**Supplementary Tables**

**Table S1 – A list of all primers used in the study.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Left Primer** | **Sequence** | **Right Primer** | **Sequence** |
| **SVA\_L1** | GAGTGTCCACTGGAAAATACT | **SVA\_R1** | CTACTCACTTCCCAGACGAT |
| **SVA\_L2** | CTAAACATGCGAGCATAACA | **SVA\_R2** | CTACTCACTTCCCAGACGAC |
| **AluSz6\_F** | CCTGTACTCCCGGCACTCT | **L1M5\_R** | TGCACACAAAACAGCAAACA |
| **qPCR-Assay1F** | CAGGTCTACCCTGGAGTCATACTC | **qPCR-Assay1R** | GAGAGAGGGACTTTGTATGGATCA |
| **qPCR-Assay3F** | CAACTCAGTGACAACAAAACAGGTCTA | **qPCR-Assay3R** | CAGAAAGGGAGGAAAATAGAAAAA |
| **27** | CATCACAAAGAAGTTTCTGAGAATGCTTC | **30** | TGCATTCAACTCACAGAGTTGAACCTTCC |
| **SATR1\_L** | cccctgtgatattgttccta | **SATR1\_R** | cccctggatattacgaaca |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Copy number estimates** | **Assay 1** | **Assay 1** | **Assay 3** | **Assay 3** | **Assay 1** | **Assay 3** |
| **Species** | **Copy nr** | **STDEV** | **Copy** | **STDEV** | **t-TEST vs NLE** | **t-TEST vs NLE** |
| *Homo sapiens* (HSA) | 6 | 0 | 6 | 0 | **P=** | **P=** |
| *Nomascus leucogenys* (NLE) | 245 | 58 | 585 | 104 | n/a | n/a |
| *Nomascus gabriellae* (NGA) | 520 | 128 | 772 | 195 | 0.0072 | 0.1093 |
| *Hylobates moloch* (HMO) | 320 | 64 | 436 | 70 | 0.0018 | 0.0982 |
| *Hylobates agile* (HAG) | 317 | 62 | 434 | 52 | 0.0226 | 0.0306 |
| *Hylobates albibarbis* (HAL) | 1062 | 311 | 1221 | 234 | 0.0084 | 0.0053 |
| *Hylobates muelleri* (HMU) | 620 | 211 | 918 | 234 | 0.0150 | 0.0359 |
| *Hylobates lar* (HLA) | 658 | 268 | 730 | 83 | 0.0282 | 0.0102 |
| *Hylobates pileatus* (HPI) | 595 | 232 | 697 | 185 | 0.0263 | 0.02673 |
| *Hollock leucodenys* (HLE) | 579 | 261 | 720 | 209 | 0.0435 | 0.2283 |

**Table S2 – Estimate of copy numbers of LAVA elements in gibbon species.** The table reports the quantitative PCR results for estimating the copy number of LAVA elements in different gibbon species. We performed t-tests on our copy number estimates to compare each gibbon species to NLE.

**Table S3 – List of LAVA elements identified in NLE BACs**

**Supplementary Figure Legends**

**Figure S1- FISH on three gibbon genera (*Hylobates*, *Symphalangus*, and *Nomascus*).** CH271-457L13 produces centromeric signals in HLE but it hybridizes only on one pair of chromosomes in the other genera (indicated by the arrows). Some repetitive signals are also visible on some centromeres/ pericentromeric regions in *Nomascus* and *Hylobates*.

**Figure S2- PCR of a full length LAVA element.** Primes were designed in order to amplify the full length LAVA element. The PCR product was obtained using BAC CH271-261H3 and NLE gDNA as template and it was run on a 1% agarose gel.

**Figure S3– Estimated copy number of LAVA in gibbon species.** The mean and standard deviations were calculated and plotted as the estimated copy number for each species and assay condition. Abbreviations for the gibbon species can be found in Table S2.

**Figure S4 – Chromosome painting experiments.** Chromosome painting was used to identify chromosome pairs whose centromeres are depleted of the LAVA elements. Sorted chromosomes were labeled in green (FITC) and the probe containing the LAVA element was labeled in red (Cy3).