

**Figure 4-source data 2**

List of genomes and transcriptomes used in the Blastn search to detect conserved *S. arctica* lncRNAs. SRA indicates the accession number to raw data available from the NCBI Short Read Archive. "Trinity de novo" indicates that the transcriptome was assembled without a reference genome. "Trinity de novo + ref + PASA genome" indicates that the transcriptome was assembled using a reference genome. Assembly details are described in the methods.

| Species                           | Transcriptome accessions (assembly strategy)              | Genome accessions |
|-----------------------------------|---|-------------------|
| <i>Sphaeroforma sirkka</i>        | SRA ERR2729814 (Trinity de novo)                          |                   |
| <i>Sphaeroforma napiecek</i>      | SRA ERR2709822 (Trinity de novo)                          |                   |
| <i>Sphaeroforma gastrica</i>      | Unpublished RNA-seq (Trinity de novo + ref + PASA genome) |                   |
| <i>Sphaeroforma tapetis</i>       | Unpublished RNA-seq (Trinity de novo + ref + PASA genome) |                   |
| <i>Sphaeroforma nootkatensis</i>  | Unpublished RNA-seq (Trinity de novo)                     |                   |
| <i>Creolimax fragrantissima</i>   | SRA ERR2666850 (Trinity de novo)                          |                   |
| <i>Abeoforma whisleri</i>         | Unpublished RNA-seq (Trinity de novo)                     |                   |
| <i>Pirum gemmata</i>              | Unpublished RNA-seq (Trinity de novo)                     |                   |
| <i>Amoebidium parasiticum</i>     | SRA SRR343044, SRR343049, SRR545192 (Trinity de novo)     |                   |
| <i>Chromosphaera perkinsii</i>    | SRA SRR5192512 (Trinity de novo)                          |                   |
| <i>Ichthyophonus hoferi</i>       | SRA SRR1618711 (Trinity de novo)                          |                   |
| <i>Sphaerotecum destruens</i>     | SRA SRR1618479 (Trinity de novo)                          |                   |
| <i>Ministeria vibrans</i>         | SRA SRR343051, SRR343053 (Trinity de novo)                |                   |
| <i>Capsaspora owczarzaki</i>      | GCA_000151315.2   | GCA_000151315.2   |
| <i>Salpingoeca rosetta</i>        | GCF_000188695.1   | GCF_000188695.1   |
| <i>Monosiga brevicollis</i>       | GCF_000002865.3   | GCF_000002865.3   |
| <i>Didymoeca costata</i>          | SRA SRR6344966 (Trinity de novo)                          |                   |
| <i>Choanoeca perplexa</i>         | SRA SRR6344967 (Trinity de novo)                          |                   |
| <i>Salpingoeca infusioenum</i>    | SRA SRR6344968 (Trinity de novo)                          |                   |
| <i>Microstomoeca roanoka</i>      | SRA SRR6344969 (Trinity de novo)                          |                   |
| <i>Diaphanoeca grandis</i>        | SRA SRR6344970 (Trinity de novo)                          |                   |
| <i>Acanthoeca spectabilis</i>     | SRA SRR6344971 (Trinity de novo)                          |                   |
| <i>Salpingoeca dolichothecata</i> | SRA SRR6344972 (Trinity de novo)                          |                   |
| <i>Codosiga hollandica</i>        | SRA SRR6344973 (Trinity de novo)                          |                   |
| <i>Salpingoeca helianthica</i>    | SRA SRR6344974 (Trinity de novo)                          |                   |
| <i>Mylnosiga fluctuans</i>        | SRA SRR6344975 (Trinity de novo)                          |                   |
| <i>Salpingoeca punica</i>         | SRA SRR6344976 (Trinity de novo)                          |                   |
| <i>Hartaetosiga gracilis</i>      | SRA SRR6344977 (Trinity de novo)                          |                   |
| <i>Salpingoeca kvevrii</i>        | SRA SRR6344978 (Trinity de novo)                          |                   |
| <i>Salpingoeca urceolata</i>      | SRA SRR6344979 (Trinity de novo)                          |                   |
| <i>Stephanoeca diplocostata</i>   | SRA SRR6344980 (Trinity de novo)                          |                   |
| <i>Helgoeca nana</i>              | SRA SRR6344981 (Trinity de novo)                          |                   |
| <i>Stephanoeca diplocostata</i>   | SRA SRR6344982 (Trinity de novo)                          |                   |
| <i>Savillea parva</i>             | SRA SRR6344983 (Trinity de novo)                          |                   |
| <i>Salpingoeca macrocollata</i>   | SRA SRR6344984 (Trinity de novo)                          |                   |
| <i>Hartaetosiga balthica</i>      | SRA SRR6344985 (Trinity de novo)                          |                   |