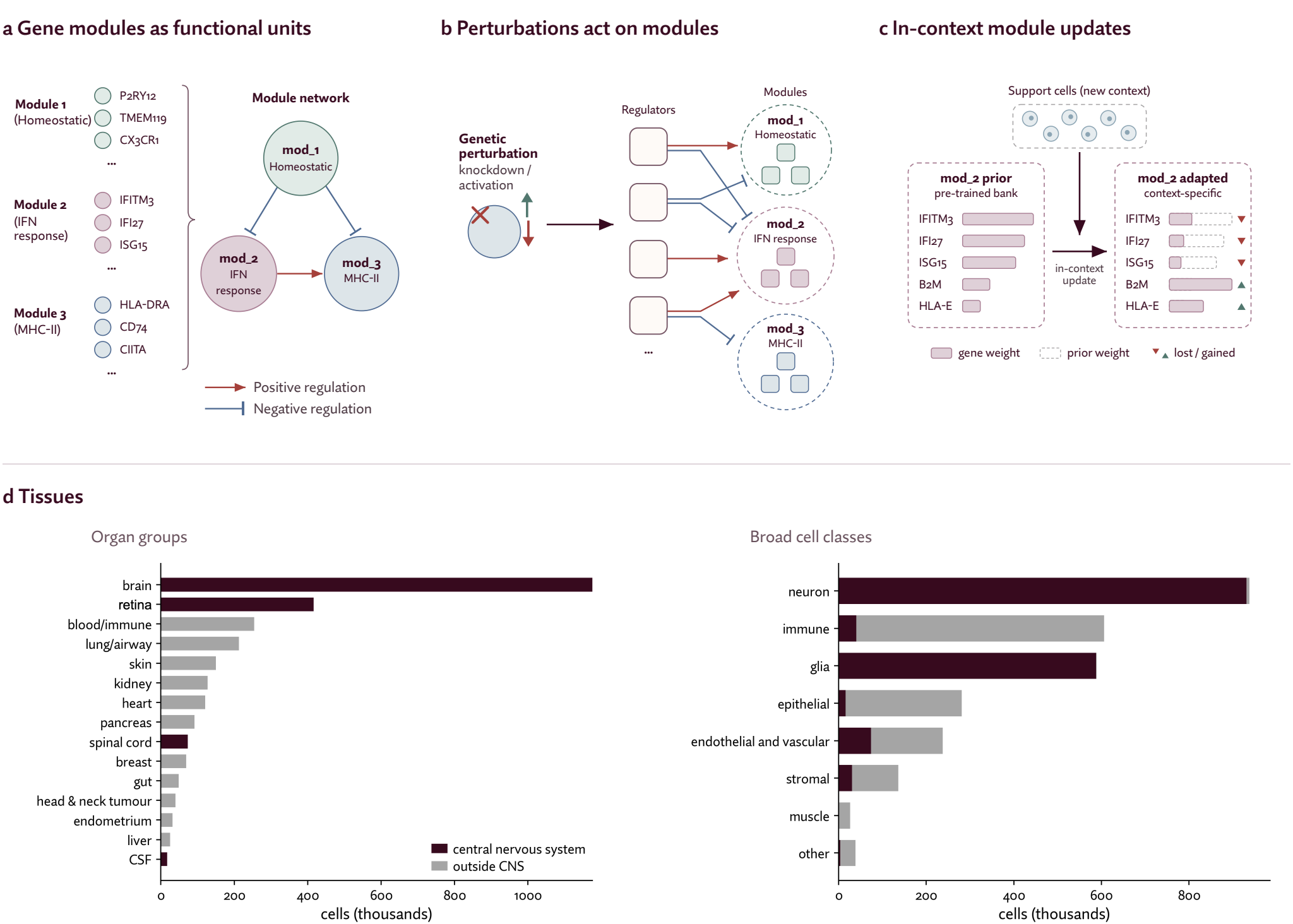

a Gene modules as functional units
Module 1
(Homeostatic)
P2RY12
TMEM119
CX3CR1
Module 2
(IFN
response)
IFITM3
IFI27
ISG15
Module 3
(MHC-II)
HLA-DRA
CD74
CIITA
Module network
mod_1
Homeostatic
mod_2
IFN
response
mod_3
MHC-II
Positive regulation
Negative regulation
b Perturbations act on modules
Genetic
perturbation
knockdown /
activation
Regulators
Modules
mod_1
Homeostatic
mod_2
IFN response
mod_3
MHC-II
c In-context module updates
Support cells (new context)
mod_2 prior
pre-trained bank
IFITM3
IFI27
ISG15
B2M
HLA-E
in-context
update
mod_2 adapted
context-specific
IFITM3
IFI27
ISG15
B2M
HLA-E
gene weight
prior weight
lost / gained
d Tissues
Organ groups
brain
retina
blood/immune
lung/airway
skin
kidney
heart
pancreas
spinal cord
breast
gut
head & neck tumour
endometrium
liver
CSF
central nervous system
outside CNS
0
200
400
600
800
1000
cells (thousands)
Broad cell classes
neuron
immune
glia
epithelial
endothelial and vascular
stromal
muscle
other
0
200
400
600
800
cells (thousands)