Supplementary Material

**Supplementary Table S1.** Host range and sources of occurrences and of Perkinsidae, Parviluciferaceae, SPI agent and Xcellidae detected by both molecular (qPCR or PCR) and microscopical (histology or RFTM incubation or cultures) methodologies.

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| --- | --- | --- | --- | --- | --- | --- |
| **Clade** | **Species** | **Host** | **Continent** | **Country** | **Location** | **Reference** |
| Perkinsidae | *Perkinsus olseni* | *Ruditapes decussatus, R. philippinarum, Venus verrucosa* | Europe | Spain, France, Portuga, Italia | Mediterranean Sea, Atlantic Ocean | (Azevedo, 1989; Figueras et al., 1992; Elandaloussi et al., 2009; Arzul et al., 2012; Pretto et al., 2014; Ramilo et al., 2015) |
| Perkinsidae | *Perkinsus olseni* | *R. decussatus* | Africa | Tunisia | Southern Mediterranean Sea | (El Bour et al., 2012) |
| Perkinsidae | *Perkinsus olseni* | *R. philippinarum, Protothaca jedoensis, Tridacna crocea, Pictada fucata, Paphia malabarica* | Asia | China, Korea, India, Japan, Vietnam | Yellow Sea, Bohai Sea, East China Sea, Sea of Japan, Bay of Bengal, Lakshadweep Sea, Pacific Ocean | (Hamaguchi et al., 1998; Park et al., 2006, 2008; Sheppard and Phillips, 2008; Choi and Park, 2010; Sanil et al., 2010; Wu et al., 2011; Shamal, 2018) |
| Perkinsidae | *Perkinsus olseni* | *Pitar rostrata, Crassostrea rizophorae, C. gasar* | South America | Brazil, Uruguay, Panama | Atlantic Ocean, Caribbean Basin | (Cremonte et al., 2005; Sabry et al., 2009; da Silva et al., 2014) |
| Perkinsidae | *Perkinsus olseni* | *Haliotis laevigata, H. rubra, Austrovenus stutchbutyi* | Oceania | Australia, New-Zealand | Indian Ocean, the Coral Sea, Pacific Ocean | (Goggin and Lester, 1995; Murrell et al., 2002; Dungan et al., 2007) |
| Perkinsidae | *Perkinsus marinus* | *C. virginica, C. gigas, Saccostrea palmula* | North America | USA, Mexico | Chesapeake Bay, Gulf of Mexico, Florida coast Delaware bay, Gulf of California | (Marsh et al., 1995; Reece et al., 2001; Gullian-Klanian et al., 2008; Enríquez-Espinoza et al., 2010; Cáceres-Martínez et al., 2012) |
| Perkinsidae | *Perkinsus marinus* | *C. gasar, C. rhizophorae* | South America | Brazil | Atlantic Ocean | (da Silva et al., 2013, 2014) |
| Perkinsidae | *Perkinsus chesapeaki* | *Mya arenaria, Macoma balthica, Tagelus plebeius, C. virginica, Cyrtopleura costata* | North America | USA | Chesapeake Bay, Gulf of Maine | (Mclaughlin et al., 2000; Coss et al., 2001; Reece et al., 2008; Marquis et al., 2020) |
| Perkinsidae | *Perkinsus chesapeaki* | *C. rhizophorae* | South America | Brazil | Atlantic Ocean | (Dantas Neto et al., 2016) |
| Perkinsidae | *Perkinsus chesapeaki* | *R. decussatus, R. phillipinarum* | Europe | France | Mediterranean Sea, Atlantic Ocean | (Arzul et al., 2012) |
| Perkinsidae | *Perkinsus beihaiensis* | *C. hongkongensis, C. ariakensis, C. madrasensis* | Asia | China, India | South China Sea, Bay of Bengal | (Moss et al., 2008; Sanil et al., 2012) |
| Perkinsidae | *Perkinsus beihaiensis* | *Anomalocardia brasiliana* | South America | Brazil | Atlantic Ocean | (Pinho Ferreira et al., 2015) |
| Perkinsidae | *Perkinsus honshuensis* | *R. phillipinarum, R. variegatus* | Asia | Japan, Korea | Pacific Ocean | (Dungan and Reece, 2006; Kang et al., 2016) |
| Perkinsidae | *Perkinsus mediterraneus* | *Ostrea edulis, Arca noae, V. verrucosa, chlamys varia* | Europe | Spain, Italy | Mediterranean Sea | (Casas et al., 2004; Ramilo et al., 2015) |
| Perkinsidae | *Perkinsus qugwadi* | *Patinopecten yessoensis* | North America | Canada | Gulf of Alaska | (Itoh et al., 2013) |
| Parviluciferaceae | *Parvilucifera sinerae* | *Gymnodinium catenatum, G. nolleri, G. aureolum, Karenia brevis, Alexandrium andersonii, A. catenella, A. insuetum, A. margalefii, A. minutum, A. tamutum, A. ostenfeldii, A. peruvianum, Protoceratium reticulatum, Gonyaulax spinifera, Scrippsiella donghaienis, S. trochoidea, Prorocentrum micans, Akashiwo sanguinea* | Europe | Spain, France, Portugal | Mediterranean Sea, Atlantic Ocean, English Channel | (Figueroa et al., 2008; Lepelletier et al., 2014; Garcés and Hoppenrath, 12010) |
| Parviluciferaceae | *Parvilucifera rostrata* | *Alexandrium minutum, A. catenella, A. ostenfeldii, A. tamutum, Gonyaulax spinifera, Gymnodinium aureolum, Heterocapsa triquetra, Scrippsiella trochoidea, Akashiwo sanguinea, Prorocentrum micans* | Europe | France | English Channel | (Lepelletier et al., 2014) |
| Parviluciferaceae | *Parvilucifera corolla* | *Durinskia baltica, Akashiwo sanguinea, Gymnodinium catenatum, G. impudicum, G. microreticulatum, G. nolleri, Heterocapsa pygmaea, Lepidodinium chlorophorum, Levanderina fissa, Lingulodinium polyedrum, Ostreopsis cf. ovata, O. fattorussoi, O. lenticularis, A. andersonii, A. catenella, A. minutum, A. andersoni, A. mediterraneum, A. tamutum, Amphidinium carterae, Barrufeta bravensis, Coolia canariensis, C. monotis, C. palmyrensis, C. tropicalis, Dinophysis acuminata,Prorocentrum micans, P. triestinum, Protodinium simplex, Scrippsiella acuminata, Takayama sp.* | Africa | Spain | Canary Islands, Mediterranean Sea | (Reñé et al., 2017b; Rodríguez and Figueroa, 2020) |
| Parviluciferaceae | *Parvilucifera catillosa* | *Kryptoperidinium foliaceum, Heterocapsa triquetra* | Europe | Sweden | Baltic Sea | (Alacid et al., 2020) |
| Parviluciferaceae | *Parvilucifera infectans* | *Dinophysis acuminata, Alexandrium fundyense, A. tamarense, A. ostenfeldii,* | Europe | Sweden | North Sea, Baltic Sea | (Norén et al., 1999; Johansson et al., 2006) |
| Parviluciferaceae | *Parvilucifera infectans* | *Akashiwo sanguinea* | Asia | Korea | East China Sea | (Jeon et al., 2018) |
| Parviluciferaceae | *Parvilucifera multicavata* | *Alexandrium affine, A. catenella, Scrippsiella sp.,* Pyrophacus steinii | Asia | Korea | East China Sea | (Jeon and Park, 2020) |
| Parviluciferaceae | *Snorkelia* sp. Fosca 2016 | *Levanderina fissa* | Europe | Spain | Mediterranean Sea | (Reñé et al., 2017a) |
| Parviluciferaceae | *Snorkelia prorocentri* | *Prorocentrum fukuyoi, Levanderina fissa* | North America | Canada | Pacific Ocean | (Leander and Hoppenrath, 2008) |
| Parviluciferaceae | *Dinovorax pyriformis* | *Dinophysis sacculus* | Europe | Spain | Mediterranean Sea | (Reñé et al., 2017a) |
| Parviluciferaceae | *Tuberlatum coatsi* | *Alexandrium catenella, Scrippsiella sp.* | Asia | Korea | East China Sea | (Jeon and Park, 2019) |
| Parviluciferaceae | *Maranthos nigrum* | *Alexandrium affine, A. andersonii, A. catenella, A. mediterraneum, A. minutum, A. tamarense, A. taylorii, Gambierdiscus excentricus, Coolia tropicalis, Ostreopsis ovata, Heterocapsa triquetra, Kryptoperidinium foliaceum, Scrippsiella trochoidea, Prorocentrum rathymum, P. lima.* | Europe | Spain | NW Mediterranean Sea | (Reñé et al., 2021) |
| NAG01 | SPI agent | *Rana sphenocephala, R. sylvatica, R. heckscheri, R. clamitans, R. septentrionalis, R. pipens, R. sevosa, R. catesbeiana, capito, Pseudacris crucifer* | North America | USA | FL, GA, LA, MD, ME, MN, MS, NH, NY, OR, VA, WI | (Green et al., 2002; Davis et al., 2007; Jones et al., 2012; Landsberg et al., 2013; Isidoro-Ayza et al., 2017)) |
| Xcellidae | *Gadixcellia gadi* | *Gadus morhua* | Europe | Iceland | Atlantic Ocean | (Freeman *et al.*, 2017) |
| Xcellidae | *Gadixcellia* sp. | *Micromesistius poutassou* | Europe | Iceland | Atlantic Ocean | (Freeman et al., 2017) |
| Xcellidae | *Xcellia gobii* | *Acanthogobius flavimanus* | Asia | Japan | Pacific Ocean | (Freeman et al., 2017) |
| Xcellidae | *Xcellia lamelliphila* | *LImanda limanda, Lycodes spp., Macruronus*  *novaezelandiae, Merluccius gayi gayi, Trematomus spp.* | Europe | Scotland | North Sea | (Freeman et al., 2017) |
| Xcellidae | *Xcellia lamelliphila* | *Trematomus borchgrevinki, T. bernacchii, T. pennellii, T. nicolai* | Antartic | Antartic | Antartic sea | (Evans and Tupmongkol, 2014; Freeman et al., 2017) |
| Xcellidae | *Xcellia pleuronecti* | *Cleisthenes*  *herzensteini, Cleisthenes pinetorum, Glyptocephalus stelleri, Kareius bicoloratus, Hippoglossoides*  *dubius, Hippoglossoides elassodon, Liopsetta pinnifasciata, Platichthys stellatus, Parophrys vetulus,*  *Pseudopleuronectes obscurus, Pseudopleuronectes schrenki, Verasper moseri* | Asia | Japan | Pacific Ocean | (Freeman et al., 2017) |
|  | *Salmoxcellia vastator* | *Oncorhynchus mykiss, Salmo salar* | Europe | Norway | North Sea | (Karlsbakk et al., 2021) |

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