

University Animal Care Committee Standard Operating Procedure		
Document No: 7.36	Subject: Guideline for Ulcerative Dermatitis	
Date Issued: March 26 th , 2025	Revision: Original	Page No: 1

Location: Queen's University

Responsibility: Principal Investigators, Research Staff, Veterinary Staff

Purpose: The purpose of this Standard Operating Procedure (SOP) is to describe ulcerative dermatitis (UD) in C57BL/6 (B6) mice and related strains. The purpose of this SOP is to identify early clinical signs of UD, provide a quantitative scoring system, recommend treatment strategies, and define endpoints.

1. Introduction and Definitions:

Ulcerative dermatitis is a common and well recognized disease in C57BL/6(B6) mice and related strains. The cause is unknown but is likely multi-factorial with an epigenetic component. Ulcerative dermatitis can lead to alopecia, ulceration, crusting and exudation of the affected areas, and severe pruritus resulting in self-mutilation and deformity. Historically, this condition has responded poorly to a wide variety of treatments and may lead to debilitating lesions if allowed to progress. Recent studies have shown that toenail trims provide lasting and effective treatment (Adams, et al, 2016, [PMID: 26735497](https://pubmed.ncbi.nlm.nih.gov/26735497/)). The use of mice with ulcerative dermatitis for breeding should be limited.

Abbreviations: Animal Care Services **ACS**, Principal Investigator **PI**, subcutaneous **SC**, intravenous **IV**, intraperitoneal **IP**, intramuscular **IM**, per os **PO**, per rectum **PR**

2. Descriptions of Lesions:

- Ulcerative dermatitis may be spontaneous or secondary to a break in the skin. Animals with fight wounds or who have been barbered should be monitored closely for progression to ulcerative dermatitis, especially if on a B6 background.
 - Lesions are pruritic and are most commonly located on the dorsal neck, followed by facial, flank and limbs, although lesions may appear anywhere on the body.
 - There are no clinical signs that will predict the onset of UD, however, pruritis has been found to correlate with rapid progression due to self-trauma.
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- There are 3 common regions for these lesions (see Figure 1 below).
 - Region 1 – nose to ears
 - Region 2 – ears to mid-abdomen
 - Region 3 – mid-abdomen to tail
- Region 1 is considered more severe than regions 2 & 3 due to the increased potential for interference with eating and drinking or involvement of the eye.

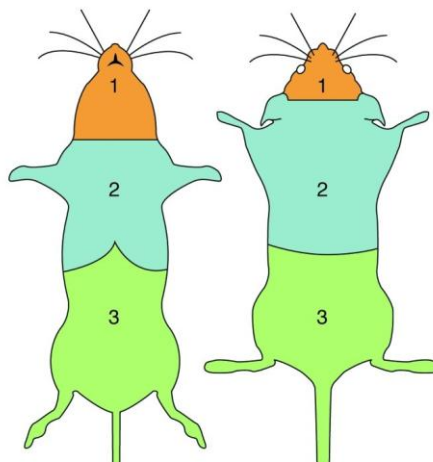


Figure1: Three common regions of UD lesions in mice.

3. Treatment Options:

- **Trim Nails:** Animals should receive a nail trim; cleanse wound with chlorhexidine. Monitor mice for up to five days.
- **Euthanasia:** Animals should be euthanized if the researcher does not require the animal for further research or if the animal exhibits any of the following:
 - Ulceration of the lesions
 - Lesion is >2cm
 - Lesions are located in region 1 and additional regions are also affected
 - Lesions are affecting the eye
- Mice with ulcerative dermatitis must be monitored for additional endpoints outside of those included in the above scoring system. Other endpoint criteria may include:
 - Presence of wounds, scar tissue or contractures that severely impede the animal's locomotion.

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- Depression, lethargy, loss of body condition and/or anorexia indicating the wounds have resulted in generalized infection.

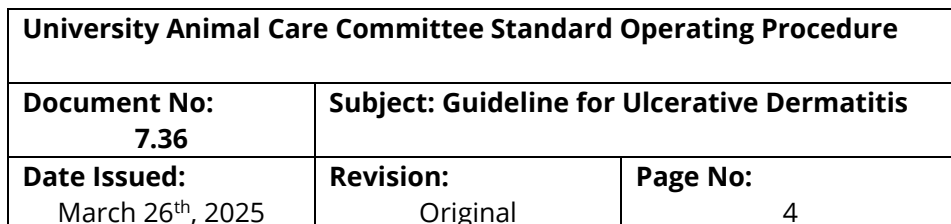
4. Scoring System:

- The UD scoring system for mice, as described below, utilizes character of the lesion, lesion length and location. This system is useful for groups studying dermatitis or those requiring a mouse to be very closely monitored prior to endpoint euthanasia.
- Mice scored at <75% may undergo treatment; mice scoring ≥75% are considered end-stage of the disease and are to be euthanized.
- Continued Monitoring & Scoring:
 - Mice undergoing treatment must be monitored and re-scored on a regular basis to ensure that the condition is not worsening during the treatment period (3-5 days).
 - If the score increases, euthanasia is recommended.
 - If the score decreases, monitoring can be continued for an additional 3-5 days.
 - After 10 days, if the mouse has not completely recovered, euthanasia is recommended and/or consultation with a veterinarian.

A	Character of Lesions	Score
	No lesion present	0
	Excoriations only or one, small punctuated crust (<2mm)	1
	Multiple, small punctuated crusts or coalescing crust (>2mm)	2
	Erosion or ulceration	3

B	Length of Lesion**	Score
	0cm	0
	<1cm	1
	1cm-2cm	2
	>2cm	3

***length of lesion is determined by measuring the longest diameter of the largest lesion identified. This measurement should involve the lesion only and not cross over clinically normal skin.*



C	Regions Affected	Score
	None	0
	Region 2 or 3	1
	Region 2 and 3	2
	Region 1 +/- other affected regions	3

E	Calculated Severity Score
	$[(A+B+C)/9] \times 100$

- 1) TCP Standard Operating Procedure “Ulcerative Dermatitis Guidelines”
- 2) Adams SC, Garner JP, Felt SA, Geronimo JT, Chu DK. A "Pedi" Cures All: Toenail Trimming and the Treatment of Ulcerative Dermatitis in Mice. PLoS One. 2016 Jan 6;11(1):e0144871. doi: 10.1371/journal.pone.0144871. PMID: 26735497; PMCID: PMC4703297.
- 3) Hampton AL, Hish GA, Aslam MN, Rothman ED, Bergin IL, Patterson KA, Naik M, Paruchuri T, Varani J, Rush HG. Progression of ulcerative dermatitis lesions in C57BL/6Crl mice and the development of a scoring system for dermatitis lesions. J Am Assoc Lab Anim Sci. 2012;51(5):586-93. PMID: 23312087; PMCID: PMC3447447.

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