Sharif University of Technology

BBRC CULTURE COLLECTION

Biochemical and Bioenvironmental Eng. Research Center

Culture Collection

October 2013

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IN THE NAME OF GOD

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Introduction

The Biochemical and Bioenvironmental Eng. Research Center (BBRC) was established in 1970 at Sharif University of Technology, to conduct and perform research on problems of national importance in the fields of Biochemical and Bioenvironmental Engineering. BBRC (Biochemical and Bioenvironmental Eng.), BBRC strain collection is a merge of local collection located at BBRC , Sharif university of Technology ready to supply all the relevant services both to the public and private sectors. Research Center Culture collection located at Biochemical and bioenvironmental eng. Research center as a collection of industrial, biochemical and educational importance since BBRC establishment. The BBRC collection has an on-going concern with all aspects of culture collection activity and, in particular, with the encouragement of new initiatives and improvement of the quality standards of scientific services provided to the national user community **The main objectives** of BBRC culture collection are to act as a national depository, to supply authentic microbial cultures and to provide related services to the scientific community working in research institutions, universities and industries. The increasing demands on culture collection for authenticated, reliable biological material and associated information have paralleled the growth of biotechnology. At present the collection contains about 200 strains including bacteria and fungi usable for industrial and biochemical and educational services. About one third of the collection belong the strains screened and isolated from native sources.

Microbial cultures are usually supplied freeze – dried in glass ampules.

This site permits users to request strains also orders could be demanded by fax at: 982166005417.

The center focuses on basic research in the area of microbial isolation and preparation in freeze – dried samples. Our total strains number are 108 including: Bacteria, Fungi and Screened and Partially Characterized Strains.

Freeze Dry a Microbial Culture

One of best ways to store a bacterial, fungal, yeast or other microorganism culture for long period of time is to use a process called lyophilization or freeze drying it. This short laboratory procedure can be used with any commercially available freeze drier, for preservation of culture collections.

Difficulty: Easy

Time Required: 3 – 24 hours not including culture growth time.

Method

1. Grow the microorganism on Liquid Broth (LB) or other appropriate nutrient plate or tubes.
2. Prepare sterile crimp-cap vials by autoclaving ahead of time with the caps (rubber stopper) placed loosely on top. Place paper labels printed with the culture identification inside the tubes prior to autoclaving. Alternatively use tubes with caps designed for sterility.
3. Add 4 ml lyophilization buffer to the plate. If necessary, the cells can be suspended using a sterile glass rod.
4. Quickly transfer the culture suspension to the sterilized vials. Add approximately 1.5 ml per vial. Seal with the rubber cap.
5. Freeze the culture suspension inside the vials by placing the vials in minimum a – 20 degrees' Celsius freezer.

6. Once cultures are frozen, prepare the freeze drier by turning it on and allowing time for the appropriate temperature and vacuum conditions to stabilize. Of course this is done according the manufacturer′s instructions for the particular brand of freeze drier you are using.

7. Carefully and aseptically place the vial caps loosely on top of the vials, so moisture can escape during the freeze drying the process and place the vials into a freeze drier chamber. Apply the vacuum to the chamber according to the manufacturer′s instructions.

8. Allow the culture time to completely lyophilize (dry out). This may take anywhere from a couple hours to overnight depending on the volume of each sample and how many samples you have.

9. Remove the samples from the freeze drier chamber according to the manufacturer′s instruction manufacturer′s and immediately seal the vials with the rubber caps, then the crimp tops.

10. Store the lyophilized culture collection at 4°C not exposed to light.

What you need

- Freeze drier
- Nutrient or other appropriate agar plates (and incubator to grow culture)
- Glass rod
- Lyophilization buffer
- Crimp – top vials with rubber stoppers (and crimper apply the caps)
- Freezer

Revival of cultures

- Carefully opening the ampoules.
- About 0.4 – 0.5 ml suitable medium or physiological serum should be added to the ampoules and the content mixed.

- The suspension should be sub – cultured into a few suitable solid or liquid media.
- Subcultures should be incubated at optimum temperature.
- Resuscitated freeze – dried cultures tend to exhibit a lengthened lag period of time.

SECTION A

COLLECTION OF BACTERIA

Fully Characterized Strains

Bacteria

10001-*Acetobacter*

- Medium for growth: 1
- Incubation temperature: 26 ºC

*****

10004 – *Bacillus cereus*

- Medium for growth: 1
- Incubation temperature: 30 ºC

*****

10005 – *Bacillus coagulans*

- Medium for growth: 1
- Incubation temperature: 30 ºC

*****

10006- *Bacillus licheniformis*

- Medium for growth: 1
- Incubation temperature: 30 ºC

*****

10009 – *Bacillus* subtilis subsp. *spizizenii*

ATCC-6633

Deposited as Bacillus subtilis. Quality control strain .Used for assay of different antibiotics, media and antibacterial activity testing, bactericides and sterility testing. Produces restriction endonuclease Bsu6633I.

- Medium for growth: 1

- Incubation temperature: 30 ºC

*****

10016 – *Corynebacterium glutamicum*

ATCC 13032

Type strain, production of L-glutamic acid

- Medium for growth: 1
- Incubation temperature: 30 ºC

*****

10019 – *E coli*

ATCC – 11105

- Medium for growth: 4
- Incubation temperature: 37 ºC

*****

10028 – *Micrococcus luteus*

ATCC – 4698

Detection of aerosols

Produces 6-aminopenicillanic acid

Produces L-Aspartyl-L-phenylalanine esters

Quality control strain

Sensitive to lysozyme

Quality control strain for BBL products

- Medium for growth: 8
- Incubation temperature: 30 ºC

*****

10035 – *Pseudomonas*

- Medium for growth: 1
- Incubation temperature: 30°

*****

10036 – *Pseudomonas aeruginosa*

RPMC – B -3556

Production of lipase.

- Medium for growth: 1
- Incubation temperature: 30 ºC

*****

10040 – *Serratia marcesens*

- Medium for growth: 1
- Incubation temperature: 26 ºC

*****

10042 – *Streptomyces erythreus*

Type strain, production of erythromycin

- Medium for growth: 9
- Incubation temperature: 26 ºC

*****

10045 – *Methylobacterium extorquens*

DSMZ – 1337

ATCC 43645

- Medium for growth: 7
- Incubation temperature: 30 ºC

*****

10047 – *Geobacillus thermoleovorans*

DSMZ – 5366

ATCC- 43513

Utilizes hydrocarbons.

- Medium for growth: 1
- Incubation temperature: 60 ºC

*****

10048 – *Streptomyces fradia*

DSMZ – 40705

Produces neomycin.

- Medium for growth: 10
- Incubation temperature: 28 ºC

*****

10049 – *Hyphomicrobium facile* subs.*facile*

DSMZ – 1565

ATCC 27485

- Medium for growth: 5
- Incubation temperature: 30 ºC

*****

10050 – *Staphylococcus aureus*

Assay of chlortetracycline aureomycin, demeclocycline ,demethylchlortetracycline, oxytetracycline, terramycin, tetracycline ,tobramycin, tylosin. Refrence strain. Testing of iodophores.

- Medium for growth: 8
- Incubation temperature: 37 ºC

*****

10053- *Bacillus licheniformis*

Production of protease.

- Medium for growth: 1
- Incubation temperature: 30 ºC

*****

10054- *Bacillus sphaericus*

- Medium for growth: 1
- Incubation temperature: 30 ºC

*****

10055 – *Pseudomonas putida*

ATCC – 12633

Degrades aromatic acids

Hydrolyzes d,L-alpha-amino acid amides

Metabolizes 2-ketogluconate 2-ketogluconic acid

Metabolizes beta-ketoadipate

Bacteriophage host

- Medium for growth: 1
- Incubation temperature: 26 ºC

*****

10056 – *Streptomyces rimasus*

ATCC – 10970

Produces Rimocidin [Reg TM]

Produces oxytetracycline terramycin

Produces tetracyclines

Transformation of uleine

- Medium for growth: 9
- Incubation temperature: 26 ºC

*****

10057 – *Alcaligenes eutrophus*

ACM -1296

Derived from strain ATCC 17699, produces poly - B – hydroxy butyric acid

- Medium for growth: 2
- Incubation temperature: 28ºC

*****

10058 - *Streptomyces clavuligerus*

DSMZ – 41826

Produces cephamycin C, clavulanic acid.

- Medium for growth: 10
- Incubation temperature: 28 ºC

*****

10059 – *Bifidobacterium bifidum*

DSM 20456

Isolated from stool of breast-fed infant. Type strain

- Medium for growth: 3
- Incubation temperature: 37 ºC

*****

10060 - *E coli*

ATCC 11303

Readily produces clonial mutantes, Phage host, produces L-asparaginase, production of aspartate transaminase

- Medium for growth: 4
- Incubation temperature: 37 ºC

*****

10061 – *Enterobacter cloacae*

- Medium for growth: 1
- Incubation temperature: 37 ºC

*****

10062 – *Lactobacillus acidophilus*

DSM 20079

Isolated from human. Type strain. Produces hydrogen peroxide.

- Medium for growth: 6
- Incubation temperature: 37 ºC

*****

10063 – *Xanthomonas campestris*

DSM- 1706

Produces xanthan, continuous fermentation

- Medium for growth: 13
- Incubation temperature: 26 ºC

*****

10064 - Sulfate-Reducing Bacteria

- Medium for growth: 11
- Incubation temperature: 30 ºC

*****

10065 – *Thiobacillus thioparus*

DSM – 5368

Isolated from activated sludge, Japan.

Degradation of volatile organic sulfur compounds (carbon disulfide, methane thiol ,dimethyl sulfide, dimethyl disulfide)

- Medium for growth: 12
- Incubation temperature: 30 ºC

*****

10066 – *Bacillus* Sp.

DSMZ-2523

ATCC- 31006

Produces cyclodextrins (U.S. Pat. 3,923,598).

- Medium for growth: 26
- Incubation temperature: 30 ºC

*****

10067 – *Lactobacillus plantarum*

DSMZ – 20205

Assay of amino acids, Arginine and tryptophan, biotin ,calcium pantothenate, niacin, nicotinic acid, pantothenic acid; AOAC methods 43.117-43.187, 1980;

- Medium for growth: 27
- Incubation temperature: 37 ºC

*****

10068 – *Lactobacillus Plantarum* subsp . *Plantarum*

ATCC 14917

Isolated from pickled cabbage. Type strain. Quality control strain.

- Medium for growth: 27
- Incubation temperature: 30 ºC with %5 CO_2

*****

10069 – *Lactobacillus rhamnosus*

ATCC – 7469

Assay of folic acid

Assay of niacin amide nicotinamide

Assay of riboflavin vitamin B2

Produces folate transport protein

Food testing

- Medium for growth: 27
- Incubation temperature: 37 ºC

*****

10070 – *Natronorubrum tibetense*

DSMZ – 13204

Isolated from sediment (pH 10, 18 °C)

- Medium for growth: 22
- Incubation temperature: 37 ºC

*****

10071 – *Halorubrum vacuolatum*

DSMZ -8800

- Medium for growth: 22
- Incubation temperature: 37ºC

*****

10072 – Natronorubrum gregoryi

DSMZ – 3393

ATCC- 43098

Isolated from solar salt works liquor

- Medium for growth: 22
- Incubation temperature: 37ºC

*****

10073 – *Haloferax mediterranei*

DSMZ – 1411

ATCC -33500

Isolated from solar salt pond.

Grows with single carbon sources on defined inorganic media.

- Medium for growth: 23 and 24
- Incubation temperature: 37ºC

*****

10074 – *Natrialba magadii*

DSMZ – 3394

ATCC- 43099

- Medium for growth: 22
- Incubation temperature: 37°

*****

10075 – *Natronococcus occultus*

DSMZ – 3396

ATCC- 43101

- Medium for growth: 22

- Incubation temperature: 37ºC

*****

10076 – *Halobacterium salinarum*

ATCC– 33171

- Medium for growth: 25

- Incubation temperature: 35ºC

*****

10077- *Gluconobacter oxydans* subsp.suboxydans (*Acetobacter suboxidans*)

Assay of p-aminobenzoic, nicotinic, pantothenic acids, and production of sorbose

- Medium for growth: 28

- Incubation temperature: 26ºC

*****

10078- *Lysinibacillus macroides*

NCBI- AJ628749

Isolated by BBRC for Sulfur Oxidation

- Medium for growth: 1

- Incubation temperature: 30ºC

*****

10079- *Brevundimonas naejangsanensis*

GenBank- FJ544245

Isolated by BBRC for Sulfur Reduction

- Medium for growth: 1

- Incubation temperature: 30ºC

*****

10080- *Pseudomonas aeruginosa*

Isolated by BBRC for Diesel Removal

- Medium for growth: 1

- Incubation temperature: 30ºC

*****

1. Fully Characterized Strains

1.1. Bacteria

No	Species	BBRC NO	Cross Reference
1.	*Acetobacter*	10001	-
2.	*Alcaligenes eutrophus*	10057	ACM-1296
3.	*Bacillus cereus*	10004	-
4.	*Bacillus coagulans*	10005	-
5.	*Bacillus licheniformis*	10006	-
6.	*Bacillus licheniformis*	10053	-
7.	*Bacillus* Sp.	10066	DSMZ- 2523
8.	*Bacillus sphaericus*	10054	-
9.	*Bacillus subtilis*	10009	ATCC-6633
10.	*Bifidobacterium bifidum*	10059	-
11.	*Corynebacterium glutamicum*	10016	ATCC-1532
12.	*E coli*	10019	ATCC-11105
13.	*E coli*	10060	-
14.	*Enterobacter cloacae*	10061	-
15.	*Geobacillus thermoleovorans*	10047	DSMZ-5366
16.	*Hyphomicrobium facile subs.facile*	10049	DSMZ-1565
17.	*Lactobacillus acidophilus*	10062	-

18.	*Lactobacillus plantarum*	10067	DSMZ- 20205
19.	*Lactobacillus plantarum subsp. plantarum*	10068	DSM 20174
20.	*Lactobacillus rhamnosus*	10069	ATCC -7469
21.	*Methylobacterium extorquens*	10045	DSMZ-1337
22.	*Micrococcus luteus*	10028	ATCC-4698
23.	*Pseudomonas*	10035	-
24.	*Pseudomonas aeruginosa*	10036	RPMC- B-3556
25.	*Pseudomonas putida*	10055	ATCC-12633
26.	*Serratia marcesens*	10040	-
27.	*Staphylococcus aureus*	10050	-
28.	*Streptomyces erythreus*	10042	-
29.	*Streptomyces fradia*	10048	DSMZ- 40705
30.	*Streptomyces rimasus*	10056	ATCC-10970
31.	*Streptomyces clavuligerus*	10058	DSMZ-41826
32.	*Sulfate-reducing bacteria*	10064	
33.	*Thiobacillus thioparus*	10065	DSM- 5368
34.	*Xanthomonas campestris*	10063	-
35.	*Gluconobacter oxydans* subsp.suboxydans *(Acetobacter suboxidans)*	10077	-
36.	*Lysinibacillus macroides*	10078	NCBI- AJ628749

37.	*Brevundimonas naejangsanensis*	10079	Gen Bank- FJ 544245
38.	*Pseudomonas aeruginosa*	10080	Isolated by BBRC for Diesel Removal

1.1.2 Halophilic strains

No	Species	**BBRC NO**	Cross Reference	Medium
1	*Natronorubrum tibetense*	10070	DSMZ- 13204	Medium 371, 37°C
2	*Halorubrum vacuolatum*	10071	DSMZ- 8800	Medium 371 , 37°C
3	*Natronobacterium gregoryi*	10072	DSMZ- 3393	Medium 371 , 37°C
4	*Haloferax mediterranei*	10073	DSMZ- 1411	Medium 97 , 37°C Or Medium 372 , 37°C
5	*Natrialba magadii*	10074	DSMZ- 3394	Medium 371 , 37°C
6	*Natronococcus occultus*	10075	DSMZ- 3396	Medium 371 , 37°C
7	*Halobacterium salinarum*	10076	ATCC- 33171	ATCC medium 217 , 35°C

SECTION B

COLLECTION OF MOLDS AND YEASTS

Molds and Yeasts

20001 – *Aspergillus flavus*

Production of aflatoxin B1

- Medium for growth: 14
- Incubation temperature: 25 ºC

*****

20002 – *Aspergillus foetidus*

ATCC 16878

Production of pectic enzyme.

- Medium for growth: 15
- Incubation temperature: 25 ºC

*****

20003 – *Aspergillus niger*

NCIM – 548

- Medium for growth :14
- Incubation temperature: 25 ºC

*****

20004 - *Aspergillus niger*

ATCC 9029

Production of glucono-delta-lactone and gluconic acid ,aldonic acid, citric acid, lincomycin sulfoxides, urease.

Degrades pulp and paper-mill wastewater

- Medium for growth: 14
- Incubation temperature: 25 ºC

*****

20005 - *Aspergillus niger*

ATCC 9142

Produces citric acid, L-malic acid, gluconic acid ,hydroxylated steroids, grindelane dimers, hydroxygrindelanes, and lipase.

Degrades acronine acronycine, apple pomace ,brewery wastes, cotton wastes, nulin, and molasses.

- Medium for growth: 14
- Incubation temperature: 25 ºC

*****

20006 - *Aspergillus niger*

- Medium for growth: 14
- Incubation temperature: 25 ºC

*****

20009 – *Penicillum chrysogenum*

ATCC 12687

Produces high yield of nonpigmented penicillin (in submerged culture)

- Medium for growth: 18
- Incubation temperature: 26ºC

*****

20011 –*Rhizopus oryzae*

ATCC 9363

Produces lactic acid, fumaric acid; NAD-dependent lactate dehydrogenase; amylolytic enzymes and ergostadientriols useful in lowering serum cholestrol levels.

Used in tempeh fermentation. Source of lactate dehydrogenase genes used in the construction of expression vectors.

- Medium for growth: 14
- Incubation temperature: 25ºC

*****

20013 – *Trichoderma koningil*

Isolated from agricultural soil.

Cellulase production

- Medium for growth: 14
- Incubation temperature: 25ºC

*****

20014 – *Trichoderma Longibrachiatum*

Cellulase production

- Medium for growth: 20
- Incubation temperature: 25ºC

*****

20015 – *Trichoderma reesei*

ATCC 13631

Fungus resistance testing plastics

Produces endoglucanase

Produces glucan 1,3-beta-glucosidase beta-D-1,3-glucanase, exo-1,3-beta-glucanase, exo-1,3-beta-glucosidase

Produces glucose D-glucose

Produces glucose by enzymatic hydrolysis of cellulose

Produces: cell-wall lytic enzymes

- Medium for growth: 14

- Incubation temperature: 25ºC

*****

20018 - *Aspergillus niger*

Singapour

- Medium for growth: 14
- Incubation temperature: 25 ºC

*****

20019 – *Penicillum simplicissimum*

Singapour

- Medium for growth: 14
- Incubation temperature: 25ºC

*****

20020 – *Phanerochaete chrysosporium*

ATCC – 24725

Bacterial resistance testing adhesives

Type culture of Sporotrichum pulverolentum.

Produces ligninase and peroxidase, glyoxal oxidase, lignin peroxidase, extracellular peroxidase, xylanase.

Decolorization of textile-industry waste water; UV and benomyl resistant

- Medium for growth: 14
- Incubation temperature: 25ºC

*****

30006 – *Saccharomyces cerevisiae*

- Medium for growth: 16
- Incubation temperature: 25ºC

*****

30009 – *Debaryomyces hansenii var.hansenii*

CBS -767

ATCC- 36239

Ferments xylose D-xylose

Produces xylitol

- Medium for growth: 17
- Incubation temperature: 25 ºC

*****

30010 –*Pichia stipitis*

CBS -7126

- Medium for growth: 17
- Incubation temperature: 25ºC

*****

30012 – Zygosaccharomyces rouxii

DSM- 2531

- Medium for growth: 21

- Incubation temperature: 25ºC

*****

30013 – *Kluyveromyces marxianus*

DSM -5420

Produces miso

Transformation host

- Medium for growth: 16
- Incubation temperature: 25ºC

*****

30014 – *Pichia guilliermondii*

DSMZ - 11947

ATCC- 90887

Assay of Iitraconazole, fluconazole, amphotericin B (9251).

- Medium for growth: 19
- Incubation temperature: 25ºC

*****

30015 – *Candida albicans*

ATCC- 10231

Used fror assay of amphotericin B fungi zone ,antimicrobial preservatives, haloprogin, nystatin fungicide. Quality control strain. Used for media testing, membrane filter testing ,Sterility testing, Fungicide testing.

Produces D-arabinolactone oxidase ,DNA topoisomerase, aspartic proteinases aspartyl proteinases ,estrogen-binding protein, lanosterol synthase 2,3-oxidosqualene lanosterol cyclase, phenethyl alcohol, polyamine oxidase, tryptophol.

- Medium for growth: 16
- Incubation temperature: 25 ºC

*****

30015 – *Pichia jadinii (Candida utilis*)

DSMZ – 2361

Produces adenosyl-2-methyl methionine, adenosyl-D-methyl methionine, yeast protein.

Degrades ribonucleic acid (RNA)

- Medium for growth: 16
- Incubation temperature: 25ºC

*****

20021 - *Aspergillus niger* var. *tubingensis*

ATCC 10864

Produces saccharifying enzymes; glucoamylase, large amounts of maltase and smaller amounts of alpha-amylase. Produces ethanol from potato starch when co cultured with saccharomyces cerevisiae ATCC 26603, acetylesterase, acetyl-xylan esterase, mono amin oxidase, dextranase; lipase.

- Medium for growth: 18

- Incubation temperature: 25 ºC

1.2. Molds and Yeasts

No	Species	BBRC NO	Cross Reference
1	*Aspergillus flavus*	20001	-
2	*Aspergillus foetidus*	20002	-
3	*Aspergillus niger*	20003	NCIM-548
4	*Aspergillus niger*	20004	-
5	*Aspergillus niger*	20005	-
6	*Aspergillus niger*	20006	-
7	*Aspergillus niger*	20018	سنگاپور
8	*Candida albicans*	30016	-
9	*Debaryomyces hansenii var.hansenii*	30009	CBS-767هلند
10	*Kluyvero myces marxianus*	30013	-
11	*Penicillum chrysogenum*	20009	-
12	*Penicillium simplicissimum*	20019	سنگاپور
13	*Phanerochaete chrysosporium*	20020	-ATCC-24725
14	*Pichia guilliermondii*	30014	DSMZ- 11947 ATCC- 90887
15	*Pichia jadinii (Candida utilis)*	30015	- DSMZ - 2361
16	*Pichia stipitis*	30010	CBS-7126هلند
17	*Rhizopus oryzae*	20011	-
18	*Saccharomyces cervisiae*	30006	-
19	*Trichoderma koningil*	20013	-
20	*Trichoderma longibrachiatum*	20014	-
21	*Trichoderma reesei*	20015	-

22	*Zygosaccharomyces rouxii*	30012	-
23	*Aspergillus niger var. tubingensis*	20021	ATCC -10864

SECTION C

COLLECTION OF SCREENED AND PARTIALLY CHARACTERIZED STRAINS

Screened and Partially Characterized Strains

9001 – Yeast

TOC Removal

- Medium for growth: 17
- Incubation temperature: 25ºC

*****

9002 – Fungi

PAH Removal

- Medium for growth: 14
- Incubation temperature: 25ºC

*****

9003 – Bacteria

PAH Removal

- Medium for growth: 1
- Incubation temperature: 30ºC

*****

9004 – Bacteria

Furfural Treatment

- Medium for growth: 1
- Incubation temperature: 30ºC

*****

9006 – Bacteria

Sulfur Removal

- Medium for growth: 1
- Incubation temperature: 30ºC

*****

9007 – Bacteria

Sulfur Removal

- Medium for growth: 1
- Incubation temperature: 30 ºC

*****

9008 - Bacteria

Sulfur Removal

- Medium for growth: 1
- Incubation temperature: 30 ºC

*****

9012 – Bacteria

Asphalthene Removal

- Medium for growth: 1
- Incubation temperature: 30 ºC

*****

9013 – Bacteria

Oil Emulsifier Production

- Medium for growth: 1
- Incubation temperature: 30 ºC

*****

9014 – Bacteria

Oil Emulsifier Production

- Medium for growth: 1
- Incubation temperature: 30 ºC

*****

9015 - Bacteria

Oil Emulsifier Production

- Medium for growth: 1
- Incubation temperature: 30 ºC

*****

9016 – Bacteria

Sulfur Removal

- Medium for growth: 1
- Incubation temperature: 45 ºC

*****

9018 - Bacteria

Sulfur Removal

- Medium for growth: 1
- Incubation temperature: 30 ºC

*****

9019 – Bacteria

- Medium for growth: 1
- Incubation temperature: 50ºC

*****

9020 - Bacteria

- Medium for growth: 1
- Incubation temperature: 50ºC

*****

9021 - Bacteria

- Medium for growth: 1
- Incubation temperature: 50ºC

*****

9022 – Bacteria

- Medium for growth: 1
- Incubation temperature: 50ºC

*****

9023 - Bacteria

- Medium for growth: 1
- Incubation temperature: 50ºC

*****

9026 – Yeast

- Medium for growth: 16
- Incubation temperature: 30ºC

*****

9048 - Bacteria

- Medium for growth: 1
- Incubation temperature: 30ºC

*****

9050 – Bacteria

- Medium for growth: 1
- Incubation temperature: 60ºC

*****

9052 – Fungi

- Medium for growth: 14
- Incubation temperature: 30ºC

*****

9056 – Bacteria

- Medium for growth: 1
- Incubation temperature: 37ºC

*****

9057 – Fungi

- Medium for growth: 14
- Incubation temperature: 45ºC

*****

9058 - Fungi

- Medium for growth :14
- Incubation temperature: 45ºC

*****

9059 – Bacteria

- Medium for growth: 1
- Incubation temperature: 30ºC

*****

9060 – Bacteria

- Medium for growth: 1
- Incubation temperature: 30ºC

*****

9061 – Bacteria

- Medium for growth: 1
- Incubation temperature: 30ºC

*****

9062 – Bacteria

- Medium for growth: 1
- Incubation temperature: 30°

*****

9063 – Bacteria

- Medium for growth: 1
- Incubation temperature: 30°

*****

9064 – Bacteria

- Medium for growth: 1
- Incubation temperature: 30°

*****

9065 – Bacteria

- Medium for growth: 1
- Incubation temperature: 30°

*****

9066 – Bacteria

- Medium for growth: 1
- Incubation temperature: 30 ºC °

*****

9067 – Bacteria

- Medium for growth: 1
- Incubation temperature: 30ºC

*****

9068 – Bacteria

- Medium for growth: 1
- Incubation temperature: 30ºC

*****

9069 – Bacteria

- Medium for growth: 1
- Incubation temperature: 30ºC

*****

9070 - Fungi

- Medium for growth: 14
- Incubation temperature: 25ºC

*****

9071- Fungi

- Medium for growth: 14
- Incubation temperature: 25ºC

*****

9072- Fungi

- Medium for growth: 14
- Incubation temperature: 25ºC

*****

9073- Fungi

- Medium for growth: 14
- Incubation temperature: 25ºC

*****

9074- Fungi

- Medium for growth: 14
- Incubation temperature: 25ºC

*****

9075- Fungi

- Medium for growth: 14
- Incubation temperature: 25ºC

*****

9077- Bacteria

- Medium for growth: 1
- Incubation temperature: 30ºC

*****

9078- Bacteria

- Medium for growth: 1
- Incubation temperature: 30ºC

*****

9079- Bacteria

- Medium for growth: 1
- Incubation temperature: 30ºC

*****

2. Screened and Partially Characterized Strains

No	Species	BBRC NO	Cross Reference
1	Yeast	9001	TOC Removal
2	Fungi	9002	PAH Removal
3	Bacteria	9003	PAH Removal
4	Bacteria	9004	Furfural Treatment
5	Bacteria	9006	Sulfur Removal
6	Bacteria	9007	Sulfur Removal
7	Bacteria	9008	Sulfur Removal
8	Bacteria	9012	Asphalthene Removal
9	Bacteria	9013	Oil Emulsifier production
10	Bacteria	9014	Oil Emulsifier production
11	Bacteria	9015	Oil Emulsifier production
12	Bacteria	9016	Sulfur removal
13	Bacteria	9018	Sulfur removal
14	Bacteria	9019	Oil Emulsifier production
15	Bacteria	9020	Oil Emulsifier production
16	Bacteria	9021	Oil Emulsifier production
17	Bacteria	9022	Oil Emulsifier production
18	Bacteria	9023	Oil Emulsifier production

19	Yeast	9026	PAH removal
20	Bacteria	9048	Sulfur removal
21	Bacteria	9050	Sulfur removal
22	Fungi	9052	Sulfur removal
23	Bacteria	9056	Petroleum Oil removal
24	Fungi	9057	Thermophylic Fungi for oil removal
25	Fungi	9058	Thermophylic Fungi for oil removal
26	Bacteria	9059	Diesel Removal
27	Bacteria	9060	Diesel Removal
28	Bacteria	9061	Diesel Removal
29	Bacteria	9062	Diesel Removal
30	Bacteria	9063	Diesel Removal
31	Bacteria	9064	Diesel Removal
32	Bacteria	9065	Diesel Removal
33	Bacteria	9066	Diesel Removal
34	Bacteria	9067	Diesel Removal
35	Bacteria	9068	Diesel Removal
36	Bacteria	9069	Diesel Removal
37	Fungi	9070	Lignolytic Enzyme producers Fungi
38	Fungi	9071	Lignolytic Fungi
39	Fungi	9072	Lignolytic Fungi
40	Fungi	9073	Lignolytic Fungi

41	Fungi	9074	Lignolytic Fungi
42	Fungi	9075	Lignolytic Fungi
43	Bacteria	9077	Cyanide Removal
44	Bacteria	9078	Diesel Removal
45	Bacteria	9079	Cyanide Removal From Soil

SECTION D

NUMERICAL INDEX OF BBRC STRAINS

NUMERICAL INDEX OF BBRC STRAINS

Bacteria

10001 *Aceto bacter*

10004 *Bacillus cereus*

10005 *Bacillus coagulans*

10006 Bacillus licheniformis

10009 *Bacillus subtilis*

10016 *Corynebacterium glutamicum*

10019 *E coil*

10028 *Micrococcus luteus*

10035 *Pseudomonas*

10036 *Pseudomonas aeruginosa*

10040 *Serratia marcesens*

10042 *Streptomyces erythreus*

10045 *Methylobacterium extorquens*

10047 *Geobacillus thermoleovorans*

10048 *Streptomyces fradia*

10049 *Hyphomicrobium facile* subs.*facile*

10050 *Staphylococcus aureus*

10053 *Bacillus licheniformis*

10054 *Bacillus sphaericus*

10055 *Pseudomonas putida*

10056 *Streptomyces rimasus*

10057 *Alcaligenes eutrophus*

10058 *Streptomyses clavuligerus*

10059 *Bifidobacterium bifidum*

10060 *E coil*

10061 *Enterobacter cloacae*

10062 *Lactobacillus acidophilus*

10063 *Xanthomonas campestris*

10064 *Sulfate – reducing bacteria*

10065 *Thiobacillus thioparus*

10066 *Bacillus Sp.*

10067 *Lactobacillus plantarum*

10068 *Lactobacillus plantarum* subsp *plantarum*

10069 *Lactobacillus rhamnosus*

10070 *Natronorubrum tibetense*

10071 Halorubrum vacuolatum

10072 *Natronorubrum gregoryi*

10073 *Haloferax mediterranei*

10074 *Natrialba magadii*

10075 *Natronococcus occultus*

10076 *Halobacterium salinarum*

10077 *Gluconobacter oxydans* subsp.suboxydans (*Acetobacter suboxidans*)

10078 *Lysinibacillus macroides*

10079 *Brevundimonas naejangsanensis*

10080 *Pseudomonas aeruginosa*

Molds

20001 *Aspergillus flavus*

20002 *Aspergillus foetidus*

20003 *Aspergillus niger*

20004 *Aspergillus niger*

20005 *Aspergillus niger*

20006 *Aspergillus niger*

20009 *Penicillum chrysogenum*

20011 *Rhizopus oryzae*

20013 *Trichoderma koningil*

20014 *Trichoderma Longibrachiatum*

20015 *Trichoderma reesei*

20018 *Aspergillus niger*

20019 *Penicillum simplicissimum*

20020 *Phanerochaete chrysosporium*

20021 *Aspergillus niger*

Yeast

30006 *Saccharomyces cervisiae*

30009 *Debaryomyces hansenii* var. *hansenii*

30010 Pichia stipitis

30012 *Zygosaccharomyces rouxii*

30013 *Kluyveromyces marxianus*

30014 *Pichia guilliermondii*

30015 *Pichia jadinii (Candida utilis)*

30016 *Candida albicans*

SECTION E

STRAINS LISTED BY APPLICATION

LIST OF SRAIN WITH SPECIAL APPLICATION (Native Strains)

APPLICATION	STRAIN	BBRC NO.
TOC Removal	Yeast	9001
PAH Removal	Fungi	9002
PAH Removal	Bacteria	9003
Furfural Treatment	Bacteria	9004
Sulfur Removal	Bacteria	9006
Sulfur Removal	Bacteria	9007
Sulfur Removal	Bacteria	9008
Asphalthene Removal	Bacteria	9012
Oil Emulsifier Production	Bacteria	9013
Oil Emulsifier Production	Bacteria	9014
Oil Emulsifier Production	Bacteria	9015
Sulfur Removal	Bacteria	9016
Sulfur Removal	Bacteria	9018
Oil Emulsifier Production	Bacteria	9019
Oil Emulsifier Production	Bacteria	9020
Oil Emulsifier Production	Bacteria	9021
Oil Emulsifier Production	Bacteria	9022
Oil Emulsifier Production	Bacteria	9023

PAH Removal	Yeast	9026
Sulfur Removal	Bacteria	9048
Sulfur Removal	Bacteria	9050
Sulfur Removal	Fungi	9052
Petroleum Oil Removal	Bacteria	9056
Thermophylic Fungi for oil Removal	Fungi	9057
Thermophylic Fungi for oil Removal	Fungi	9058
Diesel Removal	Bacteria	9059
Diesel Removal	Bacteria	9060
Diesel Removal	Bacteria	9061
Diesel Removal	Bacteria	9062
Diesel Removal	Bacteria	9063
Diesel Removal	Bacteria	9064
Diesel Removal	Bacteria	9065
Diesel Removal	Bacteria	9066
Diesel Removal	Bacteria	9067
Diesel Removal	Bacteria	9068
Diesel Removal	Bacteria	9069
Lignolytic Enzyme Producers Fungi	Fungi	9070
Lignolytic Fungi	Fungi	9071

Lignolytic Fungi	Fungi	9072
Lignolytic Fungi	Fungi	9073
Lignolytic Fungi	Fungi	9074
Lignolytic Fungi	Fungi	9075
Cyanide Removal	Bacteria	9077
Diesel Removal	Bacteria	9078
Cyanide Removal	Bacteria	9079

SECTION F

LIST OF CULTURE MEDIA

Medium1

NUTRIENT AGAR

Peptone	5.0g
Meat extract	3.0g
Agar	15.0g
Distilled water	1.0L

Adjust pH to 7.0 for bacillus strains the addition of 10.0 mg $MnSO_4 \times H_2O$ is recommended for sporulation

Medium2

LB AGAR

Peptone	10.0g
Yeast extract	5.0g
NaCl	5.0g
Distilled water	1.0 L

Adjust pH to 7.2 add 1.5% agar

Medium3

BIFIDOBACTERIUM MEDIUM

Casein peptone, tryptic digest 10.0g

Yeast extract	5.0g
Meat extract	5.0g
Glucose	10.0g

K_2HPO_4	3.0g
Tween 80	1.0ml
Tap water	1.0 L

Adjust pH to 6.8

After sterilization, aseptically add solutions of sodium ascorbate and cysteine - HCL to a final concentration of 1.0% and 0.05% respectively. Medium not freshly prepared should be heated in a steamer for 10 minutes before addition of reducing substances.

Medium4

NUTRIENT AGAR WITH 0.5% Na CL

Agar	15.0g
NaCl	5.0g
Pancreatic digest of gelation	5.0g
Beef extract	3.0g
DW	1.0L

pH 6.8 ±0.2 at 25°C

Medium5

HYPHOMICROBIUM MEDIUM

KH_2PO_4	1.36g
Na_2HPO_4	2.13g
$(NH_4)2SO_4$	0.50g
$MgSO_4$ x 7 H_2O	0.20g

$CaCl_2$ x H_2O	6.00mg
$FeSO_4$ x 7 H2O	3.00mg
$MnSO_4$ x H_2O	1.00mg
$NaMoO_4$ x2 H2O	1.50mg
Methylamine hydrochloride	3.38g
Yeast extract	0.10gr
Distilled water	1000.00ml

Adjust pH to 7.4 with NaOH. Autoclave 20 min at 121°C¸final pH: 7.2

Medium6

MRS MEDIUM WITH CYSTEINE

Casein peptone¸ tryptic digest	10.0g
Meat extract	10.0g
Yeast extract	5.0g
Glucose	20.0g
Tween 80	1.0g
K_2HPO_4	2.0g
Sodium acetate	5.0g
Diammonium citrate	2.0g
$MgSO_4.7H_2O$	0.2g
$MnSO_4.H_2O$	0.05gr

Add 0.05% cysteine – hydrochloride.

Distilled water	1.0L

Adjust pH 6.2 – 6.5

Lactobacilli MRS Broth (Difco 288130)

Note: Cystein – hydrochloride should be filter sterilized

MEDIUM7

Medium 1 + 1% methanol

Medium8

TRYPTICASE SOY AGAR

Pancreatic digest of casein	17.0g
NaCl	5.0g
Papaic digest of soybean meal	3.0g
K_2HPO_4	2.5g
Glucose	2.5g
Agar	15.0g
Distilled water	1.0L

pH 7.3±0.2 at 25ºC

Medium9

SPRULATION AGAR

Yeast extract	1.0g

Beef extract	1.0g
Tryptose	2.0g
$FeSO_4$	Trace
Glucose	10.0g
Agar	15.0g
Distilled water	1.0L

Adjust pH to7.2; for broth ,eliminate agar and reduce concentration to 1/3 of given quantities.

Medium10

GYM STREPTOMYCES MEDIUM

GYM Streptomyces Medium

Glucose	4.0 g
Yeast Extract	4.0g
Malt Extract	10.0g
$CaCO_3$	2.0g
Agar	12.0g
Distilled water	1000.0 ml

Adjust pH to 7.2 with KOH before adding agar (use pH indicator paper). Delete $CaCO_3$ if liquid medium is used.

Medium11

SRB MEDIUM

KH_2PO_4	0.5g
NH_4CL	1g

Na_2SO_4	1g
$CaCl_2.6H_2O$	1g
$MgSO_4.7H_2O$	2g
Sodium Lactate	3.5g
Yeast Extract	1g
$FeSO_4.7H_2O$	0.5g
Ascorbic acid	0.1g
Thioglycolic Acid	0.1g
Distilled water	1000ml

Note: $FeSO_4.7H_2O$ should be filter sterilized. After sterilization aseptically add solution of $FeSO_4.7H_2O$Adjust pH to 7.5 with NaOH

Medium 12

THIOBACILLUS THIOPARUS II MEDIUM

KH_2PO_4	2.0g
K_2HPO_4	2.0g
NH_4Cl	0.4g
Na_2CO_3	0.4g
$MgC1_2.6HO_2$	0.2g
Vitamin solution (see medium 98)	3ml
Trace metal solution (see medium 61)	1.0ml
Bromocresol purple (sat.aqu.solution)	2.0ml

$Na_2S_20_3.5H_2O$	5.0g
Agar ,if necessary	15.0g
Distilled water	1000.0 ml

Sterilize the phosphates separately in 1/10 of medium volume and mix with the other salts when cool.

Add filter-sterilized vitamin solution. Medium pH 7.1.

Medium13

GLUCOSE YEAST EXTRACT AGAR

Glucose	20.0g
Yeast extract	10.0g
$CaCO_3$ (light precipitate)	20.0g
Agar	17.0g
Distilled water	1000.0ml

Medium14

Potato Dextrose Agar (PDA)

Diced Potatoes	300.0g
Glucose	20.0g
Agar	15.0g
DW	1.0L

Boil finely diced potatoes in 500 ml of water until thoroughly cooked. Filter through cheese – cloth and add water to filtrate to 1.0 l. The agar is dissolved in the filtrate by heating, and Glucose is added prior to sterilization.

Medium15

Czapek Agar

$NaNO_3$	3.0g
K_2HPO_4	1.0g
$MgSO_4.7H_2O$	0.5g
KCL	0.5g
$FeSO_4.7H_2O$	0.01g
Agar	15.0g
DI Water	900ml

Autoclave at 121°C

Let cool and add following filter sterilized solution:

Sucrose (commercial grad)	30g
DI Water	100ml

Final pH 7.3±0.2 at 25°C

Medium16

Yeast Mold Agar

Agar	20.0g
Glucose	10.0g
Peptone	5.0g
Yeast extract	3.0g
Malt extract	3.0g

Distilled water	1.0L

Adjust pH to 6.2±0.2

Omit agar, for making YM Broth

YM Agar (Difco 271120)

YM Broth (Difco 271210)

Medium17

GPYA Medium

Glucose	40.0g
Peptone	5.0g
Yeast extract	5.0g
Agar	15.0g
Distilled water	1.0L

Medium18

Malt Extract Agar (Blakeslees formula)

Malt extract	20.0g
Glucose	20.0g
Peptone	1.0g
Agar	20.0g
DW	1.0L

Add glucose prior to sterilization.

Medium19

Universal Medium for Yeasts (YM)

Yeast extract	3.0g
Malt extract	3.0g
Peptone from soybeans	5.0g
Glucose	10.0g
Agar	15.0g
Distilled water	1000.0 ml

Medium 20

Oat Meal Agar

Agar	5.0gr
Oatmeal, instant for babies	40.0 g

Add agar to distilled water and bring volume to 500.0 ml Mix thoroughly. Gently heat and bring to boiling. Add instant oatmeal for babies to distilled water and bring volume to 250.0 ml. Mix thoroughly Autoclave for 15 min at 15 psi pressure 121°C

Medium21

Medium for Osmophilic Fungi (Harrold′s) (M 40 Y)

Sucrose	400.0g
Malt extract	20.0g
Yeast extract	5.0g

Agar	20.0g
Distilled water	1000.0 ml

Medium22

Natronobacreria Medium

KH_2PO_4	1.00g
KCL	1.00g
NH_4CL	1.00g
$MgSO_4 \times 7\ H_2O$	0.24g
$CaSSo_4 \times 2\ H_2O$	0.17g
Trace element solution SL – 10	1.00ml
Agar, if necessary	20.00g
Nacl	200.00 g
Na_2 – glutamate	1.00g
Yeast extract	5.00g
Casamino acids	5.00g
Na_2CO_3	5.00g

Add distilled water to give a final volume of 1000 ml

Adjust pH to 6.5 before autoclaving.

Sterilize Na_2CO_3 separate from medium add after cooling.

Check final pH to be 9.0 – 9.5.

If agar medium is prepared, heat and dissolve agar before adding sodium chloride.

Trace element solution SL – 10:

HCl (25% 7.7 M)	10.00 ml
$FeCl_2 \times 4\ H_2O$	1.50 g
$ZnCl_2$	70.00 mg
$MnCl_2 \times 4\ H_2O$	100.00 mg
H_3Bo_3	6.00 mg
$CoCl_2 \times 6\ H_2O$	190.00mg
$CuCl_2 \times 2\ H_2O$	2.00 mg
$NiCl_2 \times 6\ H_2O$	24.00 mg
$Na_2MoO_4 \times 2\ H_2O$	36.00 mg
Distilled water	990.00ml

First dissolve $FeCl_2$ in the HCl, then dilute in water ,add and dissolve the other salts.

Finally make up to 1000.0 ml

Medium23

Halobacterium Medium

Casamino acids	7.50g
Yeast extract	10.00g
Na_3 – citrate	3.00g
KCl	2.00g
$MgS0_4 \times 7\ H_2O$	20.00g
$FeSO_4 \times 7\ H_2O$	0.05g
$MnSO_4 \times H_2O$	0.20g

NaCl	250.00g
Agar	20.00g
Distilled water	1000.00ml

Adjust pH to 7.4. Add the agar after dissolving all ingredients in the water and adjustment of pH.

Medium24

Halobacterium Medium

Yeast extract	5.00g
Casamino acids	5.00g
Na – glutamate	1.00g
KCl	2.00g
Na_3 – citrate	3.00g
$MgSO_4 \times 7\ H_2O$	20.00g
NaCl	200.00g
$FeCl_2 \times 4\ H_2O$	36.00mg
$MnCl_2 \times 4\ H_2O$	0.36mg
Agar	20.00g

Add distilled water to give a final volume of 1000 ml.

Adjust pH 7.0 – 7.2

Medium25

Van Niel's Yeast Agar with 25% NaCl

ATCC Medium 112: (see below) with 25% NaCl

K_2HPO_4 1.0g

$MgSO_4$ 0.5g

Yeast extract 10.0g

Agar 20.0g

Tap water 1.0L

Adjust pH to 7.0 – 7.2

Autoclave at 121ºC for 15 minutes.

Medium26

The same as medium 1. After sterilization add sterile 1M Na-sesquicarbonate solution (1ml in 10 ml) to achieve a pH of 9.7.

Na-sesquicarbonate solution:

$NaHCO_3$ 4.2 g

Na_2CO_3 anhydrous 5.3 g

Distilled water 100ml

Medium27

MRS Broth Medium

Casein peptone, tryptic digest 10 g

Meat extract 10 g

Yeast extract 5.0 g

Glucose 20 g

Tween 80 1.0 g

K_2HPO_4	2.0 g
Sodium acetate	5.0 g
Diammonium citrate	2.0 g
$MgSO_4.7H_2O$	0.2 g
$MnSO_4.H_2O$	0.05 g
Distilled water	1.0 L

Adjust pH to: 6.2-6.5

Lactobacilli MRS Broth (Difco 288130)

Medium 28

MANITOL AGAR

Yeast extract	5.0 g
Peptone	3.0 g
Mannitol	25.0 g
Agar	15.0 g
DW	1000.0 ml

Autoclave at 121°C

Section G

Persian Information

مقدمه

مرکز مهندسی بیوشیمی محیط زیست از سال ۱۳۴۹ (۱۹۷۰) در دانشگاه صنعتی شریف آغاز به فعالیت نمود . هدف از تاسیس این مرکز انجام تحقیقات و پژوهش در زمینه فرایندهای زیستی در حوزه های مختلف صنعتی تعریف گردید. برای انجام فرایندهای زیستی نیاز به میکروبها با تولید های خاص می باشد . بر حسب نوع فرایند و تولید خاص، نوع میکروارگانیسم و اطلاعات علمی دقیق از شرایط رشد و تولید آن گونه میکروبی از الزامات تحقیق می‌باشد . از بدو تاسیس مرکز مهندسی بیوشیمی – محیط زیست، مطالعات تئوری و تجربی جدا سازی میکروب‌ها از منابع مختلف و همچنین سفارش این میکروبها از کلکسیون های بین المللی از جمله ATCC آغاز گردید. البته نمونه های جدا سازی شده با استفاده از امکانات موجود و خدمات سایر ارگان‌ها بصورت خشک انجمادی تهیه و در کلکسیون مرکز مهندسی بیوشیمی ذخیره شده است .

در کشور های مختلف مراکز متعدد ملی و بین المللی کلکسیون میکروبی موجود است که هدف اصلی آنها جمع آوری میکروارگانیسم های مورد نیاز صنعتی و تشخیصی می باشد. مرکزیت دادن به مراکز کلکسیون در سال ۱۹۴۷ در گرد هم‌آیی Common wealth specialist conference پیشنهاد شد و در سال ۱۹۷۰ بمنظور هم آهنگی، فدراسیون جهانی کلکسیون میکروارگانیسم ها World collection for culture تاسیس شد.

با شناخت بیوتکنولوژی جدید و مهندسی ژنتیک، میکروارگانیسم های با خصوصیات مورد نظر و از طریق فرایندهای ژنتیکی و اصلاح ژنتیکی در فراوری گونه های نو ترکیب برای تولیدات با اهمیت دارویی از جمله انسولین، هورمون رشد و داروهای خاص مد نظر واقع گردید.

مراکز کلکسیون همواره باید با فدراسیون جهانی کلکسیون میکروارگانیسم ها در تماس دائم بوده و با روشهای جدید نگهداری میکروارگانیسم ها آشنا می شوند.

کلکسیون میکروبی Biochemical and Bioenvironmental Eng. Research Center (BBRC) که از سال ۱۳۴۹ به صورت ملی در مرکز مهندسی بیوشیمی محیط زیست فعالیت خود را آغاز نمود در حال حاضر ۱۰۸ نمونه میکروبی شامل باکتری و قارچ نگهداری می نماید که حدود یک سوم از این میکروارگانیسم ها بومی ایران هستند. این کلکسیون بطور مداوم با نمونه هایی از میکروارگانیسم های بومی و سفارش شده از خارج و داخل غنی تر می شود .از سال ۱۳۹۰ پس از تکمیل امکانات فرایند جهت تهیه نمونه های خشک انجمادی، تلاش های متعدد برای ثبت کلکسیون در داخل و ثبت بین الملل در دست اقدام می باشد.

خدمات مرکز کلکسیون BBRC

۱. تهیه نمونه ای میکروبی بصورت لیوفیلیزه (خشک انجماد ی) بر طبق روشهای استاندارد بین المللی.

۲. جدا سازی نمونه های میکروبی جدید از منابع داخلی ،شناسائی اولیه ان ها، تشخیص مقدماتی و آماده سازی جهت نگهداری.

۳. ارائه خدامات به سایر ارگان های آموزشی پژوهشی و دانشگاهها از لحاظ ارسال نمونه ها یا آموزش تهیه و نگهداری سوشها به محققین.

۴. ارائه ودریافت اطلاعات از طریق سایت مرکز مهندسی بیوشیمی محیط زیست.

۵. ارائه سفارش از طریق سایت و یا تلفکس ۶۶۰۰۵۴۱۷ امکان پذیر است

تهیه نمونه های لیوفیلیزه و کشت آمپول‌ها

آمپول های مخصوص لیوفیلیزه با دترجنت شسته شده و سپس با آب شیر و در انتها با آب خالص شستشو شود . آمپول ها در c° ۱۲۱ برای مدت ۲۰ دقیقه استریل شده و در دمای اطاق نگهداری می شوند . قبل از استفاده ، آمپول ها بر چسب زنی می شوند . مراحل تهیه نمونه به ترتیب شامل :

- محیط سوسپانسیون . معمولا از Skim milk ۱۰ درصد و یا ۱۰ درصد Skim milk و ۵ درصد گلوتامات بصورت استریل در آب مقطر استفاده می شود
- کشت هوازی یا بی هوازی بر اساس بروشور آماده نموده و بصورت جامد یا مایع تهیه می شوند . کشت های مایع را می توان بصورت استریل در g۴۰۰۰ و ۳۰ دقیقه سانتی رفوژ نمود تا تعدد کافی سلول موجود باشد .
- کشت های جامد توسط محیط سوسپانسیون به میزان ۴ میلی لیتر جدا شده و در صورت لزوم از میله مخصوص برای جدا کردن استفاده می شود.
- با سرعت سوسپانسیون کشت به ظروف (آمپول های) استریل وارد که معمولا ۱/۵ میلی لیتر به هر آمپول، کشت سلولی وارد می شود .
- سر ظروف یا آمپولها بصورت نیمه بسته (loose) آماده می شود و آمپول ها در فریزر حداقل c °۲۰- قرار می گیرد .
- پس از فریز نمودن آمپول ها، مرحله خشک انجمادی با قرار دادن آمپول ها در خشک کن انجمادی و تنظیم شرائط خشک کن انجمادی انجام می شود.
- باید در نظر داشت که سر ظروف یا آمپول ها بصورت loose و عاری از میکروب بسته شود تا خروج رطوبت از آنها تسهیل شود .
- معمولا زمان خشک انجمادی بر حسب حجم نمونه متغیر(۲۴ – ۳)ساعت و طولانی است .

- پس از خشک کردن، نمونه ها از دستگاه بر طبق دستور خارج می شوند .
- نمونه های خشک کن انجمادی می توانند در دمای ۴c° در شرایط تاریک نگهداری شوند .

تجدید کشت نمونه های لیوفیلیزه

- برای تهیه و کشت میکروارگانیسم های لیوفیلیزه ،توسط پی پت پاستوربطور استریل به هر آمپول ۰/۵ – ۰/۴ میلی لیتر از محیط کشت مایع یا سرم فیریولوژی اضافه نموده و کاملا آنرا مخلوط کرده، مجموعه محتویات آمپول را به محیط کشت مایع انتقال داده و دو سه قطره آن را به محیط کشت جامد منتقل نمایید. مشخصات محیط جامد و یا مایع مورد نیاز برای هر سوش میکروبی در بروشور کلکسیون موجود است . کشت ها را در شرایط بهینه رشد در انکو باتور قرارداده و زمان لازم برابر زمان عادی رشد در شرایط عادی می باشد .
- آمپول های لیوفیریزه تا هنگام مصرف باید در یخچال(۴c°) و عدم دسترسی به نور مستقیم قرار گیرد.
- تجدید کشت نمونه های لیوفیلیزه به زمان بیشتری نسبت به نمونه های عادی نیازمند است.

نشانی: تهران- خیابان آزادی- دانشگاه صنعتی شریف- صندوق پستی ۱۳۹۹-۱۱۱۵۵

تلفن: ۶۶۱۶۴۱۰۱- ۶۶۰۰۵۴۱۷

نمابر: ۶۶۰۰۵۴۱۷

وبسایت:

کلکسیون میکروبی
مرکز مهندسی بیوشیمی محیط زیست

تدوین مهرماه ۱۳۹۲

ایران عالم زاده، زهرا قبادی نژاد

نشانی: تهران- خیابان آزادی- دانشگاه صنعتی شریف- صندوق پستی ۱۳۹۹-۱۱۱۵۵

تلفن: ۶۶۱۶۴۱۰۱- ۶۶۰۰۵۴۱۷

نمابر: ۶۶۰۰۵۴۱۷