National Institute of Allergy and Infectious Diseases

NIAID Biodefense Pathogens

NIAID's biodefense pathogen list is periodically reviewed and is subject to revision in conjunction with our federal partners, including the U.S. Department of Homeland Security, which determines threat assessments, and the Centers for Disease Control and Prevention, which is responsible for responding to emerging pathogen threats in the United States.

Research on microbial- or plant-derived toxins or antimicrobial resistance may also be included.

Bacteria

- *Bacillus anthracis* (anthrax)
- *Bordetella pertussis* (new in FY15)
- *Borrelia mayonii* (new in FY18)
- *Borrelia miyamotoi* (new in FY14)
- *Brucella* species (brucellosis)
- *Burkholderia mallei* (glanders)
- *Burkholderia pseudomallei* (melioidosis)
- *Campylobacter jejuni*[3]
- *Chlamydia psittaci* (psittacosis)
- *Coxiella burnetii* (Q fever)
- *Ehrlichia*
- diarrheagenic *Escherichia coli*[3]

- *Francisella tularensis* (tularemia)
- *Leptospira* (new in FY14)
- *Listeria monocytogenes*[3]
- *Rickettsia prowazekii* (typhus fever) and other Rickettsias
- *Salmonella*[3]
- *Shigella*[3]
- *Tuberculosis*
- *pathogenic Vibrios*[3]
- *Yersinia enterocolitica*[3]
- *Yersinia pestis* (plague)

Fungi

- *Coccidioides*
- Microsporidia[3]
- Mucorales (new in FY14)

Protozoa

- *Balamuthia mandrillaris*[3] (new in FY14)
- *Cryptosporidium parvum*[3]
- *Cyclospora cayetanensis*[3]
- *Entamoeba histolytica*[3]
- *Giardia lamblia*[3]
- *Naegleria fowleri*[3] (new in FY14)
- *Toxoplasma gondii*[3]

Viruses

- *Alkhurma virus*[7]

- *Cache Valley virus*[4] (new in FY24)
- *Caliciviruses*[3]
- *California encephalitis virus*[4]
- *Chapare virus*[8] (new in FY14)
- *Chikungunya virus*[4]
- *Crimean-Congo hemorrhagic fever virus*[9]
- *Dengue virus*[10]
- *Eastern equine encephalitis virus* (EEE)[4]
- *Ebola virus* and viruses causing Ebola disease[11]
- *Enterovirus D68* (new in FY15)
- *Enterovirus A71*
- *Guanarito virus*[8]
- *Hantaviruses* causing hantavirus pulmonary syndrome [9]
- *Heartland virus*[6]
- *Hendra virus*
- *Hepatitis A virus*[3]
- *Influenza viruses*
- *Japanese encephalitis virus* (JE)[4]
- *Junin virus*[8]
- *Kyasanur Forest virus*[7]
- *LaCrosse encephalitis virus* (LACV)[4]
- *Langya virus* (new in FY24)
- *Lassa virus*[8]
- *Lujo virus*[8] (new in FY14)
- *Lymphocytic choriomeningitis virus* (new in FY24)
- *Machupo virus*[8]
- *Marburg virus*[11]

- *Mayaro virus*[4] (new in FY24)
- *Nipah virus*
- *O'nyong-nyong virus*[4] (new in FY24)
- *Omsk hemorrhagic fever virus*[7]
- *Oropouche virus*[4] (new in FY24)
- *Poliovirus* (new in FY15)
- *Powassan/Deer tick virus*[5]
- *Punta Toro virus*[7] (new in FY24)
- *Rabies virus*
- *Rift Valley fever virus*[9]
- *St. Louis encephalitis virus* (SLEV)[4]
- *Severe acute respiratory syndrome associated coronavirus* (SARS-CoV), SARS-CoV-2, MERS-CoV, and other highly pathogenic human coronaviruses
- *Severe fever with thrombocytopenia syndrome virus* (SFTSV)[6]
- *Tickborne encephalitis viruses*[5]
    - *European subtype*
    - *Far Eastern subtype*
    - *Siberian subtype*
- *Variola major* (smallpox) and other related poxviruses (including *Monkeypox*)
- *Venezuelan equine encephalitis virus* (VEE)[4]
- *West Nile virus* (WNV)[4]
- *Western equine encephalitis virus* (WEE)[4]
- *Yellow fever virus* (YFV)[4]
- *Zika virus*[4]

Toxins/Other Infectious Agents

- Botulinum toxin/Botulism *(Clostridium botulinum)*

- Epsilon toxin (*Clostridium perfringens*)
- Prions
- Ricin toxin (*Ricinus communis*)
- Staphylococcal enterotoxin B (SEB)

Antimicrobial Resistance

- Serious and urgent threats as identified by the CDC 2019 AR Threat report
- Studies on resistance mechanisms, intervention development targeting antimicrobial-resistant pathogens, broad-spectrum antimicrobials, antibiotic stewardship, unexpected antibiotic failure, and (reduction/circumvention of) resistance emergence

Immunologic Studies

Immunology studies that advance our understanding of host defenses are critical for the development of vaccines, therapeutics, and diagnostics. While our knowledge of immune system regulation and function is increasing, there is still much to be learned regarding the mechanisms required to provide protection against infectious disease. Therefore, areas advancing NIAID's biodefense effort include, but are not limited to, the following in the context of infectious disease and relevant model antigens:

- Vaccine adjuvant discovery, mechanisms of action and development
- Immune epitope (antibody / B cell / T cell) discovery, immunopathogenesis, and/or mechanisms of protection
- Immunotherapeutics/host-directed therapies, antibody-based therapeutics
- Mechanisms regulating the induction and durability of B and T cell memory
- Mechanisms of inflammation and tissue damage triggered by immune dysfunction
- Mechanisms of immune cell killing/clearance of infected cells
- Functions of innate immune cells, receptors, or soluble mediators

- Mucosal immunology
- Skin immunology

Notes

1. This list was created for the purpose of extramural and intramural program management within the NIAID biodefense/emerging infectious disease mission and does not represent the complete scope of biodefense and emerging infectious disease.
2. Pathogens listed on this page are **not** all select agents regulated by the U.S. Federal Select Agent Program (FSAP). For a list of select agents regulated by the U.S. FSAP, refer to the Select Agents and Toxins List.
3. Food-and/or waterborne pathogen
4. Mosquito-borne viruses
5. Tickborne encephalitis complex flaviviruses
6. Tickborne hemorrhagic fever bunyaviruses
7. Tickborne hemorrhagic fever flaviviruses
8. Viral hemorrhagic fevers (arenaviruses)
9. Viral hemorrhagic fevers (bunyaviruses)
10. Viral hemorrhagic fevers (flaviviruses)
11. Viral hemorrhagic fevers (filoviruses)

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