SIMIAN RETROVIRUSES

Undetected simian retroviruses in macaques compromise the integrity of biomedical research across fields, distorting immune responses, obscuring study outcomes, and necessitating costly repeated experiments. At the same time, these viruses present a significant zoonotic hazard to laboratory personnel.

Retroviruses in the Research Pipeline

Macaques, the most commonly used primates in preclinical safety and immunotoxicology research, are natural hosts of simian retrovirus (SRV) and simian foamy virus (SFV). Both infections can remain hidden yet alter immune function in ways that distort study outcomes.[1]

In immunotoxicology, where the goal is to evaluate how new drugs and biologics act on the immune system, these infections undermine data integrity and raise doubts from regulators. Invalidated studies mean wasted resources, repeated trials, and significant delays in drug development.

Simian Retrovirus Type D

SRV is widespread among rhesus, long-tailed, and pig-tailed macaques. Some animals remain asymptomatic carriers, while others develop immunosuppression, which causes diarrhea, weight loss, anemia, and secondary infections.[2]

SRV has already been confirmed in U.S. facilities: In 2020, two macaques at a site registered by the Centers for Disease Control and Prevention (CDC) were euthanized after diagnosis, and in 2021, 13 more tested positive.[3] These cases likely represent only a fraction of the actual number of infections.

Simian Foamy Virus

SFV is a retrovirus that infects nearly 100% of adult primates, both in the wild and in captivity. While generally considered non-pathogenic in monkeys, SFV establishes a lifelong latent infection across a broad range of tissues and is primarily transmitted through saliva. Because transmission often occurs before antibodies are detectable, a single undetected case can quickly seed an entire colony.[4]

While often clinically silent in monkeys, SFV reactivates in cell cultures, causing rapid cell death and altered immune responses—complications that can distort studies using primate-derived cells.[1]

Consequences

Compromised science: Both SRV and SFV distort immune responses, producing misleading data and undermining the validity of infectious disease, vaccine, and immunology studies.

Worker risk: Both SRV and SFV cross into humans after occupational exposure. SRV infections have caused disease in workers, while SFV establishes lifelong latent infections of uncertain consequence—together underscoring the direct biohazards faced by personnel handling infected primates.[5,6]

Animal welfare: Infected macaques suffer from chronic illness, secondary infections, and premature euthanasia, adding to the suffering inherent in laboratory captivity.

CONTINUED

Endnotes

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