae Pacini <u>Distribution restricted</u> NCTC 8021, ARCC 14035, CDC 9060-79	NHI 2519
Vibrio	damsela Love et al ATCC 33539, CDC 2588-80	NHI 2689
Vibrio	extorquens see <i>Pseudomonas mesophilica</i>	
Vibrio	fluvialis Lee et al CDC 9555-78, NCTC 11327	NHI 2620
Vibrio	furnissii Brenner et al NCTC 11218,	NHI 2605
Vibrio	furnissii Brenner et al CDC 9552-78	NHI 2619
Vibrio	hollisae Hickman et al. AtCC 33564, CDC 0075-80	NHI 2748
Vibrio	metschnikovii Gamaleia NCTC 8443	WARC
Vibrio	metschnikovii Gameleia ATCC 7708, CDC 9528-79	NHI 2520
Vibrio	mimicus Davis et al NZ isolate 76/3827	NHI 2640
Vibrio	mimicus Davis et al ATCC 33653, CDC 1721-77, NCTC 11435	NHI 2647
Vibrio	natrigiens Payne et al Baumann et al ATCC 14048, CDC 9101-79	NHI 2562
Vibrio	parahaemolyticus Fujino et al., Sakazaki et al, NCTC 10884, CDC 9107-79	NHI 2506
Vibrio	parahaemolyticus Sakazaki et al. NCTC 10884	WARC
Vibrio	spp. V.campbelli, V.fischeri, V.harveyi, V.nereis, V.nigrapulchritudo, V.pelagius, V.splendus	NHI
Xanthomonas	campestris (Pammel), Dowson ATCC 11645	NHI 2531
Xanthomonas	campestris (Pammel), Dowson ATCC 11672	NHI 2532
Xanthomonas	campestris (Pammel), Dowson ATCC 14180	NHI 2533
Yersinia	enterocolitica (Scheifstein & Coleman) Frederiksen (MY 79B)	WARC
Yersinia	enterocolitica (Scheifstein and Coleman), Frederiksen, NCTC 10460	NHI 767
Yersinia	enterocolitica (Scheifstein and Coleman), Frederiksen, University of Lund,	NHI 1000
Yersinia	enterocolitica (Scheifstein and Coleman), Frederiksen, University of Lund, Strain 79B	NHI 1001

Yersinia	enterocolitica (Scheifstein and Coleman), Frederiksen, ATCC 9610	NHI 2603
Yersinia	frederiksenii Ursing et al CIP 80.29, NCTC 11470	NHI 2534
Yersinia	intermedia Brenner et al ATCC 29909, CIP 80.28, NCTC 11469	NHI 2604
Yersinia	kristensenii Brenner et al, CIP 80.30, NCTC 11471	NHI 2535
Yersinia	pestis (Lehmann & Neumann) van Loghem <u>Not for distribution</u> NCTC 5923, ATCC 19428	NHI 1104
Yersinia	pseudotuberculosis (Pfeiffer) Smith & Thal NCTC 10275	WARC
Yersinia	pseudotuberculosis (Pfeiffer) Smith & Thal NCTC 1102, NHI 63	WARC
Yersinia	pseudotuberculosis (Pfeiffer) Smith & Thal NHI 110	WARC
Yersinia	pseudotuberculosis (Pfeiffer) Smith and Thai NCTC 1102, ATCC 6902	NHI 63
Yersinia	pseudotuberculosis (Pfeiffer) Smith and Thai NZ isolate (rabbit)	NHI 110
Yersinia	pseudotuberculosis (Pfeiffer) Smith and Thai NCTC 10274, ATCC 29833	NHI 768
Yersinia	pseudotuberculosis (Pfeiffer) Smith and Thai NCTC 10277	NHI 769
Yersinia	pseudotuberculosis (Pfeiffer) Smith and Thai NCTC 10278	NHI 770
Yersinia	pseudotuberculosis (Pfeiffer) Smith and Thai NCTC 8580, ATCC 13979	NHI 771
Yersinia	pseudotuberculosis (Pfeiffer) Smith and Thai NCTC 8579	NHI 772
Yersinia	ruckeri Ewing et al <u>Distribution restricted</u> CDC 2396-61, ATCC 29473	NHI 2237
Yersinia	ruckeri Ewing et al. ATCC 29473	WARC

F U N G I

Alternaria	tenuis Nees	FRI
Amylostereum	sp.	FRI
Amylostereum	areolatum (Fries) Boidin	FRI
Amylostereum	chailletii (Persoon ex Fries) Fries	FRI
Antrodia	serialis (Fries) Donk	FRI
Antrodia	vaillantii (Fries) Ryvar den	FRI
Antrodia	xantha (Fries) Ryvar den	FRI
Armillaria	hinnulea Kyle & Watling	FRI
Armillaria	limonea Stevenson	FRI
Armillaria	novae-zelandiae Stevenson	FRI
Aspergillus	fumigatus Fresenius	FRI
Aspergillus	niger van Tieghem	FRI
Aulographina	eucalypti (Cooke & Masee) von Arx & Muller	FRI
Aureobasidium	pullulans (Debary) Arnaud	FRI
Beauvaria	sp.	FRI
Bjerkandera	adusta (Wildenow) Karsten	FRI
Bondarzewia	berkeleyi (Fries) Bondartzev & Singer	FRI
Botryosphaeria	dothidea (Mougeot ex Fries) Cesati & de Nottaris	FRI
Botrytis	sp.	FRI

<i>Calonectria</i>	<i>retaudii</i> (Bugnicourt) Booth	FRI
<i>Ceratocystis</i>	<i>huntii</i> Robinson-Jeffrey & Grinchenko	FRI
<i>Chaetomium</i>	<i>globosum</i> Kunze ex Fries	FRI
<i>Chaetoporus</i>	<i>vinctus</i> (Berkeley) J. E. Wright	FRI
<i>Chondrostereum</i>	<i>purpureum</i> (Persoon ex Fries) Pouzar	FRI
<i>Cladosporium</i>	sp	FRI
<i>Cladosporium</i>	<i>elatum</i> (Harz) Nannfeldt	FRI
<i>Cladosporium</i>	<i>herbarum</i> Link ex Fries	FRI
<i>Coleophoma</i>	sp	FRI
<i>Colletotrichum</i>	<i>acutatum</i> Simmonds f.sp. <i>pini</i> Dingley & Gilmour	FRI
<i>Coniophora</i>	<i>arida</i> (Fries) Karsten	FRI
<i>Coniophora</i>	<i>olivacea</i> (Fries) Karsten	FRI
<i>Coniophora</i>	<i>puteana</i> (Schumacher ex Fries) Karsten	FRI
<i>Coriolus</i>	<i>vaporarius</i> (Fries) Bondartzev & Singer	FRI
<i>Corticium</i>	sp	FRI
<i>Cucurbitaria</i>	sp	FRI
<i>Curvularia</i>	<i>lunata</i> (Wakker) Boedijn	FRI
<i>Cyclaneusma</i>	<i>minus</i> (Butin) DiCosmo, Peredo & Minter	FRI
<i>Cylindrocladium</i>	<i>scoparium</i> Morgan	FRI
<i>Diplodia</i>	<i>pineae</i> (Desmazieres) Kickx	FRI
<i>Discula</i>	<i>pinicola</i> (Naumov) Petrak	FRI
<i>Dothiostroma</i>	<i>pini</i> Hulbary	FRI

<i>Emericellopsis</i>	<i>minima</i> Stalk	FRI
<i>Endomycoopsis</i>	<i>platypodis</i> Baker & Kreger-van Rij	FRI
<i>Epicoccum</i>	<i>nigrum</i> Link	FRI
<i>Fomes</i>	<i>fraxinophilus</i> (Peck) Saccardo	FRI
<i>Fomitopsis</i>	<i>subrosea</i> (Weir) Bondartzev & Singer	FRI
<i>Fusarium</i>	<i>arthrosporiodides</i> Sherbakoff	FRI
<i>Fusarium</i>	<i>avenaceum</i> (Fries) Saccardo	FRI
<i>Fusarium</i>	<i>equiseti</i> (Corda) Saccardo	FRI
<i>Fusarium</i>	<i>heterosporum</i> Nees ex Fries	FRI
<i>Fusarium</i>	<i>lateritium</i> Nees ex Fries	FRI
<i>Fusarium</i>	<i>moniliforme</i> Sheldon	FRI
<i>Fusarium</i>	<i>moniliforme</i> var <i>subglutinans</i> Wollenweber & Reinking	FRI
<i>Fusarium</i>	<i>oxysporum</i> Schlectendahl ex Fries	FRI
<i>Fusarium</i>	<i>sambucinum</i> Fuckel	FRI
<i>Fusarium</i>	<i>solani</i> (Martius) Appel & Wollenweber emend Snyder & Hanson	FRI
<i>Fusarium</i>	<i>trichothecioides</i> Wollenweber	FRI
<i>Fuscoporia</i>	<i>livida</i> (Kalchbrenner) G. H. Cunningham	FRI
<i>Ganoderma</i>	<i>applanatum</i> (Persoon ex Gray) Patouillard	FRI
<i>Gliocladium</i>	<i>catenulatum</i> Gilman & Abbott	FRI
<i>Gliocladium</i>	<i>deliquescens</i> Sopp	FRI
<i>Gloeophyllum</i>	<i>sepiarium</i> (Wulfden ex Fries) Fries	FRI
<i>Gloeophyllum</i>	<i>trabeum</i> (Persoon ex Fries) Murrill	FRI
<i>Glomerella</i>	<i>cingulata</i> (Stoneman) Spaulding & von Schrenk	FRI

Heterobasidion	annosum (Fries) Brefeld	FRI
Inonotus	glomeratus (Peck) Murrill	FRI
Lachnellulla	subtilissima (Cooke) Dennis	FRI
Laetiporus	sulphureus (Bulliard) Murrill	FRI
Lentinus	edodes (Berkeley) Singer	FRI
Lentinus	lepideus (Fries ex Fries) Fries	FRI
Leptosphaeria	coniothyrium (Fuckel) Saccardo	FRI
Melanconis	stilbostoma (Fries) Tulasne	FRI
Mucor	spinescens Lendner	FRI
Mycosphaerella	cryptica (Cooke) Hansford	FRI
Mycosphaerella	nubilosa (Cooke) Hansford	FRI
Mytilidion	sp	FRI
Papulospora	byssina Hotson	FRI
Paxillus	involutus (Batsch ex Fries) Fries	FRI
Peniophora	sacrata G. H. Cunningham	FRI
Perenniporia	medulla-panis (Fries) Donk	FRI
Perenniporia	subacida (Peck) Donk	FRI
Pestalotia	funerea Desmaziere	FRI
Phacidiopycnis	pseudotsugae (Wilson) Hahn	FRI
Phaeocryptopus	gaeumannii (Rohde) Petrak	FRI
Phaeolus	schweinitzii (Fries) Patouillard	FRI

Phellinus	contiguus (Persoon) Patouillard	FRI
Phellinus	ferreus (Persoon) Bourdot & Galzin	FRI
Phellinus	ferruginosus (Schrader) Bourdot & Galzin	FRI
Phellinus	gilvus (Schweinitz) Patouillard	FRI
Phellinus	noxius (Corner) G. H. Cunningham	FRI
Phellinus	pini (Thore ex Fries) Pilat	FRI
Phellinus	robustus forma Resupinatus Bourdot & Galzin	FRI
Phialophora	fastigata (Lagerberg & Melin) Conant	FRI
Phlebia	gigantea (Fries ex Fries) Donk	FRI
Pholiota	adiposa (Fries) Kummer	FRI
Pholiota	aurivella (Fries) Kummer	FRI
Phoma	sp	FRI
Phoma	exigua Desmazieres	FRI
Phytophthora	cactorum (Lebert & Cohn) Schroeter	FRI
Phytophthora	cambivora (Petri) Buisman	FRI
Phytophthora	cinnamomi Rands	FRI
Phytophthora	citricola Sawada	FRI
Phytophthora	cryptogea Pethybridge & Lafferty	FRI
Phytophthora	heveae Thompson	FRI
Phytophthora	megasperma Drechsler	FRI
Phytophthora	palmivora Butler	FRI
Pleurotus	ostreatus (Jacquin ex Fries) Kummer	FRI
Polyporus	arcularius (Batsch) Fries	FRI

Polyporus	palustris Berkeley & Curtis	FRI
Poria	incrassata (Berkeley & Curtis) Burt	FRI
Poria	monticola Murrill	FRI
Pycnoporus	sanguineus (Linnaeus ex Fries) Murrill	FRI
Pythium	acanthicum Drechsler	FRI
Pythium	anandrum Drechsler	FRI
Pythium	debaryanum Hesse	FRI
Pythium	graminicola Subramanium	FRI
Pythium	megalacanthum de Bary	FRI
Pythium	middletonii Sparrow	FRI
Pythium	spinosum Sawada	FRI
Pythium	splendens Braun	FRI
Pythium	torulosum Coker & Patterson	FRI
Pythium	ultimum Trow	FRI
Pythium	undulatum Peterson	FRI
Pythium	vexans De Barry	FRI
Readeriella	mirabilis M. & P. Sydow	FRI
Retinocyclus	abietis (Crouan) Groves & Wells	FRI
Rhizoctonia	solani Kuhn	FRI
Rhizosphaera	kalkhoffii Bubak	FRI
Rosellinia	necatrix Prillieux	FRI
Rosellinia	radiciperda Masee	FRI

Saccharomyces	chevalieri Guilliermond	FRI
Schizophyllum	commune Fries	FRI
Sclerotium	sp	FRI
Seiridium	cardinale (Wagener) Sutton & Gibson	FRI
Seiridium	unicorne (Cooke & Ellis) Sutton	FRI
Septoria	pulcherrima Gadgil & Dick	FRI
Serpula	himantioides (Fries) Karsten	FRI
Serpula	pinastri (Fries) Cooke	FRI
Serpula	lacrimans Gray	FRI
Sistotrema	brinkmannii (Bresadola) Eriksson	FRI
Spicaria	elegans Corda	FRI
Stemphylium	ilicis Tengwall	FRI
Stereum	hirsutum (Wildenow) Persoon ex Gray	FRI
Stereum	sanguinolentum (Von Albertini & Schweintz) Fries	FRI
Strasseria	geniculata (Berkeley & Broome) Hohnel	FRI
Trametes	hirsuta (Wilfden ex Fries) Lloyd	FRI
Trametes	lilacino-gilva (Berkeley) Lloyd	FRI
Trametes	versicolor (Linnaeus ex Fries) Lloyd	FRI
Trechispora	raduloides (Karsten) Rogers	FRI
Trichoderma	viride Persoon	FRI
Trichothecium	roseum Link ex Fries	FRI
Tyromyces	catervatus (Berkeley) G. H. Cunningham	FRI
Tyromyces	sericeo-mollis (Romell) Bondartzev & Singer	FRI

Ustulina	vulgaris Tulasne	FRI
Verticicladiella	procera Kendrick	FRI
Verticicladiella	truncata Wingfield & Marasas	FRI
Zygorhynchus	moelleri Vuillemin	FRI
Zythia	resinae (Ehrenberg) Karsten	FRI

ALGAE, ANIMAL VIRUSES, PROTOZOA, YEASTS

ALGAE

Poteriochromonas malhamensis Pringsheim UK Culture Centre of Algae and Protozoa WARC

ANIMAL VIRUSES

Mastadenovirus ovine adenovirus 6 WARC

Mastadenovirus ovine variant bovine adenovirus 7 WARC

Paramyxovirus ovine parainfluenza 3 WARC

Parapoxvirus pseudocowpox virus WARC

Parapoxvirus contagious ecthyma virus - ovine WARC

PROTOZOA

Toxoplasma gondii (sheep semen) WARC

Toxoplasma gondii (goat foetal cotyledons) WARC

Toxoplasma gondii (sheep foetal cotyledons) WARC

YEASTS

Candida tropicalis ATCC 13803 WARC

Kluyveromyces fragilis ATCC 10022 NZDRI 20058