

Parvicapsula curvatura* n. sp. in cultured olive flounder *Paralichthys olivaceus* and phylogenetic characteristics of the genus *Parvicapsula

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Table S1. Phylogenetic trait and 18S rDNA accession number to assess correlations among *Parvicapsula* spp. through BaTS.

| <i>Parvicapsula</i> species | Accession number | Spore morphotypes | Locality | Host | | | | Reference |
|---------------------------------------|------------------|-------------------|------------------------|-------------------|-----------------|------------------------|-------------------------------------|-----------------------|
| <i>Parvicapsula curvatura</i> | MF161398 | Semicircular | Asia (South Korea) | Pleuronectiformes | Paralichthyidae | <i>Paralichthys</i> | <i>Paralichthys olivaceus</i> | The present study |
| <i>Parvicapsula anisocaudata</i> | KY341924 | Oblong | Asia (South Korea) | Pleuronectiformes | Paralichthyidae | <i>Paralichthys</i> | <i>Paralichthys olivaceus</i> | Shin et al. 2018 |
| <i>Parvicapsula asymmetrica</i> | AY584191 | Semicircular | Europe (Norway) | Scorpaeniformes | Cyclopteridae | <i>Cyclopterus</i> | <i>Cyclopterus lumpus</i> | Nylund et al. 2005 |
| <i>Parvicapsula bicornis</i> | EF429097 | Oblong | Europe (Denmark) | Pleuronectiformes | Pleuronectidae | <i>Pleuronectes</i> | <i>Pleuronectes platessa</i> | Koie et al. 2007 |
| <i>Parvicapsula irregularis</i> | KF874229 | Oblong | Norway (Europe) | Pleuronectiformes | Pleuronectidae | <i>Hippoglossoides</i> | <i>Hippoglossoides platessoides</i> | Kodakova et al. 2014 |
| <i>Parvicapsula kabatai</i> | DQ515821 | Semicircular | North America (Canada) | Salmoniformes | Salmonidae | <i>Oncorhynchus</i> | <i>Oncorhynchus gorbuscha</i> | Jones et al. 2006 |
| <i>Parvicapsula limandae</i> | EF429096 | Semicircular | Europe (Denmark) | Pleuronectiformes | Pleuronectidae | <i>Limanda</i> | <i>Limanda limanda</i> | Koie et al. 2007 |
| <i>Parvicapsula minibicornis</i> | AF201375 | Oblong | North America (Canada) | Salmoniformes | Salmonidae | <i>Oncorhynchus</i> | <i>Oncorhynchus nerka</i> | Kent et al. 2000 |
| <i>Parvicapsula petuniae</i> | KF874230 | Oblong | Europe (Norway) | Scorpaeniformes | Cottidae | <i>Gymnocanthus</i> | <i>Gymnocanthus tricuspis</i> | Kodakova et al. 2014 |
| <i>Parvicapsula pseudobranchicola</i> | AY308481 | Semicircular | Europe (Norway) | Salmoniformes | Salmonidae | <i>Salmo</i> | <i>Salmo salar</i> | Nylund et al. 2005 |
| <i>Parvicapsula spinachiae</i> | EF431928 | Semicircular | Europe (Denmark) | Gasterosteiformes | Gasterosteidae | <i>Spinachia</i> | <i>Spinachia spinachia</i> | Koie et al. 2007 |
| <i>Parvicapsula</i> sp. SMK-2015 | KT321705 | Oblong | Asia (South Korea) | Pleuronectiformes | Paralichthyidae | <i>Paralichthys</i> | <i>Paralichthys olivaceus</i> | Unpublished data |
| <i>Parvicapsula unicornis</i> | AY584190 | Semicircular | Europe (Norway) | Gadiformes | Merlucciidae | <i>Merluccius</i> | <i>Merluccius merluccius</i> | Nylund et al. 2005 |
| <i>Tetracapsuloides bryosalmonae</i> | KF731712 | Outgroup | Outgroup | Outgroup | Outgroup | Outgroup | Outgroup | Bartosova et al. 2014 |

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Table S2. Significant associations between 18S rDNA sequence phylogeny and locality of *Parvicapsula* spp. identified by BaTS testing.

| Statistic | Observed mean | Lower 95% CI | Upper 95% CI | Null mean | Lower 95% CI | Upper 95% CI | Significance |
|--------------------|---------------|--------------|--------------|-----------|--------------|--------------|--------------|
| AI | 0.433 | 0.351 | 0.583 | 0.975 | 0.539 | 1.376 | 0.021 |
| PS | 6.226 | 5.000 | 7.000 | 7.791 | 6.317 | 8.883 | 0.026 |
| MC (North America) | 1.000 | 1.000 | 1.000 | 1.049 | 1.000 | 1.000 | 1.000 |
| MC (Europe) | 3.971 | 4.000 | 4.000 | 2.309 | 1.000 | 3.984 | 0.048 |
| MC (Asia) | 2.000 | 2.000 | 2.000 | 1.121 | 1.000 | 2.000 | 0.011 |
| MC (Outgroup) | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

Table S3. Significant associations between 18S rDNA sequence phylogeny and host specificity (Order level) of *Parvicapsula* spp. identified by BaTS testing.

| Statistic | Observed mean | Lower 95% CI | Upper 95% CI | Null mean | Lower 95% CI | Upper 95% CI | Significance |
|------------------------|---------------|--------------|--------------|-----------|--------------|--------------|--------------|
| AI | 0.958 | 0.705 | 1.095 | 1.196 | 0.797 | 1.524 | 0.165 |
| PS | 9.299 | 8.000 | 10.000 | 9.781 | 8.474 | 10.883 | 0.167 |
| MC (Salmoniformes) | 1.000 | 1.000 | 1.000 | 1.140 | 1.000 | 2.000 | 1.000 |
| MC (Pleuronectiformes) | 2.000 | 2.000 | 2.000 | 1.753 | 1.000 | 2.995 | 0.263 |
| MC (Scorpaeniformes) | 1.000 | 1.000 | 1.000 | 1.042 | 1.000 | 1.000 | 1.000 |
| MC (Gasterosteiformes) | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| MC (Gadiformes) | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| MC (Outgroup) | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |