

Table S4 Major migration edges inferred from the *TreeMix* analyses, allowing 1 to 5 migration edges (m), suggest gene flow events between Europeans and Native Americans and/or Siberians, between the Ainu and lowland East Asian farmers, and to a lesser degree, between the Ainu and the Itelmen. Migration edges are counted across 100 bootstrap replicates. Here we tabulated migration edges inferred in more than 5% of replicates. When multiple populations are listed, the value refers to an internal branch that is the most recent common ancestor of all listed populations. Ainu related migration edges are highlighted in blue font. EA = East Asians, SB = Siberians, NA = Native Americans.

m	Source	Target	Count
1	Basque	(Karitiana, Surui)	77
	(Karitiana, Surui)	Basque	23
2	Basque or (Basque, Sardinian)	(Karitiana, Surui)	67
	(Karitiana, Surui)	(Basque, Sardinian)	33
	Itelmen	(Basque, Sardinian)	32
	Basque	(SB, NA)	31
	(EA, SB, NA)	(Karitiana, Surui)	10
	Sherpa	Nganasan	8
	Papuan	EA	14
3	Basque or (Basque, Sardinian)	(Karitiana, Surui)	74
	(Karitiana, Surui)	(Basque, Sardinian)	24
	Itelmen or (Itelmen, Nganasan)	(Basque, Sardinian)	41
	Basque	(SB, NA)	26
	Ainu	(Ami, Atayal) or (Ami, Atayal, Dai)	43
	Ami or (Ami, Atayal)	Ainu	15
	Sherpa	Nganasan	10
	Papuan	EA	13
Ju_hoan_North	Papuan	12	

(Continued in the next page)

Table S4 (Continued from the previous page)

m	Source	Target	Count
4	Basque or (Basque, Sardinian)	(Karitiana, Surui)	68
	(Karitiana, Surui)	(Basque, Sardinian)	28
	Itelmen, Nganasan or SB	(Basque, Sardinian)	36
	Basque	(SB, NA)	31
	Itelmen	Nganasan	9
	Nganasan	Itelmen	7
	Ainu	(Ami, Atayal) or (Ami, Atayal, Dai)	52
	Ami or (Ami, Atayal)	Ainu	14
	Itelmen	Ainu	12
	(EA, SB, NA)	(Karitiana, Surui)	14
	Sherpa	Nganasan	24
	(Ami, Atayal, Dai, Lahu, Sherpa)	Nganasan	7
	Papuan	EA	9
	Ju_hoan_North	Papuan	16
	5	Basque or (Basque, Sardinian)	(Karitiana, Surui)
(Karitiana, Surui)		Basque or (Basque, Sardinian)	46
Itelmen, Nganasan or SB		(Basque, Sardinian)	39
Basque		(SB, NA)	14
Itelmen		Nganasan	8
Ainu		(Ami, Atayal) or (Ami, Atayal, Dai)	72
Ami or (Ami, Atayal)		Ainu	17
Itelmen		Ainu	17
Ainu		Itelmen	6
Ainu		(Itelmen, Nganasan)	12
(EA, SB, NA)		(Karitiana, Surui)	24
Sherpa		Nganasan	24
(Ami, Atayal, Dai, Lahu, Sherpa)		Nganasan	15
Papuan		EA or (EA but Ainu)	18
(Ami, Atayal) or Dai		Papuan	18
Ju_hoan_North	Papuan	14	