

## ***Streptobacillus moniliformis***

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### **Background**

*Streptobacillus moniliformis*, a gram-negative rod-shaped bacterium, has the potential to cause disease in humans (1). Called “Rat Bite Fever” because it is usually transmitted by the bite of an infected wild rat, the mortality can be as high as 10% without proper treatment. Groups of people can occasionally be infected by contaminated in food, milk or water. An outbreak in Haverhill, MA in 1926 caused by contaminated ice cream gave rise to the name Haverhill Fever. Very few cases are reported each year in the US, even though the disease may be carried by a significant percentage of wild rats.

### **Frequency in Laboratory Rodents**

Unfortunately, the CDC MMWR and a few other publications do not always distinguish between the high prevalence of *S. moniliformis* in wild rats, or in laboratory rats before Dr. Henry Foster pioneered caesarian derivation of laboratory rats in the 1950s, and the extremely low prevalence in laboratory rats in modern times. Thus, it is possible to find misleading statements such as “*Streptobacillus moniliformis* is part of the normal respiratory flora of rats.” and “Because of the high prevalence of colonization and asymptomatic infection with *Streptobacillus moniliformis* among rodents, testing and treatment of rats is not practical.”

(<http://www.cdc.gov/mmwr/PDF/wk/mm5351.pdf> )

However, the current prevalence in laboratory rodents is extremely low (2). The CRL Diagnostic Laboratory is perhaps the largest diagnostic service for laboratory rodents in the world, with a much better perspective on prevalence than the decades-old references used by the CDC. We have not found *S. moniliformis* in recent years in customer-submitted samples, nor have we detected it in CRL-owned animals, nor has any customer reported finding it in animals from CRL anywhere worldwide, regardless of how long the animals were in the customer facility. By way of illustration, in a recent two year period, CRL cultured 1,516 rats and 7,163 mice for this agent and all were negative (C. Clifford, unpublished data).

### **CRL Monitoring**

Although the rarity of *S. moniliformis* would not seem to warrant monitoring of barrier room colonies, CRL has chosen to continue monitoring mice and rats on an annual basis (<http://www.criver.com/techdocs/healthmon-sum.html>). It should also be noted that although infected rats may be asymptomatic carriers (hence the need to culture), mice suffer a septicemic disease with high mortality from *S. moniliformis* infection so it would likely be detected prior to routine monitoring (3). Both mice and rats are currently monitored by bacterial culture onto enriched medium specifically to screen for this agent. The CRL Molecular Diagnostics group has been developing a PCR assay for *S. moniliformis*, and this assay, with its benefit of increased speed and possible cost savings, should be ready for launch within a few months.

### **Conclusion**

Infection of laboratory rats and mice with *S. moniliformis* is very rare, and contamination of a CRL barrier room is improbable. Nonetheless, CRL continues to screen rodent colonies for this agent and would immediately terminate any colony in which *S. moniliformis* was confirmed. For more information, please call CRL Technical Support at 1.800.338.9680, or email at [comments@criver.com](mailto:comments@criver.com).

### **References:**

1. Will, L.A., Rat-bite fever, in Handbook of Zoonoses: Bacterial Rickettsial, Chlamydial, and Mycotic, Beran, G.W. (ed.), pp. 231-242, CRC Press, Boca Raton, 1994.
2. Kohn, D.F. and Clifford, C.B., Biology and diseases of rats, in Laboratory Animal Medicine, 2<sup>nd</sup> ed., Fox, J.G., Anderson, L.C., Loew, F.M., and Quimby, F.W., (eds.), p. 139, Academic Press, San Diego, 2002.
3. Percy, D.H. and Barthold, S.W., Pathology of Laboratory Rodents and Rabbits, 2<sup>nd</sup> ed., p. 62, Iowa State University Press, Ames, 2001.