



行政院農業委員會

家畜衛生試驗所

ANIMAL HEALTH RESEARCH INSTITUTE, COUNCIL OF AGRICULTURE, EXECUTIVE YUAN



牛結節疹病例報告

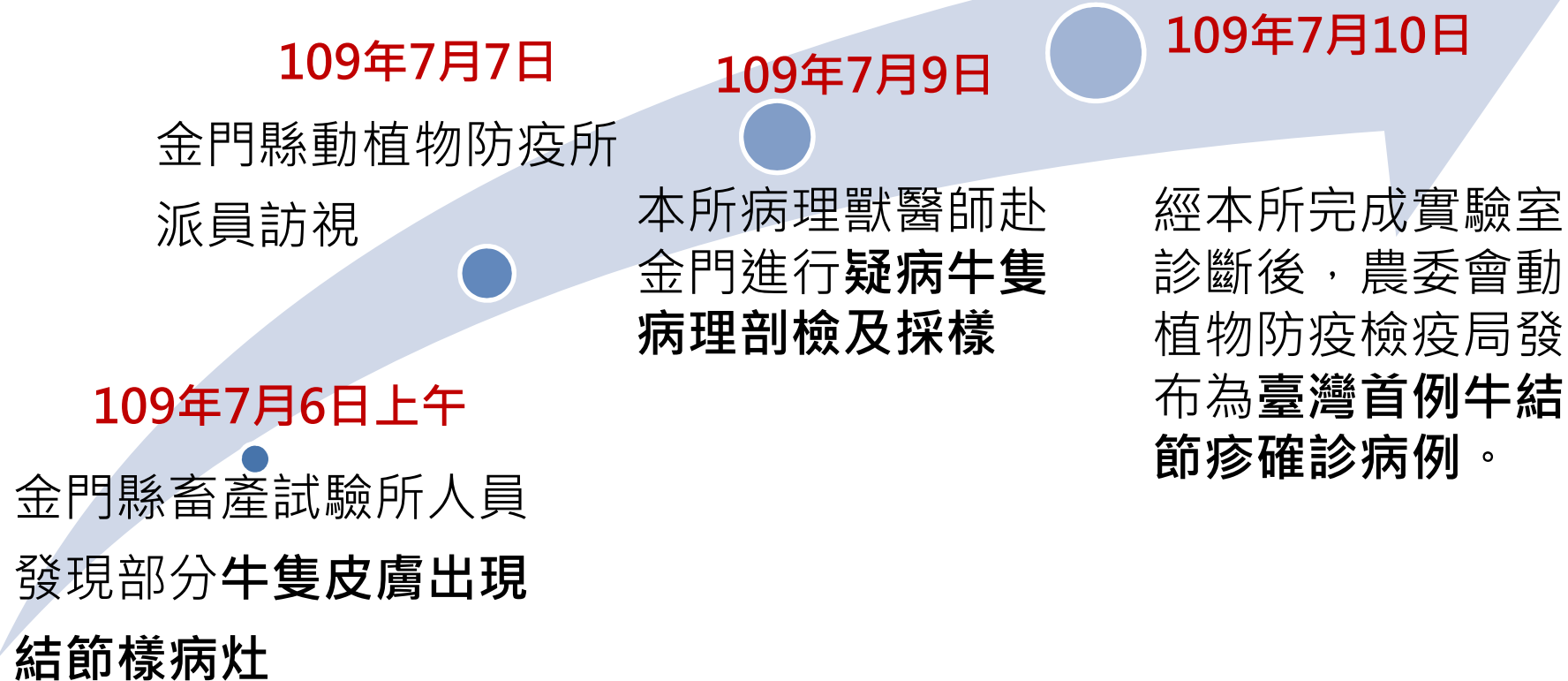
涂央昌

疫學研究組

2020/9/4



金門縣牛結節疹診斷大事紀





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金門縣畜產試驗所-牧場資訊

□在養548頭種公牛，主要飼養布拉安格斯牛，牛結節疹疫情主要發生在C區。



C棟

封閉不使用



<https://news.ltn.com.tw/news/life/breakingnews/2837673>



病歷

- 109年7月6日，畜試所人員發現6頭牛隻皮膚出現結節。
- 7月7日，金門縣動植物防疫所派員訪視，累計發病7至8頭。
- 7月8日，累計發病13頭。
- 7月9日，累計發病19頭。
- 7月10日，累計發病22頭。
- 疾病發生率4%（22/548）。



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肉眼病變-1

□ 切片編號：2020-366-10

□ 7/9因驅趕致緊迫死亡，體表僅見右前肢皮膚有兩處有凸起觸感硬實結節。





肉眼病變-2

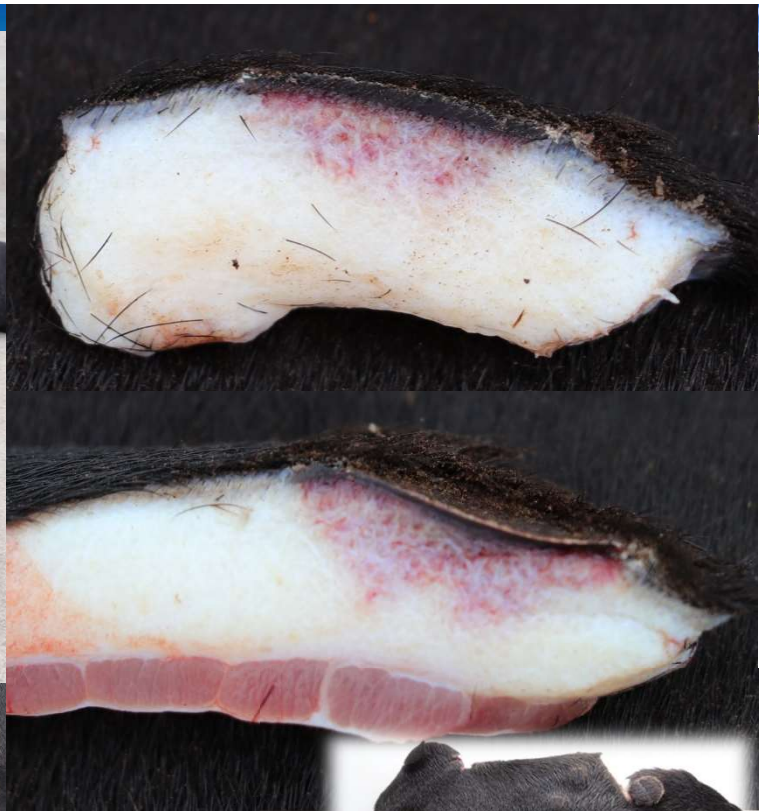
□切片編號：2020-367-14&18

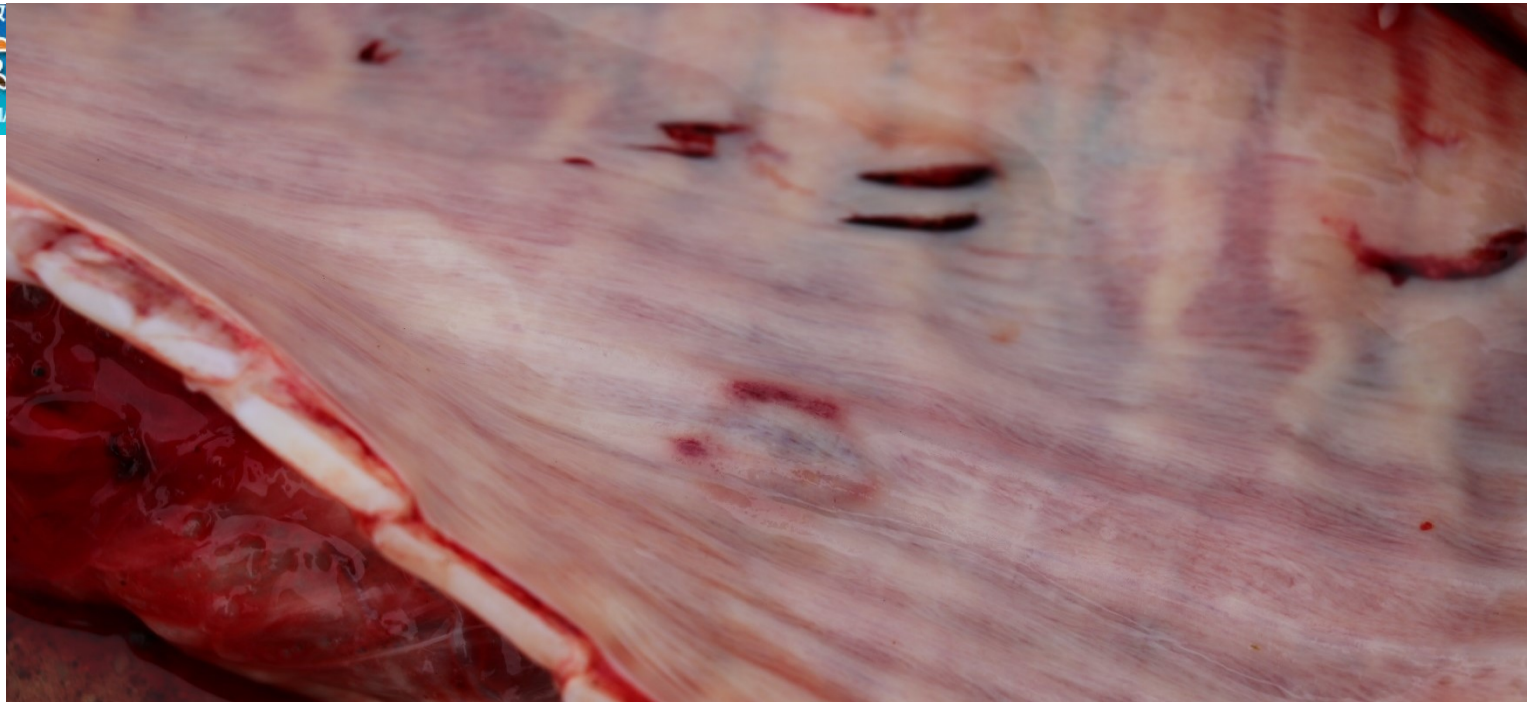
□最早（7/6）被發現皮膚出現結節。

□外觀可見四肢、軀幹、尾巴、頭部、睪丸、口腔及鼻腔黏膜均可見多發凸起大小不等的圓形結節，結節呈圓形，中央凹陷（有些可見潰瘍），觸感堅實，直徑約1.5~2公分，有些結節大於2公分以上，結節切面可見病灶深入皮下層。

□氣管黏膜有多發白色結節。









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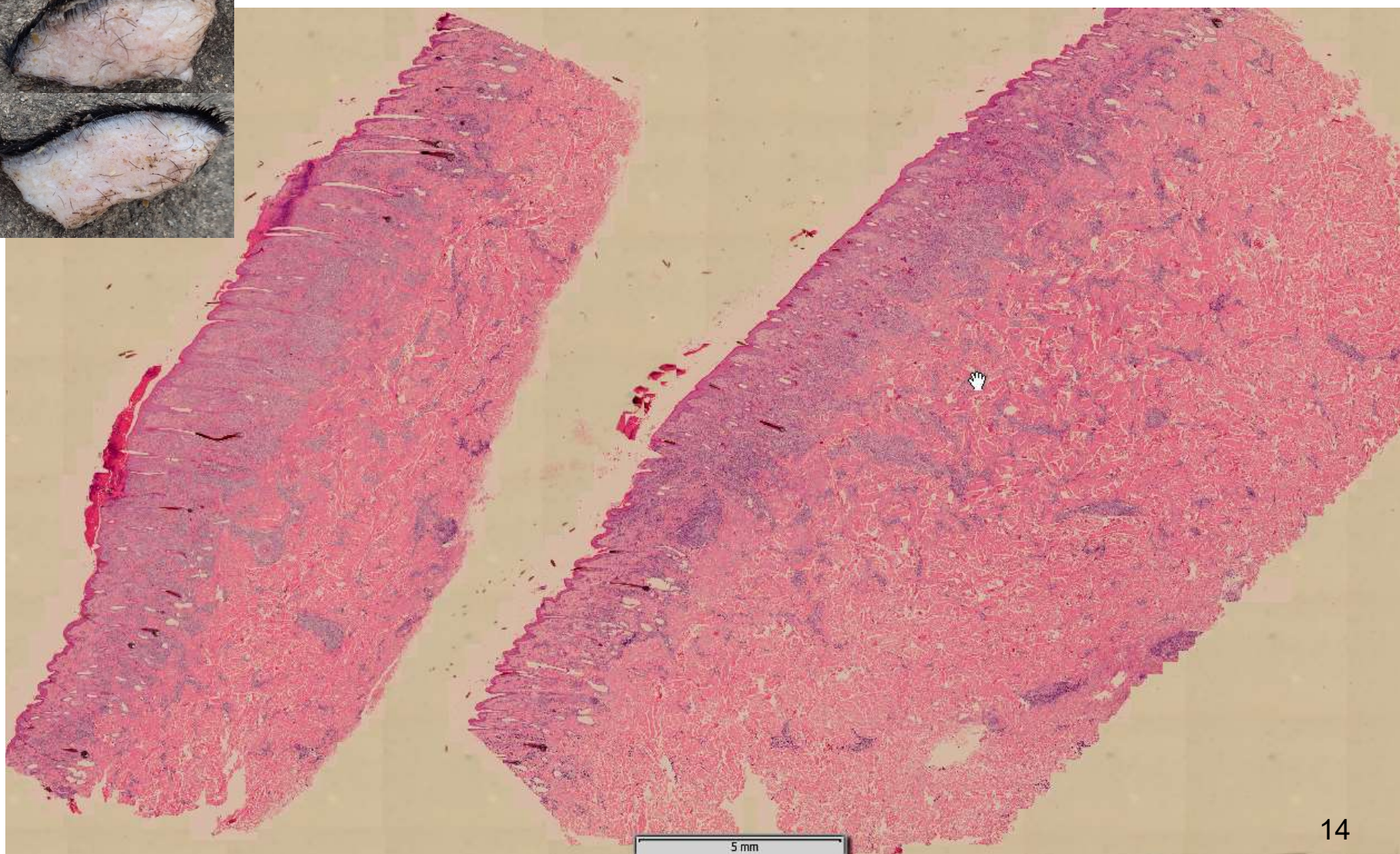
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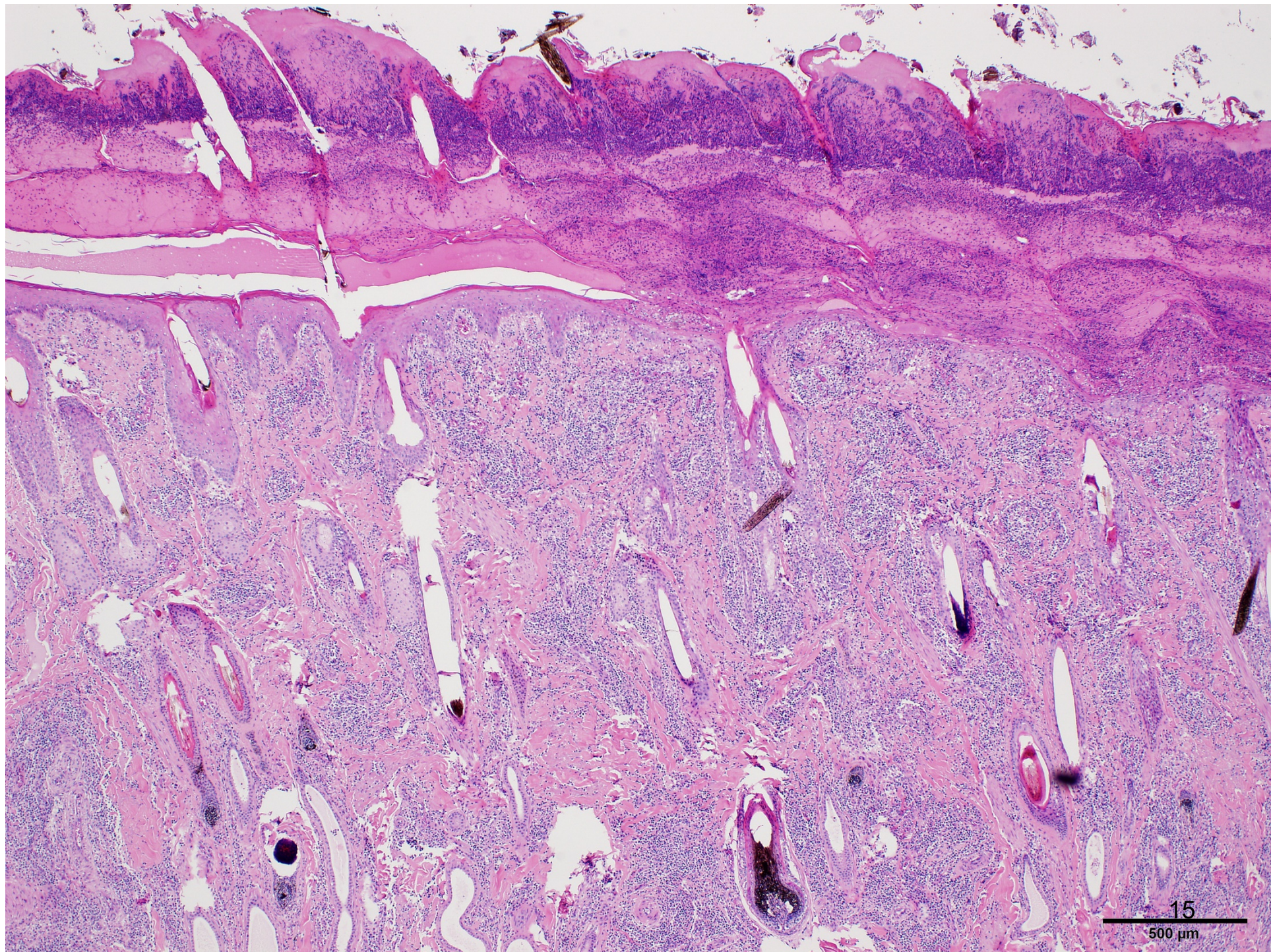
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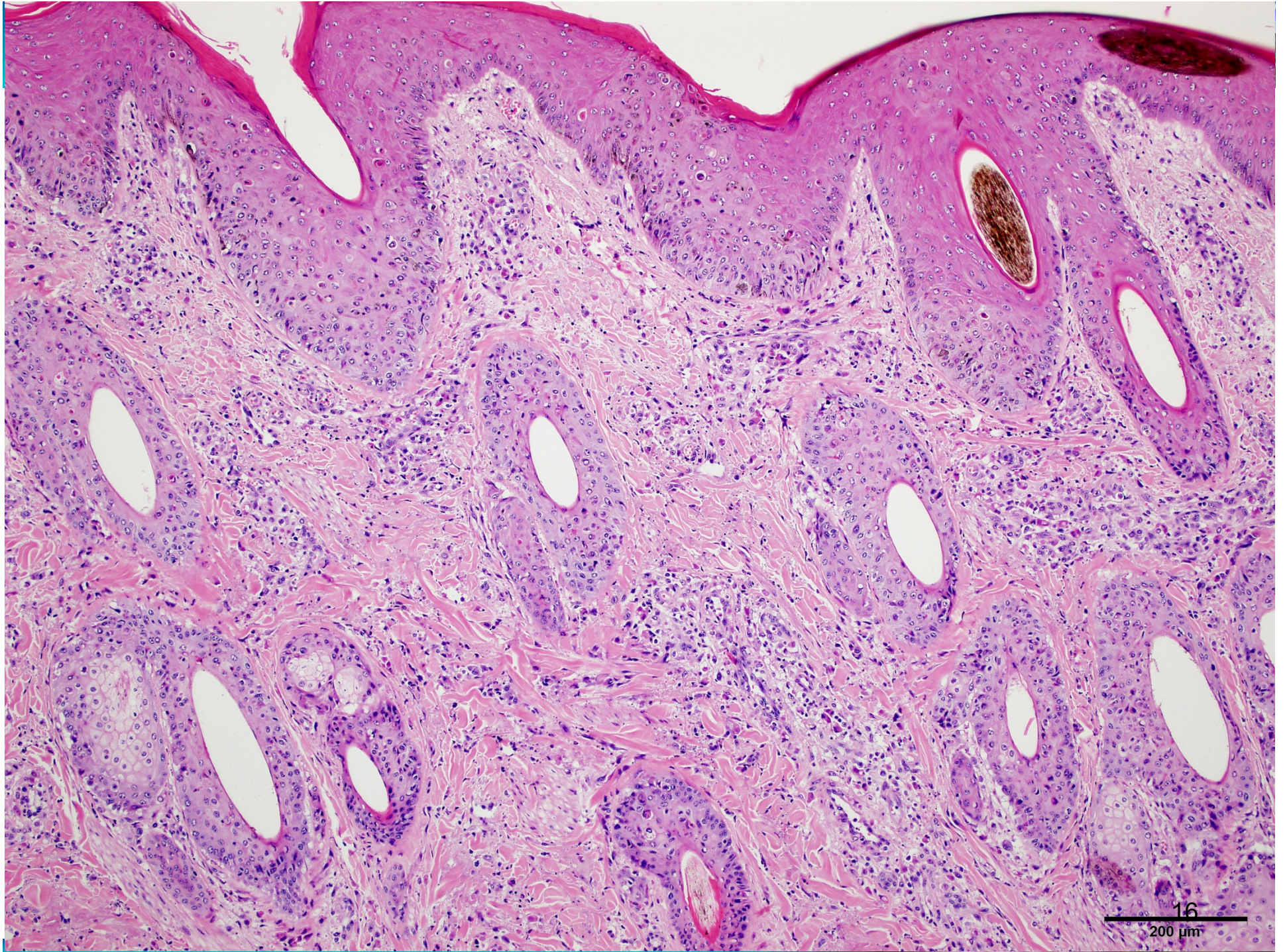


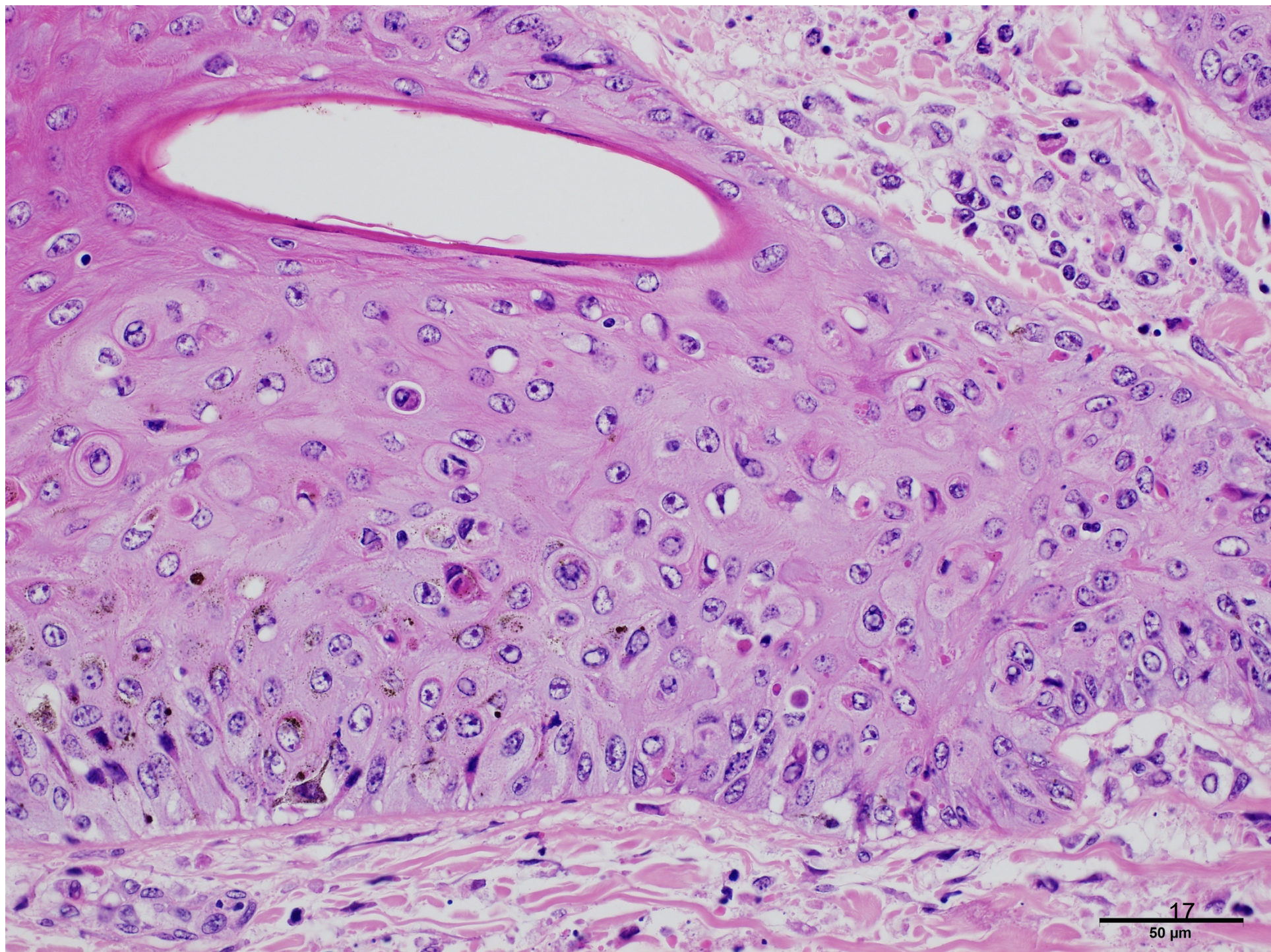
組織病理病變

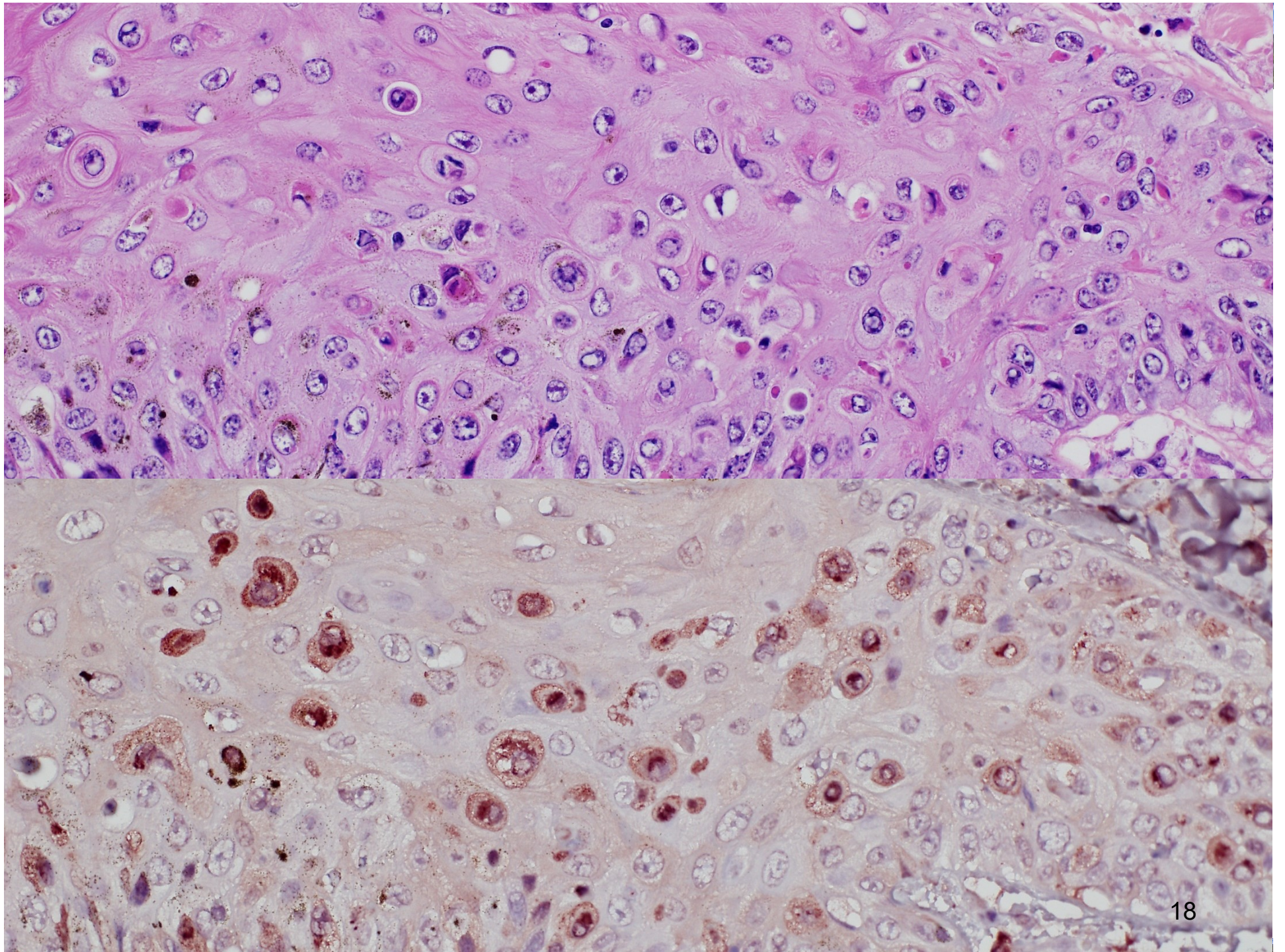
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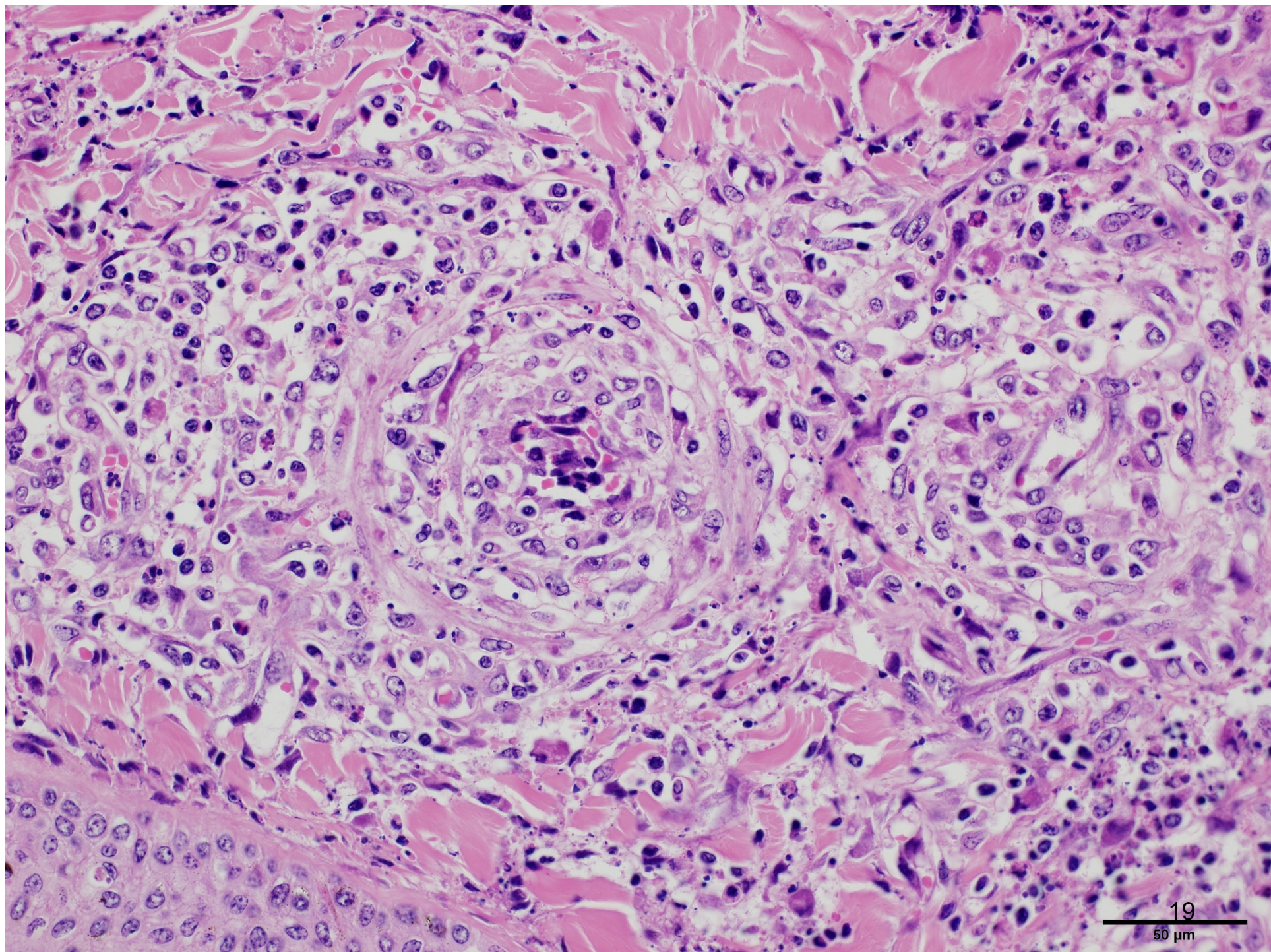


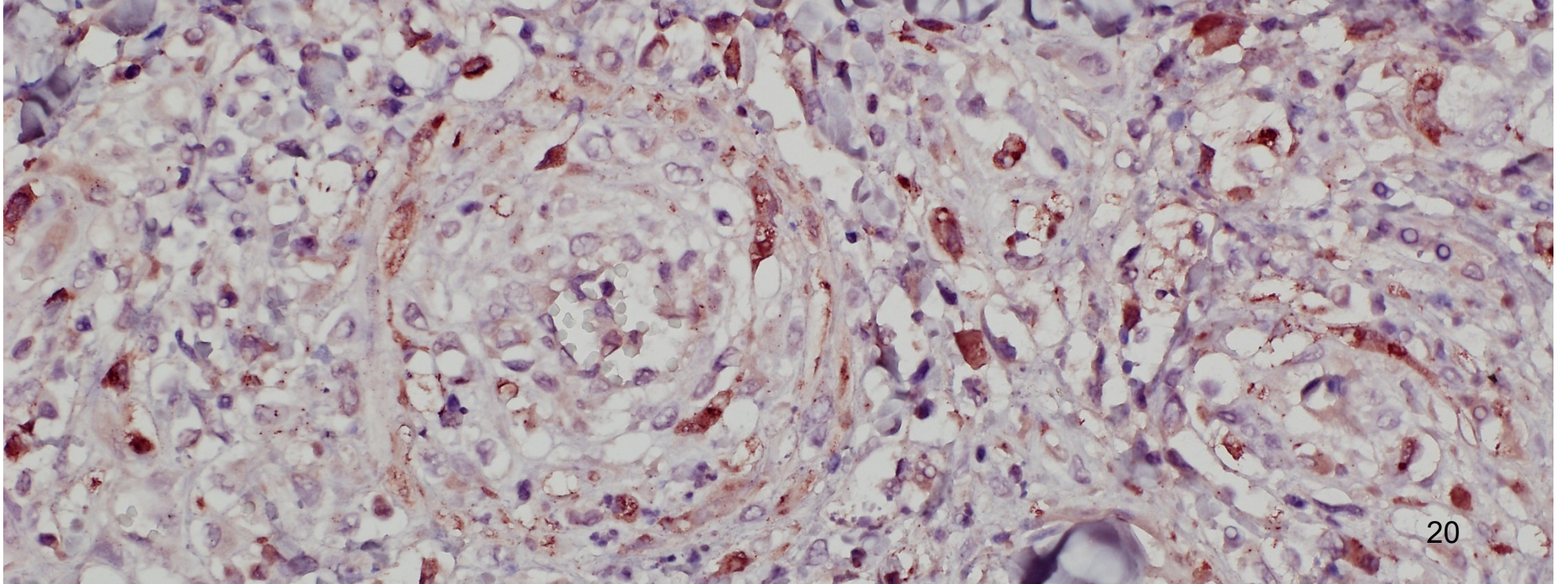
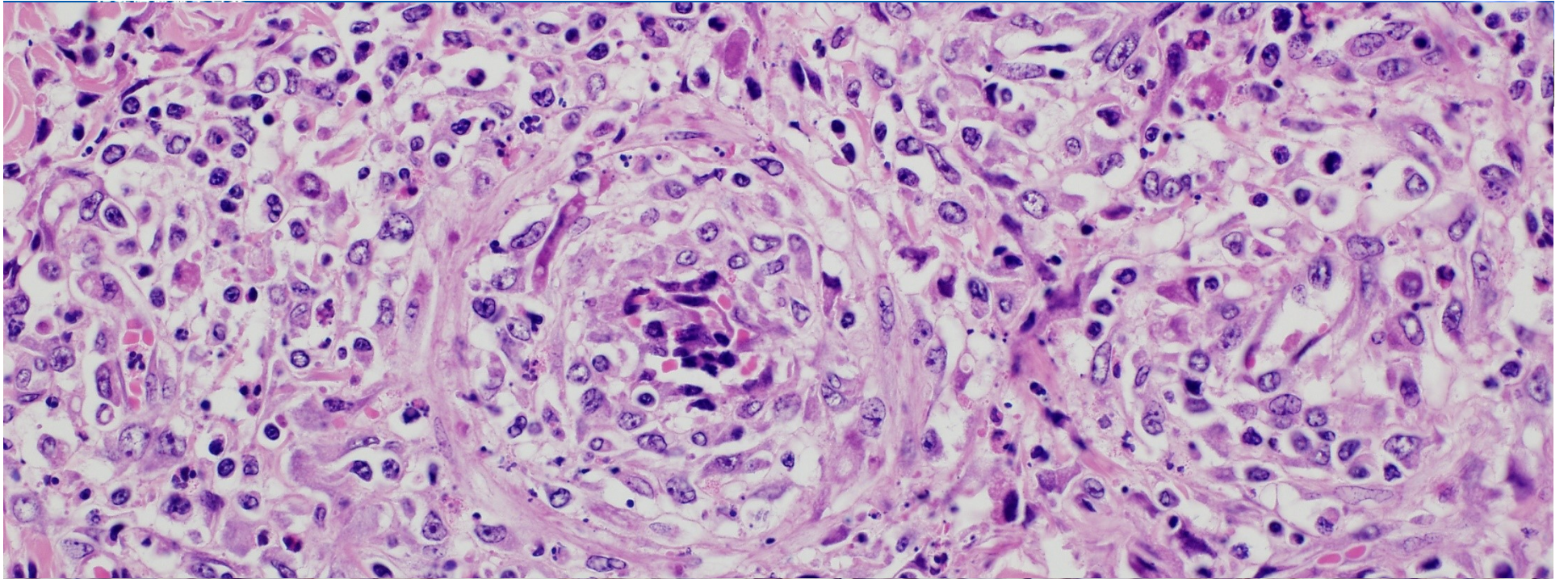


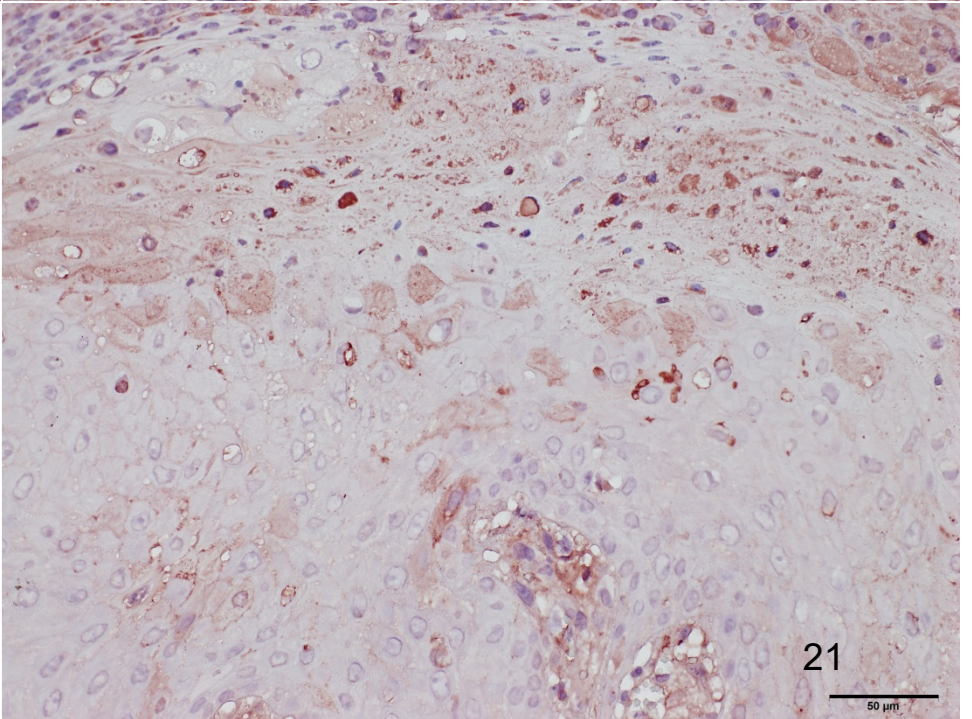
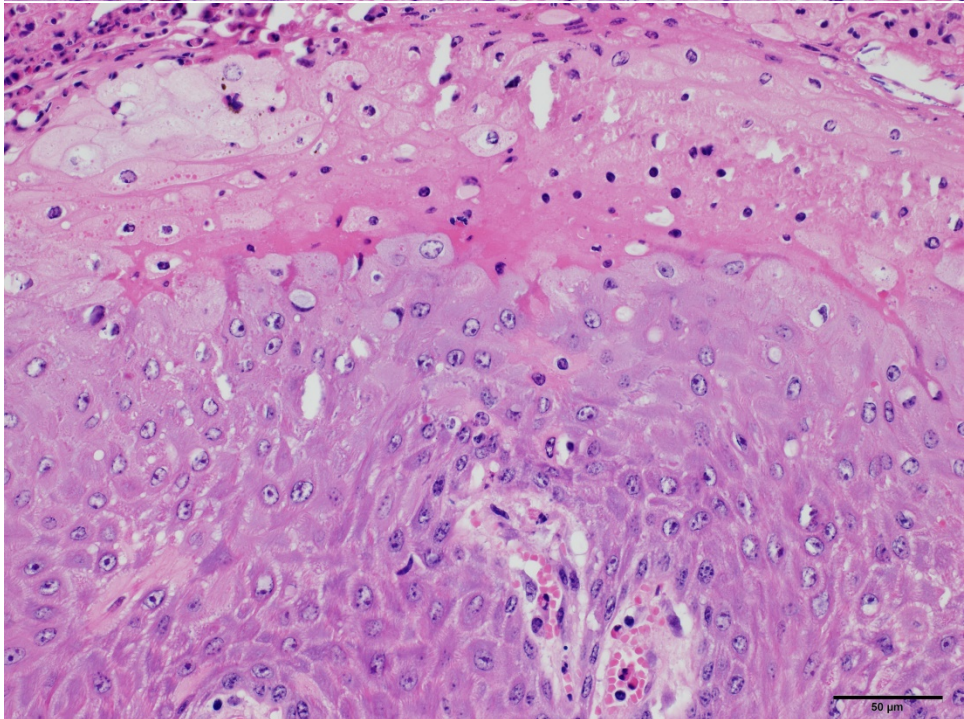
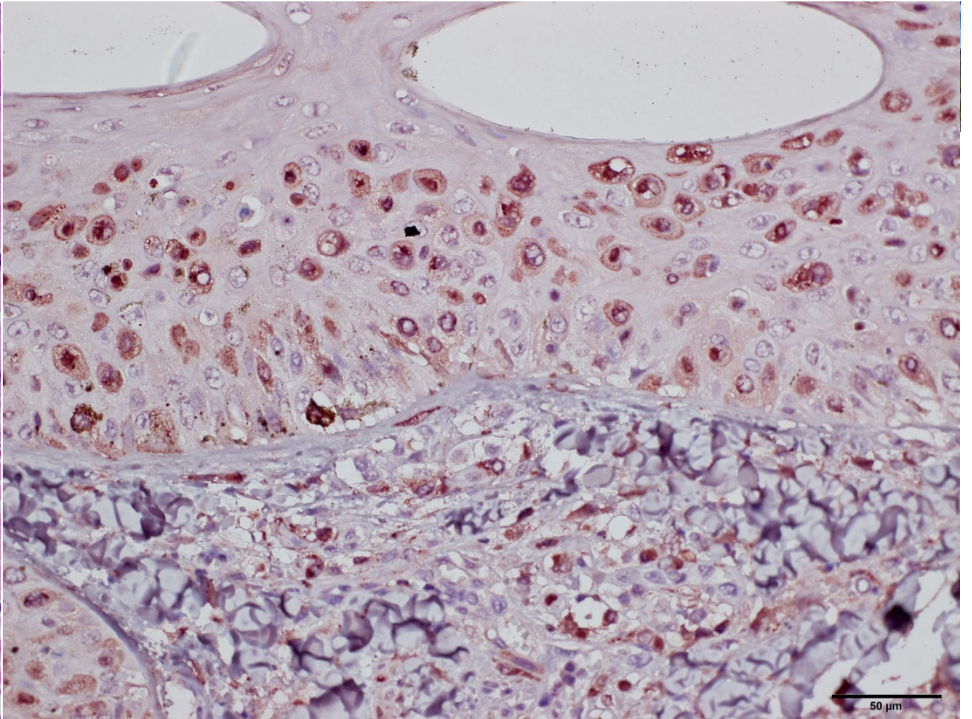
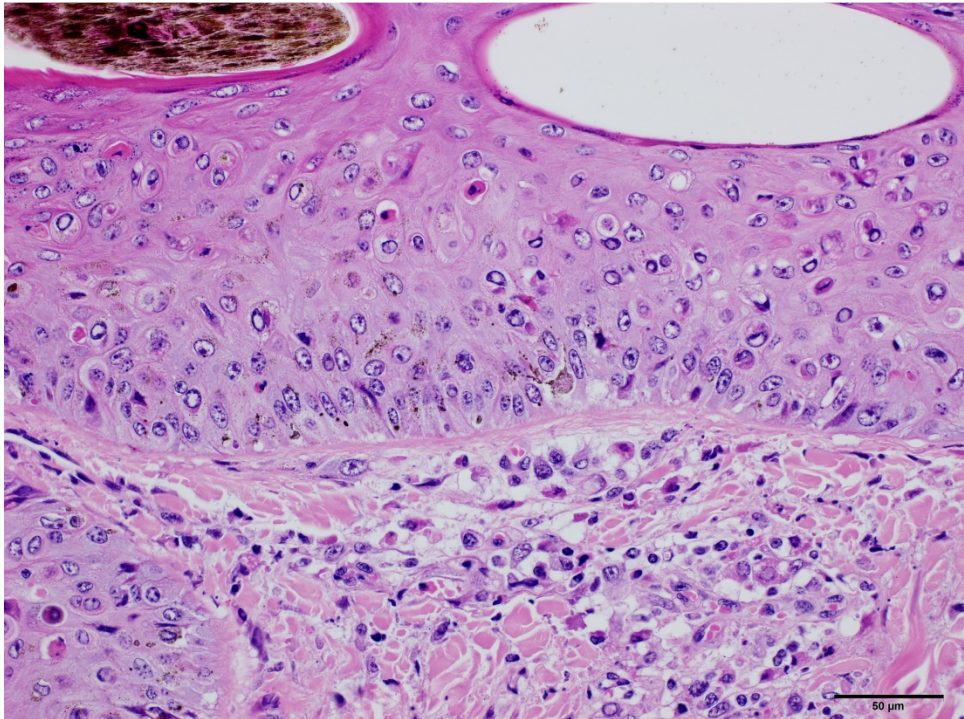














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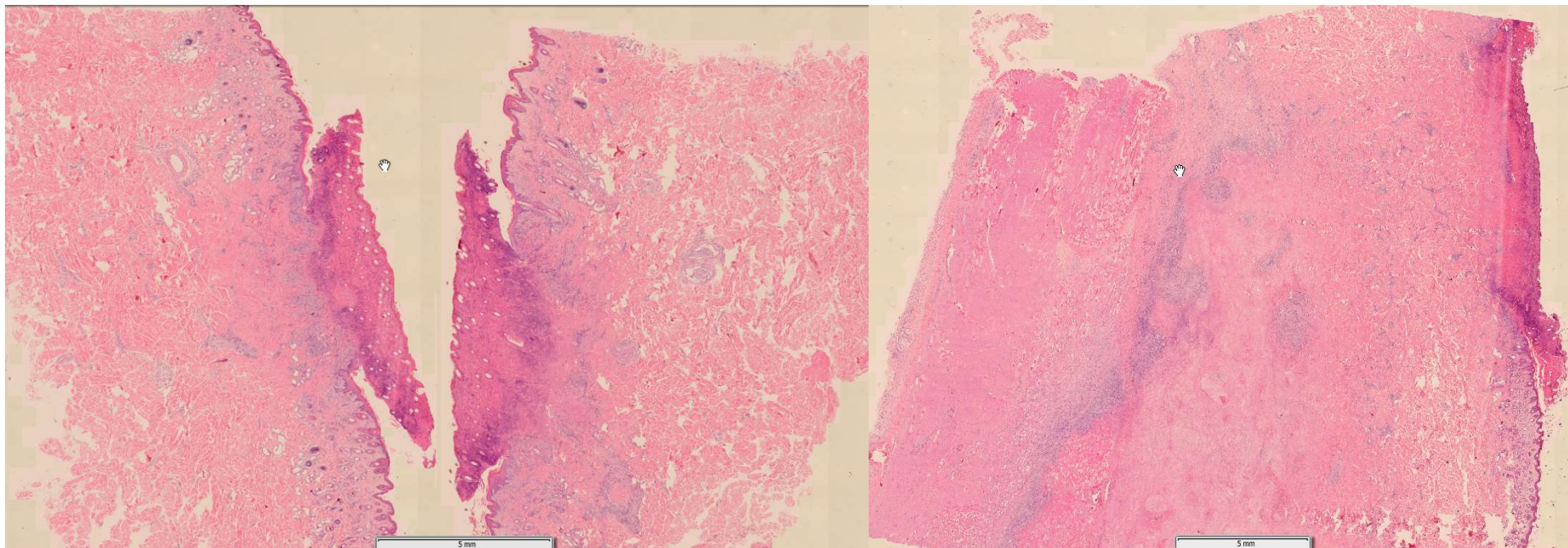
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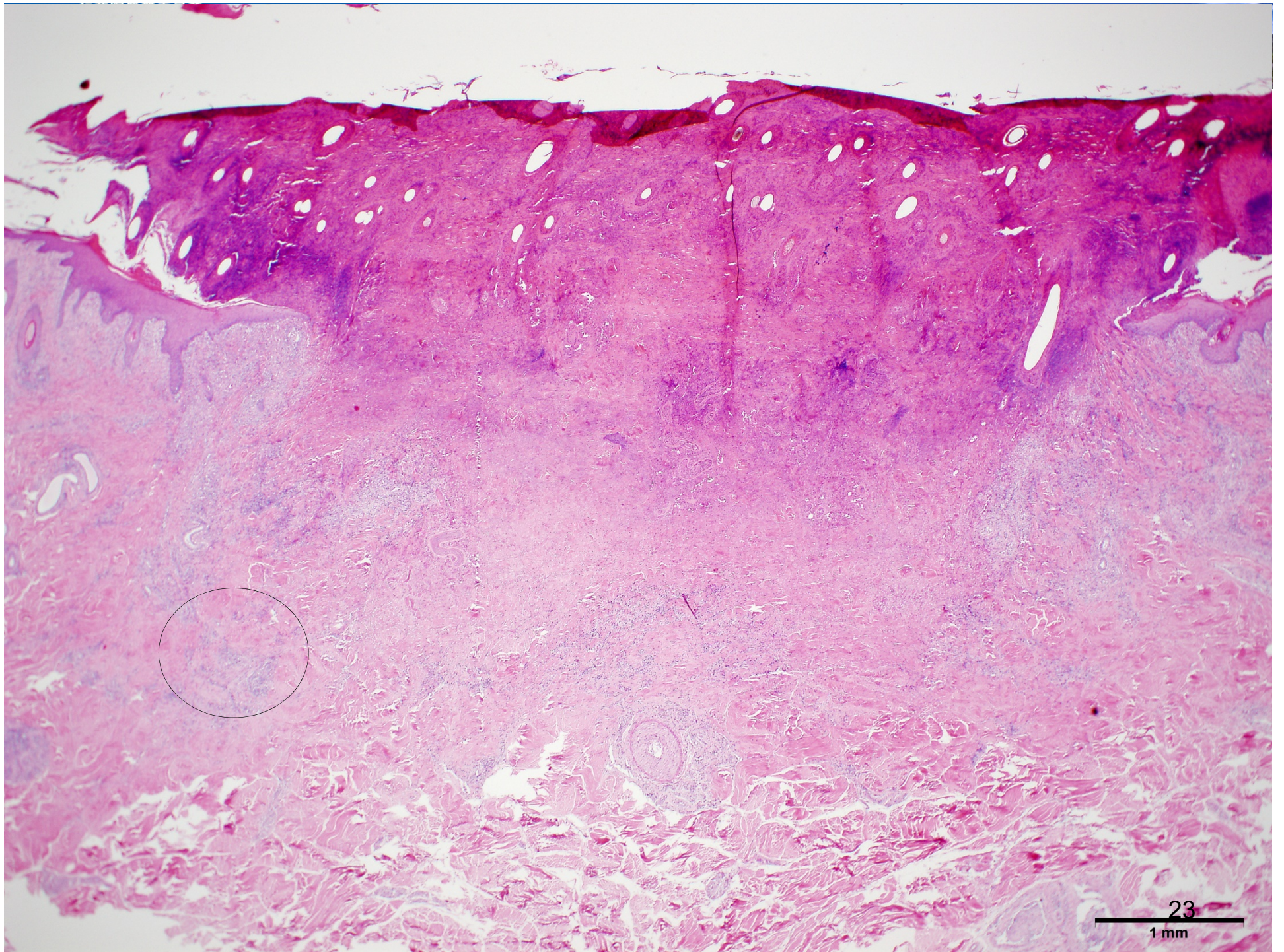
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組織病理病變

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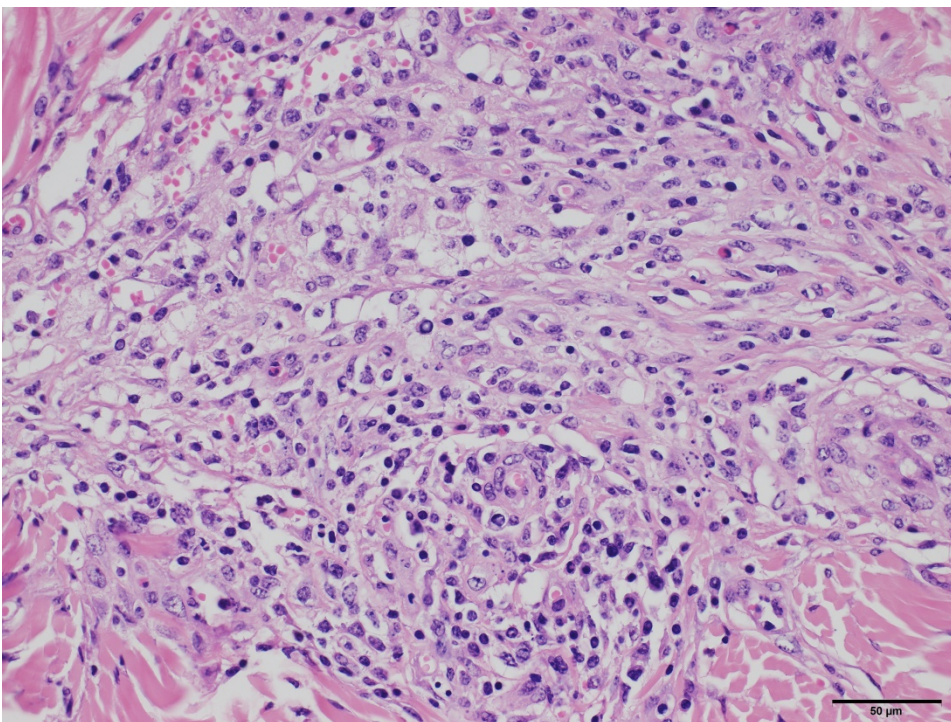
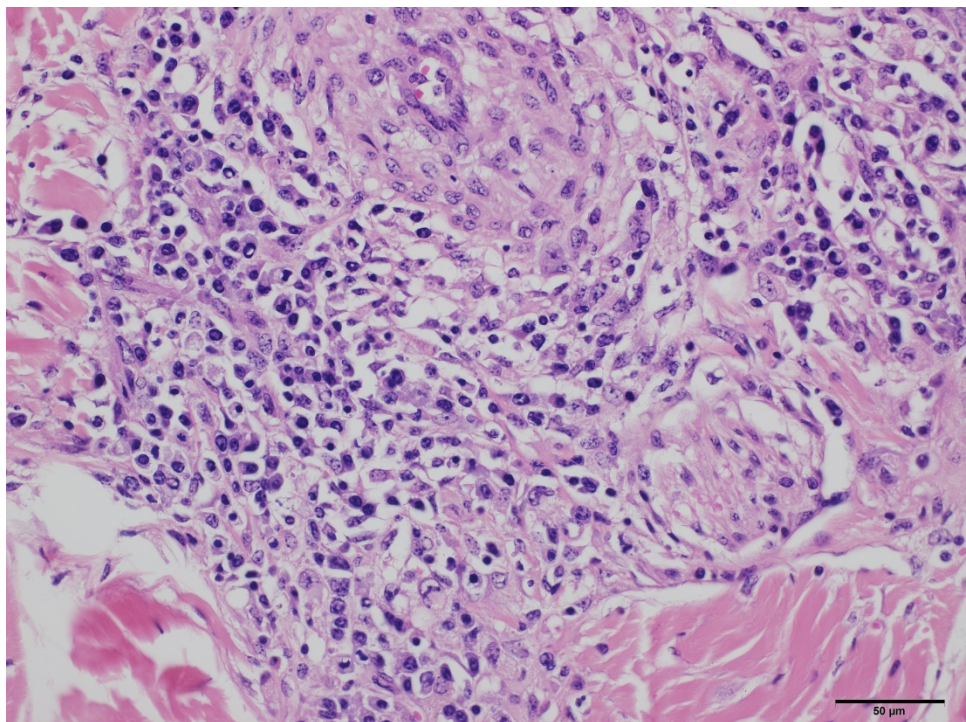




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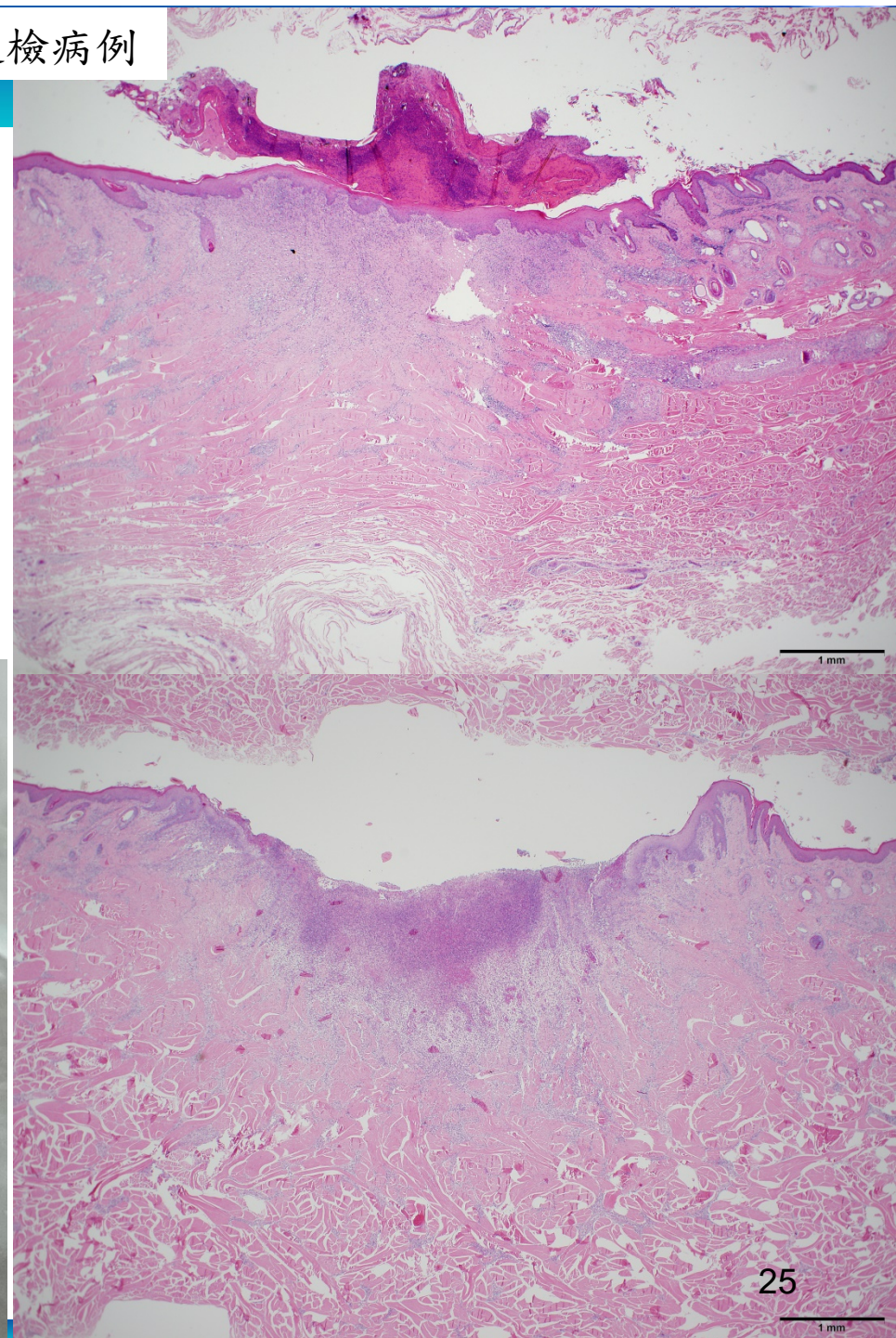
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其他送檢病例

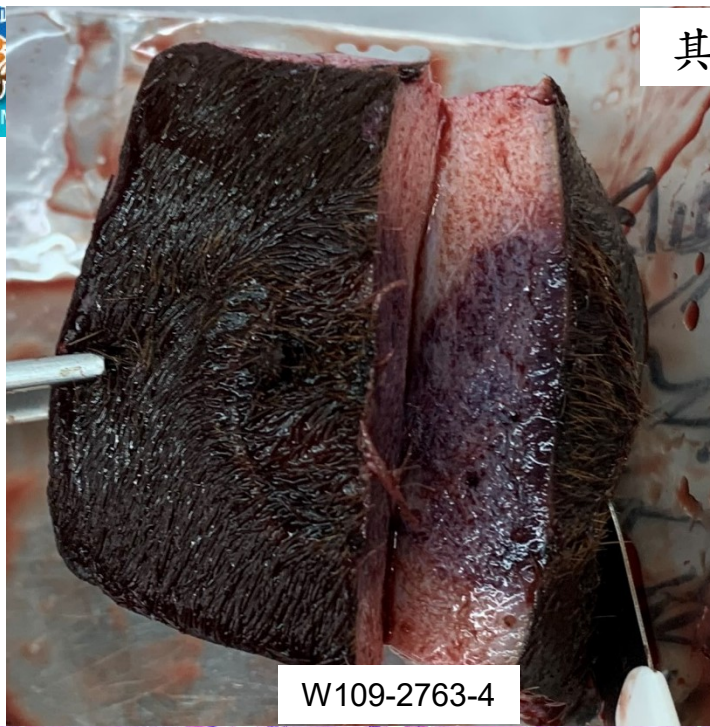


W109-2763-6

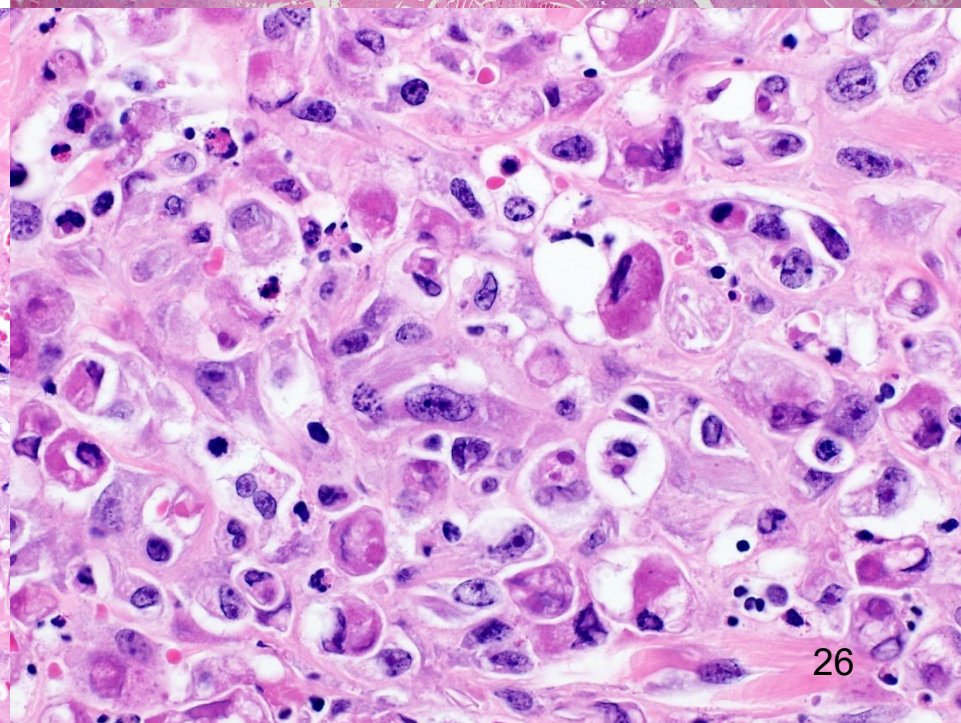
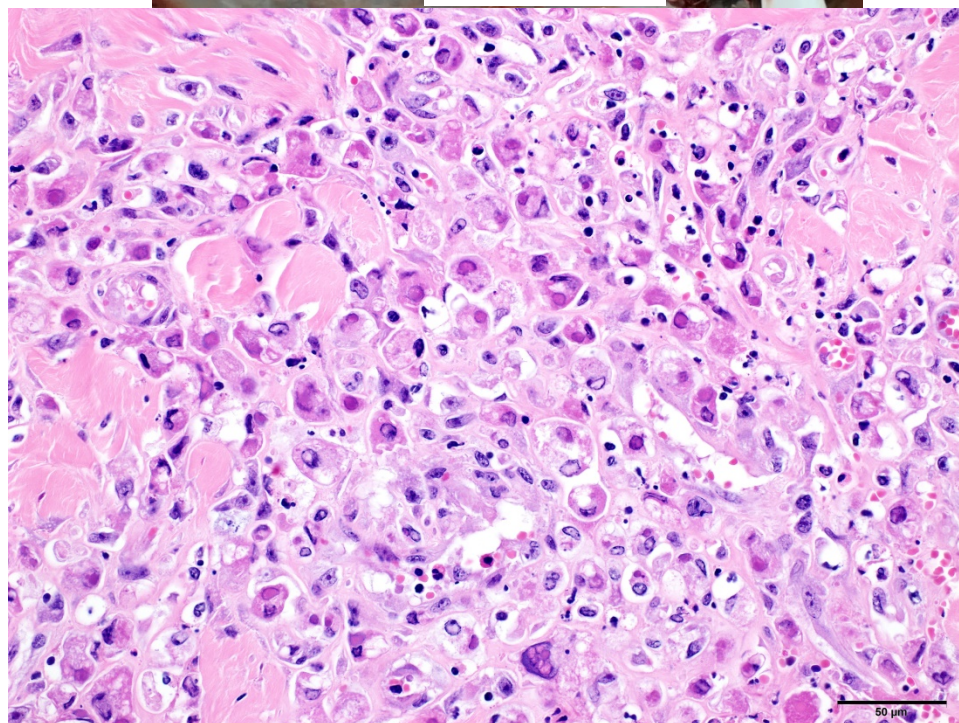
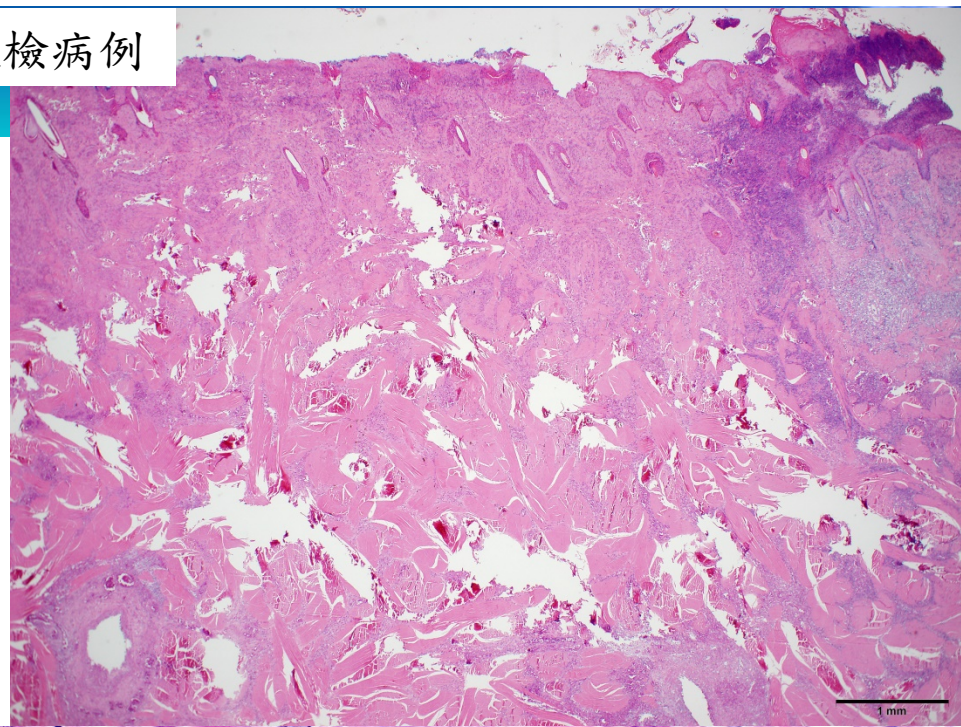


W109-2763-7

其他送檢病例



W109-2763-4





Morphological diagnosis

- Haired skin: Dermatitis, infarcted, subacute, multifocal, moderate, with necrotizing vasculitis, histiocytic, multiple, and intra-keratinocyte and intra-histiocytic eosinophilic cytoplasmic inclusion, etiology consistent with lumpy skin disease virus.



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Discussions



Lumpy skin disease virus

- Family Poxviridae

- Genus Capripoxvirus

- Species Sheeppox

- Goatpox

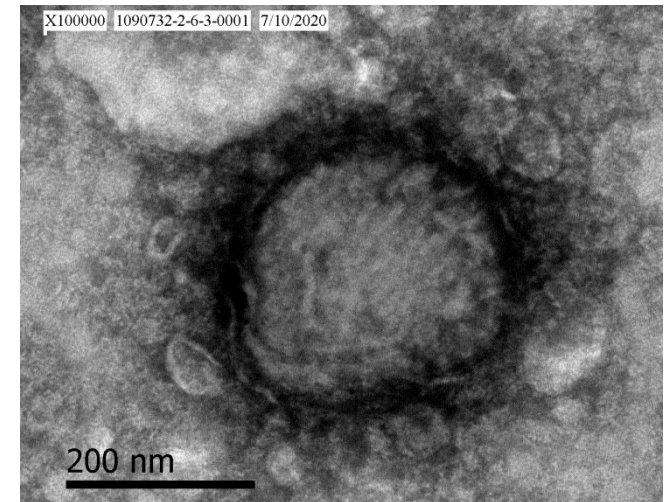
- Lumpy skin disease

- dsDNA, envelope

- Genome of ± 150 Kbp

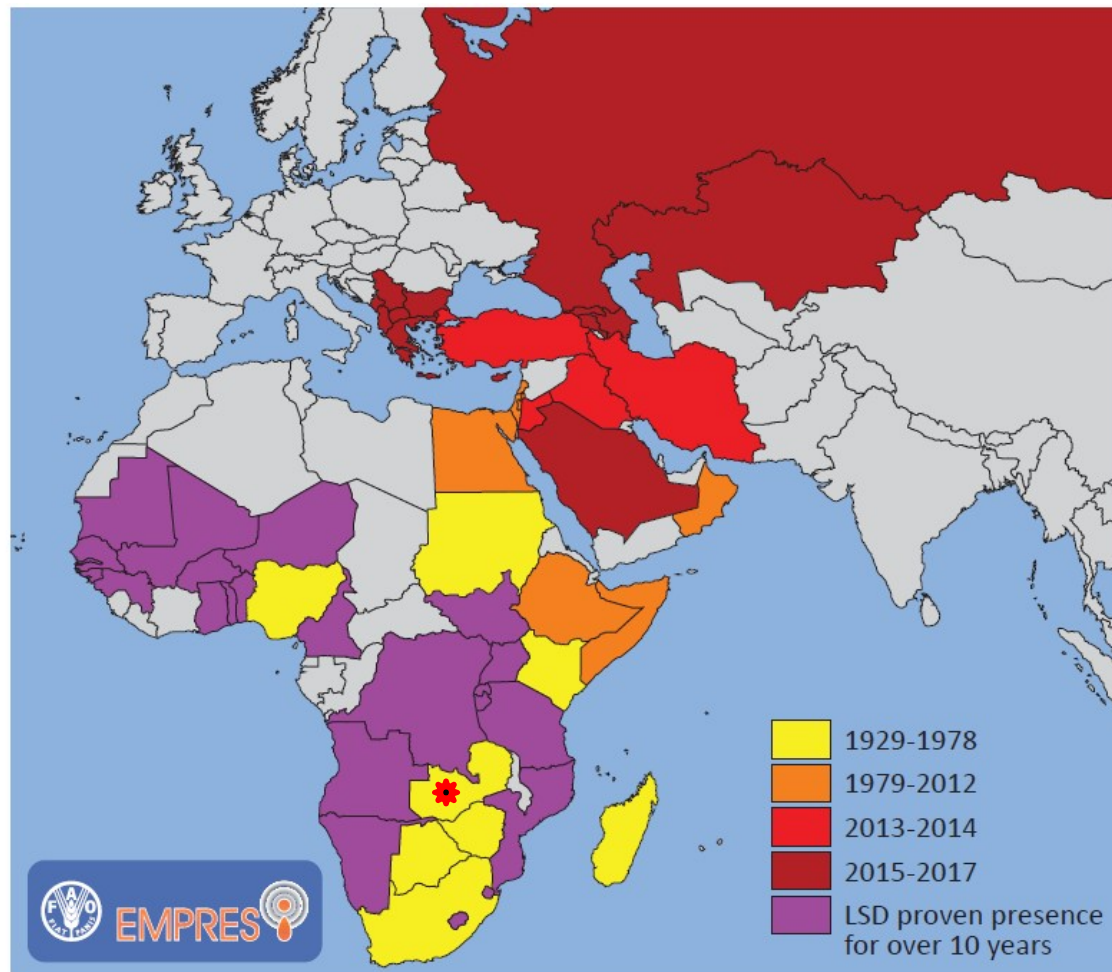
- Only one serotype (conserved genome)

- Possible cross-reactions between species



生物研究組 吳介豪助理研員提供

Geographic distribution



The outbreaks in the Russian Federation have been limited to regions within and next to the northern Caucasus.

Source: OIE WAHID and EMPRES-i, 2017



Clinical manifestations

□ Epidemiology

- Morbidity: 3% to 85% (~10% in endemic areas)

- Mortality: 1 to 3%

□ Transmission

- Biting insects, direct contact (saliva, discharge, milk, semen...)

□ Incubation period: 2 to 5 wks

□ Clinical signs

- Fever, decreased feed intake/ milk yield, salivation, ocular/nasal discharge

- Pyrexia may persist for 7-12 days in severe case



Pathogenesis

- ❑ Subcutaneous or intradermal inoculation of LSD virus results in the development of localized swelling at the site of inoculation after 4 to 7 days.
- ❑ Generalized eruption of skin nodules occurs 7 to 19 days post-inoculation.
 - ❑ It takes 2 to 5 wks in natural cases.
- ❑ Viremia occurs after an initial febrile period and persists for about 4 days.
- ❑ A variety of cell types, including epithelial and endothelial cells, pericytes and fibroblasts are infected by the virus.
 - ❑ Vasculitis
 - ❑ Lymphagitis
 - ❑ Infarction



LSD lesions

□ Mild vs severe forms

□ The number of lumps (nodules)

□ Occurrence of complications

□ Dose of the inoculum

□ The susceptibility of the host

□ The density of insect population



Mulatu and Feyisa, J Vet Sci Technol 2018, DOI: 10.4172/2157-7579.1000535

Figure 3: Characteristic LSD nodular lesion indicating severity: Lesion covering the whole body in severe form (A) and LSD with few skin nodules in mild form (B), adapted from [46,47].

FIGURE 6

Mild case of LSD showing characteristic skin lesions (neck)



Lumpy skin disease field manual—A manual for veterinarians. FAO. 2017

FIGURE 5

Mild case of LSD showing characteristic skin lesions (full body)



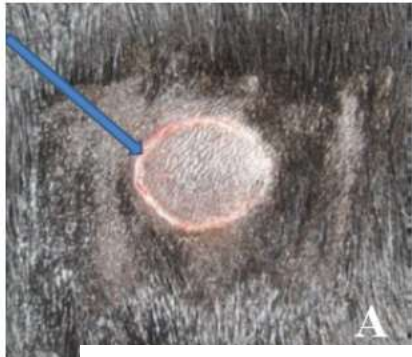
Lumpy skin disease field manual—A manual for veterinarians. FAO. 2017

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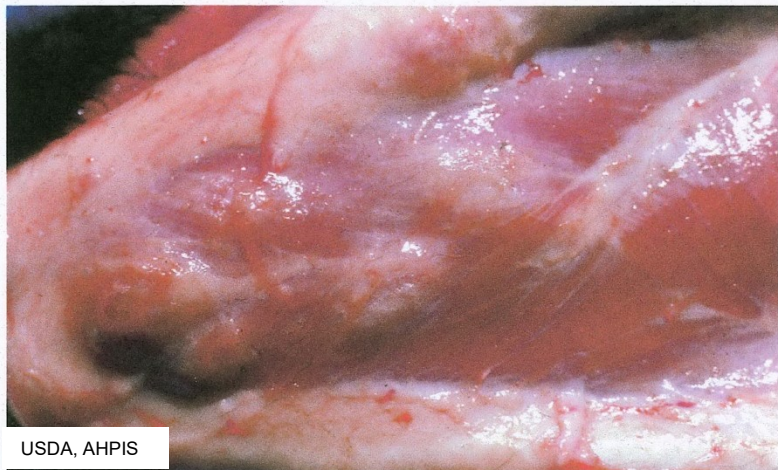
LSD- Typical lesions



Mulatu and Feyisa, J Vet Sci Technol 2018, DOI: 10.4172/2157-7579.1000535



Figure 4: Distinguishing lesions of LSD: Raised and separated narrow ring of hemorrhage” (A), skin lesions leaving ulcer (B) and “sit fast” like “inverted conical zone” of necrosis (C), adapted from [46,48].



USDA, AHPIS

Photo 13. **Lumpy skin disease:** Cow, subcutaneous muscle. Pox lesion extending from subcutaneous to muscular layer.

[Source: OVI/ARC]



USDA, AHPIS

Photo 14. **Lumpy skin disease:** Cow, glottis and epiglottis. Multiple circular, raised, flattened nodules in the mucosa.

[Source: PIADC]



USDA, AHPIS

Photo 15. **Lumpy skin disease:** Cow, tracheal mucosa. Severe multifocal necrotizing tracheitis; raised plaques with necrotic surfaces and circumscribed with hemorrhage.

[Source: OVI/ARC]



USDA, AHPIS

Photo 16. **Lumpy skin disease:** Cow, trachea. Two focal, slightly raised, circumscribed, white pox lesions in the tracheal mucosa.

[Source: PIADC]



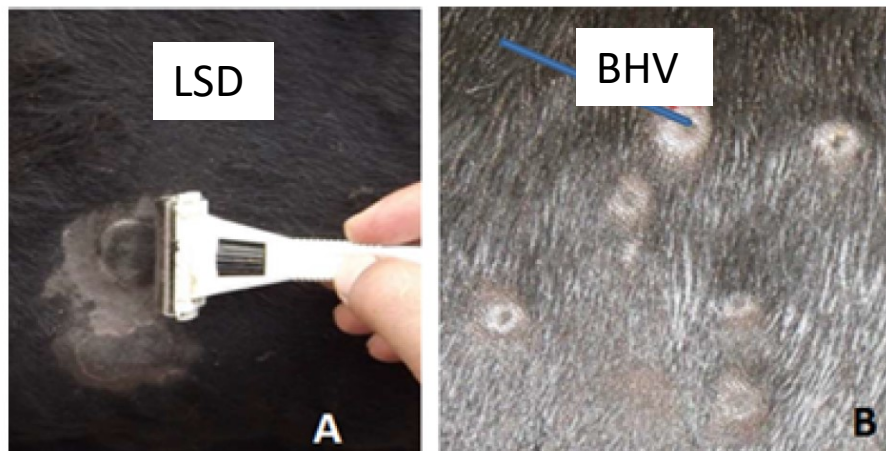
Differential diagnosis

- ❑ Severe LSD is highly characteristic, but milder forms can be confused with those below
 - ❑ Pseudo-lumpy skin disease/ Bovine herpes mammilitis (Herpes 2)
 - ❑ Bovine papular stomatitis (Parapox)
 - ❑ Pseudocowpox (Parapox)
 - ❑ *Dermatophilus congolensis*
 - ❑ Demodicosis
 - ❑ Ringworm
 - ❑ *Hypoderma bovis*
 - ❑ Cutaneous tuberculosis
 - ❑ Rinderpest
 - ❑ Insect bites, urticaria, and photosensitisation



Differential diagnosis

❑ Pseudo-lumpy skin disease/ Bovine herpes mammilitis (Herpes 2)



Mulatu and Feyisa, J Vet Sci Technol 2018, DOI: 10.4172/2157-7579.1000535

Figure 6: Illustrative clinical feature of LSD (A) and BHV (B), w characteristic intact central area (blue arrow).

FIGURE 19
Bovine Herpesvirus 2



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Skin lesions covering the udder and teats

Lumpy skin disease field manual—A manual for veterinarians. FAO. 2017



Differential diagnosis

- ❑ Bovine papular stomatitis (Parapox)
- ❑ Pseudocowpox (Parapox)



Papular stomatitis

FIGURE 24
Papular stomatitis



Lumpy skin disease field manual—A manual for veterinarians. FAO. 2017

Papular stomatitis

FIGURE 21
Pseudocowpox lesions on the teats



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Pseudocowpox



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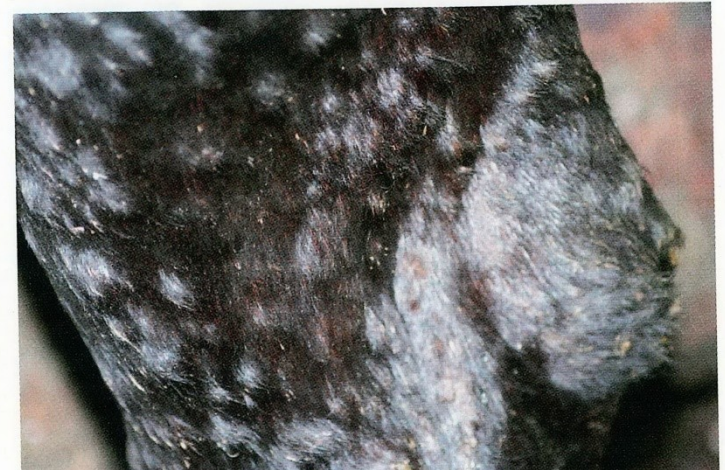
Differential diagnosis

□ *Dermatophilus congolensis*



Blowey RW, Weaver AD. Color atlas of disease and disorders of cattle, 3rd ed., 2011 Elsevier Ltd.

3.37. Dermatophilosis affecting whole cow



Blowey RW, Weaver AD. Color atlas of disease and disorders of cattle, 3rd ed., 2011 Elsevier Ltd.

3.41. Dermatophilosis of hock, close up



Blowey RW, Weaver AD. Color atlas of disease and disorders of cattle, 3rd ed., 2011 Elsevier Ltd.

3.42. Dermatophilosis in cow (Antigua, West Indies)



Economic impact

- ❑ Severe emaciation
- ❑ Weight loss
- ❑ Reduced milk production
- ❑ Reduced hides quality
- ❑ Abortion
- ❑ Infertility
- ❑ Secondary mastitis





Control measures

☐ Endemic area

- ☐ Vaccinate cattle

- ☐ Insect control

☐ Vaccination

- ☐ Attenuated LSD strain

 - ☐ Neethling strain vaccine confers immunity up to 3ys

- ☐ Sheep and goat pox vaccine

 - ☐ May cause local, severe reaction



FIGURE 32
Local reaction at vaccination site



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FIGURE 33
Post-vaccination superficial generalized skin lesions



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FIGURE 34
Post-vaccination superficial skin lesions in the udder



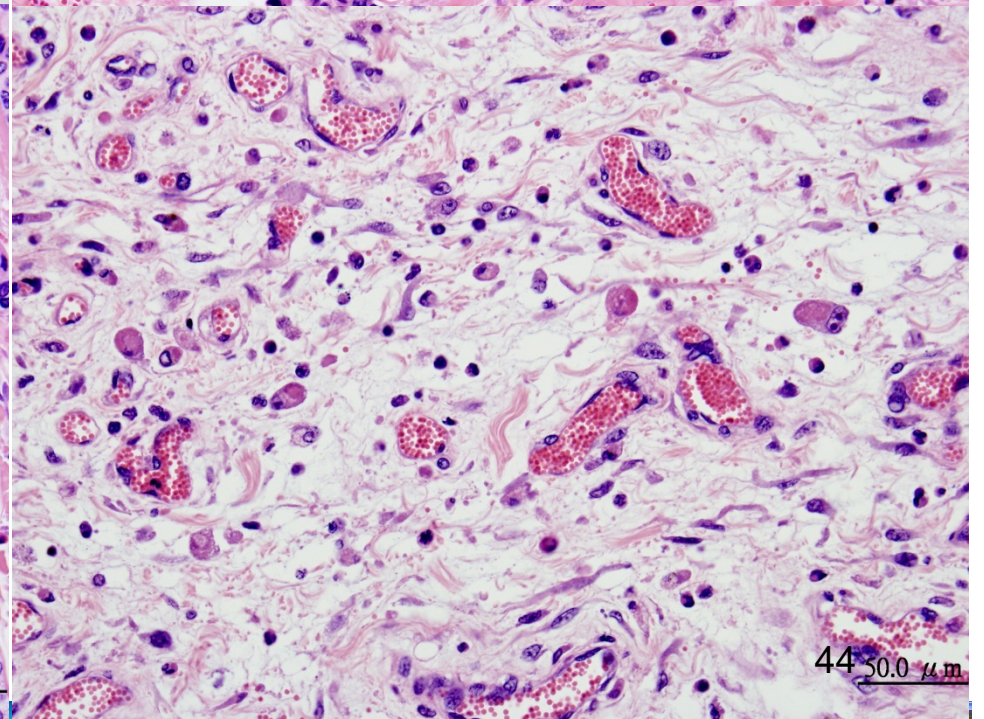
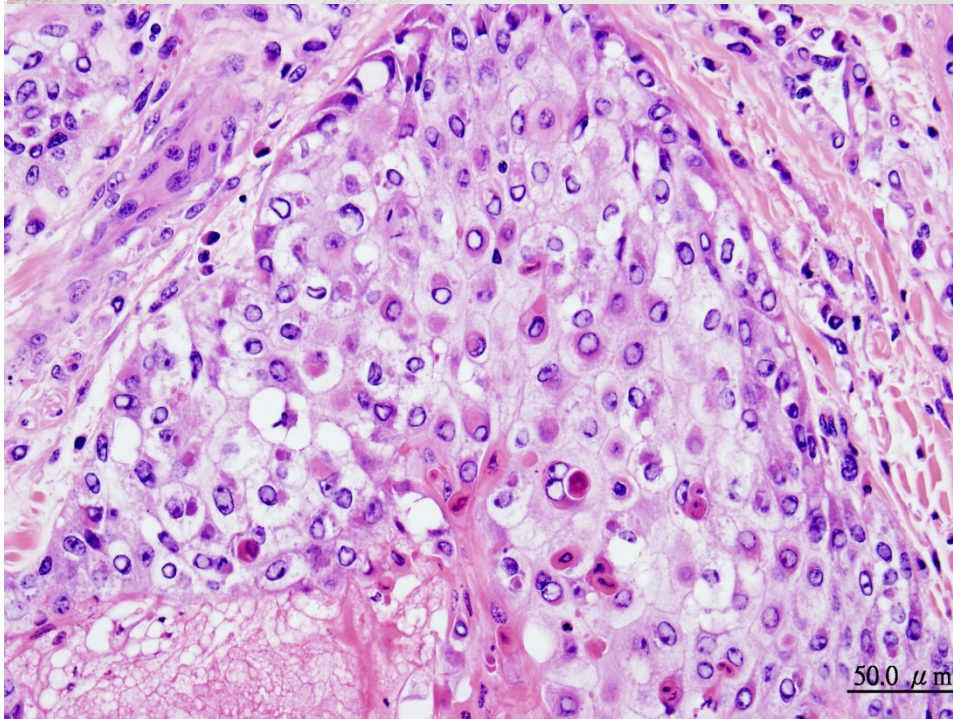
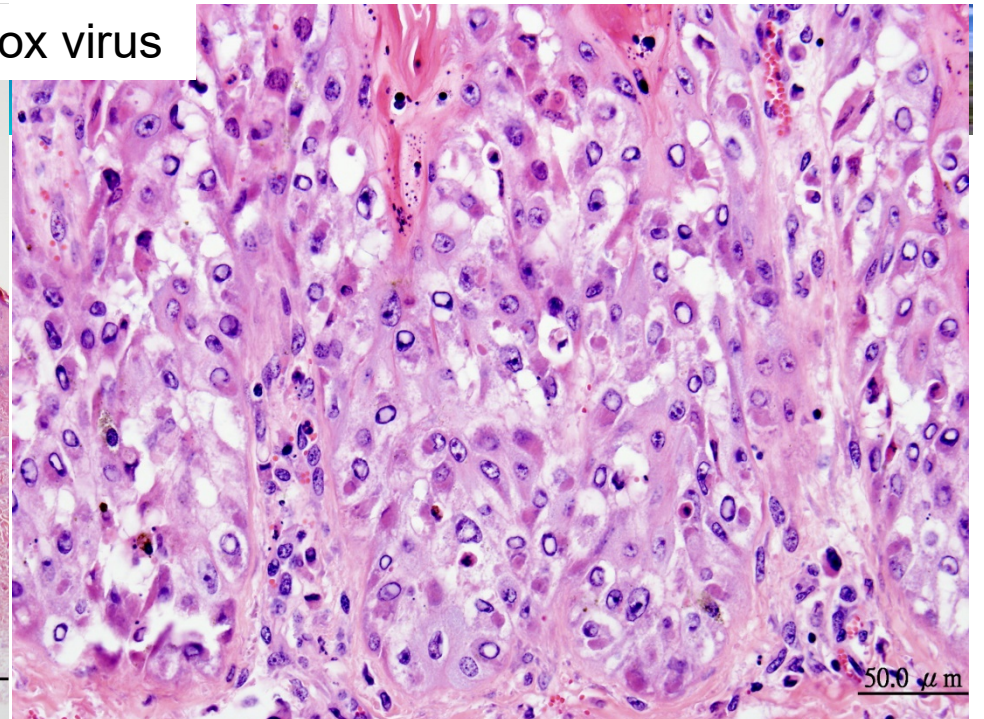
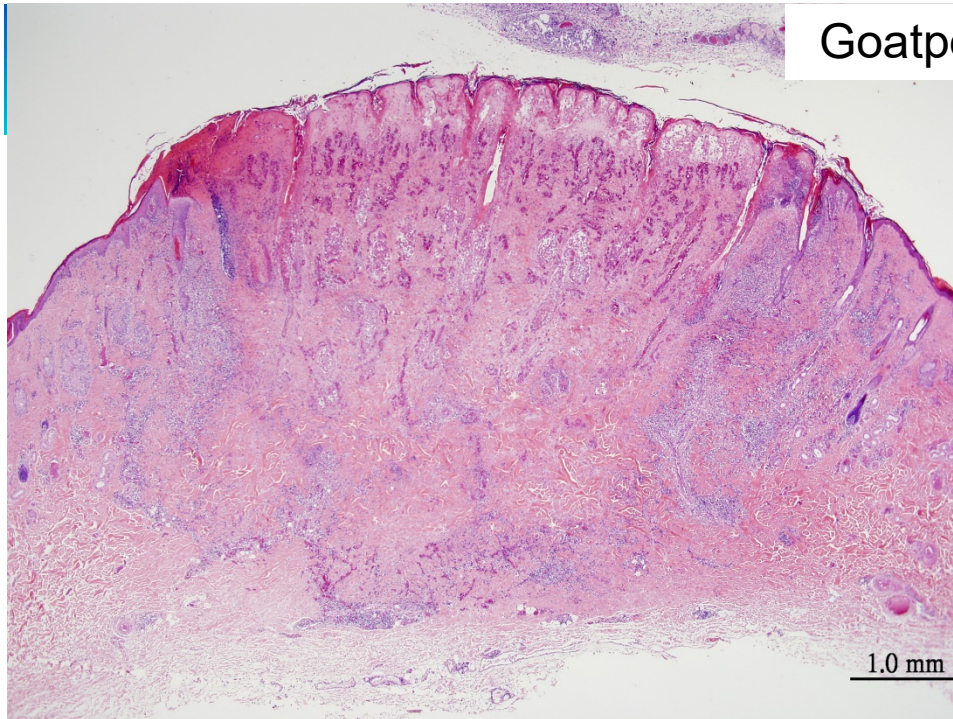
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Goatpox virus



Goatpox virus





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Thanks for Listening

