Fugure p1.

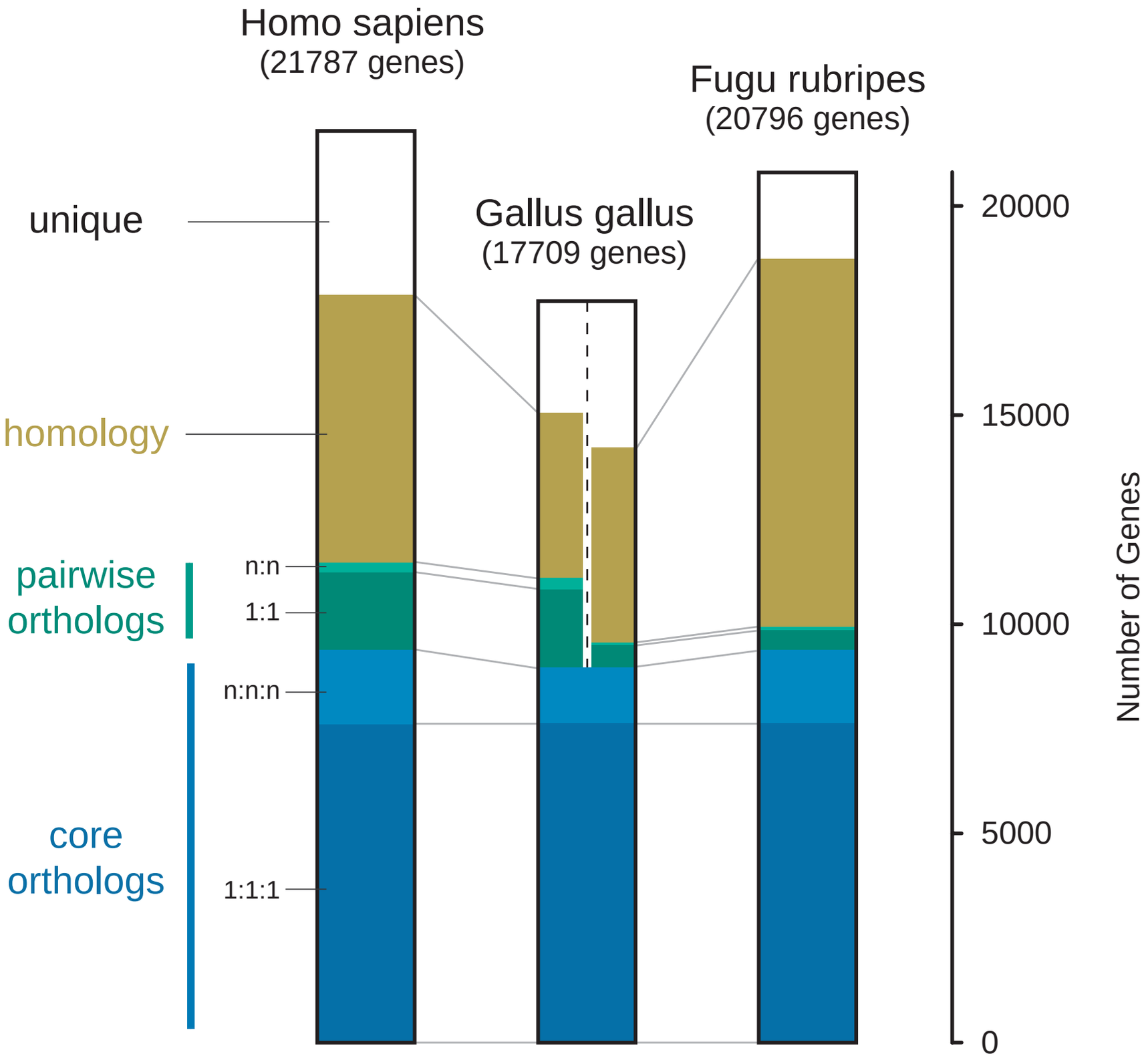

Homo sapiens
(21787 genes)
Gallus gallus
(17709 genes)
Fugu rubripes
(20796 genes)
unique
homology
pairwise
orthologs
core
orthologs
n:n
1:1
n:n:n
1:1:1
20000
15000
10000
5000
0
Number of Genes

Figure p2.

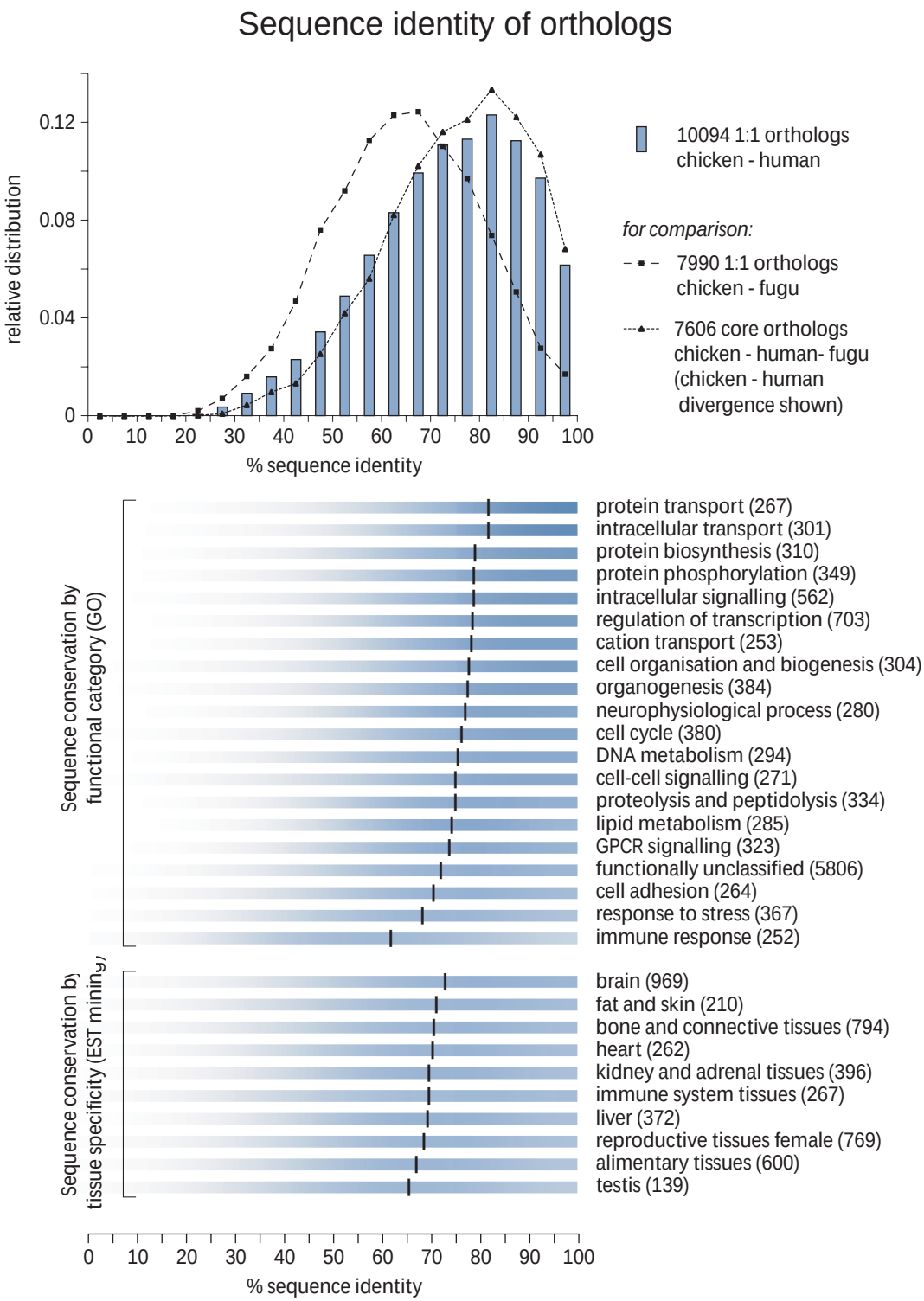

Sequence identity of orthologs
relative distribution
0.12
0.08
0.04
0
0 10 20 30 40 50 60 70 80 90 100
% sequence identity
10094 1:1 orthologs
chicken - human
for comparison:
7990 1:1 orthologs
chicken - fugu
7606 core orthologs
chicken - human- fugu
(chicken - human
divergence shown)
Sequence conservation by
functional category (GO)
protein transport (267)
intracellular transport (301)
protein biosynthesis (310)
protein phosphorylation (349)
intracellular signalling (562)
regulation of transcription (703)
cation transport (253)
cell organisation and biogenesis (304)
organogenesis (384)
neurophysiological process (280)
cell cycle (380)
DNA metabolism (294)
cell-cell signalling (271)
proteolysis and peptidolysis (334)
lipid metabolism (285)
GPCR signalling (323)
functionally unclassified (5806)
cell adhesion (264)
response to stress (367)
immune response (252)
Sequence conservation by
tissue specificity (EST mining)
brain (969)
fat and skin (210)
bone and connective tissues (794)
heart (262)
kidney and adrenal tissues (396)
immune system tissues (267)
liver (372)
reproductive tissues female (769)
alimentary tissues (600)
testis (139)
0 10 20 30 40 50 60 70 80 90 100
% sequence identity

Figure 3 A)

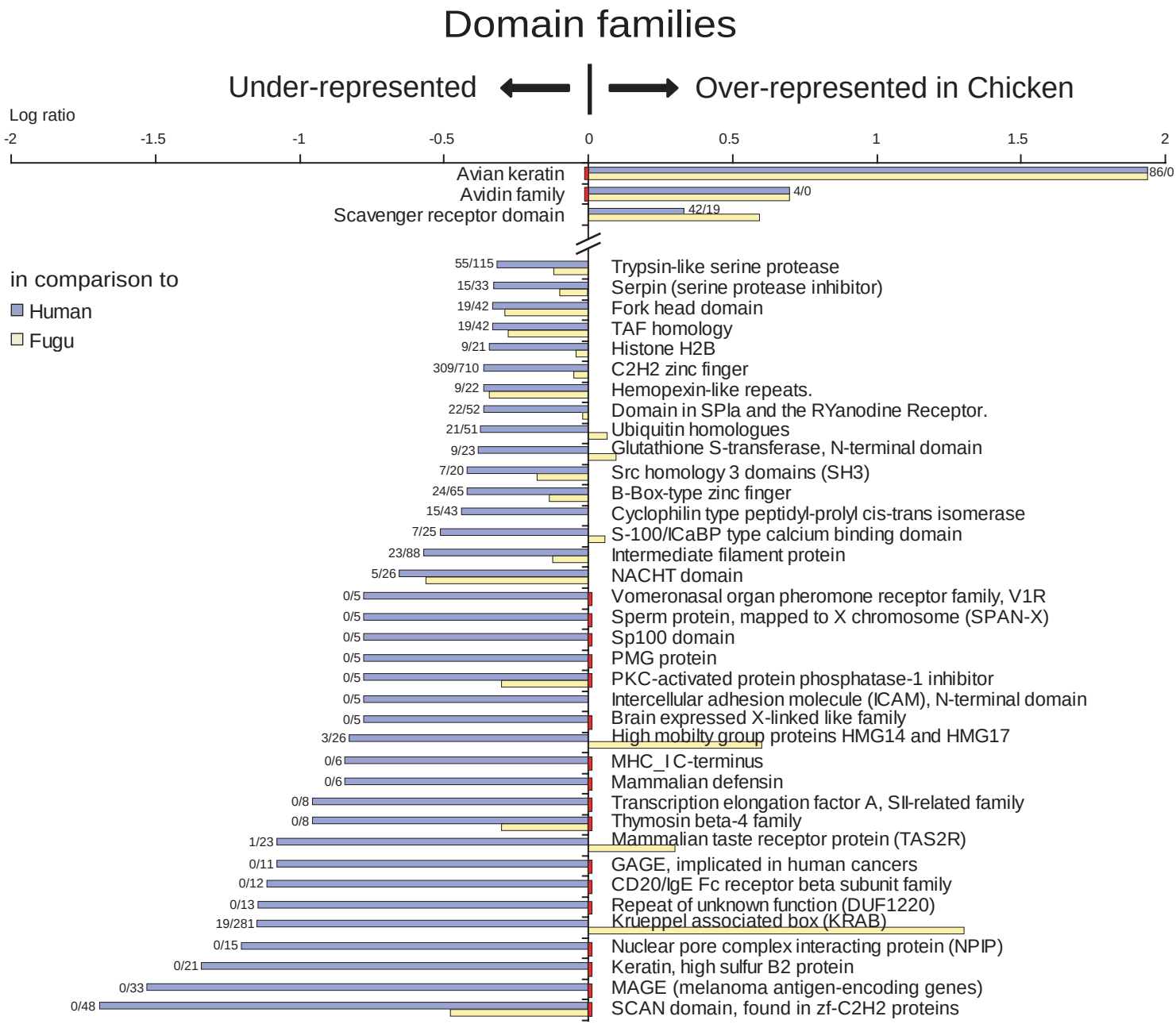

Domain families
Under-represented
Over-represented in Chicken
Log ratio
-2
-1.5
-1
-0.5
0
0.5
1
1.5
2
in comparison to
Human
Fugu
Avian keratin
86/0
Avidin family
4/0
Scavenger receptor domain
42/19
55/115
Trypsin-like serine protease
15/33
Serpin (serine protease inhibitor)
19/42
Fork head domain
19/42
TAF homology
9/21
Histone H2B
309/710
C2H2 zinc finger
9/22
Hemopexin-like repeats.
22/52
Domain in SPla and the RYanodine Receptor.
21/51
Ubiquitin homologues
9/23
Glutathione S-transferase, N-terminal domain
7/20
Src homology 3 domains (SH3)
24/65
B-Box-type zinc finger
15/43
Cyclophilin type peptidyl-prolyl cis-trans isomerase
7/25
S-100/lCaBP type calcium binding domain
23/88
Intermediate filament protein
5/26
NACHT domain
0/5
Vomeronasal organ pheromone receptor family, V1R
0/5
Sperm protein, mapped to X chromosome (SPAN-X)
0/5
Sp100 domain
0/5
PMG protein
0/5
PKC-activated protein phosphatase-1 inhibitor
0/5
Intercellular adhesion molecule (lCAM), N-terminal domain
0/5
Brain expressed X-linked like family
3/26
High mobilty group proteins HMG14 and HMG17
0/6
MHC_I C-terminus
0/6
Mammalian defensin
0/8
Transcription elongation factor A, SII-related family
0/8
Thymosin beta-4 family
1/23
Mammalian taste receptor protein (TAS2R)
0/11
GAGE, implicated in human cancers
0/12
CD20/lgE Fc receptor beta subunit family
0/13
Repeat of unknown function (DUF1220)
19/281
Krueppel associated box (KRAB)
0/15
Nuclear pore complex interacting protein (NPIP)
0/21
Keratin, high sulfur B2 protein
0/33
MAGE (melanoma antigen-encoding genes)
0/48
SCAN domain, found in zf-C2H2 proteins

Figure 3B)

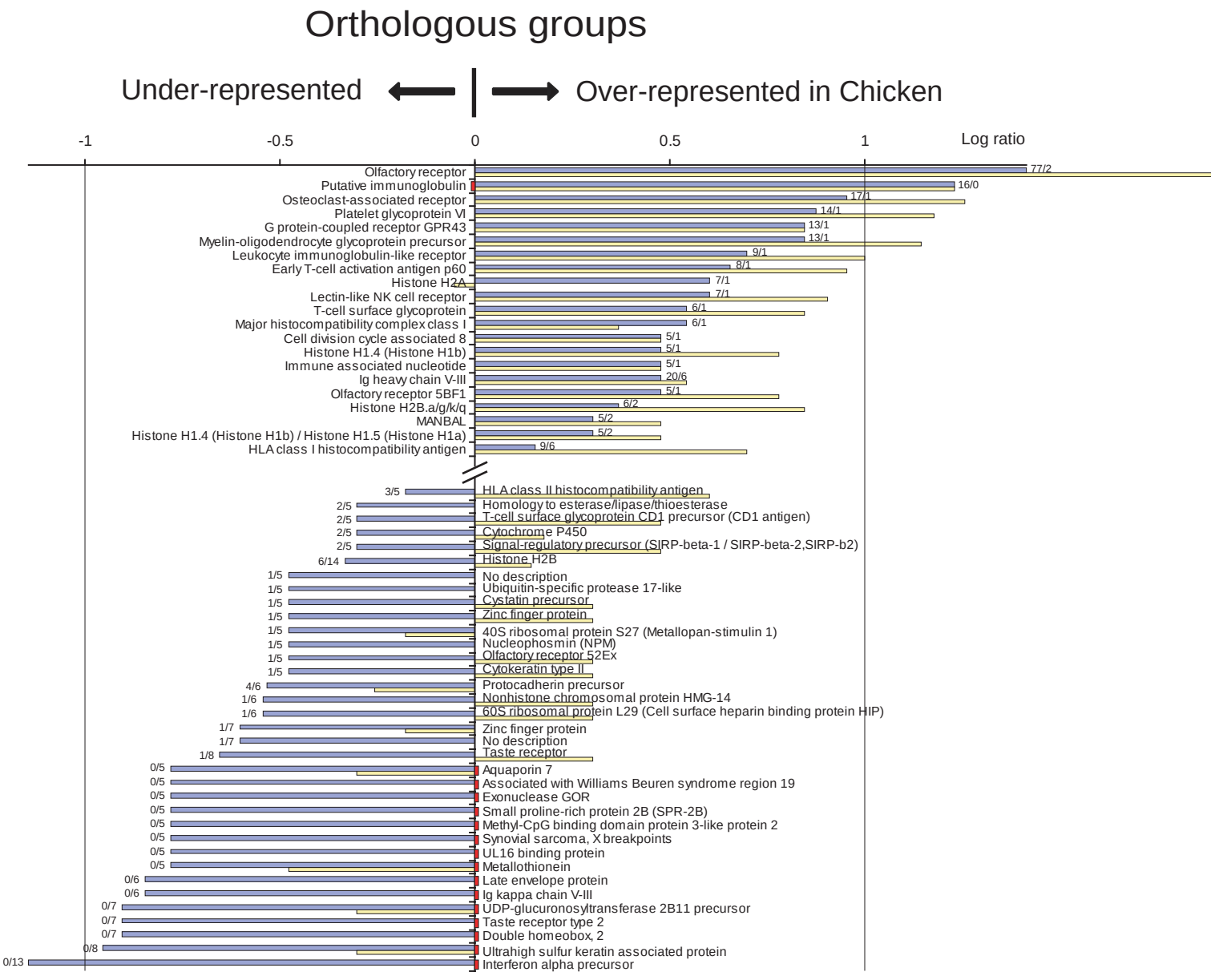

Orthologous groups
Under-represented
Over-represented in Chicken
-1
-0.5
0
0.5
1
Log ratio
Olfactory receptor 77/2
Putative immunoglobulin 16/0
Osteoclast-associated receptor 17/1
Platelet glycoprotein VI 14/1
G protein-coupled receptor GPR43 13/1
Myelin-oligodendrocyte glycoprotein precursor 13/1
Leukocyte immunoglobulin-like receptor 9/1
Early T-cell activation antigen p60 8/1
Histone H2A 7/1
Lectin-like NK cell receptor 7/1
T-cell surface glycoprotein 6/1
Major histocompatibility complex class I 6/1
Cell division cycle associated 8 5/1
Histone H1.4 (Histone H1b) 5/1
Immune associated nucleotide 5/1
Ig heavy chain V-III 20/6
Olfactory receptor 5BF1 5/1
Histone H2B.a/g/k/q 6/2
MANBAL 5/2
Histone H1.4 (Histone H1b) / Histone H1.5 (Histone H1a) 5/2
HLA class I histocompatibility antigen 9/6
3/5 HLA class II histocompatibility antigen
2/5 Homology to esterase/lipase/thioesterase
2/5 T-cell surface glycoprotein CD1 precursor (CD1 antigen)
2/5 Cytochrome P450
2/5 Signal-regulatory precursor (SIRP-beta-1 / SIRP-beta-2,SIRP-b2)
6/14 Histone H2B
1/5 No description
1/5 Ubiquitin-specific protease 17-like
1/5 Cystatin precursor
1/5 Zinc finger protein
1/5 40S ribosomal protein S27 (Metallopan-stimulin 1)
1/5 Nucleophosmin (NPM)
1/5 Olfactory receptor 52Ex
1/5 Cytokeratin type II
4/6 Protocadherin precursor
1/6 Nonhistone chromosomal protein HMG-14
1/6 60S ribosomal protein L29 (Cell surface heparin binding protein HIP)
1/7 Zinc finger protein
1/7 No description
1/8 Taste receptor
0/5 Aquaporin 7
0/5 Associated with Williams Beuren syndrome region 19
0/5 Exonuclease GOR
0/5 Small proline-rich protein 2B (SPR-2B)
0/5 Methyl-CpG binding domain protein 3-like protein 2
0/5 Synovial sarcoma, X breakpoints
0/5 UL16 binding protein
0/5 Metallothionein
0/6 Late envelope protein
0/6 Ig kappa chain V-III
0/7 UDP-glucuronosyltransferase 2B11 precursor
0/7 Taste receptor type 2
0/7 Double homeobox, 2
0/8 Ultrahigh sulfur keratin associated protein
0/13 Interferon alpha precursor

Figure p4

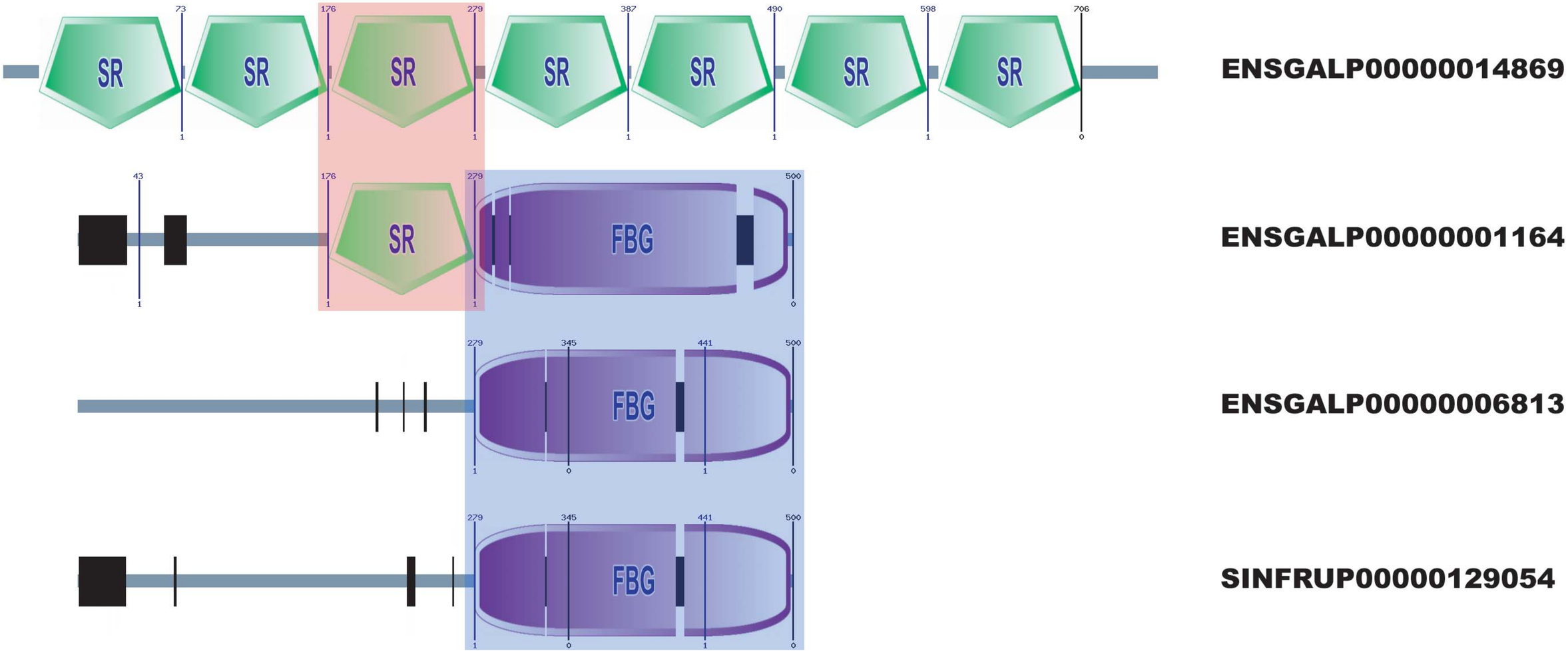
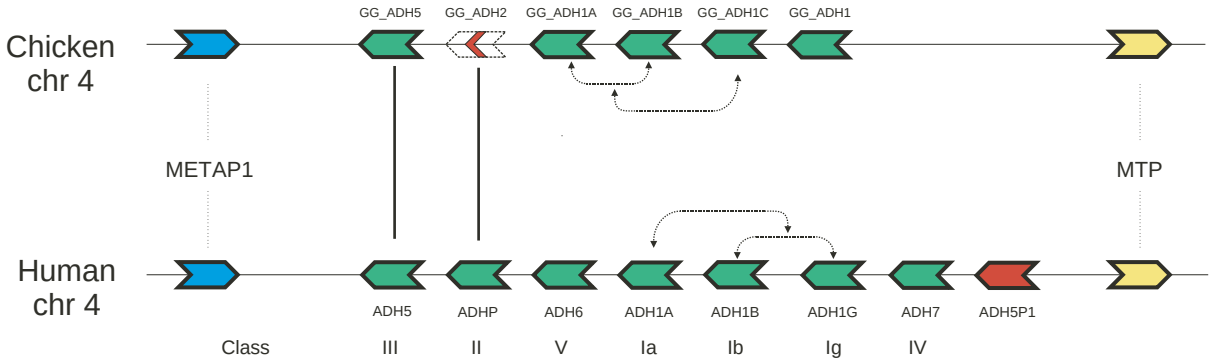

SR
FBG
ENSGALP00000014869
ENSGALP00000001164
ENSGALP00000006813
SINFRUP00000129054

Figure pw

A)


Chicken
chr 4
GG_ADH5
GG_ADH2
GG_ADH1A
GG_ADH1B
GG_ADH1C
GG_ADH1
METAP1
MTP
Human
chr 4
ADH5
ADHP
ADH6
ADH1A
ADH1B
ADH1G
ADH7
ADH5P1
Class
III
II
V
Ia
Ib
Ig
IV

B)

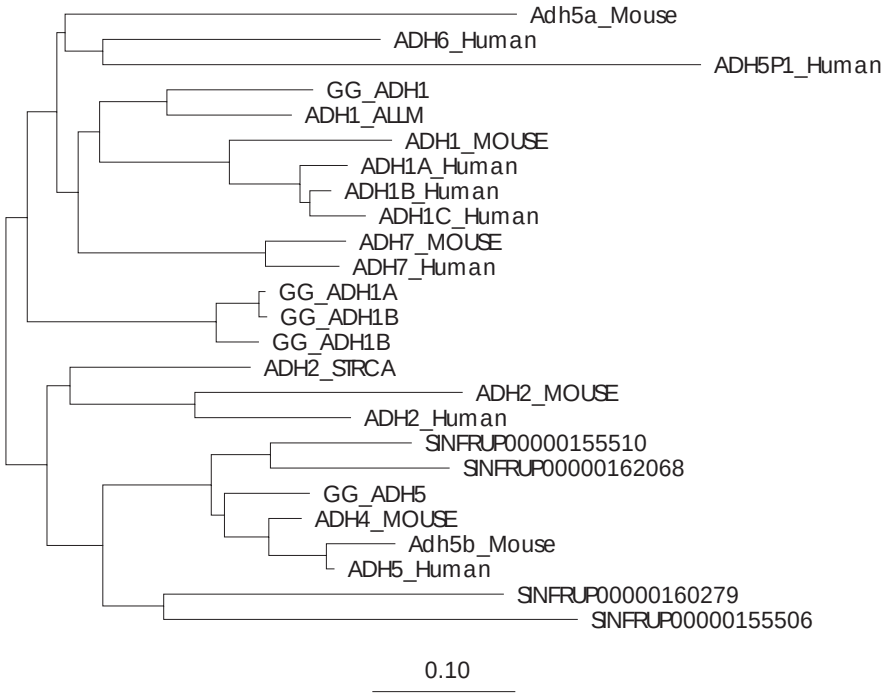
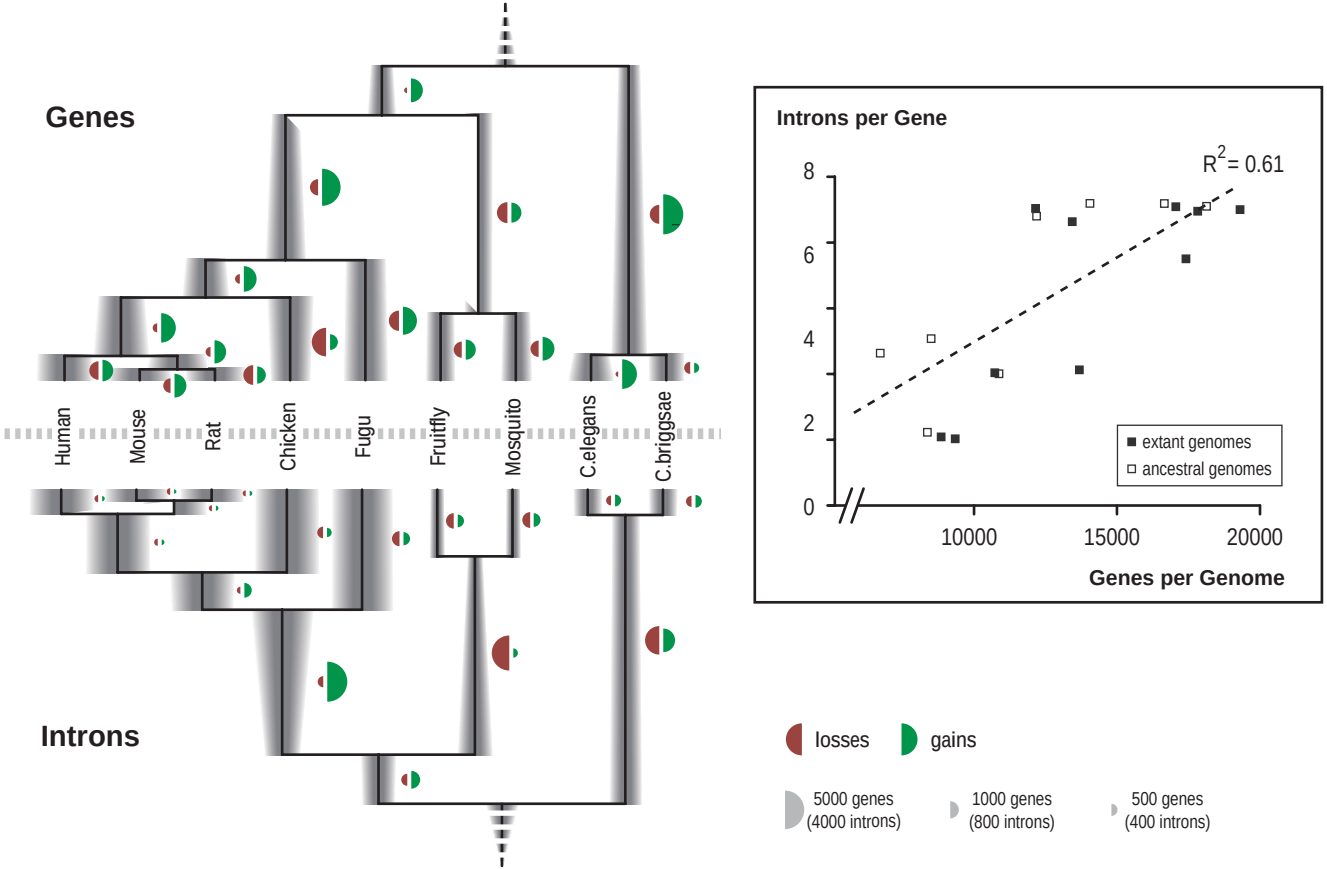

Adh5a_Mouse
ADH6_Human
ADH5P1_Human
GG_ADH1
ADH1_ALLM
ADH1_MOUSE
ADH1A_Human
ADH1B_Human
ADH1C_Human
ADH7_MOUSE
ADH7_Human
GG_ADH1A
GG_ADH1B
GG_ADH1B
ADH2_STRCA
ADH2_MOUSE
ADH2_Human
SINFRUP00000155510
SINFRUP00000162068
GG_ADH5
ADH4_MOUSE
Adh5b_Mouse
ADH5_Human
SINFRUP00000160279
SINFRUP00000155506
0.10

Figure pz


Genes
Introns
Human
Mouse
Rat
Chicken
Fugu
Fruitfly
Mosquito
C.elegans
C.briggsae
Introns per Gene
R^2= 0.61
8
6
4
2
0
10000
15000
20000
Genes per Genome
extant genomes
ancestral genomes
losses
gains
5000 genes (4000 introns)
1000 genes (800 introns)
500 genes (400 introns)