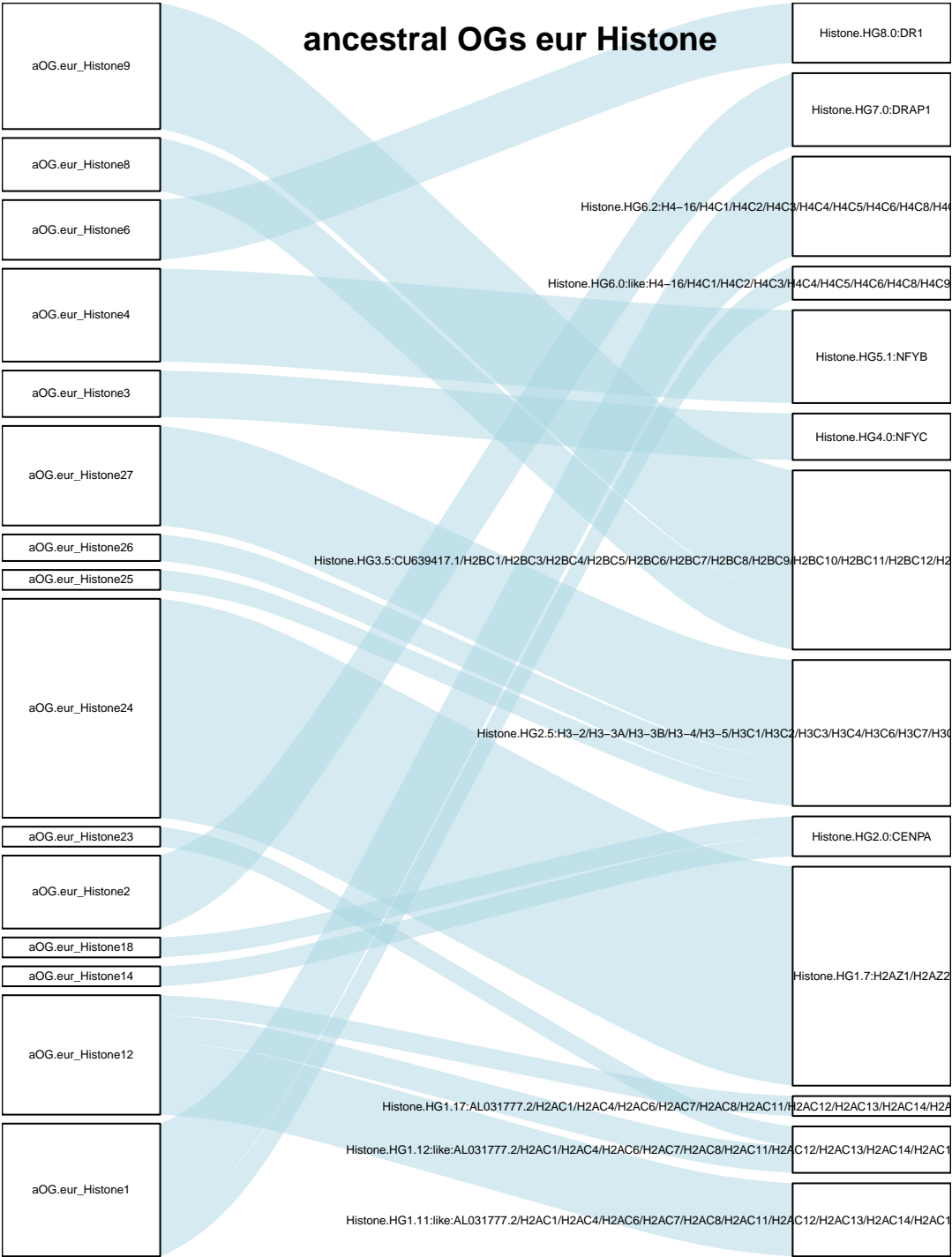


ancestral OGs eur Histone



ancestral OGs eur LinkerHistone

.

=

n genes =

# ancestral OGs eur Acetyltransf\_1

aOG.eur_Acetyltransf_19
aOG.eur_Acetyltransf_18
aOG.eur_Acetyltransf_17
aOG.eur_Acetyltransf_164
aOG.eur_Acetyltransf_163
aOG.eur_Acetyltransf_162
aOG.eur_Acetyltransf_161
aOG.eur_Acetyltransf_160
aOG.eur_Acetyltransf_16
aOG.eur_Acetyltransf_158
aOG.eur_Acetyltransf_157
aOG.eur_Acetyltransf_155
aOG.eur_Acetyltransf_154
aOG.eur_Acetyltransf_153
aOG.eur_Acetyltransf_152
aOG.eur_Acetyltransf_151
aOG.eur_Acetyltransf_150
aOG.eur_Acetyltransf_149
aOG.eur_Acetyltransf_148
aOG.eur_Acetyltransf_147
aOG.eur_Acetyltransf_146
aOG.eur_Acetyltransf_145
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aOG.eur_Acetyltransf_119
aOG.eur_Acetyltransf_118
aOG.eur_Acetyltransf_116
aOG.eur_Acetyltransf_115
aOG.eur_Acetyltransf_114
aOG.eur_Acetyltransf_113
aOG.eur_Acetyltransf_111
aOG.eur_Acetyltransf_110
aOG.eur_Acetyltransf_11
aOG.eur_Acetyltransf_10

Acetyltransf_1.HG9.1:ELP3
Acetyltransf_1.HG9.0:like:ELP3:lik
Acetyltransf_1.HG8.1:NAA20
Acetyltransf_1.HG7.2:NA
Acetyltransf_1.HG7.0:NA
Acetyltransf_1.HG6.1:NAA10/NA
Acetyltransf_1.HG5.1:KAT2A/KAT
Acetyltransf_1.HG4.1:SAT1/SAT2/S
Acetyltransf_1.HG4.0:like:SAT1/SAT2/SAT
Acetyltransf_1.HG31.0:NA
Acetyltransf_1.HG3.5:GNPNAT
Acetyltransf_1.HG28.1:NA
Acetyltransf_1.HG27.0:NA
Acetyltransf_1.HG25.1:NA
Acetyltransf_1.HG23.0:NA
Acetyltransf_1.HG21.0:NA
Acetyltransf_1.HG2.8:NAA60
Acetyltransf_1.HG2.6:like:NAA50/NAA60
Acetyltransf_1.HG2.17:NAA50
Acetyltransf_1.HG2.16:like:NAA50:lik
Acetyltransf_1.HG2.0:KAT14
Acetyltransf_1.HG19.1:NA
Acetyltransf_1.HG18.0:NA
Acetyltransf_1.HG16.0:AANAT
Acetyltransf_1.HG15.1:NA
Acetyltransf_1.HG14.1:NAT9
Acetyltransf_1.HG13.8:NA
Acetyltransf_1.HG13.2:NA
Acetyltransf_1.HG12.2:NA
Acetyltransf_1.HG12.0:NA
Acetyltransf_1.HG11.1:NA
Acetyltransf_1.HG10.0:NAA40
Acetyltransf_1.HG1.28:like:NAT8/NAT8:lik
Acetyltransf_1.HG1.2:like:NAA30/NAT8/NAT8:lik
Acetyltransf_1.HG1.19:like:NAT8/NAT8L
Acetyltransf_1.HG1.14:NAA30
Acetyltransf_1.HG1.13:like:NAA30:lik

ancestral\_OG

n genes = 402  
n aOG = 53

OG

# ancestral OGs eur GNAT\_acetyltr\_2

aOG.eur\_GNAT\_acetyltr\_21

GNAT\_acetyltr\_2.HG1.1:NAT10

aOG.eur\_GNAT\_acetyltr\_20

GNAT\_acetyltr\_2.HG1.0:like:NAT10:li

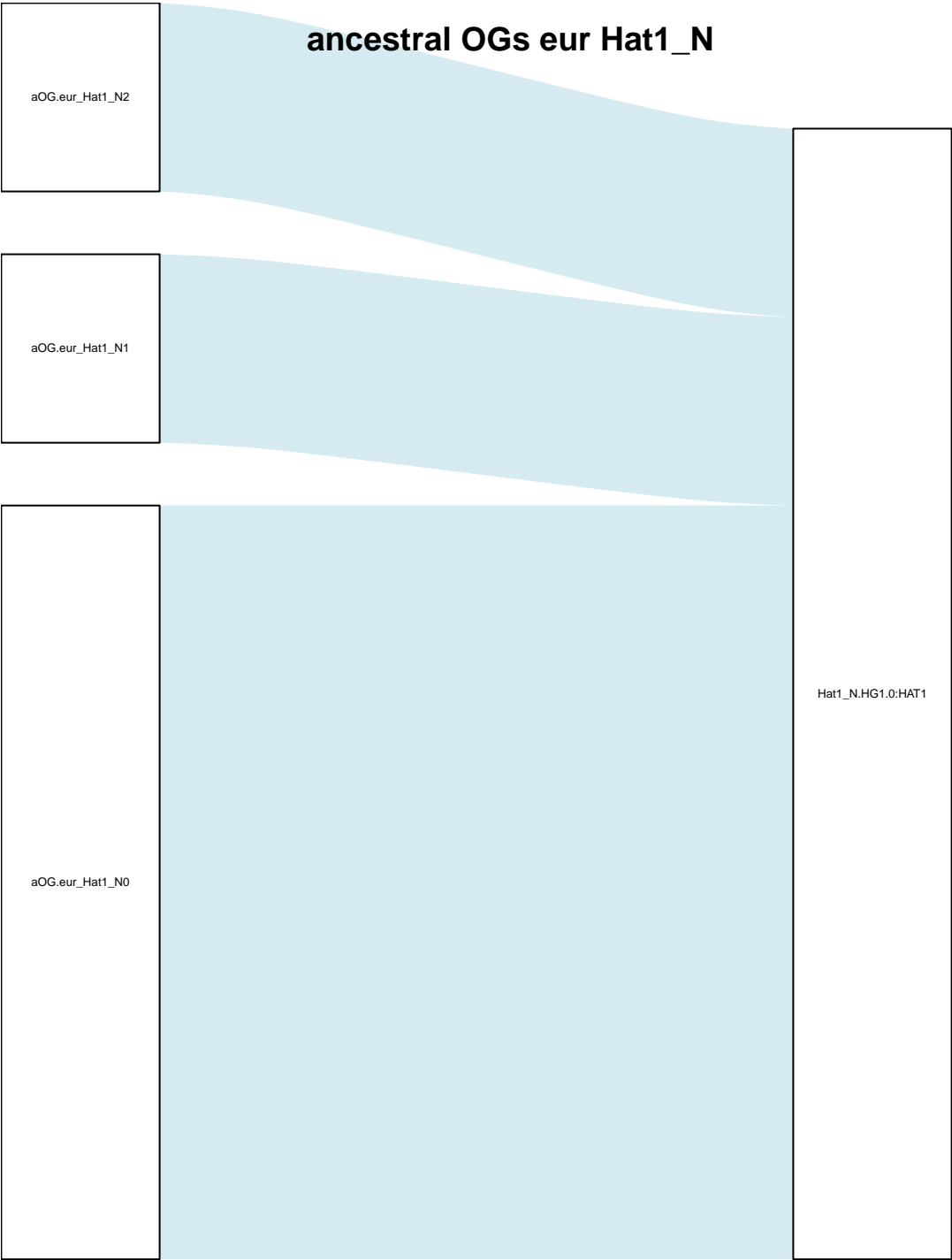
n genes = 27

n aOG = 2

OG

ancestral\_OG

**ancestral OGs eur Hat1\_N**



aOG.eur\_Hat1\_N2

aOG.eur\_Hat1\_N1

aOG.eur\_Hat1\_N0

Hat1\_N.HG1.0:HAT1

n genes = 24

n aOG = 3

ancestral\_OG

OG

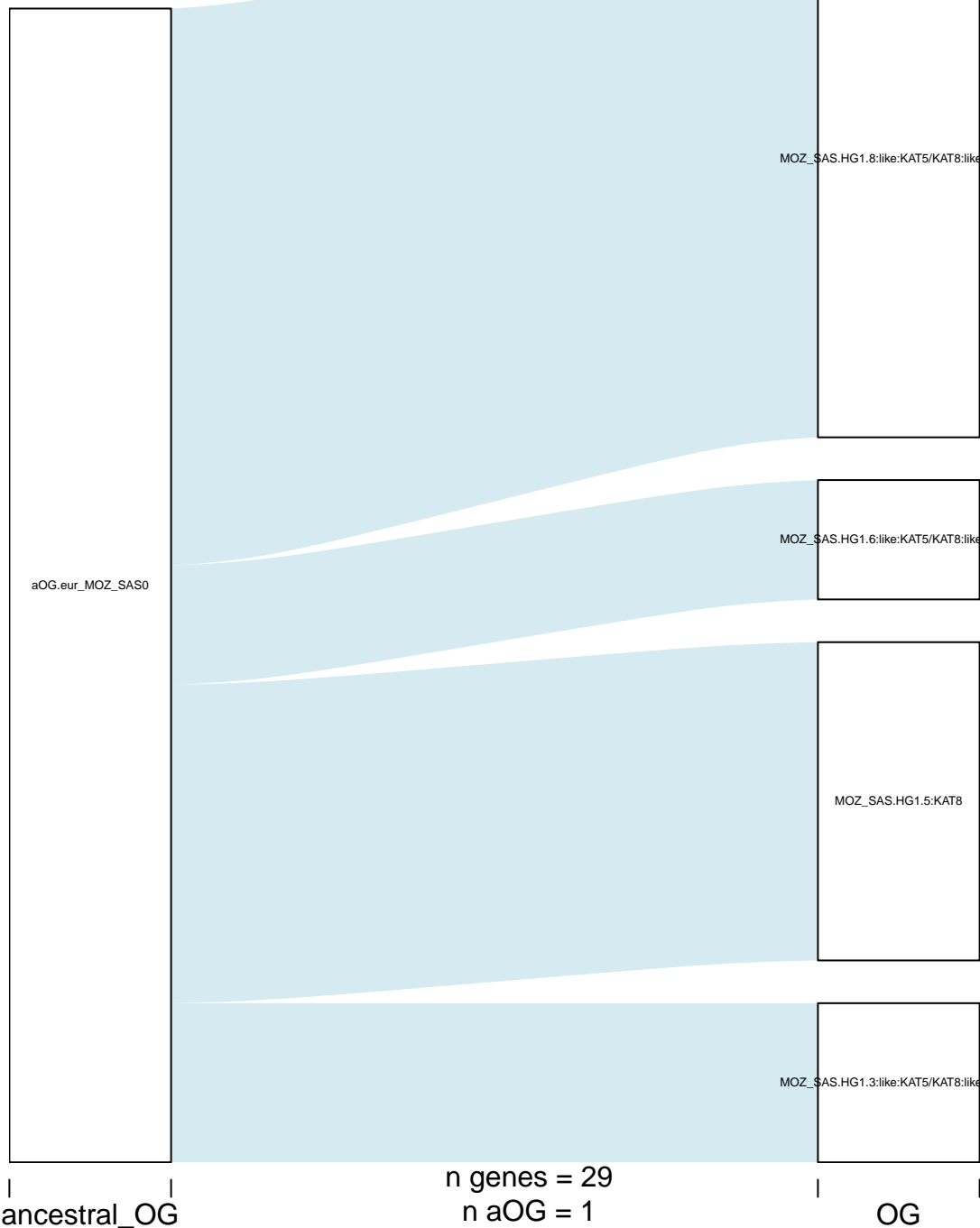
## ancestral OGs eur KAT11



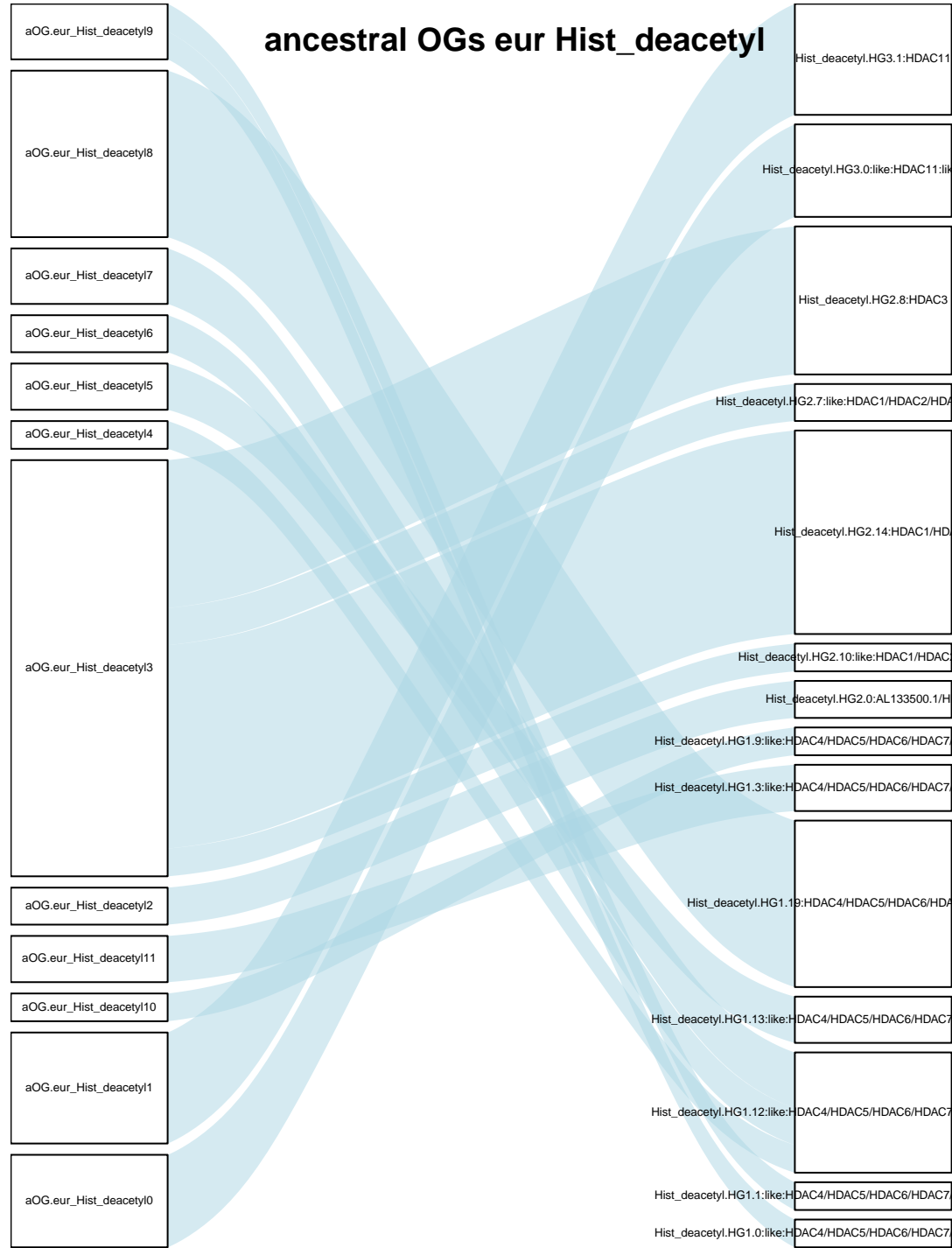
aOG.eur\_KAT110 = KAT11.HG1.1:CREBBP/EP300

n genes = 6

# ancestral OGs eur MOZ\_SAS



ancestral OGs eur Hist\_deacetyl



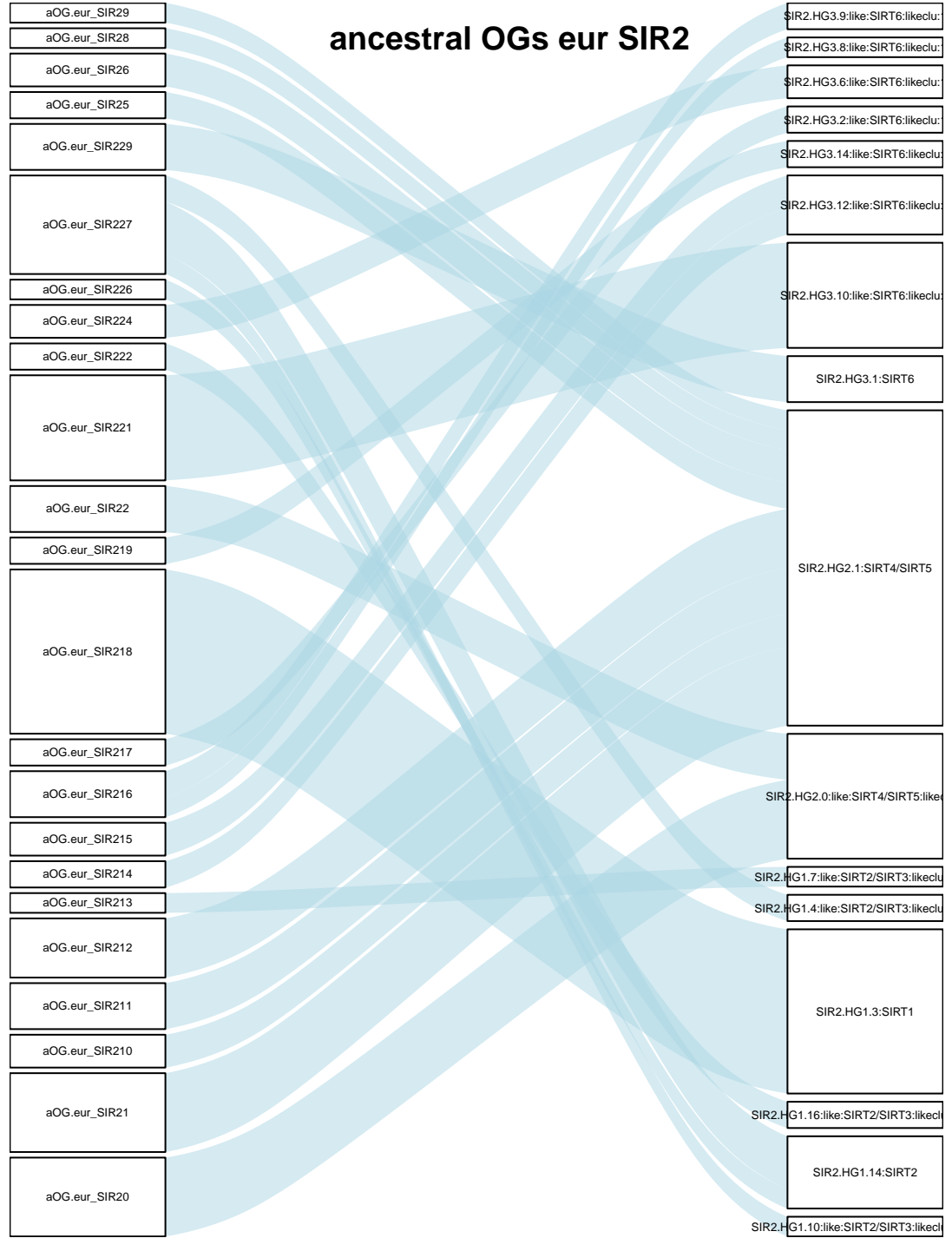
n genes = 121  
n aOG = 12

ancestral OG

OG



ancestral OGs eur SIR2



n genes = 169  
n aOG = 23

ancestral OG

OG

ancestral OGs eur DOT1

aOG.eur\_DOT19

DOT1.HG1.19:like:DOT1L:likeclu

aOG.eur\_DOT16

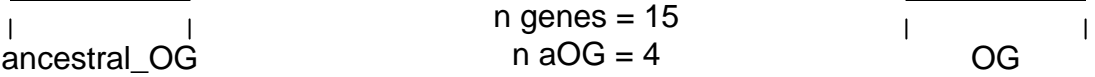
DOT1.HG1.14:like:DOT1L:likeclu

aOG.eur\_DOT111

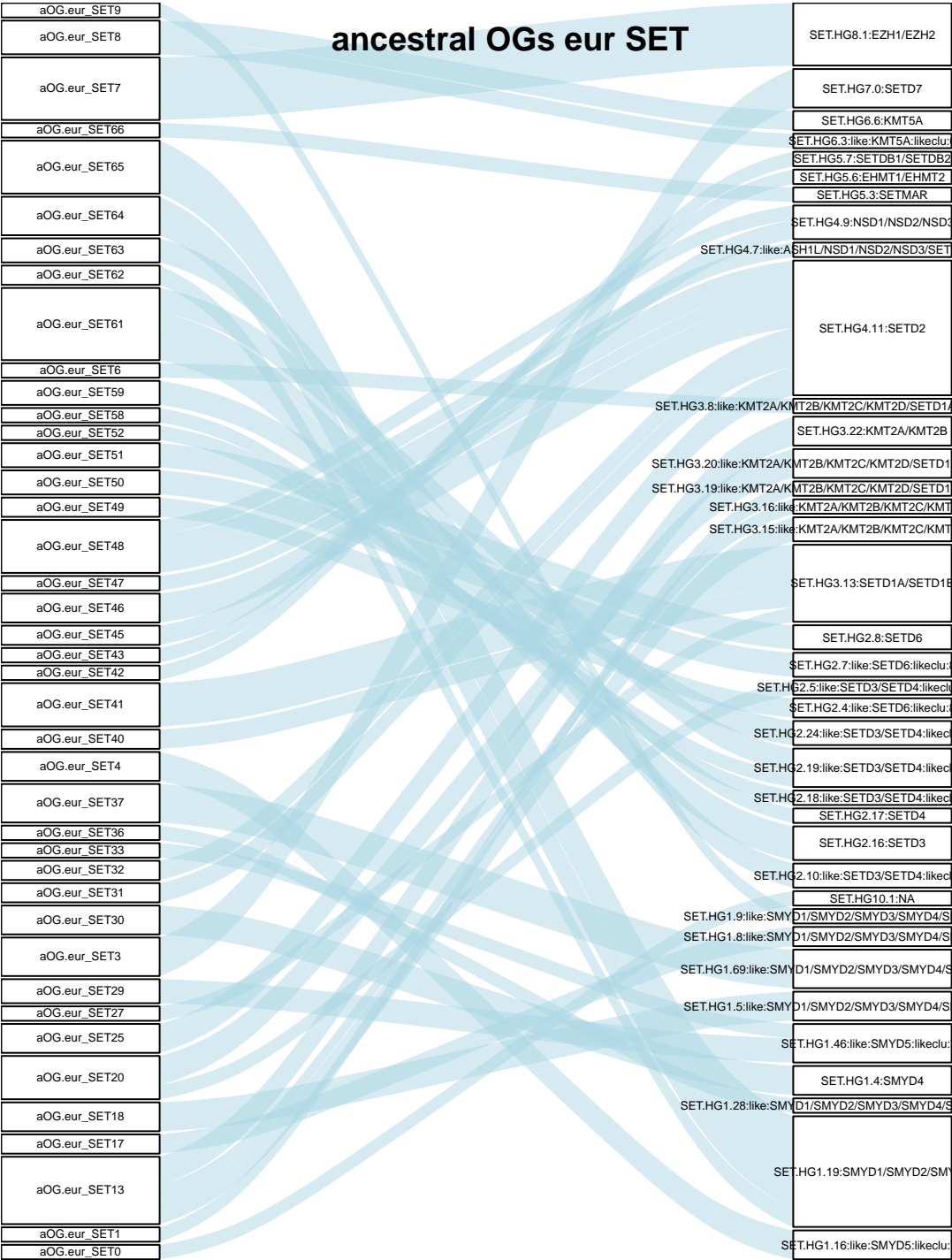
DOT1.HG1.12:like:DOT1L:likeclu

aOG.eur\_DOT110

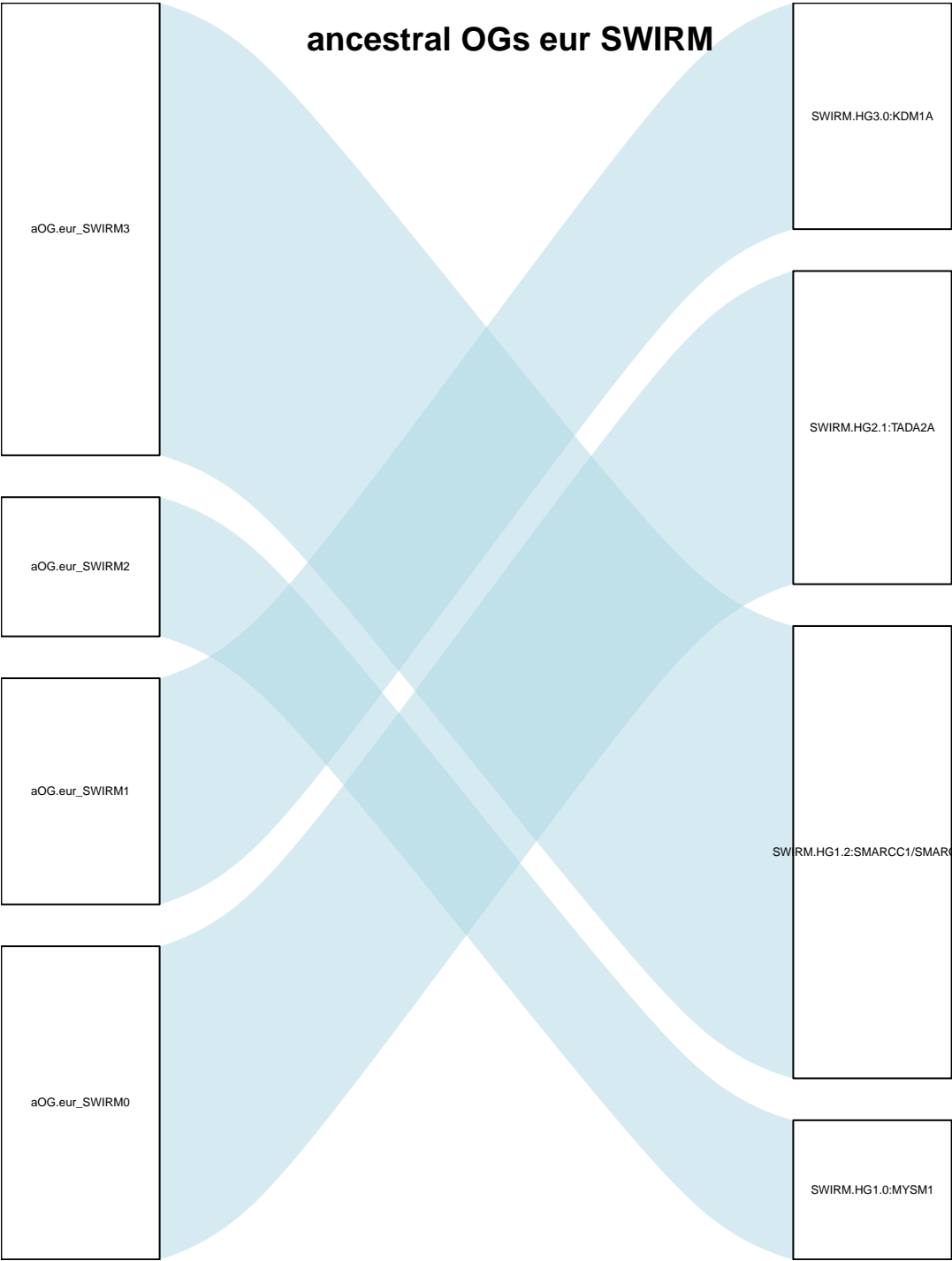
DOT1.HG1.11:like:DOT1L:likeclu



ancestral OGs eur SET



ancestral OGs eur SWIRM



ancestral OG

n genes = 65  
n aOG = 4

OG

aOG.eur_CupinJmjC9
aOG.eur_CupinJmjC7
aOG.eur_CupinJmjC6
aOG.eur_CupinJmjC50
aOG.eur_CupinJmjC49
aOG.eur_CupinJmjC48
aOG.eur_CupinJmjC45
aOG.eur_CupinJmjC44
aOG.eur_CupinJmjC43
aOG.eur_CupinJmjC42
aOG.eur_CupinJmjC40
aOG.eur_CupinJmjC4
aOG.eur_CupinJmjC38
aOG.eur_CupinJmjC35
aOG.eur_CupinJmjC34
aOG.eur_CupinJmjC32
aOG.eur_CupinJmjC31
aOG.eur_CupinJmjC30
aOG.eur_CupinJmjC3
aOG.eur_CupinJmjC28
aOG.eur_CupinJmjC27
aOG.eur_CupinJmjC26
aOG.eur_CupinJmjC25
aOG.eur_CupinJmjC24
aOG.eur_CupinJmjC23
aOG.eur_CupinJmjC22
aOG.eur_CupinJmjC20
aOG.eur_CupinJmjC2
aOG.eur_CupinJmjC19
aOG.eur_CupinJmjC18
aOG.eur_CupinJmjC17
aOG.eur_CupinJmjC16
aOG.eur_CupinJmjC15
aOG.eur_CupinJmjC14
aOG.eur_CupinJmjC12
aOG.eur_CupinJmjC11
aOG.eur_CupinJmjC10
aOG.eur_CupinJmjC0

ancestral\_OG

## ancestral OGs eur CupinJmjC

n genes = 260  
n aOG = 38

CupinJmjC.HG9.1:JMJD4
CupinJmjC.HG9.0:like:JMJD4:like
CupinJmjC.HG8.1:KDM2A/KDM2B/KDM7A
CupinJmjC.HG6.4:AL451062.4/KDM4A/KDM4B/KDM4C
CupinJmjC.HG4.1:JARID2/KDM5A/KDM5B/K
CupinJmjC.HG3.1:like:RIOX1:like
CupinJmjC.HG3.0:RIOX2
CupinJmjC.HG2.7:JMJD8
CupinJmjC.HG2.27:like:JMJD6/JMJD8:li
CupinJmjC.HG2.26:like:JMJD6/JMJD8:li
CupinJmjC.HG2.13:like:JMJD6:like
CupinJmjC.HG2.10:like:JMJD6:like
CupinJmjC.HG2.1:like:JMJD8:like
CupinJmjC.HG10.0:KDM6A/KDM6B
CupinJmjC.HG1.8:like:HSPBAP1/TYW5:li
CupinJmjC.HG1.57:like:HIF1AN:like
CupinJmjC.HG1.54:like:HIF1AN:like
CupinJmjC.HG1.48:like:HIF1AN:like
CupinJmjC.HG1.45:KDM8
CupinJmjC.HG1.44:like:KDM8:like
CupinJmjC.HG1.39:like:HIF1AN:like
CupinJmjC.HG1.37:JMJD7/JMJD7-PLA2
CupinJmjC.HG1.35:like:JMJD7/JMJD7-PLA2
CupinJmjC.HG1.34:like:JMJD7/JMJD7-PLA2
CupinJmjC.HG1.31:HIF1AN
CupinJmjC.HG1.28:like:HSPBAP1:lik
CupinJmjC.HG1.21:TYW5
CupinJmjC.HG1.17:like:JMJD7/JMJD7-PLA2
CupinJmjC.HG1.14:like:KDM8:like
CupinJmjC.HG1.10:like:JMJD7/JMJD7-PLA2
CupinJmjC.HG1.1:like:KDM8:like

OG

## ancestral OGs eur ADD\_ATRX



aOG.eur\_ADD\_ATRX0 = ADD\_ATRX.HG1.0:ATRX

n genes = 3

ancestral OGs eur BAH

aOG.eur\_BAH2

BAH.HG2.0:DNMT1

BAH.HG1.11:ORC1

aOG.eur\_BAH0

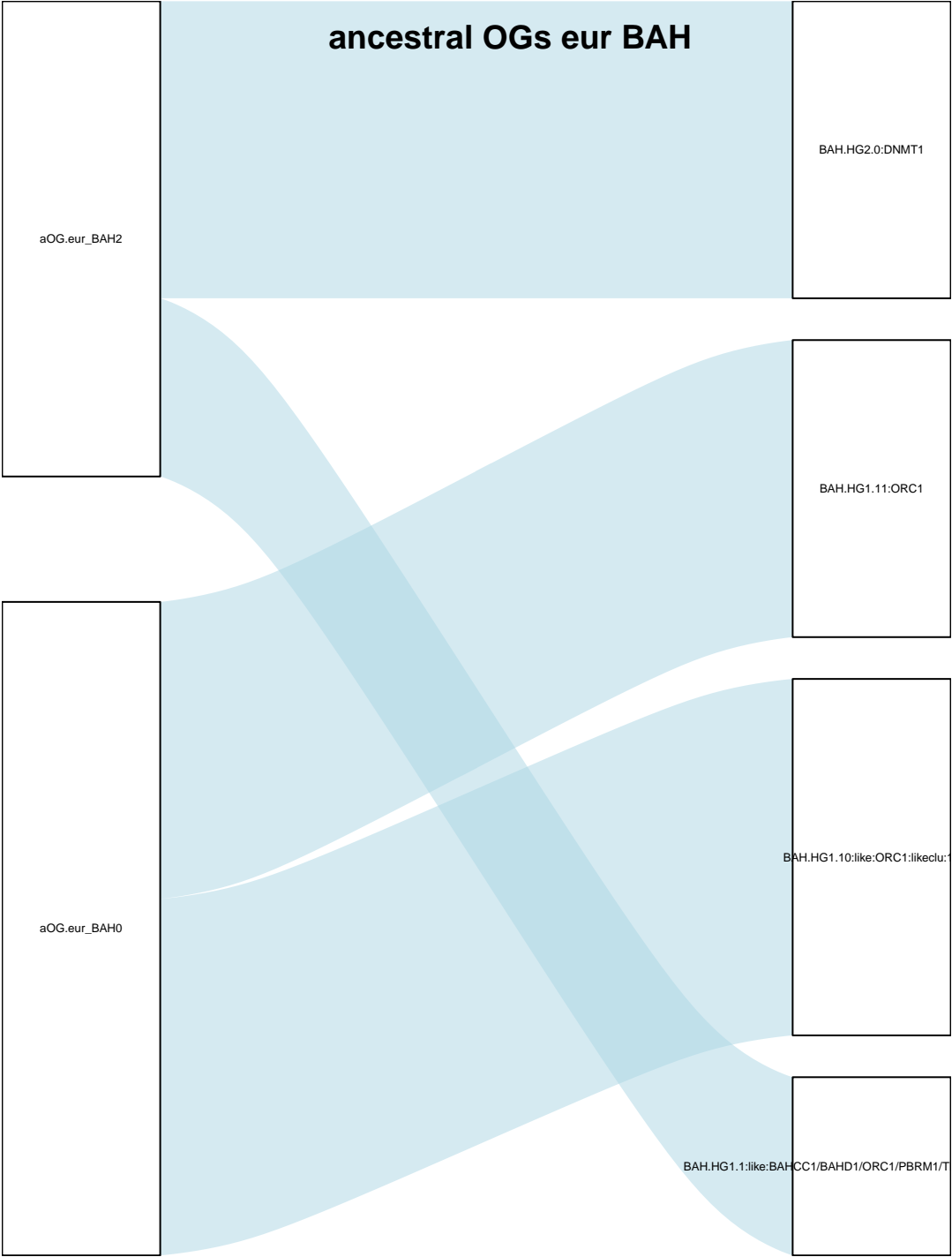
BAH.HG1.10:like:ORC1:likeclu:1

BAH.HG1.1:like:BAHCC1/BAHD1/ORC1/PBRM1/T

n genes = 19  
n aOG = 2

ancestral\_OG

OG



ancestral OGs eur BIR

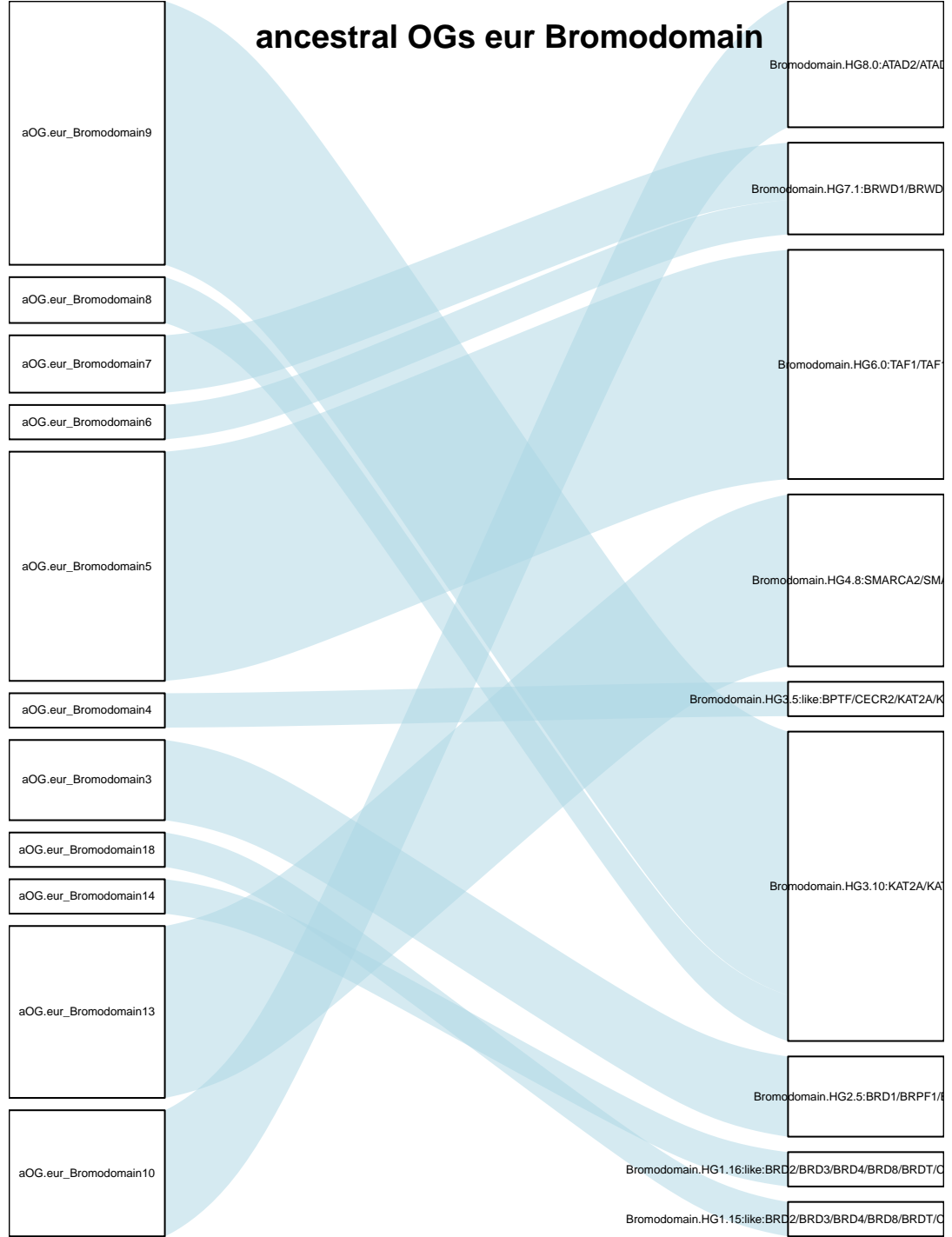
•

=

n genes =



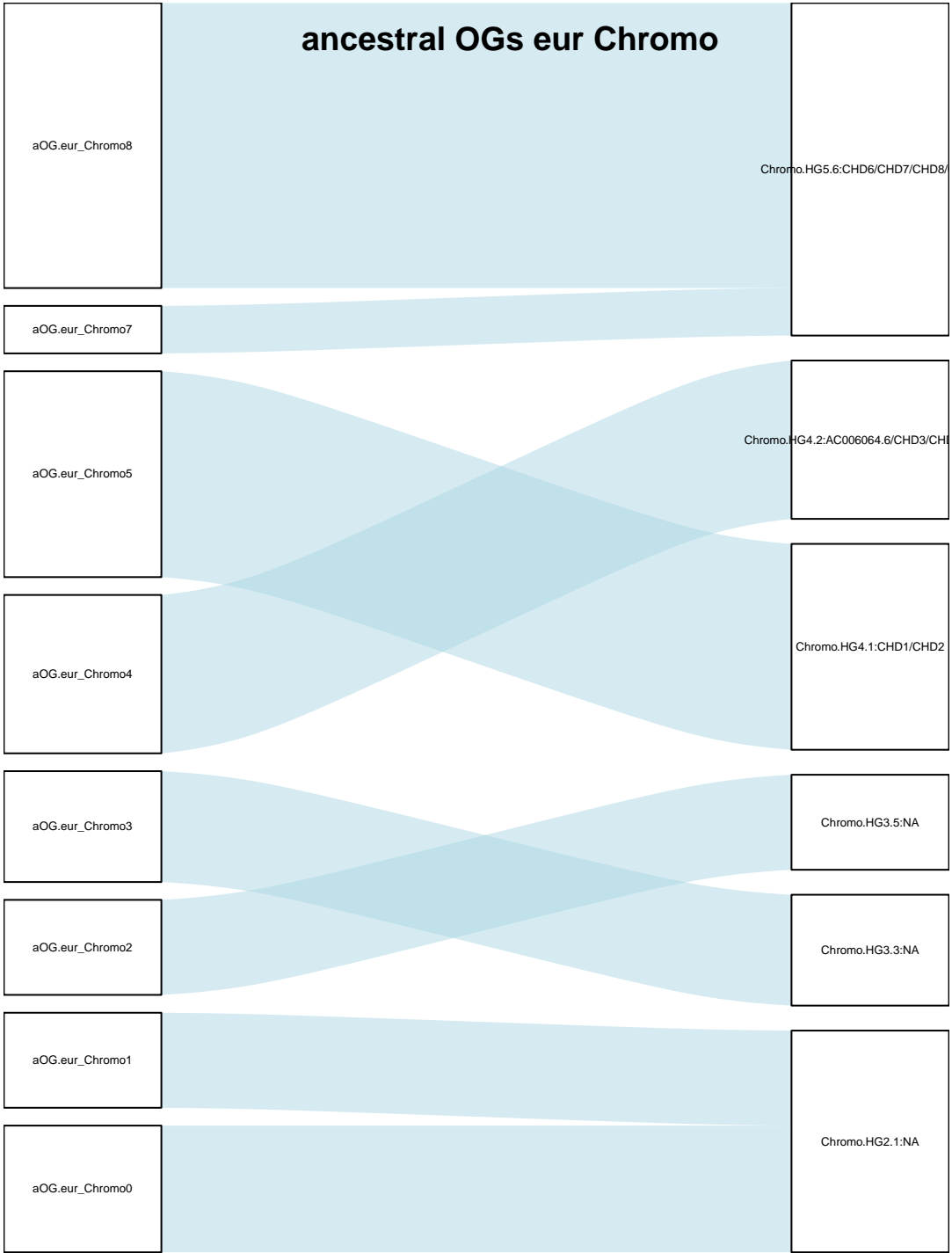
ancestral OGs eur Bromodomain



| ancestral\_OG | n genes = 97 | OG |

n aOG = 11

ancestral OGs eur Chromo



n genes = 71

n aOG = 8

ancestral\_OG

OG

## ancestral OGs eur ING



aOG.eur\_ING0 = ING.HG1.2:ING1/ING2/ING4/ING5  
n genes = 26

# ancestral OGs eur MRG

aOG.eur\_MRG3

aOG.eur\_MRG2

aOG.eur\_MRG1

aOG.eur\_MRG0

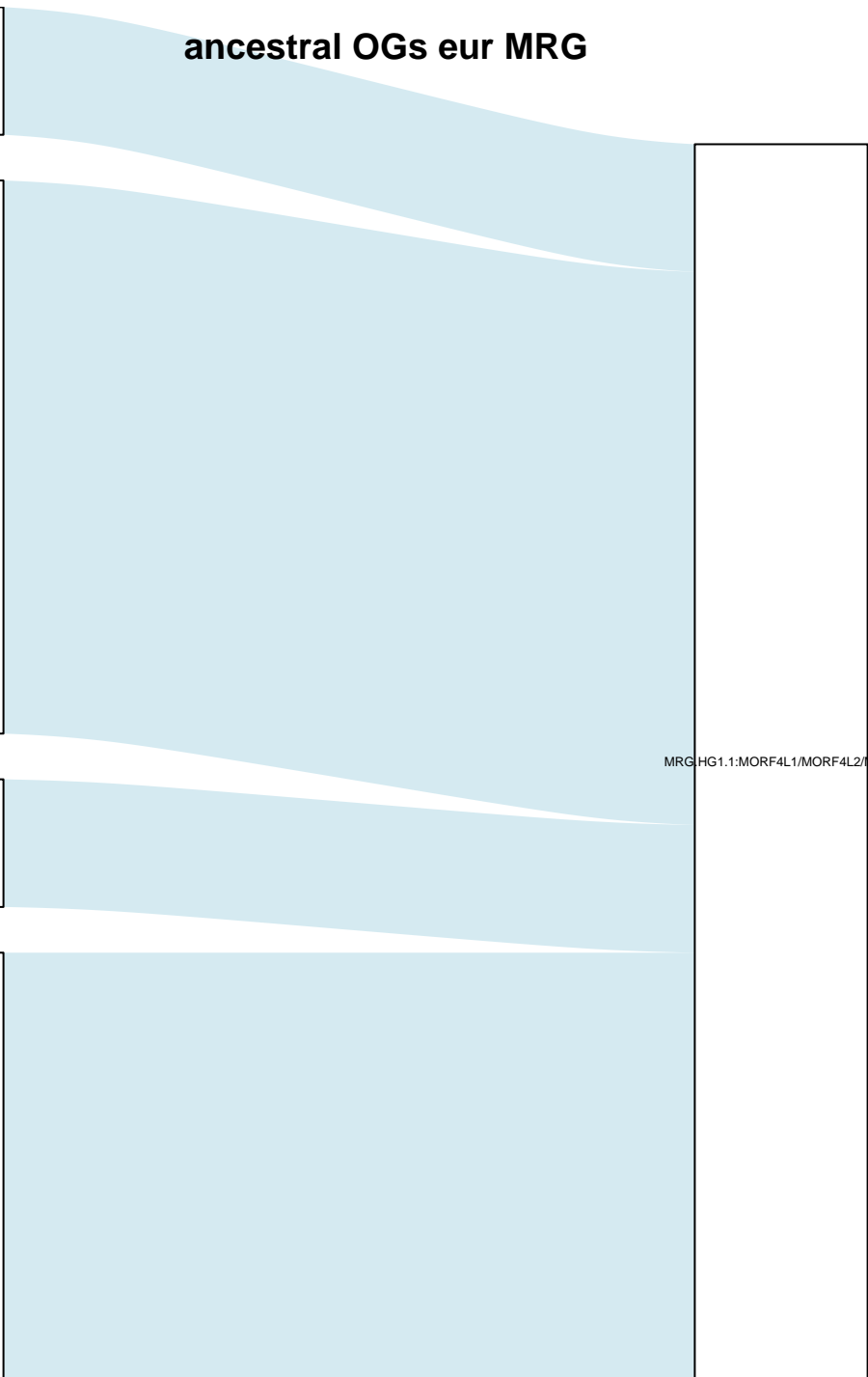
MRG.HG1.1:MORF4L1/MORF4L2/

n genes = 29

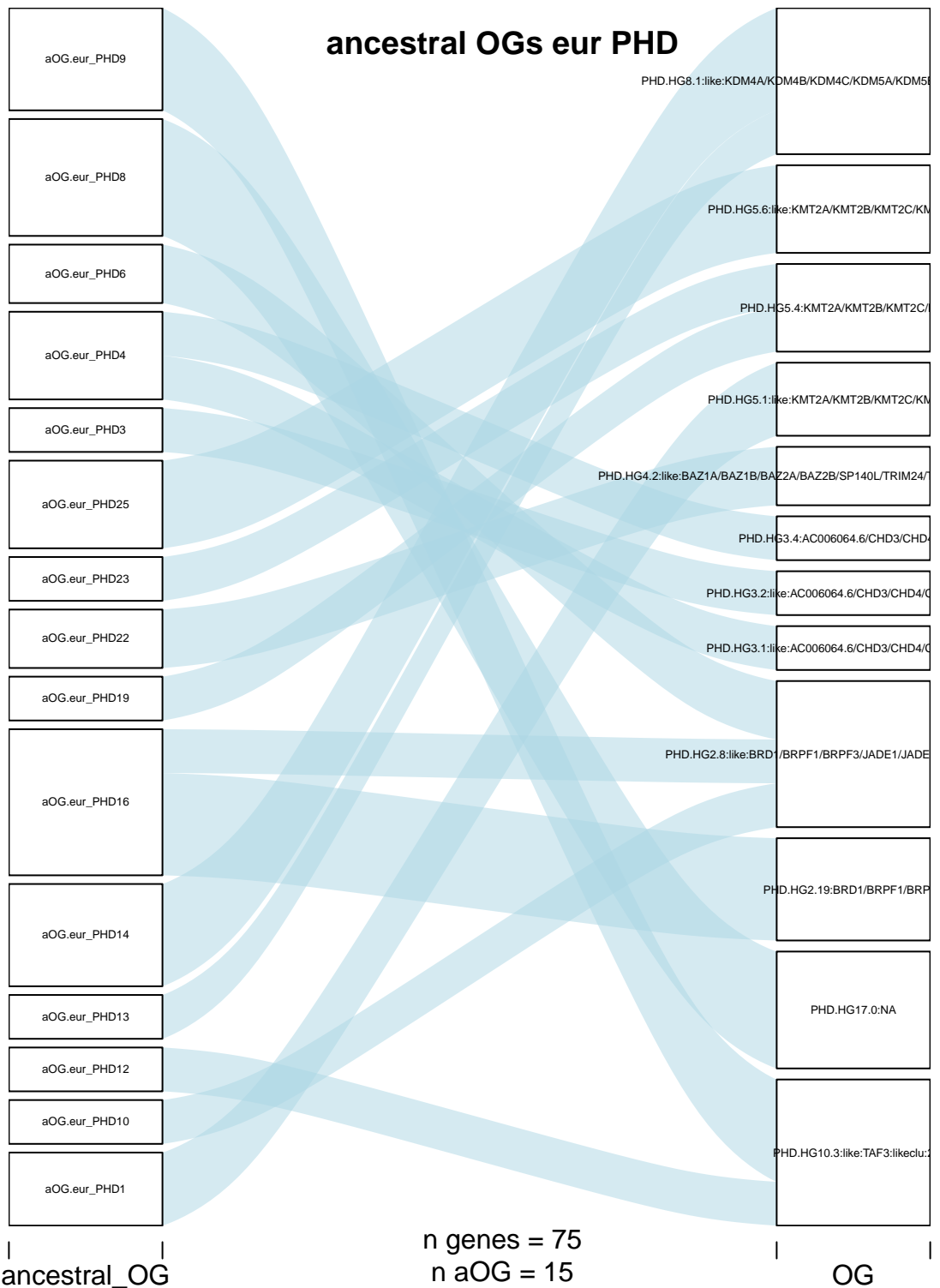
n aOG = 4

ancestral\_OG

OG



**ancestral OGs eur PHD**



ancestral OGs eur PWWP

aOG.eur\_PWWP1

PWWP.HG1.8:AC098650.1/GLYR1/HDGFL1/HDGFL2/HDGFL3/MSH6/PSIP1/PV

aOG.eur\_PWWP0

PWWP.HG1.2:NSD1/NSD2/NSD3

ancestral OGs eur TUDOR

aOG.eur\_TUDOR1

TUDOR.HG1.56:SND1

aOG.eur\_TUDOR0

TUDOR.HG1.2:like:TDRD12:likec

|  
ancestral\_OG

n genes = 27  
n aOG = 2

|  
OG

ancestral OGs eur zf-CW

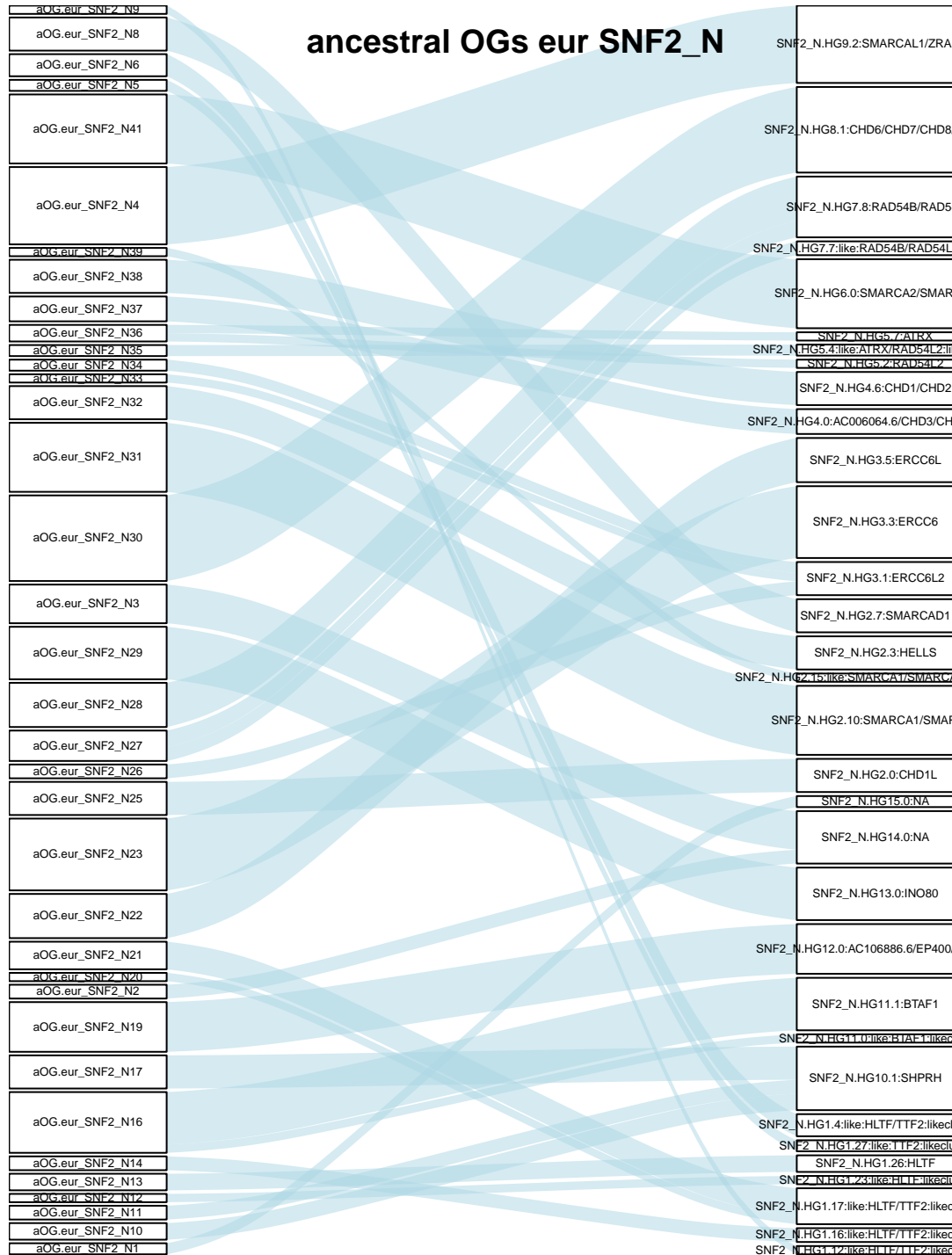
.

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n genes =



ancestral OGs eur SNF2\_N



# ancestral OGs eur ASF1\_hist\_chap

aOG.eur\_ASF1\_hist\_chap1

aOG.eur\_ASF1\_hist\_chap0

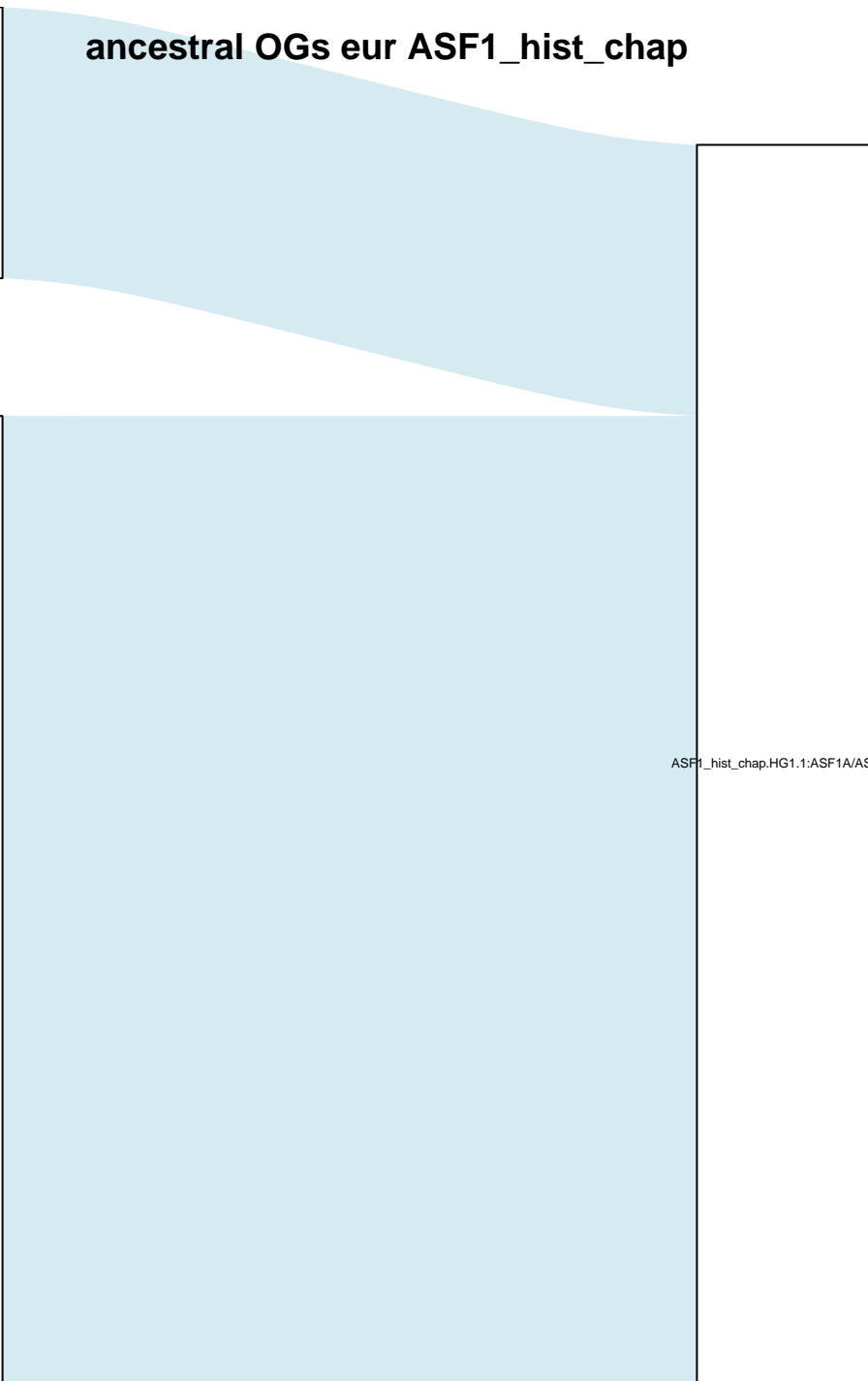
ASF1\_hist\_chap.HG1.1:ASF1A/AS

n genes = 32

n aOG = 2

ancestral\_OG

OG



## ancestral OGs eur CAF1A



aOG.eur\_CAF1A0 = CAF1A.HG1.0:CHAF1A  
n genes = 11

# ancestral OGs eur Hira

aOG.eur\_Hira1

Hira.HG1.0:HIRA

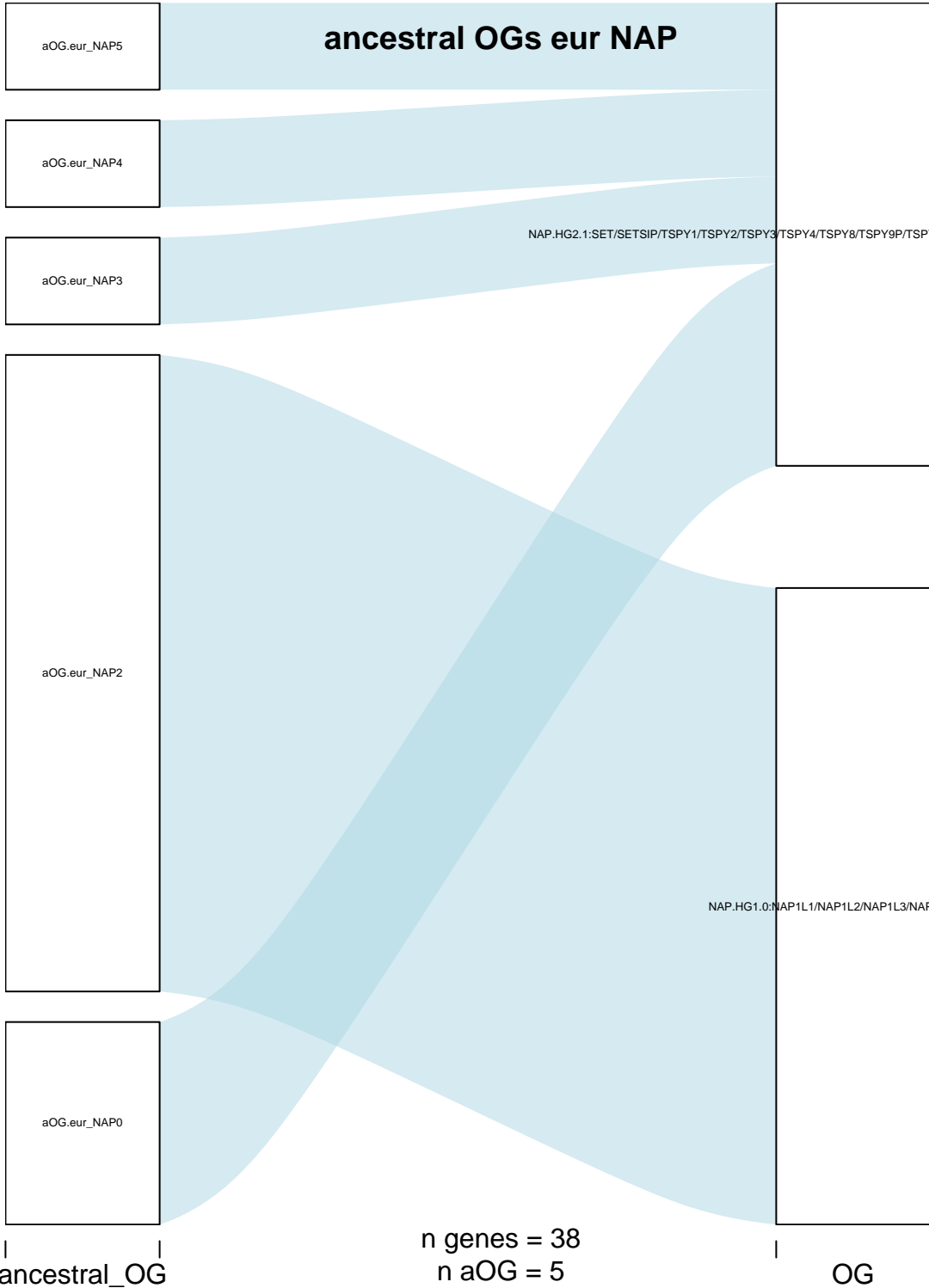
aOG.eur\_Hira0

n genes = 22

n aOG = 2

OG

ancestral\_OG



# ancestral OGs eur Rtt106

aOG.eur\_Rtt1062

Rtt106.HG2.0:SUPT16H

aOG.eur\_Rtt1060

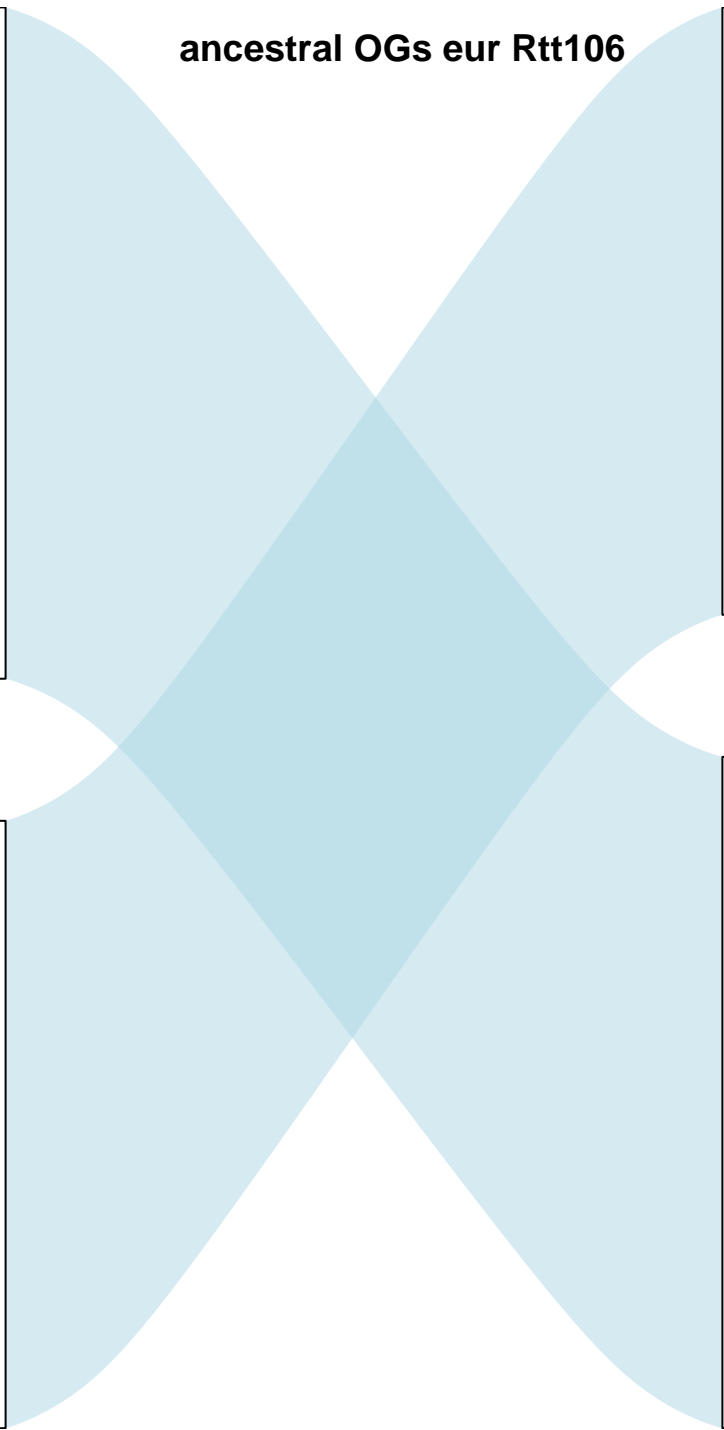
Rtt106.HG1.1:SSRP1

n genes = 40

n aOG = 2

ancestral\_OG

OG



## ancestral OGs eur SPT16



aOG.eur\_SPT160 = SPT16.HG1.0:SUPT16H  
n genes = 21

ancestral OGs eur SSrecog

aOG.eur\_SSrecog1

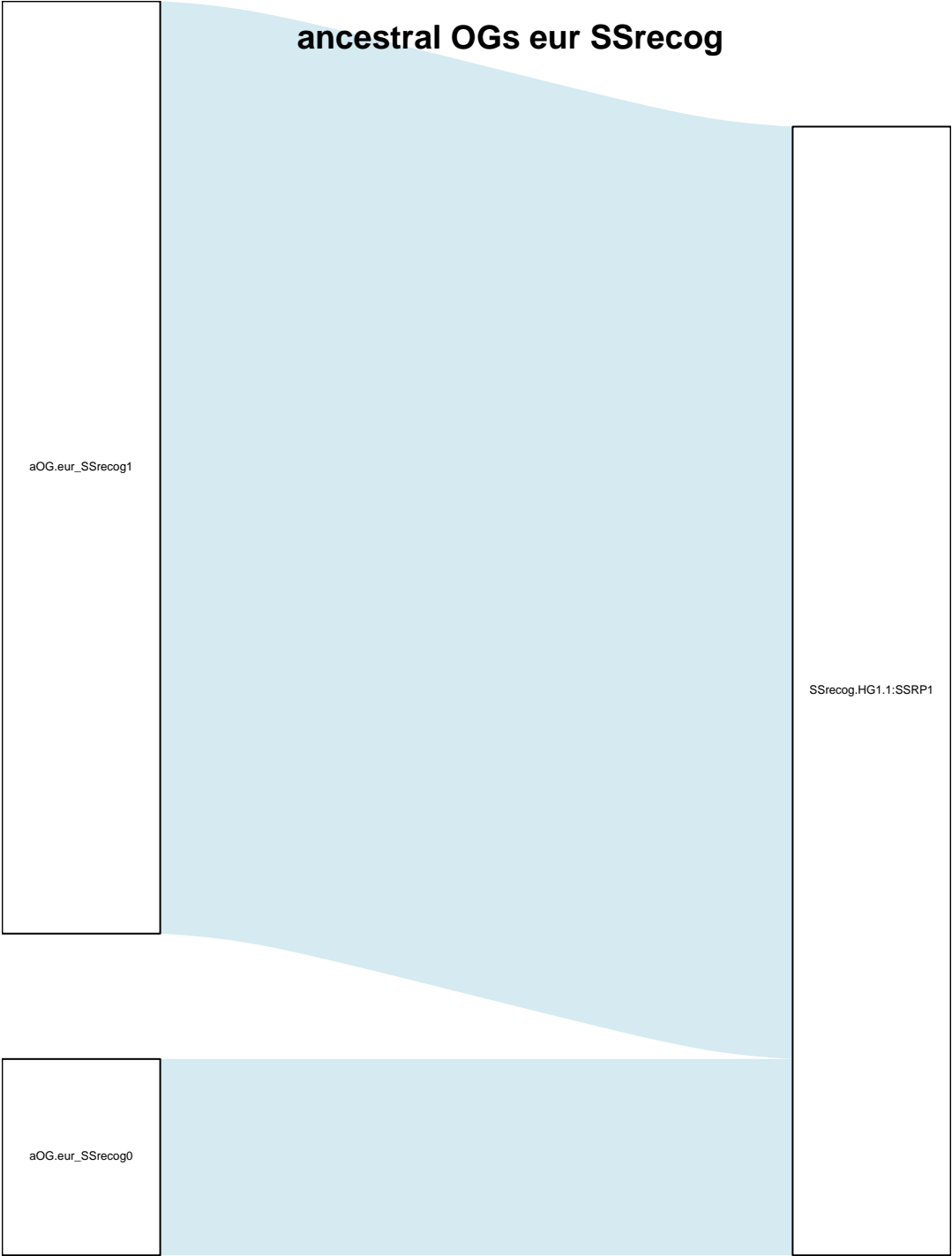
SSrecog.HG1.1:SSRP1

aOG.eur\_SSrecog0

n genes = 23  
n aOG = 2

ancestral\_OG

OG





ancestral OGs eur zf-CCHH

aOG.eur\_zf-CCHH5

zf-CCHH.HG1.8:like:APLF:likecl

aOG.eur\_zf-CCHH4

aOG.eur\_zf-CCHH3

aOG.eur\_zf-CCHH1

aOG.eur\_zf-CCHH0

zf-CCHH.HG1.7:CHFR

zf-CCHH.HG1.2:like:CHFR:likecl

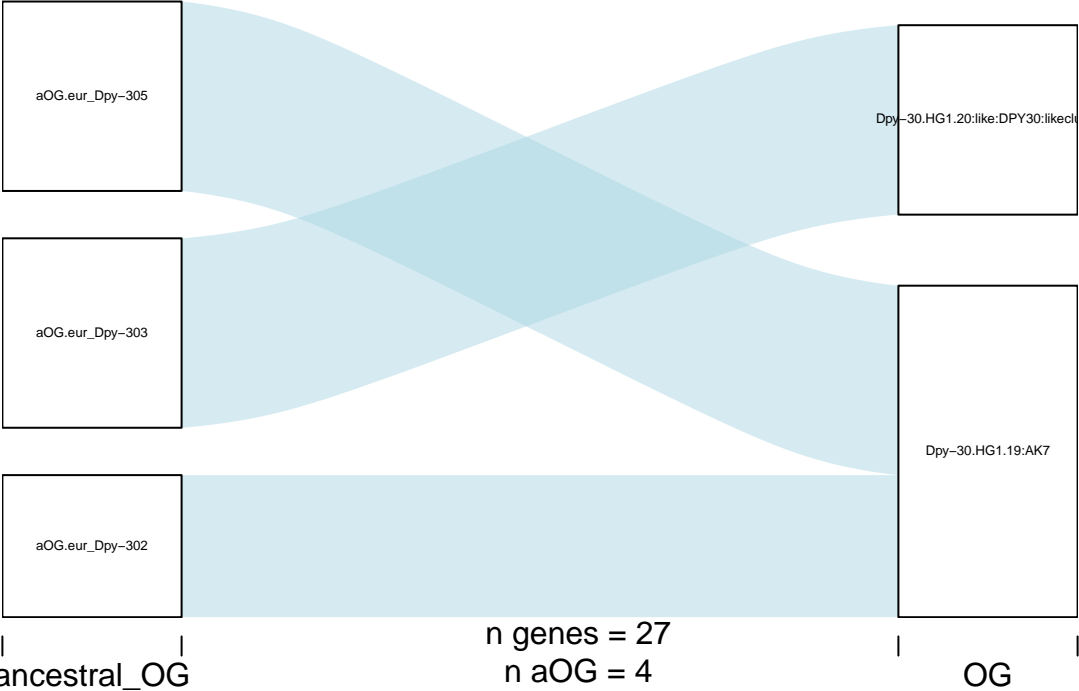
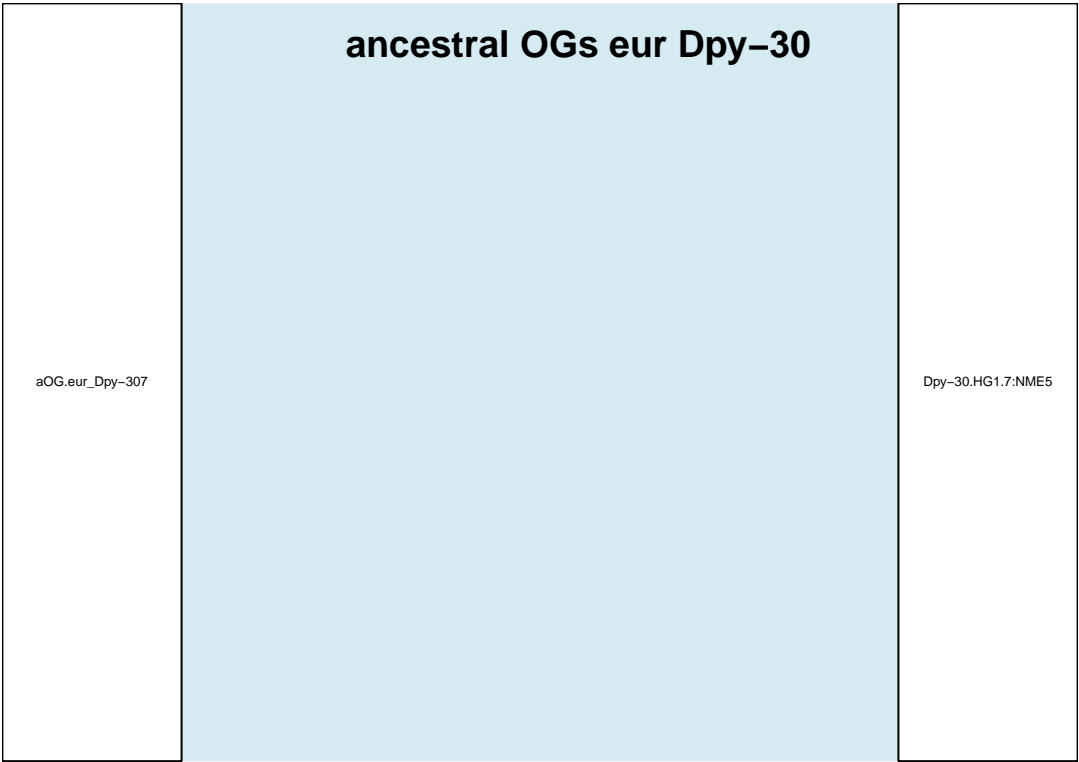
zf-CCHH.HG1.14:like:APLF:likecl

zf-CCHH.HG1.1:like:APLF:likecl

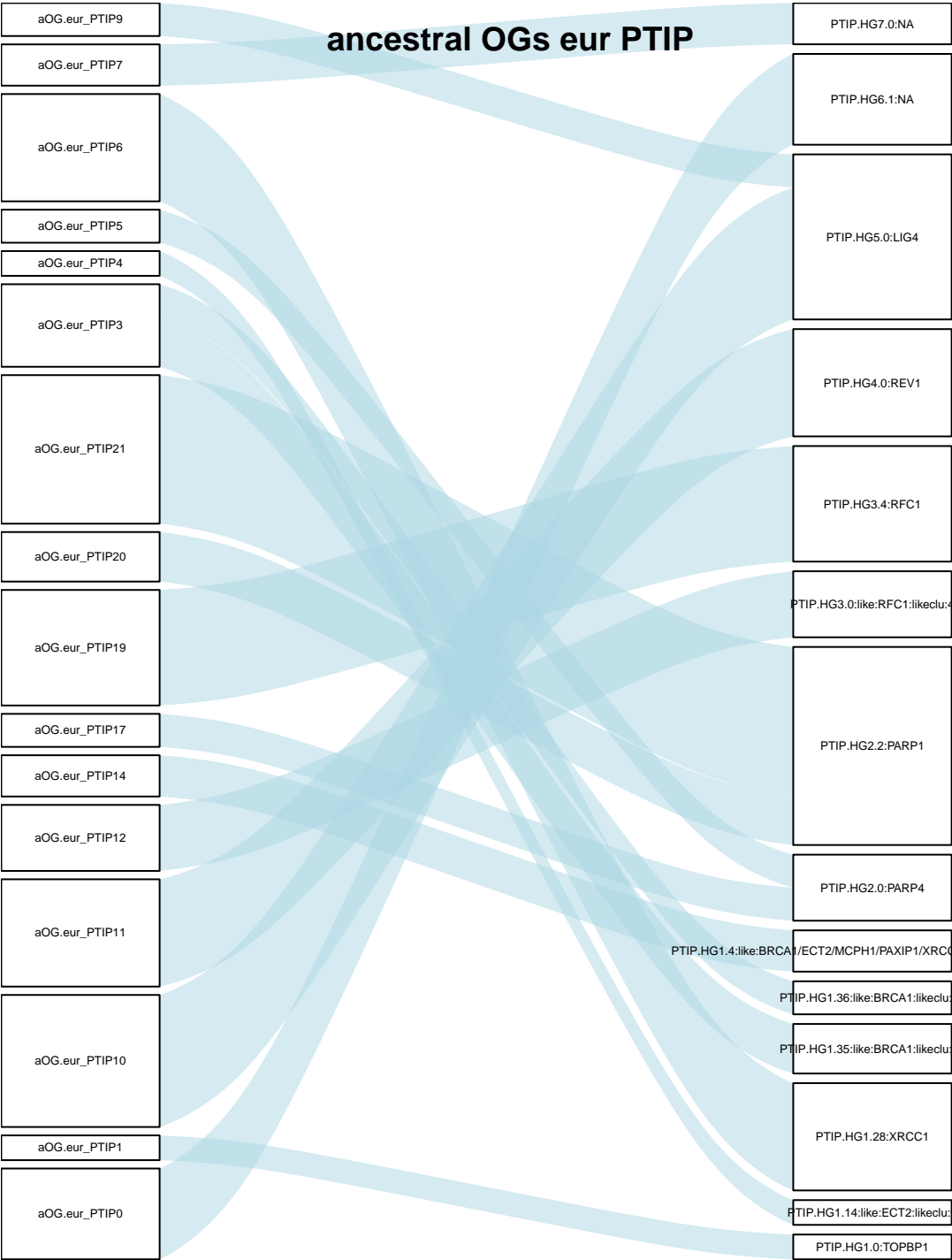
n genes = 24  
n aOG = 5

ancestral\_OG

OG



ancestral OGs eur PTIP

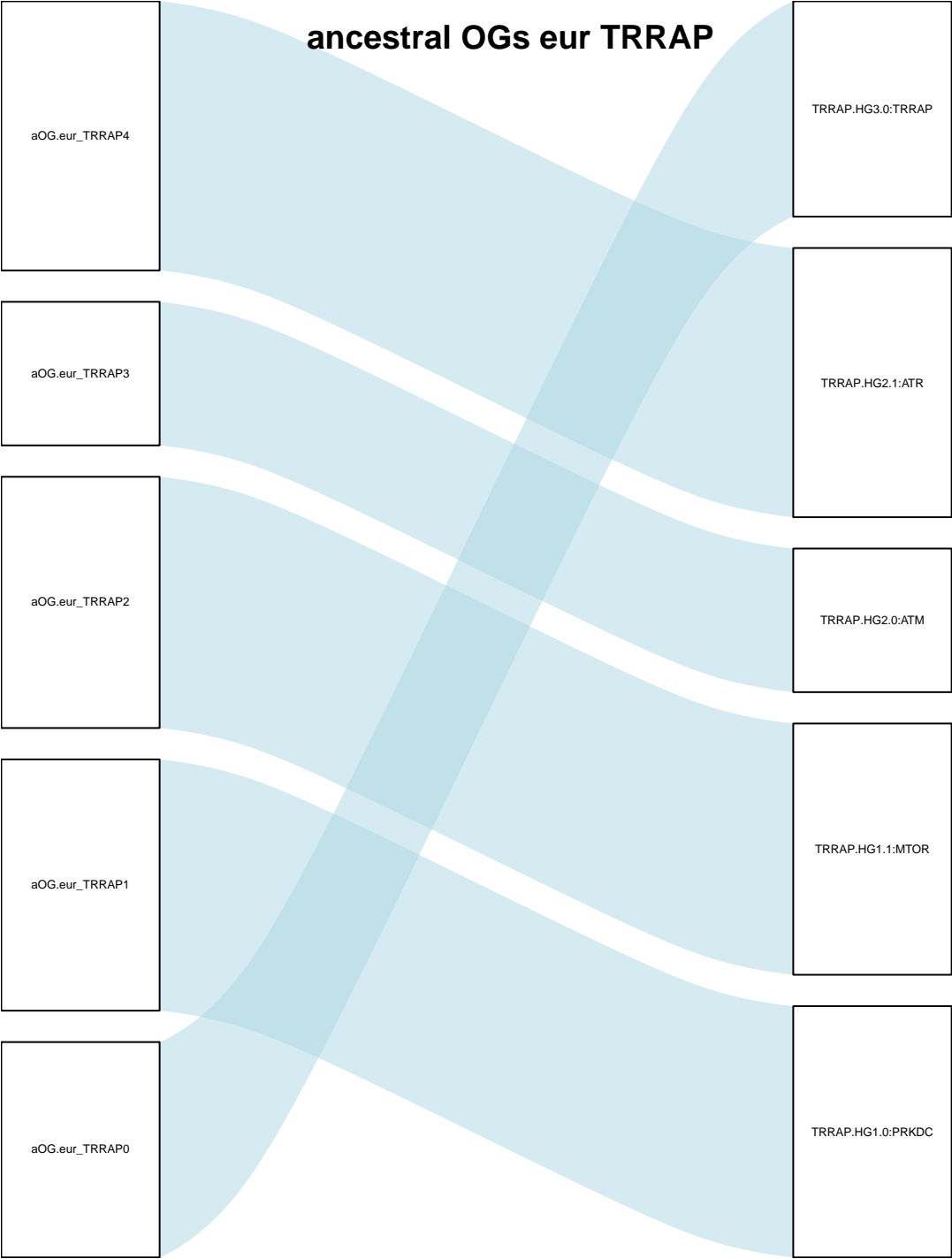


n genes = 137  
n aOG = 16

ancestral OG

OG

ancestral OGs eur TRRAP



n genes = 63  
n aOG = 5

ancestral OG

OG

# ancestral OGs eur PCRing

aOG.eur\_PCRing5

PCRing.HG0.1:BMI1/COMMD3-BMI1/PCGF1/PCGF2

aOG.eur\_PCRing4

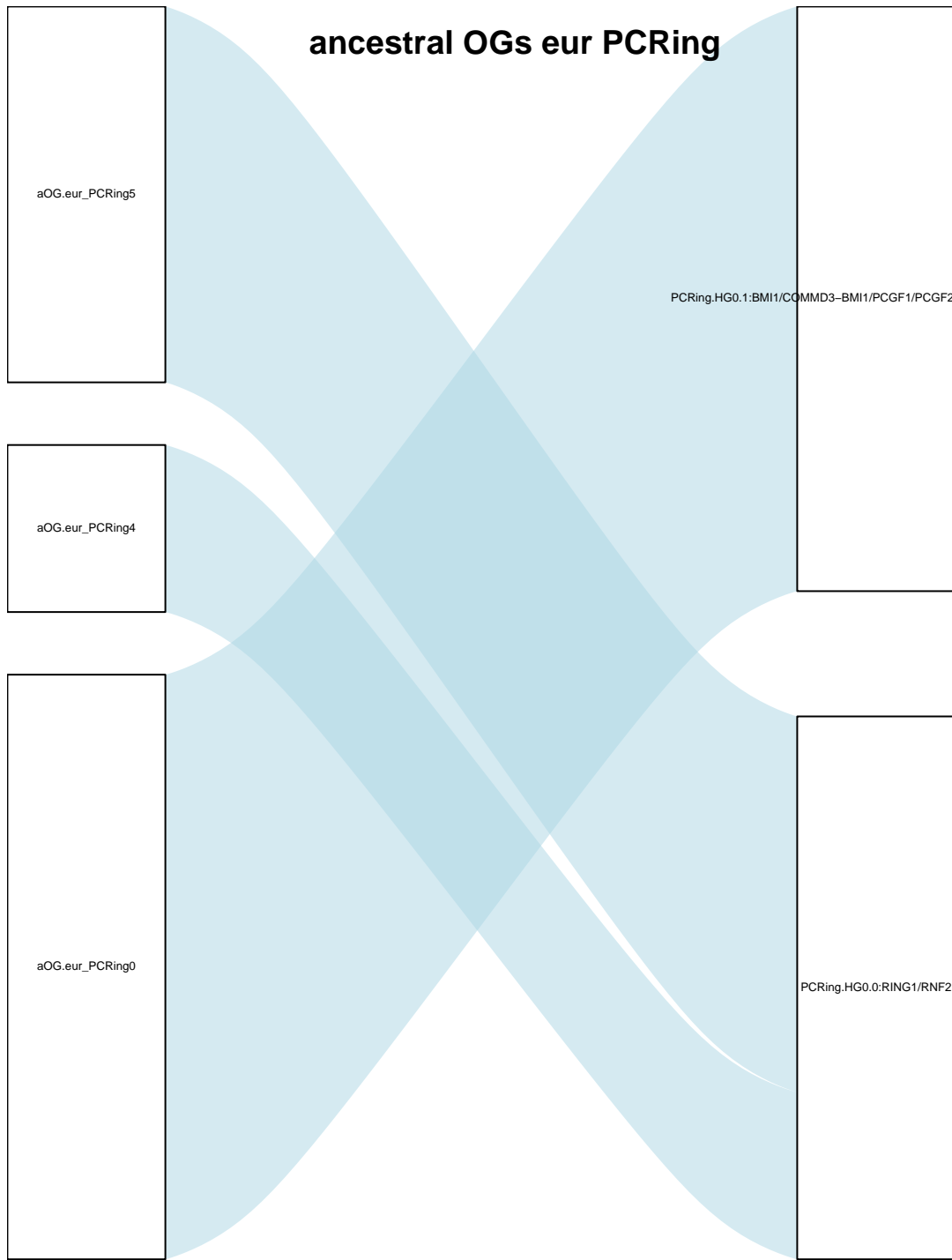
aOG.eur\_PCRing0

PCRing.HG0.0:RING1/RNF2

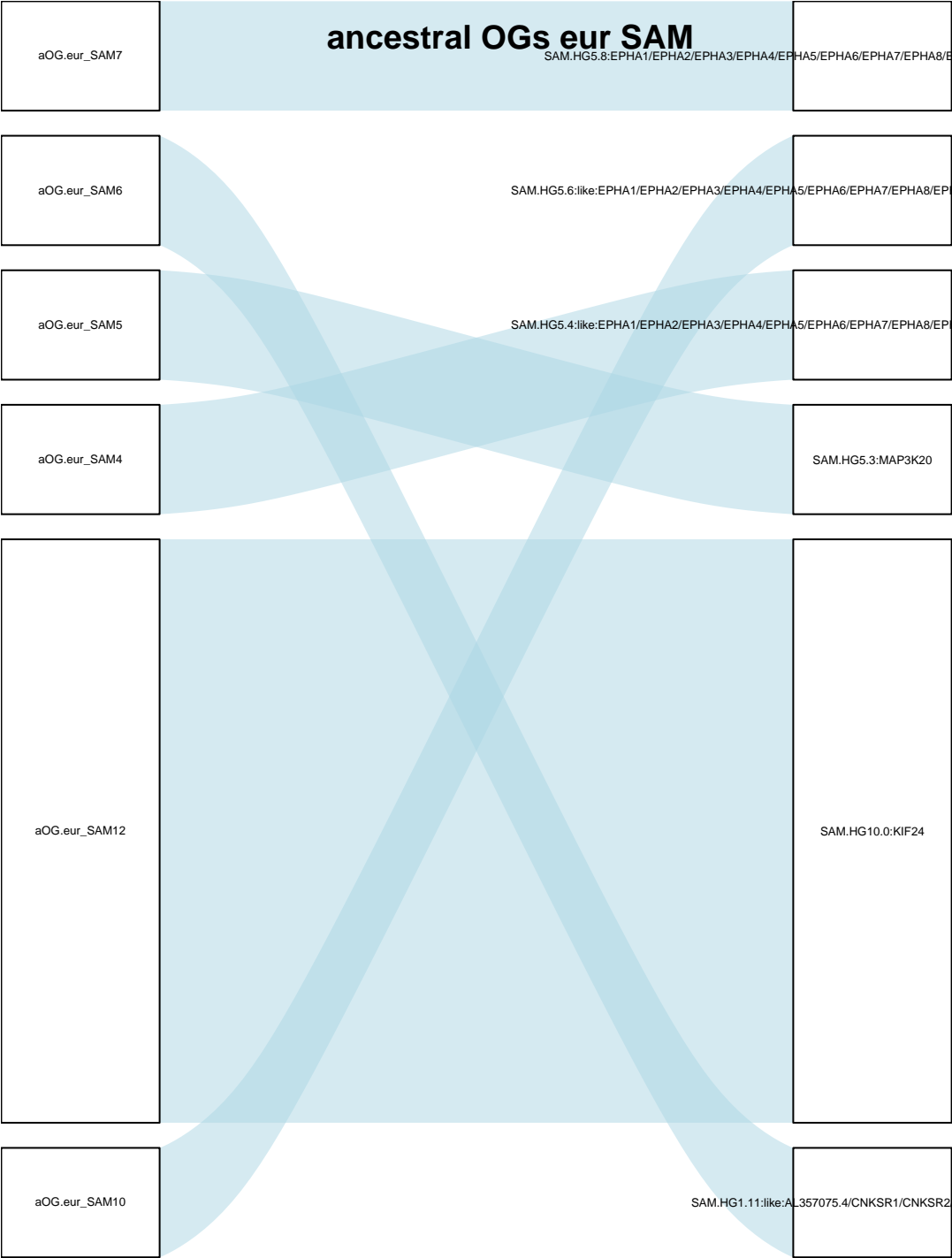
n genes = 27  
n aOG = 3

ancestral\_OG

OG



ancestral OGs eur SAM

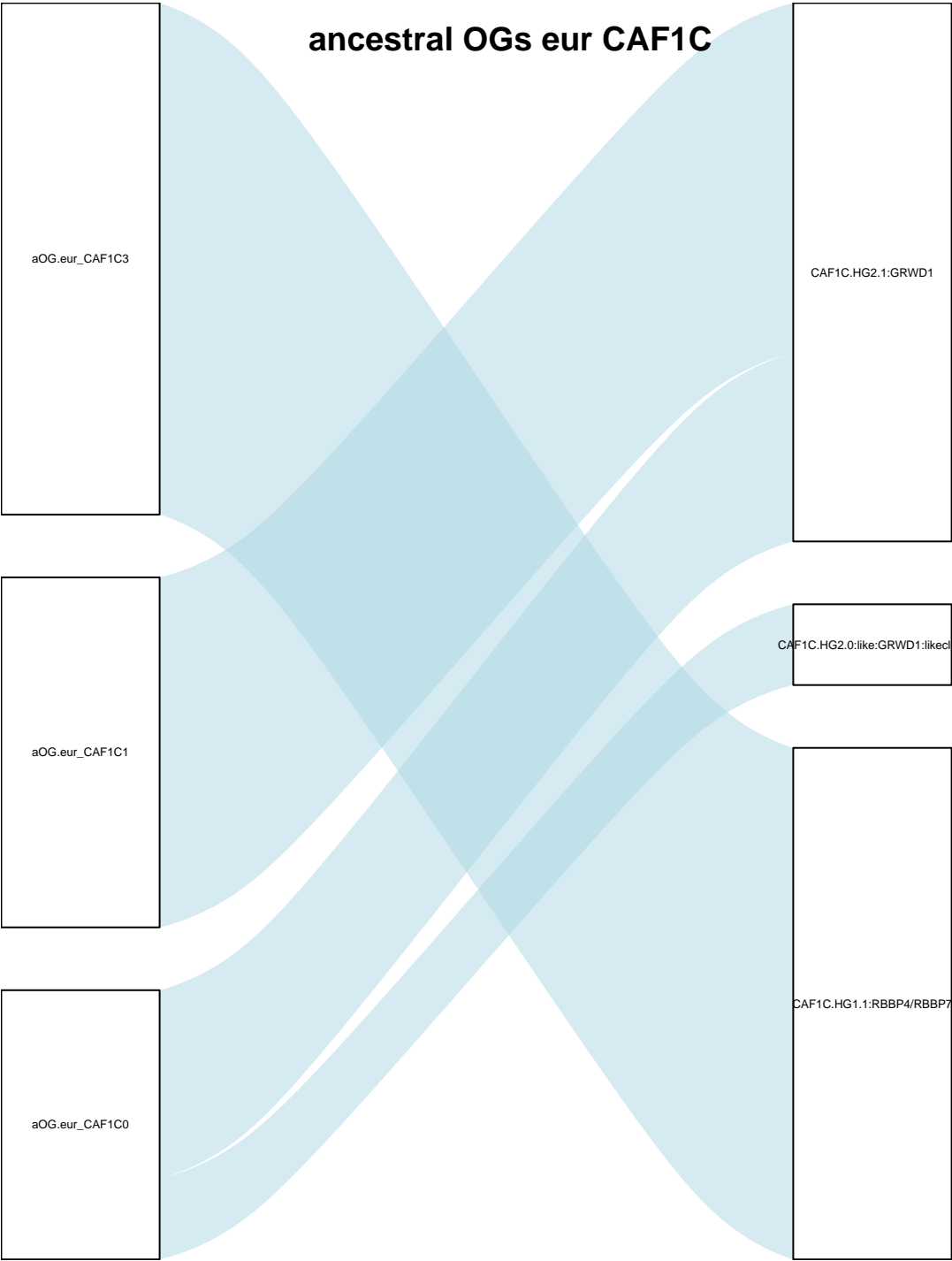


## ancestral OGs eur Suz12



aOG.eur\_Suz121 = Suz12.HG1.0:SUZ12  
n genes = 4

ancestral OGs eur CAF1C



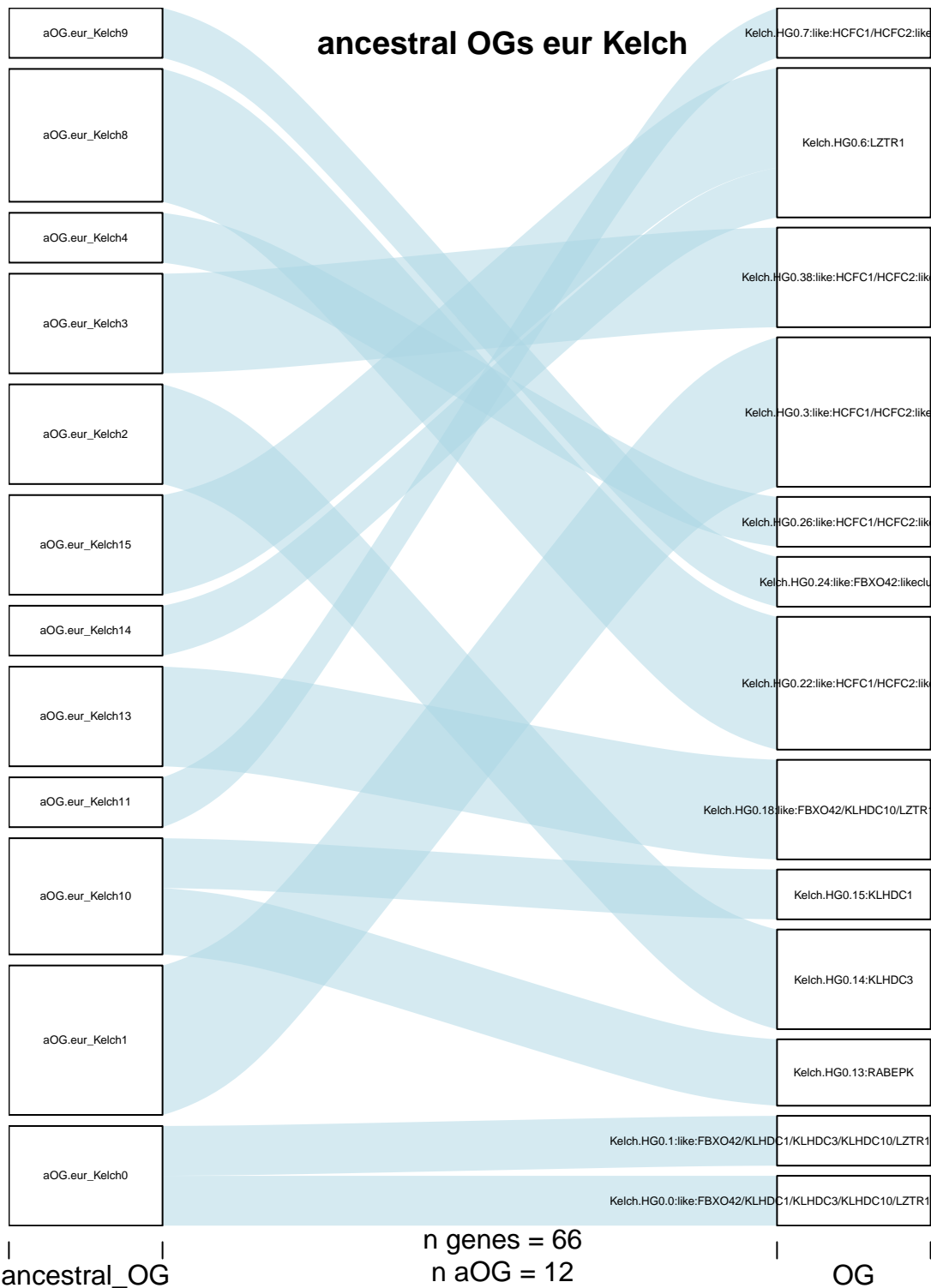
|  
ancestral\_OG

n genes = 42  
n aOG = 3

|  
OG



## ancestral OGs eur Kelch



ancestral OGs eur WD40



n genes = 126  
n aOG = 18

ancestral\_OG

OG