Spatial fragmentation in the distribution of diatom endosymbionts from the taxonomically clarified dinophyte *Kryptoperidinium triquetrum* (= *Kryptoperidinium foliaceum*, Peridiniales)

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Supplementary information

Tables

Table S1: Voucher list. All names are given under the rules of the ICN, with the author standard forms[1]. Abbreviation: n.inf., no information. If 'holotype' or 'epitype' is noted for a species name, then it refers to material, from which the type was prepared.

Species name with author	Strain No.	Locality	Date	Collector(s) [isolator]	GenBankNo(s)	Reference
Aduncodinium glandulum (Herdman) N.S.Kang, H.J.Jeong & Moestrup	n.inf.	western North Pacific, East China Sea, off South Korea: Gyeongsangnam-do, Masan Bay (35°11'N, 128°35'E)	2013	N.S. Kang s.n.	LK934662 (SSU+ITS+LSU)	2
Amphidiniopsis uroensis Toriumi, Yoshimatsu & J.D.Dodge	uro8	western North Pacific, off Japan: Kōchi (33°19'N, 134°10'E)	Apr 18, 2014	A. Yamaguchi s.n.	LC191235 (SSU), LC191250 (LSU)	3
Apocalathium malmogiense (G.Sjöstedt) Craveiro, Daugbjerg, Moestrup & Calado (reference material)	SHTV1	Baltic Sea, off Finland: Uusimaa, Raseborg, Tvärminne (59°50'N, 23°15'E)	2002	A. Kremp s.n.	KF751923 (SSU+ITS+LSU)	4–8
Archaeperidinium minutum (Kof.) Jørg.	n.inf.	eastern North Pacific, off Canada: British Columbia, Victoria	Mar 21, 2006	n.inf.	AB564309 (SSU), AB564310 (LSU)	9
Blastodinium contortum Chatton [isolated from *Paracalanus* cf. *parvus* (Claus, 1863)]	n.inf.	eastern North Pacific, off USA–CA: Gulf of California, station 3 (24°14'N, 110°20'W)	Jun 11, 2008	n.inf.	FJ228701 (SSU+ITS+LSU)	10
Blastodinium crassum Chatton [isolated from *Paracalanus* cf. *parvus* (Claus, 1863)]	n.inf.	eastern North Pacific, off USA–CA: Gulf of California, station 2 (24°13'N, 110°20'W)	Jun 10, 2008	n.inf.	FJ228702 (SSU+ITS+LSU)	10
Blixaea quinquecornis (T.H.Abé) Gottschling	n.inf.	western North Pacific, Sea of Japan, off Japan: Hokkaidō, Shiribeshi, Otaru (43°10'N, 141°01'E)	Sep 9, 2005	n.inf.	AB246744 (SSU), AB246746 (esSSU), AB246745 (rbcL)	11

*Caladoa arcachonensis Z.*Luo, K.N.Mert. & H.Gu (holotype)	TIO278	eastern North Atlantic, Bay of Biscay, off France, Arcachon Bay (44°38'N, 1°04'W)	Apr, 2016	n.inf.	MK012071 (SSU), MK012081 (ITS), MK012076 (LSU)	12
†*Calciodinellum operosum* Deflandre (reference material)	SZN74	Mediterranean Sea, Tyrrhenian Sea, off Italy: Campania, Naples (40°43'N, 14°10'W)	n.inf.	M. Montresor	KF751922 (SSU+ITS+LSU)	5, 8, 13–16
Dinothrix paradoxa Pascher	2020-HS02	western North Pacific, off Japan: Kanagawa, Miura (35°12'N, 139°36'E)	n.inf.	H. Sakai	LC583318 (SSU)	17
Dinothrix phymatodea Norico Yamada & T.Horig. (holotype)	HG180	western North Pacific, East China Sea, off Japan: Okinawa, Shimajiri, Hanashiro (26°07'N, 127°45'E)	n.inf.	n.inf.	LC054946 (SSU), LC192339 (esSSU), LC192328 (rbcL)	18–19
Dinothrix pseudoparadoxa Norico Yamada & T.Horig. (holotype)	HG204	western Indian Ocean, off South Africa: KwaZulu-Natal, Marina Beach (30°57'S, 30°18'E)	n.inf.	n.inf.	LC054947 (SSU), LC192340 (esSSU), LC192329 (rbcL)	18–19
Dinothrix quadrilobata (T.Horig. & Pienaar) R.Onuma & T.Horig.	2020-RO01	western North Pacific, East China Sea, off Japan: Okinawa, Ishigaki (30°45'N, 131°00'E)		R. Onuma	LC583319 (SSU)	17
Dinothrix rugata (Tam. & T.Horig.) Norico Yamada & T.Horig.	n.inf.	western North Pacific, Mirconesia, off Palau: Mecherchar Island	May 22, 2002	n.inf.	AB195668 (SSU), AB195669 (rbcL)	20
Duboscquodinium collinii Grassé [isolated from *Eutintinnus fraknoii* (Daday, 1887)]	VSM11	western Mediterranean Sea, off France: Alpes-Maritimes, Nice, Villefranche-sur-Mer (43°41'N, 7°19'E)	Sep 10, 2009	n.inf.	HM483399 (SSU+ITS+LSU)	21
Durinskia agilis (Kof. & Swezy) Saburova, Chomérat & Hoppenrath	IFR10-452	Persian Gulf, off Kuwait: Hawalli, Ras Salmiya	Nov 28, 2010	n.inf.	JF514515 (SSU)	22
Durinskia cf. *baltica* (Levander) Carty & El.R.Cox	CS38 (≡ UTEX1563)	USA–CA: Salton Sea	Oct, 1965	[A.R. Loeblich III.] s.n.	AF231803 (SSU), LC192343 (esSSU), NC_014287 (atpB, psaA, psaB, psbA, psbC, rbcL)	19, 23–24

Durinskia cf. *baltica* (Levander) Carty & El.R.Cox	DbDH2	western North Pacific, Yellow Sea, off South Korea: Seoul, Dongho	Mar 11, 2013	n.inf.	KT371442 (LSU)	25
Durinskia cf. *baltica* (Levander) Carty & El.R.Cox	DbDH3	western North Pacific, Yellow Sea, off South Korea: Seoul, Dongho	Jun 13, 2013	n.inf.	KT371448 (LSU)	25
Durinskia cf. *baltica* (Levander) Carty & El.R.Cox	HG171	western North Pacific, East China Sea, off Japan: Okinawa, Tokashiki	n.inf.	n.inf.	LC054925 (SSU), LC192341 (esSSU), LC192335 (rbcL)	18–19
Durinskia cf. *baltica* (Levander) Carty & El.R.Cox	HG265	western North Pacific, East China Sea, off Japan: Okinawa, Odo	n.inf.	n.inf.	LC054926 (SSU), LC192336 (rbcL)	18–19
Durinskia cf. *baltica* (Levander) Carty & El.R.Cox	n.inf.	Japan, Kyūshū, Kagoshima, Amami-Ōshima	Jul 12, 1998	n.inf.	AB195670 (rbcL)	20
Durinskia cf. *baltica* (Levander) Carty & El.R.Cox	n.inf.	n.inf.	n.inf.	n.inf.	Y10566 (esSSU)	26
Durinskia capensis Pienaar, Sakai & T.Horig.	Kommetjie 2-A	eastern South Atlantic, off South Africa: Western Cape, Kommetjie	n.inf.	N. Yamada s.n.	LC192320 (SSU)	19
Durinskia capensis Pienaar, Sakai & T.Horig.	Kommetjie 2-B	eastern South Atlantic, off South Africa: Western Cape, Kommetjie	n.inf.	N. Yamada s.n.	LC192322 (SSU)	19
Durinskia capensis Pienaar, Sakai & T.Horig.	Kommetjie 6-A	eastern South Atlantic, off South Africa: Western Cape, Kommetjie	n.inf.	N. Yamada s.n.	LC192324 (SSU)	19
Durinskia capensis Pienaar, Sakai & T.Horig.	Kommetjie 6-B	eastern South Atlantic, off South Africa: Western Cape, Kommetjie	n.inf.	N. Yamada s.n.	LC192323 (SSU)	19
Durinskia capensis Pienaar, Sakai & T.Horig.	NY066	eastern South Atlantic, off South Africa: Western Cape, Kommetjie	n.inf.	R.J. Anderson s.n.	LC385879 (SSU), LC385878 (rbcL)	27
Durinskia capensis Pienaar, Sakai & T.Horig.	Saldanha Bay	eastern South Atlantic, off South Africa: Western Cape, Kommetjie	n.inf.	T. Horiguchi s.n.	LC192321 (SSU)	19

Durinskia kwazulunatalensis Norico Yamada, Sym & T.Horig.	Cx18	western Indian Ocean, off South Africa: KwaZulu-Natal, Marina Beach	n.inf.	n.inf.	LC054928 (SSU), LC192338 (esSSU), LC192325 (rbcL)	18–19
Durinskia kwazulunatalensis Norico Yamada, Sym & T.Horig. (holotype)	Cx22	western Indian Ocean, off South Africa: KwaZulu-Natal, Marina Beach	n.inf.	n.inf.	LC054929 (SSU), LC192337 (esSSU), LC192327 (rbcL)	18–19
Durinskia oculata (F.Stein) Gert Hansen & Flaim (epitype)	GeoM*662 (≡ CCAC6039B, CCCM6005)	Czech Republic: Prague, Hlavní město Praha, Vltava (50°08'N, 14°23'E)	Sep, 2015	J. Kretschmann & M. Gottschling [J. Kretschmann] D043	KY693722 (SSU+ITS+LSU), KY693725 (LSUd8d10), KY693716 (esSSU), KY693717 (esITS), KY693719 (rbcL)	28–29
Durinskia oculata (F.Stein) Gert Hansen & Flaim	I2804*	China: Shandong, Qingdao (36°21'N, 120°10'E)	Oct, 2010	n.inf.	HQ588943 (ITS), HQ588944 (LSU)	30
Durinskia oculata (F.Stein) Gert Hansen & Flaim	n.inf.	China: Xiantao (30°21'N, 113°32'E)	Nov, 2009	n.inf.	GU999528 (SSU), GU999529 (LSU)	30
Ensiculifera tyrrhenica (Balech) Zhun Li, K.N.Mert., Gottschling, H.Gu & H.H.Shin	GeoB*230	Mediterranean Sea, Ionian Sea, off Italy: Gulf of Taranto (40°07'N, 17°19'E)	Oct 26, 2002	D. Saracino [M. Kirsch] s.n.	HQ845329 (SSU+ITS+LSU)	4, 31–32
Gloeodinium montanum Klebs	CCAC0066	Germany: Hessen, Marburg, Nordeck	n.inf.	n.inf.	EF058238 (SSU), EF058258 (LSU)	6, 33
Herdmania litoralis J.D.Dodge	n.inf.	eastern North Pacific, off Canada, Boundary Bay: British Columbia, Centennial Beach	Mar 19, 2009	n.inf.	AB564300 (SSU), AB564306 (LSU)	9
Heterocapsa arctica T.Horig. (holotype)	NCMA445 (≡ NCMA35)	North Atlantic, Baffin Bay (76°15'N, 82°33'W)	Jun 3, 1986 [Jul 28, 1989]	R. Selvin s.n.	KF925338 (SSU), JQ972677 (ITS), AY571372 (LSU)	34–37, Preston & Gilg (unpubl. 2014)
Heterocapsa pseudotriquetra Iwataki, Gert Hansen & Fukuyo	GeoB 222	eastern North Atlantic, off Canary Islands (24°25'N, 17°11'W)	2003	[Meteor 58] [M. Kirsch]	AY499509 (ITS), MF423367 (LSU), MF423369 (LSUd8d10)	4, 38
Heterocapsa steinii Tillmann, Gottschling, Hoppenrath, Kusber & Elbr. (epitype)	UTKG7 (ITS clones 7, 9→14, LSU clones 14→15)	Baltic Sea, off Germany: Schleswig-Holstein, Kiel (54°19'N, 10°09'E)	Aug 7, 2013	A. Tillmann [U. Tillmann] s.n.	MF423350 (SSU), MF423353 (ITS), MF423362 (LSU)	38
Islandinium minutum (Harland & P.C.Reid) Head	IMINCS2	Arctic Ocean (75°22'N, 176°19'E)	Aug 31, 2015	n.inf.	KY129807 (rRNA)	39

Johsia chumphonensis Z.Luo, Na Wang, K.N.Mert. & H.Gu	IshiMM4	western North Pacific, East China Sea, off Japan: Okinawa, Ishigaki, Nosoko (24°29'N, 124°14'E)	Jul 26, 2010	n.inf.	AB999980 (SSU), AB999984 (ITS), AB999988 (LSU)	Prabowo et al. (2017 unpubl.)
Kryptoperidinium sp.	NCMA1326	eastern North Pacific, off USA–CA: San Diego, La Jolla	1984	n.inf.	EF492508 (SSU), FJ823570 (ITS), NC_014267 (atpB, psaA, psaB, psbA, psbC, rbcL)	23, 36, 40–44
Kryptoperidinium sp.	SC (ribotype B)	western North Atlantic, off USA–SC	n.inf.	n.inf.	EF492508 (SSU), FJ823570 (ITS)	40
Kryptoperidinium sp.	UTEX1688 (≡ CCCM974, CS37)	western North Atlantic, Caribbean Sea, off USA–PR: Lajas, La Parguera (18°03'N, 67°04'W)	1965	[P.R. Burkholder] s.n.	EF492508 (SSU), FJ823570 (ITS), Y10567 (esSSU), U31876 (rbcL)	23, 26, 36, 40, 44–46, Yu et al. (2006 unpubl.)
Kryptoperidinium sp.	Xmm11S5	western North Pacific, East China Sea, South China Sea, off China: Guangdong, Xuwen	n.inf.	n.inf.	KU561157 (esSSU)	47
Kryptoperidinium triquetrum (Ehrenb.) Tillmann, Gottschling, Elbr., Kusber & Hoppenrath	A6	Caspian Sea	n.inf.	n.inf.	KY921623 (LSU)	48
Kryptoperidinium triquetrum (Ehrenb.) Tillmann, Gottschling, Elbr., Kusber & Hoppenrath	CCAP1116/3	western North Atlantic, off USA–VA: York River	n.inf.	Ott s.n.	MMETSP0118 (SSU)	37
Kryptoperidinium triquetrum (Ehrenb.) Tillmann, Gottschling, Elbr., Kusber & Hoppenrath	CSST1001	Caspian Sea	n.inf.	n.inf.	KY921622 (LSU)	48
Kryptoperidinium triquetrum (Ehrenb.) Tillmann, Gottschling, Elbr., Kusber & Hoppenrath	GE08	Baltic Sea, off Germany: Mecklenburg-Vorpommern, Greifswald (54°06'N, 13°23'E)	Sep 18, 2019	U. Tillmann, M. Gottschling & A. Kremp [U. Tillmann] s.n.	OP256594 (SSU+ITS+LSU), OP256609 (esSSU+esITS+esLSU), OP264876 (psbA), OP264877 (rbcL)	this study
Kryptoperidinium triquetrum (Ehrenb.) Tillmann, Gottschling, Elbr., Kusber & Hoppenrath	GE10	Baltic Sea, off Germany: Mecklenburg-Vorpommern, Greifswald (54°06'N, 13°23'E)	Sep 18, 2019	U. Tillmann, M. Gottschling & A. Kremp [U. Tillmann] s.n.	OP256617 (esSSU+esITS+esLSU)	this study

Kryptoperidinium triquetrum (Ehrenb.) Tillmann, Gottschling, Elbr., Kusber & Hoppenrath	GeoB 459 (≡ CCAC4765B, CCCM327)	Mediterranean Sea, Aegean Sea, off Greece: Peloponnese, Argolis, Nafplio, Nea Kios (37°35'N, 22°45'E)	Mar, 2010	C. Zinßmeister & S. Söhner [M. Kirsch] GRI00027	KY693721 (SSU+ITS+LSU), KY693724 (LSUd8d10), MF440333 (esSSU), KY693718 (esITS), KY693720 (rbcL)	28–29
Kryptoperidinium triquetrum (Ehrenb.) Tillmann, Gottschling, Elbr., Kusber & Hoppenrath	GF09	Baltic Sea, off Germany: Mecklenburg-Vorpommern, Greifswald (54°06'N, 13°23'E)	Sep 18, 2019	U. Tillmann, M. Gottschling & A. Kremp [U. Tillmann] s.n.	OP256595 (ITS), OP256618 (esSSU+esITS+esLSU)	this study
Kryptoperidinium triquetrum (Ehrenb.) Tillmann, Gottschling, Elbr., Kusber & Hoppenrath	GF11	Baltic Sea, off Germany: Mecklenburg-Vorpommern, Greifswald (54°06'N, 13°23'E)	Sep 18, 2019	U. Tillmann, M. Gottschling & A. Kremp [U. Tillmann] s.n.	OP256616 (esITS+esLSU)	this study
Kryptoperidinium triquetrum (Ehrenb.) Tillmann, Gottschling, Elbr., Kusber & Hoppenrath	KFF0901	Baltic Sea, off Finland: Föglö, Aland	2009	[A. Kremp] s.n.	OP256597 (ITS), OP256607 (esSSU+esITS+esLSU), OP264874 (psbA), OP264875 (rbcL)	this study
Kryptoperidinium triquetrum (Ehrenb.) Tillmann, Gottschling, Elbr., Kusber & Hoppenrath	KFF1001	Baltic Sea, off Finland	2010	[P. Hakanen] s.n.	LT906378 (SSU), OP256596 (ITS), OP256608 (esSSU+esITS+esLSU)	Mikkonen (unpubl. 2017), this study
Kryptoperidinium triquetrum (Ehrenb.) Tillmann, Gottschling, Elbr., Kusber & Hoppenrath	KryCA_Uniss	Italy: Sardinia, Sassari, Alghero, Calich	Apr, 2014	C.T. Satta	MN963958 (SSU), MN963988 (ITS), MN963959 (LSU)	49
Kryptoperidinium triquetrum (Ehrenb.) Tillmann, Gottschling, Elbr., Kusber & Hoppenrath	KrySG_Uniss	Italy: Sardinia, Oristano, Santa Giusta	Aug, 2015	C.T. Satta	MN963957 (SSU), MN963989 (ITS), MN963960 (LSU)	49
Kryptoperidinium triquetrum (Ehrenb.) Tillmann, Gottschling, Elbr., Kusber & Hoppenrath	PCC499	n.inf.	n.inf.	n.inf.	KM062179 (psbA)	50
Kryptoperidinium triquetrum (Ehrenb.) Tillmann, Gottschling, Elbr., Kusber & Hoppenrath	PCC499	n.inf.	n.inf.	n.inf.	KM062180 (psbA)	50
Kryptoperidinium triquetrum (Ehrenb.) Tillmann, Gottschling, Elbr., Kusber & Hoppenrath	SAG38.80	western North Atlantic, off USA–MD: Assateague Island Wildlife Refuge	n.inf.	n.inf.	EF058256 (LSU)	51

Kryptoperidinium triquetrum (Ehrenb.) Tillmann, Gottschling, Elbr., Kusber & Hoppenrath	SCCAP K-0638	western Mediterranean Sea, off Spain	n.inf.	Y. Pazos s.n.	EF052684 (LSU)	52
Kryptoperidinium triquetrum (Ehrenb.) Tillmann, Gottschling, Elbr., Kusber & Hoppenrath	VGO556	Spain: Galicia, Pontevedra, Ulla estuary, Ría de Arousa	Jun 1, 2002	n.inf.	OP256598 (ITS+LSU), OP256710 (esSSU), OP264866 (psbA), OP264867 (rbcL)	this study
Kryptoperidinium triquetrum (Ehrenb.) Tillmann, Gottschling, Elbr., Kusber & Hoppenrath	VGO1124	Spain: Galicia, Pontevedra, Baiona	n.inf.	n.inf.	OP256599 (ITS+LSU), OP256711 (esSSU), OP264868 (psbA), OP264869 (rbcL)	this study
Kryptoperidinium triquetrum (Ehrenb.) Tillmann, Gottschling, Elbr., Kusber & Hoppenrath	W1C06	Baltic Sea, off Germany: Mecklenburg-Vorpommern, Wismar (53°55'N, 11°26'E)	Sep 18, 2019	U. Tillmann, M. Gottschling & A. Kremp [U. Tillmann] s.n.	OP256586 (ITS), OP256615 (esSSU+esITS+esLSU)	this study
Kryptoperidinium triquetrum (Ehrenb.) Tillmann, Gottschling, Elbr., Kusber & Hoppenrath	W1C07	Baltic Sea, off Germany: Mecklenburg-Vorpommern, Wismar (53°55'N, 11°26'E)	Sep 18, 2019	U. Tillmann, M. Gottschling & A. Kremp [U. Tillmann] s.n.	OP256592 (ITS), OP256614 (esSSU+esITS+esLSU)	this study
Kryptoperidinium triquetrum (Ehrenb.) Tillmann, Gottschling, Elbr., Kusber & Hoppenrath	W1D01	Baltic Sea, off Germany: Mecklenburg-Vorpommern, Wismar (53°55'N, 11°26'E)	Sep 18, 2019	U. Tillmann, M. Gottschling & A. Kremp [U. Tillmann] s.n.	OP256585 (ITS), OP256606 (esSSU+esITS+esLSU)	this study
Kryptoperidinium triquetrum (Ehrenb.) Tillmann, Gottschling, Elbr., Kusber & Hoppenrath	W1D06	Baltic Sea, off Germany: Mecklenburg-Vorpommern, Wismar (53°55'N, 11°26'E)	Sep 18, 2019	U. Tillmann, M. Gottschling & A. Kremp [U. Tillmann] s.n.	OP256591 (ITS), OP256613 (esSSU+esITS+esLSU)	this study
Kryptoperidinium triquetrum (Ehrenb.) Tillmann, Gottschling, Elbr., Kusber & Hoppenrath	W1D11	Baltic Sea, off Germany: Mecklenburg-Vorpommern, Wismar (53°55'N, 11°26'E)	Sep 18, 2019	U. Tillmann, M. Gottschling & A. Kremp [U. Tillmann] s.n.	OP256578 (SSU+ITS+LSU), OP256709 (esSSU)	this study
Kryptoperidinium triquetrum (Ehrenb.) Tillmann, Gottschling, Elbr., Kusber & Hoppenrath (epitype of *Glenodinium foliaceum* F.Stein)	W1E04 (≡ CCAC9297B)	Baltic Sea, off Germany: Mecklenburg-Vorpommern, Wismar (53°55'N, 11°26'E)	Sep 18, 2019	U. Tillmann, M. Gottschling & A. Kremp [U. Tillmann] s.n.	OP256580 (SSU+ITS+LSU), OP256601 (esSSU+esITS), OP264872 (psbA), OP264873 (rbcL)	this study

Kryptoperidinium triquetrum (Ehrenb.) Tillmann, Gottschling, Elbr., Kusber & Hoppenrath	W1E12	Baltic Sea, off Germany: Mecklenburg-Vorpommern, Wismar (53°55'N, 11°26'E)	Sep 18, 2019	U. Tillmann, M. Gottschling & A. Kremp [U. Tillmann] s.n.	OP256593 (ITS), OP256612 (esSSU+esITS+esLSU)	this study
Kryptoperidinium triquetrum (Ehrenb.) Tillmann, Gottschling, Elbr., Kusber & Hoppenrath (epitype)	W4A06 (≡ CCAC9296B)	Baltic Sea, off Germany: Mecklenburg-Vorpommern, Wismar (53°55'N, 11°26'E)	Sep 18, 2019	U. Tillmann, M. Gottschling & A. Kremp [U. Tillmann] s.n.	OP256581 (ITS+LSU), OP256600 (esSSU+esITS), OP264870 (psbA), OP264871 (rbcL)	this study
Kryptoperidinium triquetrum (Ehrenb.) Tillmann, Gottschling, Elbr., Kusber & Hoppenrath	W4A07	Baltic Sea, off Germany: Mecklenburg-Vorpommern, Wismar (53°55'N, 11°26'E)	Sep 18, 2019	U. Tillmann, M. Gottschling & A. Kremp [U. Tillmann] s.n.	OP256589 (ITS), OP256611 (esSSU+esITS+esLSU)	this study
Kryptoperidinium triquetrum (Ehrenb.) Tillmann, Gottschling, Elbr., Kusber & Hoppenrath	W4A09	Baltic Sea, off Germany: Mecklenburg-Vorpommern, Wismar (53°55'N, 11°26'E)	Sep 18, 2019	U. Tillmann, M. Gottschling & A. Kremp [U. Tillmann] s.n.	OP256584 (ITS), OP256610 (esSSU+esITS+esLSU)	this study
Kryptoperidinium triquetrum (Ehrenb.) Tillmann, Gottschling, Elbr., Kusber & Hoppenrath	W4A10	Baltic Sea, off Germany: Mecklenburg-Vorpommern, Wismar (53°55'N, 11°26'E)	Sep 18, 2019	U. Tillmann, M. Gottschling & A. Kremp [U. Tillmann] s.n.	OP256590 (ITS), OP256605 (esSSU+esITS+esLSU)	this study
Kryptoperidinium triquetrum (Ehrenb.) Tillmann, Gottschling, Elbr., Kusber & Hoppenrath	W4B10	Baltic Sea, off Germany: Mecklenburg-Vorpommern, Wismar (53°55'N, 11°26'E)	Sep 18, 2019	U. Tillmann, M. Gottschling & A. Kremp [U. Tillmann] s.n.	OP256583 (ITS), OP256603 (esSSU+esITS+esLSU)	this study
Kryptoperidinium triquetrum (Ehrenb.) Tillmann, Gottschling, Elbr., Kusber & Hoppenrath	W4F01	Baltic Sea, off Germany: Mecklenburg-Vorpommern, Wismar (53°55'N, 11°26'E)	Sep 18, 2019	U. Tillmann, M. Gottschling & A. Kremp [U. Tillmann] s.n.	OP256587 (ITS), OP256602 (esSSU+esITS+esLSU)	this study
Kryptoperidinium triquetrum (Ehrenb.) Tillmann, Gottschling, Elbr., Kusber & Hoppenrath	W4F09	Baltic Sea, off Germany: Mecklenburg-Vorpommern, Wismar (53°55'N, 11°26'E)	Sep 18, 2019	U. Tillmann, M. Gottschling & A. Kremp [U. Tillmann] s.n.	OP256579 (SSU+ITS+LSU), OP256604 (esSSU+esITS+esLSU)	this study

Kryptoperidinium triquetrum (Ehrenb.) Tillmann, Gottschling, Elbr., Kusber & Hoppenrath	W20H6	Baltic Sea, off Germany: Mecklenburg-Vorpommern, Wismar (53°55'N, 11°26'E)	Sep 23, 2020	U. Tillmann [U. Tillmann] s.n.	OP256582 (ITS)	this study
Kryptoperidinium triquetrum (Ehrenb.) Tillmann, Gottschling, Elbr., Kusber & Hoppenrath	W20H7	Baltic Sea, off Germany: Mecklenburg-Vorpommern, Wismar (53°55'N, 11°26'E)	Sep 23, 2020	U. Tillmann [U. Tillmann] s.n.	OP256588 (ITS)	this study
Naiadinium polonicum (Wołosz.) Carty (reference material)	HBI:MG200823a	n.inf.	n.inf.	n.inf.	JQ639764 (SSU), JQ639772 (ITS), JQ639754 (LSU)	Zhang et al. (unpubl. 2012)
Nottbeckia ochracea (Levander) Gert Hansen, Daugbjerg & Moestrup (reference material)	GH957	Finland: Uusimaa, Raseborg, Tvärminne, Brännskär	Jun 19, 2011	n.inf.	MG754078 (SSU), MG754079 (LSU)	53
Palatinus apiculatus (Ehrenb.) Craveiro, Calado, Daugbjerg & Moestrup (epitype)	GeoM*762 (≡ CCAC6788B)	Germany: Berlin, Mitte, Tiergarten (52°31'N, 13°21'E)	Mar 28, 2016	M. Gottschling [J. Kretschmann] D047	KY996787 (SSU+ITS+LSU), MG255412 (LSUd8d10)	54
Parvodinium cf. *centenniale* (Playfair) Carty	GeoM*795 (≡ CCAC6789B)	Poland: Lesser Poland, Tatra, Toporowy Staw Niżni (49°17'N, 20°02'E)	Aug 4, 2016	J. Kretschmann & P.M. Owsianny [J. Kretschmann] PL069	MG255428 (SSU+ITS+LSU), MG255420 (LSUd8d10)	55
Parvodinium trawinskii Kretschmann, Owsianny, Zerdoner & Gottschling (holotype)	GeoM*753 (≡ CCAC6787B)	Poland: Lesser Poland, Tatra, Długi Staw Gąsienicowy (49°14'N, 20°01'E, 1784m)	Sep 22, 2015	P.M. Owsianny, K. Trawiński & G. Marciniak [J. Kretschmann] PL019	MG255427 (SSU+ITS+LSU), MG255419 (LSUd8d10)	55
Peridiniopsis borgei Lemmerm. (reference material)	PBSKA	Sweden: Skåne, St. Kalkbrottsdammen (55°31'N, 12°55'E)	2005	n.inf.	EF058241 (SSU), EU445295 (ITS), EF058261 (LSU), FJ236464 (LSU), EF417339 (cyb)	51, 56–57
"*Peridinium*" *americanum* Gran & Braarud	080218-12	western North Pacific, East China Sea, off Japan: Kyūshū, Nagasaki, Sasebo	n.inf.	n.inf.	AB716911 (SSU), AB716925 (LSU)	58
Peridinium bipes forma *globosum* Er.Lindem.	NIES495 (≡ LOND9)	Japan: Fukushima, Lake Onogawa	Jul 30, 1985	[T. Sawaguchi s.n.]	GU046392 (SSU+ITS+LSU)	59–60
Peridinium bipes forma *occultatum* (Er.Lindem.) M.Lefèvre	HYJA0310	eastern Indian Ocean, off South Korea: Juam	n.inf.	n.inf.	GU046390 (SSU+ITS+LSU)	59–60
Peridinium cinctum (O.F.Müll.) Ehrenb.	CCAC0102 (≡ M1576/1)	Germany: Lower Saxony, Wittmund, Spiekeroog	1998	[D. Hille s.n.]	EF058244 (SSU), KF751925 (SSU+ITS+LSU), MF423370 (LSUd8d10)	4, 8, 16, 51, 61

Peridinium willei Huitf.-Kaas	TK007	Japan: Hokkaidō, Kiritappu-shitsugen	n.inf.	n.inf.	AB232669 (SSU+ITS+LSU)	62
†*Pernambugia tuberosa* (Kamptner) Janofske & Karwath (reference material)	GeoB*61 (≡ CCAC4752B, CCAP1141/1)	western South Atlantic (11°32'S, 28°35'W, –100m)	Feb 27, 1997	[Meteor 38/1] [M. Kirsch] 4321-9	KR362907 (SSU), JN982372 (ITS+LSU), MF423371 (LSUd8d10)	4, 8, 16, 31, 61
Pfiesteria piscicida Steid. & J.M.Burkh.	n.inf.	USA–MD: Chicamacomico River	1997	K.A. Steidinger & J.M. Burkholder s.n.	AY112746 (rRNA)	63
†*Posoniella tricarinelloides* (G.Versteegh) Streng, Banasová, Reháková & H.Willems (reference material)	PTLY01	western North Pacific, Yellow Sea, off China: Jiangsu, Lianyungang (34°49'N, 119°32E, –15m)	May 9, 2011	H. Gu s.n.	KC511790 (SSU), KC511792 (ITS), KC511794 (LSU)	64
Preperidinium meunieri (Pavill.) Elbr.	cell1_3clones	western North Atlantic, off USA–MA: Salt Pond	n.inf.	n.inf.	EF152930 (LSU)	65
Protoperidinium bipes (Paulsen) Balech	n.inf.	western North Pacific, Sea of Japan, off Japan: Hokkaidō, Ishikari	n.inf.	n.inf.	AB284159 (SSU), AB284160 (LSU)	66
Protoperidinium pellucidum Bergh	#28	western North Pacific, Sea of Japan, off Japan: Hokkaidō, Shiribeshi, Otaru (43°10'N, 141°01'E)	Oct 31, 2002	n.inf.	AB181903 (SSU), AB255862 (LSU)	67–68
Scrippsiella bicarinata Zinssmeister, S.Soehner, S.Meier & Gottschling	GeoB 411 (≡ CCAC5106B, CCCM324)	Mediterranean Sea, Tyrrhenian Sea, off Italy: Formia (41°15'N, 13°36'E)	Apr, 2009	M. Gottschling, C. Zinßmeister, S. Söhner [M. Kirsch] ITA00044	MH497031 (SSU), KF751927 (SSU+ITS+LSU)	8, 16, 55
"*Scrippsiella*" *donghaienis* H.Gu	CS168	eastern Indian Ocean, off Australia (33°S, 138°E)	1983	J.L. Stauber s.n.	JN982374 (ITS+LSU), MH497032 (LSUd8d10), JN982415 (cyb), GQ501314 (coI)	4, 36, 69
Scrippsiella sweeneyae Balech	CCCM280	n.inf.	n.inf.	A. Chan s.n.	HQ845331 (SSU+ITS+LSU), EU840175 (cyb)	4–5, 32
Theleodinium calcisporum Craveiro, Pandeirada, Daugbjerg, Moestrup & Calado (holotype)	MP69	Portugal: Aveiro, Ílhavo, Gafanha da Boavista (40°36'N, 8°42'W)	Mar 2, 2011	n.inf.	KC699492 (SSU+ITS+LSU)	70
Thoracosphaera heimii (Lohmann) Kamptner	CCCM670 (≡ NCMA1069)	western North Atlantic, Gulf of Mexico	Apr 23, 1980	L. Brand s.n.	HQ845327 (SSU+ITS+LSU)	32, 45

Tintinnophagus acutus Coats (isolated from *Tintinnopsis cylindrica* Daday, 1887) (holotype)	n.inf.	western North Atlantic, off USA–MD: Rhode River, Chesapeake Bay (38°53'N, 76°33'W)	n.inf.	n.inf.	HM483397 (SSU+ITS+LSU)	21
Unruhdinium jiulongense (H.Gu) Gottschling (holotype)	PSJL01	China: Fujian, Zhangzhou, Jiulongjiang River, Xipi (25°07'N, 117°32'E)	Dec, 2012	n.inf.	KM217384 (SSU), KY594913 (ITS), KY594912 (LSU), KM217383 (esSSU)	71–72
Unruhdinium cf. *kevei* (Grigorszky & Vagas) Gottschling	DA08	Japan: Hokkaidō, Shikotsu Lake	n.inf.	n.inf.	LC054935 (SSU)	18
Unruhdinium minimum (Qi Zhang, G.X.Liu & Z.Y.Hu) Gottschling (holotype)	QZ-2012 HBI:FJ201101	China: Fujian, Zhangzhou, Jiulongjiang River	n.inf.	n.inf.	JQ639767 (SSU), JQ639770 (ITS), JQ639752 (LSU)	73
Unruhdinium niei (G.X.Liu & Z.Y.Hu) Gottschling (holotype)	Donghu	China: Hubei, Wuhan, Donghu Lake (30°33'N, 114°23'E)	Mar 18, 2004	G.-X. Liu s.n.	HM596542 (SSU), HM596550 (ITS), HM596555 (LSU)	74
Unruhdinium penardii (Lemmerm.) Gottschling (reference material)	Jiulongjiang	China: Fujian, Zhangzhou, Jiulongjiang River (24°35'N, 117°41'E)	Feb, 2009	n.inf.	HM596543 (SSU), HM596551 (ITS), HM596556 (LSU), HM596547 (esSSU)	74
Unruhdinium penardii (Lemmerm.) Gottschling	n.inf.	Japan: Shiga, Lake Biwa	Mar 30, 2005	n.inf.	AB353771 (SSU), AB353773 (esSSU), AB353775 (rbcL)	75
Unruhdinium penardii var. *robustum* (Qi Zhang, G.X.Liu & Z.Y.Hu) Gottschling (holotype)	Manwan	China: Yunnan, Manwan, Luodi River (24°44'N, 100°21'E)	Apr 14, 2008	G.-X. Liu s.n.	HM596554 (ITS), HM596558 (LSU), HM596549 (esSSU)	74
Vulcanodinium rugosum Nézan & Chomérat	G	France	n.inf.	n.inf.	MG826115 (SSU), MG826367 (ITS), MG826107 (LSU)	76
Zooxanthella nutricula K.Brandt (isolated from *Thalassicolla nucleata* Huxley, 1851)	BBSR323	western North Atlantic, Sargasso Sea, off UK, the Bermudas: 3-5 miles SE of Bermuda	n.nf.	n.nf.	U52356 (SSU), KC511788 (ITS+LSU)	77–78

Table S2: Primer sets used for PCR amplification and sequencing.

Target	Primer	Direction	Sequence 5´–3´	Reference
Host LSU (D1–D2)	D1R	forward	ACC CGC TGA ATT TAA GCA TA	79
Host LSU (D1–D2)	D2C	reverse	CCT TGG TCC GTG TTT CAA GA	79
Host LSU (D3)	28_14838	forward	GCT ACT ACC ACC AAG ATC TGC	80
Host LSU (D3)	28S_2	reverse	TGA AAA GGA CTT TAA AAG AGA	79
Host ITS	ITS1	forward	TCC GTA GGT GAA CCT GCG G	81
Host ITS	ITS4	reverse	TCC TCC GCT TAT TGA TAT GC	82
Host ITS	ITSA	forward	CCA AGC TTC TAG ATC GTA ACA AGG (ACT)TC CGT AGG T	83
Host ITS	ITSB	reverse	CCT GCA GTC GAC A(GT)A TGC TTA A(AG)T TCA GC(AG) GG	83
Host SSU	1F	forward	AAC CTG GTT GAT CCT GCC AGT	84–85
Host SSU	528F	forward	GCG GTA ATT CCA GCT CCA A	84–85
Host SSU	1055F	forward	GGT GGT GCA TGG CCG TTC TT	84–85
Host SSU	536R	reverse	AAT TAC CGC GGC (GT)GC TGG CA	84–85
Host SSU	1055R	reverse	ACG GCC ATG CAC CAC CAC CCA T	84–85
Host SSU	1528R	reverse	TGA TCC TTC TGC AGG TTC ACC TAC	84–85
Endosymbiont ITS	Ns7m	forward	GGC AAT AAC AGG TCT GT	86
Endosymbiont ITS	LR1850	reverse	CCT CAC GGT ACT TGT TC	86
Endosymbiont ITS (nested)	SR12cf	forward	TAG AGG AAG GAG AAG TCG TAA	62
Endosymbiont ITS (nested)	25F1R	reverse	ATA TGC TTA AAT TCA GCG G	62
Endosymbiont ITS (nested)	1645F	forward	CTT ATC ATT TAG AGG AAG GTG AAG TCG	28
Endosymbiont ITS (nested)	28SR	reverse	CCG CTT CAC TCG CCG TTA CT	28

Endosymbiont SSU	EukA	forward	ACC TGG TTG ATC CTG CCA GT	85
Endosymbiont SSU	EukB	reverse	TGA TCC TTC TGC AGG TTC ACC TAC	85
Endosymbiont SSU (nested)	D1800R	reverse	GCT TGA TCC TTC TGC AGG T	28
Endosymbiont SSU (nested)	KrypendoSSU	forward	TTG CGC ACC AAG GTA ATG ATT AA	this study
Endosymbiont SSU	DiaR	reverse	CCA TTC AAT CGG TAG GTG C	74
Endosymbiont SSU	1055R	reverse	ACG GCC ATG CAC CAC CAC CCA T	87
Endosymbiont SSU	1010R	reverse	ACG GTA TCT GAT CGT CTT CGA TCC C	this study
Endosymbiont SSU	930F	forward	AAG ACG GAC TAC TGC GAA AGC A	this study
Endosymbiont SSU	1055F	forward	GGT GGT GCA TGG CCG TTC TT	84
Endosymbiont SSU	1209F	forward	CAG GTC TGT GAT GCC C	88

Table S3: Primer combinations and PCR conditions.

Target	rRNA region	Primer	Cycling Conditions		Cycles
Host	LSU D1–D2	D1R D2C (=Sequencing primers)	Initial denaturation: Denaturation: Annealing: Elongation: Final extension: Hold:	94°C / 120 sec 94°C / 30 sec 55°C / 30 sec 68°C / 120 sec 68°C / 600 sec 10°C	30 x
Host	LSU D3	28_14838 28S_2 (=Sequencing primers)	Initial denaturation: Denaturation: Annealing: Elongation: Final extension: Hold:	95°C / 180 sec 95°C / 30 sec 52°C / 60 sec 68°C / 60 sec 68°C / 600 sec 10°C	30 x
Host	ITS	ITS1 ITS4 ITSA ITSB (=Sequencing primers)	Initial denaturation: Denaturation: Annealing: Elongation: Denaturation: Annealing: Elongation: Final extension: Hold:	94°C / 240 sec 94°C / 50 sec 58°C / 40 sec 70°C / 60 sec 94°C / 45 sec 50°C / 45 sec 70°C / 60 sec 70°C / 300 sec 10°C	10 x 30 x
Host	SSU	1F 1528R	Initial denaturation: Denaturation: Annealing: Elongation: Final extension: Hold:	94°C / 240 sec 94°C / 120 sec 55°C / 120 sec 68°C / 180 sec 68°C / 600 sec 10°C	30 x

Host	SSU	1F 528F 1055F 536R 1055R 1528R	Initial denaturation: Denaturation: Annealing: Elongation: Hold:	96°C / 60 sec 96°C / 10 sec 50°C / 5 sec 60°C / 240 sec 10°C	25 x
Endosymbiont	ITS	Ns7m LR1850	Initial denaturation: Denaturation: Annealing: Elongation: Final extension: Hold:	94°C / 300 sec 94°C / 50 sec 52°C / 60 sec 72°C / 90 sec 72°C / 600 sec 10°C	32 x
Endosymbiont	Nested in ITS product	SR12cf 25F1R (=Sequencing primers A)	Initial denaturation: Denaturation: Annealing: Elongation: Final extension: Hold:	94°C / 120 sec 94°C / 35 sec 50°C / 35 sec 72°C / 60 sec 72°C / 300 sec 10°C	39 x
Endosymbiont	Nested in ITS product	1645F 28SR (=Sequencing primers B)	Initial denaturation: Denaturation: Annealing: Elongation: Final extension: Hold:	95°C / 120 sec 95°C / 10 sec 67°C / 30 sec 72°C / 90 sec 72°C / 600 sec 10°C	34 x

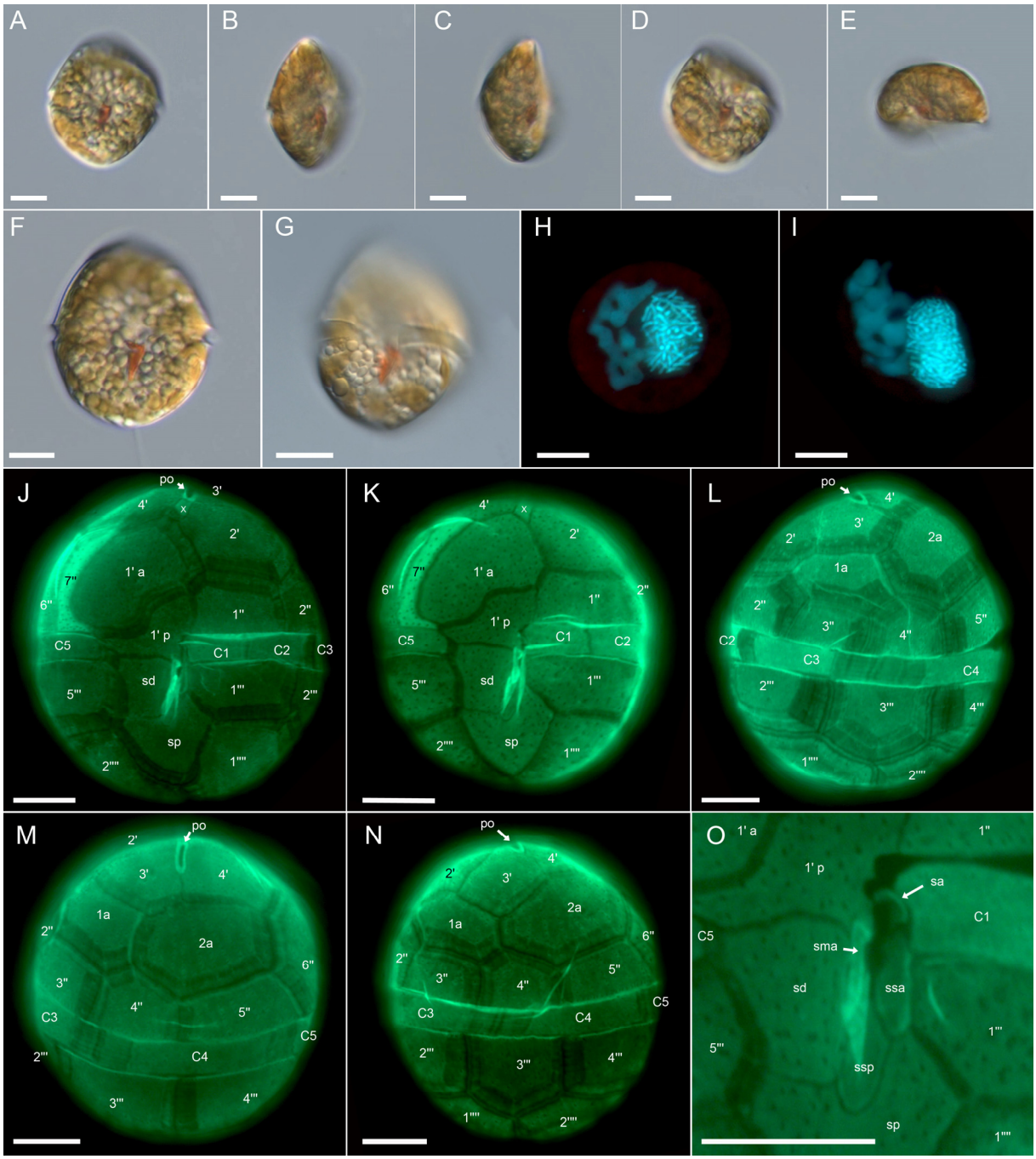

Figure S1: ***Kryptoperidinium triquetrum*, strain W4-A10**. Light microscopy of living cells (A–G), formaldehyde-fixed cells (H–I) or lugol-fixed cells (J–O). (A–E) The same cells in ventral (A), lateral (B–C), ventral-antapical (D) and antapical view (E). (J–O) Light microscopy of cells stained with solophenyl flavine and viewed with epifluorescence and green light excitation. (J–K) Cells in ventral view. (L) Cell in left-lateral view. (M–N) Cells in dorsal view. (O) Detailed view of the sulcal area with sulcal plates. Plate labels according to the Kofoidean system, modified by labelling an anterior part (1' a) and a posterior part (1' p) of the first apical plate. Sulcal plate labels: sa = anterior sulcal plate; sd = right sulcal plate; sma = anterior median sulcal plate; smp = posterior median sulcal plate; sp = posterior sulcal plate; ssa = anterior left sulcal plate; ssp = posterior left sulcal plate. Scale bars = 10 µm.

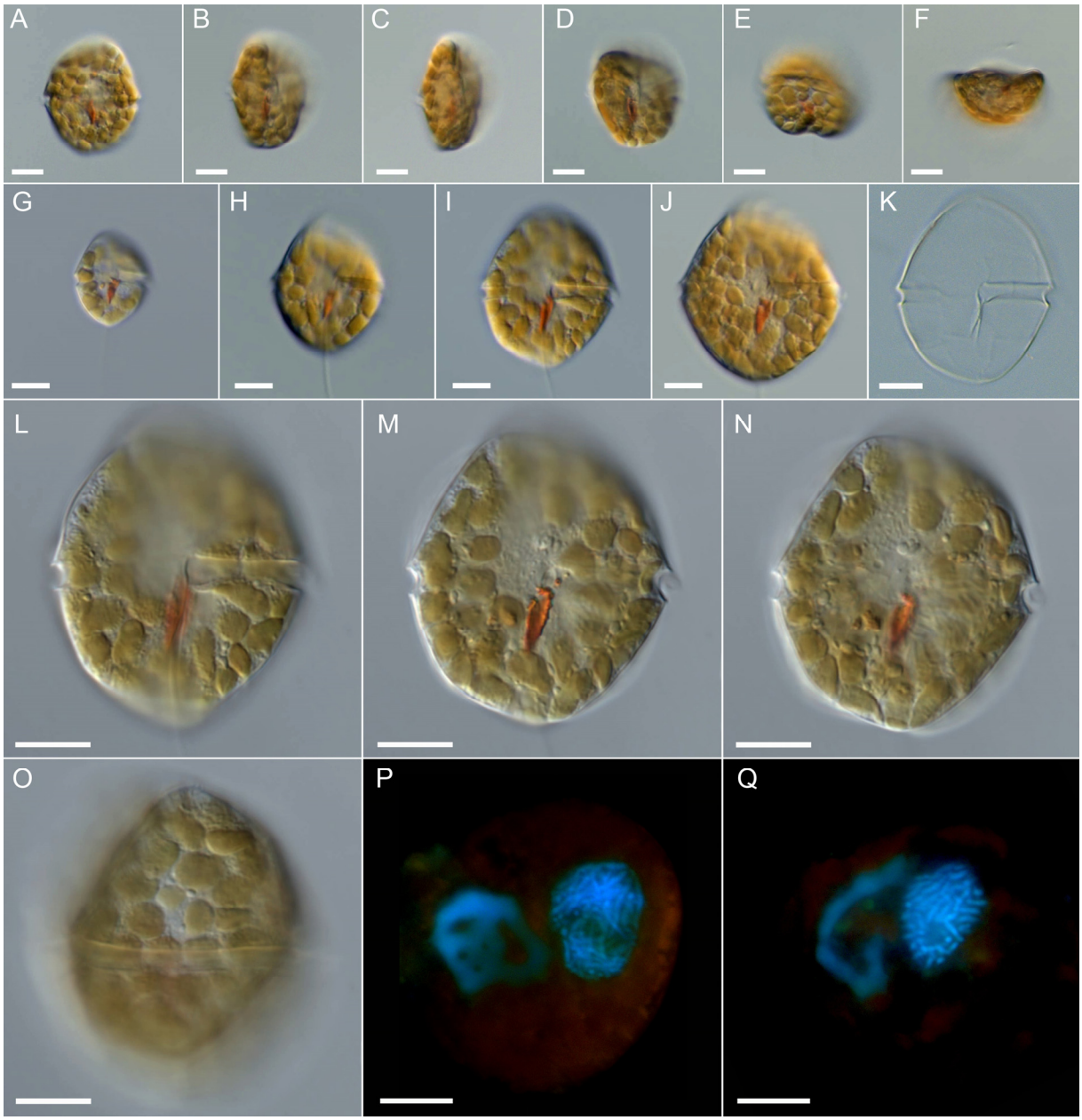

Figure S2: ***Kryptoperidinium triquetrum*****, strain W4-F9**. Light microscopy of living cells (A–O) or formaldehyde-fixed cells (P–Q). (A–F) The same cell in ventral (A), lateral (B–C), ventral-antapical (D), dorsal-antapical (E) and antapical view (F). (G–J) Cells of different size in ventral view. (K) Empty theca in ventral view. (L–O) The same cell in ventral view in different focal planes (L–M) or in dorsal view (O). (P–Q) Different cells stained with DAPI and viewed with epifluorescence and UV excitation, note the irregularly shaped diatom nucleus (left) and the dinophyte nucleus with condensed chromosomes (right). Scale bars = 10 µm.

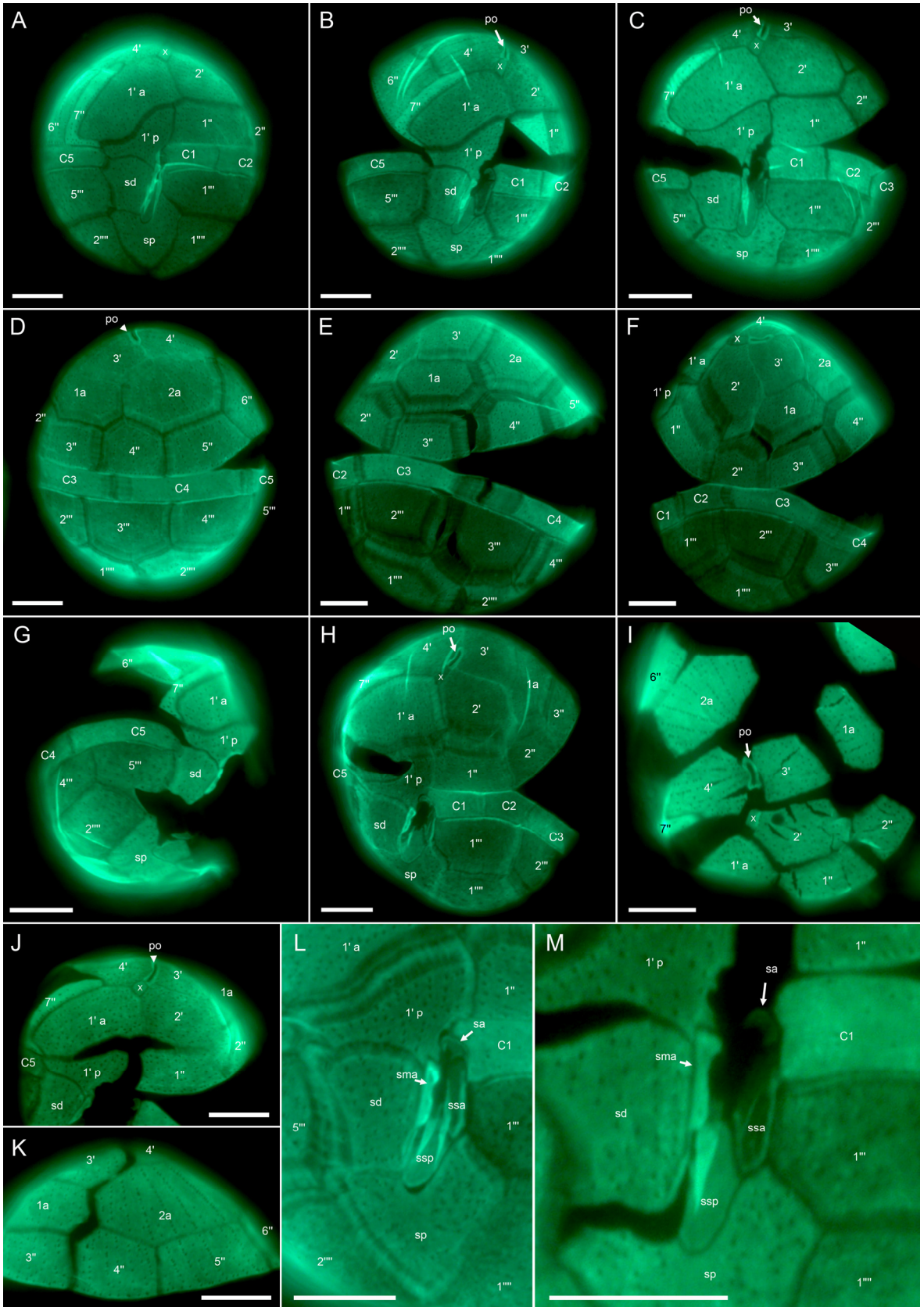

Figure S3: ***Kryptoperidinium triquetrum*****, strain W4-F9**. Light microscopy of lugol-fixed cells stained with solophenyl flavine and viewed with epifluorescence and green light excitation. (A–C) Cells in ventral view. (D–E) Cells in dorsal view. (F) Cell in left-lateral view. (G) Cell in right-lateral view. (H) Cell in ventral apical view. (I–J) Detailed view of epithecal plates in apical view. (K) Epitheca in dorsal view, note the arrangement of thecal pores in lines. (L–M) Detailed view of the sulcal area with sulcal plates. Plate labels according to the Kofoidean system, modified by labelling an anterior part (1′ a) and a posterior part (1′ p) of the first apical plate. Sulcal plate labels: sa = anterior sulcal plate; sd = right sulcal plate; sma = anterior median sulcal plate; smp = posterior median sulcal plate; sp = posterior sulcal plate; ssa = anterior left sulcal plate; ssp = posterior left sulcal plate. Scale bars = 10 µm.

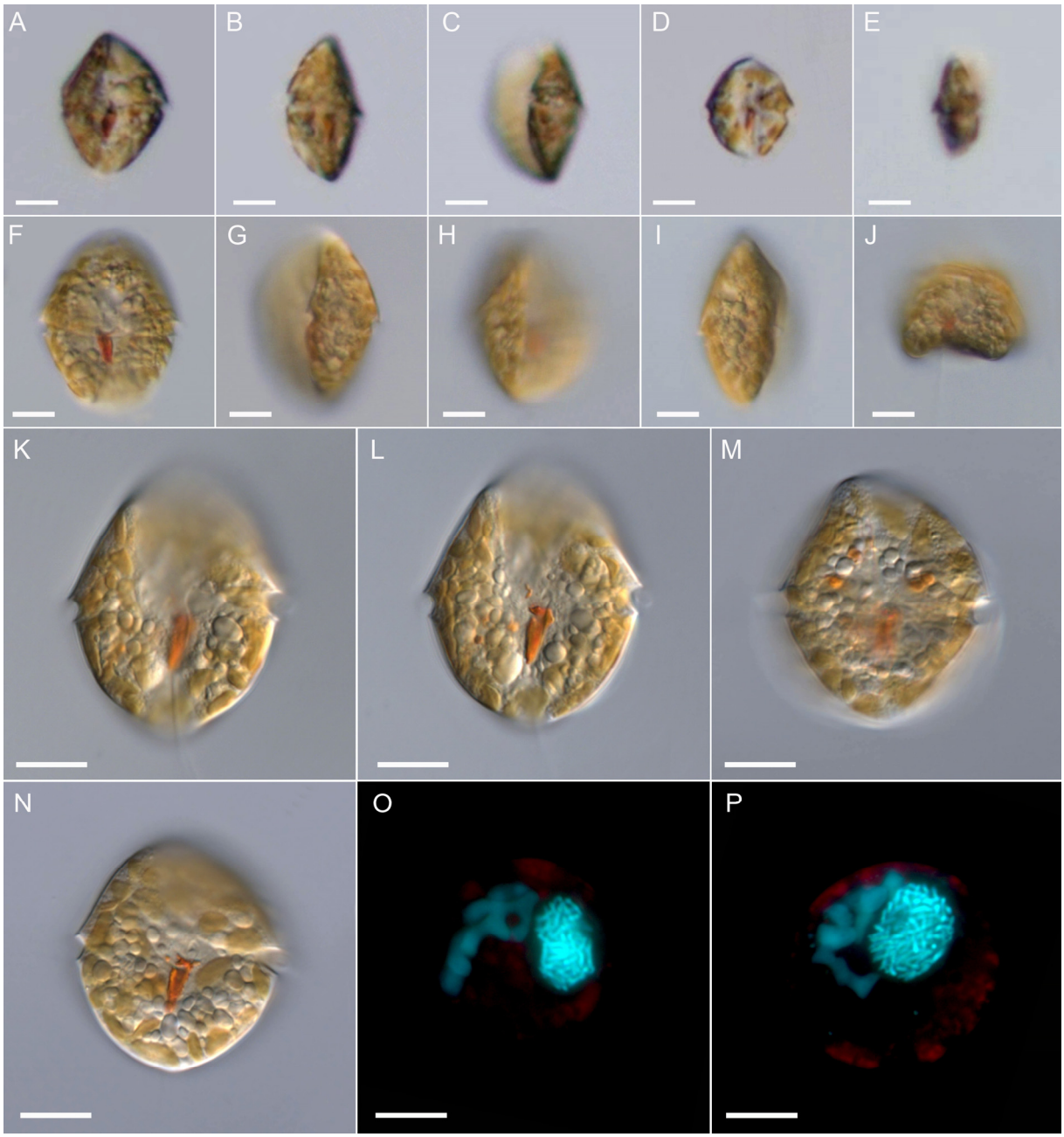

Figure S4: ***Kryptoperidinium triquetrum*****, strain W1-E4**. Light microscopy of living cells (A–N) or formaldehyde-fixed cells (O–P). (A–C) The same cell in ventral (A) and lateral view (B–C). (D–E) The same cell in ventral (D) and lateral view (E). (F–J) The same cell in ventral (F), left-lateral (G), right-lateral (H–I) and antapical view (J). (K–L) The same cell in ventral view in different focal planes. (M–N) Cells in ventral view. (O–P) Different cells stained with DAPI and viewed with epifluorescence and UV excitation, note the irregularly shaped diatom nucleus (left) and the dinophyte nucleus with condensed chromosomes (right). Scale bars = 10 µm.

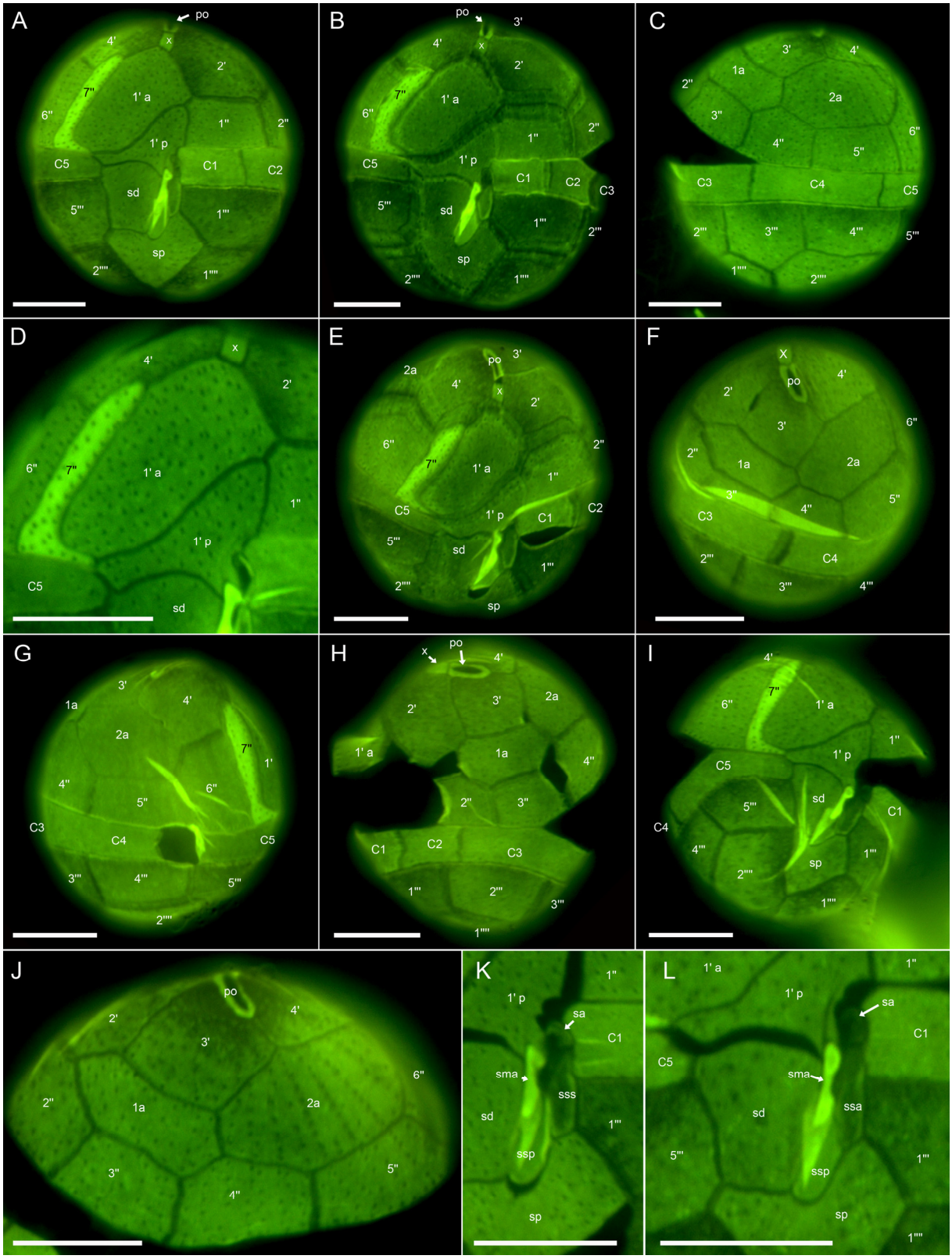

Figure S5: ***Kryptoperidinium triquetrum*****, strain W1-E4**. Light microscopy of lugol-fixed cells stained with solophenyl flavine and viewed with epifluorescence and green light excitation. (A–B) Cells in ventral view. (C) Cell in dorsal view. (D) Detailed ventral view of plate 7''. (E) Cell in ventral apical view. (F) Cell in dorsal apical view. (G) Cell in right-lateral view. (H) Cell in left-lateral view. (I) Cell in ventral antapical view. (J) Epitheca in dorsal view, note the arrangement of thecal pores in lines. (K–L) Detailed view of the sulcal area with sulcal plates. Plate labels according to the Kofoidean system, modified by labelling an anterior part (1' a) and a posterior part (1' p) of the first apical plate. Sulcal plate labels: sa = anterior sulcal plate; sd = right sulcal plate; sma = anterior median sulcal plate; smp = posterior median sulcal plate; sp = posterior sulcal plate; ssa = anterior left sulcal plate; ssp = posterior left sulcal plate. Scale bars = 10 µm.

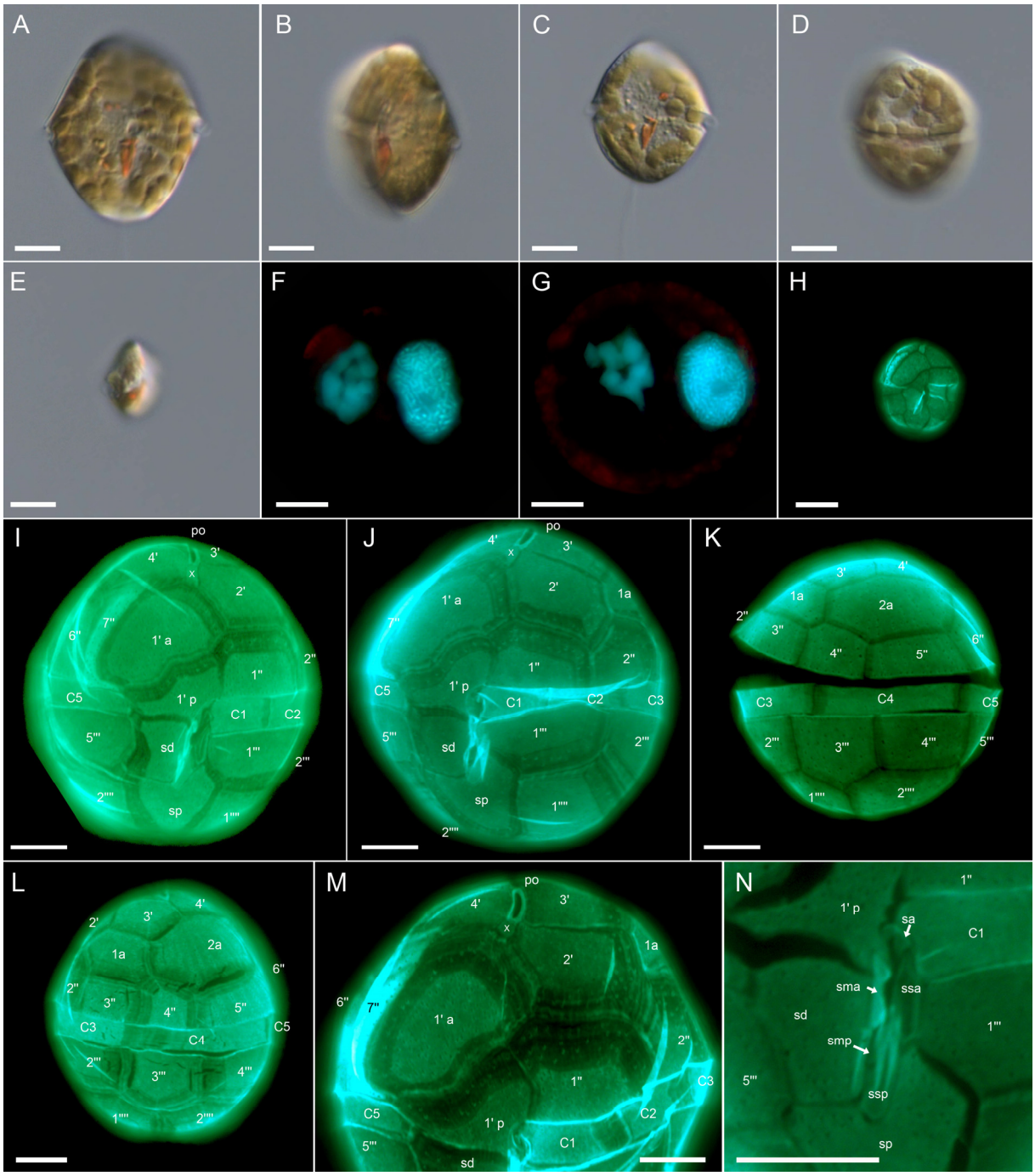

Figure S6: ***Kryptoperidinium triquetrum*****, strain W1-D6**. Light microscopy of living cells (A–E), formaldehyde-fixed cells (F–G) or lugol-fixed cells (H–N). (A–B) The same cell in ventral (A) or lateral view (B). (C–D) The same cells in ventral (C) or dorsal view (D). (E) A small cell in lateral view. (F–G) Different cells stained with DAPI and viewed with epifluorescence and UV excitation, note the irregularly shaped diatom nucleus (left) and the dinophyte nucleus with condensed chromosomes (right). (H–N) Light microscopy of cells stained with solophenyl flavine and viewed with epifluorescence and green light excitation. (H) Small cell in ventral view. (I–J) Cells in ventral view. (K–L) Cells in dorsal view. (M) Epithecal plates in ventral apical view. (N) Detailed view of the sulcal area with sulcal plates. Plate labels according to the Kofoidean system, modified by labelling an anterior part (1′ a) and a posterior part (1′ p) of the first apical plate. Sulcal plate labels: sa = anterior sulcal plate; sd = right sulcal plate; sma = anterior median sulcal plate; smp = posterior median sulcal plate; sp = posterior sulcal plate; ssa = anterior left sulcal plate; ssp = posterior left sulcal plate. Scale bars = 10 µm.

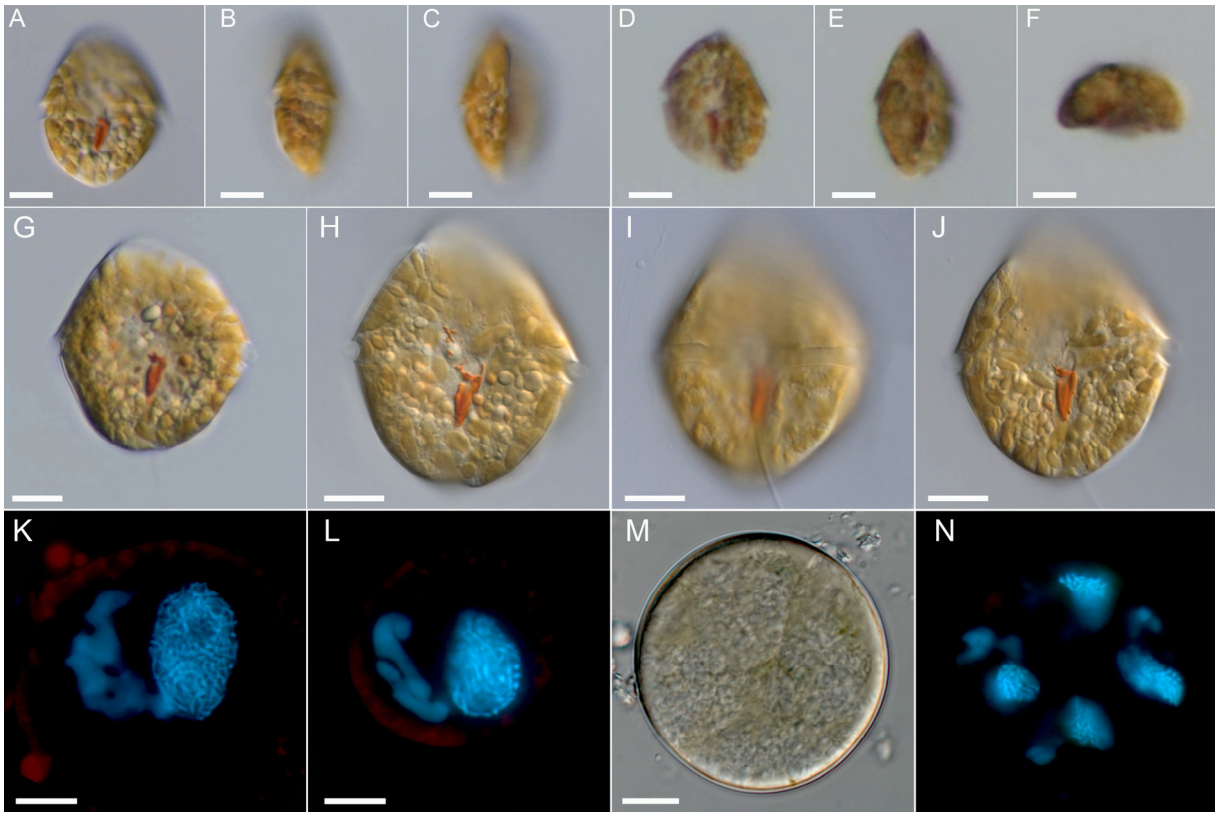

Figure S7: ***Kryptoperidinium triquetrum*****, strain W1-D11**. Light microscopy of living cells (A–J) or formaldehyde-fixed cells (K–N). (A–C) The same cell in ventral (A) and lateral view (B–C). (D–F) The same cell in ventral lateral (D), lateral (E) or antapical (F) view. (G–H) Cells in ventral view. (I–J) The same cell in ventral view in two different focal planes. (K–L) Different cells stained with DAPI and viewed with epifluorescence and UV excitation, note the irregularly shaped diatom nucleus (left) and the dinophyte nucleus with condensed chromosomes (right). (M–N) A DAPI-stained squeezed (flat) 4-cell coccoid division stage in LM (M) and epifluorescence and UV excitation (N). Scale bars = 10 µm.

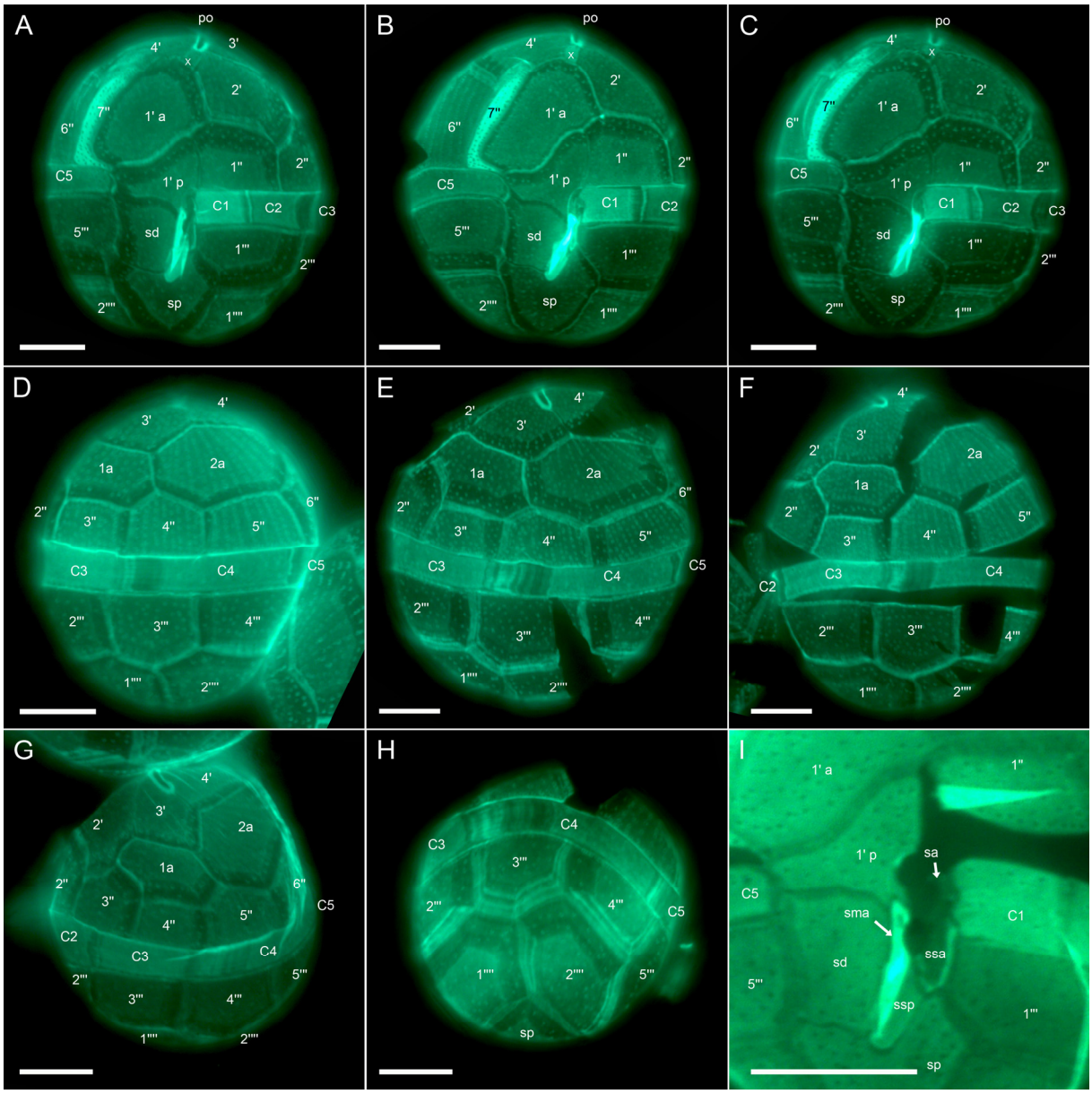

Figure S8: ***Kryptoperidinium triquetrum*****, strain W1-D11**. Light microscopy of lugol-fixed cells stained with solophenyl flavine and viewed with epifluorescence and green light excitation. (A–C) Cells in ventral view. (D–E) Cells in dorsal view. (F–G) Cells in left-lateral view. (H) Cell in dorsal antapical view. (I) Detailed view of the sulcal area with sulcal plates. Plate labels according to the Kofoidean system, modified by labelling an anterior part (1' a) and a posterior part (1' p) of the first apical plate. Sulcal plate labels: sa = anterior sulcal plate; sd = right sulcal plate; sma = anterior median sulcal plate; smp = posterior median sulcal plate; sp = posterior sulcal plate; ssa = anterior left sulcal plate; ssp = posterior left sulcal plate. Scale bars = 10 µm.

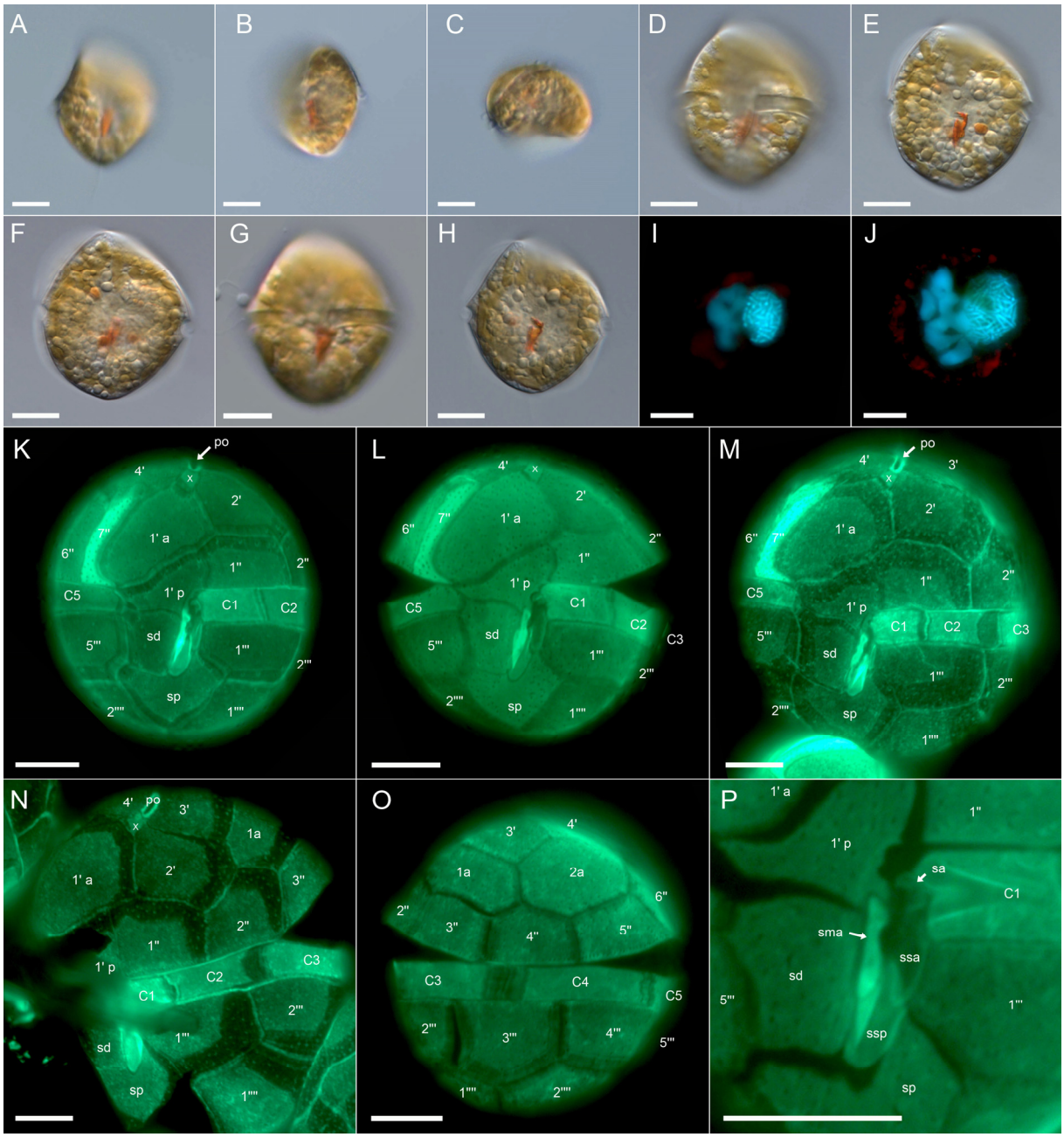

Figure S9: ***Kryptoperidinium triquetrum*****, strain G-E8**. Light microscopy of living cells (A–H), formaldehyde-fixed cells (I–J) or lugol-fixed cells (K–P). (A–C) The same cell in ventral-lateral (A), lateral (B) and antapical view (C). (D–E) The same cell in ventral view with two different focal planes. (F–H) Cells in ventral view. (I–J) Different cells stained with DAPI and viewed with epifluorescence and UV excitation, note the irregularly shaped diatom nucleus (left) and the dinophyte nucleus with condensed chromosomes (right). (K–P) Light microscopy of cells stained with solophenyl flavine and viewed with epifluorescence and green light excitation. (K–M) Cells in ventral view. (N) Cell in left-lateral view. (O) Cell in dorsal view. (P) Detailed view of the sulcal area with sulcal plates. Plate labels according to the Kofoidean system, modified by labelling an anterior part (1' a) and a posterior part (1' p) of the first apical plate. Sulcal plate labels: sa = anterior sulcal plate; sd = right sulcal plate; sma = anterior median sulcal plate; smp = posterior median sulcal plate; sp = posterior sulcal plate; ssa = anterior left sulcal plate; ssp = posterior left sulcal plate. Scale bars = 10 µm.

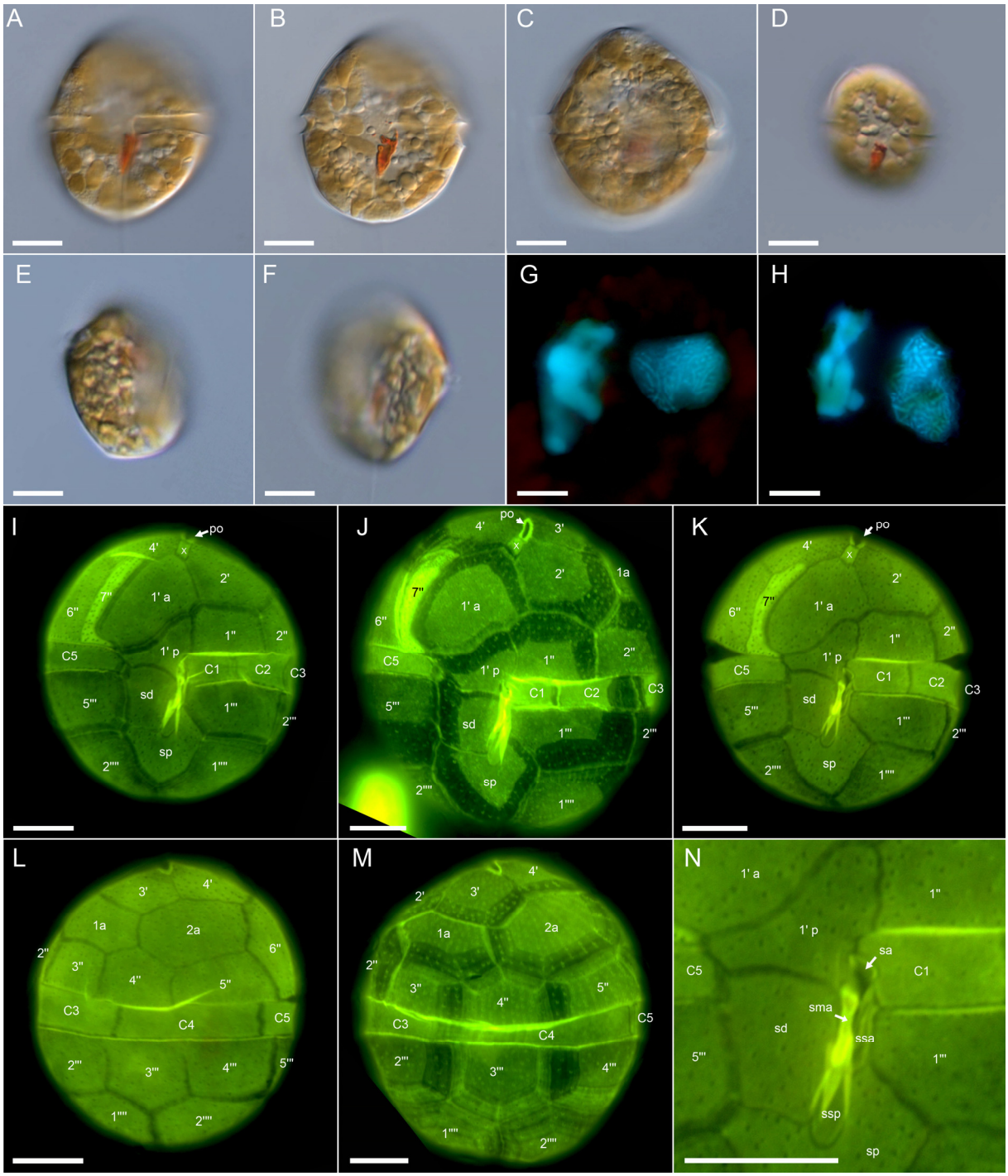

Figure S10: ***Kryptoperidinium triquetrum*****, strain G-F9**. Light microscopy of living cells (A–F), formaldehyde-fixed cells (G–H) or lugol-fixed cells (I–N). (A–C) The same cell in ventral view with different focal planes. (D–F) Different cells in ventral (D) or lateral view (E–F). (G–H) Different cells stained with DAPI and viewed with epifluorescence and UV excitation, note the irregularly shaped diatom nucleus (left) and the dinophyte nucleus with condensed chromosomes (right). (I–N) Light microscopy of cells stained with solophenyl flavine and viewed with epifluorescence and green light excitation. (I–K) Cells in ventral view. (L–M) Cells in dorsal view. (N) Detailed view of the sulcal area with sulcal plates. Plate labels according to the Kofoidean system, modified by labelling an anterior part (1′ a) and a posterior part (1′ p) of the first apical plate. Sulcal plate labels: sa = anterior sulcal plate; sd = right sulcal plate; sma = anterior median sulcal plate; smp = posterior median sulcal plate; sp = posterior sulcal plate; ssa = anterior left sulcal plate; ssp = posterior left sulcal plate. Scale bars = 10 µm.

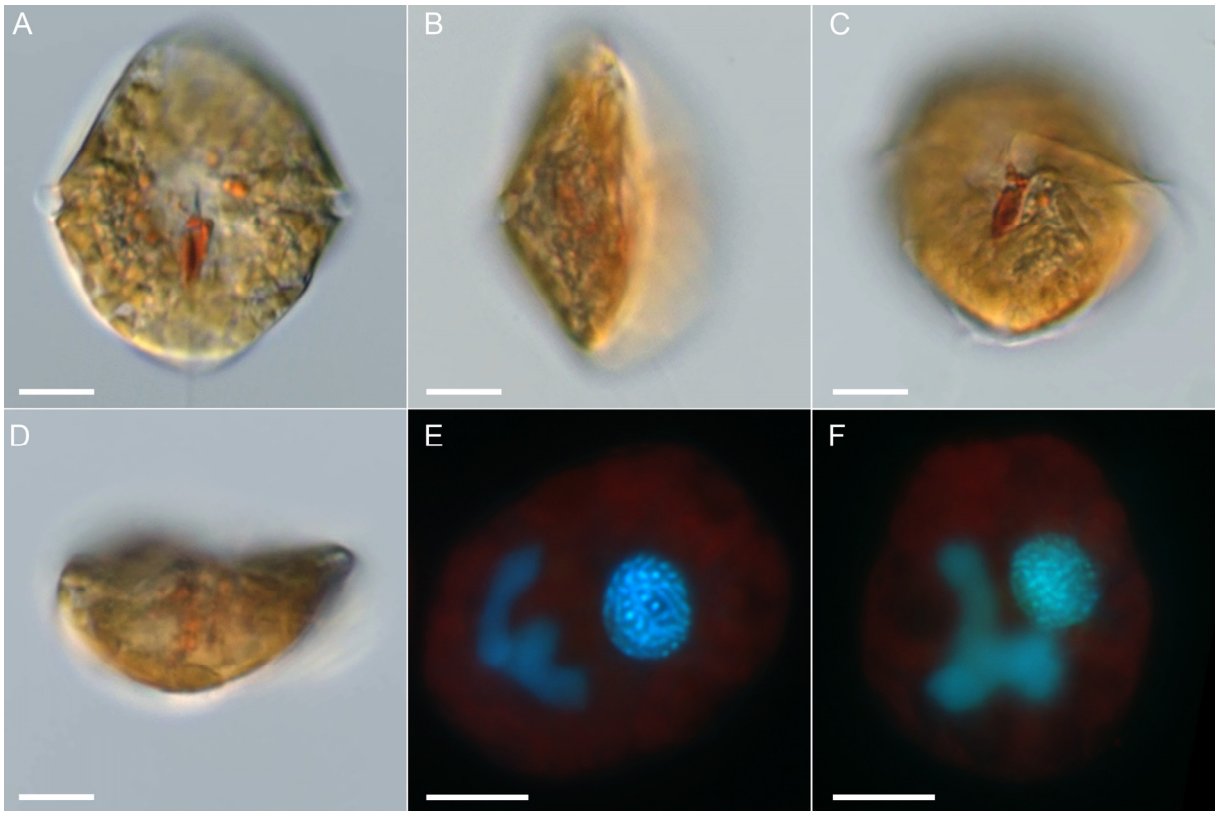

Figure S11: ***Kryptoperidinium triquetrum*****, strain KFF 0901**. Light microscopy of living cells (A–D) or formaldehyde-fixed cells (E–F). (A–B) The same cells in ventral (A) and lateral view (B). (C–D) Different cells in ventral antapical (C) or antapical view (D). (E–F) Different cells stained with DAPI and viewed with epifluorescence and UV excitation, note the irregularly shaped diatom nucleus (left) and the dinophyte nucleus with condensed chromosomes (right). Scale bars = 10 µm.

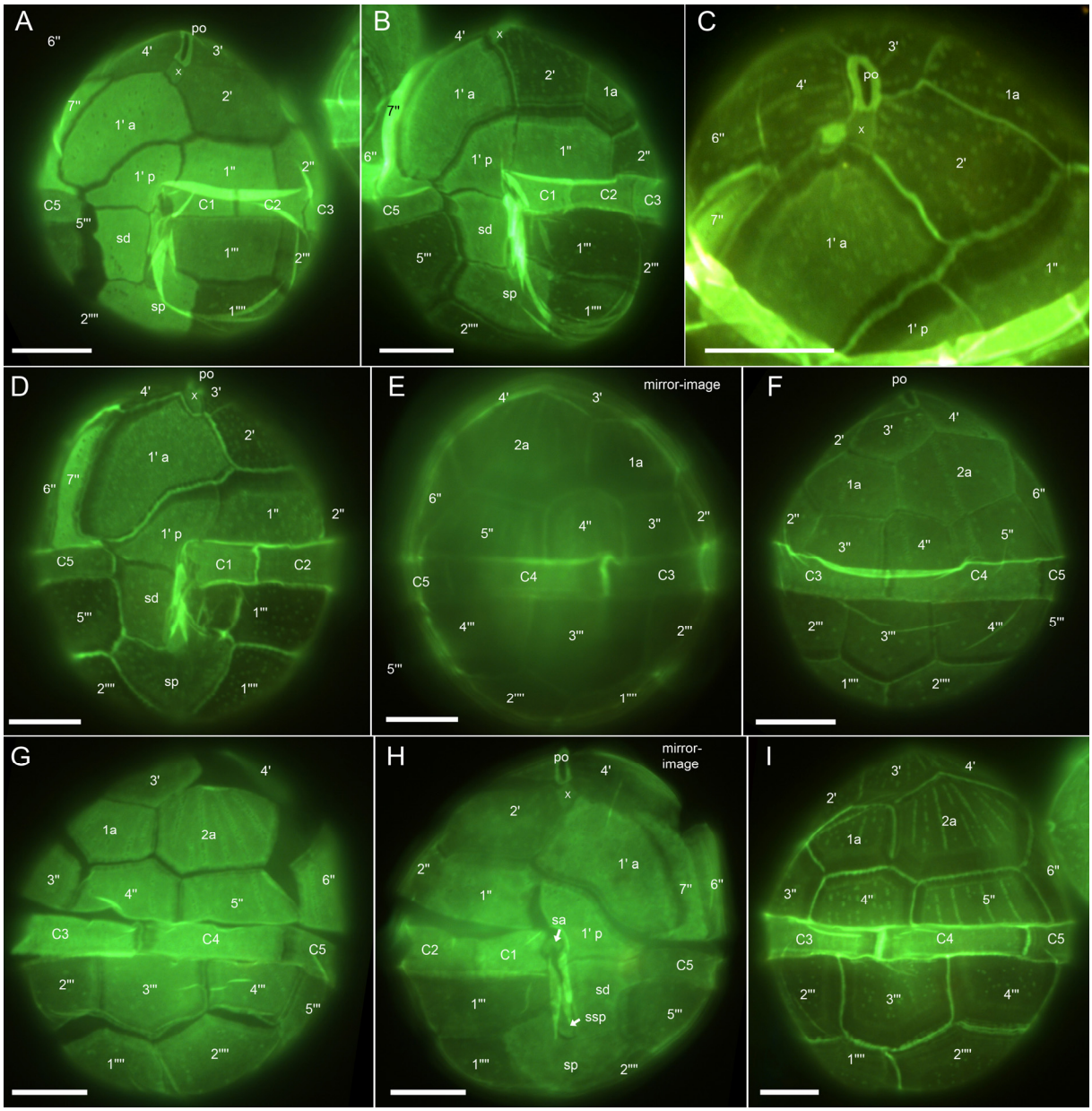

Figure S12: ***Kryptoperidinium triquetrum*****, strain KFF 0901**. Light microscopy of lugol-fixed cells stained with solophenyl flavine and viewed with epifluorescence and green light excitation. (A–B) Cells in ventral view. (C) Detailed view of epithecal plates in apical view. (D–E) The same cell with focus on ventral (D) or dorsal plates (E), note that plate arrangement in E appears as mirror-imaged. (F) Cell in dorsal view. (G–H) The same cell with focus on dorsal (G) or ventral plates (H), note that plate arrangement in H appears as mirror-imaged. (I) Cell in dorsal view. Plate labels according to the Kofoidean system, modified by labelling an anterior part (1′ a) and a posterior part (1′ p) of the first apical plate. Sulcal plate labels: sa = anterior sulcal plate; sd = right sulcal plate; sma = anterior median sulcal plate; smp = posterior median sulcal plate; sp = posterior sulcal plate; ssa = anterior left sulcal plate; ssp = posterior left sulcal plate. Scale bars = 10 µm.

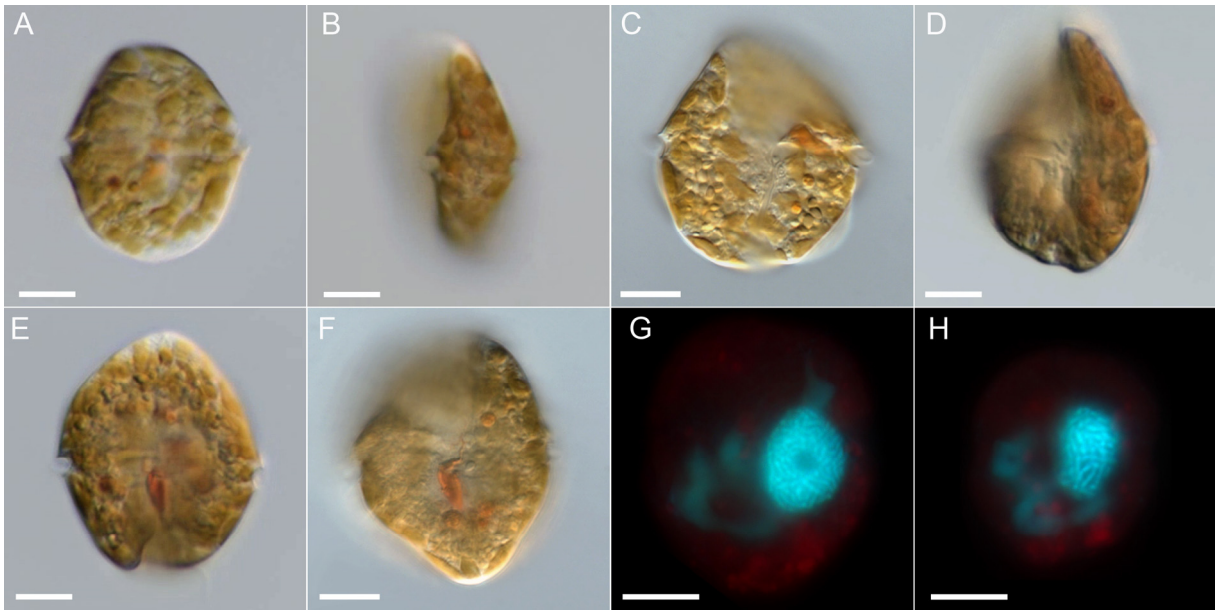

Figure S13: ***Kryptoperidinium triquetrum*****, strain KFF 1001**. Light microscopy of living cells (A–F) or formaldehyde-fixed cells (G–H). (A–B) The same cell in ventral (A) and lateral view (B). (C–F) Different cells in ventral (C), lateral (D), ventral (E) and ventral lateral view (F). (G–H) Different cells stained with DAPI and viewed with epifluorescence and UV excitation, note the irregularly shaped diatom nucleus (left) and the dinophyte nucleus with condensed chromosomes (right). Scale bars = 10 µm.

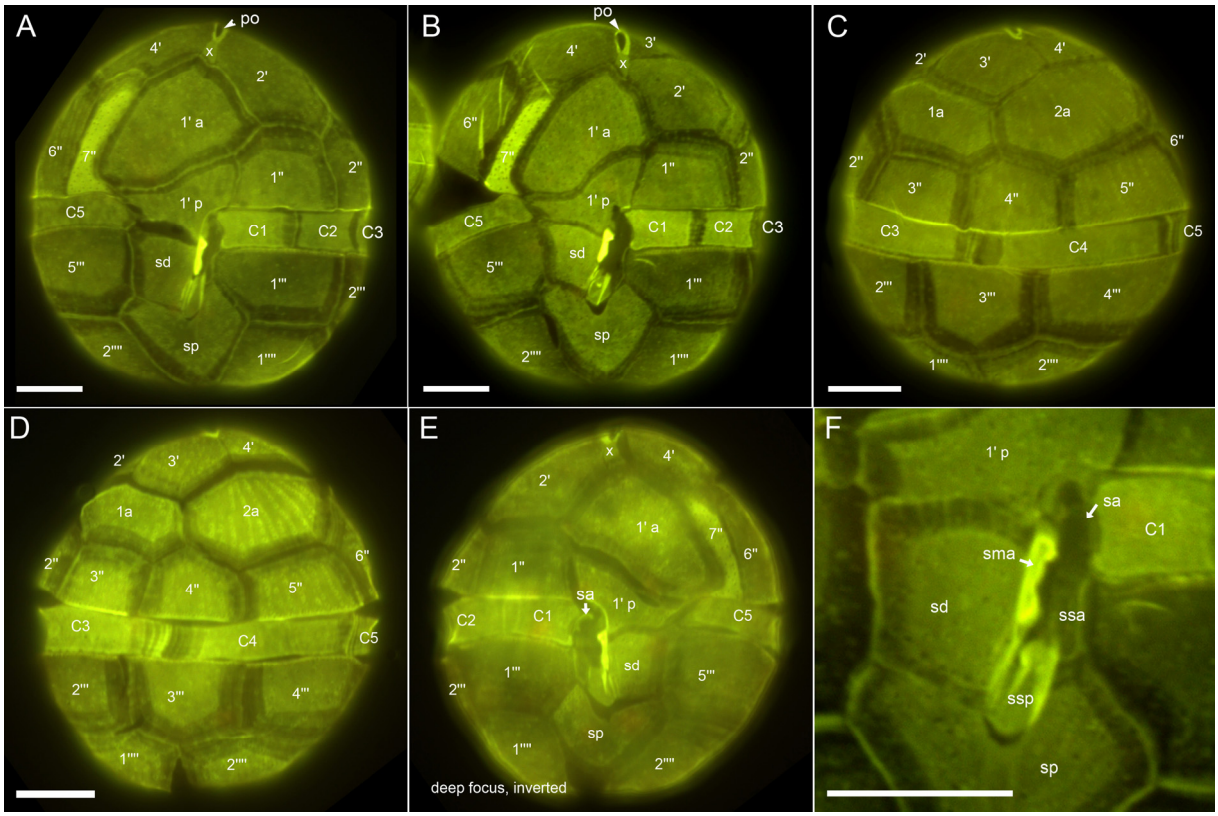

Figure S14: ***Kryptoperidinium triquetrum*, strain KFF 1001**. Light microscopy of lugol-fixed cells stained with solophenyl flavine and viewed with epifluorescence and green light excitation. (A–B) Cells in ventral view. (C) Cell in dorsal view. (D–E) The same cell with focus on dorsal (D) or ventral plates (E), note that plate arrangement in E appears as mirror-imaged. (F) Detailed view of the sulcal area with sulcal plates. Plate labels according to the Kofoidean system, modified by labelling an anterior part (1' a) and a posterior part (1' p) of the first apical plate. Sulcal plate labels: sa = anterior sulcal plate; sd = right sulcal plate; sma = anterior median sulcal plate; smp = posterior median sulcal plate; sp = posterior sulcal plate; ssa = anterior left sulcal plate; ssp = posterior left sulcal plate. Scale bars = 10 µm.

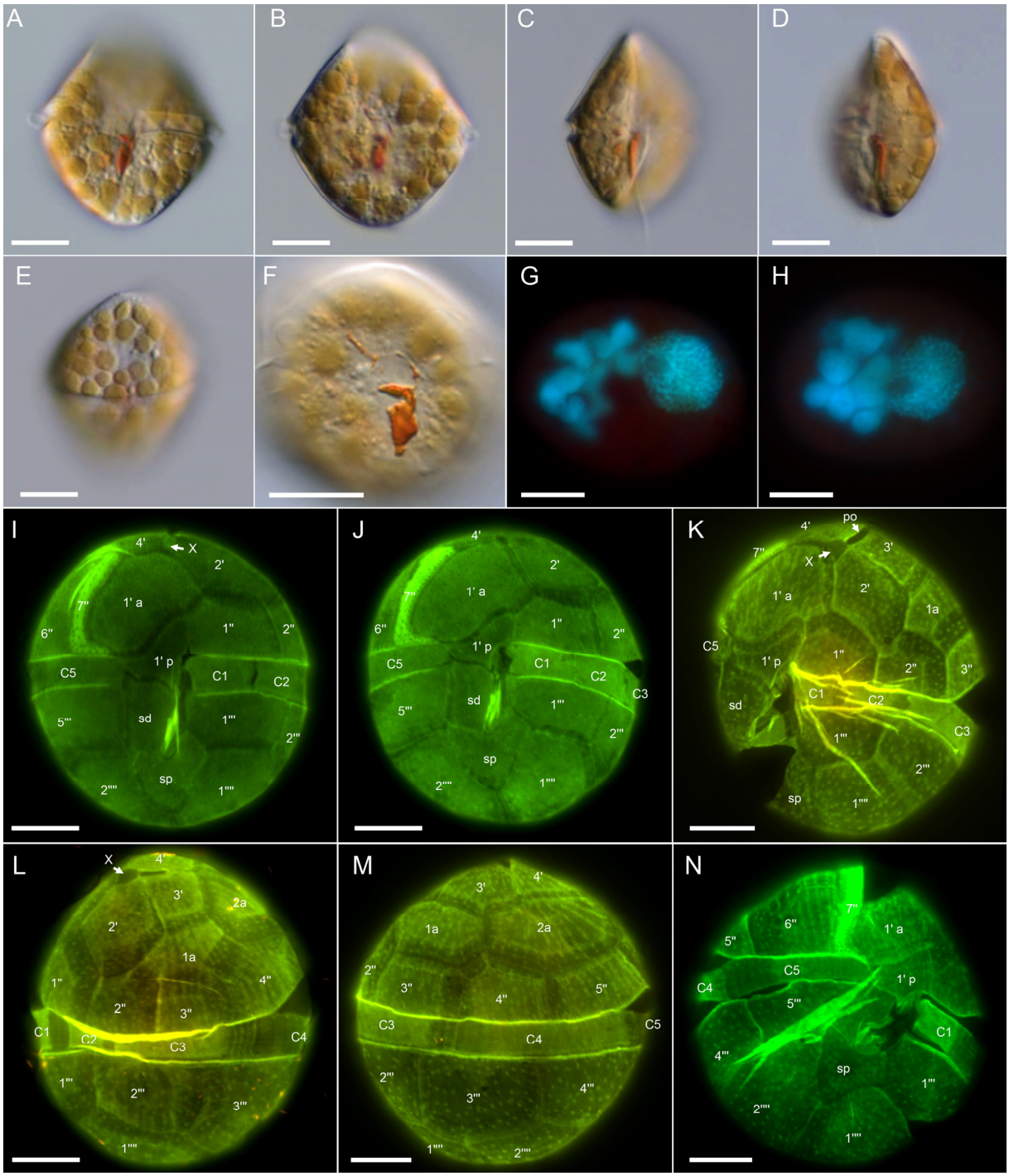

Figure S15: ***Kryptoperidinium triquetrum*, strain VGO 556**. Light microscopy of living cells (A–F), formaldehyde-fixed cells (G–H) or lugol-fixed cells (I–N). (A–E) Different cells in ventral (A–B), lateral (C–D) and dorsal view (E). (F) Detailed view of the stigma. (G–H) Different cells stained with DAPI and viewed with epifluorescence and UV excitation, note the irregularly shaped diatom nucleus (left) and the dinophyte nucleus with condensed chromosomes (right). (I–N) Light microscopy of cells stained with solophenyl flavine and viewed with epifluorescence and green light excitation. (I–K) Cells in ventral view. (L) Cell in left-lateral view. (M) Cell in dorsal view. (N) Cell in ventral antapical view. Plate labels according to the Kofoidean system, modified by labelling an anterior part (1′ a) and a posterior part (1′ p) of the first apical plate. Sulcal plate labels: sa = anterior sulcal plate; sd = right sulcal plate; sma = anterior median sulcal plate; smp = posterior median sulcal plate; sp = posterior sulcal plate; ssa = anterior left sulcal plate; ssp = posterior left sulcal plate. Scale bars = 10 µm.

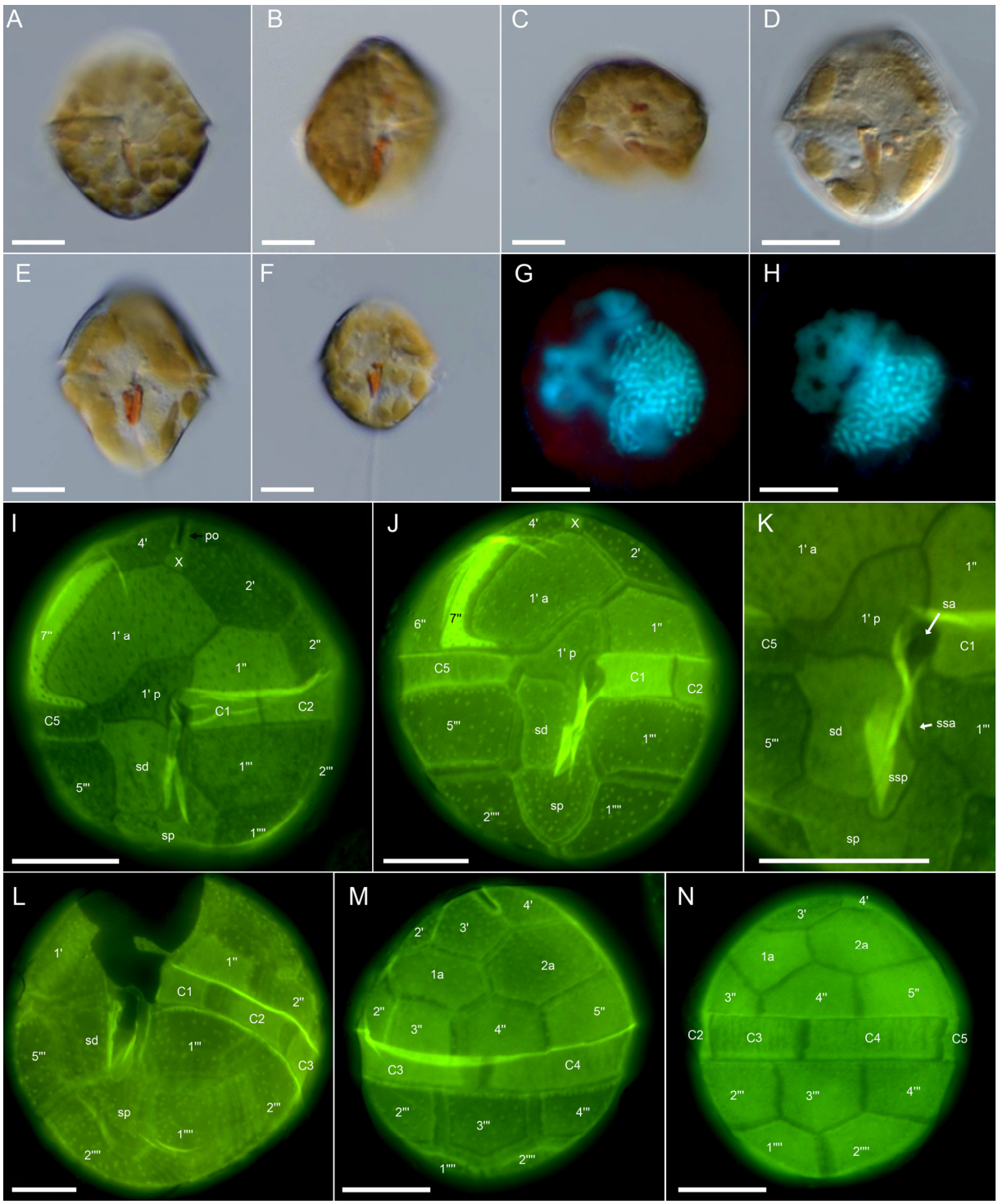

Figure S16: ***Kryptoperidinium triquetrum*****, strain VGO 1124**. Light microscopy of living cells (A–F), formaldehyde-fixed cells (G–H) or lugol-fixed cells (I–N). (A–F) Different cells in ventral (A, D–F), lateral (B) and apical view (C). (G–H) Different cells stained with DAPI and viewed with epifluorescence and UV excitation, note the irregularly shaped diatom nucleus (left) and the dinophyte nucleus with condensed chromosomes (right). (I–N) Light microscopy of cells stained with solophenyl flavine and viewed with epifluorescence and green light excitation. (I–J) Cells in ventral view. (K) Detailed view of the sulcal area with sulcal plates. (L) Cell in ventral antapical view. (M–N) Cells in dorsal view. Plate labels according to the Kofoidean system, modified by labelling an anterior part (1' a) and a posterior part (1' p) of the first apical plate. Sulcal plate labels: sa = anterior sulcal plate; sd = right sulcal plate; sma = anterior median sulcal plate; smp = posterior median sulcal plate; sp = posterior sulcal plate; ssa = anterior left sulcal plate; ssp = posterior left sulcal plate. Scale bars = 10 µm.

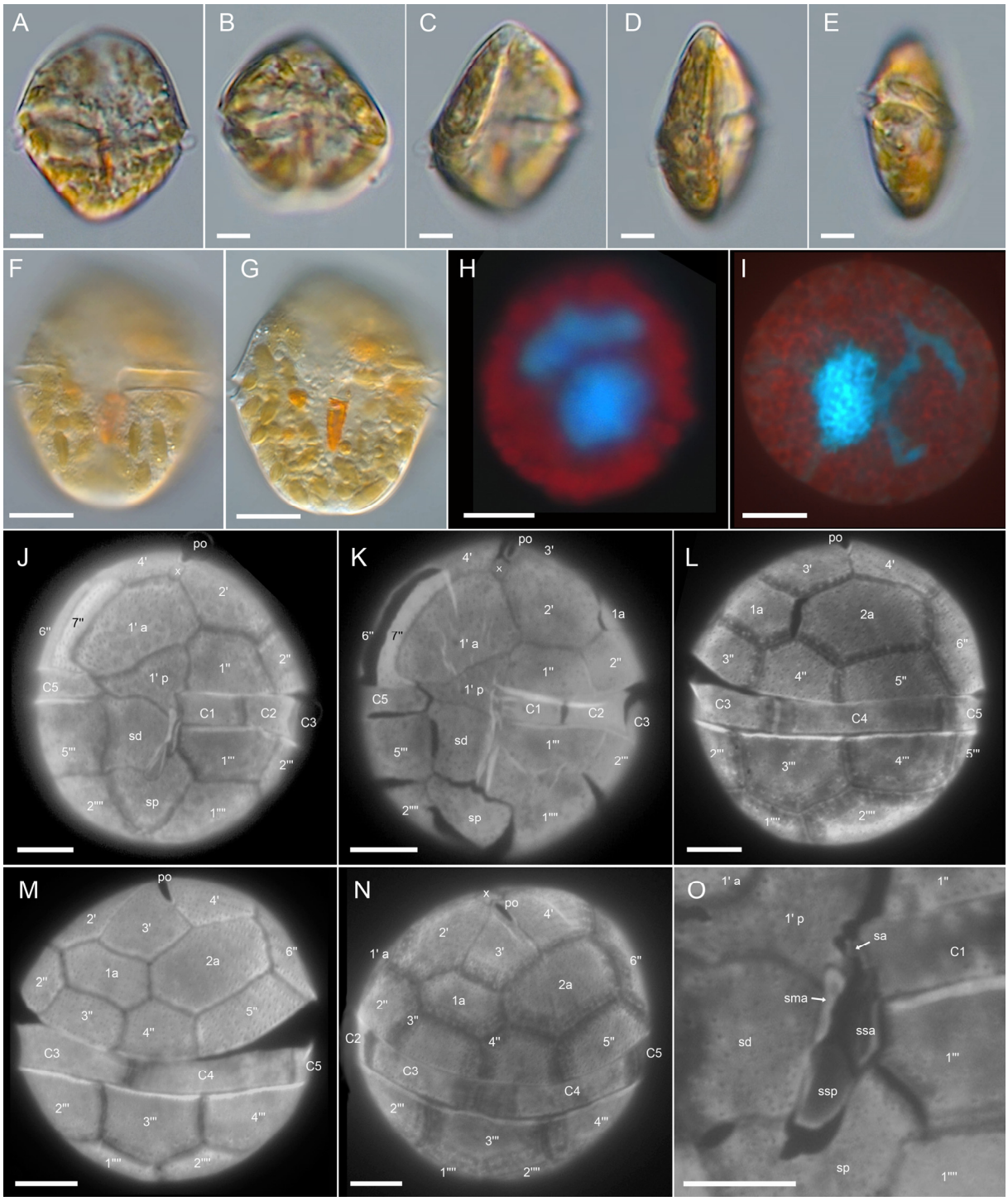

Figure 17: ***Kryptoperidinium triquetrum*****, strain GeoB 459**. Light microscopy of living cells (A–G) or formaldehyde-fixed cells (H–I). (A–E) The same cell in ventral (A), ventral antapical (B), ventral right-lateral (C), right-lateral (D) and left-lateral view (E). (F–G) The same cell in ventral view in different focal planes. (H–I) Different cells stained with DAPI and viewed with epifluorescence and UV excitation, note the irregularly shaped diatom nucleus (left) and the dinophyte nucleus with condensed chromosomes (right). (J–O) Light microscopy of cells stained with calcofluor white and viewed with epifluorescence and UV light excitation. (J–K) Cells in ventral view. (L–N) Cells in dorsal view. (O) Detailed view of the sulcal area with sulcal plates. Plate labels according to the Kofoidean system, modified by labelling an anterior part (1' a) and a posterior part (1' p) of the first apical plate. Sulcal plate labels: sa = anterior sulcal plate; sd = right sulcal plate; sma = anterior median sulcal plate; smp = posterior median sulcal plate; sp = posterior sulcal plate; ssa = anterior left sulcal plate; ssp = posterior left sulcal plate. Scale bars = 10 µm.

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