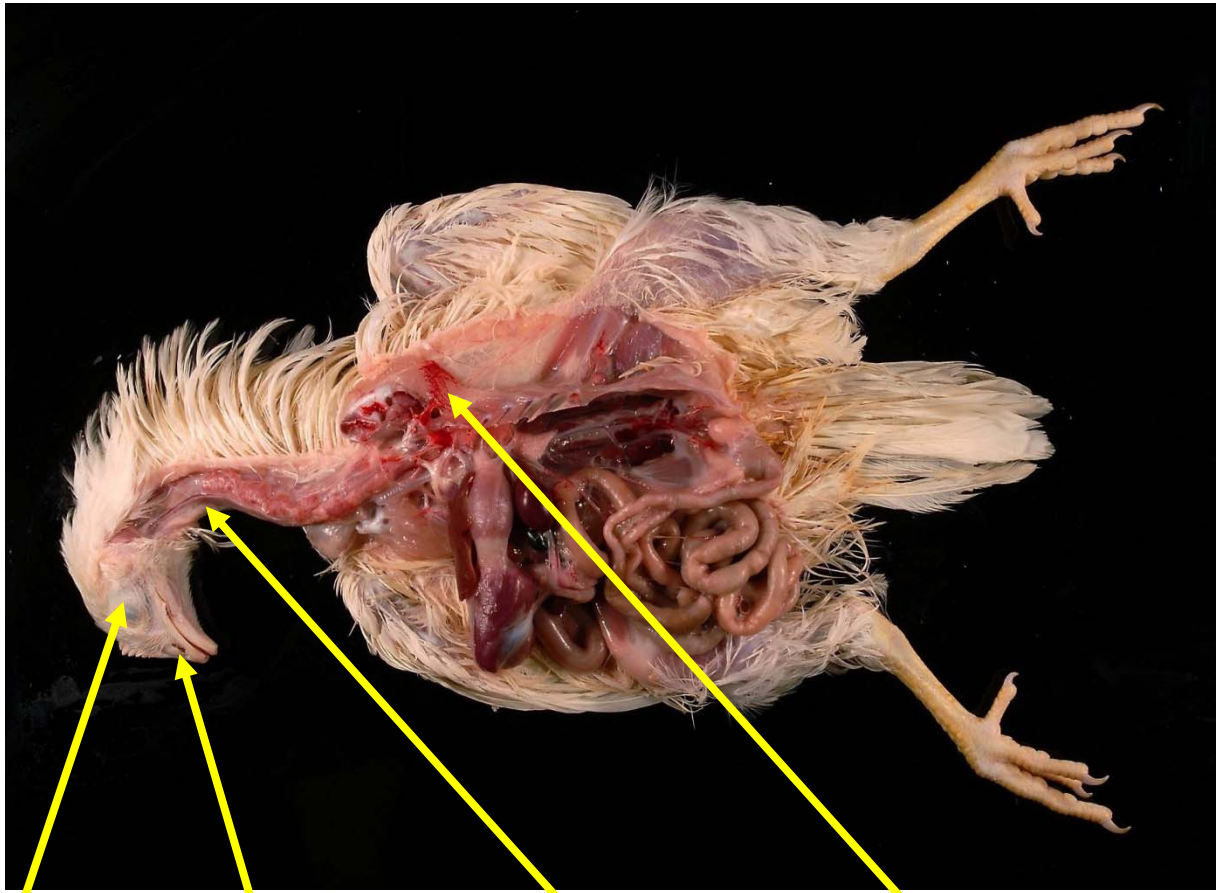
LMU LUDWIG-MAXIMILIANS-UNIVERSITÄT MÜNCHEN

Struktur und Funktion des Immunsystems im Respirationstrakt

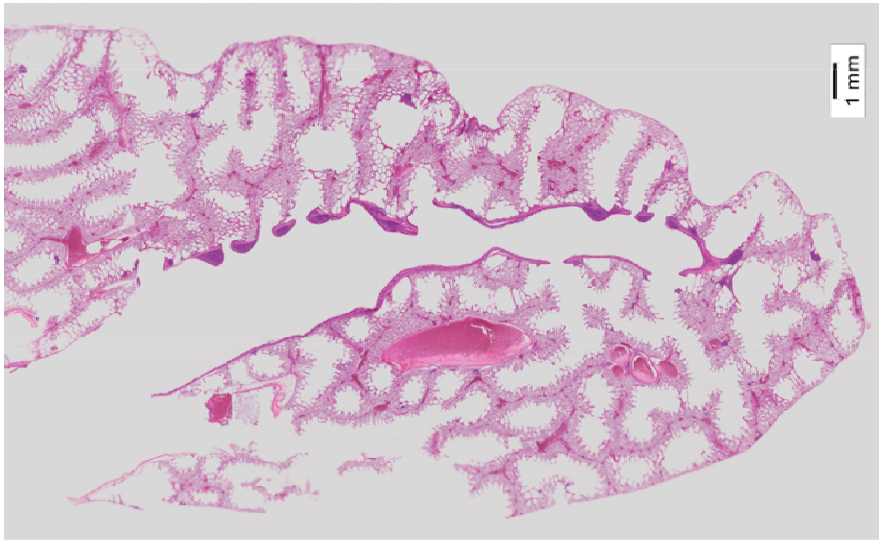
B. Kaspers, G. Zengerling, A. Wilhelm, S. Reese

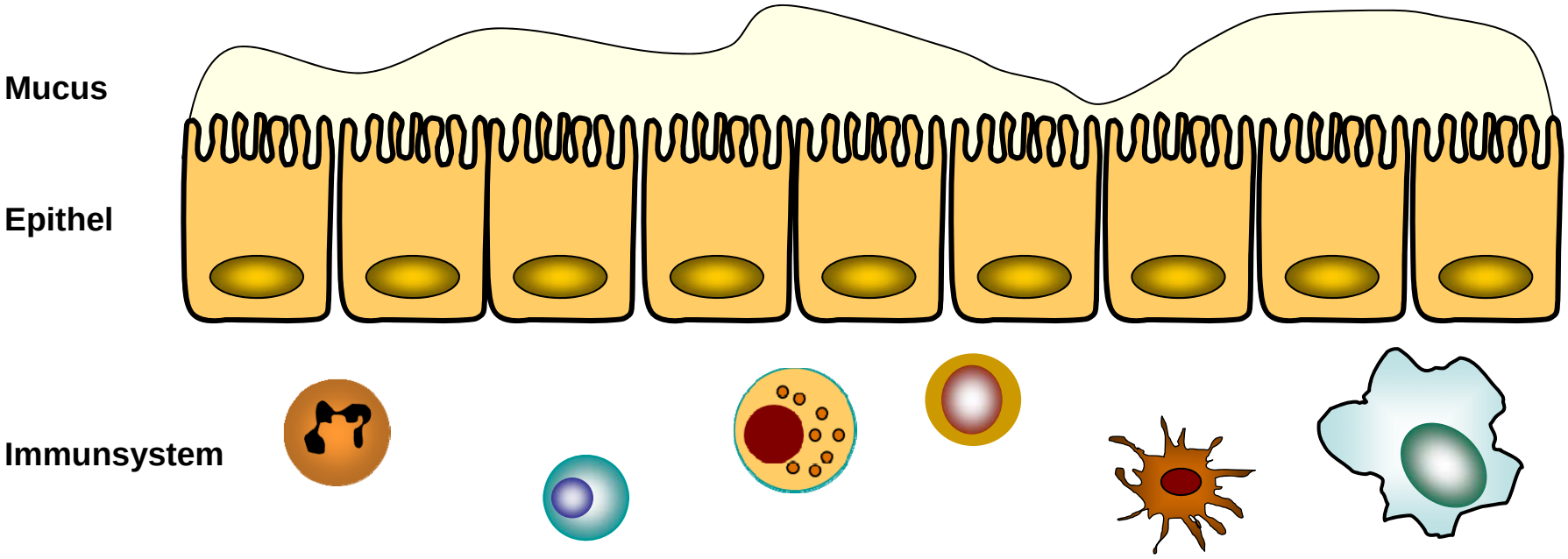
LMU München

Lymphatische Strukturen im Respirationstrakt

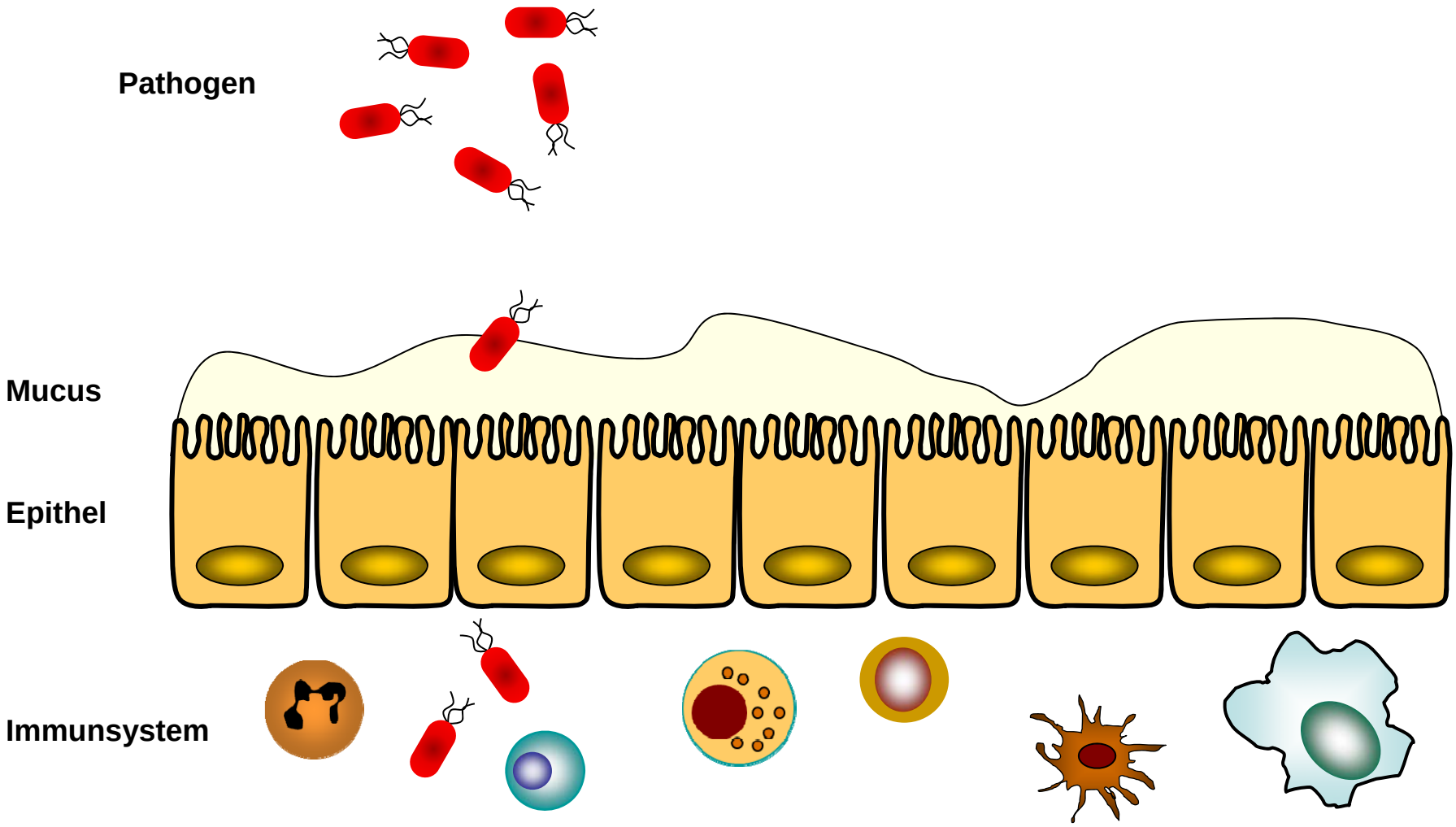


Die epitheliale Barriere

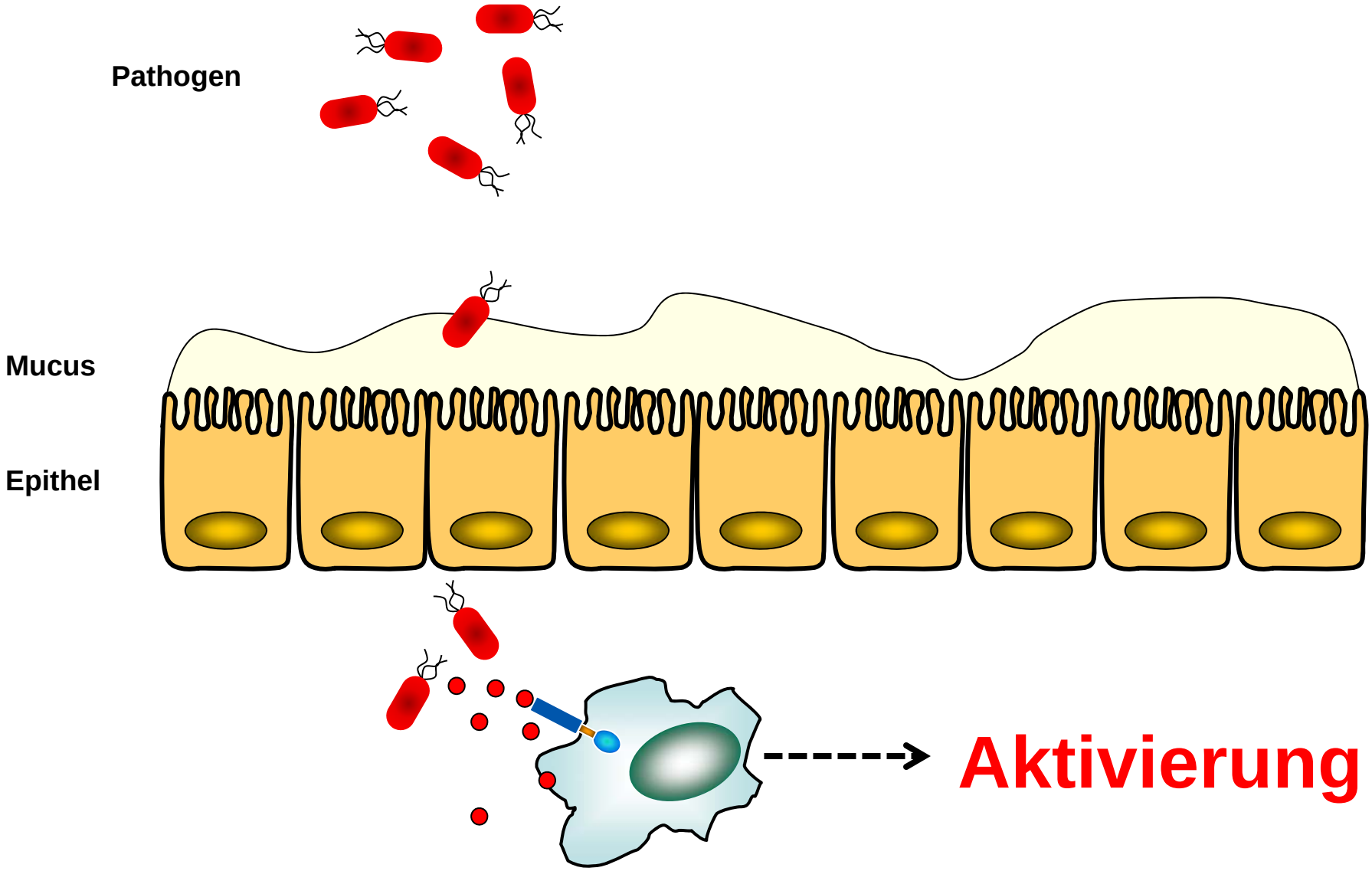




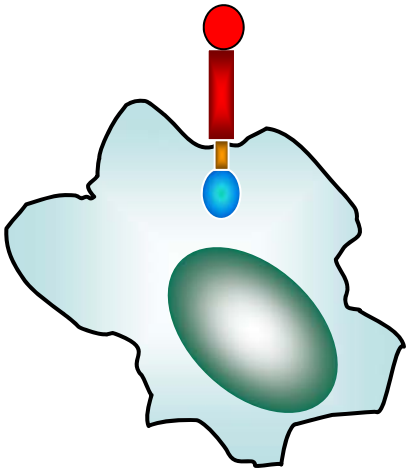
Pathogene

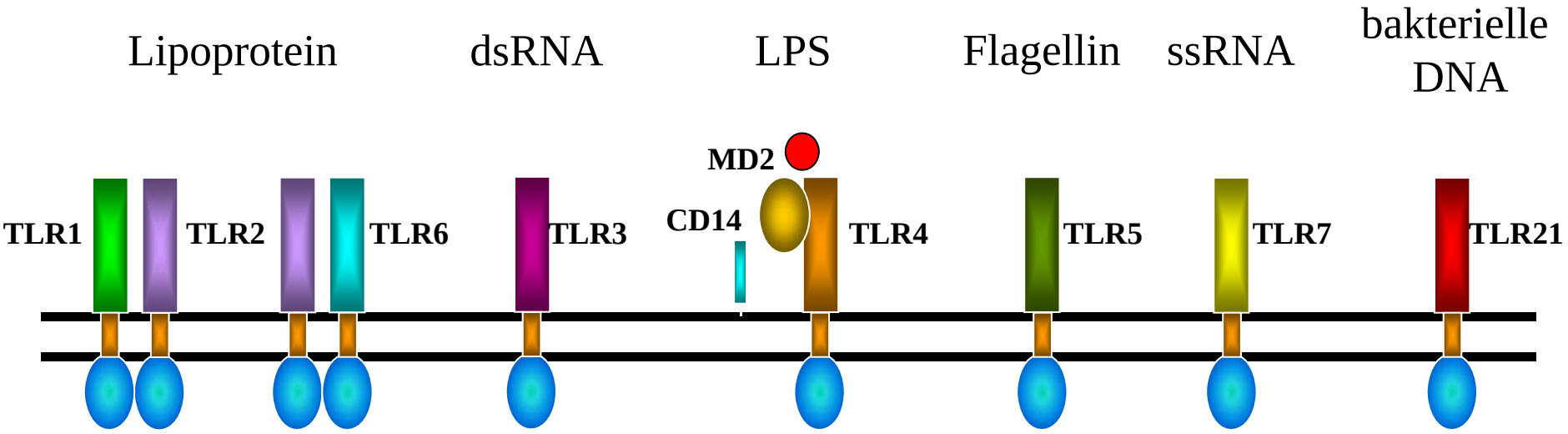


Erkennung von Gefahr



Gefahrrezeptoren





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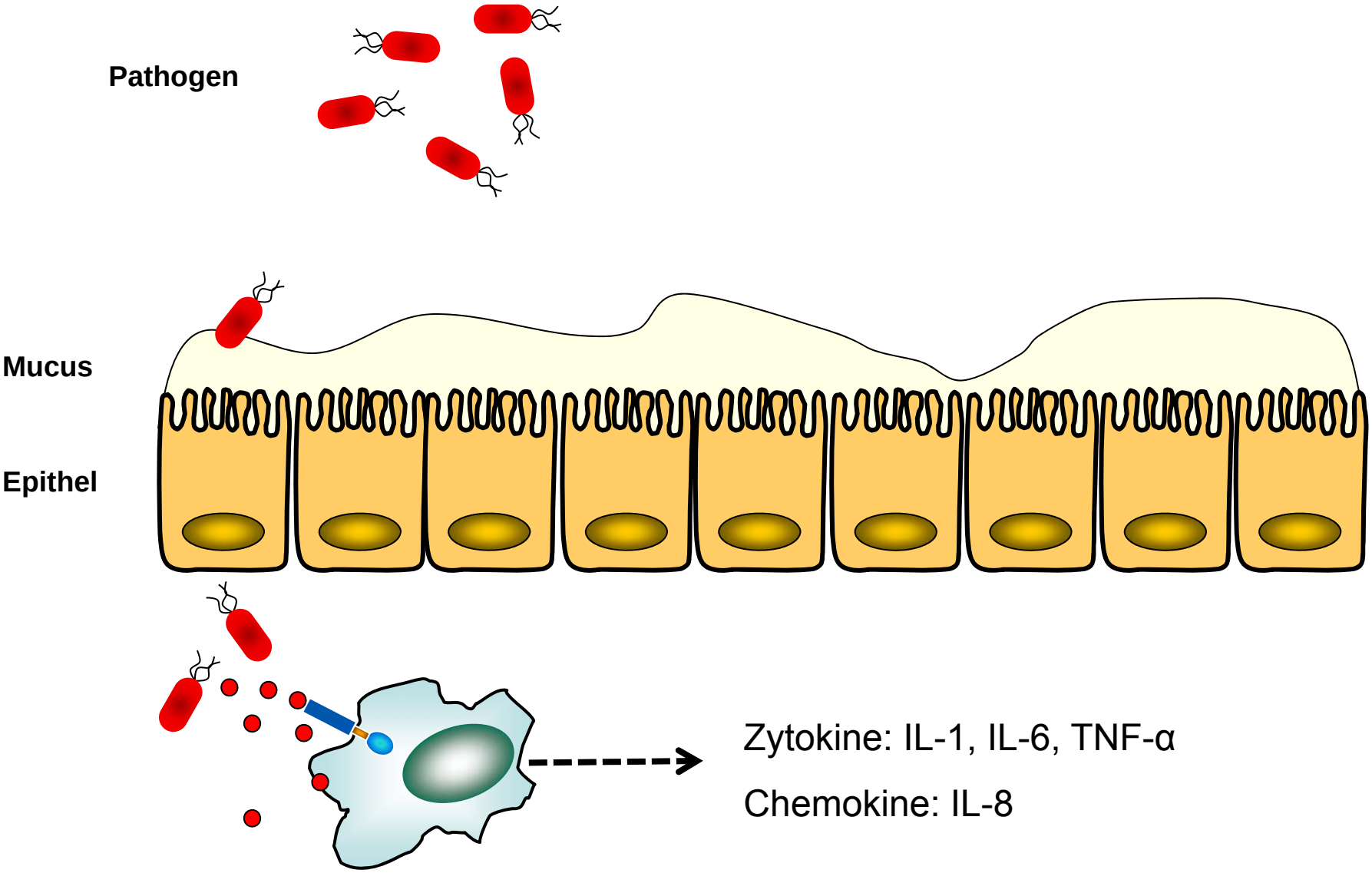

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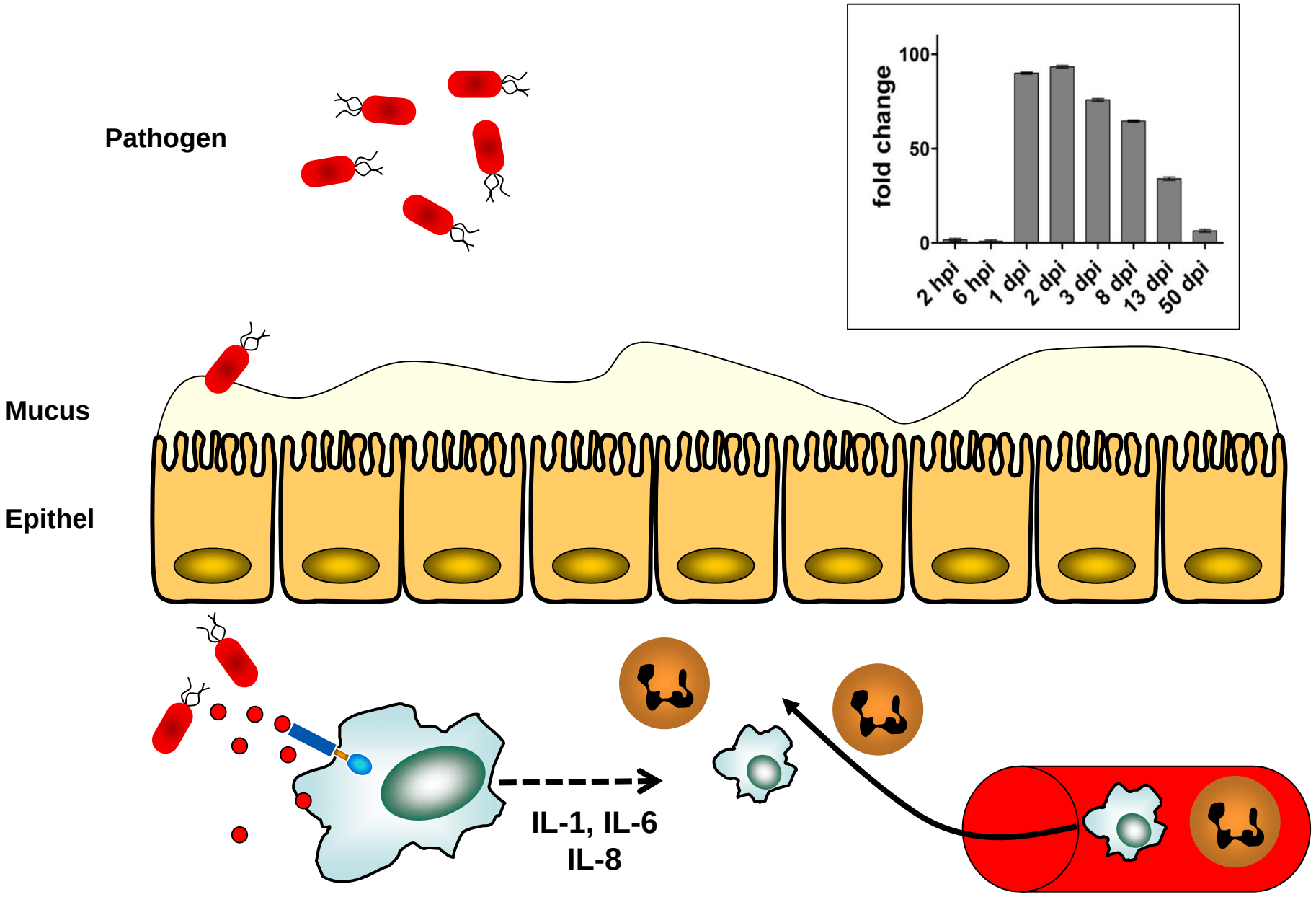
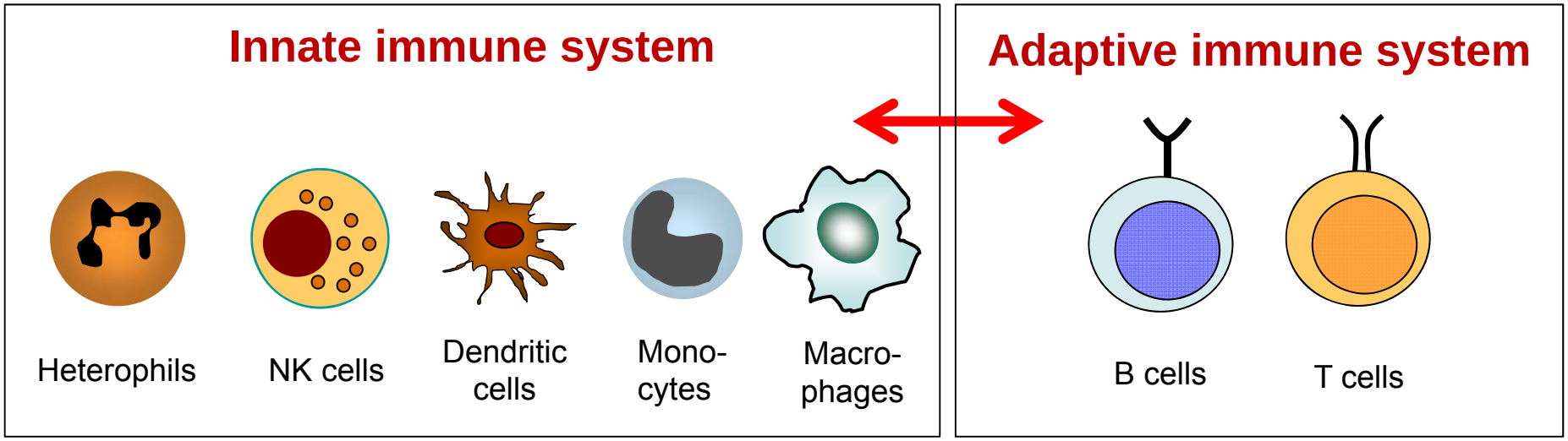


Die zwei Arme des Immunsystems

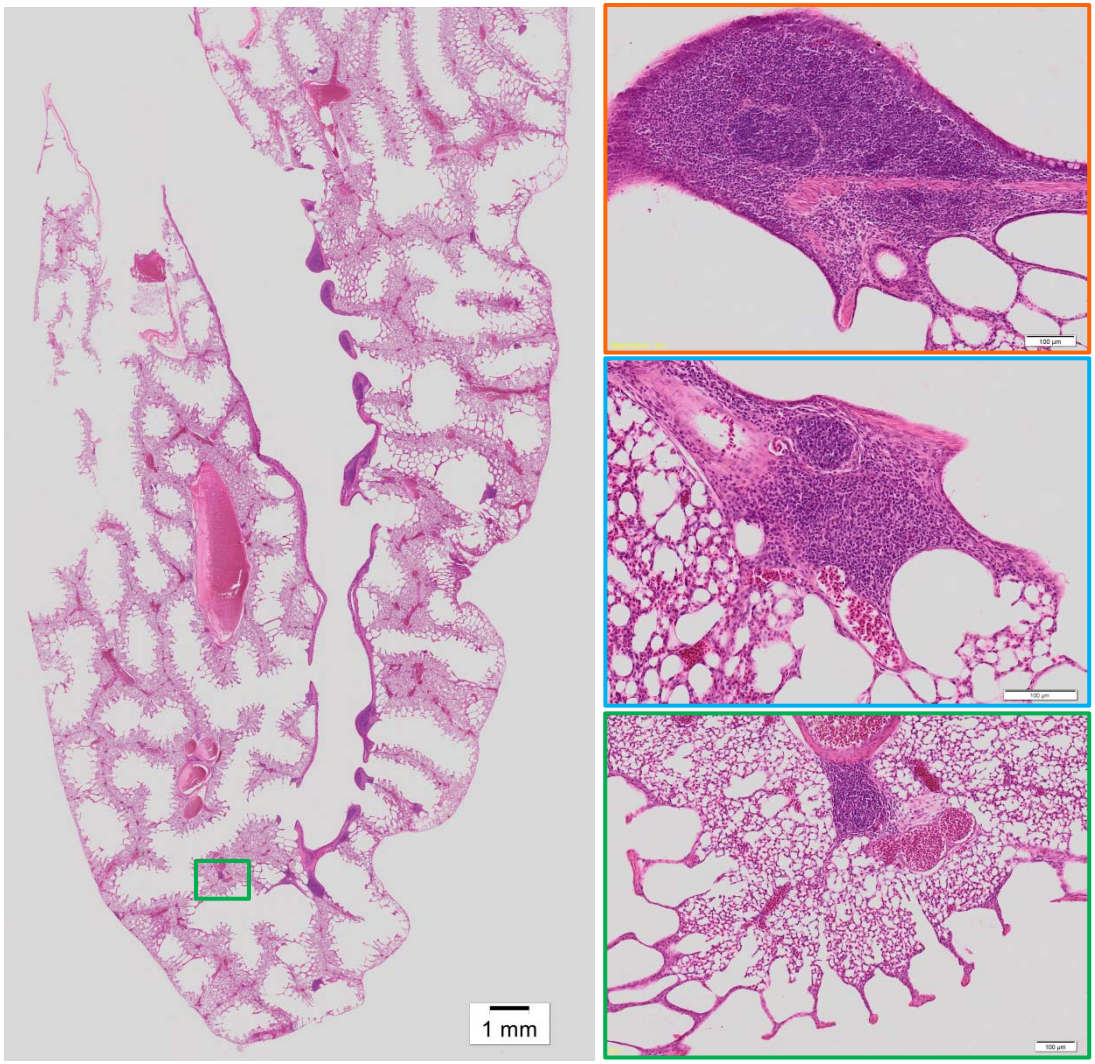


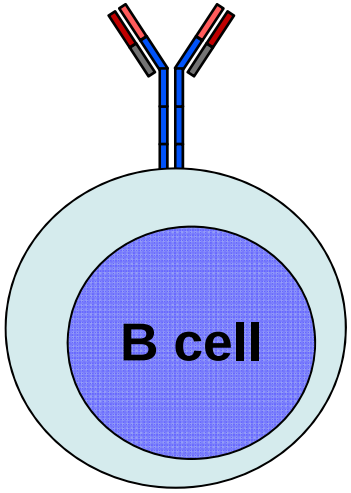
Schnelle Reaktion
(in Minuten bis Stunden)

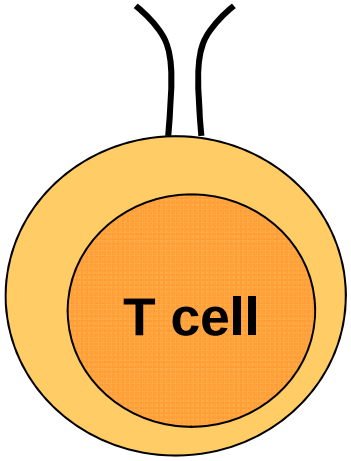
Langsame Reaktion
(6-8 Tage)

Immunologisches
Gedächtnis

Organisierte lymphytische Strukturen







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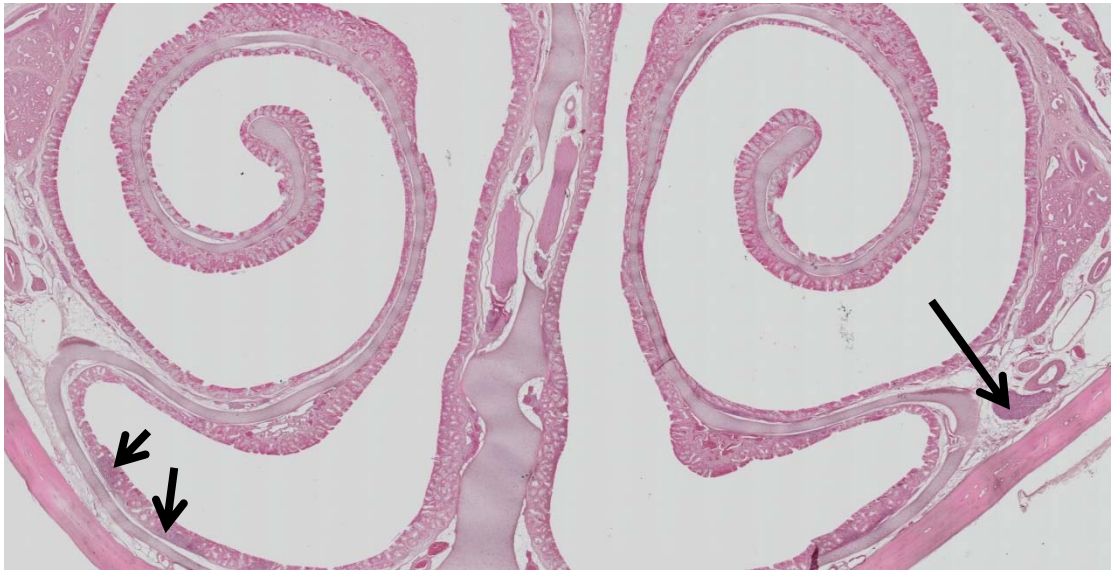
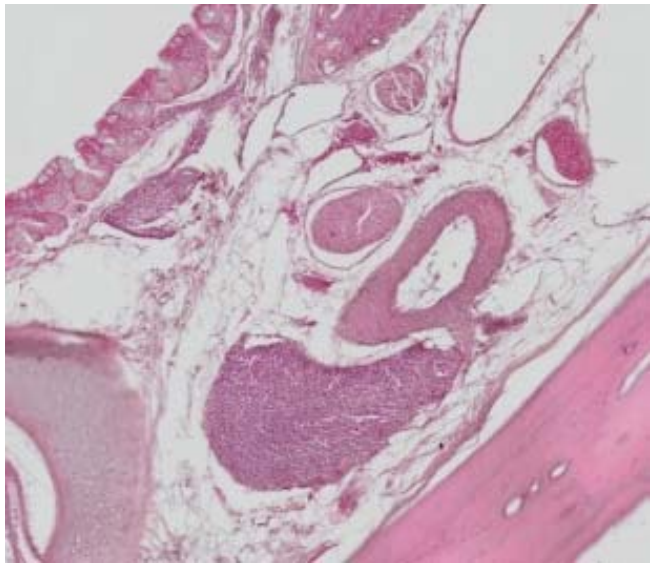
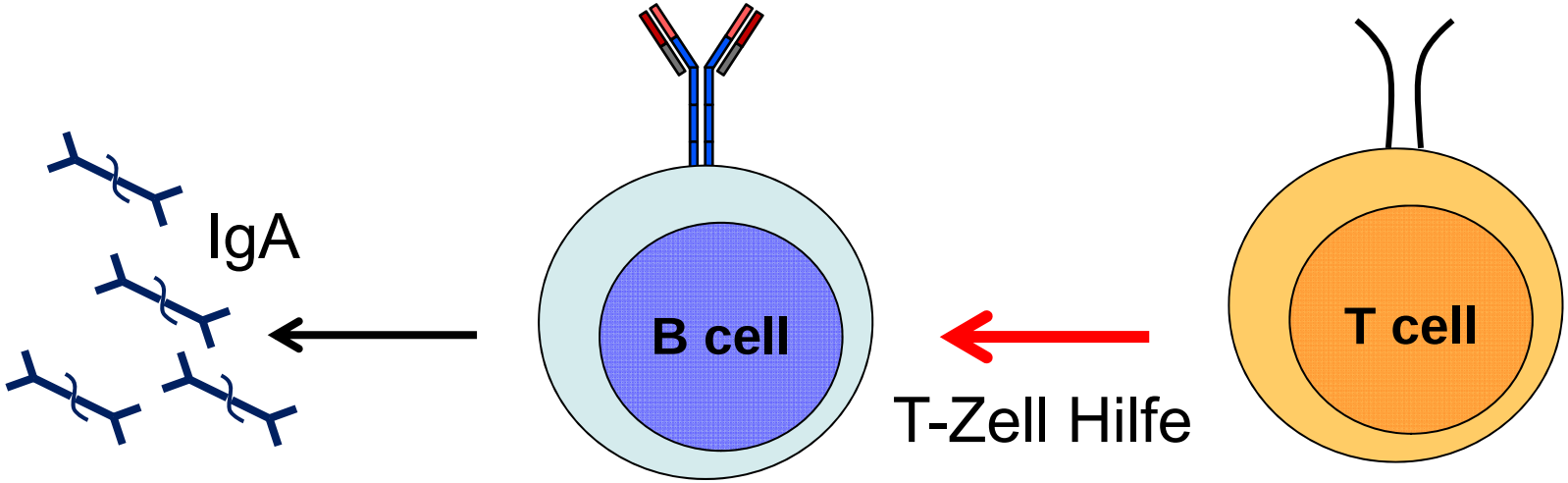
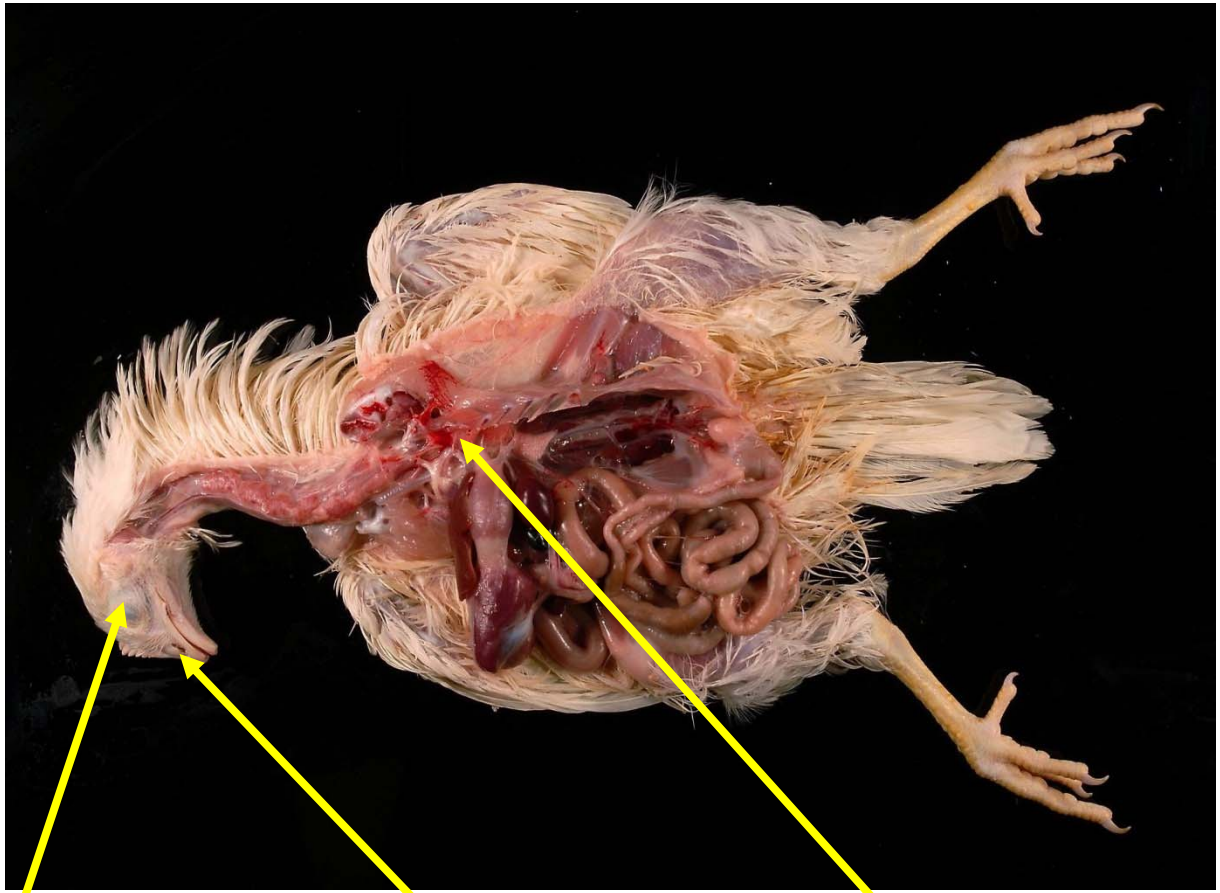


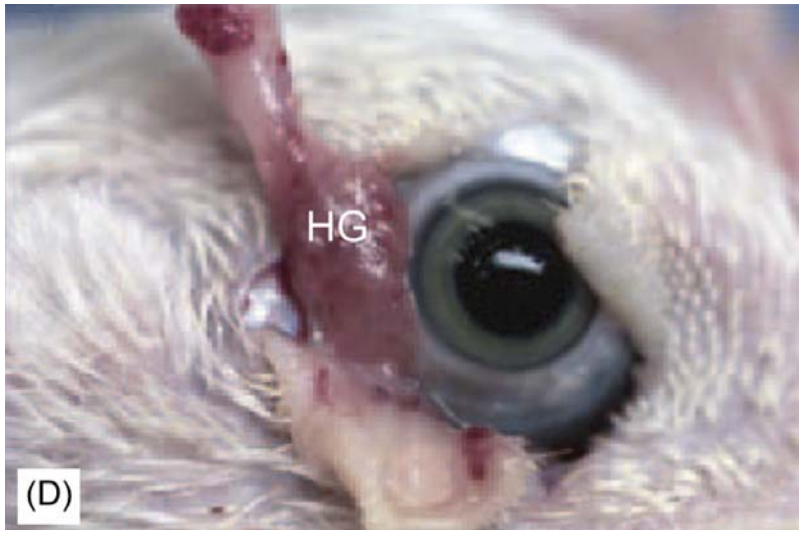


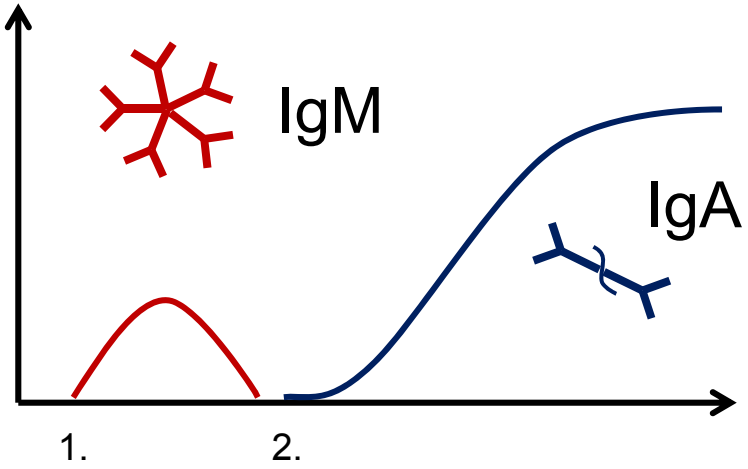


Lymphatische Strukturen im Respirationstrakt

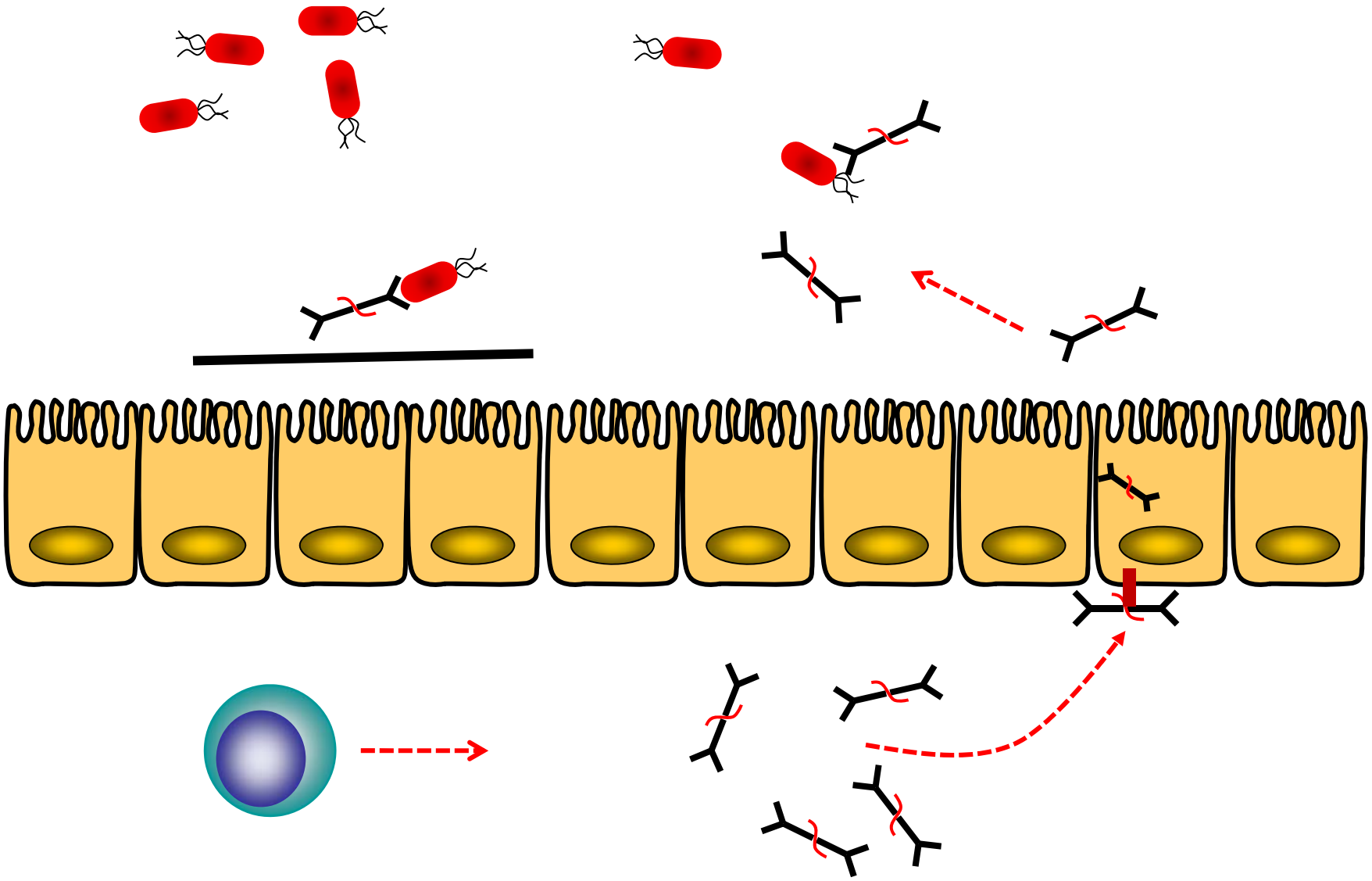


Harder’sche Drüse

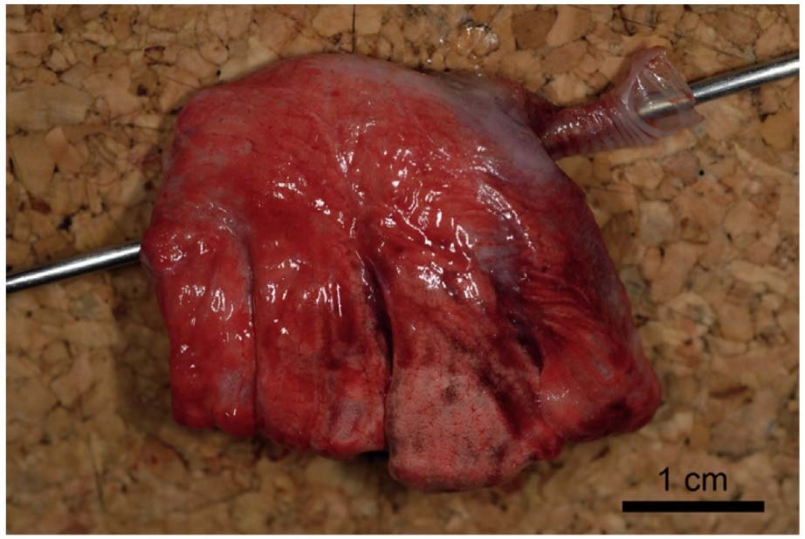




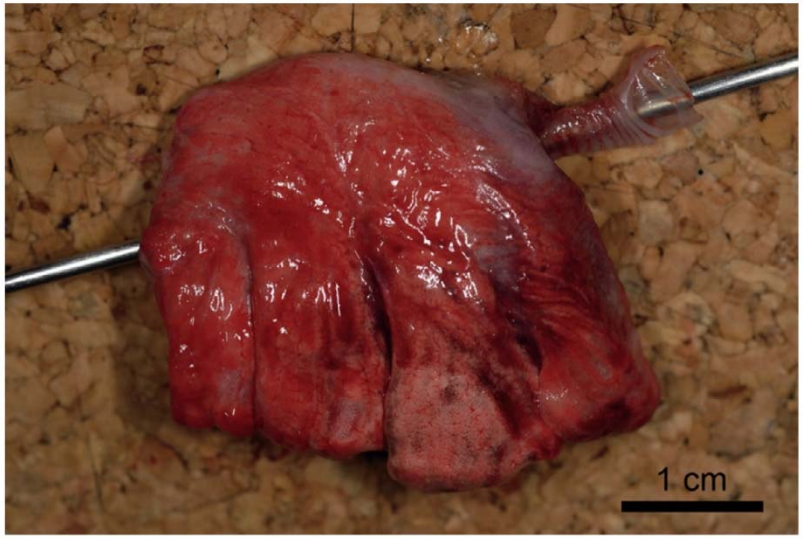
IgA kontrolliert Pathogene

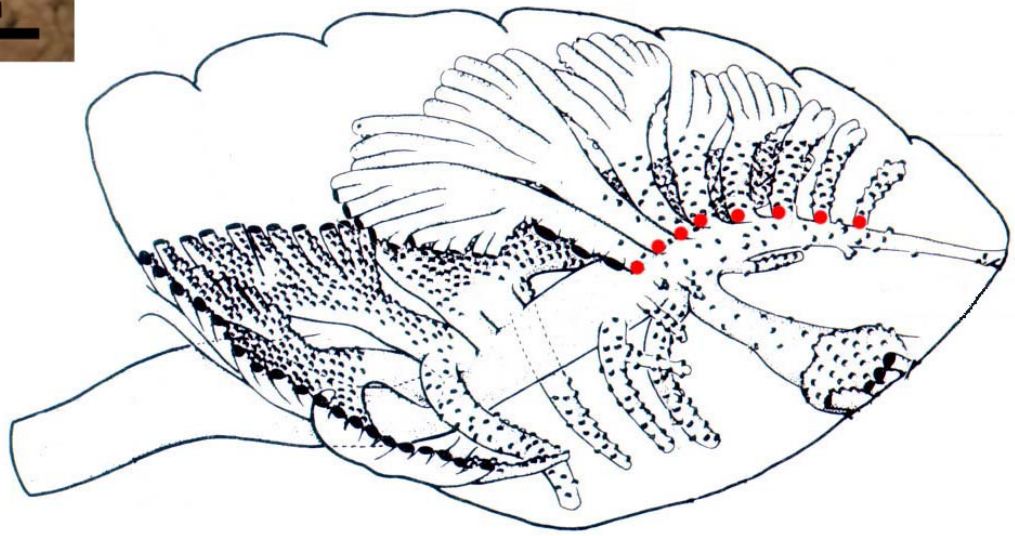


Trachea

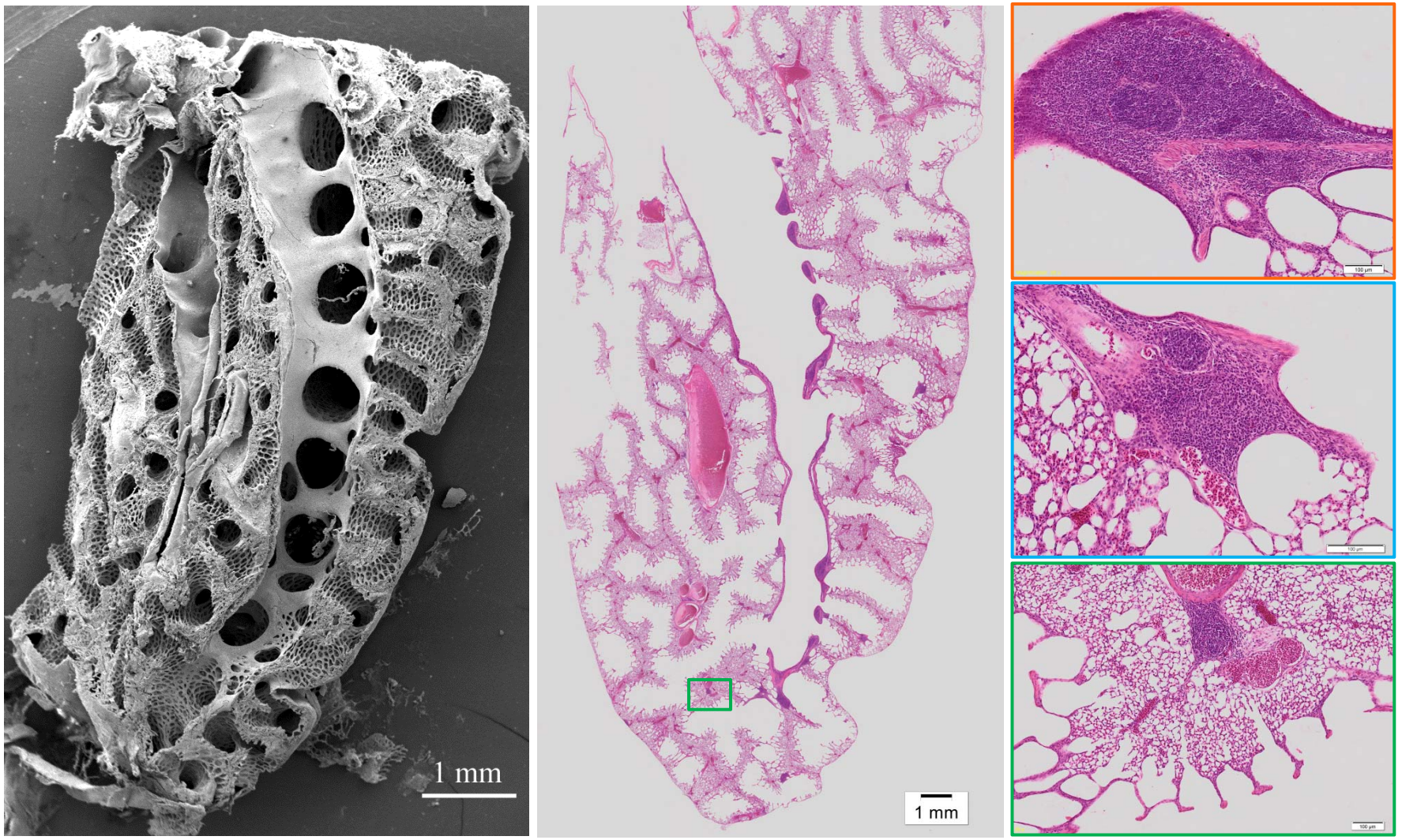


BALT





Immunzellen in der Lunge



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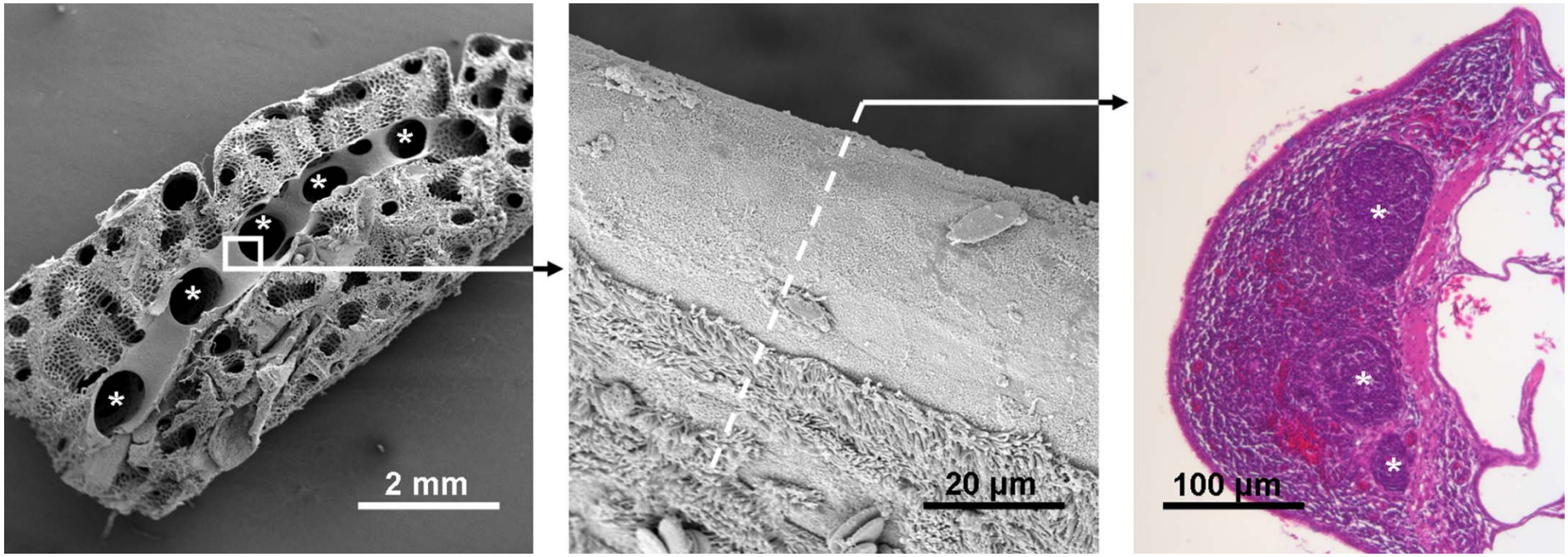
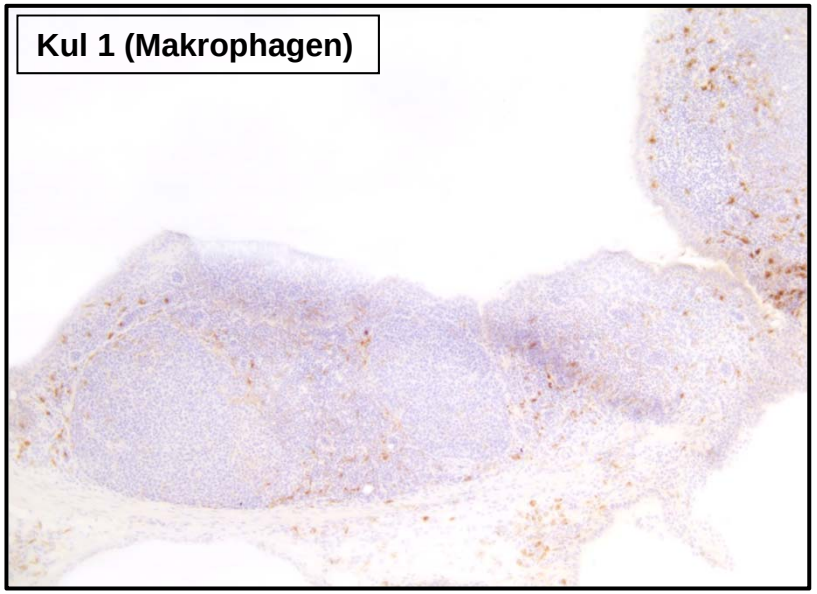
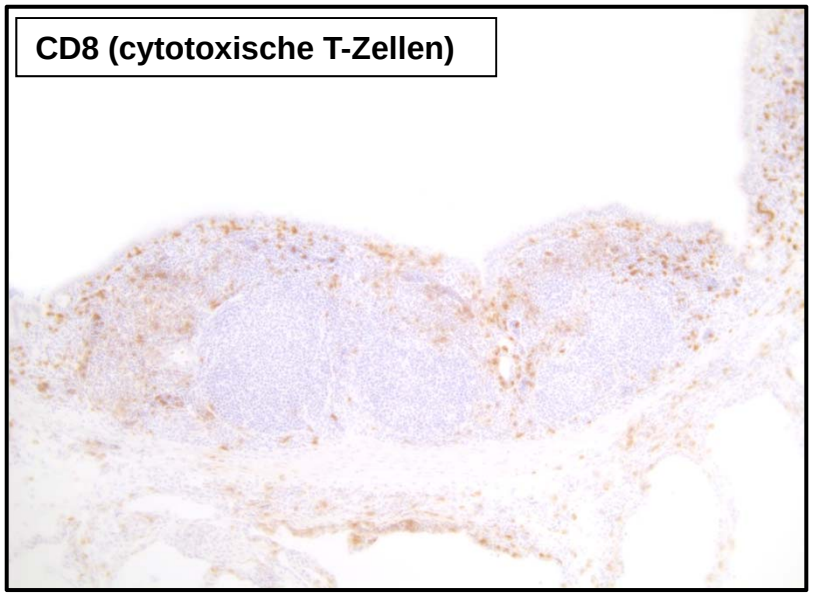


BALT

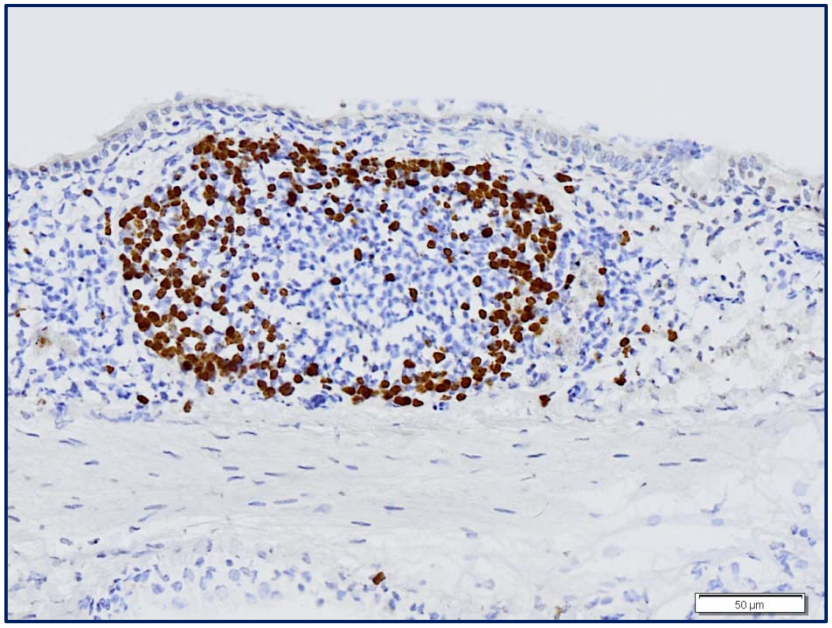

Bu1 (B-Zellen)

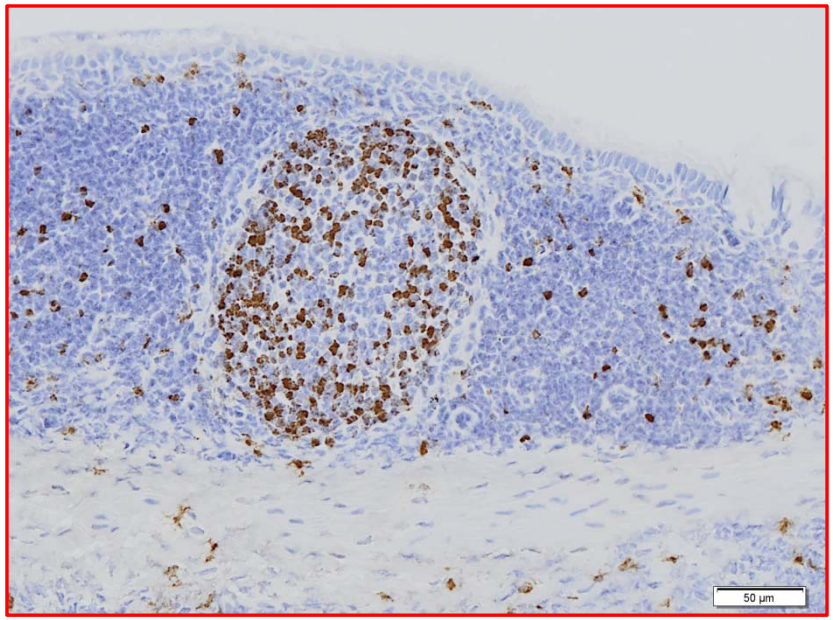

Kul 1 (Makrophagen)


CD4 (T-Helferzellen)

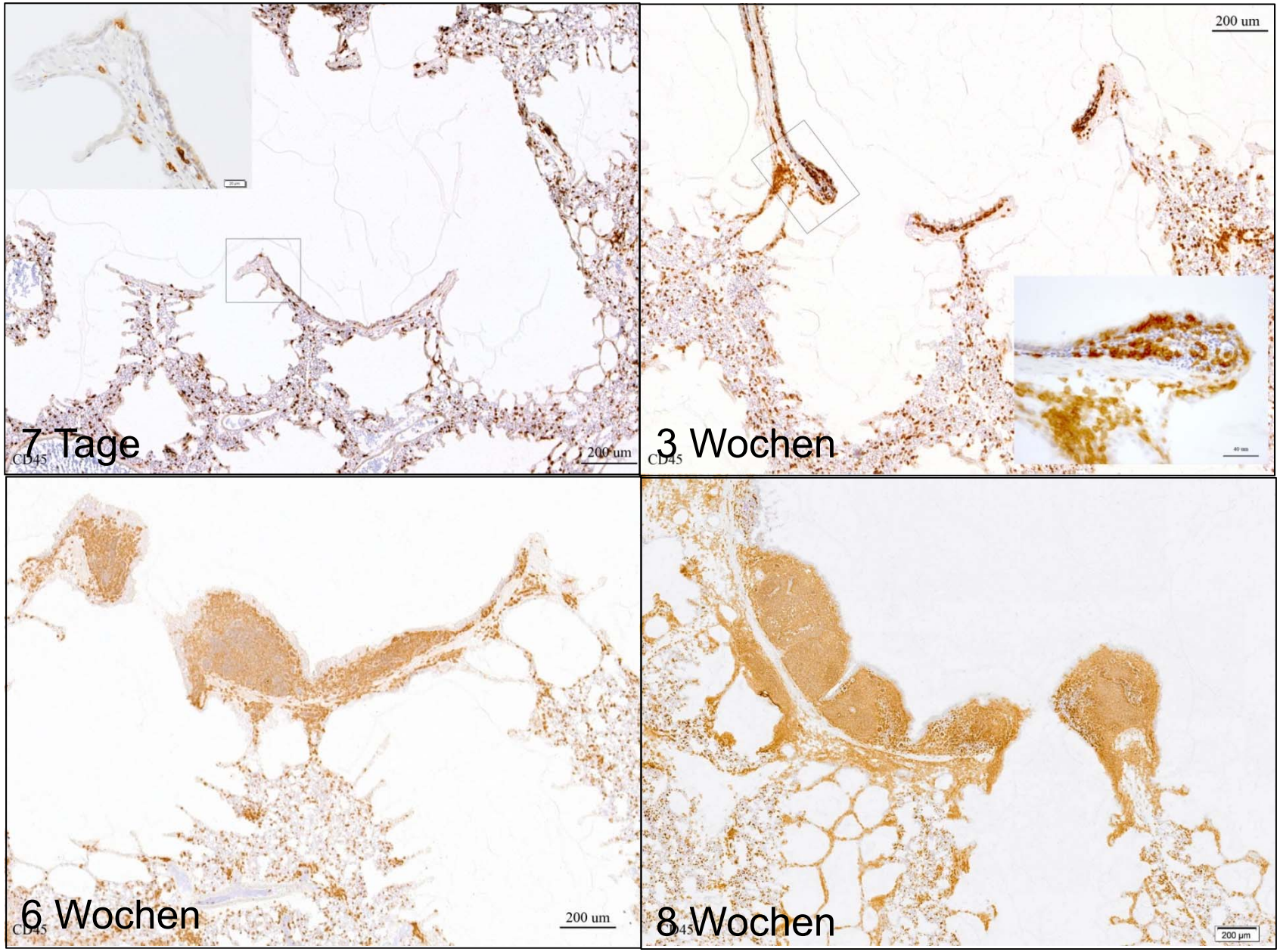

CD8 (cytotoxische T-Zellen)

Proliferation der B-Zellen



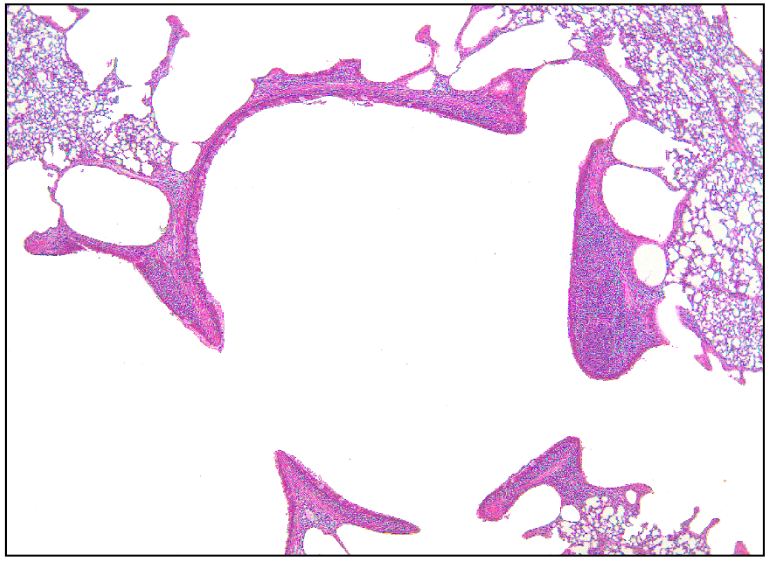


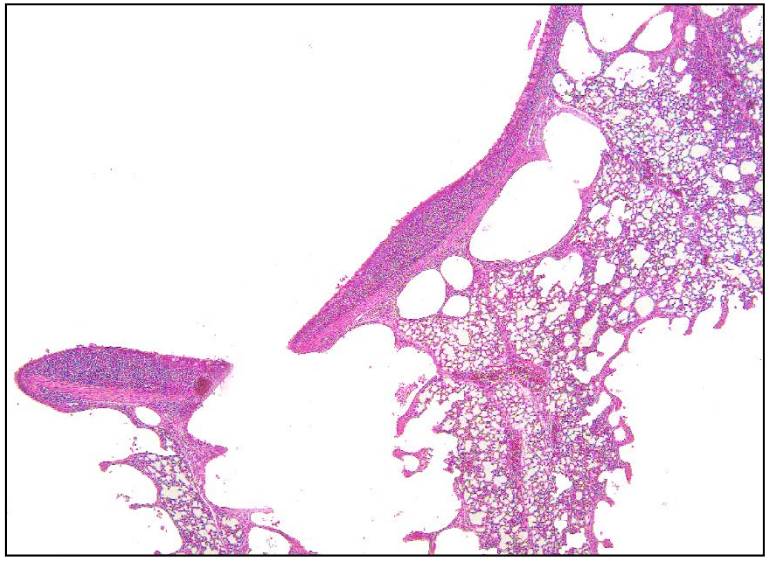
Entwicklung des BALT



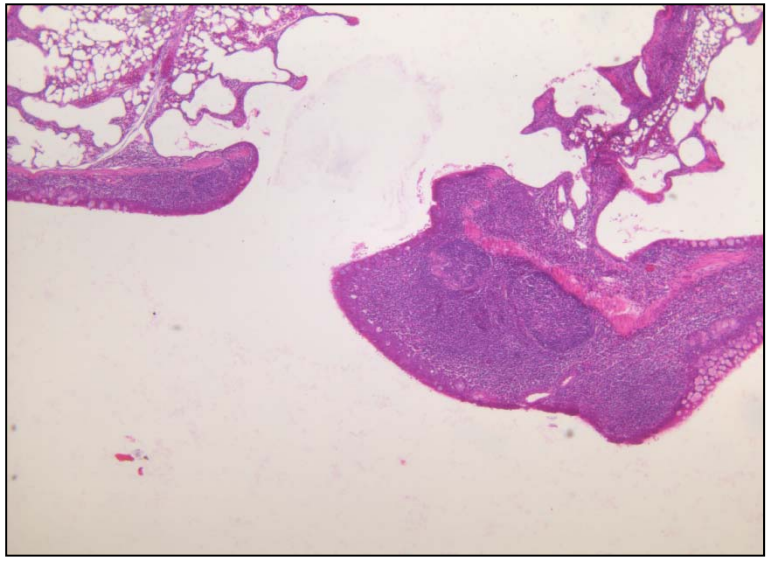
Das BALT ist sehr reaktiv

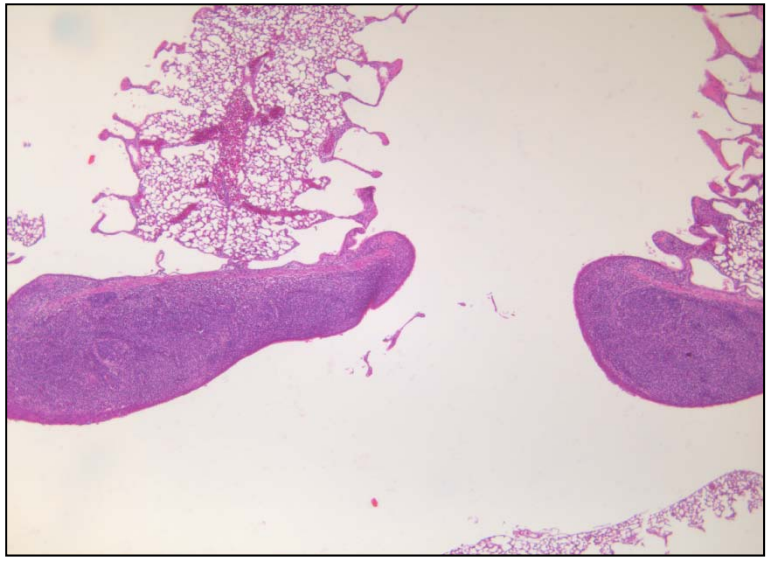
SPF



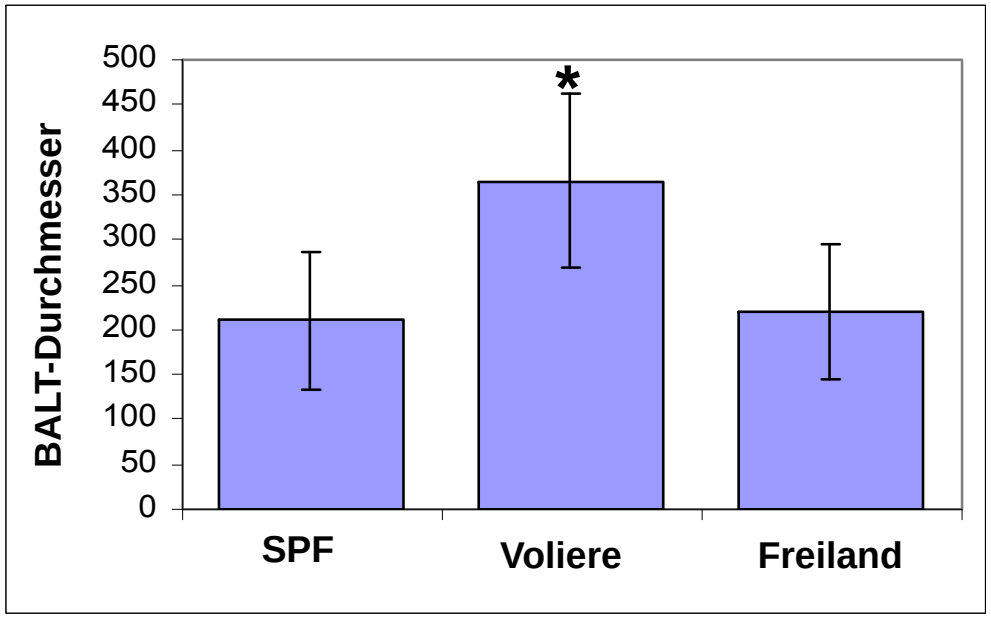


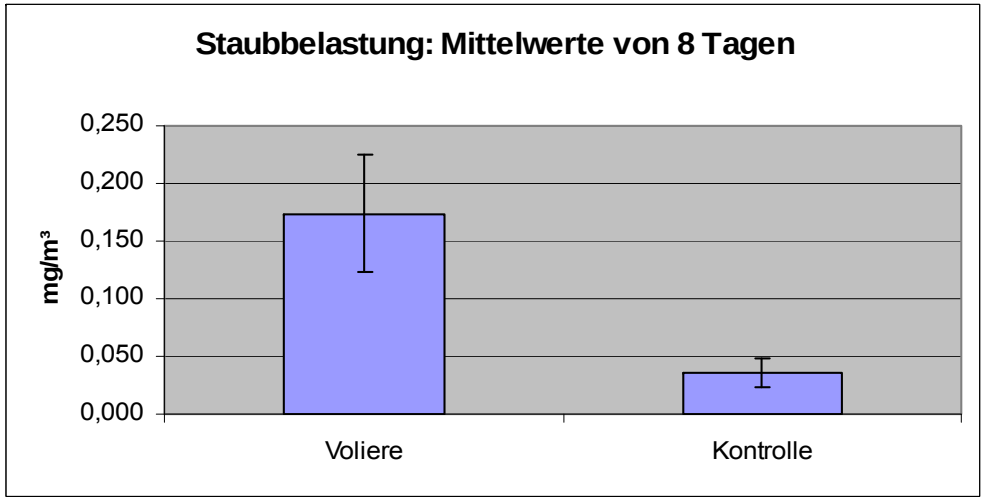
Konventionell

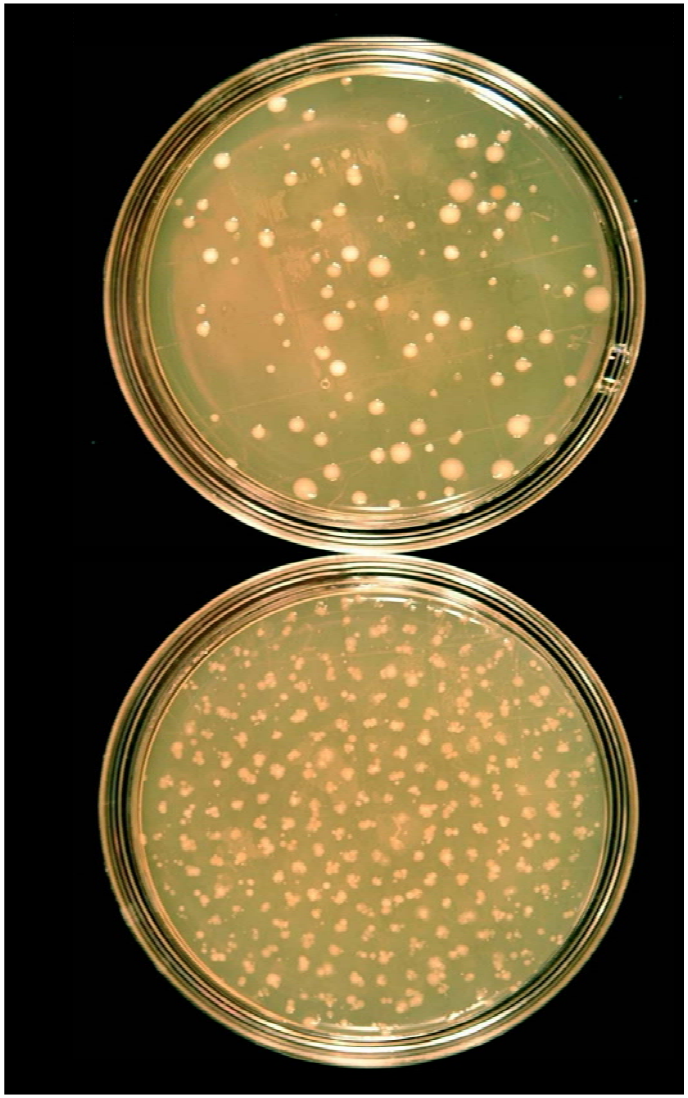




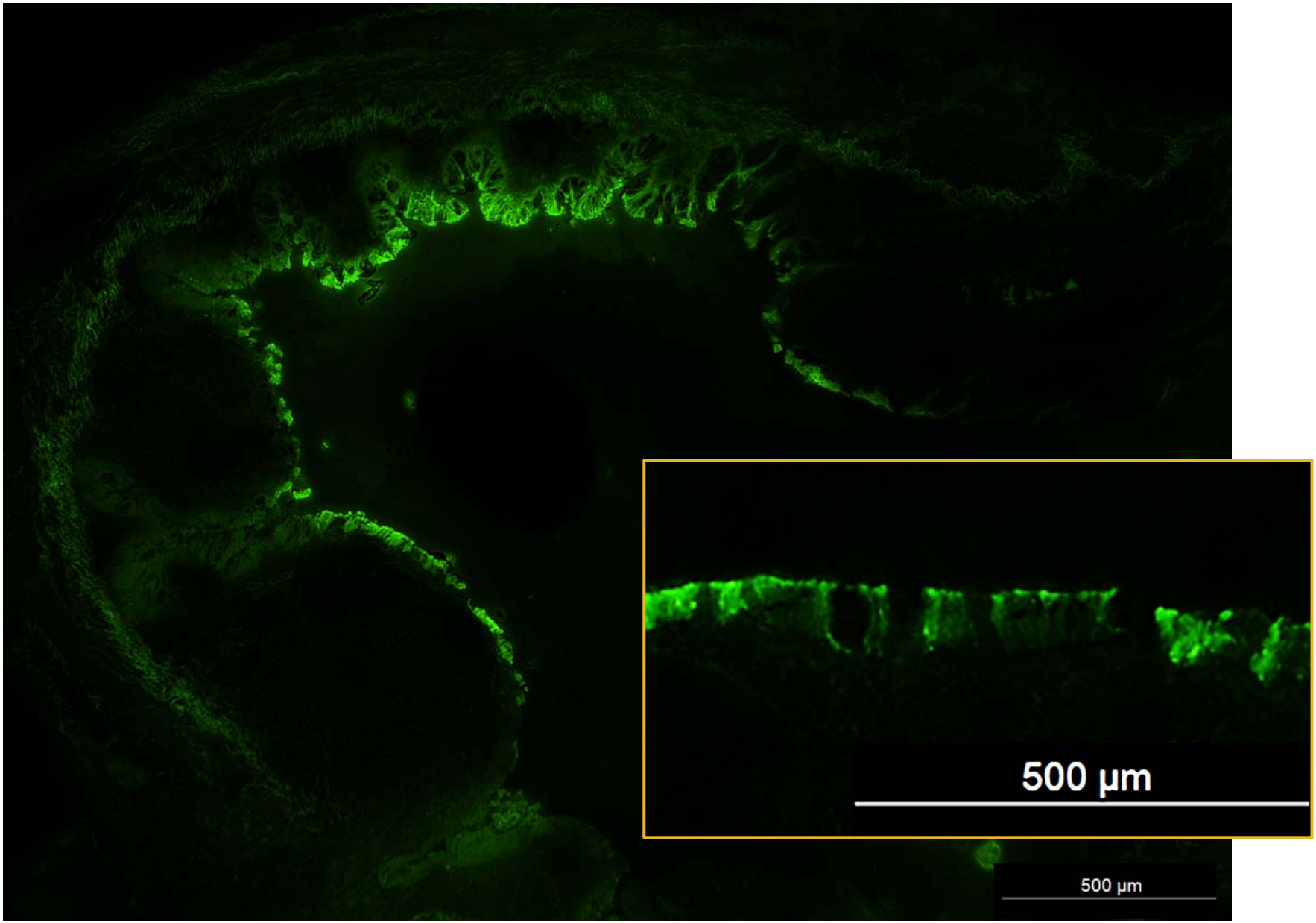
Staubbelastung



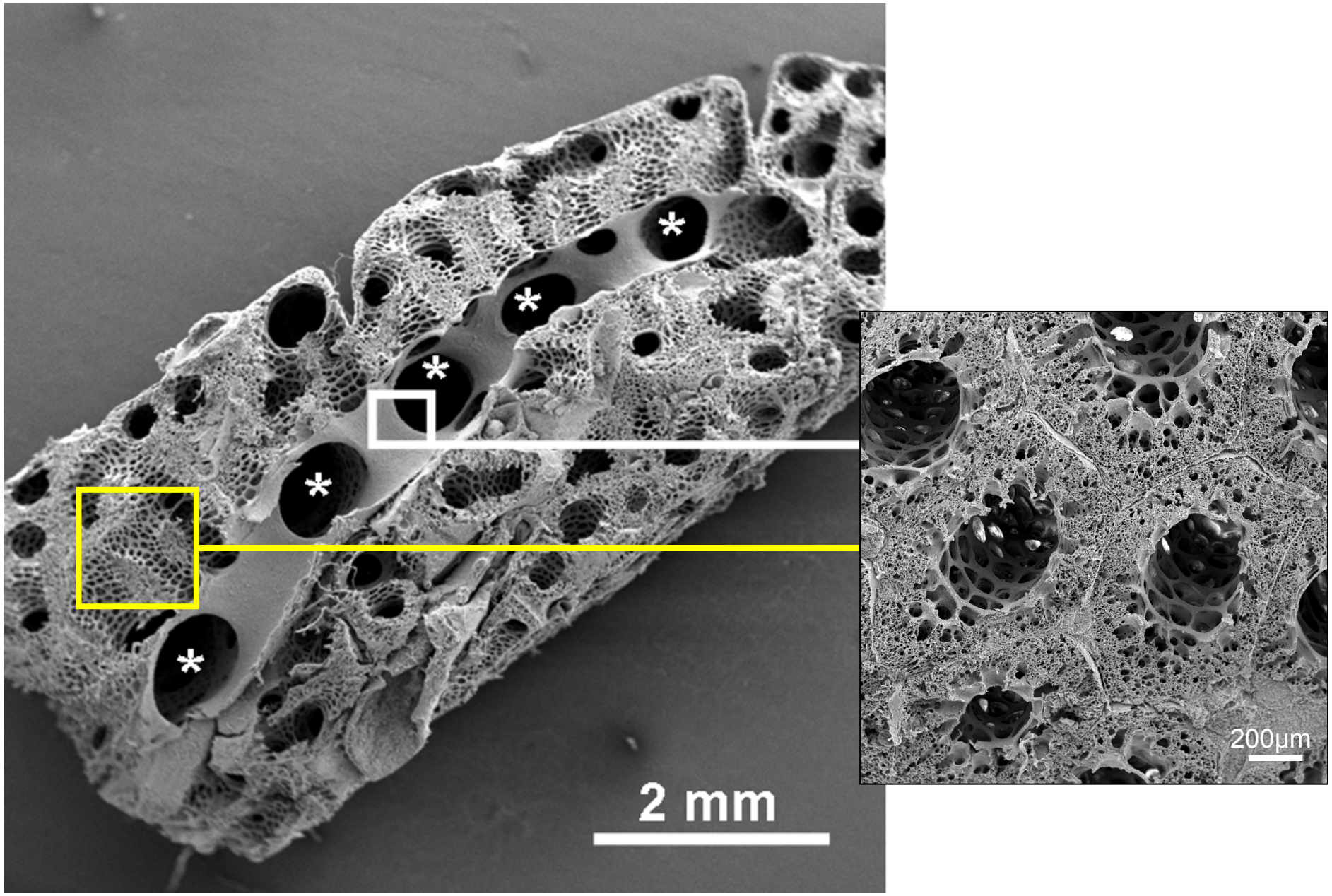




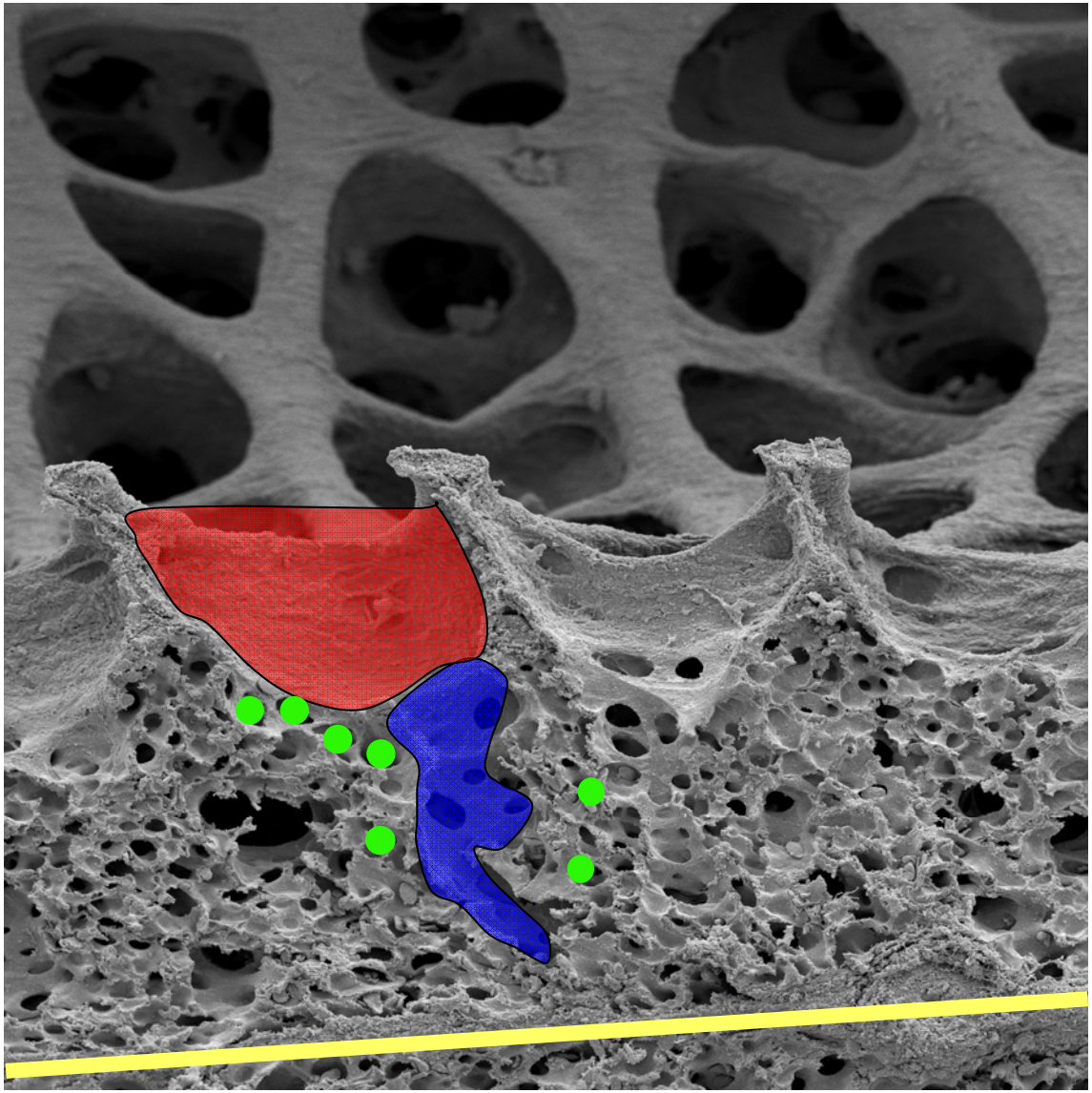
Partikelaufnahme

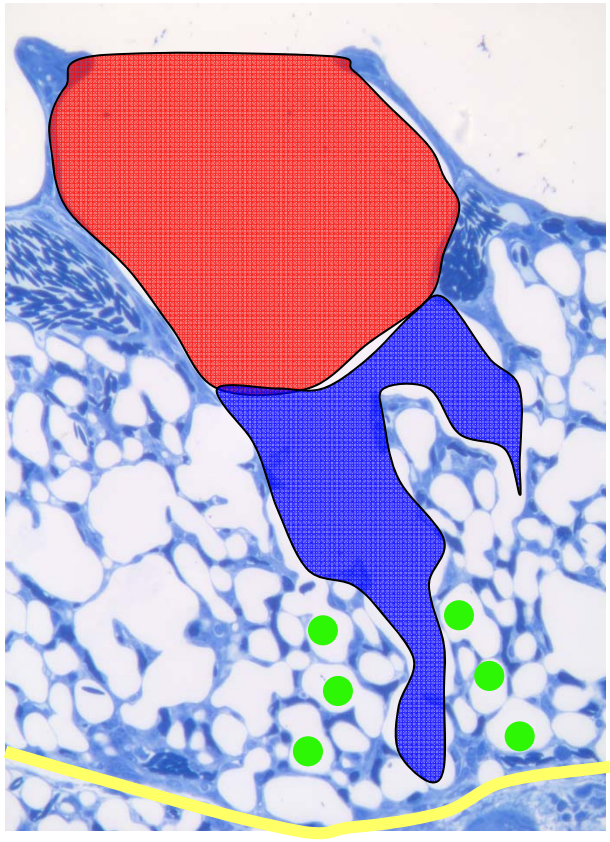


Immunzellen im Parenchym

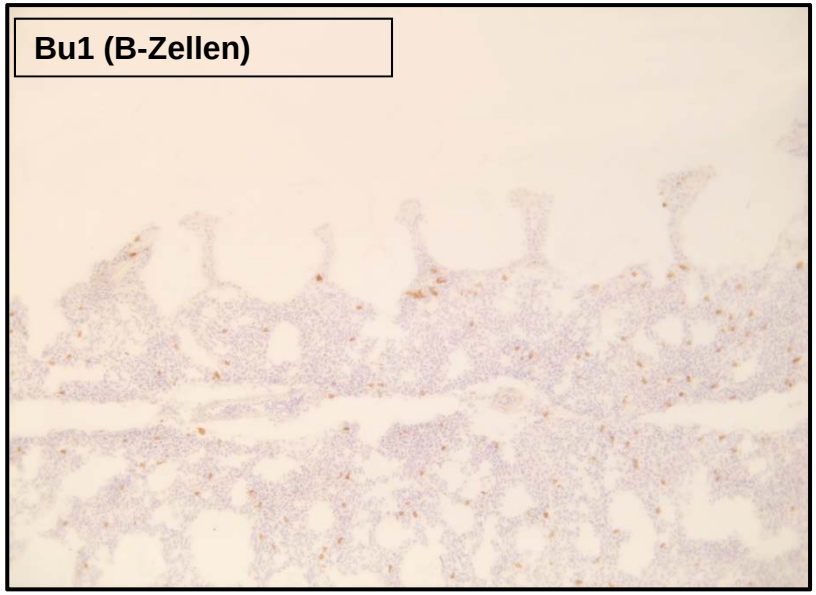


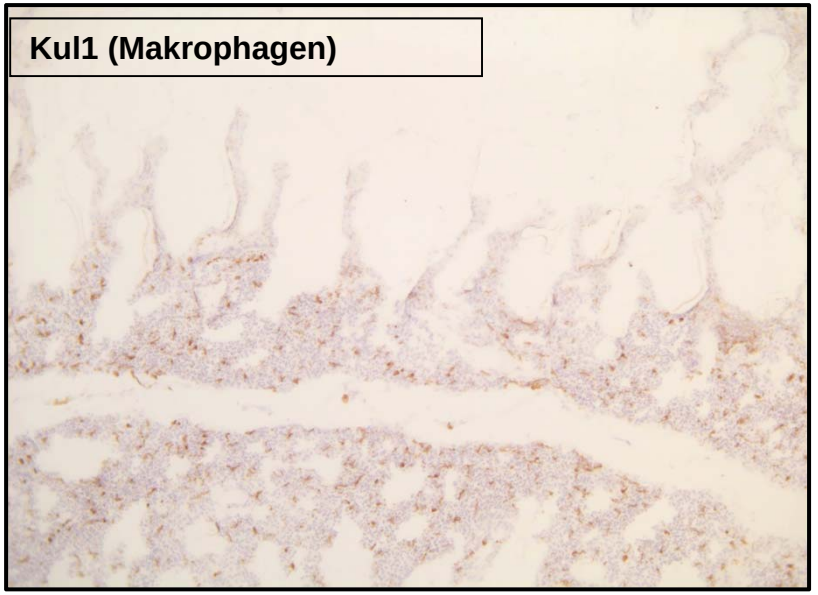
Struktur des Parenchyms



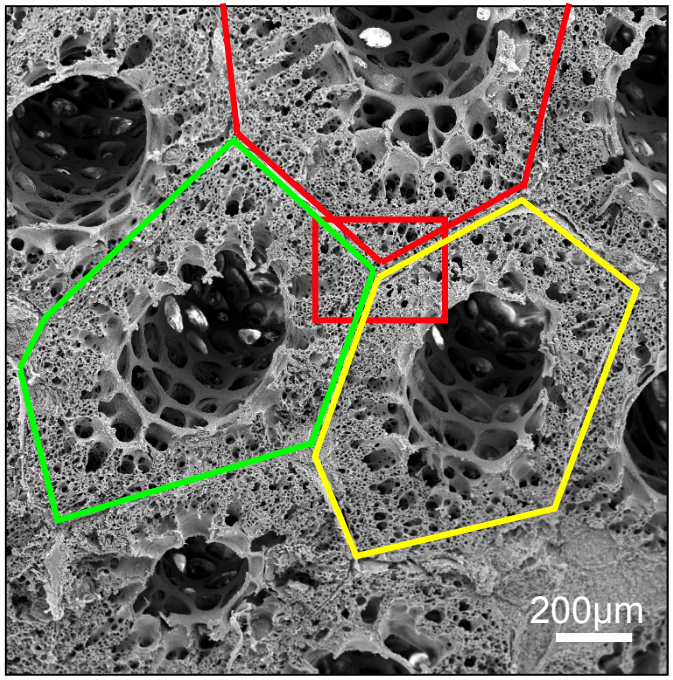


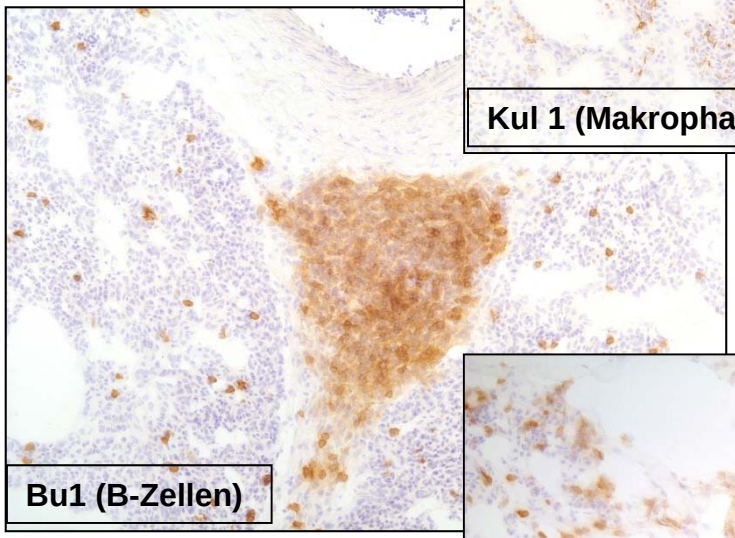
Immunzellen im Parenchym

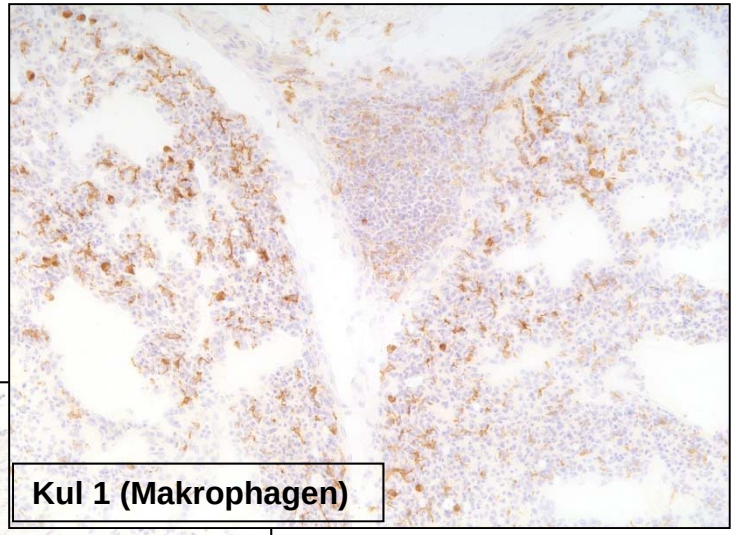


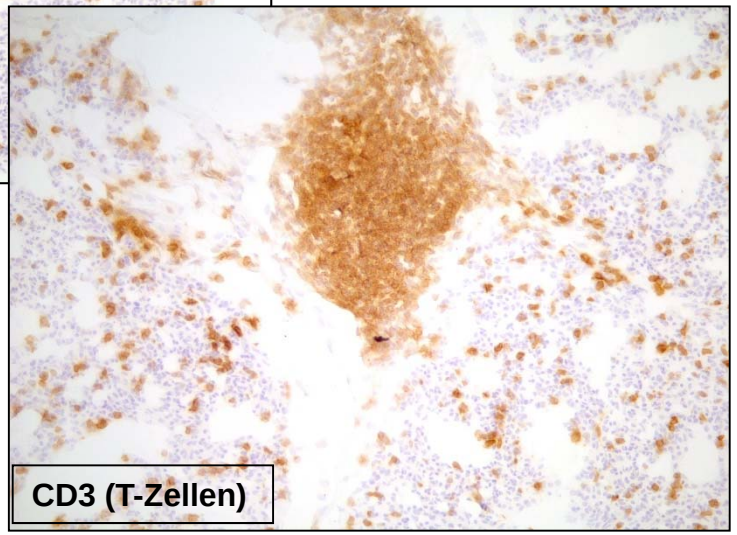


Lymphoide Knötchen

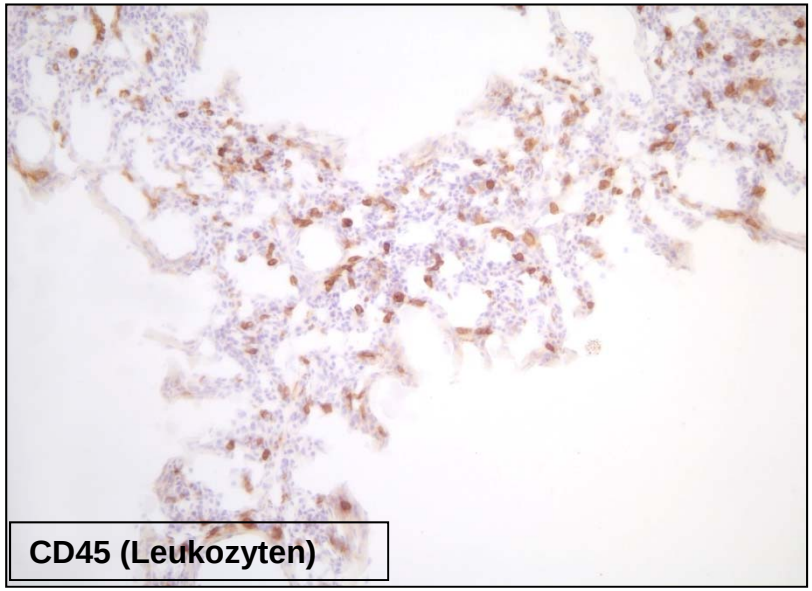


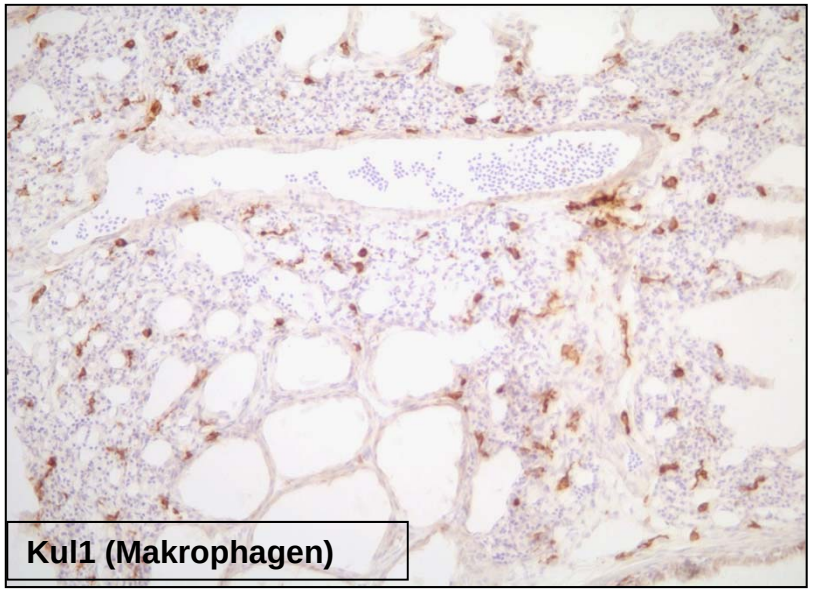


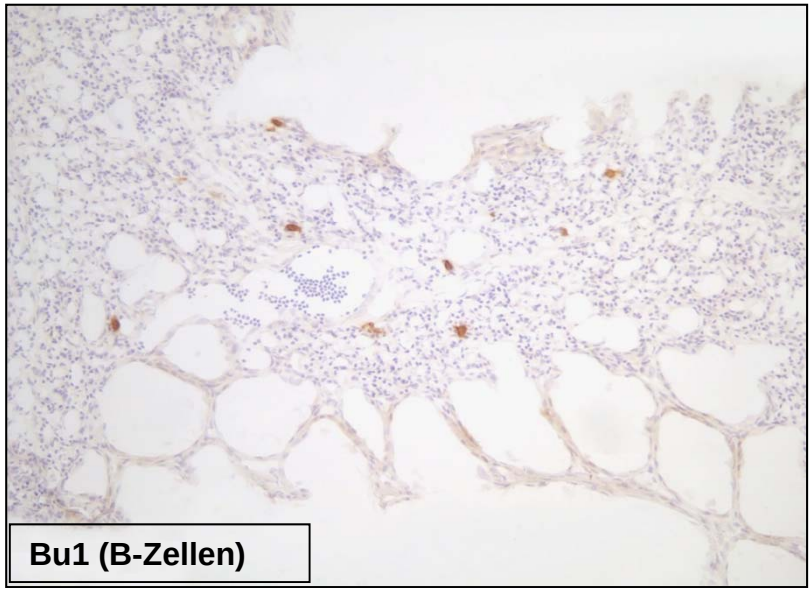


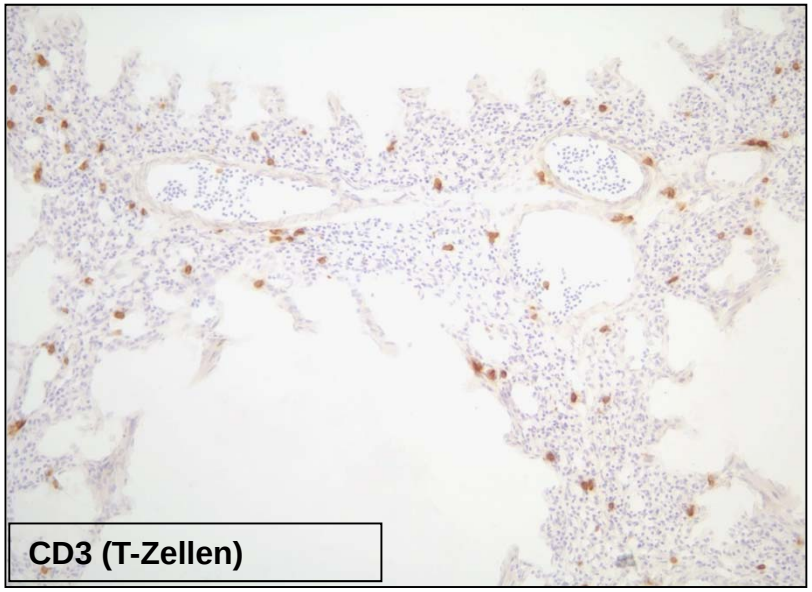


Entwicklung 1. Woche

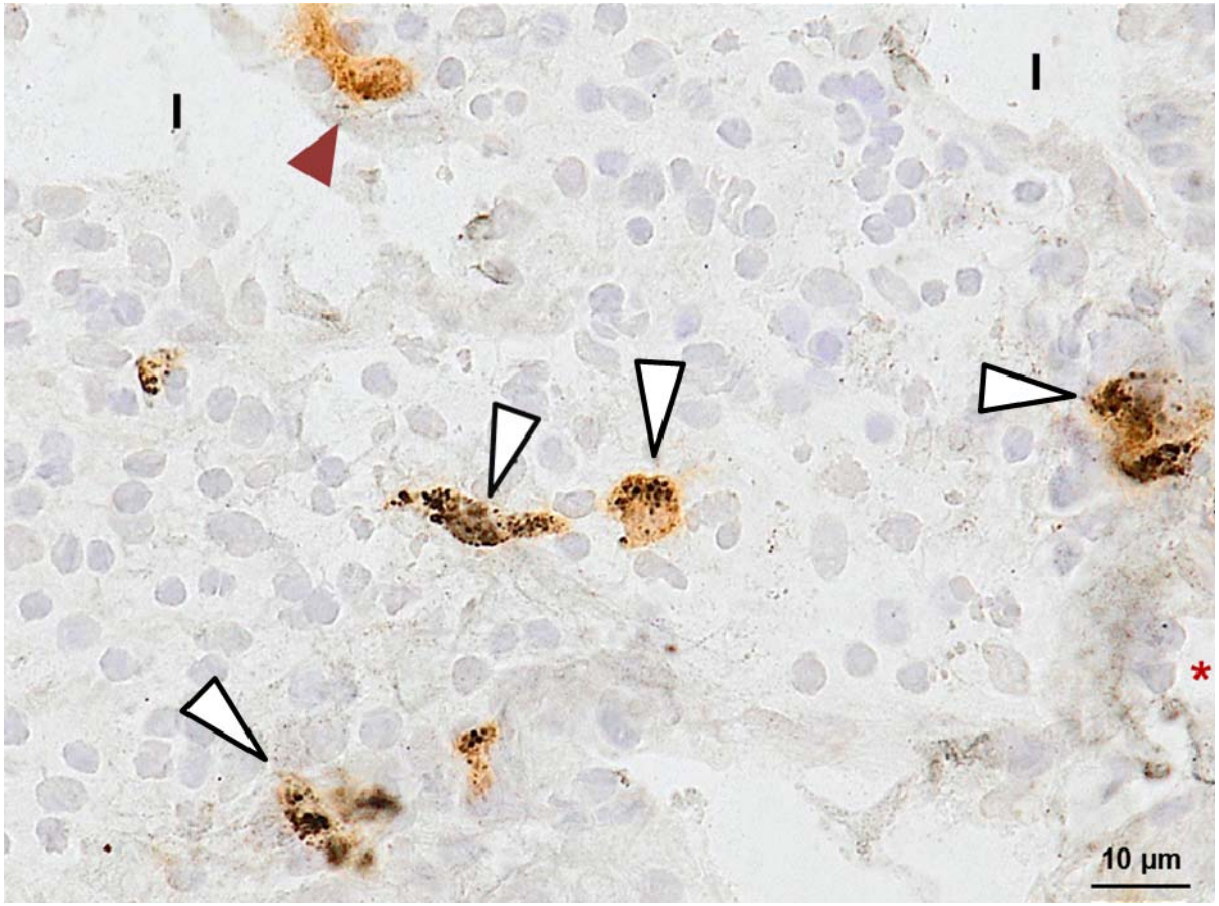




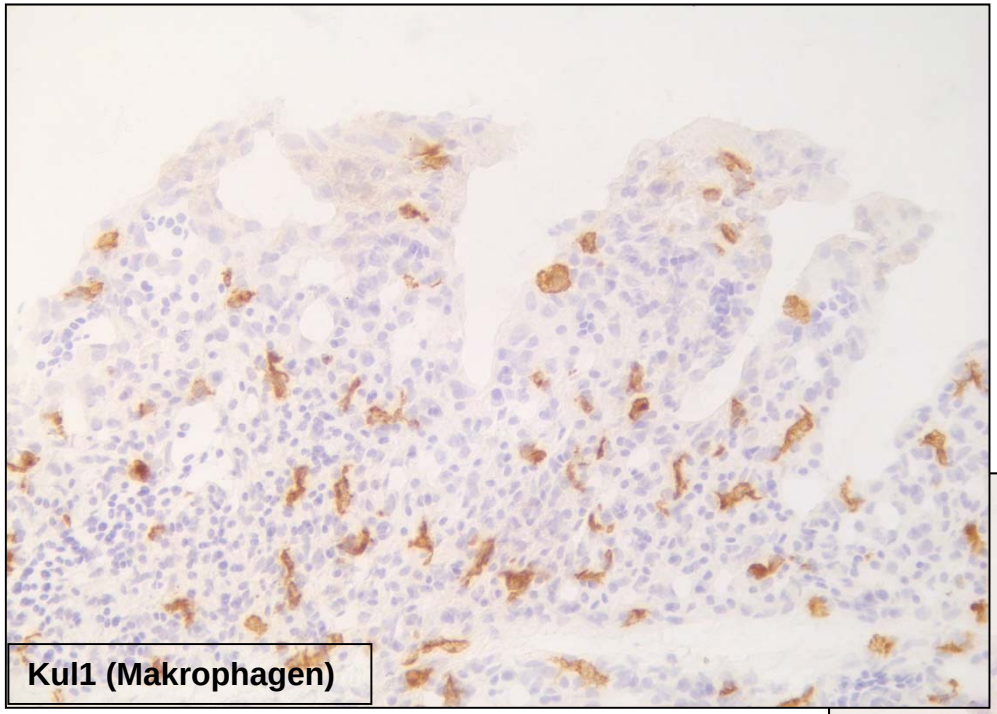




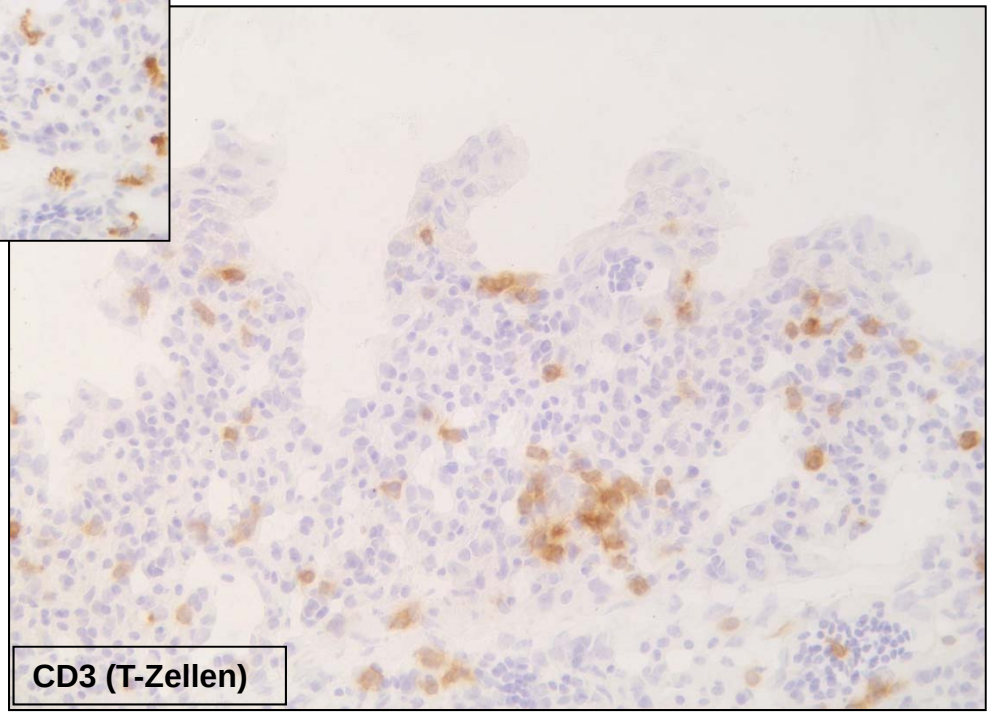
Phagozytose



Entwicklung 3. Woche

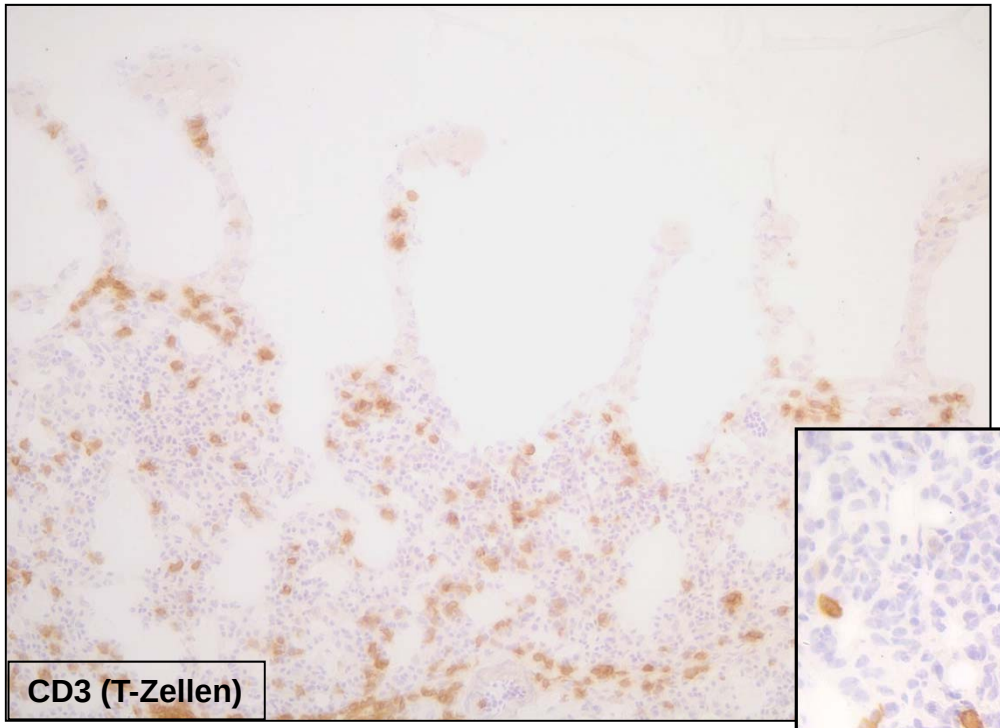


Kul1 (Makrophagen)

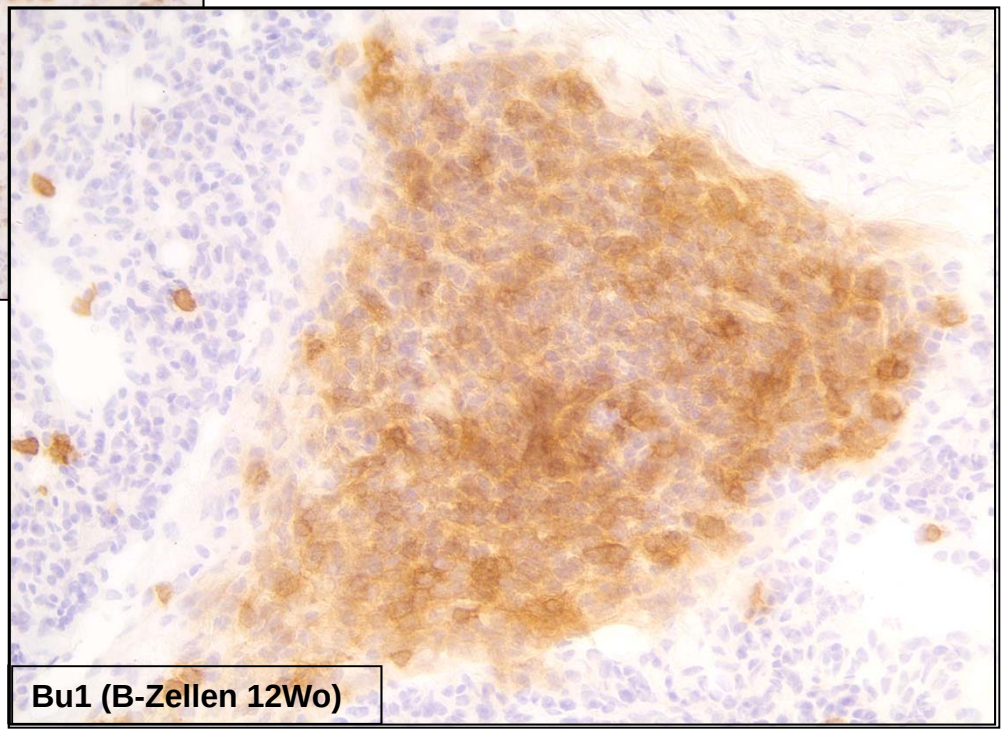


CD3 (T-Zellen)

Entwicklung 6 bis 12 Wochen

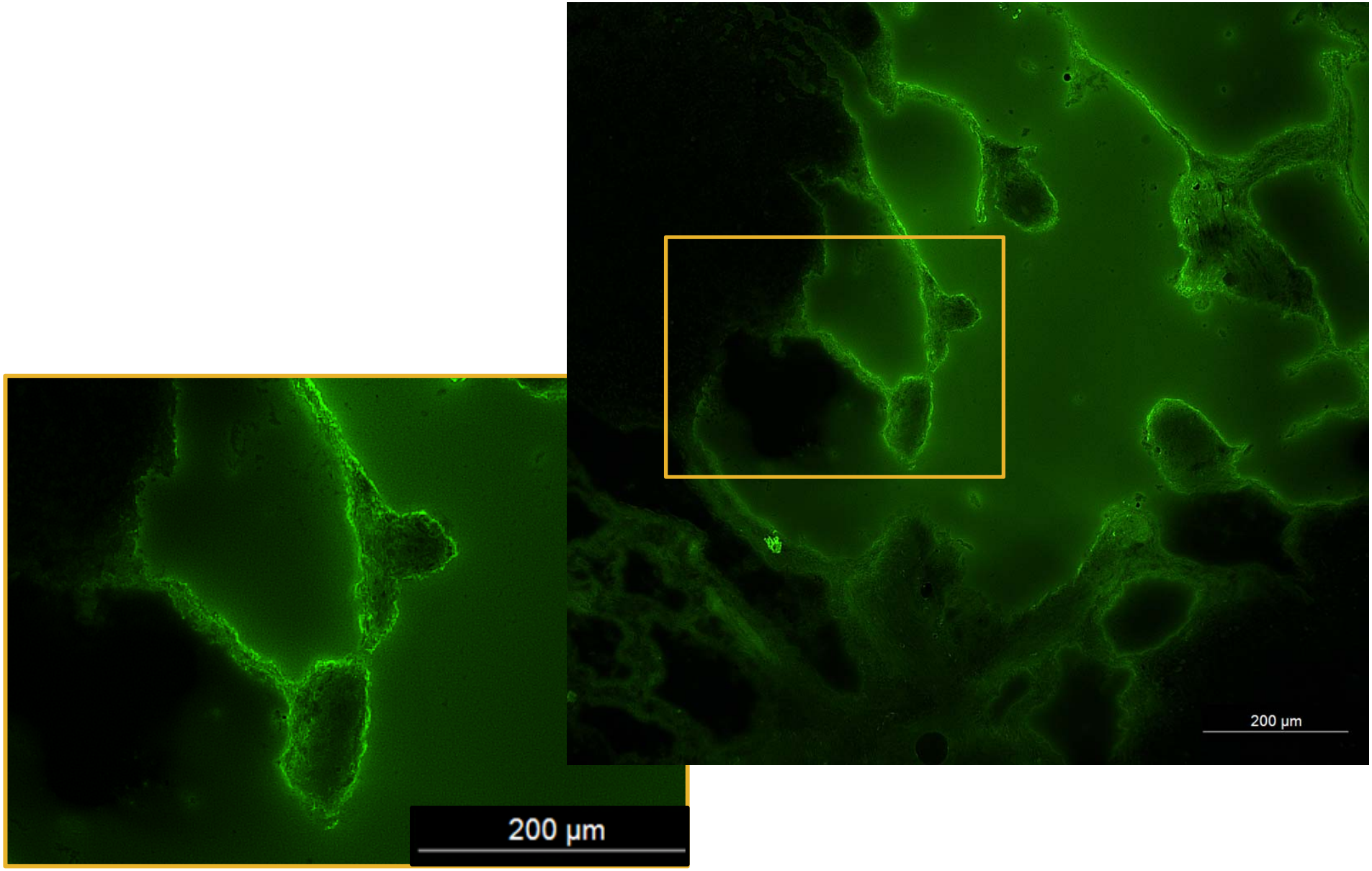


CD3 (T-Zellen)

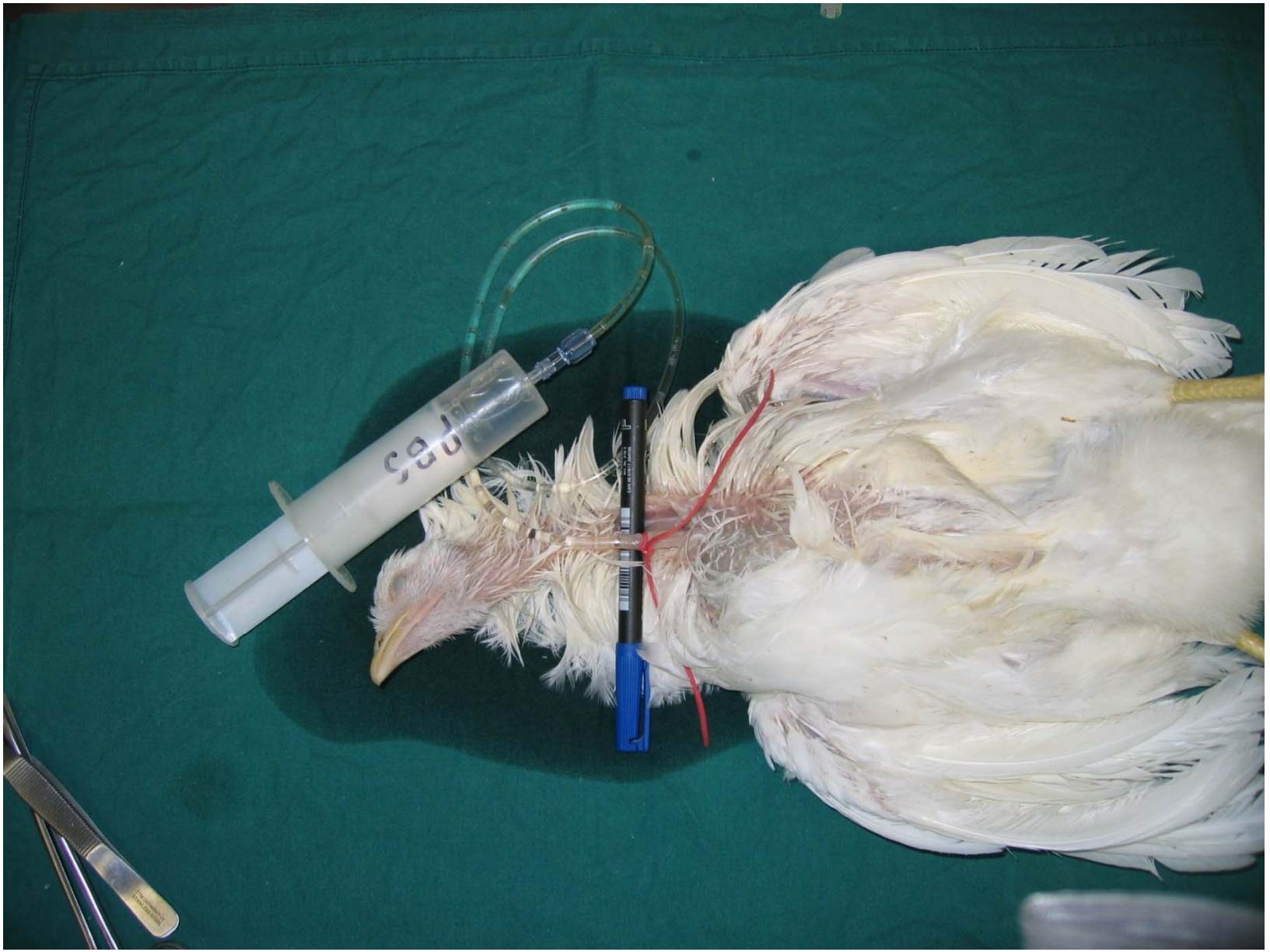


Bu1 (B-Zellen 12Wo)

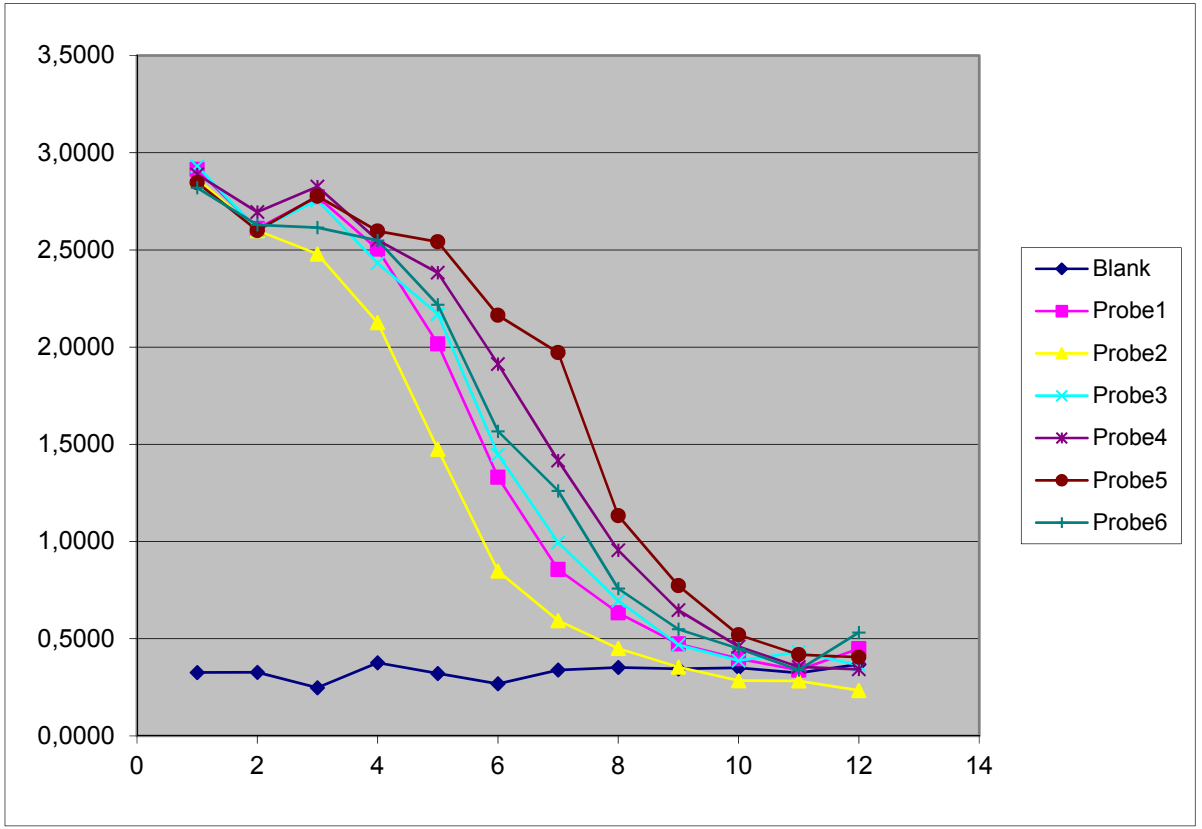
Partikelaufnahme



Lungenlavage



IgA in der Lungenlavage



Die IgA- Produktion braucht T-Zellhilfe

Table 3. Effect of anti-TCR2 treatment and thymectomy on IgA production

Treatment group	No. of animals	IgA levels, μg/ml		
		Serum	Lung lavage fluid	Bile
Control	7	385 ± 48	10 ± 3	16,446 ± 4327
Thymectomy	10	266 ± 81	6 ± 3	12,979 ± 6959
Anti-TCR2 and thymectomy	7	25 ± 4	0.01 ± 0.003	2 ± 2

*Values are means ± SE from 6-week-old chickens.

Cihak et al, PNAS 1991