Supplementary Material for “Three hundred years of low non-paternity in a human population” by Jaco M. Greeff & J. Christoff Erasmus

**Supplementary Table 1** Genealogically linked surnames genotyped in this study. The origin and year of arrival for each immigrant is given.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Origin | Surname | Arrival in Cape | Number of fertilizations | Total fertilizations | |
| Dutch | Family 1 | 1679 | 44 |  |
|  | Family 2 | 1693 | 54 |  |
|  | Greeff, Cornelis J.a | 1856 (born) | 5 |  |
|  | Family 3 | 1666 | 56 |  |
|  | Family 4 | 1669 | 165 |  |
|  | Family 5 | before 1681 | 16 |  |
|  | Family 6 | 1683 (born) | 36 |  |
|  | Family 7 | 1699 | 62 |  |
|  | Family 8 | 1661 | 65 | **503** |
| German | Family 9 | 1765 | 75 |  |
|  | Botha, Friedrichb | 1678 | 70 |  |
|  | Family 10 | before 1683 | 51 |  |
|  | Greeff Matthiasa | 1680 | 103 |  |
|  | Family 11 | 1713 | 62 |  |
|  | Family 12 | 1765 | 14 |  |
|  | Family 13 | 1663 | 24 |  |
|  | Family 14 | 1688 | 105 | **504** |
| French | Family 15 | 1698 | 39 |  |
|  | Family 16 | 1710 | 41 |  |
|  | Family 17 | 1688 | 29 |  |
|  | Family 18 | 1718 | 76 |  |
|  | Family 19 | 1671 | 25 | **210** |
| Scandinavia | Family 20 | 1703 | 56 | **56** |
| **Total** |  |  |  | **1273** |

a From Greeff *et al.* (2012)

b From Greeff and Erasmus (2013). Due to well-known non-paternity in this family (Franken, 1926), we counted Maria Kickers’s first son as a non-paternity, but not her later sons as the married father seems to have consented to adultery and all the sons used their biological father’s surname (Greeff and Erasmus, 2013). In our total tally of conceptions we excluded the first generation of this family so that the denominator is 1273 rather than 1277.

**Supplementary Table 2 Unique haplotypes found in this study.**

Please see separate Excel file for this table.



**Supplementary Figure 1** A histogram of father's age at birth of their sons.

**R code for calculating exclusion probabilities sampling back in time, as is done for coalescence.**

This is to use coalescence back in time given a set of population sizes and number of immigrants for each time step. Note that there is an exclusion probability for each generation and that coalescence can happen in any of the previous time steps.

g1 <- 1000000 #number of iterations

trek <- 8 # generation where first two males are randomly drawn without replacement.

# Next follow the number of immigrants and the total population size in every interval, this will be unique for each study

Immi<- c(68, 298, 317, 553, 758, 970, 2090, 0)

T <- c(68, 426, 770,1789, 3798,13008,33493,86232)

gen <- length(T)

c <- numeric(trek) # To remember in which generation two samples coalesce

d1 <- 0 #number of simulations counted

while (d1<g1) {#starting the cycle

#drawing the first two samples

e1 <- trek

n1<- sort(sample(1:T[e1],2,replace = FALSE)) #with replacement in the first sample only

if (n1[1] <= Immi[e1]) {e1 <- 0} #If either of the samples is a new immigrant it cannot coalesce

else {

e1 <- e1 - 1

#now drawing deeper samples

while (e1 > 0) {

n1<- sort(sample(1:T[e1],2,replace = TRUE))

if (n1[1] == n1[2]) {

c[e1] <- c[e1] + 1

e1 <- 0}

else {

if (n1[1] <= Immi[e1]){

e1 <- 0}

else {

e1 <- e1 - 1}

}

}

}

d1 <- d1 + 1

}

# then the results of the simulation is given as follows:

# the exclusion probability:

1-sum(c)/d1

#The generation where coalescence occurred

c

**References**

Franken JLM (1926) Die Franse vlugtelinge. *Huisgenoot*, 16 July, 36-38.

Greeff JM, Erasmus JC (2013) Appel Botha ~~Cornelitz~~: The abc of a three hundred year old divorce case. *Forensic Sci Int-Genet* **7**: 550-554.

Greeff JM, Greeff FA, Greeff AS, Rinken L, Welgemoed DJ, Harris Y (2012) Low nonpaternity rate in an old Afrikaner family. *Evol Hum Behav* **33**: 268-273.