Francisella tularensis
LEVEL A LABORATORY GUIDELINES

Safety

***F. tularensis* is highly infectious! Once this organism is suspected on the basis of clinical and/or laboratory information, do not perform additional testing except within an approved biosafety cabinet and wearing appropriate personal protective equipment!**

1. Biosafety level 2 practices for specimen processing.
2. Biosafety level 3 practices for all activities involving manipulations of cultures.

Colony Characteristics

1. Fastidious, requires cysteine, usually not visible at 24 hours.
2. Grows poorly on SBA. 1-2 mm, grey-white, non-hemolytic at 48-72 h.
3. Cysteine Heart Agar colonies 2-4 mm, smooth, entire, greenish-white, butyrous with opalescent sheen at 48-72 h.

F. tularensis on cysteine heart agar (72 hours)

4. Chocolate, Martin Lewis or Thayer-Martin medium colonies 1-3 mm, grey-white at 48-72 h.
5. Growth in thioglycollate broth is slow, with denser band near top, diffusing with age.

Microscopic Characteristics

1. Poorly staining, **very tiny gram-negative coccobacillus** (0.2-0.7 um), seen mostly as single cells. Bipolar staining is not a distinctive feature.

Key Characteristics (perform all testing within biosafety cabinet)

1. Growth: Grows slowly at 35-37 C, and poorly if at all at 25-28 C, does not require CO_2.
2. Gram stain: Gram-negative, tiny coccobacillus.
3. Catalase: Weakly Catalase Positive or negative.
4. Motility: Non-motile.
5. Oxidase: Negative.
6. Urease: Negative.
7. Beta-lactamase: Positive
8. X and V factors: Neither is required.
   Note: *F. tularensis* may or may not grow on heart infusion agar (HIA). If growth occurs, it will not be limited to the space around the XV disk. However, *Haemophilus influenzae* will grow on HIA and growth will be limited to the space around the XV disk.

If a biosafety cabinet is available for testing, oxidase, urease and XV factor testing may be very useful in differentiating *F. tularensis* from the phenotypically similar *Yersinia pestis, Brucella, Haemophilus, Bordetella, Acinetobacter, Pasteurella, Moraxella* and *Oligella* (*Moraxella urethralis*).

Isolates with the above characteristics should be reported to the patient's physician and forwarded to the South Dakota State Public Health Laboratory for additional testing.
South Dakota State Public Health Laboratory 615 E 4th; Pierre, SD 57501, (605) 773-3368