

Feline immune-mediated diseases

Ekaterina S. Mendoza-Kuznetsova

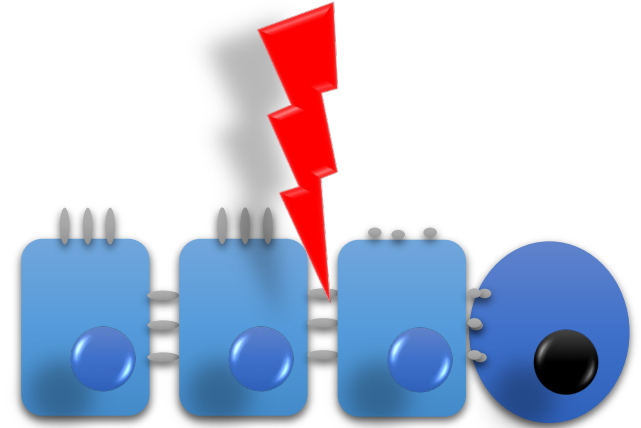
Immune-
mediated

Autoimmune

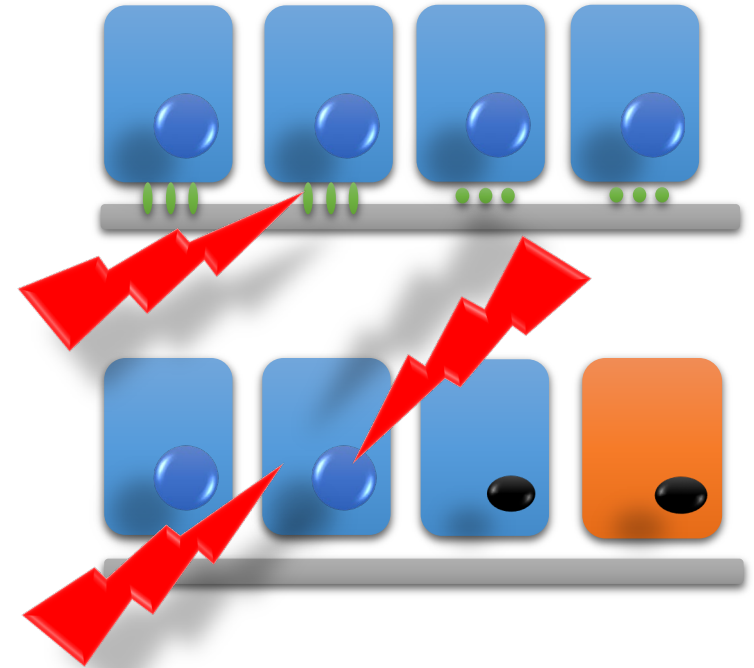


Autoimmune diseases

Pemphigus

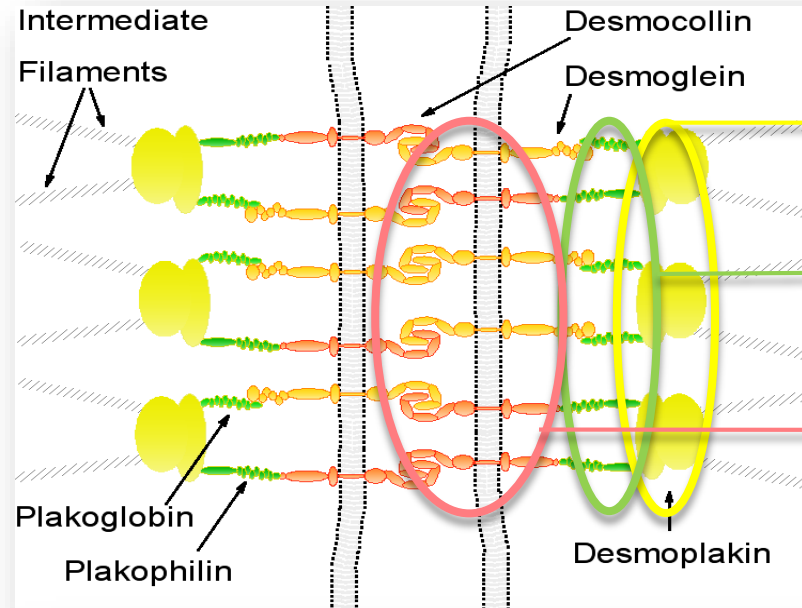
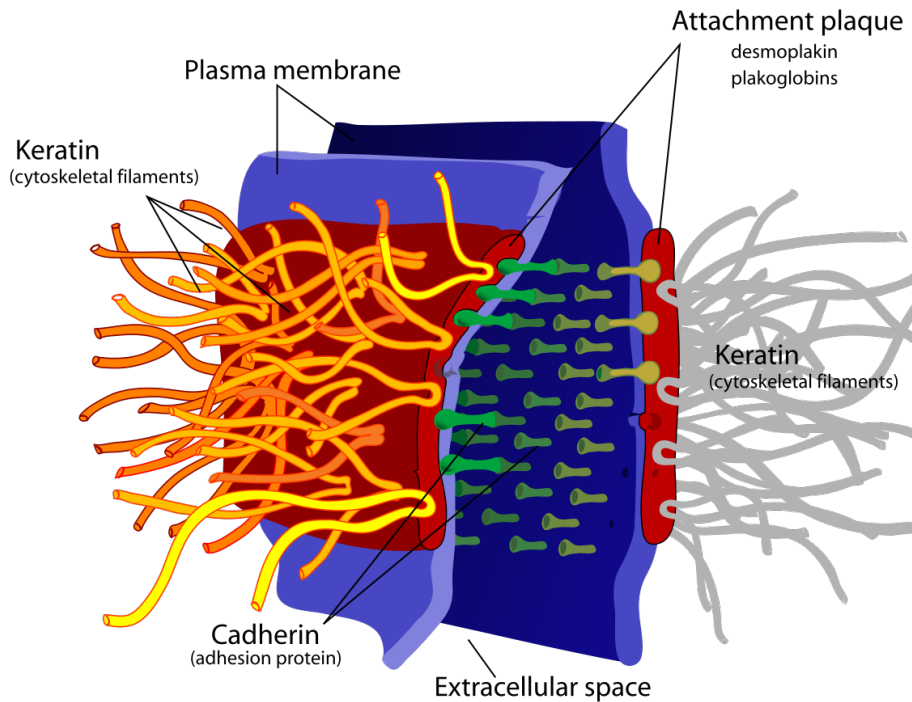
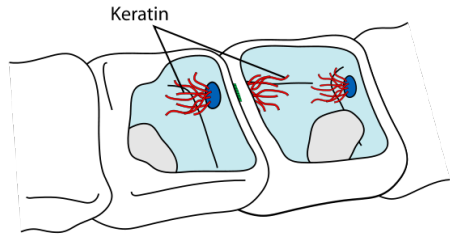


Pemphigoids



Lupus
erythematosus

Pemphigus, desmosome composition



Plakins

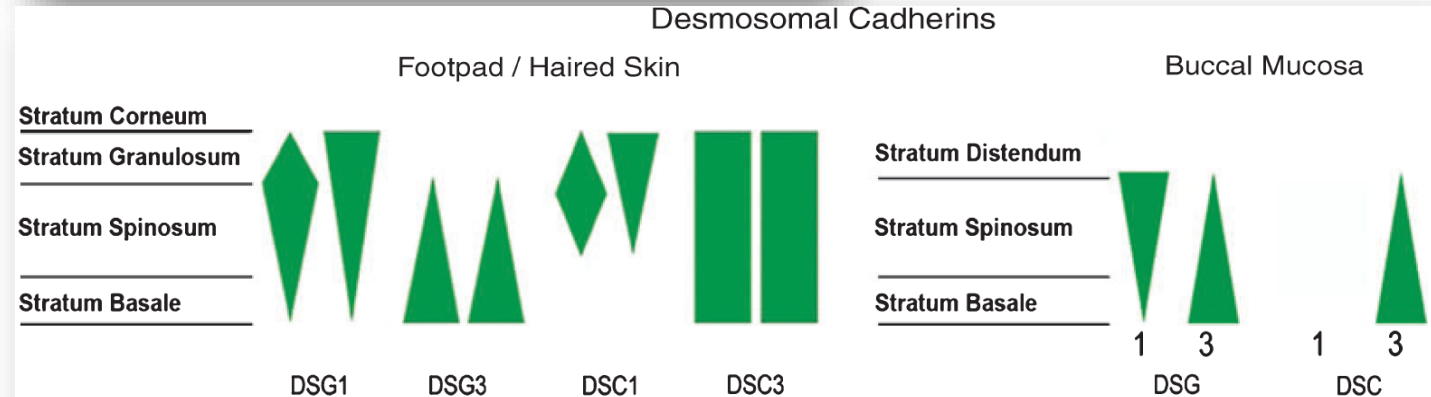
- Desmoplakin

Armadillo proteins

- Plakiglobin
- Plakophilin

Cadherins

- Desmoglein – 1,3
- Desmocollin – 1,3



Pemphigus foliaceus (PF)

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RESEARCH ARTICLE

Open Access

Feline pemphigus foliaceus: original case series and a comprehensive literature review



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Clinicopathological findings and clinical outcomes in 49 cases of feline pemphigus foliaceus examined in Northern California, USA (1987–2017)

Tyler J.M. Jordan* , Verena K. Affolter† , Catherine A. Outerbridge‡, Elizabeth C. Goodale§ 
and Stephen D. White‡ 

Pemphigus foliaceus (PF)

Signalments

- The most common pemphigus
- The most common autoimmune disease
- Wide range of onset age (0.4-17 years)
 - Middle age (median 6-7 years) – the most common disease onset
- No breed or sex predisposition
 - DSH, DLH and Siamese are overrepresented
 - Females are slightly overrepresented.

Pemphigus foliaceus (PF)

Etiology and pathogenesis

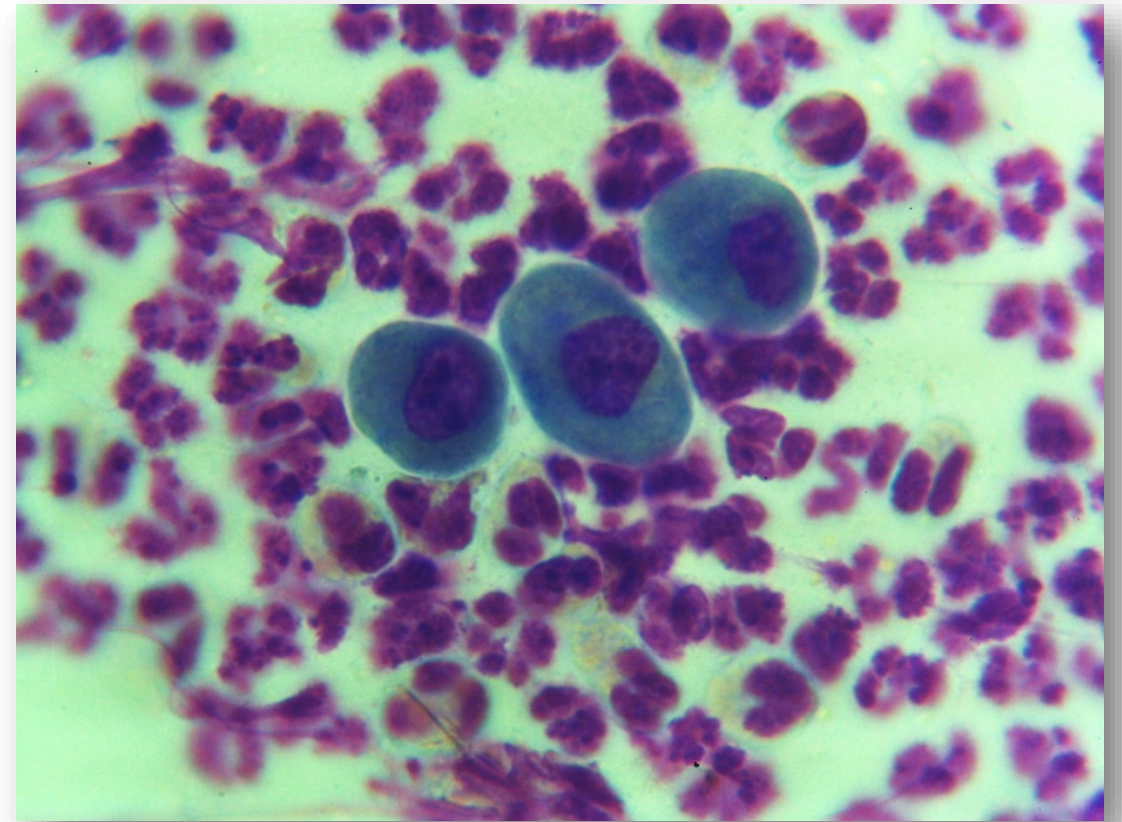
- Spontaneous – majority of the cases
- Can be drug-induced/triggered?
 - Cimetidine, doxycycline ...
 - Vaccines?
- Can be disease-induced/associated?
 - Thymoma
 - Leishmaniosis
- The major autoantigen in cats is to be defined
 - Desmoglein-1 in humans
 - Desmocollin-1 in dogs.

Pemphigus foliaceus – clinical presentation

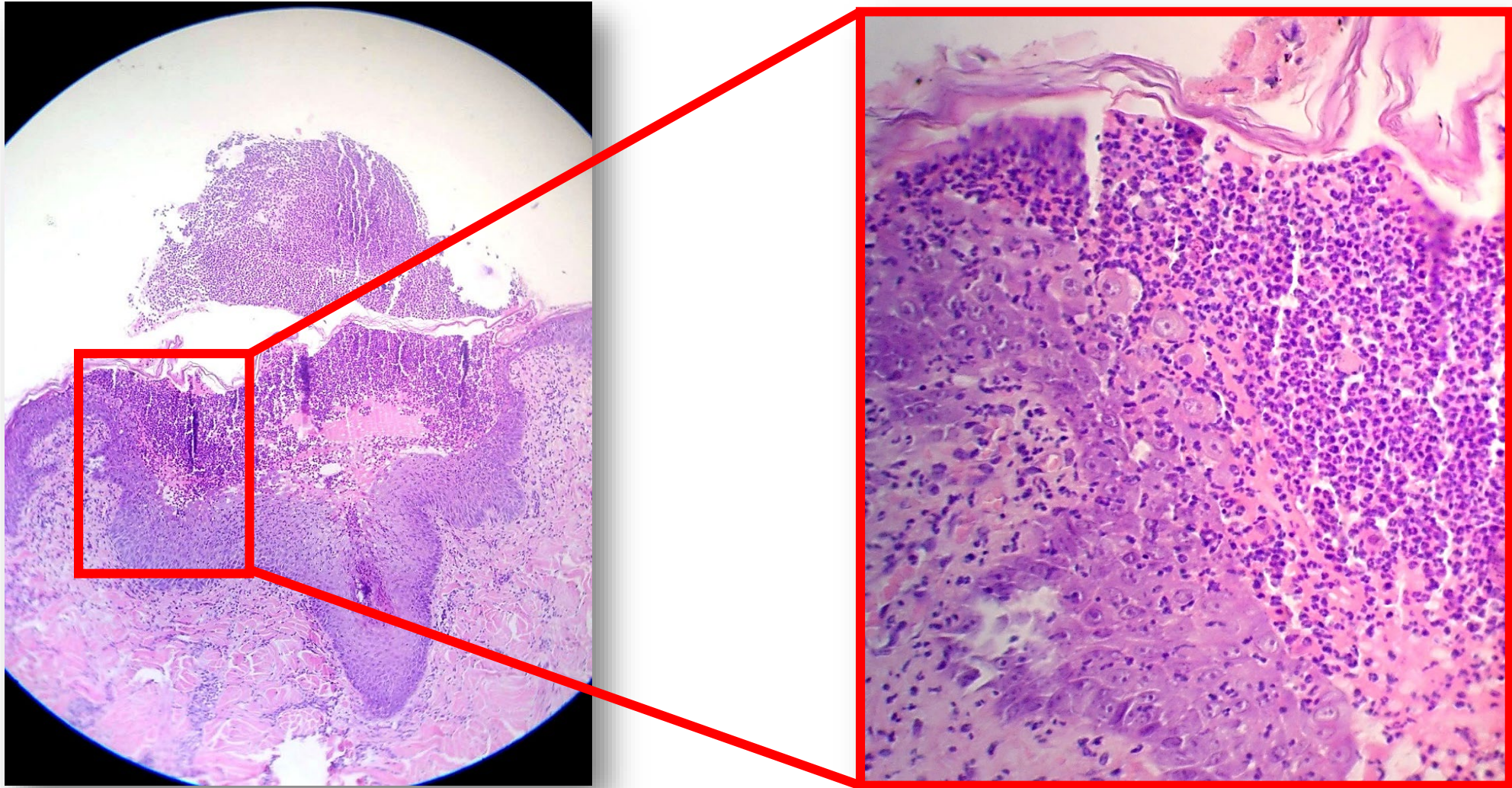
- The primary type of lesions – PUSTULE
- The main clinical presentation – crust
- The most common and early affected areas:
 - Pinnae
 - Nasal planum
 - The head and face
 - Claw folds (47-74%)
- Can be generalized
- Can be accompanied by systemic signs (50-63%).

Pemphigus foliaceus – diagnosis

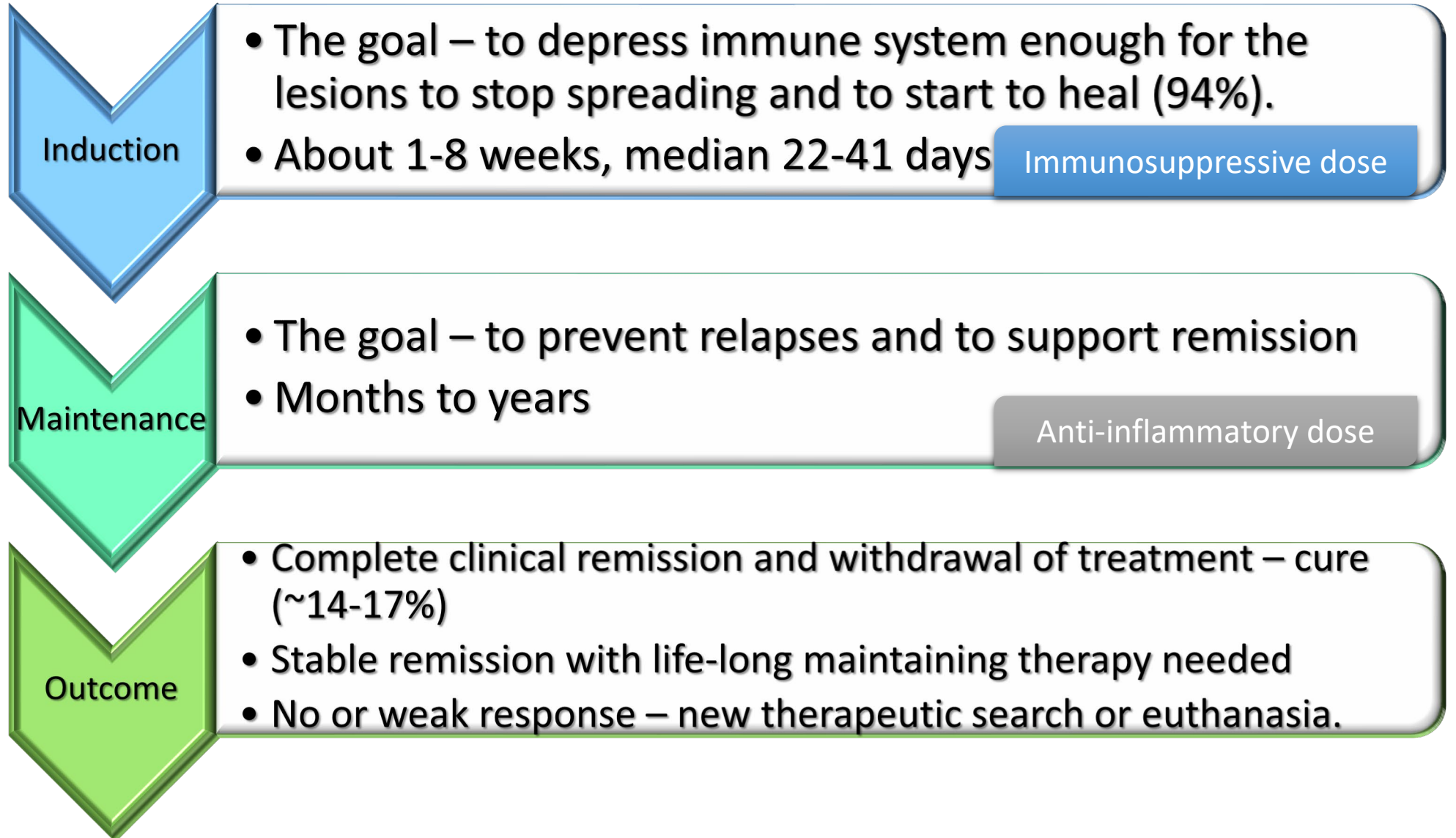
- History
 - Non pruritic pustules / crust
 - Pruritus in 31-73% of feline cases
- Clinical presentation
- Cytology
 - The best – from intact pustule
 - Acceptable – under the superficial crust
 - From claw fold pus
 - Non degenerative neutrophils and acantholytic cells
 - Cytology is not confirmative!



Pemphigus foliaceus – histopathology



Pemphigus foliaceus – treatment



Induction

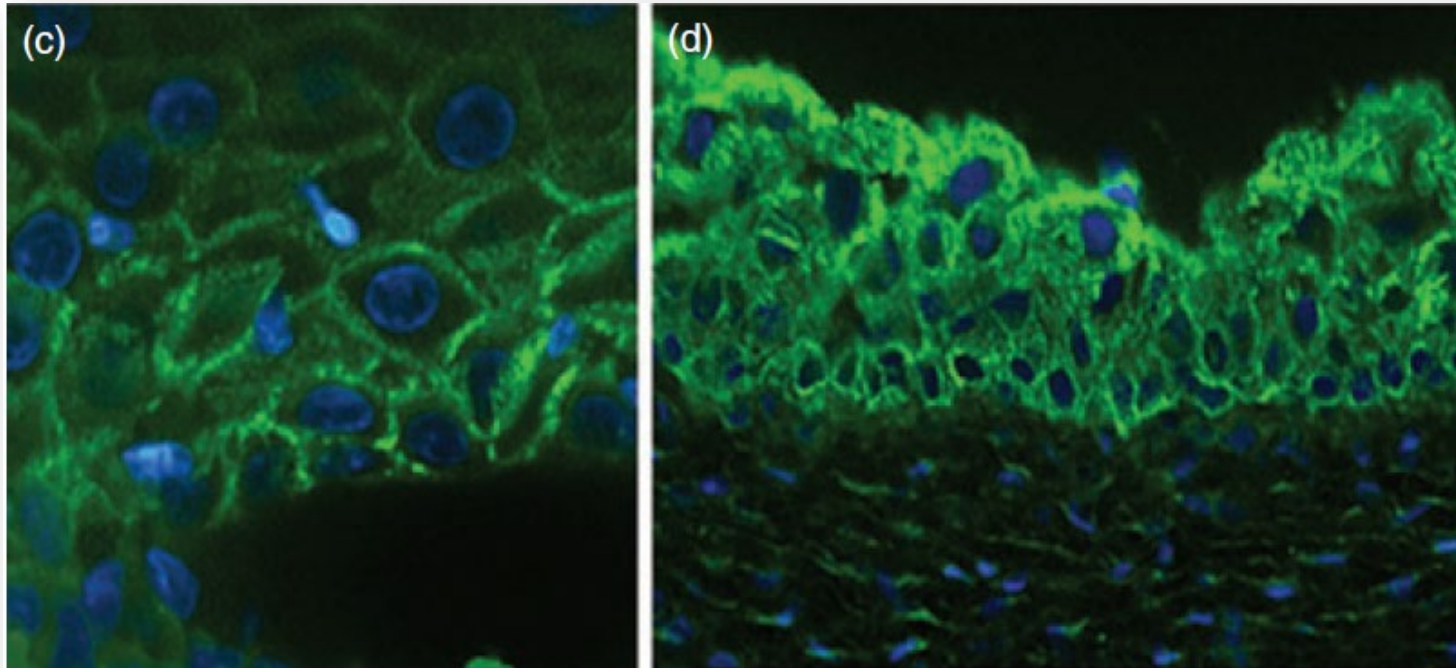
- Prednisolone (not prednisone!) 2-6.6 mg/kg/day or triamcinolone 0.6-2 mg/kg/day
 - No benefit of pulse therapy (Bizikova, 2017 and 2019)
 - Usually 2-4 weeks to achieve the clinical remission (Simpson and Burton, 2013)
 - 62% - in 2 weeks
 - 89% - in 4 weeks
- Prednisolone + chlorambucil – 0.1-0.2 mg/kg/day or EOD
- Prednisolone + cyclosporine – 5-7.5 mg/kg/day
 - Cyclosporine may have a GCS-sparing effect (Irwin *et al*, Vet Derm 2012) .

Maintenance

- Prednisolone:
 - Decrease the dose
 - When the dose is about $\frac{1}{2}$ - go to every other day (EOD)
 - Withdraw prednisolone (slowly) if possible
- Other medications:
 - Decrease the dose or go to EOD
- Control adverse effects (in about 30% of cats with PF)
 - Depending on the medication and the dose
 - If adverse effects are serious – consider other order or switch the medications
- If lesions are few – consider topical treatment.

Putative paraneoplastic pemphigus and myasthenia gravis in a cat with a lymphocytic thymoma

Peter B. Hill*, Phil Brain†, David Collins†, Steve Fearnside† and Thierry Olivry‡



Immune-mediated diseases

Plasma cell pododermatitis

- Uncommon disease
- Unknown etiology
 - Likely infectious or immune-mediated
 - No viral, bacterial or allergic components were found
- Clinical signs are characteristic
 - Early lesions:
 - Scaling of the footpads
 - Softness
 - Later – dark color of the deep tissue
 - Eventually – ulceration.

Nasal swelling due to plasma cell infiltrate in a cat without plasma cell pododermatitis

Jan Declercq* and Hendrik De Bosschere[†]

- Sneezing
- Swollen nose
- Conjunctivitis
- Rhinitis
- No lesions on the footpads
- Biopsy was identical to plasma cell pododermatitis
- Responded to AB or resolved spontaneously.

- Cytology – plasma cell predominating dermatitis
- Biopsy is important for confirmation
- Treatment:
 - Doxycycline + niacinamide
 - Prednisolone
 - Cyclosporine
 - Surgical excision.

Hypereosinophilic syndrome – human medicine

- Several disorders, all with eosinophilia and with no detectable cause:

- ✓ • Myeloproliferative – clonal expansion in the bone marrow
 - Chronic eosinophilic leukemia
 - Undefined
- ✓ • Lymphocytic – chronic reactive polyclonal hypereosinophilia (due to IL-3, IL-5 and GM-CSF)
 - Familial
 - Associated
 - Mastocytosis, HIV, IBD and others
 - Overlap – organ-restricted eosinophilia
 - Undefined.

Hypereosinophilic syndrome – cats

- Middle-aged
- Domestic short-hair cats
- Females > males
- Most cats are FeLV-negative.

Hypereosinophilic syndrome – clinical signs

- Gastro-intestinal-related signs:
 - Weight loss
 - Anorexia
 - Diarrhea
 - Vomiting
- Skin signs (not necessary!)
 - Pruritus (excoriations)
 - Erythema
 - Macules (erythematous)
 - Wheals
 - Papules.

Hypereosinophilic syndrome – diagnosis

- Diagnostic criteria have not been validated for cats
 - Peripheral eosinophilia (more than $5 \times 10^9/L$)
 - Bone marrow eosinophilia
 - Tissue infiltration of eosinophils
 - No other detectable cause of eosinophilia
- Bone marrow cytology – hyperplasia
 - Differs from eosinophilic leukemia:
 - ↑ myeloid/erythroid ration
 - Anemia
 - ↑ circulating immature eosinophils.

Hypereosinophilic syndrome – treatment

- Prednisolone – 1-3 mg/kg SID-BID
- Prednisolone + hydroxycarbamide 15-30 mg/kg SID

Prognosis is poor.

Exfoliative dermatitis (ED).

Thymoma or not-thymoma associated.

- The pathomechanism is not clear
 - defect of thymic lymphocyte selection or/and maturation is suspected
- ED skin lesions (scales, crust, erythema)
 - head and pinnae, then spread to the neck and the rest of the body.
- The diagnosis: skin histopathology \pm finding the thymoma (x-ray, MRI).

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 - head and pinnae, then spread to the neck and the rest of the body.
- The diagnosis: skin histopathology \pm finding the thymoma (x-ray, MRI)
- The only curative treatment is surgical removal of thymoma (when present and when possible)
- Non-thymoma associated cases can be managed with steroids, cyclosporine or even shampoo.

Erythema multiforme: human medicine

- EM is acute, self-limited, usually mild and often relapsing target-shaped plaques affecting mostly the face and extremities.

