**Supplementary Table 2.**

List of RNA FISH probe sequences.

|  |
| --- |
| Probes to detect satellite repeat RNAs |
| Probe Target | Dye | Sequence (5′ - 3′) |
| (AAUAU)n [Y-loop B] | Alexa488, Cy3,Cy5 | ATATTATATTATATTATATTATATTATATT |
| (UUGUC)n [Y-loop A/C] | Alexa488, Cy3, Cy5 | AAGACAAGACAAGACAAGACAAGACAAGAC |
| **Stellaris RNA FISH probe sets** |
| *kl-2*, Introns1-2 | Quasar® 670 | TTTACCTTGGGTTTTATTGA,GTCCGACAAAGACACACGTA,GTAAGTGTATCCCCCAGAAG,TGCCTTGCGTATGTACAGAT,TTTACATCCTTAGGGGATCA,CCTTTCTCAAGCCAGTAAAG,CTCTCTTTCGACTCTCACAA,CAGGGGGACCTAATTTGATG,CAGAAGAAGAAACGGAGCCA,AATAGTTCTTCTCAGGACCT,GTGTCTAATTTTCCGCTGAA,ATTTTGGCGGAGGAGTAGTG,GGGGTTTTACCACTTTTTTC,AGTAATGCTCGAAACTAGCA,CGGTCTAATTTGAGTCGCAG,CCCCTACATTTTTTTTATTC,CCTAAATGTTAGGGGTAGTC,CGTCCAACATCGATTTTTCT,TTTTGTGCTTATCCGGTATA,AAACGCCTTGACCGATTTTG,GTTTTCAAAACGCGACACCT,AGCTGCAGTAATTTTACCTA,CTGGCCAGAGAACTTTTTTT,TTTTTTGTATAGGTTCCCTG,ACCCCCTTACGTATATATAC,TCCTTCGCAAATTTCTAACT,GAGCGTCATTCATCTCATAC,ATTATTTCCTTCTATCGCAG,GATCGAACCAATCCTTCAGA,AAAACAACCGCGATCGGCAG,CAGGGAAATTCATTACCCTT,AGTTTTTAACCAGGGCAACA,ATCGCTAGTGCTAGTGCTAG,GTAGCAATCCACATGTTTCG,TTTCGACTAGCAAGGCGTTG,GGACAGAAGAAGGGATGGGA,GGAACTAAACAAGCGTCTGA,GCGATTGCACGAATTGTCTG,GAACGTTCGTCTATCACTGG,CAGCTTGAGGAAGGGGTTGG,GCTAACTTGAGATGGTGGTT,TTAGCAACCAAAAAGACCCT,GATTGGGAAATCTGCCAACT,CAACGAGTGACGGGCATAAT,ATCCGTATGCAGGTATTTTT,AGATTTAGATTGTGCACGCG,ACGGTTGATAATCTATCCCA,TCTCTCATTGACCATCAAGT |
| *kl-2*, Exon 8 | Quasar® 570 | AGTGTCTCCAGTAGGAACAA,TTCCAACAAGCATCACAGGA,TATAGCCGTTGACGTTTTTC,TTATCACAAGCCTCCATTAC,TTGCGTTTTTGTACGTTTCT,AAAGGTGGCTGAGATCCATA,GTAATCTATCCATTGCCGAA,CCATCGCAGCCATTAATAAT,AACCGACTTTGAGTTCGACT,AGCATCGTTCCAAATATGCG,CTCACGAACTTCATTTGGGT,CAAAGGGTTATAGGTAGCCA,TTTGGCGTCGGTAACATTTT,TCTACCTGTAGATCTTCGTA,CGCGGTTGGGAAATAACTCT,TTAATACTTGTCGGCCTGAT,TCGAAAGTCTCCTGTTTTGT,GAGACTTCTGCTATTTGGTC,ATTTCTCCAGTACTTAGCAT,CTTCAGTTGTTAGCAGAACC,TTTTCTCCGATTGGGCTAAA,TTCCAAAAGGGCTTCTTGTG,GCGTTGAAGAATGGCTTCTG,TGAAAGCCCATTGCGTAATC,CTTGTTCAGAGCTAGCTTTA,CATCCCTTCTAATAAGCACG,TACAGCTTCCATAACCTTTT,ATGTTGGTTCTTTTCCAAGT,AAGCGATACAACAGCCACTT,CTAAAGCAGCTTGCTTTTCT,ACAACCTGAAGCTCTTCGAG,TTCTAAGTCGTTCTTCCTTG,CTCTCCAGAAAGCGATTCTA,AAAAGCCCCTAAGTACGACA,ATACGTAACCTTAAGCTCCA,GTAAGTAATCTGCCATACCG,GCAAACCTTCTTTTAGAGCT,CCCACGTTTTGCAACAATAC,ACCTTTCTCCACTTTGAATG,CGGTGGGTAATGTGGATTTG,CCATCTTGCTTTAGTGCAAA,GTCTTTTTGTTCTTCTAGGG,CGTTTGTTTCGAGCTATTGT,ACTGATGTCTGACGGGATTT,TTTCTACTTCAGTTACCTCG,CGAGGACTTCGCTCAATAGA,TATTTCGGTAGACCGCATAG,GTAGCTTATGTCGCTCGAAA |
| *kl-3*, Exon 1 | Quasar® 670 | AACTGACAAGCGCAACGTGT,GTTATCTGCACTACTTTTAT, CTGATTTACCACGTAACACA, CGTAAACGTTTAACATTCCT, GCGCGAAACGCCAAAGAGTT, GGGCAGCACGCTTTAACATG, TTGGTCACTTACACTAGGTC, TATCGTCTTCTTTGTTGGTC,CCTCATTTCTCGAAGTAACT,CCAGGCTTGAAATCCGTTGT,AAAACATACCGCTGGTTTGG,ACCCAACAAATCTGCACAAA,TTACTATTTCCTCAGGATCT,TTGCTTTCATCCACAATACC,ACCATTTACATTCTCAACAT, TGGGACCTTTTTCCTCAAAT,GCGTTACTTATCATTATGGC,CGGAATCAGTTGGATATCCT,TTTAAGCTTTTCCTGGTAGC,ACAGAGCGTTGAATTTCAGT,TCAACTAGATCCGACCTCAA,GTCGATATACAACAGTCCAC,ACCGAACGGTTATCAATCGA,AAATATTGCCACCTCATCAC,AAGCAAGAGTTTCGCTCTTC,CGGCTTTAAAACGTGATCCA,CAAATTCGGTCACAGCTTCT,TGAGTTTGCTCTTTTTCTGC,ACAGTTGCTTCAGATGATTT,CCTTTAAATAGTTCATGCGA,TTGCCATCTCACAAGTAATA,GTATTTTTGAACTGGCTTCA,TTCAACCAGTCGAACTCGTG,TGTCGAAGCCATTGCTCAAA,CCTCTACTAGTATACCTTGA,GGGTGTATCTCTTTGTATTT,ACATTTGCAAAGGTCCTACA,AACATACGCCGCCAATTGAC,TCCGTTATGGTTGTATATCT,TAAATGCTCGGGATGTAACA,ATGTCAAGCAATCCTTGTGG |
| *kl-3*, Exon 13 | Quasar® 670 | CCAATACTTTTGACCTTACA, CGAGATCCATATTATATCCT, AGGTGTTTTAATGCATCCAT,GTTTCCTCTTGGATTACTTA,CCTCCAACACCAACAAGTAA,TTGTCAAGCTTTGTTTTCCG,ATAGGACCGAGTTAAAGTCA,AAGTCTTCGGTTAGATTTCC,CCGGCCGTTCGATACAAAAA,AAAGTCATGCCATTTCCATC,TCTTTAATTTCATTGGCAGT,AGGTTAGCAATTTCACCAGA,CATCAAGCTCATCTTTAGCA,CTGGAATTAGCTCGCTATAC,CGAGGTTGGTGTTTTTTCAT,TACAGATTGTCTTGCGTAGC,GAAGATTATAGCGGGCACGA,CTGGAGAAAAGCAGAGAGCT,CGCATTCGAAATTTCTCTCC,GGATATAAGGCCGGGAAACT,GCCATTTTTGAAACCAGTCT,ACTGCGATACGAGCATCTTC,ATCAGTCAGATAATGGCGCG,CCTGATCCTTAACTTTTTCA,GTATCCAACTCATGATGTCA,TCTCCGAAACCGATCGTAAT,GACTTTGGCGTCACAAATGT,ATGATCCTGTTTGTCTTTAT,ACTCATTCGCTCTGACATTA,CATCAAGTTTATCCAATCCA,GAATAGCAACAGATGCACCT,GCAAGAGCAATAACCTTGTT,AAACGTCTTCTGCTTCTTCA,TGCAGCTTTGGATTGTTCAA,CCACTTCCACTTTTACTATT,TTACAAGAACTTCCGCTTGG,CCACATGTTTTACTGCTGAA,AATGCCGGAAGAGCTTTTTC,TTTAAGAGCAGCTTCTGCTT,GCAATATCAGCCGCTTTAAT,GTTTTCCCAATTTTCTGACA,ACACACACAGTCCATTATTA,ATAGGTTTTACTTTTCTTCT,AAAGCTTTTTCCGTATCAGG,TTCGTCCCAAGAACTTTGTA,TCAGTAGGGTACTCTACTAT,GACCATTTCGGCGTTAATTA, CTGAAAATAGGGCACCATCA |
| *kl-3*, Exon 14 | Quasar® 570 | GTACTTTGACATAGCCATGG, AAGATTTGCCTTTAAGGGCA,TGATATTTAGCCTCTTGCAC,CTGCTTCTTGTAGATCACTT,CGTTTTCTTTTTGTTGCAGT,TTTTTGGCCTCGTCTAATAC,AACCACCAATAAGAGCGGTT,TTCAGTCCATCGGATTTTTT,CGGTCGGTCTCACTTTTAAA,GGAGAATAACATCTCCGACC,TCTTGATTAAATGGTCCCGT,ATGTTCCACTCACCAATTTG,TTGACAGTTCATCTGTTGGT,TTTTAATCCACACTTTTCCC,TAATCGGAATTCCCATGCTA,TAACTCCTCTGCAACATCTT,TTTCGGTCCAAAAGGTTGTC,TCCAATCCACTTCTTTATCA,GATTGGGTAGCTTTGTTGTA,CGCGCAAATATTTCAGGTGT,CCACGCATTGTCACAGTAAA,GAACCCGTTCATCTTCTAAT,TTTCATGTTTCCAGTCACAG,TTCCTTTCGTAGTGGACAAC,CCTCAATCACTGTAACGTCG,TCCTTAACTTCAATGGCAGT,CAGCGTTTATTTTTGCTTCT,ACACTACCTCTTGTAGCAAC,GCATCAAAGCGCTCAAGGAA,TCCTCTAGATTTGTAGCGAT,TTAACTCAAGCTGGCGATCA,CGCACCGCCTTTTATAAATA,CACCGAAACGGAACAGGAGG,TATACCACGTAAACCAAGCC,CCATACACCACGAACGAACA,AGTTTAGTACTACTGGCTCG,AATCATTGGCATAAGTTCCC,AGCTCATTTTTTTTGGCGAG,CTTGGCCCATAGAAATAGGA,CGTCTTCTAGGCAGGATAAT,TCCTAAGTGACAGTTTTGCA,ACTGTAAGCTCTACCATGTA,AGCAGGTGGTTCATTAGTAT,TTTTTAGTCCAGCACGTATT,TGGAGATTGCGAATAGTCCA,TGCATACCAGTCGGATGAAT,TCCTGCTCCTTAAAACTGTA,CGTTTGCCATGTCATCAATA |
| *kl-5*, Exons 1-6 | Quasar® 670 | CTTCTTTTCCTTTTCGTCAG, AAAAACTCCGGACGGTTGTC,AGACGCATTGTCTTGGTTAG,CATTTTAGTCCACTTATCCA,AACATCCCTAAACTCGTTGG,ATACGTTTCTTGTTGGGATT,CCACCGGAATTGATTGTGAA,CTGGAAAGCTGTAGGATGGA,AGCAACTTTATACCGTGGTC,GAAGTGGTGTTAAGTACCGA,ATTTGCTAATGGGTTCGGTA,ATCCCACTTGATTTACTGTG, TCTGTCTTCATATCGTTTGC,TCCATTTCGCATTTCTTGAG,AACGAGACCTTTCATCTGGG,CATGACTTCGTCCATGCAAA,GTTAACCACGGAAATATCCC,ACTCGAGCGAATGCTTCATA,TCAAGCCACTTTACAACCAT,TGCCTCTGGTAGTGGAAAAT,CAAGTTCTCAAGGTTTTCCA,AGTCTTTATACGCCTATCTC,ACTTAGTTATGTCTCTAGCC,CTTGTCCATTTTTCTTTTCA,TCGTCCATATCGTTTGTTTC,AGTGGTCGTATATCTGATCG,CACTAATCCAATTGTCAGCA,TGAAAATACCGCGAGTGACC,GTTCTGTTGACACAGTCGAT,GGAATATGGAGTCTGGTTCT,TTATAGGCTTCGTCGACATC,TGTAATACTCTAGGTGCTGC,CAGTCCTGCGAGTTAAATGT,ATCGTCCGAATATTTCATCC,TCTTTTAGCTCTTCCAATCG,CCCCATAACAATTTTTTCCA,AAGGGCGAAAGTTATCTGCC,TGCTGTTGTACTCTTCAAGA,AATATTTGTCCACTCACGGT,ACAGAGAATTTTCTGCGTCC,TGGCCTTGAAGCTTAAACGA,TGAAACGATACCATGCGCTC,ATGTGTGTCTTCAAGACCTT,GCGAAGAAGTAAGGAGCCTG,GGGTTCGACATGTTTTTTGA,ATCATCCACAATGACATGCA,TAACGCACATGATCTCTTCC,CGAGCGCCGTAAAAACGTTT |
| *kl-5*, Exons 16-17 | Quasar® 570 | TTAGTCTTGACCCACTTTAT, TAAGTACTACCAACCCAGTT,ACTGCTCTCTCAACTTGATC,CGTCCTAGGAGAGGATTTAG,GTGGGTTTGCTAATTTCGTA,CCGGGTTACGGTAAAGTTTA,CCACTTTAACTACTTCAGCT,TCTCCAGCAGAAGATAAGCG,CCAGAGTGACATCTTCAAGG,GACTTCTATTTCGTCAGCAG,GCATGGCATTGTTAAACACC,CTATCAGATTCTCAACGCGG,CGTGAGGTGTACACAAAGCT,GCTCTACTTCACCAAGATTT,AGCCATGTGAAATTGGACGT,TGAATACTGCCTGGTTGTTA,TCCTTCAATGTCCTTTTCAA,TTTTCAGGACTCTCTGAGTC,ATGCATCGCATTATGCAGAG,CAATAAAGGAGCGCATGGCG,GAATTCCATAGAGCGAGCAT,TCTGGACTAGATTCCTCGAA,ATTTCAATGGCGTTTTCTGC,CGCGACCAGGTGAATATTTT,CGATAGCTTGTGTGGACATT,GATATGAGCAGCAGGATCAC,GATTCAAGTATTCCTTGGGG,ATCTAAGGCCTTATGGATGT,CGAGCACATTTCTAGAGTCT,TAAACGGGTAGCTACGGTTC,TGATATTGTCAAATCGCCCA,TCCAGGTAATTGTACAGCAC,CTGTAATGTGACCTCCATAC,GGAAAACCCTGGCAATACTC,TGTAATTGTGGTAGCCAGTA,AAGGCCGTATAGAGATGGAC,AGTCGTTCAGAAACCGTAGT,TCTCGGCTGCAACTCGAAAA,TGTCTTCCTGTGAAACTGTC,AATGGTGTGGGAGTTTTGTC,CGCTCACACTCTTGAAATGC,AGCGCTTCAATTCAGTCATA,TGAAGGCATGCGAAAGTCGG,TGCATGATAGCTGTGAGGAG,GACACATTCTATCGAGAGGC,TTCCACTTTTTGGTGACATC,CAATGGTTCCCATTTTCATG,AAGGTCCAAACGAAGGTGGG |
| *ks-1 (ory)*, All exons | Quasar® 670 | TTTTTGGCTTTCTTTCTGTC,AAAAGTTGAGGCTCCGAGTT,AAAACTGGACTACCCGGTTA,CGTTTAATTCGCGATGCTTC,CTTCATCTACATACCGACGA,TCCGATGTTGAAGTCAGTTC,TGATGCATCTGATTCTTTCC,TCTTGCACTAACTGTTCTCG,AATTCAGCTGTGTCATCAGT,TTAGCTCGAGAAGCCATTTT,ATTCAACGTTTAGGCGTTCG,CCATTGTCTTCATCAAAGCT,TTTCCATGTGCTTCTTTTTG,CTCTATTCGCAATATCCAGT,AGTTTACGTGTCGTTTCTGA,GCATTGCCTTATTTAATGCG,AAGCCTGCTCGTTAATTGAG,TTGTACATTCTTGTTGTCGC,CATCCTTCTCCAGAGAATTA,GACGAATATCATCCGTTCGG,CACGTTGCAATGTCTCTTTG,ATGTTTTAAGTCCGCCATAG,TCTTTCTCTGCTTTGGATTT,CGTCTTCAGAGAGATTTGGT,TCGTGTAACTTTTCCGTGAG,ACGGACTCCAACTGTTTTTT,CGCTGAAGCATCATTTTCTC,TTTGATGTCCTGATTTTGCT,TTTTACTTCGTTTGCGCTTA,GCCACTAAGTTTTCTTTGTT,TTTCTCTCATATCCTTACGT,CAATCCGACTAGGTTACGTT,AACAATCTCGTCATTCCGTC,GGGCATTTTGTGCAATTTGA,AAGGCATTCACTTTCAGTGT,CTCATGTCAGCAGTACTTTT,TCTTCAGTTAGAGCTCGTAT,CAACGATGTACTCCTGTAGG,AATTTCTTAGGATCTTCGCC,TATTGACTGCTTTAGGGAGC,AGCCTCACACAGTTTATTTT,GCATATGAGATAGCATCCTT,TAATGAACGCTCTGCTGCTA,GTCTTGATTTAAGTTCCACC,AATTGACAGCTCTCCGATTT,TATTTCGTTTTTCCCATCTG,ATCCACATTCCATATACTCT, ATATCCGTTAACTTCGCACA |