Supplementary Table and Figures

Biofluorescence in Catsharks (Scyliorhinidae): Fundamental Description and Relevance for Elasmobranch Visual Ecology

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Supplementary Information

Supp. Table 1. Classification and GenBank accession numbers for species included in phylogenetic analyses.

Supp. Fig. 1. *Cephaloscyllium ventriosum* in its natural environment in Scripps Canyon under natural light conditions, with no filter or added light.

Supp. Fig. 2. Top) Cross section of *C. ventriosum* showing localization of fluorescent compound in the "lighter" areas of the skin and in basal layer of dermis under white light (top left) and fluorescent light (top right). Bottom) 150X magnification of a single dermal dendrite showing fluorescence at base of dermal dendrite. White light (bottom left), fluorescent light (bottom right).

Supp. Fig. 3. Top) Cross section of *S. retifer* showing localization of fluorescent compound in basal layer of dermis.

Supp. Fig. 4. Fluorescence exhibited in egg casings of *S. retifer* at different life-stages.

Supp. Fig. 5. Species level maximum likelihood phylogeny of elasmobranchs. Numbers at nodes indicate bootstrap support values ≥50%. Asterisks (*) at nodes indicate bootstrap support values ≥95%. Outgroups marked with dashed lines.

Supplementary Table 1. Classification and GenBank accession numbers for species included in phylogenetic analyses.

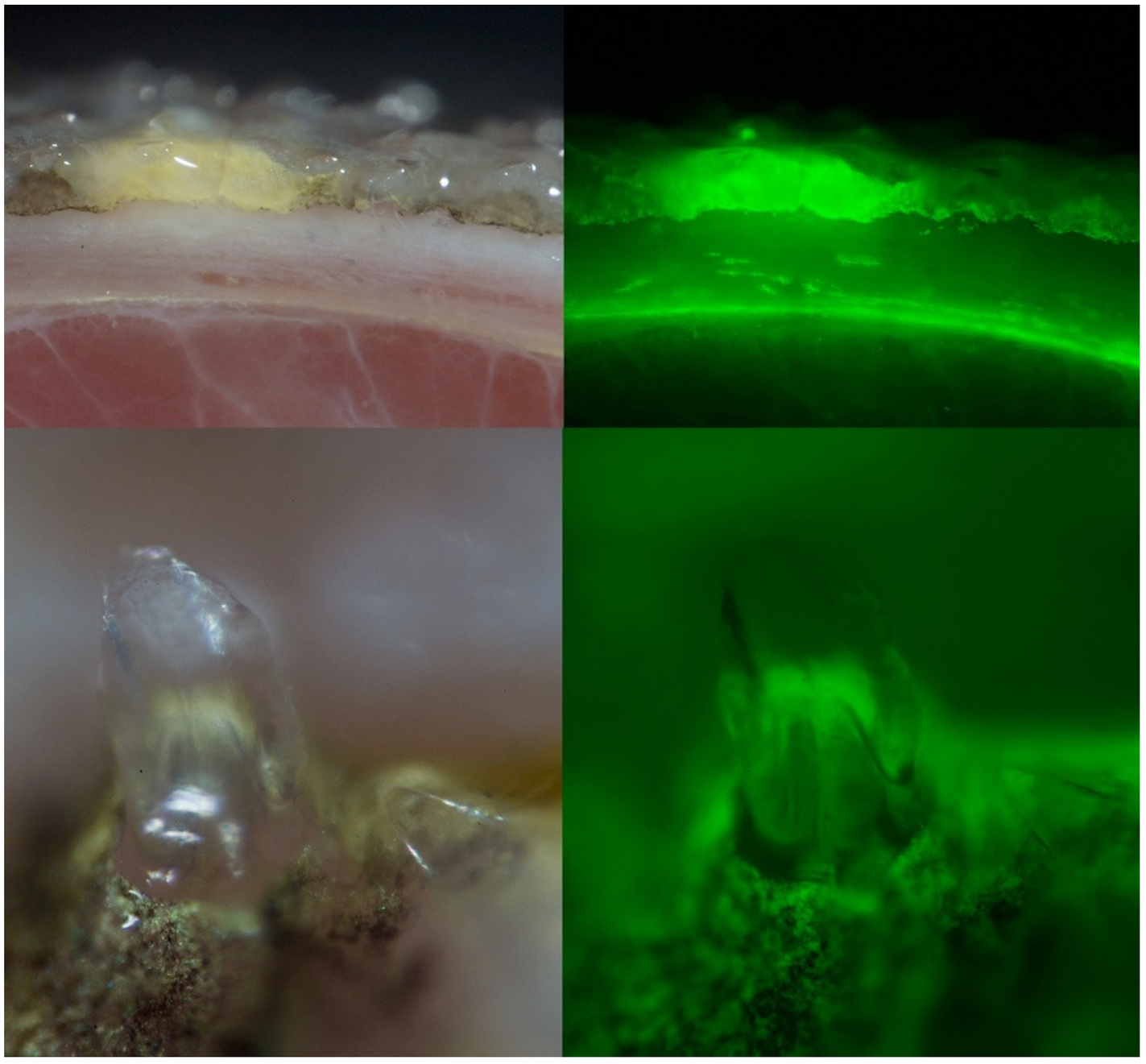
TAXON	RAG1	ND2	COI
PETROMYZONTIFORMES			
Petromyzon_marinus	//	U11880.1	U11880.1
COELACANTHIFORMES			
Coelacanthidae			
Latimeria_menadoensis	AY442925.1	NC_006921.2	NC_006921.2
LEPISOSTEIFORMES			
Lepisosteidae			
Lepisosteus_osseus	//	NC_008104.1	NC_008104.1
CHIMAERIFORMES			
Callorhinchidae			
Callorhinchus_milii	//	HM147137.1	HM147137.1
Chimaeridae			
Chimera_sp	GU130744.1	//	GU130671.1
Hydrolagus_colliei	//	JQ518720.1	JQ354134.1
Rhinochimaeridae			
Rhinochimaera_pacifica	//	HM147141.1	HM147141.1
HEXANCHIFORMES			
Hexanchidae			
Heptranchias_perlo	//	KF927891.1	KF590398.1
SQUALIFORMES			
Dalatiidae			
Squaliolus_aliae	GU130748.1	KF927966.1	GU130675.1
Dalatias_licha	GU130749.1	JQ518951.1	GU130676.1
Isistius_brasiliensis	GU130817.1	JQ518953.1	//
Etmopteridae			
Etmopterus_lucifer	GU130785.1	JQ518963.1	GU130682.1
Etmopterus_pusillus	GU130762.1	JQ518964.1	KF899426.1
Trigonognathus_kabeyai	GU130775.1	JQ400130.1	GU130702.1
Somniosidae			
Proscymnodon_plunketi	GU130769.1	KF927991.1	GU130696.1
Oxynotidae			
Oxynotus_paradoxus	GU130747.1	JQ518966.1	GU130674.1
Centrophoridae			
Deania_calcea	GU130772.1	JQ519007.1	DQ108225.1
Centrophorus_squamosus	GU130774.1	JQ035655.1	KF899383.1
Squalidae			

Squalus_acanthias	JN184093.1	JQ035621.1	KC015925.1
Echinorhinidae			
Echinorhinus_brucus	GU130818.1	JQ519170.1	HM467790.1
Echinorhinus_cookei	//	JQ519016.1	DQ521002.1
PRISTIOPHORIFORMES			
Pristiophoridae			
Pristiophorus_japonicus	//	AB721306.1	AB721306.1
SQUATINIFORMES			
Squatinidae			
Squatina nebulosa	//	KF927985.1	KM264313.1
HETERODONTIFORMES			
Heterodontidae			
Heterodontus_francisci	JN184089.1	JQ519165.1	FJ519566.1
LAMNIFORMES			
Odontaspididae			
Carcharias_taurus	AF135475	KF569943.1	KF569943.1
Mitsukurinidae			
Mitsukurina_owstoni	JN184090.1	EU528659.1	EU528659.1
Pseudocarchariidae			
Pseudocarcharias_kamoharai	AF135479.1	KM575726.1	KM575726.1
Lamnidae			
Lamna_ditropis	AF135478.1	JQ518735.1	KF918878.1
Isurus_oxyrinchus	AF135480.1	JQ518734.1	KF590330.1
Megachasmidae			
Megachasma_pelagios	AF135483.1	KC702506.1	KC702506.1
Cetorhinidae			
Cetorhinus_maximus	AY462147.1	KF597303.1	KF597303.1
Alopiidae			
Alopias_pelagicus	AF135473	KF412639.1	KF412639.1
ORECTOLOBIFORMES			
Rhincodontidae			
Rhincodon_typus	//	KC633221.1	KC633221.1
Parascylliidae			
Parascyllium_collare	//	JQ518749.1	//
Brachaeluridae			
Brachaelurus_colcloughi	//	JQ519055.1	//
Orectolobidae			

Orectolobus_japonicus	//	KF111729.1	KF111729.1
Hemiscyllidae			
Chiloscyllium_punctatum	//	JQ082337.1	JQ082337.1
Ginglymostomatidae			
Ginglymostoma_cirratum	AY949032.1	JQ518741.1	//
Nebrius_ferrugineus	//	JQ518742.1	KF899636.1
CARCHARHINIFORMES			
Pentanchidae			
Apristurus_melanoasper	AY462161.1	JQ519193.1	EU398537.1
Scyliorhinidae			
Cephaloscyllium_ventriosum	//	JQ519118.1	GU440268.1
Scyliorhinus_retifer	//	JQ519117.1	KT075309.1
Scyliorhinus_canicula	JN184092.1	NC_001950.1	NC_001950.1
Proscylliidae			
Proscyllium_habereri	AY462184.1	KF927940.1	JQ681382.1
Pseudotriakidae			
Pseudotriakis_microdon	AY462185.1	AB560493.1	AB560493.1
Leptochariidae			
Leptocharias_smithii	//	JQ518660.1	//
Triakidae			
Mustelus_asterias	AY462188.1	JQ518705.1	KJ709832.1
Hemigaleidae			
Hemipristis_elongata	//	JQ519069.1	KP193382.1
Carcharhinidae			
Carcharhinus_acronotus	//	GU385350.1	KF461148.1
Eusphyra_blochii	//	DQ422104.1	EU398784.1
Sphyrnidae			
Sphyrna_lewini	JQ929571.1	JQ519063.1	KF009669.1
RAJIFORMES			
Rajidae			
Leucoraja_naevus	JN184231.1	JN184280.1	KP975730.1
Okamejei_hollandi	//	JQ519059.1	JQ681338.1
PLATYRHINIFORMES			
Platyrhinidae			
Platyrhina_sinensis	JN184111.1	JN184068.1	HM180795.1
Platyrhinoidis_triseriata	JN184112.1	JQ518853.1	GU440463.1
TORPEDINIFORMES			
Narcinidae			

Narcine_tasmaniensis	JN184094.1	JN171594.1	JN171594.1
Torpedinidae			
Torpedo_macneilli	JN184095.1	JQ518927.1	EU399058.1
TRYGONORRHINIFORMES			
Trygonorrhinidae			
Trygonorrhina_fasciata	JN184102.1	JQ519027.1	EU399098.1
Zapteryx_exasperata	JN184103.1	KC610081.1	JN184087.1
RHINOBATIFORMES			
Rhinobatidae			
Anoxypristis_cuspidata	JN184212.1	JN184261.1	KF590517.1
Pristis_clavata	JN184097.1	JQ519150.1	EU398988.1
Rhinobatos_glaucostigma	JN184100.1	JQ518911.1	JN184075.1
Glaucostegus_thouin	JN184215.1	JN184264.1	KF899441.1
Glaucostegus typus	JN184098.1	JQ519057.1	EU398998.1
Zanobatidae			
Zanobatus_schoenleinii	JN184113.1	JQ518943.1	//
Hexatrygonidae			
Hexatrygon_bickelli	JN184120.1	JQ518835.1	JN184061.1
Plesiobatidae			
Plesiobatis_daviesi	JN184125.1	KF927935.1	EU398978.1
Dasyatidae			
Pastinachus_atrus	KC249808.1	JN184290.1	KM072988.1
Urogymnus_asperrimus	KC249812.1	JQ519107.1	KC250636.1
Himantura_walga	KC249807.1	JN184308.1	KM072995.1
Himantura leoparda	//	KM073045.1	JX263418.1
Gymnuridae			
Gymnura_crebripunctata	JN184119.1	JQ518827.1	JN184060.1
Gymnura_micrura	JN184244.1	JN184295.1	GU225294.1
Aetoplatea_zonura	JN184243.1	JN184294.1	EU398805.1
Myliobatidae			
Mobula_thurstoni	KM364956.1	KM396925.1	KM073012.1
Urolophidae			
Urolophus_cruciatus	JN184129.1	JQ518937.1	DQ108152.1
Potamotrygonidae			
Taeniura_lymma	KC249810.1	KM073038.1	KC250633.1
Urotrygonidae			
Urobatis_jamaicensis	//	JQ518941.1	GU225505.1

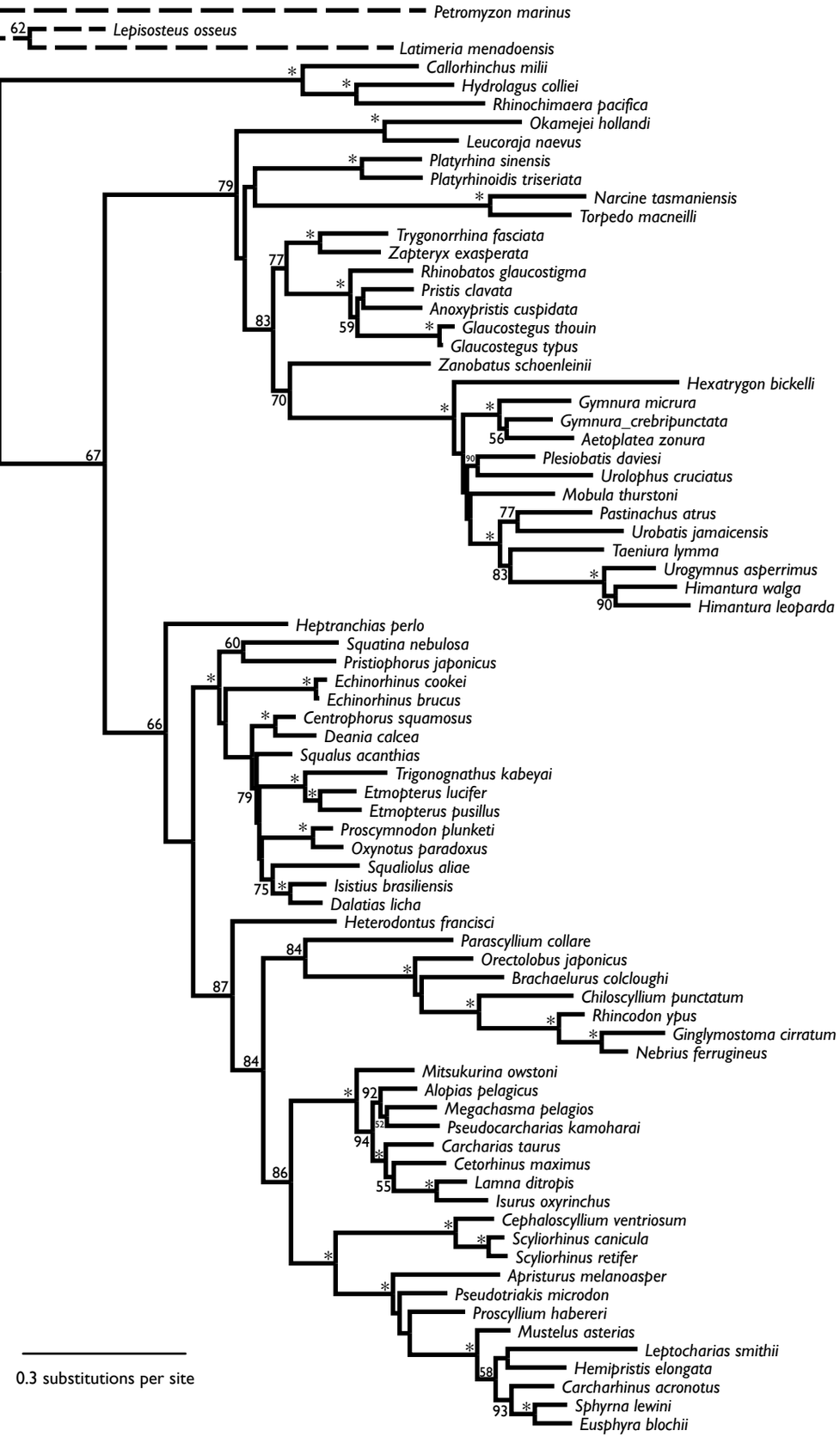
Supp. Fig. 1.



Supp. Fig. 2.

Supp. Fig. 3.

Supp. ***Fig. 4.***


Petromyzon marinus
Lepisosteus osseus
Latimeria menadoensis
Callorhinchus milii
Hydrolagus colliei
Rhinochimaera pacifica
Okamejei hollandi
Leucoraja naevus
Platyrhina sinensis
Platyrhinoidis triseriata
Narcine tasmaniensis
Torpedo macneilli
Trygonorrhina fasciata
Zapteryx exasperata
Rhinobatos glaucostigma
Pristis clavata
Anoxypristis cuspidata
Glaucostegus thouin
Glaucostegus typus
Zanobatus schoenleinii
Hexatrygon bickelli
Gymnura micrura
Gymnura_crebripunctata
Aetoplatea zonura
Plesiobatis daviesi
Urolophus cruciatus
Mobula thurstoni
Pastinachus atrus
Urobatis jamaicensis
Taeniura lymma
Urogymnus asperrimus
Himantura walga
Himantura leoparda
Heptranchias perlo
Squatina nebulosa
Pristiophorus japonicus
Echinorhinus cookei
Echinorhinus brucus
Centrophorus squamosus
Deania calcea
Squalus acanthias
Trigonognathus kabeyai
Etmopterus lucifer
Etmopterus pusillus
Proscymnodon plunketi
Oxynotus paradoxus
Squaliolus aliae
Isistius brasiliensis
Dalatias licha
Heterodontus francisci
Parascyllium collare
Orectolobus japonicus
Brachaelurus colcloughi
Chiloscyllium punctatum
Rhincodon ypus
Ginglymostoma cirratum
Nebrius ferrugineus
Mitsukurina owstoni
Alopias pelagicus
Megachasma pelagios
Pseudocarcharias kamoharai
Carcharias taurus
Cetorhinus maximus
Lamna ditropis
Isurus oxyrinchus
Cephaloscyllium ventriosum
Scyliorhinus canicula
Scyliorhinus retifer
Apristurus melanoasper
Pseudotriakis microdon
Proscyllium habereri
Mustelus asterias
Leptocharias smithii
Hemipristis elongata
Carcharhinus acronotus
Sphyrna lewini
Eusphyra blochii
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Supp. Fig. 5.