

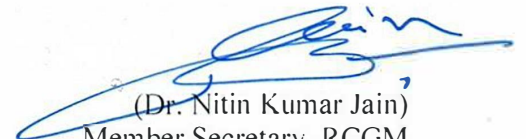


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Date: 09.12.2021

OFFICE MEMORANDUM

1. In India, all activities related to Genetically Engineered organisms (GE organisms) or cells and hazardous microorganisms and products thereof are regulated as per the “**Manufacture, Use/Import/Export and Storage of Hazardous Microorganisms/ Genetically Engineered Organisms or Cells, Rules, 1989**” (Rules, 1989) notified by the Ministry of Environment, Forest and Climate Change (MoEF&CC), Government of India under the **Environment (Protection) Act, 1986** (EPA 1986). “**The Regulations & Guidelines for Recombinant DNA Research and Biocontainment, 2017**” notified by the Department of Biotechnology vide OM No. **BT/BS/17/635/2015-PID, dated 01st April 2018** provided the list of Infective Microorganisms corresponding to different Risk Groups at **Annexure 1**, which determine the operational practice and minimum physical containment requirements and accordingly, allows selection of appropriate biosafety level facilities.
2. The “**List of Infective Microorganisms corresponding to different Risk Groups**” was revised and updated in accordance with the IBSC feedback, public consultation, national and international references, recommendations from sub-committees and detailed deliberations by the Expert Committee.
3. The revised list was deliberated in 213th meeting of Review Committee on Genetic Manipulation (RCGM), the competent authority notified under Rules, 1989 of the Environment (Protection) Act, 1986 and based on its recommendations, the Department of Biotechnology hereby notifies the “**List of Infective Microorganisms corresponding to different Risk Groups, 2021**”.
4. “**List of Infective Microorganisms corresponding to different Risk Groups, 2021**” **supersedes the Annexure I of “Regulations & Guidelines for Recombinant DNA Research and Biocontainment, 2017” and should be read in conjunction with aforementioned guideline.**
5. The list can be accessed from <https://dbtindia.gov.in/> and <https://ibkp.dbtindia.gov.in/>.


(Dr. Nitin Kumar Jain)
Member Secretary, RCGM
Scientist F, DBT

To:

- i. All IBSCs
- ii. DBT NIC for uploading on DBT website
- iii. IBKP portal

Annexure 1: List of Infective Microorganisms corresponding to different Risk Groups, 2021

- i. The list is indicative but not exhaustive and will be updated periodically.
- ii. For working with organisms not listed here, investigators should determine the appropriate containment level in consultation with IBSC.
- iii. Depending upon the work envisaged, organisms listed in higher risk groups (BSL-2/3) may be handled in lower containment laboratory provided, if the work does not involve genes known to be involved in pathogenesis/carcinogenesis/production of toxins, etc. Accordingly, lower containment facility may be used with prior approval from IBSC and information to RCGM.

A. List of Risk Group 1 microorganisms

Bacteria

- *Acetobacter* spp.
- *Achromobacter* spp., *A. agile*, *A. lacticum*, *A. spanius*
- *Acidithiobacillus ferrooxidans*
- *Actinoplanes missouriensis*
- *Afipia* spp., *A. broomeae*, *A. clevelandensis*, *A. felis*
- *Akkermansia muciniphila*
- *Alcaligenes aquamarinus*
- *Alishewanella* spp., *A. aestuarii*, *A. agri*, *A. contaminisoli*, *A. fetalis*, *A. jeotgali*
- *Anoxybacillus thermarum*
- *Aquaspirillum* spp.
- *Arthrobacter* spp. (except those listed under RG-2)
- *Auricoccus indicus* Genus. nov.
- *Azospirillum brasilense*
- *Azotobacter* spp.
- *Azotomonas insolita*
- *Bacillus* spp., *B. licheniformis*, *B. megaterium*, *B. pumilus*, *B. subtilis*, *B. thuringiensis*
- *Bacteroides* spp., *B. fragilis*, *B. xylanisolvens*
- *Beijerinckia fluminensis*, *B. indica*
- *Bifidobacterium lactis*
- *Bradyrhizobium japonicum*
- *Brevibacillus parabrevis*
- *Brevundimonas nasdae*
- *Caryophanon* spp.
- *Cellulomonas* spp., *C. biazotea*, *C. bibula*, *C. cartae*, *C. fimi*, *C. flavigena*, *C. gelida*, *C. uda*
- *Chainia nigra*
- *Chakrabartia godavariana*

- *Chlamydomonas reinhardtii*
- Christensenellaceae spp.
- *Clostridium* spp., *C. aceticum*, *C. acetobutylicum*, *C. aciduric*, *C. cellobiparum*, *C. kluyveri*, *C. thermoaceticum*, *C. thermocellum*, *C. thermosulfurogenes*
- *Corynebacterium* spp., *C. glutamicum*, *C. lilium*, *C. xerosis*
- *Cupriavidus oxalaticus*
- *Cutibacterium acnes*
- *Cytophaga hutchinsonii*
- *Deinococcus radiodurans*
- *Delftia lacustris*
- *Desulfovibrio desulfuricans*
- *Enhydrobacter aerosaccus*
- *Escherichia coli* B series, *Escherichia coli* Nissel 1917
- *Eubacterium siraeum*
- *Exiguobacterium indicum*
- *Gluconobacter* spp.
- *Halobacterium* spp., *H. cutirubrum*, *H. halobium*, *H. salinarium*
- *Halomonas elongata*, *H. halodenitrificans*, *H. titanicae*
- *Izhakiella australiensis*
- *Jensenia canicruria*
- *Klebsiella* spp. (except those listed under RG-2)
- *Kocuria* spp., *K. indica*, *K. marina*, *K. rosea*, *K. salsicia*
- *Lactobacillus* spp., *L. acidophilus*, *L. bulgaricus*, *L. brevis*, *L. buchneri*, *L. casei*, *L. cellobiosis*, *L. fermentum*, *L. helveticus*, *L. sake*, *L. crispatus*, *L. delbrueckii gasserii*, *L. iners*, *L. johnsonii*, *L. lactis*, *L. paracasei*, *L. plantarum*, *L. reuteri*, *L. rhamnosus*, *L. lactis*
- *Leifsonia naganensis*
- *Leuconostoc* spp., *L. mesenteroides*, *L. pseudomesenteroides*
- *Lysinibacillus fusiformis*, *L. telephonicus*
- *Lysobacter* spp
- *Megasphaera elsdenii*, *M. indica*
- *Methanobacter* spp.
- *Methylococcus capsulatus**¹
- *Methylomonas* spp.
- *Microbacterium* spp.
- *Microbacterium telephonicum*
- *Micrococcus luteus*
- *Microcycilus aquaticus*, *M. flavus*
- *Microterricola gilvus* comb. nov. (= *Phycicola gilvus*), *M. pindariensis* comb. nov. (= *Leifosnia pindariensis*)
- *Mycobacterium smegmatis*
- *Mycoplana bullata*, *M. dimorpha*
- *Natrialba swarupiae*
- *Neisseria flava*
- *Nitrincola alkalisediminis* sp. nov.
- *Nitrincola tapanii*
- *Ochrobactrum cicero*, *O. cytisi*, *O. grignonense*, *O. oryzae*, *O. tritici*

- *Oerskovia xanthineolytica*
- *Paenibacillus alkaliterrae*, *P. harenae*, *P. pasadenensis*, *P. polymyxa*
- *Paracoccus bengalense*, *P. niistense*, *P. pantotrophus*, *P. thioajanapus*, *P. versutus*
- *Pediococcus pentosaceus*
- *Phyllobacterium myrsinacearum*
- *Planctopirus hydrillae* sp. nov.
- *Pradoshia eiseniae*
- *Prevotella* spp.
- *Propionibacterium* spp., *P. freudenreichii*, *P. shermanii*, *P. theonii*, *P. zeae*
- *Protaminobacter alboflavus*
- *Pseudomonas azotoformans*, *P. fluorescens*, *P. gladioli*, *P. syringae*, *P. sediminis* sp. nov.
- *Rhizobium* spp.
- *Rhodobacter* spp., *R. alkalitolerans* sp. nov., *R. capsulatus*, *R. sphaeroides*
- *Rhodococcus erythropolis*, *R. rhodochorous*, *R. terrae*
- *Rhodopseudomonas* spp.
- *Rickettsiella* spp.
- *Roseburia hominis*
- *Ruminococcus flavefaciens*
- *Sarcina subflava*
- *Staphylococcus capitis*, *S. carnosus*,
- *Streptomyces* spp.
- *Synechococcus* spp., *Synechococcus elongatus*, *Synechococcus* sp. PCC 7002, *Synechococcus* sp. PCC 11801, *Synechococcus* sp. PCC 7942
- *Synechocystis* spp., *Synechocystis* sp. PCC 6803
- *Terribacillus* spp.
- *Thalassospira frigidophilosprofundus*
- *Thermobacteroides* spp.
- *Thermus* spp.
- *Thiobacillus* spp.
- *Vibrio* spp., *V. campbellii*, *V. diazotrophicus*, *V. fischeri*, *V. harveyi*, *V. natriegens*, *V. owensii*, *V. ponticus*
- *Weissella cibaria*
- *Wolbachia* sp
- *Zymomonas anaerobia*, *Z. mobilis*

Plant pathogen - Bacteria

- *Agrobacterium* spp., *A. agile*, *A. luteum*, *A. pusense*, *A. rhizogenes*, *A. rubi*
- *Candidatus phytoplasma cynodontis*
- *Erwinia* spp., *E. amylovora*, *E. carotovora* subsp. *betavasculorum*, *E. chrysanthemi*, *E. herbicola*, *E. sennetsu*
- *Klebsiella* spp., *K. indica* sp. nov., *K. planticola*, *K. pneumoniae* SnebYK
- *Mangrovibacter phragmitis* sp. nov.
- New elm yellows
- Novel Aster yellows
- *Pseudomonas solanacearum*
- *Rhizobium radiobacter* (= *Agrobacterium tumefaciens*/*Agrobacterium radiobacter*)

- *Rolstonia solanacearum*
- *Xanthomonas* spp., *X. axonopodis* pv. *manihotis*, *X. campestris*, *X. campestris* pv. *aberrans*, *X. populi*, *X. campestris* pv. *alfalfa*, *X. campestris* pv. *oryzae*, *X. campestris* pv. *vesicatoria*, *X. malvacearum*, *X. oryzae* pv. *oryzicola*

Fungi

- *Acremonium chrysogenum*
- *Actinomucor elegans*
- *Agaricus bisporus*
- *Akanthomyces* (*Lecanicillium*) spp.
- *Aphanomyces invadans*
- *Arthrobotrys* spp., *A. brochopaga*, *A. conoides*, *A. oligospora*
- *Ashbya gossypii*
- *Aspergillus* spp., *A. niger*, *A. ochraceus*, *A. ustus*
- *Aureobasidium pullulans*
- *Auricularia polytricha*
- *Beauveria bassiana*
- *Benjaminiella* spp., *B. poitrasii*, *B. multisporea*
- *Blakeslea trispora*
- *Brettanomyces bruxellensis*
- *Candida* spp., *C. albicans*, *C. boindinii*, *C. utilis*
- *Chaetomium globosum*
- *Cladosporium cladosporioides*
- *Claviceps* spp., *C. purpurea*, *C. paspali*
- *Conidiobolus* spp. *C. macrosporus*, *C. coronatus*
- *Coriolus versicolor* (= *Trametes versicolor*)
- *Cryptendoxyla hypophloia*
- *Cunninghamella* spp., *C. blakesleana*, *C. elegans*
- *Cyathus stercoreus*
- *Debaryomyces hansenii*
- *Flammulina velutipes*
- *Gliocladium* spp. *G. roseum*, *G. virens*
- *Humicola grisea*
- *Hypholoma* spp., *H. fasciculare*, *H. roseonigra*
- *Isaria fumosorosea*
- *Lentinus edodes*
- *Lenzites striata* (= *Gloeophyllum striatum*)
- *Lipomyces lipofer*
- *Malassezia furfur*, *M. globosa*, *M. restricta*
- *Metarhizium anisopliae*
- *Monascus pupureus*
- *Neurospora* spp., *N. crassa*, *N. sitophilla*
- *Nigrospora sphaerica*
- *Oxyporus populinus*
- *Pachysolen tannophilus*
- *Penicillium* spp. (except those listed under RG-2)

- *Phanerochaete chrysosporium*
- *Phoma exigua*
- *Phycomyces blakesleanus*
- *Pichia* spp., *P. membranae faciens*, *P. farinosa*, *P. guilliermondii*, *P. pastoris*, *P. stipitis*
- *Piriformospora indica*
- *Pleurotus ostreatus*
- *Pycnoporus sanguineus*
- *Rhodosporidium toruloides*
- *Rhodotorula mucilaginosa*, *R. rubra*
- *Saccharomyces cerevisiae*
- *Schizosaccharomyces pombe*
- *Schwanniomyces occidentalis*
- *Sordaria macrospora*
- *Talaromyces cellulolyticus*
- *Thanatephorus cucumeris*
- *Thermomyces lanuginosus*
- *Thermothelomyces heterothallica*
- *Tolypocladium inflatum*
- *Trametes hirsute*
- *Trichoderma* spp., *T. asperellum*, *T. harzianum*, *T. reesei*, *T. viride*
- *Trigonopsis variabilis*
- *Verticillium lecanii*
- *Volvariella volvacea*
- *Wallernia sebi*
- *Xeromyces bisporus*
- *Zygorhynchus moelleri*
- *Zygosaccharomyces* spp., *Z. bailii*, *Z. rouxii*

Fungi - plant pathogens

- *Albugo candida*
- *Ascochyta* spp., *A. caricaria*, *A. rabiei*, *A. sorghi*
- *Aspergillus* spp., *A. niveus*, *A. oryzae*, *A. versicolor*
- *Athelia rolfsii* (anamorph *Sclerotium rolfsii*)
- *Beltraniella humicola*
- *Botryotrichum piluliferum*
- *Botrytis* spp., *B. allii*, *B. cinerea*, *B. elliptica*, *B. hyacinthi*, *B. tulipae*
- *Capnodium* spp.
- *Cercospora* spp., *C. canescens*, *C. musa*, *C. granati*, *C. punicae*, *C. sorghi*, *C. zeaemaydis*, *C. zinnia*
- *Cercosporidium personatum*
- *Ceuthospora phyllosticta*
- *Cladosporium* spp., *C. fulvum*, *C. herbarum*, *C. oxysporum*, *C. phlei*, *C. variabile*
- *Colletotrichum* spp., *C. capsici*, *C. coccodes*, *C. falcatum*, *C. gossypii*, *C. langenarium*, *C. lindemuthianum*, *C. orbiculare*, *C. piperatum*
- *Coniella granati*

- *Coniothyrium glycines*
- *Dacrymyces deliquescens*
- *Daedalea flavida*
- *Datronia mollis*
- *Didymella bryoniae*
- *Diplodia natalensis*
- *Dipodascus uninucleatus*
- *Discosia punicae*
- *Dreschlera oryzae*
- *Ganoderma lucidum*
- *Gibberella fujikuroi*, *Gibberella zeae*
- *Gliocladium roseum*
- *Gloeocercospora sorghi*
- *Glomerella* spp., *G. cingulata* (anamorph), *G. graminicola*, *G. tucumanensis* (anamorph)
- *Gnomoniella pongamiae*
- *Greenaria uvicola*
- *Haemilea vestarix*
- *Helminthosporium gramineum*, *Helminthosporium maydis*
- *Hyaloperonospora parasitica*
- *Hymenochaete rubiginosa*
- *Laetiporus sulphureus*
- *Lepiota rhacodes*
- *Moniliella suaveolens*
- *Monilina fructicola*
- *Myrothecium roridum*, *Myrothecium verrucaria*
- *Oidium mangiferae* Berthed
- *Peronosclerospora* spp., *P. heteropogoni*, *P. maydis*, *P. philippinensis*, *P. sacchari*, *P. sorghi*
- *Pestalotia psidii*
- *Pestalotiopsis versicolor*
- *Pestlotia mangiferae*
- *Phoma glycinicola*
- *Phoma sorghina*
- *Plasmopara viticola*
- *Plenotrichella mangiferae* nov. sp.
- *Pleospora allii*
- *Pleurotus sapidus*
- *Podosphaera xanthii*
- *Polyporus meliae*
- *Poria placenta*
- *Pseudocercospora cruenta*
- *Pseudoperonospora cubensis*
- *Pyrenopeziza brassicae*
- *Pythium* spp., *P. aphanidermatum*, *P. betleri*, *P. cubensis*, *P. myriotylum*
- *Ramulispora sorghi*
- *Sclerospora graminicola*

- *Setosphaeria monoceras*
- *Sphaceloma punicae*
- *Sphaerotheca fuliginea*
- *Synchytrium endobioticum*
- *Thielavia microspore*
- *Tolyposporium penicillariae*
- *Uncinula necator*
- *Verticillium theobromae*

Protista

- *Entamoeba dispar*, *Entamoeba invadens**²

Parasites

None listed

Virus

None listed

B. List of Risk Group 2 microorganisms

Bacteria

- *Achromobacter xylosoxidans*, *A. denitrificans*
- *Acinetobacter* spp., *A. baumannii*, *A. calcoaceticus*, *A. johnsonii*, *A. Iwoffii*
- *Actinobacillus* spp., *A. lignieresii*, *A. pleuropnermoniae*, *A. equuli*
- *Actinomadura* spp., *A. madurae*, *A. pelletieri*
- *Actinomyces* spp., *A. israelii*, *A. bovis*, *A. viscosus*
- *Aeromonas* spp., *hydrophila*, *A. jandaei*, *A. schubertii*, *A. sobria*, *A. veronii*
- *Aggregatibacter actinomycetemcomitans*
- *Alcaligenes* spp.
- All enteropathogenic, enterotoxigenic, enteroinvasive, uropathogenic and strains bearing K1 antigen, including *E. coli* O157:H7 *³
- *Amycolata autotrophica*
- *Anaplasma* spp.
- *Arachnia propionica*
- *Archanobacterium haemolyticum*
- *Arizona hinshawii* - all serotypes
- *Arthrobacter* spp., *albus*, *A. cumminsii*, *A. gandavensis*, *A. luteolus* and *A. woluwensis*
- *Avibacterium* spp., *A. ducreyi* (= *Haemophilus ducreyi*), *A. influenza* (= *Haemophilus influenza*), *A. paragallinarum* (= *Haemophilus paragallinarum*), *A. parasuis* (= *Haemophilus parasuis*)
- *Bacillus cereus*
- *Bacteroides* spp., *B. ovatus*
- *Bartonella* spp., *B. bacilliformis*, *B. henselae*, *B. quintana*, *B. vinsonii*
- *Bifidobacterium dentium*
- *Bordetella bronchiseptica*
- *Bordetella* spp., *B. avium*, *B. bronchiseptica*, *B. parapertussis*, *B. pertussis*
- *Borrelia* spp., *B. burgdorferi*, *B. recurrentis*, *B. duttonii*, *B. vincentii*
- *Brevibacterium avium*
- *Brucella abortus* RB-51, *Brucella abortus* S-19, *Brucella melitensis* Rev-1 vaccine strains
- *Burkholderia* spp., *B. cepacia*, *B. cenocepacia*
- *Campylobacter* spp., *C. coli*, *C. fetus* subsp. *fetus*, *C. fetus* subsp. *venerealis*, *C. jejuni*
- *Capnocytophaga canimorsus*, *C. sputigena*
- *Cardiobacterium hominis*
- *Chlamydia* spp., *C. pneumonia* (serovars WR1310, AR39), *C. trachomatis* (serovars A, B, Ba, C, D, E, F, G, H, I, J, K, L1, L2 and L3)
- *Chryseobacterium* spp., *C. indologenes*, *C. indoltheticum*, *C. meningosepticum*, *C. scophthalmum*
- *Citrobacter koseri*
- *Clostridium* spp., *C. botulinum*, *C. butyricum*, *C. chauvoei*, *C. difficile*, *C. fallax*, *C. haemolyticum*, *C. histolyticum*, *C. novyi*, *C. perfringens*, *C. septicum*, *C. tetani*
- *Comamonas terrigena*

- *Corynebacterium* spp., *C. bovis*, *C. diphtheriae*, *C. haemolyticum*, *C. matruchotii*, *C. minutissimum*, *C. pseudotuberculosis*, *C. pyogenes*, *C. renale*, *C. ulcerans*, *C. urealyticum*,
- *Coxiella burnetii* - Phase II, Nine Mile strain, plaque purified, clone 4
- *Cutibacterium avidum*, *C. granulosum*
- *Cytophaga* species pathogenic to animals
- *Dermatophilus congolensis*
- *Edwardsiella tarda*
- *Ehrlichia ewingii*, *E. sennetsu*
- *Eikenella corrodens*
- *Enterobacter* spp., *E. aerogenes*, *E. cloacae*, *E. gallinarum*, *E. casseliflavus*, *E. gergoviae*
- *Enterococcus* spp., *E. durans*, *E. faecium*, *E. faecalis*, *E. hirae*
- *Eperythrozoon* spp.
- *Erysipelothrix* spp., *E. rhusiopathiae*, *E. tonsillarum*
- *Faecalibacterium prausnitzii*
- *Flavobacterium meningosepticum*
- *Fluoribacter bozemanae*
- *Fusobacterium* spp., *F. necrophorum*
- *Gardnerella vaginalis*
- Group A streptococcus (GAS)
- *Hafnia alvei*
- *Helicobacter pylori*, *Helicobacter hepaticus*
- *Klebsiella granulomatis*, *K. mobilis*, *K. ornithinolytica*, *K. pneumonia*, *K. rhinoscleromatis*
- *Kluyvera cryocrescens*
- *Kosakonia cowanii*
- *Legionella* spp., *L. pneumophila*
- *Leptospira interrogans* - all serotypes
- *Listeria* spp.
- *Moraxella osloensis*
- *Morganella morgani*
- *Mycobacterium* spp., *M. abscessus*, *M. avium* complex, *M. avium*, *M. avium* subsp. *paratuberculosis*, *M. avium* subsp. *avium*, *M. asiaticum*, *M. bovis* BCG vaccine strain, *M. chelonae*, *M. fortuitum*, *M. kansasii*, *M. indicus pranii*, *M. intracellulare*, *M. leprae* (except MDR strains listed under RG-3), *M. malmoense*, *M. marinum*, *M. paratuberculosis*, *M. scrofulaceum*, *M. simiae*, *M. szulgai*, *M. tuberculosis* H37Ra, *M. paratuberculosis*, *M. phlei*, *M. xenopi*, *M. mungi*, *M. orgys*
- *Mycoplasma* spp., *M. agalactiae*, *M. capricolum*, *M. caviae*, *M. mycoides*, *M. genitalium*, *M. hominis*, *M. pneumoniae*
- *Neisseria* spp., *N. meningitidis*, *N. gonorrhoeae*
- *Neohrlichia mikurensis*
- *Nocardia* spp., *N. otitidiscaviarum*, *N. brasiliensis*, *N. farcinica*, *N. nova*, *N. otitidiscaviarum*, *N. asteroides*, *N. transvalensis*
- *Ochrobactrum anthropic*, *O. intermedium*
- *Ornithobacterium rhinotracheale*
- *Pantoea agglomerans*

- *Pasteurella multocida*
- *Peptococcus* spp.
- *Peptostreptococcus* spp.
- *Photobacterium damsela*
- *Plesiomonas shigelloides*
- *Porphyromonas* spp.
- *Prevotella* spp.
- *Proteus* spp., *P. mirabilis*, *P. penneri*, *P. vulgaris*, *P. morgani*
- *Providencia* spp., *P. alcalifaciens*, *P. rettgeri*, *P. rustigianii*, *P. stuartii*
Pseudomonas aeruginosa, *P. putida*, *P. syringae*
- *Ralstonia mannitolytica*, *R. Pickettii*
- *Raoultella ornithinolytica*
- *Rhodococcus equi*
- *Riemerella anatipestifer*
- *Rothia dentocariosa*
- *Salmonella* spp., *S. enterica*, *S. abortusequi*, *S. abortusovis*, *S. arizonae*, *S. choleraesuis*, *S. dublin*, *S. enteritidis*, *S. gallinarum*, *S. meleagridis*, *S. paratyphi*,
A, *B*, *C*, *S. typhi*, *S. pullorum*, *S. typhimurium*
- *Serpulina* spp.
- *Serratia* spp., *S. liquefaciens*, *S. marcescens*
- *Shewanella putrefaciens*
- *Shigella* spp., *S. boydii*, *S. dysenteriae*, *S. flexneri*, *S. sonnei*
- *Sphaerophorus necrophorus*
- *Staphylococcus* spp., *S. aureus*, *S. epidermidis*, *S. haemolyticus*, *S. hominis*, *S. hyicus*, *S. intermedius*
- *Stenotrophomonas maltophilia*
- *Streptobacillus moniliformis*
- *Streptococcus* spp., *S. agalactiae*, *S. dysgalactiae*, *S. equi*, *S. mitis*, *S. mutans*, *S. oralis*,
S. parasanguinis, *S. pneumoniae*, *S. pyogenes*, *S. salivarius*, *S. salivarius thermophiles*,
S. sanguinis, *S. suis*, *S. thermophiles*, *S. uberis*
- *Streptomyces somaliensis*
- *Treponema* spp., *T. cuniculi* *T. pertenuis*, *T. carateum*, *T. pallidum*
- *Tropheryma whippelii*
- *Trueperella* (= *Arcanobacterium*) *pyogenes*
- *Ureaplasma urealyticum*
- *Veillonella* spp. *V. parvula*
- *Vibrio* spp., *V. alginolyticus*, *V. anguillarum*, *V. parahaemolyticus*, *V. vulnificus*,
V. cholerae, *V. fluvialis*, *V. metschnikovii*, *V. mimicus*
- *Yersinia enterocolitica*, *Yersinia pseudotuberculosis*

Plant pathogens – Bacteria

- *Candidatus liberibacter asiaticus*, *Candidatus Phytoplasma*
- *Clavibacter michiganensis*, *Clavibacter sepedonicus*
- *Dickeya dadantii*, *Dickeya solani*
- *Pectobacterium atrosepticum*, *P. carotovorum*
- *Pseudomonas* spp., *P. cichorii*, *P. savastanoi*, *P. syringae* subsp. *syringae*, *P. syringae* DC3000, *P. syringae* pv *tomato*

- *Ralstonia solanacearum*
- *Rhodococcus fascians*
- *Xylella fastidiosa*

Fungi

- *Acremonium* spp., *A. falciforme*, *A. kiliense*, *A. recifei*, *A. strictum*
- *Apophysomyces elegans*, *Apophysomyces variabilis*
- *Arthroderma* spp., *A. benhamiae*, *A. simii*, *A. simiti*, *A. vanbreuseghemii*
- *Aspergillus* spp., *A. brasiliensis*, *A. flavus*, *A. fumigatus*, *A. nidulans*, *A. parasiticus*
- *Basidiobolus haptosporus*
- *Blastomyces dermatitidis*
- *Candida* spp., *C. albicans*, *C. auris*, *C. glabrata*, *C. guilliermondii* (= *Meyerozyma guilliermondii*), *C. krusei*, *C. lusitaniae*, *C. parapsilosis*, *C. tropicalis*
- *Cladophialophora carrionii*
- *Cokeromyces recurvatus*
- *Coprinus cinereus*
- *Cryptococcus neoformans* var *gattii* (= *Filobasidiella bacillispora*)
- *Cunninghamella bertholletiae*
- *Curvularia* spp., *C. lunata*, *C. brachyspora*, *C. geniculata*, *C. pallescens*
- *Didymella bryoniae*
- *Diplodia natalensis*
- *Emmonsia parva* var *crescens*, var *parva*
- *Emmonsia capsulate*
- *Engyodontium album*
- *Epidermophyton* spp., *E. floccosum*
- *Exophiala* spp., *E. castelanii*, *E. dermatitidis*, *E. jeanselmei*, *E. mansonii*, *E. mesophila*, *E. oligosperma*, *E. spinifera*, *E. xenobiotica*
- *Exserohilum mcginnisii*
- *Filobasidiella neoformans*
- *Fonsecaea* spp., *F. compacta*, *F. monophora*, *F. pedrosoi*
- *Geotrichum candidum*
- *Hansenula* spp., *H. anomala*, *H. polymorpha*
- *Hortaea werneckii*
- *Lasiodiplodia theobromae*
- *Leptosphaeria* spp., *Leptosphaeria maculans*, *L. senegalensis*, *L. thompkinsii*
- *Lichtheimia corymbifera*
- *Loboa loboii*
- *Lomentospora prolificans*
- *Madurella* spp., *M. grisea*, *M. mycetomi*
- *Microsporum* spp., *M. audouinii*, *M. canis*, *M. distortum*, *M. duboisii*, *M. equinum*, *M. ferrugineum*, *M. gallinae*, *M. gypseum*, *M. praecox*, *M. nanum*, *M. persicolor*
- *Monosporium apiospermum*
- *Mortierella vinacea*
- *Mucor* spp., *M. circinelloides*, *M. mucedo*, *M. plumbeus*, *M. rouxii*
- *Mycocladius corymbifer* (= *Absidia corymbifera*)

- *Mycotypha* spp., *M. africana*, *M. microspora*
- *Nannizzia* spp., *N. gypsea*, *N. obtusa*, *N. otae*
- *Neotestudina rosatii*
- *Paecilomyces lilacinus*, *Paecilomyces variotii*
- *Paracoccidioides brasiliensis*
- *Penicillium camemberti*, *P. chrysogenum*, *P. funiculosum*, *P. marneffeii*, *P. piceum*
- *Phialophora* spp. *P. lagerbergii*, *P. calciformis*, *P. fastigiata*, *P. melinii*, *P. bubakii*, *P. richardsiae*
- *Phialophora* spp., *P. compacta*, *P. pedrosoi*, *P. verrucosa*
- *Pneumocystis jirovecii*
- *Pseudocercospora eumusae*
- *Pseudallescheria boydii*
- *Rhinocladiella* spp., *R. compacta*, *R. pedrosoi*, *R. spinifera*
- *Rhinosporidium seeberi*
- *Rhizomucor miehei*, *Rhizomucor pusillus*
- *Rhizopus* spp., *R. cohnii*, *R. microsporus*, *R. arrhizus*, *R. homothallicus*
- *Rhodotorula glutinis*,
- *Scedosporium* spp., *S. apiospermum*, *S. prolificans*
- *Scopulariopsis brevicaulis*
- *Sporothrix* spp., *S. brasiliensis*, *S. globose*, *S. mexicana*, *S. schenckii*
- *Sporotrichum pruniosum*
- *Stachybotrys chartarum*
- *Syncephalastrum monosporum*, *Syncephalastrum racemosum*
- *Trichophyton* spp., *T. cocciniforme*, *T. equinum*, *T. erinacei*, *T. gourvillii*, *T. megninii*, *T. mentagrophytes*, *T. quinckeanum*, *T. rubrum*, *T. schoenleinii*, *T. smii*, *T. soudanense*, *T. tonsurans*, *T. verrucosum*, *T. violaceum*, *T. yaoundei*
- *Trichosporon asahii*, *T. mucoides*
- *Westerdykella reniformis*
- *Xylophora carrionii*

Fungi - plant pathogens

- *Alternaria* spp., *A. alternata*, *A. brassicae*, *A. brassicicola*, *A. burnsii*, *A. carthami*, *A. citri*, *A. dauci*, *A. helianthi*, *A. macrospora*, *A. sesame*, *A. ricini*, *A. porri*, *A. tenuissima*, *A. tenuissima*
- *Bipolaris* spp., *B. australiensis*, *B. maydis* (= *Cochliobolus heterostrophus*), *B. hawaiiensis*, *B. sorghicola*, *B. sorokiniana*, *B. spicifera*
- *Botryodiplodia theobromae*
- *Ceratocystis fimbriata*, *Ceratocystis paradoxa*
- *Claviceps* spp., *C. africana*, *C. fusiformis*, *C. purpurea*, *C. sorghi*
- *Cochliobolus miyabeanus* (= *Helminthosporium oryzae*)
- *Colletotrichum gloeosporioides*, *C. musae*
- *Drechslera australiensis*
- *Erysiphe* spp., *E. cichoracearum*, *E. pisi*, *E. polygoni*
- *Exserohilum rostratum*
- *Fusarium* spp., *F. arthrosporioides*, *F. chlamydosporium*, *F. coccophilum*, *F. culmorum*, *F. graminum*, *F. moniliformae*, *F. solani*, *F. udum*, *F. verticillioides*, *F. oxysporum* f. sp. *cepae*, *Fusarium oxysporum* f. sp. *ciceris*, *F. oxysporum* f. sp.

lentis, *Fusarium oxysporum* f. sp. *psidii*, *Fusarium oxysporum* f. sp. *cubense*, *Fusarium oxysporum* f. sp. *melonis*, *Fusarium oxysporum* f.sp. *lentis*, *Fusarium oxysporum* f. sp. *vasinfectum*, *F. oxysporum* f. sp. *betae*, *F. oxysporum* f. sp. *pisi*

- *Ganoderma lucidum*
- *Hymenula cerealis* (= *Cephalosporium gramineum*)
- *Leveillula taurica*
- *Macrophomina phaseolina*
- *Magnaporthe grisea*, *Magnaporthe oryzae*
- *Mucor circinelloides*
- *Nectria haematococca*
- *Nigrospora oryzae*
- *Ophiostoma stenoceras*
- *Penicillium* spp., *P. citrinum*, *P. corymbiferum*, *P. cyclopium*, *P. digitatum*, *P. expansum*, *P. frequentans*, *P. italicum*
- *Peronospora pisi*
- *Phomopsis* spp., *P. aucubicola*, *P. mangiferae*, *P. vexans*
- *Phytophthora* spp., *P. cinnamomi*, *P. colocasiae*, *P. drechsleri* f. sp. *cajani*, *P. infestans*, *P. megasperma*, *P. nicotianae* var. *nicotianae*, *P. palmivora*, *P. parasitica*, *P. ramorum*
- *Plasmodiophora brassicae*
- *Puccinia* spp., *P. coronata*, *P. graminis* f.sp. *tritici*, *P. polysora*, *P. purpurea*, *P. striiformis* f.sp. *tritici*, *P. substriata*, *P. triticina* f.sp. *tritici*
- *Pyricularia* spp., *P. grisea*, *P. oryzae*, *P. penniseti*
- *Pythium insidiosum*
- *Rhizoctonia* spp., *R. bataticola*, *R. carotae*, *R. fragariae*, *R. solani*, *R. tuliparum*
- *Rhizopus* spp., *R. arrhizus*, *R. oligosporus*, *R. oryzae*, *R. stolonifer*
- *Sclerophthora* spp., *S. macrospora*, *S. graminicola*, *S. rayssiae* var. *zeae*
- *Sclerotinia* spp., *S. minor*, *S. rolfsii*, *S. sclerotiorum*, *S. trifoliorum*
- *Sclerotium cepivorum* (anamorph *Stromatinia cepivora*)
- *Septoria* spp., *S. azalea*, *S. lactucae*, *S. lycopersici*
- *Setosphaeria turcica* (anamorph *Exserohilum turcicum*)
- *Terebralia palustris*
- *Trichoderma longibrachiatum*
- *Trichothecium roseum*
- *Uromyces viciae fabae*
- *Ustilaginoidea virens*
- *Ustilago maydis*, *Ustilago scitaminea*
- *Venturia inaequalis*

Protista

- *Acanthamoeba castellanii*, *A. culbertsoni*
- *Babesia divergens*, *B. microti*
- *Balantidium coli*
- *Blastocystis hominis*
- *Coccidia* spp.
- *Cryptosporidium parvum*. *C. hominis*
- *Eimeria* spp., *E. acervulina*, *E. burnetti*, *E. maxima*, *E. necatrix*

- Entamoeba coli, E. histolytica
- Giardia lamblia (syn intestinalis)
- Ichthyophthirius multifiliis
- Isospora belli
- Leishmania spp., L. aethiopica, L. braziliensis, L. donovani, L. major, L. mexicana, L. peruviana, L. tropica
- Leptomonas seymouri
- Naegleria spp., N. australiensis, N. fowleri, N. gruberi
- Neospora caninum
- Perkinsus beihaiensis, P. olseni
- Plasmodium spp., P. berghei, P. cynomolgi, P. falciparum, P. knowlesi, P. malariae, P. ovale, P. vivax, P. yoelii
- Sarcocystis neurona, Sarcocystis sui hominis
- Theileria spp., T. annulata, T. hirei, T. parva
- Trichodina sp.
- Trichomonas spp., T. foetus, T. hominis, T. tenax, T. vaginalis
- Trichuris suis
- Trypanosoma spp., T. brucei brucei, T. brucei gambiense, T. brucei rhodesiense, T. cruzi, T. rangeli

Protista – plant pathogens

- Labyrinthula zosterae, L. terrestris
- Phytonomonas spp., P. leptovasorum, P. stahelii, P. serpens, P. francai

Parasites

- Ancylostoma spp., A. ceylanicum, A. duodenale
- Angiostrongylus spp.
- Anisakis simplex
- Ascaris lumbricoides
- Besnoitia besnoiti
- Brugia filaria worms, B. malayi, and B. timori
- Capillaria spp.
- Cysticercus cellulosae (hydatid cyst, larva of T. solium)
- Dicrocoelium dendriticum
- Dientamoeba fragilis
- Echinococcus spp., E. granulosus, E. multilocularis, E. vogeli
- Enterobius spp., E. vermicularis
- Fasciola spp., F. hepatica, F. gigantica
- Heterophyes spp.
- Hymenolepis spp., H. diminuta, H. nana
- Loa loa filaria worms
- Mansonella spp., M. ozzardi, M. perstans, M. streptocerca
- Metagonimus spp.
- Microsporidium
- Necator human hookworms, Necator americanus
- Nosema bombycis
- Onchocerca filaria worms, Onchocerca volvulus

- *Opisthorchis* spp., *O. felinus*, *O. sinensis* (=Clonorchis sinensis), *O. viverrini* (=Clonorchis viverrini), *O. filaria*
- *Schistosoma* spp., *S. mansoni*, *S. haematobium*, *S. intercalatum*, *S. japonicum*, *S. mekongi*
- *Strongyloides stercoralis*
- *Taenia solium*
- *Toxocara canis*
- *Toxoplasma gondii*
- *Trichinella* spp., *T. nativa*, *T. nelso*, *T. pseudospiralis*, *T. spiralis*
- *Trichostrongylus orientalis*
- *Wuchereria bancrofti*

Viruses

- Acute haemorrhagic conjunctivitis virus
- Adeno-associated virus constructs (replication deficient, recombinant or synthetic)
- Adeno-associated viruses (AAV)
- Adenovirus of the guinea pig
- Aino virus
- Alcelaphine herpesvirus 1
- Aleutian mink disease virus
- Amapari virus
- Animal adenoviruses
- Animal papillomaviruses
- Animal parvovirus
- Aphthovirus
- Aquabirna virus
- Arterivirus
- Astroviruses
- Attenuated viral strains which are accepted vaccines. Only a limited number of passages in defined cell culture or host-systems are allowed. Example: Attenuated Kabete-O strain of Rinderpest virus, Chikungunya vaccine strain 181/25*¹
- Aura-virus
- Avian viruses, i.e., adenovirus, encephalomyelitis virus, enterovirus, herpesvirus - 1 (Infectious Laryngotracheitis [ILT] disease virus), infectious bronchitis virus, influenza virus (H9N2), poxvirus, retrovirus, reticuloendotheliosis virus, sarcoma virus (Rous sarcoma virus, RSV)
- Baboon herpesvirus (=Cercopithecine herpesvirus 2)
- Bagaza virus
- Barmah forest virus
- Batai virus (=Chittoor virus)
- Bebaru virus
- Bern-virus
- Betanoda virus
- Bhanja virus
- BK-virus
- Border disease virus
- Borna virus

- Bovine coronavirus
- Bovine diarrhoea virus
- Bovine enteric calicivirus
- Bovine ephemeral-fever virus
- Bovine foamy virus
- Bovine herpesvirus -1 (=infectious bovine rhinotracheitis (IBR) virus)
- Bovine herpesvirus 2, 3, and 4
- Bovine leukemia virus
- Bovine mucosal disease virus
- Bovine papilloma virus
- Bovine parvo virus
- Bovine polyomavirus (BPoV)
- Bovine respiratory syncytial virus
- Bovine rhinoviruses (types 1-3)
- Breda virus
- Buffalo pox virus
- Bunyamwera virus
- Cache Valley virus
- Caliciviruses
- California encephalitis virus
- Camel pox virus^{*6}
- Canid herpesvirus 1
- Canine calicivirus
- Canine coronavirus
- Canine distemper virus
- Canine hepatitis virus
- Canine parvovirus (CPV)
- Caprine herpesvirus 1
- Capripoxvirus
- Cardiovirus
- Cat Que virus
- Catfish herpesvirus
- Channel catfish virus (CCV)
- Chicken anaemia virus
- Chicken infectious anaemia virus (CIAV)
- Chikungunya virus^{*4}
- Chimpanzee herpesvirus
- Chuzan virus
- Classical swine fever virus (=Hog cholera virus)
- Coltivirus all types including Colorado tick fever virus
- Common cold-causing Human coronaviruses (HCoV-229E, HCoV-OC43, HCoV-NL63, HCoV-HKU1)
- Corona viruses (Bovine, Canine, Rat and Rabbit)
- Cotton rabbit papilloma virus
- Cowpox virus
- Coxsackie A and B viruses
- Cytomegalovirus

- Dengue virus serotypes 1-4*⁴
- Drosophila X virus
- Duck hepatitis virus
- Duck plague virus
- Duck pox virus
- Echovirus
- Ectromelia virus
- Eel influenza virus A (EV-2)
- Eel rhabdovirus (EVA, EVX, B12, C26)
- Elephantpox virus
- Emsliki Forest virus
- Encephalomyocarditis virus (EMC)
- Enterovirus
- Enterovirus D-68
- Entomopoxviruses
- Epizootic hemorrhagic virus
- Equid herpes virus
- Equine arteritis virus
- Equine Encephalosis Virus (EEV)
- Equine infectious anemia virus
- Equine influenza virus 1 (H7N7) and 2 (H3N8)
- Equine rhinopneumonitis virus
- Erythrocytic necrosis virus
- Murine mammary-tumor virus
- Feline calicivirus
- Feline foamy virus
- Feline immunodeficiency virus
- Feline infectious peritonitis virus
- Feline leukemia virus
- Feline panleukopenia virus
- Feline sarcoma virus (FeSV)
- Fibroma virus
- Flanders virus
- Flock house virus
- Fort morgan virus
- Fowlpox virus
- Frog viruses (FV 1 to 3, FV 9 to 24)
- Gamma herpes virus
- Ganjam virus
- Gecko virus
- Goose parvovirus
- Ground squirrel hepatitis B virus
- Hamster H-1 virus
- Hand foot and mouth disease virus
- Hart Park virus
- Hazara virus
- Hemagglutinating encephalomyelitis virus of swine

- Hemagglutinating Virus of Japan (HVJ virus/Sendai virus)
- Hepatitis A, B, C, D, E and G viruses
- Herpes virus saimiri
- Herpes simplex virus types 1 and 2
- Herpes zoster
- Herpesvirus ateles
- Herpesvirus of the rabbit
- Herpesvirus saimiri
- Herpesviruses of crustaceans and molluscs
- Herpesviruses of reptiles
- Herpesviruses of sheep and goat
- Herpesviruses of the frog (FV 4-8)
- Horsepox virus
- Human adenoviruses
- Human herpesvirus types 6 and 7
- Human immunodeficiency viruses (HIV) types 1 & 2
- Human metapneumonovirus
- Human papillomaviruses (HPV)
- Human parvovirus (B-19)
- Human rhinoviruses
- Human T-cell lymphotropic viruses (HTLV) types 1 & 2*³
- Inclusion body hepatitis virus
- Infectious Bovine Rhinotracheitis virus (IBR)
- Infectious bronchitis virus (IBV)
- Infectious hypodermal and haematopoietic necrosis virus
- Infectious Laryngotracheitis (ILT) Influenza virus
- Influenza A virus, strain A/California/04/2009 (H1N1) or Cal09
- Influenza A virus, strain A/Philippines/2/1982(H3N2) or X79
- Influenza B virus, strain A/PR8/34
- Influenza B virus, strain B/Brisbane/60/2008
- Influenza B virus, strain B/Phuket/3073/2013
- Ingwavuma (=Oya) virus
- Ippy virus
- Iridoviruses (of chilids, perch, goldfish, common cod, carp, cat-fish, crustaceans and molluscs)
- Japanese encephalitis virus*⁴
- John Cunningham Virus (JC virus)
- Junin virus candid #1 vaccine strain, listed in Appendix B-II-D
- Kaikalur Virus
- Kaisodi virus
- Kammavanpettai virus
- Kilham rat virus (KRV)
- Kundal Virus
- Kunjin virus
- Lactate dehydrogenase-elevating virus
- Langat virus
- Lapine parvovirus

- Lentivirus
- Leopard frog iridoviruses
- Leopard frog papovavirus
- Lymphocryptovirus
- Lymphocystis disease virus
- Lymphocytic choriomeningitis virus (non-neurotropic strains)
- Malsoor virus
- Mammalian retrovirus
- Marek's Disease virus
- Mason-Pfizer monkey virus (=Simian retrovirus)
- Measles virus
- Milker's node virus
- Minute virus in mice
- Molluscipoxvirus
- Molluscum contagiosum virus
- Monkey enteroviruses (SEV)
- Monkey polyomaviruses (SV40, SA-12, STMV, LPV)
- Mouse adeno Virus
- Mouse hepatitis virus
- Mouse rotaviruses (causes epizootic diarrhoea of infant mice (EDIM))
- Mumps virus
- Murine cytomegalovirus
- Murine hepatitis virus
- Murine pneumoniae virus
- Murine polyoma virus
- Myxoma virus
- Newcastle Disease Virus
- Newt viruses (T 6 to 21, LT 1 to 4)
- Norovirus (= Norwalk virus)
- Oncorhynchus-Masou virus
- O'nyong-nyong virus
- Orbi virus
- Orf virus
- Ovine pulmonary adenomatosis virus
- Parainfluenza viruses, types 1, 2, 3, 4 and 5
- Paramyxoviruses
- Paravaccinia virus
- Parvovirus
- Pesti virus
- Phocid distemper virus
- Phocid herpesvirus 1
- Pichinde virus
- Picobirna virus
- Picorna virus
- Pigeon pox virus
- Pike herpesvirus
- Piry virus

- Pixuna virus
- Pneumo virus
- Poikilothermic vertebrate and invertebrate viruses
- Polyoma virus
- Porcine adenovirus
- Porcine circo virus
- Porcine enteric calicivirus
- Porcine epidemic diarrhoea virus
- Porcine haemagglutinating encephalomyelitis virus
- Porcine parvo virus
- Porcine reproductive and respiratory syndrome virus (PRRSV)
- Porcine transmissible gastroenteritis virus
- Powassan virus
- Poxviruses- All types except Alastrim, Monkey pox, Sheep pox and White pox
- Prospect hill virus
- Pseudorabies virus
- Puumala virus
- Quarantfil virus
- Rabbit haemorrhagic disease virus
- Rabbit kidney vacuolating virus
- Rabies (fixed, attenuated) virus
- Raccoonpox virus
- Rat corona virus
- Rat rotavirus
- Reovirus
- Replication incompetent lentiviral vectors
- Respiratory syncytial virus (RSV)
- Reticuloendotheliosis viruses (REV)
- Rhadinovirus
- Rhinoviruses - all types
- Rift Valley fever virus vaccine strain MP-12
- Ross river virus
- Rota virus
- Rotifer birnavirus
- Rubella virus
- Rubivirus
- Salmonid herpesvirus (Herpesvirus salmonis)
- Sandfly fever virus
- Sapovirus (=Sapporo virus)
- Sathuperi Virus
- Schmallerberg virus
- Seal influenza virus A
- Sealpox virus
- Shope fibroma virus
- Shope papilloma virus
- Simbu virus (except Oropouche virus, listed under RG-3)
- Simian foamy virus

- Simian haemorrhagic fever virus
- Simian virus 40
- Sindbis virus
- Small ruminant morbilli virus (= peste des petits ruminants virus, PPRV)
- Stomatitis papulosa virus
- Suid herpesvirus
- Swine vesicular disease virus
- Swinepox virus
- Tamiami virus
- Tanapox virus
- Taterapox virus (=Gerbilpox virus)
- Tensaw virus
- Theiler's Murine Encephalomyelitis Virus (=Mouse Encephalomyelitis Virus)
- Thetalympocryptovirus
- Thimiri Virus
- Thottapalayam virus
- Tilapia lake virus
- Tioman Virus
- Tipula iridescent virus (TIV)
- Toscana virus
- Transmissible gastroenteritis virus of swine
- Turbot herpesvirus disease
- Turkey coronavirus
- Turkey hepatitis virus
- Turkey rhinotracheitis virus
- Turlock virus
- Turuna virus
- Uasin Gishu disease virus
- Umbre virus
- Una virus
- Uukuniemi virus
- Vaccinia virus
- Varicella virus
- Varicella Zoster virus
- Venezuelan equine encephalomyelitis vaccine strains TC-83 and V3526
- Vertebrate lyssaviruses
- Vesiculo virus
- Wad medani virus
- Wanowrie virus
- West Nile virus (WNV)*⁴
- White spot syndrome virus (WSSV)
- Woodchuck hepatitis B virus
- Yatapox viruses (Tana & Yaba)
- Yellow Fever virus attenuated strain 17D*⁴
- Zika virus*^{4, 8}

Virus – plant pathogens

- Abutilon mosaic virus
- African cassava mosaic virus
- Ageratum enation virus
- Alfalfa mosaic virus
- Allamanda leaf mottle distortion virus
- Alternanthera yellow vein virus
- Andrographis yellow vein leaf curl
- Apple chlorotic leafspot virus
- Apple mosaic virus
- Apple stem grooving virus
- Apple stem pitting virus
- Arabis mosaic virus
- Bajra streak virus
- Banana mild mosaic virus
- Banana streak GF virus
- Banana streak Mysore virus
- Banana streak OL virus
- Barley yellow dwarf virus
- Barley yellow mosaic virus
- Bean common mosaic virus
- Bean leaf roll virus
- Bean yellow mosaic virus
- Beet black scorch virus
- Beet curly top virus
- Beet necrotic yellow vein virus
- Beet western yellows virus
- Bhendi yellow vein Bhubhaneswar virus
- Bougainvillea spectabilis chlorotic vein-banding virus
- Broad bean wilt virus
- Brome mosaic virus
- Cacao swollen shoot virus
- Calla lily chlorotic spot virus
- Canna yellow mottle virus
- Cardamom mosaic virus
- Carnation etched ring virus
- Carnation latent virus
- Carnation mottle virus
- Carnation necrotic fleck virus
- Carnation ringspot virus
- Carnation vein mottle virus
- Carrot red leaf virus
- Cassava brown streak virus
- Cauliflower mosaic virus
- Chayote enation yellow mosaic virus
- Cherry green ring mottle virus
- Cherry necrotic rusty mottle virus

- Cherry tomato leaf curl virus
- Cherry virus A
- Chickpea bushy dwarf virus
- Chickpea chlorotic dwarf virus
- Chickpea chlorotic stunt virus
- Chilli leaf curl Ahmedabad virus
- Chilli leaf curl India virus
- Chilli leaf curl Kanpur virus
- Chilli leaf curl Vellanad virus
- Chrysanthemum virus B
- Citrus psorosis virus
- Citrus ringspot virus
- Citrus vein enation virus
- Citrus yellow mosaic virus
- Clerodendron yellow mosaic virus
- Coccinia mosaic Tamil Nadu virus
- Commelina yellow mottle virus
- Corchorus golden mosaic virus
- Corchorus yellow vein mosaic virus
- Cotton leaf curl Alahabad virus
- Cotton leaf curl Bangalore virus
- Cotton leaf curl Barasat virus
- Cotton leaf curl Kokhran virus
- Cotton leaf curl virus
- Cotton leaf roll dwarf virus
- Cowpea aphid borne virus
- Cowpea mild mottle virus
- Cowpea mosaic virus
- Croton yellow vein mosaic virus
- Cucumber green mottle mosaic virus
- Cucurbit chlorotic yellows virus
- Cymbidium mosaic virus
- Dasheen mosaic virus
- Datura distortion mosaic virus
- Datura mosaic virus
- Dolichos yellow mosaic virus
- East African Cassava mosaic virus
- Eclipta yellow vein virus
- Eggplant mottled crinkle virus
- Frangipani mosaic virus
- French bean leaf curl virus
- French bean leaf curl virus
- Garlic common latent virus
- Garlic virus A
- Garlic virus X
- Ginger chlorotic fleck virus
- Grapevine Algerian latent virus

- Grapevine leaf roll associated virus
- Groundnut yellow spot virus
- Hemidesmus yellow mosaic virus
- Henbane mosaic virus
- Hippeastrum mosaic virus
- Hollyhock leaf curl virus
- Hollyhock yellow vein mosaic virus
- Hop mosaic virus
- Horsegram yellow mosaic virus
- Indian cassava mosaic virus
- Indian peanut clump virus
- Iris mild mosaic virus
- Iris severe mosaic virus
- Iris yellow spot virus
- Jatropha leaf crumple India virus
- Jatropha leaf crumple virus
- Jatropha mosaic India virus
- Jatropha yellow mosaic India virus
- Konjac mosaic virus
- Leek yellow stripe virus
- Lily mottle virus
- Lily symptomless virus
- Maize chlorotic mottle virus
- Maize dwarf mosaic virus
- Maize lethal necrotic virus
- Maize mosaic virus
- Maize streak Reunion virus
- Maize streak virus
- Maize stripe virus
- Malvastrum yellow vein virus
- Melon necrotic spot virus
- Mesta yellow vein mosaic Bahraich virus
- Mesta yellow vein mosaic virus
- Milk vetch dwarf virus
- Mirabilis leaf curl India virus
- Mungbean yellow mosaic virus
- Odontoglossum ringspot virus
- Okra leaf curl virus
- Ornithogalum mosaic virus
- Papaya leaf crumple virus
- Papaya ringspot virus
- Pea early-browning virus
- Pea necrotic yellow dwarf virus
- Pea seed borne mosaic virus
- Pea stem necrosis virus
- Pea streak virus
- Pea venation mosaic virus

- Peanut chlorotic streak virus
- Peanut green mosaic virus
- Peanut mottle virus
- Pedilanthus leaf curl virus
- Pepper leaf curl Bangladesh virus
- Pepper leaf curl Lahore virus
- Pepper mild mottle virus
- Pepper mottle virus
- Pepper vein banding virus
- Pepper veinal mottle virus
- Pigeonpea sterility mosaic emaravirus 1 and 2
- Piper yellow mosaic virus
- Piper yellow mottle virus
- Plum pox virus
- Potato aucuba mosaic virus
- Potato leafroll virus
- Potato virus A, M, S and X
- Prunus necrotic ringspot virus
- Radish leaf curl virus
- Radish mosaic virus
- Red clover vein mosaic virus
- Rhynchosia yellow mosaic India virus
- Rice black-streaked dwarf virus
- Rice grassy stunt virus
- Rice necrosis mosaic virus
- Rice ragged stunt virus
- Rice stripe mosaic virus
- Rice stripe virus
- Rice tungro spherical virus
- Rice wrinkled stunt disease virus
- Rice yellow mottle virus
- Rice yellow stunt virus
- Rose leaf curl virus
- Senna leaf curl virus
- Sesbania mosaic virus
- Shallot latent virus
- Shallot virus X
- Sida leaf curl virus
- Southern bean mosaic virus
- Southern rice black-streaked dwarf virus
- Soybean mosaic virus
- Spinach yellow vein Sikar virus
- Squash leaf curl virus
- Sri Lankan cassava mosaic virus
- Strawberry latent ring spot virus
- Strawberry latent ringspot virus
- Strawberry vein banding virus

- Sugarcane bacilliform IM virus
- Sugarcane bacilliform Morocco virus
- Sugarcane bacilliform virus
- Sugarcane mosaic virus
- Sugarcane streak mosaic virus
- Sugarcane yellow leaf virus
- Sunn hemp leaf distortion virus
- Sunn-hemp mosaic virus
- Sweet potato feathery mottle virus
- Sweet potato leaf curl virus
- Synedrella leaf curl virus
- Synedrella yellow vein clearing virus
- Telosma mosaic virus
- Tobacco black ring virus
- Tobacco bushy top virus
- Tobacco curly shoot virus
- Tobacco etch potyvirus
- Tobacco leaf curl Pusa virus
- Tobacco necrosis virus
- Tobacco rattle virus
- Tobacco ringspot virus
- Tobacco stunt virus
- Tobacco vein-distorting virus
- Tomato aspermy virus
- Tomato black ring spot virus
- Tomato enation leaf curl virus
- Tomato leaf curl Gujarat virus
- Tomato leaf curl Joydebpur virus
- Tomato leaf curl Karnataka virus
- Tomato leaf curl Kerala virus
- Tomato leaf curl Palampur virus
- Tomato leaf curl Patna virus
- Tomato leaf curl Rajasthan virus
- Tomato leaf curl Sudan virus
- Tomato Leaf curl virus
- Tomato leaf curl virus
- Tomato mosaic virus
- Tomato ringspot virus
- Tomato rugose mosaic virus
- Tomato severe leaf curl virus
- Tomato severe rugose virus
- Tomato torrado virus
- Tomato zonate spot virus
- Tulip breaking virus
- Turnip crinkle virus
- Turnip mosaic virus
- Turnip yellow virus

- Ugandan cassava brown streak virus
- Velvet bean severe mosaic virus
- Vernonia yellow vein virus
- Vinca leaf curl virus
- Watermelon chlorotic stunt virus
- Watermelon mosaic virus
- Wheat dwarf India virus
- Wheat streak mosaic virus
- Wheat yellow mosaic virus
- Witches' broom disease virus
- Zucchini lethal chlorosis virus
- Zucchini yellow mosaic virus

Viroids – plant pathogens

- Australian grapevine viroid
- Chrysanthemum chlorotic mottle viroid
- Chrysanthemum stunt viroid
- Coleus blumei viroid 1
- Grapevine yellow speckle viroid 1
- Hop stunt viroid
- Iresine viroid 1
- Peach latent mosaic viroid
- Rubber viroid India
- Tomato chlorotic dwarf viroid

C. List of Risk Group 3 microorganisms

Bacteria

- *Bacillus anthracis**⁵
- *Brucella abortus**⁵, *B. canis*, *B. melitensis**⁵, *B. suis**⁵
- *Burkholderia mallei**⁵, *B. pseudomallei**⁵
- *Chlamydia psittaci* (avian strains)
- *Coxiella burnetii**³
- *Francisella tularensis*
- *Mycobacterium* spp., *M. africanum*, *M. bovis* (except the BCG strain), *M. caprae*, *M. carnetti*, *M. microti*, *M. leprae*, *M. pinnipedii*, *M. tuberculosis* H37Rv, *M. ulcerans*, *M. leprae* (MDR strains)
- *Orientia tsutsugamushi*
- *Rickettsia* spp., *R. rickettsii*, *R. prowazekii*, *R. akari*, *R. conorii*, *R. montanensis*, *R. typhi*
- *Yersinia pestis*

Bacteria - Plant Pathogen(s)

- *Ralstonia solanacearum*, race 3, biovar 2

Fungi

- *Blastomyces dermatitidis*, *Blastomyces mallei*
- *Cladophialophora arxii*, *Cladophialophora bantiana*
- *Cladosporium trichoides*
- *Coccidioides immitis*, *Coccidioides posadasii*
- *Histoplasma* spp., *H. capsulatum*, *H. duboisii*, *H. farciminosum*
- *Ochroconis gallopava* (= *Dactylaria gallopava*)
- *Paracoccidioides brasiliensis*
- *Ramichloridium mackenziei*

Fungi - Plant Pathogen(s)

- *Alternaria solani*
- *Aspergillus candidus*
- *Aspergillus flavus*
- *Botrytis fabae*
- *Claviceps gigantea*
- *Curvularia geniculata*
- *Mucor* spp., *M. piriformis*, *M. racemosus*, *M. strictus*
- *Septoria* spp., *S. apiicola*, *S. chrysanthemella*, *S. lycopersici*

Protista

- *Argulus* sp.
- *Chilodonella cyprini*

- Ergasilus sp.
- Gyrodactylus sp.
- Lernaea elegans
- Posthodiplostomum sp.
- Trichodina indica

Parasites

- Dracunculus medinensis

Prions agents for

- Bovine spongiform encephalopathy
- Chronic Wasting Disease
- Creutzfeldt-Jakob Disease
- Fatal Familial Insomnia
- Feline spongiform encephalopathy
- Gerstmann-Sträussler-Scheinker encephalopathy
- Kuru & Creutzfeldt-Jacob agents
- Scrapie
- Transmissible mink encephalopathy
- Transmissible spongiform encephalopathy
- Ungulate spongiform encephalopathy
- Variant Creutzfeldt-Jacob Disease

Parasites- Plant Pathogen(s)

- Heterodera glycines

Viruses

- African Horse Sickness Virus (Attenuated strains)
- Akabane virus
- Andes virus
- Australian bat lyssavirus
- Avian influenza virus A (Fowl plague virus)
- Avian leucosis viruses (ALV)
- Borna diseases virus
- Bovine immunodeficiency virus (BIV)
- Cabassou virus
- California encephalitis virus
- Cercopithecine herpesvirus 1 (B virus)
- Choclo virus
- Dobrava-Belgrade virus (DOBV)
- Duvenhage virus
- Eastern equine encephalitis virus
- Epstein - Barr virus*⁵
- Equine arteritis virus*⁵
- Everglade virus
- Feline Leukemia virus

- Feline sarcoma virus (FeSV)
- Flexal virus
- Foot and Mouth Disease virus
- Fowl plague virus
- G4 Eurasian (EA) avian-like H1N1 viruses (G4 EA H1N1)
- Germiston virus
- Getah virus
- Gibbon ape lymphosarcoma virus
- Goat pox virus
- Golden shiner virus
- Guinea pig lymphosarcoma virus
- Hamster lymphosarcoma virus
- Hanta virus
- Hypr virus
- Infectious Equine Anaemia virus
- Infectious pancreatic necrosis virus
- Influenza A virus (highly pathogenic strain HPAI emerging strain)
- Influenza viruses 1918–1919 H1N1 (1918 H1N1), human H2N2 (1957–1968), and highly pathogenic avian influenza H5N1 strains within the Goose/Guangdong/96-like H5 lineage (HPAI H5N1)
- Israel turkey meningoencephalitis virus
- Kairi virus
- Koutango virus
- Kumlinge virus
- Kyasanur Forest disease (KFD) virus*⁶
- Laguna Negra virus
- Las Crosse virus
- Leukomogenic murine oncovirus (Murine lymphosarcoma virus, MuLV)
- Louping ill virus
- Lumpy skin disease virus
- Lymphocytic choriomeningitis virus (LCM) (neurotropic strains)
- Lymphosarcoma viruses of nonhuman primates
- Mayaro virus
- Meningitis virus
- Middelburg virus
- Middle East respiratory syndrome coronavirus (MERS-CoV)
- Mobala virus
- Mokola virus
- Monkey mammary tumor viruses (MPTV)
- Mucambo virus
- Murine mammary tumor viruses (MMTV)
- Murine sarcoma viruses (MuSV)
- Murray Valley encephalitis virus
- Nairobi sheep disease virus
- Ndumu virus
- Newcastle disease virus (Asiatic strains)
- Oropouche virus

- Orungo virus
- Pappataci-fever virus
- Polio viruses - attenuated and vaccine strains*⁷
- Porcine enterovirus type 1
- Porcine sarcoma virus
- Powassan virus
- Pseudorabies virus
- Rabbitpox virus
- Rabies virus*⁵
- Rat lymphosarcoma virus (Murine lymphosarcoma virus: MuLV)
- Rift Valley fever virus*⁵
- Rocio virus
- Sagiyama virus
- San Miguel sealion virus
- SARS-associated coronavirus (SARS-CoV)*⁵
- SARS-associated coronavirus 2 (Novel coronavirus, SARS-CoV2)*⁵
- Semliki Forest virus
- Seoul virus
- Sheep pox virus
- Simian immunodeficiency virus (SIV)
- Simian sarcoma viruses (SSV)
- Sin Nombre virus (=Muerto Canyon)
- Snake sarcoma viruses
- Spondweni virus
- St. Louis encephalitis virus
- Swine Fever virus
- Swine vesicular disease virus
- Tacaribe virus
- Tonate virus
- Venezuelan equine encephalitis virus (except the vaccine strains TC-83 & V3526, under RG-2)
- Vesicular stomatitis virus
- Wesselsborn virus
- Western equine encephalomyelitis virus
- Woolly monkey fibrosarcoma virus
- Yaba pox virus

Viruses- Plant Pathogen

- Banana bract mosaic virus
- Banana bunchy top virus
- Banana streak virus
- Bhendi yellow vein mosaic virus
- Capsicum chlorosis virus
- Cardamom bushy dwarf virus
- Chili leaf curl virus
- Chilli veinal mottle virus
- Citrus tristeza virus

- Cotton leaf curl Multan virus
- Croton yellow vein mosaic virus
- Cucumber mosaic virus
- Groundnut bud necrosis virus
- Lettuce mosaic virus
- Mungbean yellow mosaic India virus
- Okra enation leaf curl virus
- Onion yellow dwarf virus
- Papaya leaf curl virus
- Pigeonpea sterility mosaic virus
- Potato virus Y
- Rice tungro bacilliform virus
- Squash leaf curl China virus
- Tobacco mosaic virus
- Tobacco streak virus
- Tomato bushy stunt virus
- Tomato leaf curl Bangalore virus
- Tomato leaf curl New Delhi virus
- Tomato spotted wilt virus
- Tomato yellow leaf curl virus
- Watermelon bud necrosis virus
- Wheat dwarf virus
- Wheat spindle steak mosaic virus

Viroids – plant pathogens

- Apple scar skin viroid
- Citrus exocortis viroid
- Potato spindle tuber viroid

D. List of Risk Group 4 microorganisms

Viruses

- African horse sickness virus (serotype not reported in India and challenge strains)
- African swine fever virus
- Alastrim, Monkeypox, Whitepox viruses*⁹
- Chapare hemorrhagic fever virus
- Crimean-Congo hemorrhagic fever virus
- Ebola virus
- Guanarito virus
- Hanzalova virus
- Hendra virus (=Equine morbillivirus)
- Herpesvirus simiae (Herpes B or Monkey B virus)
- Junin virus
- Lassa virus
- Lujo hemorrhagic fever virus
- Machupo virus
- Marburg virus
- Mopeia virus
- Nipah virus
- Polio viruses - wild strains*⁷
- Rinderpest virus (Cattle plague virus)
- Sabia virus
- Tick-borne encephalitis virus complex including Absetterov, Central European encephalitis, Omsk hemorrhagic fever virus, and Russian spring-summer encephalitis viruses
- Variola (major & minor) virus
- Yellow Fever virus

- *1 Special consideration for handling large volumes (>100 Lt) and/or high concentration of microorganisms. For large scale operations, the investigator needs to seek approval of the competent authority (GEAC), through submission of information in a prescribed format to GEAC for consideration; Refer “Regulations and Guidelines on Biosafety of Recombinant, DNA Research and Biocontainment, 2017”.
- *2 For research and development activities involving propagation or genetic manipulation, BSL-2 practices should be considered.
- *3 For research and development activities involving propagation or genetic manipulation, BSL-3 practices should be considered.
- *4 For research and development activities involving infection of arthropods, High Containment facility (BSL-3) should be considered.
- *5 For research and development activities involving clinical materials of human or animal origin, BSL-2 facility may be considered; while for all manipulations of cultures and for experimental animal studies, BSL-3 facility should be considered.
- *6 For diagnostic activities, BSL-2 facility may be considered, while for animal and tick testing as well as animal/vector studies, BSL-3 facility should be considered.
- *7 Procurement and any research and development activities would require prior approval of MoH&FW.
- *8 For diagnostic activities, BSL-2 facility may be considered, while for animal/vector studies, BSL-3 facility should be considered.
- *9 For use in vitro, BSL-3 facility may be considered, while for transmission and animal inoculation experiments, BSL-4 facility should be considered.