



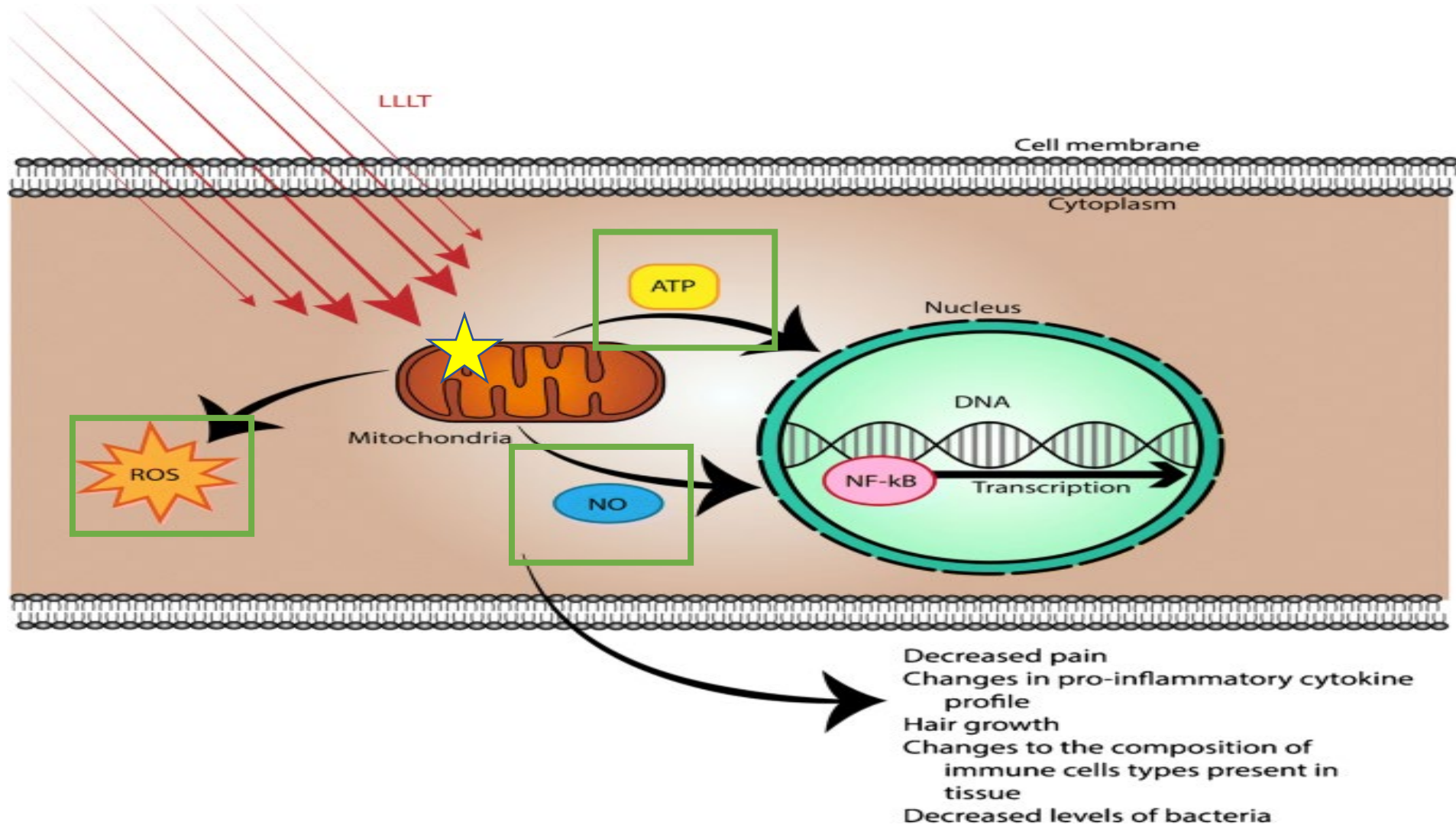
Practical applications of fluorescence photobiomodulation in skin cases

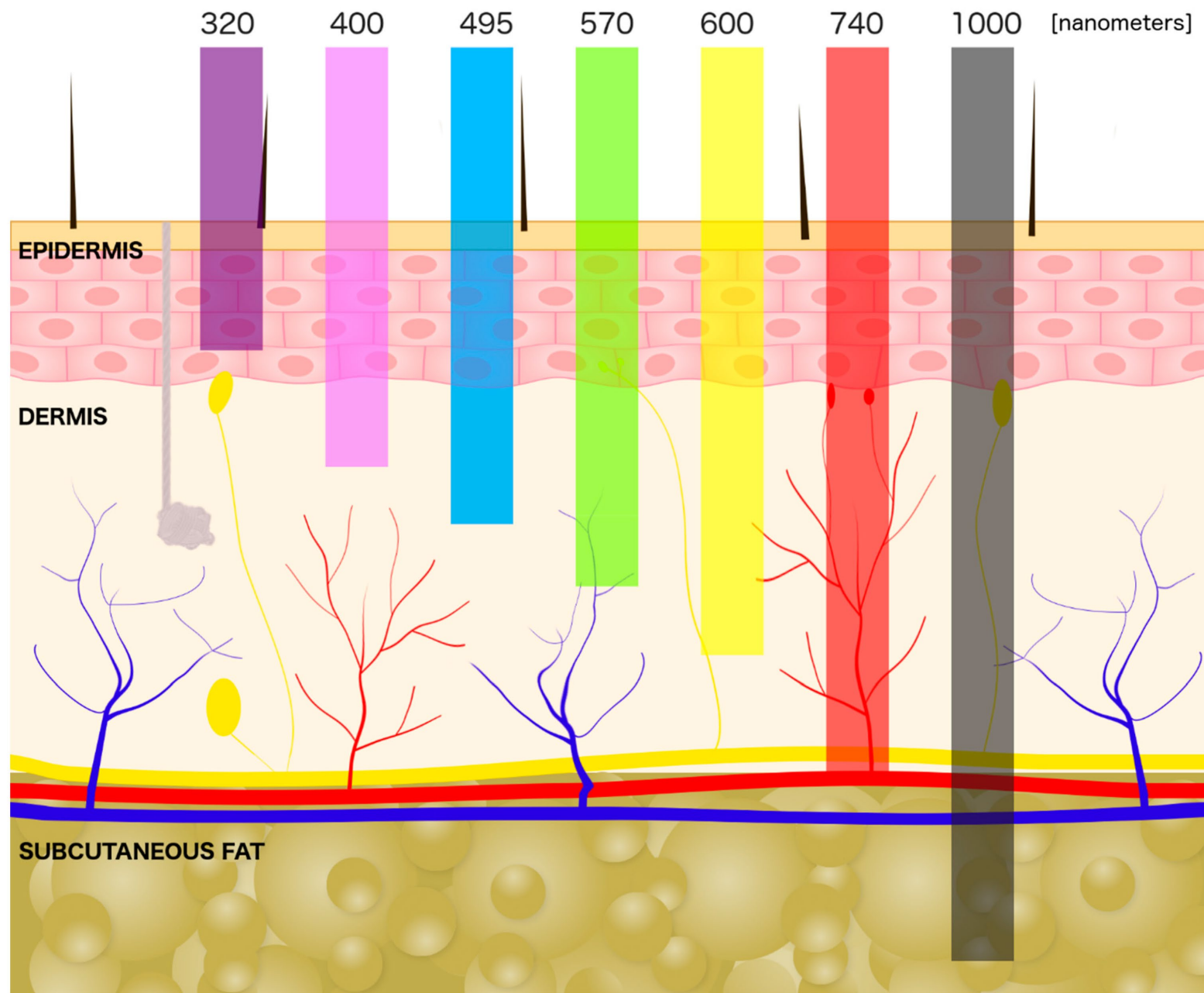
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Pathomechanisms of Photobiomodulation

Cellular Pathomechanism of PBM





What is Phovia?

PHOVIA IS A TWO PART SYSTEM THAT CONSISTS OF

A light energy emitting lamp



A photoconverter carrier gel

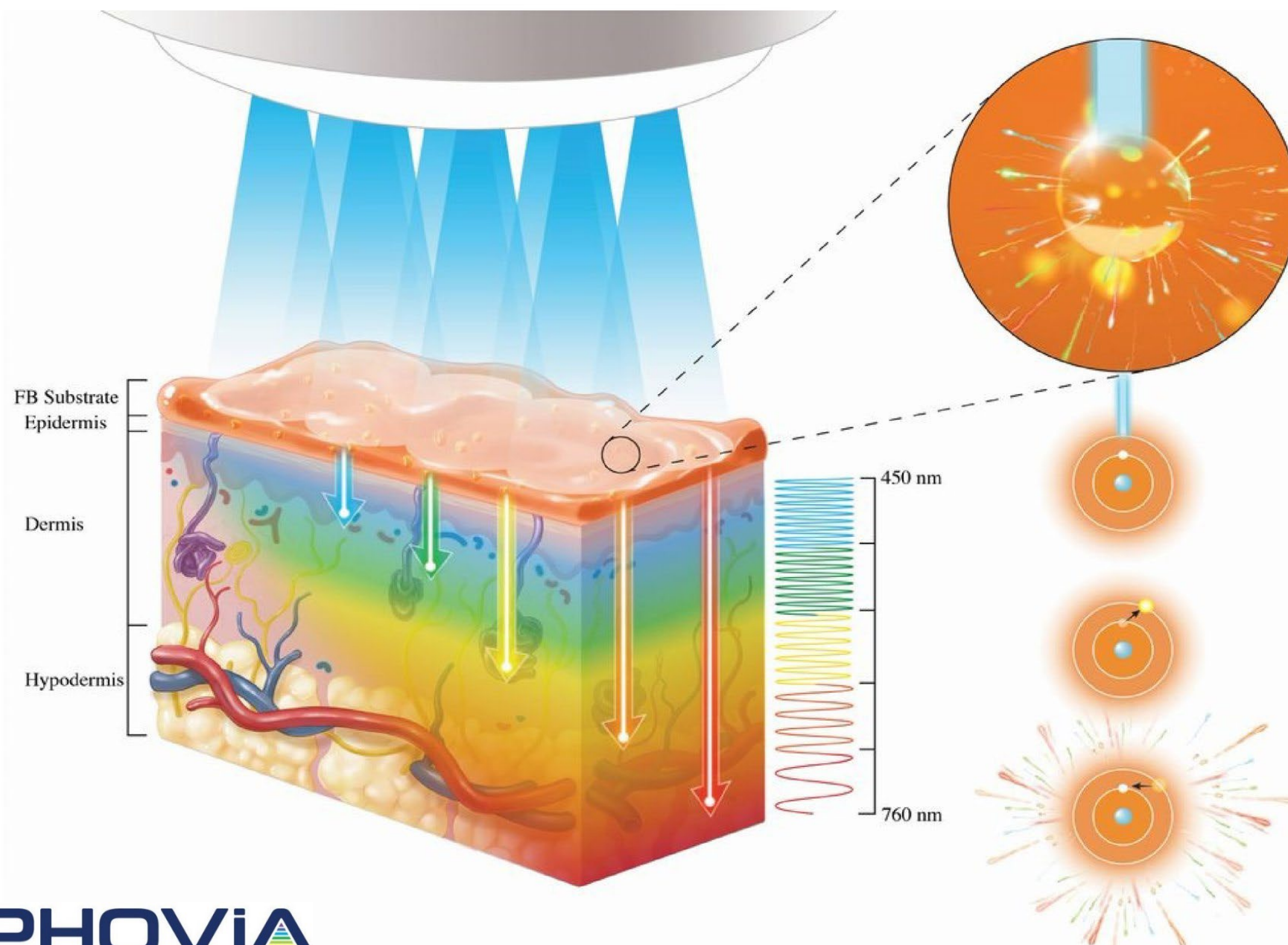


What is Phovia?

HEALING WITH THE SPEED OF LIGHT

Phovia is a dermatology system clinically proven to accelerate healing for skin lesions and **visibly reduce recovery time by 50%** through the use of fluorescent light therapy





The chromophore gel is applied to the lesion, and illuminated with a multi-LED Lamp.

FLE provides a broad spectrum of wavelengths capable of penetrating skin at different depths.

Phovia™ – Fluorescent Light Therapy



Phovia™ – Fluorescent Light Therapy



Phovia™ – Fluorescent Light Therapy

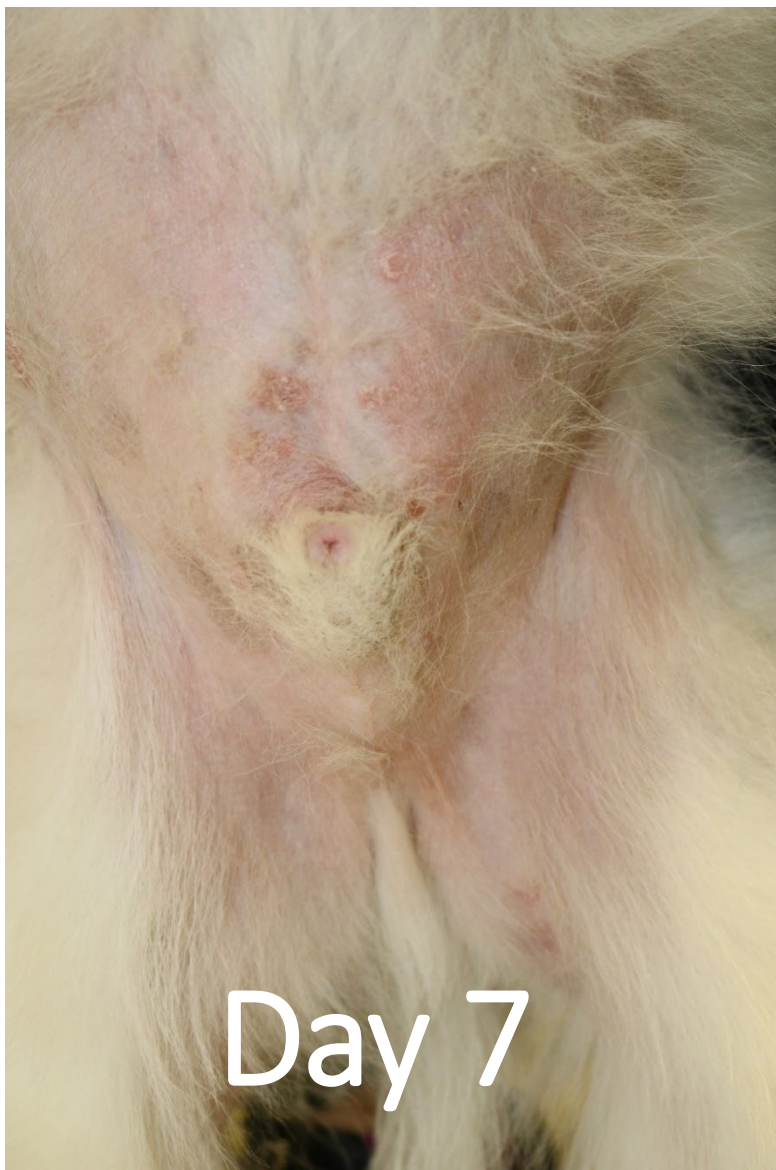


PHOVIA

- Steps
 1. Shave hair
 2. Clean with chlorhexidine and saline
 3. Mix carrier gel with chromophore gel immediately before application
 4. Apply gel 2mm layer
 5. Illumination #1 (2 min, <5 cm from lesion)
 6. Wipe off gel with saline gauze
 7. Illumination #2 (2 min)
 8. Wipe of gel and done!
- At home care:
 - +/- topical or systemic therapies as planned
 - Healing time reduced 50% with Phovia™ and SOC treatment
 - Monitor for redness, irritation, swelling or pain

Superficial Pyoderma

8 yo MC American Eskimo



10 yo FS Yorkshire Terrier



Day 0



Day 14

4 yo FS terrier mix



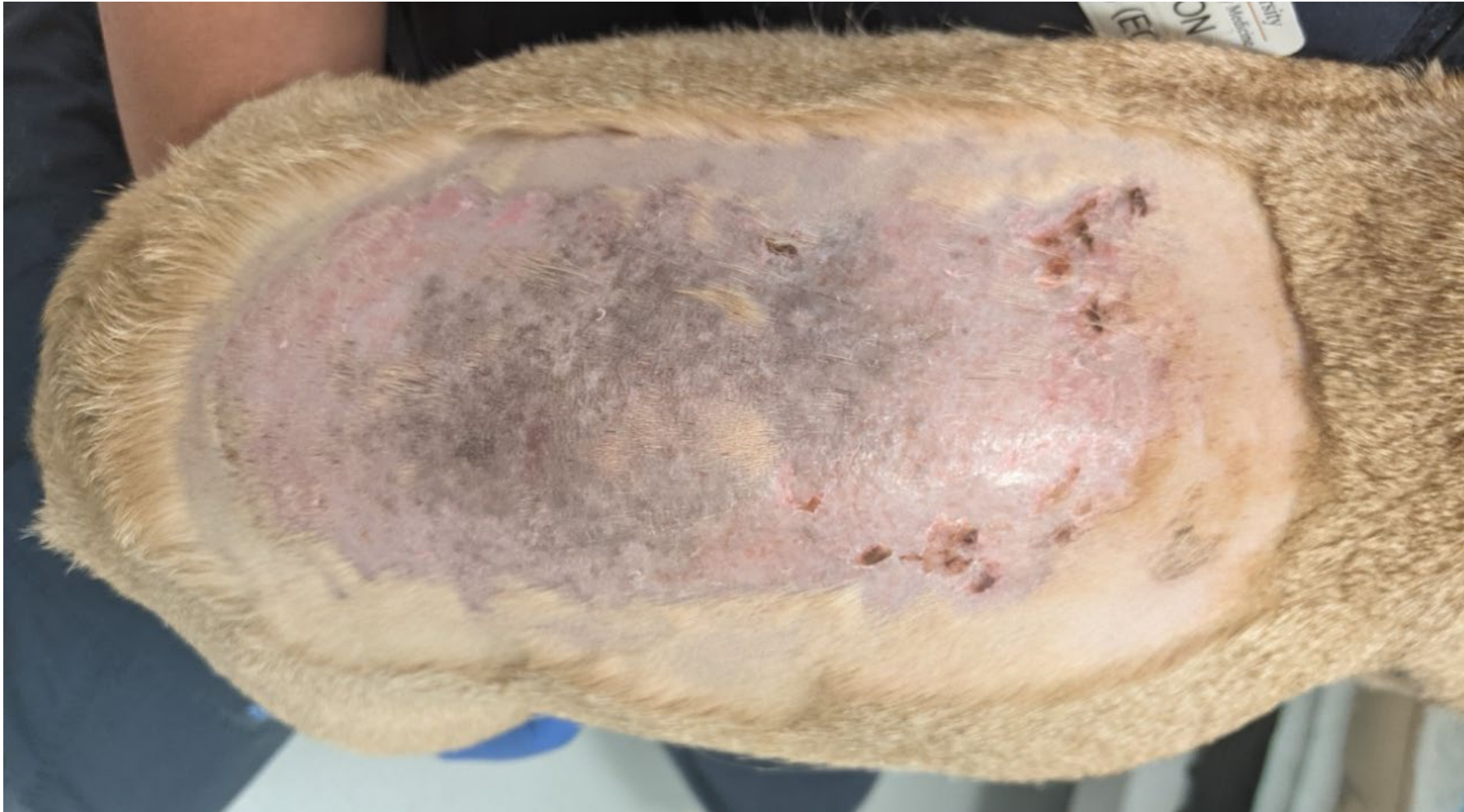
4 yo FS terrier mix



4 yo FS terrier mix



4 yo FS terrier mix – 1 week later

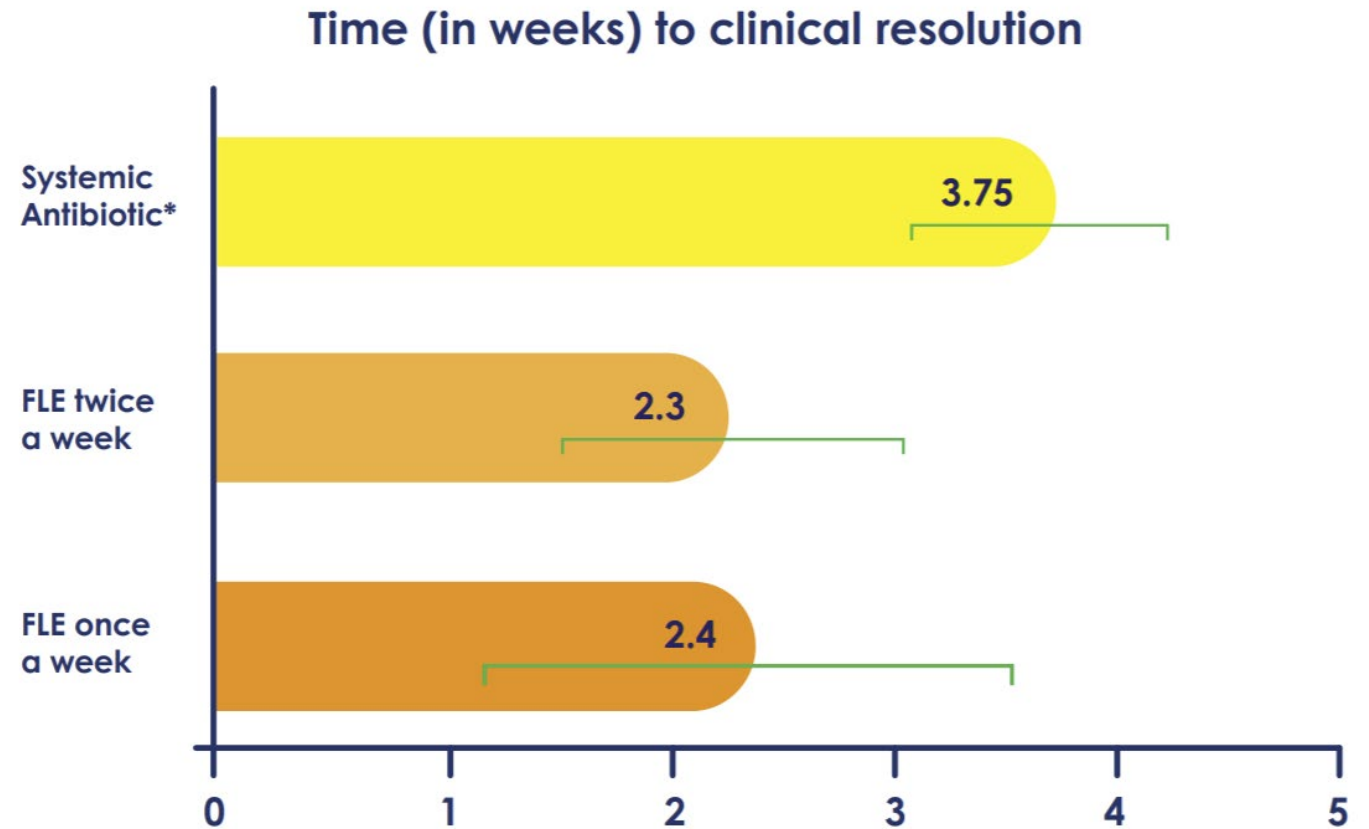


1 yo FS dachshund mix



Canine superficial pyoderma

Marchegiani et al., 2018



*All dogs underwent culture and sensitivity swab sampling at the time of enrolment

Mucocutaneous Pyoderma

Myles – Mucocutaneous Pyoderma

- 7-year-old MC Welsh corgi
- 7-month history of drooling and perioral dermatitis
 - Pruritic – perioral only
- No previous skin problems
- Severe dental disease
 - Gingivitis, tartar, tooth fractures
- Previous treatments
 - Topical antiseptic, cefpodoxime, marbofloxacin, steroids, NSAIDs



Myles- Mucocutaneous Pyoderma



Myles- MCP, 1 week later

Phovia, mometasone 0.1%, mupirocin





Deep Pyoderma

Chronic Decubital Ulcers

12 yo M Labrador Retriever



Phovia™ – Fluorescent Light Therapy

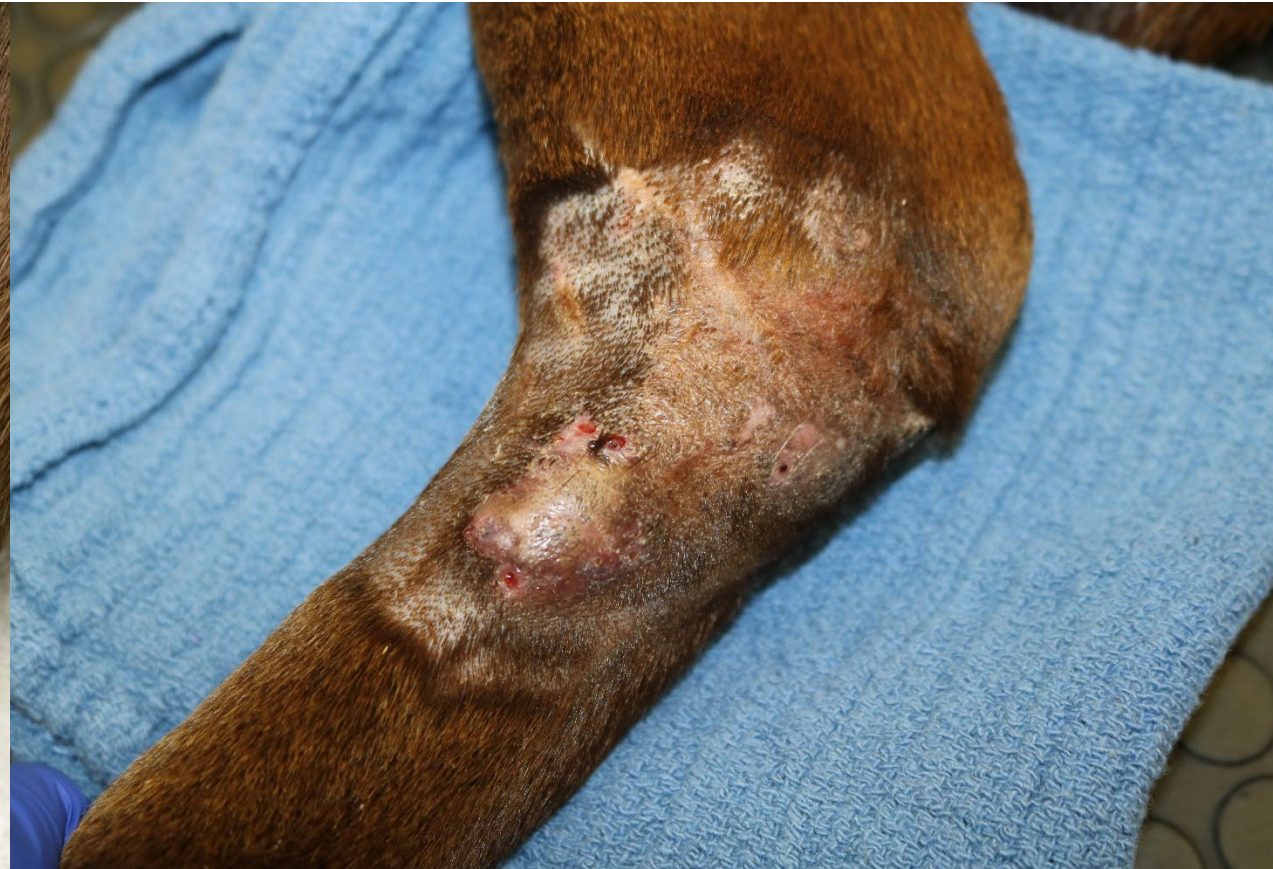


PHOVIA

Phovia™ – Fluorescent Light Therapy



Day 0



Day 7

Phovia™ – Fluorescent Light Therapy



Day 14



Day 14 – after removing gel

Phovia™ – Fluorescent Light Therapy



Day 28

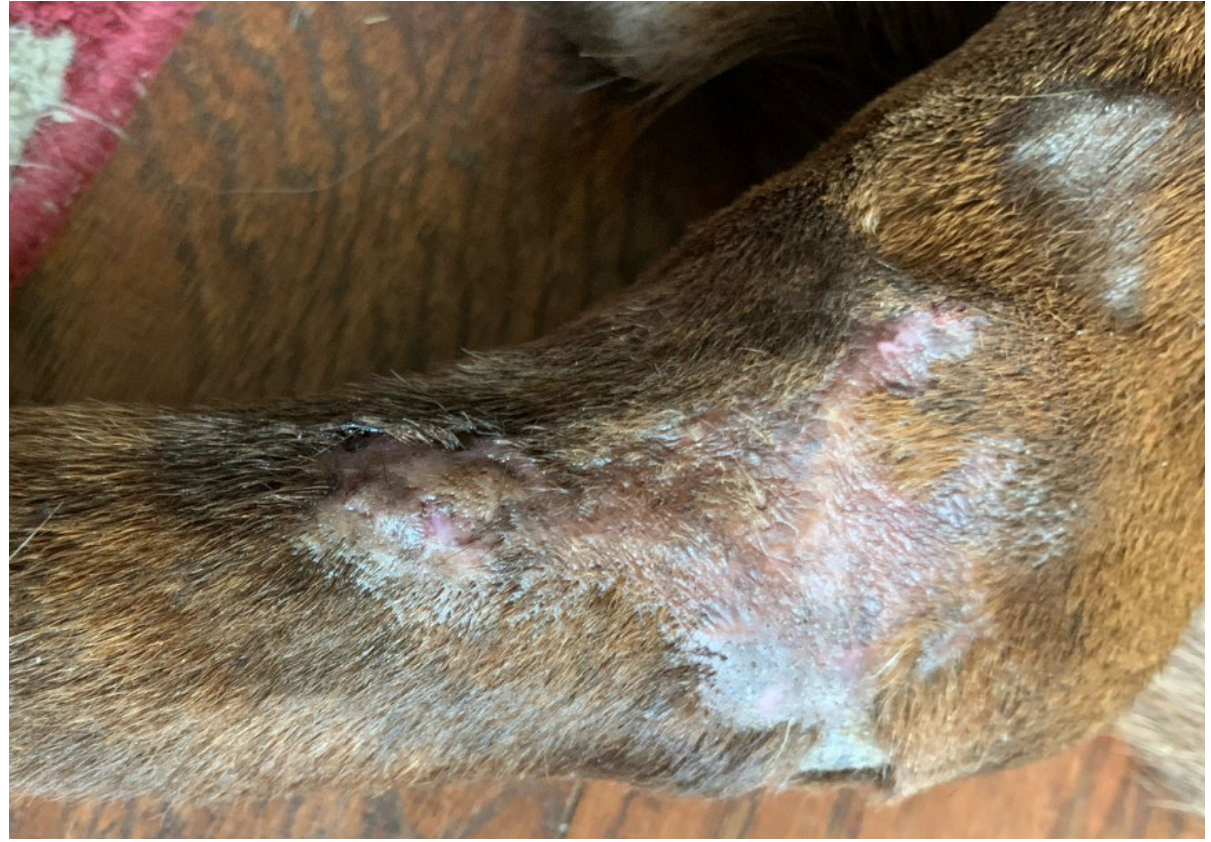


Day 35

Phovia™ – Fluorescent Light Therapy



Day 42



2 weeks after last Phovia™

PHOVIA 

Phovia™ – Fluorescent Light Therapy



1 year later

PHOVIA 

Decubital Ulcer

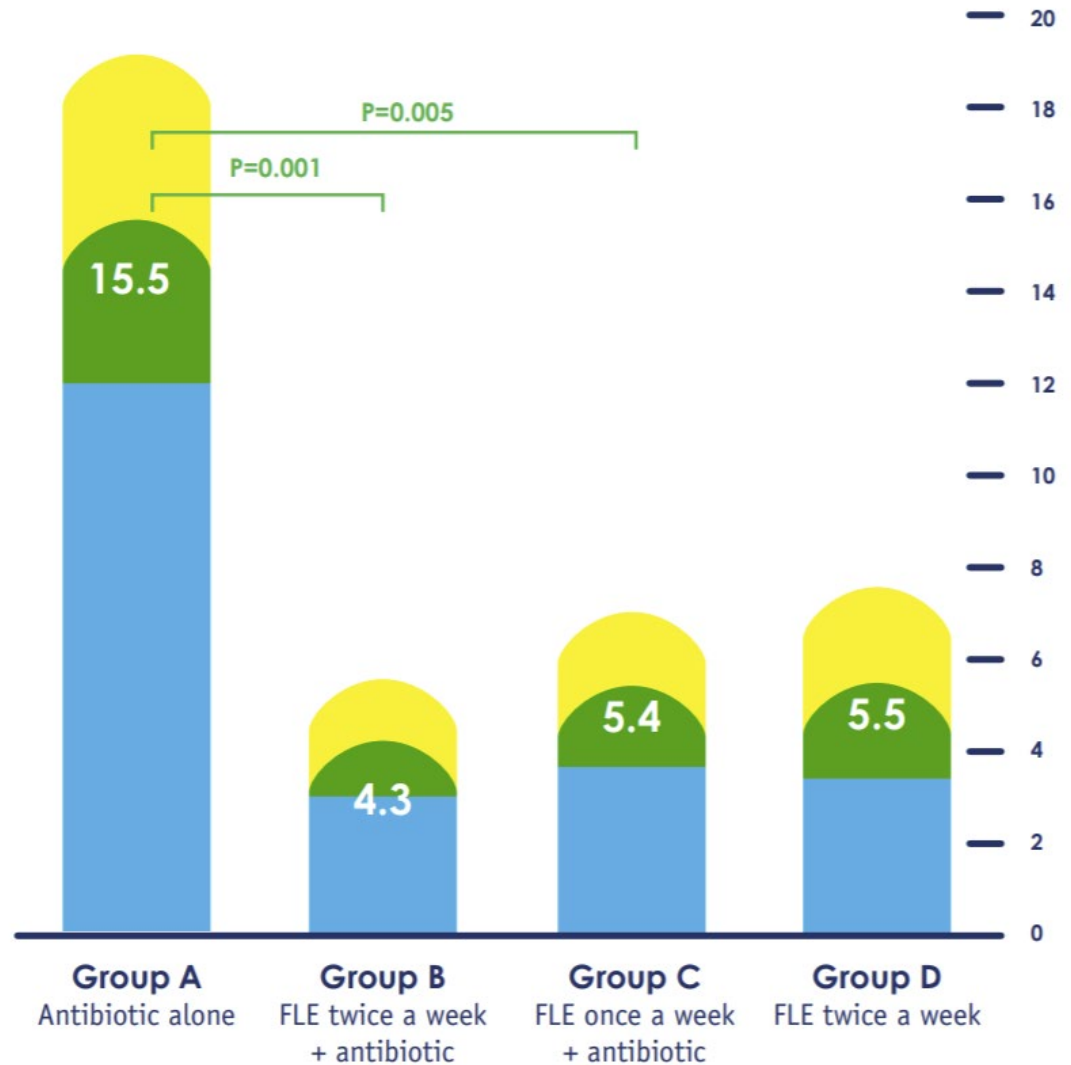


5 days later

Canine deep pyoderma

Marchegiani et al.,
2017 & 2021

FIGURE 1. Time (weeks) to clinical resolution





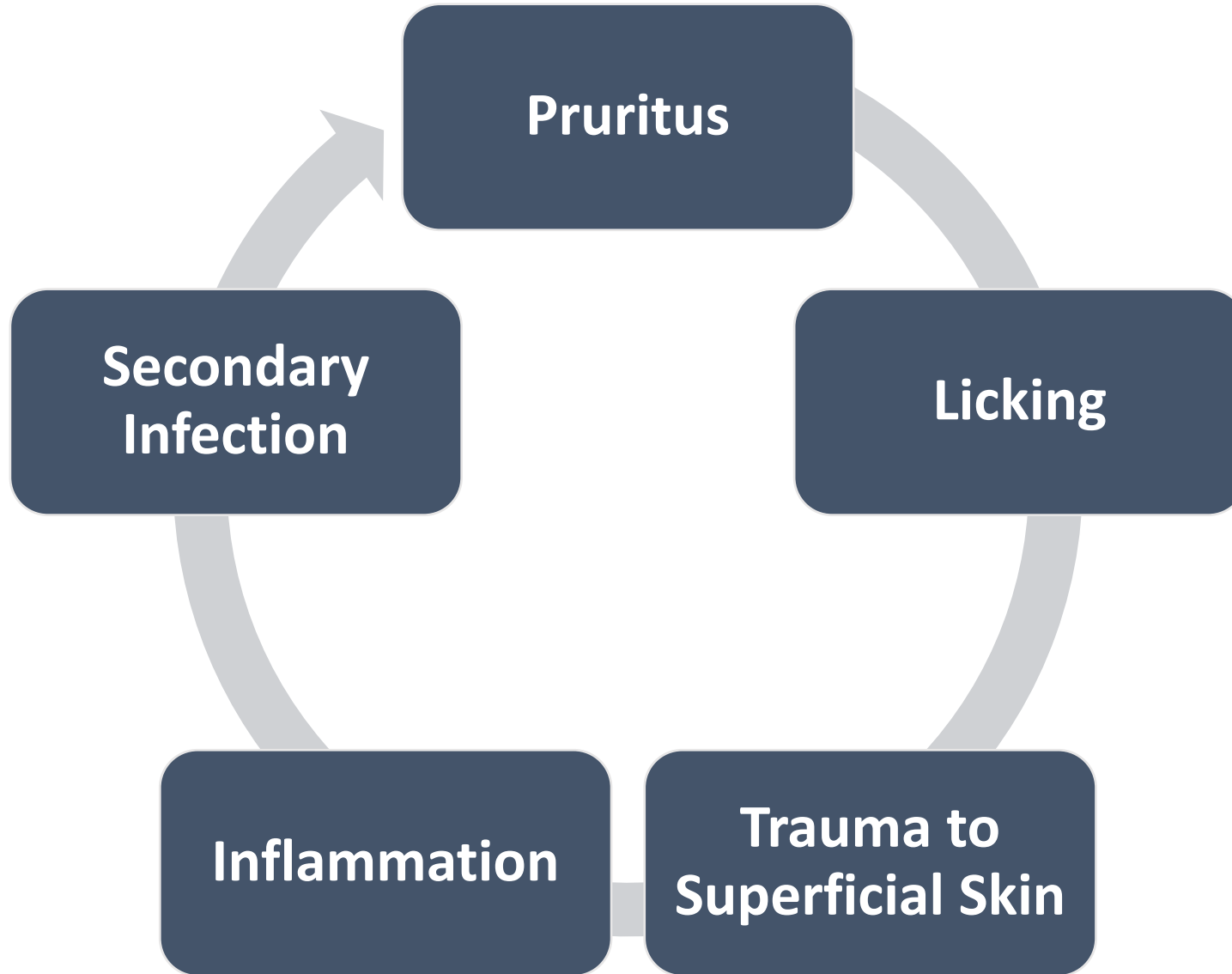
Acral Lick Granulomas

Acute and Chronic



Acral Lick Granulomas

The Itch-Lick Cycle



PHOVIA



Day 0



Day 7



Day 14

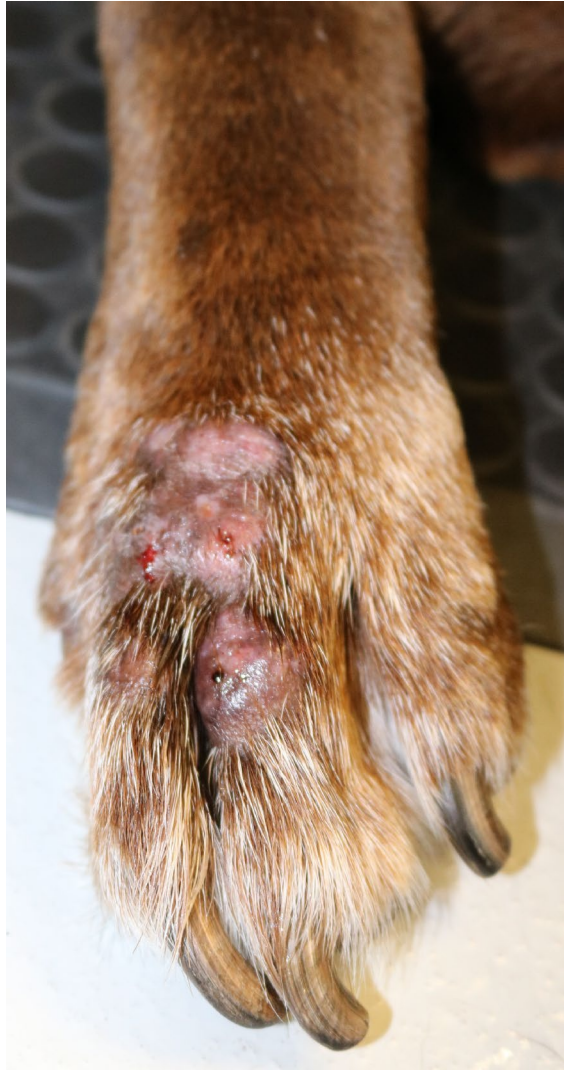


Day 21



Day 28

Acral Lick Dermatitis



Day 0



Day 14



Day 30



Day 45

Acral Lick Granuloma



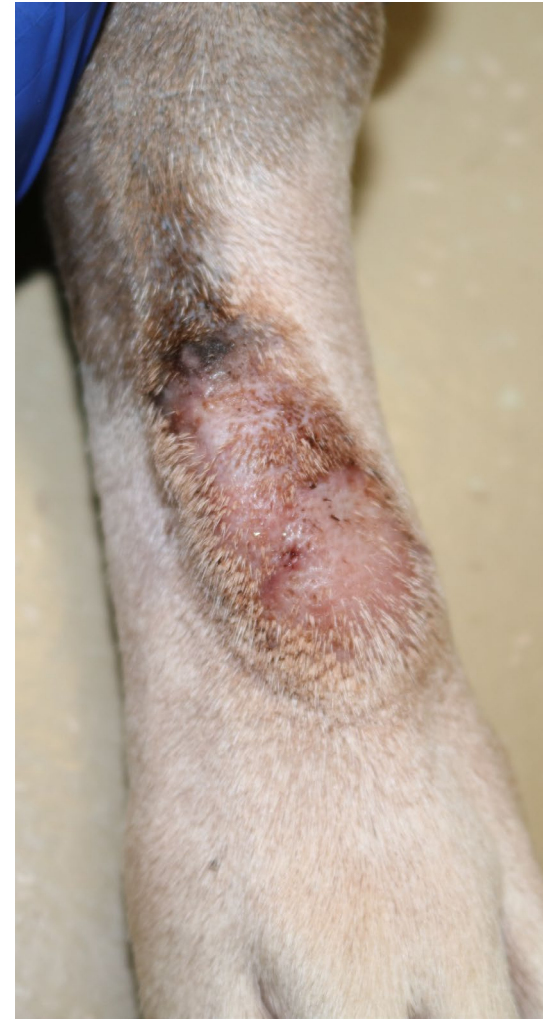
Day 0



Day 21 – 1 Phovia Tx



Day 35 – 3 Phovia Tx



Day 45 – 6 Phovia Tx



Day 60

Pedal Furunculosis

10 y/o MC Jack Russell Terrier



Day 0



Day 21

PHOVIA



Canine interdigital furunculosis

Marchegiani et al., 2019

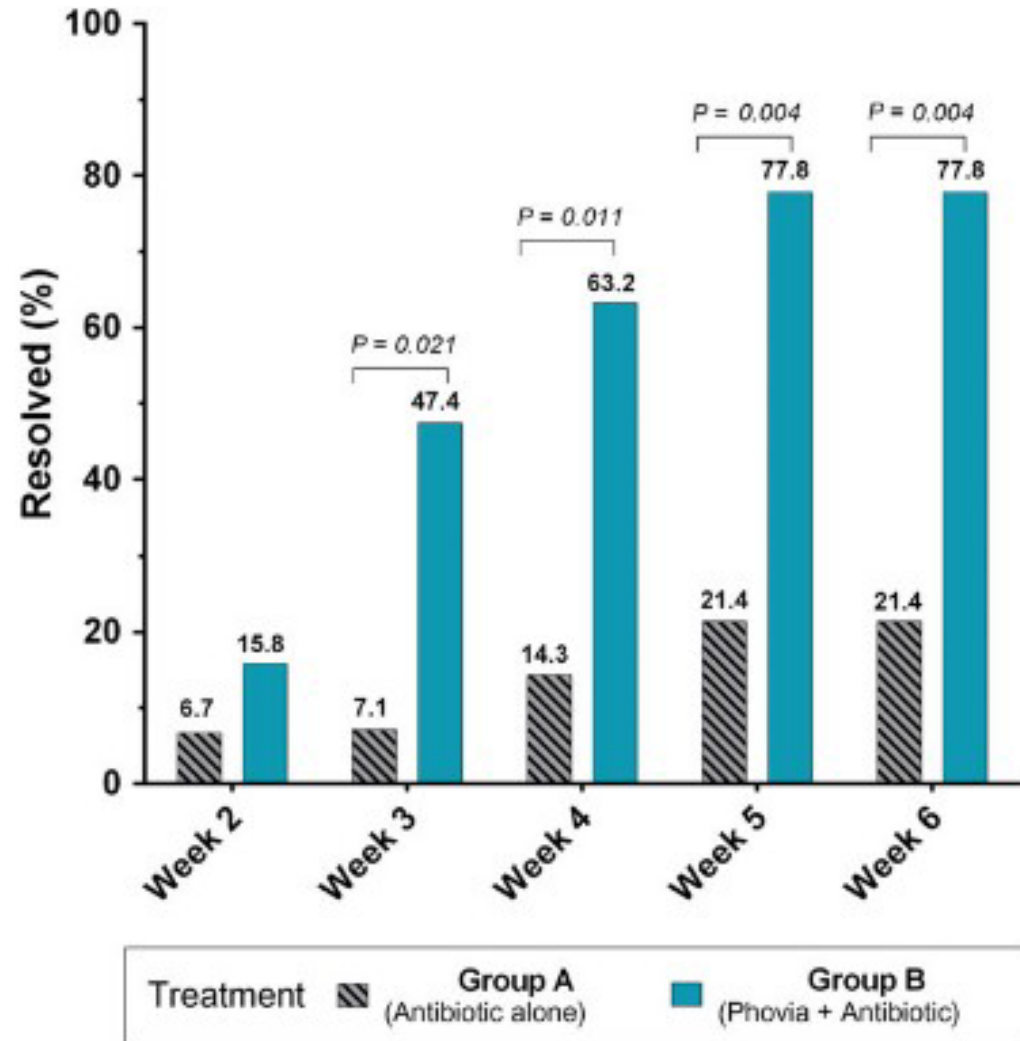
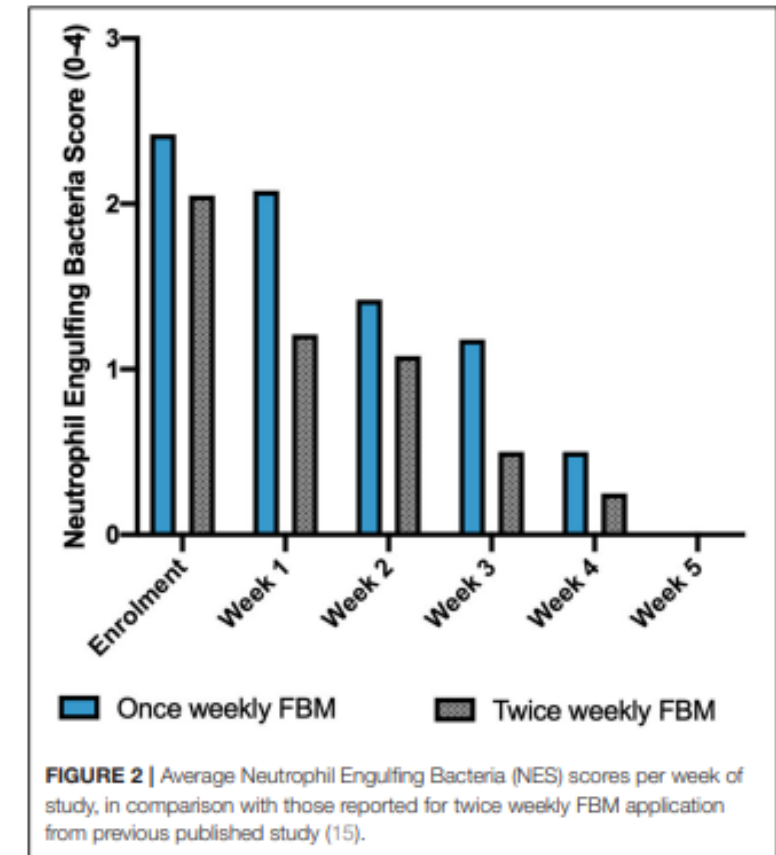
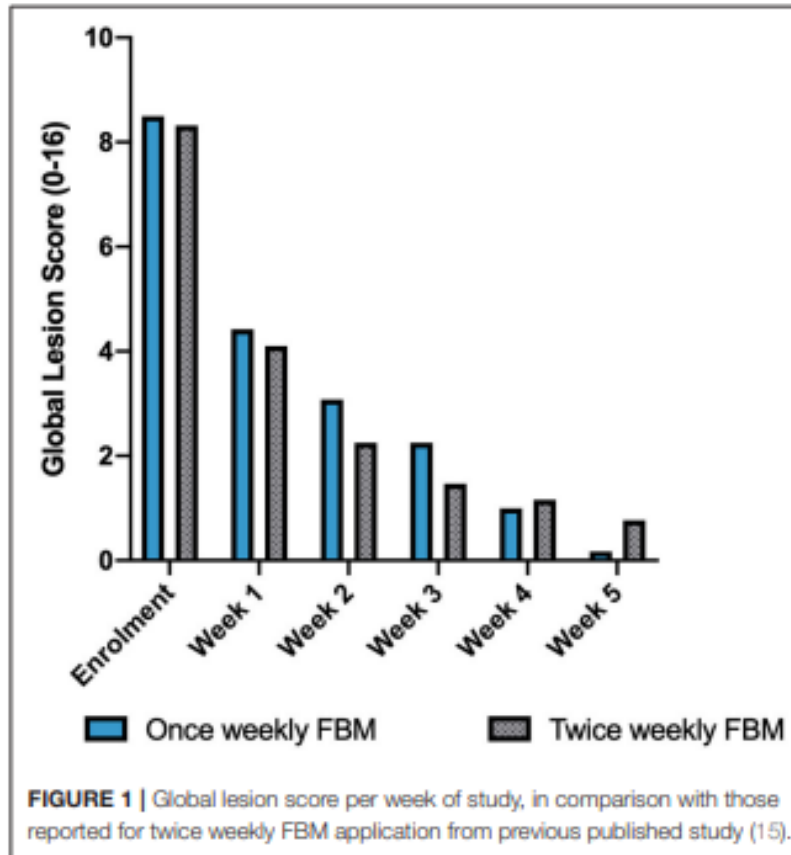


Figure 1. Percentage of dogs healed by treatment and study week.

* P -value based on two-sided Fisher's Exact test.

Canine interdigital furunculosis

Marchegiani et al., 2020



Acute Wounds

3 yo MC GSP



Visit 2 – Day 7



Visit 3 - Day 24



Visit 4 – Day 30



Surgical Wounds

Chronic proliferative otitis externa



Chronic proliferative otitis externa



Chronic proliferative otitis externa



Chronic proliferative otitis externa



1 week



2 weeks



3 weeks



4 weeks

Wound dehiscence

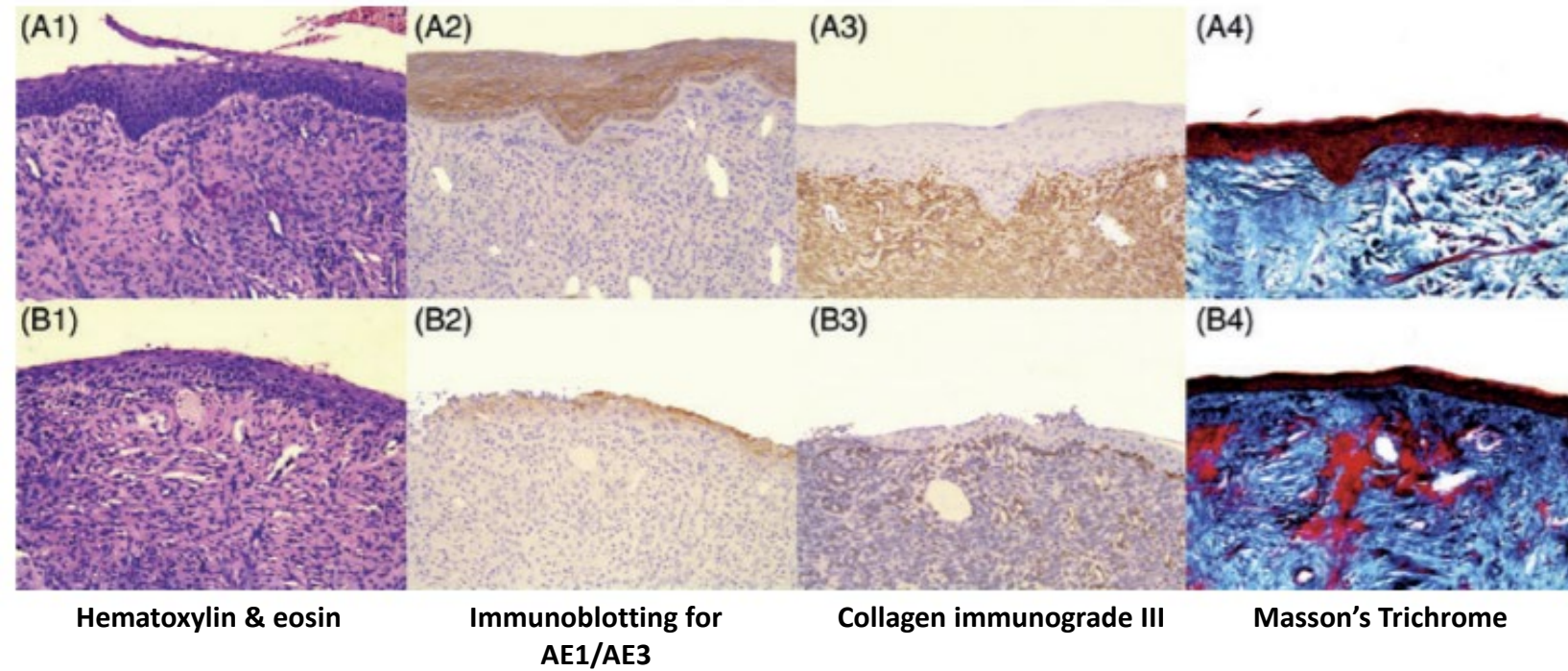


1 week later

Surgical Wounds

Salvaggio et al., 2020

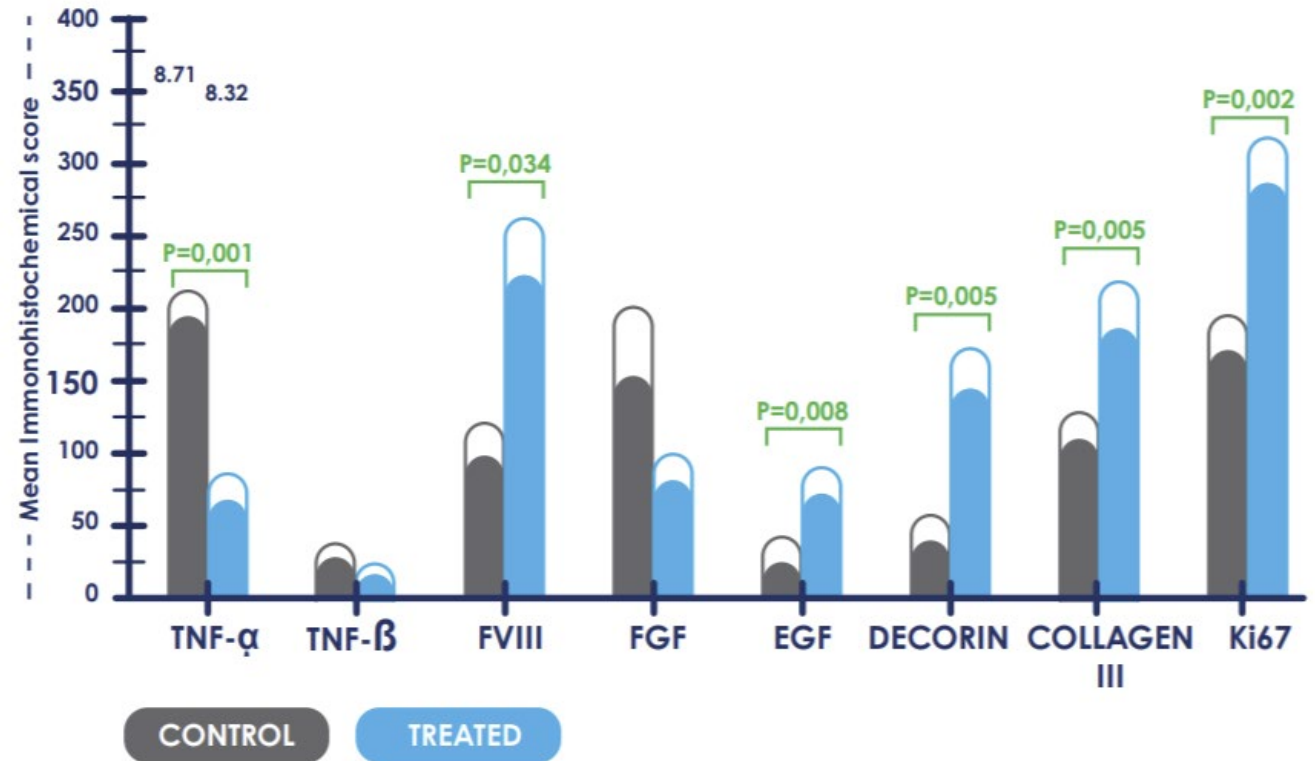
FIGURE 1. Histologic appearance of wounds



Surgical Wounds

Salvaggio et al., 2020

FIGURE 2. Immunohistochemistry scores of treated and control wounds.

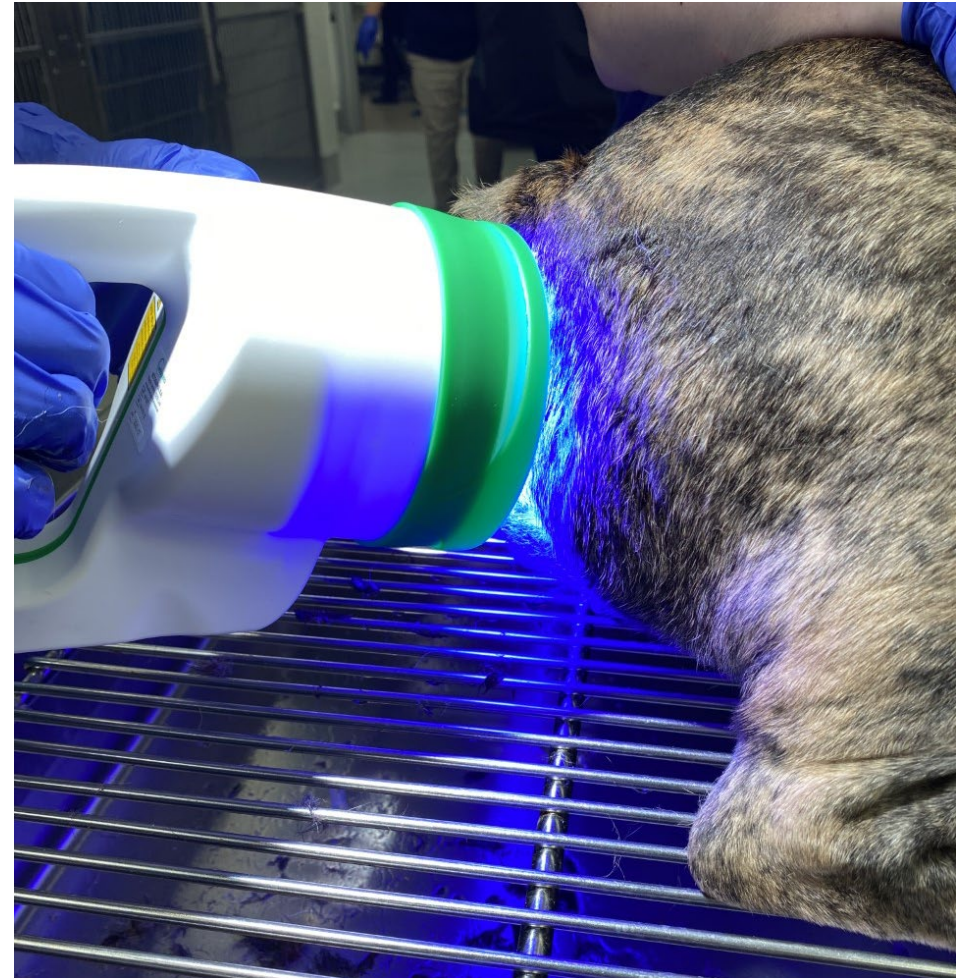


Anal Sacculitis and Rupture

Wounds - anal sacculitis and rupture



Wounds - anal sacculitis and rupture



Wounds - anal sacculitis and rupture



Perianal Fistulae

Perianal Fistulas



1 week later

Canine perianal fistulae

Marchegiani et al., 2020

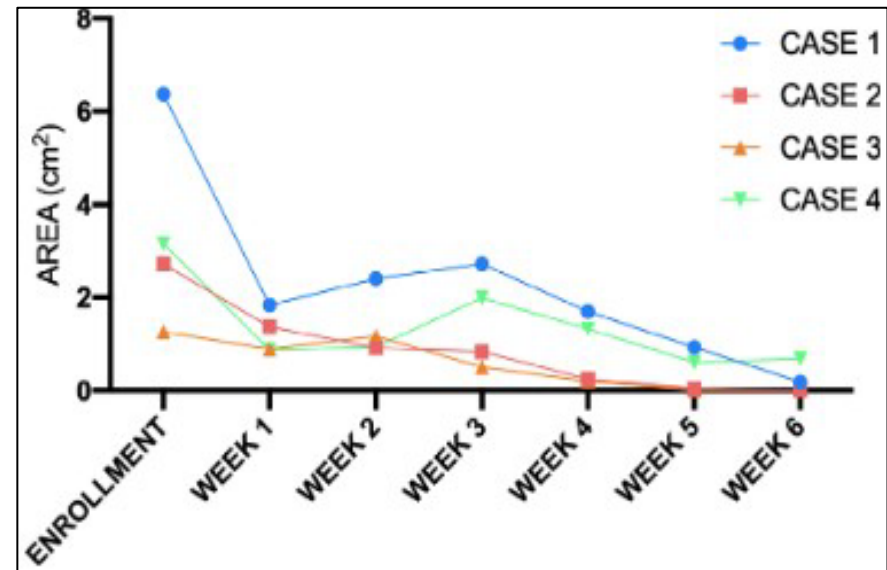


Figure 4. Weekly lesional areas by case in German shepherd dogs with perianal fistulae treated with fluorescence light energy.

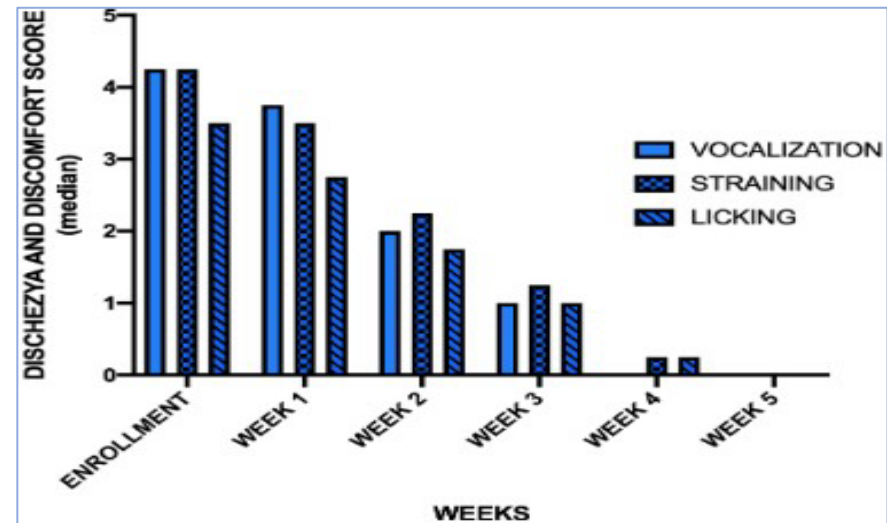


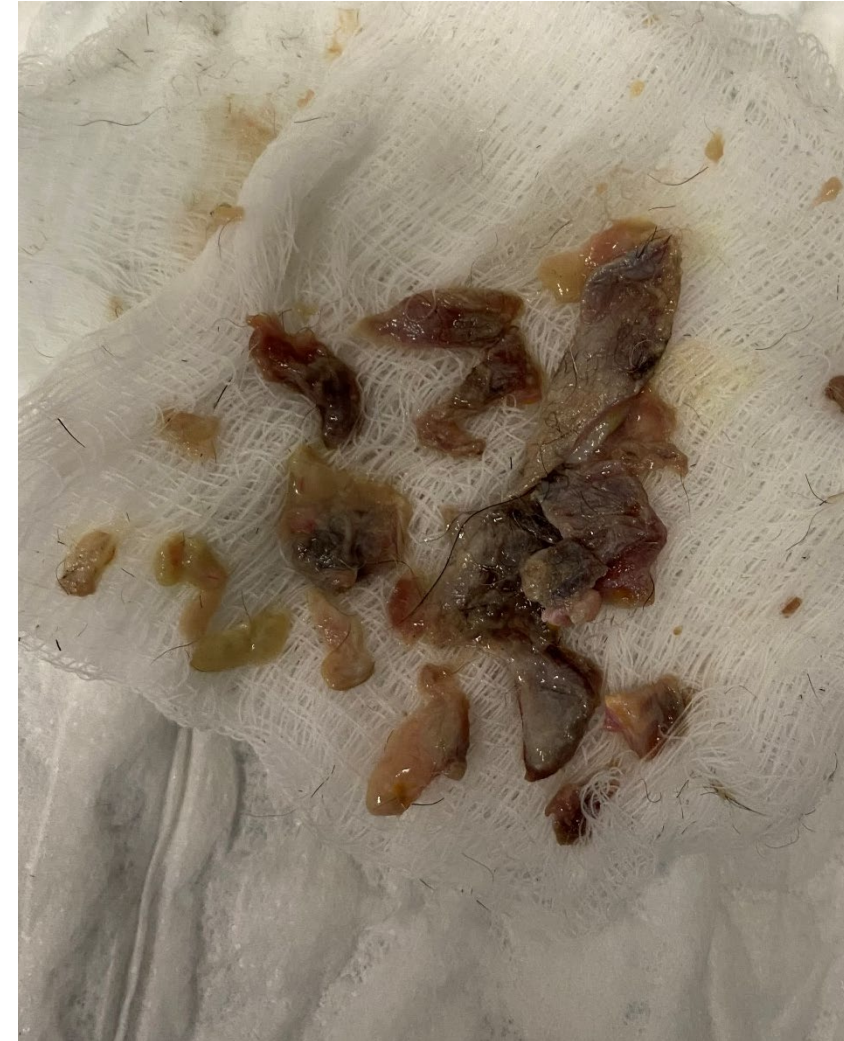
Figure 5. Median weekly scores for dyschezia (vocalization, straining) and discomfort (licking) in German shepherd dogs with perianal fistulae treated with fluorescence light energy.

A statistically significant improvement was seen starting from Week 2.

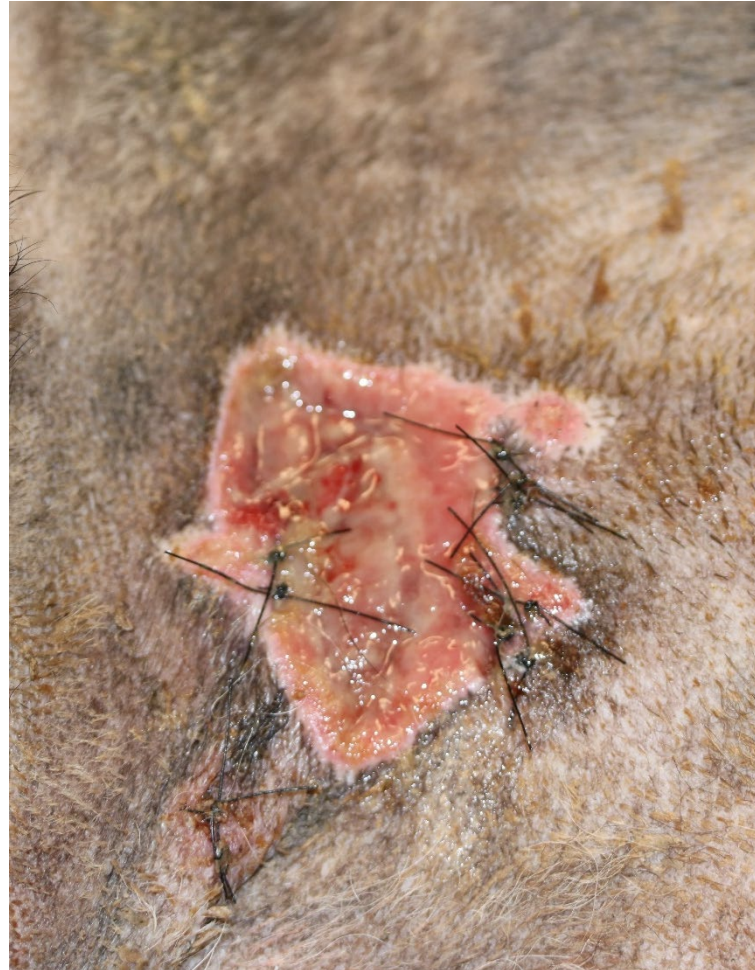


Burns

Burns



Burns



Burns - Ferret



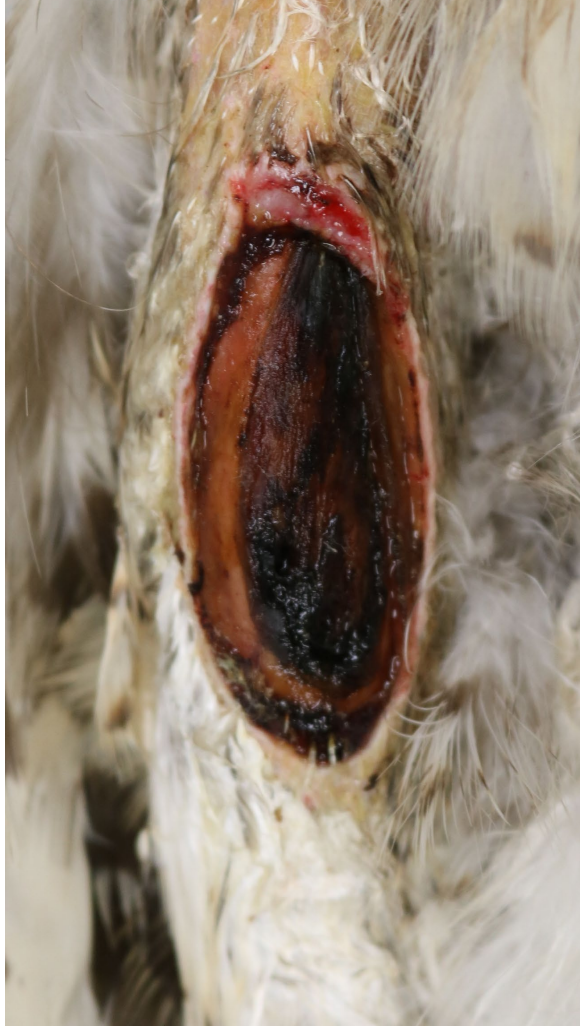
Avian Wound - Electrocution



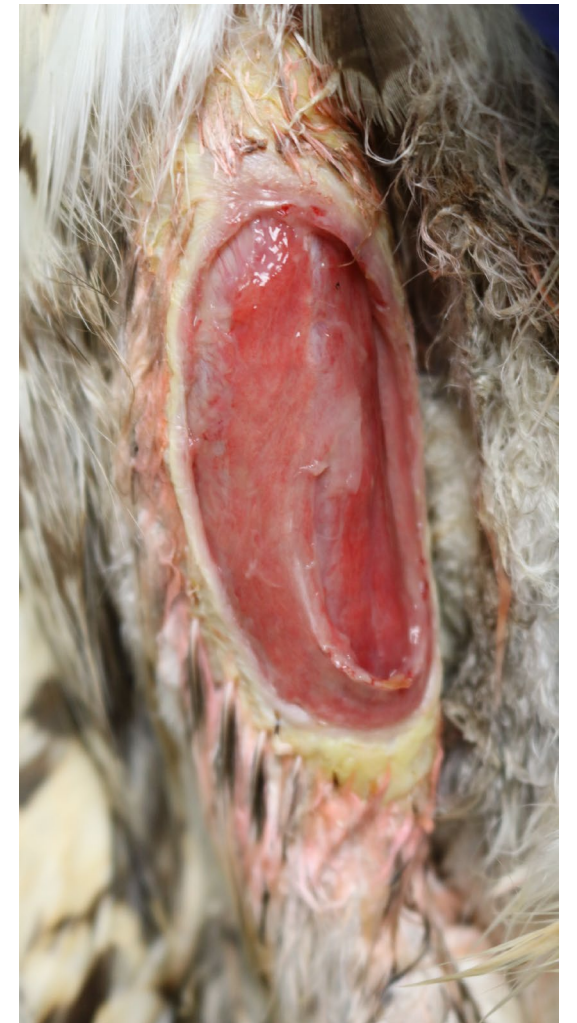
Avian Wound - Electrocution



Day 0



Day 5



Day 7

Chronic Wounds

Equine Wounds



Week 1



Week 2



Week 3



Week 5

Avian Infections & Wounds



Avian Infections & Wounds



1st Phovia treatment



Avian Infections & Wounds



1 week



2 weeks



4 weeks



Other Applications

- Bacterial pyoderma
 - Surface
 - Superficial
 - Deep
- Pinnal dermatitis
- Perianal fistulas
- Surgical wounds
 - Complicated
 - Uncomplicated
- Traumatic wounds
 - Burns
 - De-gloving injuries
 - Road rash



FLE Limitations

- Neoplasia?
 - Accelerate mitochondrial activity – affects on neoplastic cell activity?
- Still need to ID and treat the primary disease
 - Allergy, endocrinopathy, trauma, etc.
- Not a miracle cure!
 - Combine with SOC treatments for better outcomes
- Design treatment protocols that fit the condition
 - Chronic acral lick granuloma vs acute wounds



Questions?