UNIVERSITÄT BERN

Kolloquium Hornstatus Rind
03.11.16

Führt die Enthornung von Kälbern zu chronischen Schmerzen?

Anatomischer Teil

Svenja Stettler
Universität Bern

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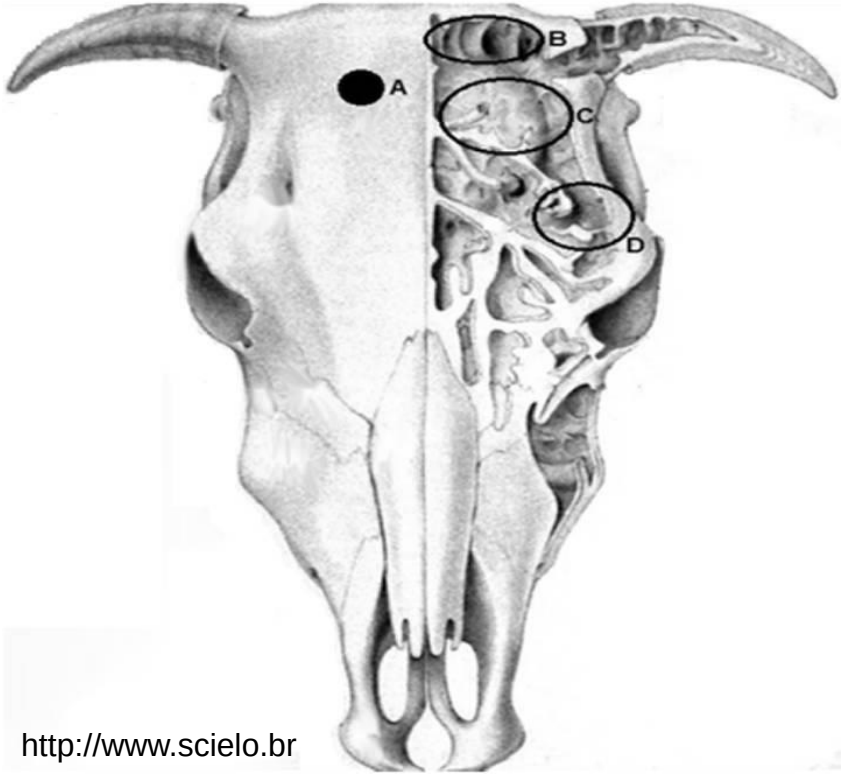
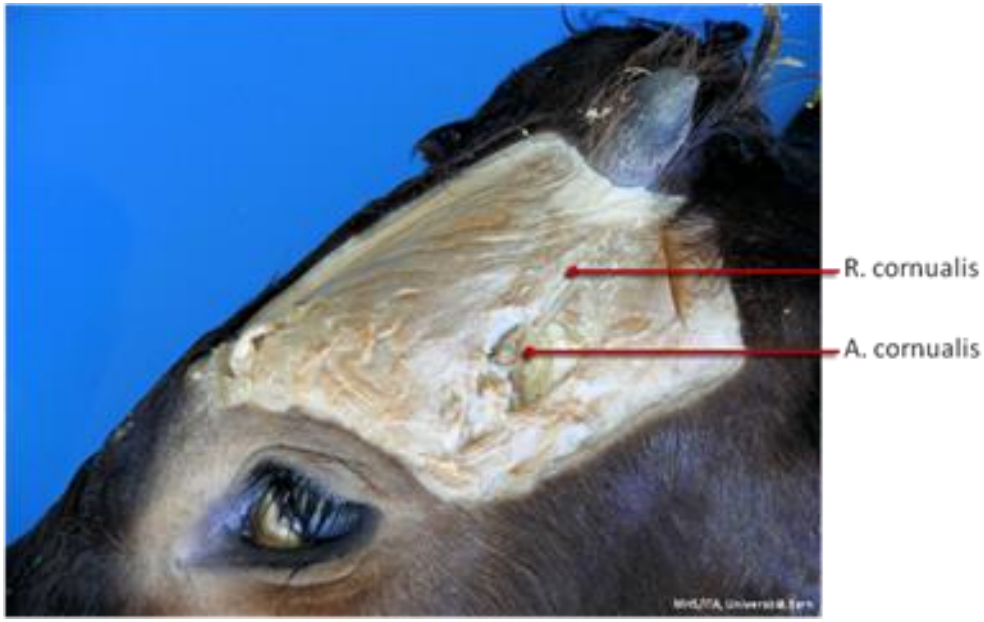
Einleitung
Anatomie

Hornzapfen



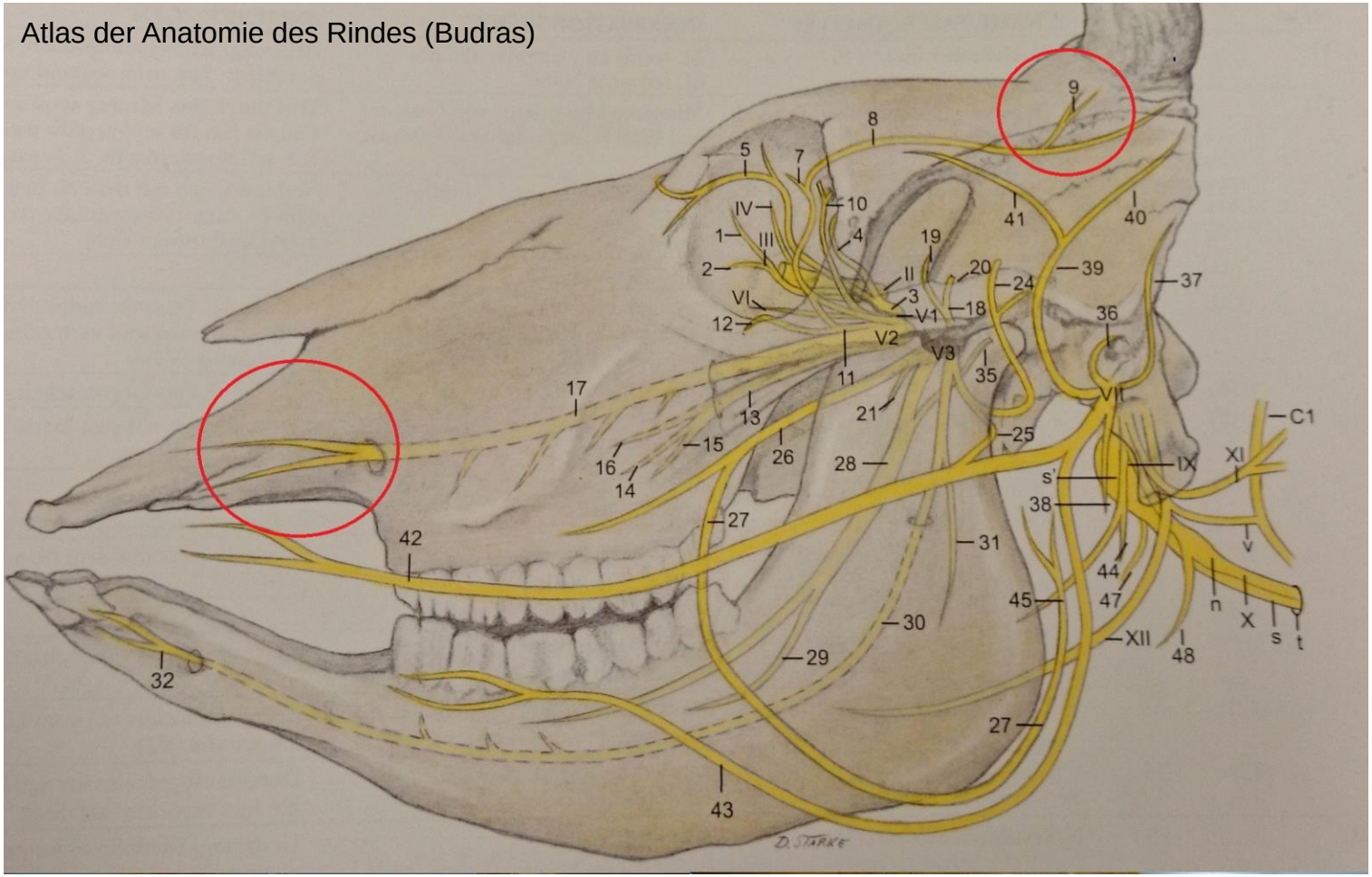
http://www.scielo.br

Innervation



Einleitung

Anatomie



Ziel der Studie

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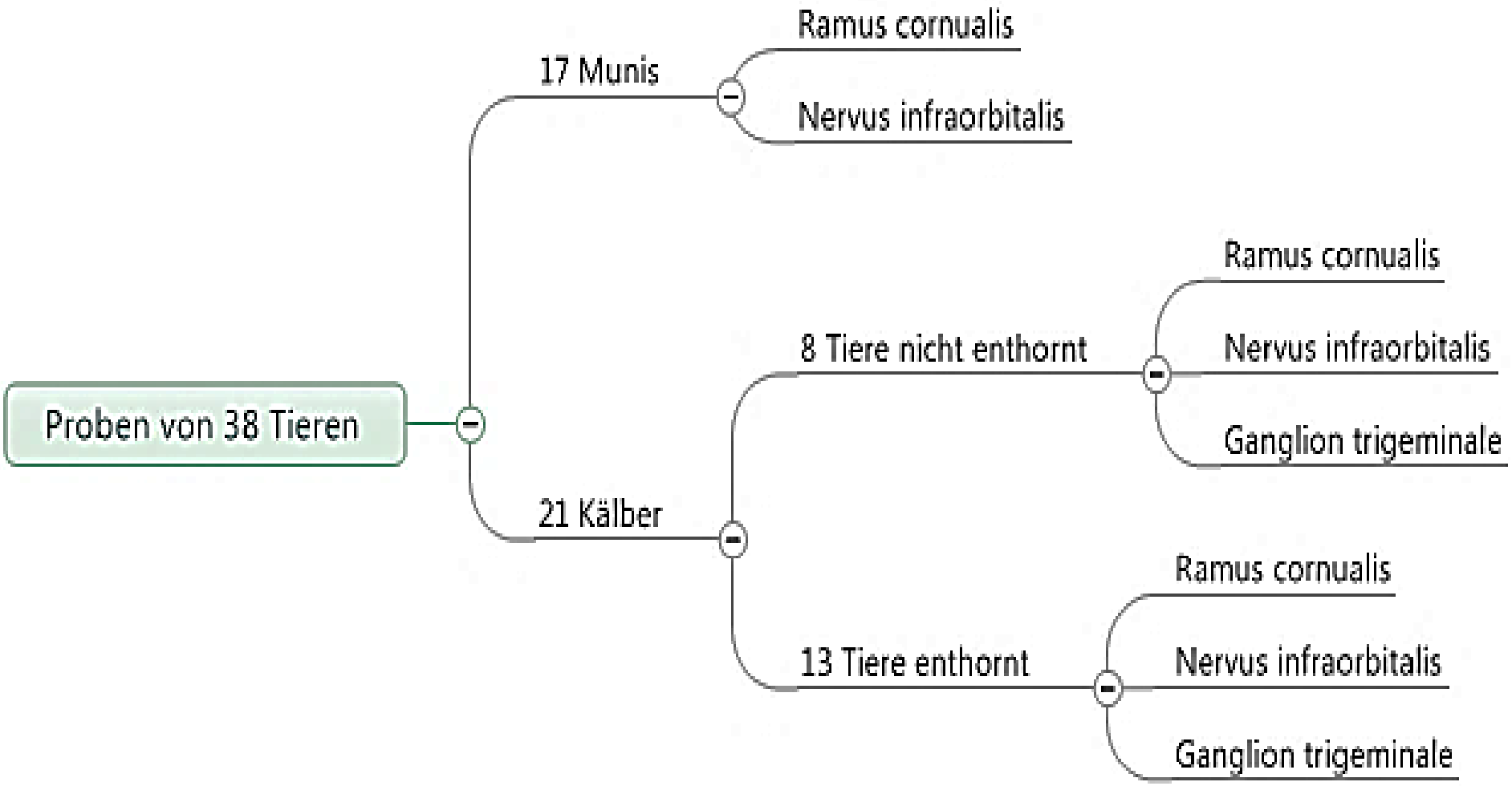
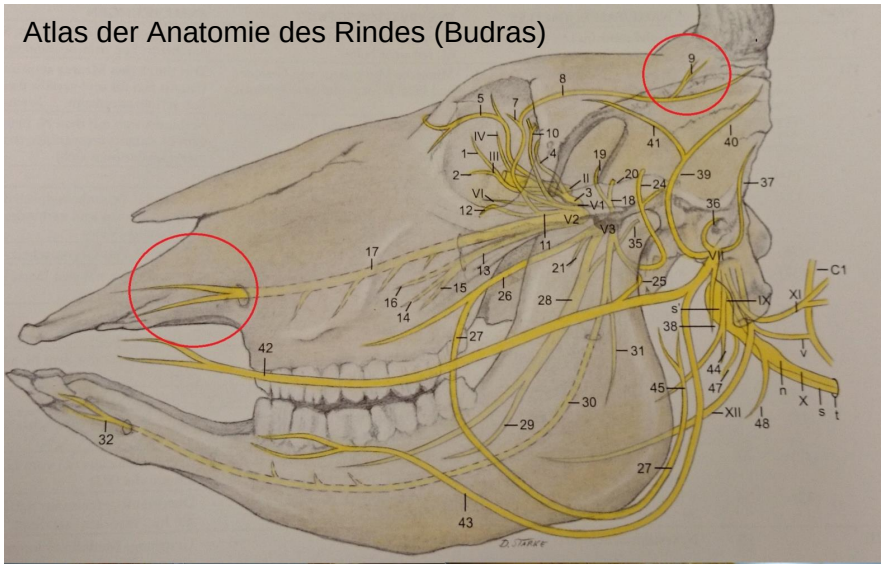
Hypothesen:

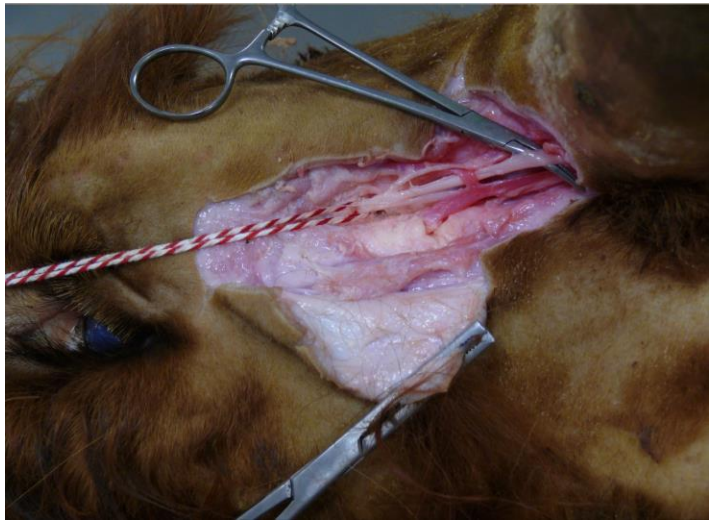
1. Amputation des Hornzapfens führt zu neuropathischen Veränderungen des *R. cornualis* und damit zusammenhängenden neuropathischen Schmerzen beim Rind
    a. Verschiebung in der Verteilung der unterschiedlichen Nervenkaliber
    b. Verschiebung in der Verteilung der sensorischen und sympathischen Nervenfasern
2. Bei Kälbern mit Anzeichen von chronischen Schmerzen können zusätzlich zu den neuropathischen Veränderungen des *R. cornualis* auch Modifikationen in Neuronen und Gliazellen des *Ganglion trigeminale* nachgewiesen werden

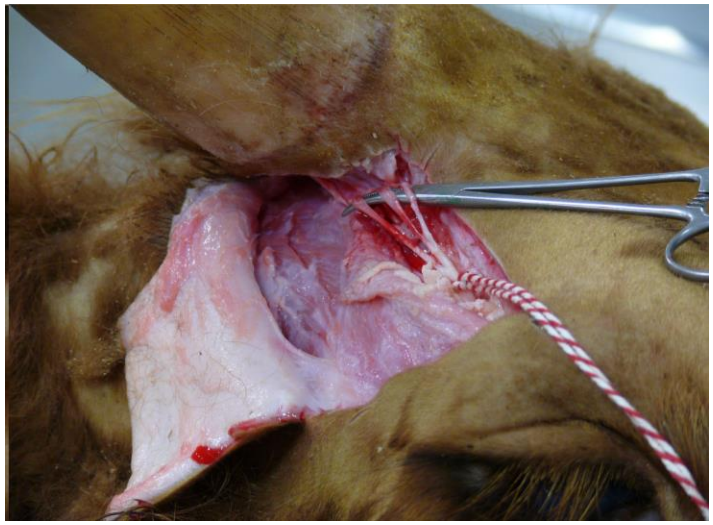
Material


Proben von 38 Tieren
17 Munis
Ramus cornualis
Nervus infraorbitalis
21 Kälber
8 Tiere nicht enthornt
Ramus cornualis
Nervus infraorbitalis
Ganglion trigeminale
13 Tiere enthornt
Ramus cornualis
Nervus infraorbitalis
Ganglion trigeminale

Material

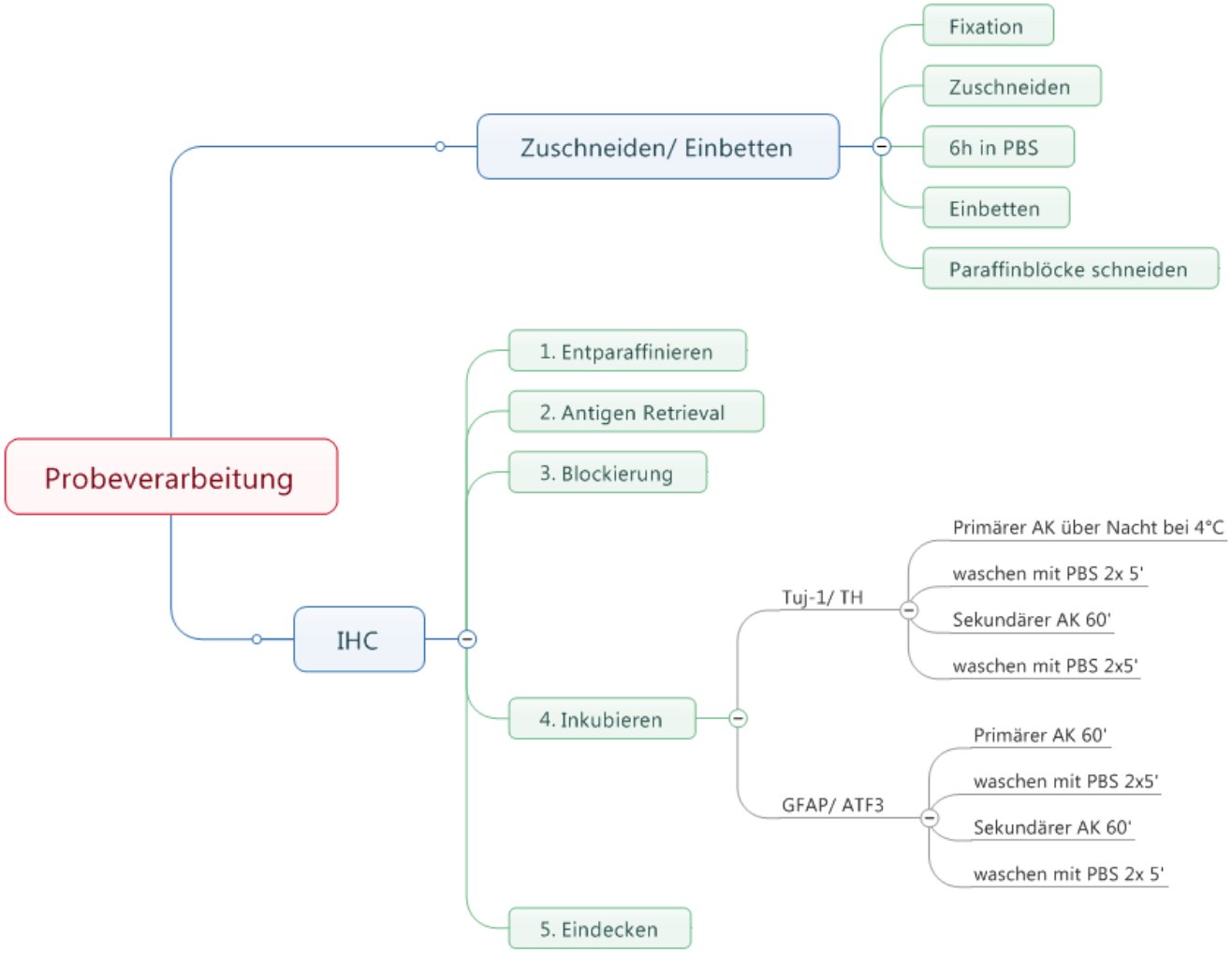






Methode

Probeverarbeitung



Methode

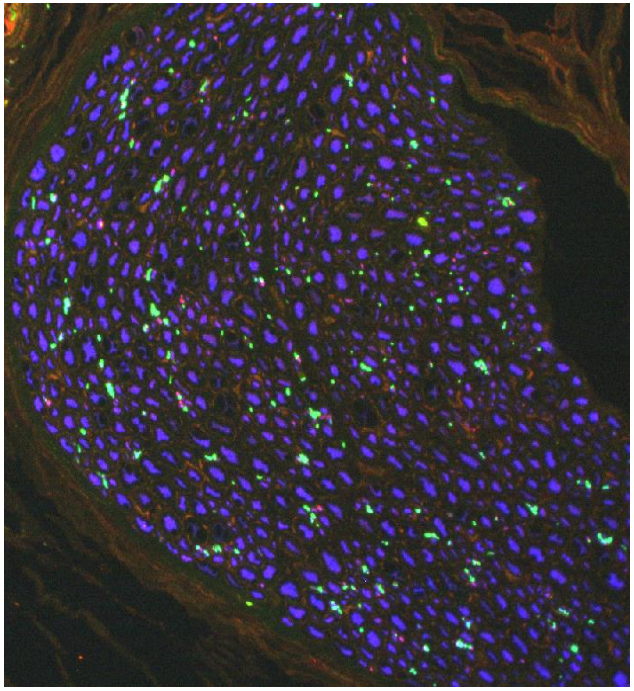
Antikörper

Antikörper	Wirt	Ziel	Markierung
Tuj-1	mouse	Neuron-specific calss III-b tubulin, panneuronaler Marker	Alexa 647
TH	rabbit	Tyrosine Hydroxylase, Marker für sympathische Fasern	CY3
PGP 9.5	rabbit	Protein Gen Produkt, panneuronaler Marker	CY3
GFAP	mouse	Glial fibrillary acidic protein, Marker für Astrocyten	Alexa 647
ATF3	rabbit	Activating transcription factor 3, Marker für Transkriptionsfaktoren	CY3

Methode

Analyse

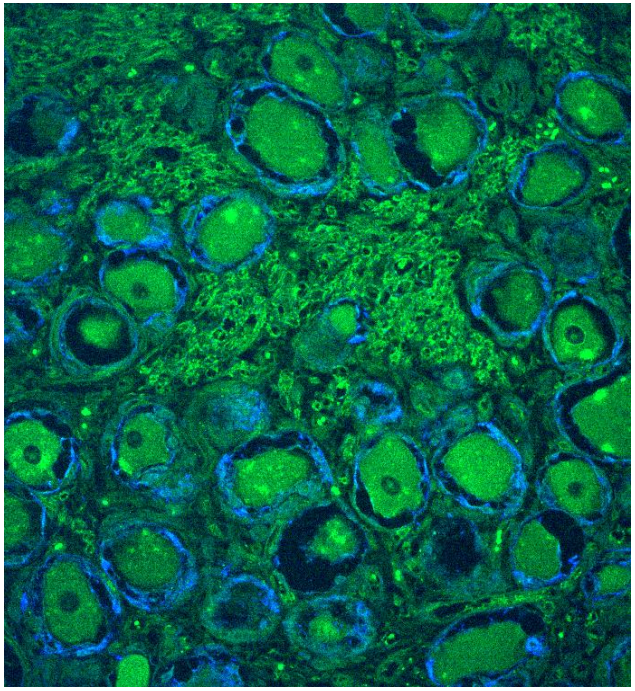
Nerv



Tuj-1

TH

Ganglion

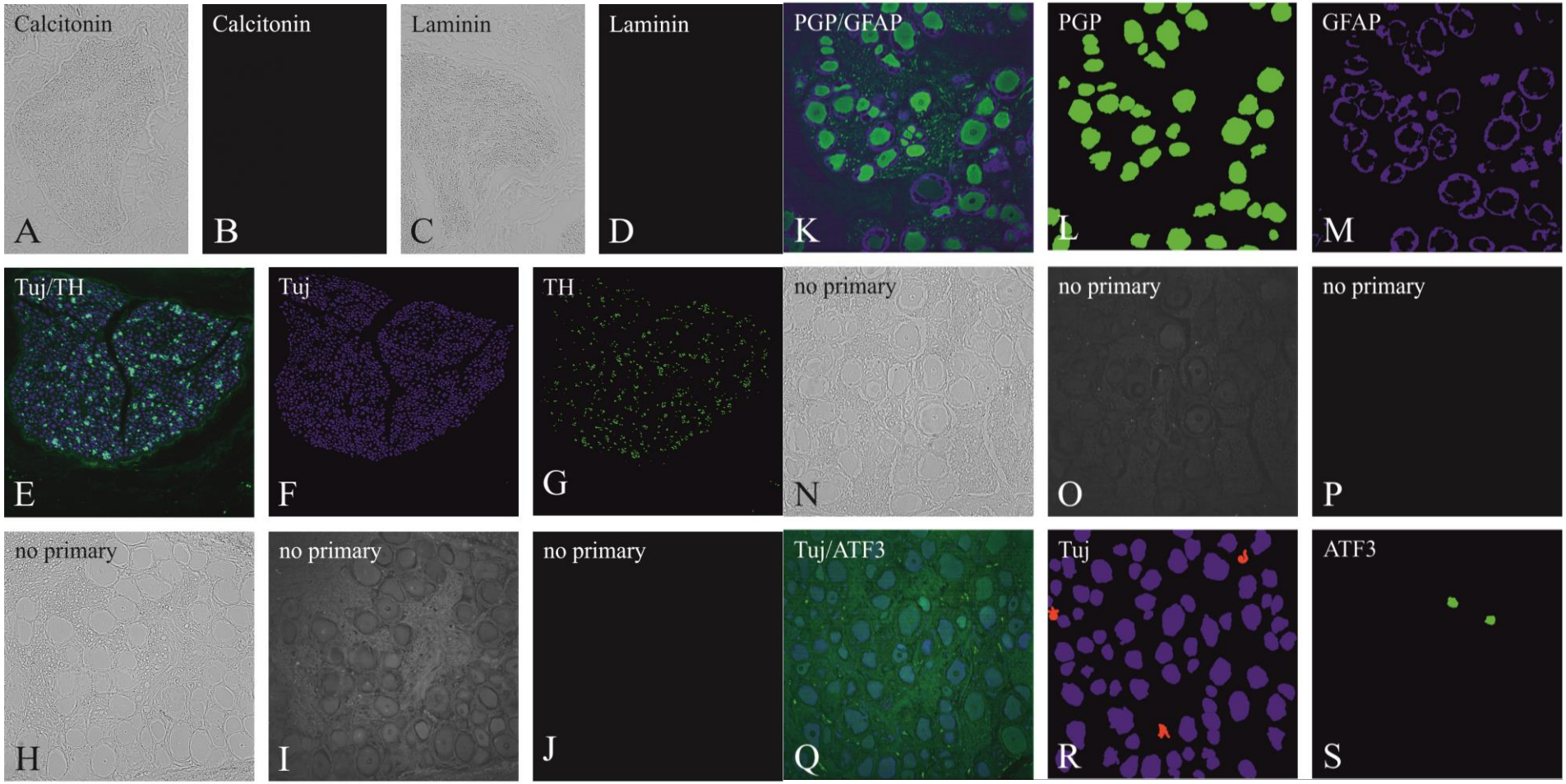


GFAP

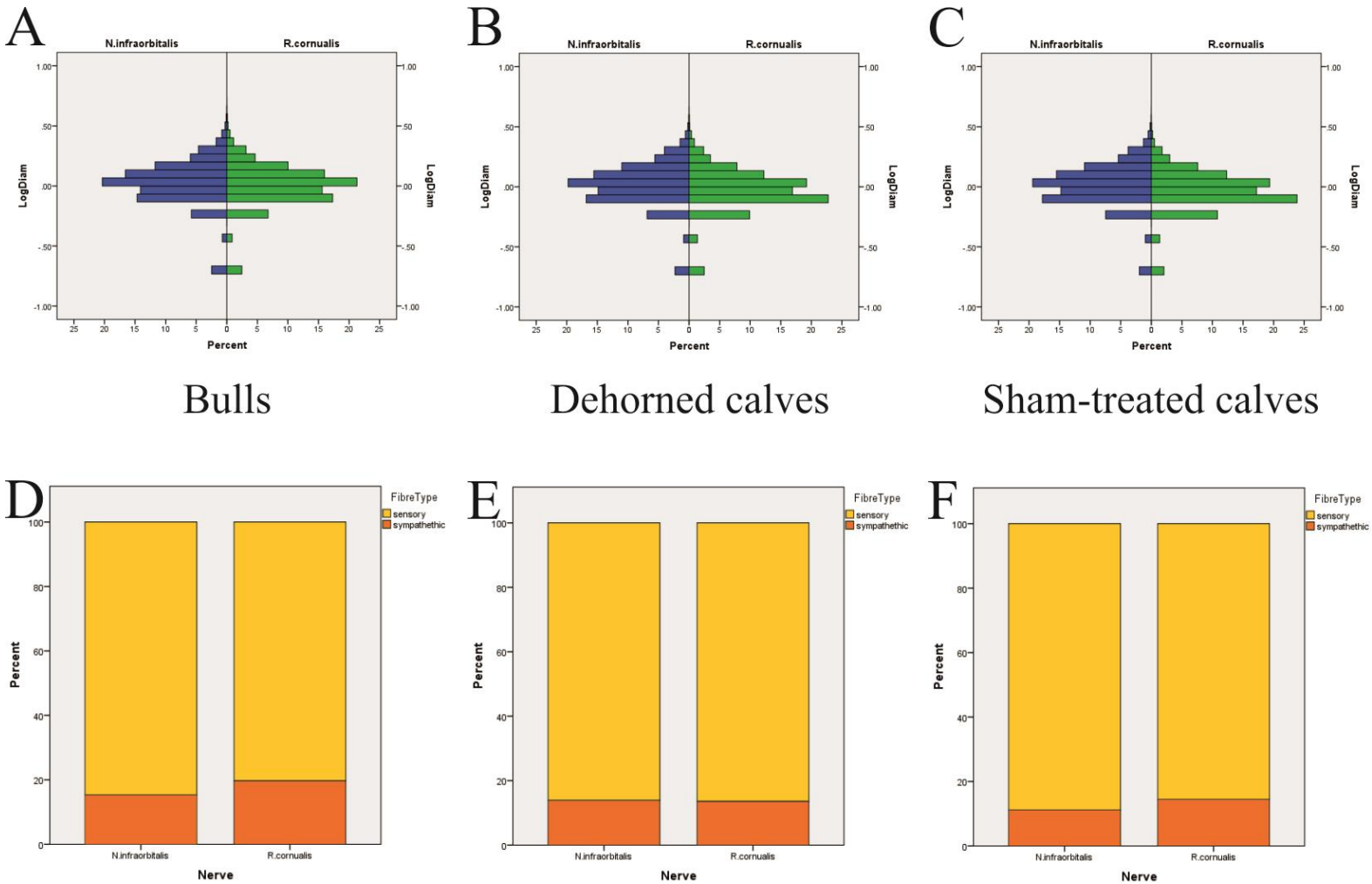
ATF3

Methode

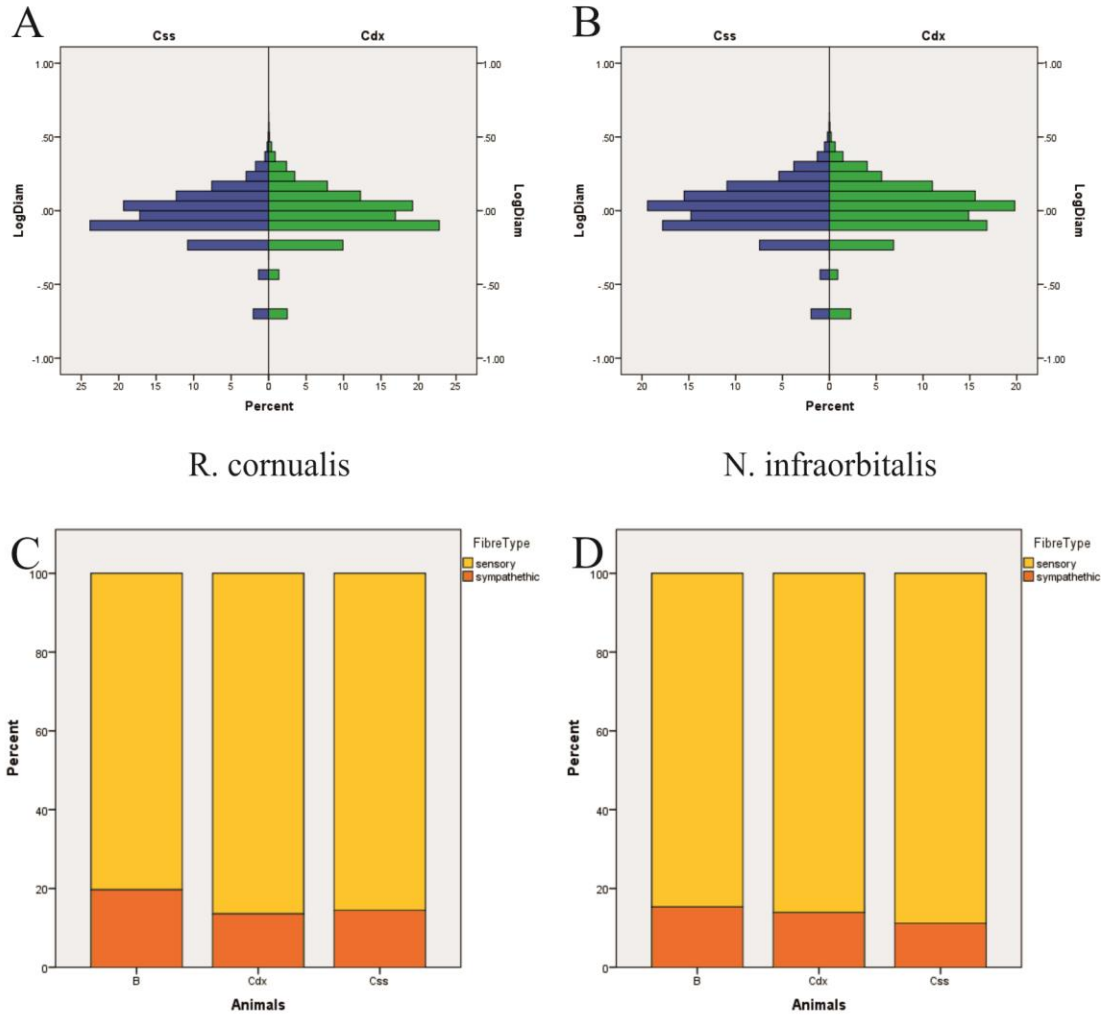
Analyse



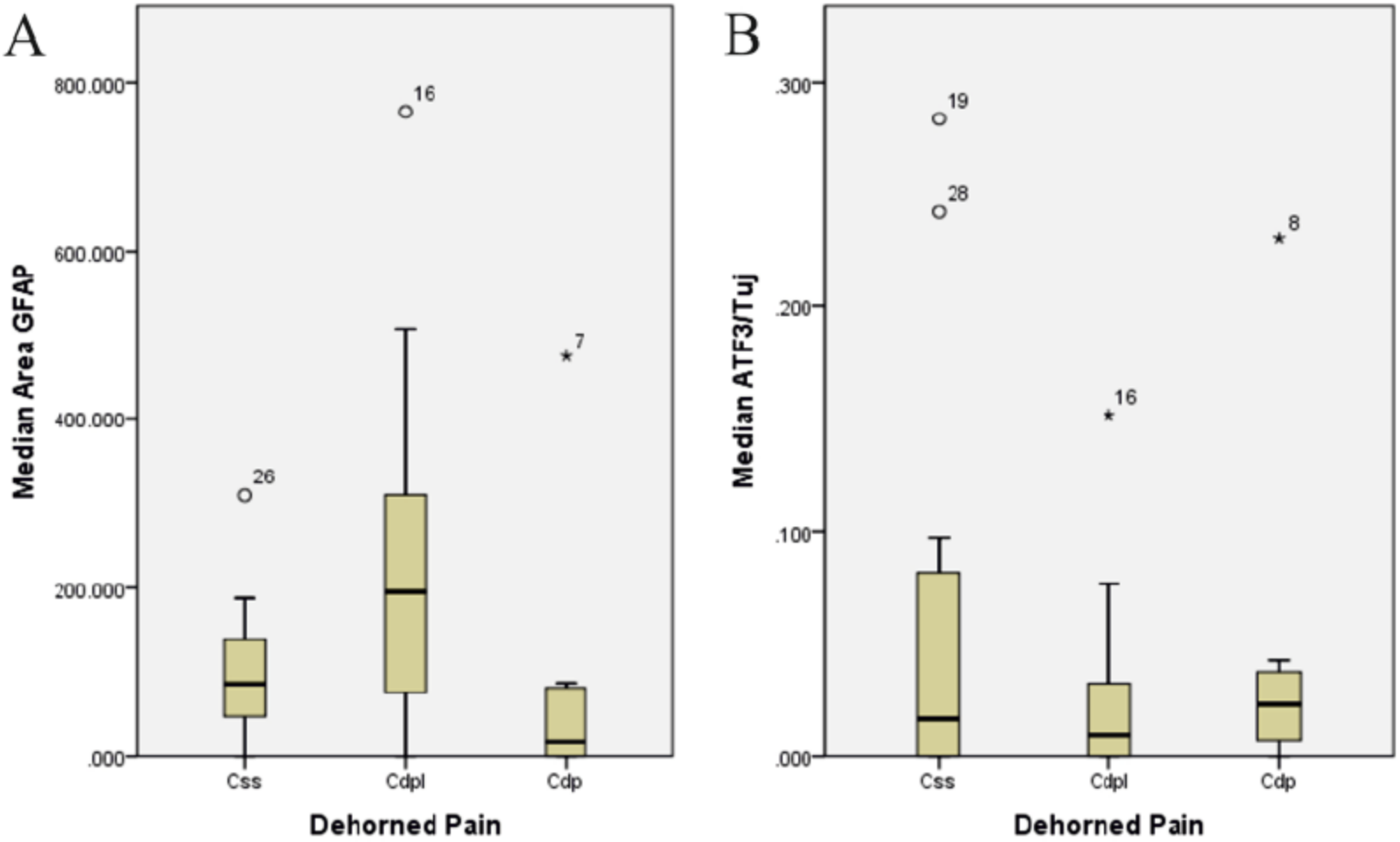
Resultate


A
B
C
N.infraorbitalis
R.cornualis
LogDiam
Percent
Bulls
Dehorned calves
Sham-treated calves
D
E
F
FibreType
sensory
sympathethic
Percent
Nerve
N.infraorbitalis
R.cornualis

Resultate


A
Css
Cdx
LogDiam
Percent
B
Css
Cdx
LogDiam
Percent
R. cornualis
N. infraorbitalis
C
FibreType
sensory
sympathethic
Percent
Animals
B
Cdx
Css
D
FibreType
sensory
sympathethic
Percent
Animals
B
Cdx
Css

Resultate


A
Median Area GFAP
800.000
600.000
400.000
200.000
.000
16
26
7
Css
Cdpl
Cdp
Dehorned Pain
B
Median ATF3/Tuj
.300
.200
.100
.000
19
28
8
16
Css
Cdpl
Cdp
Dehorned Pain