

APPENDIX 5.

Synonym list of spatial elements. For abbreviations see Appendix 7. Donor structures are highlighted. For simplification, not all abbreviations are used in the figures of that article (available online).

Structure	Abbreviation	Selected synonyms	Comments / definition
aponeuroses			
I – coronar aponeurosis	apo. cno	<i>Adduktoresehne</i> (Schumacher 1953/54), <i>basal aponeurosis</i> (Haas 1973), <i>Binnesehne</i> (Poglayen-Neuwall 1953: bs), <i>Bodenaponeurose</i> (Lakjer 1926, Rieppel 1990), <i>central tendon</i> (Rieppel 1990: embryonally), <i>coronar aponeurosis</i> (lordansky 1994, 1996), <i>external tendon</i> (Schumacher 1973), <i>Externusehne</i> (Schumacher 1972), <i>Sehne des m. adductor mandibulae externus</i> (Schumacher 1953/54, 1954/55a)	three sheets, lateral and medial sheet are connected by a bend (lordansky 1994)
coronar aponeurosis, lateral sheet	apo. cnoLAT	<i>lateral sheet</i> (lordansky (1994), <i>laterale Lamelle der Adduktoresehne / inferiore Sehnenplatte / unteres Sehnenblatt</i> (Schumacher 1953/54), <i>lateral Zipfel der Adduktoresehne</i> (Schumacher 1954/55b, 1956b), <i>Sehne a</i> (Poglayen-Neuwall 1953)	anteriorly and laterally at coronoid, within m. adductor mandibulae externus (lordansky 1994), with several terminal branches (Poglayen-Neuwall 1953: <i>with two terminal branches, a dorsal, saggital "a1" and a ventrocaudal, horizontal "a2"</i>)
coronar aponeurosis, medial sheet	apo. cnoMDI	<i>medial sheet</i> (lordansky (1994), <i>dorsale Lamelle der Adduktoresehne / superiore Sehnenplatte / oberes Sehnenblatt</i> (Schumacher 1953/54), <i>medialer Zipfel der Adduktoresehne</i> (Schumacher 1954/55b, 1956b), <i>Sehne b</i> (Poglayen-Neuwall 1953)	posteriorly to coronoid, within m. adductor mandibulae externus, largest sheet in turtles with an insertion anteriorly, dorsally and posteriorly to the coronoid (process) (lordansky 1994)
coronar aponeurosis, anteromedial sheet	apo. cnoANTMDI	<i>anterio-medial sheet</i> (lordansky 1994), <i>ventraler Zipfel der Adduktoresehne</i> (Schumacher 1954/55b, 1956b), <i>mediale Lamelle der Adduktoresehne / mediale Sehnenplatte / mittleres Sehnenblatt</i> (Schumacher 1953/54)	on the posterior edge of the coronoid or connected to the medial sheet (lordansky 1994) – insertion face for m. adductor mandibulae internus Pars pseudotemporalis superficialis (No. 24) (if existing)
Zwischensehne	Zwi	<i>Insertionsehne des M. adductor mandibulae internus pseudotemporalis und Ursprungsehne des M. intramandibularis</i> (Poglayen-Neuwall 1953: T), <i>intramandibular tendon</i> (Schumacher 1973), <i>tensverse tendinous inscription</i> (lordansky 1994)	possibly homologous to the anteromedial sheet of the coronar aponeurosis (Ic), which shifts its attachment from the coronoid to the intramandibularis (if present)
coronar aponeurosis, dentary sheet	apo. cnoDEN	<i>additional lateral sheet in Malayemys</i> (lordansky 1994)	additional lateral sheet in <i>Malayemys</i> , originating laterally from the dentary (lordansky 1994), possibly a separation of the lateral sheet of the coronar aponeurosis
II – subarticular aponeurosis	apo. subart	subarticular aponeurosis (lordansky 1994), <i>internal tendon (superficial aponeurosis)</i> (Schumacher 1973), <i>Sehne des m. adductor mandibulae internus</i> (Schumacher 1954/55b)	medially to the lower jaw, near the jaw joint (cartilago meckeli, prearticular, surangular, articular), possibly on a particular crest or process of the articular (lordansky 1994), in Platysternon, trionychids and <i>Pelomedusa</i> from the coronoid (Schumacher 1973)
retroarticular aponeurosis	apo. rroart	<i>retroarticular aponeurosis</i> (lordansky 1994)	separated from subarticular aponeurosis, inserting to the retroarticular process (lordansky 1994)

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supraangular aponeurosis	apo. sprang	<i>supraangular tendon</i> (lordansky 1994)	fibres of m. adductor mandibulae internus Pars pseudotemporalis (No. 23) and m. adductor mandibulae posterior (No. 29) (lordansky 1994)
supraangular aponeurosis intramandibular sheet	apo. sprang TRMAN	<i>branch of supraangular tendon to the intramandibularis muscle / intramandibularis aponeurosis</i> (lordansky 1987, 1994)	rostrad leading sheet of the supraangular aponeurosis, inserting to the primordial channel of the lower jaw and bearing m. adductor mandibulae internus Pars intramandibularis (No. 25) (lordansky 1994)
III – pterygoidal poneurosis	apo. pte	<i>pterygoidal aponeurosis</i> (lordansky 1994), <i>Lamina anterior (of internal tendon)</i> (Schumacher 1973)	from the posterior process and the posteroventral edge of the pterygoid, embraces the m. adductor mandibulae internus Partes pterygoideus (No. 26-28) ventally, possibly laterally or medially; enters to the lower jaw as an internal sheet of the muscular structures (lordansky 1994), partly separated in 2 tendons (Poglayen-Neuwall 1953)
pterygoidal aponeurosis, dorsal sheet	apo. pteDOR	<i>pterygoideus tendon a</i> (Poglayen-Neuwall 1953)	still a part of internal tendon such as in <i>Testudo graeca</i> : m. adductor mandibulae internus Pars dorsalis (No. 26) (Poglayen-Neuwall 1953)
pterygoidal aponeurosis, ventral sheet	apo. pteVTR	<i>pterygoideus tendon b</i> (Poglayen-Neuwall 1953)	in relation to m. adductor mandibulae internus Pars ventralis (No. 28) (Poglayen-Neuwall 1953; <i>Caretta caretta</i> , <i>Testudo graeca</i>)
IV – quadrate aponeurosis	apo. qua	<i>quadrate aponeurosis</i> (lordansky 1994)	would not be present in turtles, has two sheets, that are dorsally connected to each other, originate dorsally from the anterior face of the quadrate and run rostroventrad in archosaurs and lepidosaurs (sensu lordansky 1994)
quadrate aponeurosis, lateral sheet	apo. quaLAT	<i>lateral sheet of quadrate aponeurosis</i> (lordansky 1994)	may be laterally connected to the fascia temporalis (lordansky 1994), runs and inserts between the lateral and medial sheet of coronar aponeurosis at the lower jaw (lordansky 1994)
quadrate aponeurosis, medial sheet	apo. quaMDI	<i>medial sheet of quadrate aponeurosis</i> (lordansky 1994)	
lig. quadrato-maxillare	lig. quamax	<i>lig. quadrato-maxillare</i> (Lakjer 1926), <i>Membrana quadrato-squamoso-jugomaxillare</i> (Schumacher 1956c), <i>lig. quadrato-jugo-maxillare</i> (Schumacher 1956c)	this structure is only found in turtles and is spanning between the quadrate and the lateral face of the posterior part of the maxilla/jugal; it may be homologous to the quadrate aponeurosis in archosaurs and lepidosaurs but not to the lig. quadratojugal of birds and squamates, which is derived from the temporal fascia (Werneburg, unpublished work; note modifications made to Werneburg 2010)
V – supraoccipital aponeurosis	apo. sprocc	<i>Supraoccipitales Sehnenblatt</i> (Schumacher 1955b), <i>Sehne b</i> and <i>Sehne, die den Muskelbauch medio-ventral umgibt</i> (Poglayen-Neuwall 1953: in <i>Kinosternon</i> and <i>Sternotherus</i>) (origin of Pars profundus="profunda" and Pars medialis="media"), <i>Sehnenband c</i> (Lakjer 1926), <i>supraoccipital tendon (lobe)</i> (Schumacher 1973) (origin of Pars profundus="profunda")	several splits possible, origin area for m. adductor mandibulae externus Pars profundus (No.) in trionychids and <i>Podocnemis</i> , who have a very extended supraoccipital crest (Schumacher 1973)
fasciae and membranae			
I – fascia colli superficialis	fas. cllsfi	<i>Fascia colli superficialis</i> (Hacker 1954, Hacker and Schumacher 1954, Schumacher 1956c)	around muscles of the neck; depending on the degree of rostrad expansion to the ear and buccal region following pars are defined (Schumacher 1956c):

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fascia colli superficialis Pars cranio-lateralis	fas. cllsfiCRALAT	<i>Fascia colli superficialis ... Pars auriculo(-)temporalis</i> (Schumacher 1953/54, Schumacher 1956c: found in <i>Chelonia mydas</i> , <i>Caretta caretta</i> , <i>Podocnemis expansa</i> or <i>Platysternon megacephalon</i>), ... <i>Pars auriculo-supratemporalis</i> or ... <i>Pars auricularis</i> (Schumacher 1956c: latter both found in <i>Pelomedusa subrufa</i> , <i>Mauremys rivulata</i> , <i>Graptemys geographica</i> , <i>Macrochelys temmincki</i> or <i>Hydromedusa tectifera</i>)	possibly homologous expansions of the fascia colli superficialis to the ear and buccal region: depending on the extend Schumacher (1956c) named the structure differently in the respective species
fascia colli superficialis Pars cranio-temporalis	fas. cllsfiCRATEM	<i>Fascia colli superficialis Pars temporalis</i> (Schumacher 1956c: found in trionychids, <i>Hydromedusa tectifera</i> or <i>Chelodina longicollis</i>)	is an extension of the fascia colli superficialis to the temporal region of the head, lies superficially to the fascia temporalis (Schumacher 1956c)
fascia colli superficialis Pars intermandibularis	fas. cllsfiITEMAN	<i>Fascia intermaxillaris superficialis</i> (Hacker 1954: A1, Fortsetzung der Fascia colli superficialis, Hacker and Schumacher 1954)	intermandibular continuation of fascia colli superficialis, attached to ventromedial edge of lower jaw, ventrally to fascia intermandibularis and extend caudally over the area of m. intermandibularis and its fascia (Hacker 1954)
II – fascia temporalis	fas. tem	<i>fascia temporalis</i> (Hacker and Schumacher 1954, Schumacher 1956c), <i>Temporalfascie</i> (Lakjer 1926, Poglayen-Neuwall 1953: Tp.), <i>quadrato-temporal aponeurosis</i> (Iordansky 1994), <i>temporal fascia</i> (Rieppel 1980a)	lies directly in the temporal region and attaches to the periost of supraoccipital, parietal, postorbital, jugal, quadratojugal and/or squamosal; caudally it is an insertion side for the dorsal neck muscles; in taxa without lateral temporal armour (<i>Chelodina longicollis</i> , <i>Hydromedusa tectifera</i> , <i>Emydura krefftii</i>) it extends rostroventrad and attaches to the lig. quadratomaxillare medially; in taxa with a zygomatic arch it does not split or form a subzygomatic part (no lower temporal fascie; in taxa with a stegal morphotype (<i>Emydura</i>) or transition forms between zygal and stegal morphotype (Podocnemis, Schumacher 1956c:50) the temporal fascie can split into an anterior and posterior part (Schumacher 1956c)
fascia temporalis posterostegalis	fas. tempossga	<i>obere Temporalfascie</i> (Lakjer 1926)	“temporal fascie can split into an anterior and posterior part“ (Schumacher 1956c)
fascia temporalis anterostegalis	fas. temantsga	<i>untere Temporalfascie</i> (Lakjer 1926)	“temporal fascie can split into an anterior and posterior part (Schumacher 1956c)”
lig. quadratoangulo-orale	lig. quaangora	<i>lig. quadrato-angulo-orale</i> (Schumacher 1956c)	This structure, especially found in trionychid turtles. It spans between the quadrate and attaches to the external edge of the mouth (mostly reduced, but visible in trionychids) (Schumacher 1956c). It may be developmentally homologous to the lig. quadratojugale of birds and squamates (Werneburg, unpublished work; note modifications made to Werneburg 2010)
III – fascia adductor mandibulae externus	fas. addmanete	<i>Fascie des M. adductor mandibulae externus</i> (Hacker and Schumacher 1954, Schumacher 1956c)	around the whole m. adductor mandibular externus (No. 17-21), and in addition m. zygomaticomandibularis (No. 22) in trionychids (Schumacher 1956c); nothing is known about inclusion of m. levator bulbi (No. 16)
IV – fascia adductor mandibulae internus	fas. addmanite	<i>Fascie des M. adductor mandibulae internus</i> (Hacker and Schumacher 1954, Schumacher 1956c)	includes all portions of m. adductor mandibulae internus and m. adductor mandibulae posterior (sensu Schumacher 1956c)
V – fascia intermandibularis	fas. iteman	<i>Fascia intermaxillaris superficialis</i> (Hacker 1954: A2, Fascie des M. intermaxillaris)	lies directly on the ventral surface of m. intermandibularis and is ventrally covered by fascia superficialis colli Pars intermandibularis (Hacker 1954)

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VI – fascia intermandibularis medialis	fas. itemanmed	<i>Fascia intermaxillaris medialis</i> (Hacker 1954: B, Hacker and Schumacher 1954)	supports the lateral part of the mouth floor, which does not have many muscles (Hacker 1954)
fascia intermandibularis medialis, ventral sheet	fas. itemanmedVEN	<i>ventrales Blatt der Fascia intermaxillaris medialis</i> (Hacker 1954: B)	lateral to m. genioglossus (which inserts also to this fascia) , over Glandulae sublinguales, attached to medial face of lower jaw (Hacker 1954)
fascia intermandibularis medialis, dorsal sheet	fas. itemanmedDOR	<i>dorsales Blatt der Fascia intermaxillaris medialis</i> (Hacker 1954: B)	attached to hypoglossum; fused with the anterior parts of m. genioglossus; covers tongue ventrolaterally; attached to medial face of lower jaw; ventrally to glandula sublingualis (Hacker 1954)
VII – fascia intermandibularis profundus	fas. itemanpfu	<i>Fascia intermaxillaris profunda</i> (Hacker 1954: C, Hacker and Schumacher 1954)	caudal and dorsal to glandulae sublingualis; covers whole lateral part of the tongue; some fibres of m. hyoglossus insert to it; laterally attached to lower jaw (Hacker 1954)
VIII – membrana obturatoria orbitae	mem. otuorb	<i>Membrana obturatoria orbitae</i> (Schumacher 1956c)	between bones, that form the transition between orbital and adductor chamber
IX – membrana tympanica	mem. tym	<i>Membrana tympanica</i> (Schumacher 1953/54, 1956c), Tympanon (Poglayen-Neuwall 1953: Tymp., Schumacher 1954/55a)	spans over the otic cavity
X – ligamentum nuchae	lig. nuc	<i>Lig. nuchae</i> (Gräper 1932)	nape area
XI – ligamentum hyosquamosal	lig. hyosqu	<i>Lig. hyosquamosal</i> (Ogushi 1913b)	between the distal tip of cornu brachiale-I and the posteroventral area of the squamosal
Additional elements and spatial terms			
cartilago / os transiliens	car./os tsl	<i>cartilago transiliens</i> (Schumacher 1972, 1973), <i>os transiliens</i> (Ray 1959, Bramble 1974: only in Gopheridae ossified), <i>Sesamknorpel</i> (Lakjer 1926), a sesamoid cartilage or bone (lordansky 1994)	formed within the coronar aponeurosis between its insertion side and the split into lateral and medial sheets; it forms a joint (possibly with a joint capsule) together with the processus trochlearis oticum in Cryptodira or the process trochlearis pterygoidei in Pleurodira; in Cryptodira a fascies articularis prootica articulates with the tuberculum osseus prootic and a facies articularis quadrata articulating with tuberculum osseus quadrati may occur at the articulation face of the cartilago transiliens – on the opposite face the inner mouth plate of the cartilago transiliens contacts the external mouth plate (Schumacher 1956b)
processus trochlearis oticum	proc. trooti	<i>processus trochlearis otico-quadratus</i> (lordansky 1996: pto), <i>Proc. trochlearis oticum</i> (Gaffney), <i>Proc. trochlearis quadrati et prootici</i> (Schumacher1956b)	see cartilago / os transiliens
processus trochlearis pterygoidei	proc. tropte	<i>processus trochlearis pterygoidei</i> (Schumacher 1953/54), <i>processus trochlearis pterygoideus</i> (Schumacher 1956bm lordansky 1996: ptp)	see cartilago / os transiliens
glandula lacrimalis	gla. lac	<i>Glandula lacrimalis</i> (Schumacher 1956c), <i>Tränendrüse</i> (Poglayen-Neuwall 1953: Tr.Dr.)	-
otic cavity	cav. oti	otic chamber	area, which is bounded by quadrate, prootic, opisthotic and squamosal
otic capsule	scu. oti		area of the skull enclosing the otic cavity; it is made of quadrate, prootic, opisthotic and squamosal

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orbital cavity	cav. orb	<i>Orbita</i> (Schumacher 1953/54)	area of the skull enclosing the eye bulbus, eye muscles and nerves
trigonum intermandibulare anterior	trig. itemanant	trigonum intermaxillaris rostralis (Hacker 1954)	a trigonal area posterior to the symphysis of the dentaries which is present of m. intermandibularis (No. 31) does not reach the anteromedial corner of the lower jaw
trigonum intermandibulare posterior	trig. itemanpos	trigonum intermaxillaris caudalis (Hacker 1954)	a trigonal area, which is present if the posterolateral extend of m. intermandibularis (No. 31) and the anteromedial extent of m. constrictor colli Pars intermandibularis (No. 42) do not fuse together
adductor chamber	cham. add		roughly the area dorsal to the otic capsule and lateral to the brain case; it can be covered laterally by dermal bones and contains the trigeminus innervated jaw musculature
postorbital cavity of the adductor chamber	cham. addposorb cav	<i>untere Schläfenöffnung</i> (Lakjer 1926), <i>untere Temporalgrube</i> (Poglayen-Neuwall 1953)	roughly anterior to the otic capsule; area m. adductor mandibulae internus (No. 23-28), m. adductor mandibulae posterior (No. 29-30), m. zygomaticomandibularis (No. 22), and the insertion area of m. adductor mandibulae externus (17-21)
temporal cavity of the adductor chamber	cham. addtemcav	<i>obere Schläfenöffnung</i> (Lakjer 1926), <i>fossa temporalis superior</i> (Schumacher 1954/55) <i>obere Temporalgrube</i> (Poglayen-Neuwall 1953)	origin area of m. adductor mandibulae externus Partes profundus et superficialis (No. 19, 21)