



Differences and similarities in Finnish hops

genetic analysis

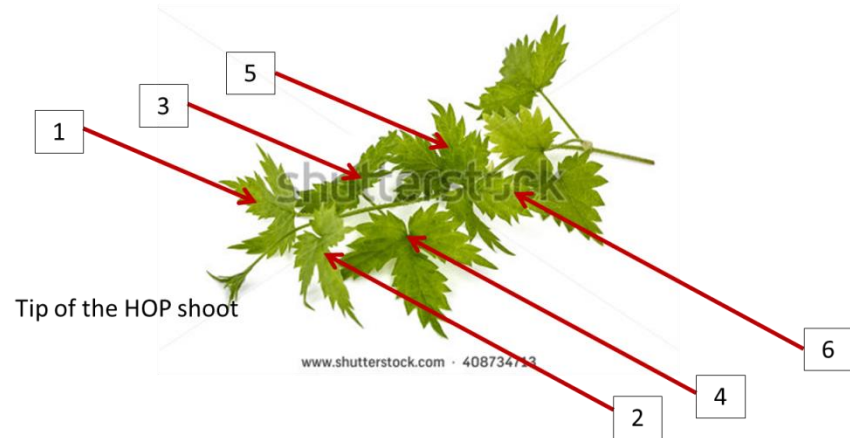
Lidija Bitz



63

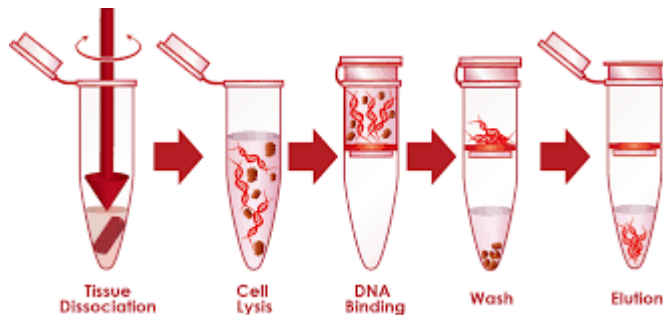
HOP leaves samples You sent us 63 during 2016 !!!

Sampling of HOP leaves for DNA analysis



Take the most younges developed leaves and the most helathy ones.

KIITOS=)

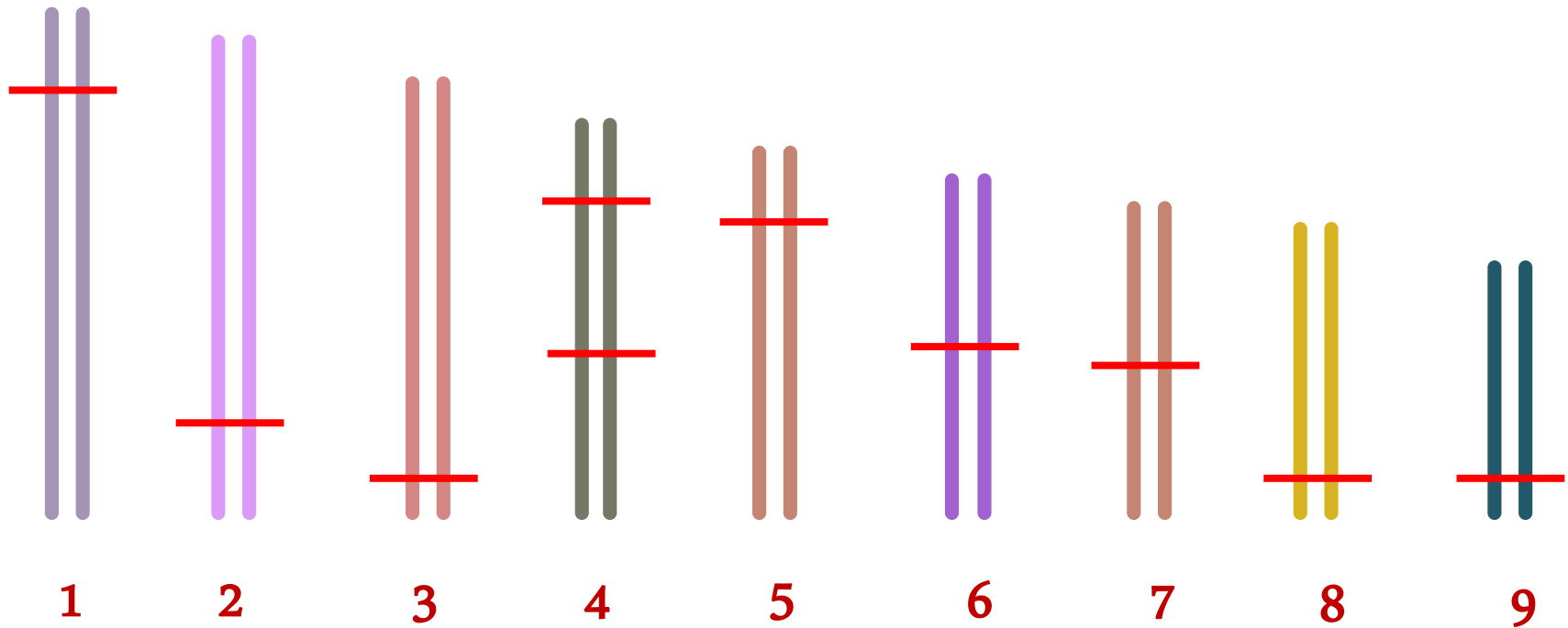


We isolated

DNA

GENETIC MARKERS – MICROSATELLITES – HOP

*We used **10** markers*



WE translated genes into numbers

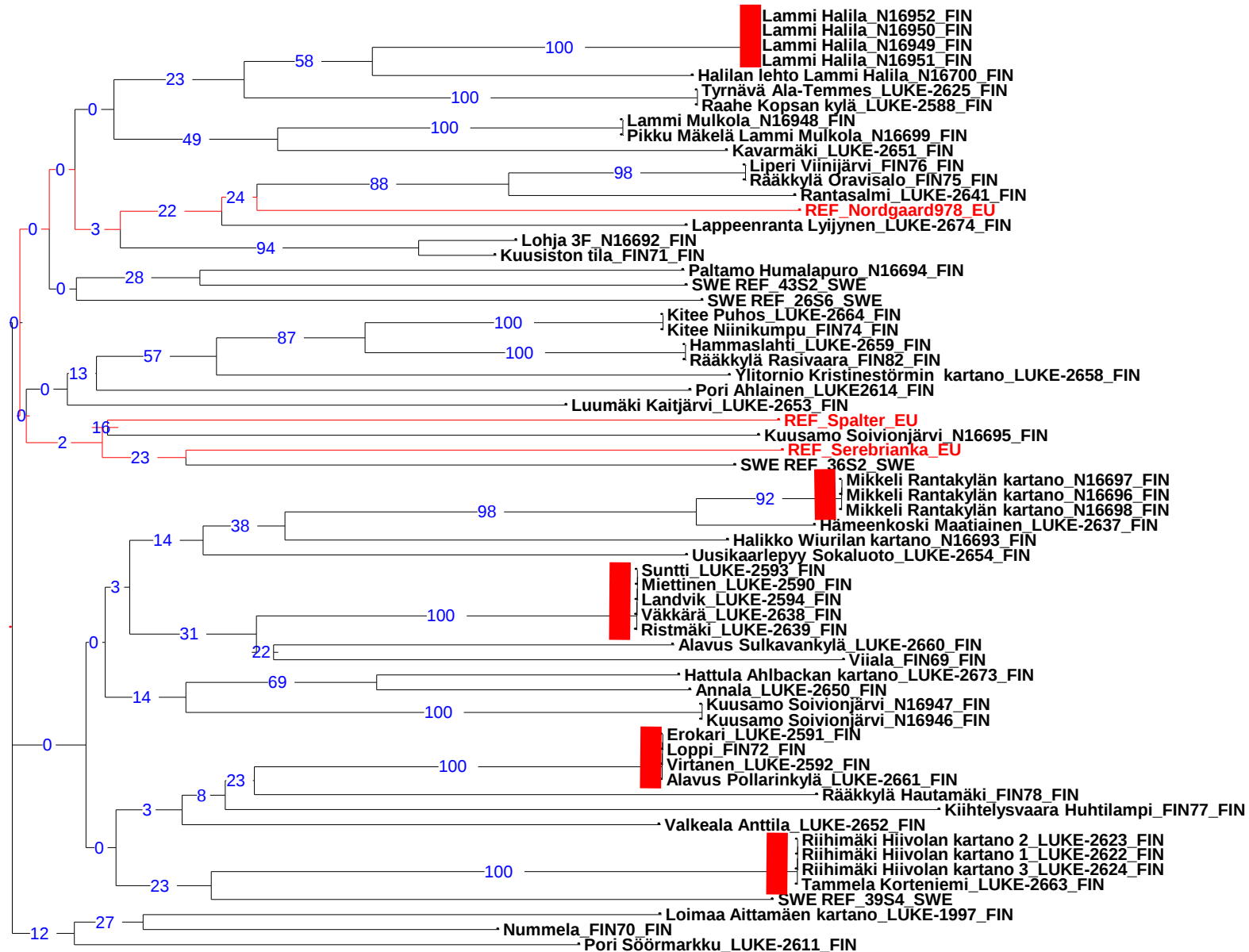
E.g.

MATRIX

LUKE-2590	<i>Miettinen</i>	204	206	76	86	125	154	210	216
LUKE-2591	<i>Erokari</i>	204	204	76	86	141	154	210	214
LUKE-2592	<i>Virtanen</i>	204	204	76	86	141	154	210	214
N16695	<i>Kuusamo Soivionjärvi</i>	190	206	76	86	129	174	206	222

→ matrix → dendrogram → To see relationships between accessions

→ E.g. groups within vertical lines



→ We checked each group separately e.g.:

DUPLICATES



Halila_N16700_FIN

Times_LUKE-2625_FIN

NAME	GA4-P11-9	GA4-P11-9	GA5-G3-10I	GA5-G3-10I	GA5-G3-10II	GA5-G3-10II	GA7-I6-16	GA7-I6-16	GA8-K15-4	GA8-K15-4	GT1-K1-4	GT1-K1-4	HI-ACA3	HI-ACA3	HI-AGA1	HI-AGA1	HI-AGA6	HI-AGA6	HI-AGA7	HI-AGA7	HI-GA27	HI-GA27
Lammi Halila_N16949_FIN	204	206	76	86	115	137	206	214	240	240	204	206	207	216	272	281	176	187	165	181	199	209
Lammi Halila_N16950_FIN	204	206	76	86	115	137	206	214	240	240	204	206	207	216	272	281	176	187	165	181	199	209
Lammi Halila_N16951_FIN	204	206	76	86	115	137	206	214	240	240	204	206	207	216	272	281	176	187	165	181	199	209
Lammi Halila_N16952_FIN	204	206	76	86	115	137	206	214	240	240	204	206	207	216	272	281	176	187	165	181	199	209

DUPLICATES

BESTfrom OLAVI

Miettinen LUKE-2590_FIN

Suntti LUKE-2593_FIN

Landvik LUKE-2594_FIN

TUUNAJÄRVI

HÄMEENKOSKI

Ristmäki LUKE-2639_FIN

Väkkärä LUKE-2638_FIN

HYVINKÄÄ



DUPLICATES

Loppi FIN72

Second best from OLAVI



*Erokari*_LUKE 2591

Virtanen LUKE 2592

TUUNAJÄRVI



Alavus Pollarinkylä LUKE-2661

HYVINKÄÄ

OLAVI

from

TUUNAJÄRVI

was spreading best hops

across Finland

to

HYVINKÄÄ

and

HÄMEENKOSKI

=)

Is this true?



DAUGHTERS & SONS
SISTERS & BROTHERS



ANNALA

LUKE 2650

×

?

FROM VESA LINDQVIST

HATTULA

AHLBACKAN KARTANO

LUKE 2673

FROM MIA HUOTARI

WHAT DOES MARKKU SOININEN HAS
TO DO WITH VILLES FATHER ?!?!

WERE THEY HOP BREEDERS ???

KITEE

×

?

LUKE 2664

From VILLES FATHER

HAMMASLAHTI

LUKE 2659

FROM MARKKU SOININEN

FINNISH HOPS ARE QUITE UNIQUE !!!

FINLAND

REST of the WORLD

Photo: www.olvi.fi

e.g. HEMP HITS NEW HIGH AS BUILDING MATERIAL ON DUTCH BRIDGE



SOURCE: http://www.metro.us/news/hemp-hits-new-high-as-building-material-on-dutch-bridge/kZggar---WDawxE_s_rR1T79S9LjXA/