**Supplementary Table 3**

**A)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **ADCYAP1 mRNA** | **TSA** | **WGS** | **E value** | **% ID** | **Hits (NCBI)** |
| **ECDYZOSOAN** |
| *Periplaneta americana* (AB083652) (114 bp) | No significant similarities found | No significant similarities found  | 4e-514e-514e-514e-514e-51 | 100%100%100%100%100% | XM\_029700880.1- Salmo trutta glucagon family neuropeptides-like XM\_029626850.1-Oncorhynchus nerka glucagon family neuropeptides-like LR584445.1- Salmo trutta genome assembly, chromosome: 2XM\_024374870.1- Oncorhynchus tshawytscha adenylate cyclase activating polypeptide 1XM\_024006657.1- Salvelinus alpinus glucagon family neuropeptides  |
| *Eriocheir japonica*AB121765.1(114 bp) | Not available | Not available | 4e-512e-492e-492e-492e-49 | 100%100%100%100%100% | AB121765.1- Eriocheir japonica mRNA for pituitary adenylate cyclase activating polypeptideXM\_029756051.1- Salmo trutta glucagon family neuropeptidesXM\_029661465.1- Oncorhynchus nerka glucagon family neuropeptidesLR584406.1- Salmo trutta genome assembly, XM\_024393020.1- Oncorhynchus tshawytscha glucagon family neuropeptides |
| *Litopenaeus vannamei\** |  |  |  |  |  |
| **LOPHOCOTROZOA** |
| *Sepioteuthis lessoniana*(AB083651)(114 bp)  | Not available | Not available | 4e-514e-514e-514e-514e-51 | 100%100%100%100%100% | XM\_029756051.1- Salmo trutta glucagon family neuropeptidesXM\_029661465.1- Oncorhynchus nerka glucagon family neuropeptides LR584406.1- Salmo trutta genome assemblyXM\_024393020.1- Oncorhynchus tshawytscha glucagon family neuropeptidesXM\_021562972.1- Oncorhynchus mykiss glucagon family neuropeptides  |
| *Dugesia japonica*(AB083649)(114 bp) | No significant similarities found | No significant similarities found.  | 4e-514e-514e-514e-514e-51 | 100%100%100%100%100% | XM\_029756051.1- Salmo trutta glucagon family neuropeptidesXM\_029661465.1- Oncorhynchus nerka glucagon family neuropeptides LR584406.1- Salmo trutta genome assemblyXM\_024393020.1- Oncorhynchus tshawytscha glucagon family neuropeptidesXM\_021562972.1- Oncorhynchus mykiss glucagon family neuropeptides  |
| **CNIDARIAN** |
| *Hydra vulgaris*(AB083650.1) (114 bp) | No significant similarities found.  | No significant similarities found.  | 4e-514e-514e-514e-514e-51 | 100%100%100%100%100% | XM\_029756051.1- Salmo trutta glucagon family neuropeptidesXM\_029661465.1- Oncorhynchus nerka glucagon family neuropeptidesLR584406.1- Salmo trutta genome assemblyXM\_024393020.1- Oncorhynchus tshawytscha glucagon family neuropeptidesXM\_021562972.1- Oncorhynchus mykiss glucagon family neuropeptides |
| **INVERTEBRATE DEUTEROSTOME** |
| *Halocynthia roretzi*(AB121759.1)(114 bp) | Not available | Not available | 4e-512e-492e-492e-492e-49 | 100%100%100%100%100% | [AB121759.1](https://www.ncbi.nlm.nih.gov/nucleotide/AB121759.1?report=genbank&log$=nuclalign&blast_rank=1&RID=02CX5M6X014)- Halocynthia roretzi mRNA for pituitary adenylate cyclase activating polypeptide[XM\_029756051.1](https://www.ncbi.nlm.nih.gov/nucleotide/XM_029756051.1?report=genbank&log$=nuclalign&blast_rank=2&RID=02CX5M6X014)- Salmo trutta glucagon family neuropeptides XM\_029661465.1- Oncorhynchus nerka glucagon family neuropeptidesLR584406.1- Salmo trutta genome assemblyXM\_024393020.1- Oncorhynchus tshawytscha glucagon family neuropeptides  |
| *Chelyosoma productum*(507 bp) | Not available | Not available |  |  | No significant similarities found |
| *Chelyosoma productum*(883-bp) | Not available | Not available |  |  | No significant similarities found |

**B)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **ADCYAP1 mRNA** | **E value** | **ID %** | **Salmoniformes** **taxid:8006** | **Identity (NCBI)** |
| *Periplaneta americana* (AB083652) (114 bp) | 5e-525e-525e-525e-525e-52 | 100%100%100%100%100% | EZ872471.1- O. mykissGGDU01301331.1- O. tshawytscha GGDU01017810.1- O. tshawytscha GGDU01017807.1- O. tshawytschaGGDU01017804.1- O. tshawytscha  | XM\_014157815.1 - PREDICTED: S. salar glucagon family neuropeptides-likeXM\_014157815.1 - PREDICTED: S.salar glucagon family neuropeptides-likeXM\_014157815.1 - PREDICTED: S. salar glucagon family neuropeptides-likeXM\_024374870.1 - PREDICTED: O. tshawytscha adenylate cyclase activating polypeptide 1XM\_014157815.1 - PREDICTED: S. salar glucagon family neuropeptides-like |
| *Sepioteuthis lessoniana*(AB083651)(114 bp)  | 5e-525e-525e-525e-525e-52 | 100%100%100%100%100% | HAGJ01147357.1 - H. taimenHAGJ01147355.1- H. taimenGFIS01058303.1 - S. truttaGFIN01062319.1 - O. mykissGFIN01062318.1 - O. mykiss | XM\_014157816.1 - PREDICTED: Salmo salar glucagon family neuropeptides-likeXM\_021619861.1 - PREDICTED: O. mykiss adenylate cyclase activating polypeptide 1LR584406.1 – S. trutta genome assembly, chromosome: 6NM\_001139927.1 – S. salar Glucagon family neuropeptides (paca), mRNAXM\_021619858.1 - PREDICTED: O. mykiss adenylate cyclase activating polypeptide 1 |
| *Dugesia japonica*(AB083649)(114 bp) | 5e-525e-525e-525e-525e-52 | 100%100%100%100%100% | HAGJ01147357.1 – H. taimenHAGJ01147355.1 – H. taimenGFIS01058303.1- S. truttaGFIN01062319.1 – O. mykiss GFIN01062318.1-O. mykiss | XM\_014157816.1 - PREDICTED: Salmo salar glucagon family neuropeptides-likeXM\_021619861.1 - PREDICTED: Oncorhynchus mykiss adenylate cyclase activating polypeptide 1[XM\_014180582.1](https://www.ncbi.nlm.nih.gov/nucleotide/XM_014180582.1?report=genbank&log$=nucltop&blast_rank=3&RID=09NRDM5501R) - PREDICTED: Salmo salar Glucagon family neuropeptides (paca), transcript XM\_014180581.1 - PREDICTED: Salmo salar Glucagon family neuropeptides (paca), LR664377.1 - Coregonus sp. 'balchen' genome |
| *Eriocheir japonica*AB121765(114 bp) | 2e-502e-502e-502e-502e-50 | 99.2%99.2%99.2%99.2%99.2% | HAGJ01147357.1- H. taimenHAGJ01147355.1 - H. taimenGFIS01058303.1 - S. truttaGFIN01062319.1 - O. mykissGFIN01062318.1 - O. mykiss | XM\_014157816.1 - PREDICTED: Salmo salar glucagon family neuropeptides-likeXM\_021619861.1 - PREDICTED: Oncorhynchus mykiss adenylate cyclase activating polypeptide 1[XM\_014180582.1](https://www.ncbi.nlm.nih.gov/nucleotide/XM_014180582.1?report=genbank&log$=nucltop&blast_rank=3&RID=09NRDM5501R) - PREDICTED: Salmo salar Glucagon family neuropeptides (paca), transcript XM\_014180581.1 - PREDICTED: Salmo salar Glucagon family neuropeptides (paca), LR664377.1 - Coregonus sp. 'balchen' genome |
| *Hydra vulgaris*(AB083650) (114 bp) | 5e-525e-525e-525e-525e-52 | 100%100%100%100%100% | HAGJ01147357.1- H. taimenHAGJ01147355.1 - H. taimenGFIS01058303.1 - S. truttaGFIN01062319.1 - O. mykissGFIN01062318.1 - O. mykiss | XM\_014157816.1 - PREDICTED: Salmo salar glucagon family neuropeptides-likeXM\_021619861.1 - PREDICTED: Oncorhynchus mykiss adenylate cyclase activating polypeptide 1[XM\_014180582.1](https://www.ncbi.nlm.nih.gov/nucleotide/XM_014180582.1?report=genbank&log$=nucltop&blast_rank=3&RID=09NRDM5501R) - PREDICTED: Salmo salar Glucagon family neuropeptides (paca), transcript XM\_014180581.1 - PREDICTED: Salmo salar Glucagon family neuropeptides (paca), LR664377.1-Coregonus sp. 'balchen' genome |
| *Halocynthia roretzi*(AB121759)(114 bp) | 2e-502e-502e-502e-502e-50 | 99.1%99.1%99.1%100%100% | HAGJ01147357.1- H. taimenHAGJ01147355.1 - H. taimenGFIS01058303.1 - S. truttaGFIN01062319.1 - O. mykissGFIN01062318.1 - O. mykiss | XM\_014157816.1 - PREDICTED: Salmo salar glucagon family neuropeptides-likeXM\_021619861.1 - PREDICTED: Oncorhynchus mykiss adenylate cyclase activating polypeptide 1[XM\_014180582.1](https://www.ncbi.nlm.nih.gov/nucleotide/XM_014180582.1?report=genbank&log$=nucltop&blast_rank=3&RID=09NRDM5501R) - PREDICTED: Salmo salar Glucagon family neuropeptides (paca), transcript XM\_014180581.1 - PREDICTED: Salmo salar Glucagon family neuropeptides (paca), LR664377.1-Coregonus sp. 'balchen' genome |
| *Chelyosoma productum* |  |  | No significant similarities found |  |