

**Table S5** The Ainu are more closely related to lowland East Asian farmer populations (Ami, Atayal, Dai and Lahu) than to the Sherpa or to Tibetans, suggesting gene flow between the two groups after lowland East Asians split from the high-altitude East Asians. Choice of outgroup population did not affect results, suggesting that significant positive D statistic is not due to gene flow between the Sherpa or Tibetans and non-East Asian populations.

| Pop1      | Pop2 | Pop3    | D(Pop1, Pop2; Pop3, X) (Z) |                   |                   |                   |
|-----------|------|---------|----------------------------|-------------------|-------------------|-------------------|
|           |      |         | Ami                        | Atayal            | Dai               | Lahu              |
| Yoruba    | Ainu | Sherpa  | 0.0192<br>(7.465)          | 0.0155<br>(5.532) | 0.0109<br>(4.855) | 0.0084<br>(3.334) |
|           |      | Tibetan | 0.0163<br>(7.064)          | 0.0126<br>(4.933) | 0.0080<br>(4.051) | 0.0054<br>(2.427) |
| Sardinian |      | Sherpa  | 0.0201<br>(8.473)          | 0.0170<br>(6.596) | 0.0138<br>(6.449) | 0.0104<br>(4.597) |
|           |      | Tibetan | 0.0158<br>(7.411)          | 0.0128<br>(5.342) | 0.0095<br>(5.071) | 0.0061<br>(3.007) |
| MA1       |      | Sherpa  | 0.0257<br>(5.907)          | 0.0199<br>(3.903) | 0.0157<br>(3.742) | 0.0147<br>(3.444) |
|           |      | Tibetan | 0.0202<br>(5.097)          | 0.0144<br>(3.503) | 0.0101<br>(2.835) | 0.0091<br>(2.335) |
| Karitiana |      | Sherpa  | 0.0175<br>(6.112)          | 0.0143<br>(4.432) | 0.0128<br>(4.835) | 0.0080<br>(2.897) |
|           |      | Tibetan | 0.0144<br>(5.724)          | 0.0112<br>(3.817) | 0.0097<br>(4.247) | 0.0049<br>(1.943) |
| Papuan    |      | Sherpa  | 0.0139<br>(4.933)          | 0.0150<br>(4.908) | 0.0090<br>(3.578) | 0.0075<br>(2.920) |
|           |      | Tibetan | 0.0093<br>(3.687)          | 0.0105<br>(3.825) | 0.0044<br>(2.091) | 0.0029<br>(1.264) |