



Ringworm Protocol

RINGWORM (AKA DERMATOPHYTOSIS) OVERVIEW

• Definition

- Ringworm is an infection of the hair, nails or outermost layer of skin with a specific type of fungi, called dermatophytes

• Species Infected

- Ringworm is zoonotic which means it is contagious between animals and humans
- Most common dermatophyte species in cats and dogs
 - *Microsporum canis*, *Microsporum gypseum*, and *Trichophyton mentagrophytes*
- Dermatophytes that affect humans cause skin lesions on any skinned part of the body
 - In the groin, it is termed “jock itch”; on the feet, it is termed “athlete’s foot”

• How Ringworm is Acquired

- Direct contact with infected animal or person (most common route)
- Contact with contaminated soil
- Contact with contaminated fomites (objects or materials that have ringworm on them such as toys, bedding, floors, kennels, bowls, scratching posts, gardening equipment, brushes, etc.)
 - Damp, dark areas tend to harbor dermatophytes such as showers and locker rooms
- Acquiring a ringworm infection requires a complex interplay between dermatophyte fungi, host animal/ human immune system and the environment

• Factors that Increase Risk of Acquiring Ringworm

- **Age:** animals of any age are susceptible however young (<1 year) or geriatric animals are most susceptible
- **Immune Status:** conditions that compromise the immune system such as FIV, FeLV, pregnancy/lactation, malnutrition, anti-inflammatory drugs, cancer, other illnesses (URI, kennel cough, UTI, etc.) increase susceptibility to disease; stress can increase susceptibility
- **Skin Health:** if there is a break in the skin’s natural barrier system (i.e. cuts, wounds, abrasions, allergic skin disease), dermatophytes can much more easily invade skin
- **Amount of Infective Dermatophyte in Environment:** higher fungal loads contribute to higher incidences of infection
- **Frequency of Exposure:** the more an animal is exposed to ringworm, the more likely it is that disease will occur

• Why We Care So Much About Ringworm

- Ringworm is HIGHLY contagious to both people and animals and spreads easily
- Dermatophytes live for months to years on shed hair follicles and animals have A LOT of hair
- Infected patients are capable of shedding infective spores prior to visible clinical signs
- Ringworm can lead to completely unmanageable outbreaks, expensive diagnostic and medical costs, the possibility of spread to adopters and staff and an intolerable blow to shelter status in the community

• Prognosis

- Excellent! Ringworm is cosmetic, NOT life-threatening and is both treatable and curable



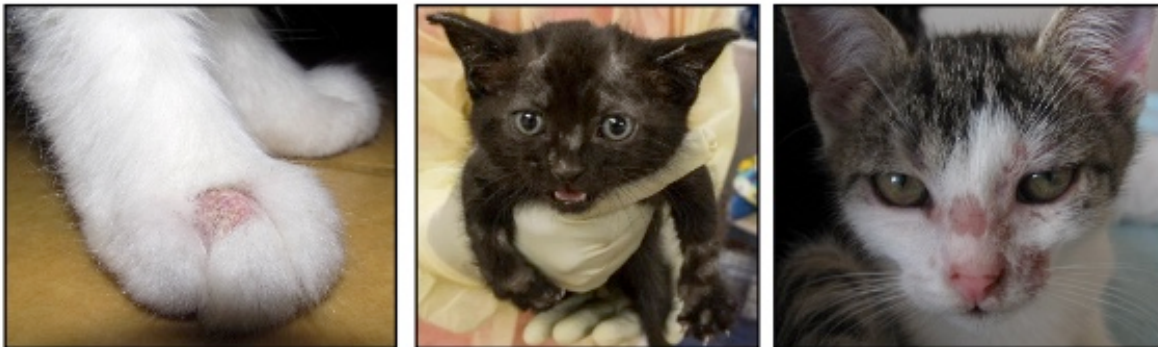
CLINICAL SIGNS

- Generally start to be visible 1-3 weeks after initial exposure
- Most common sites are the head, face, ears and toes

Ringworm can look like many different skin disorders however some of the most common things you may see are:

- Missing hair
- Damaged hair
- Crusty skin
- Scaly skin
- Red skin
- Abnormal appearing toe nail beds
- Itchy skin

Any abnormally appearing skin, hair or nails may be caused by ringworm



What To Do if Abnormal Skin Lesions are Noted

- With ANY suspicious skin lesions, separate that animal and its littermates from other animals (separate kennel or cage)
- Notify DVM or LVT
- Place towel over kennel/ cage to cover all holes to prevent spread of potential ringworm spores
- Label kennel/ cage with large, obvious sign/ tape reading “Ringworm suspect”
- Perform Wood’s lamp exam (see ‘Woods Lamp Exam’) on individual animal and all animals that may have had contact with that animal (littermates, housemates, same site during trapping, etc.)
- Set up DTM culture plate (see ‘Dermatophyte Test Medium [DTM] Culture Plate Setup’)
- Clean all surfaces that could even possibly be contaminated with floating ringworm spores appropriately (see ‘Environmental Decontamination’)
 - This includes floors, carriers, cages, transport vehicles and countertops surfaces appropriately
 - This can involved entire rooms

Record Keeping:

- Skin Lesions Noted During Intake Exam:
 - Write description of lesion in ‘Skin’ section on the ‘Intake Exam’ form (i.e. small round area of hair loss and crusty skin above left eye)
- Skin Lesions Noted at Any Time Other than Intake:
 - Take a photo and send it to LVT or DVM or physically show animal and lesion to LVT or DVM



The Humane Society of Mason County
24070 WA State Route 3, Suite 3, Belfair, WA 98528
360.275.9310
info@hsmcwa.org

DIAGNOSIS

1. Woods Lamp Exam

Wood's Lamp - fluorescent lamp with nickel or cobalt glass filter that emits long-wave, UVA light at 320-400 nm. Wood's lamp's wavelengths picks up tryptophan metabolites produced by *Microsporium canis* (ringworm species) as it attacks actively growing hair follicles; this shows up as an "apple-green" glow.

When To Perform

- On all kittens and puppies less than 5 months of age at intake
- On any animal exhibiting suspicious skin lesions suggestive of ringworm
- On all animals that may have had contact with an animal with a suspicious ringworm skin lesion (littermates, housemates, same site during trapping, etc.)

Supplies

- Wood's lamp
- Gloves
- Dark room
- Any work surface
- Human eyeballs

Wood's Lamp Exam Protocol

- Plug Wood's lamp in to wall outlet; let Wood's lamp sit illuminated for 3-5 minutes to "warm up" before examining the animal
- Turn lights in room down/ off and examine animal in darkened room after the examiners eyes have adjusted to the darkness
- Hold Wood's lamp 1-2 inches from the animal's body at all times
- Illuminate all areas of the animal - start with the head of the animal and cover the entire animal including nose, face, chin, ears (front and back), all aspects of the neck/ chest/ back, all of tail, all aspects of the front and hind legs and feet including in between toes and all nails, vulva/ scrotum/ prepuce, inguinal region, armpit region and stomach
 - Pay particularly close attention to face, ears, muzzle and toes (most commonly affected areas)
- Push hair in opposite direction of growth to better visualize skin deep to hair coat
- Remove any any crusts or mats and examine skin/ hair underneath



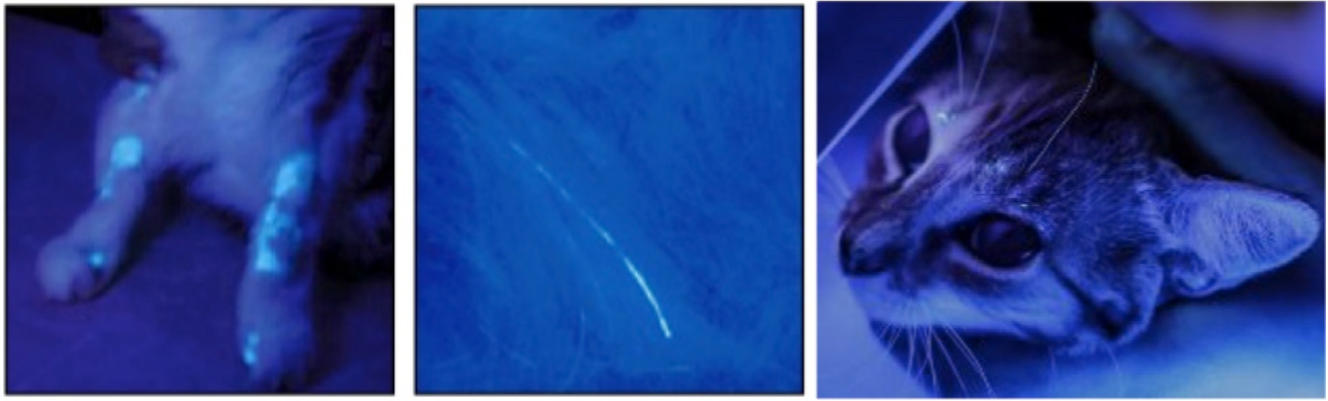
Positive Findings:

- Individual hairs will fluoresce/ glow an apple-green color, particularly at the base of the hair and involve the entire hair shaft (not just the tips of the hairs)
 - Only the ringworm species *Microsporium canis* will fluoresce; there are several other species of ringworm that will not fluoresce
 - Only determine fluorescence of hairs, not crusts or skin
 - Yellow or blue fluorescence is not diagnostic for *Microsporium canis*
- If fluorescence is not apple-green or does not involve entire hair shaft, attempt to remove fluorescing areas with warm water and gauze
 - False positives can result from medication (eye and oral meds), scales, crusts, lint, carpet fibers, soap, shampoo, etc.
 - If fluorescence disappears or diminishes, it is likely a false positive; true ringworm will remain strongly fluorescent
- **NOTE:** Positive apple-green fluorescence indicates a high suspicion for ringworm however does not definitively diagnose ringworm as there is a high chance for false negatives (animal has ringworm but it does not fluoresce) or false positives (animal shows fluorescence but ringworm is not causing it)



The Humane Society of Mason County
24070 WA State Route 3, Suite 3, Belfair, WA 98528
360.275.9310
info@hsmcwa.org

Examples of positive fluorescence for *Microsporum canis* with Wood's Lamp



What To Do If Apple-Green Fluorescing Hair Shafts are Noted

- Separate affected animal and its littermates from other animals (separate kennel or cage)
- Place towel over kennel/ cage to cover all holes to prevent spread of potential ringworm spores
- Label kennel/ cage with large, obvious sign or tape reading "RINGWORM SUSPECT"
- Set up dermatophyte test medium (DTM) culture plate (see below 'DTM Culture Plate Protocol')
- Clean all surfaces that could even possibly be contaminated with floating ringworm spores appropriately (see 'Environmental Decontamination within the Shelter Environment')
 - This includes floors, carriers, cages, transport vehicles and countertops surfaces appropriately
 - This can involve entire rooms
- Notify DVM or LVT

Record Keeping:

- Woods Lamp Exam Performed During Intake:
 - Note negative or positive findings on specified location on 'Intake Exam' form
 - If positive fluorescence:
 - Write down each specific area of fluorescence (i.e. above left eye, on back of right ear flap, on top of front left of foot, etc.) on 'Skin' section of 'Intake Exam' form
 - Follow protocol for setting up a DTM culture plate (See Below 'Dermatophyte Test Medium [DTM] Culture Plate')
 - Notify DVM or LVT
- Woods Lamp Exam Performed at Any Time Other than Intake:
 - Negative fluorescence noted → no action necessary
 - If positive fluorescence:
 - Follow protocol for setting up a DTM culture plate (See Below 'Dermatophyte Test Medium [DTM] Culture Plate')
 - Notify DVM or LVT



2. Dermatophyte Test Medium (DTM) Culture Plate *Current gold standard for ringworm diagnosis*

Dermatophyte Test Medium - growth medium (agar) that contains antibacterial agents (prevent bacterial growth) and anti-fungal agents (prevent non-ringworm fungal growth); also contains red dye to differentiate ringworm from other plants, fungi and microorganisms

When To Set-Up DTM Culture Plate:

- When Woods Lamp exam shows apple-green fluorescence of hair shafts
- When there are skin lesions suspicious for ringworm regardless of results of Wood's lamp exam
- When an animal has been exposed to another animal or human with confirmed or suspicious ringworm skin lesions
- When monitoring the treatment of an animal suspected of having or previously diagnosed with ringworm
 - New DTM culture plate will be set up once weekly during treatment
 - Make sure to obtain samples for DTM plates BEFORE dipping animal with lime-sulfur dip

Supplies

- Gown & gloves
- Permanent marker
- Any clear (i.e. Scotch®) tape
- Sterilized hemostat
- Individual toothbrush sealed in plastic
- Accelerated hydrogen peroxide (Rescue®) at a concentration of 8oz to one gallon of water
- Paper towels
- DTM culture plate
 - Remove DTM culture plate from box in refrigerator; keep lid on culture plate until ready to add sample
 - Allow DTM culture plate to warm to room temperature (approximately 30 minutes) before adding sample
 - Do not use any DTM culture plate that is expired, cracked, dry, discolored, has excessive condensation, shows signs of colony growth or is otherwise deteriorated
 - **Number of DTM plates to use within litters will be determined by DVM or LVT on a case by case basis and will be determined by number of available foster homes, separation of litters, demonstration of overt clinical signs of ringworm vs. exposure, etc.**

DTM Culture Plate Protocol

Preparation:

- Put on gloves +/- gown prior to sample collection from any animal
- Open hemostat package but leave hemostat sitting on sterile surface/ packaging
- Remove lid from DTM culture plate and place the culture plate & lid somewhere where the medium won't get inadvertently touched by you, an animal or something in the environment

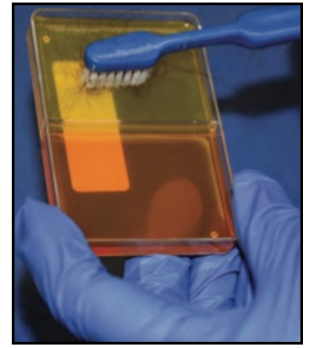
Techniques:

1. Hair plucking (Recommended for animals with obvious skin lesions)
 - If fluorescence with Wood's lamp noted:
 - Use Wood's lamp to identify green fluorescing hairs
 - Pluck these hairs using the sterile hemostats
 - Place hairs gently but firmly onto the DTM culture medium without damaging the medium
 - If no fluorescing hairs seen but suspicious lesion present:
 - Pluck hairs from the outermost aspect of the suspicious area, collecting any visibly damaged hair
 - Once samples have been collected, place lid on DTM culture plate and set aside
2. Mackenzie Brush Technique (Recommended for animals without obvious skin lesions)
 - Remove individually sealed toothbrush from wrapper



The Humane Society of Mason County
24070 WA State Route 3, Suite 3, Belfair, WA 98528
360.275.9310
info@hsmcwa.org

- Brush animals entire coat with toothbrush for a total of at least one minute, making sure to include the animals face, ears and paws
- Make sure toothbrush bristles contain hair
- Take toothbrush and gently “blot” toothbrush bristles onto culture medium multiple times - press hard enough to make visible marks in culture medium but not enough to damage/ crush the medium
- Use sterile hemostats to remove hairs from toothbrush and place on culture medium
- Once samples have been collected, place lid on DTM culture plate and set aside

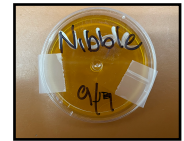


Clean Up:

- Place animal back in kennel
 - Ask a “clean” assistant (one who has not handled the animal) to open and close the door to the kennel so you do not contaminate any clean surface
 - If no clean assistant is available, clean all surfaces touched as described below
- Throw toothbrush in garbage
- Saturate hemostat and work surface with Rescue®
- Wipe down work surface with paper towels removing all debris (litter, hair, dirt, feces, etc.)
- Saturate clean work surface a second time with the same concentration of Rescue®
- Let work surface and hemostat sit in Rescue® for 10 minutes prior to wiping up remaining solution with paper towel and placing hemostat in surgical scrub area
- Thoroughly moisten paper towel with Rescue® and wipe down Wood’s lamp, entire Rescue® bottle and outside of DTM culture plate (outer plastic only)
 - Use paper towel that is thoroughly moistened but not dripping with Rescue®
 - DO NOT spray accelerated hydrogen peroxide directly onto Wood’s lamp or DTM plate

DTM Plate Care:

- On *bottom* of DTM plate, write animal’s name, today’s date and your initials with permanent marker
- Secure lid to bottom of DTM plate with clear tape so lid will not inadvertently fall off
- Place DTM culture plate UPSIDE DOWN in appropriate drawer to left to surgical prep sink
 - If not upside down, condensation can drip onto fungal growth and make results hard to interpret
- Close drawer when finished
 - Ideal DTM environment - dark area, room temp (77-86° F), 30% humidity
- Keep all culture plates for 14 days



Results

- Positive Findings
 - White or pale colony growth PLUS concurrent red medium color change within 7 days of plating samples
 - pH indicator in medium changes color to red when protein sources are used up; Ringworm prefers protein as food source so when it uses up all protein in medium, the pH changes and red color is seen
- Negative Findings:
 - Red color change after 10-14 days that is NOT concurrent with colony growth
 - Contaminate fungi use up carbohydrates in medium as food source first, keeping the medium color yellow; once the fungi start to metabolize protein, the medium may change to red later
 - Pigmented colony growth
- Important notes:
 - Not all dermatophytes turn the DTM red, thus false negatives are possible



The Humane Society of Mason County
 24070 WA State Route 3, Suite 3, Belfair, WA 98528
 360.275.9310
info@hsmcwa.org

- Some non-pathogenic fungi can cause the red color to DTM, thus false positives are possible
- False negatives are possible if non-infected hairs on an infected animal are used for culture
- *Due to false negative and false positive results of DTM culture plates, it is important to microscopically examine and attempt to positively identify all growth*

Record Keeping

1. At Time of DTM Culture Set Up

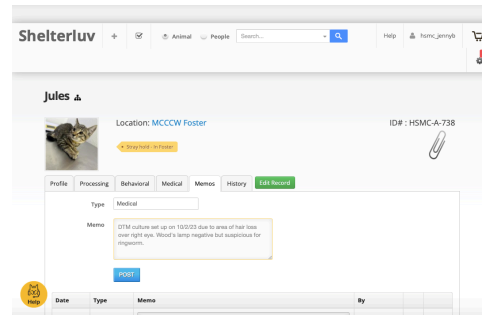
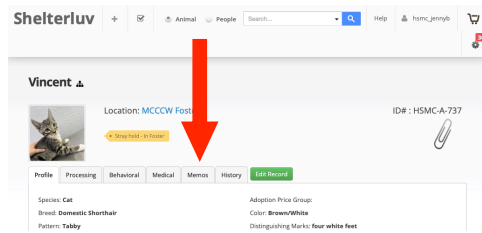
- All animals:
 - Fill out 'Ringworm DTM Monitoring Sheet' with animal's name(s), lesion site(s)/ description(s) and dates from today (day 0) to 14 days from today
- HSMC Animals:
 - Go to animal's chart in ShelterLuv; click 'Memo' tab; select 'Medical' type and enter "DTM culture set up on (date) due to (lesions/ reason for setting up DTM culture and Wood's lamp exam results); click 'POST'

Ringworm DTM Monitoring Sheet

ANIMAL NAME(S): Fluffy
 LESION SITE(S) AND DESCRIPTION(S): Wood's lamp fluorescence on hairs on right ear
Fluffy
Fluffy has fleas across her right eye

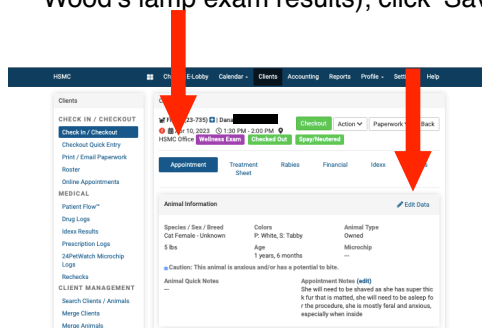
Date: 10/2/23	Growth (Number, color, description)	DTM Color Change (Color of medium)
Day 1	10/2/23	
Day 2	10/3/23	
Day 3	10/4/23	
Day 4	10/5/23	
Day 5	10/6/23	
Day 6	10/7/23	
Day 7	10/8/23	
Day 8	10/9/23	
Day 9	10/10/23	
Day 10	10/11/23	
Day 11	10/12/23	
Day 12	10/13/23	
Day 13	10/14/23	
Day 14	10/15/23	

MICROSCOPIC FINDINGS:
 Date: _____ Description: _____
 Date: _____ Description: _____



• Privately Owned Animals:

- Go to animal's chart in ClinicHQ; in 'Appointment' tab, click on 'Edit Data' in Animal Information section; type "DTM culture set up on (date) due to (lesions/ reason for setting up DTM culture and Wood's lamp exam results); click 'Save Data'



Screenshot of ClinicHQ Edit Appointment Data form. A red arrow points to the 'Animal Quick Notes' field, which contains the text: "DTM culture set up on 10/2/23 due to exposure to ringworm in outdoor colony. Wood's lamp negative."



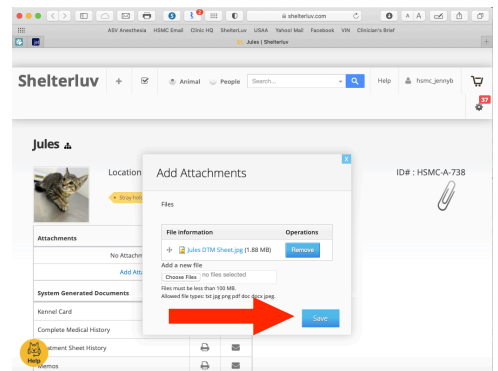
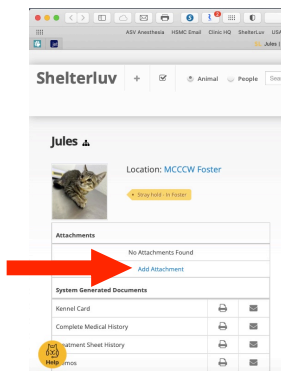
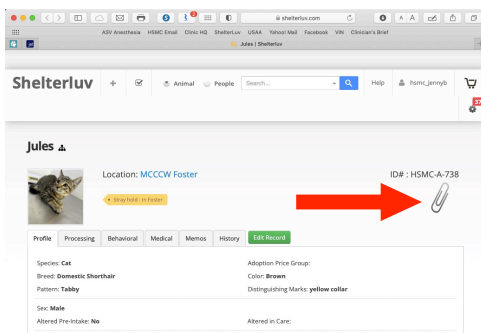
The Humane Society of Mason County
 24070 WA State Route 3, Suite 3, Belfair, WA 98528
 360.275.9310
info@hsmcwa.org

2. 14 Day Monitoring of DTM Culture Plates

- DTM culture plates should be looked once a day and 'Growth' and 'DTM Color Change' sections of 'Ringworm DTM Monitoring Sheet' filled out accordingly
 - "Growth" - negative or positive with description (size, shape, color, appearance)
 - "DTM Color Change" - write negative if no color change and "red" if medium changed to red
- If positive growth or color change is seen at any time, notify DVM

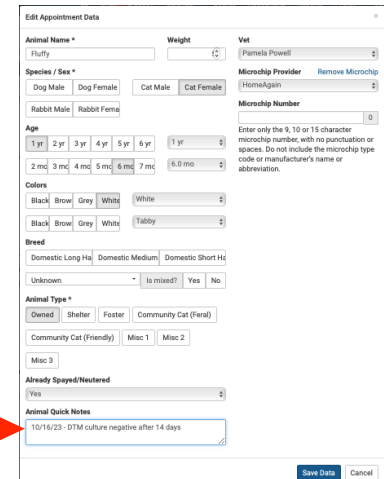
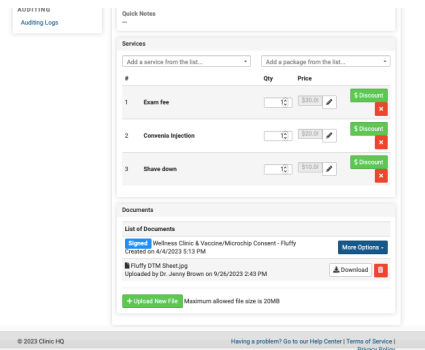
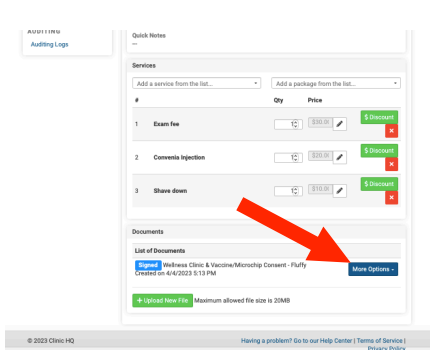
3. Negative DTM Culture Plates at Conclusion of 14 Day Monitoring

- HSMC Animals:
 - Scan 'Ringworm DTM Monitoring Sheet' into computer and save file as "(Animal's name) DTM Sheet" (i.e. "Fluffy's DTM Sheet"); Add as attachment to animal's file in ShelterLuv (see below)
 - Add Memo in ShelterLuv → click 'Memo' tab; select 'Medical' type and enter Type: Medical > type 'DTM culture negative after 14 days'; click 'POST' (see above for reference)



Client Owned Animals:

- Scan 'Ringworm DTM Monitoring Sheet' into computer and save file as "(Animal's name) DTM Sheet" (i.e. "Fluffy's DTM Sheet"); Go to animal's chart in ClinicHQ; in 'Appointment' tab, scroll down to bottom of page and click on 'Upload New File' in 'Documents' section; Choose scanned file
- Go to animal's chart in ClinicHQ; in 'Appointment' tab, click on 'Edit Data' in Animal Information section; type "(Today's date) - DTM culture negative after 14 days"; click 'Save Data' (see above for reference)



The Humane Society of Mason County
 24070 WA State Route 3, Suite 3, Belfair, WA 98528
 360.275.9310
info@hsmcwa.org

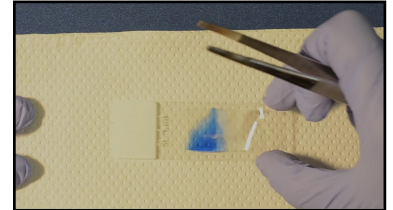
3. MICROSCOPIC ANALYSIS OF DTM CULTURE GROWTH

Supplies

- DTM culture plate with colony growth
- Microscope
- Gloves
- Glass microscope slide
- Clear acetate tape (not regular Scotch® tape)
- Paper towel
- Blue stain options - Methylene blue, lactophenol cotton blue or the dark blue/ purple Diff-Quik solution [basophilic thiazine dye]

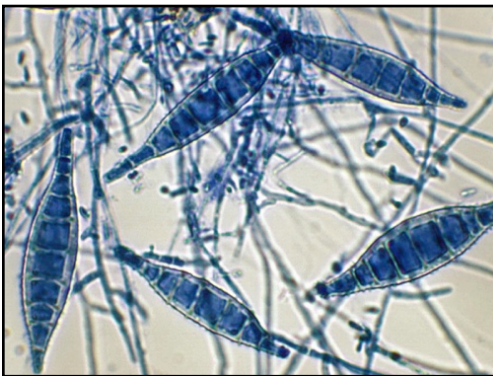
Slide Preparation

- Put on clean gloves
- Place clean unused glass slide on flat surface near microscope
- Apply one drop of blue stain onto glass slide
- Tear off a small piece of clear acetate tape from the roll
- Lightly touch sticky side of tape to the surface of the fungal colonies
- Stick tape to the glass slide (sticky side touching slide) over the drop of blue stain
 - Press tape onto slide; sample will mix with dye
 - Use paper towel to blot dye that seeps from under tape and to better adhere tape
- Examine slide under 400x magnification (blue lens) for dermatophyte macroconidia (see photos below)



Diagnosing Dermatophytes Microscopically

- Diagnosis is based on macroconidia (large spindle or cigar-shaped fungal bodies that house multiple internal cells)
- Other type of fungi produce hyphae and often small spores, but do not form macroconidia



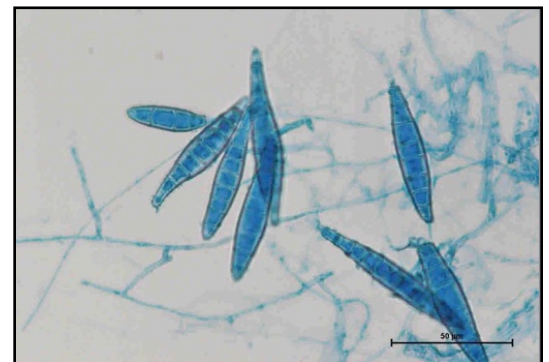
Microsporium canis

- Large in size
- Thick walls
- Contain six or more internal cells
- End of the spindles has a "terminal knob"

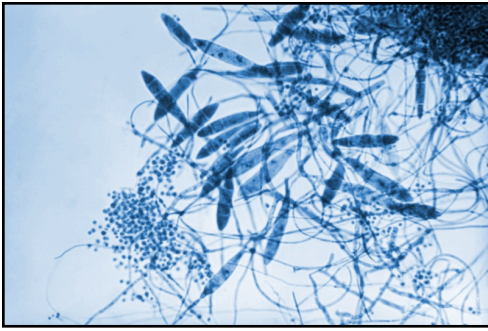


Microsporium gypseum

- Large in size
- Thin walls
- No "terminal knob"
- Six or less internal cells
- Fungal hyphae are long, straight and stringy



The Humane Society of Mason County
24070 WA State Route 3, Suite 3, Belfair, WA 98528
360.275.9310
info@hsmcwa.org



Trichophyton Species

Long bodies


Thin walls

Also contain spiral-shaped hyphae and numerous grape-like clusters of microconidia



Record Keeping

- After performing microscopy, fill out sections at bottom of 'Ringworm DTM Monitoring Sheet' titled 'Microscopic Findings' with today's date & description of microscopic findings at 400X power
- If no macroconidia was noted, continue daily tracking of colony growth and color change for 14 total days
- If macroconidia was noted, notify DVM and give 'Ringworm DTM Monitoring Sheet' to DVM for scanning into computer



 The Humane Society of Mason County
 24070 WA State Route 3, Suite 3, Belfair, WA 98528
 360.275.9310
 info@hsmcwa.org

Ringworm DTM Monitoring Sheet

ANIMAL NAME(S): Fluffy, Bob, Raymond, Stella

LESION SITE(S) AND DESCRIPTION(S): Front left top of paw, No lesions / No fluorescence, Large area top of nose, No abscess lesions, Few fluorescent lesions base of ear

Date:	Growth (number, color, description)	DTM Color Change (color of medium)
Day 1 10/3	○	○
Day 2 10/4	○	○
Day 3 10/5	○	○
Day 4 10/6	○	○
Day 5 10/7	○	○
Day 6 10/8	○	○
Day 7 10/9	Small white fuzzy colony	Red
Day 8 10/10		
Day 9 10/11		
Day 10 10/12		
Day 11 10/13		
Day 12 10/14		
Day 13 10/15		
Day 14 10/16		

MICROSCOPIC FINDINGS:

Date: 10/9/22 Description: M. canis macroconidia

Date: _____ Description: _____



The Humane Society of Mason County
 24070 WA State Route 3, Suite 3, Belfair, WA 98528
 360.275.9310
info@hsmcwa.org

4. Dermatophyte Polymerase Chain Reaction (PCR)

PCR - laboratory test which detects a very small piece of DNA in a sample (i.e. ringworm in hair, COVID-19 in mucous samples) and copies or amplifies that piece of DNA many times to ease detection and identification of diseases

When To Perform:

- HSMC Protocol
 - When looking for a fast answer if an animal is infected with ringworm (test takes 1-3 days to run)
 - When animals have been exposed to or potentially exposed to ringworm but show no skin lesions and are negative on Wood's lamp exam
- Uses not within HSMC
 - Can be used for testing all animals suspicious of having ringworm, animals exposed or potentially exposed to ringworm and for monitoring animals during ringworm treatment
 - I.e. all cases as mentioned above in "DTM Culture Plate; When to Perform"
 - HSMC does not use PCR for all ringworm diagnoses due to increased cost and increased potential for false positives and negatives when compared to DTM cultures

Pros and Cons of PCR Testing

- Pros:
 - Results obtained in 1-3 days
 - Tests for *Microsporum* species including *M. canis* as well as *Trichophyton* species
 - Less supplies needed and less staff time required monitoring DTM plates and identifying macroconidia
- Cons:
 - Expense much higher than DTM culture
 - Any dead or "stray" ringworm spore on an animal's coat will yield a positive PCR (even if the animal's skin is not infected with ringworm)

Supplies

- Gloves +/- gown
- Permanent marker or pen
- Sterilized hemostat
- Individual toothbrush sealed in plastic
- Accelerated hydrogen peroxide (Rescue®) at a concentration of 8oz to one gallon of water
- Paper towels
- White top laboratory tube (blood tube)
 - Number of samples to use within litters will be determined by DVM or LVT on a case by case basis and will be determined by number of available foster homes, separation of litters, demonstration of overt clinical signs of ringworm vs. exposure, etc.

Ringorm PCR Protocol

Preparation:

- Put on gloves +/- gown prior to sample collection from an animal
- Open hemostat & toothbrush for easy access but leave sitting on sterile surface/ packaging

Techniques:

1. Hair plucking (Recommended for animals with obvious skin lesions)
 - If apple-green fluorescence with Wood's lamp noted:
 - Use Wood's lamp to identify green fluorescing hairs
 - Pluck these hairs using the sterile hemostats
 - Place hairs into white top laboratory tube, place lid back on tube and write animal's name, today's date and HSMC on lab tube in permanent marker
 - If no Wood's lamp fluorescing hairs noted but suspicious ringworm skin lesion(s) present:
 - Pluck hairs from the outermost aspect of the suspicious area, collecting any visibly damaged hair
 - Place hairs in white top laboratory tube, place lid back on tube and write animal's name, today's date and HSMC on lab tube in permanent marker



The Humane Society of Mason County
24070 WA State Route 3, Suite 3, Belfair, WA 98528
360.275.9310
info@hsmcwa.org

- Mackenzie Brush Technique** (Recommended for animals without obvious skin lesions)
 - Remove individually sealed toothbrush from wrapper
 - Brush animals entire coat with toothbrush for a total of at least one minute, making sure to include the animals face, ears and paws
 - Make sure toothbrush bristles contain hair
 - Place entire toothbrush in new, clean ziplock bag and write on the bag in permanent marker animal's name, today's date and HSMC

Clean Up:

- Place animal back in kennel
 - Ask a "clean" assistant (one who has not handled the animal) to open and close the entrance to the kennel so you do not contaminate any clean surface
 - If no clean assistant is available, clean all surfaces touched as described below
- Throw toothbrush (if applicable) in garbage
- Saturate hemostat (if applicable) and work surface with Rescue®
- Wipe down work surface with paper towels removing all debris (litter, hair, dirt, feces, etc.)
- Saturate clean work surface a second time with the same concentration of Rescue®
- Let work surface and hemostat sit in Rescue® for 10 minutes prior to wiping up remaining solution with paper towel and placing hemostat in surgical scrub area
- Thoroughly moisten paper towel with Rescue® and wipe down entire Rescue® bottle and any other items you may have touched

Sending Ringworm PCR Test to ANTECH

- Go to <https://online.antechdiagnostics.com/login.html>
- Enter Clinic ID, Username and Password to enter site
- Hover mouse over 'Lab' header at top of page and select 'Lab Ordering'
- Step 1: Select Veterinarian; Step 2: Enter client information; Step 3: Enter animal information
- Step 4: Search for Canine/Feline Ringworm PCR Panel, test code T982; Click 'Preview Order'
- Print lab form
- Place in Antech Lab plastic bag:
 - Toothbrush in plastic Ziplock® bag (toothbrush must be in its own Ziplock bag)
 - Appropriately labeled white top laboratory tube
 - Printed Antech Lab form
- Place Antech lab bag with samples in Antech lab box outside of HSMC's back door
- Call Antech (1-800-872-1001) to request a lab sample pickup

Order Summary

Item Name	Test Code	List Price
Canine/Feline Ringworm PCR Panel	T982	\$49.67
Total (1 Item)		\$49.67

Summary

Lab: (270924) Patient ID:

Doctor: Brown, Jennifer
Client: Jenny Brown
Pet: Shaniqua
Age: 8 Years

Additional Information (Optional):

Print ANTECH

Antech Account Number: 270904
Humane Society of Mason County
24070 WA State Route
Belter, WA, 98528, USA
Phone: 253-224-9360

Request Number: 124952290

PMS ID: 1 Patient ID: 1
Doctor: Brown, Jennifer Species: Feline
Shred: Domestic Shorthair
Sex: SF Age: 8 Years

Lab Order #: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

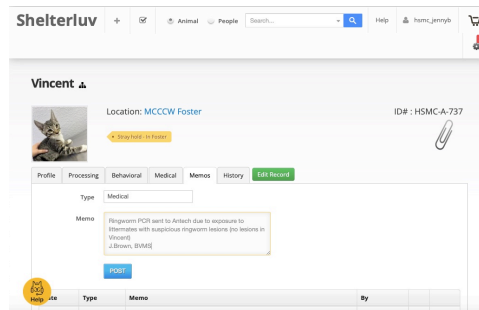
Ordered Tests	Test Code	Description	Component
	T982	Canine/Feline Ringworm PCR Panel	Canine/Feline Ringworm PCR Panel



Record Keeping

- HSMC Animals:

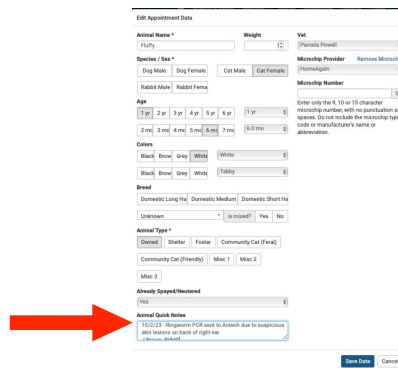
- Go to animal's chart in ShelterLuv; click 'Memo' tab; select 'Medical' type and type in "Ringworm PCR sent to Antech lab on (date) due to (lesions/ reason for sending PCR test and Wood's lamp exam results)"; click 'POST'



The screenshot shows the ShelterLuv interface for an animal named Vincent. The animal's location is listed as 'MCCCW Foster' and its ID is 'HSMC-A-737'. The 'Medical' tab is selected, and a memo is being entered. The memo text reads: "Ringworm PCR sent to Antech due to suspicion of dermatophyte with suspicious inguinal lesions (no lesions in Wood's lamp exam)". The 'POST' button is visible below the memo text.

- Client Owned Animals:

- Go to animal's chart in ClinicHQ; in 'Appointment' tab, click on 'Edit Data' in Animal Information section; type "Ringworm PCR sent to Antech lab on (date) due to (lesions/ reason for sending PCR test and Wood's lamp exam results)"; click 'Save Data' (see above for reference)



The screenshot shows the 'Edit Appointment Data' form in ClinicHQ. A red arrow points to the 'Animal Quick Notes' field, which contains the text: "10/2/22 Ringworm PCR sent to Antech due to suspicious skin lesions on back of right ear". The form includes various fields for animal information such as name, species, age, sex, and breed.

Results

- Positive Findings

- Dermatophyte DNA was found in sample from animal; animal is considered positive for ringworm

- Negative Findings:

- No dermatophyte DNA was found in sample from animal; animal is considered negative for ringworm



The Humane Society of Mason County
24070 WA State Route 3, Suite 3, Belfair, WA 98528
360.275.9310
info@hsmcwa.org

TREATMENT

Although ringworm is self-limiting and will resolve on its own over time, in a shelter environment, it is recommended that animals be treated with both topical and oral anti-fungal treatments to decrease the time to cure and to decrease the likelihood of spread to other animals/ people

Guidelines

- Make sure to get an updated animal weight at the start of treatment and every 7 days during treatment for health monitoring purposes and to adjust medication doses as needed
- Start BOTH topical (lime-sulfur dip) and oral (Itrafungol/ terbinafine) treatments ONLY on animals with:
 - Apple-green fluorescing hairs on Wood's lamp exam AND have skin lesions classic for ringworm (hair loss, crusting, scaling)
 - A positive finding of ringworm based on DTM culture plate and microscopic analysis results

1) Lime Sulfur Dip Topical Treatment

Purpose

- Used to kill infective ringworm spores on the hair coat thereby:
 - Limiting spread of spores via direct animal to animal transmission
 - Minimizing environmental contamination (reduces number of infective spores in environment)
 - Reducing risk of false-positive DTM culture and dermatophyte PCR results
- Helps to shorten course of disease in infected individual animals



Safety

- Can be drying/ irritating to human skin; wash off thoroughly with soap and water after use
- Will stain work surfaces & clothing yellow or white; will turn light animal's coat yellow for a period
- Side effects of lime-sulfur use in animals include skin irritation, drying of the hair coat and foot pads and hair-loss on the ears
- Can be irritating to the GI tract if ingested in large amounts (i.e. dams licking dip from neonate litters) however generally non-irritating long-term to the GI tract or the eyes
- If dip has gotten into human or animal eyes, it will burn; rinse eyes with sterile saline until no longer irritated or uncomfortable

When to Perform Lime Sulfur Dip

- One time dip:
 - Animals suspicious of having been exposed to ringworm but have no obvious lesions or apple-green fluorescence with Wood's Lamp
- Twice weekly (every 3-4 days) dip
 - Animals with confirmed ringworm (positive DTM culture or PCR test)
 - Dips to be continued until two negative consecutive DTM cultures are obtained
 - Animals with obvious apple-green fluorescence on Wood's lamp exam
 - Animals with lesions suspicious for ringworm while awaiting DTM or PCR results
 - Animals who have no suspicious ringworm lesions but are part of a litter with confirmed ringworm or with littermates having lesions suspicious for ringworm

Dipping Supplies:

- Gloves
- Gown
- Sterile 3ml or 5ml syringe filled with sterile NaCl (saline) for flushing eyes
- Heat disk warmed to appropriate temperature to keep animal warm post-dipping
- Clean pee-pad to place animal on after dipping
- Towel to dry animal after dipping
 - +/- warmed in dryer or towel warmer



The Humane Society of Mason County
24070 WA State Route 3, Suite 3, Belfair, WA 98528
360.275.9310
info@hsmcwa.org

- Vessel to mix warm water and lime-sulfur dip (large dog bowl, rubbermaid container, sink, squirt bottle, etc.)
- Item to apply lime sulfur solution to head and face (Sponge, gauze, paper towel, washcloth etc.)
- Clean kennel or cage to place animal in post-dipping
- Trash can
- Extra trash bag with “RINGWORM” written on it in large, obvious permanent marker lettering
- Accelerated hydrogen peroxide (Rescue®) at a concentration of 8oz to one gallon of water
- Concentrate of lime-sulfur dip
- Warm tap water

Procedure

Preparation:

- Remove all jewelry (sulfur can tarnish many types of metal)
- Put on gown and gloves
- Warm heat disk and place in kennel where animal will be housed after dipping with pee-pad on top of warmed heat disk
 - Always assure there are 2 layers of fabric in between the heat disc and the animal to prevent burns
- Mix 8 oz of lime-sulfur dip with 1 gallon of warm water
 - Note: this is twice the recommended concentration listed on the bottle
 - Using solutions more concentrated than this can result in chemical burns to the animal
- Never wet animal with water prior to applying lime-sulfur solution

Application to Body:

- The Dunk:
 - If animal is small enough, place lime-sulfur solution in a vessel and you can physically dunk animal into lime-sulfur solution up to the neck; do not immerse head
- Spray Bottle
 - Place lime-sulfur solution into spray bottle and saturate animal with solution
- Wipe Down
 - Saturate sponge, cloth, towel with lime-sulfur solution and use to wipe onto animal, making sure to get as much lime-sulfur solution on animal as possible
- Pump Sprayer
 - Place lime-sulfur solution in pump sprayer and use to apply to animal
- Battery Powered Sprayer
 - Place lime-sulfur solution in spray bottle and attach electric sprayer top to spray bottle; turn on sprayer; use sprayer to saturate animal



Application to Dainty Areas (head/ face/ ears):

- Use sponge, paper towel, gauze, etc. to apply lime-sulfur solution to ears, face, around eyes, nose, chin and head trying to keep lime-sulfur water solution out of eyes
 - If lime sulfur solution gets into eyes, you may see tearing, squinting, pawing at the eyes, etc.; take syringe of sterile NaCl and flush solution from eyes
 - Although initially irritating, lime-sulfur dip in the eyes does not cause long-term irritation or pathology to the eyes



Tips:

- Make sure to get as much lime-sulfur solution on the animal as possible
 - Include nose, face including around eyes, chin, ears (front and back), all aspects of the neck/ chest/ back, all of tail, all aspects of the front and hind legs and feet including in between toes and all nails, vulva/ scrotum/ prepuce, inguinal region, armpit region and stomach
- Make sure to get solution as close to the skin as possible



The Humane Society of Mason County
 24070 WA State Route 3, Suite 3, Belfair, WA 98528
 360.275.9310
info@hsmcwa.org

- Use your fingertips to massage lime-sulfur into coat
 - Push hair in opposite direction of growth as you apply lime sulfur
- Use a freshly mixed lime-sulfur solution for each animal litter needing dipping if animals will touch the solution (i.e. “the dunk” method)
 - Only keep diluted mixture of water and lime-sulfur for 24 hours then discard

Post-Dip:


- Hand-squeeze excess lime-sulfur dip from trunk and legs
 - Wrap animal with towel and hand-dry as much as possible
 - Place animal in kennel/ cage on pee-pad with 2 layers of towel placed over heat disk & pee pad
 - Do not ever rinse lime-sulfur solution off animal with water
 - OK to keep animal wrapped in towel
 - Allow animal to dry in kennel
- Nursing dams and babies:*
- Wipe lime-sulfur solution from dams nipples prior to placing in kennel
 - Separate nursing babies from dam for 30 minutes until kittens/ puppies are more dry to prevent dam from licking lime-sulfur solution from neonates
 - Use extra warming methods to prevent hypothermia in babies (rice bags, circulating warm water blanket, warm room, warm towels, etc.)
 - Always assure there are 2 layers of fabric in between the heat disc and the animal to prevent burns

Clean Up:

- Pour remaining lime-sulfur solution down the drain once all the animals that need to be dipped for the day are complete; rinse container with warm water and allow to air dry
- Throw away all disposable items
- Place all laundry in a plastic garbage bag labelled “RINGWORM” and place in laundry
 - See “Environmental Decontamination: Laundry” for washing protocols
- Clean the work surface area and all non-disposable items according to “Environmental Decontamination: Work Surfaces” protocol below

Record Keeping:

- Start a ‘Ringworm Monitoring and Treatment Sheet’ and fill out name(s) of animals, weight(s) and dates
- Place your initials on the on the date you dip each animal



The Humane Society of Mason County
24070 WA State Route 3, Suite 3, Belfair, WA 98528
360.275.9310
www.hsmcwa.org

Ringworm Monitoring and Treatment Sheet

ANIMAL NAME(S): Fluffy & Harry

Weight(s):	<u>Fluffy 24</u>	<u>Harry 2.5</u>	lb		Itrafungol Dose (10mg/ml solution):	_____ml	
Date	Sun	Mon	Tues	Wed	Thurs	Fri	Sat
Weight		<u>F 24; H 2.5 lb</u>					
DTM Plate Set Up							
Itrafungol							
Lime Sulfur Dip			<u>JB</u>			<u>JB</u>	

Weight(s):	_____lb	Itrafungol Dose (10mg/ml solution):	_____ml				
Date	Sun	Mon	Tues	Wed	Thurs	Fri	Sat



The Humane Society of Mason County
24070 WA State Route 3, Suite 3, Belfair, WA 98528
360.275.9310
info@hsmcwa.org

2) Oral/ Systemic Treatment

Purpose

- Treats ringworm at the source, in the skin

When to Start Oral Ringworm Treatment

- As soon as a DTM culture becomes positive for ringworm
- Animals with lesions HIGHLY suspicious for ringworm with or without apple-green fluorescence noted on Wood's lamp exam

Important Note for Oral Ringworm Treatment

- Weigh all animals once a week to determine updated Itrafungol/ terbinafine dose
 - Growing kittens and puppies will likely need updated dose amounts throughout treatment

Itrafungol (10mg/ml solution) Protocol

- 5mg/kg by mouth once daily for 7 days then no treatment for 7 days; Repeat this cycle until the animal is cured (i.e. two negative consecutive DTM cultures one week apart)
- Give with food if possible (Itrafungol is best absorbed in acidic environments)
- Side Effects:
 - Decreased appetite, lethargy and increased serum ALT concentration
 - If any side effects are noted during treatment, notify DVM
- Do not use compounded or other versions of itraconazole (shown to be ineffective)




Terbinafine Protocol

- 30-40 mg/kg by mouth once daily until animal is cured (i.e. two negative consecutive DTM cultures one week apart)
- Dosing tips:
 - Cats weighing < 6 lb receive 1/4 x 250mg tablet (i.e. 62.5mg) per dose
 - Cats weighing 6-12 lb receive 1/2 x 250mg tablet (i.e. 125 mg) per dose
 - Cats weighing > 12 lb receive 1 x 250mg tablet (i.e. 250 mg) per dose
 - Dogs are dosed by weight in kilograms
 - Can be compounded into liquid
- Give with food
- Side effects:
 - Stomach upset (vomiting, diarrhea, inappetence) and mild liver enzyme elevations
 - If any side effects are noted during treatment, notify DVM

Record Keeping

- If an animal is to receive oral Itraconazole or terbinafine treatments, please fill out 'Ringworm Monitoring and Treatment Sheet' with all information and send home with foster
 - Fill out Names of animals; Fill out Weight(s) and Itrafungol/ terbinafine dose for first week
 - Dose based on largest animal in litter; if large difference in weights within litters, ask DVM or LVT for appropriate dose
 - Highlight when Weight, DTM Plate Set Up, Itrafungol doses and Lime Sulfur Dips are due for all weeks
 - For every DTM Plate Set Up, dose of oral medication given and lime sulfur Dip given, please write initials of who performed task on sheet



 The Humane Society of Mason County
 24070 WA State Route 3, Suite 3, Belfair, WA 98528
 360.275.9310
www.hsmcwa.org

Ringworm Monitoring and Treatment Sheet

ANIMAL NAME(S): Fluffy and Harry

Weight(s): Fluffy 2.9; Harry 2.5 lb Itrafungol Dose (10mg/ml solution): 0.6 ml

Date	Sun	Mon	Tue	Wed	Thurs	Fri	Sat
Weight		F 2.9; H 2.5					
DTM Plate Set Up		JB					
Itrafungol		JB	CJS	JB	CJS	JB	KJ
Lime Sulfur Dip		CJS				JB	

Weight(s): Fluffy 2.9; Harry 2.7 lb Itrafungol Dose (10mg/ml solution): 0.7 ml

Date	Sun	Mon	Tue	Wed	Thurs	Fri	Sat
Weight		F 2.9; H 2.7					
DTM Plate Set Up		JB					
Itrafungol		KJ					
Lime Sulfur Dip			CJS			CJS	

Weight(s): _____ lb Itrafungol Dose (10mg/ml solution): _____ ml

Date	Sun	Mon	Tue	Wed	Thurs	Fri	Sat
Weight							
DTM Plate Set Up							
Itrafungol							
Lime Sulfur Dip							

Weight(s): _____ lb Itrafungol Dose (10mg/ml solution): _____ ml

Date	Sun	Mon	Tue	Wed	Thurs	Fri	Sat
Weight							
DTM Plate Set Up							
Itrafungol							
Lime Sulfur Dip							



The Humane Society of Mason County
 24070 WA State Route 3, Suite 3, Belfair, WA 98528
 360.275.9310
info@hsmcwa.org

RINGWORM CURE

Definition

- An animal is considered *cured* of ringworm when two consecutive DTM cultures taken one week apart are negative for ringworm growth, red DTM medium color change and show no signs of macroconidia

Time to Cure

- With both topical and oral/ systemic treatment, time to cure (i.e. two negative consecutive DTM cultures one week apart) is generally approximately 6-8 weeks although can take as long as 12-16 weeks
- If animal is not cured of ringworm after 12 weeks, identification of other co-morbidities is recommended



The Humane Society of Mason County
24070 WA State Route 3, Suite 3, Belfair, WA 98528
360.275.9310
info@hsmcwa.org

ENVIRONMENTAL DECONTAMINATION WITHIN THE SHELTER

Main Goals

- Remove as much hair, crust and scale as possible then use appropriate disinfect to kill remaining spores
- Clean all surfaces that could possibly be contaminated with floating ringworm spores
 - This includes floors, carriers, cages, transport vehicles and countertops
 - This may include entire Intake Room or clinic area

Supplies

- Gown
- Gloves
- Paper towels or wash cloths
- Trash can lined with plastic trash bag
- Accelerated hydrogen peroxide (Rescue®) mixed to a concentration of 8oz to one gallon of water
- Spray bottle or bucket filled with Rescue®
- Dust broom or Swiffer® broom
- Mop head attached to mop handle

Surface Cleaning Procedure

- Put on gown and gloves
- Remove all organic material (hair, crust, scale, food, feces, etc.) from surface by using a paper towel or rag to wipe pieces into a trash can lined with a plastic trash bag; scrub surfaces to remove hardened or caked on substances
- Saturate entire surface using appropriate concentration of accelerated hydrogen peroxide (Rescue®)
 - Option 1: Spray surface with Rescue® at appropriate dilution and wipe entire surface with paper towel/ rag
 - Option 2: Fill bucket with Rescue® at appropriate dilution; saturate paper towel/ rag with Rescue® and wipe onto surface
 - Important note: Always use NEW, CLEAN rag or paper towel to dip into Rescue® bucket; never put any substance in bucket of Rescue that has been contaminated by touching any animal or touching any surface that an animal has or may have touched
- Saturate entire surface using appropriate concentration of Rescue® using either option 1 or 2 for a second time
- Allow Rescue® to sit wet on surface for 10 minutes
- Use new paper towel/ rag to wipe excess solution from surface
- Throw away all paper towels or rags used for cleaning

Kennel Cleaning Procedure

- Put on gown and gloves (if you haven't already)
- Remove all organic material (hair, crust, scale, food, feces, etc.) from surface by using a paper towel or rag to wipe pieces into a trash can lined with a plastic trash bag; scrub surfaces to remove hardened or caked on substances
- Saturate entire kennel (using appropriate concentration of accelerated hydrogen peroxide (Rescue®))
 - Kennel surfaces include:
 - *Inside*: top, left and right sides and bottom of kennel; clean front and back of kennel door
 - *Outside*: outside of kennel top, bottom, left and right
 - If top kennel housed confirmed or suspicious ringworm animals, clean kennel below this kennel also
 - Cleaning options:
 1. Spray surface with Rescue® at appropriate dilution and wipe entire surface with paper towel/ rag
 2. Fill bucket with Rescue® at appropriate dilution; saturate paper towel/ rag with Rescue® and wipe onto surface
 - Important note: Always use NEW, CLEAN rag or paper towel to dip into Rescue® bucket; never put any substance in bucket of Rescue that has been contaminated by touching any animal or touching any surface that an animal has or may have touched



- Saturate entire surface using appropriate concentration of Rescue® using either option 1 or 2 for a second time
- Allow a Rescue® to sit wet on surface for 10 minutes
- Use new paper towel/ rag to wipe excess solution from surface
- Throw away all paper towels or rags used for cleaning

Floor Cleaning Procedure

- Sweep floor with dust broom or Swiffer® broom (do not use regular broom) or vacuum floor of all visible particles
- Place dust broom in plastic bag with "RINGWORM" written on the outside of bag in large visible letters and place in laundry -OR- throw away Swiffer® pad
- Saturate bottom of vacuum or handle of broom with Rescue® at appropriate dilution
- Use mop and appropriate dilution of Rescue® to thoroughly saturate all floor surfaces in room and allow to sit wet for 10 minutes
- Mop all floor surfaces for a second time in 10 minutes
- Place mop head in same plastic bag as dust broom (if used) with "RINGWORM" written on the outside of bag in large visible letters and place in laundry

Laundry

- Put on gloves (+/- gown if preferred)
- Place all towels/ blankets/ toys in the washing machine and run according to normal washing protocol however use HOT water cycle
 - Do not overfill the washing machine as this reduces the machine's ability to mechanically removed ringworm spores
- Once washing cycle is complete and laundry has been moved to dryer, wipe inside of washer with appropriate dilution of Rescue®
- Dry all laundry on "Extra dry" cycle
- Clean lint filter after dryer cycle
- Spray lint filter with appropriate dilution of Rescue®
- Bedding or toys that cannot be washed should be discarded

Dishes

- Soak all dishes in Rescue® at appropriate dilution for 10 minutes
- Rinse with warm water
- Clean with dish soap
- Rinse with water
- Allow to air dry

Toys or Other Substances that Cannot Be Placed in Washer/ Dryer

- Soak all toys, brushes, collars, leashes, etc. that cannot be placed in the washing machine/ dryer in appropriate dilution of Rescue® for 10 minutes
- Rinse with warm water
- Allow to air dry



The Humane Society of Mason County
 24070 WA State Route 3, Suite 3, Belfair, WA 98528
 360.275.9310
info@hsmcwa.org

KEEPING RINGWORM ANIMALS IN A FOSTER HOME

Fostering or adopting a dog or cat with ringworm can be a very rewarding experience. Ringworm (a contagious fungus, not a parasite) is merely cosmetic and is not life threatening. The bond formed from caring for a ringworm animal can be very strong and last a lifetime.

Am I, my family or my pets going to catch ringworm if we foster or adopt a ringworm animal from HSMC?

While it is always possible, with proper isolation, care and cleaning as described in this handout, it is unlikely.

Some people and animals are at greater risk of contracting the fungus including children, puppies, kittens, the elderly/geriatric, people affected with HIV or cats with FIV, those receiving chemotherapy or taking medication after transfusion or organ transplant as well as highly stressed people or animals. These populations are all at high risk and should not be around ringworm animals.

Typically, healthy people and pets don't catch ringworm. If you use proper isolation, wash your hands and change clothes after handling ringworm animals, you, your family and your pets' risk of acquiring ringworm is minimal.

What if I, my family or my pets acquire ringworm?

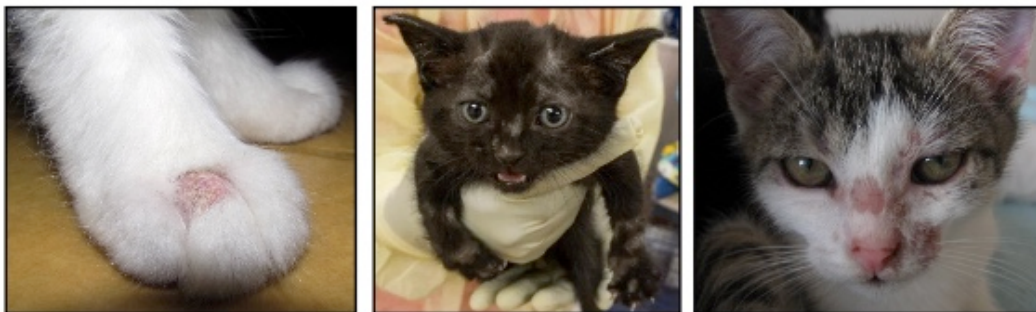
Ringworm in humans and pets is VERY treatable.

If you find any skin abnormalities on yourself or your human family, we recommend you consult your family physician who can treat you appropriately. In humans, the ringworm fungus typically looks like a small, red, crusty spot, which can sometimes be itchy. If you've ever had athlete's foot or jock itch, then you've already had a ringworm fungus.



Examples of ringworm lesions in people

If your pets acquire ringworm (see clinical signs above) while housing a ringworm infected animal, notify the staff at HSMC and we can assist with treatment of your animals providing you have followed the recommended isolation, cleaning and decontamination procedures provided in this handout. If these recommendations are not followed, you may be responsible for seeking treatment with your family veterinarian.



Examples of ringworm lesions in pets



The Humane Society of Mason County
24070 WA State Route 3, Suite 3, Belfair, WA 98528
360.275.9310
info@hsmcwa.org

How do I care for ringworm infected animals?

HSMC will supply you with everything you need to help get your ringworm infected animal healthy.

Your ringworm pet will require a once daily dose of medication by mouth, twice weekly medicated dipping baths and a specific isolation and cleaning routine. You and your family will do the oral medication and overall care; HSMC will perform the medicated dipping and the weekly culture. If you or your family prefer to do the medicated dip and weekly culture, we can show you how to do it and you are more than welcome to do it yourselves!

How do I keep my family and animals from acquiring ringworm?

Housing Ringworm Infected Animals

- Limit animals infected with ringworm to a small area of the house that has minimal furniture and carpeting and is easy to clean all surfaces (e.g. a large dog crate or bathroom)

Contact with Ringworm Infected Animals

- Clothing that was worn when in contact with infected animals should be removed immediately following handling of infected animals
- Wash your hands thoroughly with any soap and warm water after handling ringworm animals; wash your hands including all surfaces of each finger, the web in between each finger, the palm of both hands, the back of both hands, all aspects of the wrist and all aspects of the forearm up to the elbows on both hands; sing the entire "Happy Birthday" song while washing your hands and arms, when the song is over, you are finished washing and can rinse your hands/ arms
- Do not allow your own animals in the same room as ringworm infected animals

Cleaning

Supplies Needed:

- Gown or change of clothes
- Gloves
- Paper towels or wash cloths
- Trash bags
- Dust broom or Swiffer® broom
- Vacuum
- Spray bottle or bucket
- Accelerated hydrogen peroxide (i.e. Rescue®) - mix 8oz of Rescue® to one gallon of tap water and place in spray bottle or bucket

Cleaning Tasks To Be Performed on Lime-Sulfur Dipping Days (i.e. Twice Weekly)

Preparation

- Put on gloves and wear the entire time during cleaning

Remove All Objects in Room/ Kennel

- Place all bedding, toys, brushes, bowls, litter box, rugs etc. in garbage bags while you clean the surfaces in the room/ kennel

Surface Cleaning

- Remove all organic material (hair, crust, scale, food, litter, feces, etc.) from floors, walls, counters and other surfaces by using a Swiffer®, dust broom, paper towels or vacuum
- Scrub surfaces to remove hardened or caked on substances
- Saturate entire surfaces using spray bottle or bucket/ rag with appropriate concentration of Rescue® and let solution sit wet on surface for 10 minutes
- Wipe all surfaces clean
- Wipe entire vacuum (if used) with washcloth/ paper towels saturated with Rescue® at appropriate dilution; do not spray Rescue® directly onto vacuum



The Humane Society of Mason County
24070 WA State Route 3, Suite 3, Belfair, WA 98528
360.275.9310
info@hsmcwa.org

- If carpeting is inadvertently contaminated, vacuum thoroughly two times
- Wipe inside of vacuum canister with Rescue® at appropriate dilution or throw away vacuum bag when finished

Bedding, Towels, Rugs and Washer/ Dryer Items

- Place all towels/ blankets/ toys in the washing machine and run on “whites” and “heavy” cycle with HOT water
 - Do not overfill the washing machine as this reduces the machine’s ability to mechanically removed ringworm spores
- Once washing cycle is complete and laundry has been moved to dryer, wipe inside of washer with appropriate dilution of Rescue®
- Dry all laundry on “Extra dry” cycle
- Clean lint filter after dryer cycle
- Spray lint filter with appropriate dilution of Rescue®
- Bedding or toys that cannot be washed should be discarded

Dishes, Brushes, Toys and Non-Washer/ Dryer Items

- Soak all in Rescue® at appropriate dilution for 10 minutes
- Rinse with warm water
- Clean with dish soap
- Rinse with water
- Allow to air dry

Scratching Posts

- Vacuum first then spray down with appropriate dilution of Rescue® and let sit x 10 minutes
- Spray with appropriate dilution of Rescue® a second time

Once all surfaces have been wiped down and let sit for 10 minutes of contact time with Rescue®, all cleaned or new items can be returned to the room/ kennel housing ringworm foster animals

Throw away all garbage bags, change your clothes and wash your hands

How long will it take to cure my animal of ringworm?

Normally around 6 – 8 weeks in a shelter environment, but typically less time if the animal is treated in a loving, low-stress home.

HSMC staff will take a skin and hair culture to test for ringworm once a week during treatment. When there are two consecutive negative cultures, the animal is considered cured of ringworm and ringworm treatment can stop.

How do I adequately disinfect my home once my animal(s) are cured of ringworm?

Preparation

- Put on gloves and wear the entire time during cleaning

Remove All Objects in Room/ Kennel

- Place all bedding, toys, brushes, bowls, litter box, rugs etc. in garbage bags while you clean the surfaces in the room/ kennel
- Throw away all items that cannot be throughout disinfected including scratching posts and plastic litter boxes

Surface Cleaning

- Remove all organic material (hair, crust, scale, food, feces, etc.) from surface by using a paper towel or rag to wipe pieces into a trash can lined with a plastic trash bag; scrub surfaces to remove hardened or caked on substances
- Saturate entire surface using appropriate concentration of Rescue®



The Humane Society of Mason County
 24070 WA State Route 3, Suite 3, Belfair, WA 98528
 360.275.9310
info@hsmcwa.org

- Option 1: Spray surface with Rescue® at appropriate dilution and saturate entire surface with paper towel/ rag
- Option 2: Fill bucket with Rescue® at appropriate dilution; saturate paper towel/ rag with Rescue® and wipe surface clean
 - Important note: Always use NEW, CLEAN rag or paper towel to dip into bucket; never put any substance in bucket of Rescue® that has been contaminated by touching any animal or touching any surface an animal has or may have touched
- Saturate entire surface using appropriate concentration of accelerated hydrogen peroxide using either option 1 or 2 for a second time
- Allow Rescue® to sit wet on surface for 10 minutes
- Use new paper towel/ rag to wipe excess solution from surface
- Throw away all paper towels or rags used for cleaning

Non-Porous Floor Cleaning Procedure

- Sweep floor with dust broom or Swiffer® broom (do not use regular broom) or vacuum floor of all visible particles
- Place dust broom in laundry -OR- throw away Swiffer® pad
- Saturate bottom of vacuum (if used) or broom handle with Rescue® at appropriate dilution
- Use mop and appropriate dilution of Rescue® to thoroughly saturate all floor surfaces in room and allow to sit wet for 10 minutes
- Mop all floor surfaces for a second time and allow to dry
- Place mop head in laundry or discard in garbage

Carpet and Upholstery

- All exposed carpets and furniture should be vacuumed daily for one week
 - Discard vacuum cleaner bags (if present) daily
 - Wipe out vacuum canister with appropriate dilution of Rescue® daily
- Carpets should be commercially steam cleaned
 - Steam cleaning with a cleaner that uses hot tap water is ineffective as the water does not reach a high enough temperature
- Upholstered furniture can be vacuumed and then steam cleaned using a commercial steam cleaner

Laundry

- Place all towels/ blankets/ toys in the washing machine and run according to normal washing protocol however use HOT water cycle
 - Do not overfill the washing machine as this reduces the machine's ability to mechanically removed ringworm spores
- Once washing cycle is complete and laundry has been moved to dryer, wipe inside of washer with appropriate dilution of Rescue®
- Dry all laundry on "Extra dry" cycle
- Clean lint filter after dryer cycle
- Spray lint filter with appropriate dilution of Rescue®
- Bedding or toys that cannot be washed should be discarded

Dishes, Toys or Other Substances that Cannot Be Placed in Washer/ Dryer

- Soak all dishes in Rescue® at the appropriate dilution
- Rinse with warm water
- Clean with dish soap
- Rinse with water
- Allow to air dry

Furnace Filters

- Replace the furnace filters as ringworm spores can collect in the filter
- It is not necessary to have ducts commercially cleaned

Throw away all garbage bags, change your clothes and wash your hands



The Humane Society of Mason County
 24070 WA State Route 3, Suite 3, Belfair, WA 98528
 360.275.9310
info@hsmcwa.org

Sources:

IDEXX. Diagnosis and management of dermatophytosis with the Ringworm (Dermatophte RealPCR™ Panel. Diagnostic Update Info Sheet. <https://www.idexx.com/files/ringworm-pcr-panel.pdf>. Accessed 1 Sept 2023.

Henderson, L. SOP - Ringworm.doc. Humane Society for Tacoma and Pierce County.

Paws Chicago. Becoming a Foster; Welcoming a Ringworm Foster Animal into your Home. <https://www.pawschicago.org/how-to-help/foster/find-the-right-foster-pet-for-you/finding-a-dog-to-foster/sick-or-injured-foster/caring-for-your-ringworm-foster-animal#:~:text=We%20highly%20recommend%20that%20animals,hygiene%20is%20also%20a%20must.> Accessed 3 Sept 2023.

Ringworm (Dermatophytosis) Information Sheet. Koret Shelter Medicine. Last updated 2015-08-14. <https://www.sheltermedicine.com/library/resources/?r=ringworm-dermatophytosis#Verifying>. Accessed 27 Aug 2023.

Ringworm Guidebook. Shelter Medicine School of Veterinary Medicine University of Wisconsin-Madison. <https://www.uwsheltermedicine.com/library/guidebooks/ringworm>. Accessed 27 Aug 2023.

VINcyclopedia of Diseases. Dermatophytosis (Zoonotic) (Feline). vin.com. Last updated 04/28/21. Gould, Alexandra 04/28/21 et. al. Accessed 24 Aug 2023.

Woods Lamp Ringworm Exam. Austin Pet's Alive. <https://americanpetsalive.org/uploads/resources/Austin-Pets-Alive-Ringworm-Woods-Lamp-Instructions-52F6.pdf>. 2019. Accessed 24 Aug 2023.



The Humane Society of Mason County
24070 WA State Route 3, Suite 3, Belfair, WA 98528
360.275.9310
info@hsmcwa.org