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# Common Swine Mycoplasmas

by Sally K. Kennedy\*, Michele Gill,<sup>†</sup>  
and Daniel O. Farrington,  
D.V.M., Ph.D.<sup>‡</sup>

Mycoplasmas are the smallest organisms (200-300nm) that are capable of growth in cell free medium. They are different from bacteria in that they have no cell wall but are bounded by a unit membrane. The typical mycoplasma colony on solid growth medium has the appearance of a "fried egg." Most mycoplasmas require sterol for growth. Non-sterol requiring mycoplasmas are placed into the genus *Acholeplasma*.

Three recognized species of mycoplasmas known to be pathogenic for swine are *Mycoplasma hyorhinis*, a cause of polyserositis and polyarthritis in 3-to-10-week old swine; *M. hyosynoviae*, a cause of polyarthritis in swine over 10 weeks of age; and *M. hypopneumoniae* (suipneumoniae), a cause of chronic pneumonia in swine.

*Acholeplasma laidlawii*, *A. granularum*, *A. axanthum* and other unclassified isolates of the genus *Acholeplasma* are known to occur in swine. Their role as possible primary pathogens has not been made clear to date.

*Mycoplasma hyorhinis* Infection—Pigs weighing 15-60 pounds (3-to-10-weeks old) show a polyarthritis-polyserositis as the principle lesion associated with *Mycoplasma hyorhinis*. This is also found in young adult swine undergoing stress. Besides localizing in preexisting pneumonias, the organism is thought to induce a primary pneumonia in the pig. Cell culture lines are frequently contaminated by *M. hyorhinis*.

\*Ms. Kennedy is a third year student in the College of Veterinary Medicine.

†Ms. Gill is a 1977 ISU graduate in Journalism and Mass Communication.

‡Dr. Farrington is a former associate professor at VMRI and is now with Pfizer, Inc.

The organism prefers serosal surfaces including synovial membranes and is maintained in a herd mainly by a chronic infection in the upper respiratory tract of adult swine. Transmission is by direct contact or aerosol droplets. A febrile septicemia followed by a polyserositis occurs when *M. hyorhinis* enters the blood stream. The primary lesion is characterized by serofibrinous exudate on serosal membranes. Secondary lesions include fibrous pleural, pericardial and peritoneal adhesions. An increased volume of clear to turbid synovial fluid with or without large fibrin flakes is also present.

A typical *M. hyorhinis* colony after 4 days incubation is presented in figure 1. "Fried egg" type colony morphology (up to 1mm in diameter) with no evidence of film and spots is usual.

*Mycoplasma hyosynoviae* Infection—This disease, which occurs in 80-to-200 pound pigs (3-to-6-months old) and in young adult swine, is usually an uncomplicated, non-suppurative arthritis. Chronic infection of tonsillar and pharyngeal mucosa of adult swine is the primary way this organism is maintained in the herd. Although the articular cartilage appears normal, synovial membranes become swollen, hyperemic, and yellowish, with mild villous hypertrophy. The affected joint characteristically shows an increased volume of serofibrinous or serosanguinous synovial fluid.

Agar grown colonies show typical "fried egg" morphology and measure up to 1 mm in diameter (Figure 2). The elevated central area generally appears to be more prominent

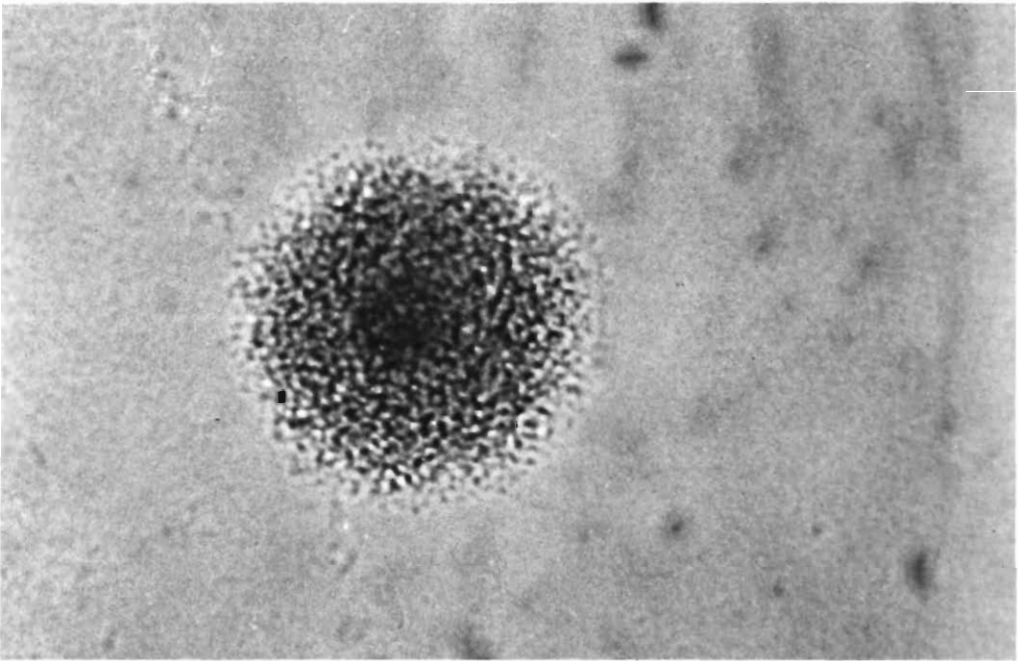


Figure 1. *Mycoplasma hyorhinis* colony, 265X, on beef heart infusion (BHI) solid medium.

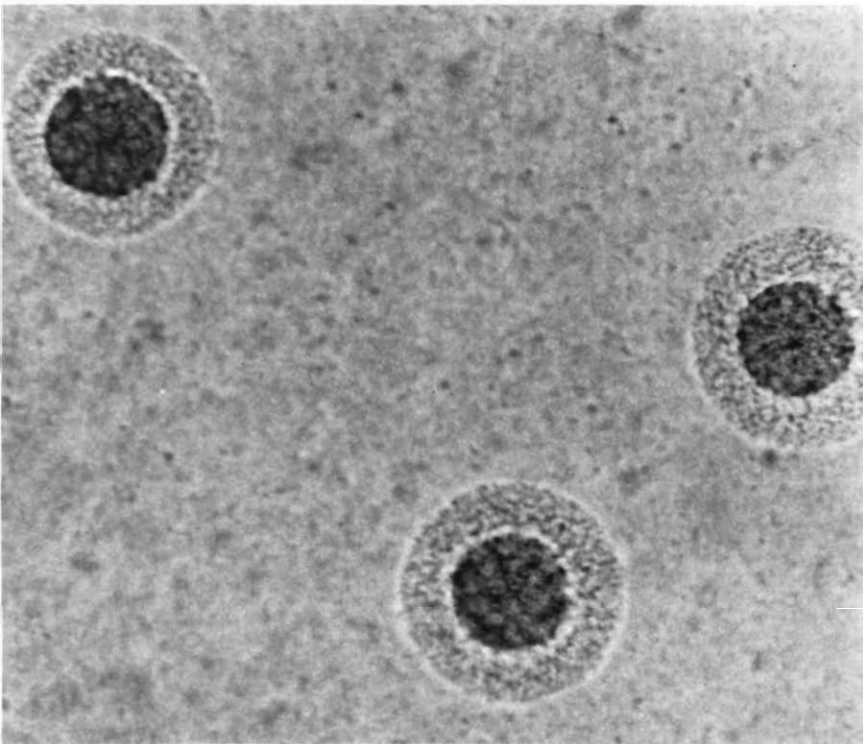


Figure 2. *Mycoplasma hyosynoviae*, 180X, on Difco solid medium.

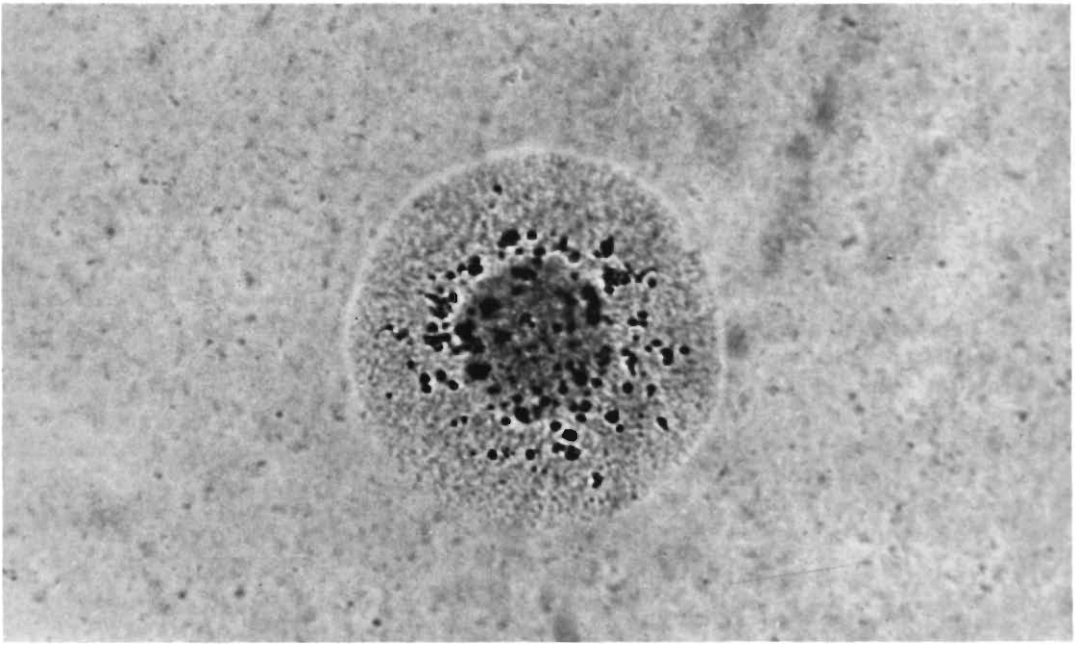


Figure 3. *Mycoplasma hyosynoviae*, 221X, on Difco solid medium exhibiting characteristic "spotting."

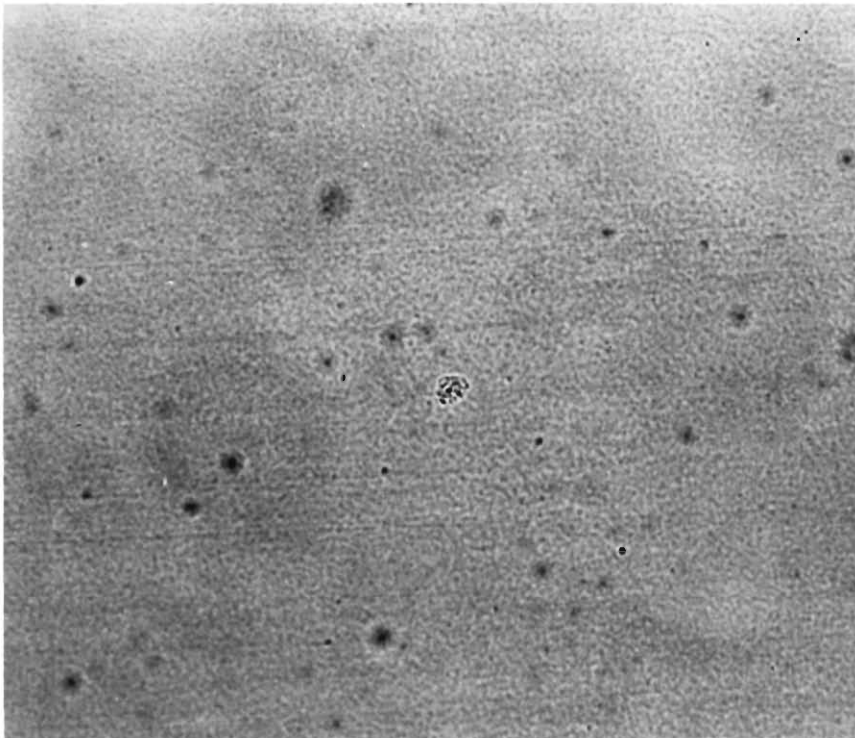


Figure 4. *Mycoplasma hyopneumoniae* ("J" strain *M. suis pneumoniae*), 165X, on Eagle's solid medium.

than that of *M. hyorhinis*. Figure 3 shows the distinct "spotting" reaction that is seen on *M. hyosynoviae* colonies after prolonged incubation (7 days).

*Mycoplasma hyopneumoniae* Infection—Mycoplasma pneumoniae is thought to be most prevalent in the finishing building which houses pigs about 6 months old and in 1 year old first litter gilts. The swine lung is *M. hyopneumoniae*'s only apparent habitat. Virus pneumonia of pigs (VPP) was the former name for this disease. It is referred to as enzootic pneumonia (EP) in Europe. Mycoplasmal pneumonia of swine (MPS) is a chronic lung infection having a high morbidity and low mortality. A well demarcated plum-colored area with "liver-like" consistency is the characteristic gross lesion. The ventral portion of the cardiac and apical lobes are its common location. These gross lesions

may be accompanied by enlarged mediastinal and other lymph nodes draining the lung.

*Mycoplasma hyopneumoniae* is very fastidious in its growth requirements and produces minute colonies (up to 0.5 mm diameter) that are granular, devoid of a central elevation, and do not form a film and spots. Figure 4 presents a typical *M. hyopneumoniae* colony after 4 days incubation.

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