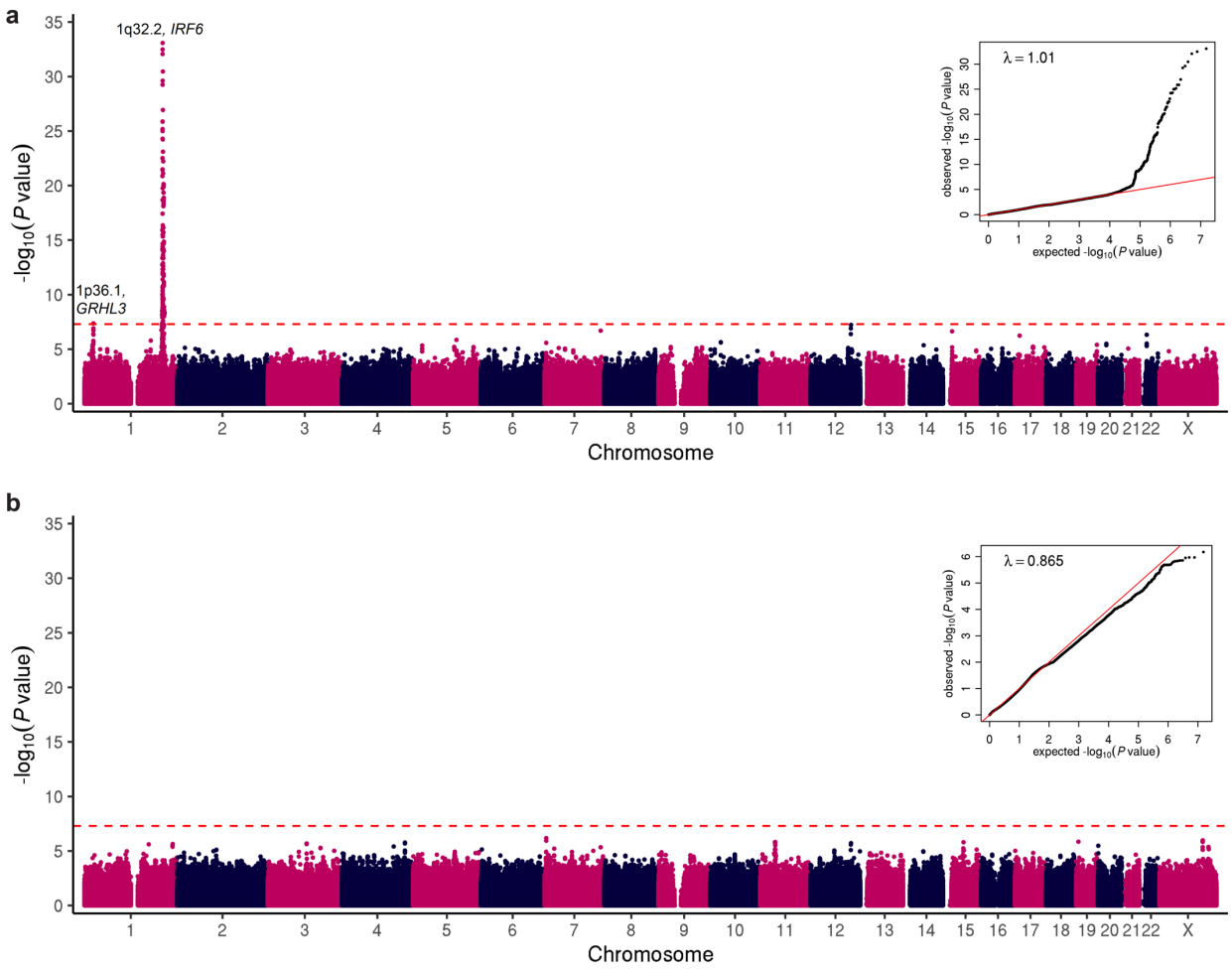
Supplementary Information

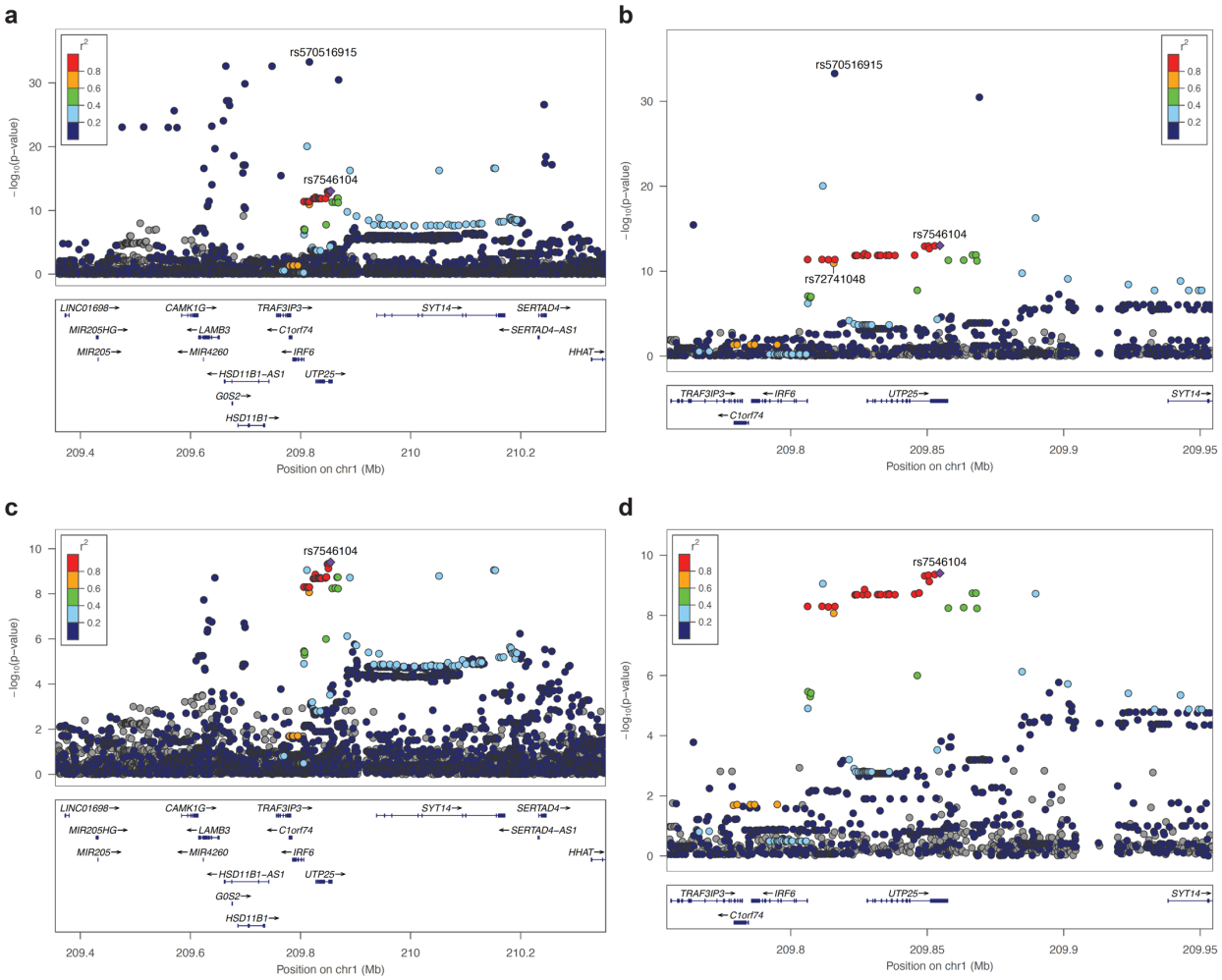
High incidence and geographic distribution of cleft palate in Finland are associated with the *IRF6* gene

Fedik Rahimov, Pekka Nieminen, Priyanka Kumari, Emma Juuri, Tiit Nikopensius, Kitt Paraiso, Jakob German, Antti Karvanen, Mart Kals, Abdelrahman G. Elnahas, Juha Karjalainen, Mitja Kurki, Aarno Palotie, FinnGen, Estonian Biobank Research Team, Arja Heliövaara, Tõnu Esko, Sakari Jukarainen, Priit Palta, Andrea Ganna, Anjali P. Patni, Daniel Mar, Karol Bomsztyk, Julie Mathieu, Hannele Ruohola-Baker, Axel Visel, Walid D. Fakhouri, Brian C. Schutte, Robert A. Cornell, David P. Rice

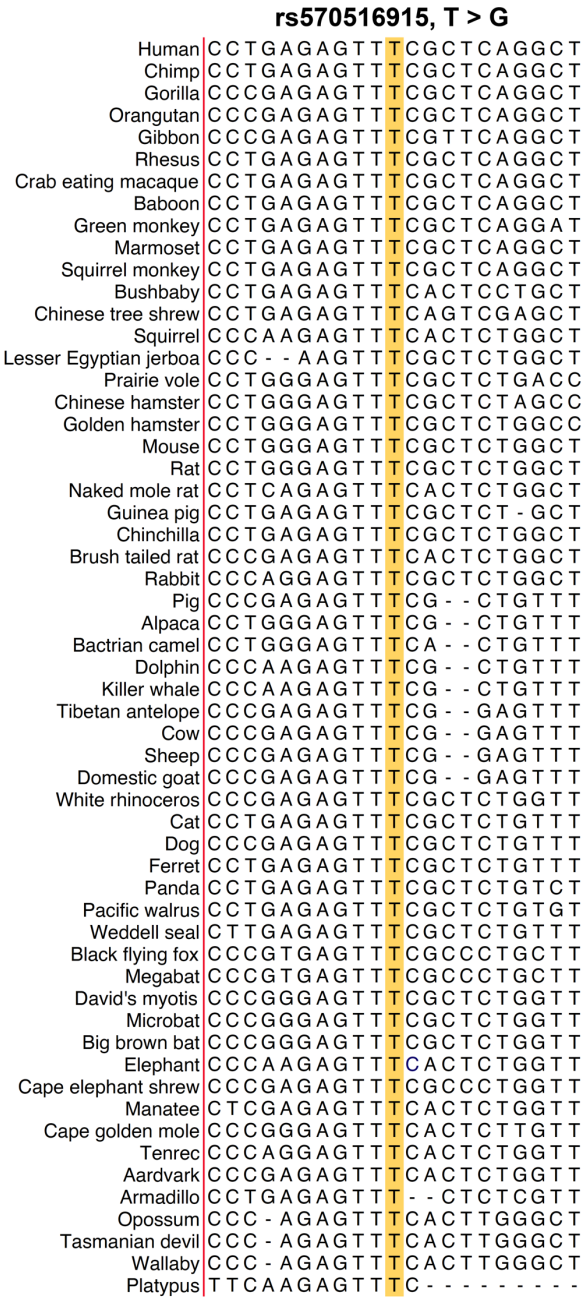
Supplementary Figures



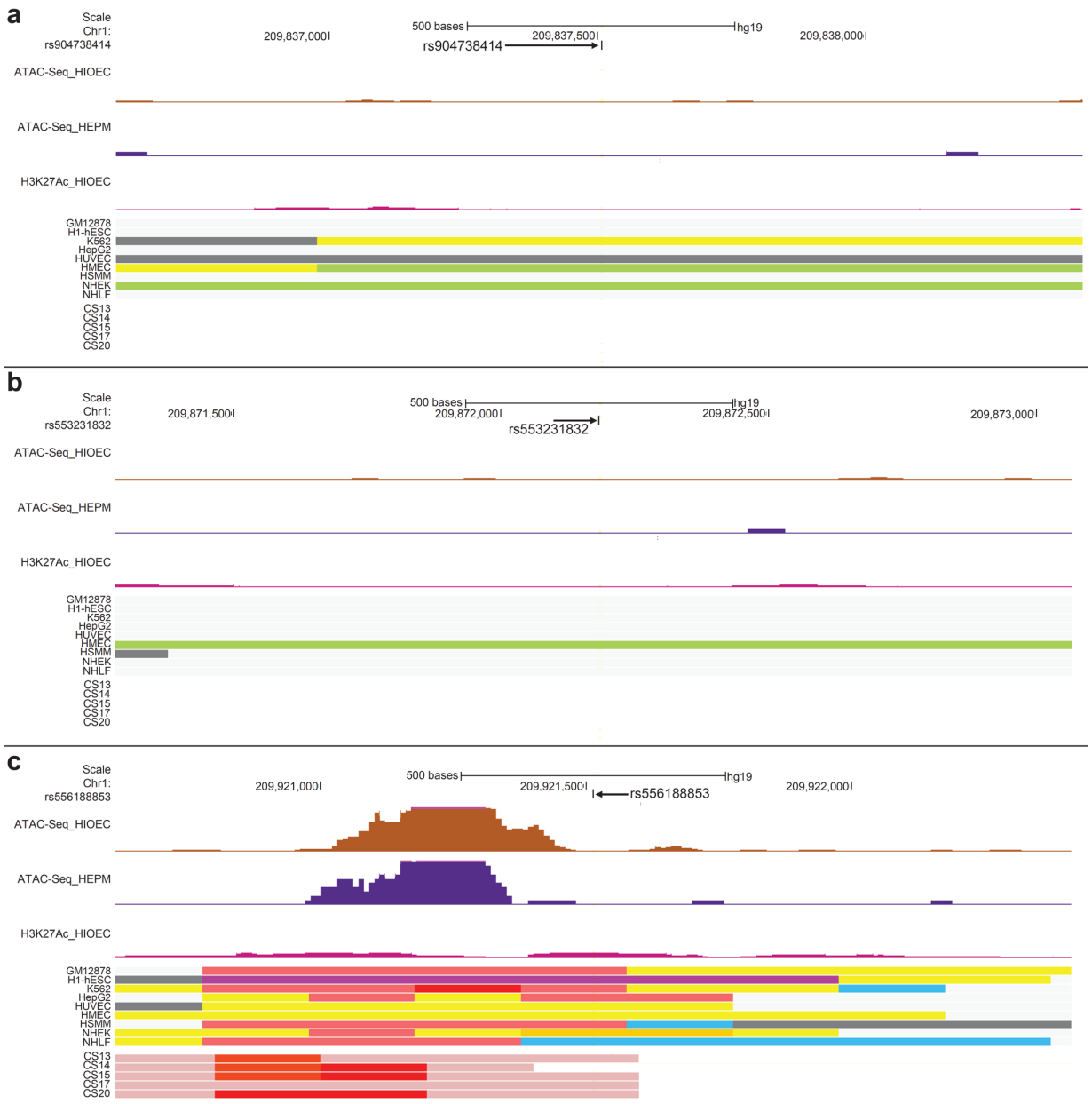
Supplementary Fig. 1: Manhattan plots showing GWAS results of (**a**) 355 cases with non-syndromic OFC (CL, CLP, and CP combined) and 308,799 population controls, and (**b**)151 cases with CL and CLP combined and 308,799 population controls. Negative $\log_{10}$ *P* values (*y* axis) are plotted for each tested variant against their chromosomal coordinates (*x* axis) provided in the human genome build GRCh38/hg38. Two-sided *P* values are obtained from a likelihood ratio test in regression analysis and are not corrected for multiple comparisons. Red dashed line represents the threshold for genome-wide statistical significance ($P = 5 \times 10^{-8}$ or $\log_{10}(P) = 7.3$) after Bonferroni correction for multiple hypothesis testing. Quantile-quantile plots are shown in inset panels, where the observed (*y* axis) negative $\log_{10}$ *P* values are plotted against the expected (*x* axis) negative $\log_{10}$ *P* values under null distribution (red line).

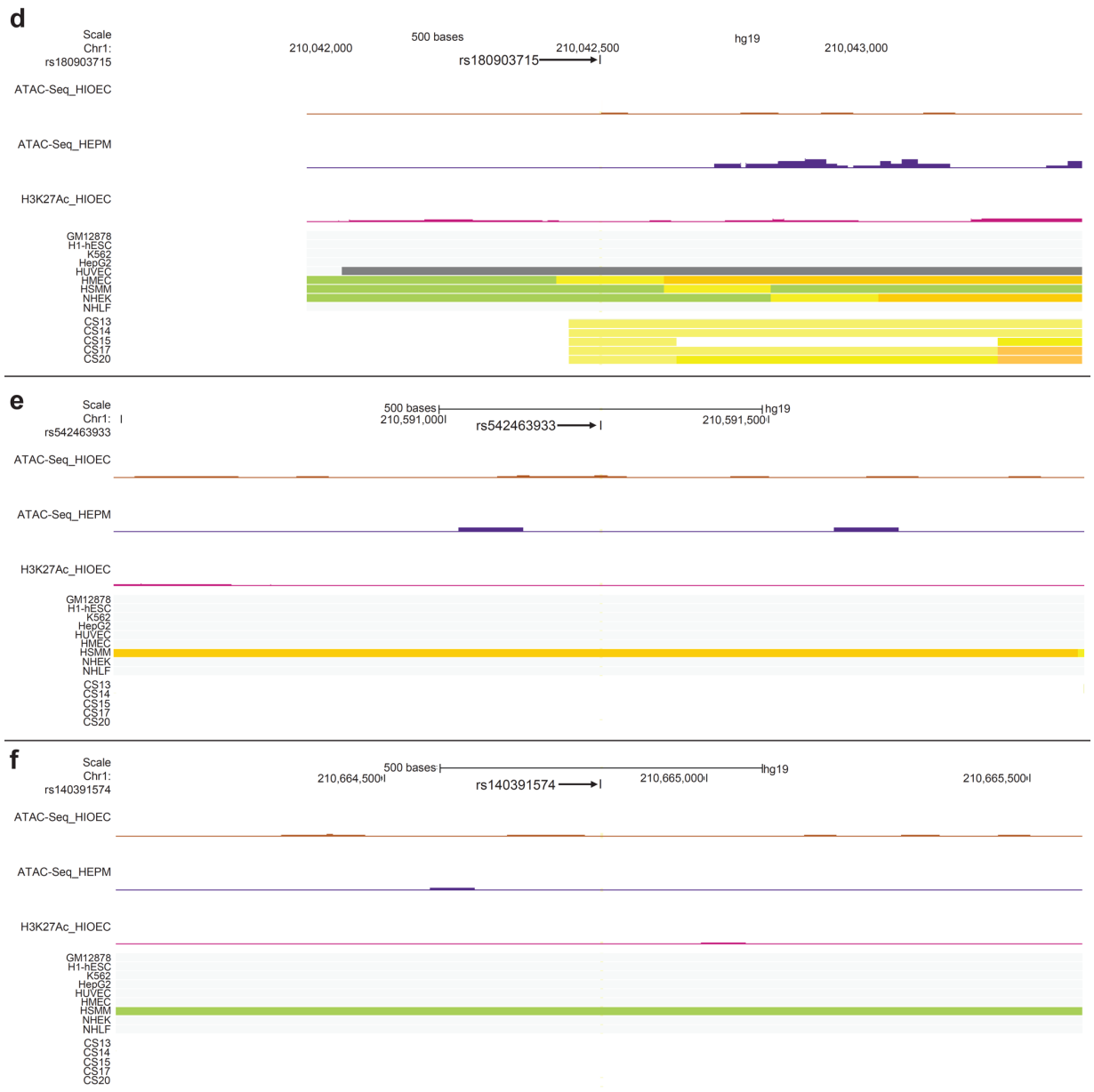


Supplementary Fig. 2: Regional association plots of the chromosome 1q32.2 locus before (a and b) and after (c and d) conditional analysis. For clarity, negative $\log_{10}$ *P* values (*y* axis) are shown for variants (*x* axis) within a 1 Mb (**a** and **c**) and a 200 kb (**b** and **d**) windows flanking the reference SNP rs7546104, respectively. Two-sided *P* values are obtained from a likelihood ratio test in regression analysis and are not corrected for multiple comparisons. The reference SNP rs7546104 is labeled with a purple diamond, and pairwise LD (r^2) between the reference SNP and other variants are indicated by color. The r^2 values were estimated from high-coverage whole-genome sequences of 3,775 Finns. Both directly genotyped and imputed SNPs are plotted. Genomic coordinates are shown according to the human genome build GRCh38/hg38. Plots **c** and **d** display SNPs in LD with the lead SNP rs7546104, after adjusting for rs570516915 in a conditional analysis. Plots **a** and **c** show 1 Mb regions surrounding the index SNP, whereas plots **b** and **d** show an expanded view of a 200 kb region focusing on the independent risk haplotype tagged by rs7546104. SNP rs72741048 has been associated with OFC in a large GWAS in the Chinese population[1].

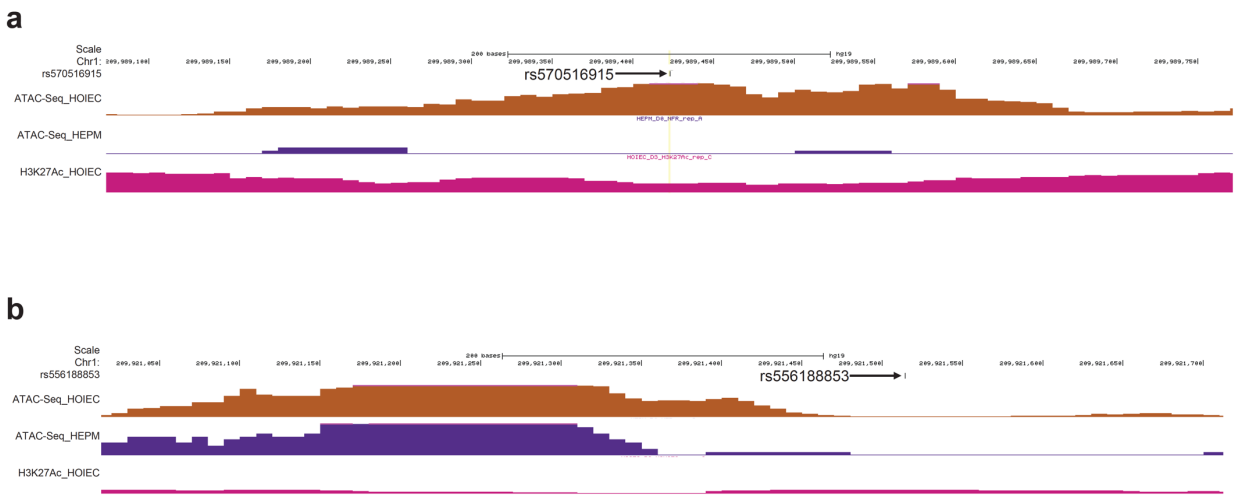


Supplementary Fig. 3: Evolutionary conservation of the rs570516915 variant site in MCS-9.7. Multi-species sequence alignments surrounding the rs570516915 variant site in the MCS-9.7 enhancer for *IRF6* were obtained from the multiz alignment and conservation track of 100 vertebrate species in the UCSC Genome Browser (https://genome.ucsc.edu).

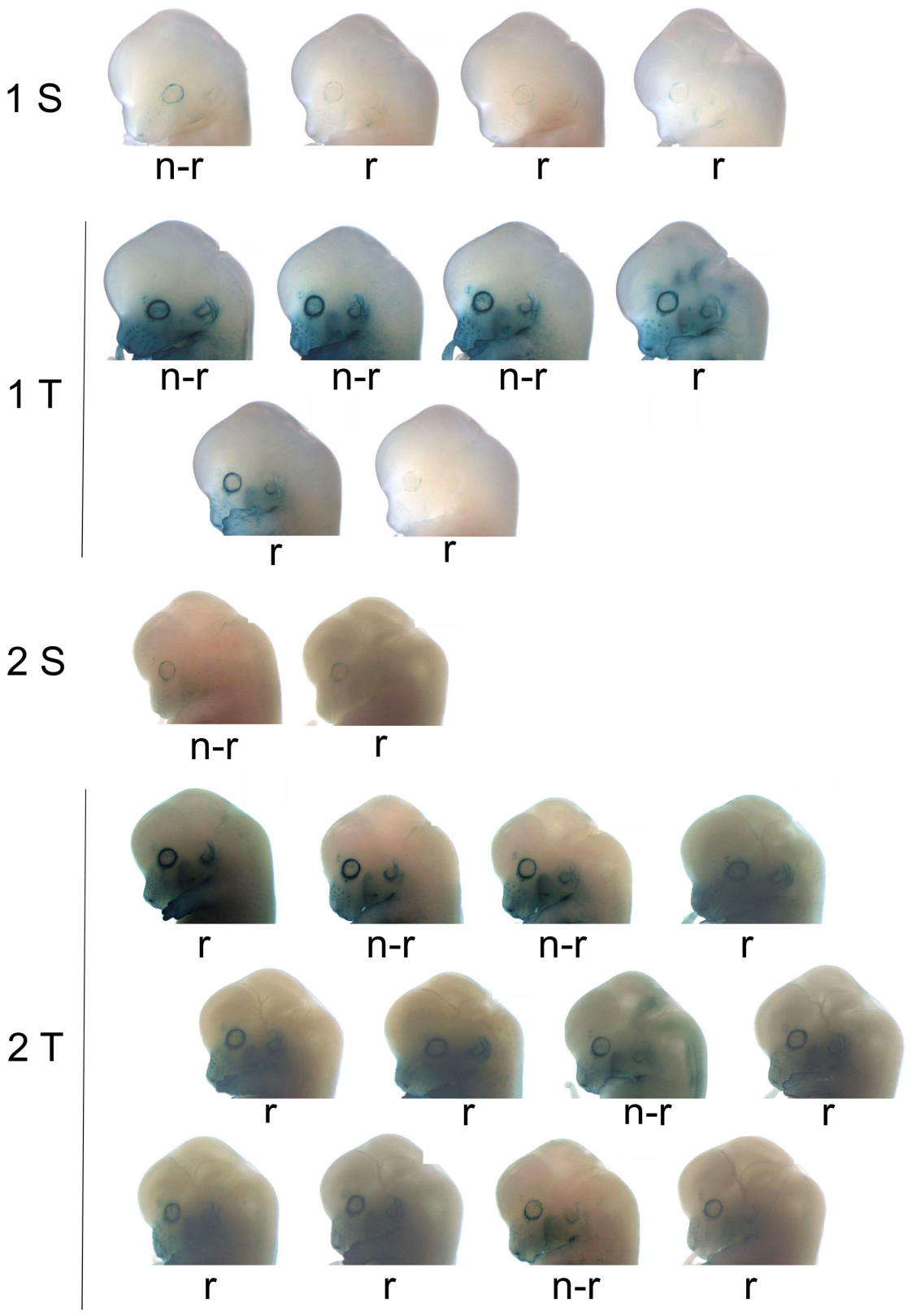

a
Scale
Chr1:
rs904738414
209,837,000
500 bases
hg19
209,837,500
rs904738414
209,838,000
ATAC-Seq_HIOEC
ATAC-Seq_HEPM
H3K27Ac_HIOEC
GM12878
H1-hESC
K562
HepG2
HUVEC
HMEC
HSMM
NHEK
NHLF
CS13
CS14
CS15
CS17
CS20
b
Scale
Chr1:
rs553231832
209,871,500
500 bases
hg19
209,872,000
209,872,500
rs553231832
209,873,000
ATAC-Seq_HIOEC
ATAC-Seq_HEPM
H3K27Ac_HIOEC
GM12878
H1-hESC
K562
HepG2
HUVEC
HMEC
HSMM
NHEK
NHLF
CS13
CS14
CS15
CS17
CS20
c
Scale
Chr1:
rs556188853
209,921,000
500 bases
hg19
209,921,500
rs556188853
209,922,000
ATAC-Seq_HIOEC
ATAC-Seq_HEPM
H3K27Ac_HIOEC
GM12878
H1-hESC
K562
HepG2
HUVEC
HMEC
HSMM
NHEK
NHLF
CS13
CS14
CS15
CS17
CS20

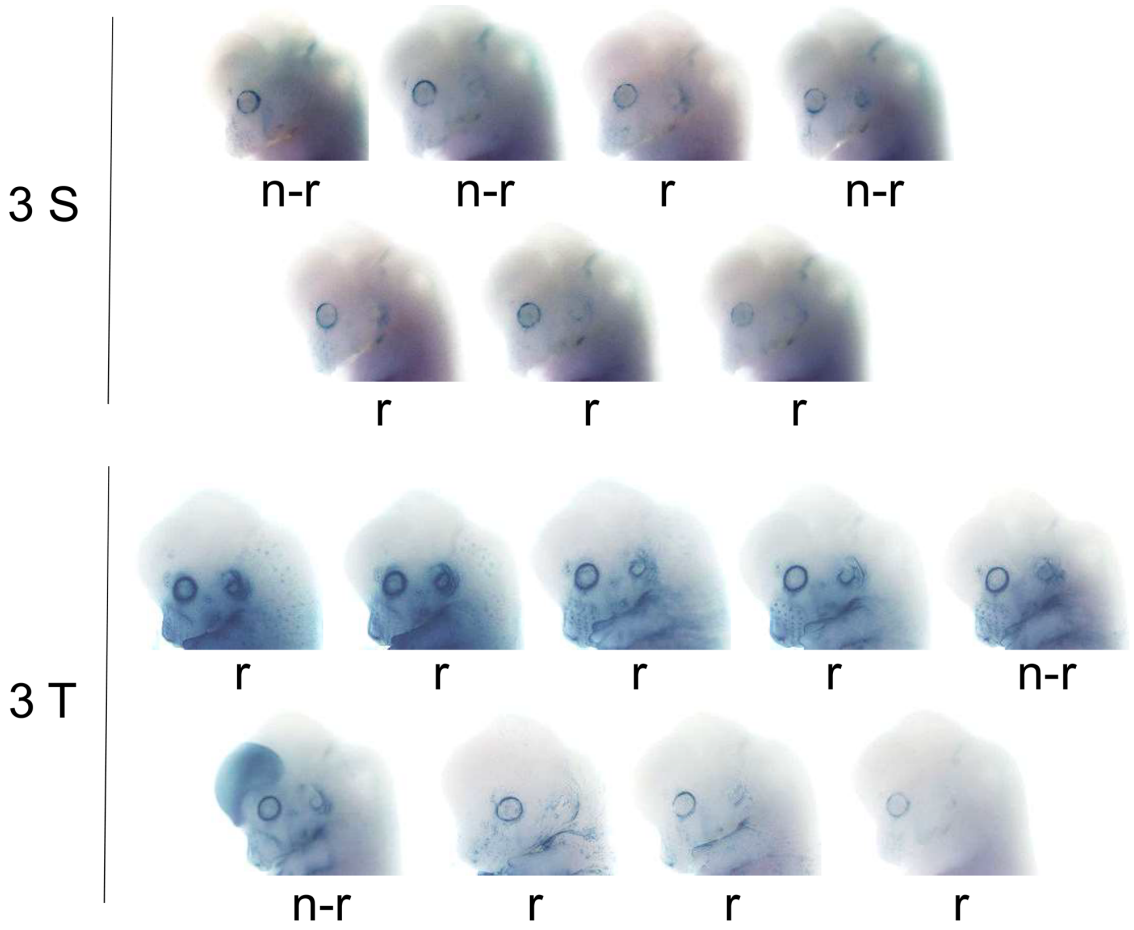


Supplementary Fig. 4: Browser views of the human genome in GRCh37/hg19, illustrating that one (rs556188853) of the 6 SNPs in strong LD with rs570516915 falls into a region with chromatin marks consistent with enhancer activity in epithelial cells (HIOEC and NHEK). First track, SNPs in LD with rs570516915, (**a**) rs904738414, (**b**) rs553231832, (**c**) rs556188853, (**d**) rs180903715, (**e**) rs542463933 and (**f**) rs140391574); second and third tracks, ATAC-Seq peaks from HIOEC and HEPM cells, respectively; fourth track, H3K27Ac from HIOEC cells; fifth track, chromatin status revealed by ChIP-Seq to various chromatin marks from the ENCODE Project cell lines and facial explants from human embryos at Carnegie stage (CS) 13-20, color coded as in Fig. 4a**.** Additional color codes from ENCODE project cell lines: bright red, active promoter; light red, weak promoter; purple, inactive/poised promoter. Additional color codes from facial explants from human embryos at CS 13-20: red, active TSS; orange red, promoter upstream or downstream TSS; light purple, poised promoter.

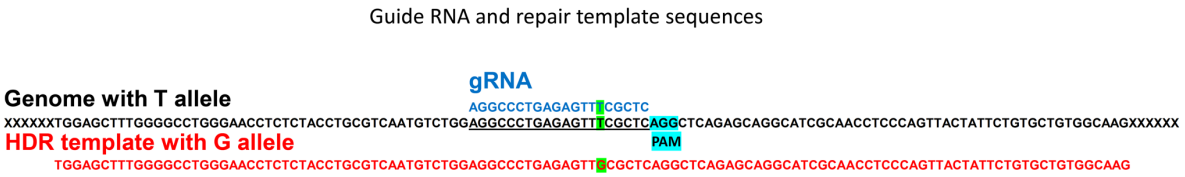


Supplementary Fig. 5: Browser views of genomic regions included in the luciferase reporter vectors for the rs570516915 and rs556188853 variants. First track, position of (**a**) rs570516915 and (**b**) rs556188853 SNPs; second and third track, ATAC-Seq peaks from the HIOEC and HEPM cells, respectively; fourth track, H3K27Ac peaks from the HIOEC cells.

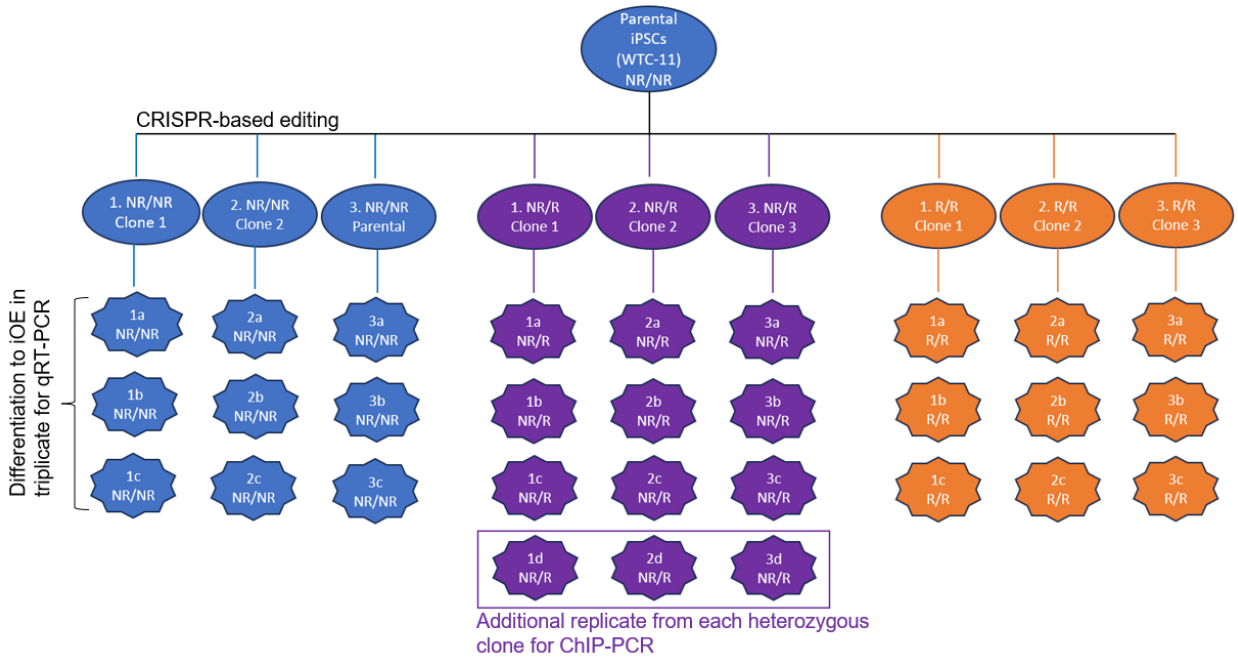

1 S
n-r
r
r
r
1 T
n-r
n-r
n-r
r
r
r
2 S
n-r
r
2 T
r
n-r
n-r
r
r
r
n-r
r
r
r
n-r
r



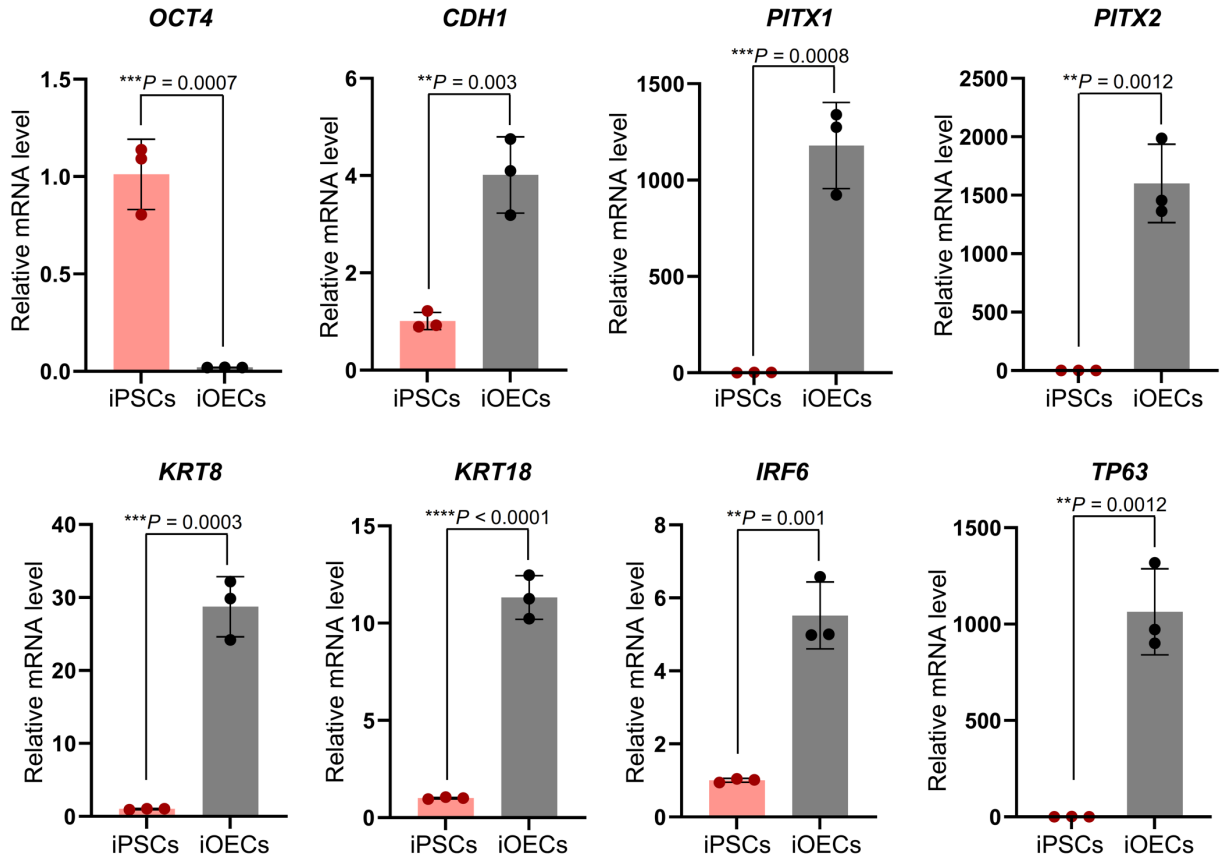
Supplementary Fig. 6: Heads of X-gal-stained transgenic reporter embryos at E13.5 showing effect on staining of inserted non-risk and risk alleles of rs570516915. Embryos were divided into six sets, which consisted of single (S) or tandem (T) insertions from three experimental batches (1, 2 and 3). The heads are ordered according to consensuses from blinded assessments from strongest to weakest expression. Images of heads of sets 3S and 3T were adjusted similarly in each set for brightness and contrast. n-r, non-risk; r, risk.



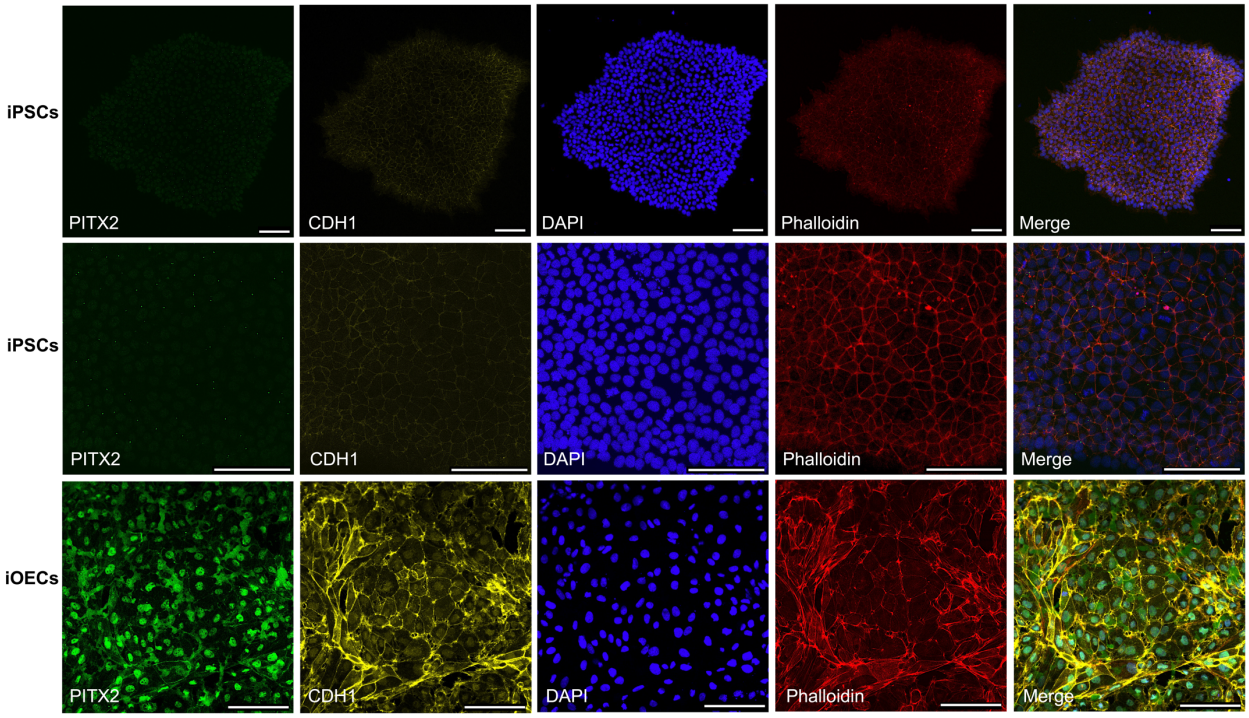
Supplementary Fig. 7: Sequences of the guide RNA (gRNA) and homology-directed repair (HDR) template DNA used for CRISPR-Cas9 editing of the rs570516915 variant sequence. PAM represents the protospacer adjacent motif for the guide used in the study.



Supplementary Fig. 8: Strategy for *in vitro* cell culture experiments: Parental induced pluripotent stem cells (iPSCs) WTC-11, homozygous for non-risk allele of rs570516915 (TT, NR/NR), were edited to be heterozygous (TG, NR/R) or homozygous for the risk allele (GG, R/R) and subjected to a 10-day differentiation protocol to generate induced oral epithelial cells (iOECs). NR, non-risk allele; R, risk allele.



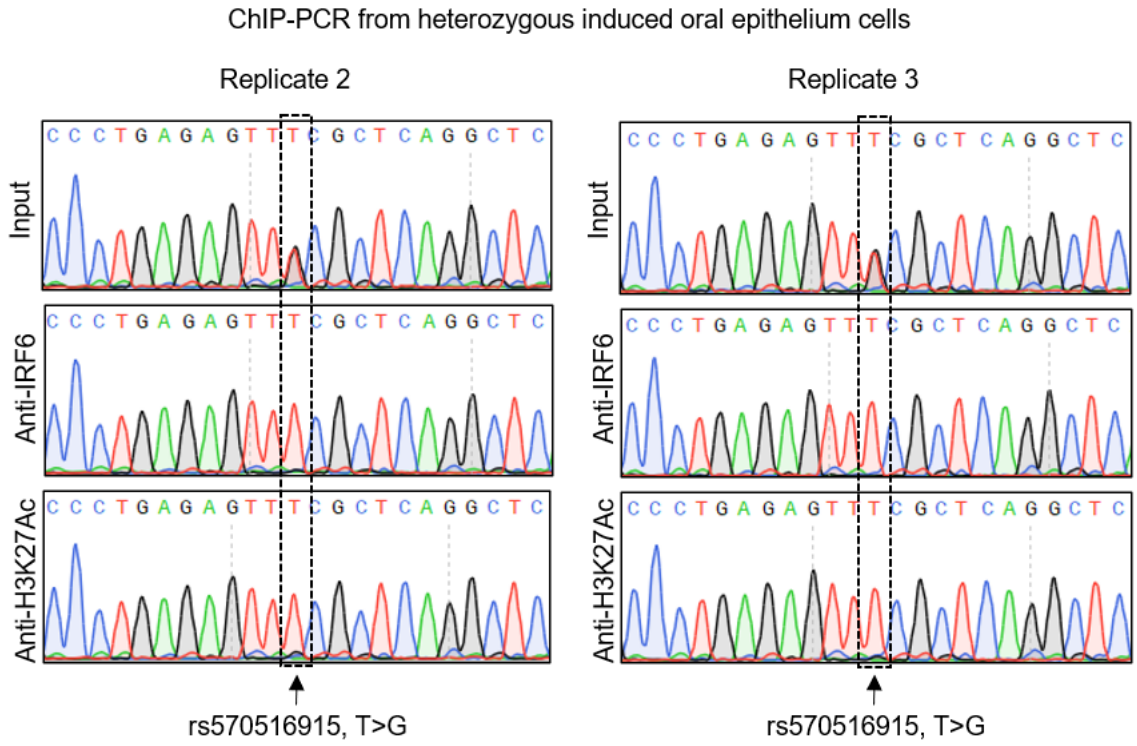
Supplementary Fig. 9: Scattered dot plots illustrating comparison of expression of stem cell marker *OCT4* and different epithelial markers (*CDH1, PITX1, PITX2, KRT8, KRT18*, and *TP63*) in iOECs vs iPSCs by qRT-PCR. Expression levels of each gene are normalized to *ACTB* expression. Data are represented as mean values +/- s.d. from three replicates. Statistical significance is determined by Student's *t*-test (two-tailed; *P* values are indicated on the plot).



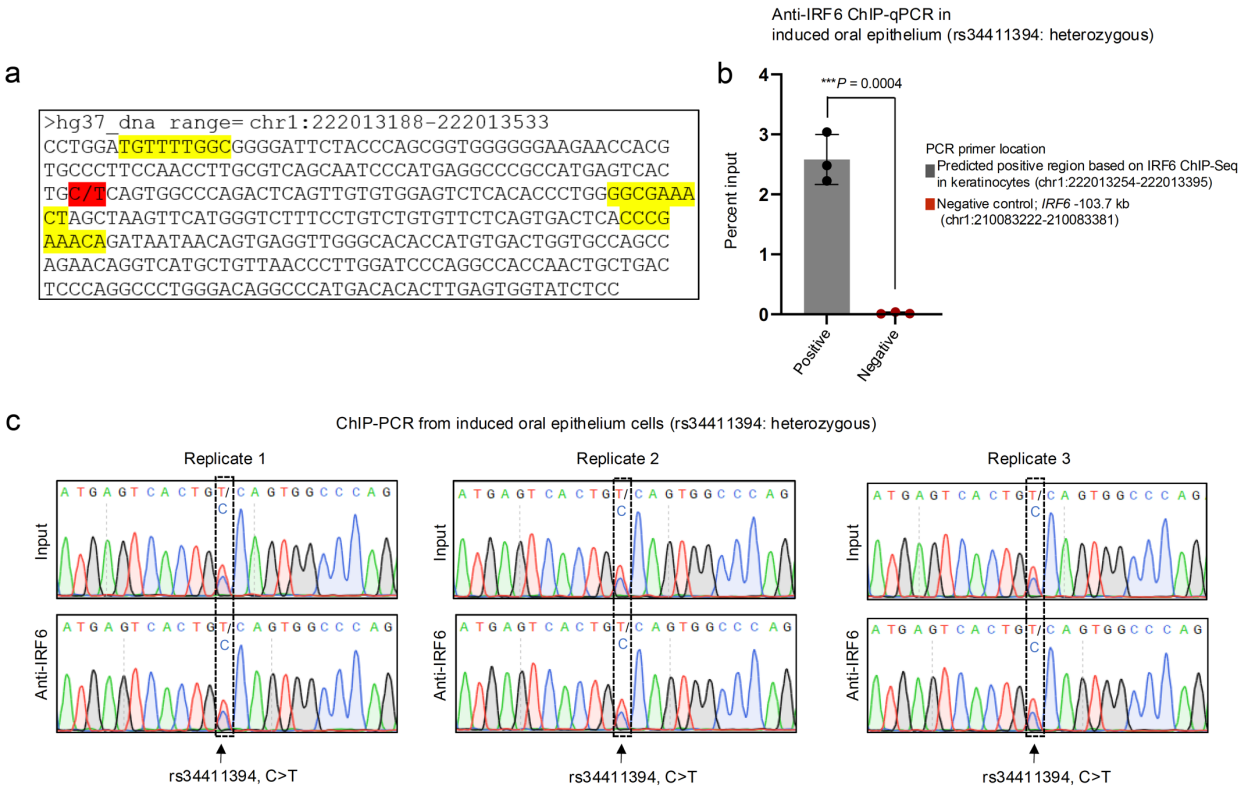
Supplementary Fig. 10: Immunofluorescence staining of human iPSCs and iOECs. Green, PITX2-positive nuclei; yellow, CDH1-positive induced oral epithelial cells (scale bar: 100 μm).

Rank	Difference log(p) for two sequences	rs570516915_A sequence p-value	rs570516915_C sequence p-value	Matrix_ID	Matrix name
1	1.8	0.00382	0.242	PB0036.1	Irf6_1
2	1.49	0.0117	0.36	PB0034.1	Irf4_1
3	1.3	0.0183	0.363	PB0035.1	Irf5_1
4	-1.13	0.354	0.026	PF0167.1	CCTNTMAGA
5	1.02	0.0473	0.498	MA0024.1	E2F1
6	0.906	0.111	0.898	MA0393.1	STE12
7	-0.802	0.533	0.0842	MA0349.1	OPI1
8	0.786	0.0375	0.229	MA0440.1	ZAP1
9	0.742	0.125	0.69	PB0115.1	Ehf_2
10	0.737	0.156	0.852	MA0360.1	RDR1

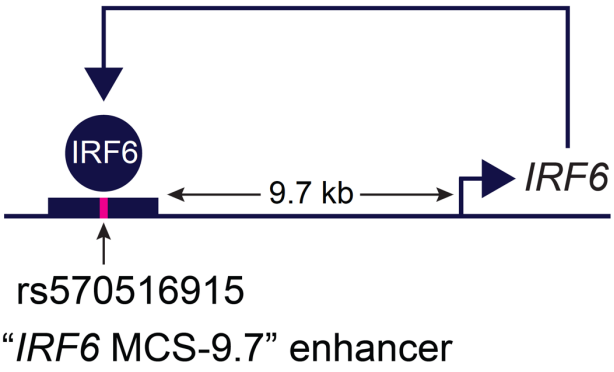
Supplementary Fig. 11: Prediction of IRF6 binding and the effect of the rs570516915 risk allele on its binding affinity. Sequence shown in Supplementary Fig. 6 was searched in sTRAP[2] (http://trap.molgen.mpg.de/cgi-bin/trap_two_seq_form.cgi) with the non-risk (rs570516915_A) and risk (rs570516915_C) alleles of rs570516915 (AGCCTGAGCG[A/C]AACTCTCAGG). Complementary nucleotides are shown. *P* values are calculated by comparing the observed transcription factor (TF) affinity to the background, using a generalized extreme value (GEV) parametrization model as described previously[3]. *P* values are not corrected for multiple testing. As a visual aid, *P* values less than 0.05 are highlighted in green. TF matrix was selected from Jaspar (all_matrices) and human_promoters was selected as a background model.



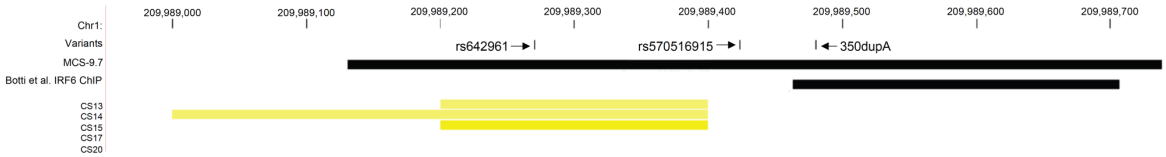
Supplementary Fig. 12: Sanger sequencing chromatograms of anti-IRF6 and anti-H3K27Ac ChIP-PCR products of cells heterozygous for rs570516915 from two ChIP replicates.



Supplementary Fig. 13: No allele bias was detected in chromatin precipitated by anti-IRF6 at a heterozygous SNP that does not lie within a predicted IRF6 binding site. a Genomic sequence underlying an anti-IRF6 ChIP-Seq peak in human keratinocytes[4]. IRF6 binding sites predicted by the JASPAR 2024 database[5] are highlighted in yellow; red, rs34411394 C>T position. **b** Percent of input chromatin precipitated by anti-IRF6 in iOECs heterozygous for rs34411394 using primers within the locus mentioned above or at a predicted negative region. The latter is located 103.7 kb upstream *IRF6* transcription start site. This region does not overlap ATAC-Seq or H3K27Ac ChIP-Seq peaks in HIOEC or NHEK cells and is devoid of predicted IRF6 binding sites. Error bars refer to 3 ChIP replicates and expressed as mean values +/- s.d. Statistical significance is determined by Student's t-test. *P* value (two-tailed) is indicated on the plot. **c** Sanger sequencing chromatograms of anti-IRF6 ChIP-PCR product of cells heterozygous for rs34411394.



Supplementary Fig. 14: A schematic model depicting autoregulation of *IRF6* through the MCS-9.7 enhancer located 9.7 kb upstream of *IRF6* transcription start site.



Supplementary Fig. 15: Browser view of the human genome in GRCh37/hg19, illustrating that rs570516915 is close to IRF6 ChIP-Seq peak identified by Botti et al. First track, three DNA variants in MCS-9.7, rs642961[6], rs570516915 and 350dupA[7]; second and third tracks, MCS-9.7[6] and IRF6 binding peaks identified by Botti et al.[4]; fourth track, chromatin status from facial explants from human embryos at Carnegie stage (CS) 13-20, encompassing the time when palate shelves fuse where yellow bars represent the active enhancer elements.

Supplementary Methods

Sequence of the rs556188853 variant region inserted into the luciferase reporter construct. Variant sequence is highlighted in red.

> hg19_chr1:209921014-209921714

CAGGGGCTCCCTCACACCGTCCTTGAACAGTACCGTGGACCACAAAAGAGCAAGGCTGTCCTAAGGAAAGACTTTGC
CTCTTCGCCGGCCTCCCTTTGGGCCGTCAGGGTGGCAGCGCCACCCCGTGGCTGAATGTGGTGGTGTACCACGCTTC
ACGCAATCTCCTTGCCCAGTGCGTATCAGGTTCTACCCCAGGGCGGCCACCACCTGCACACCAGCGTGCCTACCAGT
GAGTCATCGCTTAGGGCCCTGAACTGACCTAGAGGCGGGGCTGGACTCCGGCGTCCGGTAACTCCGCCCGGCTGCTG
GGGCCTACGTTTGGCATTGAGCCGTGGGGAACTAGACCTGTTCAATAGCGACAGCTAGTGGTCACCCTCAAAAACAA
GGTGCTCTGAACCTCGCGGGGAAAGCGCTGTCAAGATATGGGAAAATCAGGACAGATGATTGGCCTTGAGTGGAAGC
TGGCACATTTTCGAAGCCACTCTTGGGTAAAATGGTCTG/ATCGAAAACCCAAACGCTTTAAAGTGATGTACAACGA
CCTTGGCTGCCTCTCCAGCCACATCTCGGGCCACCTGCCTTGCTTTTGATTCCCCAAGGACAAAGAACTGCCAGTCC
TCTGAAGCACCCTGATGATCCCACTGTGTGTTGGCCATGCCATCTCCTCTGCCCTGAGCGCTCTTCACTCTCCCCAT
TGCATGGTTA

Sequence of the rs570516915 variant region inserted into the luciferase reporter construct. Variant sequence is highlighted in red.

> hg19_chr1:209989073-209989773

GTTCATCAGGGGATTTTTTAAAAATTTAGTTTTTAAGAGTTTTATCCAAGGTCTCAAAGCTGGTAAATGGTGAGTAG
GAAGTTGATTCTGCCCGATCTGTCTGACTCCATGCCCTTTCTATTAGGTCATGAAGGGGAACCTGAGGATTGGAGCT
TTGGAATGTTAATCTTACCCAAAGGCCTGAAGTAATACCCCAGAATGTGAACATGTGTGACCATCTGCCTGTCCTGG
GGGTGGGAAGAAGGCAGCATGCTCTATCCTTGACCCTGATTGAGCCCAGGGGCTGAATCTGGAGCTTTGGGGCCTGG
GAACCTCTCTACCTGCGTCAATGTCTGGAGGCCCTGAGAGTTT/GCGCTCAGGCTCAGAGCAGGCATCGCAACCTCC
CAGTTACTATTCTGTGCTGTGGCAAGTGCCAGCTTGTCCTCTCTTCCCCACCCAGCCCGGGAAACCGGCAGCATTTC
TAGTTCAGGCCCAGACCCGTCCTGGCAGCCTGGATTCCACTGCCTAGGCAGGAAGCTCATCTCAGCCCAGTGACCTT
TTCTCTCTGTTTTTTGTCACAGAGGAATTTCCATGCCAGCAGTATGGGGCAATGGGGGTGGGTGGCCAAAGGTTTCC
CCCTTAAGCCACAAGAGCCATGGAGTGGAGGTAAGCTAAGCAAACAGAGGAGGAAGGATGGGAGGGAAGGATCAGGA
AGATTTAGAG

Sequence of the rs570516915 variant region on the Finnish haplotype background fused to the *LacZ* reporter gene for transgenic F0 embryo assay. Variant sequence is highlighted in red.

> hg19_chr1:209988937-209990041

CTAAGAGTAATTTACCTATGTTAGCTTTTCTGGAATTGTTCCAGAATCTTGCGCTTTGAAGGAAAAGTTGTGGCTGC
GTATTCTGCCCCTCTCTGTTTGGAAATCCCCTGCACAGCTTTGCCAGCTACTCAGCTTGGTTCATCAGGGGATTTTT
TTAAAATTTAGTTTTTAAGAGTTTTATCCAAGGTCTCAAAGCTGGTAAATGGTGAGTAGGAAGTTGATTCTGCCCGA
TCTGTCTGACTCCATGCCCTTTCTATTAGGTCATGAAGGGGAACCTGAGGATTGGAGCTTTGGAATGTTAATCTTAC
CCAAAGGCCTGAAGTAATACCCCAGGATGTGAACATGTGTGACCATCTGCCTGTCCTGGGGGGTGGGAAGAAGGCAGC
ATGCTCTATCCTTGACCCTGATTGAGCCCAGGGGCTGAATCTGGAGCTTTGGGGCCTGGGAACCTCTCTACCTGCGT
CAATGTCTGGAGGCCCTGAGAGTTT/GCGCTCAGGCTCAGAGCAGGCATCGCAACCTCCCAGTTACTATTCTGTGCT
GTGGCAAGTGCCAGCTTGTCCTCTCTTCCCCACCCAGCCCGGGAAACCAGCAGCATTTCTAGTTCAGGCCCAGACCC
GTCCTGGCAGCCTGGATTCCACTGCCTAGGCAGGAAGCTCATCTCAGCCCAGTGACCTTTTCTCTCTGTTTTTTGTC
ACAGAGGAATTTCCATGCCAGCAGTATGGGGCAATGGGGGTGGGTGGCCAAAGGTTTCCCCCTTAAGCCACAAGAGC
CATGGAGTGGAGGTAAGCTAAGCAAACAGAGGAGGAAGGATGGGAGGGAAGGATCAGGAAGATTTAGAGAGTCCATT
CCTCAGGCTGCTTCATCCTCAAATTCCAAGGTAAATAAAGGTGTTGGGAAGGATGCACTATATGTCCAGCTGCCCAG
CCCTGAAGATCCTCCCCCTAGAGAACTGAGACAGGAGTTTTCTCACATTCCCACATGCAGGAGGGAAAGAGGCTGGG
CCTGGGCAGGTCTAGAGAGTTCTGTTCCCCTGCCCCAGGGGAACACGCCTAGGCTTGCTGACCTCTCAGGTAGGAGT
CTGTCAGGTTGGAAGCTGGGCCTCTCATT

Supplementary References

1. Huang, L. et al. Genetic factors define CPO and CLO subtypes of nonsyndromic orofacial cleft. *PLoS Genet.* **15**, e1008357 (2019).
2. Thomas-Chollier, M. et al. Transcription factor binding predictions using TRAP for the analysis of ChIP-seq data and regulatory SNPs. *Nat. Protoc.* **6**, 1860-1869 (2011).
3. Manke, T., Roider, H.G. & Vingron, M. Statistical modeling of transcription factor binding affinities predicts regulatory interactions. *PLoS Comput. Biol.* **4**, e1000039 (2008).
4. Botti, E. et al. Developmental factor IRF6 exhibits tumor suppressor activity in squamous cell carcinomas. *Proc. Natl. Acad. Sci. U. S. A.* **108**, 13710-13715 (2011).
5. Rauluseviciute, I. et al. JASPAR 2024: 20th anniversary of the open-access database of transcription factor binding profiles. *Nucleic Acids Res.* **52**, D174-D182 (2024).
6. Rahimov, F. et al. Disruption of an AP-2alpha binding site in an IRF6 enhancer is associated with cleft lip. *Nat. Genet.* **40**, 1341-1347 (2008).
7. Fakhouri, W.D. et al. An etiologic regulatory mutation in IRF6 with loss- and gain-of-function effects. *Hum. Mol. Genet.* **23**, 2711-2720 (2014).

FinnGen

Full Name	Affiliation	E-mail	Role 1	Role 2
Aarno Palotie	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland; Broad Institute of MIT and Harvard; Massachusetts General Hospital	aarno.palotie@helsinki.fi	**Steering Committee**	**Steering Committee**
Mark Daly	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland; Broad Institute of MIT and Harvard; Massachusetts General Hospital	mark.daly@helsinki.fi	**Steering Committee**	**Steering Committee**
Bridget Riley-Gills	Abbvie, Chicago, IL, United States	bridget.rileygillis@abbvie.com	**Steering Committee**	**Pharmaceutical companies**
Howard Jacob	Abbvie, Chicago, IL, United States	howard.jacob@abbvie.com	**Steering Committee**	**Pharmaceutical companies**
Coralie Viollet	Astra Zeneca, Cambridge, United Kingdom	coralie.viollet@astrazeneca.com	**Steering Committee**	**Pharmaceutical companies**
Slavé Petrovski	Astra Zeneca, Cambridge, United Kingdom	slav.petrovski@astrazeneca.com	**Steering Committee**	**Pharmaceutical companies**
Chia-Yen Chen	Biogen, Cambridge, MA, United States	chiayen.chen@biogen.com	**Steering Committee**	**Pharmaceutical companies**
Sally John	Biogen, Cambridge, MA, United States	sally.john@biogen.com	**Steering Committee**	**Pharmaceutical companies**
George Okafo	Boehringer Ingelheim, Ingelheim am Rhein, Germany	george.okafo@boehringer-ingelheim.com	**Steering Committee**	**Pharmaceutical companies**
Robert Plenge	Bristol Myers Squibb, New York, NY, United States	robert.plenge@bms.com	**Steering Committee**	**Pharmaceutical companies**
Joseph Maranville	Bristol Myers Squibb, New York, NY, United States	joseph.maranville@bms.com	**Steering Committee**	**Pharmaceutical companies**
Mark McCarthy	Genentech, San Francisco, CA, United States	mccarthy.mark@gene.com	**Steering Committee**	**Pharmaceutical companies**
Rion Pendergrass	Genentech, San Francisco, CA, United States	penders2@gene.com	**Steering Committee**	**Pharmaceutical companies**
Jonathan Davitte	GlaxoSmithKline, Collegeville, PA, United States	jonathan.m.davitte@gsk.com	**Steering Committee**	**Pharmaceutical companies**
Kirsi Auro	GlaxoSmithKline, Espoo, Finland	kirsi.m.auro@gsk.com	**Steering Committee**	**Pharmaceutical companies**
Simonne Longerich	Merck, Kenilworth, NJ, United States	simonne.longerich@merck.com	**Steering Committee**	**Pharmaceutical companies**
Anders Mälarstig	Pfizer, New York, NY, United States	anders.malarstig@pfizer.com	**Steering Committee**	**Pharmaceutical companies**
Anna Vlahiotis	Pfizer, New York, NY, United States	anna.vlahiotis@pfizer.com	**Steering Committee**	**Pharmaceutical companies**
Katherine Klinger	Translational Sciences, Sanofi R&D, Framingham, MA, USA	katherine.klinger@sanofi.com	**Steering Committee**	**Pharmaceutical companies**
Clement Chatelain	Translational Sciences, Sanofi R&D, Framingham, MA, USA	clement.chatelain@sanofi.com	**Steering Committee**	**Pharmaceutical companies**
Matthias Gossel	Translational Sciences, Sanofi R&D, Framingham, MA, USA	matthias.gossel@sanofi.com	**Steering Committee**	**Pharmaceutical companies**
Karol Estrada	Maze Therapeutics, San Francisco, CA, United States	kestrada@mazetx.com	**Steering Committee**	**Pharmaceutical companies**
Robert Graham	Maze Therapeutics, San Francisco, CA, United States	rgraham@mazetx.com	**Steering Committee**	**Pharmaceutical companies**
Dawn Waterworth	Janssen Research & Development, LLC, Spring House, PA, United States	dwaterwo@its.jnj.com	**Steering Committee**	**Pharmaceutical companies**
Chris O´Donnell	Novartis Institutes for BioMedical Research, Cambridge, MA, United States	chris.odonnell@novartis.com	**Steering Committee**	**Pharmaceutical companies**
Nicole Renaud	Novartis Institutes for BioMedical Research, Cambridge, MA, United States	nicole.renaud@novartis.com	**Steering Committee**	**Pharmaceutical companies**
Tomi P. Mäkelä	HiLIFE, University of Helsinki, Finland, Finland	tomi.makela@helsinki.fi	**Steering Committee**	**University of Helsinki & Biobanks**

Jaakko Kaprio	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	jaakko.kaprio@helsinki.fi	**Steering Committee**	**University of Helsinki & Biobanks**
Minna Ruddock	Arctic biobank / University of Oulu	minna.ruddock@oulu.fi	**Steering Committee**	**University of Helsinki & Biobanks**
Petri Virolainen	Auria Biobank / University of Turku / Hospital District of Southwest Finland, Turku, Finland	petri.virolainen@tyks.fi	**Steering Committee**	**University of Helsinki & Biobanks**
Antti Hakanen	Auria Biobank / University of Turku / Hospital District of Southwest Finland, Turku, Finland	antti.hakanen@tyks.fi	**Steering Committee**	**University of Helsinki & Biobanks**
Terhi Kilpi	THL Biobank / Finnish Institute for Health and Welfare (THL), Helsinki, Finland	terhi.kilpi@thl.fi	**Steering Committee**	**University of Helsinki & Biobanks**
Markus Perola	THL Biobank / Finnish Institute for Health and Welfare (THL), Helsinki, Finland	markus.perola@thl.fi	**Steering Committee**	**University of Helsinki & Biobanks**
Jukka Partanen	Finnish Red Cross Blood Service / Finnish Hematology Registry and Clinical Biobank, Helsinki, Finland	jukka.partanen@veripalvelu.fi	**Steering Committee**	**University of Helsinki & Biobanks**
Taneli Raivio	Helsinki Biobank / Helsinki University and Hospital District of Helsinki and Uusimaa, Helsinki	taneli.raivio@hus.fi	**Steering Committee**	**University of Helsinki & Biobanks**
Jani Tikkanen	Northern Finland Biobank Borealis / University of Oulu / Northern Ostrobothnia Hospital District, Oulu, Finland	jani.tikkanen@ppshp.fi	**Steering Committee**	**University of Helsinki & Biobanks**
Raisa Serpi	Northern Finland Biobank Borealis / University of Oulu / Northern Ostrobothnia Hospital District, Oulu, Finland	raisa.serpi@ppshp.fi	**Steering Committee**	**University of Helsinki & Biobanks**
Kati Kristiansson	Finnish Clinical Biobank Tampere / University of Tampere / Pirkanmaa Hospital District, Tampere, Finland	kati.kristiansson@pirha.fi	**Steering Committee**	**University of Helsinki & Biobanks**
Veli-Matti Kosma	Biobank of Eastern Finland / University of Eastern Finland / Northern Savo Hospital District, Kuopio, Finland	veli-matti.kosma@uef.fi	**Steering Committee**	**University of Helsinki & Biobanks**
Jari Laukkanen	Central Finland Biobank / University of Jyväskylä / Central Finland Health Care District, Jyväskylä, Finland	jari.laukkanen@ksshp.fi	**Steering Committee**	**University of Helsinki & Biobanks**
Marco Hautalahti	FINBB - Finnish biobank cooperative	marco.hautalahti@finbb.fi	**Steering Committee**	**University of Helsinki & Biobanks**
Outi Tuovila	Business Finland, Helsinki, Finland	outi.tuovila@businessfinland.fi	**Steering Committee**	**Other Experts/ Non-Voting Members**
Jeffrey Waring	Abbvie, Chicago, IL, United States	jeff.waring@abbvie.com	**Scientific Committee**	**Pharmaceutical companies**
Bridget Riley-Gillis	Abbvie, Chicago, IL, United States	bridget.rileygillis@abbvie.com	**Scientific Committee**	**Pharmaceutical companies**
Fedik Rahimov	Abbvie, Chicago, IL, United States	fedik.rahimov@abbvie.com	**Scientific Committee**	**Pharmaceutical companies**
Ioanna Tachmazidou	Astra Zeneca, Cambridge, United Kingdom	ioanna.tachmazidou@astrazeneca.com	**Scientific Committee**	**Pharmaceutical companies**
Chia-Yen Chen	Biogen, Cambridge, MA, United States	chiayen.chen@biogen.com	**Scientific Committee**	**Pharmaceutical companies**
Zhihao Ding	Boehringer Ingelheim, Ingelheim am Rhein, Germany	zhihao.ding@boehringer-ingelheim.com	**Scientific Committee**	**Pharmaceutical companies**
Marc Jung	Boehringer Ingelheim, Ingelheim am Rhein, Germany	marc_oliver.jung@boehringer-ingelheim.com	**Scientific Committee**	**Pharmaceutical companies**
Hanati Tuoken	Boehringer Ingelheim, Ingelheim am Rhein, Germany	hanati.tuoken@boehringer-ingelheim.com	**Scientific Committee**	**Pharmaceutical companies**
Shameek Biswas	Bristol Myers Squibb, New York, NY, United States	Shameek.Biswas@bms.com	**Scientific Committee**	**Pharmaceutical companies**
Rion Pendergrass	Genentech, San Francisco, CA, United States	penders2@gene.com	**Scientific Committee**	**Pharmaceutical companies**

Jonathan Davitte	GlaxoSmithKline, Collegeville, PA, United States	jonathan.m.davitte@gsk.com	**Scientific Committee**	**Pharmaceutical companies**
Neha Raghavan	Merck, Kenilworth, NJ, United States	neha.raghavan@merck.com	**Scientific Committee**	**Pharmaceutical companies**
Adriana Huertas-Vazquez	Merck, Kenilworth, NJ, United States	adriana.huertas.vazquez@merck.com	**Scientific Committee**	**Pharmaceutical companies**
Jae-Hoon Sul	Merck, Kenilworth, NJ, United States	jae.hoon.sul@merck.com	**Scientific Committee**	**Pharmaceutical companies**
Anders Mälarstig	Pfizer, New York, NY, United States	anders.malarstig@pfizer.com	**Scientific Committee**	**Pharmaceutical companies**
Xinli Hu	Pfizer, New York, NY, United States	xinli.hu@pfizer.com	**Scientific Committee**	**Pharmaceutical companies**
Åsa Hedman	Pfizer, New York, NY, United States	asa.hedman@pfizer.com	**Scientific Committee**	**Pharmaceutical companies**
Katherine Klinger	Translational Sciences, Sanofi R&D, Framingham, MA, USA	katherine.klinger@sanofi.com	**Scientific Committee**	**Pharmaceutical companies**
Robert Graham	Maze Therapeutics, San Francisco, CA, United States	rgraham@mazetx.com	**Scientific Committee**	**Pharmaceutical companies**
Dawn Waterworth	Janssen Research & Development, LLC, Spring House, PA, United States	dwaterwo@its.jnj.com	**Scientific Committee**	**Pharmaceutical companies**
Nicole Renaud	Novartis Institutes for BioMedical Research, Cambridge, MA, United States	nicole.renaud@novartis.com	**Scientific Committee**	**Pharmaceutical companies**
Ma´en Obeidat	Novartis Institutes for BioMedical Research, Cambridge, MA, United States	maen.obeidat@novartis.com	**Scientific Committee**	**Pharmaceutical companies**
Jonathan Chung	Novartis Institutes for BioMedical Research, Cambridge, MA, United States	jonathan.chung@novartis.com	**Scientific Committee**	**Pharmaceutical companies**
Jonas Zierer	Novartis Institutes for BioMedical Research, Cambridge, MA, United States	jonas.zierer@novartis.com	**Scientific Committee**	**Pharmaceutical companies**
Mari Niemi	Novartis Institutes for BioMedical Research, Cambridge, MA, United States	mari.niemi@novartis.com	**Scientific Committee**	**Pharmaceutical companies**
Samuli Ripatti	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	samuli.ripatti@helsinki.fi	**Scientific Committee**	**University of Helsinki & Biobanks**
Johanna Schleutker	Auria Biobank / Univ. of Turku / Hospital District of Southwest Finland, Turku, Finland	johanna.schleutker@utu.fi	**Scientific Committee**	**University of Helsinki & Biobanks**
Markus Perola	THL Biobank / Finnish Institute for Health and Welfare (THL), Helsinki, Finland	markus.perola@thl.fi	**Scientific Committee**	**University of Helsinki & Biobanks**
Mikko Arvas	Finnish Red Cross Blood Service / Finnish Hematology Registry and Clinical Biobank, Helsinki, Finland	mikko.arvas@veripalvelu.fi	**Scientific Committee**	**University of Helsinki & Biobanks**
Olli Carpén	Helsinki Biobank / Helsinki University and Hospital District of Helsinki and Uusimaa, Helsinki	olli.carpen@helsinki.fi	**Scientific Committee**	**University of Helsinki & Biobanks**
Reetta Hinttala	Northern Finland Biobank Borealis / University of Oulu / Northern Ostrobothnia Hospital District, Oulu, Finland	reetta.hinttala@oulu.fi	**Scientific Committee**	**University of Helsinki & Biobanks**
Johannes Kettunen	Northern Finland Biobank Borealis / University of Oulu / Northern Ostrobothnia Hospital District, Oulu, Finland	johannes.kettunen@oulu.fi	**Scientific Committee**	**University of Helsinki & Biobanks**
Arto Mannermaa	Biobank of Eastern Finland / University of Eastern Finland / Northern Savo Hospital District, Kuopio, Finland	arto.mannermaa@uef.fi	**Scientific Committee**	**University of Helsinki & Biobanks**
Katriina Aalto-Setälä	Faculty of Medicine and Health Technology, Tampere University, Tampere, Finland	katriina.aalto-setala@tuni.fi	**Scientific Committee**	**University of Helsinki & Biobanks**
Mika Kähönen	Finnish Clinical Biobank Tampere / University of Tampere / Pirkanmaa Hospital District, Tampere, Finland	mika.kahonen@uta.fi	**Scientific Committee**	**University of Helsinki & Biobanks**

Jari Laukkanen	Central Finland Biobank / University of Jyväskylä / Central Finland Health Care District, Jyväskylä, Finland	jari.laukkanen@ksshp.fi	**Scientific Committee**	**University of Helsinki & Biobanks**
Johanna Mäkelä	FINBB - Finnish biobank cooperative	johanna.makela@finbb.fi	**Scientific Committee**	**University of Helsinki & Biobanks**
Reetta Kälviäinen	Northern Savo Hospital District, Kuopio, Finland	reetta.kalviainen@kuh.fi	**Clinical Groups**	**Neurology Group**
Valtteri Julkunen	Northern Savo Hospital District, Kuopio, Finland	valtteri.julkunen@kuh.fi	**Clinical Groups**	**Neurology Group**
Hilkka Soininen	Northern Savo Hospital District, Kuopio, Finland	hilkka.soininen@uef.fi	**Clinical Groups**	**Neurology Group**
Anne Remes	Northern Ostrobothnia Hospital District, Oulu, Finland	anne.remes@oulu.fi	**Clinical Groups**	**Neurology Group**
Mikko Hiltunen	University of Eastern Finland, Kuopio, Finland	mikko.hiltunen@uef.fi	**Clinical Groups**	**Neurology Group**
Jukka Peltola	Pirkanmaa Hospital District, Tampere, Finland	jukka.peltola@pshp.fi	**Clinical Groups**	**Neurology Group**
Minna Raivio	Hospital District of Helsinki and Uusimaa, Helsinki, Finland	minna.raivio@geri.fi	**Clinical Groups**	**Neurology Group**
Pentti Tienari	Hospital District of Helsinki and Uusimaa, Helsinki, Finland	pentti.tienari@hus.fi	**Clinical Groups**	**Neurology Group**
Juha Rinne	Hospital District of Southwest Finland, Turku, Finland	juha.rinne@tyks.fi	**Clinical Groups**	**Neurology Group**
Roosa Kallionpää	Hospital District of Southwest Finland, Turku, Finland	roosa.kallionpaa@tyks.fi	**Clinical Groups**	**Neurology Group**
Juulia Partanen	Institute for Molecular Medicine Finland, HiLIFE, University of Helsinki, Finland	juulia.partanen@helsinki.fi	**Clinical Groups**	**Neurology Group**
Adam Ziemann	Abbvie, Chicago, IL, United States	adam.ziemann@abbvie.com	**Clinical Groups**	**Neurology Group**
Nizar Smaoui	Abbvie, Chicago, IL, United States	nizar.smaoui@abbvie.com	**Clinical Groups**	**Neurology Group**
Anne Lehtonen	Abbvie, Chicago, IL, United States	anne.lehtonen@abbvie.com	**Clinical Groups**	**Neurology Group**
Susan Eaton	Biogen, Cambridge, MA, United States	susan.eaton@biogen.com	**Clinical Groups**	**Neurology Group**
Heiko Runz	Biogen, Cambridge, MA, United States	heiko.runz@biogen.com	**Clinical Groups**	**Neurology Group**
Sanni Lahdenperä	Biogen, Cambridge, MA, United States	sanni.lahdenpera@biogen.com	**Clinical Groups**	**Neurology Group**
Shameek Biswas	Bristol Myers Squibb, New York, NY, United States	shameek.biswas@bms.com	**Clinical Groups**	**Neurology Group**
Natalie Bowers	Genentech, San Francisco, CA, United States	bowersn1@gene.com	**Clinical Groups**	**Neurology Group**
Edmond Teng	Genentech, San Francisco, CA, United States	teng.edmond@gene.com	**Clinical Groups**	**Neurology Group**
Rion Pendergrass	Genentech, San Francisco, CA, United States	penders2@gene.com	**Clinical Groups**	**Neurology Group**
Fanli Xu	GlaxoSmithKline, Brentford, United Kingdom	chun-fang.2.xu@gsk.com	**Clinical Groups**	**Neurology Group**
Kirsi Auro	GlaxoSmithKline, Espoo, Finland	kirsi.m.auro@gsk.com	**Clinical Groups**	**Neurology Group**
Laura Addis	GlaxoSmithKline, Brentford, United Kingdom	laura.x.addis@gsk.com	**Clinical Groups**	**Neurology Group**
John Eicher	GlaxoSmithKline, Brentford, United Kingdom	john.d.eicher@gsk.com	**Clinical Groups**	**Neurology Group**
Qingqin S Li	Janssen Research & Development, LLC, Titusville, NJ 08560, United States	QLi2@its.jnj.com	**Clinical Groups**	**Neurology Group**
Karen He	Janssen Research & Development, LLC, Spring House, PA, United States	khe2@its.jnj.com	**Clinical Groups**	**Neurology Group**
Ekaterina Khramtsova	Janssen Research & Development, LLC, Spring House, PA, United States	ekhramts@its.jnj.com	**Clinical Groups**	**Neurology Group**
Neha Raghavan	Merck, Kenilworth, NJ, United States	neha.raghavan@merck.com	**Clinical Groups**	**Neurology Group**
Martti Färkkilä	Hospital District of Helsinki and Uusimaa, Helsinki, Finland	martti.farkkila@hus.fi	**Clinical Groups**	**Gastroenterology Group**

Jukka Koskela	Hospital District of Helsinki and Uusimaa, Helsinki, Finland	jukka.koskela@helsinki.fi	**Clinical Groups**	**Gastroenterology Group**
Sampsa Pikkarainen	Hospital District of Helsinki and Uusimaa, Helsinki, Finland	sampsa.pikkarainen@hus.fi	**Clinical Groups**	**Gastroenterology Group**
Airi Jussila	Pirkanmaa Hospital District, Tampere, Finland	airi.jussila@pshp.fi	**Clinical Groups**	**Gastroenterology Group**
Katri Kaukinen	Pirkanmaa Hospital District, Tampere, Finland	katri.kaukinen@tuni.fi	**Clinical Groups**	**Gastroenterology Group**
Timo Blomster	Northern Ostrobothnia Hospital District, Oulu, Finland	timo.blomster@ppshp.fi	**Clinical Groups**	**Gastroenterology Group**
Mikko Kiviniemi	Northern Savo Hospital District, Kuopio, Finland	mikko.kiviniemi@kuh.fi	**Clinical Groups**	**Gastroenterology Group**
Markku Voutilainen	Hospital District of Southwest Finland, Turku, Finland	markku.voutilainen@tyks.fi	**Clinical Groups**	**Gastroenterology Group**
Mark Daly	Institute for Molecular Medicine, Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland; Broad Institute of MIT and Harvard; Massachusetts General Hospital	mark.daly@helsinki.fi	**Clinical Groups**	**Gastroenterology Group**
Jeffrey Waring	Abbvie, Chicago, IL, United States	jeff.waring@abbvie.com	**Clinical Groups**	**Gastroenterology Group**
Nizar Smaoui	Abbvie, Chicago, IL, United States	nizar.smaoui@abbvie.com	**Clinical Groups**	**Gastroenterology Group**
Fedik Rahimov	Abbvie, Chicago, IL, United States	fedik.rahimov@abbvie.com	**Clinical Groups**	**Gastroenterology Group**
Anne Lehtonen	Abbvie, Chicago, IL, United States	anne.lehtonen@abbvie.com	**Clinical Groups**	**Gastroenterology Group**
Tim Lu	Genentech, San Francisco, CA, United States	lut8@gene.com	**Clinical Groups**	**Gastroenterology Group**
Natalie Bowers	Genentech, San Francisco, CA, United States	bowersn1@gene.com	**Clinical Groups**	**Gastroenterology Group**
Rion Pendergrass	Genentech, San Francisco, CA, United States	penders2@gene.com	**Clinical Groups**	**Gastroenterology Group**
Linda McCarthy	GlaxoSmithKline, Brentford, United Kingdom	linda.c.mccarthy@gsk.com	**Clinical Groups**	**Gastroenterology Group**
Amy Hart	Janssen Research & Development, LLC, Spring House, PA, United States	ahart13@its.jnj.com	**Clinical Groups**	**Gastroenterology Group**
Meijian Guan	Janssen Research & Development, LLC, Spring House, PA, United States	mguan4@its.jnj.com	**Clinical Groups**	**Gastroenterology Group**
Jason Miller	Merck, Kenilworth, NJ, United States	jason.miller4@merck.com	**Clinical Groups**	**Gastroenterology Group**
Kirsi Kalpala	Pfizer, New York, NY, United States	kirsi.kalpala@pfizer.com	**Clinical Groups**	**Gastroenterology Group**
Melissa Miller	Pfizer, New York, NY, United States	melissa.r.miller@pfizer.com	**Clinical Groups**	**Gastroenterology Group**
Xinli Hu	Pfizer, New York, NY, United States	xinli.hu@pfizer.com	**Clinical Groups**	**Gastroenterology Group**
Kari Eklund	Hospital District of Helsinki and Uusimaa, Helsinki, Finland	kari.eklund@hus.fi	**Clinical Groups**	**Rheumatology Group**
Antti Palomäki	Hospital District of Southwest Finland, Turku, Finland	ajpalo@utu.fi	**Clinical Groups**	**Rheumatology Group**
Pia Isomäki	Pirkanmaa Hospital District, Tampere, Finland	pia.isomaki@pshp.fi	**Clinical Groups**	**Rheumatology Group**
Laura Pirilä	Hospital District of Southwest Finland, Turku, Finland	laura.pirila@fimnet.fi,laura.pirila@tyks.fi	**Clinical Groups**	**Rheumatology Group**
Oili Kaipiainen-Seppänen	Northern Savo Hospital District, Kuopio, Finland	oili.kaipiainen-seppanen@kuh.fi	**Clinical Groups**	**Rheumatology Group**
Johanna Huhtakangas	Northern Ostrobothnia Hospital District, Oulu, Finland	johanna.huhtakangas@kuh.fi	**Clinical Groups**	**Rheumatology Group**
Nina Mars	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	nina.mars@helsinki.fi	**Clinical Groups**	**Rheumatology Group**
Jeffrey Waring	Abbvie, Chicago, IL, United States	jeff.waring@abbvie.com	**Clinical Groups**	**Rheumatology Group**
Fedik Rahimov	Abbvie, Chicago, IL, United States	fedik.rahimov@abbvie.com	**Clinical Groups**	**Rheumatology Group**

Apinya Lertratanakul	Abbvie, Chicago, IL, United States	apinya.lertratanakul@abbvie.com	**Clinical Groups**	**Rheumatology Group**
Nizar Smaoui	Abbvie, Chicago, IL, United States	nizar.smaoui@abbvie.com	**Clinical Groups**	**Rheumatology Group**
Anne Lehtonen	Abbvie, Chicago, IL, United States	anne.lehtonen@abbvie.com	**Clinical Groups**	**Rheumatology Group**
Coralie Viollet	AstraZeneca, Cambridge, United Kingdom	coralie.viollet@astrazeneca.com	**Clinical Groups**	**Rheumatology Group**
Marla Hochfeld	Bristol Myers Squibb, New York, NY, United States	mhochfeld@celgene.com	**Clinical Groups**	**Rheumatology Group**
Natalie Bowers	Genentech, San Francisco, CA, United States	bowersn1@gene.com	**Clinical Groups**	**Rheumatology Group**
Rion Pendergrass	Genentech, San Francisco, CA, United States	penders2@gene.com	**Clinical Groups**	**Rheumatology Group**
Jorge Esparza Gordillo	GlaxoSmithKline, Brentford, United Kingdom	jorge.x.esparza-gordillo@gsk.com	**Clinical Groups**	**Rheumatology Group**
Kirsi Auro	GlaxoSmithKline, Espoo, Finland	kirsi.m.auro@gsk.com	**Clinical Groups**	**Rheumatology Group**
Dawn Waterworth	Janssen Research & Development, LLC, Spring House, PA, United States	dwaterwo@its.jnj.com	**Clinical Groups**	**Rheumatology Group**
Fabiana Farias	Merck, Kenilworth, NJ, United States	fabiana.farias@merck.com	**Clinical Groups**	**Rheumatology Group**
Kirsi Kalpala	Pfizer, New York, NY, United States	kirsi.kalpala@pfizer.com	**Clinical Groups**	**Rheumatology Group**
Nan Bing	Pfizer, New York, NY, United States	nan.bing@pfizer.com	**Clinical Groups**	**Rheumatology Group**
Xinli Hu	Pfizer, New York, NY, United States	xinli.hu@pfizer.com	**Clinical Groups**	**Rheumatology Group**
Tarja Laitinen	Pirkanmaa Hospital District, Tampere, Finland	tarja.laitinen@pshp.fi	**Clinical Groups**	**Pulmonology Group**
Margit Pelkonen	Northern Savo Hospital District, Kuopio, Finland	margit.pelkonen@kuh.fi	**Clinical Groups**	**Pulmonology Group**
Paula Kauppi	Hospital District of Helsinki and Uusimaa, Helsinki, Finland	paula.kauppi@hus.fi	**Clinical Groups**	**Pulmonology Group**
Hannu Kankaanranta	University of Gothenburg, Gothenburg, Sweden/ Seinäjoki Central Hospital, Seinäjoki, Finland/ Tampere University, Tampere, Finland	hannu.kankaanranta@tuni.fi	**Clinical Groups**	**Pulmonology Group**
Terttu Harju	Northern Ostrobothnia Hospital District, Oulu, Finland	terttu.harju@oulu.fi	**Clinical Groups**	**Pulmonology Group**
Riitta Lahesmaa	Hospital District of Southwest Finland, Turku, Finland	rilahes@utu.fi	**Clinical Groups**	**Pulmonology Group**
Nizar Smaoui	Abbvie, Chicago, IL, United States	nizar.smaoui@abbvie.com	**Clinical Groups**	**Pulmonology Group**
Coralie Viollet	AstraZeneca, Cambridge, United Kingdom	coralie.viollet@astrazeneca.com	**Clinical Groups**	**Pulmonology Group**
Susan Eaton	Biogen, Cambridge, MA, United States	susan.eaton@biogen.com	**Clinical Groups**	**Pulmonology Group**
Hubert Chen	Genentech, San Francisco, CA, United States	chenh37@gene.com	**Clinical Groups**	**Pulmonology Group**
Rion Pendergrass	Genentech, San Francisco, CA, United States	penders2@gene.com	**Clinical Groups**	**Pulmonology Group**
Natalie Bowers	Genentech, San Francisco, CA, United States	bowersn1@gene.com	**Clinical Groups**	**Pulmonology Group**
Joanna Betts	GlaxoSmithKline, Brentford, United Kingdom	joanna.c.betts@gsk.com	**Clinical Groups**	**Pulmonology Group**
Kirsi Auro	GlaxoSmithKline, Espoo, Finland	kirsi.m.auro@gsk.com	**Clinical Groups**	**Pulmonology Group**
Rajashree Mishra	GlaxoSmithKline, Brentford, United Kingdom	rajashree.x.mishra@gsk.com	**Clinical Groups**	**Pulmonology Group**
Majd Mouded	Novartis, Basel, Switzerland	majd.mouded@novartis.com	**Clinical Groups**	**Pulmonology Group**
Debby Ngo	Novartis, Basel, Switzerland	debby.ngo@novartis.com	**Clinical Groups**	**Pulmonology Group**
Teemu Niiranen	Finnish Institute for Health and Welfare (THL), Helsinki, Finland	teemu.niiranen@thl.fi	**Clinical Groups**	**Cardiometabolic Diseases Group**

Felix Vaura	Finnish Institute for Health and Welfare (THL), Helsinki, Finland	fechva@utu.fi	**Clinical Groups**	**Cardiometaboli c Diseases Group**
Veikko Salomaa	Finnish Institute for Health and Welfare (THL), Helsinki, Finland	veikko.salomaa@thl.fi	**Clinical Groups**	**Cardiometaboli c Diseases Group**
Kaj Metsärinne	Hospital District of Southwest Finland, Turku, Finland	kaj.metsarinne@tyks.fi	**Clinical Groups**	**Cardiometaboli c Diseases Group**
Jenni Aittokallio	Hospital District of Southwest Finland, Turku, Finland	jemato@utu.fi	**Clinical Groups**	**Cardiometaboli c Diseases Group**
Mika Kähönen	Pirkanmaa Hospital District, Tampere, Finland	mika.kahonen@uta.fi	**Clinical Groups**	**Cardiometaboli c Diseases Group**
Jussi Hernesniemi	Pirkanmaa Hospital District, Tampere, Finland	jussi.hernesniemi@tuni.fi	**Clinical Groups**	**Cardiometaboli c Diseases Group**
Daniel Gordin	Hospital District of Helsinki and Uusimaa, Helsinki, Finland	daniel.gordin@hus.fi	**Clinical Groups**	**Cardiometaboli c Diseases Group**
Juha Sinisalo	Hospital District of Helsinki and Uusimaa, Helsinki, Finland	juha.sinisalo@hus.fi	**Clinical Groups**	**Cardiometaboli c Diseases Group**
Marja-Riitta Taskinen	Hospital District of Helsinki and Uusimaa, Helsinki, Finland	marja-riitta.taskinen@helsinki.fi	**Clinical Groups**	**Cardiometaboli c Diseases Group**
Tiinamaija Tuomi	Hospital District of Helsinki and Uusimaa, Helsinki, Finland	tiinamaija.tuomi@hus.fi	**Clinical Groups**	**Cardiometaboli c Diseases Group**
Timo Hiltunen	Hospital District of Helsinki and Uusimaa, Helsinki, Finland	timo.hiltunen@hus.fi	**Clinical Groups**	**Cardiometaboli c Diseases Group**
Jari Laukkanen	Central Finland Health Care District, Jyväskylä, Finland	jari.laukkanen@ksshp.fi	**Clinical Groups**	**Cardiometaboli c Diseases Group**
Amanda Elliott	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland; Broad Institute, Cambridge, MA, USA and Massachusetts General Hospital, Boston, MA, USA	aelliott@broadinstitute.org	**Clinical Groups**	**Cardiometaboli c Diseases Group**
Mary Pat Reeve	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	mary.reeve@helsinki.fi	**Clinical Groups**	**Cardiometaboli c Diseases Group**
Sanni Ruotsalainen	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	sanni.ruotsalainen@helsinki.fi	**Clinical Groups**	**Cardiometaboli c Diseases Group**
Dirk Paul	Astra Zeneca, Cambridge, United Kingdom	dirk.paul@astrazeneca.com	**Clinical Groups**	**Cardiometaboli c Diseases Group**
Natalie Bowers	Genentech, San Francisco, CA, United States	bowersn1@gene.com	**Clinical Groups**	**Cardiometaboli c Diseases Group**
Rion Pendergrass	Genentech, San Francisco, CA, United States	penders2@gene.com	**Clinical Groups**	**Cardiometaboli c Diseases Group**
Audrey Chu	GlaxoSmithKline, Brentford, United Kingdom	audrey.y.chu@gsk.com	**Clinical Groups**	**Cardiometaboli c Diseases Group**
Kirsi Auro	GlaxoSmithKline, Espoo, Finland	kirsi.m.auro@gsk.com	**Clinical Groups**	**Cardiometaboli c Diseases Group**
Dermot Reilly	Janssen Research & Development, LLC, Boston, MA, United States	dreill11@its.jnj.com	**Clinical Groups**	**Cardiometaboli c Diseases Group**
Mike Mendelson	Novartis, Boston, MA, United States	mike.mendelson@novartis.com	**Clinical Groups**	**Cardiometaboli c Diseases Group**

Jaakko Parkkinen	Pfizer, New York, NY, United States	jaakko.parkkinen@pfizer.com	**Clinical Groups**	**Cardiometaboli c Diseases Group**
Melissa Miller	Pfizer, New York, NY, United States	melissa.r.miller@pfizer.com	**Clinical Groups**	**Cardiometaboli c Diseases Group**
Tuomo Meretoja	Department of Breast Surgery, Helsinki University Hospital Comprehensive Cancer Center and University of Helsinki, Helsinki, Finland	tuomo.meretoja@hus.fi	**Clinical Groups**	**Oncology Group**
Heikki Joensuu	Department of Oncology, Helsinki University Hospital Comprehensive Cancer Center and University of Helsinki, Helsinki, Finland	heikki.joensuu@hus.fi	**Clinical Groups**	**Oncology Group**
Olli Carpén	Hospital District of Helsinki and Uusimaa, Helsinki, Finland	olli.carpen@helsinki.fi	**Clinical Groups**	**Oncology Group**
Johanna Mattson	Hospital District of Helsinki and Uusimaa, Helsinki, Finland	johanna.mattson@hus.fi	**Clinical Groups**	**Oncology Group**
Eveliina Salminen	Hospital District of Helsinki and Uusimaa, Helsinki, Finland	eveliina.e.salminen@hus.fi	**Clinical Groups**	**Oncology Group**
Annika Auranen	Pirkanmaa Hospital District , Tampere, Finland	anaura@utu.fi	**Clinical Groups**	**Oncology Group**
Peeter Karihtala	Department of Oncology, Helsinki University Hospital Comprehensive Cancer Center and University of Helsinki, Helsinki, Finland	peeter.karihtala@hus.fi	**Clinical Groups**	**Oncology Group**
Päivi Auvinen	Northern Savo Hospital District, Kuopio, Finland	paivi.auvinen@kuh.fi	**Clinical Groups**	**Oncology Group**
Klaus Elenius	Hospital District of Southwest Finland, Turku, Finland	klaus.elenius@utu.fi	**Clinical Groups**	**Oncology Group**
Johanna Schleutker	Hospital District of Southwest Finland, Turku, Finland	johanna.schleutker@utu.fi	**Clinical Groups**	**Oncology Group**
Esa Pitkänen	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	esa.pitkanen@helsinki.fi	**Clinical Groups**	**Oncology Group**
Nina Mars	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	nina.mars@helsinki.fi	**Clinical Groups**	**Oncology Group**
Mark Daly	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland; Broad Institute of MIT and Harvard; Massachusetts General Hospital	mark.daly@helsinki.fi	**Clinical Groups**	**Oncology Group**
Relja Popovic	Abbvie, Chicago, IL, United States	relja.popovic@abbvie.com	**Clinical Groups**	**Oncology Group**
Jeffrey Waring	Abbvie, Chicago, IL, United States	jeff.waring@abbvie.com	**Clinical Groups**	**Oncology Group**
Bridget Riley-Gillis	Abbvie, Chicago, IL, United States	bridget.rileygillis@abbvie.com	**Clinical Groups**	**Oncology Group**
Anne Lehtonen	Abbvie, Chicago, IL, United States	anne.lehtonen@abbvie.com	**Clinical Groups**	**Oncology Group**
Margarete Fabre	AstraZeneca, Cambridge, United Kingdom	margarete.fabre@astrazeneca.co m	**Clinical Groups**	**Oncology Group**
Jennifer Schutzman	Genentech, San Francisco, CA, United States	schutzman.jennifer@gene.com	**Clinical Groups**	**Oncology Group**
Natalie Bowers	Genentech, San Francisco, CA, United States	bowersn1@gene.com	**Clinical Groups**	**Oncology Group**
Rion Pendergrass	Genentech, San Francisco, CA, United States	penders2@gene.com	**Clinical Groups**	**Oncology Group**
Diptee Kulkarni	GlaxoSmithKline, Brentford, United Kingdom	diptee.a.kulkarni@gsk.com	**Clinical Groups**	**Oncology Group**
Kirsi Auro	GlaxoSmithKline, Espoo, Finland	kirsi.m.auro@gsk.com	**Clinical Groups**	**Oncology Group**
Alessandro Porello	Janssen Research & Development, LLC, Spring House, PA, United States	APorrell@ITS.JNJ.com	**Clinical Groups**	**Oncology Group**
Andrey Loboda	Merck, Kenilworth, NJ, United States	andrey_loboda@merck.com	**Clinical Groups**	**Oncology Group**

Heli Lehtonen	Pfizer, New York, NY, United States	heli.lehtonen@pfizer.com	**Clinical Groups**	**Oncology Group**
Stefan McDonough	Pfizer, New York, NY, United States	stefan.McDonough@pfizer.com	**Clinical Groups**	**Oncology Group**
Sauli Vuoti	Janssen-Cilag Oy, Espoo, Finland	svuoti@its.jnj.com	**Clinical Groups**	**Oncology Group**
Kai Kaarniranta	Northern Savo Hospital District, Kuopio, Finland; Department of Molecular Genetics, University of Lodz, Lodz, Poland	kai.kaarniranta@uef.fi	**Clinical Groups**	**Opthalmology Group**
Joni A Turunen	Helsinki University Hospital and University of Helsinki, Helsinki, Finland; Eye Genetics Group, Folkhälsan Research Center, Helsinki, Finland	joni.turunen@helsinki.fi	**Clinical Groups**	**Opthalmology Group**
Terhi Ollila	Hospital District of Helsinki and Uusimaa, Helsinki, Finland	terhi.ollila@hus.fi	**Clinical Groups**	**Opthalmology Group**
Hannu Uusitalo	Pirkanmaa Hospital District, Tampere, Finland	hannu.uusitalo@tuni.fi	**Clinical Groups**	**Opthalmology Group**
Juha Karjalainen	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	juha.karjalainen@helsinki.fi	**Clinical Groups**	**Opthalmology Group**
Esa Pitkänen	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	esa.pitkanen@helsinki.fi	**Clinical Groups**	**Opthalmology Group**
Mengzhen Liu	Abbvie, Chicago, IL, United States	mengzhen.liu@abbvie.com	**Clinical Groups**	**Opthalmology Group**
Heiko Runz	Biogen, Cambridge, MA, United States	heiko.runz@biogen.com	**Clinical Groups**	**Opthalmology Group**
Stephanie Loomis	Biogen, Cambridge, MA, United States	stephanie.loomis@biogen.com	**Clinical Groups**	**Opthalmology Group**
Erich Strauss	Genentech, San Francisco, CA, United States	strauss.erich@gene.com	**Clinical Groups**	**Opthalmology Group**
Natalie Bowers	Genentech, San Francisco, CA, United States	bowersn1@gene.com	**Clinical Groups**	**Opthalmology Group**
Hao Chen	Genentech, San Francisco, CA, United States	haoc@gene.com	**Clinical Groups**	**Opthalmology Group**
Rion Pendergrass	Genentech, San Francisco, CA, United States	penders2@gene.com	**Clinical Groups**	**Opthalmology Group**
Kaisa Tasanen	Northern Ostrobothnia Hospital District, Oulu, Finland	kaisa.tasanen-maatta@oulu.fi	**Clinical Groups**	**Dermatology Group**
Laura Huilaja	Northern Ostrobothnia Hospital District, Oulu, Finland	laura.huilaja@oulu.fi	**Clinical Groups**	**Dermatology Group**
Katariina Hannula-Jouppi	Hospital District of Helsinki and Uusimaa, Helsinki, Finland	katariina.hannula-jouppi@hus.fi	**Clinical Groups**	**Dermatology Group**
Teea Salmi	Pirkanmaa Hospital District, Tampere, Finland	teea.salmi@pshp.fi	**Clinical Groups**	**Dermatology Group**
Sirkku Peltonen	Hospital District of Southwest Finland, Turku, Finland	sipelto@utu.fi	**Clinical Groups**	**Dermatology Group**
Leena Koulu	Hospital District of Southwest Finland, Turku, Finland	leena.koulu@tyks.fi	**Clinical Groups**	**Dermatology Group**
Nizar Smaoui	Abbvie, Chicago, IL, United States	nizar.smaoui@abbvie.com	**Clinical Groups**	**Dermatology Group**
Fedik Rahimov	Abbvie, Chicago, IL, United States	fedik.rahimov@abbvie.com	**Clinical Groups**	**Dermatology Group**
Anne Lehtonen	Abbvie, Chicago, IL, United States	anne.lehtonen@abbvie.com	**Clinical Groups**	**Dermatology Group**
David Choy	Genentech, San Francisco, CA, United States	choy.david@gene.com	**Clinical Groups**	**Dermatology Group**
Rion Pendergrass	Genentech, San Francisco, CA, United States	penders2@gene.com	**Clinical Groups**	**Dermatology Group**
Dawn Waterworth	Janssen Research & Development, LLC, Spring House, PA, United States	dwaterwo@its.jnj.com	**Clinical Groups**	**Dermatology Group**
Kirsi Kalpala	Pfizer, New York, NY, United States	kirsi.kalpala@pfizer.com	**Clinical Groups**	**Dermatology Group**
Ying Wu	Pfizer, New York, NY, United States	ying.wu3@pfizer.com	**Clinical Groups**	**Dermatology Group**

Pirkko Pussinen	Hospital District of Helsinki and Uusimaa, Helsinki, Finland	pirkko.pussinen@helsinki.fi	**Clinical Groups**	**Odontology Group**
Aino Salminen	Hospital District of Helsinki and Uusimaa, Helsinki, Finland	aino.m.salminen@helsinki.fi	**Clinical Groups**	**Odontology Group**
Tuula Salo	Hospital District of Helsinki and Uusimaa, Helsinki, Finland	tuula.salo@helsinki.fi	**Clinical Groups**	**Odontology Group**
David Rice	Hospital District of Helsinki and Uusimaa, Helsinki, Finland	david.rice@helsinki.fi	**Clinical Groups**	**Odontology Group**
Pekka Nieminen	Hospital District of Helsinki and Uusimaa, Helsinki, Finland	pekka.nieminen@helsinki.fi	**Clinical Groups**	**Odontology Group**
Ulla Palotie	Hospital District of Helsinki and Uusimaa, Helsinki, Finland	ulla.palotie@helsinki.fi	**Clinical Groups**	**Odontology Group**
Maria Siponen	Northern Savo Hospital District, Kuopio, Finland	maria.siponen@uef.fi	**Clinical Groups**	**Odontology Group**
Liisa Suominen	Northern Savo Hospital District, Kuopio, Finland	liisa.suominen@uef.fi	**Clinical Groups**	**Odontology Group**
Päivi Mäntylä	Northern Savo Hospital District, Kuopio, Finland	paivi.mantyla@uef.fi	**Clinical Groups**	**Odontology Group**
Ulvi Gursoy	Hospital District of Southwest Finland, Turku, Finland	ulvi.gursoy@utu.fi	**Clinical Groups**	**Odontology Group**
Vuokko Anttonen	Northern Ostrobothnia Hospital District, Oulu, Finland	vuokko.anttonen@oulu.fi	**Clinical Groups**	**Odontology Group**
Kirsi Sipilä	Research Unit of Oral Health Sciences Faculty of Medicine, University of Oulu, Oulu, Finland; Medical Research Center, Oulu, Oulu University Hospital and University of Oulu, Oulu, Finland	kirsi.sipila@oulu.fi	**Clinical Groups**	**Odontology Group**
Rion Pendergrass	Genentech, San Francisco, CA, United States	pendergrass.sarah@gene.com	**Clinical Groups**	**Odontology Group**
Hannele Laivuori	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	hannele.laivuori@helsinki.fi	**Clinical Groups**	**Women's Health and Reproduction Group**
Venla Kurra	Pirkanmaa Hospital District, Tampere, Finland	venla.kurra@tuni.fi	**Clinical Groups**	**Women's Health and Reproduction Group**
Laura Kotaniemi-Talonen	Pirkanmaa Hospital District, Tampere, Finland	laura.kotaniemi-talonen@tuni.fi	**Clinical Groups**	**Women's Health and Reproduction Group**
Oskari Heikinheimo	Hospital District of Helsinki and Uusimaa, Helsinki, Finland	oskari.heikinheimo@helsinki.fi	**Clinical Groups**	**Women's Health and Reproduction Group**
Ilkka Kalliala	Hospital District of Helsinki and Uusimaa, Helsinki, Finland	ilkka.kalliala@hus.fi	**Clinical Groups**	**Women's Health and Reproduction Group**
Lauri Aaltonen	Hospital District of Helsinki and Uusimaa, Helsinki, Finland	lauri.aaltonen@helsinki.fi	**Clinical Groups**	**Women's Health and Reproduction Group**
Varpu Jokimaa	Hospital District of Southwest Finland, Turku, Finland	varpu.jokimaa@utu.fi	**Clinical Groups**	**Women's Health and Reproduction Group**
Johannes Kettunen	Northern Ostrobothnia Hospital District, Oulu, Finland	Johannes.Kettunen@oulu.fi	**Clinical Groups**	**Women's Health and Reproduction Group**
Marja Vääräsmäki	Northern Ostrobothnia Hospital District, Oulu, Finland	marja.vaarasmaki@oulu.fi	**Clinical Groups**	**Women's Health and Reproduction Group**
Outi Uimari	Northern Ostrobothnia Hospital District, Oulu, Finland	outi.uimari@oulu.fi	**Clinical Groups**	**Women's Health and**

				Reproduction Group
Laure Morin-Papunen	Northern Ostrobothnia Hospital District, Oulu, Finland	lmp@cc.oulu.fi	**Clinical Groups**	**Women's Health and Reproduction Group**
Maarit Niinimäki	Northern Ostrobothnia Hospital District, Oulu, Finland	maarit.niinimaki@oulu.fi	**Clinical Groups**	**Women's Health and Reproduction Group**
Terhi Piltonen	Northern Ostrobothnia Hospital District, Oulu, Finland	terhi.piltonen@oulu.fi	**Clinical Groups**	**Women's Health and Reproduction Group**
Katja Kivinen	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	katja.kivinen@helsinki.fi	**Clinical Groups**	**Women's Health and Reproduction Group**
Elisabeth Widen	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	elisabeth.widen@helsinki.fi	**Clinical Groups**	**Women's Health and Reproduction Group**
Taru Tukiainen	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	taru.tukiainen@helsinki.fi	**Clinical Groups**	**Women's Health and Reproduction Group**
Mary Pat Reeve	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	mary.reeve@helsinki.fi	**Clinical Groups**	**Women's Health and Reproduction Group**
Mark Daly	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland; Broad Institute of MIT and Harvard; Massachusetts General Hospital	mark.daly@helsinki.fi	**Clinical Groups**	**Women's Health and Reproduction Group**
Niko Välimäki	University of Helsinki, Helsinki, Finland	niko.valimaki@helsinki.fi	**Clinical Groups**	**Women's Health and Reproduction Group**
Eija Laakkonen	University of Jyväskylä, Jyväskylä, Finland	eija.k.laakkonen@jyu.fi	**Clinical Groups**	**Women's Health and Reproduction Group**
Jaakko Tyrmi	University of Oulu, Oulu, Finland / University of Tampere, Tampere, Finland	jaakko.tyrmi@oulu.fi	**Clinical Groups**	**Women's Health and Reproduction Group**
Heidi Silven	University of Oulu, Oulu, Finland	heidi.silven@student.oulu.fi	**Clinical Groups**	**Women's Health and Reproduction Group**
Eeva Sliz	University of Oulu, Oulu, Finland	eeva.sliz@oulu.fi	**Clinical Groups**	**Women's Health and Reproduction Group**
Riikka Arffman	University of Oulu, Oulu, Finland	riikka.arffman@oulu.fi	**Clinical Groups**	**Women's Health and Reproduction Group**
Susanna Savukoski	University of Oulu, Oulu, Finland	susanna.savukoski@oulu.fi	**Clinical Groups**	**Women's Health and Reproduction Group**
Triin Laisk	Estonian biobank, Tartu, Estonia	triin.laisk@ut.ee	**Clinical Groups**	**Women's Health and Reproduction Group**
Natalia Pujol	Estonian biobank, Tartu, Estonia	natalia.pujolgualdo@oulu.fi	**Clinical Groups**	**Women's Health and**

				Reproduction Group
Mengzhen Liu	Abbvie, Chicago, IL, United States	mengzhen.liu@abbvie.com	**Clinical Groups**	**Women's Health and Reproduction Group**
Bridget Riley-Gillis	Abbvie, Chicago, IL, United States	bridget.rileygillis@abbvie.com	**Clinical Groups**	**Women's Health and Reproduction Group**
Rion Pendergrass	Genentech, San Francisco, CA, United States	penders2@gene.com	**Clinical Groups**	**Women's Health and Reproduction Group**
Janet Kumar	GlaxoSmithKline, Collegeville, PA, United States	janet.x.kumar@gsk.com	**Clinical Groups**	**Women's Health and Reproduction Group**
Kirsi Auro	GlaxoSmithKline, Espoo, Finland	kirsi.m.auro@gsk.com	**Clinical Groups**	**Women's Health and Reproduction Group**
Iiris Hovatta	University of Helsinki, Finland	iiris.hovatta@helsinki.fi	**Clinical Groups**	**Depression group**
Chia-Yen Chen	Biogen, Cambridge, MA, United States	chiayen.chen@biogen.com	**Clinical Groups**	**Depression group**
Erkki Isometsä	Hospital District of Helsinki and Uusimaa, Helsinki, Finland	erkki.isometsa@hus.fi	**Clinical Groups**	**Depression group**
Hanna Ollila	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	hanna.m.ollila@helsinki.fi	**Clinical Groups**	**Depression group**
Jaana Suvisaari	Finnish Institute for Health and Welfare (THL), Helsinki, Finland	jaana.suvisaari@thl.fi	**Clinical Groups**	**Depression group**
Antti Mäkitie	Department of Otorhinolaryngology - Head and Neck Surgery, University of Helsinki and Helsinki University Hospital, Helsinki, Finland	antti.makitie@helsinki.fi	**Clinical Groups**	**ENT (ear, nose and throath) Group**
Argyro Bizaki-Vallaskangas	Pirkanmaa Hospital District, Tampere, Finland	argyro.bizaki-vallaskangas@tuni.fi	**Clinical Groups**	**ENT (ear, nose and throath) Group**
Sanna Toppila-Salmi	University of Eastern Finland and Kuopio University Hospital, Department of Otorhinolaryngology, Kuopio, Finland and Department of Allergy, Helsinki University Hospital and University of Helsinki, Finland	sanna.salmi@helsinki.fi	**Clinical Groups**	**ENT (ear, nose and throath) Group**
Tytti Willberg	Hospital District of Southwest Finland, Turku, Finland	tytti.willberg@tyks.fi	**Clinical Groups**	**ENT (ear, nose and throath) Group**
Elmo Saarentaus	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	elmo.saarentaus@helsinki.fi	**Clinical Groups**	**ENT (ear, nose and throath) Group**
Antti Aarnisalo	Hospital District of Helsinki and Uusimaa, Helsinki, Finland	antti.aarnisalo@hus.fi	**Clinical Groups**	**ENT (ear, nose and throath) Group**
Eveliina Salminen	Hospital District of Helsinki and Uusimaa, Helsinki, Finland	eveliina.e.salminen@hus.fi	**Clinical Groups**	**ENT (ear, nose and throath) Group**
Elisa Rahikkala	Northern Ostrobothnia Hospital District, Oulu, Finland	elisa.rahikkala@ppshp.fi	**Clinical Groups**	**ENT (ear, nose and throath) Group**
Johannes Kettunen	Northern Ostrobothnia Hospital District, Oulu, Finland	johannes.kettunen@oulu.fi	**Clinical Groups**	**ENT (ear, nose and throath) Group**
Kristiina Aittomäki	Department of Medical Genetics, Helsinki University Central Hospital, Helsinki, Finland	kristiina.aittomaki@helsinki.fi	**Clinical Groups**	**POI (premature ovarian failure) Group**

Fredrik Åberg	Transplantation and Liver Surgery Clinic, Helsinki University Hospital, Helsinki University, Helsinki, Finland	fredrik.aberg@helsinki.fi	**Clinical Groups**	**LiverScore Group**
Mitja Kurki	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland; Broad Institute, Cambridge, MA, United States	mkurki@broadinstitute.org	**FinnGen Analysis working group**	**FinnGen Analysis working group**
Samuli Ripatti	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	samuli.ripatti@helsinki.fi	**FinnGen Analysis working group**	**FinnGen Analysis working group**
Mark Daly	Institute for Molecular Medicine, Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland; Broad Institute of MIT and Harvard; Massachusetts General Hospital	mark.daly@helsinki.fi	**FinnGen Analysis working group**	**FinnGen Analysis working group**
Juha Karjalainen	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	juha.karjalainen@helsinki.fi	**FinnGen Analysis working group**	**FinnGen Analysis working group**
Aki Havulinna	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland; Finnish Institute for Health and Welfare (THL), Helsinki, Finland	aki.havulinna@helsinki.fi	**FinnGen Analysis working group**	**FinnGen Analysis working group**
Juha Mehtonen	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	juha.mehtonen@helsinki.fi	**FinnGen Analysis working group**	**FinnGen Analysis working group**
Priit Palta	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	priit.palta@helsinki.fi	**FinnGen Analysis working group**	**FinnGen Analysis working group**
Shabbeer Hassan	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	shabbeer.hassan@helsinki.fi	**FinnGen Analysis working group**	**FinnGen Analysis working group**
Pietro Della Briotta Parolo	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	pietro.dellabriottaparolo@helsinki.fi	**FinnGen Analysis working group**	**FinnGen Analysis working group**
Wei Zhou	Broad Institute, Cambridge, MA, United States	wzhou@broadinstitute.org	**FinnGen Analysis working group**	**FinnGen Analysis working group**
Mutaamba Maasha	Broad Institute, Cambridge, MA, United States	mmaasha@broadinstitute.org	**FinnGen Analysis working group**	**FinnGen Analysis working group**
Shabbeer Hassan	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	shabbeer.hassan@helsinki.fi	**FinnGen Analysis working group**	**FinnGen Analysis working group**
Susanna Lemmelä	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	susanna.lemmela@helsinki.fi	**FinnGen Analysis working group**	**FinnGen Analysis working group**
Manuel Rivas	University of Stanford, Stanford, CA, United States	mrivas@stanford.edu	**FinnGen Analysis working group**	**FinnGen Analysis working group**
Aarno Palotie	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	aarno.palotie@helsinki.fi	**FinnGen Analysis working group**	**FinnGen Analysis working group**
Aoxing Liu	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	aoxing.liu@helsinki.fi	**FinnGen Analysis**	**FinnGen Analysis working group**

			working group	
Arto Lehisto	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	arto.lehisto@helsinki.fi	**FinnGen Analysis working group**	**FinnGen Analysis working group**
Andrea Ganna	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	aganna@broadinstitute.org	**FinnGen Analysis working group**	**FinnGen Analysis working group**
Vincent Llorens	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	vincent.llorens@helsinki.fi	**FinnGen Analysis working group**	**FinnGen Analysis working group**
Hannele Laivuori	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	hannele.laivuori@helsinki.fi	**FinnGen Analysis working group**	**FinnGen Analysis working group**
Taru Tukiainen	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	taru.tukiainen@helsinki.fi	**FinnGen Analysis working group**	**FinnGen Analysis working group**
Mary Pat Reeve	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	mary.reeve@helsinki.fi	**FinnGen Analysis working group**	**FinnGen Analysis working group**
Henrike Heyne	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	hheyne@broadinstitute.org	**FinnGen Analysis working group**	**FinnGen Analysis working group**
Nina Mars	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	nina.mars@helsinki.fi	**FinnGen Analysis working group**	**FinnGen Analysis working group**
Joel Rämö	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	joel.ramo@helsinki.fi	**FinnGen Analysis working group**	**FinnGen Analysis working group**
Elmo Saarentaus	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	elmo.saarentaus@helsinki.fi	**FinnGen Analysis working group**	**FinnGen Analysis working group**
Hanna Ollila	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	hanna.m.ollila@helsinki.fi	**FinnGen Analysis working group**	**FinnGen Analysis working group**
Rodos Rodostheno us	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	rodos.rodosthenous@helsinki.fi	**FinnGen Analysis working group**	**FinnGen Analysis working group**
Satu Strausz	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	satu.strausz@helsinki.fi	**FinnGen Analysis working group**	**FinnGen Analysis working group**
Tuula Palotie	University of Helsinki and Hospital District of Helsinki and Uusimaa, Helsinki, Finland	tuula.palotie@helsinki.fi	**FinnGen Analysis working group**	**FinnGen Analysis working group**
Kimmo Palin	University of Helsinki, Helsinki, Finland	kimmo.palin@helsinki.fi	**FinnGen Analysis working group**	**FinnGen Analysis working group**
Javier Garcia-Tabuenca	University of Tampere, Tampere, Finland	javier.graciatabuenca@tuni.fi	**FinnGen Analysis working group**	**FinnGen Analysis working group**
Harri Siirtola	University of Tampere, Tampere, Finland	harri.siirtola@tuni.fi	**FinnGen Analysis**	**FinnGen Analysis working group**

			working group	
Tuomo Kiiskinen	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	tuomo.kiiskinen@helsinki.fi	**FinnGen Analysis working group**	**FinnGen Analysis working group**
Jiwoo Lee	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland; Broad Institute, Cambridge, MA, United States	jiwoo.lee@helsinki.fi	**FinnGen Analysis working group**	**FinnGen Analysis working group**
Kristin Tsuo	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland; Broad Institute, Cambridge, MA, United States	kristintsuo@fas.harvard.edu	**FinnGen Analysis working group**	**FinnGen Analysis working group**
Amanda Elliott	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland; Broad Institute, Cambridge, MA, USA and Massachusetts General Hospital, Boston, MA, USA	aelliott@broadinstitute.org	**FinnGen Analysis working group**	**FinnGen Analysis working group**
Kati Kristiansson	THL Biobank / Finnish Institute for Health and Welfare (THL), Helsinki, Finland	kati.kristiansson@thl.fi	**FinnGen Analysis working group**	**FinnGen Analysis working group**
Mikko Arvas	Finnish Red Cross Blood Service / Finnish Hematology Registry and Clinical Biobank, Helsinki, Finland	mikko.arvas@veripalvelu.fi	**FinnGen Analysis working group**	**FinnGen Analysis working group**
Kati Hyvärinen	Finnish Red Cross Blood Service, Helsinki, Finland	kati.hyvarinen@veripalvelu.fi	**FinnGen Analysis working group**	**FinnGen Analysis working group**
Jarmo Ritari	Finnish Red Cross Blood Service, Helsinki, Finland	jarmo.ritari@veripalvelu.fi	**FinnGen Analysis working group**	**FinnGen Analysis working group**
Olli Carpén	Helsinki Biobank / Helsinki University and Hospital District of Helsinki and Uusimaa, Helsinki	olli.carpen@helsinki.fi	**FinnGen Analysis working group**	**FinnGen Analysis working group**
Johannes Kettunen	Northern Finland Biobank Borealis / University of Oulu / Northern Ostrobothnia Hospital District, Oulu, Finland	johannes.kettunen@oulu.fi	**FinnGen Analysis working group**	**FinnGen Analysis working group**
Katri Pylkäs	University of Oulu, Oulu, Finland	katri.pylkas@oulu.fi	**FinnGen Analysis working group**	**FinnGen Analysis working group**
Eeva Sliz	University of Oulu, Oulu, Finland	eeva.sliz@oulu.fi	**FinnGen Analysis working group**	**FinnGen Analysis working group**
Minna Karjalainen	University of Oulu, Oulu, Finland	minna.k.karjalainen@oulu.fi	**FinnGen Analysis working group**	**FinnGen Analysis working group**
Tuomo Mantere	Northern Finland Biobank Borealis / University of Oulu / Northern Ostrobothnia Hospital District, Oulu, Finland	tuomo.mantere@oulu.fi	**FinnGen Analysis working group**	**FinnGen Analysis working group**
Eeva Kangasniemi	Finnish Clinical Biobank Tampere / University of Tampere / Pirkanmaa Hospital District, Tampere, Finland	eeva.kangasniemi@pshp.fi	**FinnGen Analysis working group**	**FinnGen Analysis working group**
Sami Heikkinen	University of Eastern Finland, Kuopio, Finland	sami.heikkinen@uef.fi	**FinnGen Analysis**	**FinnGen Analysis working group**

			working group	
Arto Mannermaa	Biobank of Eastern Finland / University of Eastern Finland / Northern Savo Hospital District, Kuopio, Finland	arto.mannermaa@uef.fi	**FinnGen Analysis working group**	**FinnGen Analysis working group**
Eija Laakkonen	University of Jyväskylä, Jyväskylä, Finland	eija.k.laakkonen@jyu.fi	**FinnGen Analysis working group**	**FinnGen Analysis working group**
Nina Pitkänen	Auria Biobank / University of Turku / Hospital District of Southwest Finland, Turku, Finland	Niina.Pitkanen@tyks.fi	**FinnGen Analysis working group**	**FinnGen Analysis working group**
Samuel Lessard	Translational Sciences, Sanofi R&D, Framingham, MA, USA	samuel.lessard@sanofi.com	**FinnGen Analysis working group**	**FinnGen Analysis working group**
Clément Chatelain	Translational Sciences, Sanofi R&D, Framingham, MA, USA	clement.chatelain@sanofi.com	**FinnGen Analysis working group**	**FinnGen Analysis working group**
Lila Kallio	Auria Biobank / University of Turku / Hospital District of Southwest Finland, Turku, Finland	Lila.Kallio@tyks.fi	**Biobank directors**	**Biobank directors**
Tiina Wahlfors	THL Biobank / Finnish Institute for Health and Welfare (THL), Helsinki, Finland	tiina.wahlfors@thl.fi	**Biobank directors**	**Biobank directors**
Jukka Partanen	Finnish Red Cross Blood Service / Finnish Hematology Registry and Clinical Biobank, Helsinki, Finland	jukka.partanen@veripalvelu.fi	**Biobank directors**	**Biobank directors**
Eero Punkka	Helsinki Biobank / Helsinki University and Hospital District of Helsinki and Uusimaa, Helsinki	eero.punkka@hus.fi	**Biobank directors**	**Biobank directors**
Raisa Serpi	Northern Finland Biobank Borealis / University of Oulu / Northern Ostrobothnia Hospital District, Oulu, Finland	raisa.serpi@ppshp.fi	**Biobank directors**	**Biobank directors**
Sanna Siltanen	Finnish Clinical Biobank Tampere / University of Tampere / Pirkanmaa Hospital District, Tampere, Finland	sanna.siltanen@pshp.fi	**Biobank directors**	**Biobank directors**
Veli-Matti Kosma	Biobank of Eastern Finland / University of Eastern Finland / Northern Savo Hospital District, Kuopio, Finland	veli-matti.kosma@uef.fi	**Biobank directors**	**Biobank directors**
Teijo Kuopio	Central Finland Biobank / University of Jyväskylä / Central Finland Health Care District, Jyväskylä, Finland	teijo.kuopio@ksshp.fi	**Biobank directors**	**Biobank directors**
Anu Jalanko	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	anu.jalanko@helsinki.fi	**FinnGen Teams**	**Administration**
Huei-Yi Shen	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	huei-yi.shen@helsinki.fi	**FinnGen Teams**	**Administration**
Risto Kajanne	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	risto.kajanne@helsinki.fi	**FinnGen Teams**	**Administration**
Mervi Aavikko	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	mervi.aavikko@helsinki.fi	**FinnGen Teams**	**Administration**
Helen Cooper	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	helen.cooper@helsinki.fi	**FinnGen Teams**	**Administration**
Denise Öller	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	denise.oller@helsinki.fi	**FinnGen Teams**	**Administration**
Rasko Leinonen	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland; European	rasko@ebi.ac.uk	**FinnGen Teams**	**Administration**

	Molecular Biology Laboratory, European Bioinformatics Institute, Cambridge, UK			
Henna Palin	Finnish Clinical Biobank Tampere / University of Tampere / Pirkanmaa Hospital District, Tampere, Finland	henna.palin@pshp.fi	**FinnGen Teams**	**Administration**
Malla-Maria Linna	Helsinki Biobank / Helsinki University and Hospital District of Helsinki and Uusimaa, Helsinki	malla-maria.linna@hus.fi	**FinnGen Teams**	**Administration**
Mitja Kurki	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland; Broad Institute, Cambridge, MA, United States	mkurki@broadinstitute.org	**FinnGen Teams**	**Analysis**
Juha Karjalainen	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	juha.karjalainen@helsinki.fi	**FinnGen Teams**	**Analysis**
Pietro Della Briotta Parolo	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	pietro.dellabriottaparolo@helsinki.fi	**FinnGen Teams**	**Analysis**
Arto Lehisto	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	arto.lehisto@helsinki.fi	**FinnGen Teams**	**Analysis**
Juha Mehtonen	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	juha.mehtonen@helsinki.fi	**FinnGen Teams**	**Analysis**
Wei Zhou	Broad Institute, Cambridge, MA, United States	wzhou@broadinstitute.org	**FinnGen Teams**	**Analysis**
Masahiro Kanai	Broad Institute, Cambridge, MA, United States	mkanai@broadinstitute.org	**FinnGen Teams**	**Analysis**
Mutaamba Maasha	Broad Institute, Cambridge, MA, United States	mmaasha@broadinstitute.org	**FinnGen Teams**	**Analysis**
Zhili Zheng	Broad Institute, Cambridge, MA, United States	zhengzhi@broadinstitute.org	**FinnGen Teams**	**Analysis**
Hannele Laivuori	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	hannele.laivuori@helsinki.fi	**FinnGen Teams**	**Clinical Endpoint Development**
Aki Havulinna	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland; Finnish Institute for Health and Welfare (THL), Helsinki, Finland	aki.havulinna@helsinki.fi	**FinnGen Teams**	**Clinical Endpoint Development**
Susanna Lemmelä	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	susanna.lemmela@helsinki.fi	**FinnGen Teams**	**Clinical Endpoint Development**
Tuomo Kiiskinen	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	tuomo.kiiskinen@helsinki.fi	**FinnGen Teams**	**Clinical Endpoint Development**
L. Elisa Lahtela	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	laura.lahtela@helsinki.fi	**FinnGen Teams**	**Clinical Endpoint Development**
Mari Kaunisto	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	mari.kaunisto@helsinki.fi	**FinnGen Teams**	**Communication**
Elina Kilpeläinen	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	elina.kilpelainen@helsinki.fi	**FinnGen Teams**	**E-Science**
Timo P. Sipilä	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	timo.p.sipila@helsinki.fi	**FinnGen Teams**	**E-Science**
Oluwaseun Alexander Dada	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	alexander.dada@helsinki.fi	**FinnGen Teams**	**E-Science**
Awaisa Ghazal	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	awaisa.ghazal@helsinki.fi	**FinnGen Teams**	**E-Science**
Anastasia Kytölä	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	anastasia.shcherban@helsinki.fi	**FinnGen Teams**	**E-Science**

Rigbe Weldatsadik	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	rigbe.weldatsadik@helsinki.fi	**FinnGen Teams**	**E-Science**
Sanni Ruotsalainen	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	sanni.ruotsalainen@helsinki.fi	**FinnGen Teams**	**E-Science**
Kati Donner	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	kati.donner@helsinki.fi	**FinnGen Teams**	**Genotyping**
Timo P. Sipilä	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	timo.p.sipila@helsinki.fi	**FinnGen Teams**	**Genotyping**
Anu Loukola	Helsinki Biobank / Helsinki University and Hospital District of Helsinki and Uusimaa, Helsinki	anu.loukola@hus.fi	**FinnGen Teams**	**Sample Collection Coordination**
Päivi Laiho	THL Biobank / Finnish Institute for Health and Welfare (THL), Helsinki, Finland	paivi.laiho@thl.fi	**FinnGen Teams**	**Sample Logistics**
Tuuli Sistonen	THL Biobank / Finnish Institute for Health and Welfare (THL), Helsinki, Finland	tuuli.sistonen@thl.fi	**FinnGen Teams**	**Sample Logistics**
Essi Kaiharju	THL Biobank / Finnish Institute for Health and Welfare (THL), Helsinki, Finland	essi.kaiharju@thl.fi	**FinnGen Teams**	**Sample Logistics**
Markku Laukkanen	THL Biobank / Finnish Institute for Health and Welfare (THL), Helsinki, Finland	markku.laukkanen@thl.fi	**FinnGen Teams**	**Sample Logistics**
Elina Järvensivu	THL Biobank / Finnish Institute for Health and Welfare (THL), Helsinki, Finland	elina.jarvensivu@thl.fi	**FinnGen Teams**	**Sample Logistics**
Sini Lähteenmäki	THL Biobank / Finnish Institute for Health and Welfare (THL), Helsinki, Finland	sini.lahteenmaki@thl.fi	**FinnGen Teams**	**Sample Logistics**
Lotta Männikkö	THL Biobank / Finnish Institute for Health and Welfare (THL), Helsinki, Finland	lotta.mannikko@thl.fi	**FinnGen Teams**	**Sample Logistics**
Regis Wong	THL Biobank / Finnish Institute for Health and Welfare (THL), Helsinki, Finland	regis.wong@thl.fi	**FinnGen Teams**	**Sample Logistics**
Auli Toivola	THL Biobank / Finnish Institute for Health and Welfare (THL), Helsinki, Finland	auli.toivola@thl.fi	**FinnGen Teams**	**Sample Logistics**
Minna Brunfeldt	THL Biobank / Finnish Institute for Health and Welfare (THL), Helsinki, Finland	minna.brunfeldt@thl.fi	**FinnGen Teams**	**Registry Data Operations**
Hannele Mattsson	THL Biobank / Finnish Institute for Health and Welfare (THL), Helsinki, Finland	hannele.mattsson@thl.fi	**FinnGen Teams**	**Registry Data Operations**
Kati Kristiansson	THL Biobank / Finnish Institute for Health and Welfare (THL), Helsinki, Finland	kati.kristiansson@thl.fi	**FinnGen Teams**	**Registry Data Operations**
Susanna Lemmelä	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	susanna.lemmela@helsinki.fi	**FinnGen Teams**	**Registry Data Operations**
Sami Koskelainen	THL Biobank / Finnish Institute for Health and Welfare (THL), Helsinki, Finland	sami.koskelainen@thl.fi	**FinnGen Teams**	**Registry Data Operations**
Tero Hiekkalinna	THL Biobank / Finnish Institute for Health and Welfare (THL), Helsinki, Finland	tero.hiekkalinna@helsinki.fi	**FinnGen Teams**	**Registry Data Operations**
Teemu Paajanen	THL Biobank / Finnish Institute for Health and Welfare (THL), Helsinki, Finland	teemu.paajanen@thl.fi	**FinnGen Teams**	**Registry Data Operations**
Priit Palta	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	priit.palta@helsinki.fi	**FinnGen Teams**	**Sequencing Informatics**
Shuang Luo	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	shuang.luo@helsinki.fi	**FinnGen Teams**	**Sequencing Informatics**

Tarja Laitinen	Pirkanmaa Hospital District, Tampere, Finland	tarja.laitinen@pshp.fi	**FinnGen Teams**	**Trajectory**
Mary Pat Reeve	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	mary.reeve@helsinki.fi	**FinnGen Teams**	**Trajectory**
Shanmukha Sampath Padmanabhuni	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	sam.padmanabhuni@helsinki.fi	**FinnGen Teams**	**Trajectory**
Marianna Niemi	University of Tampere, Tampere, Finland	marianna.niemi@tuni.fi	**FinnGen Teams**	**Trajectory**
Harri Siirtola	University of Tampere, Tampere, Finland	harri.siirtola@tuni.fi	**FinnGen Teams**	**Trajectory**
Javier Gracia-Tabuenca	University of Tampere, Tampere, Finland	javier.graciatabuenca@tuni.fi	**FinnGen Teams**	**Trajectory**
Mika Helminen	University of Tampere, Tampere, Finland	mika.helminen@tuni.fi	**FinnGen Teams**	**Trajectory**
Tiina Luukkaala	University of Tampere, Tampere, Finland	tiina.luukkaala@tuni.fi	**FinnGen Teams**	**Trajectory**
Iida Vähätalo	University of Tampere, Tampere, Finland	iida.vahatalo@epshp.fi	**FinnGen Teams**	**Trajectory**
Jyrki Tammerluoto	Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, Helsinki, Finland	jyrki.tammerluoto@helsinki.fi	**FinnGen Teams**	**Data protection officer**
Marco Hautalahti	Finnish Biobank Cooperative - FINBB	marco.hautalahti@finbb.fi	**FinnGen Teams**	**FINBB - Finnish biobank cooperative**
Johanna Mäkelä	Finnish Biobank Cooperative - FINBB	johanna.makela@finbb.fi	**FinnGen Teams**	**FINBB - Finnish biobank cooperative**
Sarah Smith	Finnish Biobank Cooperative - FINBB	sarah.smith@finbb.fi	**FinnGen Teams**	**FINBB - Finnish biobank cooperative**
Tom Southerington	Finnish Biobank Cooperative - FINBB	tom.southerington@finbb.fi	**FinnGen Teams**	**FINBB - Finnish biobank cooperative**
Petri Lehto	Finnish Biobank Cooperative - FINBB	petri.lehto@finbb.fi	**FinnGen Teams**	**FINBB - Finnish biobank cooperative**

Estonian Biobank Research Team

Full Name	**Affiliation**
Andres Metspalu	Estonian Genome Centre, Institute of Genomics, University of Tartu
Lili Milani	Estonian Genome Centre, Institute of Genomics, University of Tartu
Reedik Mägi	Estonian Genome Centre, Institute of Genomics, University of Tartu
Mari Nelis	Estonian Genome Centre, Institute of Genomics, University of Tartu
Georgi Hudjashov	Estonian Genome Centre, Institute of Genomics, University of Tartu