

EXPOSURE

UKB-PPP cis-pQTL

2,923 proteins on panel
1,659 with cis instruments
N = 34,557 (discovery)



OUTCOME & CAUSAL ESTIMATION

FinnGen R13 outcomes

DR (strict), maculopathy,
neuropathy, nephropathy, NVG
Anchors: T1D / T2D

Wald ratio / IVW

F > 10; Steiger filtering
per-outcome BH-FDR < 0.05



ROBUSTNESS & REPLICATION

Colocalisation

HyPrColoc, PP > 0.7
protein inside the cluster

External cohorts

MVP (DR, neuropathy)
Salem 2019 (nephropathy)

Platform replication

deCODE SomaScan (34 targets)
SCALLOP cis comparison



MULTI-OMIC SUPPORT

Blood eQTL (eQTLGen)

Blood meQTL (SMR + HEIDI)
Metabolites (Nightingale, Chen)
Retina eQTL (Advani 2024)
LDSC genetic correlation



FUNCTIONAL LOCALISATION

scRNA-seq (GSE165784)

cell-type localisation
CellChat communication
Slingshot activation trajectory
bulk DEG (limma) + GSEA
Tissue: NSR vs RPE (n = 359)

Prioritised causal and druggable targets → cell and zebrafish validation