

Table S1. Proportion of Hybrid Fibers in Various Muscles

Animal	Mass (kg)	Muscle[¶]	% Hybrids	Major Type*	Method[§]	Reference
<i>Crustaceans</i>						
Ghost crab (<i>Ocypode quadrata</i>)	0.035	ext/flex carpopodite	100	MHC ₁ /MHC ₃	SDS-P	Perry et al., 2009
<i>Amphibians</i>						
Cane toad (<i>Rhinella marina</i>)	0.01 – 0.3	rectus abdominus (a) (j)	73.5 49.4	mixed mixed	SDS-P SDS-P	Nguyen and Stephenson, 2002
Leopard frog (<i>Rana pipiens</i>)	0.05	tibialis anterior	54	1/2; 3/T	SDS-P	Lutz et al., 1998
Clawed frog (<i>Xenopus laevis</i>)	0.10 – 0.21	iliofibularis	48	mixed	SDS-P	Andruchova et al., 2006
<i>Reptiles</i>						
Garter snake (<i>Thamnophis sirtalis</i>)	0.150	fast tonic slow	0 0 100	fast MHC tonic MHC fast/tonic	SDS-P	Wilkinson et al., 1991
<i>Metatherians</i>						
ST opossum (<i>Monodelphis domestica</i>)	0.101	tail flexor	76.5	IIA/IIX	IH	Rupert et al., 2014
Wooly opossum (<i>Caluromys derbianus</i>)	0.370	tail flexor	91.8	IIA/IIX	IH	
Virginia opossum (<i>Didelphis virginiana</i>)	2.2	tail flexor	76.9	IIA/IIX	IH	Hazimihalis et al., 2013
<i>Eutherians</i>						
Mouse (<i>Mus musculus</i>)	0.030	sternomastoid brachioradialis diaphragm plantaris tibialis anterior soleus triceps brachii gast. (medial)	66 47.8 35 47 32.5 25.5 25.4 26 18 17 4.9 14.4 9.4	IIX/IIB IIX/IIB IIX/IIB IIX/IIB IIX/IIB IIX/IIB IIX/IIB IIX/IIB I/IIA I/IIA I/IIA IIX/IIB IIX/IIB	ATPase SDS-P SDS-P ATPase SDS-P SDS-P SDS-P SDS-P SDS-P SDS-P SDS-P SDS-P	Guido et al., 2010 Zhang et al., 2010 Brummer et al., 2013 Guido et al., 2010 DeNies et al., 2014 Zhang et al., 2010 Glaser et al., 2010 Brummer et al., 2013 DeNies et al., 2014 Brummer et al., 2013 Glaser et al., 2010

		vast. intermedius	1.9	IIX/IIB	SDS-P	
Galago (<i>Galago senegalensis</i>)	0.220	multifidus	4.4	I/II	IH	Huq et al., 2018
		longissimus	1.7	I/II	IH	
		iliocostalis	0.5	I/II	IH	
Rat (<i>Rattus norvegicus</i>)	0.292	thyroaretenoid	85	IIB/L	SDS-P	Wu et al., 2000a
		rectus femoris	77	IIX/IIB	SDS-P	
		plantaris	65	mixed	SDS-P	Caiozzo et al., 2003
		tibialis anterior (red)	63	IIX/IIB	SDS-P	
		gast. (red medial)	59	IIX/IIB	SDS-P	
		vast. lat. (red)	58	IIX/IIB	SDS-P	
		ext. digitorum long.	58	IIX/IIB	SDS-P	
		gast. (mixed medial)	57	IIX/IIB	SDS-P	
		diaphragm	55	mixed	SDS-P	
		cricoarytenoid (post)	40	IIX/IIB	SDS-P	Wu et al., 2000a
		vastus intermedius	39	IIX/IIB	SDS-P	
		supraspinatus	28	IIA/IIX; IIX/IIB	IH	Caiozzo et al., 2003
		infraspinatus	21	IIA/IIX; IIX/IIB	IH	
		stapedius	16.5	mixed	IH	Rui et al., 2016
		tibialis anterior (white)	14	IIX/IIB	SDS-P	
		subscapularis	13	IIA/IIX; IIX/IIB	IH	
		soleus	13	I/IIA	SDS-P	
		teres minor	9	IIA/IIX; IIX/IIB	IH	
		gast. (white medial)	6	IIX/IIB	SDS-P	
		vast. lat. (white)	3	IIX/IIB	SDS-P	
Marmoset (<i>Callithrix jacchus</i>)	0.343	gast. (proximal medial)	49.7	IIA/IIX	SDS-P	Plas et al., 2015
		gast. (distal medial)	43.4	IIA/IIX	SDS-P	
		vast. lat. (proximal)	42.4	IIA/IIX	SDS-P	
		vast. lat. (distal)	31	IIA/IIX	SDS-P	
Slow loris (<i>Nyctebus coucang</i>)	0.675	iliocostalis	23.5	I/II	IH	Huq et al., 2018
		longissimus	13.2	I/II	IH	

		multifidus	10.6	I/II	IH	
Three toed sloth (<i>Bradypus variegatus</i>)	2-6	forelimb muscles	0.7-3.3	I/IIA	IH	Spainhower et al., 2018
Toe toed sloth (<i>Choloepus hoffmanni</i>)	2-9		2.3-4.8	I/IIA	IH	
Rabbit (<i>Oryctolagus cuniculus</i>)	5	rectus EOM	95	mixed	IH	McLoon et al., 2011
		gast. (deep)	61	IIX/IIB	SDS-P	Peuker and Pette, 1997
			7	I/IIA	IH	Korfage et al., 2009
		tibialis anterior	45	IIA/IIX	SDS-P	Conjard, 1998
		gast. (superficial)	40	IIX/IID	SDS-P	Peuker and Pette, 1997
		plantaris	38.5		SDS-P	Greaser et al., 1988
		adduct magnus	25	IIX/IIB	SDS-P	Peuker and Pette, 1997
		pterygoid (medial)	22	I/α	IH	Korfage et al., 2009
		temporalis (superficial)	21	I/α; IIA/α	IH	
		temporalis (deep)	20	I/α	IH	
		digastric	20	I/α	IH	
		soleus	18		SDS-P	Peuker and Pette, 1997
			1	I/IIA	IH	Korfage et al., 2009
		masseter (superficial)	18	I/α	IH	
		masseter (deep)	15	I/α	IH	
		pterygoid (lateral)	14	I/α	IH	
		psoas	5	IIX/IIB	SDS-P	Peuker and Pette, 1997
Green velvet monkey (<i>Chlorocebus aethiops sabaeus</i>)	4-6	vastus lateralis (y) (o)	67 51	IIA/IIX IIA/IIX	SDS-P SDS-P	Feng et al., 2012
Domestic cat (<i>Felis domesticus</i>)	5	semimembranosus	28.6		SDS-P	Toniolo et al., 2008
		longissimus	8.6			
		diaphragm	3.2			
		temporalis	0	100% M		
		masseter	0	100% M		
		soleus	0	100% I		

Species	Age	Muscle	Activation (%)	Recruitment	Reference
Caracal (<i>Caracal caracal</i>)	8-18	vastus lateralis	<1%		Kohn et al., 2011a
		gluteus medius	<1%		
		longissimus dorsi	<1%		
Rhesus macaque (<i>Macaca rhesus</i>)	14-16	soleus	41.4	I/IIA	Cordonnier et al., 1995
		styloglossus	11.2	I/IIA	Sokoloff et al., 2007
Dog (<i>Canis familiaris</i>)	18-27	lateral rectus (orb)	100	mixed	Bicer and Reiser, 2009
		levator veli palatini	98	IIA/IIX	Sanchez-Collado et al., 2014
		lateral rectus (glob)	75	mixed	Bicer and Reiser, 2009
		thyroarytenoid (vent)	66	IIA/IIX	Toniolo et al., 2007
		palatinus	53	IIA/IIX	Sanchez-Collado et al., 2014
		semitendinosus	44.2	IIA/IIX	Acevedo and Rivero, 2006
		cricoarytenoid (lat)	41	IIA/IIX	Wu et al., 1998
		thyroarytenoid (med)	40	IIA/X; IIX/IIB	Wu et al., 2000c
			40	IIA/X; IIX/IIB	Toniolo et al., 2007
		latissimus dorsi	35.2	IIA/X	Acevedo and Rivero, 2006
			21	IIA/IIX	Toniolo et al., 2007
		thyroarytenoid (lat)	30	IIA/X; IIX/IIB	Wu et al., 2000c
		gluteus medius	27.6	IIA/X	Acevedo and Rivero, 2006
		cricoarytenoid (obl)	25	IIA/X	Wu et al., 2000c
		triceps brachii	24.6	IIA/X	Acevedo and Rivero, 2006
		cricoarytenoid (horiz)	23	IIA/X	Wu et al., 2000c
		cricoarytenoid (vert)	21	IIA/X	Wu et al., 2000c
		rectus femoris	19.5	IIA/X	Acevedo and Rivero, 2006
		tibialis anterior	19		Toniolo et al., 2008
			7	I/IIA	SDS-P
		longissimus lumborum	15.2	IIA/X	Acevedo and Rivero, 2006
		longissimus	14.8		SDS-P
		cricothyroid (horiz)	15	mixed	Toniolo et al., 2008
		semimembranosus	10.4		Wu et al., 2000c
			8	I/IIA;IIA/IIX	Toniolo et al., 2008
		cricothyroid (oblique)	7	I/IIA	SDS-P
		cricothyroid (rectus)	6	mixed	Wu et al., 2000c
		temporalis	5.5		Toniolo et al., 2008

		diaphragm	4.8	I/IIA	SDS-P	Toniolo et al., 2007
		vastus intermedius	3.1	IIA/X	IH	Acevedo and Rivero, 2006
		tensor veli palatini	2	I/IIA	IH	Sanchez-Collado et al., 2014
Goat (<i>Caprus hircus</i>)	23-90	semitendinosus	23	IIA/IIX	IH	Arguello et al., 2001
Reedbuck (<i>Redunca fulvorufula</i>)	30	vastus lateralis	16	IIA/IIX	SDS-P	Kohn, 2014
Springbok (<i>Antidorcas marsupialis</i>)	30-50	vastus lateralis	16	IIA/IIX	SDS-P	Curry et al., 2012
Blesbok (<i>Damaliscus pygargus</i>)	60	vastus lateralis	9	IIA/IIX	SDS-P	Kohn, 2014
Fallow deer (<i>Dama dama</i>)	45-80	vastus lateralis	8	IIA/IIX	SDS-P	Curry et al., 2012
Pig (<i>Sus scrofa</i>)	46-60	longissimus (wild)	31	IIX/IIB	IH	Fazarinc et al., 2013
	100		26.5		IH	Quiroz-Rothe and Rivero, 2004
	185 – 200	(domesticated)	15.7	IIX/IIB	IH	Fazarinc et al., 2013
	100		11.5	IIX/IIB	IH	Lefaucheur et al., 2002
Sheep (<i>Ovis aries</i>)	50-78	longissimus	10	IIA/IIX	IH	Greenwood et al., 2007
		semitendinosus	7	IIA/IIX	IH	
Brown bear (<i>Ursus arctos</i>)	55-106 (y)	triceps brachii	6.5	I/IIA; IIA/IIX	IH	Smerdu et al., 2009
		rectus femoris	5.8	I/IIA; IIA/IIX	IH	
	280 (o)	longissimus dorsi	4.9	I/IIA; IIA/IIX	IH	
		triceps brachii	0.5	I/IIA	IH	
		rectus femoris	0		IH	
		longissimus dorsi	0.3	I/IIA	IH	
Human (<i>Homo sapiens</i>)	75	latissimus dorsi (men)	44	IIA/IIX	SDS-P	Paoli et al., 2013
		(women)	21	IIA/IIX	SDS-P	
		jaw closers	42	mixed	IH	Korfage et al., 2001
		vastus lateralis (men)	41	I/IIA; IIA/IIX	SDS-P	Williamson et al., 2001
		(women)	31	I/IIA; IIA/IIX	SDS-P	Williamson et al., 2001

		(men)	25	I/IIA; IIA/IIX	SDS-P	Kesidis et al., 2008
		(men)	24	I/IIA; IIA/IIX	SDS-P	Parcell et al., 2005
		(men)	20	IIA/IIX	SDS-P	Clitgaard et al., 1990a
		(men)	20	IIA/IIX	SDS-P	Kohn et al., 2007
		(m/w)	17	I/IIA; IIA/IIX	SDS-P	Luden et al., 2012
	thyroarytenoid (lateral)	40		IIA/IIX	SDS-P	Wu et al., 2000b
	PCA (oblique)	40		mixed	SDS-P	
	biceps brachii	39		IIA/IIX	SDS-P	Clitgaard et al., 1990b
	sternocleidomastoid	34.5		IIA/IIX	IH	Cvetko et al., 2012
	gastrocnemius	27		I/IIA; IIA/IIX	SDS-P	Parcell et al., 2003
	thyroarytenoid (medial)	25-30		IIA/IIX	SDS-P	Wu et al., 2000b
	tongue	20.9		I/IIA; IIA/IIX	IH	Granberg et al., 2010
	styloglossus	17.3		I/IIA	IH	Sokoloff et al., 2007
	infrahyoid	13.1		mixed	IH	Korfage et al., 2001
	PCA (horizontal)	10		I/IIA	SDS-P	Wu et al., 2000b
	suprahyoid	8		mixed	IH	Korfage et al., 2001
	soleus	7.5		I/IIA	SDS-P	Luden et al., 2012
Blesbok (<i>Damaliscus pygargus</i>)	60	vastus lateralis	9	IIA/X	SDS-P	Kohn, 2014
Black bear (<i>Ursus americanus</i>)	111.5	soleus (winter)	24.2	I/IIA	SDS-P	Riley et al., 2018
	96.5	(summer)	2	I/IIA		
Llama (<i>Llama glama</i>)	100-120	semitendinosus	41.3	IIX/IIB	IH	Graziotti et al., 2001
		deltoideus (acrom)	12.1	IIA/X; IIX/IIB	IH	Graziotti et al., 2012
		deltoideus (scapular)	11.7	IIA/X; IIX/IIB	IH	
		teres major	11.2	IIA/X; IIX/IIB	IH	
		vastus lateralis (dd)	13.4	IIA/X; IIX/IIB	IH	Graziotti et al., 2004
		vastus lateralis (dp)	7.5	IIX/IIB	IH	
		vastus lateralis (sp)	6.1	IIA/X; IIX/IIB	IH	
		vastus lateralis (sd)	4.2	IIX/IIB	IH	
Wildebeest (<i>Connochaetes gnou</i>)	118-270	vastus lateralis	4	IIA/IIX	IH	Kohn et al., 2011b
		longissimus	3	IIA/IIX	IH	

Lion (<i>Panthera leo</i>)	120	vastus lateralis gluteus medius longissimus dorsi	<1% <1% <1%		IH	Kohn et al., 2011a
Kudu (<i>Tragelaphus strep.</i>)	300	vastus lateralis	9	IIA/X	SDS-P	Kohn, 2014
Horse (<i>Equus ferus caballus</i>)	300 - 460	gluteus medius	22.9 21.4 13-21 9-13	IIA/X IIA/X IIA/X IIA/X	IH IH IH IH	Eizema et al., 2005 Eizema et al., 2003 Rietbroek et al., 2007 Rivero et al., 1996
Cow (<i>Bos Taurus</i>)	500	psoas longissimus flexor digitorum semitendinosus	14 11 9 8	IIA/IIX IIA/IIX I/IIA IIA/IIX	IH IH IH IH	Moreno-Sanchez et al., 2008 Picard et al., 1998 Moreno-Sanchez et al., 2008 Picard et al., 1998
Fin whale (<i>Balaenoptera physalus</i>)	2600-25000	longissimus (deep) (superficial)	9 6	I/IIA I/IIA	IH IH	Rivero, 2018

Table contains hybrid fiber proportions from normal, control fibers unless otherwise noted. In studies where exercise or other interventions were investigated, the control muscles are reported here. Values for each species are ordered from highest proportion to lowest proportion of hybrids.

¶Muscle abbreviations: cricoarytenoid (horiz) = horizontal region; cricoarytenoid (lat) = lateral region; cricoarytenoid (obl) = oblique region; cricoarytenoid (vert) = vertical region; cricothyroid (horiz) = horizontal region; deltoideus (acrom) = acromial region; ext/flex carpopodite = extensor and flexors of the carpopodite; ext. digitorum long. = extensor digitorum longus; gast. = gastrocnemius; lateral rectus (glob) = global region; lateral rectus (orb) = orbital region; PCA = posterior cricoarytenoid; rectus EOM = rectus group of extraocular muscles; thyroarytenoid (lat) = lateral region; thyroarytenoid (med) = medial region; thyroarytenoid (vent) = ventral region; vast. intermedius = vastus intermedius; vast. lat. = vastus lateralis; vastus lateralis (dd) = deep distal; vastus lateralis (dp) = deep proximal; vastus lateralis (sp) = superficial proximal; vastus lateralis (sd) = superficial distal

*Major Type is the predominant hybrid isoforms present. *Rana pipiens*: 1/2 = MHC 1 and 2; 3/T = MHC 3 and tonic; Mammalian MHC isoforms: (gene), MHC protein: I = (MYH7), MHC I; IIA = (MYH2), MHC IIA; IIX = (MYH1), MHC IIX; IIB = (MYH4), MHC IIB; *L = laryngeal MHC; M = (MYH16), masticatory MHC; α = (MYH6) slow alpha MHC.

§Method is the method used to identify hybrids. ATPase = ATPase histochemistry; IH = immunohistochemistry; SDS-P = single fiber SDS-PAGE.

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