*Coxiella Burnetti;* A Serious Health Issue

Introduction

Humans run across countless amounts of bacteria, some pathogenic in nature meaning they harm us, and some live with us peacefully and help in certain ways. Each bacterium behaves differently and just like us, have certain aspects about them that makes them different.

Obligate-intracellular pathogens are organisms that live and work best inside of a living cell and are becoming a serious issue for world-wide human health. After interviewing Dr. Shaw from the microbiology department at Oklahoma State university over his research on the specific intracellular bacteria *Coxiella burnetii* (*C. Burnetti)*, thus allowing to get better insight over these certain types of pathogens and how they work.

Dr. Shaw has been working in the Oklahoma State University’s microbiology department since about 2005 and the main purpose of his research[[1]](#footnote-1) is trying to understand how exactly the mechanism of the *C.Burnetti* pathogen works throughout its life cycle while also looking at host cell gene expression/and cellular pathway changes driven by the protein synthesis throughout infection in *C.Burnetti*.

Issue

*C. Burnetti* is a serious health risk for people dealing with cattle, sheep or goats due to the pathogen residing in that reservoir consistently, making it a zoonotic disease (disease that can be passed to humans by animals). Q-fever, hepatitis and even chronic fatigue are some of the issues that *C. Burnetti* can cause for whoever is infected, and the fact that this pathogen can resist the extracellular environment before being consumed makes it even more dangerous, meaning that it can survive oytside of a host cell and resist the environment outside.

When consumed, the pathogen is then phagocytosed by macrophages in our body to try and combat the bacteria, leading to where the pathogen wants to be, which is inside of a live host cell[[2]](#footnote-2). Once inside, it then starts to replicate. How people become infected with *Coxiella,* is usually via airborne. Since the pathogen is mainly found in certain farm animals, once the bacteria are inside, the animal then sheds the pathogen by excrement; which becomes hard and dry and can infect certain workers that deal with these animals by being inhaled. It also infects the placenta of the animals, and when it gives birth, the cycle continues when another animal comes by and possibly eats the left-over placenta if not cleaned up.

Once being infected, the host can sometimes acquire certain chronic issues such as vascular endocarditis, which is where the pathogen enters the pulmonary valves and causes them to clog which is never a good thing inside of humans. Besides this, certain people can also acquire chronic fatigue and hepatitis. Now these issues can be concerning, its rare for an individual to have these problems later in life.

References

1. Jones, Gary. *Microbiology*, microbiology.okstate.edu/component/content/article/88.
2. “Figure 2f from: Irimia R, Gottschling M (2016) Taxonomic Revision of Rochefortia Sw. (Ehretiaceae, Boraginales). Biodiversity Data Journal 4: e7720. Https://Doi.org/10.3897/BDJ.4.e7720.” doi:10.3897/bdj.4.e7720.figure2f.

1. Microbiology reference 1 [↑](#footnote-ref-1)
2. Biodiversity journal [↑](#footnote-ref-2)