Canine Atopic Dermatitis

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DERMATOLOGY/ALLERGY

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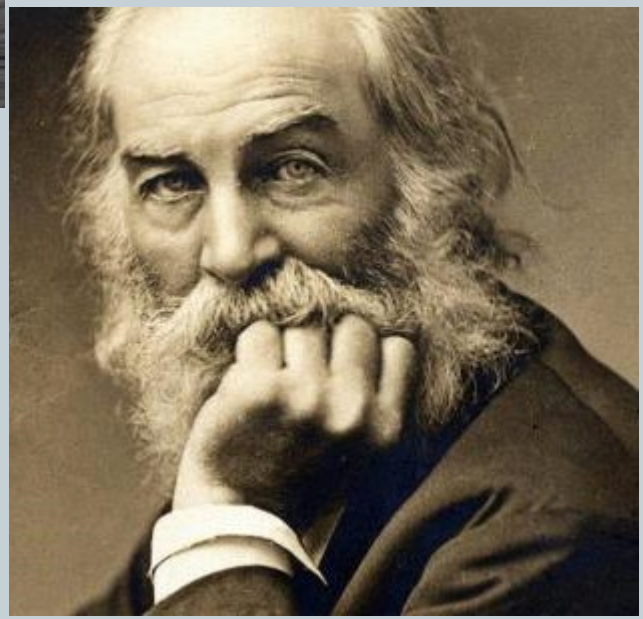
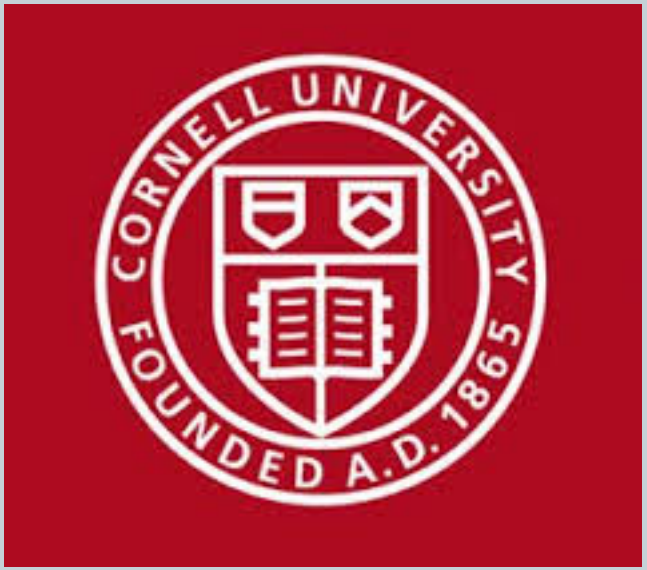




AMC
Animal Medical Center
SINCE 1910

Disclosures

- Consultant for Antech Diagnostics
- Consultant for Nutramax

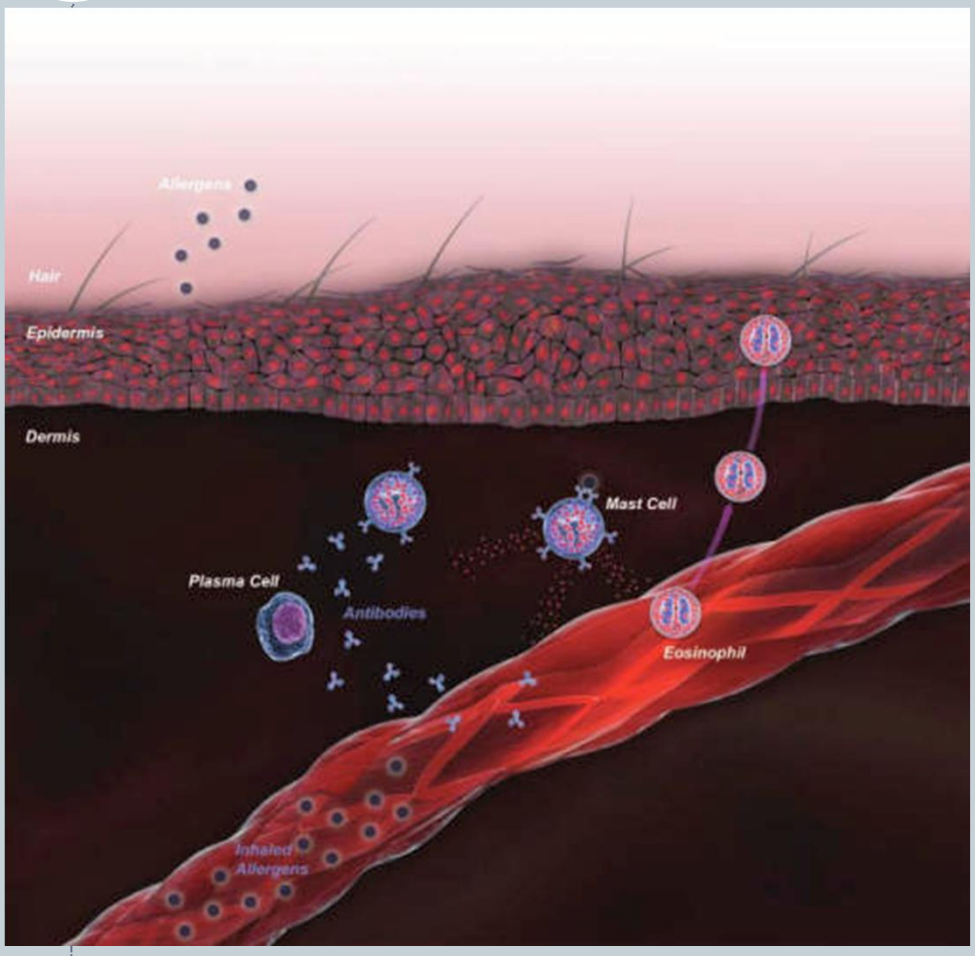
Canine Atopic Dermatitis

- "…is a genetically predisposed inflammatory and pruritic allergic skin disease with characteristic clinical features associated with IgE antibodies most commonly directed against environmental allergens."

Task Force on Canine Atopic Dermatitis, 2006

Pathogenesis until the 1980s/early 1990s

- Allergens absorbed through respiratory tract
- Type I hypersensitivity



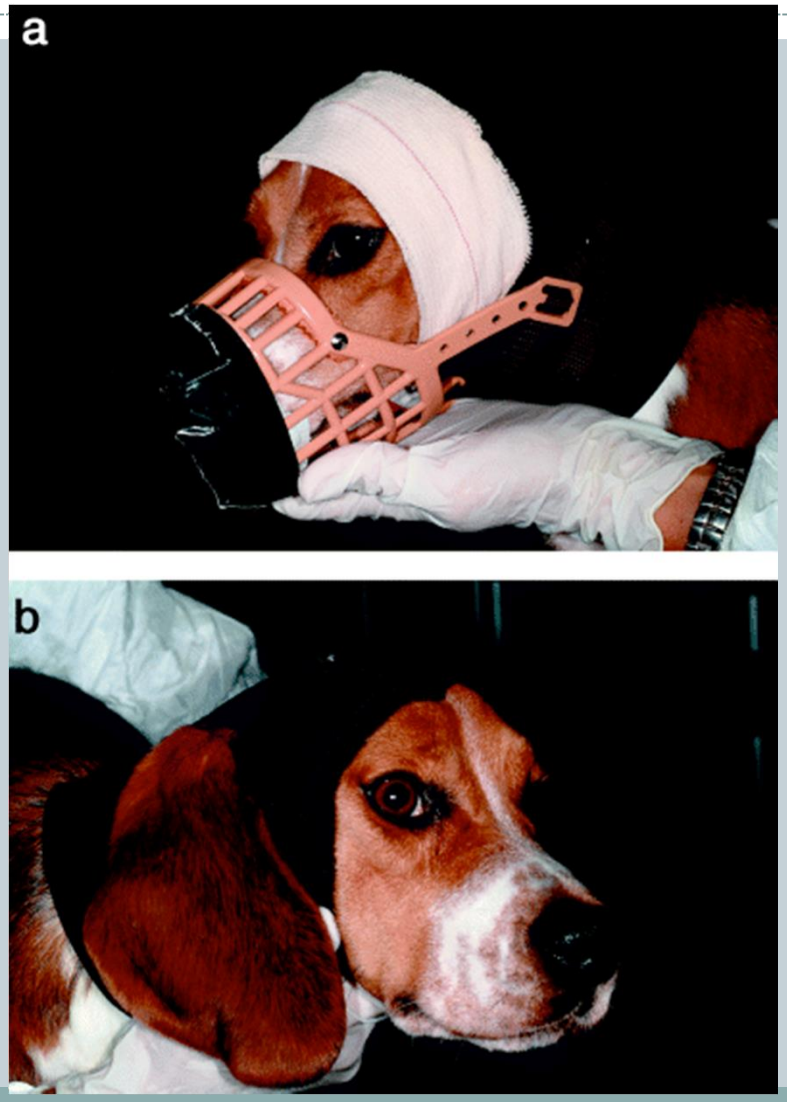
Marsella, et al 2012

Atopic Dermatitis – Newer Concepts

- Imbalance of T-helper 1 (cellular) to T-helper 2 (humoral) ratio
  - Th2 > Th1
- Dogs absorb allergens percutaneously
- Epidermal barrier defects – dogs, humans
- Increased intra-epidermal protease activity

Percutaneous Allergen Absorption

- Routes of allergen exposure
  - Oral
  - Inhaled
  - Percutaneous
- All routes are important and have additive effects
- Route of exposure does not determine the distribution of lesions
- Continuous percutaneous exposure probably plays the most important role



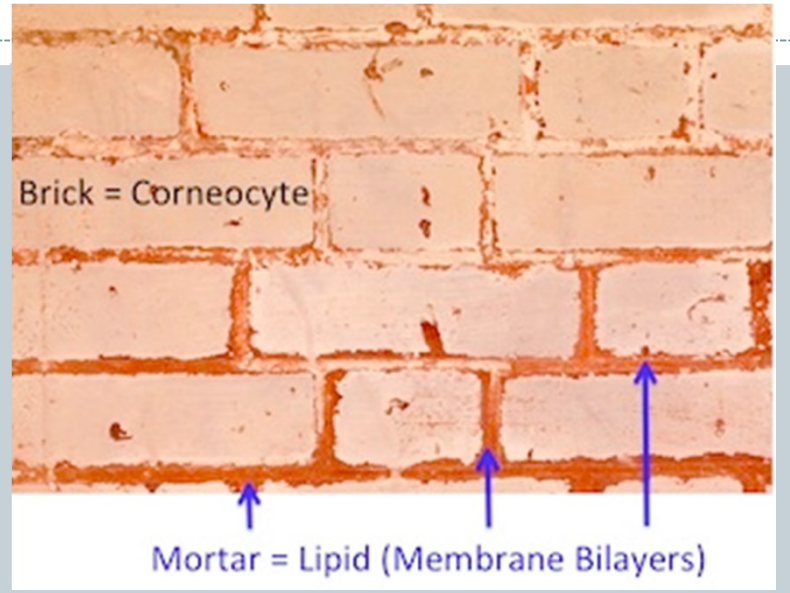
Marsella, et al 2006

Epidermal Barrier Dysfunction

- Retention of lamellar bodies
- Disorganized lipid lamellae
- Decreased ceramides
- Wide intercellular spaces
- Decreased filaggrin
  - 56% of humans w/ moderate to severe eczema have filaggrin deficiency

---Bad Mortar---

Bad Bricks

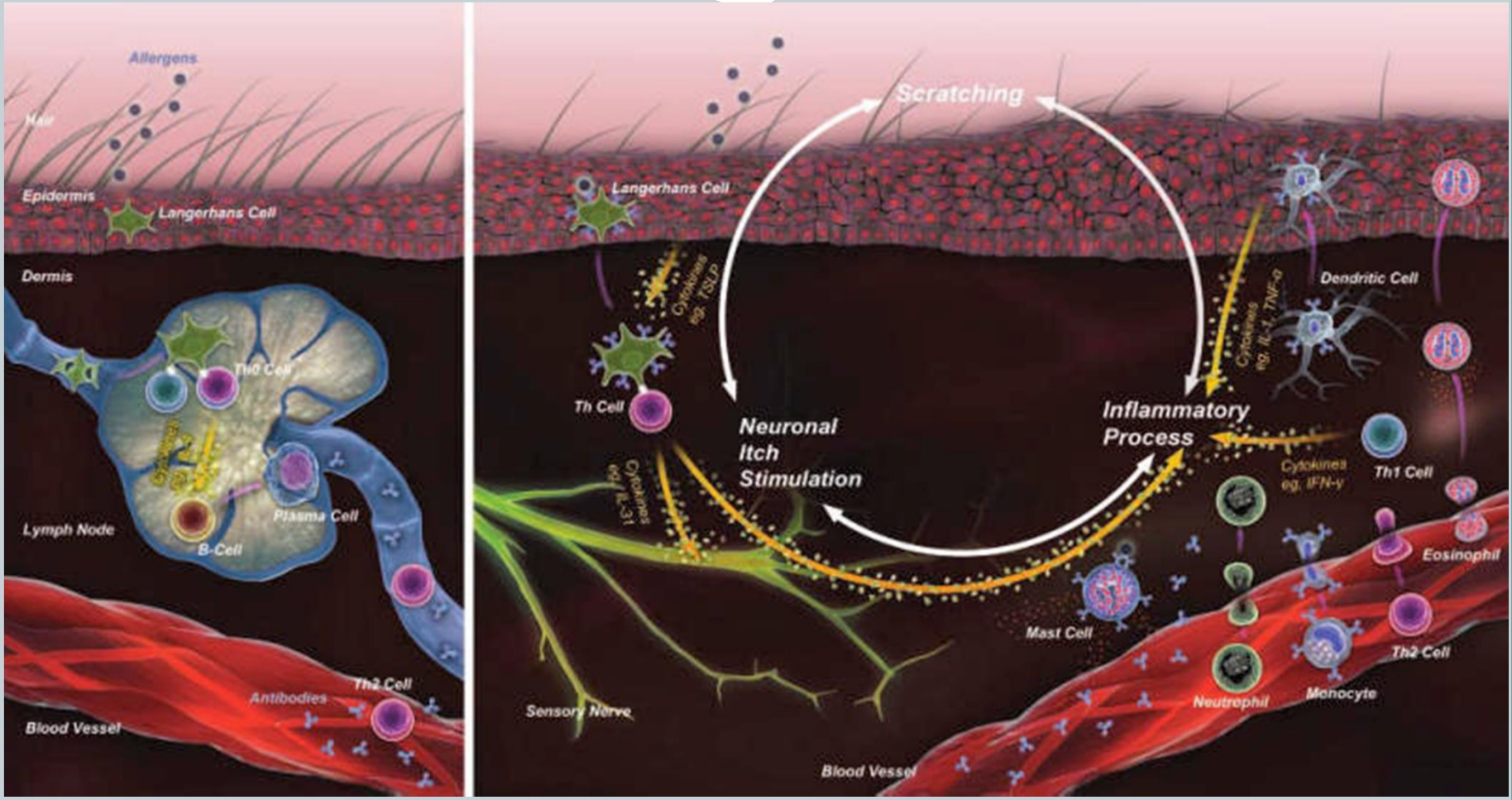


Intra-Epidermal Protease Activity

- Keratinocytes play active role in immune system
- Increases in intra-epidermal protease activity
  - Keratinocyte damage →
  - Thymic Stromal Lymphopoietin (TSLP) release →
    - Promotes allergen sensitization through skin

More bad bricks….

Basic Pathogenesis: Updated



Atopic-like dermatitis (ALD)

- Same clinical signs as AD, however an IgE response to environmental or other allergens cannot be documented by usual methods

Canine Atopic Dermatitis - Diagnosis

- History
- Clinical signs
- Rule out other common causes of pruritus
  - Especially ectoparasites

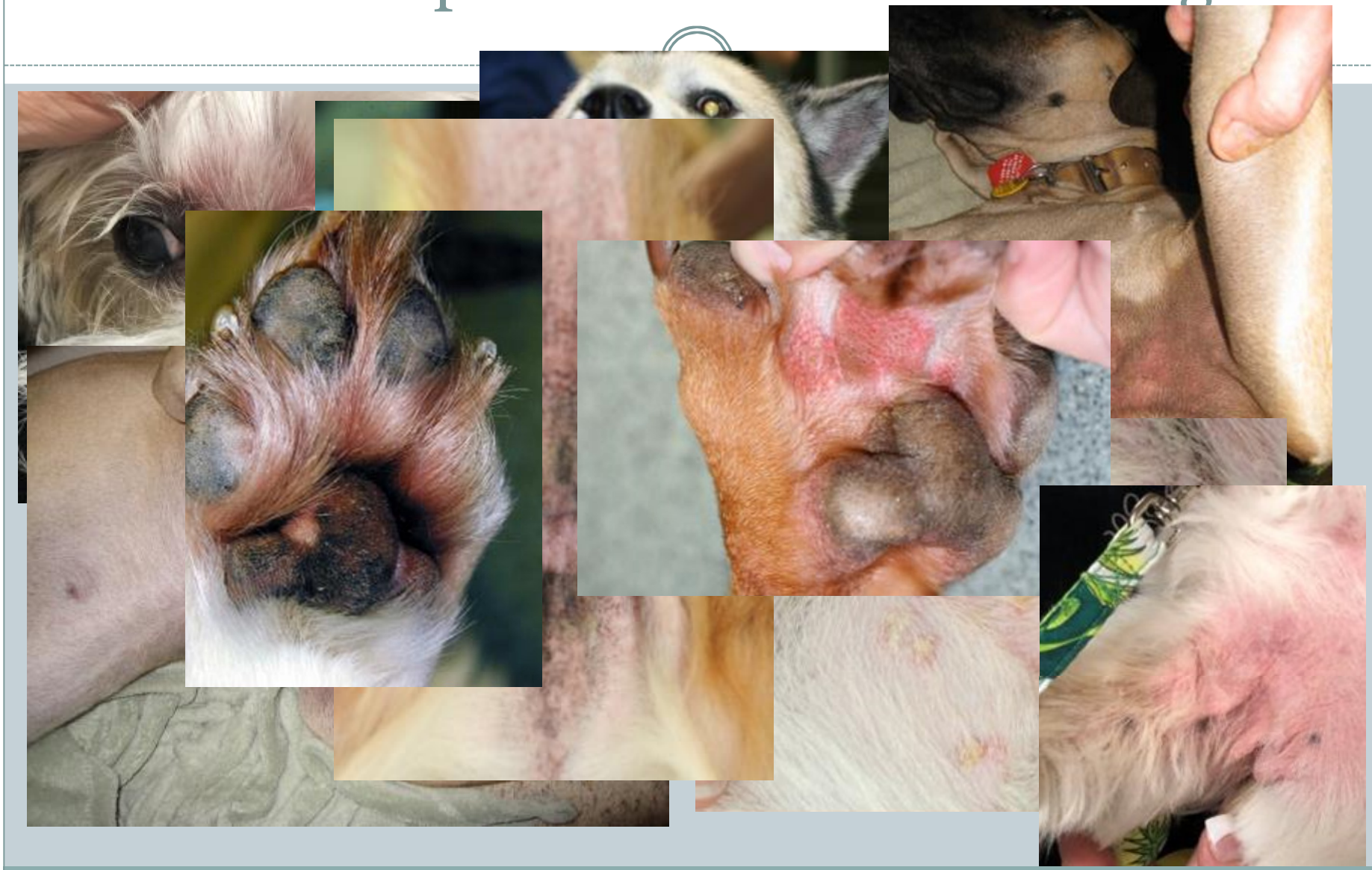
Canine Atopic Dermatitis - History

- Seasonal or non-seasonal pruritus
  - With or without seasonal flares
- Usually starts between 6 months and 3 years of age
- Pruritus with or w/o recurrent skin/ear infections
- Ocular signs/rhinitis

Canine Atopic Dermatitis- Clinical Signs

- Primary lesions
  - Erythematous macules, patches, small papules
- Secondary lesions
  - Excoriations, alopecia, lichenification, hyperpigmentation
- Face, concave pinnae, ventral neck, axillae, groin, abdomen, perineum, ventral tail, paws, flexural and medial limbs, periocular, perinasal
- Otitis, pyoderma, yeast dermatitis

Canine Atopic Dermatitis- Clinical Signs



Current Diagnostic Criteria - Canine

- Onset of signs < 3 years old
- Steroid-responsive p
- Affected nae
- Affected ont paws
- Non-affected dorsolumbar area

Be able to recognize mimickers of AD

Parasitic
Infectious
Other allergies

20% could be misdiagnosed if followed strictly

Early stages: lesions may not be seen at all sites/pruritus may be present w/o lesions

- Based on a study of 1096 pruritic dogs with AD only (Favrot, 2010)

Current Diagnostic Criteria - Canine

- Onset of signs < 3 years old
- Steroid-responsive pruritus
- Affected pinnae
- Unaffected ear margins
- Dog living mostly indoors
- Pruritus without lesions at onset
- Affected front paws
- Non-affected dorsolumbar area

Food Allergy/Cutaneous Adverse Food Rxns

- May manifest as AD in some dogs
  - Food allergens may trigger AD flares
- May be indistinguishable
  - Non-seasonal vs. seasonal
- Signs
  - Paws, face, ears, rears, axillae, groin
  - Urticaria
  - Pruritus w/o lesions
  - Seborrhea
  - Recurrent skin infections/otitis
  - GI signs

Cutaneous Adverse Food Reactions

- Age on onset: any
- Usually NOT associated with a diet change
  - Often on food for 2 years or more
- 10-30% of food allergic dogs have concurrent environmental allergies
- Cross-reactivity - food w/ environmental allergens
  - Birch pollen – apple, carrot, celery, pear, tomato, cherry, tree nuts
  - Ragweed pollen - melon, cucumber, banana, sunflower

Cutaneous Adverse Food Reactions- Diagnosis

- Strict food elimination diet trial
  - 6-12 weeks (dogs)
  - Prescription or home-cooked diets
  - STRICT!
- Serum allergy testing
  - Unreliable in most

Food Trial Diets

- Cross-reactivity
- Cross contamination
- Many companies do not have their own manufacturing plants
- Use prescription or home-cooked diets

Food Trial Diets

- Venison / Potato diets–4 OTC venison diets and Royal Canin venison diet and control diets w/ beef, soy, poultry
- Tested for beef, soy, and poultry
  - Poultry test- false negatives
  - OTC VP diets
    - ¾ + for soy at >2.5ppm – no soy on label
    - ¼ + for beef - no beef on label
    - ¼ negative for all
  - Royal Canin VP diet
    - Negative for all

Some humans react to 10ppm

Raditic, et al 2010

Food Trial- STRICT

- No unauthorized treats
- No flavored supplements
- No flavored medication
- No human food
- No other pet's foods
- No cheese, pill-pockets
- Wash bowls/containers
- No poop
- Everyone must be on board

Allergies: Treatment

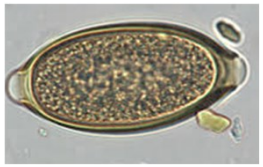
- Avoidance
  - Easier with food allergy
  - Challenging with environmental allergies
- Multiple therapies often required
  - "Multimodal"

Hygiene Hypothesis

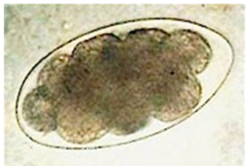
- Absence of childhood infections, esp. parasitic, can lead to immune dysregulation and allergies
- Immunologic reaction in atopic dermatitis
  - Similar to that seen with parasitic infections (Th2 reactions)
- Helminth infections
  - Negative correlations with allergies
- Increased incidence of allergies in more developed countries
- Kids on farms have lower incidence allergies
  - Bacteria, parasite exposure

Hygiene Hypothesis

- Helminth infections can protect against autoimmune diseases
  - MS, Crohn's, ulcerative colitis
- Laboratory and epidemiologic evidence suggests helminths are protective against allergy but…
  - Prospective double-blind studies have not demo'd clinical benefit in humans
  - Need more work—infection location, worm burden, duration of infection, etc.



Worms…



- Pilot study in 12 allergic dogs given either *Trichuris vulpis* or *Uncinaria stenocephala*
  - Decreased pruritus and clinical signs
- Double-blind randomized placebo controlled study of 24 dogs
  - No difference between placebo and *T. vulpis* treated dogs in pruritus, clinical signs or IgE

Mueller RS, et al, 2011

What about bacteria?

- More diverse microbiome and fewer viral infections in children who
  - Live on farms
  - Drink raw milk
  - Have older siblings
  - Have pets (dogs >cats)
- Working on which bacteria do what

Probiotics

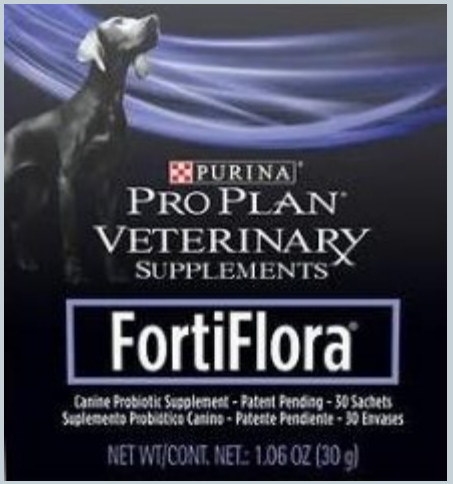
- Live microorganisms that, when administered in adequate amounts, may confer a health benefit to the host
- Prevention of pediatric AD
  - Reduce incidence by 20-24%
  - Long term benefit is controversial
- Treatment of AD – controversial
- One study of experimentally induced atopic dogs found probiotics decreased severity of clinical signs

Probiotics

- Consider using in lines of dogs that have a h/o AD
  - Give to bitch during late pregnancy and to pups for at least 6 weeks
  - Dose/type of bacteria – unknown
  - Should not hurt and might help

Probiotics

- Proviable
- Visbiome
- FortiFlora



Epidermal Barrier Repair

- Hardy kiwi, ceramides, fatty acids and beta-glucan
  - Dermaquin (Nutramax®)
  - Helps skin barrier, skin hydration and inhibits inflammatory mediators
- Phytosphingosine
  - Douxo products
  - Improvement noted ultra-structurally

- Essential oils and unsaturated fatty acids
  - Dermoscent Essential 6
  - Clinical improvement

Veterinary Dermatology

Full Access

A randomized, double-blind, placebo-controlled study to evaluate the effect of EFF1001, an *Actinidia arguta* (hardy kiwi) preparation, on CADESI score and pruritus in dogs with mild to moderate atopic dermatitis

Rosanna Marsella, Linda Messinger, Sonja Zabel, Rod Rosychuck, Craig Griffin, Patti Orozco Cronin, Gil Gil Belofsky, Julie Lindemann, Dean Stull

- Day 0-14: response to pred (0.2mg/kg) assessed
- Day 14-42: pred + EFF1001 or placebo
- Day 42-70: EFF1001
- Dogs in EFF1001 group were 3.5x more likely to maintain or improve scores

Dermaquin

- Hardy kiwi
  - Decreases mediators of inflammation
  - Reduced skin scores when used as an adjunct
- Gamma-linoleic acid
  - Maintain skin hydration
  - Inhibit inflammatory mediators
- Beta-glucan
  - Support healthy skin immune system

Low cost

- Ceramides
  - Component of skin barrier
  - Support skin hydration
- Omega-3 fatty acids
  - Skin barrier function
  - Shift toward less inflammatory mediators

Dermoscent Essential 6

- Double-blind placebo controlled study
- 48 dogs with mildly to moderately pruritic AD
- Treated with Dermoscent or vehicle once weekly x 12 weeks
- Treatment group
  - 25% decrease in pruritus
  - 40% decrease in CADESI
- Adjunctive therapy

Fatty Acids

- Shift towards less inflammatory mediators
- Reduces pruritus in ~ 30%
- 180mg EPA and 120mg DHA per 10# body weight/day
- Try for 2-3 months
- Side effects
  - Fish breath
  - Soft stool

Topical Therapy

- Water therapy, bathing or wiping down is helpful
  - Decreases percutaneous and oral exposure to allergens
  - Some can improve barrier function

Topical Therapy

- Good evidence that some topical steroids are effective in decreasing signs of atopic dermatitis
- 2 days in row per week to flare areas

Systemic Therapies

- Glucocorticoids
- Cyclosporine / Atopica
- Oclacitinib / Apoquel
- Lokivetmab / Cytopoint
- Allergen-specific immunotherapy
- Antihistamines
- Others

Glucocorticoids

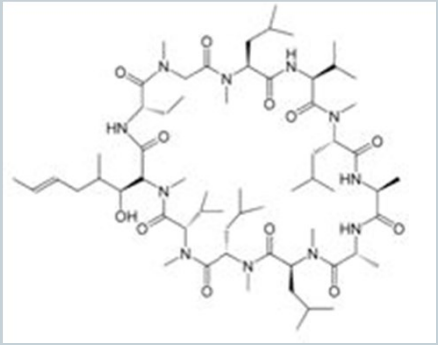
- Reduces pruritus in ~ 90-100%
- Small amount here and there – likely OK
- Side effects
  - Polyuria/polydipsia
  - Polyphagia
  - Weight gain
  - Panting
  - UTIs
  - Diabetes mellitus
  - Iatrogenic Cushing's
  - Etc.

Temaril-P

- Prednisolone 2mg + trimeprazine 5mg
- Reduced steroid use
- Use dosing on label→ taper to lowest dose
- Steroid side effects

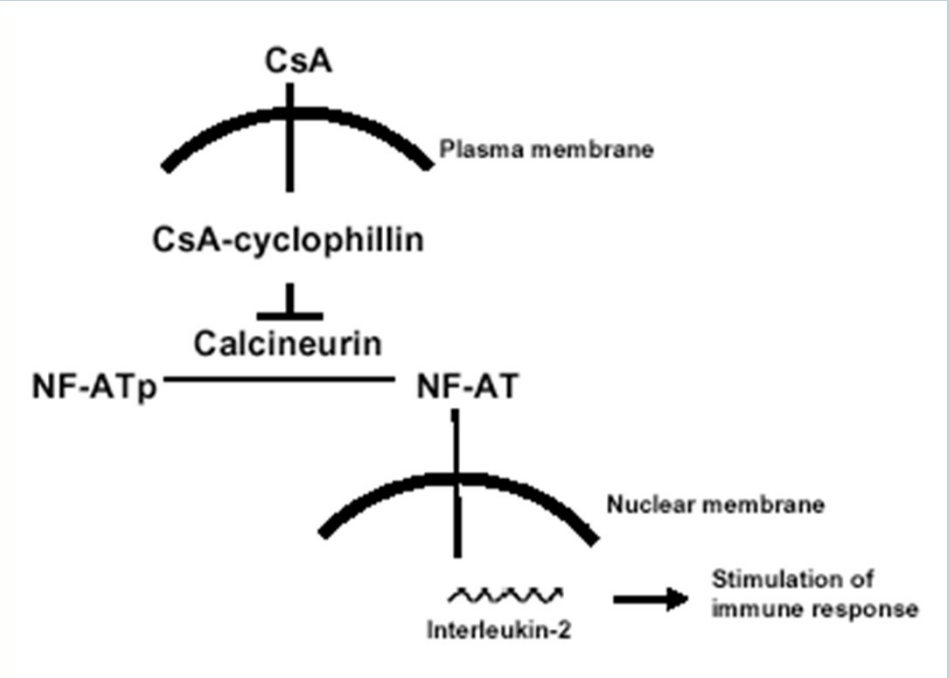
Cyclosporine- USA Timeline

- 1977- approved by FDA for psoriasis tx
- 1978- successful as anti-rejection tx in renal transplants
- 1995- cyclosporine-modified (Neoral)
  - More bioavailable, more consistently absorbed
- 2003- Atopica approved for dogs
- 2011- Atopica for Cats approved



Cyclosporine-Modified

- Calcineurin inhibitor → inhibits IL-2 → interferes with T-cell activity



Cyclosporine-Modified

- Atopica, Neoral, generics
- Reduces pruritus in ~ 70%
- 5mg/kg po q24h, ideally on an empty stomach (dogs)
- 7mg/kg po q24h (cats)
- Can take 1-6 weeks for effect
- Immunosuppressive
- Side effects
  - Vomiting/diarrhea
  - Gingival hyperplasia
  - UTIs
  - Papillomatosis
  - Lethargy

Cyclosporine-Modified

- Tricks to overcome vomiting
  - Freeze capsules
  - Give with food the first few weeks
  - Metoclopramide 15-30 minutes prior to dosing
  - Famotidine
  - Start with a smaller dose and work up to therapeutic dose
  - Divide dose into 2x per day dosing
  - Reduce dose by giving with ketoconazole

Oclacitinib - Apoquel

- JAK1 (and JAK3) inhibitor (minimal JAK2)
  - Esp inhibits IL-31
  - Also inhibits IL-2, IL-4, IL-6, IL-13
- Immunosuppressive
- Approved in 2013 in USA
  - Back-ordered/limited-supply February, 2014- June, 2016

Oclacitinib - Apoquel

- Label dosage: 0.4-0.6mg/kg po q12h for up to 14 days, then 0.4-0.6mg/kg po q24h
- Give with or w/o food
- Do not use in dogs <1 year of age
- Reduces pruritus in ~70%
- Fast acting
- Lasts ~18 hours

Oclacitinib - Apoquel

Weight Range (lb)	Number of Tablets to be Administered		
Low-High	3.6 mg Tablets	5.4 mg Tablets	16 mg Tablets
6.6-9.9	0.5	-	
10.0-14.9	-	0	
15.0-19.9	1		-
20.0-29.9			-
30.0-44.9		-	0.5
45.0-		-	0.5
	-	0.5	0.5
	-	-	1
90.0-129.9	-	-	1.5
130.0-175.9	-	-	2

0.4-0.6mg/kg

Oclacitinib – Apoquel- Side Effects

- Vomiting/diarrhea
- Polyuria/polydipsia
- Lethargy
- Weight gain
- UTIs
- Behavioral changes
- Long term side effects unknown
- Monitoring
  - Baseline cbc, chemistry panel, +/- UA; repeat q6-12 mos

UTIs

- Steroids – 18-39%
  - 46% of dogs w/ Cushing's
- Cyclosporine
  - 13%; similar to control group
- Apoquel
  - No UTIs in dogs with no prior UTI hx
- Check UAs/urine cultures q6-12 months
  - Steroids
  - +/- CsA
  - h/o UTIs

Antihistamines

- H1 blockers
- Reduce pruritus in ~30%
- Try several
  - Diphenhydramine, chlorpheniramine, cetirizine, loratadine, fexofenadine, hydroxyzine, clemastine
- Try for 2-3 weeks
- Synergy with other anti-pruritics

Lokivetmab - Cytopoint

- Caninized anti-cIL-31 monoclonal antibody (mAb)
- Targets and neutralizes canine IL-31
- Approved in 2016 in USA
- Works quickly
- Last for ~1 month
- Side effects
  - GI
  - Lethargy
  - Pyoderma
  - We have also seen: anxiousness, fever, lump at injection site

Allergen-Specific Immunotherapy (ASIT)

- Helps ~70% of patients improve 50% or more
- Only disease modifying treatment
- Provides long term cure in ~15% of patients
- Safe long term

Regional-Specific Immunotherapy (RESPIT)

- Based on the re-interpretation of a >20 year old abstract
- More recent double blinded study (abstract) found 18% of dogs with RESPIT improved while 70% improved with ASIT

RESPIT®
regionally-specific immunotherapy

Allergen-Specific Immunotherapy

- Used by most ACVD boarded dermatologists
- Well documented success in tx of human allergies
- Not as many placebo-controlled studies in veterinary medicine, but have confirmed effectiveness

Primary Goal of ASIT

- Induction of a tolerant state in peripheral T-cells
  - Generation of allergen-specific IgG
  - Production of suppressive cytokines to induce tolerance
    - IL-10, TGF-beta
  - Shift from Th2 to Th1
  - Change course of AD

Allergy Testing

- Identify appropriate allergens for ASIT
- Identify allergens to help reduce exposure

Allergy Testing

- Intradermal allergy testing
  - Gold standard
  - Expensive to maintain allergens unless you allergy test many patients
  - Dermatologists are trained in interpreting test results
- Serum allergy testing
  - Consider if
    - Owner cannot / does not wish to see a dermatologist
    - Patient cannot be withdrawn from steroids
    - Sedation is too risky
    - +/- Patient is too small for IDAT

Allergy Testing

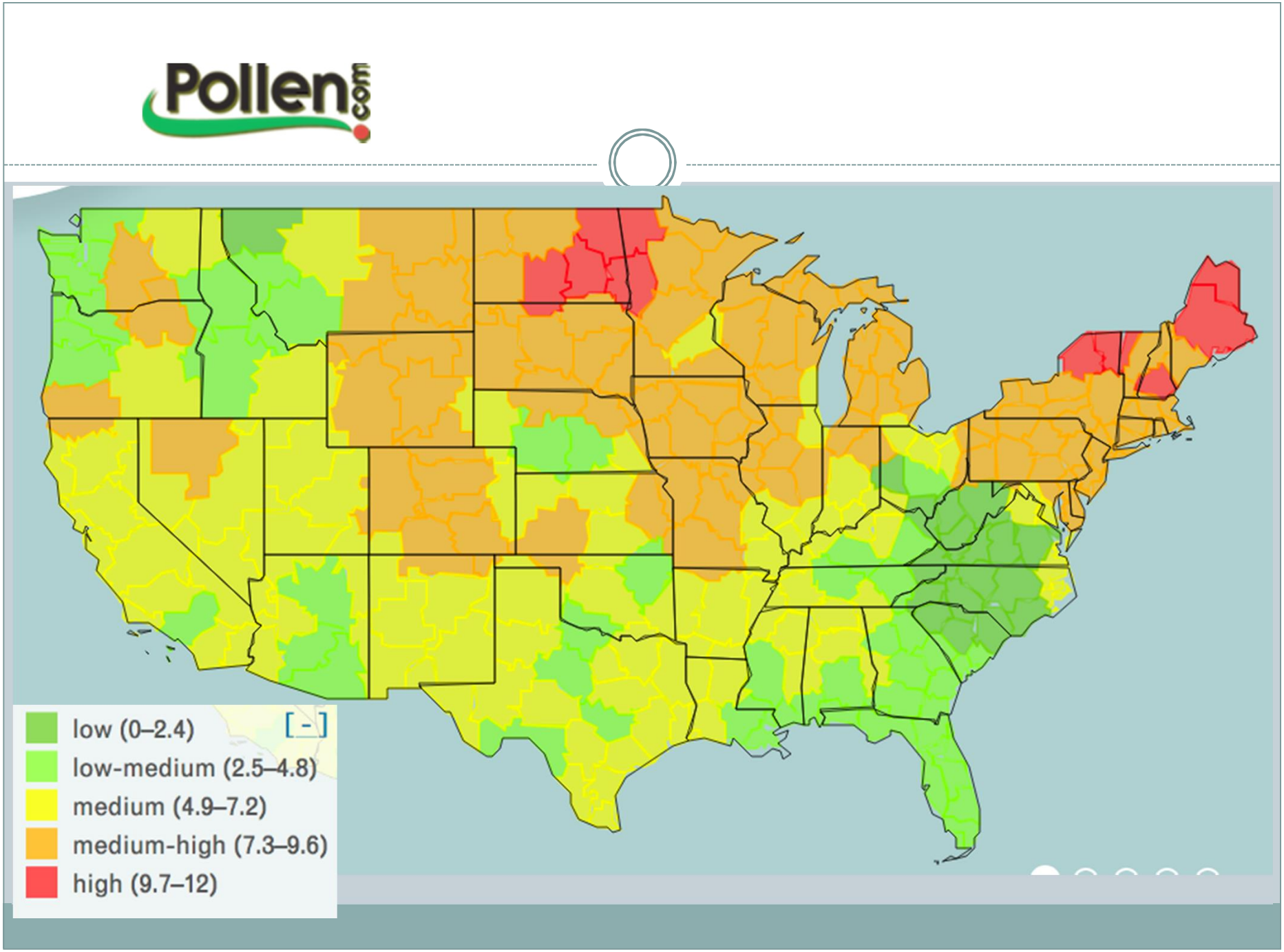
- Owners are not sure about expense…
  - Consider screening tests
    - IDAT or SAT
  - Remember….do not use to diagnose environmental allergies
    - Other causes of pruritus/dermatitis should be ruled out first

Serum Allergy Testing

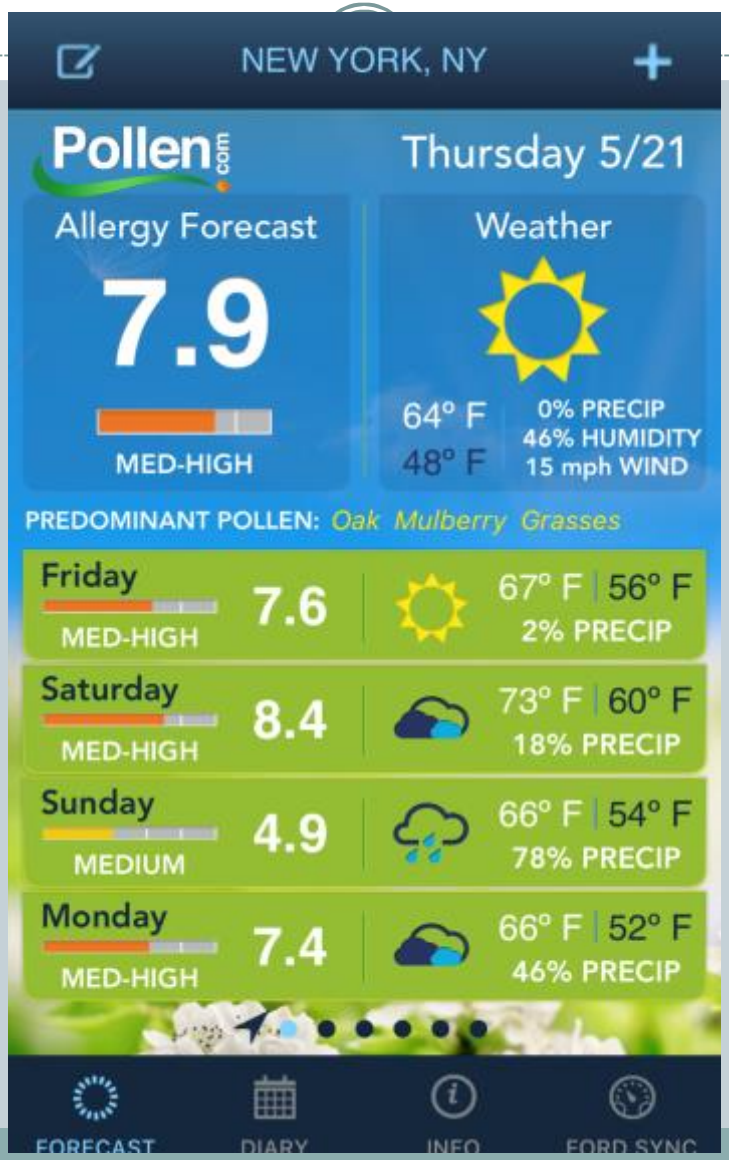
- Labs in general have no external quality control
- False positives/false negatives
  - 30% positive to bovine serum and SPF serum
- Poor agreement between labs
- VARL, Heska, Greer/Idexx, ALK, Spectrum
- Use a lab with a veterinary dermatologist on staff
- Use lab with internal quality control
- Use a lab where you have had ASIT success

What to do with your results…

- Allergen selection
  - Strength of reaction
  - Presence of allergens in local environmental
    - 15-20 mile radius (up to 50 mile radius)
    - Local pollination patterns
    - Lab should be able to supply information or make "recipe"
    - Pollen.com
    - Pollen.com app
  - Seasonality of clinical signs
  - Number of allergens in include
  - "Art" of immunotherapy


Pollen.com
low (0–2.4)
low-medium (2.5–4.8)
medium (4.9–7.2)
medium-high (7.3–9.6)
high (9.7–12)

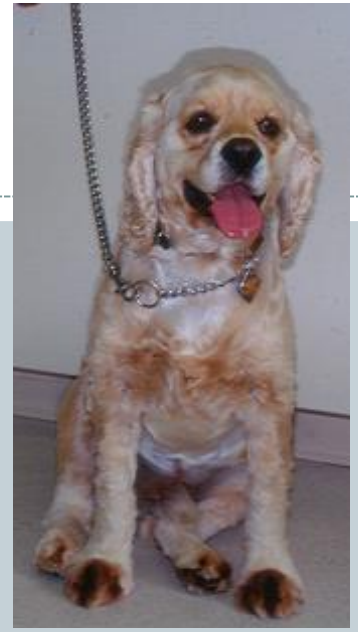
Pollen.com App



Allergen-Specific Immunotherapy

- Two forms available
  - Injectable / subcutaneous immunotherapy (SCIT)
  - Allergy drops/ sublingual immunotherapy (SLIT)

SCIT

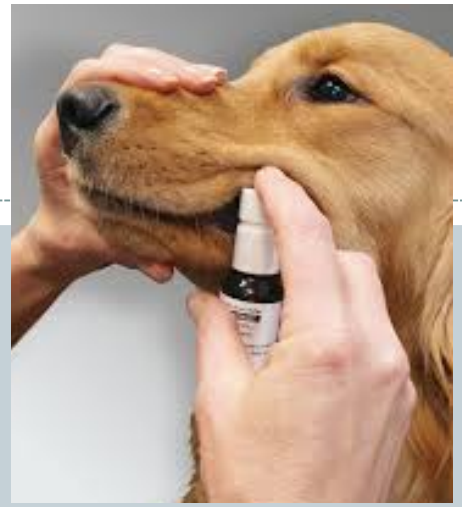


- Effective in ~70% of cases
- Try for at least 1 year
  - Want 50% + improvement after one year
  - Less severe and less frequent allergy flares
- If improvement is noted, life-long therapy
- Symptomatic therapy, esp. initially
- Most common side effects
  - Pruritus at injection site
  - Generalized pruritus x hours to 1-2 days

SLIT - Humans

- Usually a glycerin mixture
- Usually for single allergens
- Safer in humans than SCIT
- Most common side effect → itchy mouth

SLIT - Dogs



- Effective in ~60% of cases
- Try for at least 1 year
  - Want 50% + improvement after one year
  - Less severe and less frequent allergy flares
- If improvement is noted, life-long therapy
- Symptomatic therapy, esp. initially
- Most common side effects
  - Itchy mouth or perioral area
  - Generalized pruritus

SCIT vs. SLIT

- Owner's preference
- Dog's temperament
- Some dogs do better with SCIT
- Some dogs do better with SLIT
- If SLIT doesn't work, try SCIT and visa versa

Other Therapies

- Tricyclic anti-depressants
- SSRIs
- Misoprostol
- Pentoxifylline
- Gabapentin
- T-shirts, booties, body suits, Thundershirts®
- Vitamin D
- Etc.

Secondary Infections

- Remember to treat
  - Pyoderma
  - Yeast dermatitis
  - Otitis
- Infections often heighten the level of pruritus and may mask how well a therapy is performing

Winnie

- 3 year old FS Miniature Schnauzer
- Hx:
  - 8 month h/o non-seasonal pruritus
    - Face, paws, torso
  - No response to strict Hill's z/d ultra diet trial
  - Prednisone helps, however aggressive, esp at higher doses
  - Atopica- partial response + GI upset
  - Temaril-P – partial response and no aggression
  - Antihistamines- diphenhydramine helps alittle
  - Bathing – minimal response

Winnie

- Intradermal Allergy Testing
  - Positives to human and cattle epithelia, house dust mites, several tree, weed and grass pollens
- Allergen-specific immunotherapy (SCIT) started
- Temaril-P and diphenhydramine continued

Winnie

- Poor response to SCIT
- Changed to SLIT allergen-specific immunotherapy
- Temaril-P and diphenhydramine continued

Winnie

Winnie

- Apoquel
  - 5.4mg tablets- 1 tab po q12h x 14 days, then 1 tab po q24h
- Still needed some Temaril-P, but a lower dose
- Baseline labwork
  - SAP=1989
  - ALT=167
  - GGT=25
  - Proteinuria 3+ (USG=1.040)

Winnie

Winnie

- Labwork improved
  - SAP=842
- Intermittent UTIs
- Apoquel started to become less effective
- Cytopoint tried
  - Did GREAT!
  - Apoquel and Temaril-P were discontinued

Winnie

- 2nd Cytopoint injection
  - Didn't last as long as 1st
  - Cystic calculi surgery 2 weeks after injection
- 3rd Cytopoint injection
  - Only lasted 2-3 days
  - Fever
  - Lethargy
  - Severe pyoderma
- Back on Apoquel, Temaril-p and antihistamines

Thup-N

- 1.5 year old FS Great Dane
- 8 month h/o pedal, limb and chin pruritus
- Otitis x 1
- Pruritus = 7-8/10
- No response to Apoquel (when 10 months old)
- No response to Cefpodoxime and Ciprofloxacin

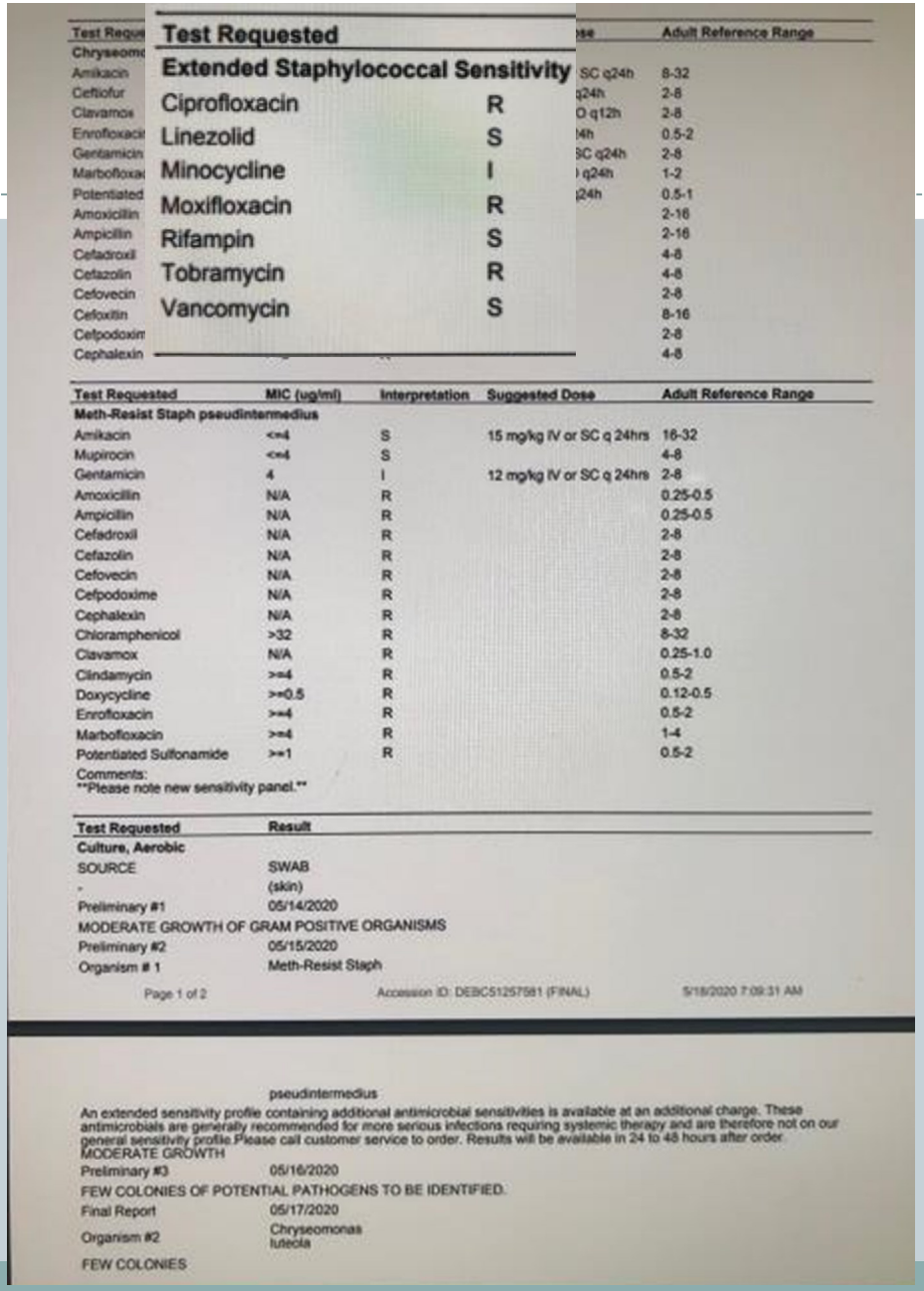
Thup-N

Thup-N - Diagnostics

- Supf and deep skin scrapings – negative
- Skin cytologies- 2+ cocci and neutrophils
- C&S – pending
- Cytopoint
- Bathing

Thup-N

- Culture and Sensitivity
  - MRSP



Test Requested	
Extended Staphylococcal Sensitivity	
Ciprofloxacin	R
Linezolid	S
Minocycline	I
Moxifloxacin	R
Rifampin	S
Tobramycin	R
Vancomycin	S

Test Requested	MIC (ug/ml)	Interpretation	Suggested Dose	Adult Reference Range
Meth-Resist Staph pseudintermedius				
Amikacin	<=4	S	15 mg/kg IV or SC q 24hrs	16-32
Mupirocin	<=4	S		4-8
Gentamicin	4	I	12 mg/kg IV or SC q 24hrs	2-8
Amoxicillin	N/A	R		0.25-0.5
Ampicillin	N/A	R		0.25-0.5
Cefadroxil	N/A	R		2-8
Cefazolin	N/A	R		2-8
Cefovecin	N/A	R		2-8
Cefpodoxime	N/A	R		2-8
Cephalexin	N/A	R		2-8
Chloramphenicol	>32	R		8-32
Clavamox	N/A	R		0.25-1.0
Clindamycin	>=4	R		0.5-2
Doxycycline	>=0.5	R		0.12-0.5
Enrofloxacin	>=4	R		0.5-2
Marbofloxacin	>=4	R		1-4
Potentiated Sulfonamide	>=1	R		0.5-2

Comments:
Please note new sensitivity panel.

Test Requested	Result
Culture, Aerobic	
SOURCE	SWAB
-	(skin)
Preliminary #1	05/14/2020
MODERATE GROWTH OF GRAM POSITIVE ORGANISMS	
Preliminary #2	05/15/2020
Organism # 1	Meth-Resist Staph

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pseudintermedius

An extended sensitivity profile containing additional antimicrobial sensitivities is available at an additional charge. These antimicrobials are generally recommended for more serious infections requiring systemic therapy and are therefore not on our general sensitivity profile.Please call customer service to order. Results will be available in 24 to 48 hours after order.

MODERATE GROWTH	
Preliminary #3	05/16/2020
FEW COLONIES OF POTENTIAL PATHOGENS TO BE IDENTIFIED.	
Final Report	05/17/2020
Organism #2	Chryseomonas luteola
FEW COLONIES	

Thup-N

- Day 7
  - Pet was less pruritic (P=4/10) after bathing and Cytopoint
  - Continued topical therapy for MRSP
    - Pyoderma resolved
- Continued Cytopoint injections monthly
- Pyodermas recurred, pruritus

Thup-N

- Antihistamines
  - Benadryl, Claritin and Zyrtec tried- no help
- Dermaquin
  - Adjunct therapy
  - Pruritus reduction to 2-3/10.

Sophie

- 2.5 year old FS Newfoundland
- One year h/o non-seasonal pedal pruritus and otitis
  - Pruritus worse April-October
    - Hydroxyzine helps reduce pruritus by ~20%
  - H/O yeast otitis
  - Paws
    - Mild to moderate erythema

- Continued to
- Head shaking malodor
- Ear flushing p
- Has been trea ments over the last year

Otitis

- Primary Causes
  - Allergy
  - Immune-mediated
  - Endocrine
  - Foreign bodies
  - Glandular disorders
  - Parasites
  - Other
- Secondary Causes
  - Bacteria
  - Yeast
  - Contact reactions
  - Over-cleaning
  - Other

Otitis-Factors

<u>Factors</u>: Alter structure, function or physiology of ear canal

- Predisposing Factors
  - Ear conformation
  - Excessive moisture
  - Obstructions
  - Systemic disease
  - Changes from treatment
    - Microflora
    - Trauma from cleaning
- Perpetuating Factors
  - Stenosis
  - Proliferative changes
  - Poor epithelial migration
  - TM changes
  - Otitis media
  - Calcification

Sophie's Otitis

- Ear Cytology
  - AU- 4+ rods, 1 + cocci and neutrophils
- Culture and sensitivity
- Steroids
  - Reduce inflammation and stenosis

Sophie's Paws

- Pedal cytologies
  - No significant findings
- Pedal skin scrapings
  - Negative for mites

Sophie

- Ear C&S
  - *Pseudomonas aeruginosa*
  - Sensitive to amikacin, enrofloxacin, marbofloxacin
  - Intermediate sensitivity to gentamicin
  - Treatment
    - Amikacin/Dexamethasone ear drops- 1ml po bid
    - Ciprofloxacin 25mg/kg po bid
    - TrizEDTA ear flushes – 1-2 times daily
    - Continue steroids
    - Recheck – 2 weeks

Sophie- Recheck

- Derm exam
  - Ears are less stenotic with only mild otic discharge
  - Paws are normal
- Ear cytologies
  - 1+ rods
- Treatment plan
  - Continue topical ear medication/flushes and ciprofloxacin
  - Taper steroids
  - Discussed managing underlying allergies

Sophie

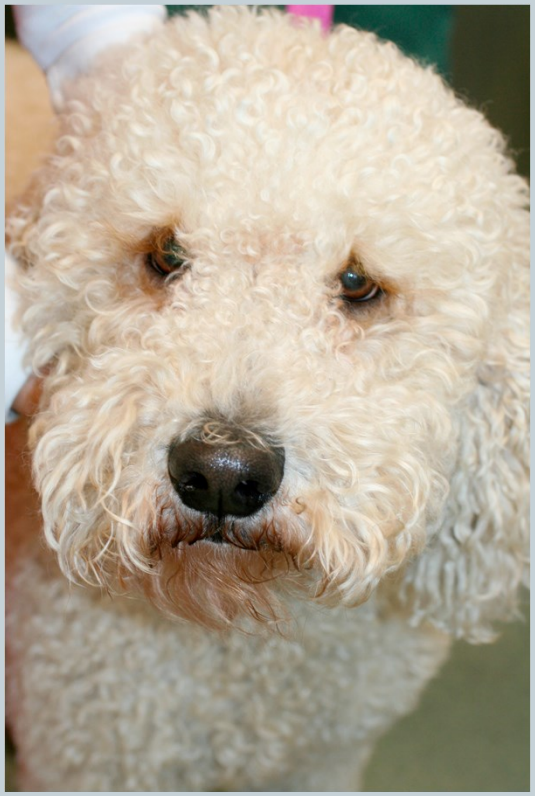
- Ear treatment
  - Continued until cytologies negative plus an additional 7 days
- Ear maintenance
  - Ear flushes weekly followed by 1-2 times weekly fluocinolone + DMSO ear drops
- IDT performed after appropriate steroid withdrawal (both oral/topical) and during winter (December)
  - ASIT injections
- Apoquel used prn to keep Sophie comfortable while giving ASIT time to work

Sophie

- 4 months and 6 months
  - Otitis- yeast
  - Treated with topical miconazole/dexamethasone ear drops, then fluocinolone + DMSO ear drops
- 9 months
  - Apoquel rarely needed for pruritus
  - Topical ear therapies reduced
- 16 months
  - ASIT continued
  - Topical ear therapies reduced again
  - Antihistamines used prn during summer months

Prim

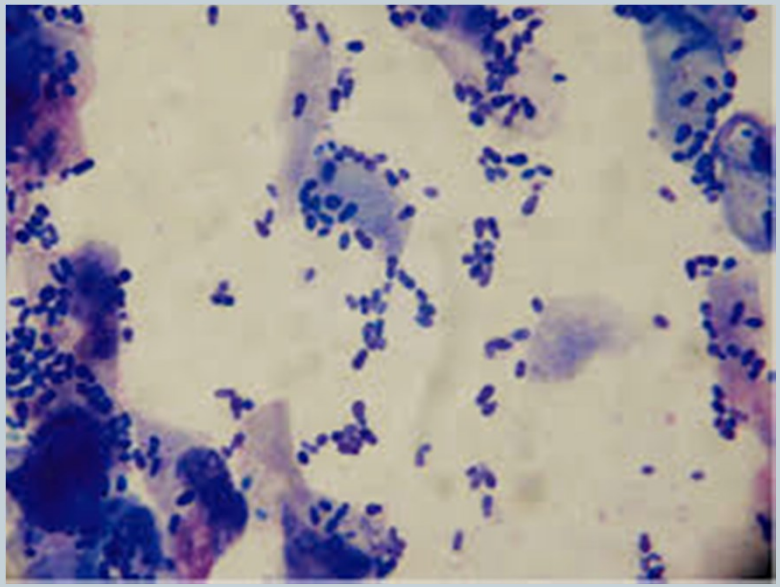
- 4 year old FS Golden Doodle
- 3 year h/o pruritus
  - Initially mild seasonal pruritus
  - Then non-seasonal pedal pruritus
- No or minimal response to:
  - Antihistamines
  - Fish oils
  - Bathing
  - Apoquel
  - Atopica
  - Steroids
  - Food trial



Prim

Prim

- Skin scrapings
  - Negative for mites
- Skin cytologies
  - Yeast



Prim

- Yeast dermatitis
  - Ketoconazole 5-10mg/kg po q12h x 21 d
  - Mal-a-cetic Wipes (1% Ketoconazole/2% Chlorhexidine/2% Acetic Acid) bid to paws
  - Recheck 2-3 weeks

Prim- 2 week recheck

- 75% reduction in pedal pruritus
- Marked reduction in pedal erythema
- Hair starting to regrow
- Discussed treating underlying allergies
  - Opted to try Apoquel again

Prim

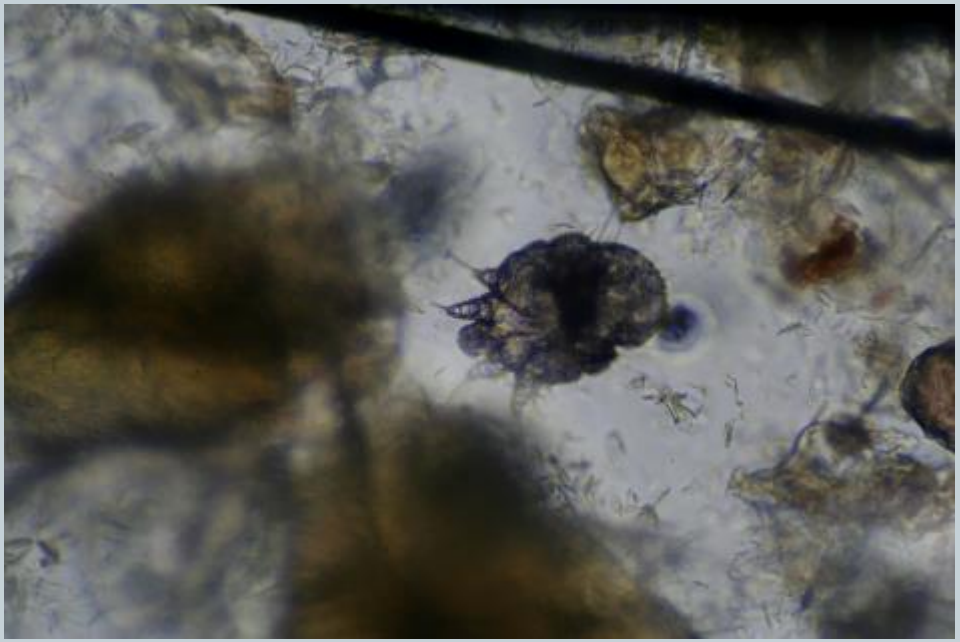
- Recheck – 1 month
  - Pruritus has reduced by 99%
- Recheck 9 months
  - Continues to do well on apoquel

Farley

- 2 year old MN Labrador Retriever
- Non-seasonal pruritus x 6 months
- Partial response to Prednisone and Apoquel

Farley

- Skin scrapings



Conclusion

- Many allergic patients may require more than one therapy…. MULTIMODAL
  - "Big Guns"
    - ASIT, Cyclosporine-modified, Apoquel, Cytopoint, Steroids
  - Add on "Little Guns" to help "Big Guns" work better
    - Dermaquin, antihistamines, fish oils, probiotics
- Set proper expectations
  - No magic potion
  - Lifelong treatment
- You will miss more for not looking than not knowing…
  - Look for other causes of pruritus

Thank you

Questions?