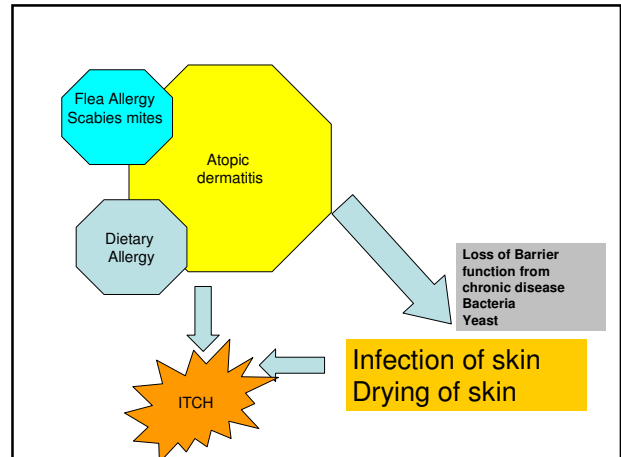


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## Allergies, Infections and Ears



## How do we approach

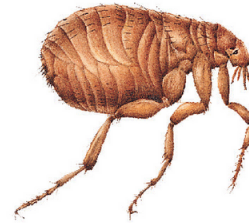
- Inflamed skin looks like inflamed skin.  
**Red/itchy** -> **thickened/black**
- **History and distribution are key**



### Treatment plan

- Identify and treat cause
- Break itch/scratch cycle with medications
- Treat infections
- Restore barrier function

## Never underestimate my capacity to cause skin disease



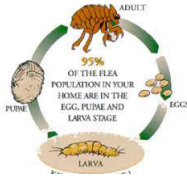
### Flea bite allergy

- Lower back and butt of tail most severe
- Can generalise
- Don't need to see fleas
- Can start at any age but most common in middle age
- Poor response to corticosteroids
- History may involve multiple animals, stray/house cats and sub-optimal flea control

## New generation flea products



## Effective flea control



- Treat all dogs and cats **REGULARLY** with an effective compound
- Vacuuming and flea spray/bombs will **HELP** only. Not the whole answer
- Block off under house
- It will take 3 months to clear problem

**What won't work**  
 Powder and collars  
 Bathing (even flea shampoo)  
 Supermarket flea products  
 Herbs  
 Fipronil

## Sarcoptic mange

- Elbows, ears, hocks, belly
- Highly itchy 9+/10
- Often history of fox/wombat access
- Contagious. May transmit to owners
- Some cases are **NOT** typical.



## Cutaneous adverse food reactions "Food allergy"



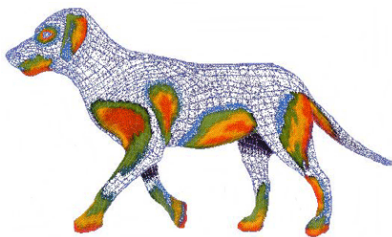
## Food allergy

- 12-15% of cases all or part food allergy
- Typically severe
- Often begin young
- 50% don't respond to corticosteroids
- Clinically indistinguishable from atopic dermatitis without a food trial



• Food allergy is not allergy to a brand  
 • Rarely chemicals  
 • Almost always base protein beef, chicken, lamb, rice, wheat fish etc  
 • Needs strict 6 week+ **SINGLE NOVEL PROTEIN DIET** to diagnose

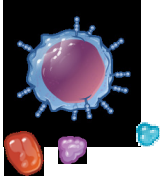
## Atopic dermatitis



## What is Atopic Dermatitis Genetically predisposed T-cell disease

- Associated an inappropriate response to environmental allergens.
- Most common veterinary skin disease. (10% of dogs?)
- Genetic primary barrier defect?

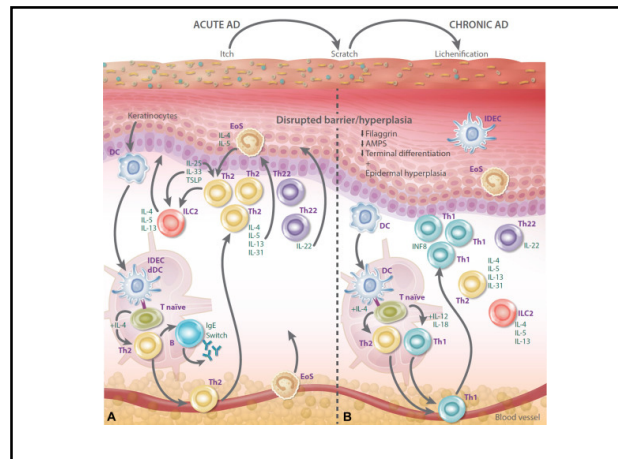
## Atopic dermatitis is a T-Cell disease, mediated by cytokines



Activated T cells, histiocytic cells and keratinocytes release inflammatory cytokines :

- interleukins
- growth factors
- interferons

Histamine has a minor role in the pathogenesis of atopic dermatitis



## Diagnosis of Atopic Dermatitis

### 1. Typical Signs

### 2. Exclusion of other diseases

- Fleas
- Food
- Sarcoptes
- Infection
- CATS – Ringworm and psychogenic

Presentation and signs are often clinically indistinguishable from "DIETARY ALLERGY".  
Alternative or concurrent diagnosis

## Criteria for the diagnosis of atopic dermatitis Favrot 2009

1. Onset of signs under 3 years of age
2. Mostly indoors
3. Glucocorticoid-responsive pruritus
4. Pruritus without lesions at onset
5. Affected front feet
6. Affected ear pinnae
7. Non-affected ear margins
8. Non-affected dorso-lumbar area

Five satisfied criteria sensitivity of 85% specificity of 79%  
Six criteria sensitivity 89% Specificity 58%  
Exclusion of ectoparasites increases specificity

## Five + 1/2 Pillars Approach to Atopic Dermatitis

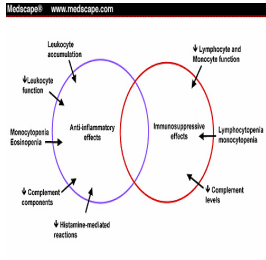


- Symptomatic relief of itch (steroids, Apoquel, Cytopoint)
- Infection control
- Skin hydration and barrier repair. Moisturizing
- Desensitizing

1. Control other allergies (diet, fleas)
2. 5&1/2.

- Essential fatty acid therapy
- Allergen avoidance
- Antihistamines ??

## Corticosteroids



Plus metabolic effects through receptors on most tissues



## Corticosteroids

- Highly effective
- SEVERE medium term side effects from

1. Immunosuppression
2. Hormonal action (Cushings)



- Failure to respond USUSALLY indicates:

1. The diagnosis of atopic dermatitis is not correct
2. The atopic dermatitis is complicated by secondary infection

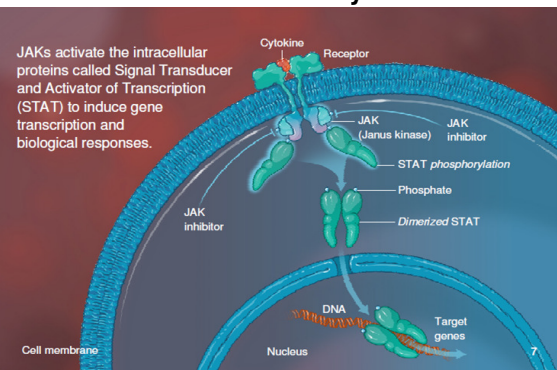
## What role for corticosteroids

- Short term smart, long term dumb. FLARES
- There is no "safe" dose of prednisolone but dogs maintained on 0.25-0.5 mg/kg twice weekly have a reduced risk of side effects
- **The cheap cost of prednisolone may soon be overtaken by the cost of its side effects**

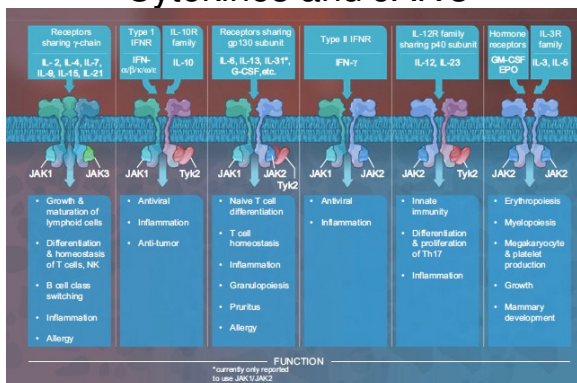


## Modern itch control using drugs that act on the JAK-STAT system

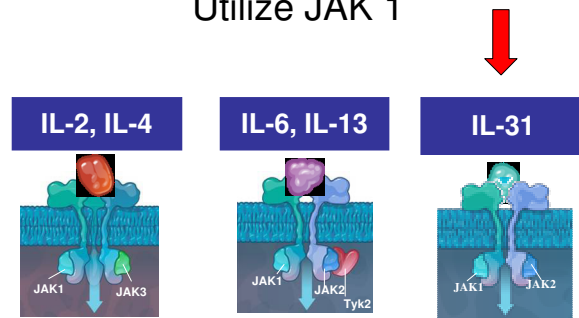
JAKs activate the intracellular proteins called Signal Transducer and Activator of Transcription (STAT) to induce gene transcription and biological responses.



## Cytokines and JAK's



## Allergic Cytokine Receptors Utilize JAK 1

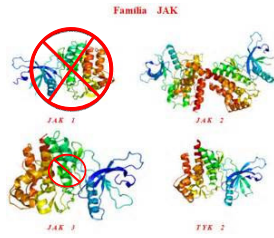


Long term response may be more impacted by other cytokine effects



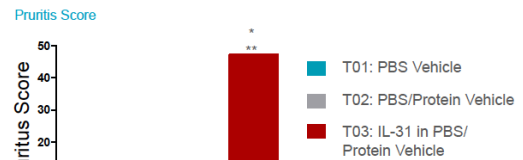
## Oclacitinib (Apoquel)

- Selective inhibition
  - Mainly JAK 1
  - Less but some effect on JAK 2
- Generally well tolerated
- Potential immunosuppression
- Half life short T1/2 = 4 hrs



## IL-31

- cIL-31 injected into dogs caused pruritic behavior over a 2 h period compared with placebo <sup>1</sup>



<sup>1</sup> Gonzales et al(2013). Interleukin-31: its role in canine pruritus and naturally occurring canine atopic dermatitis." *Vet Dermatol* **24**(1): 48-53

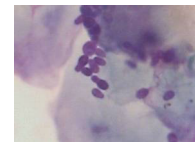
## Cytopoint efficacy

Mean pruritus scores were very mild to mild starting at day 1 and continuing for a full month

At day 42, owner assessment of pruritus VAS scores remained mild at 37.6 mm (mean baseline, 71.0 mm) for dogs receiving a 2 mg/kg dose of Canine Atopic Dermatitis Immunotherapeutic.<sup>1</sup>



## Yeast Infections



## Classification of Cutaneous Bacterial Infections

**Based on depth of infection:**

### 1. Surface Bacterial Infections

Surface layers of epidermis only

### 2. Superficial Pyoderma

Epidermis and hair follicles

### 3. Deep Pyoderma

Dermis +/- subcutis

**Implications with respect to cause and therapy.**

## Surface Bacterial Infections

**"Hot Spots"**

Often secondary to allergy

Intensely pruritic

Colonization and multiplication of

bacteria on skin surface

May develop into a deeper

pyoderma



**Surface Bacterial Infections**  
**Intertrio (fold dermatitis)**

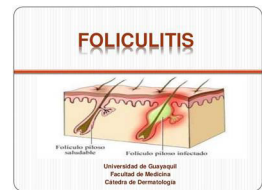
*Moist, warm and humid environment with friction predisposes infection*

*Breed or obesity related  
 Lip fold, vulval fold, face fold etc.*

*Erythema, erosions and a foul smelling exudate*



**Superficial Pyoderma (folliculitis)**



**Superficial Pyoderma**  
*Impetigo severe and pruritic*



**Superficial Pyoderma**  
 Folliculitis in a longer haired breed



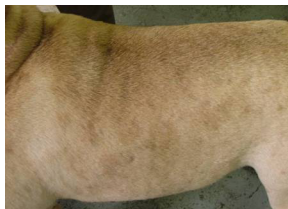
Alopecia

Scale

Collarette formation.

•May be hidden by the coat.

**Superficial Pyoderma**  
 Folliculitis in a short haired breed



•Moth eaten appearance

•Small follicular papules

**Superficial Pyoderma**  
 Folliculitis in the Dalmatian



“Bronzing syndrome”

## Superficial Pyoderma Folliculitis in the British Bulldog

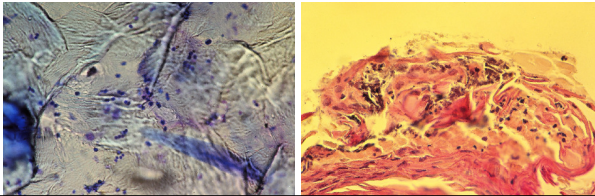


Thickened plaques of skin,  
hyperkeratosis

## Superficial Pyoderma Mucocutaneous Pyoderma



## Bacterial Overgrowth Syndrome.



## Deep Pyoderma

Results from extension of superficial pyoderma into dermis and subcutis or inoculation or direct inoculation into dermis.

### Signs:

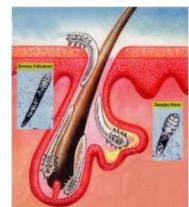
- **Fistulas**
- **Ulcers**
- **Furunculosis**
- **Haemorrhagic bullae**
- **Possible systemic signs and or cellulitis**



## Deep Pyoderma



Deep pyoderma secondary to demodectic mange.





## MRSP

methacillin resistant *Staphylococcus pseudintermedius*

- Resistant to all penicillin derivatives and cephalosporins
- Similar problem with human *Staphylococcus aureus* MRSA
- Multi-resistance gene Mec-A often confers multi-drug resistance
- Significant problem in US and Europe and rising in Australia
- Carrier dogs with opportunistic pathogen
- *S. pseudintermedius* very low pathogenicity for humans
- *Aureus* and *pseudintermedius* may exchange genetic information

## Prevention of MRSP

- Always use topical treatment and if possible use instead of antibiotics for superficial infections
- Use antibiotics at full or higher doses. Don't underdose
- Treat for correct duration
- Base second line antibiotics on culture
- Disinfection



## Moisturizers

### Hygroscopic ((humectant) agents

- Attract water into stratum corneum.
- Urea, glycerin, lactic acid and propylene glycol.

### Emollients (Paraffin/mineral oil)

- Decrease epidermal water loss
- Form a barrier between skin and potential allergens.



### Moisturizers

- Paws NutriDerm 1:2 spray
- Propylene glycol 25-33% spray
- Sorbolene (glycerin and paraffin oil + additives)
- Alpha Keri bath oil 1:50 spray

Bathing and wetting the skin  
Benefit or harm (?)  
Emollients may be MORE effective without bathing

## Desensitizing Allergen Specific Immunotherapy ASIT

### Set the goal posts!

- The majority of cases will BENEFIT from ASIT BUT MAY require adjunct symptomatic therapy for at least part of the year.
- ASIT provides a low cost means of long term control with minimal risks of side effects.
- Only a minority of cases will be TOTALY controlled by immunotherapy alone.



## Ancillary Therapy - Antihistamines

- Some dogs may respond to different antihistamines. Several may need to be trialed (individually) for 10-14 days.
- In the author's experience, <10% of dogs show some response to antihistamines.
- Trial anti-histamines as a drug sparing agent once a base-line of control has been achieved with drug therapy and while awaiting the benefits of immunotherapy.



## Ancillary Therapy – Essential fatty acids

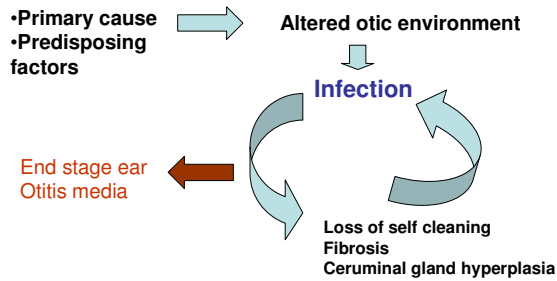
- Optimal 3:6 ratio unknown
- Omega 6 improve barrier, Omega 3 anti-inflammatory
- Lower doses of drugs = decreased risk of side effects



- Don't expect control with fatty acid therapy alone.
- A lag period of 6-12 weeks
- Synergism between fatty acid and antihistamines ?



## The otic cycle of disaster



## Primary causes and perpetuation

- **All cases of otitis have a primary cause.** Just because the primary cause is not obvious, it does not mean there is not one.
- **The most common primary cause of canine otitis is allergy.** Atopic dermatitis and dietary allergy may manifest as otitis externa alone
- **Once damaged, the ear canal is not self cleaning.** Ceruminous trapping and sequential exfoliation will not occur.

## Causes of otitis

- |   |  |
|---|--|
| <p><b>Predisposing</b></p> <ul style="list-style-type: none"> <li>• Anatomic – pendulous, narrow or hairy</li> <li>• Humidity and moisture</li> <li>• Inappropriate cleaning interventions</li> </ul> | <p><b>Primary</b></p> <ul style="list-style-type: none"> <li>• Allergy</li> <li>• Keratinization disorders</li> <li>• Endocrinopathies</li> <li>• Immune mediated disease</li> <li>• Foreign bodies</li> <li>• Ear mites/parasites</li> <li>• Foreign bodies</li> <li>• Tumours</li> </ul> |
|---|--|



Atopic dermatitis



Pemphigus foliaceus



Scaling disease as a primary cause of otitis externa

## Reasons for failure

- Not cleaning appropriately
- Not treating long enough until visible and cytological resolution
- Inadequate dose volume
- Not resolving otitis media
- Proliferate and end-stage ears
- Poor owner compliance
- Inappropriate antibiotics
- Failure to address primary cause
- Failure to maintain
- BIOFILMS



Thank you and any questions

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