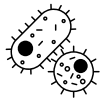
RABIES LABORATORY RESEARCH SAFETY

Occupational Health
ENVIRONMENTAL HEALTH AND SAFETY
UNIVERSITY OF COLORADO
DENVER | ANSCHUTZ MEDICAL CAMPUS

The following is general information for those involved in the laboratory-based research of rabies.[1-3]
Contact occupational.health@cuanschutz.edu if you have any questions.

ABOUT RABIES VIRUS



Rabies is a viral zoonotic disease caused by *Rhabdoviridae*, Genus *Lyssavirus,* and is the most common *Lyssavirus* infection in humans. Infection with rabies virus is acute and often fatal for humans, however it is also preventable. The rabies virus affects the central nervous system, causing brain and spinal cord inflammation, known as encephalomyelitis. Individuals working with rabies virus in research are at elevated risk for exposure.

EXPOSURE TO RABIES VIRUS

- Accidental exposure to rabies virus may occur through
  - Direct contact (through an open cut or contact with mouth, nose, or eyes) with
    - Infected brain or nervous system tissue
    - Saliva
  - Inhalation of aerosolized virus

RABIES VIRUS INFECTION

- Symptoms often appear 2-3 months after exposure, but may appear from one week to one year following exposure
- Symptoms
  - Fever
  - Pain, tingling, burning at exposure site
  - Brain and spinal cord inflammation
  - Death
- Two clinical forms
  - 1. Furious rabies
    - Characterized by hyperactivity, hallucinations, lack of coordination
  - 2. Paralytic rabies
    - Characterized by paralyzed muscle initiated at exposure site, coma
- No method approved for diagnosis of rabies prior to onset of disease
- Infection prevention includes pre-exposure prophylaxis and post-exposure prophylaxis

VACCINATION FOR WORKING WITH RABIES

- Rabies vaccine (RabaVert®) for pre-exposure prophylaxis
  - 3-dose series at days 0, 7, and 21 or 28
- To assess long-term immunity for those at frequent risk of rabies exposure, titers must be checked every 6 months
  - A booster is recommended if the titer is less than 0.5 IU/mL
- For high risk workers with record of initial series, rabies booster should be given every 3 years
- Rabies post-exposure prophylaxis is available
- See *Figure 1* for more information on vaccine recommendations

RABIES EXPOSURE SAFETY

Follow proper exposure reporting protocols

- If you are injured on the job, promptly report the incident to your supervisor
  - Immediately call or email Occupational Health (303) 724-9145 during business hours
    - Outside of normal hours seek medical attention at emergency department or other healthcare provider
  - Fill out incident report for exposure to biological hazards
  - File a claim with University Risk Management
    - https://www.cu.edu/risk/file-claim
- Minor cuts and abrasions should be immediately cleansed with antibacterial soap
  - Protect injuries from exposure

Tell your physician you work with rabies

- Whenever you are ill, mention to your physician that you work with rabies

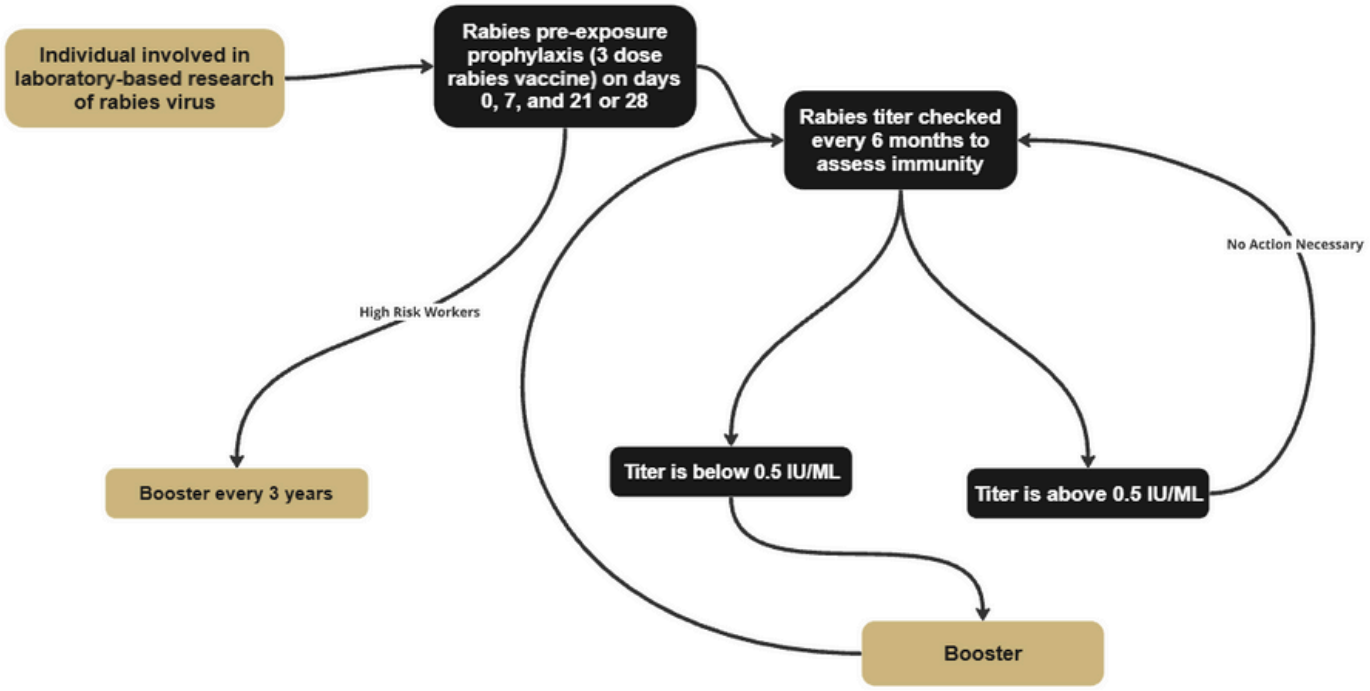
PPE FOR RABIES

- Personal protective equipment (PPE) for working with rabies includes but is not limited to:
  - Laboratory coats, disposable gloves; safety glasses
  - Special practices may be recommended based on risk assessment
- Do not reuse PPE used for work with biohazards
  - Dispose of all PPE as biohazardous waste
- Always wash your hands after removing gloves and after handling biohazards

CONTROLS FOR RABIES

- Additional protections for procedures involving rabies virus
  - Physical separation from access corridors
  - Self closing, double door access
  - Exhausted air not recirculated
  - Negative airflow into laboratory

Figure 1. *Prevention protocol flow chart for those involved in laboratory-based research of rabies*



For more information, refer to the Occupational Health website:
https://research.cuanschutz.edu/ehs/home/divisions/occupational-health
or contact Occupational Health at occupational.health@cuanschutz.edu

Updated: 3/21/2025

Sources

1. Centers for Disease Control and Prevention. Rabies. June 21, 2024. Accessed December 12, 2024. www.cdc.gov/rabies/about/index.html.
2. World Health Organization. Rabies. June 5, 2024. Accessed December 13, 2024. www.who.int/news-room/fact-sheets/detail/rabies.
3. Rao AK, Briggs D, Moore SM, et al. Use of a Modified Preexposure Prophylaxis Vaccination Schedule to Prevent Human Rabies: Recommendations of the Advisory Committee on Immunization Practices- United States, 2022. *MMWR Morb Mortal Wkly Rep.* 2022;71:619-627. DOI: dx.doi.org/10.15585/mmwr.mm7118a2.