

Differential Early Diagnosis of Benign vs Malignant Lung Cancer using Systematic Pathway Flux Analysis of Peripheral Blood Leukocytes

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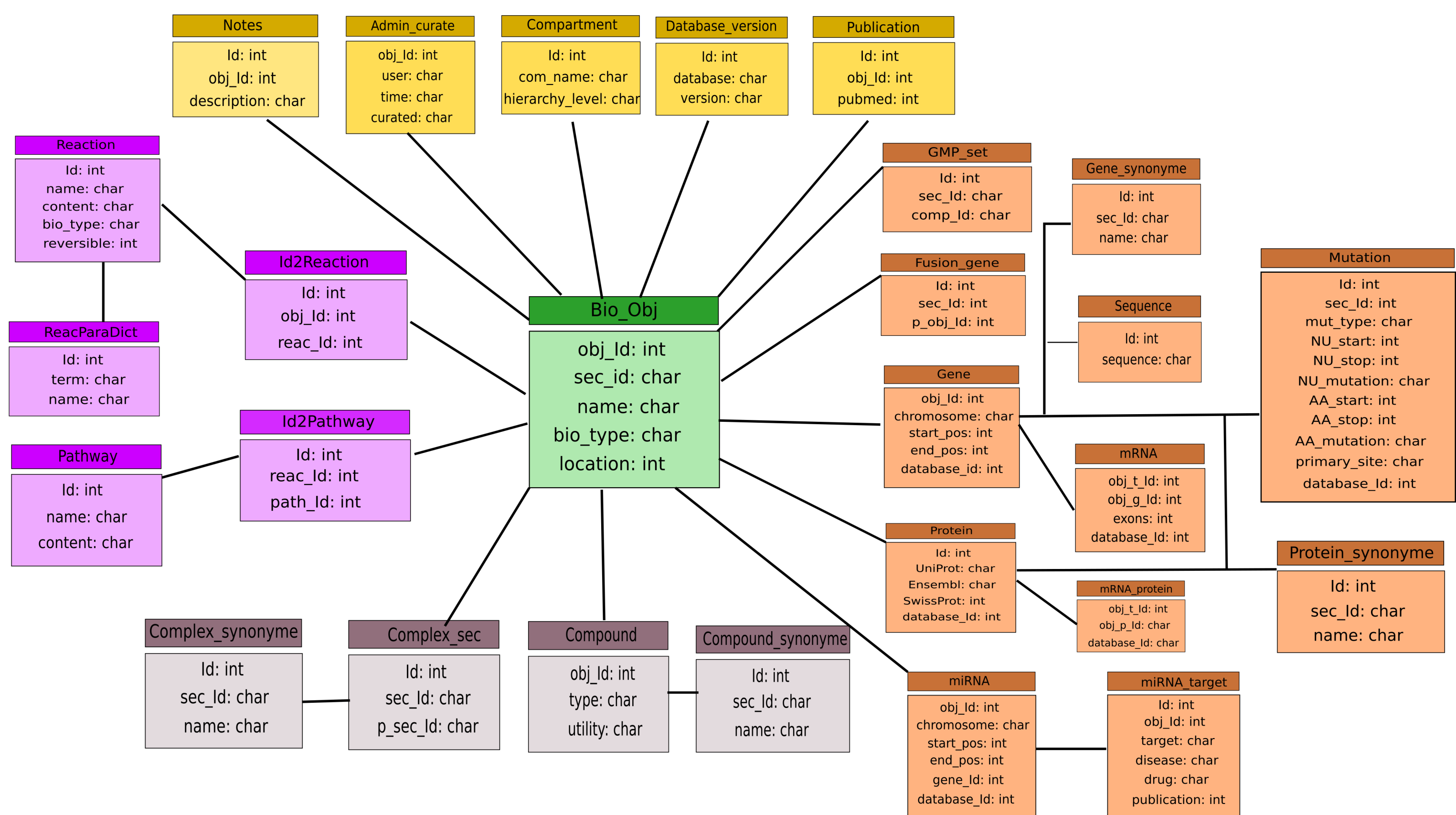
¹² Department of Oncology, Wuhan No. 1 Hospital, Wuhan, Hubei, People's Republic of China

* Corresponding Authors: h.g.y.121@163.com, joycvt@126.com, borismq@163.com

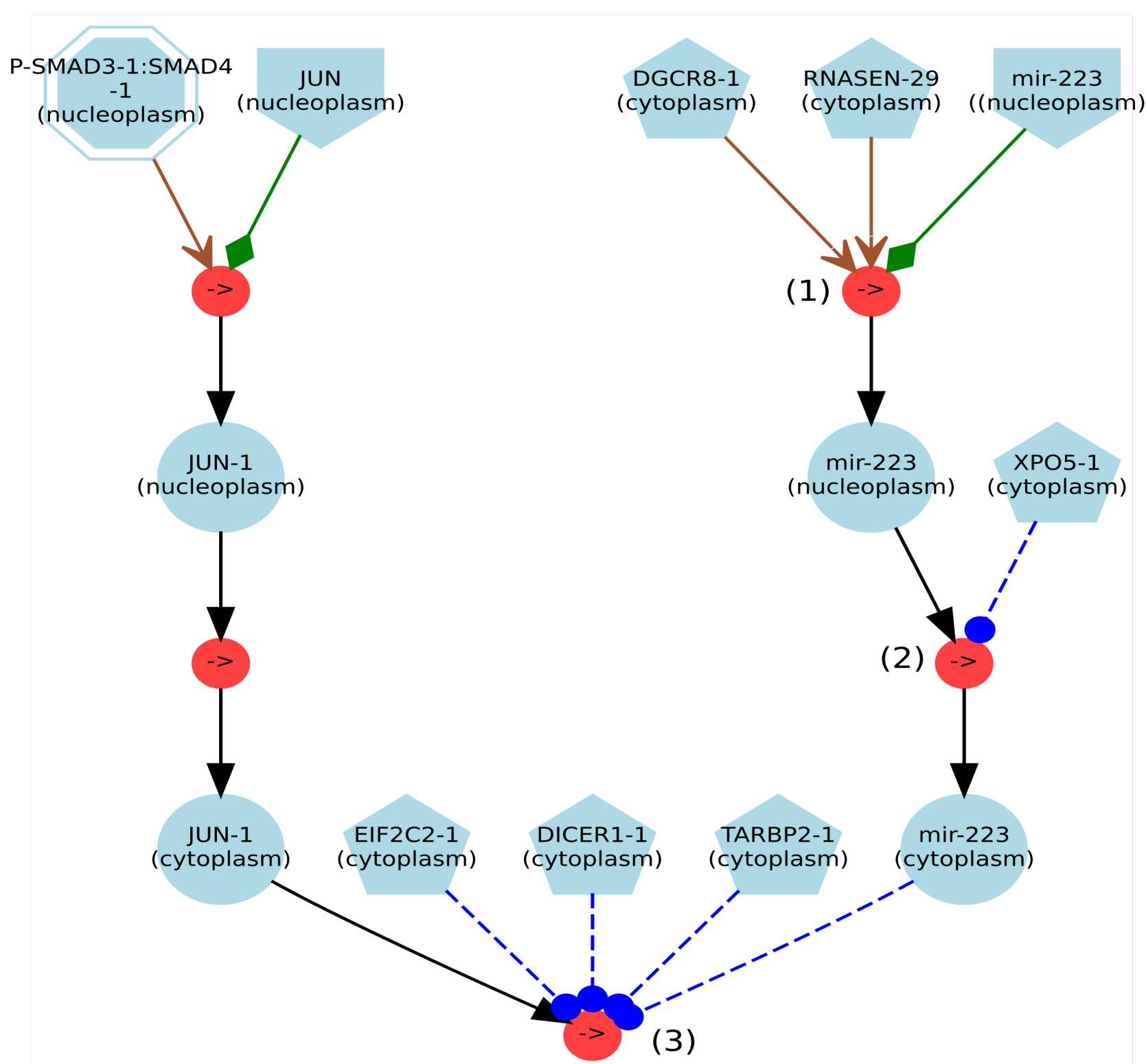
+ Contributing equally authors

Supplement Figure 1: **A:** the internal database diagram of the artificial intelligent (AI) model; **B:** the miRNA modeling pattern in the AI model. **C:** two array digital structure of the AI model;

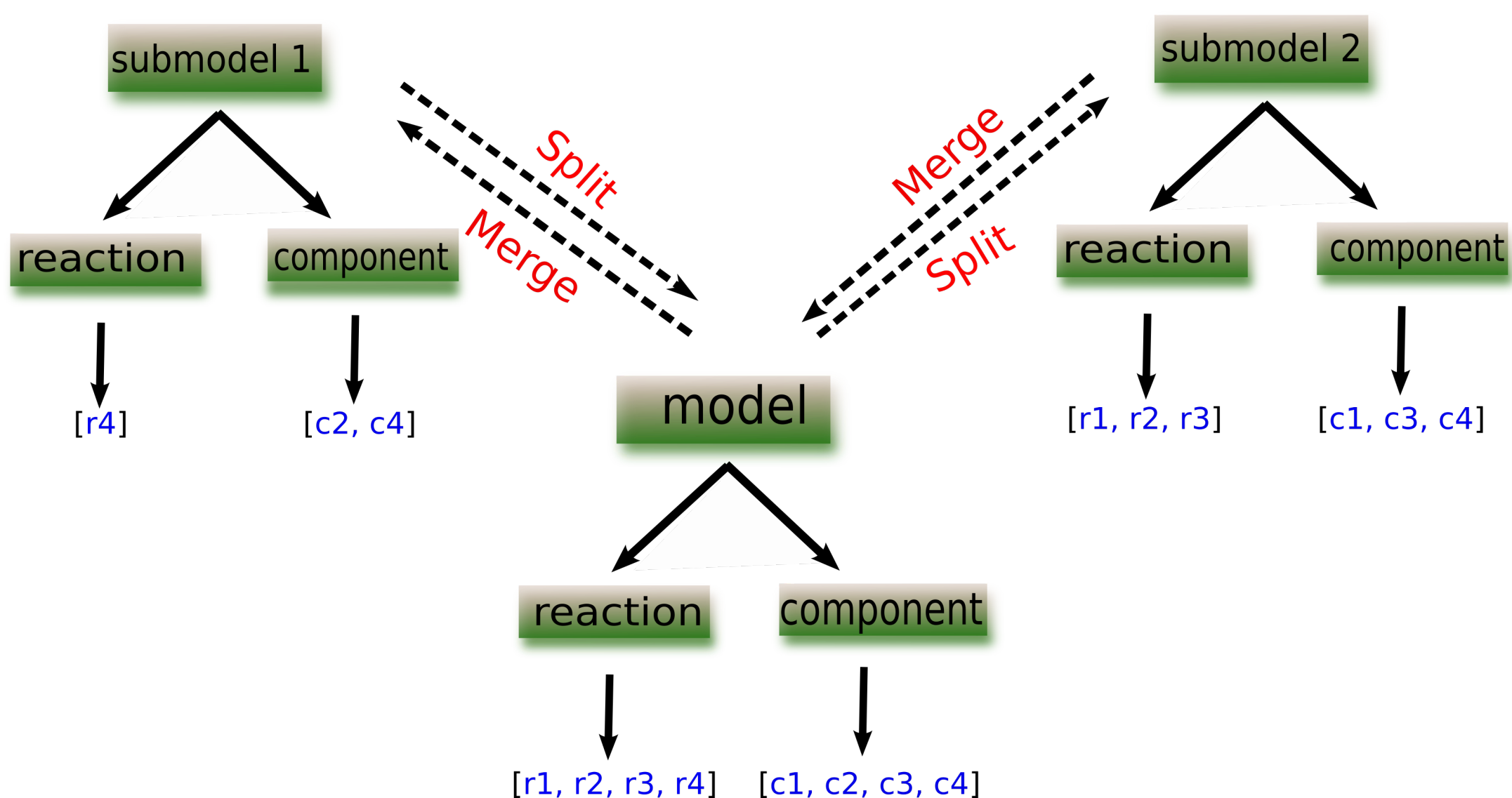
A



B

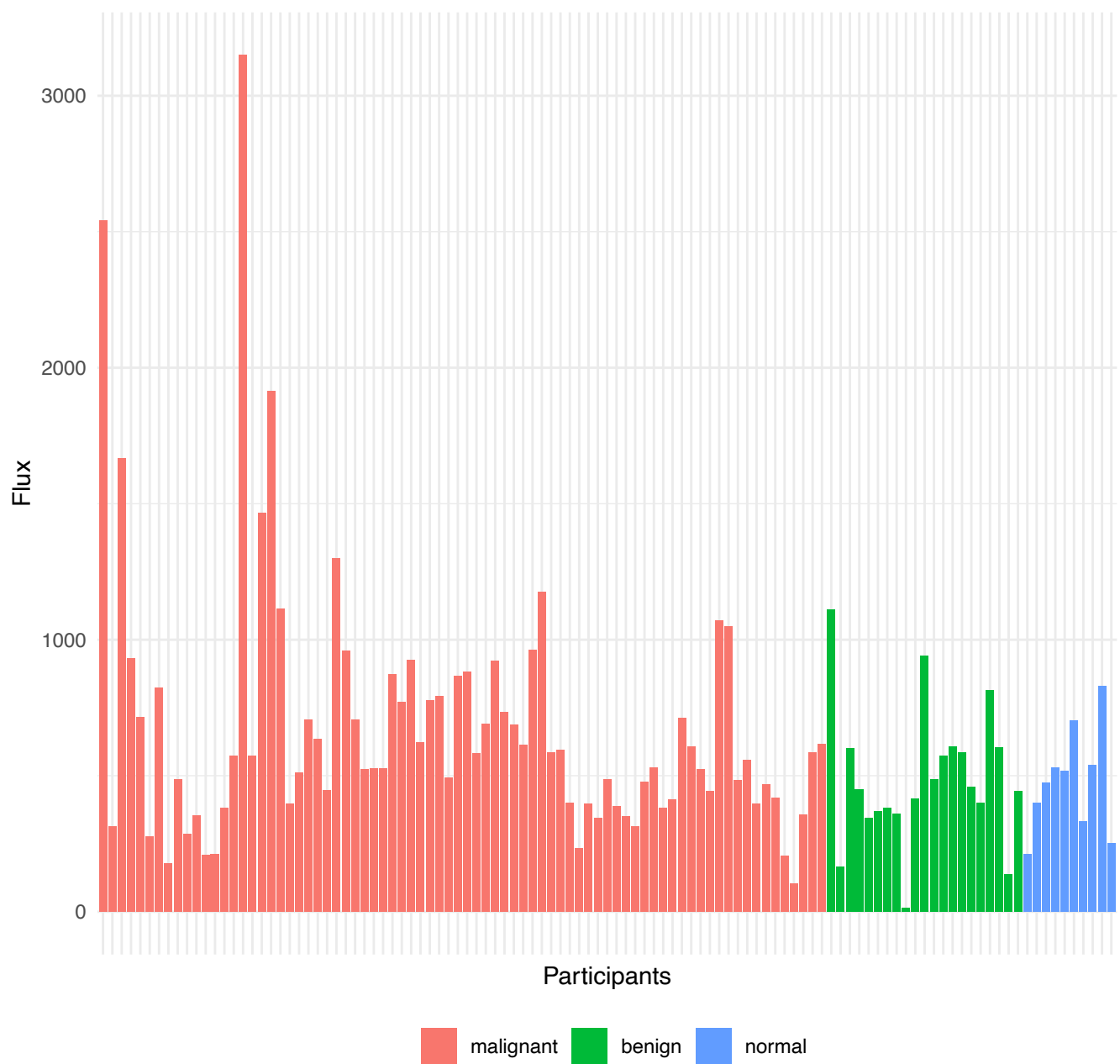


C

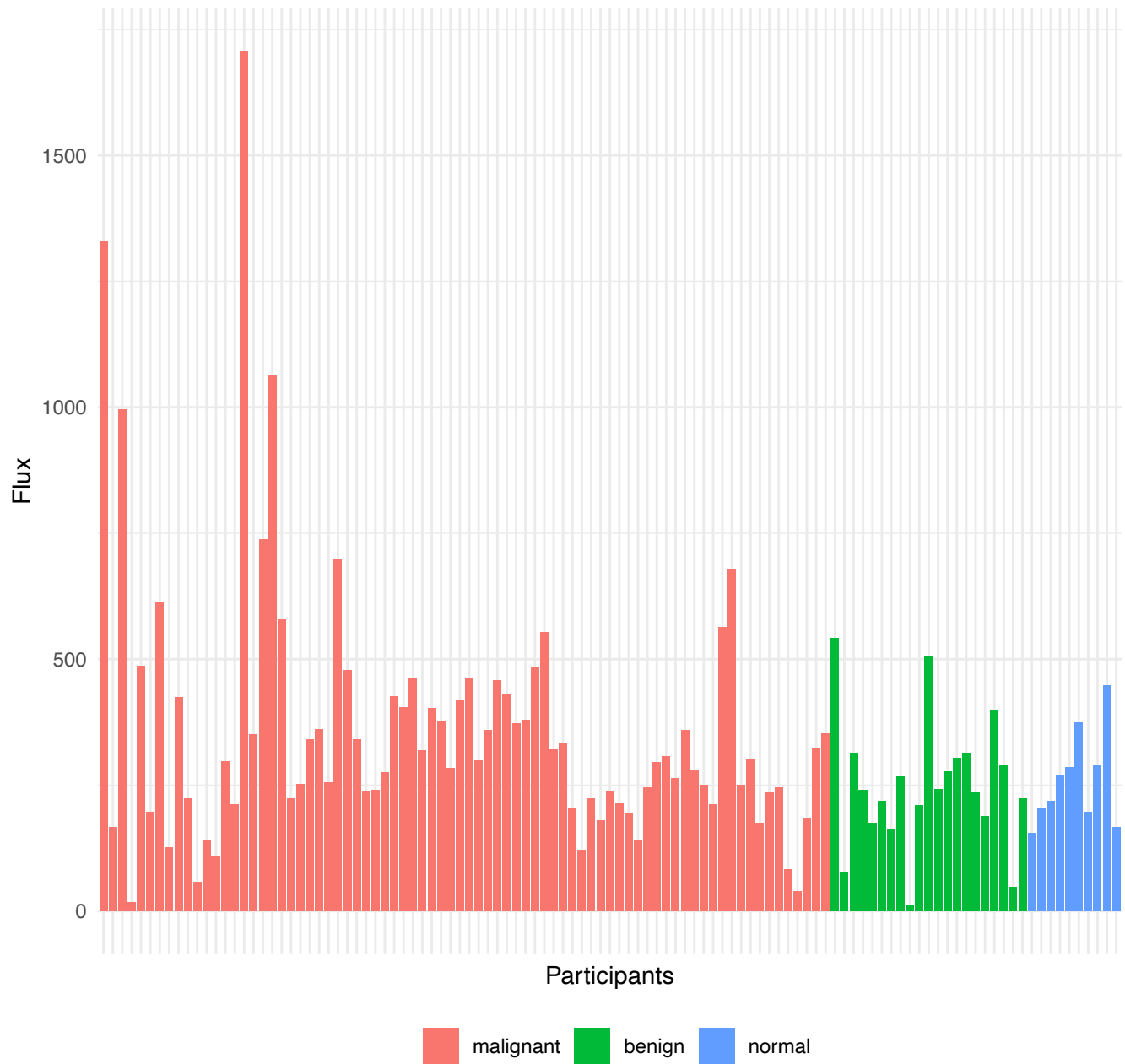


Supplement Figure 2: IM-Index related pathway flux plot in the three participant groups.

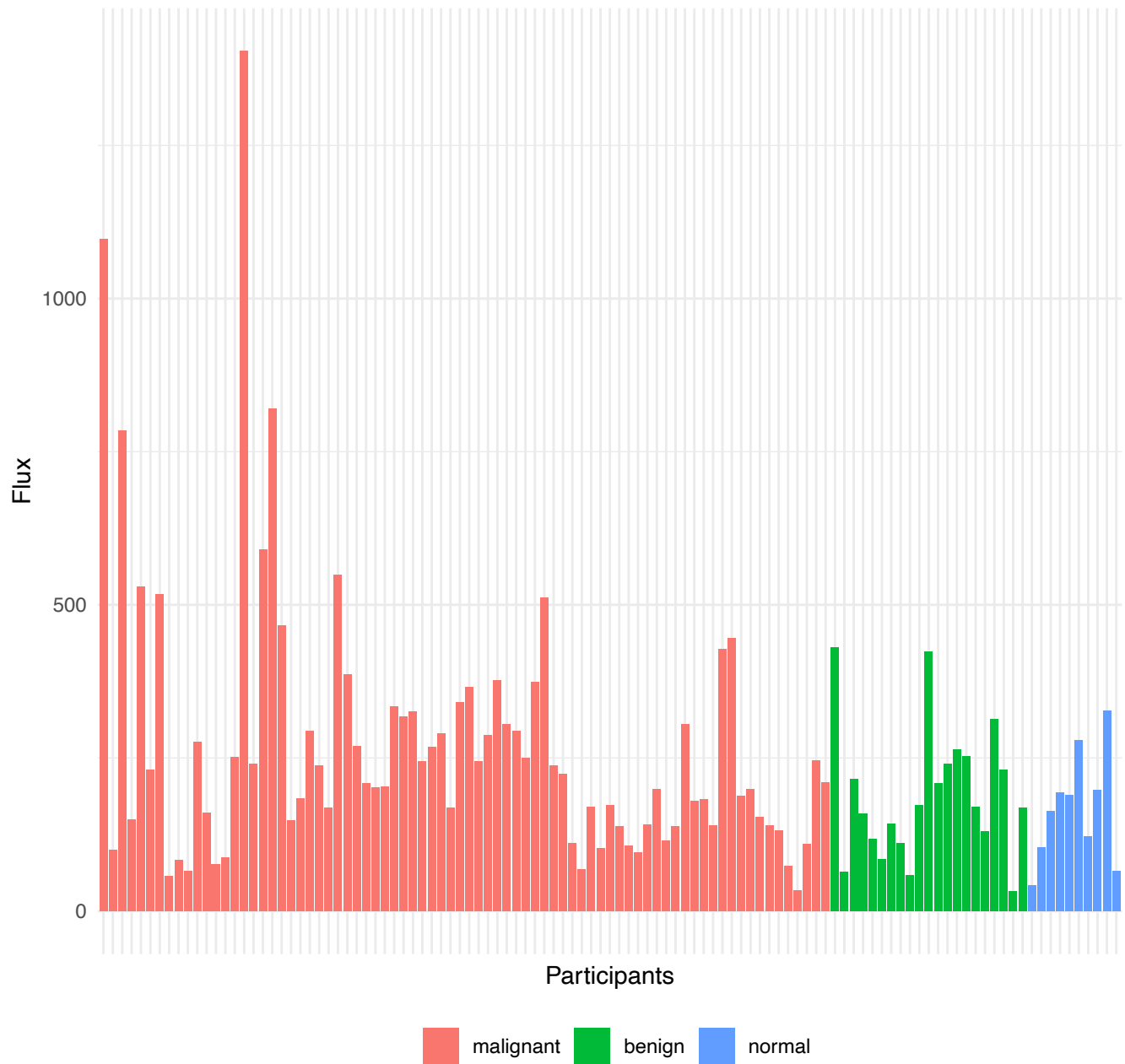
Alanine.aspartate.a..glutamate.metabolism



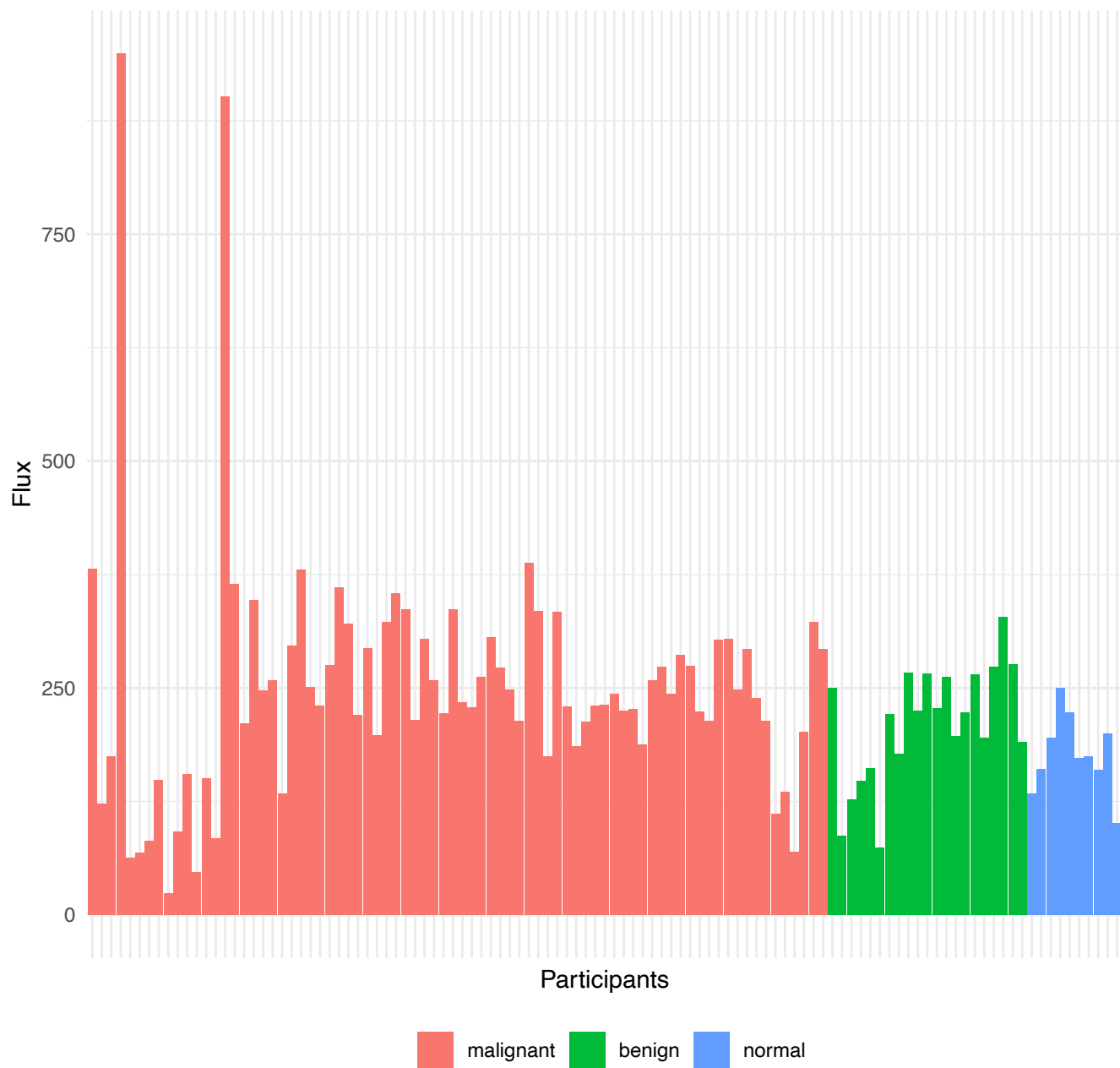
Arginine.biosynthesis



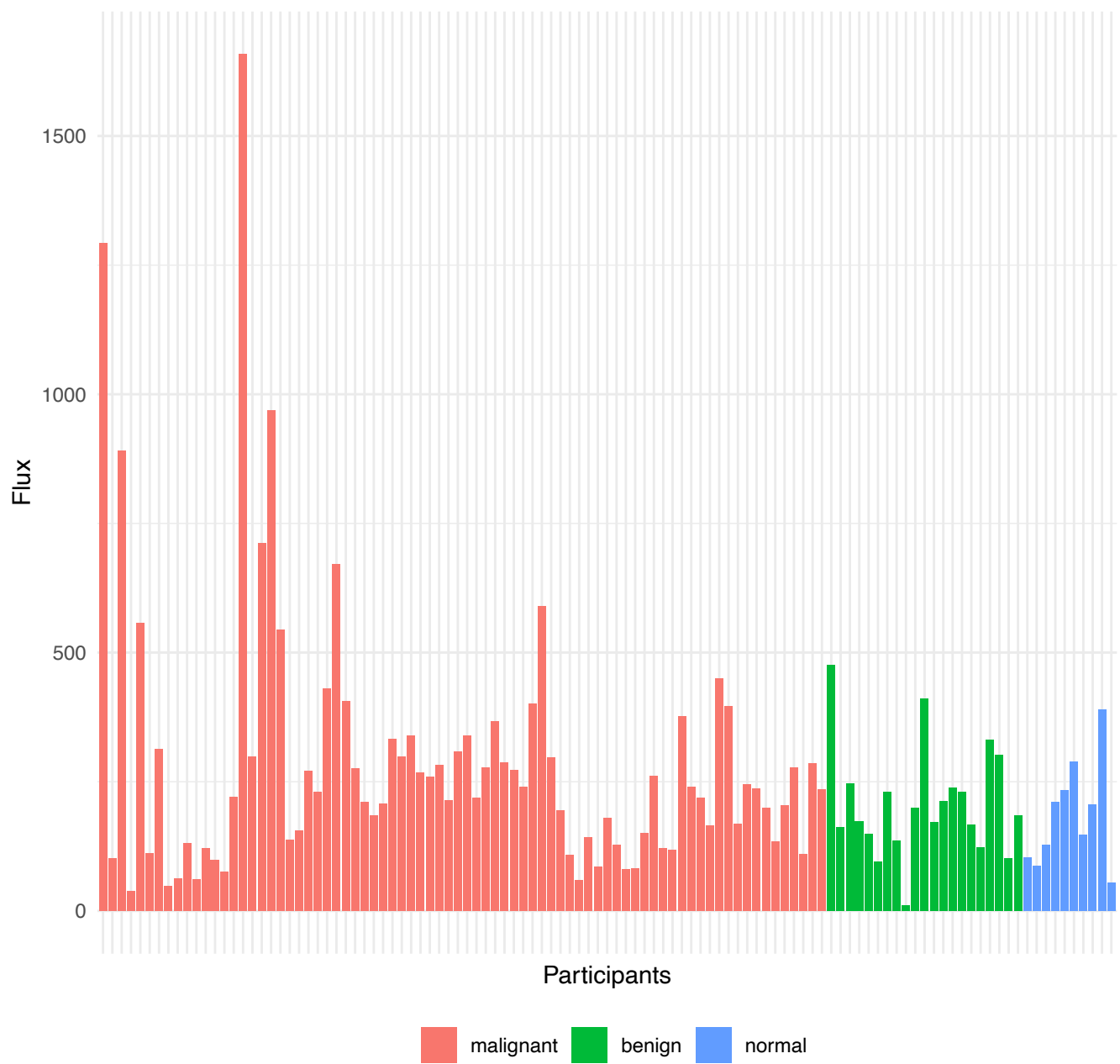
Cysteine.a..methionine.metabolism



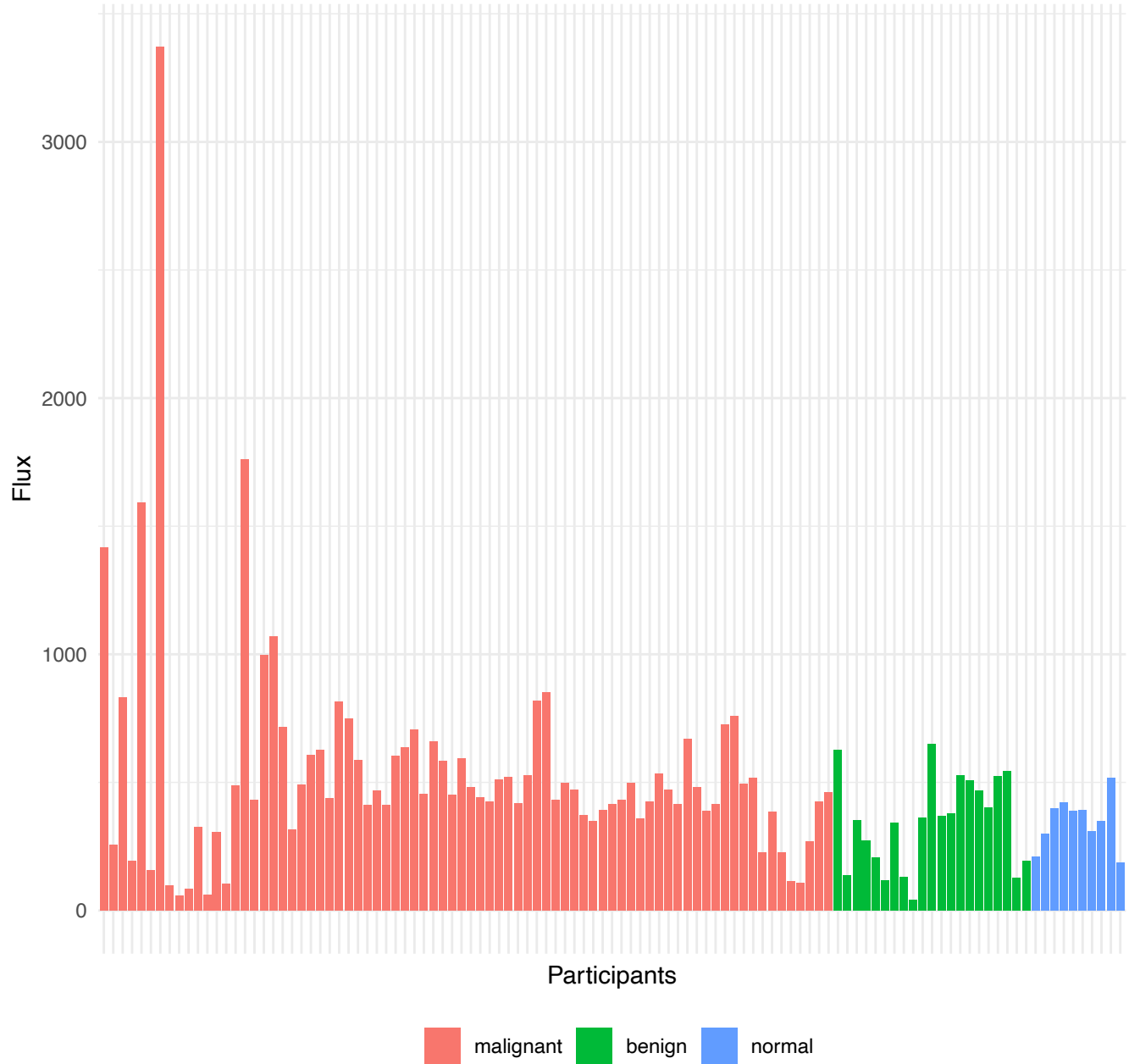
Pyruvate.metabolism



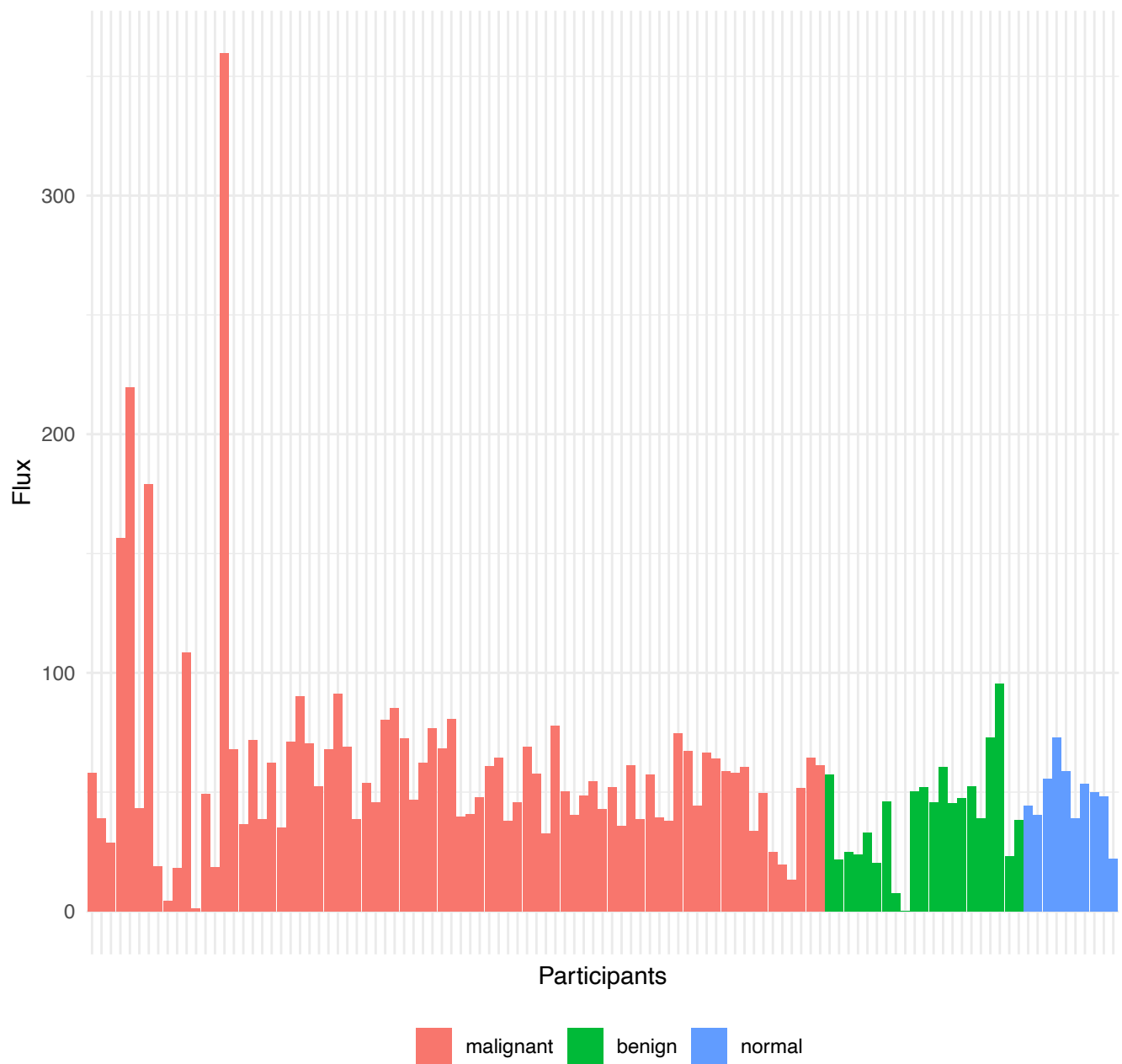
Nitrogen.metabolism



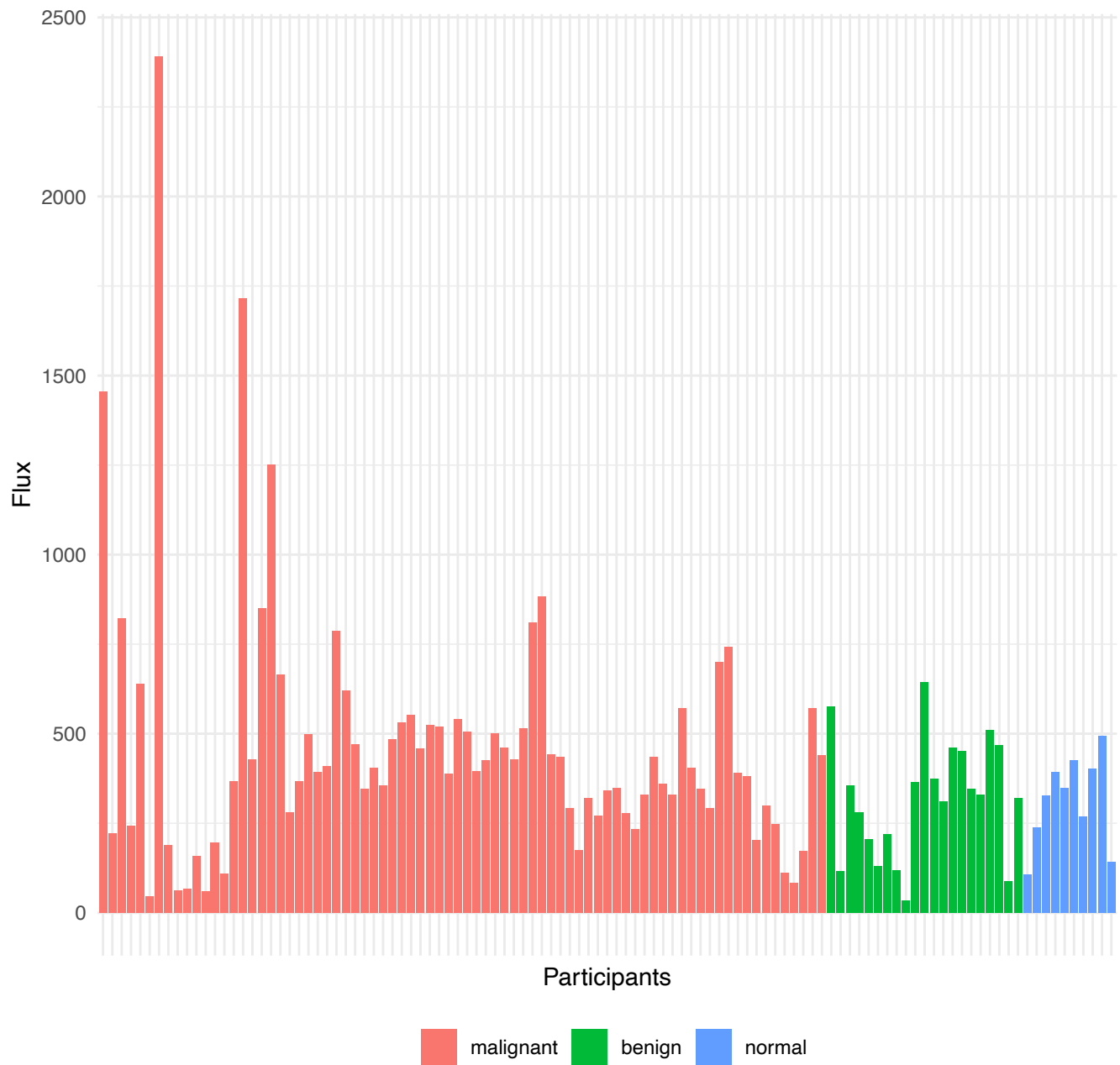
beta.Alanine.metabolism



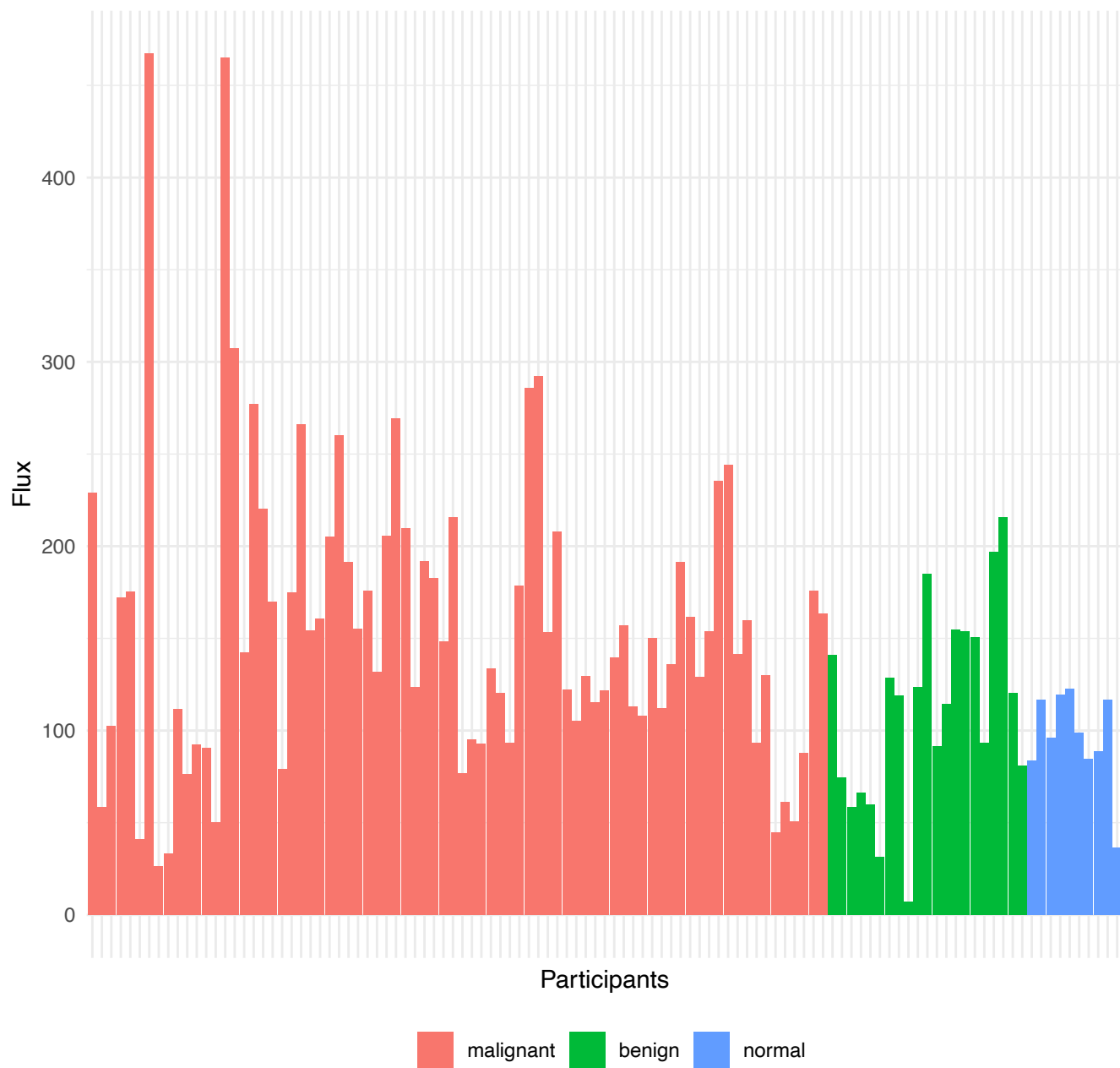
Butanoate.metabolism



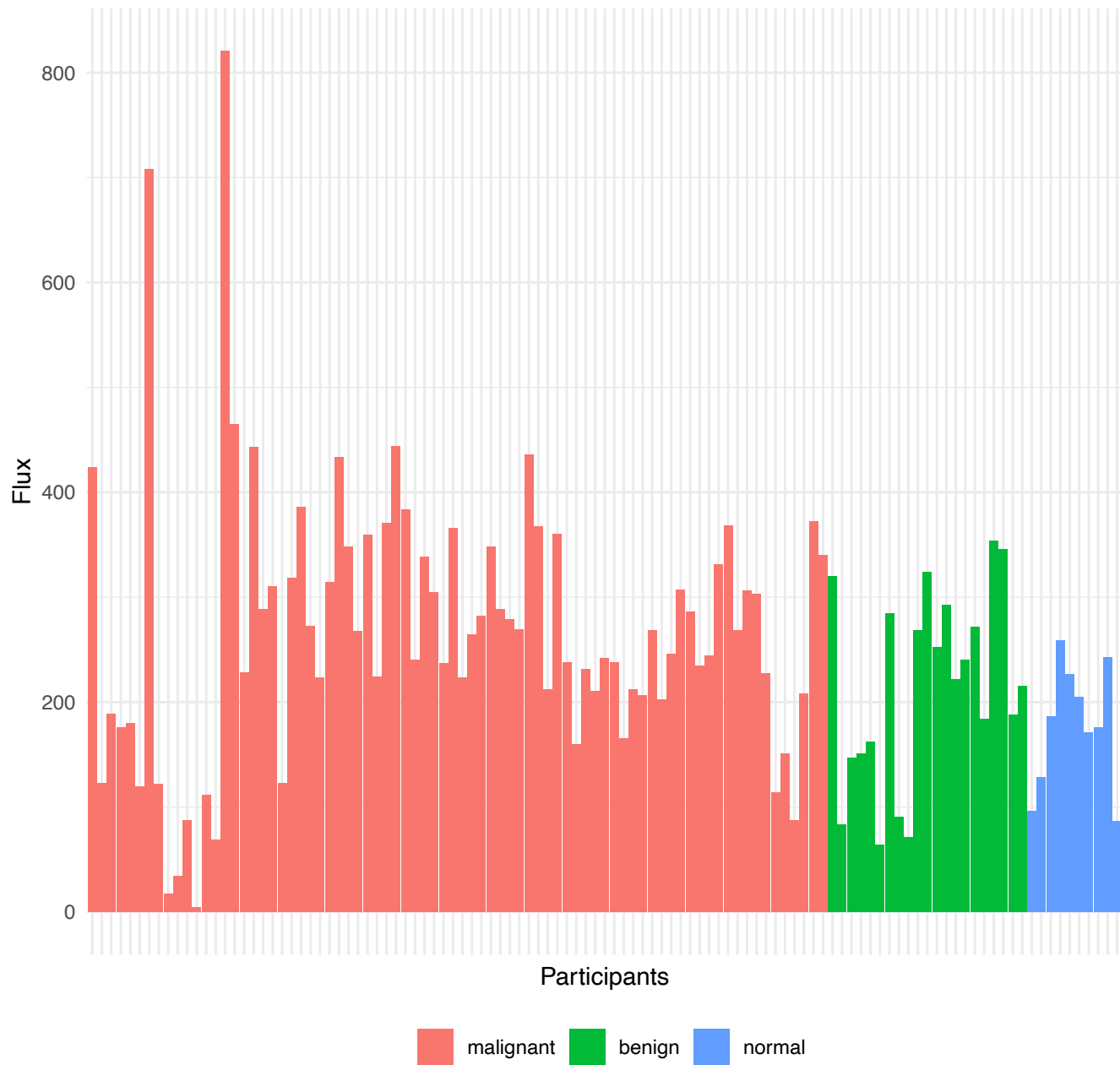
Histidine.metabolism



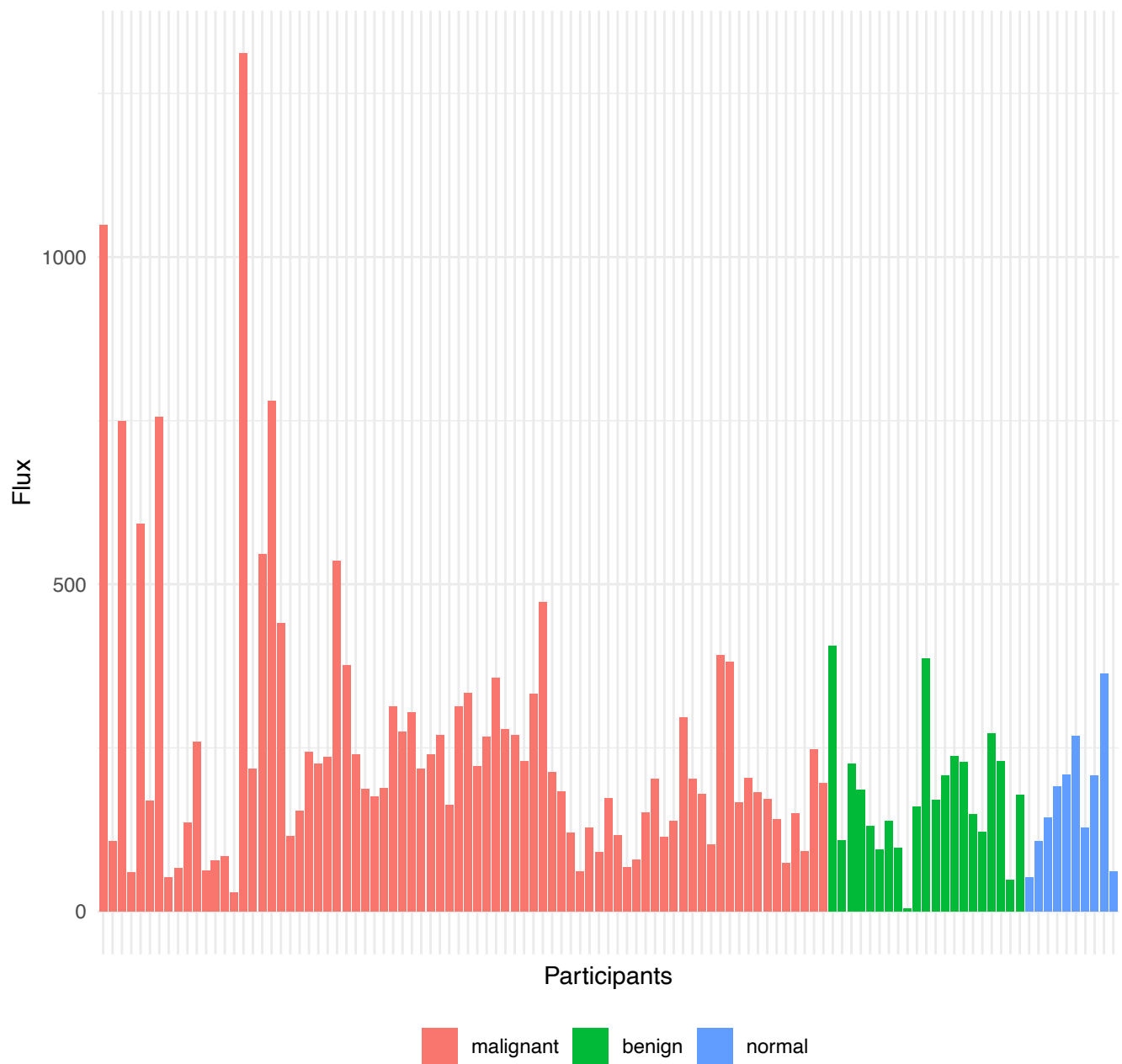
Lysine.degradation



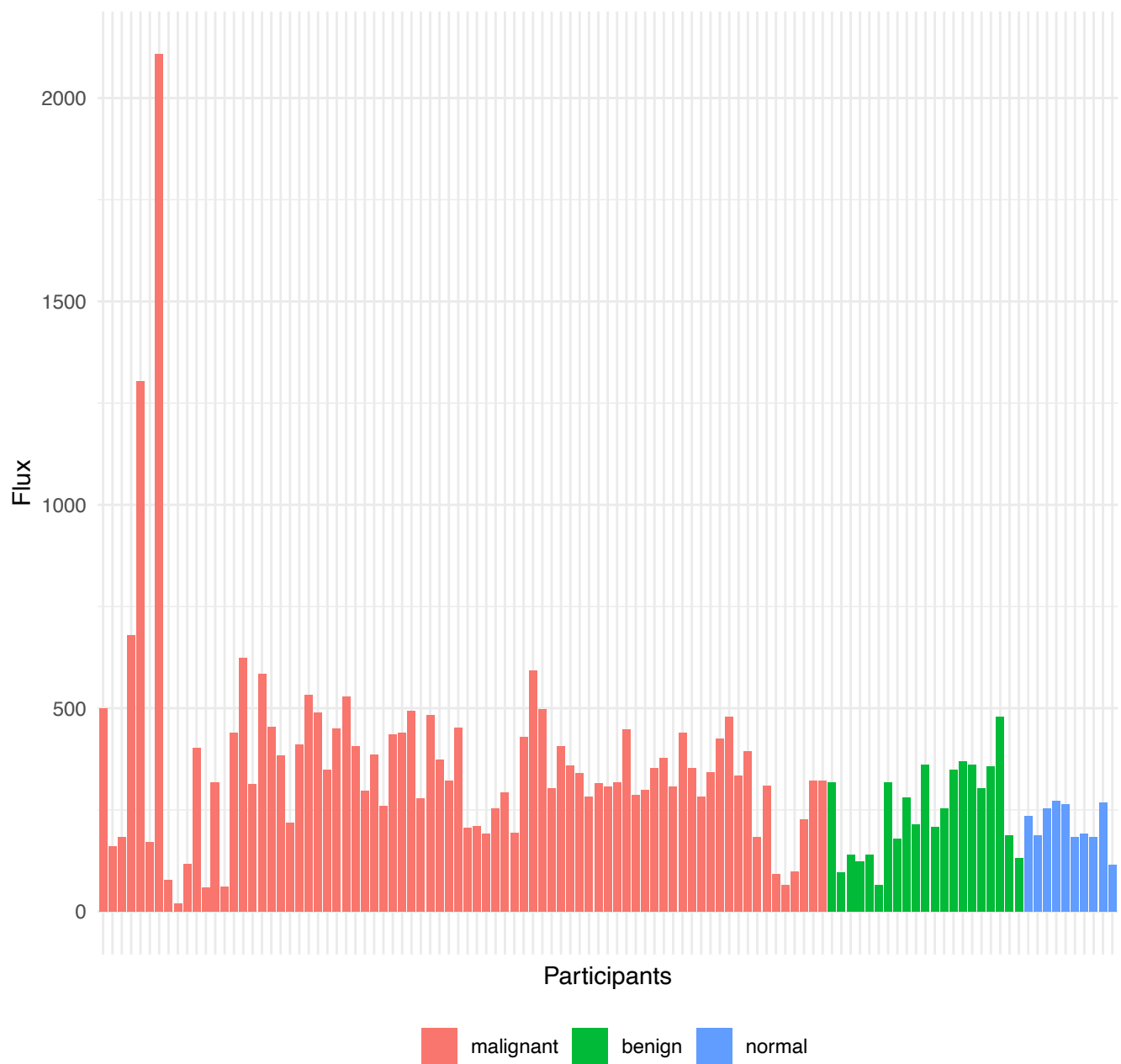
Citrate.cycle.metabolism



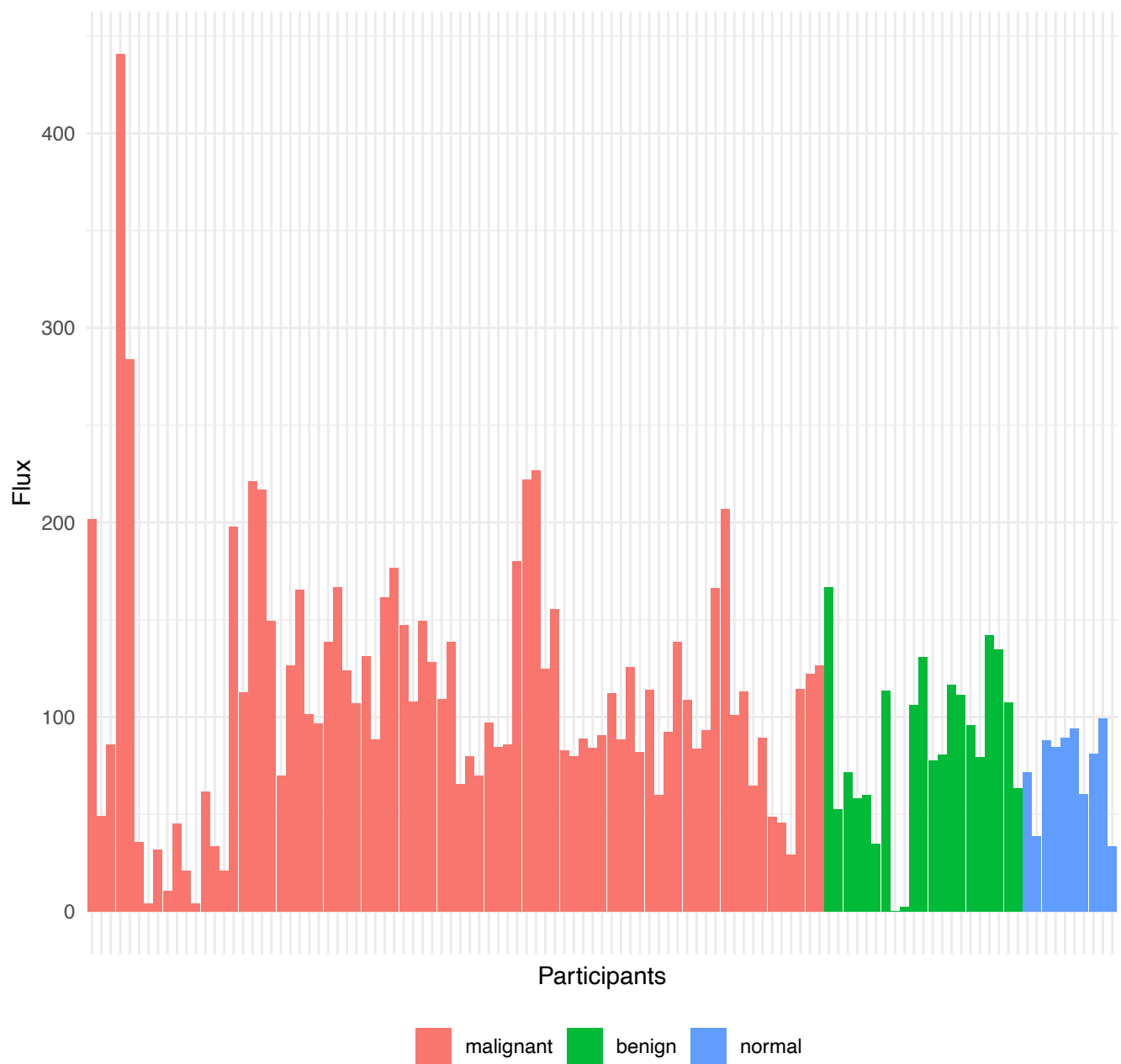
Tyrosine.metabolism



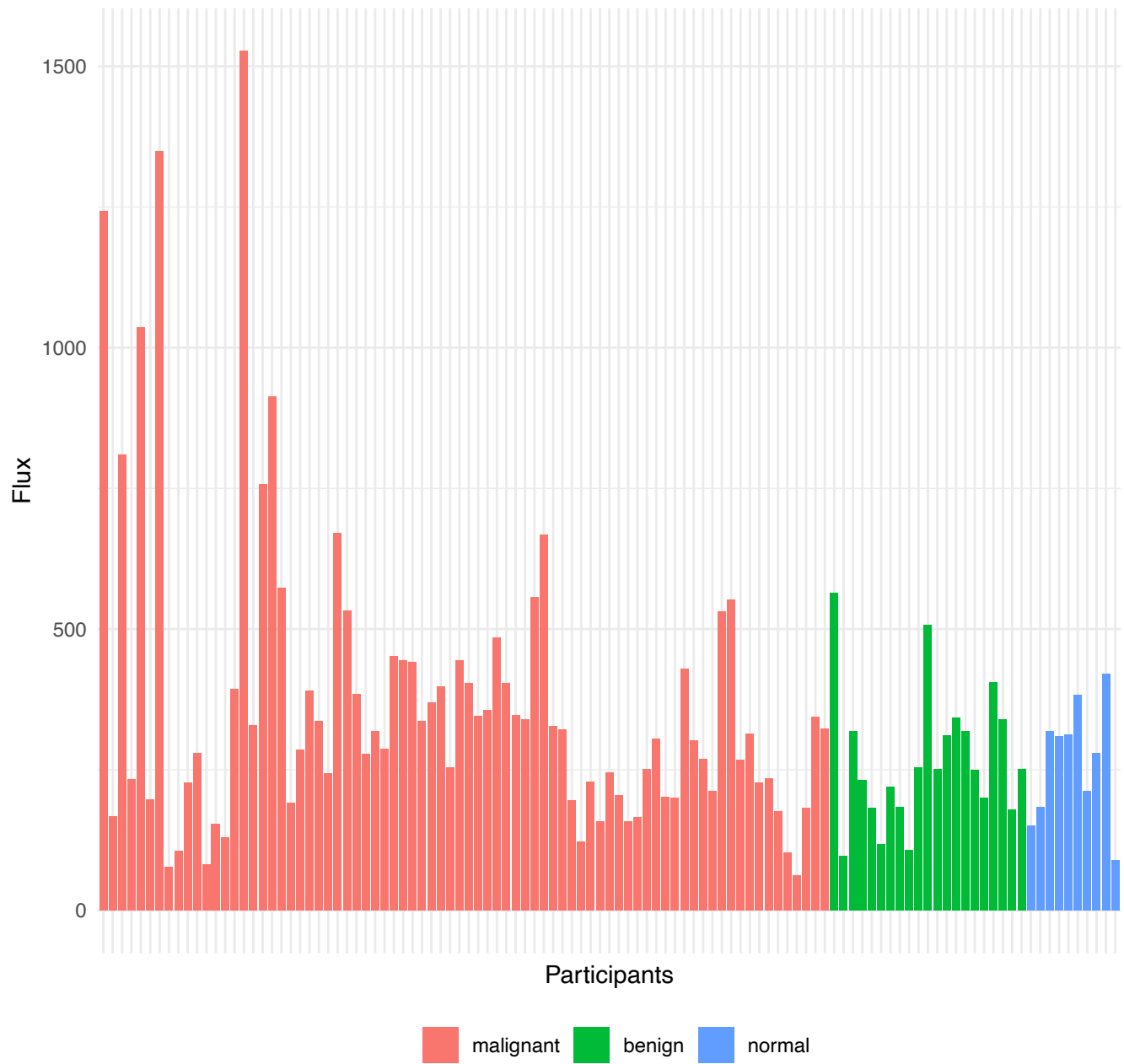
Propanoate.metabolism



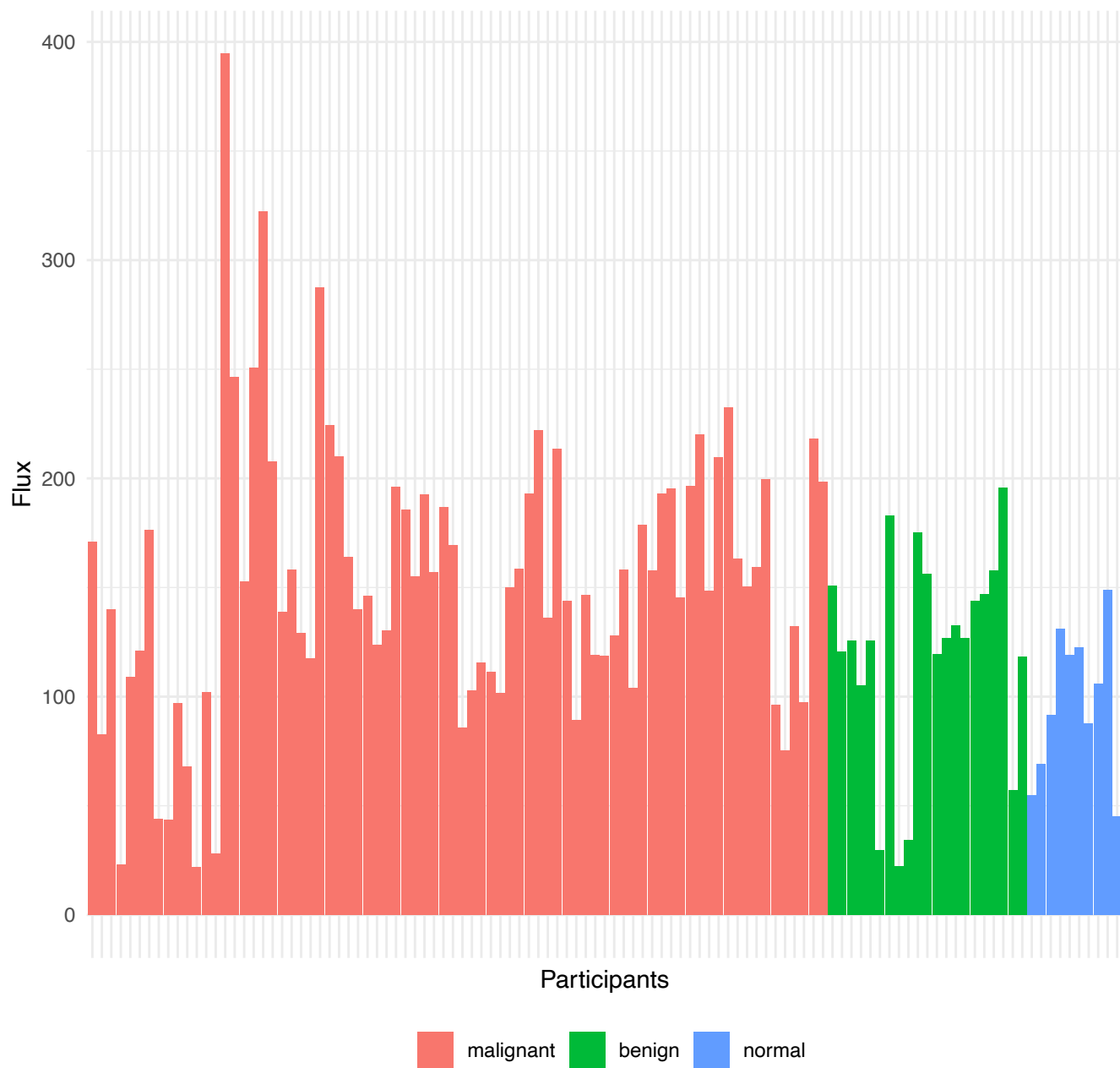
Fatty acid degradation



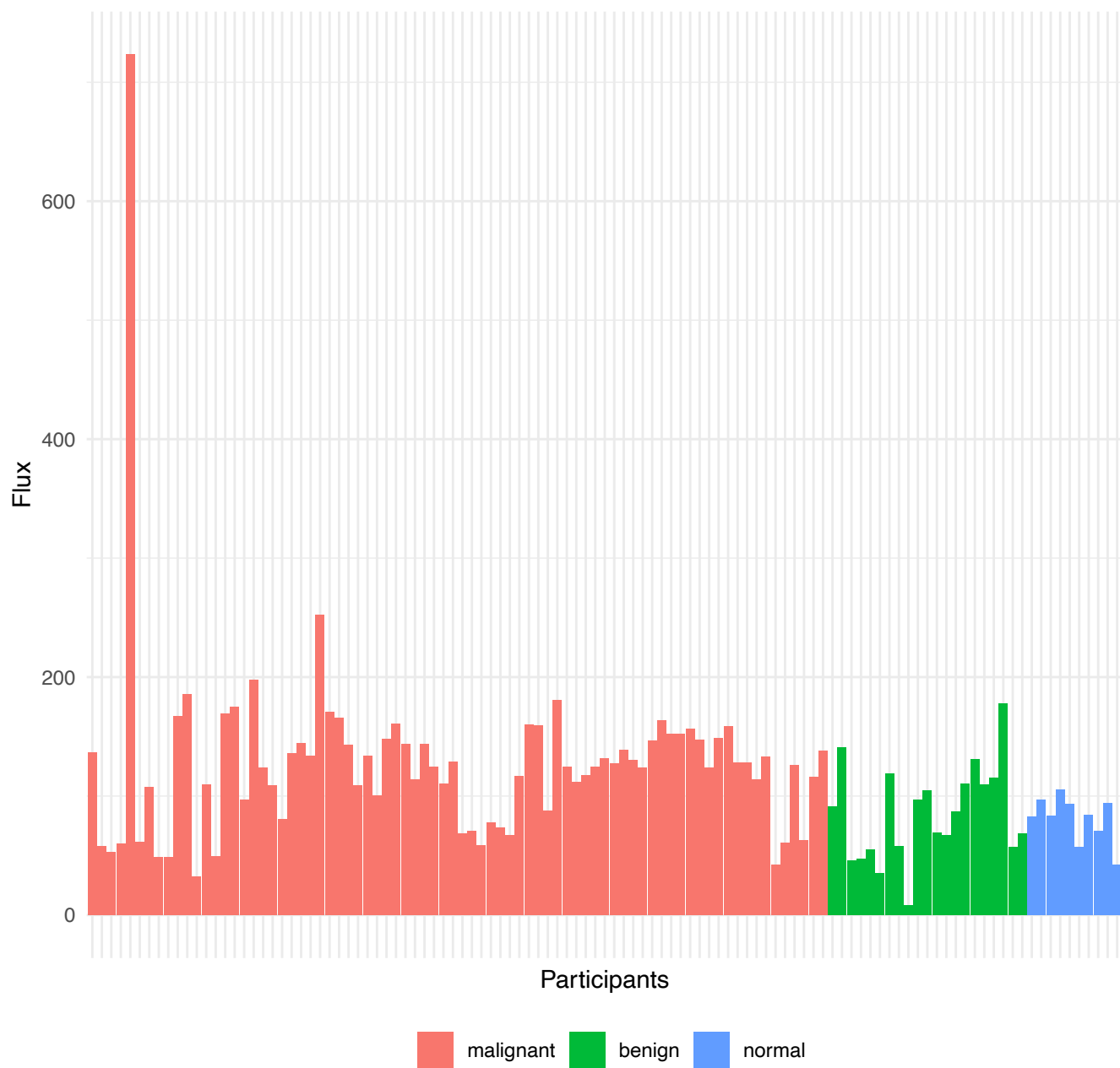
Tryptophan.metabolism



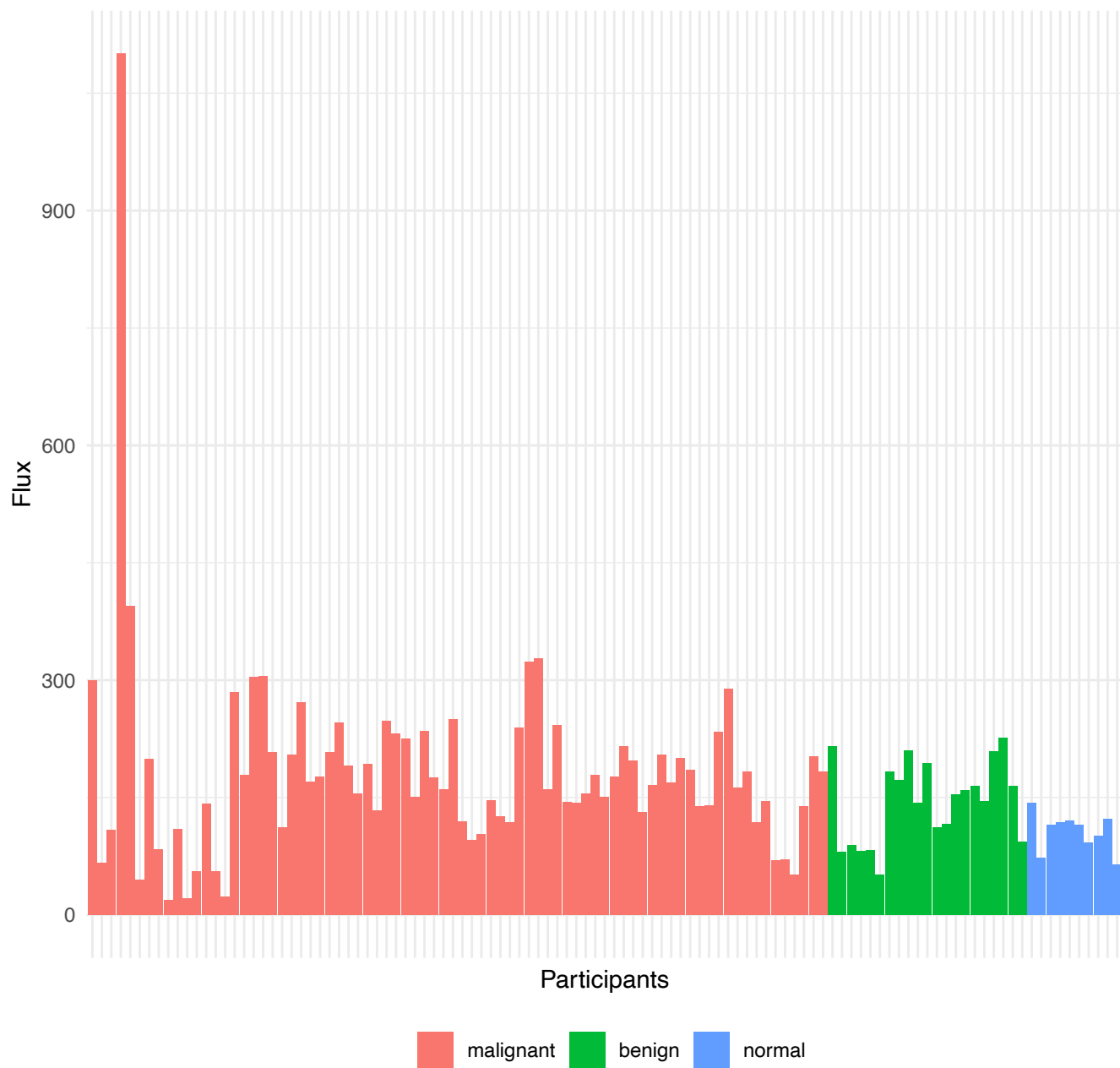
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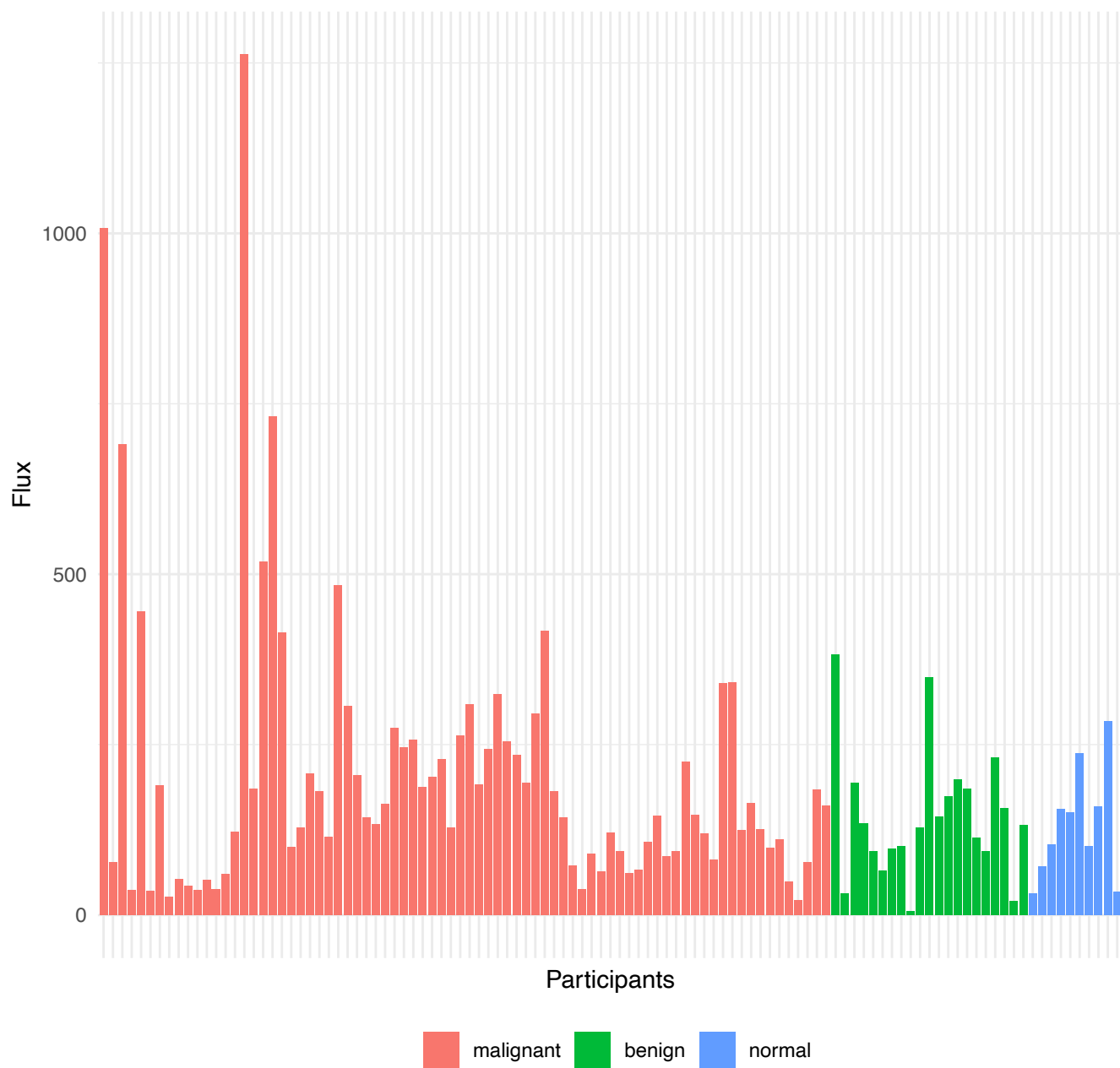
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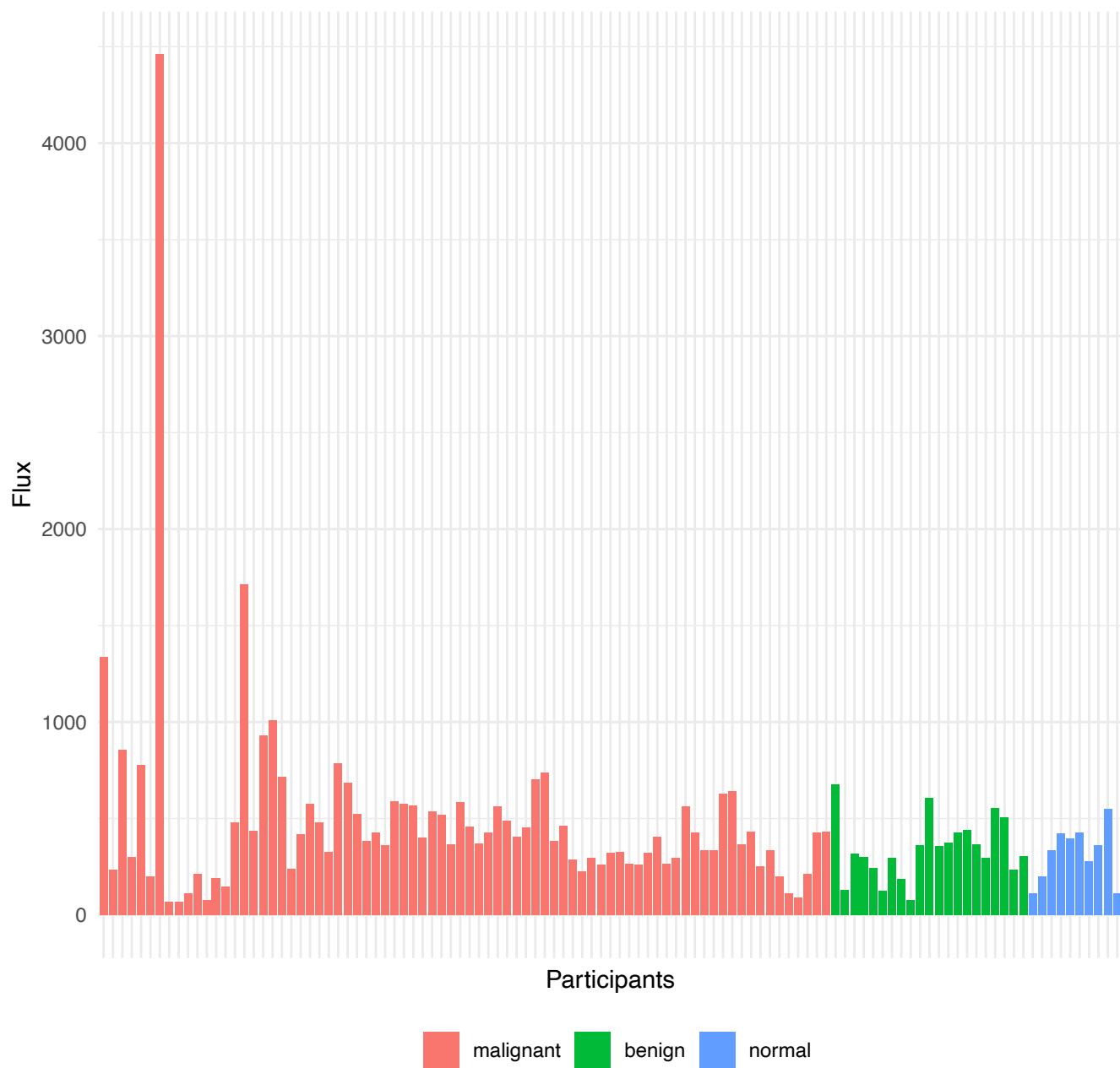
Fatty.acid.metabolism



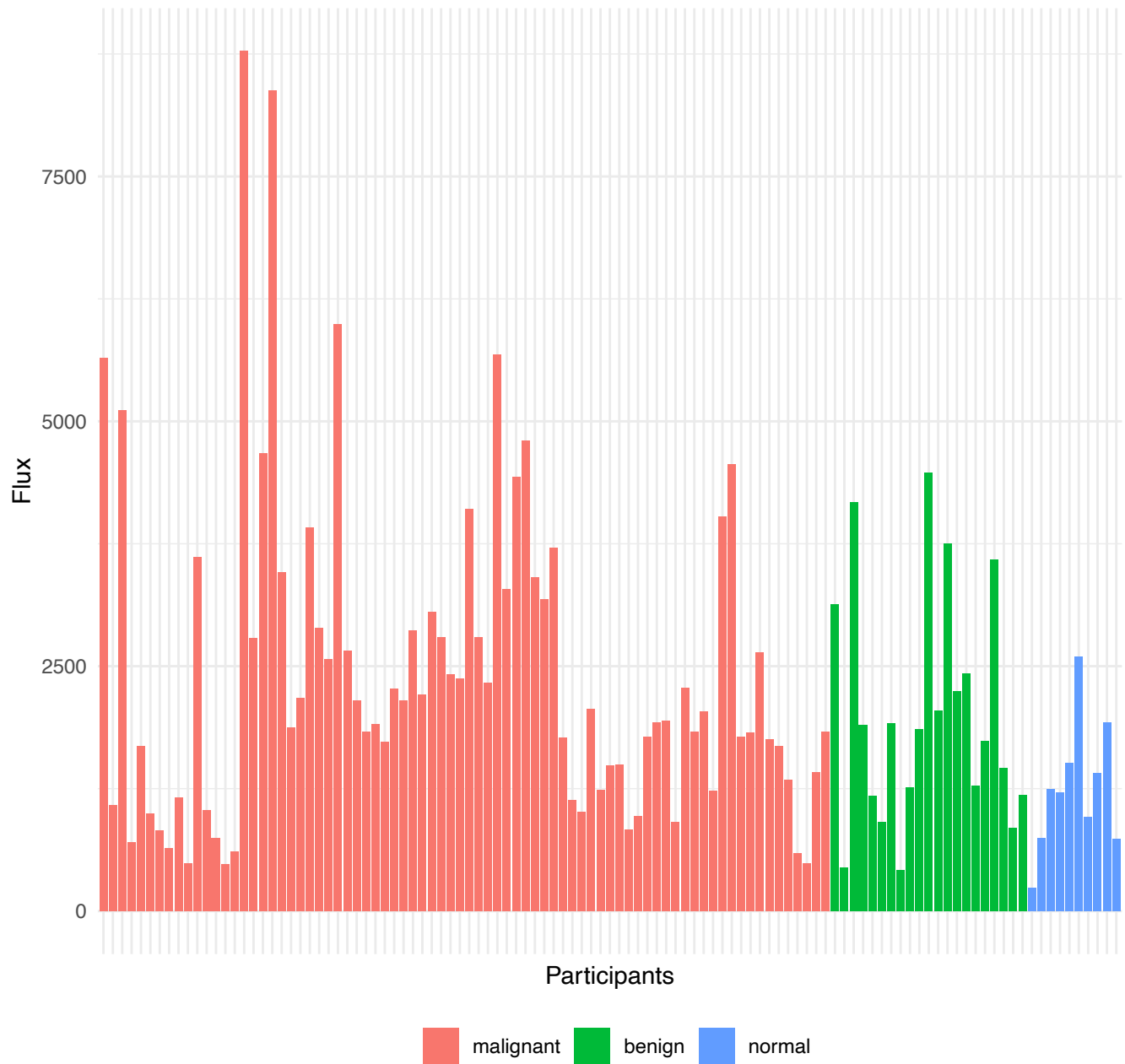
Pantothenate.a..CoA.biosynthesis



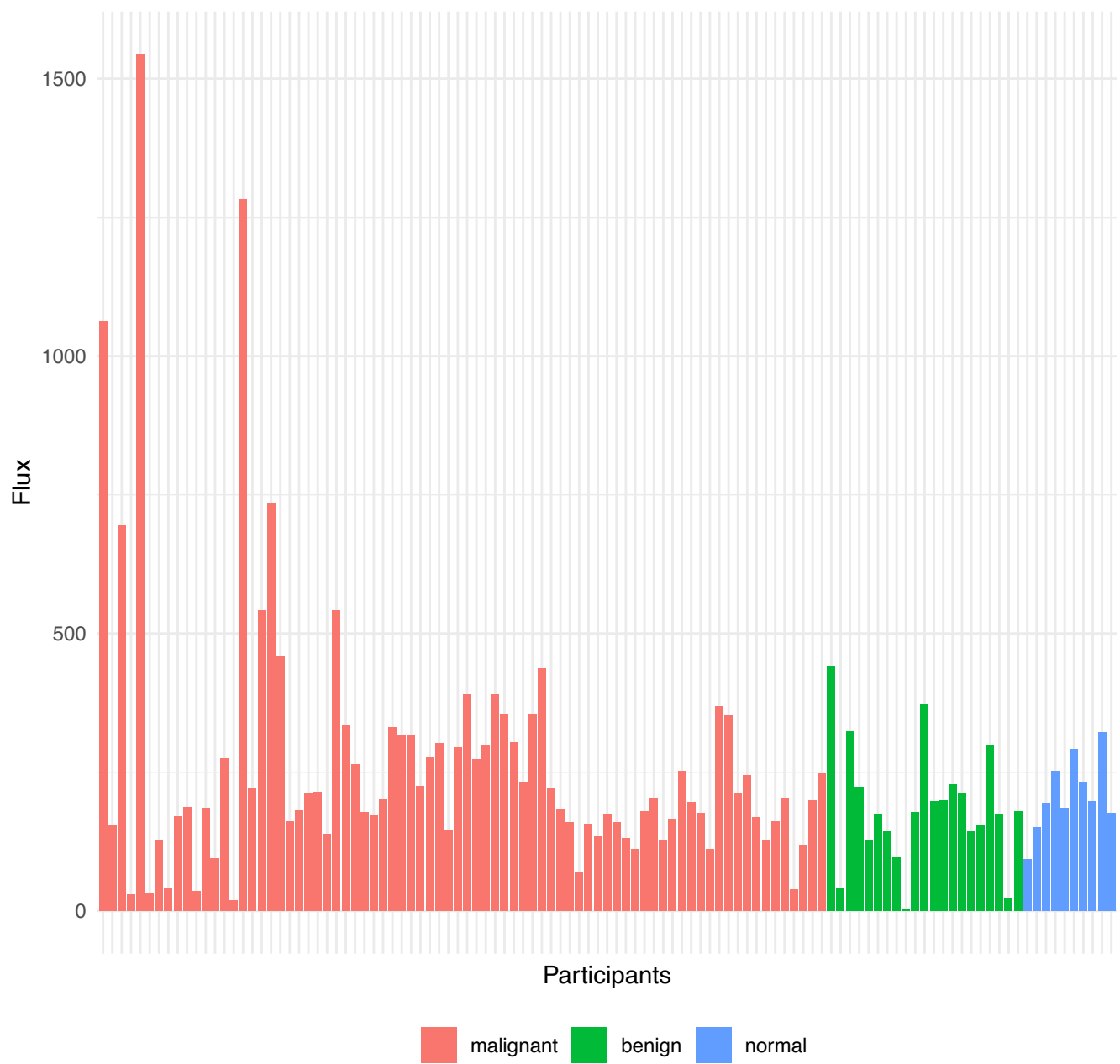
Valine.leucine.a..isoleucine.degradation



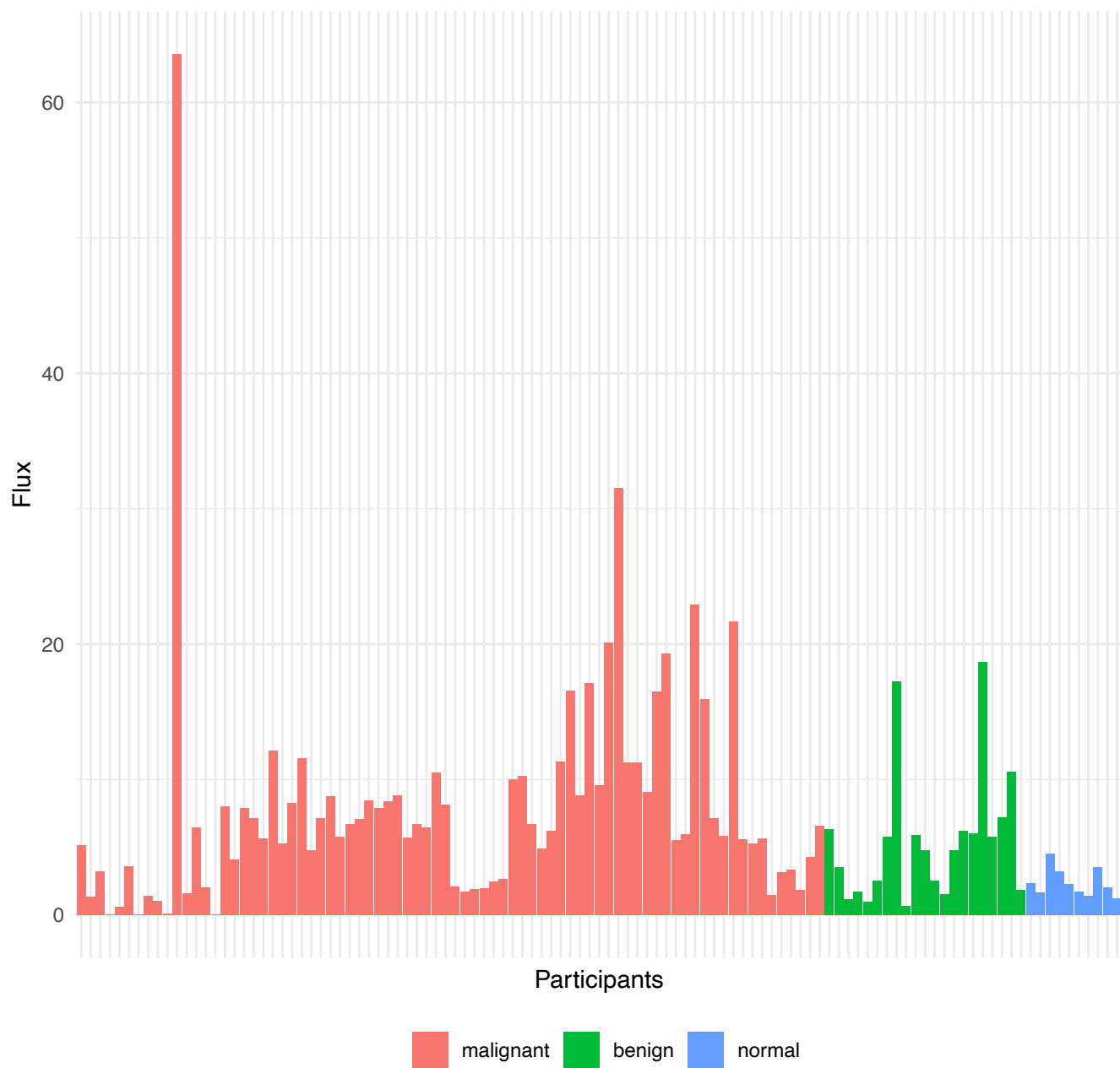
Fructose.a..mannose.metabolism



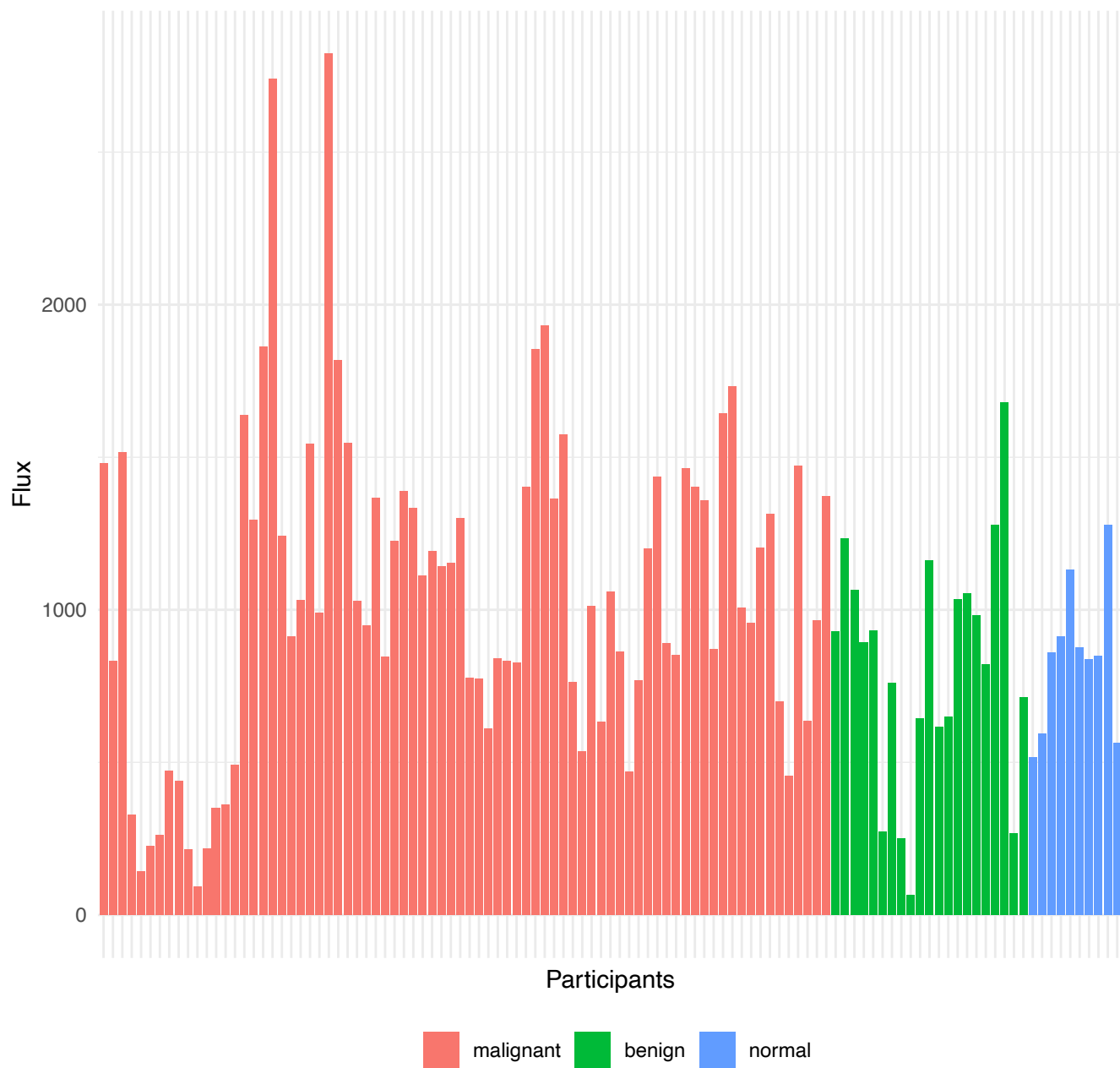
Valine.leucine.a..isoleucine.biosynthesis



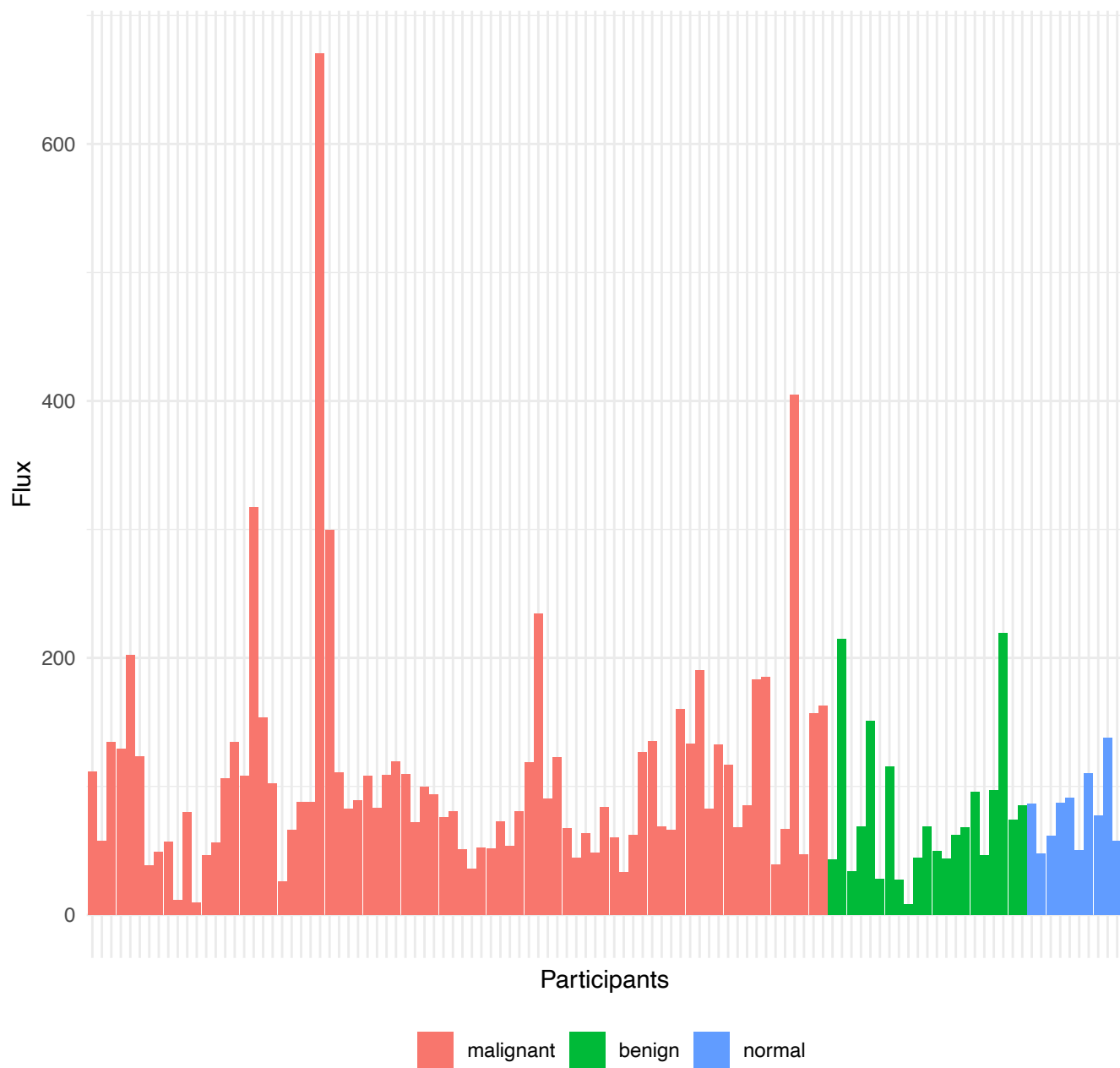
ABL.signaling



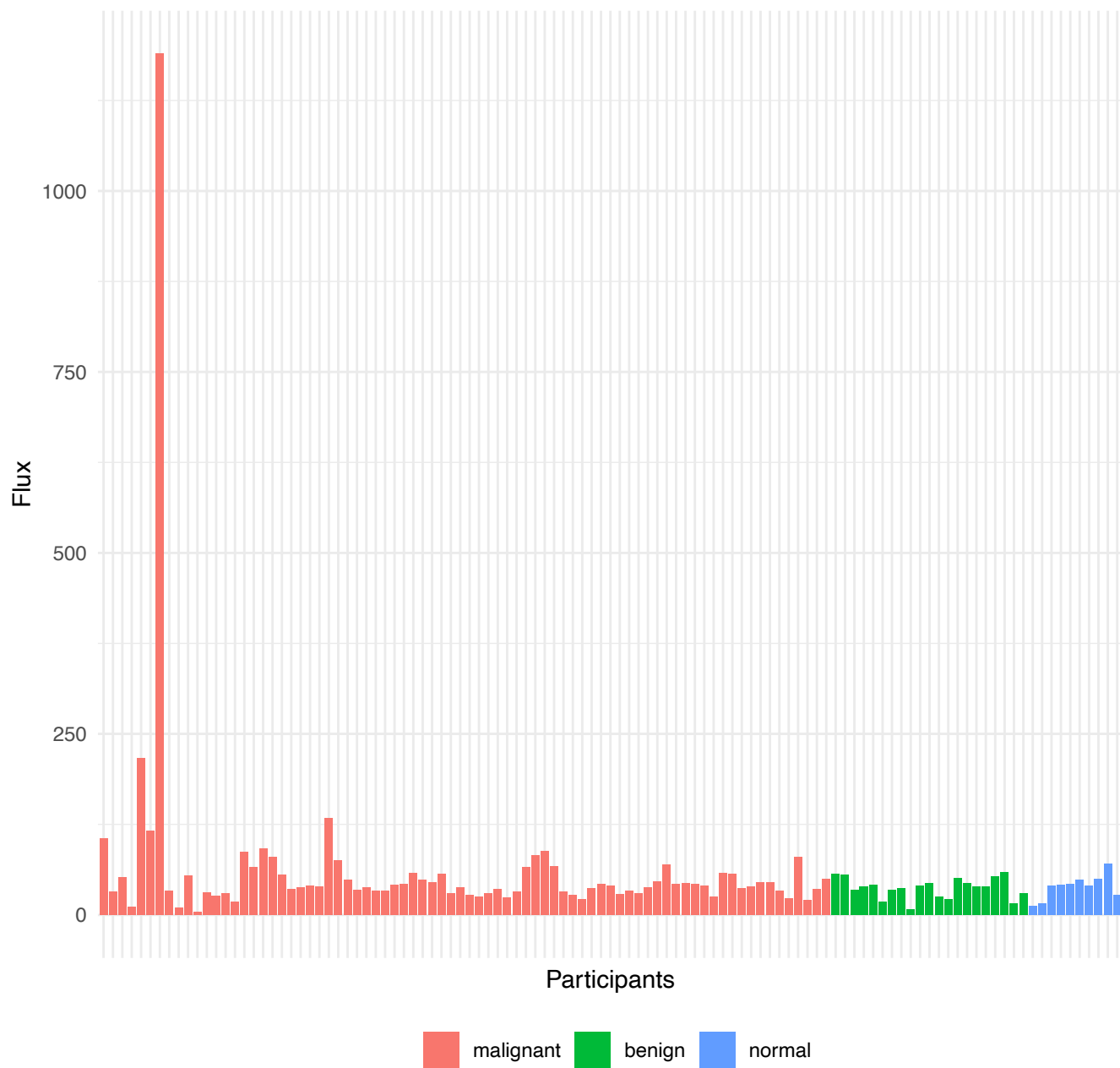
Cell.Cycle.signaling



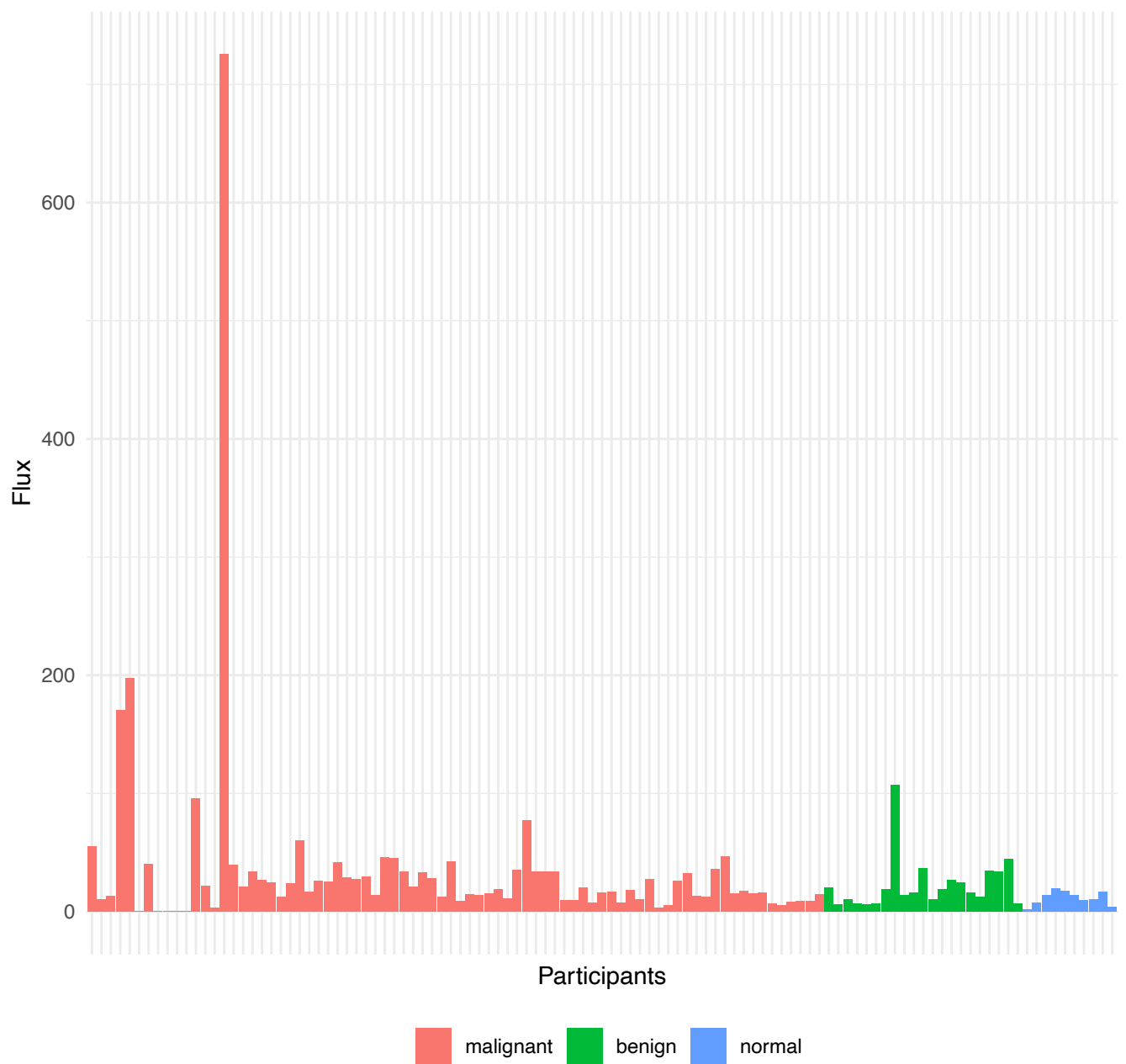
COX.signaling



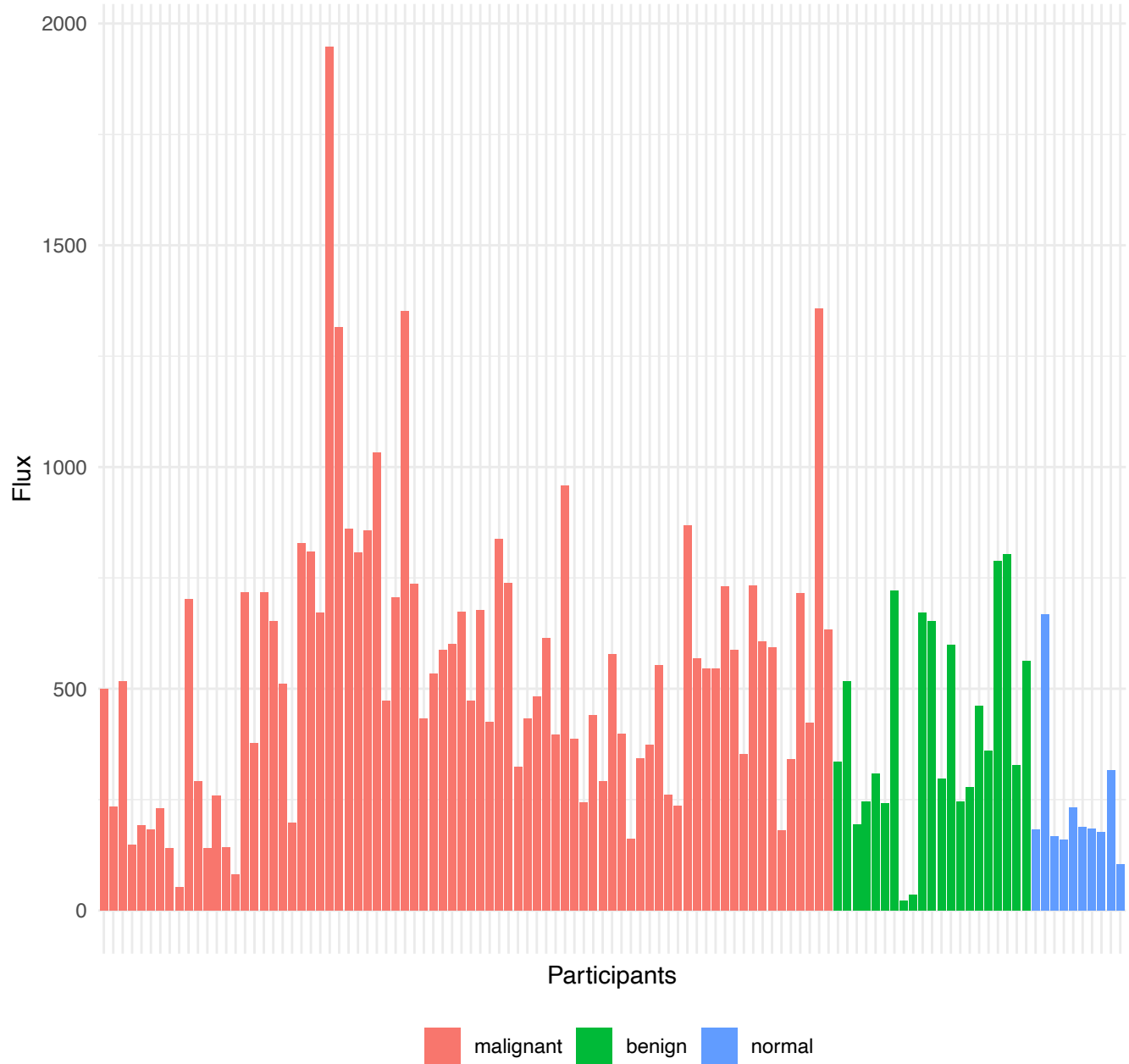
Estrogen.signaling



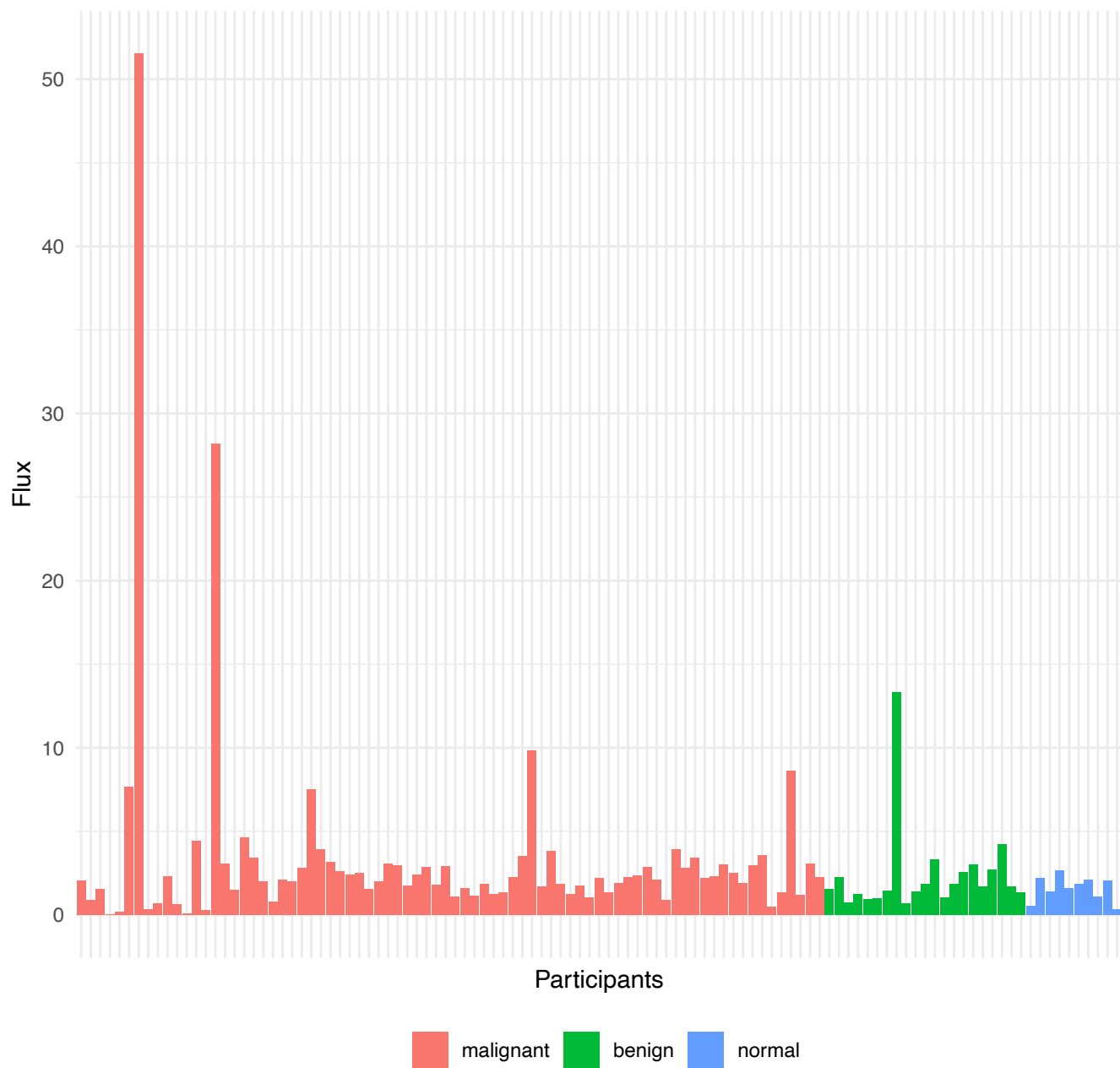
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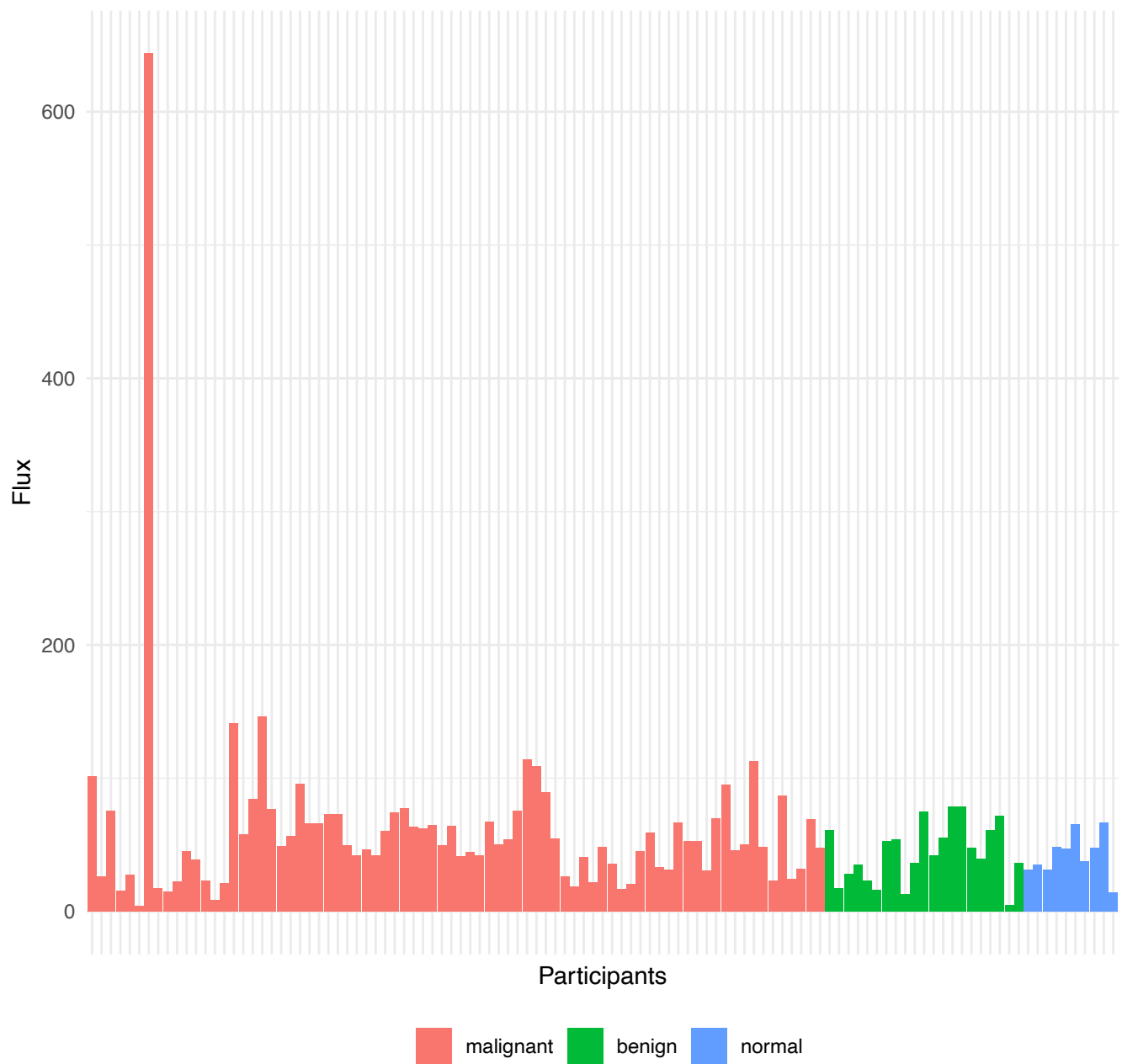
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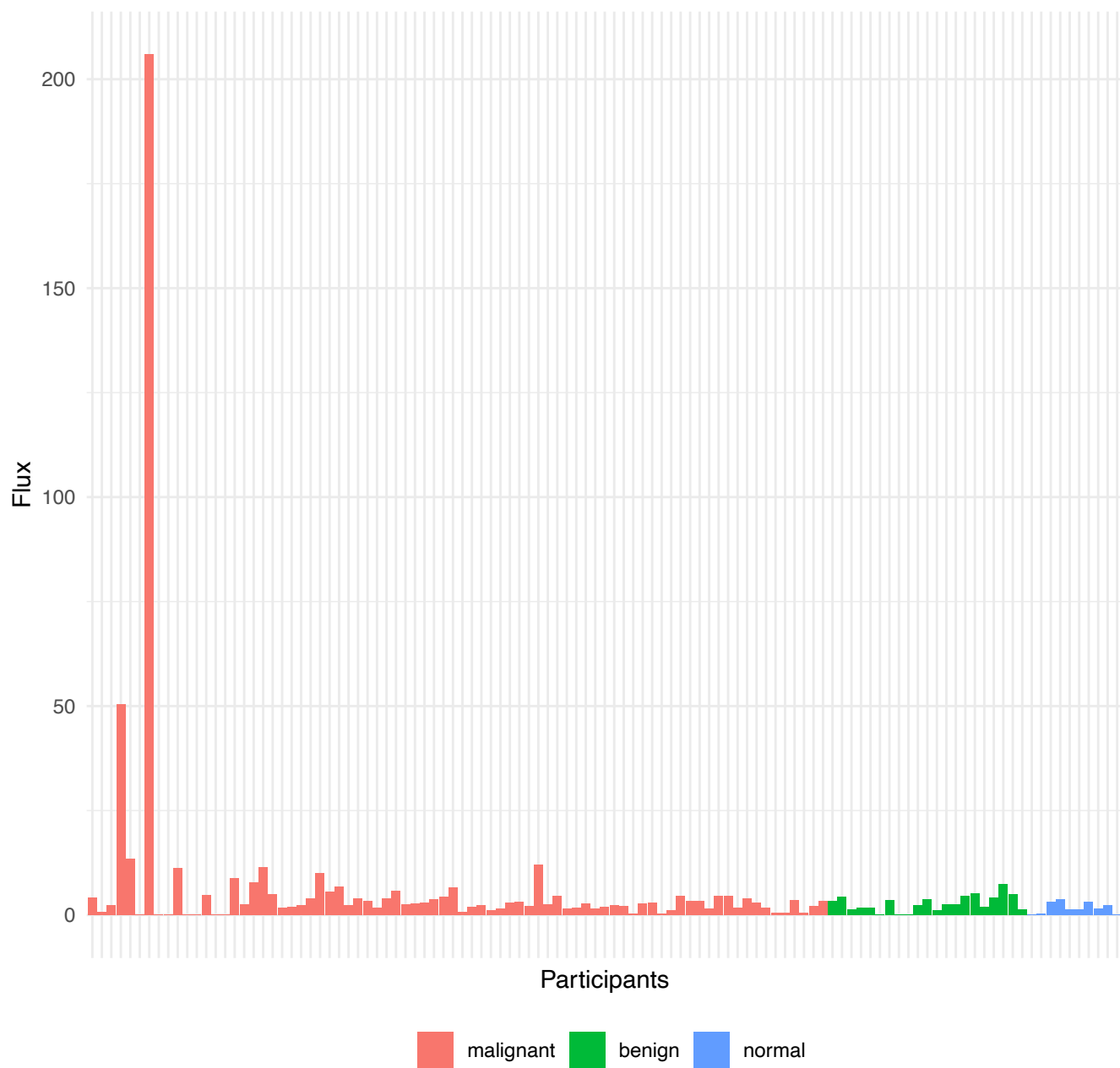
BMP.signaling



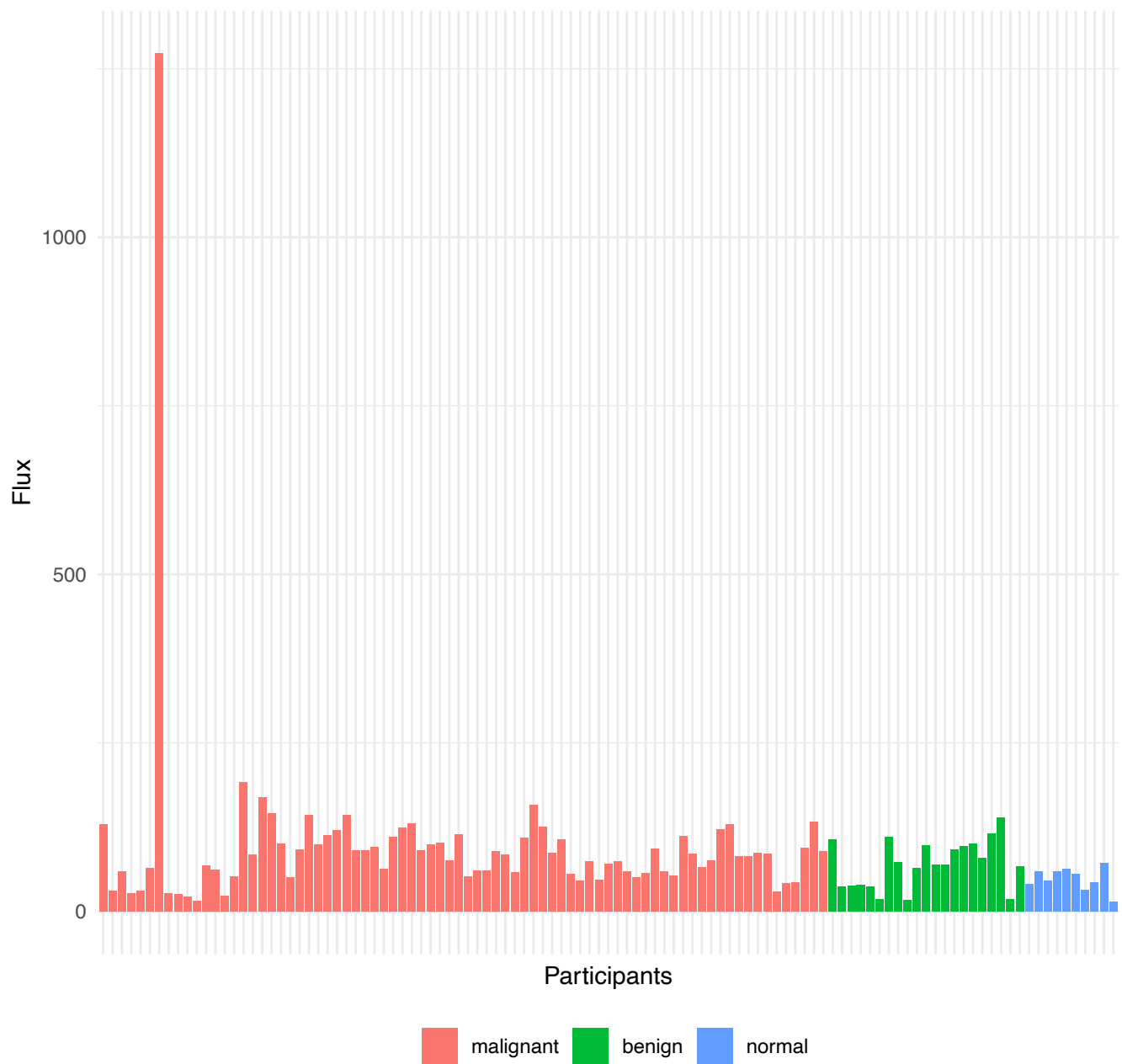
RAR.signaling



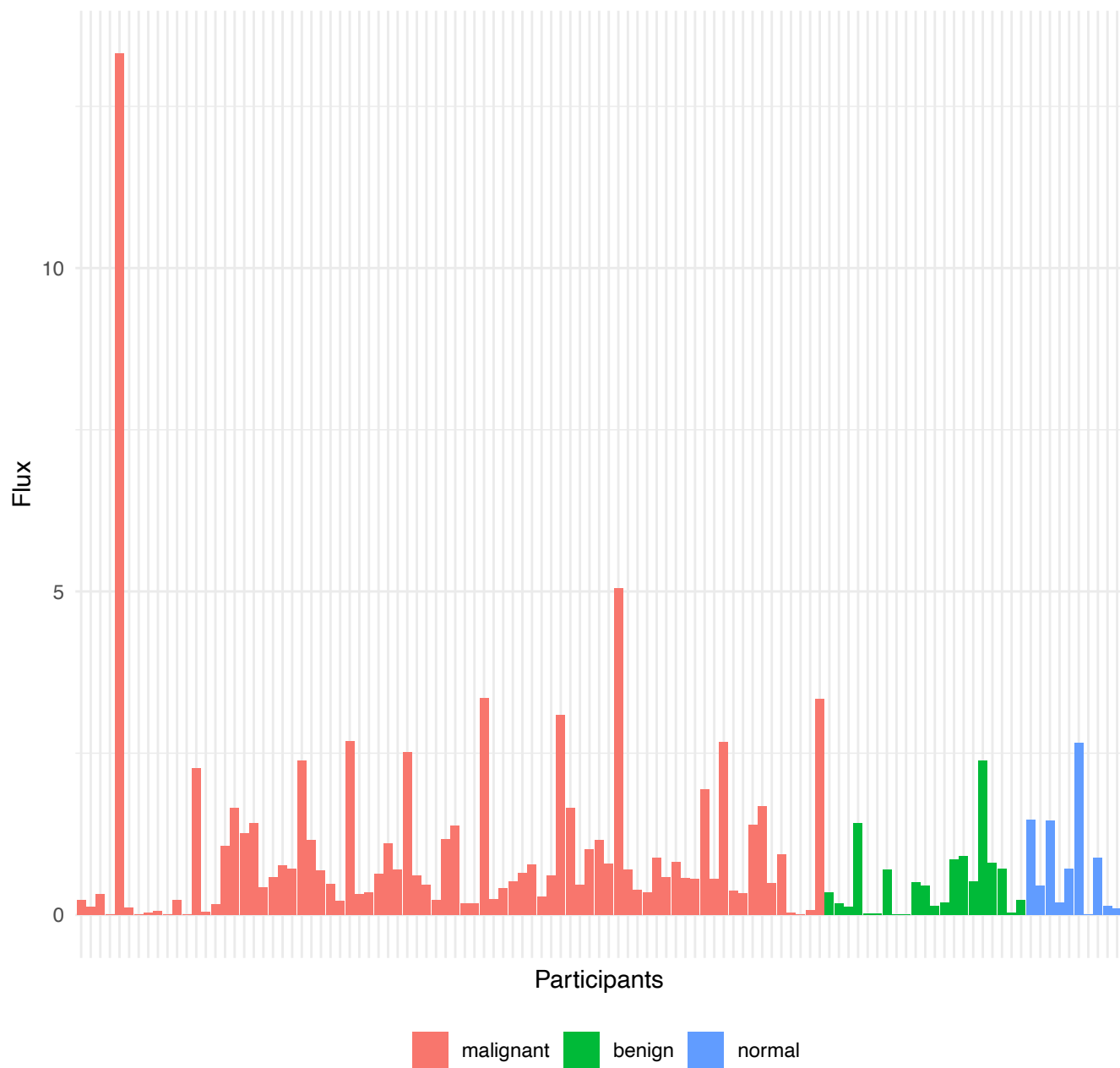
TEK.signaling



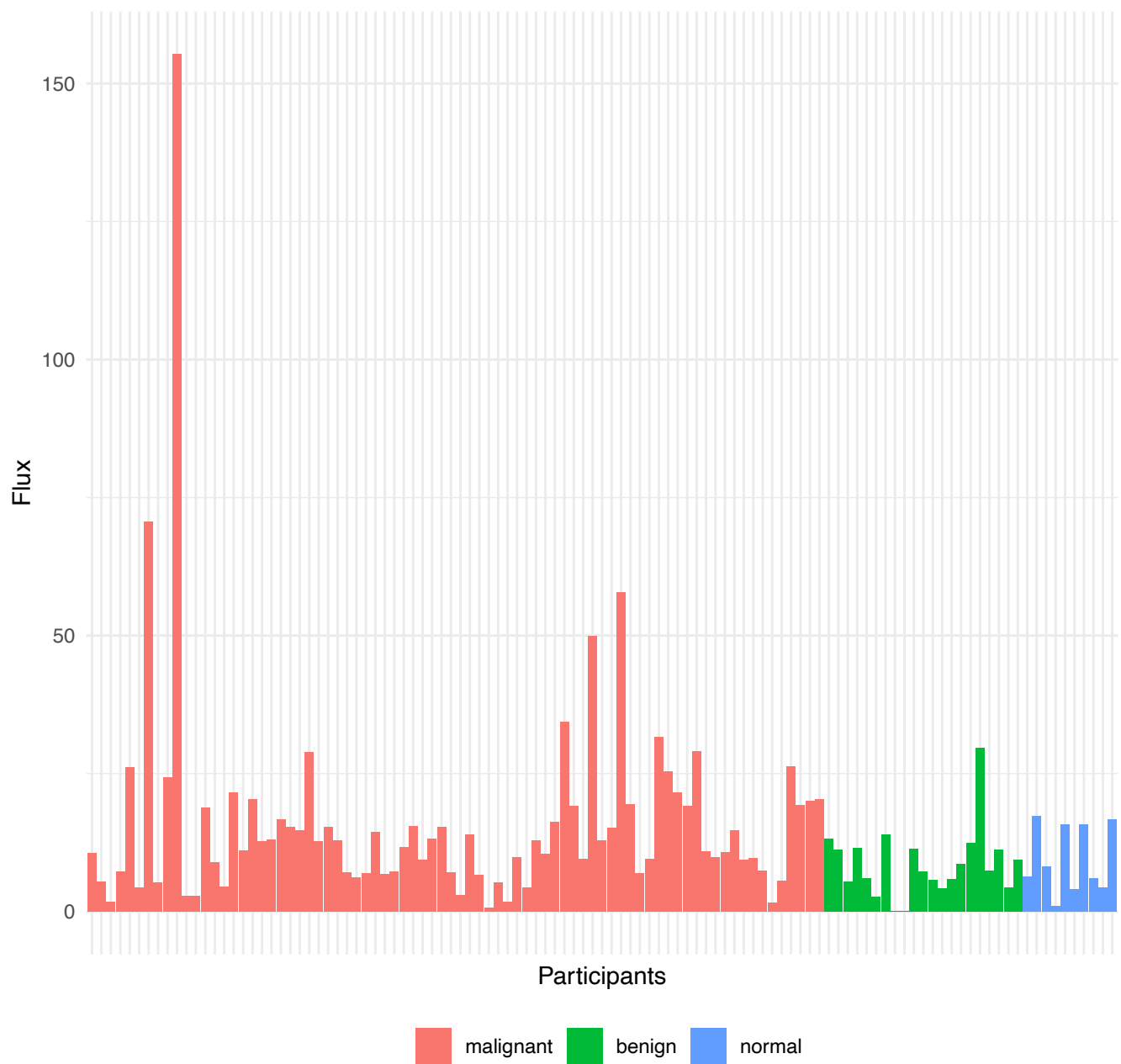
VEGF.signaling



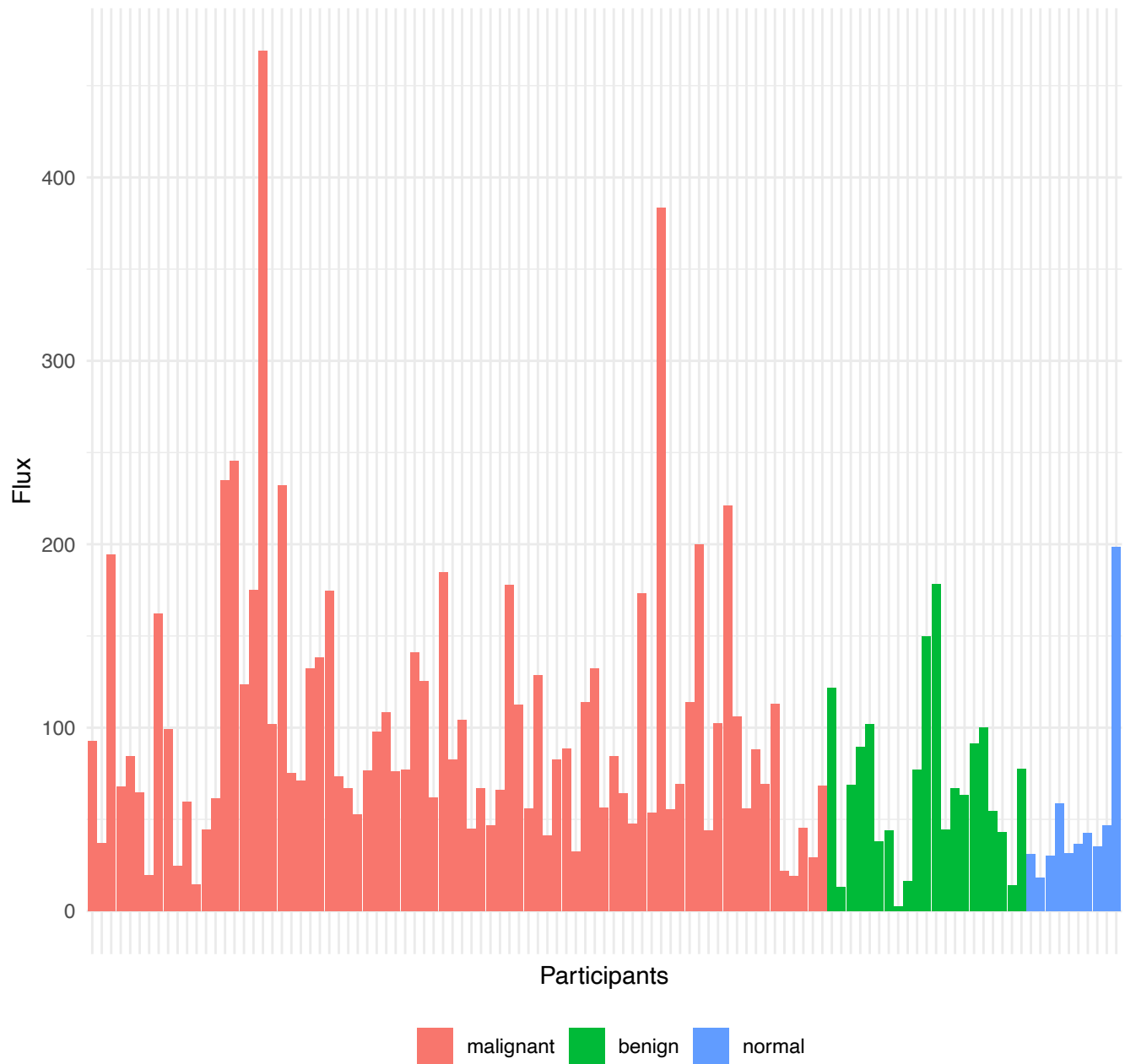
DYRK.signaling



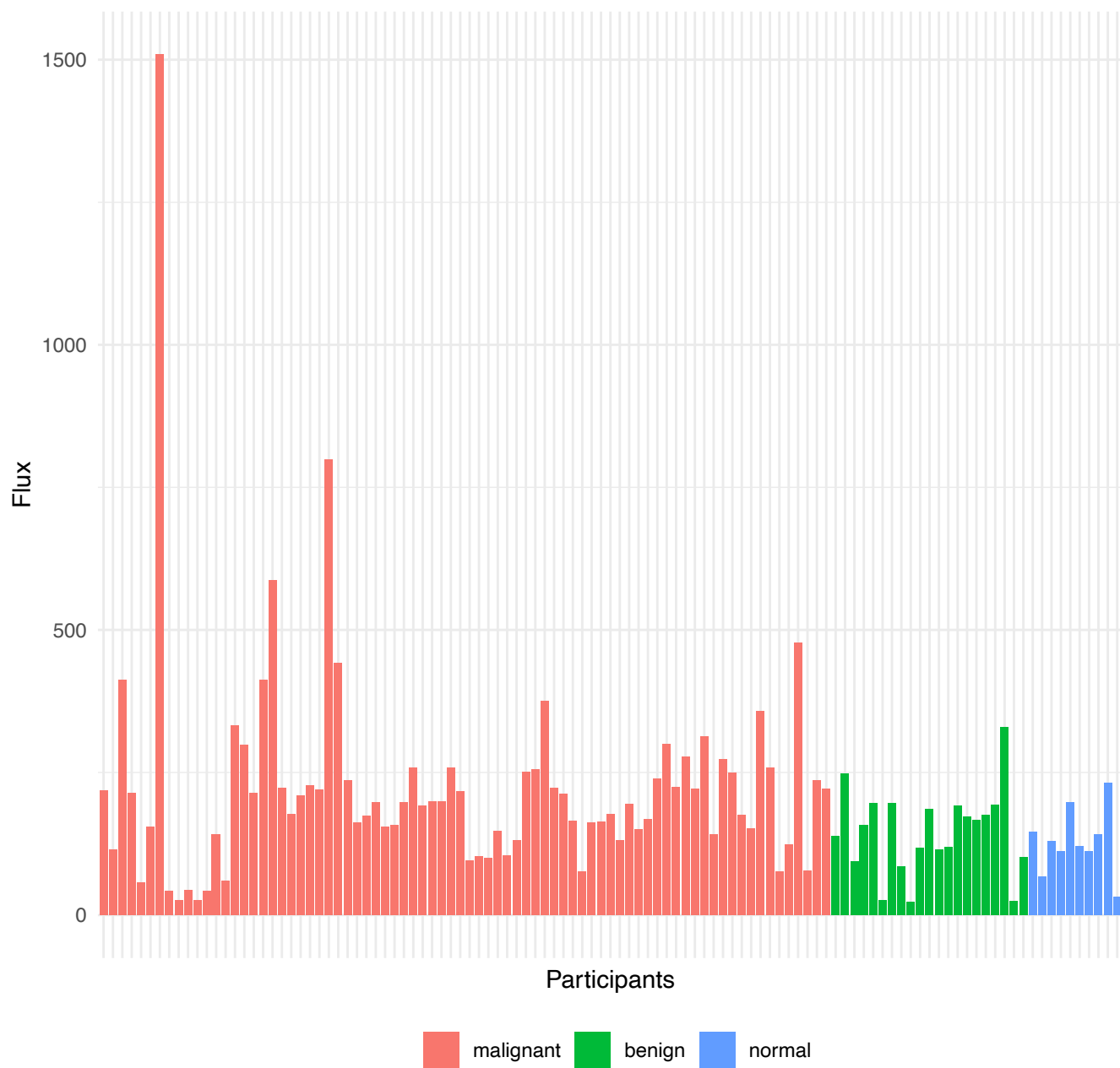
ERK5.signaling



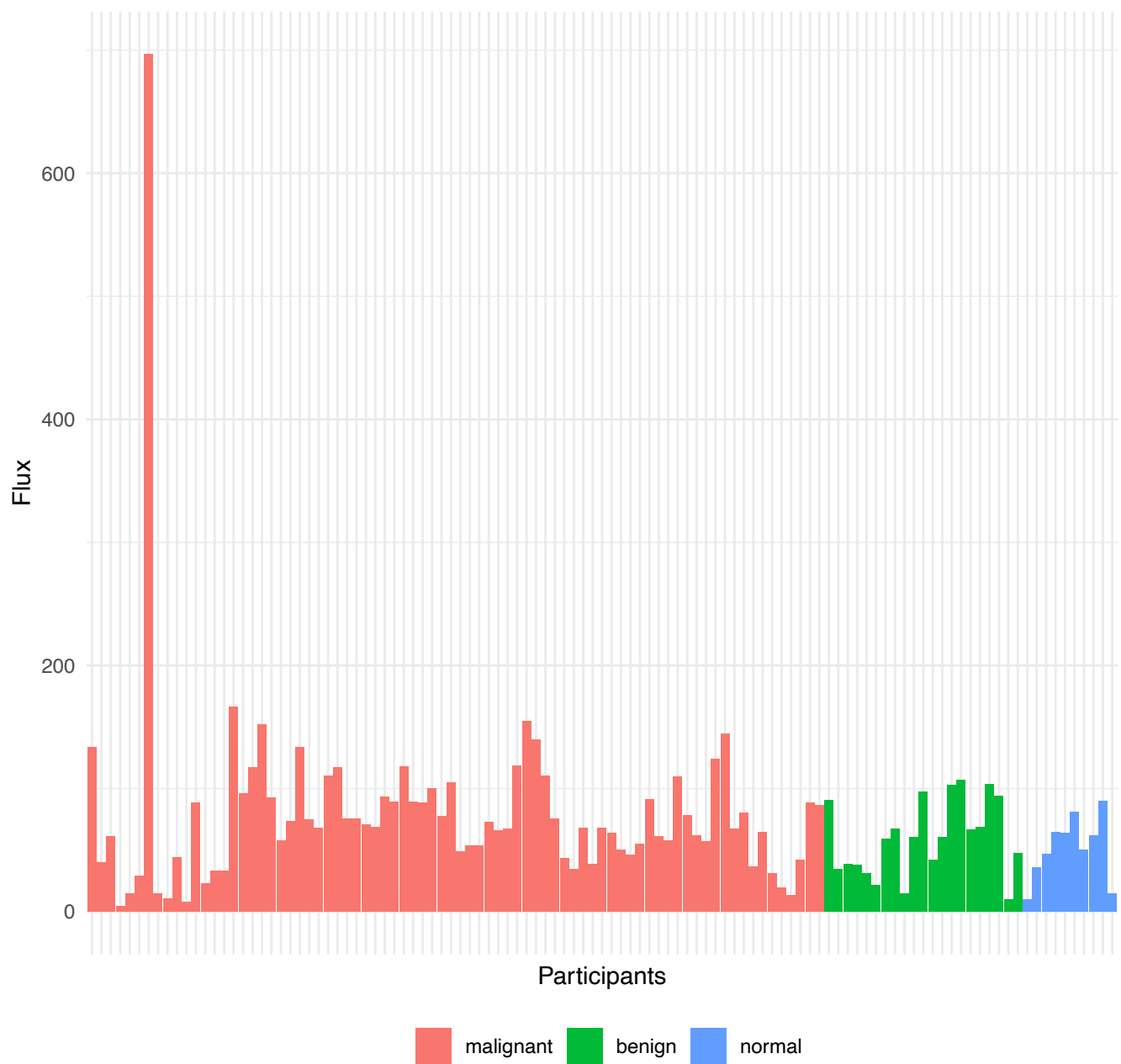
IGF1R.signaling



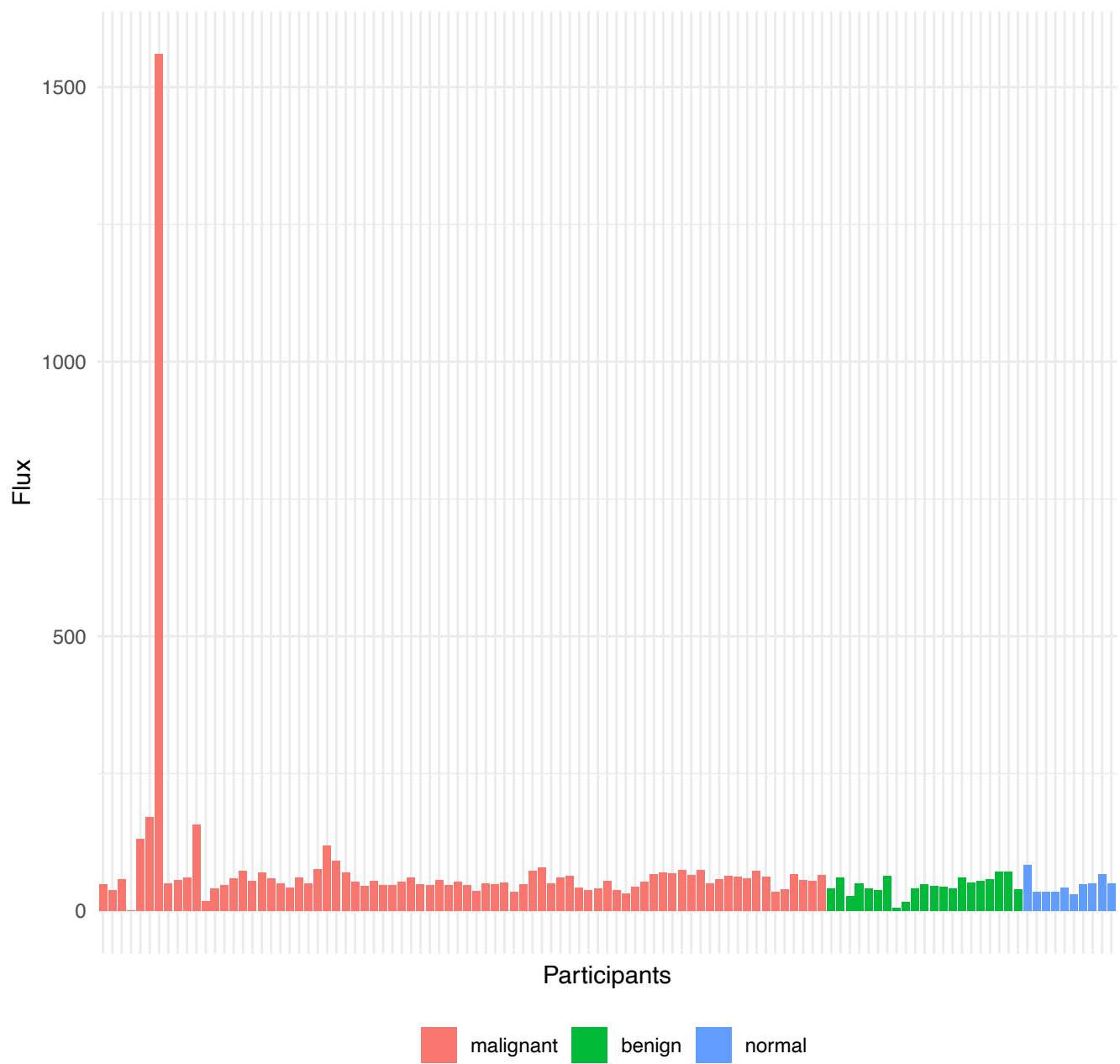
Ephrin.signaling



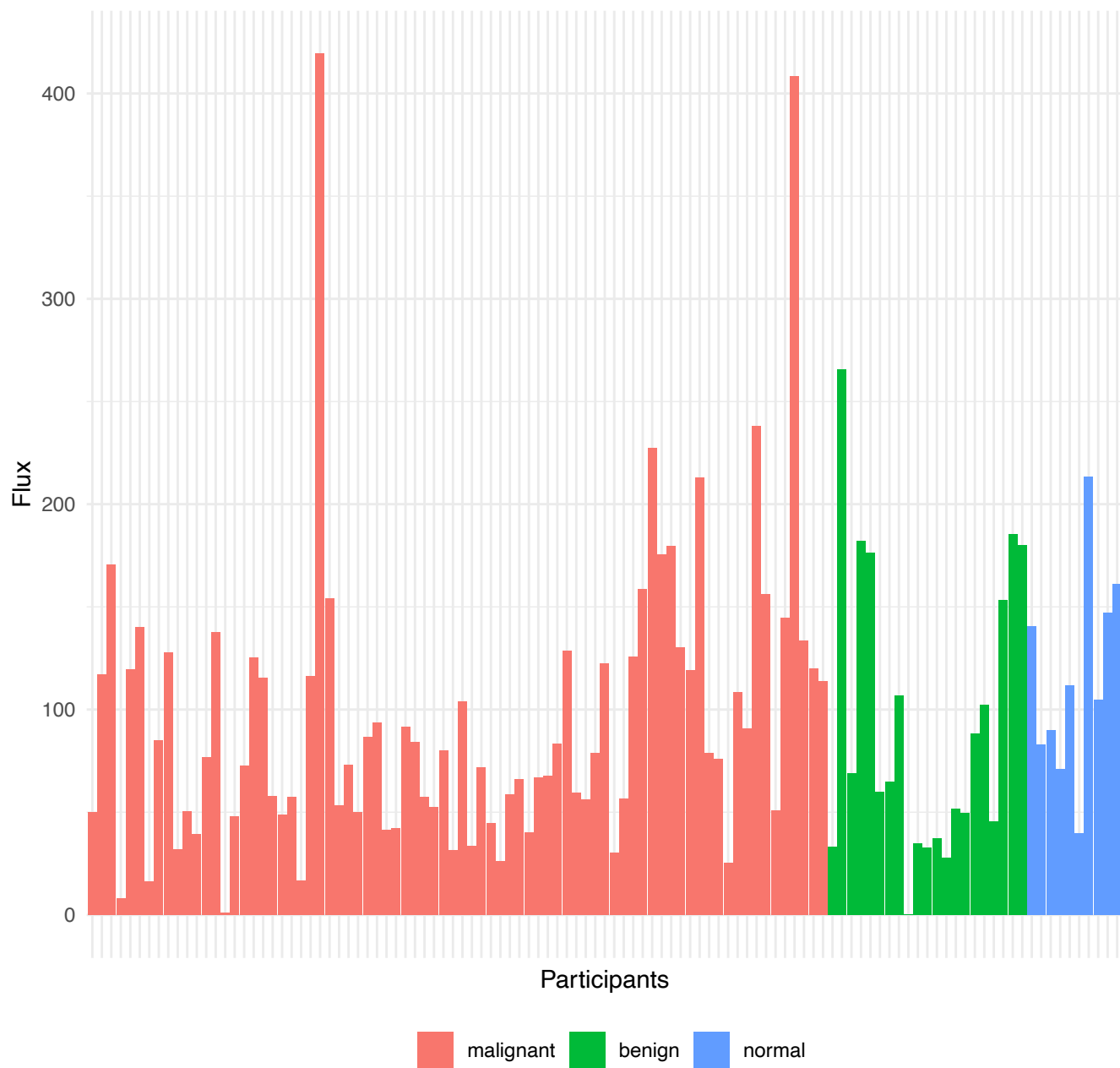
Growth.Hormone.signaling



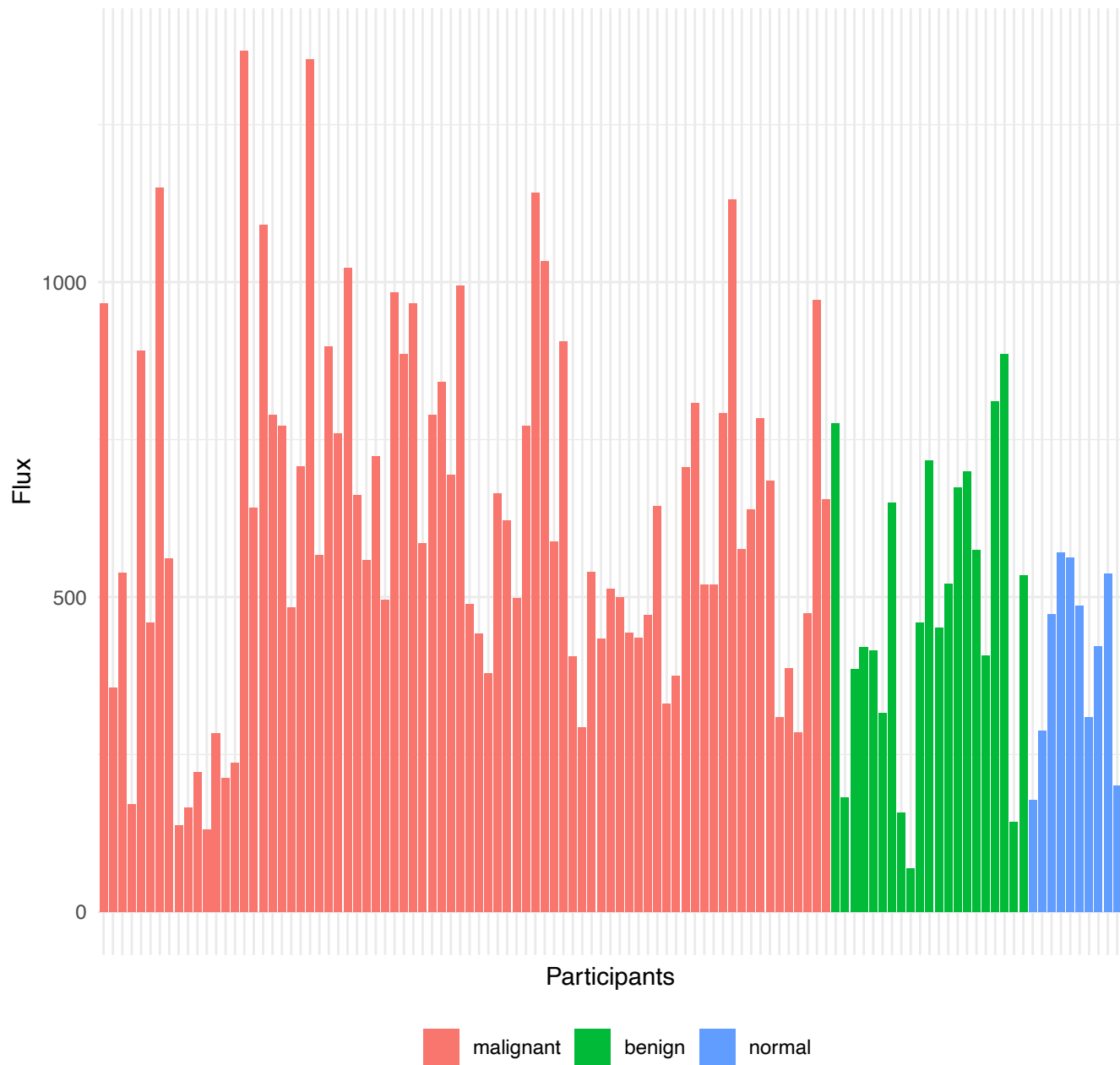
Hedgehog.signaling



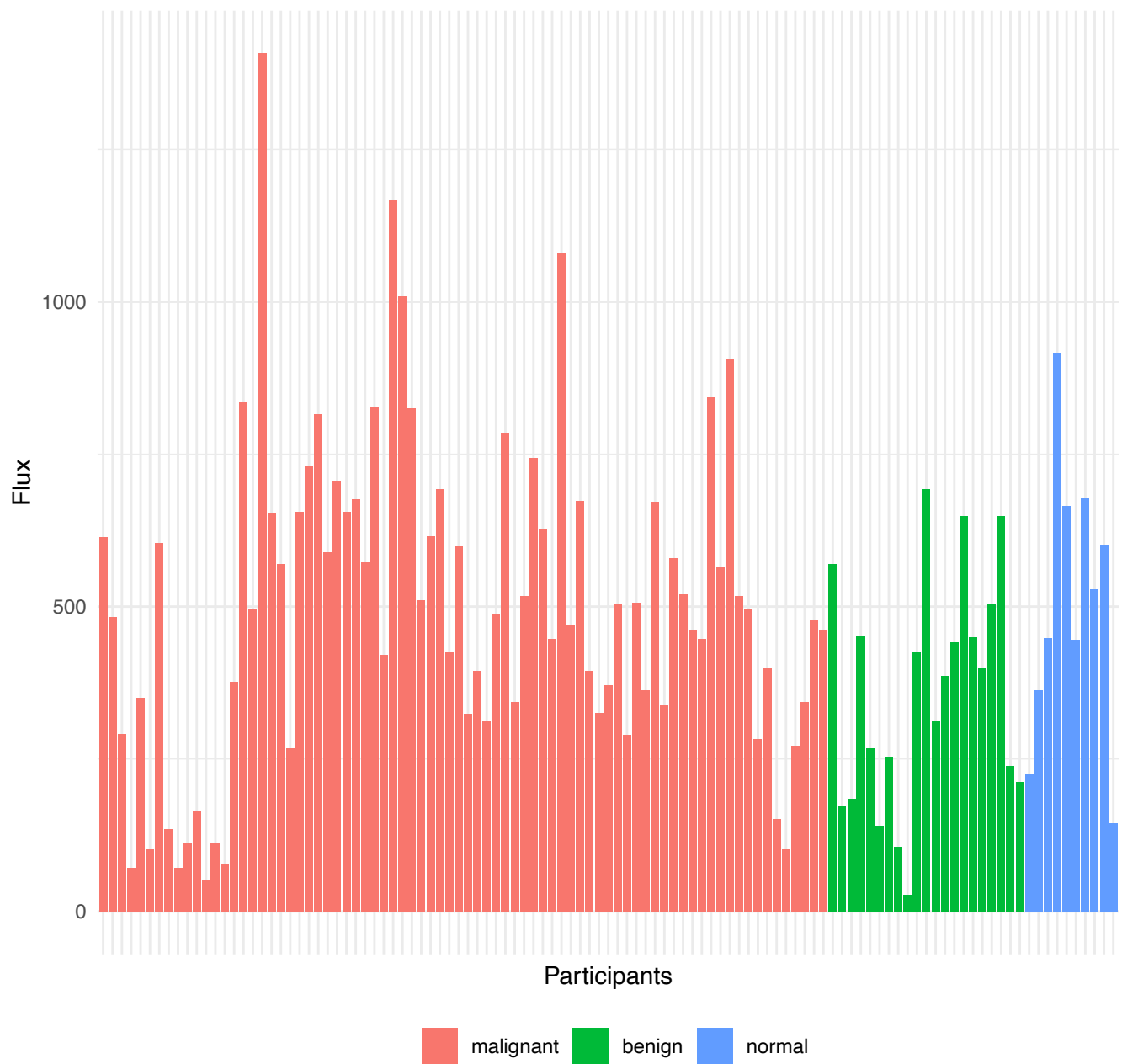
NOTCH.signaling



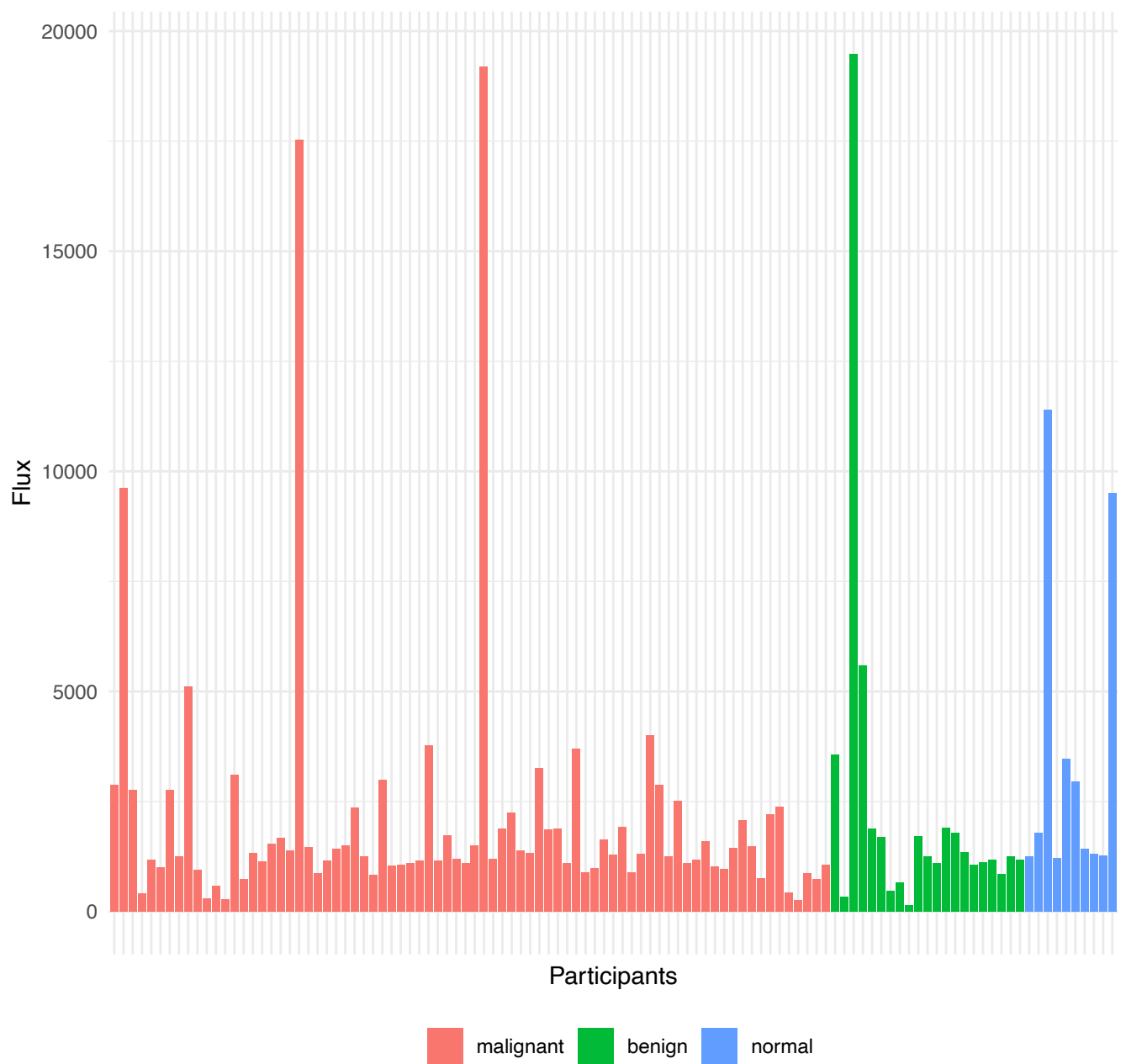
Interleukin.signaling



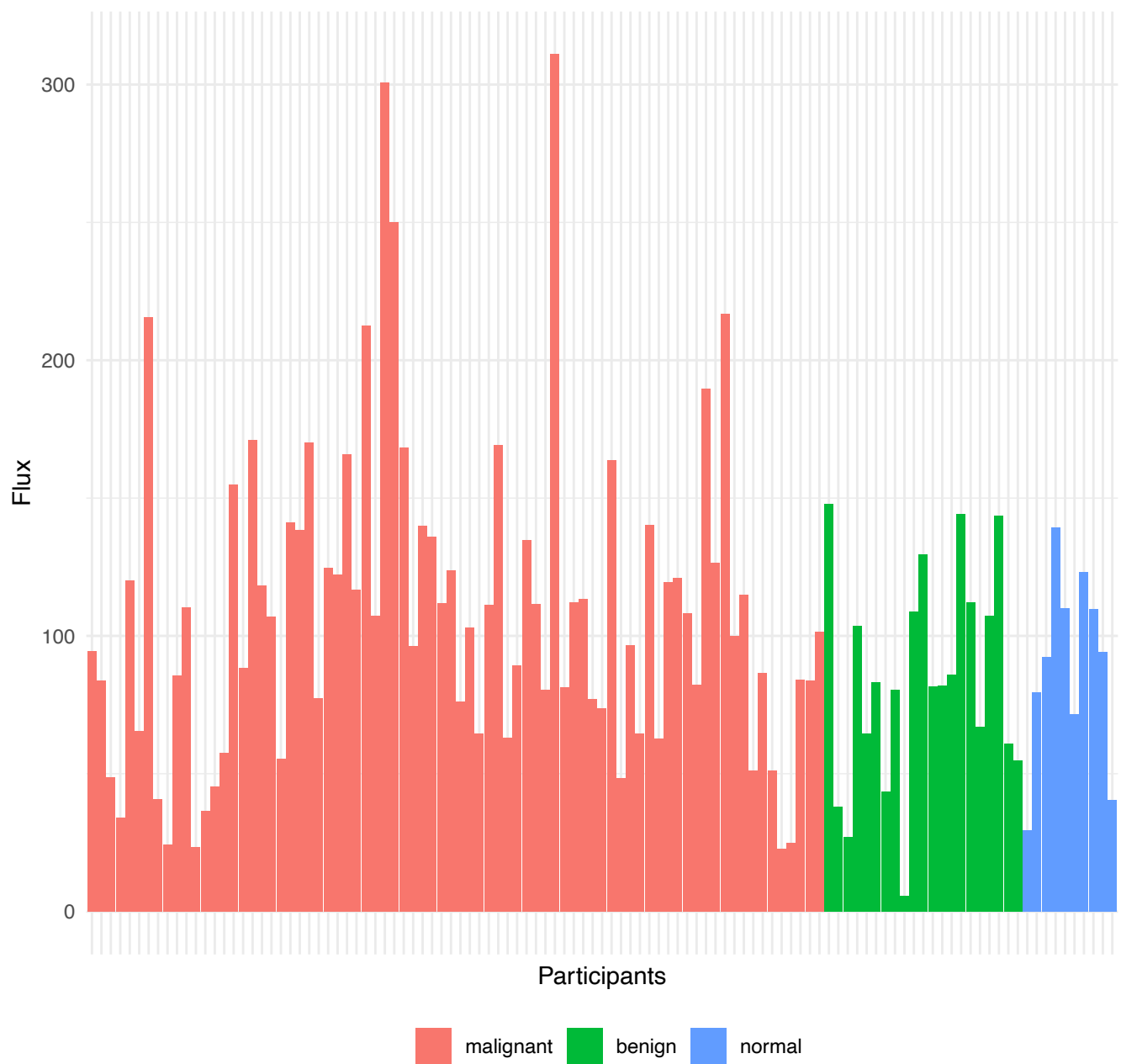
TCR.signaling



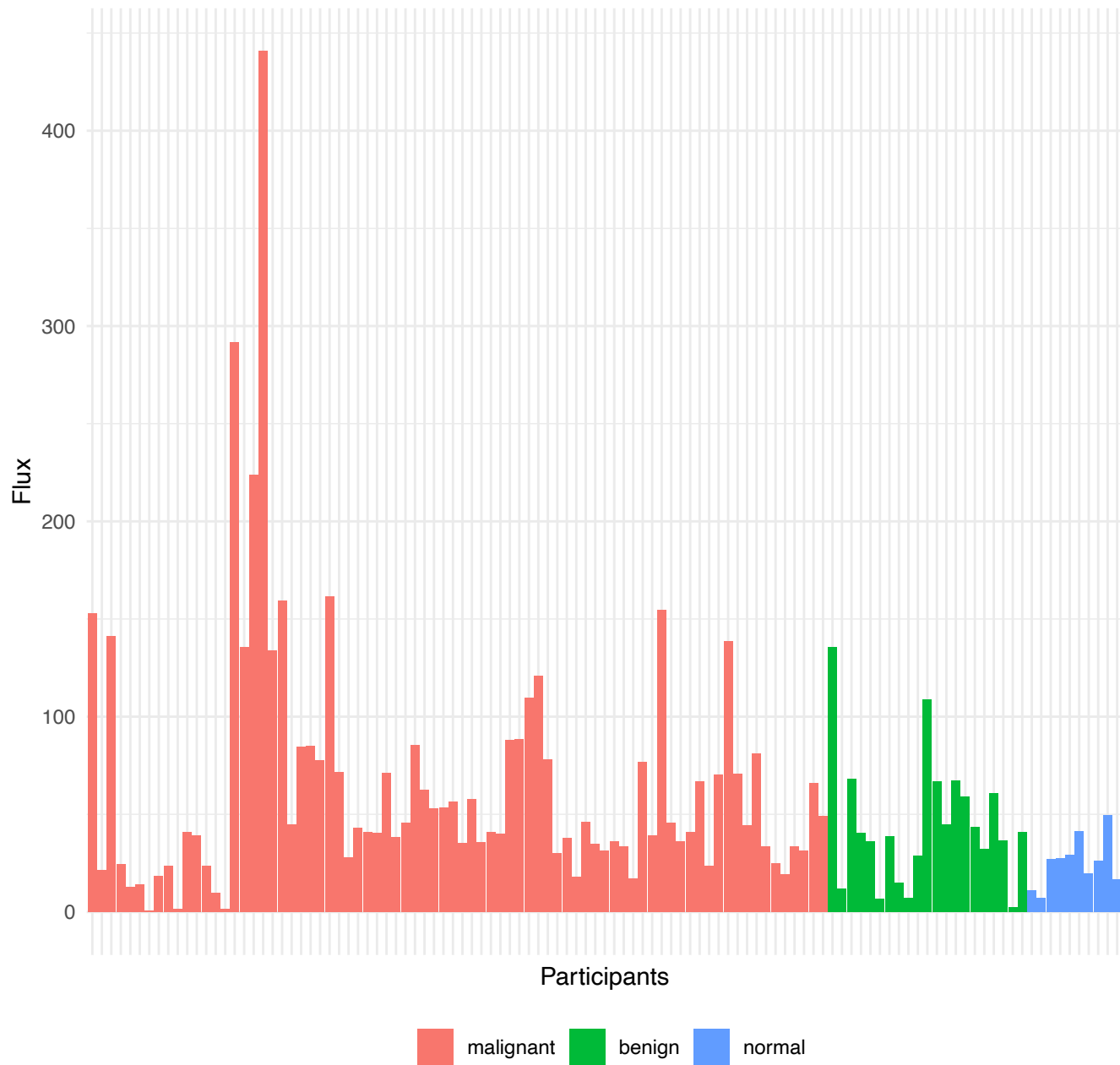
IFN.signaling



NFAT.signaling

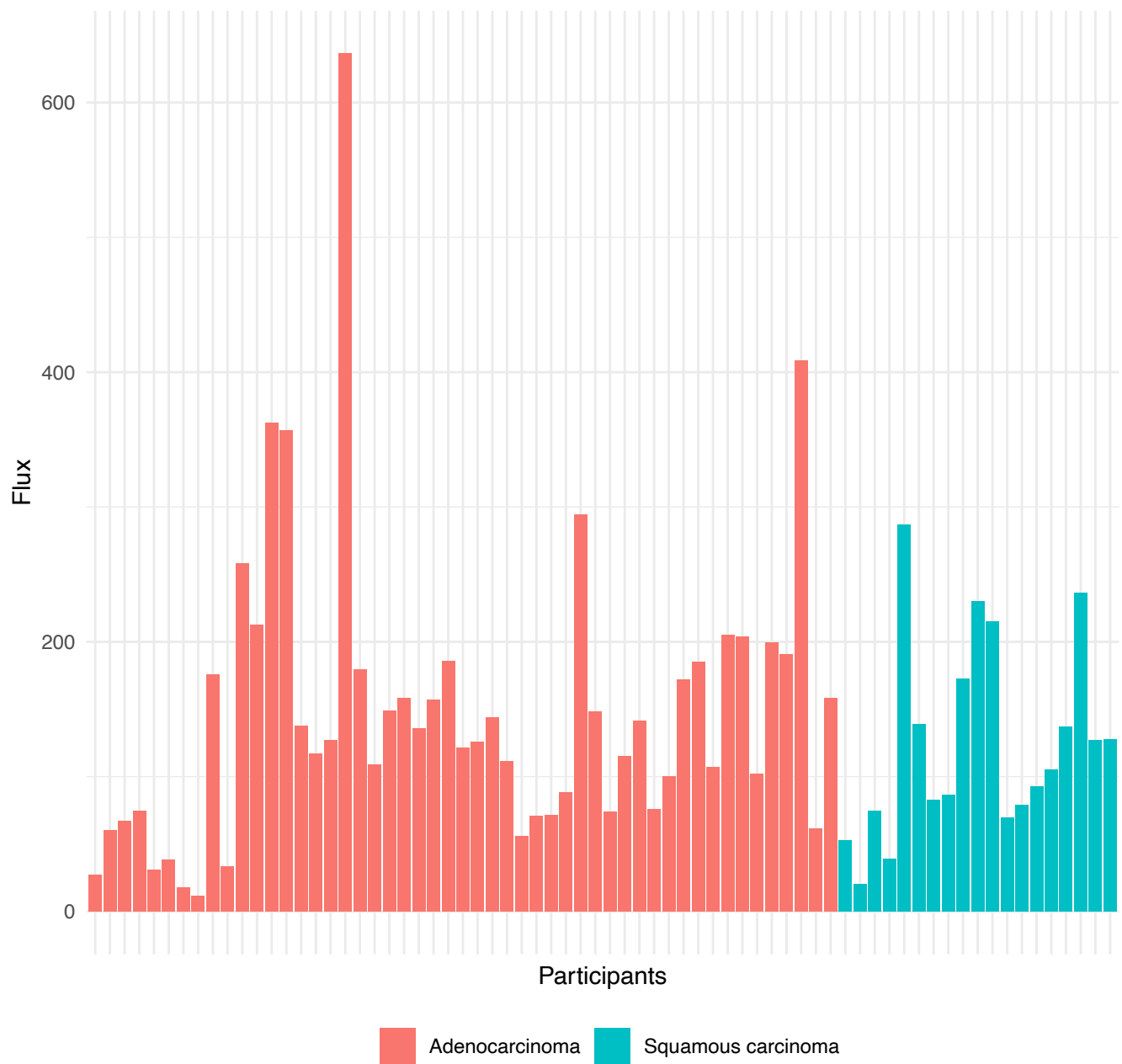


BCR.signaling

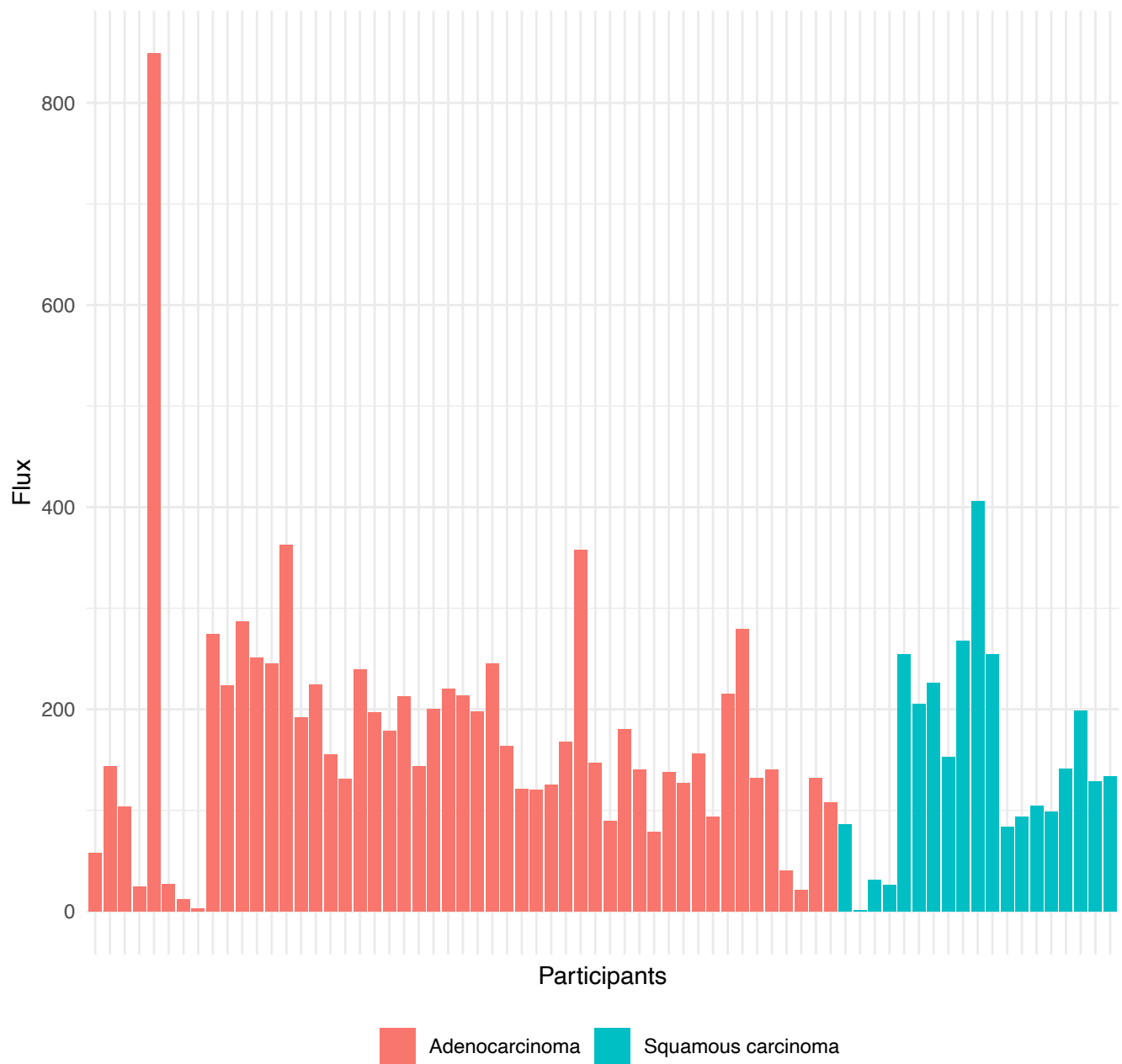


Supplement Figure 3: Pathway flux comparison between adenocarcinoma and squamous carcinoma sub-groups.

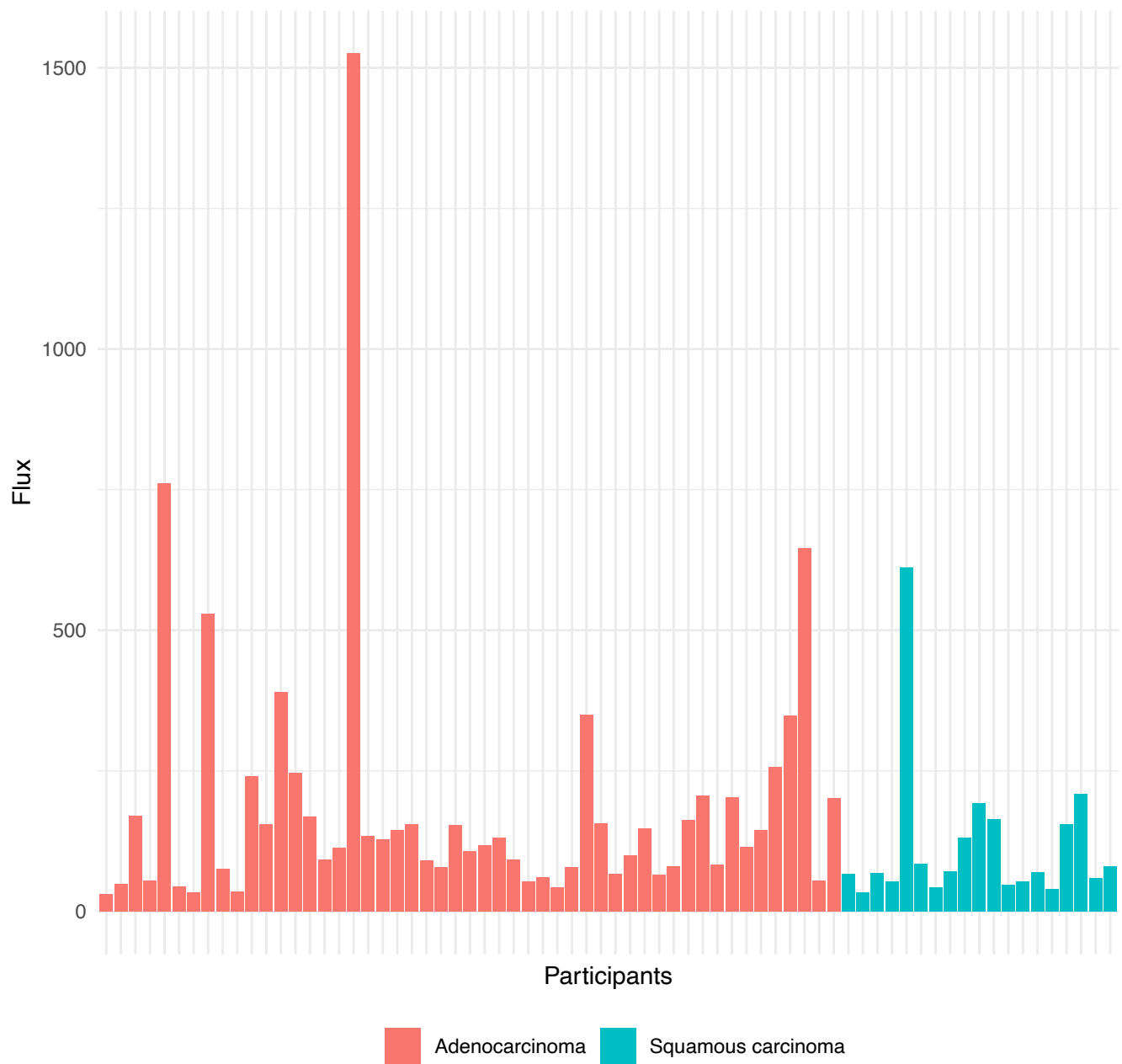
ABL.signaling



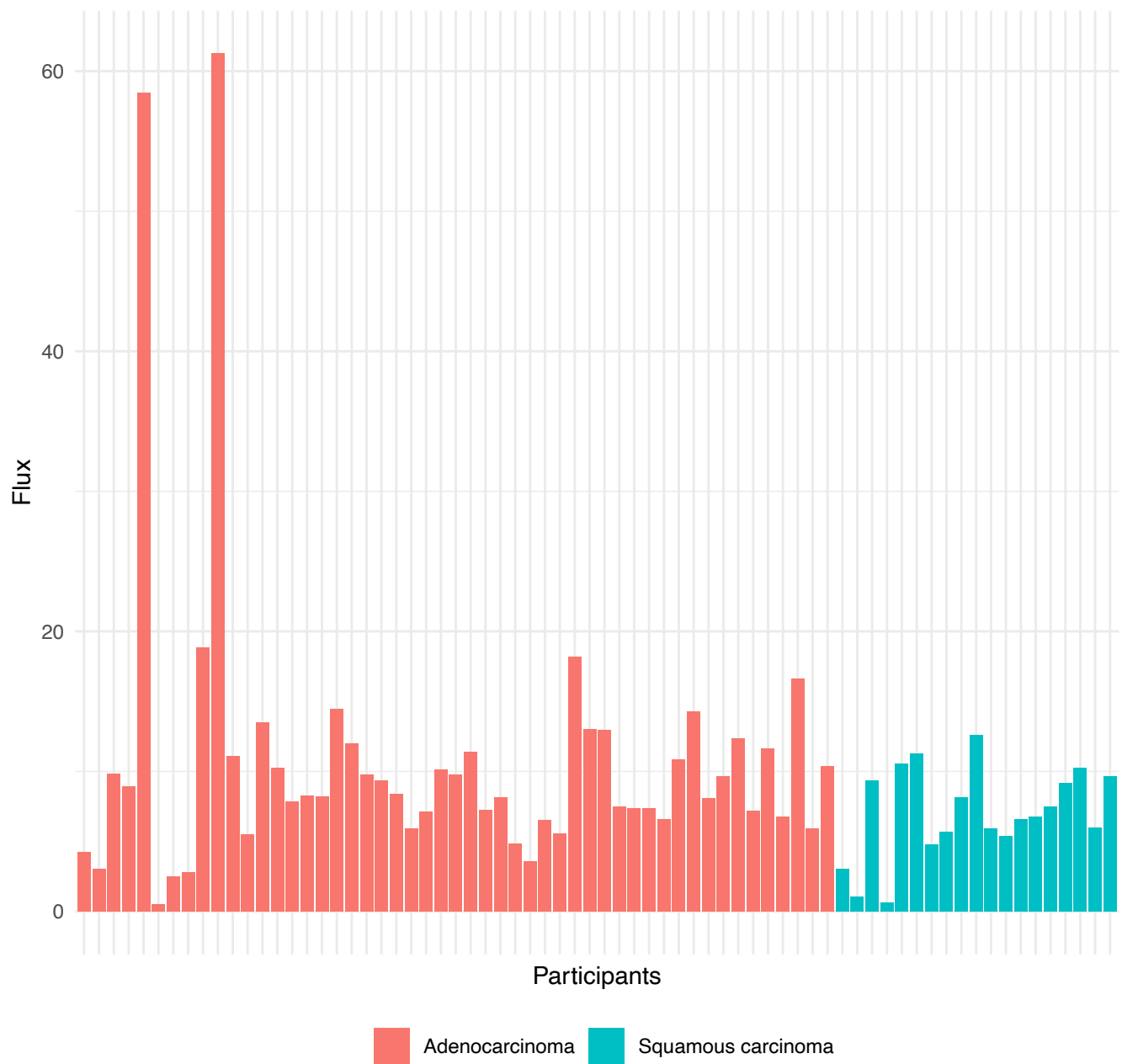
Met.Receptor



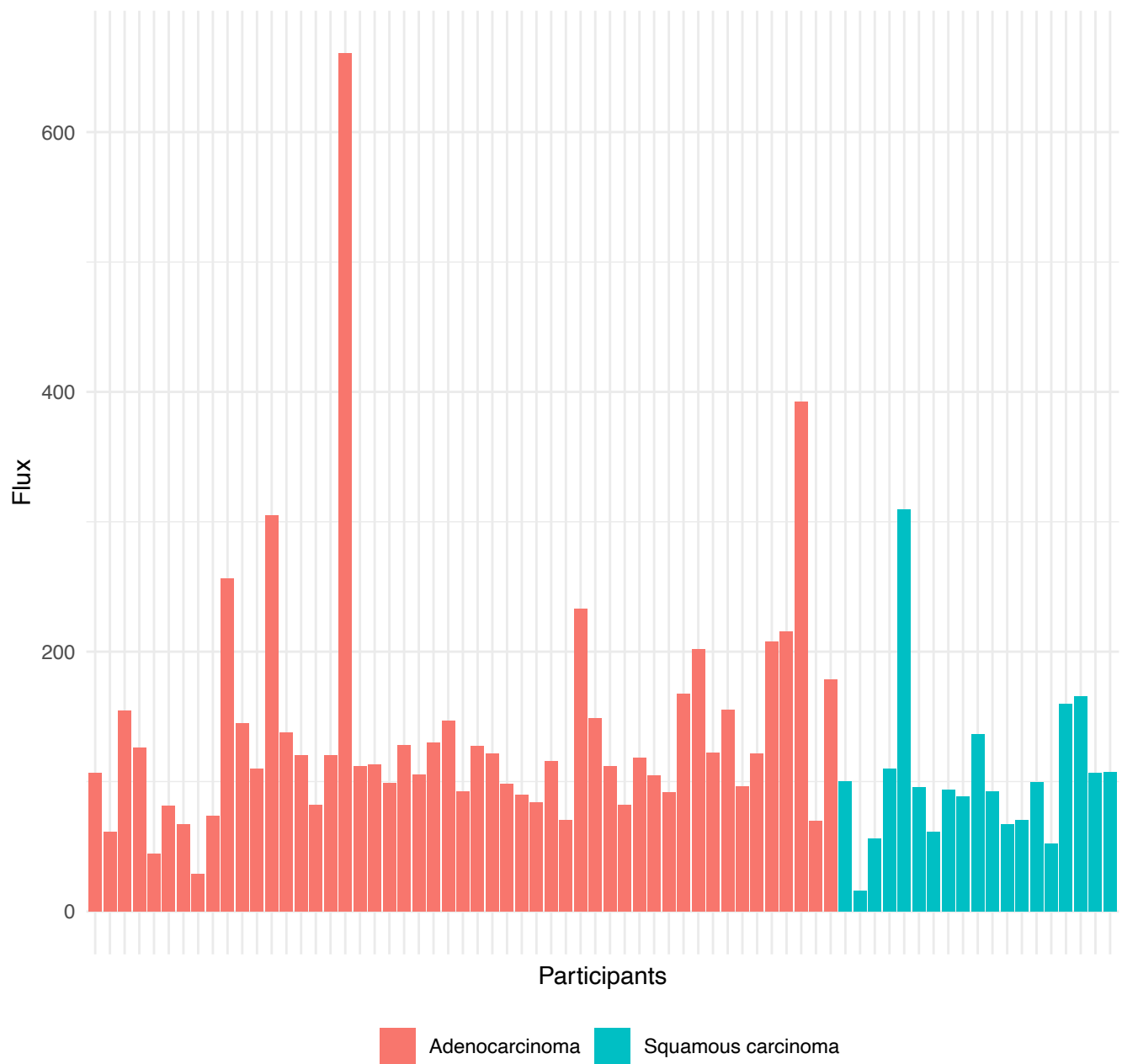
WNT.signaling



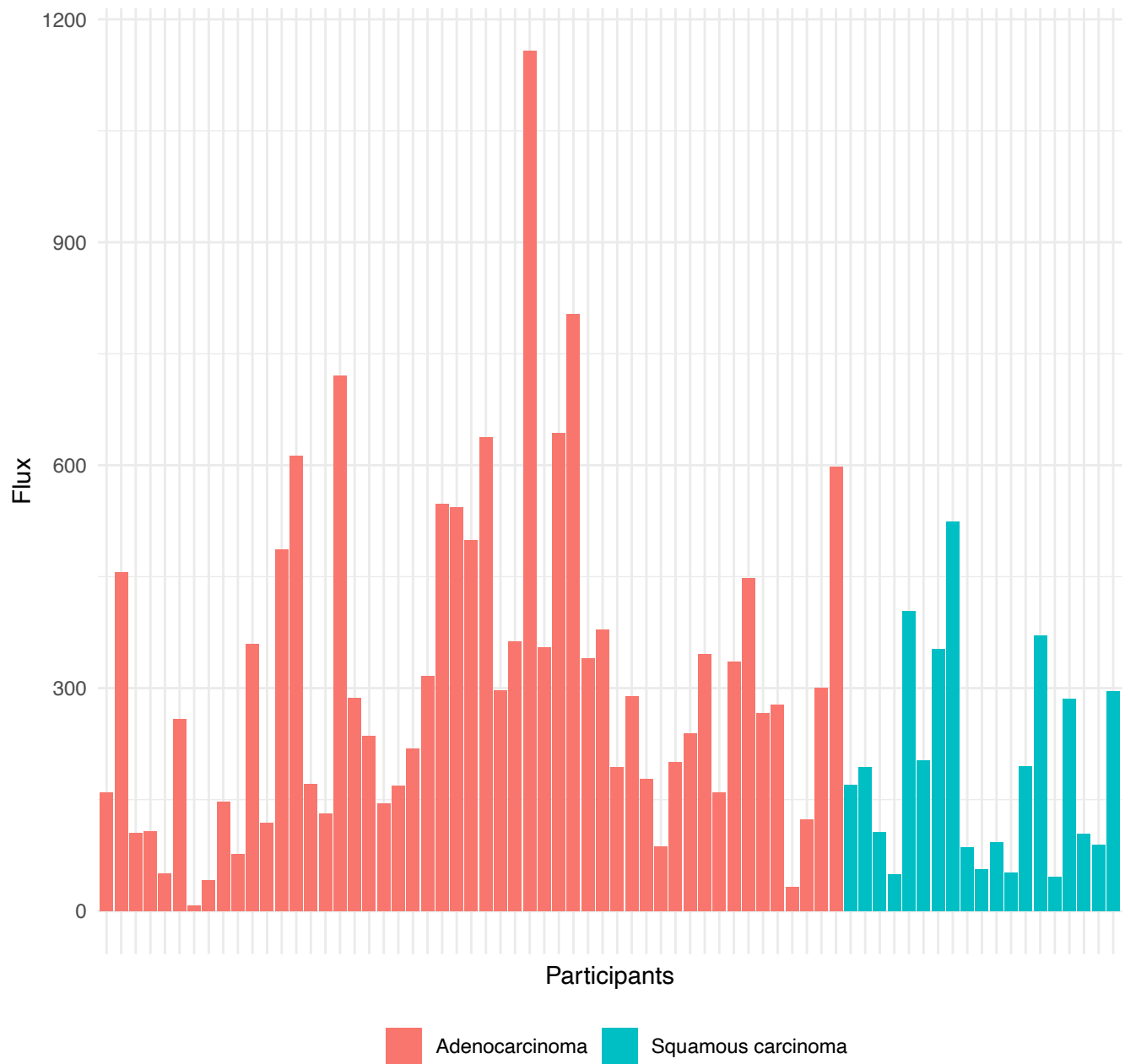
BMP.signaling



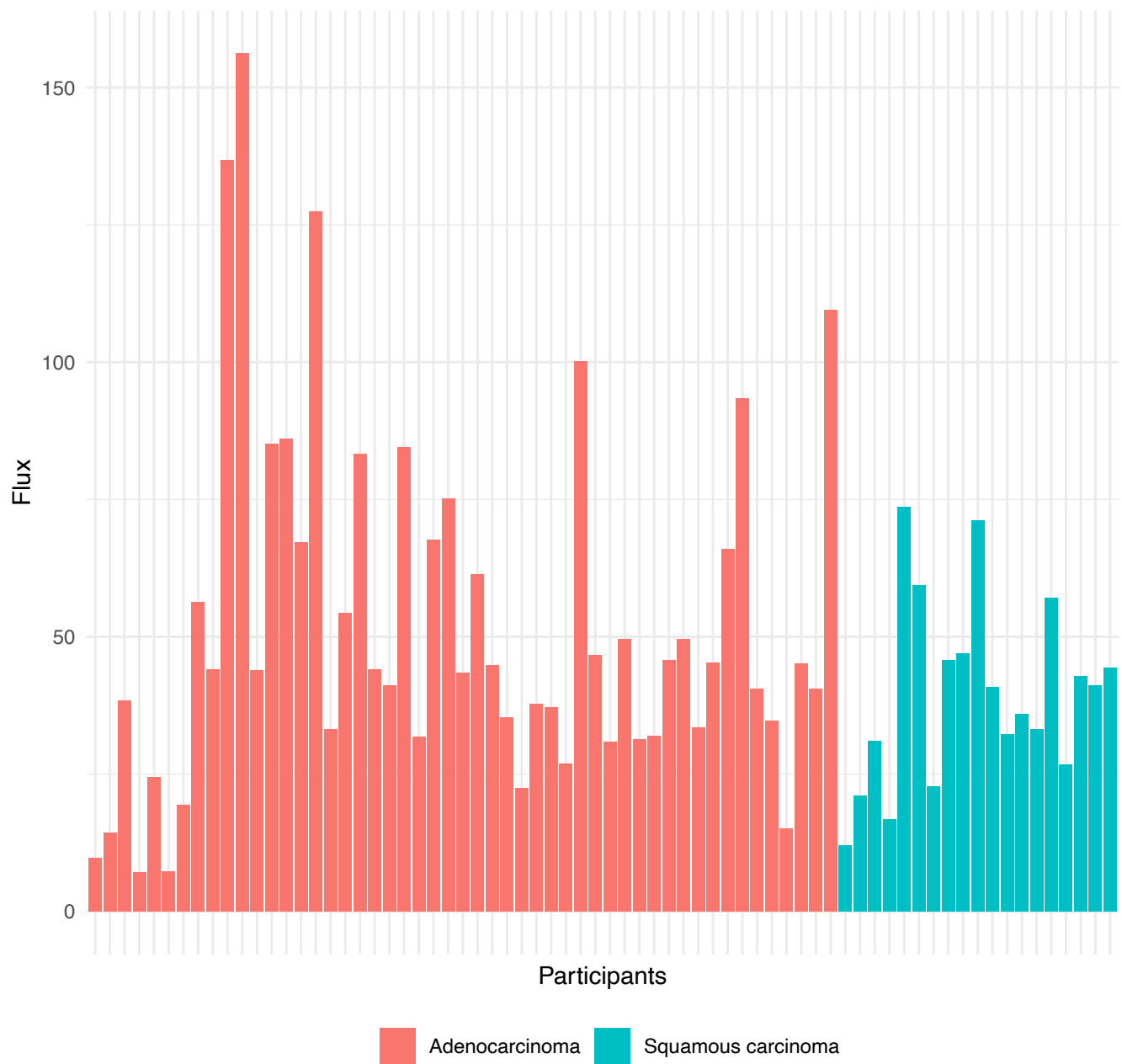
COX.signaling



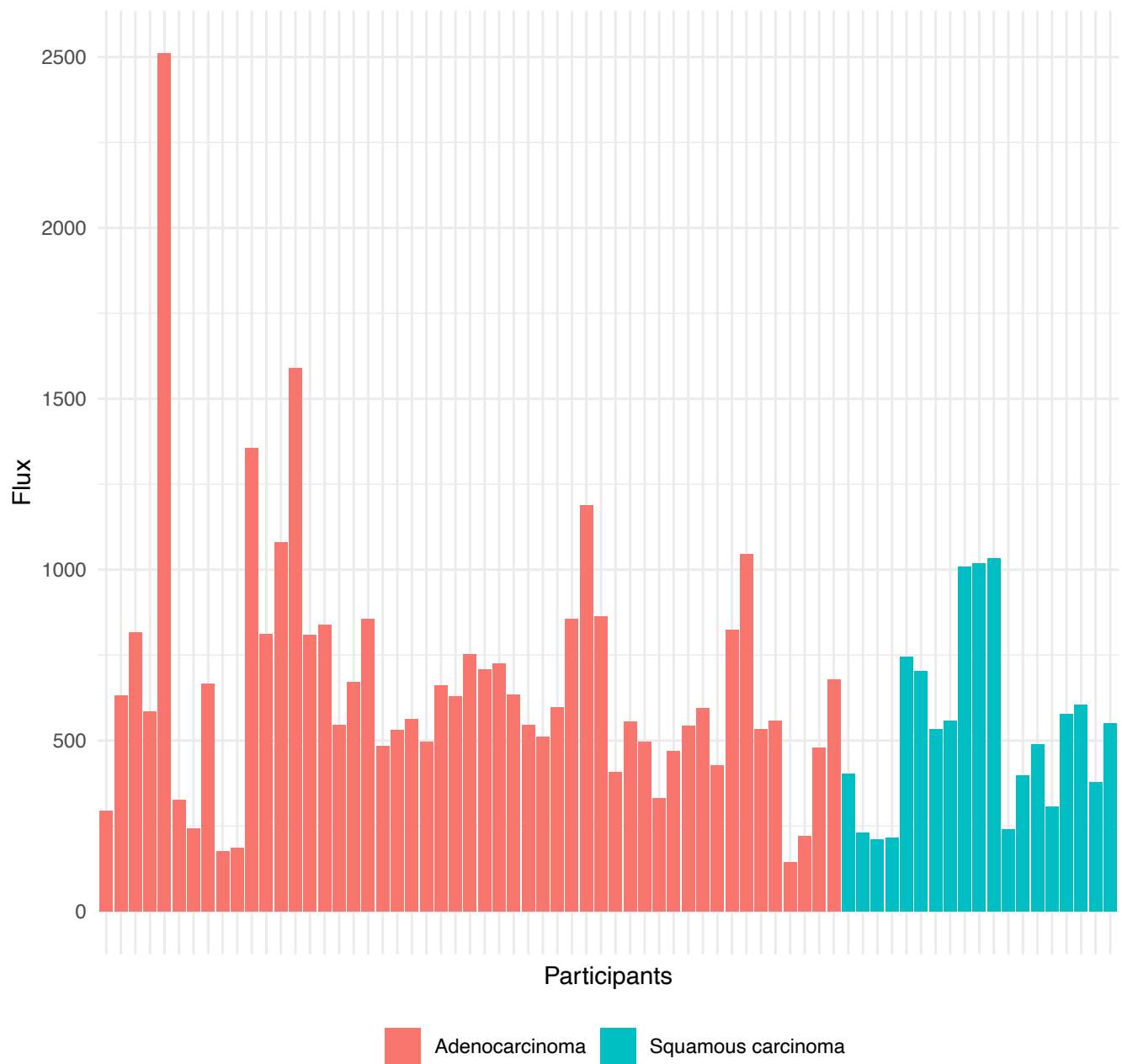
HIF.1.signaling



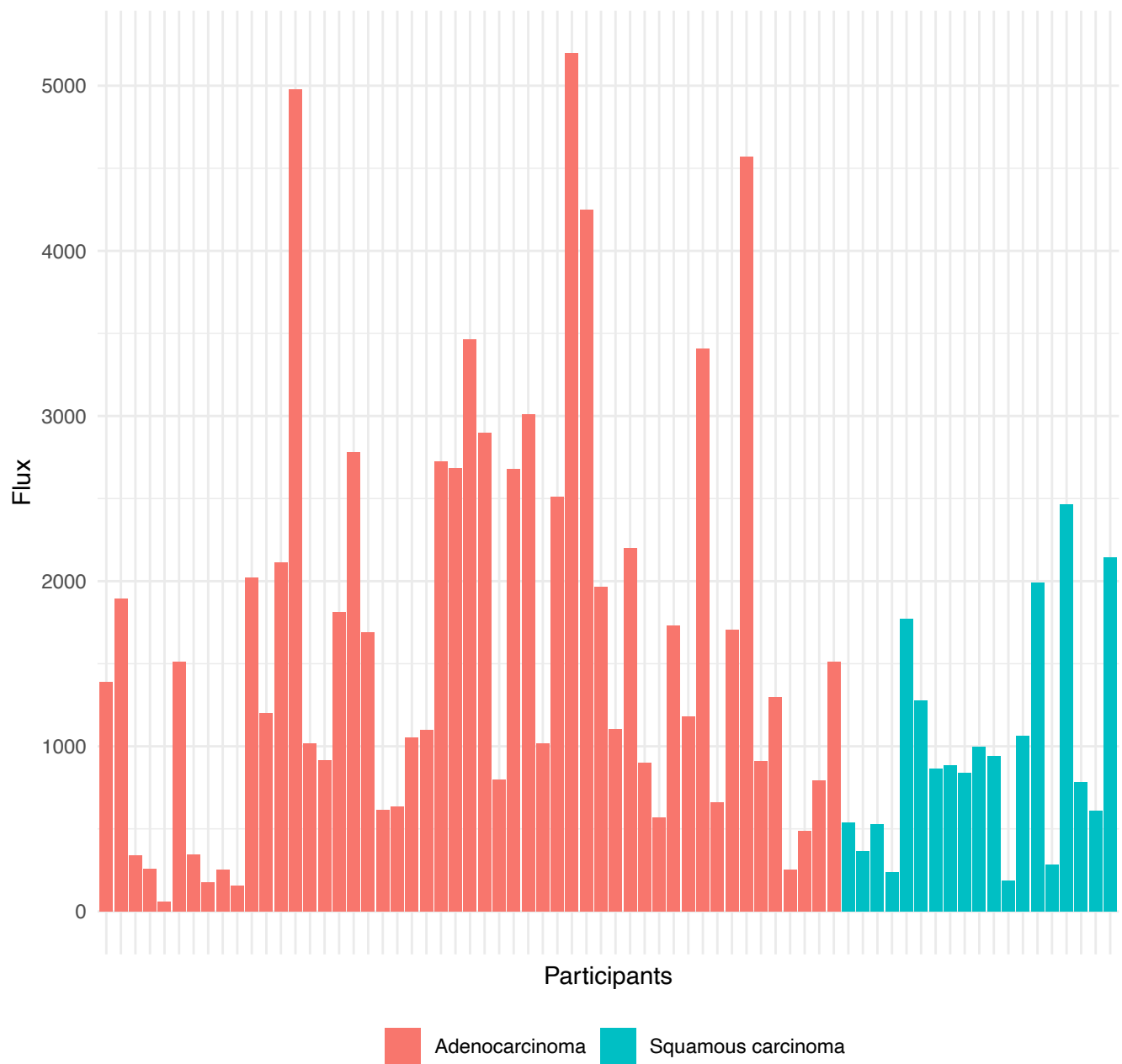
PI3K.AKT.signaling



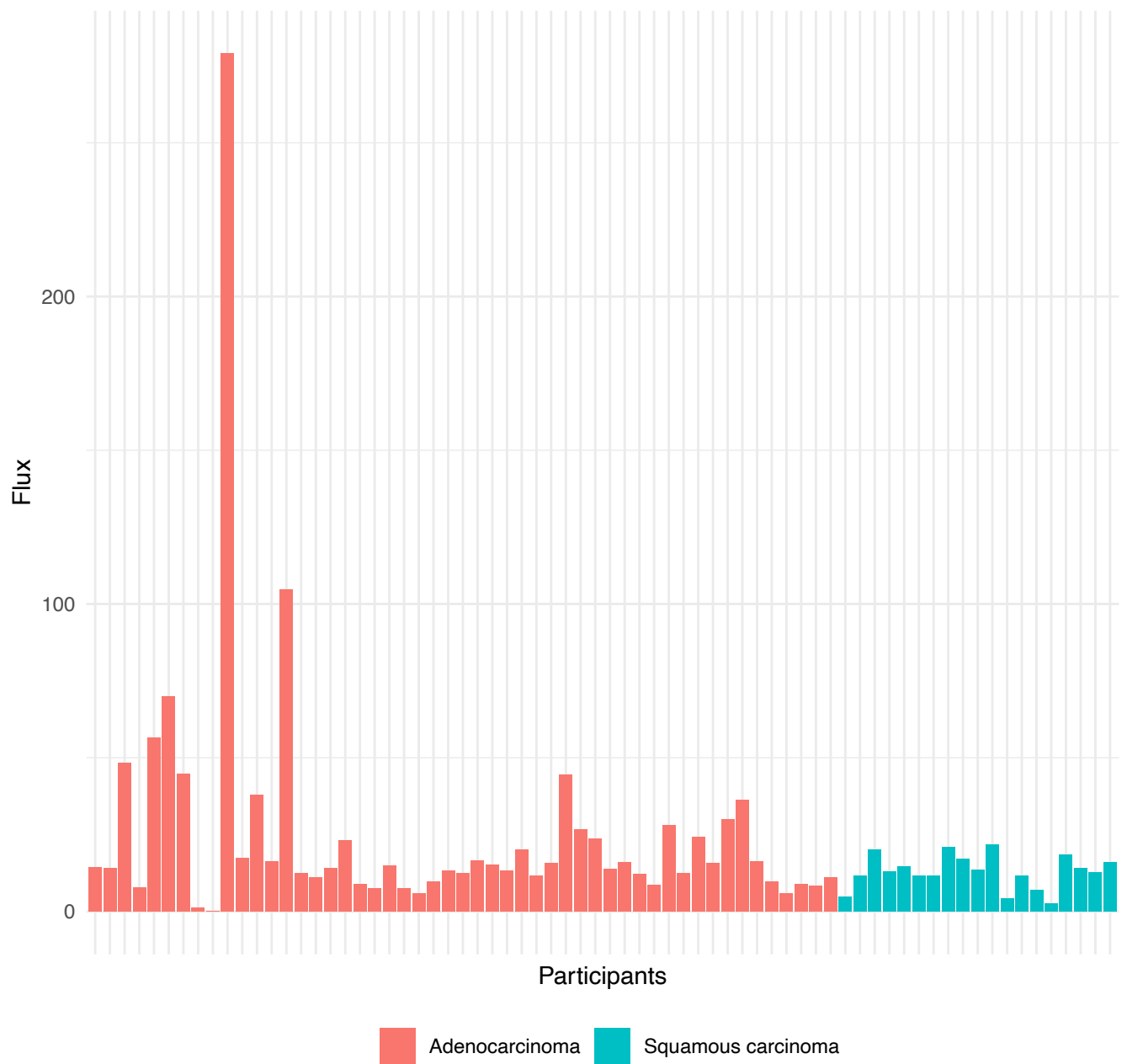
JAK.STAT.signaling



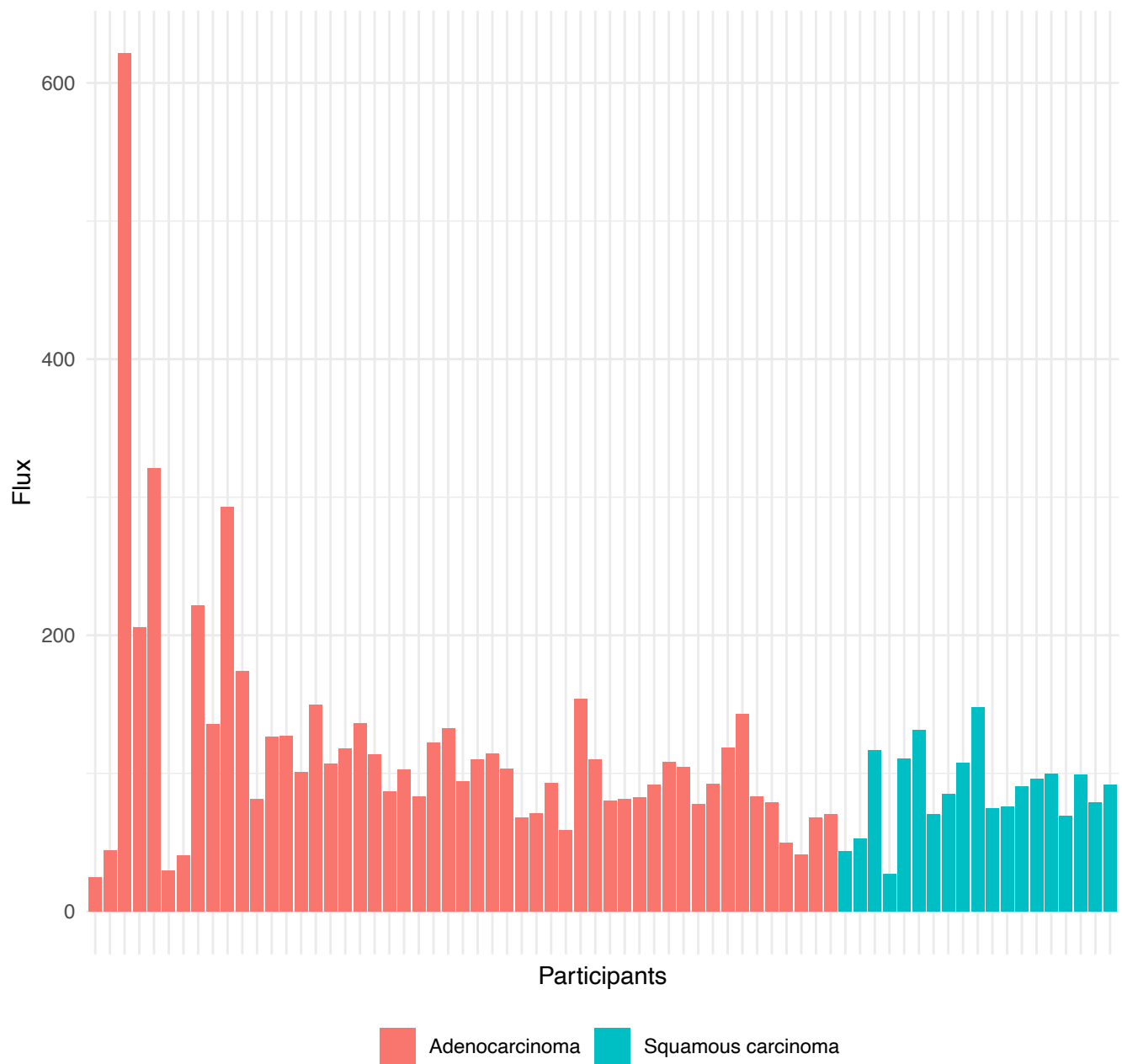
FOXO.signaling



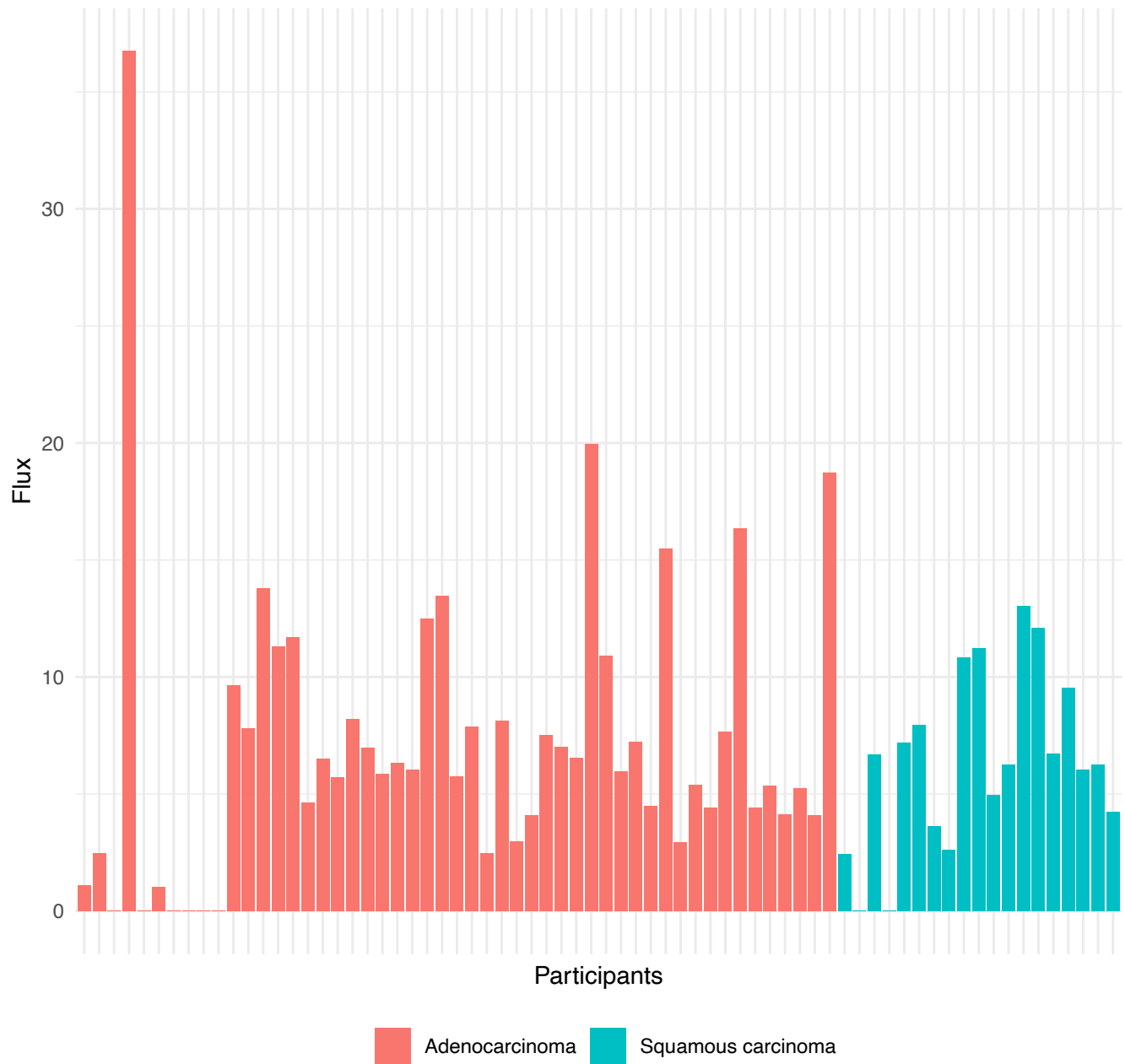
KIT.signaling



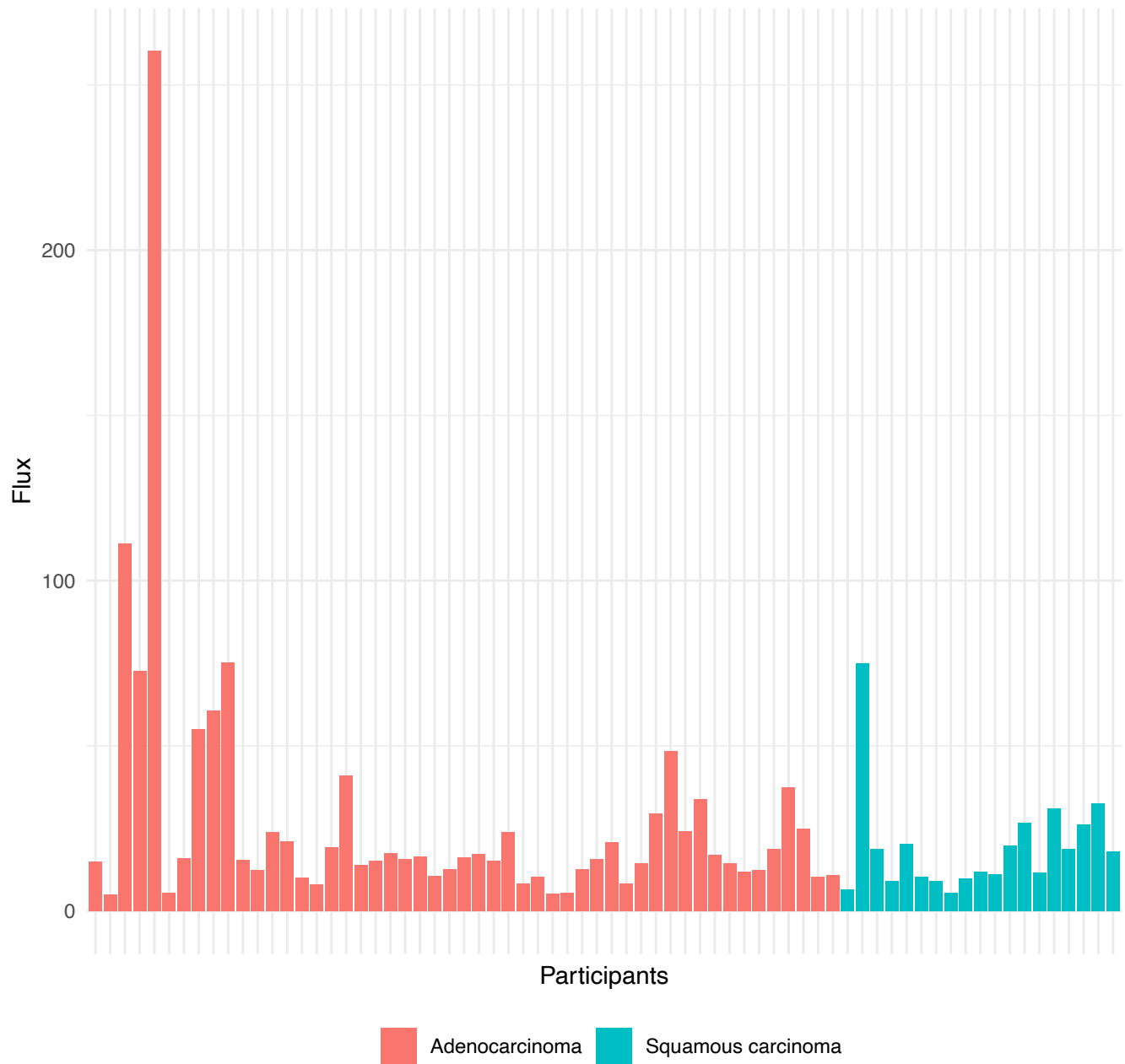
MAPK.signaling



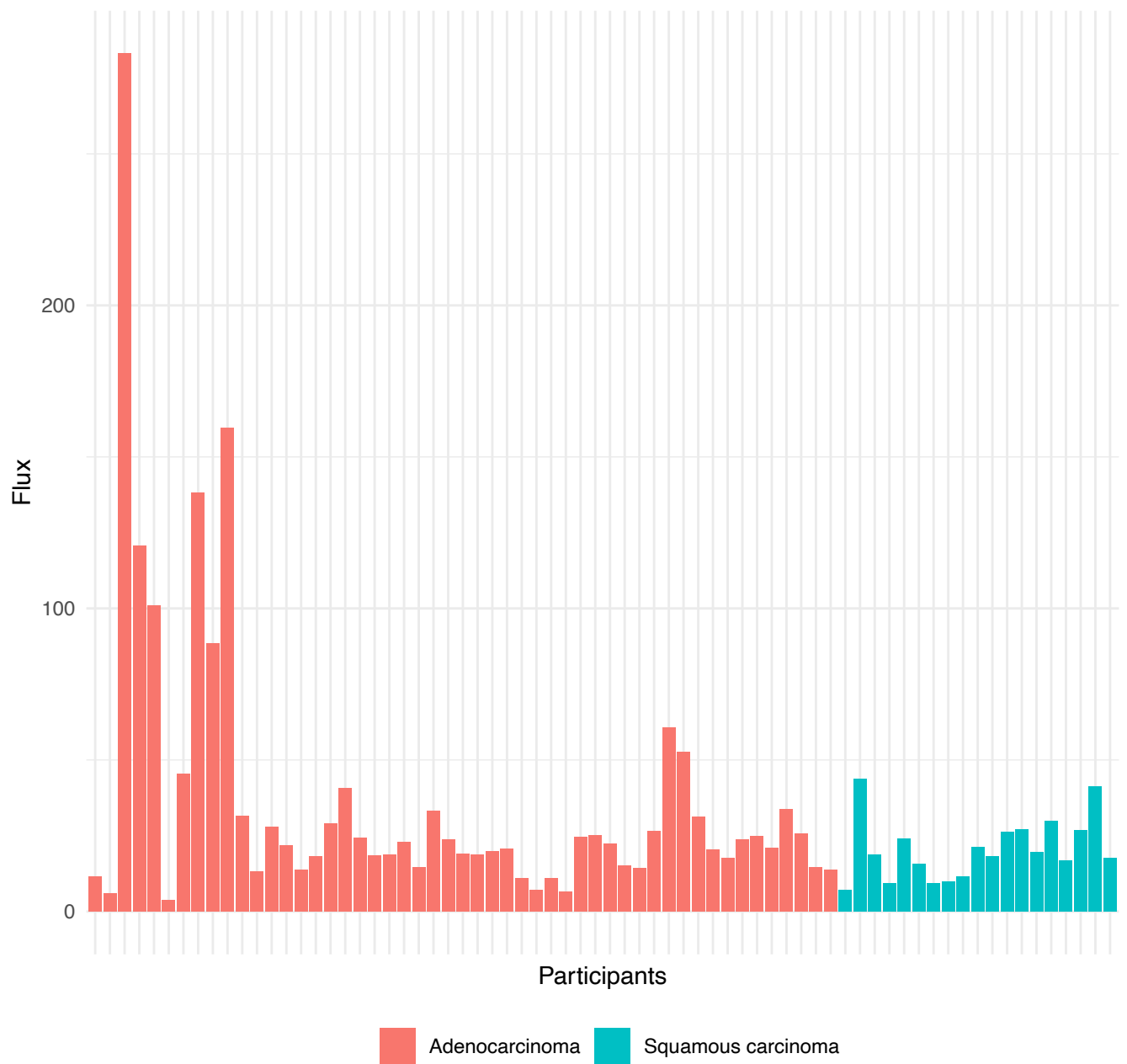
Prolactin.receptor.signaling



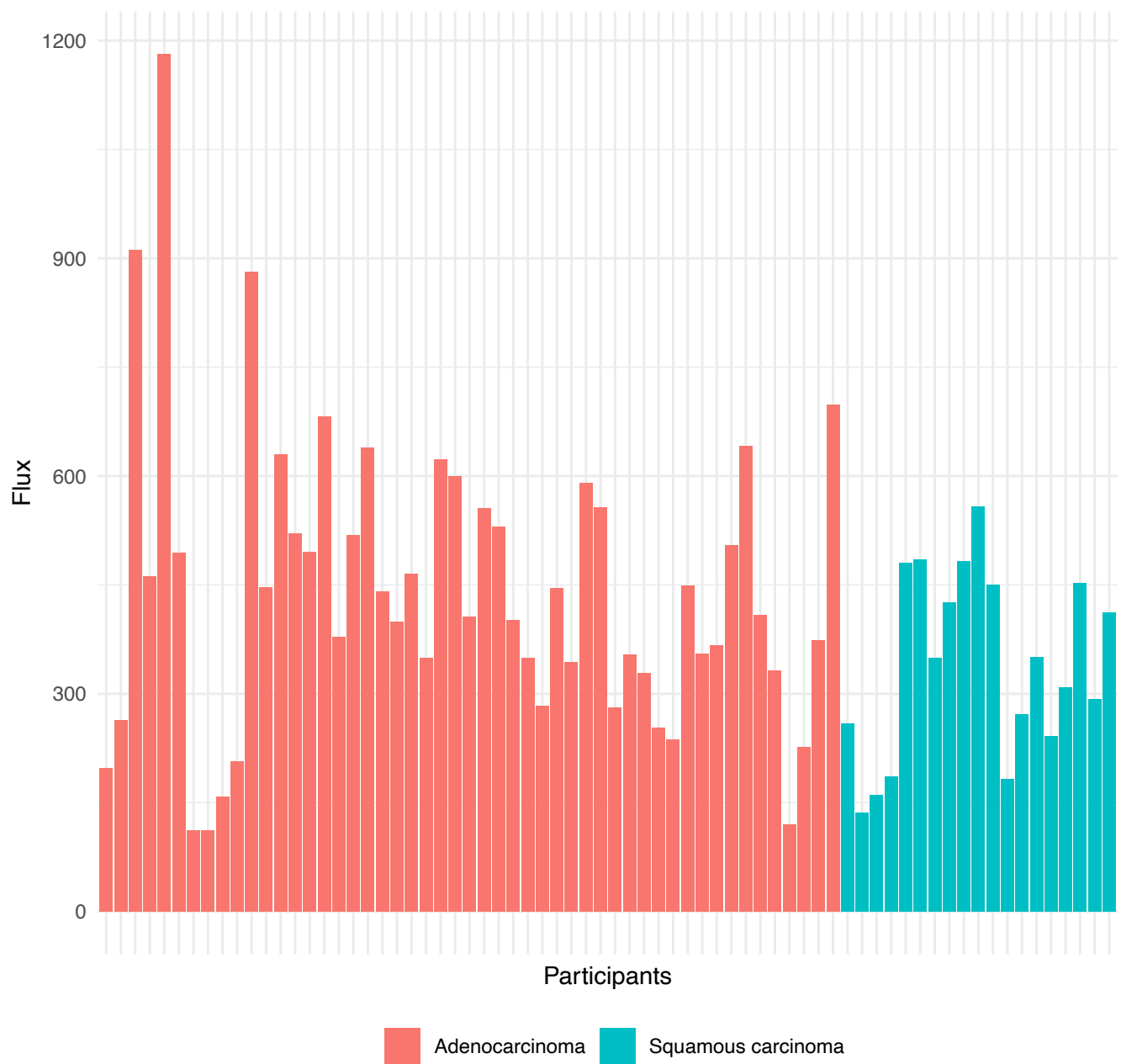
renin.angiotensin.signaling



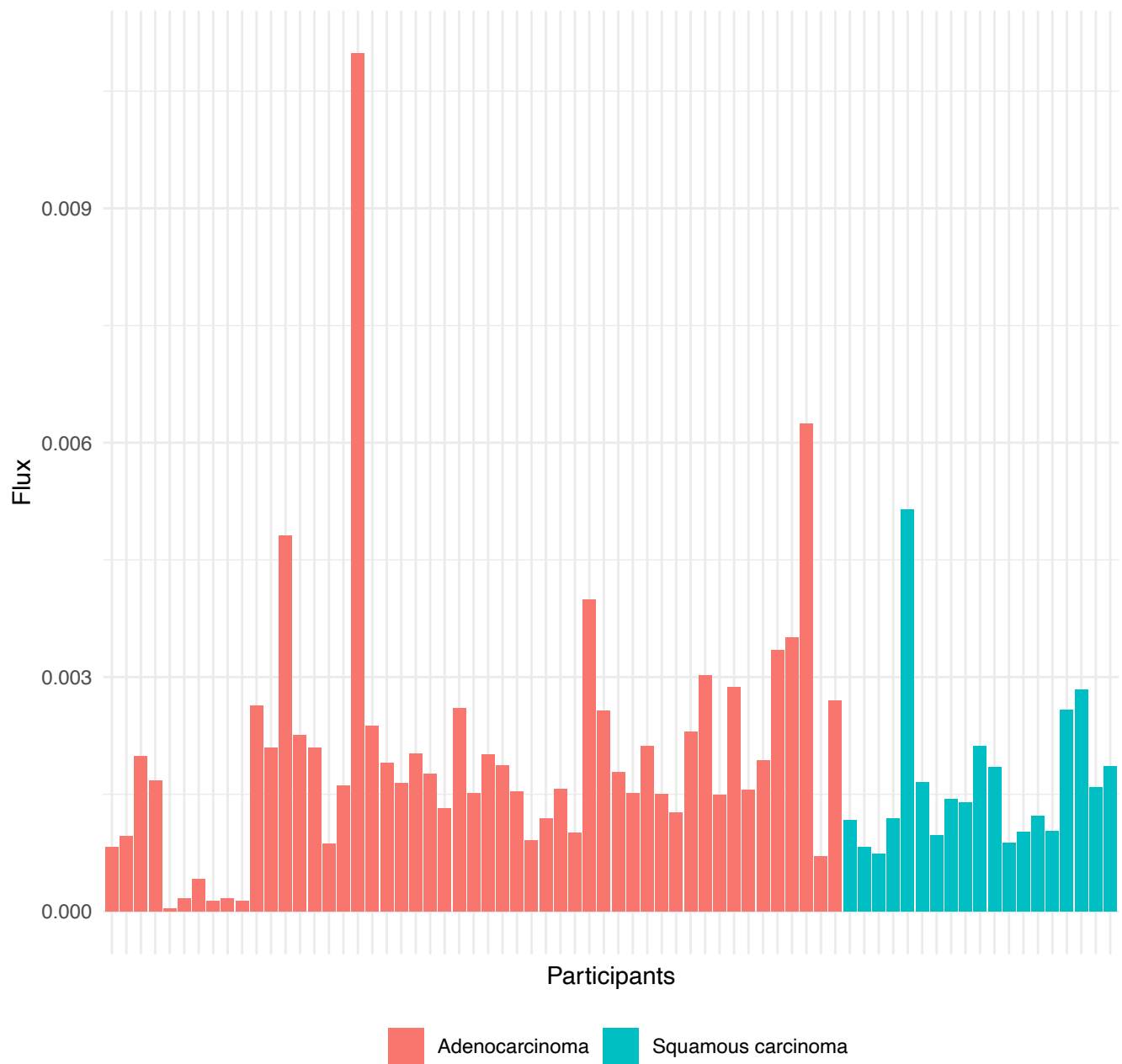
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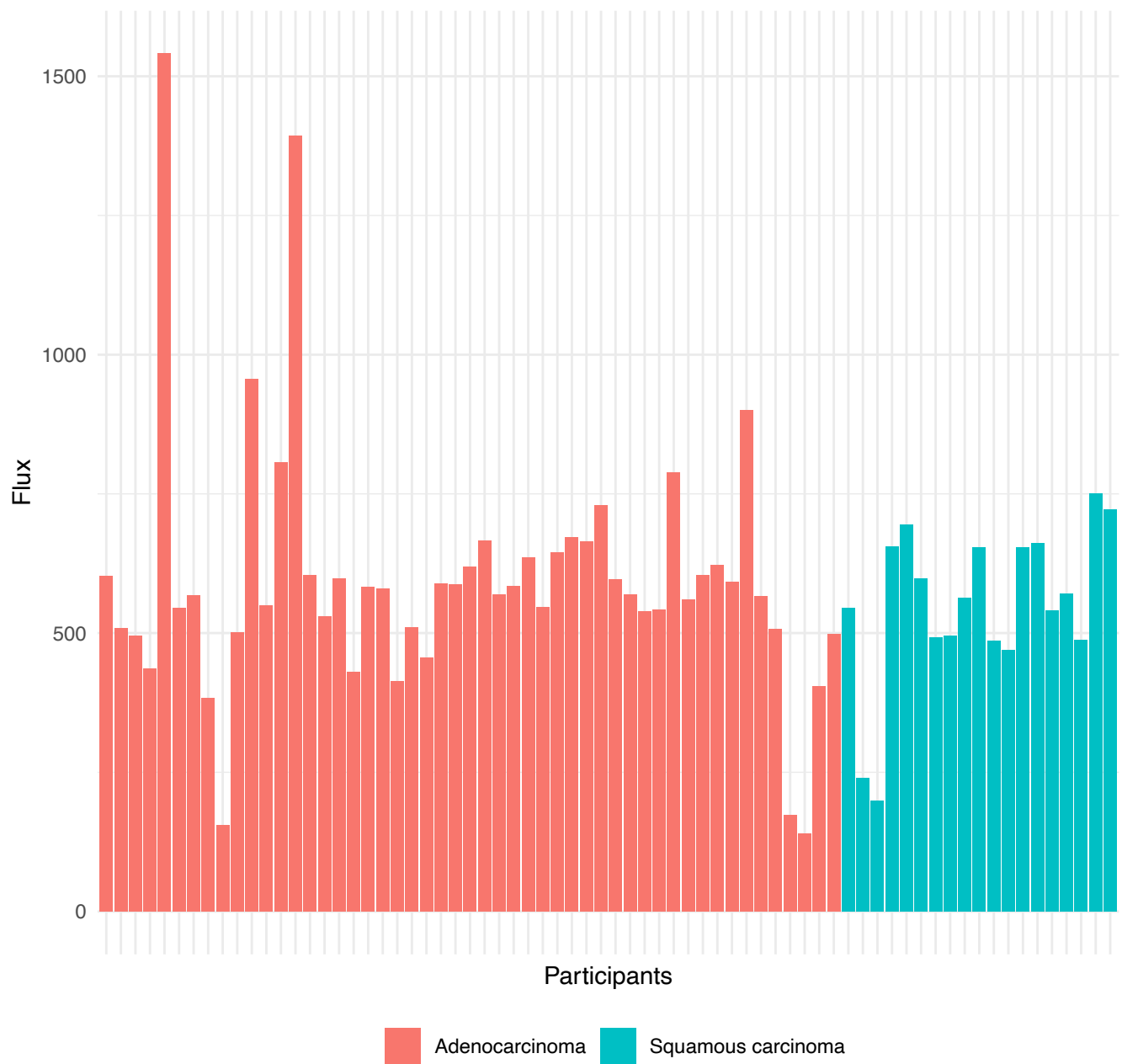
Interleukin.signaling



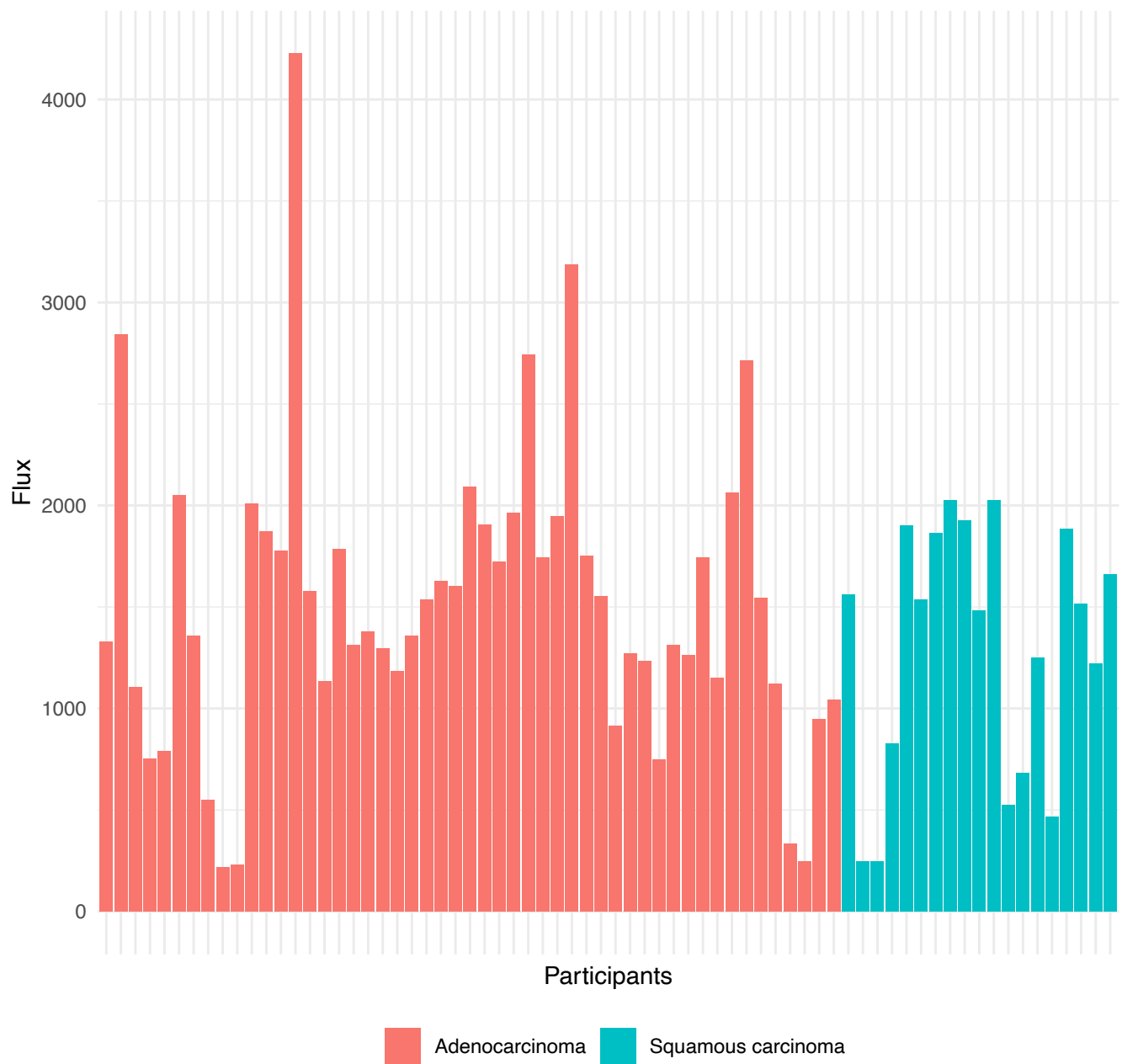
AR.DHT.signaling



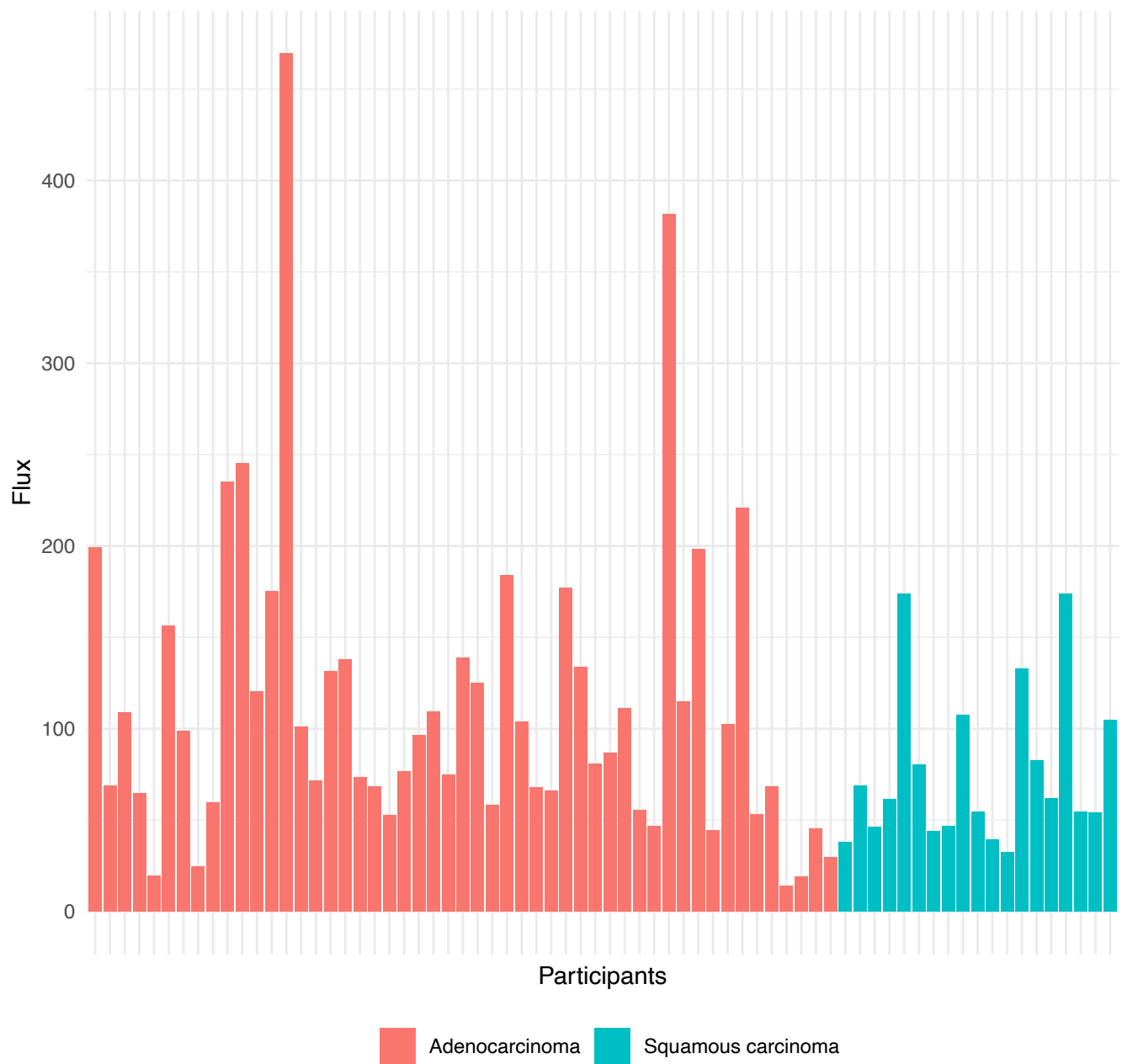
TLR.signaling



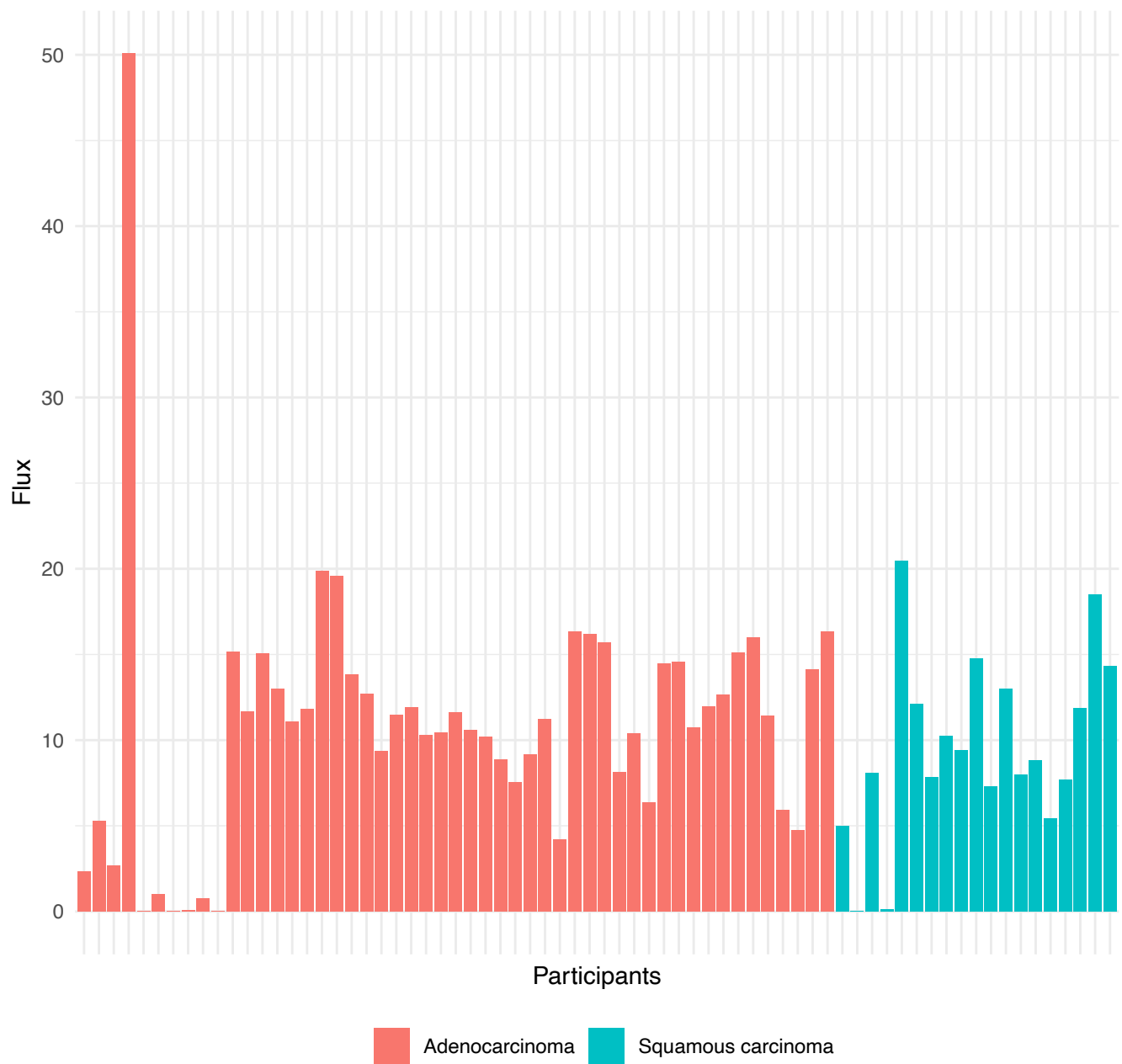
TCR.signaling



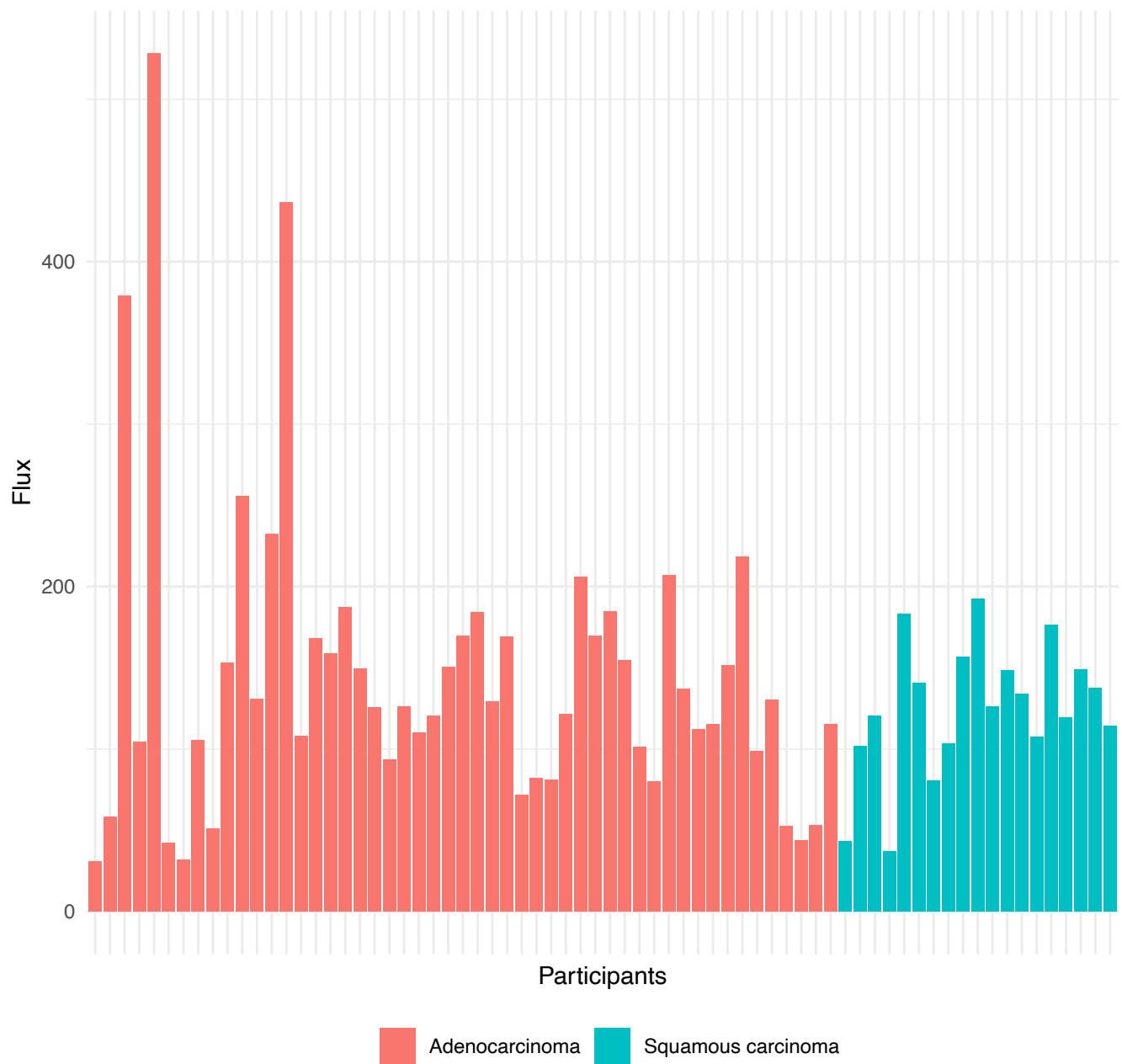
IGF1R.signaling



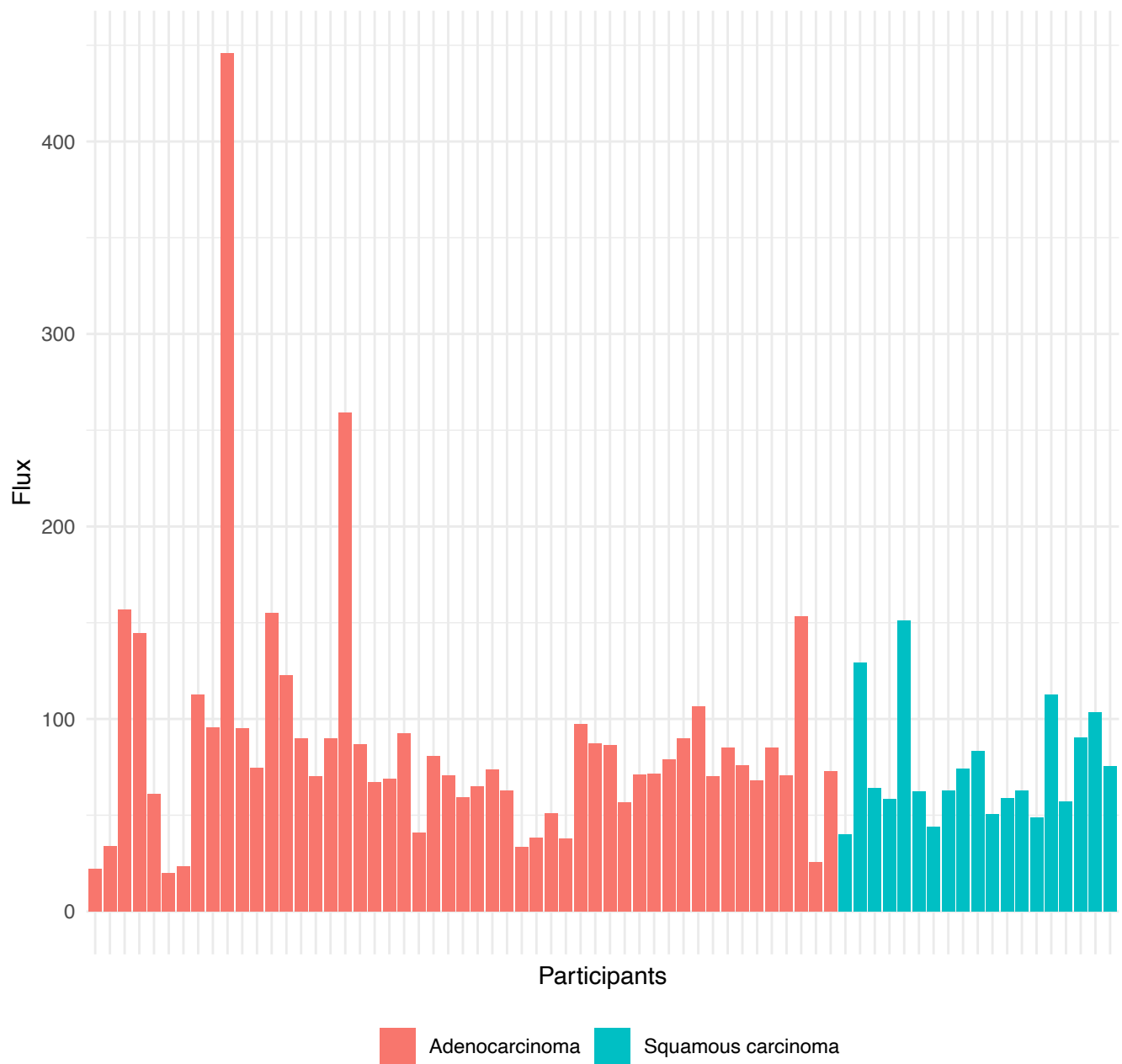
SCF.E3.degradation



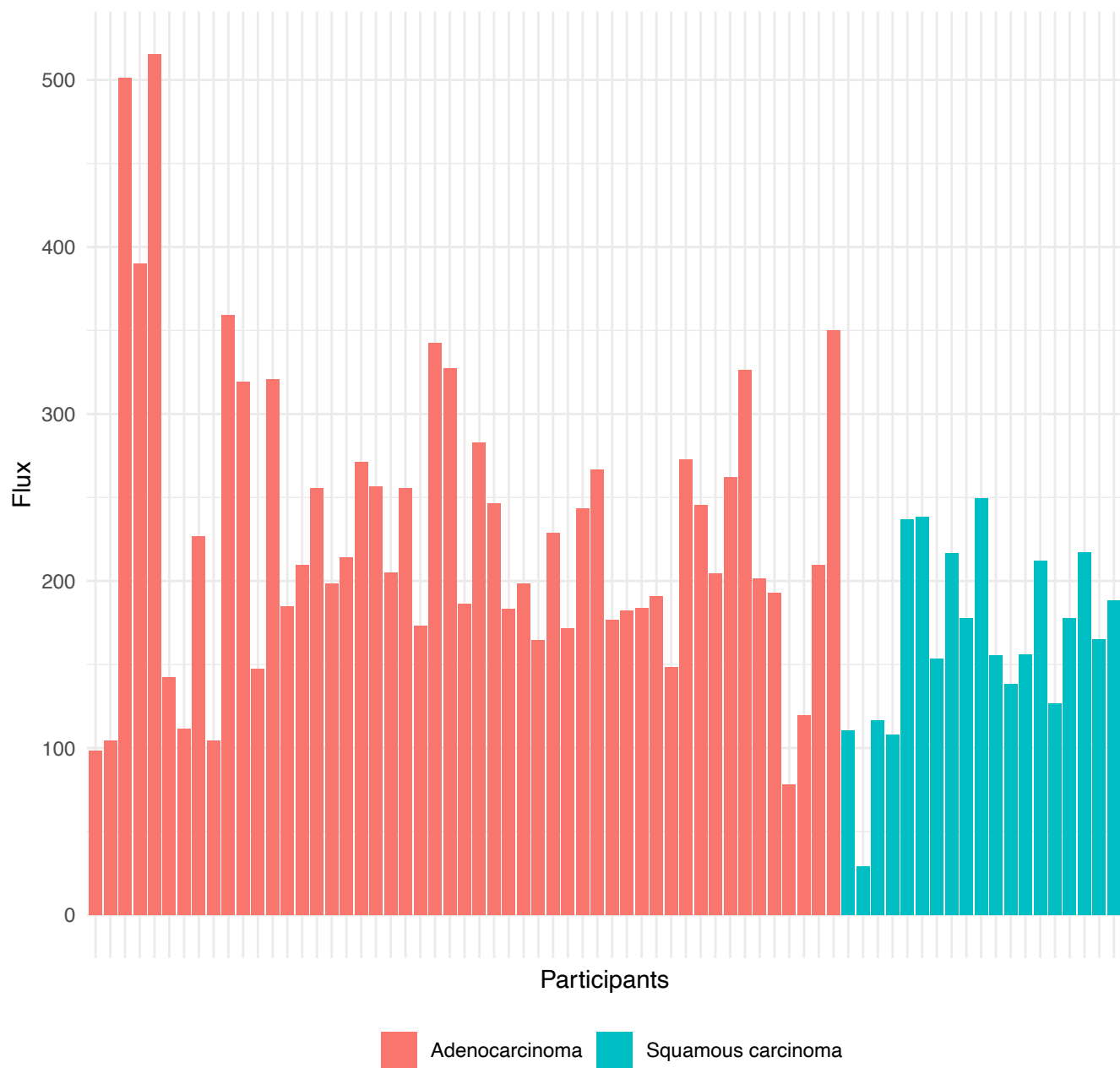
AMPK.signaling



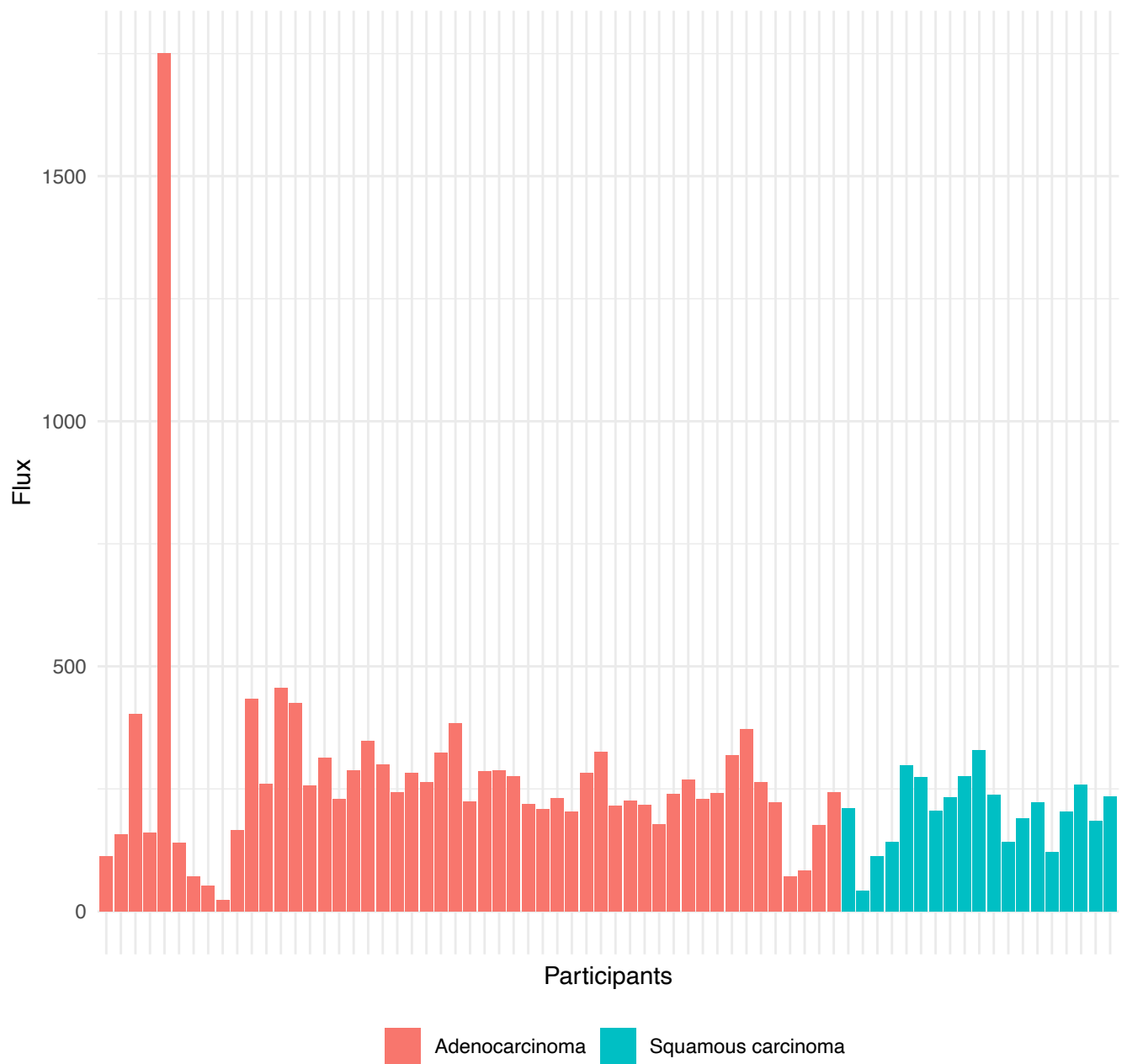
PAK.signaling



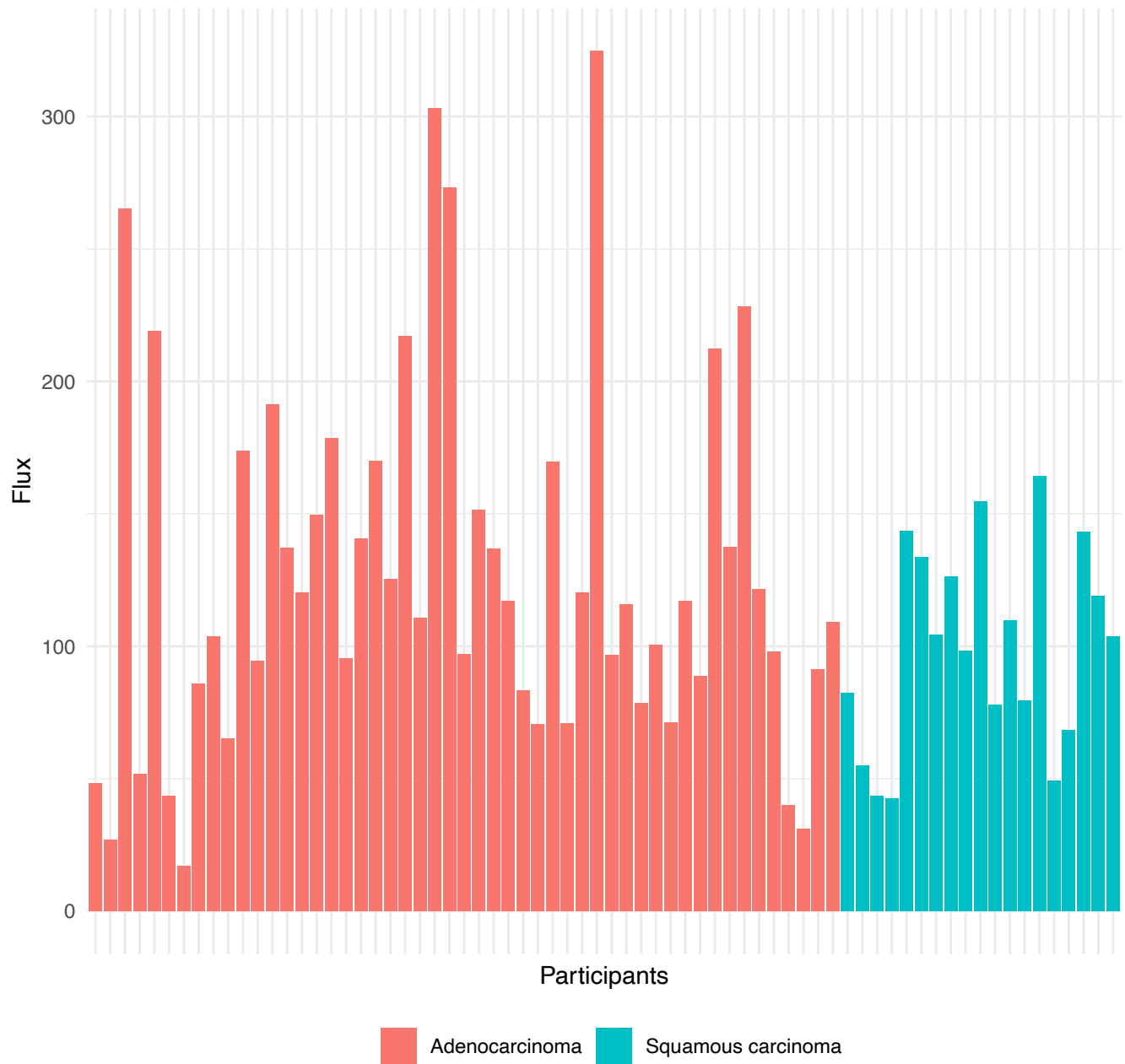
NFkB.signaling



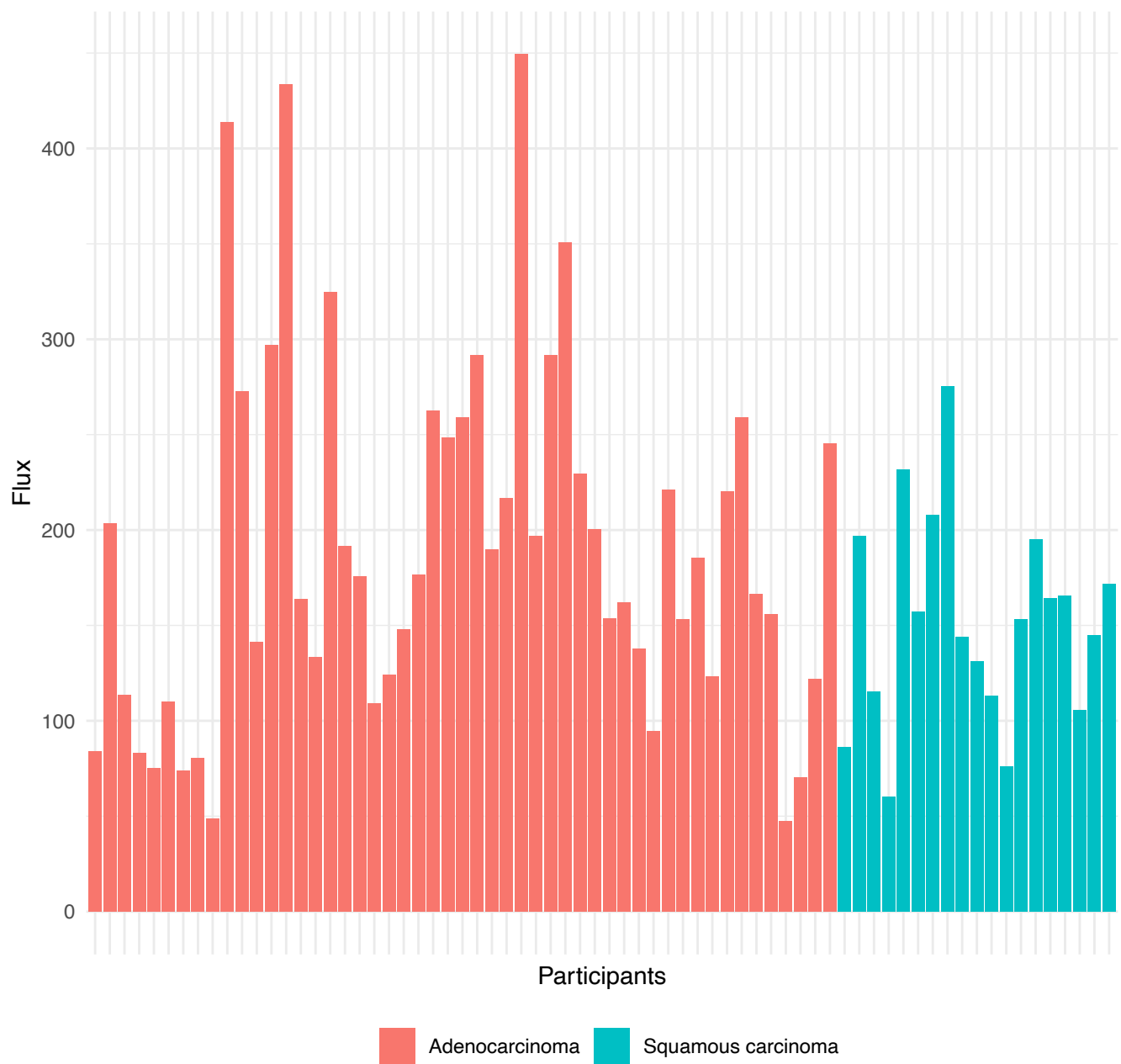
P53.signaling



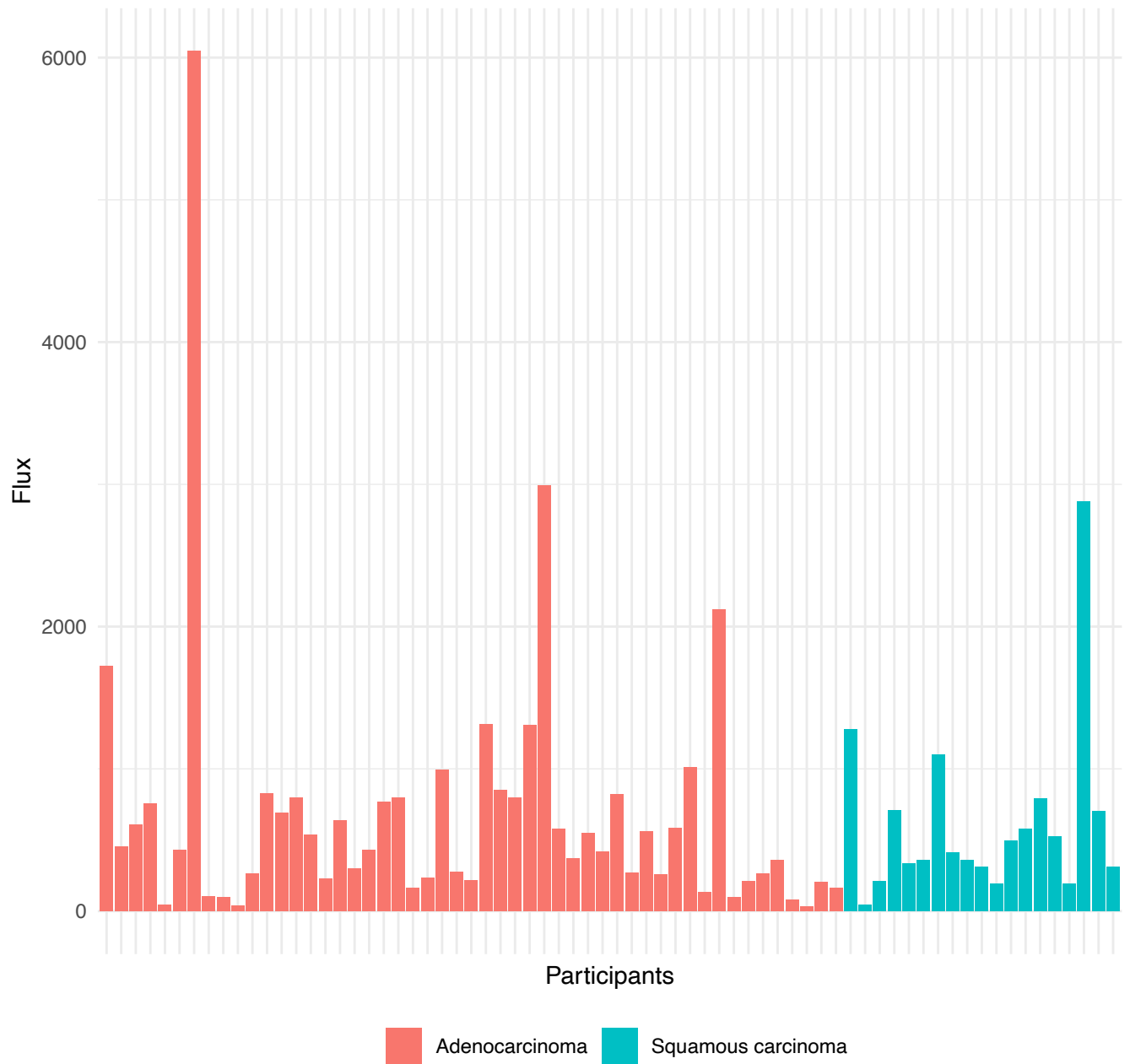
NFAT.signaling



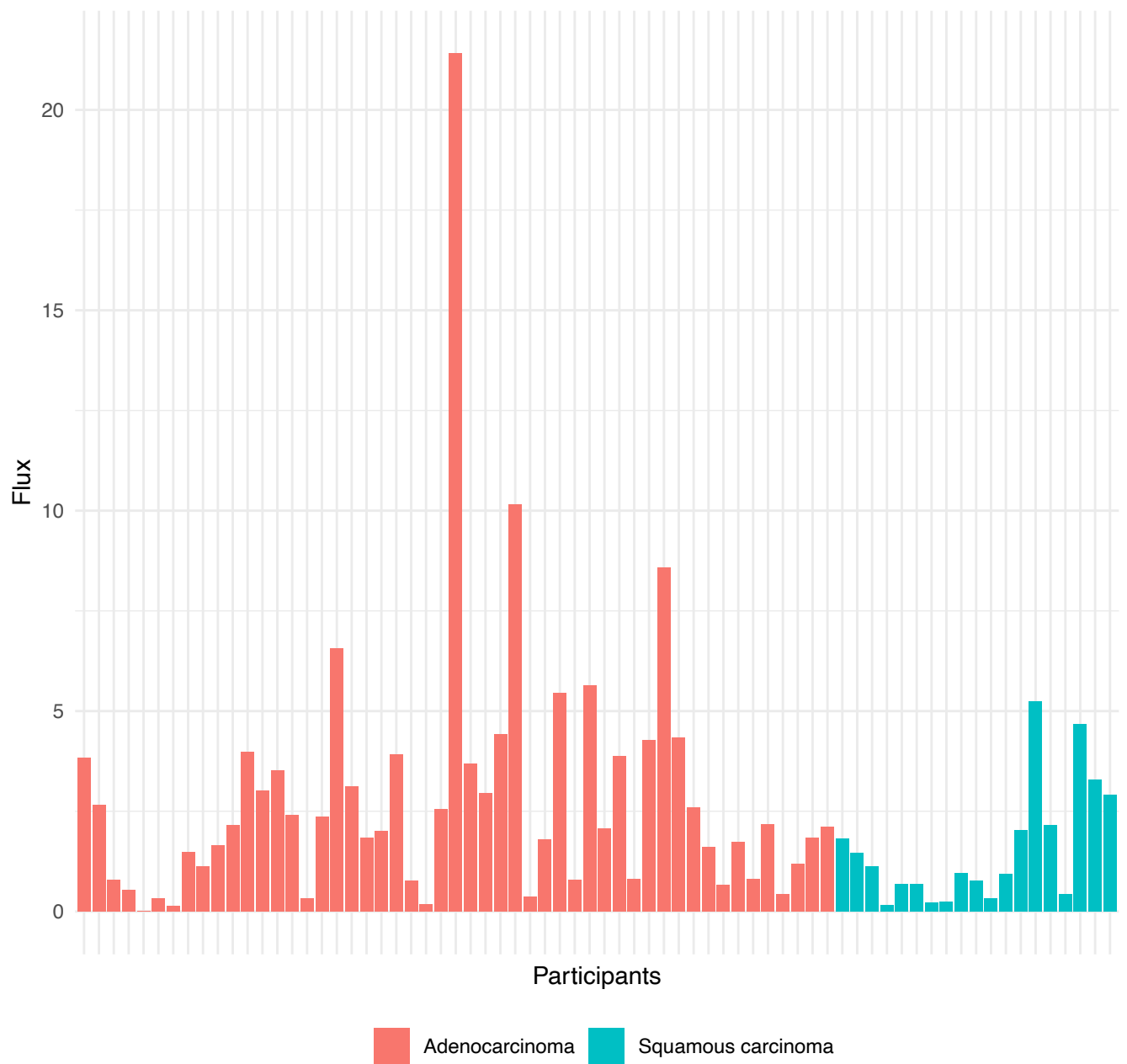
mTor.signaling



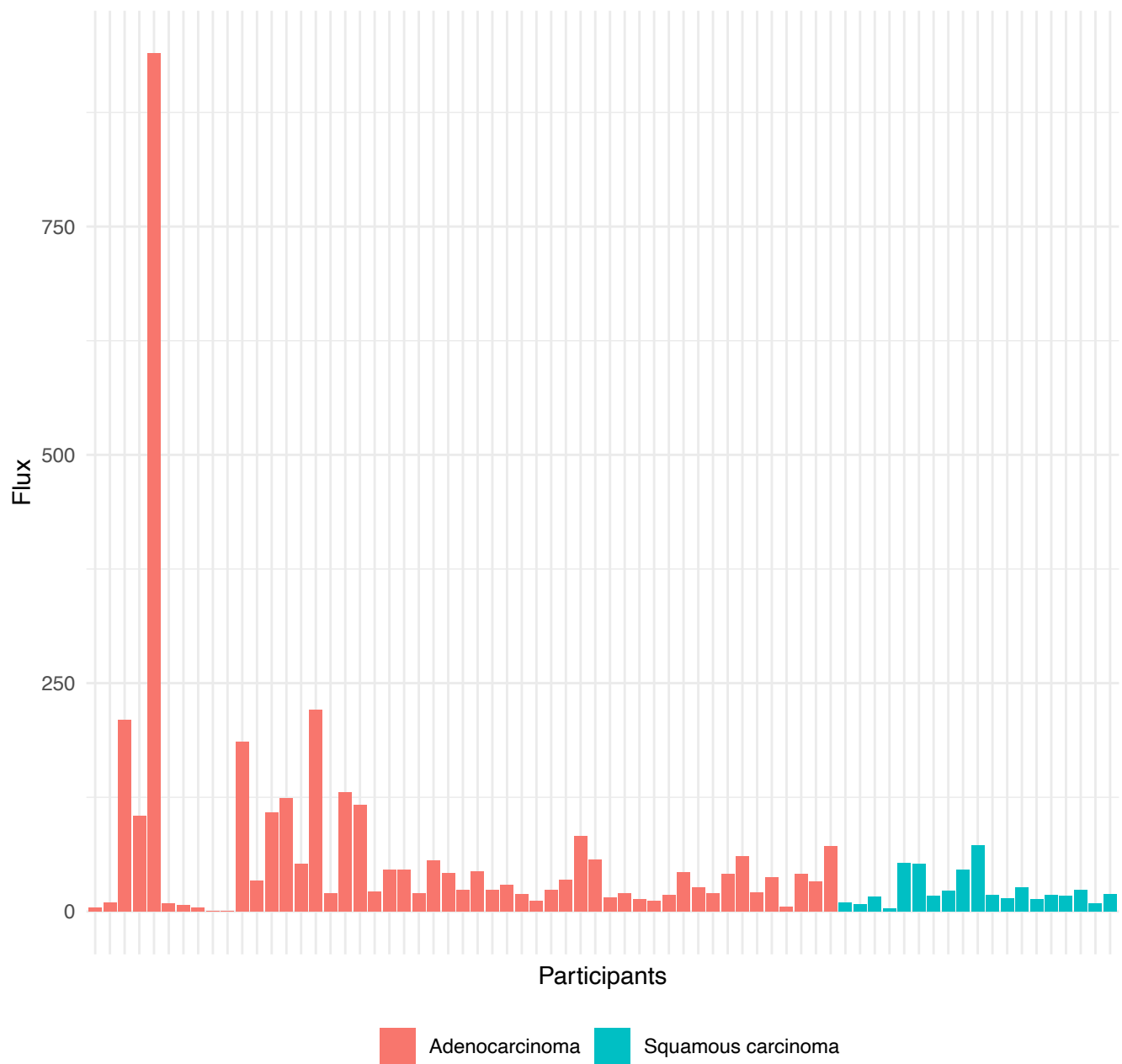
Activin.signaling



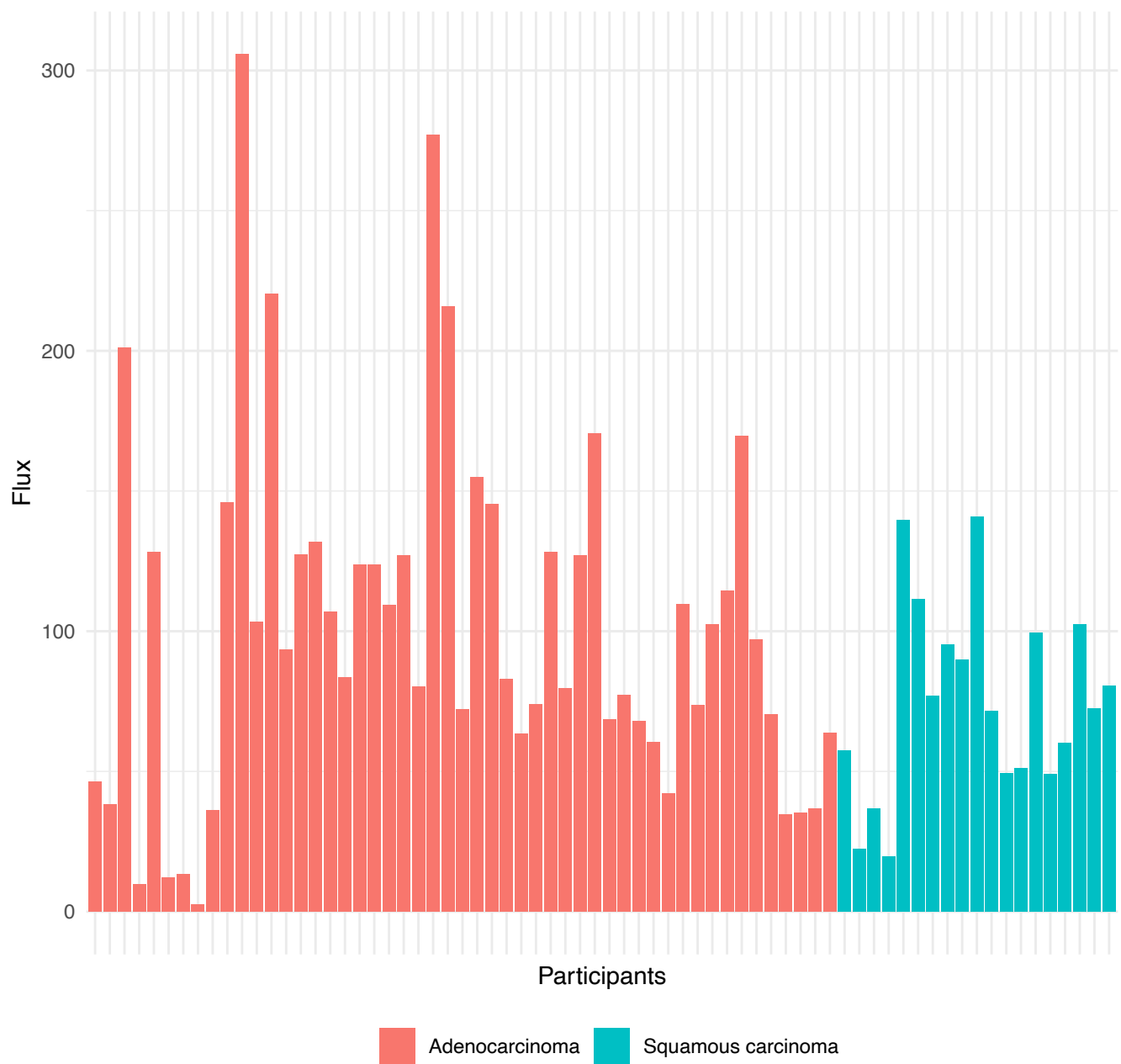
Progesterone.receptor.signaling



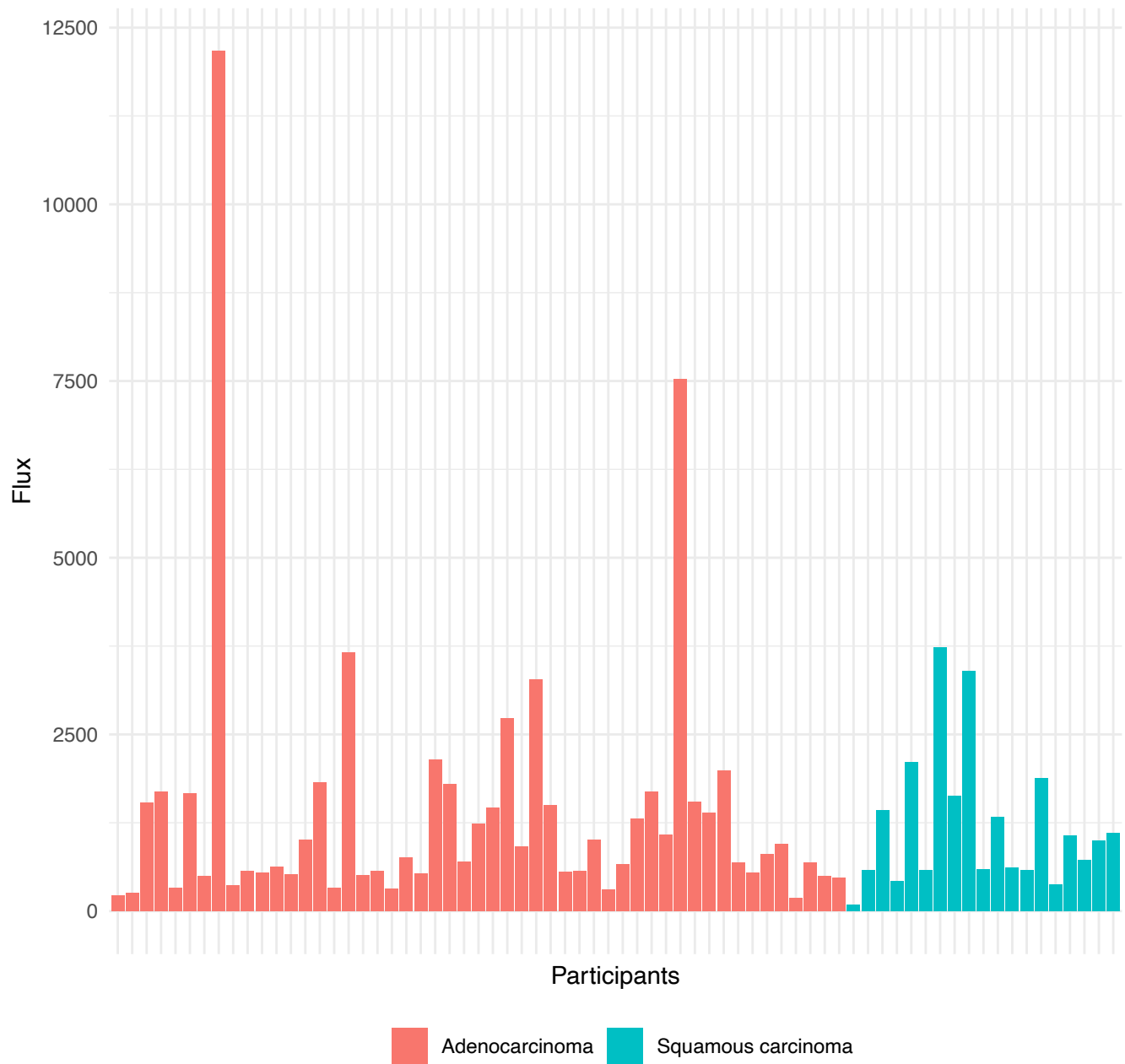
GP130.signaling



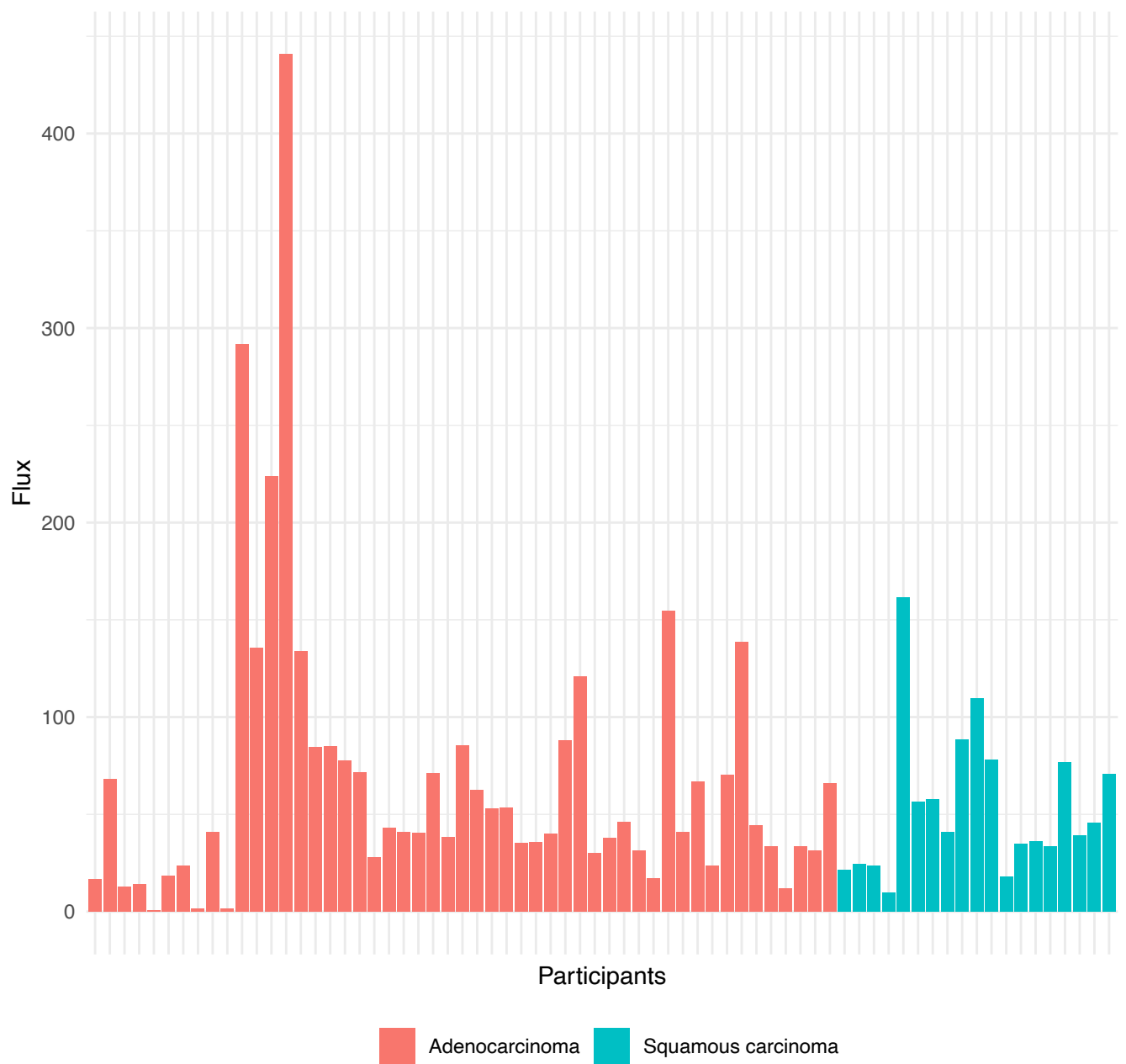
GAMMA.chain.signaling



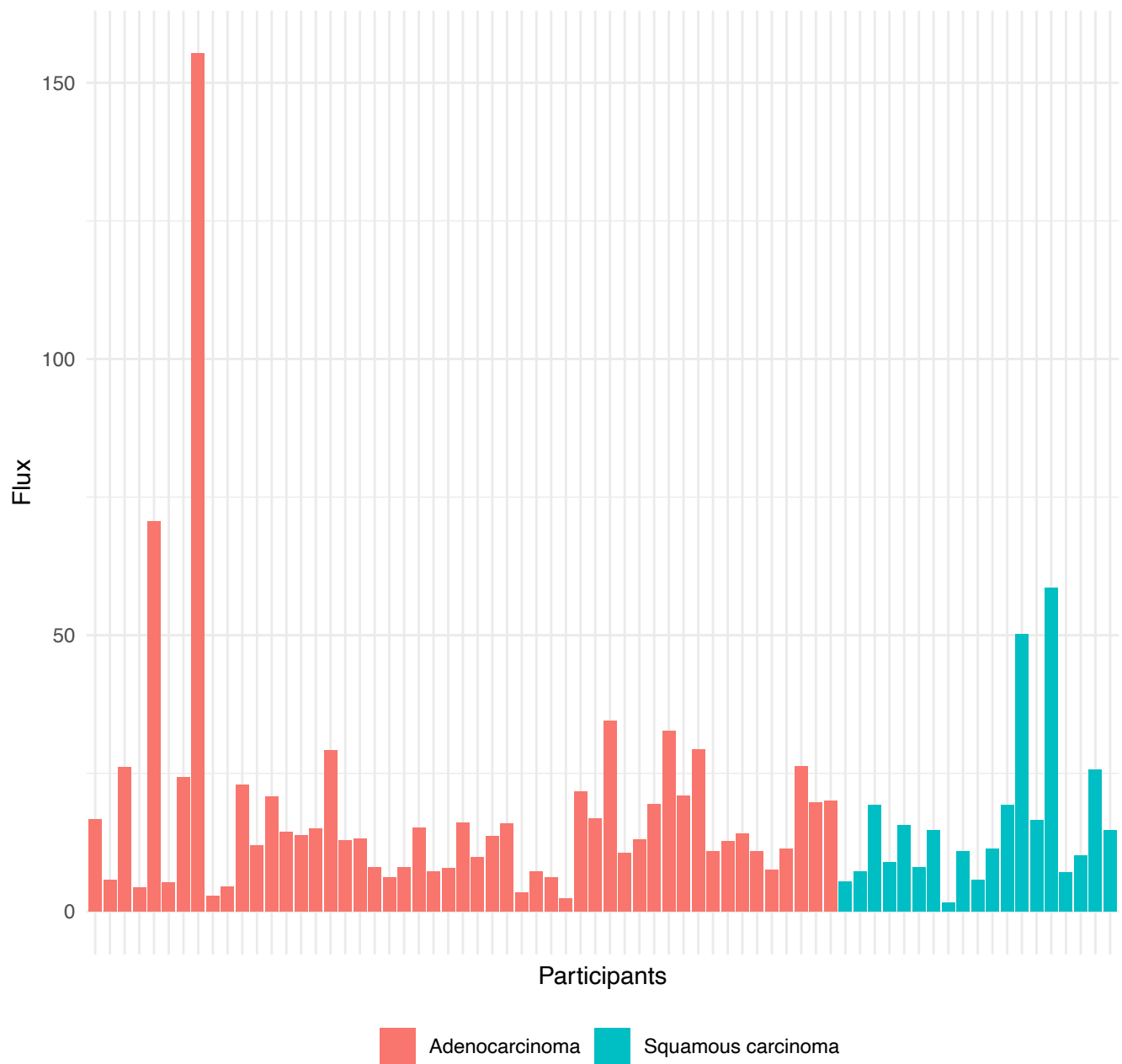
ATM.signaling



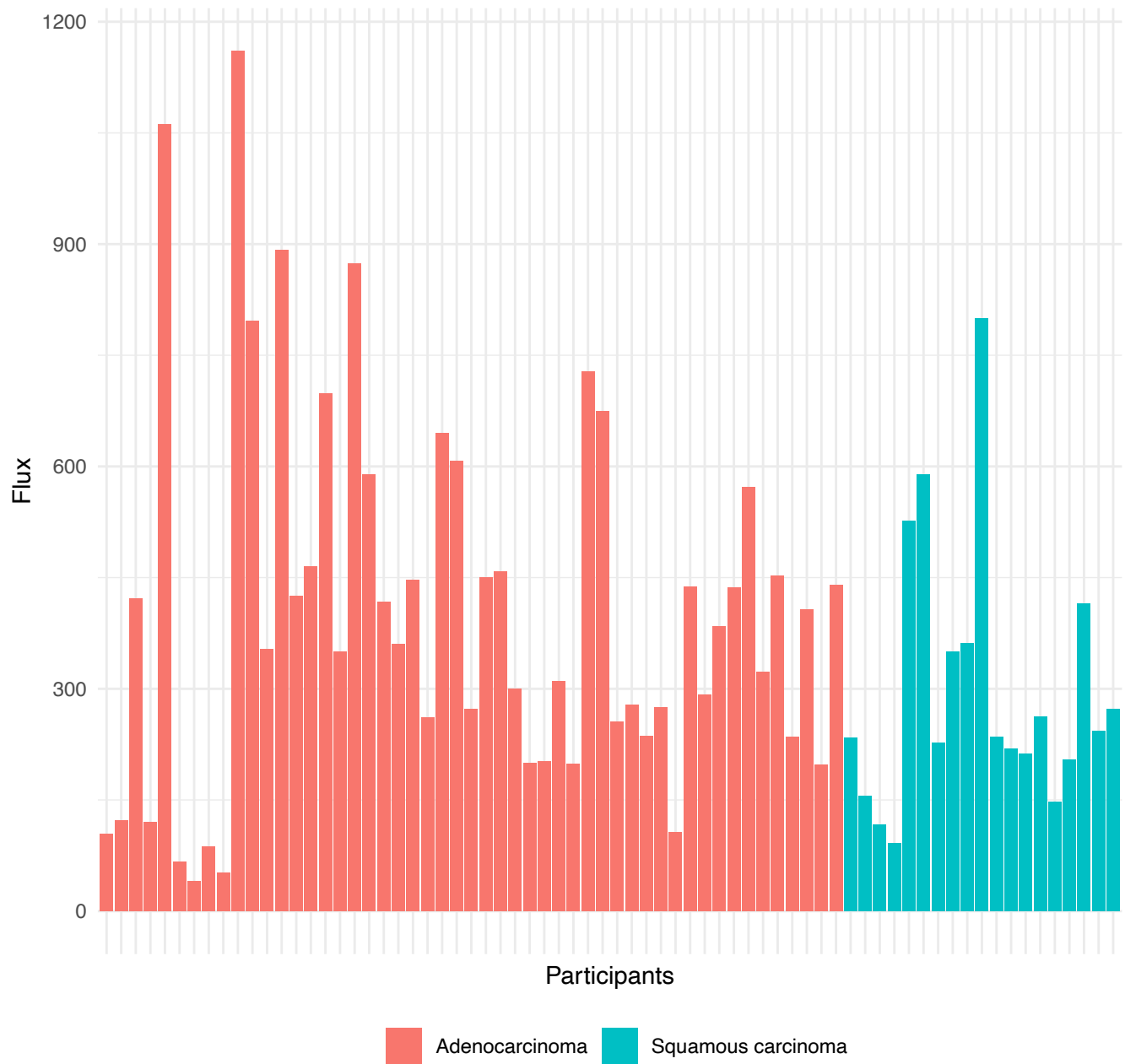
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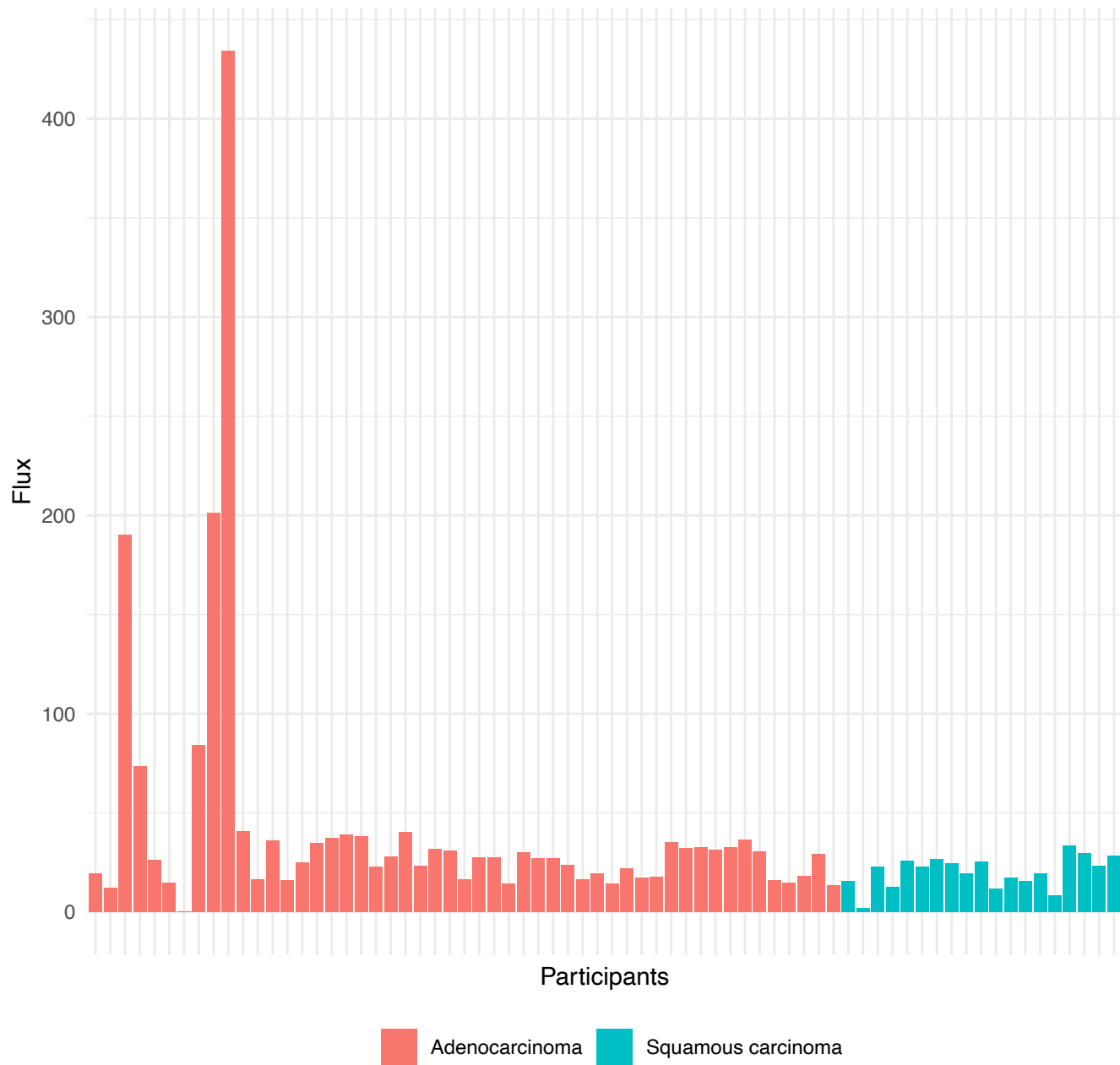
ERK5.signaling



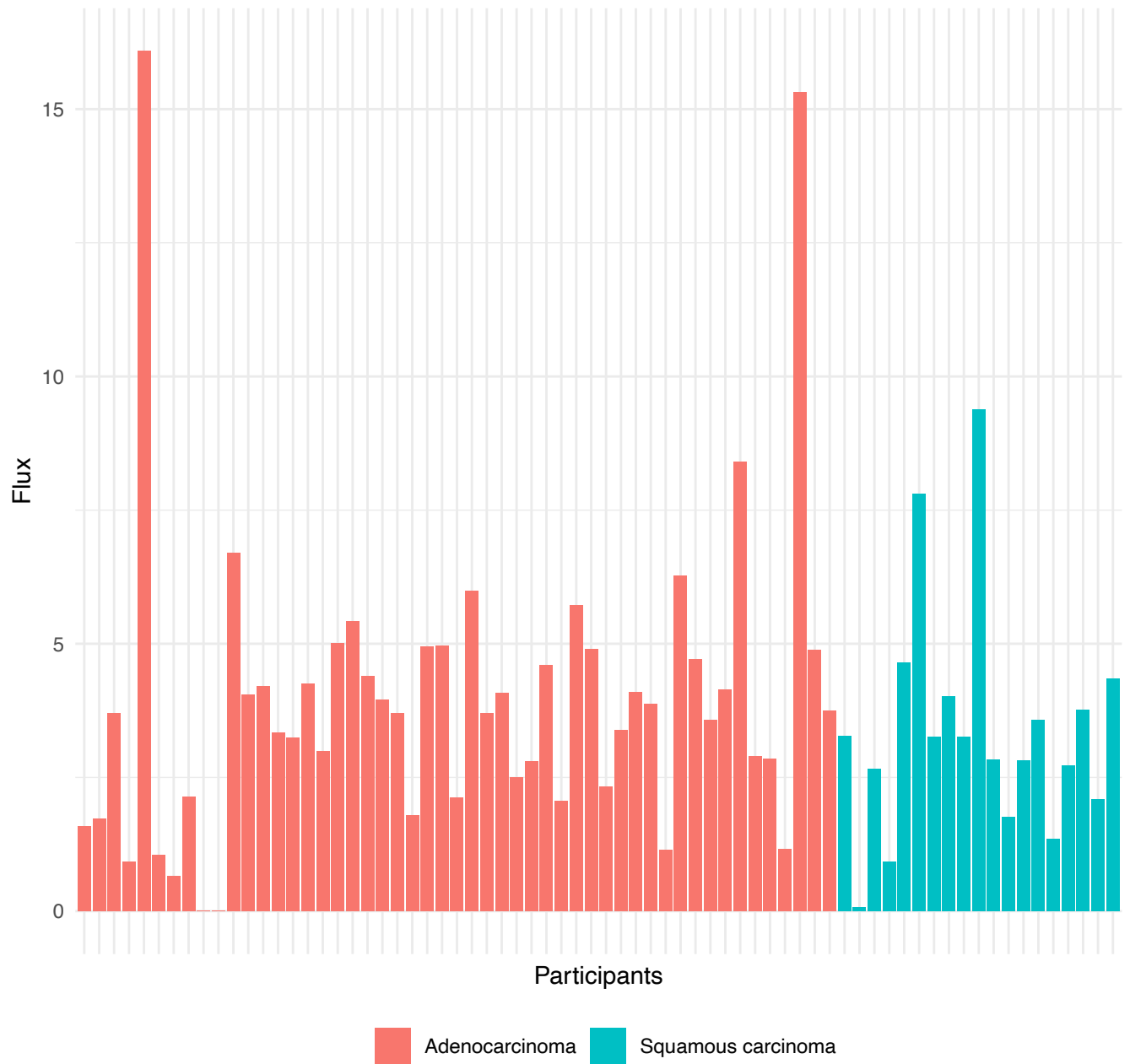
Integrin.signaling



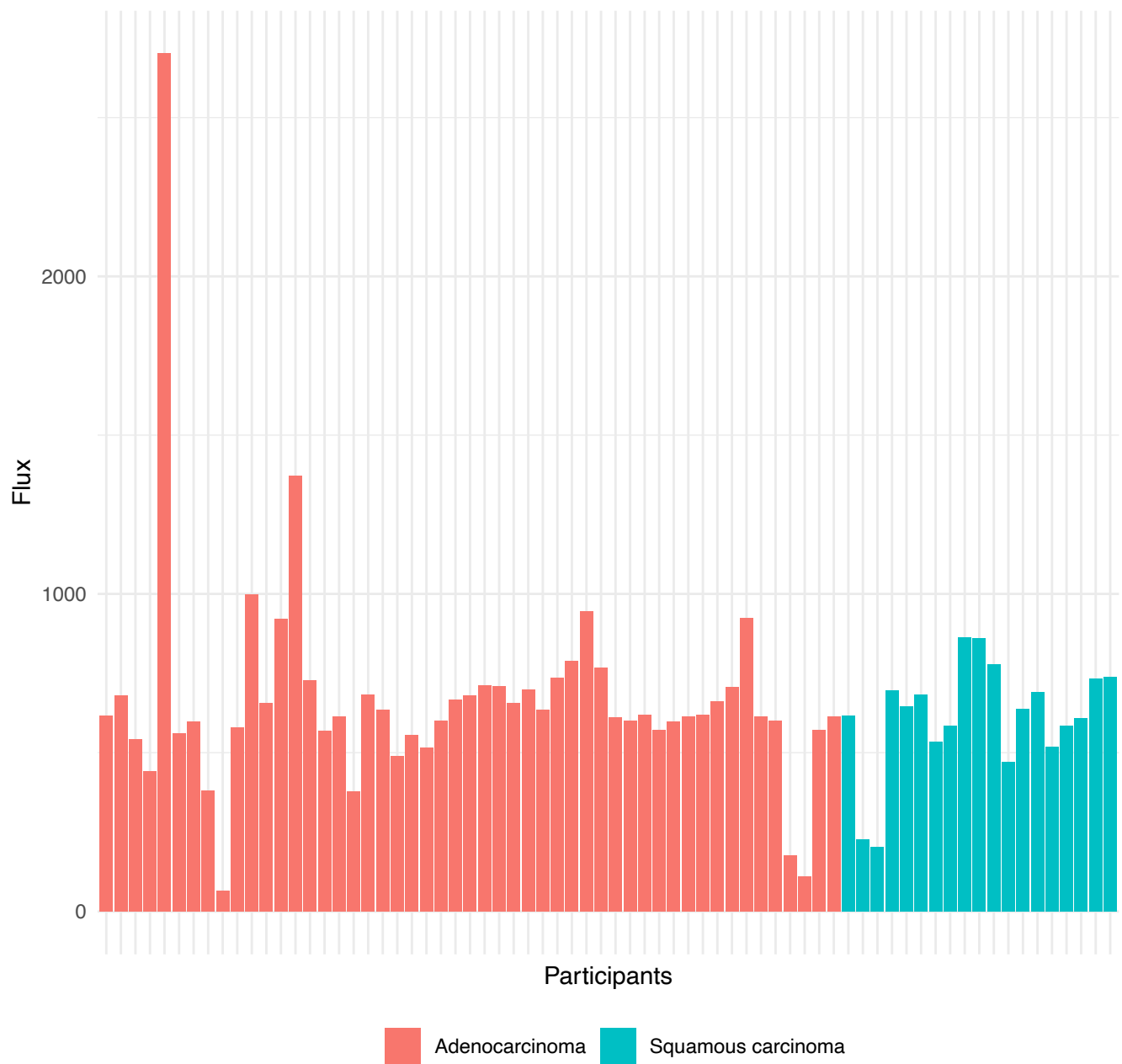
InsulinR.signaling



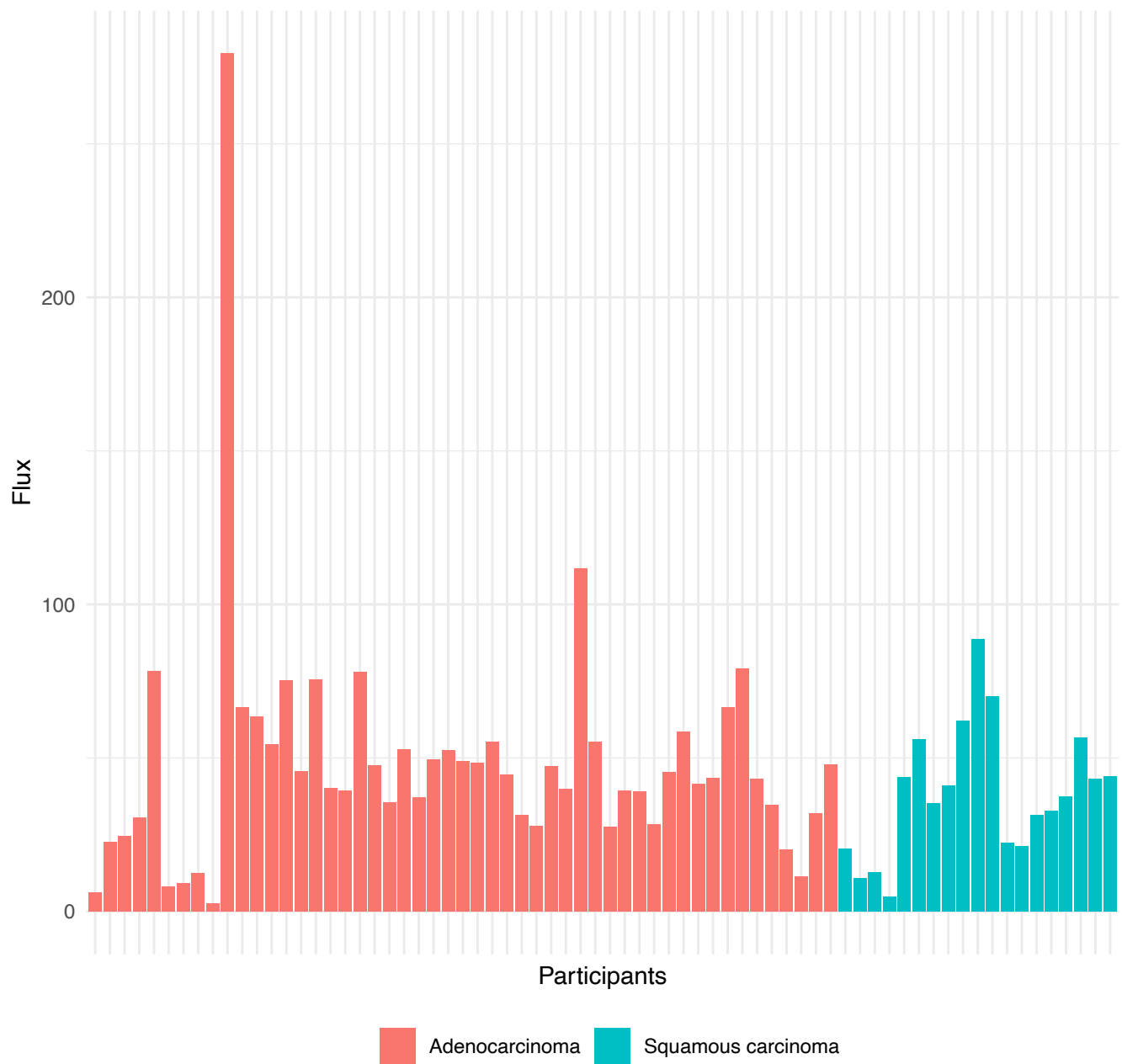
NOTCH.signaling



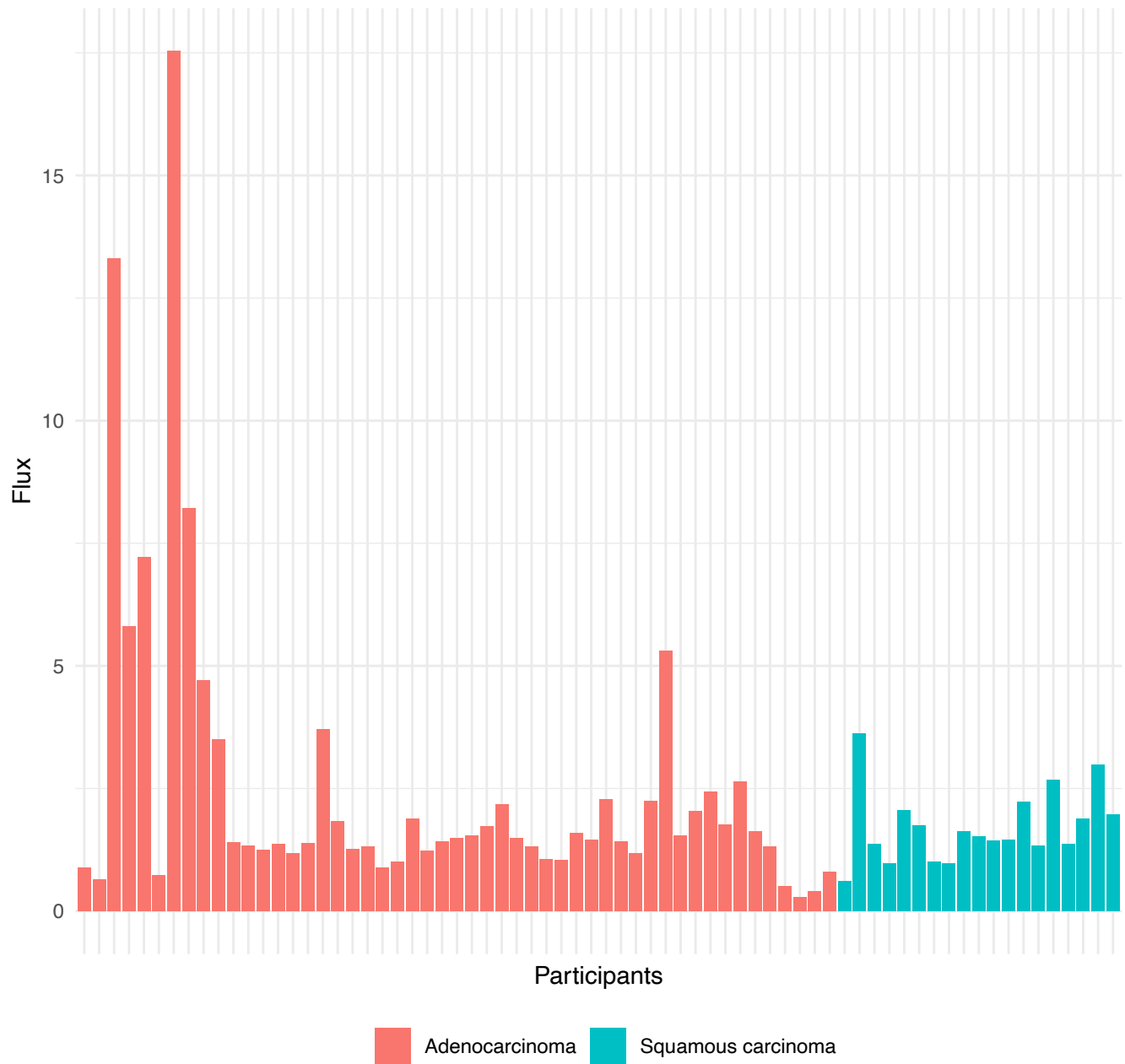
IFN.signaling



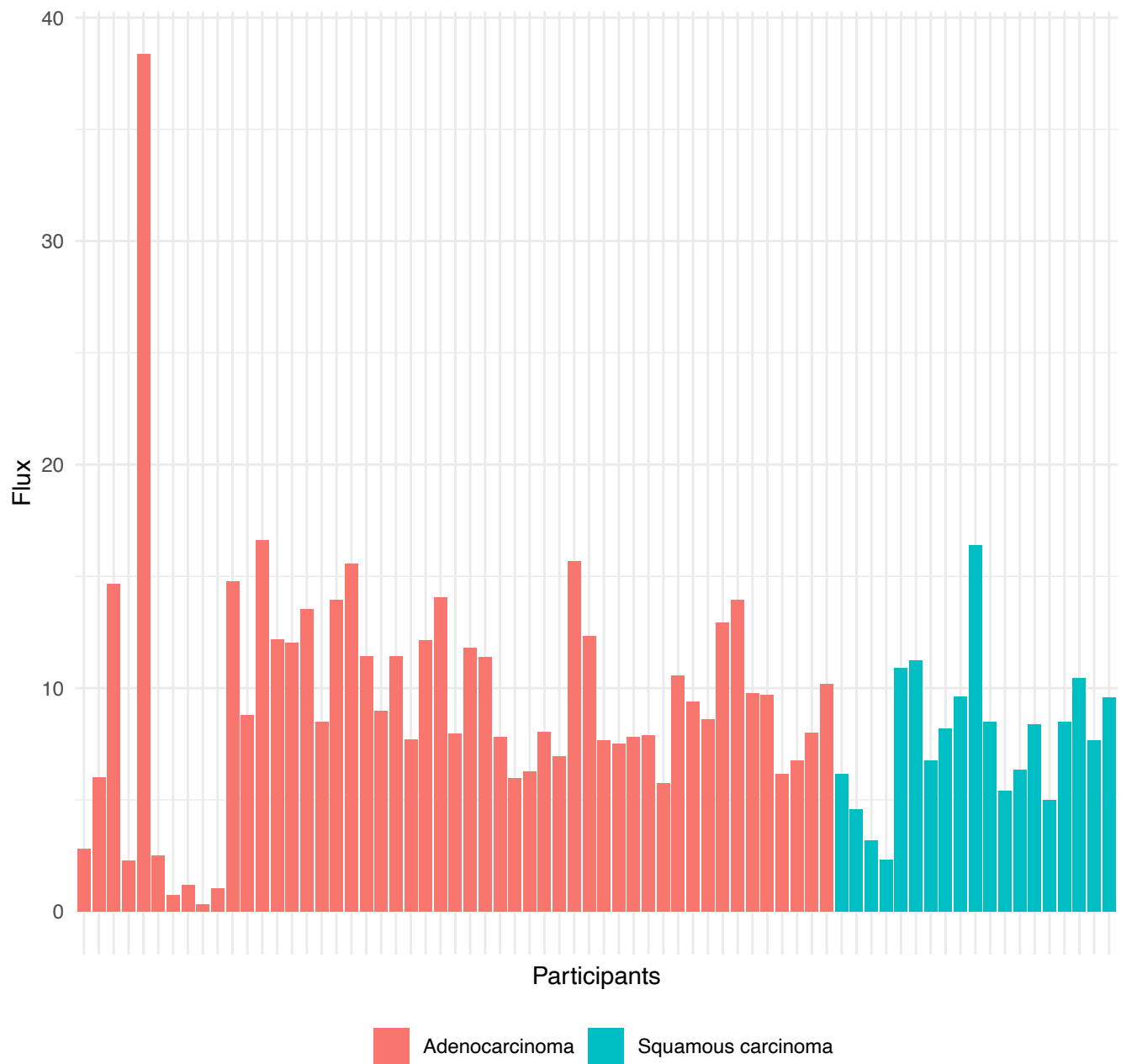
BRCA.signaling



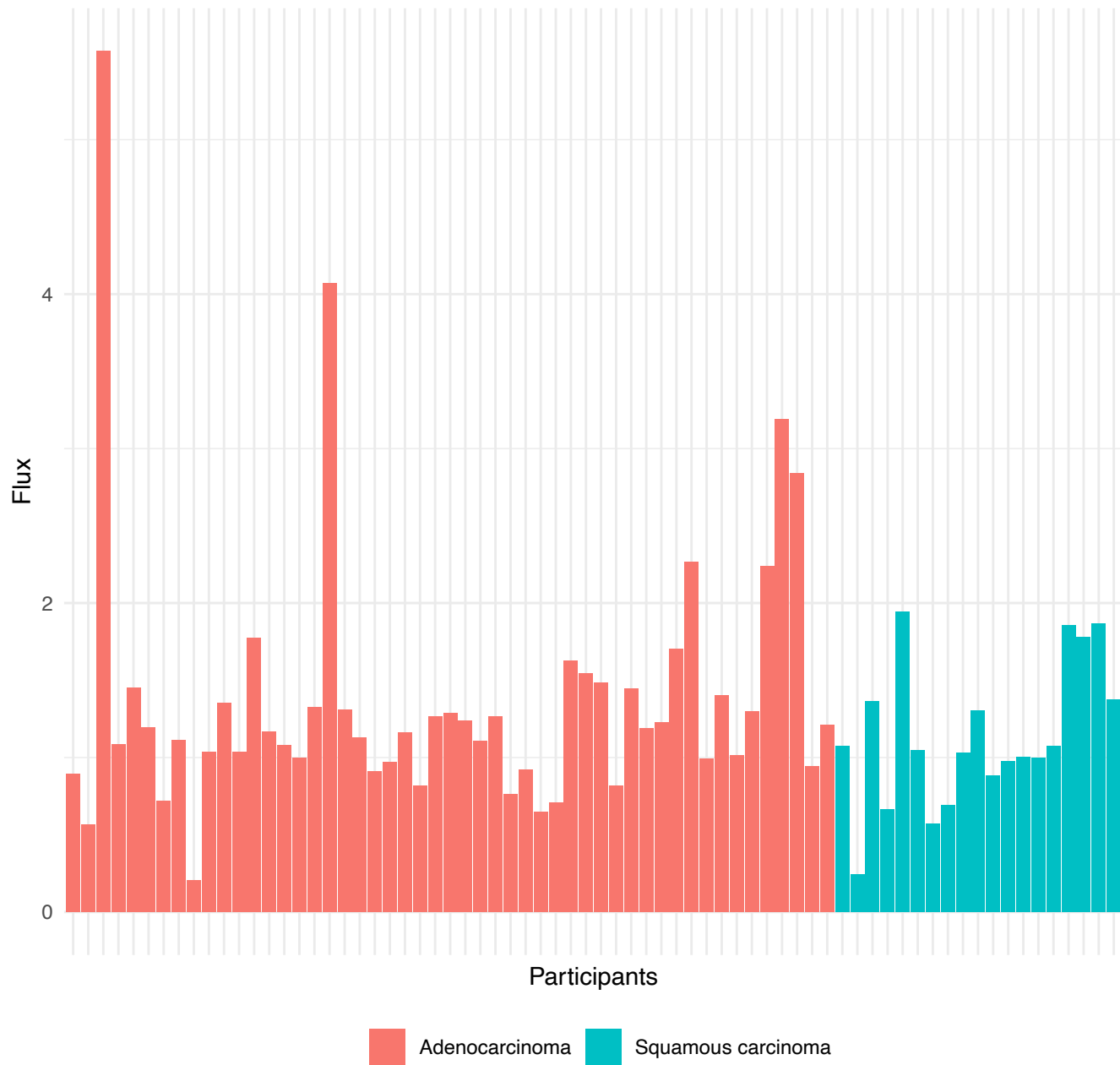
Arginine.metabolism



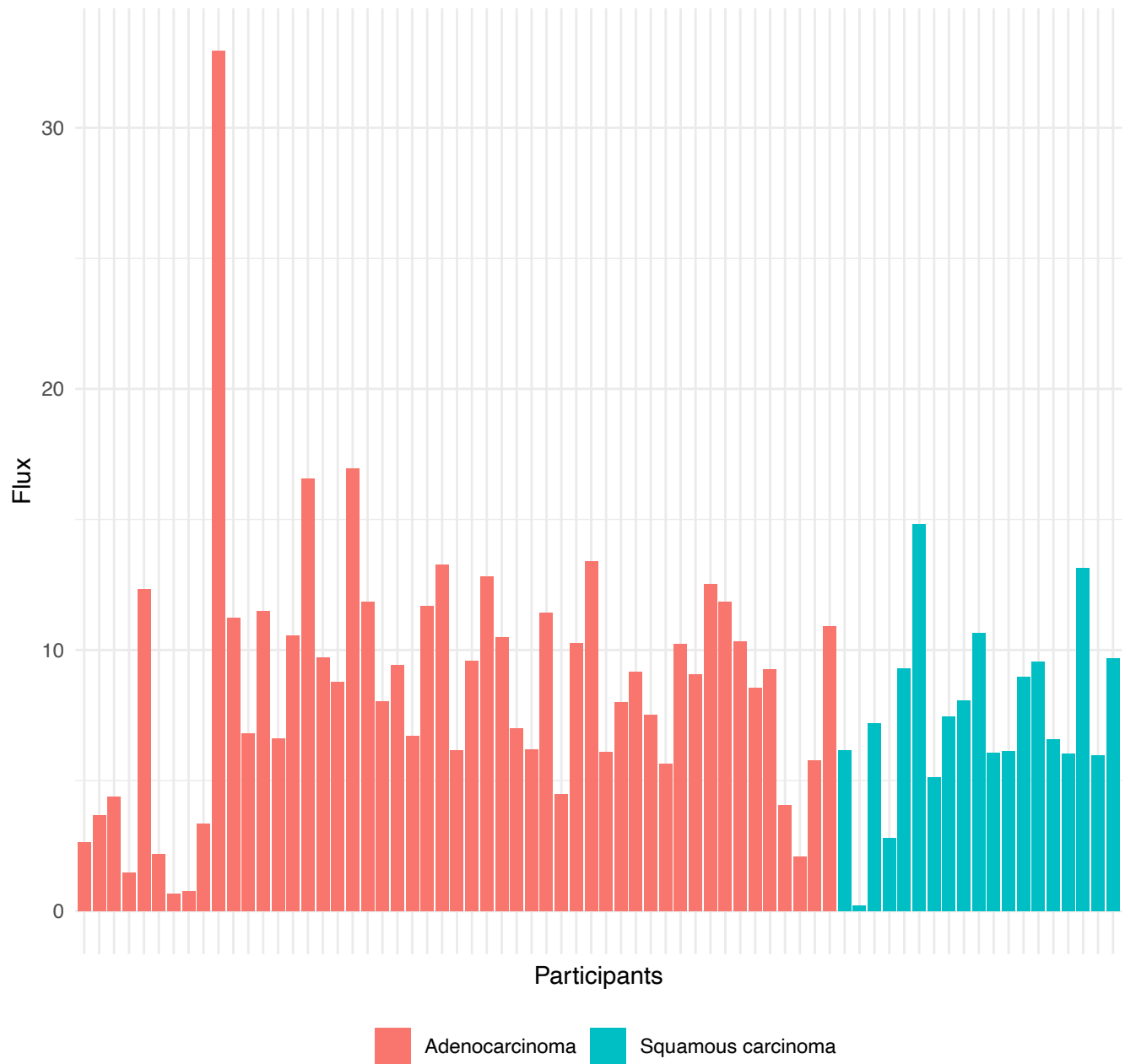
Proteasome.metabolism



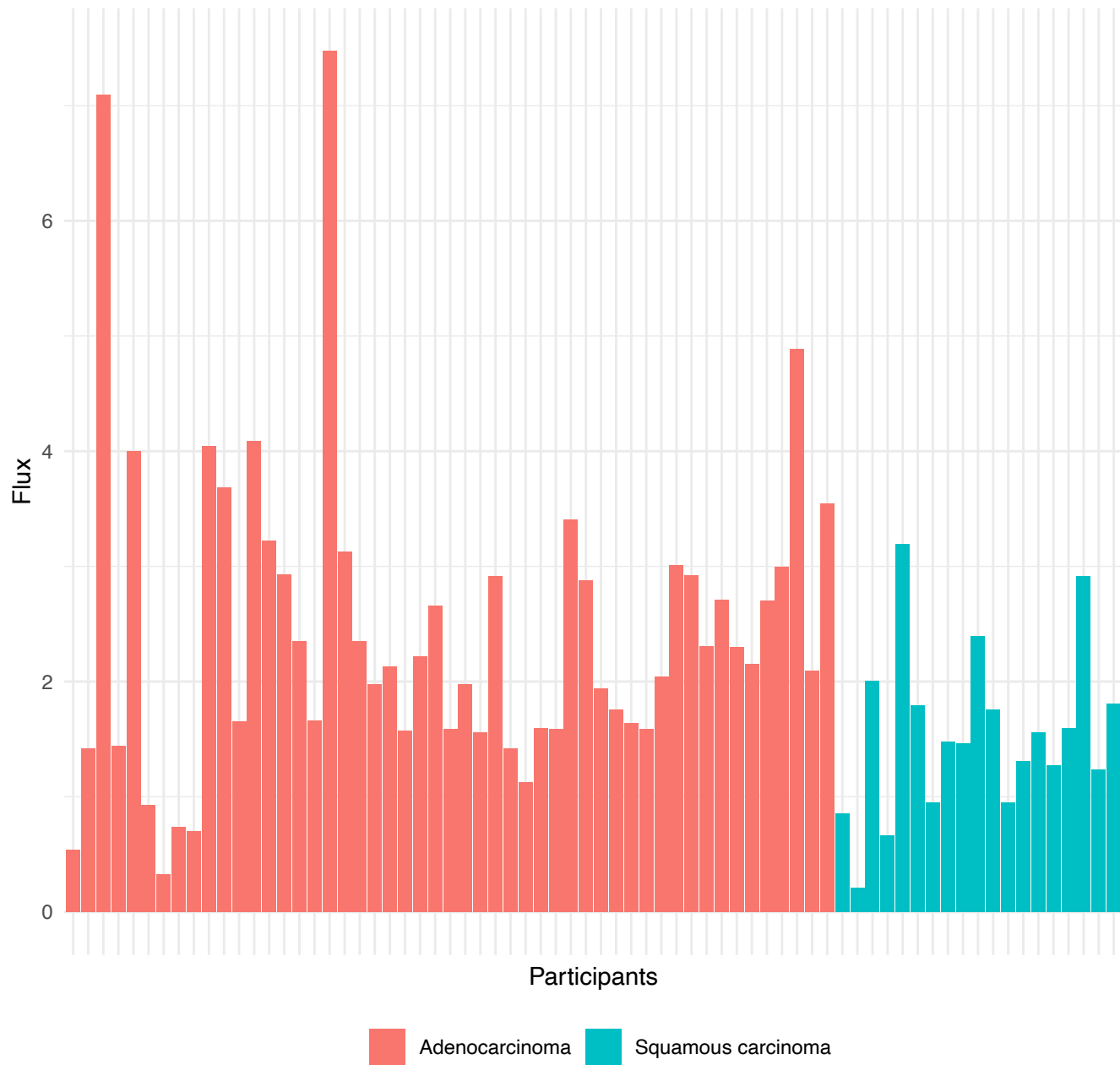
Nicotinate.metabolism



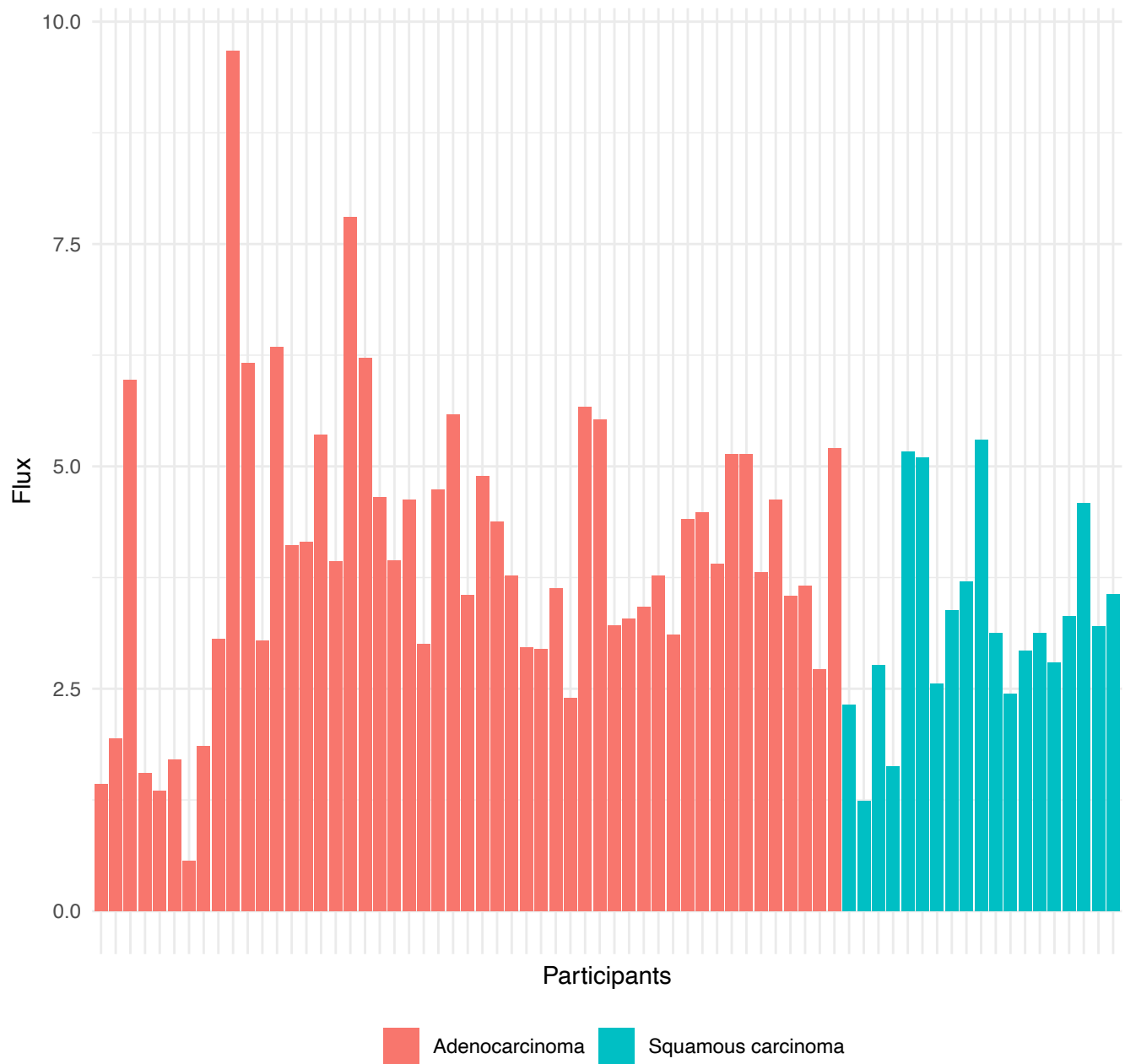
Ketone.bodies.metabolism



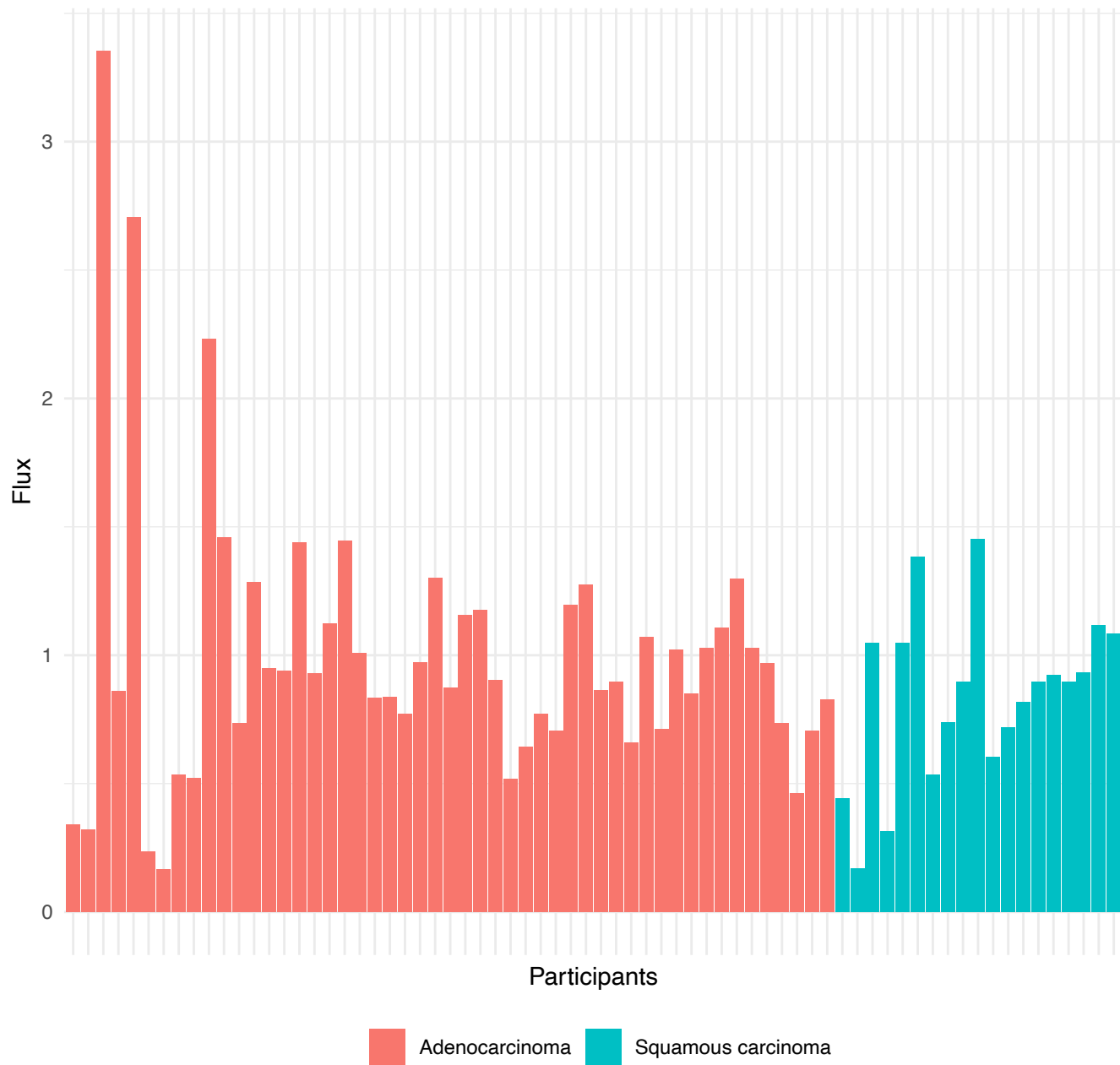
Nitrogen.metabolism



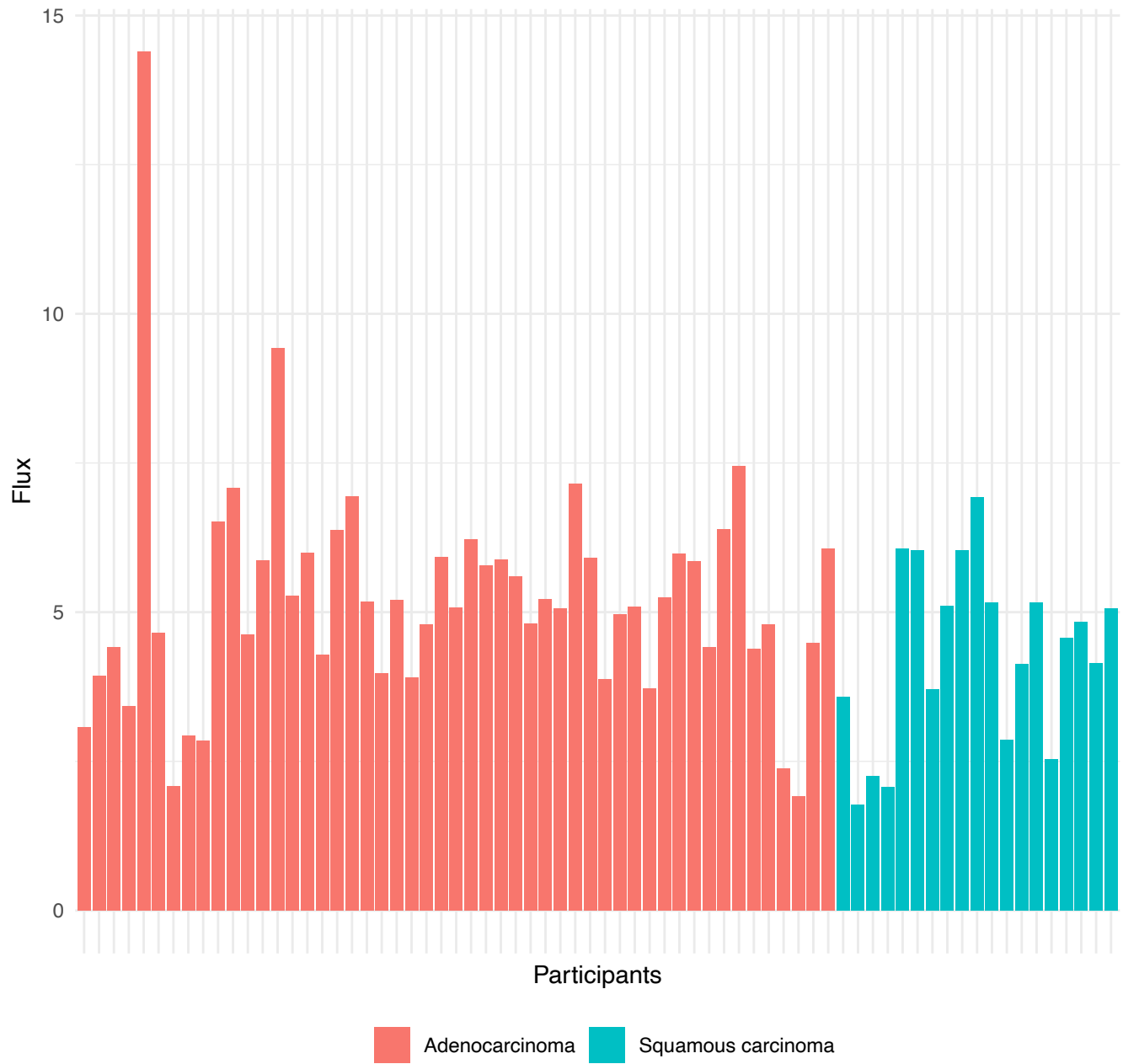
Pyrimidine.metabolism



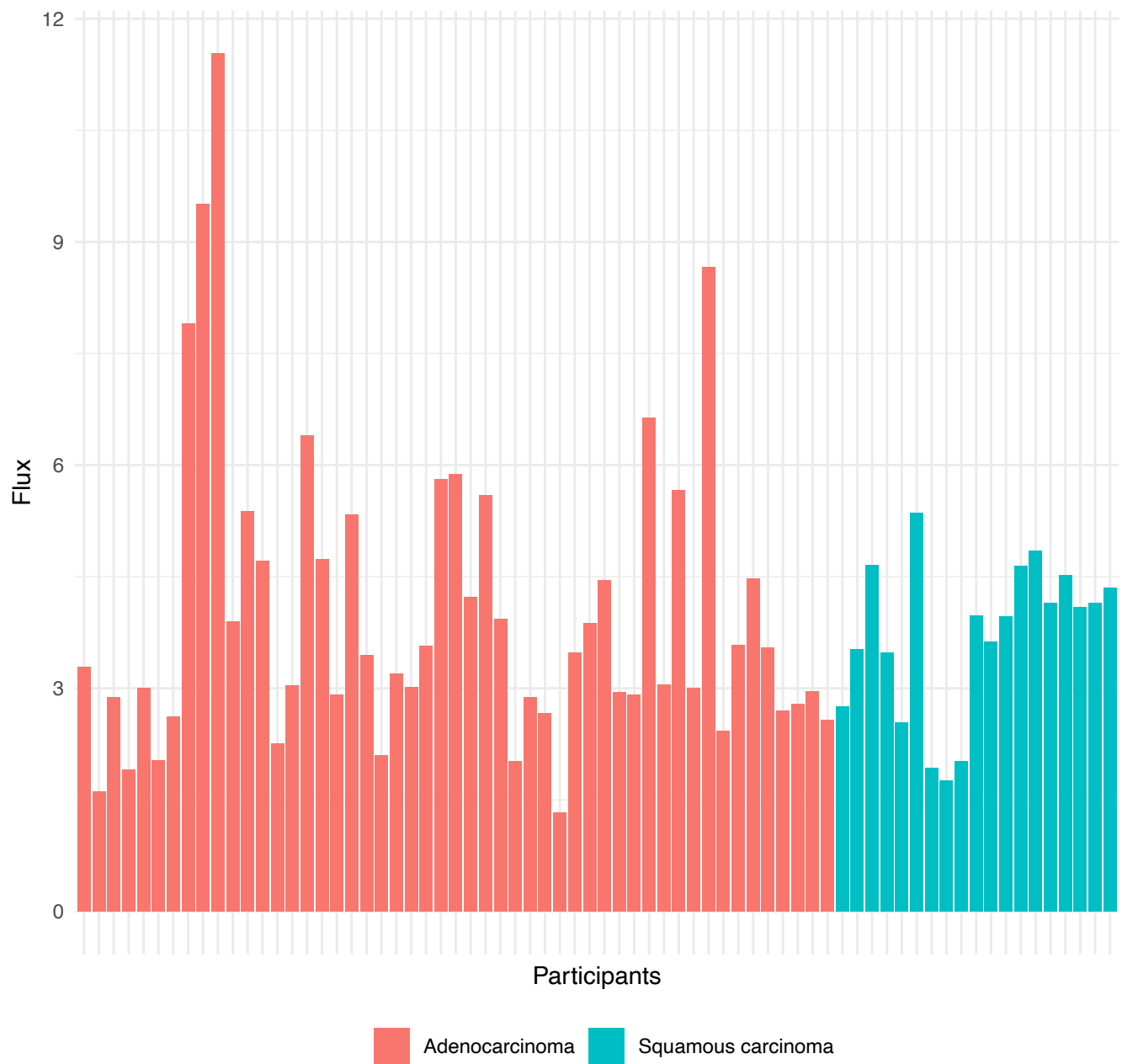
Fatty acid.degradation



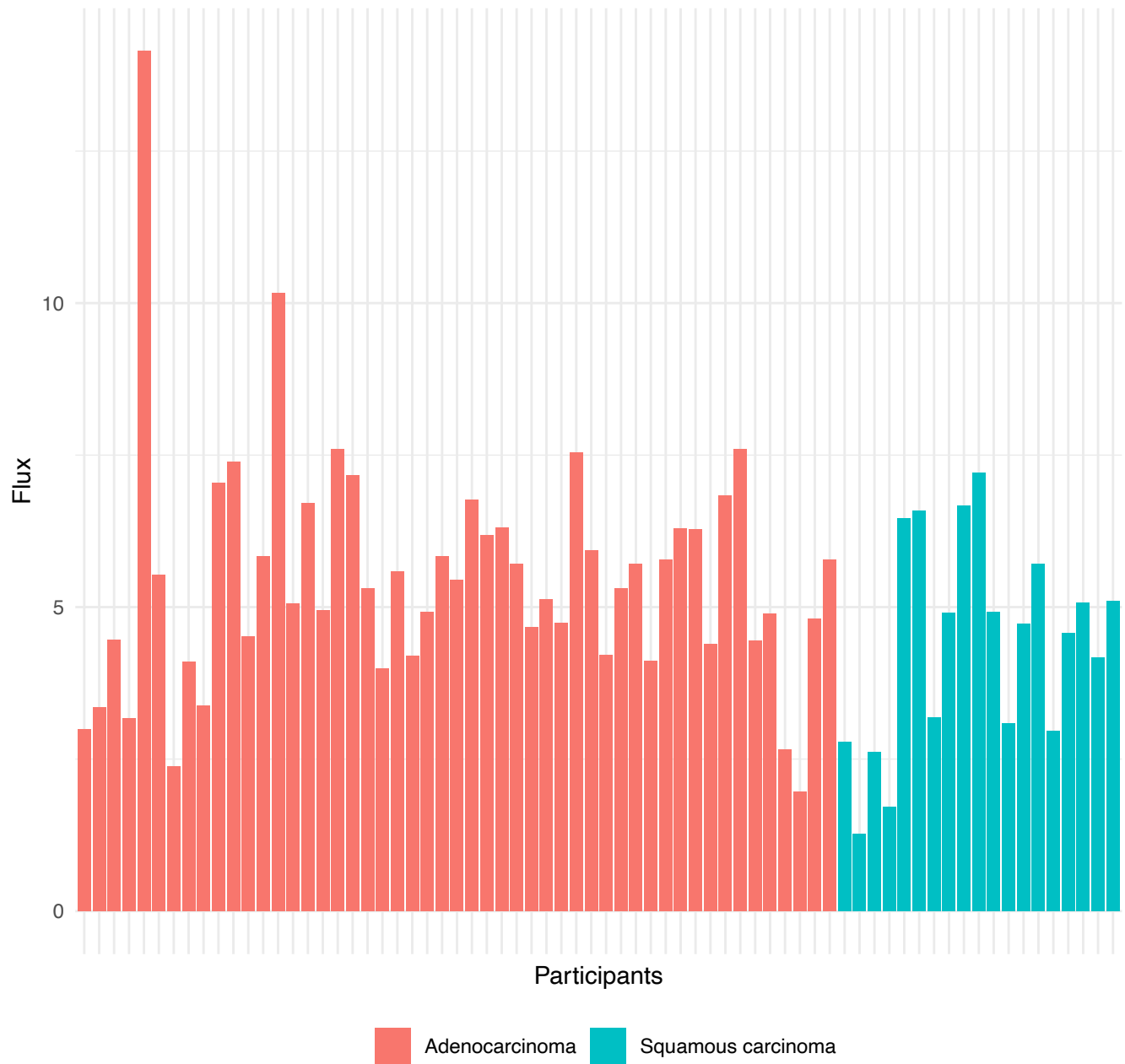
Glycerophospholipid.metabolism



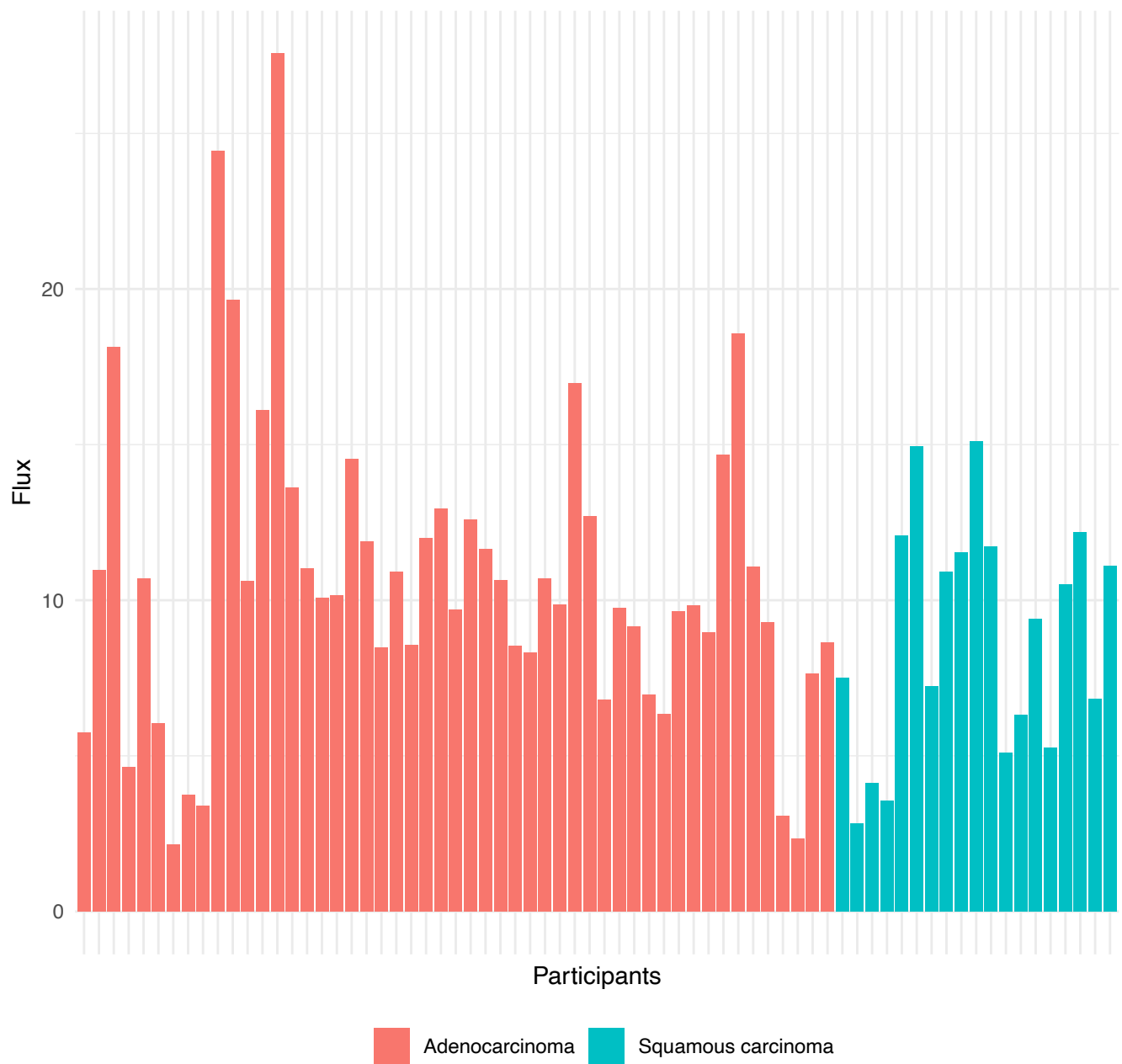
Porphyrin.metabolism



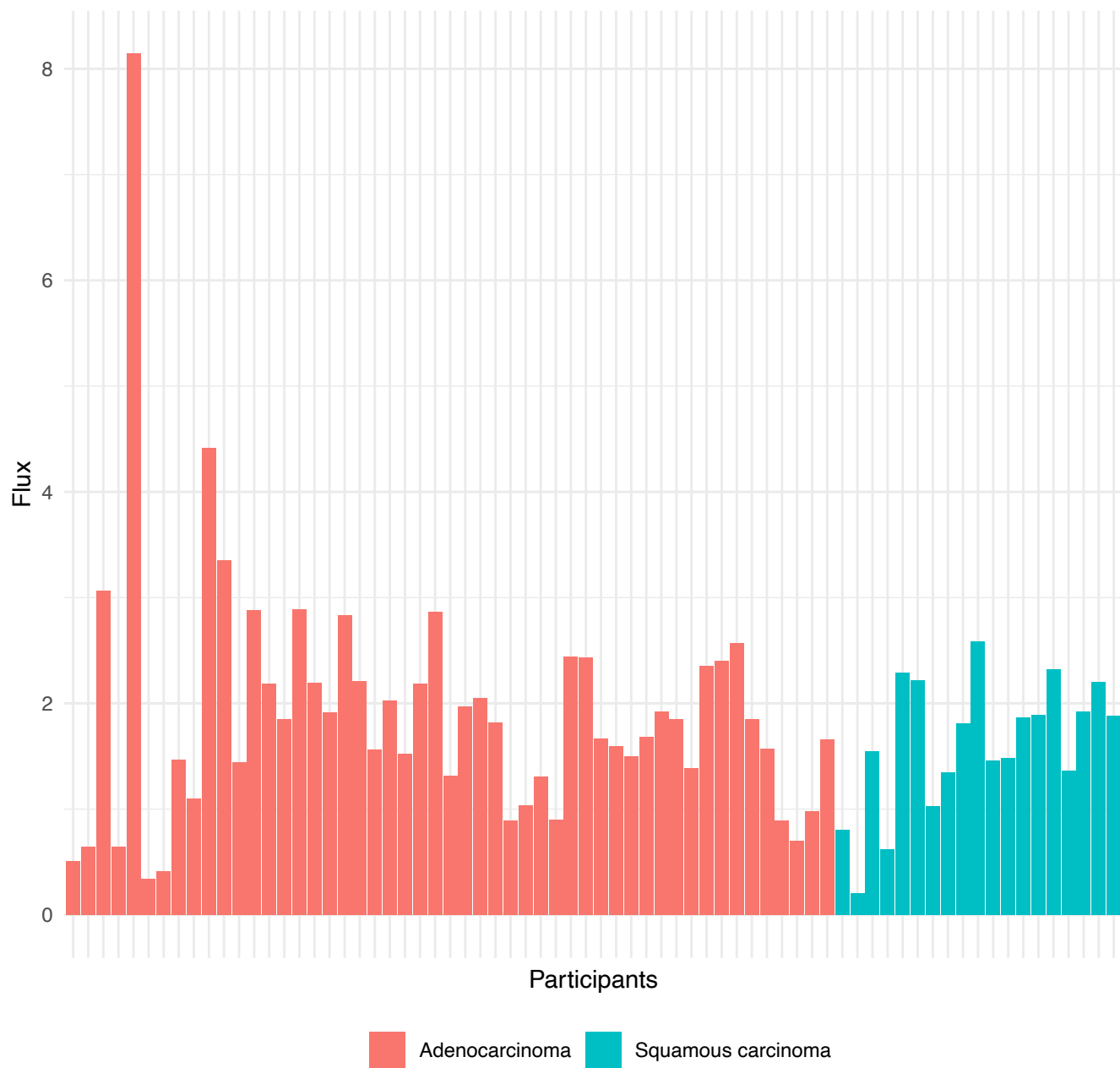
Glycerolipid.metabolism



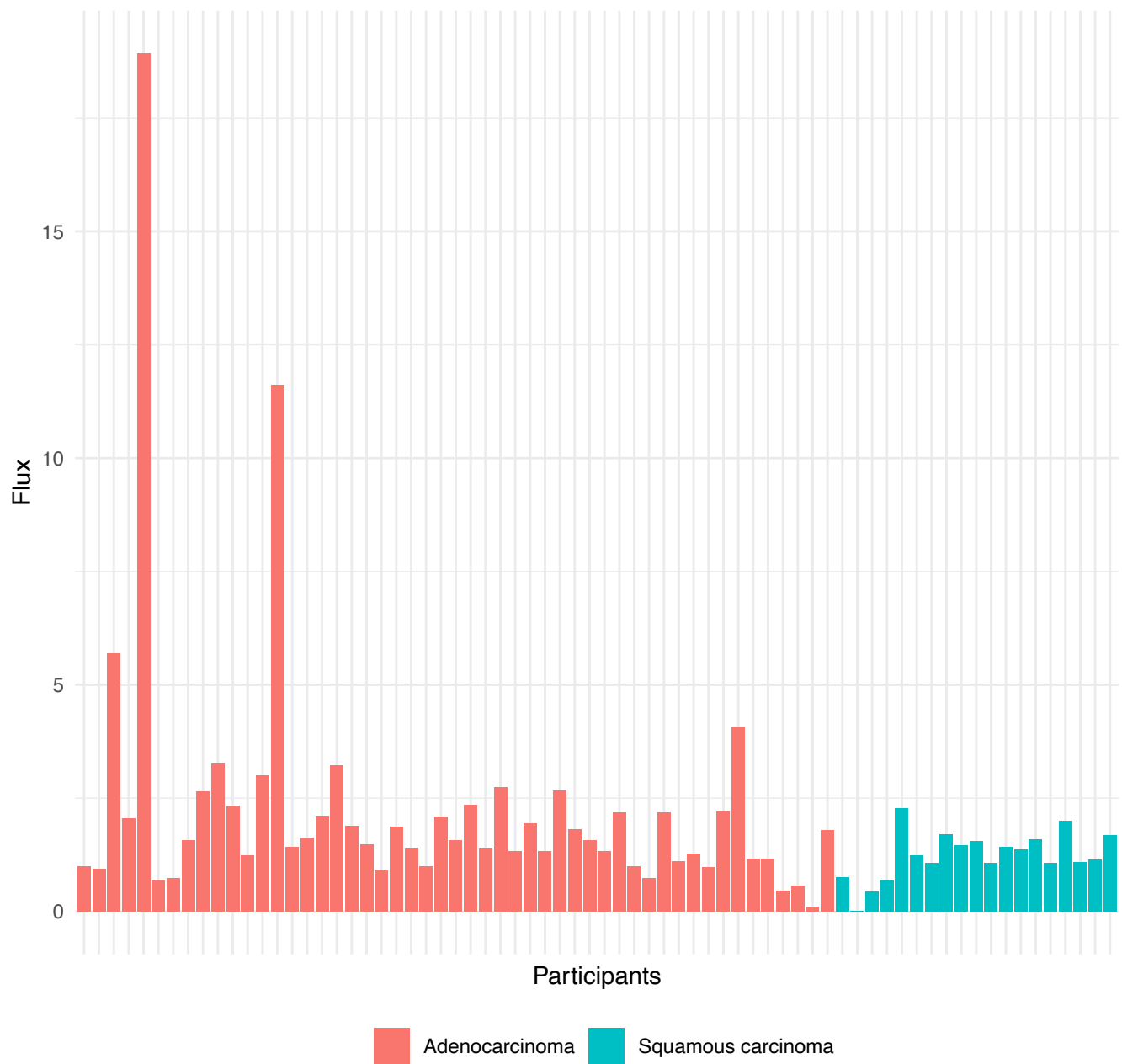
N.Glycan.biosynthesis



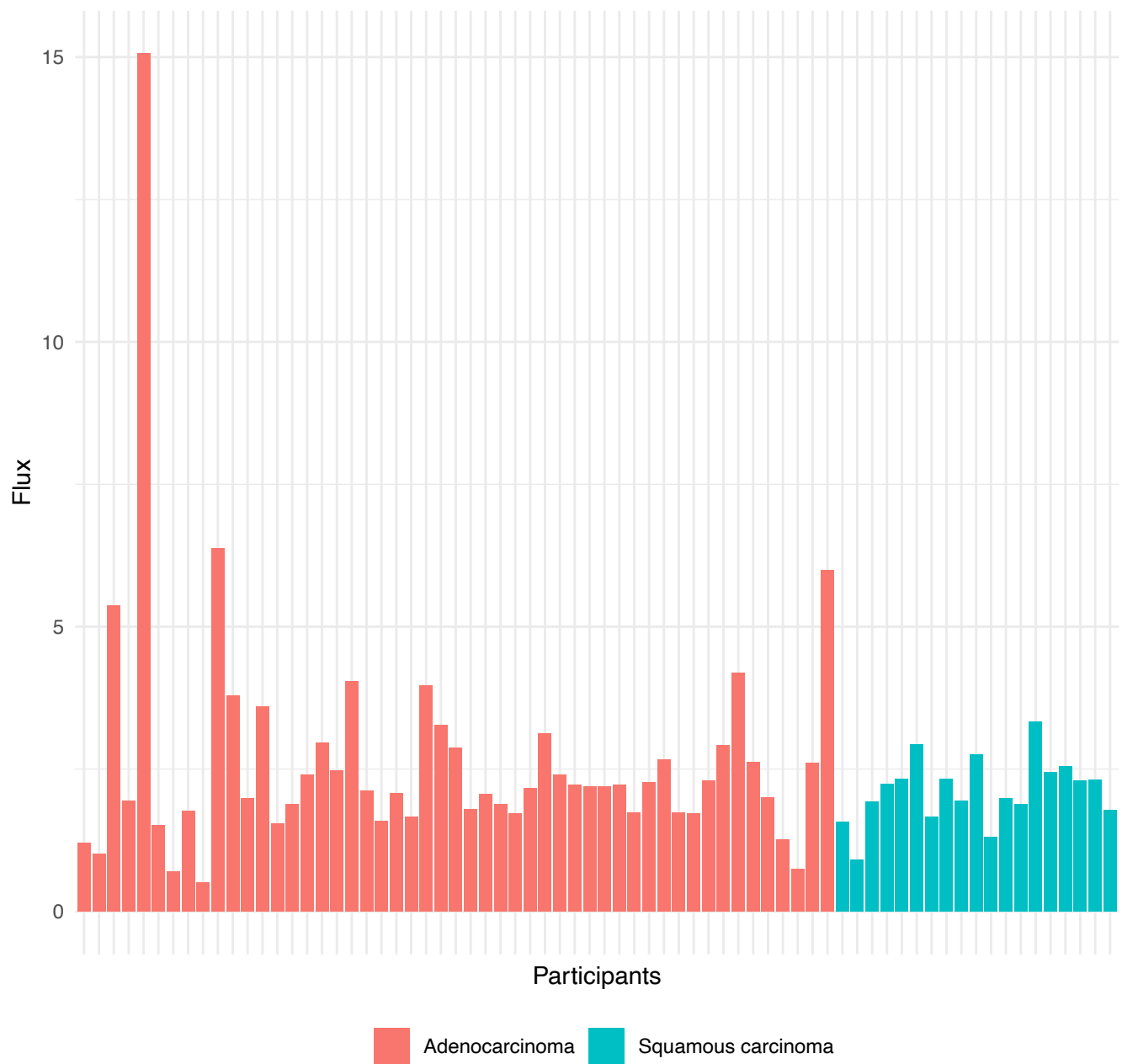
Lysine.degradation



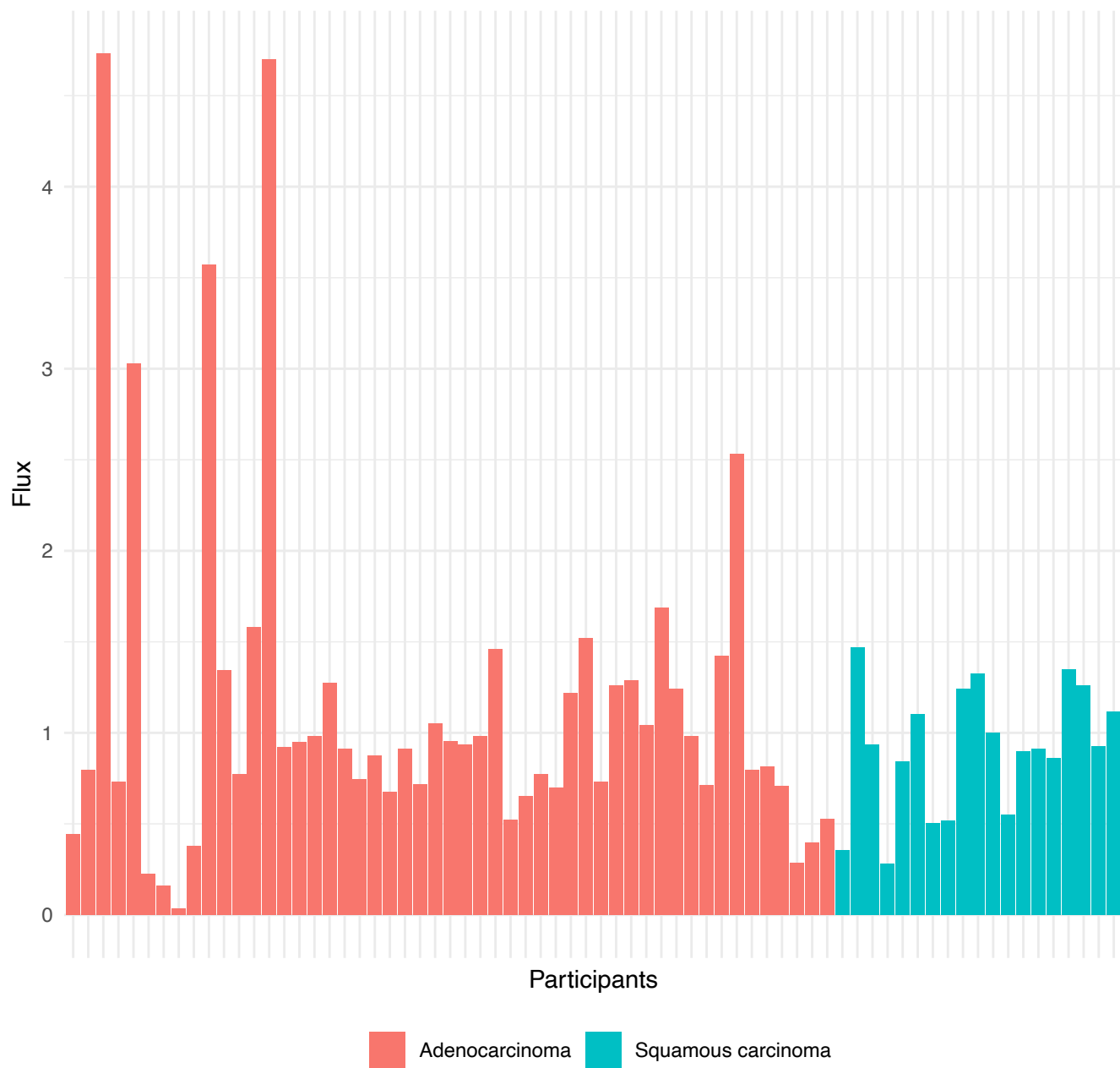
Mannose.metabolism



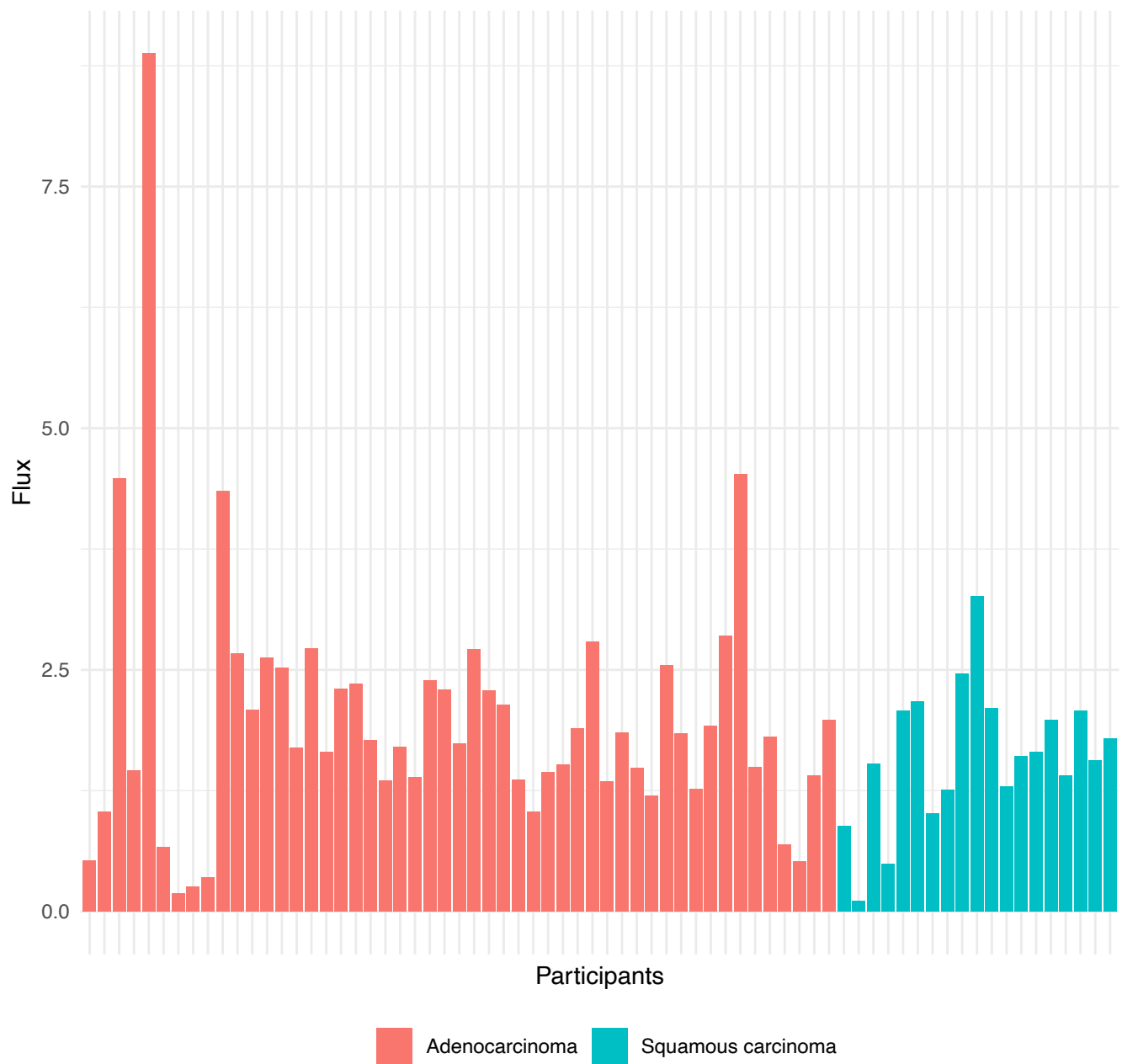
Glutathione.metabolism



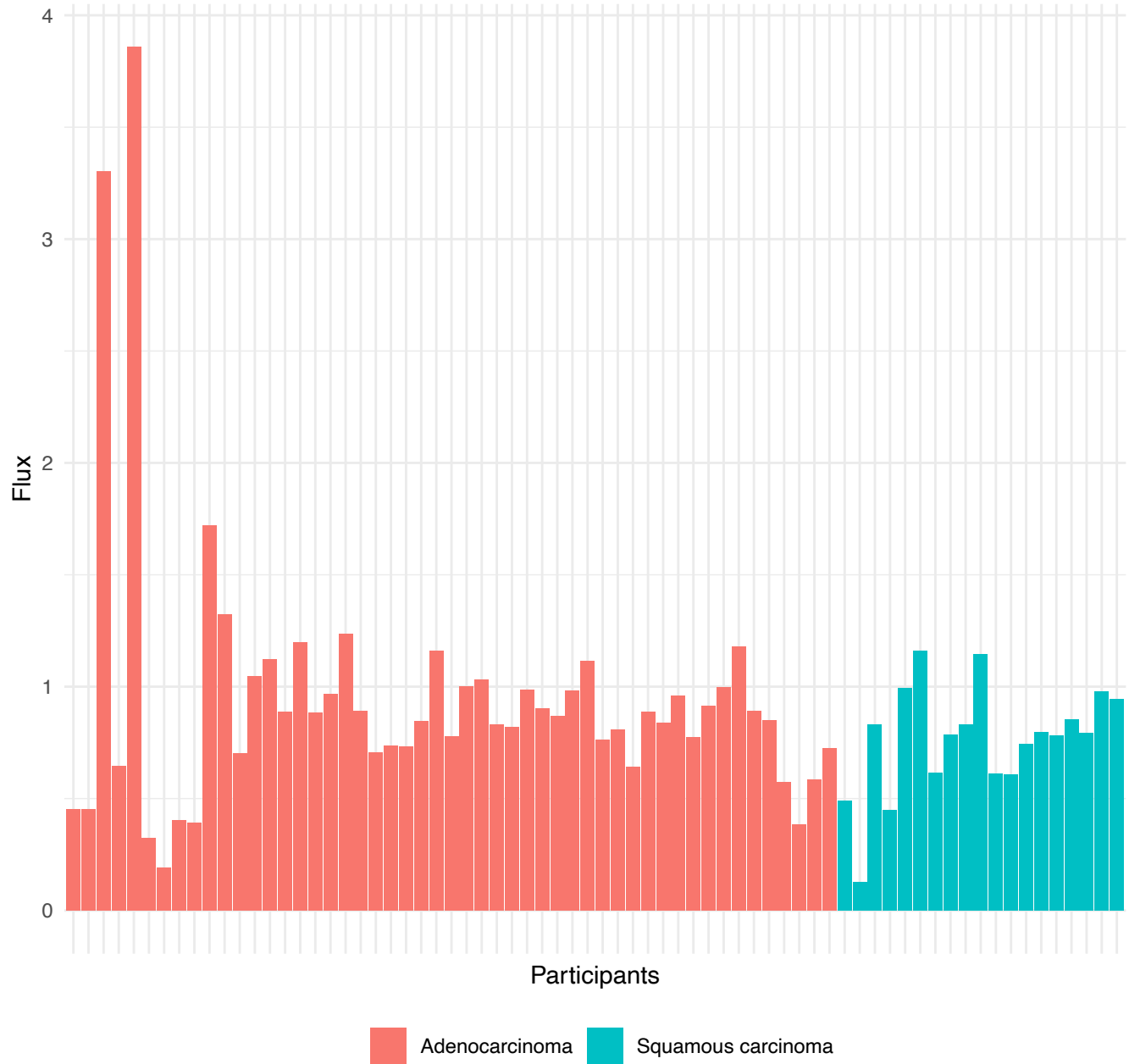
Pantothenate.biosynthesis



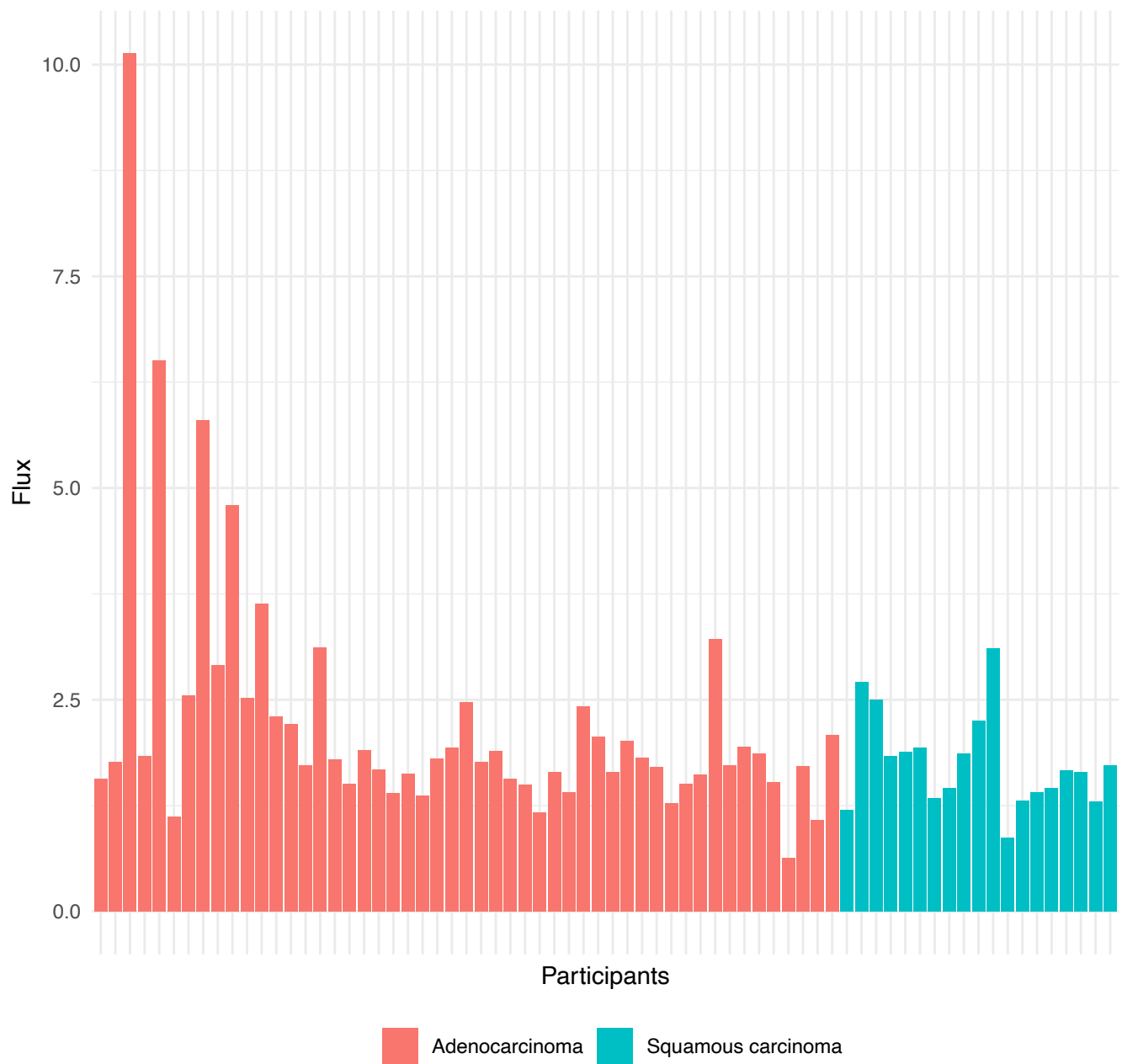
Arginine.biosynthesis



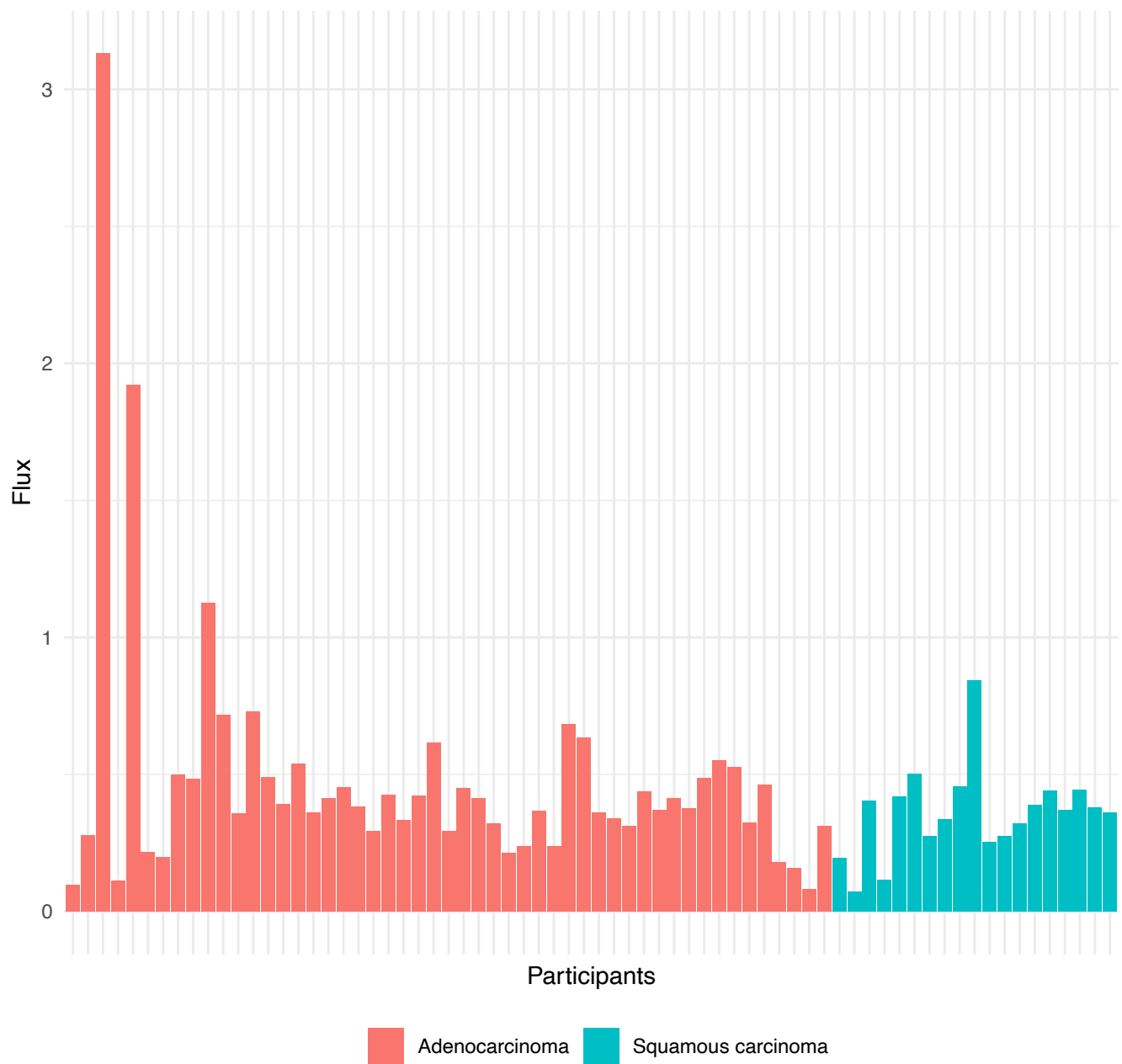
Fatty acid metabolism



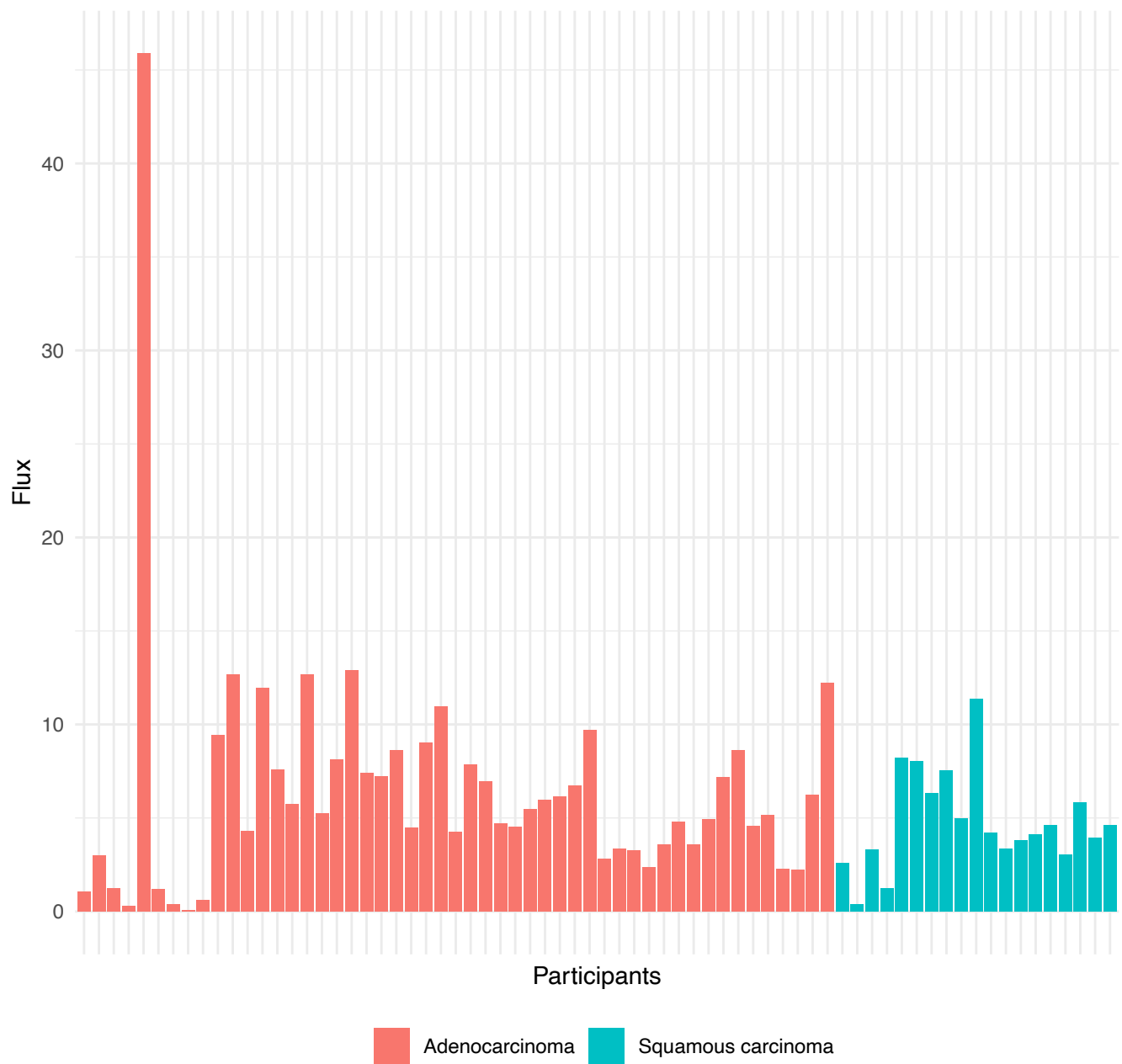
Glycine.serine.a..threonine



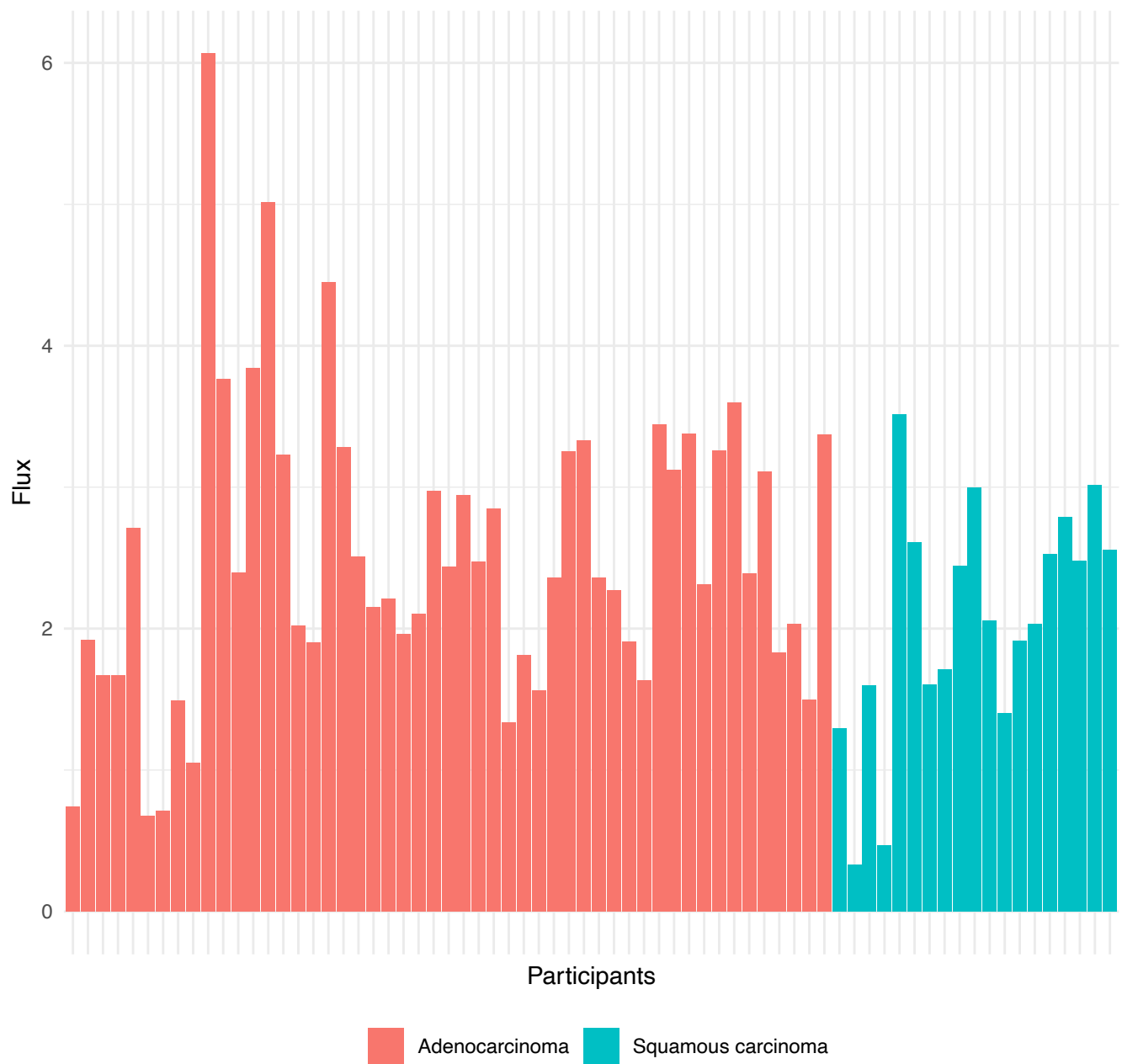
Pentose.a..glucuronate.metabolism



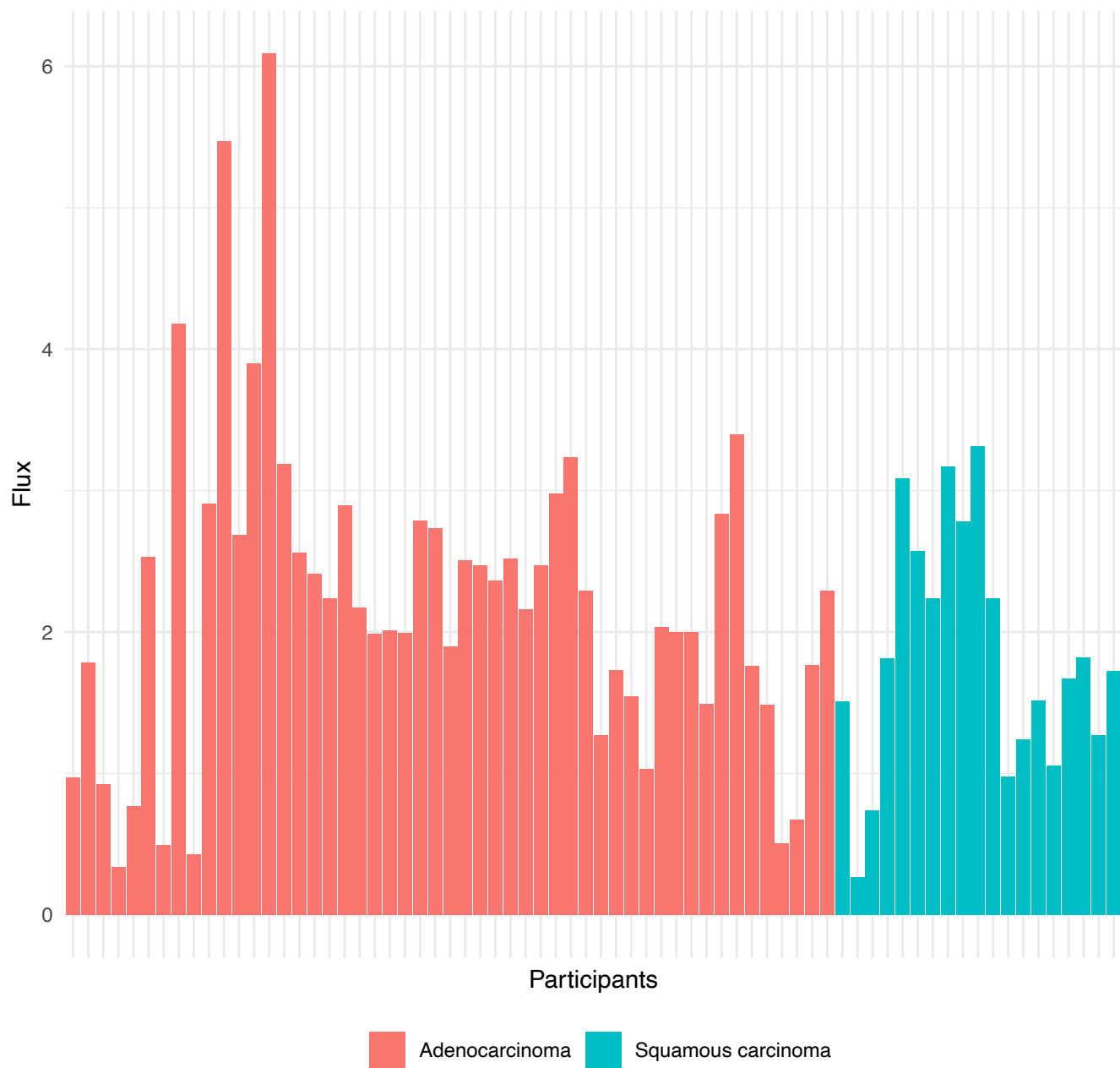
Glutamine.metabolism



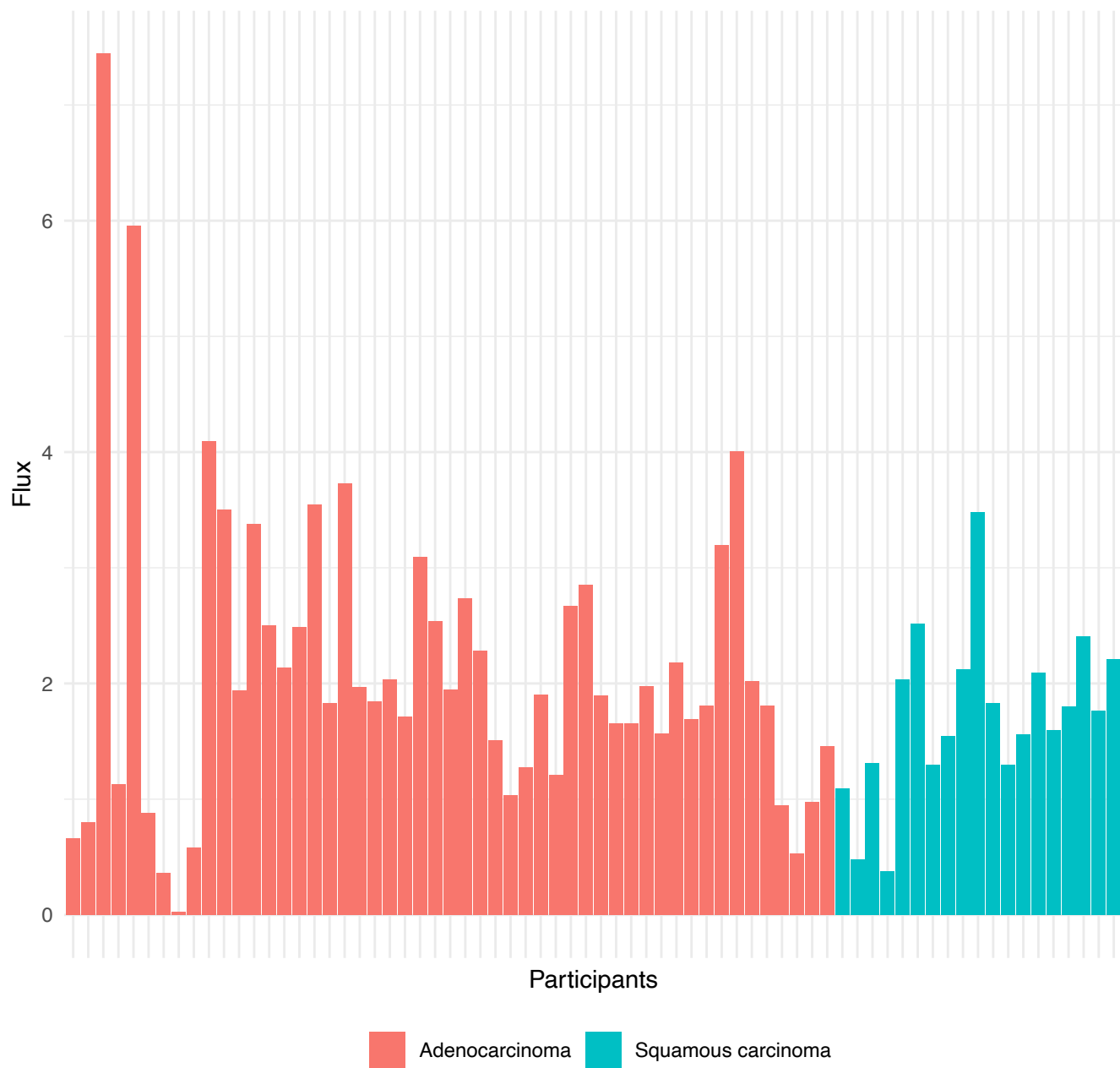
Ether.lipid.metabolism



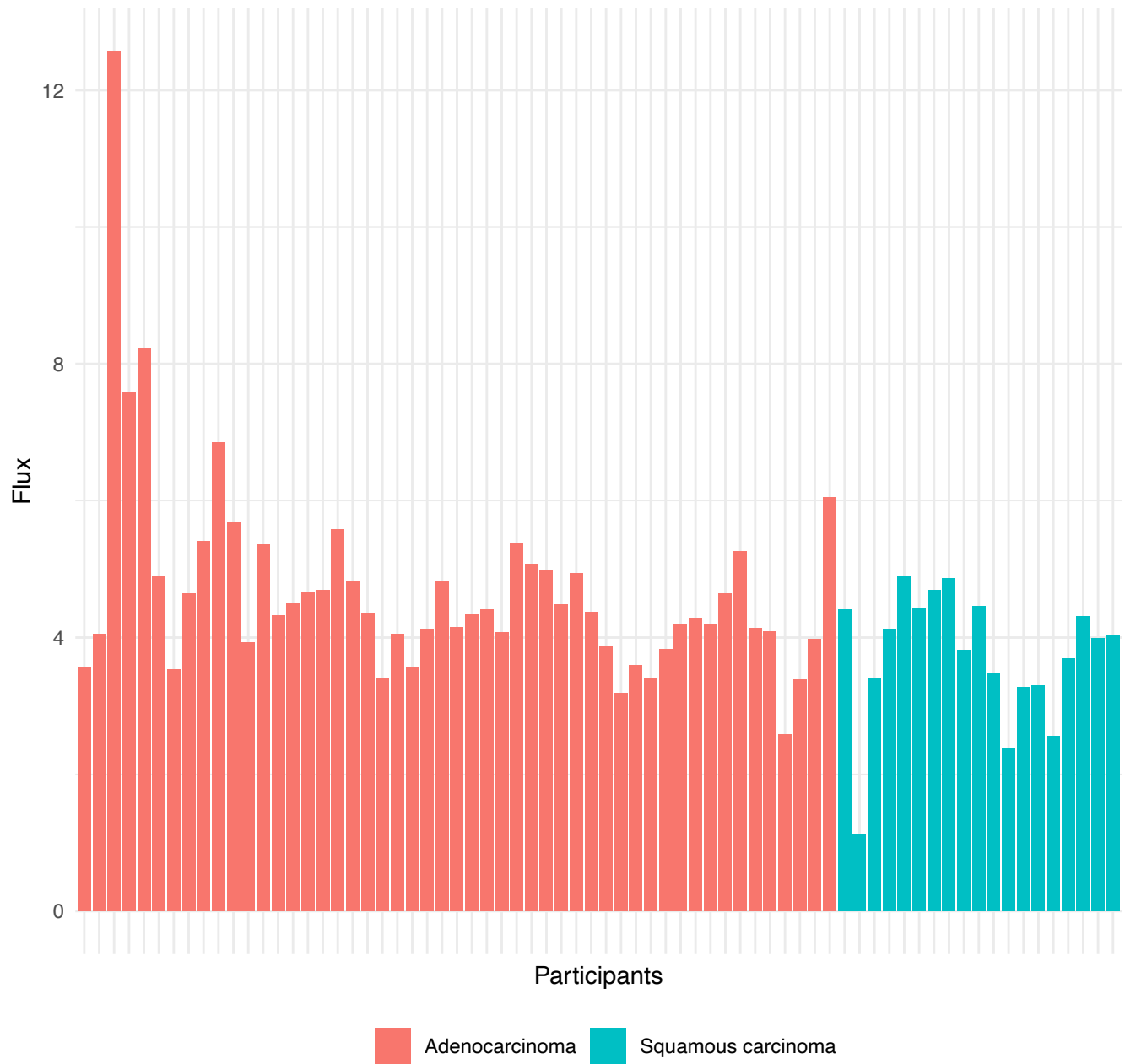
Galactose.metabolism



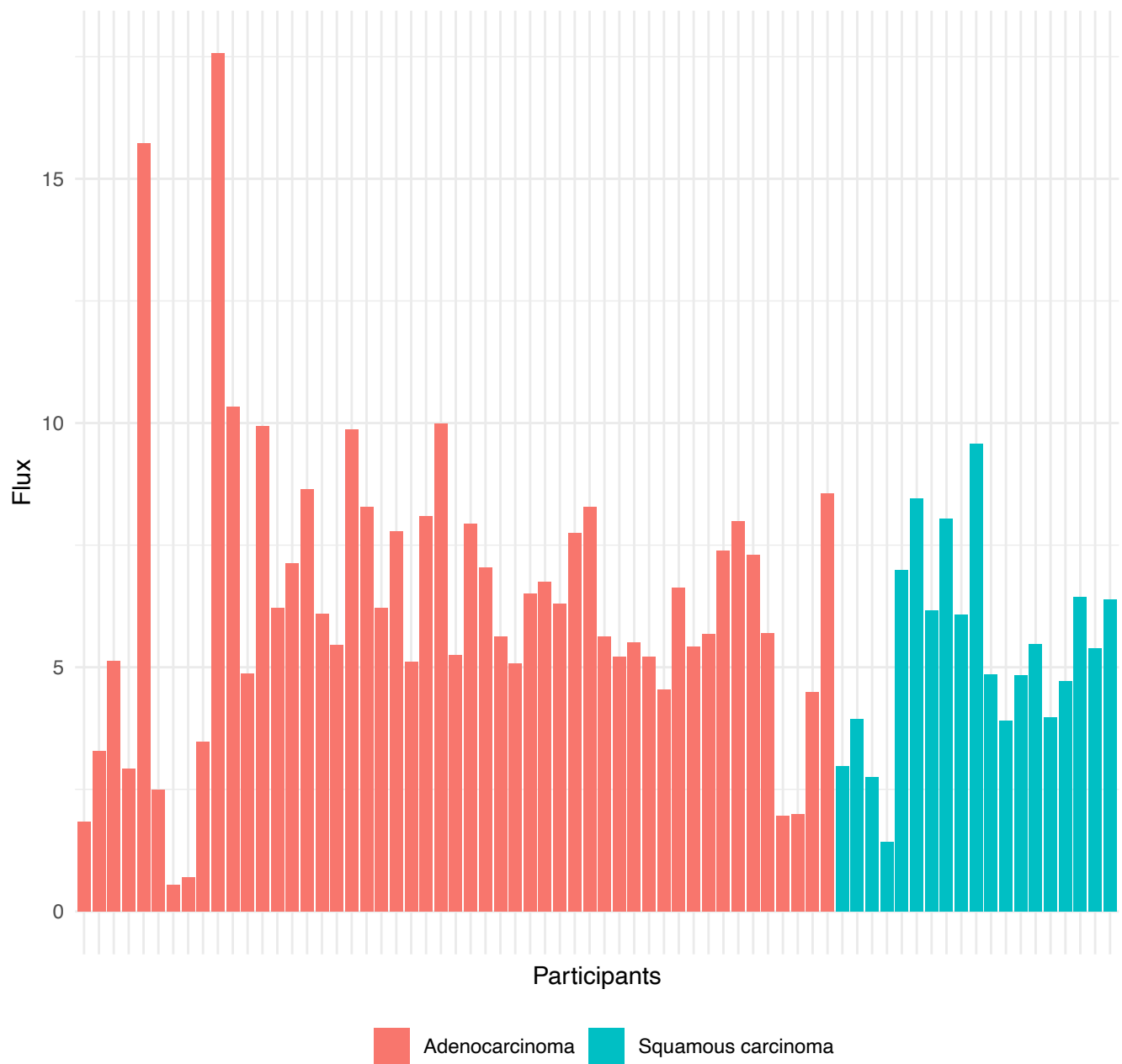
PPP.metabolism



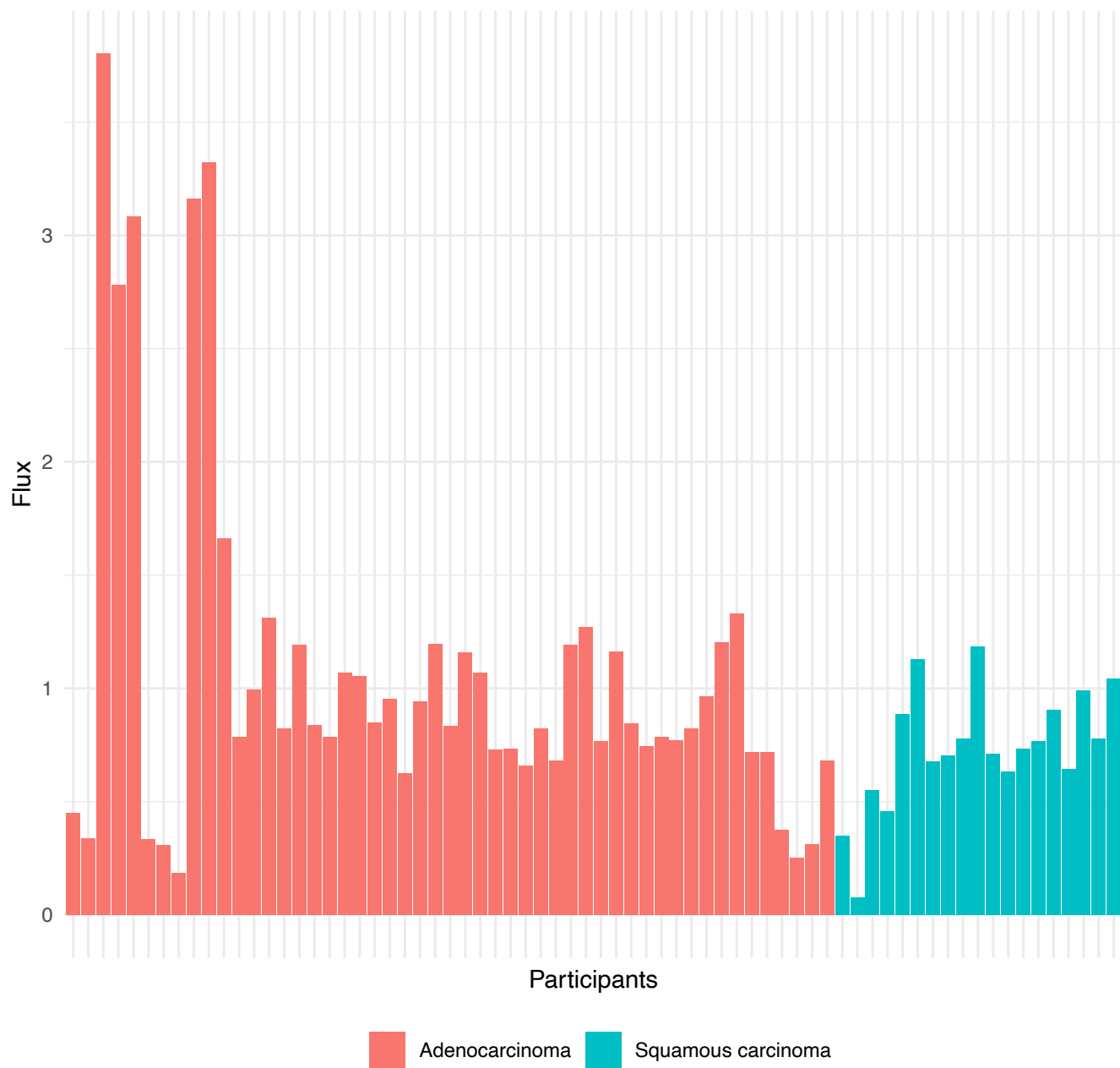
Purine.metabolism



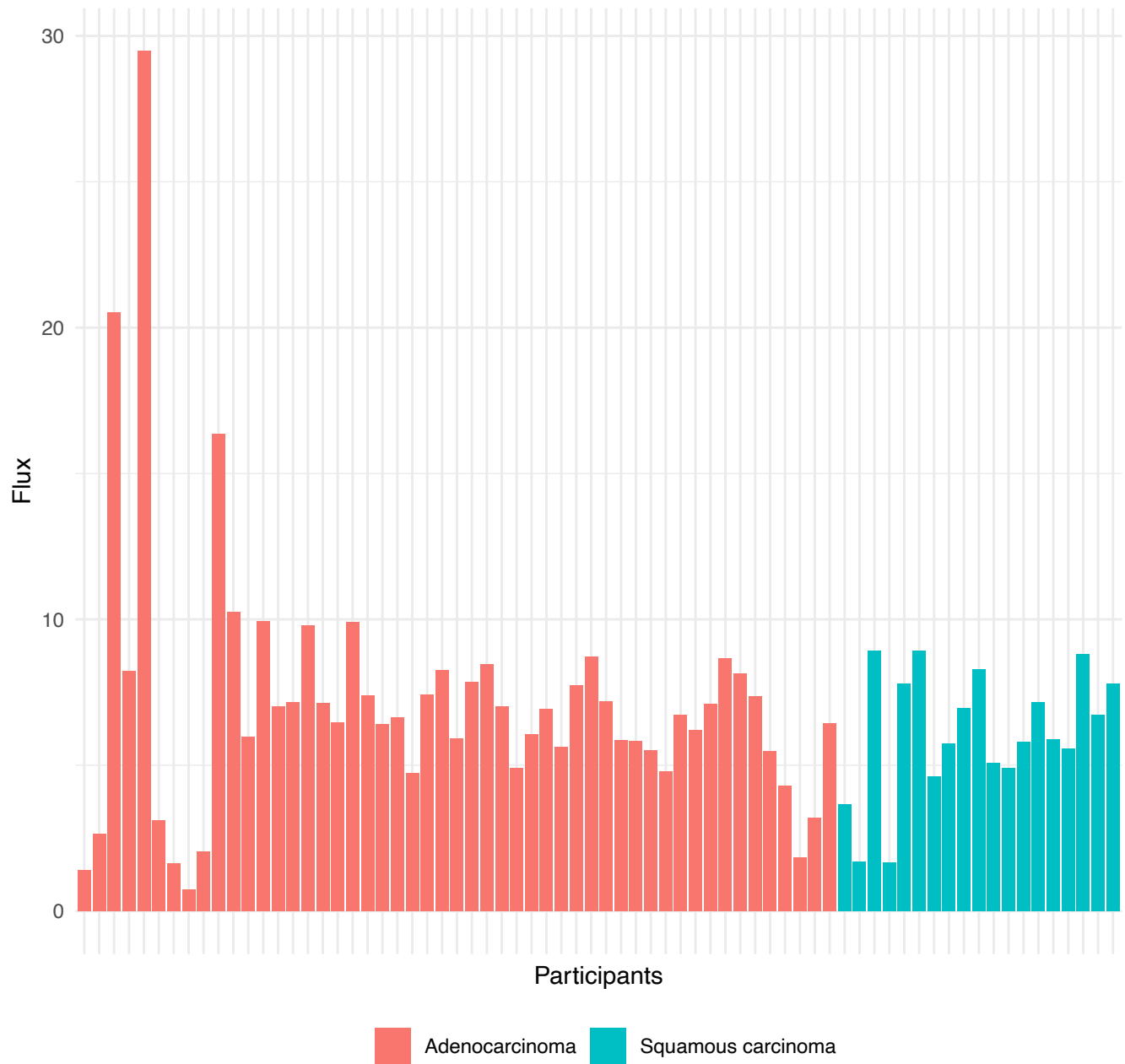
Citrate.cycle



Cysteine.a.methionine.metabolism

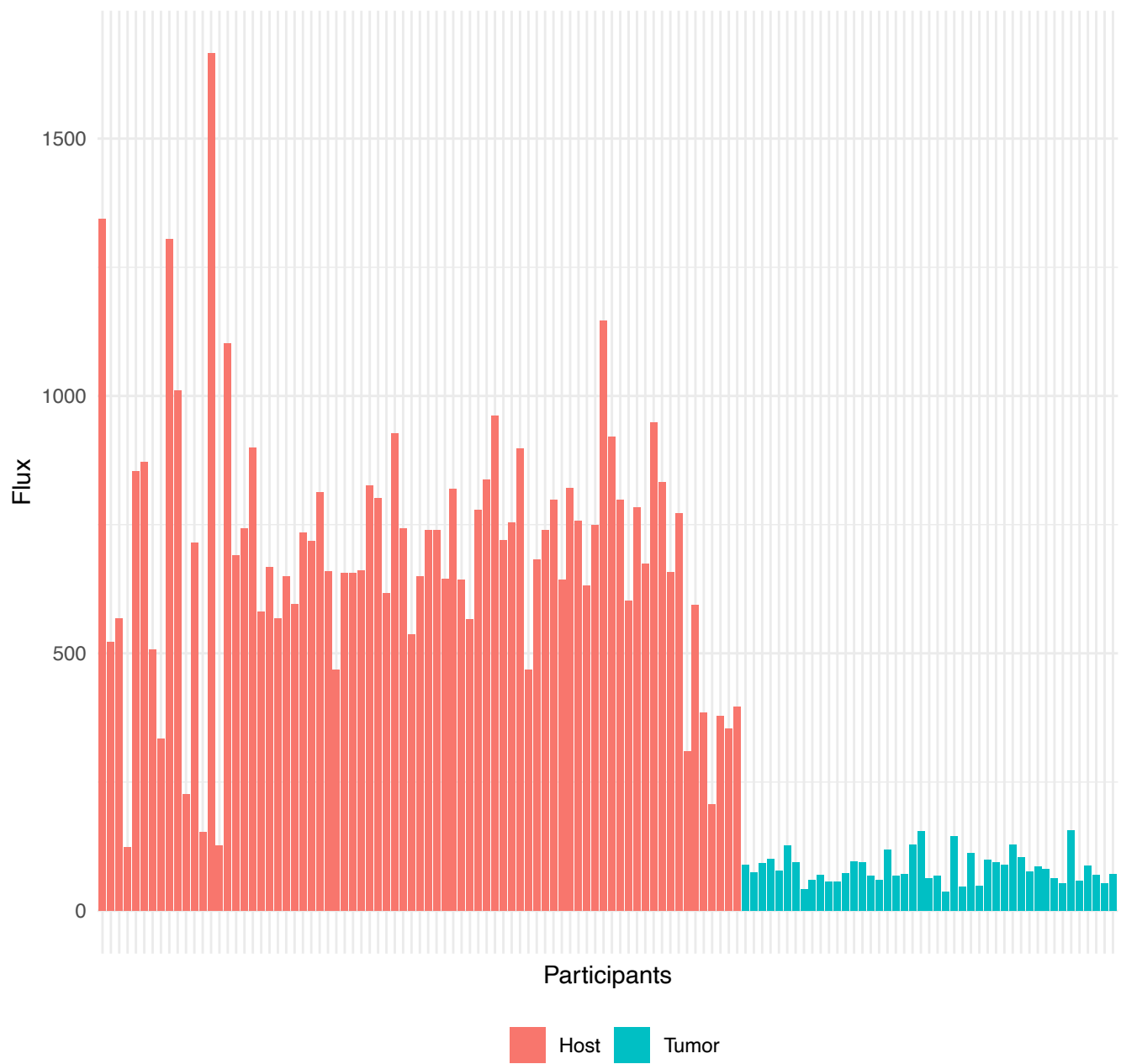


Butanoate.metabolism

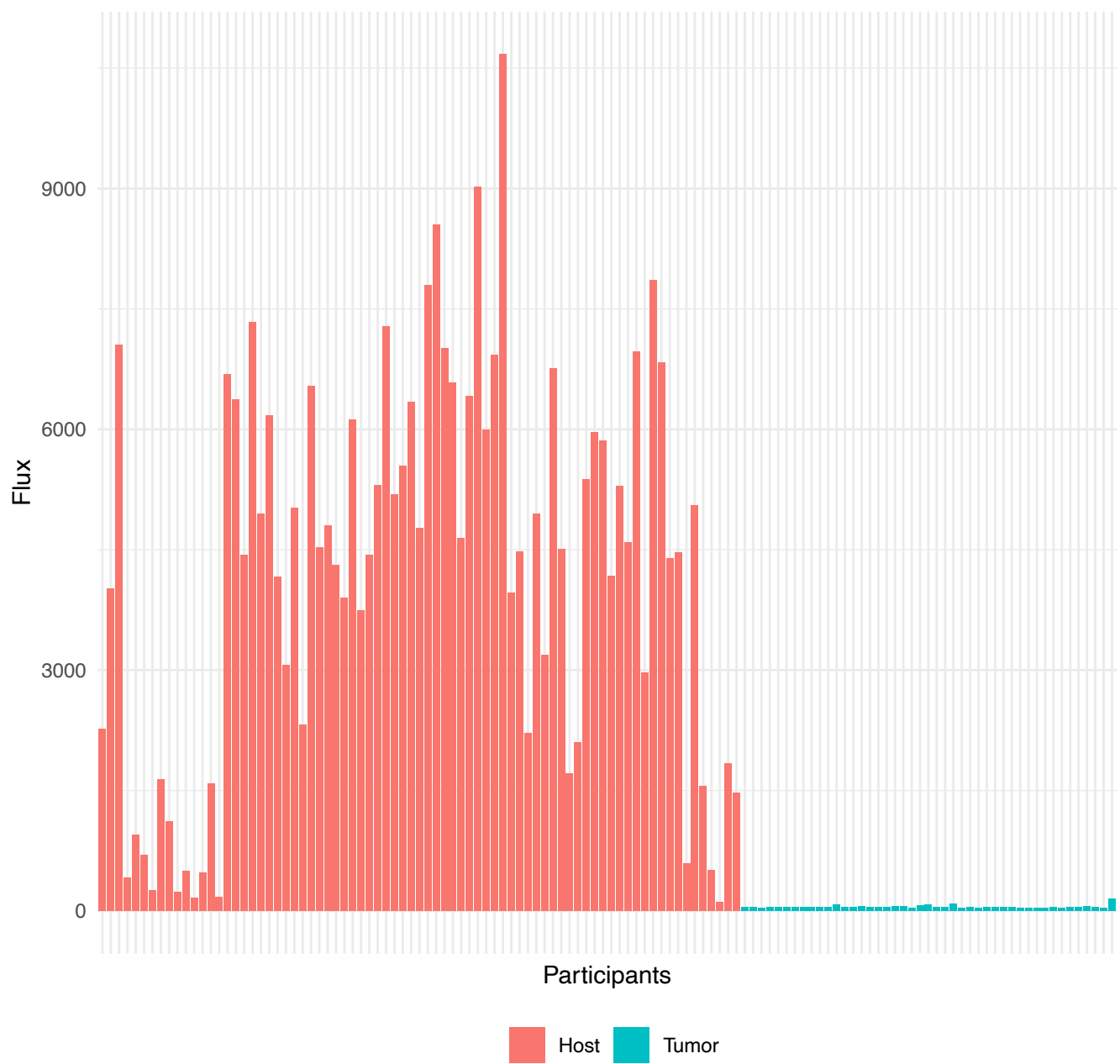


Supplement Figure 4: Pathway flux comparison between host- and tumor-side.

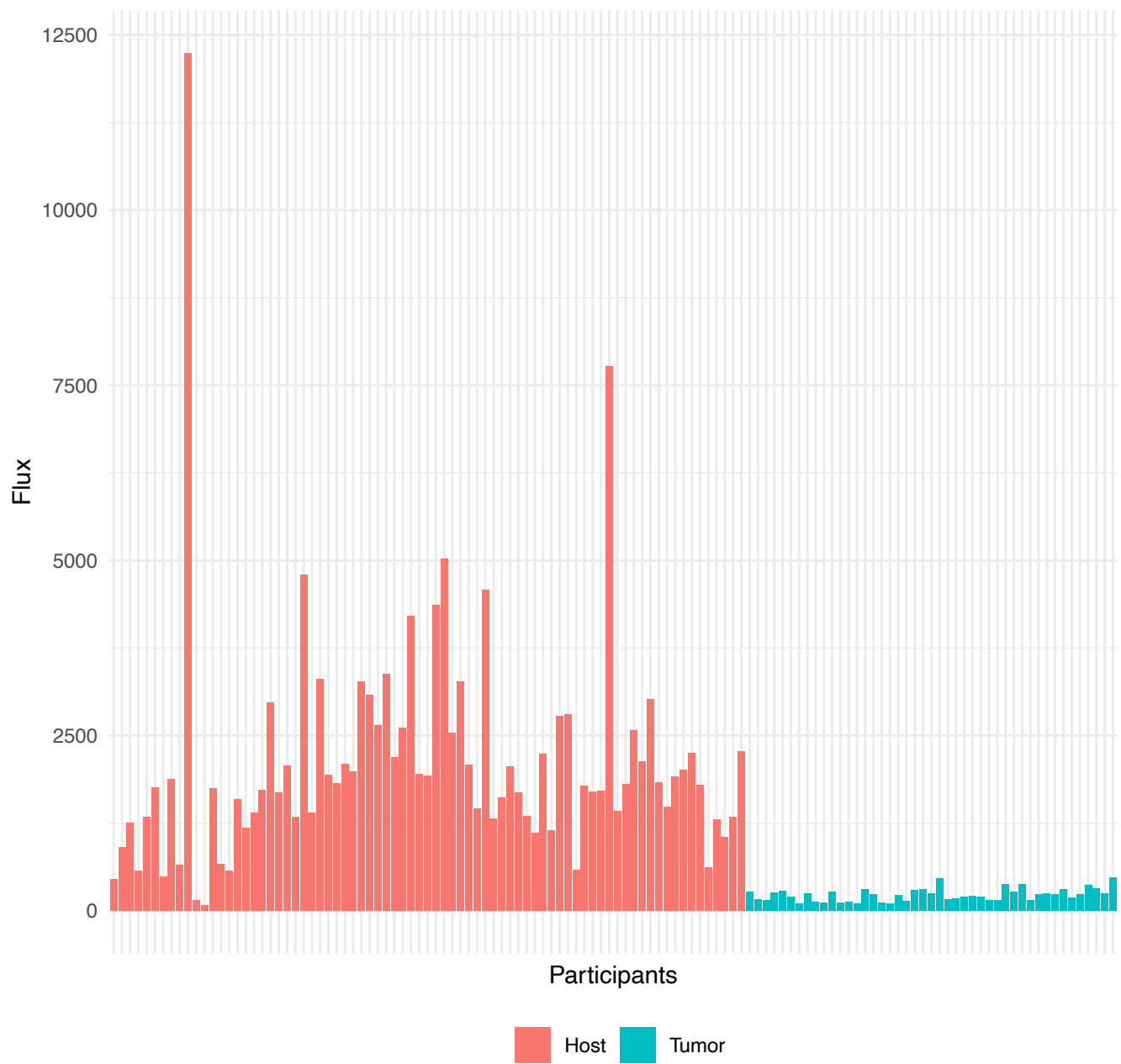
ABL.signaling



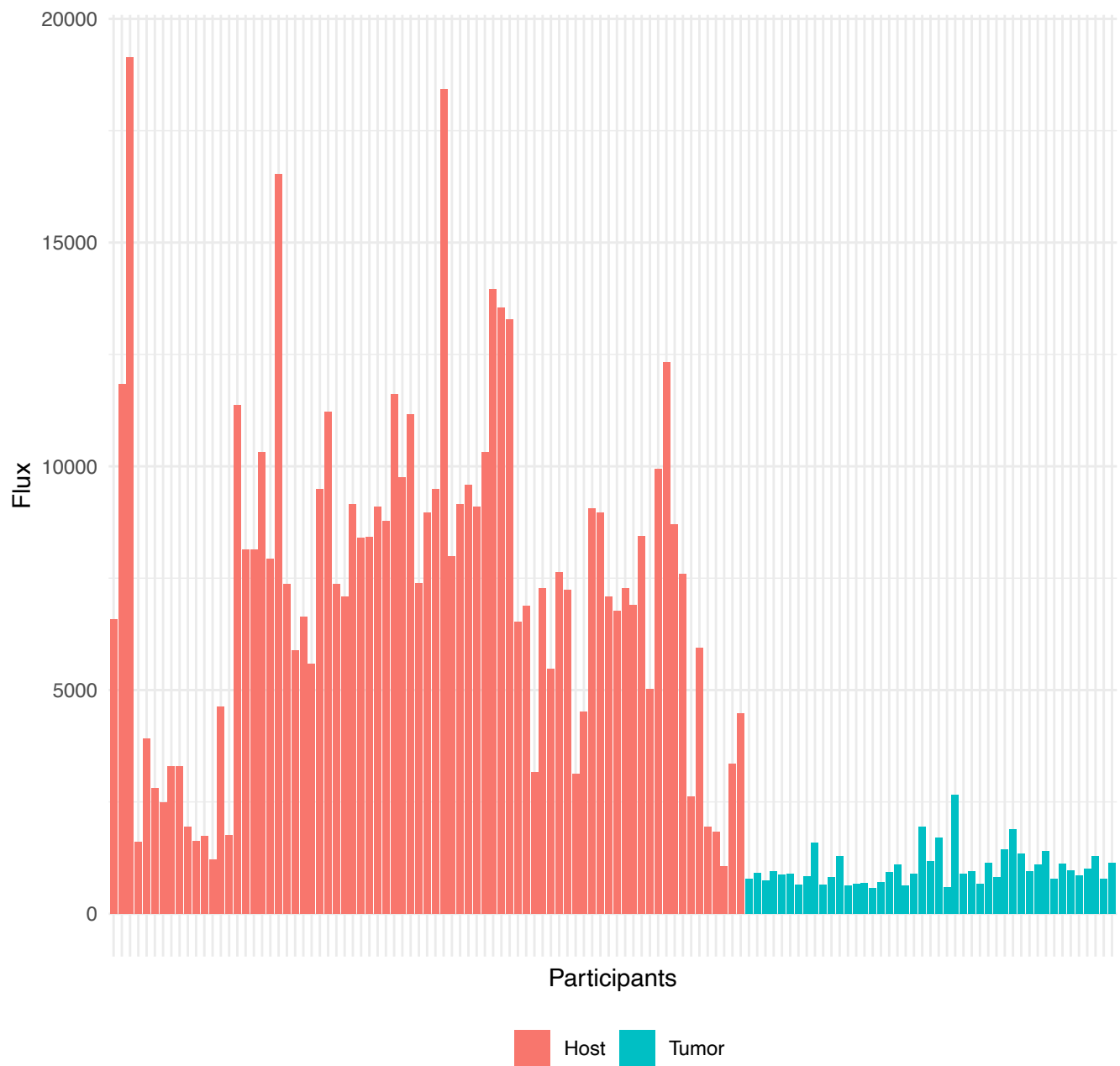
GP130



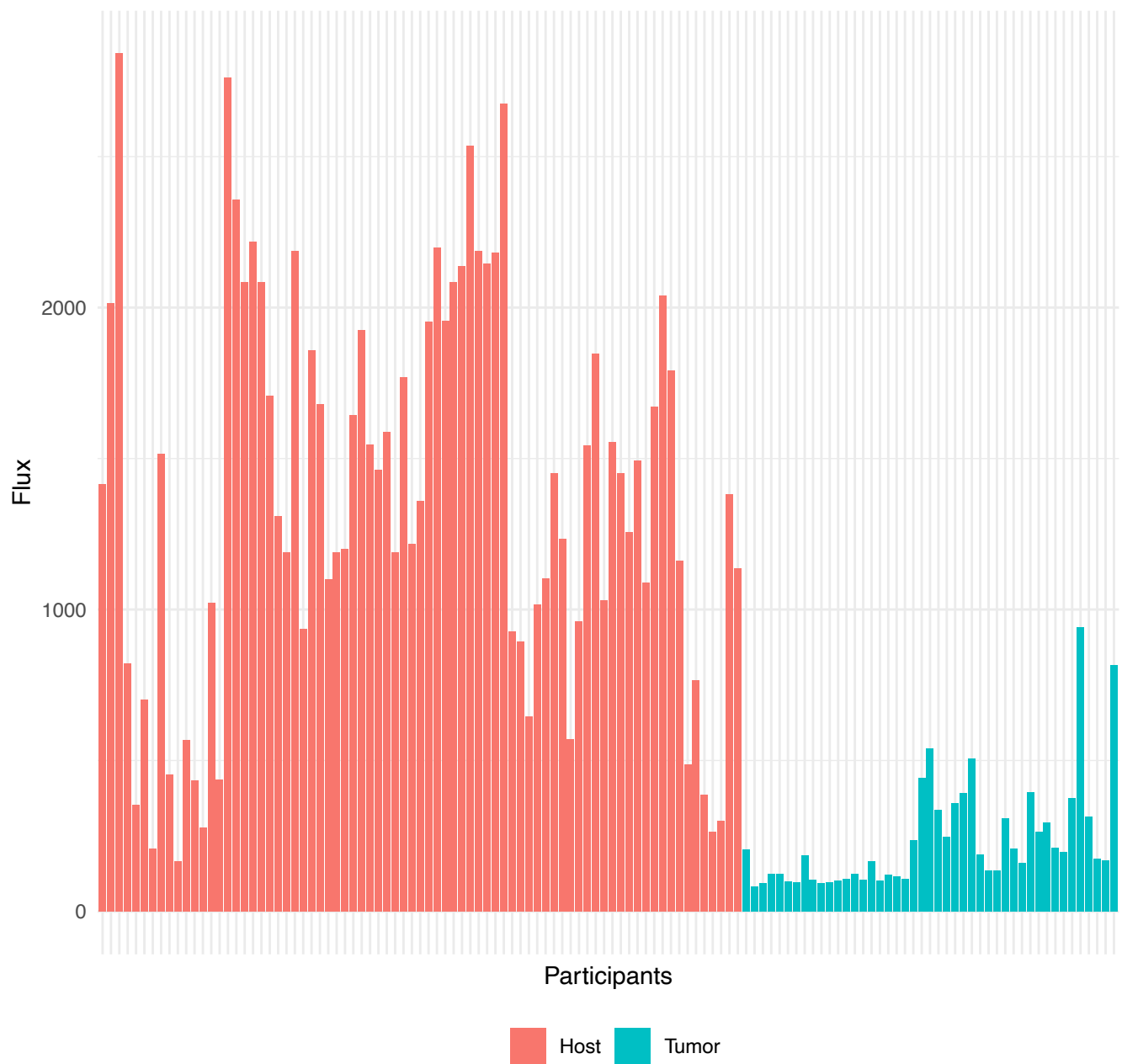
ATM



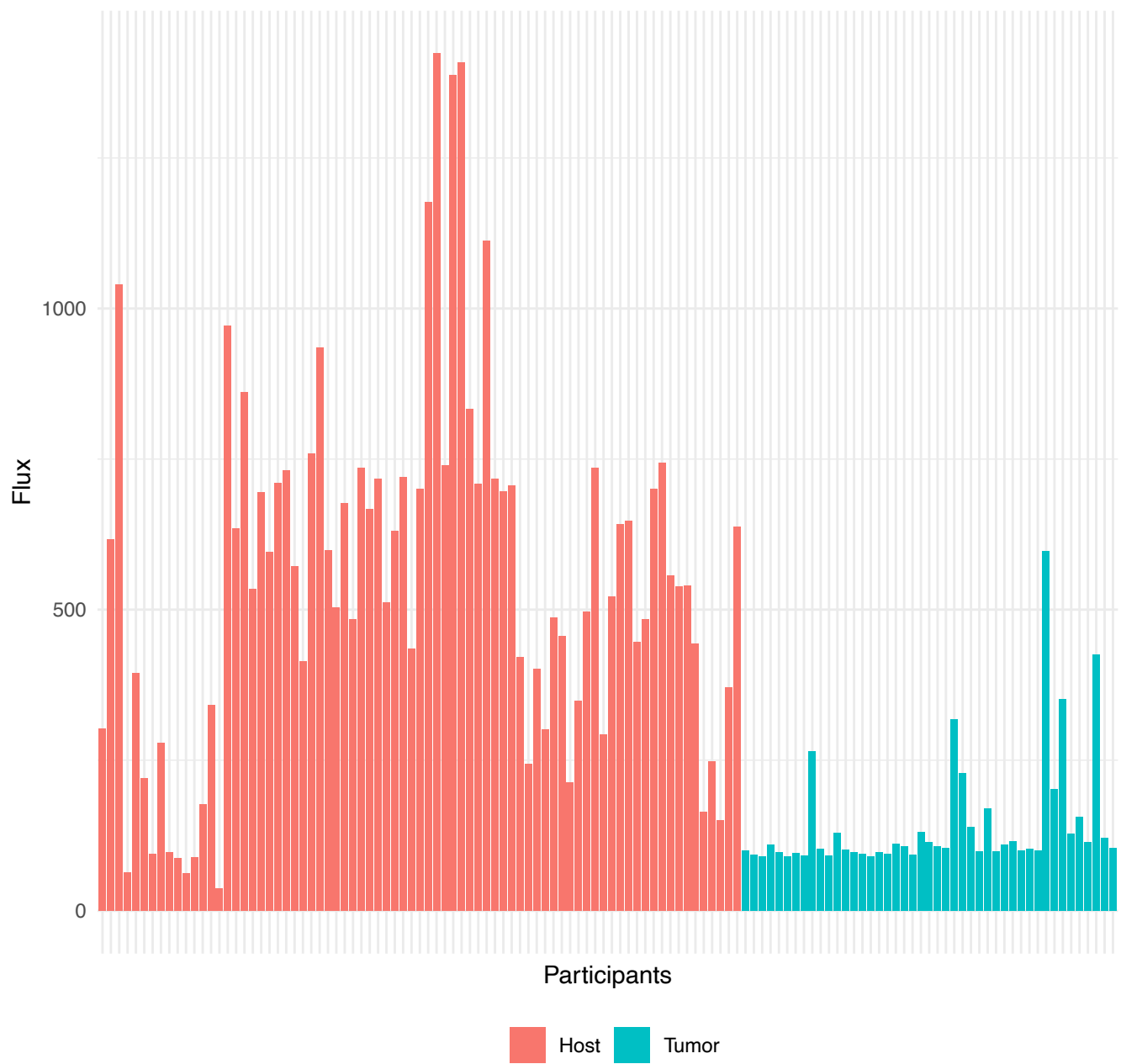
JAK.STAT



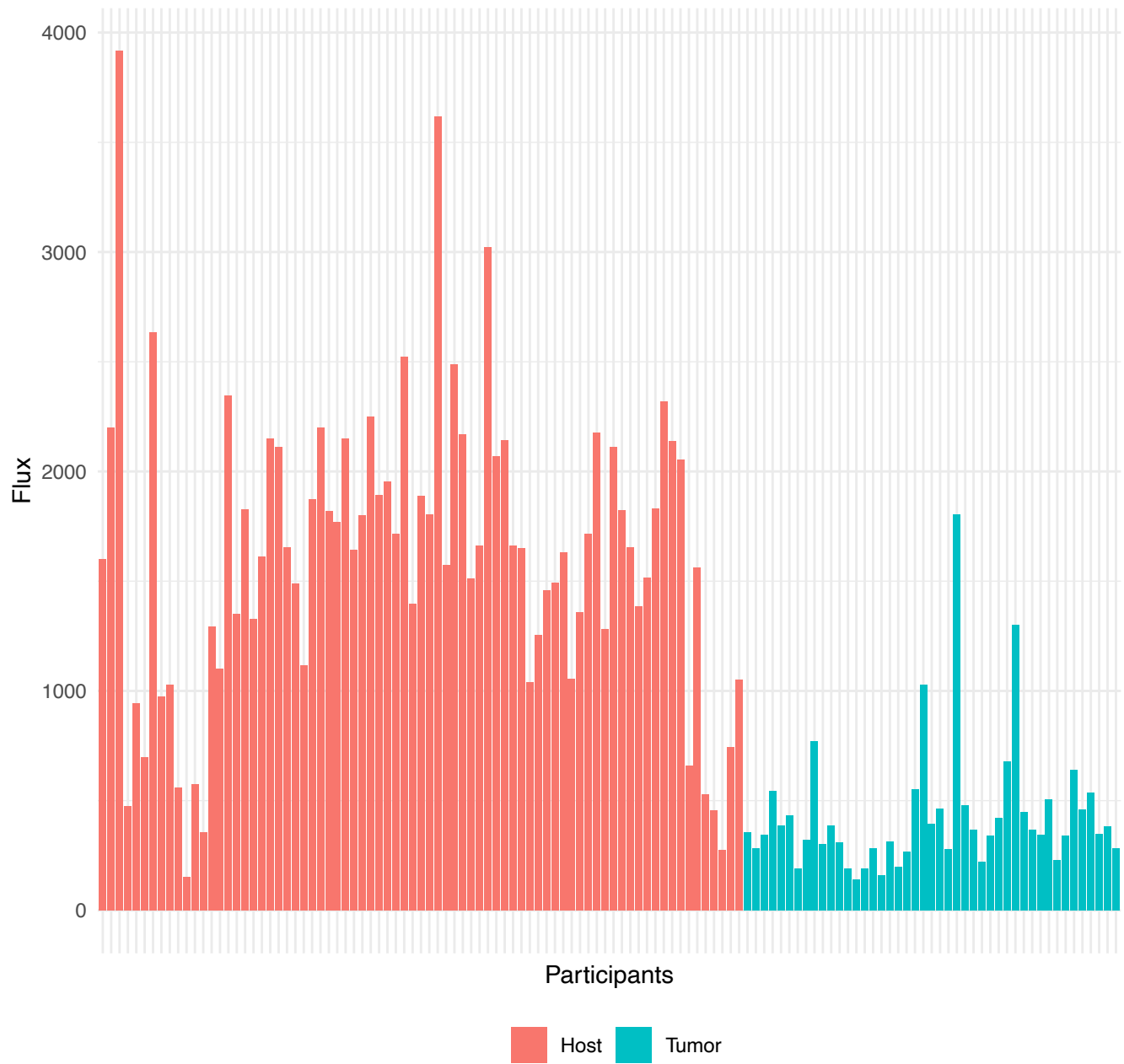
COX.signaling



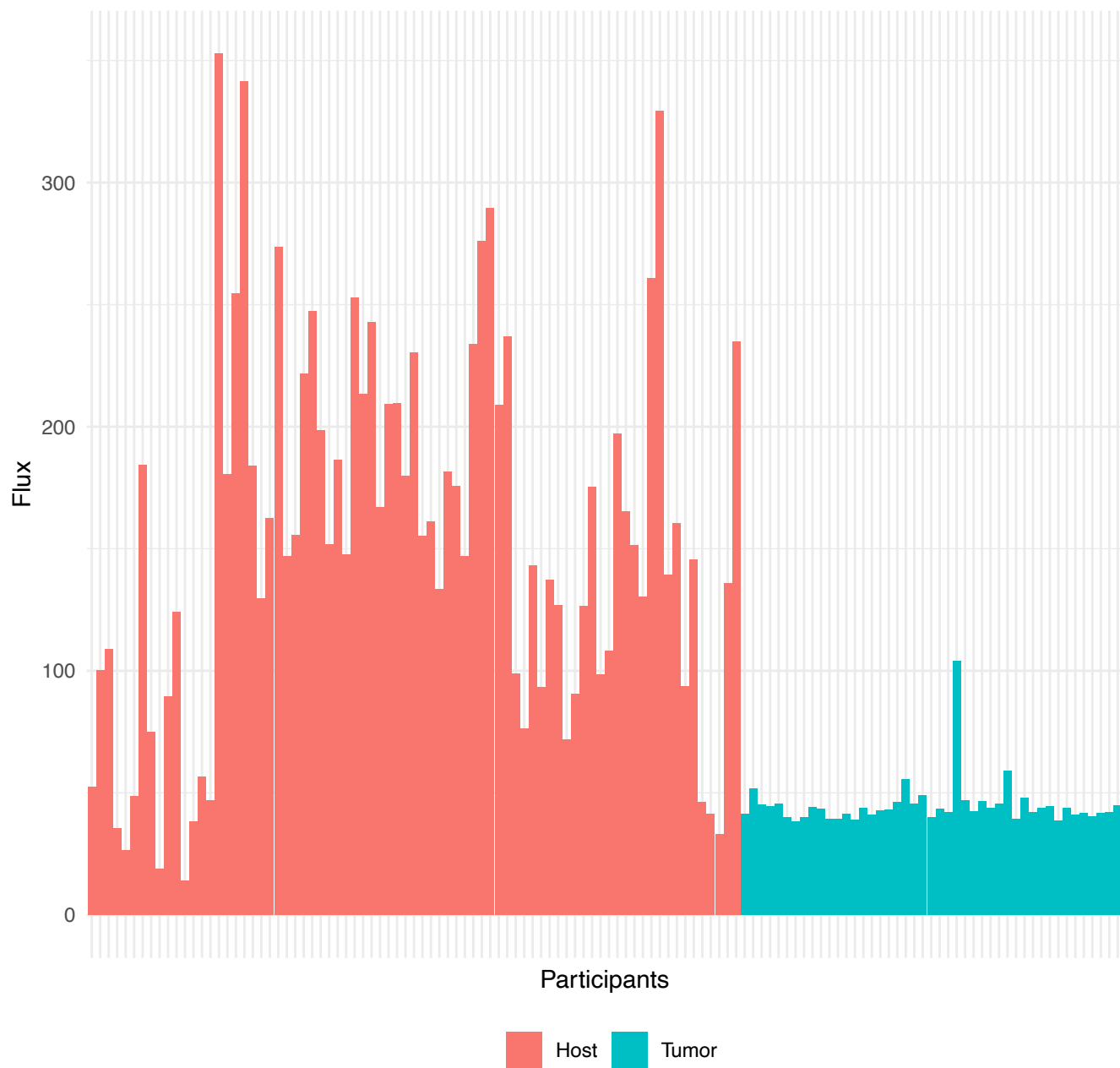
Interleukin



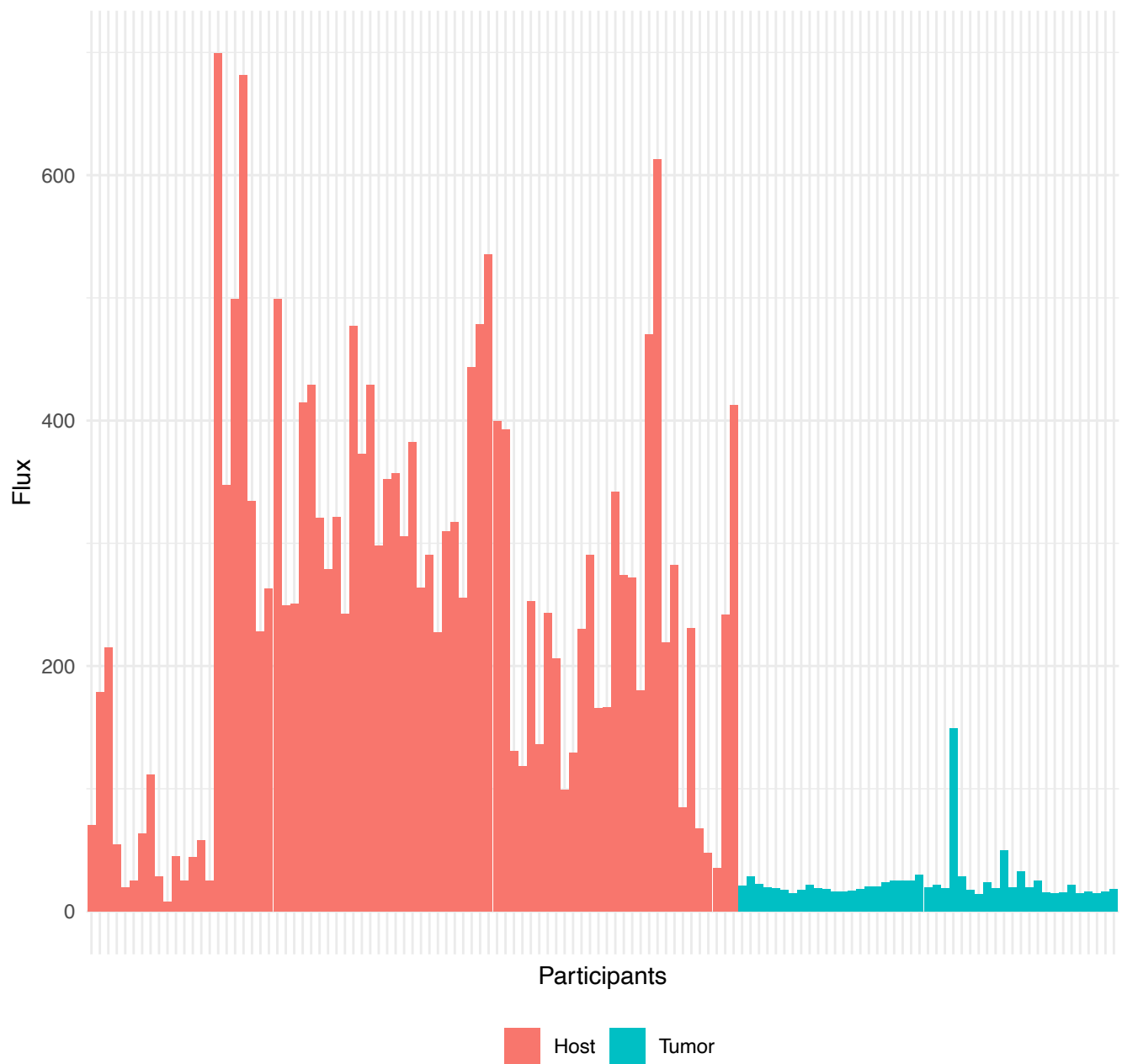
IFN



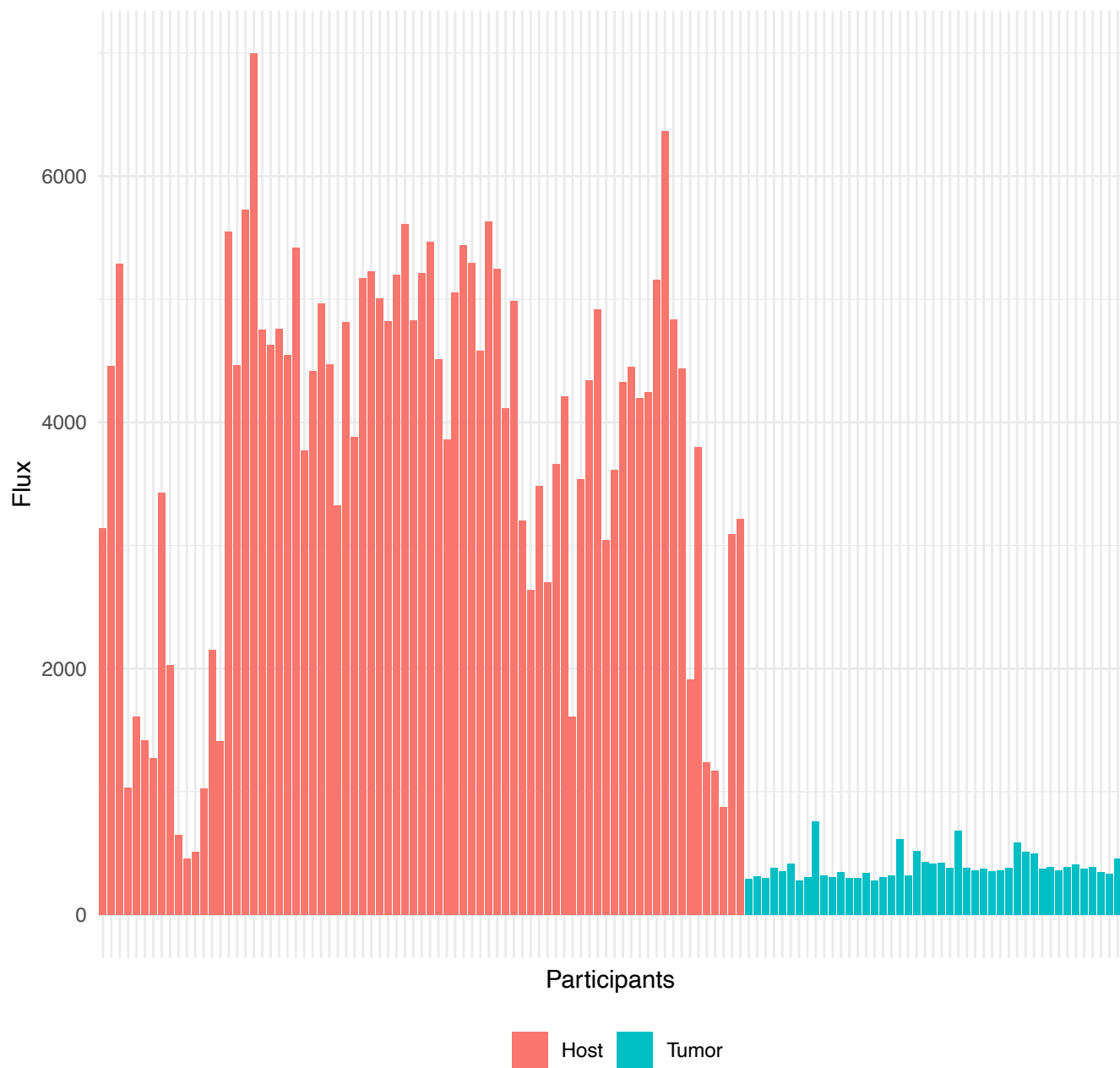
NFAT



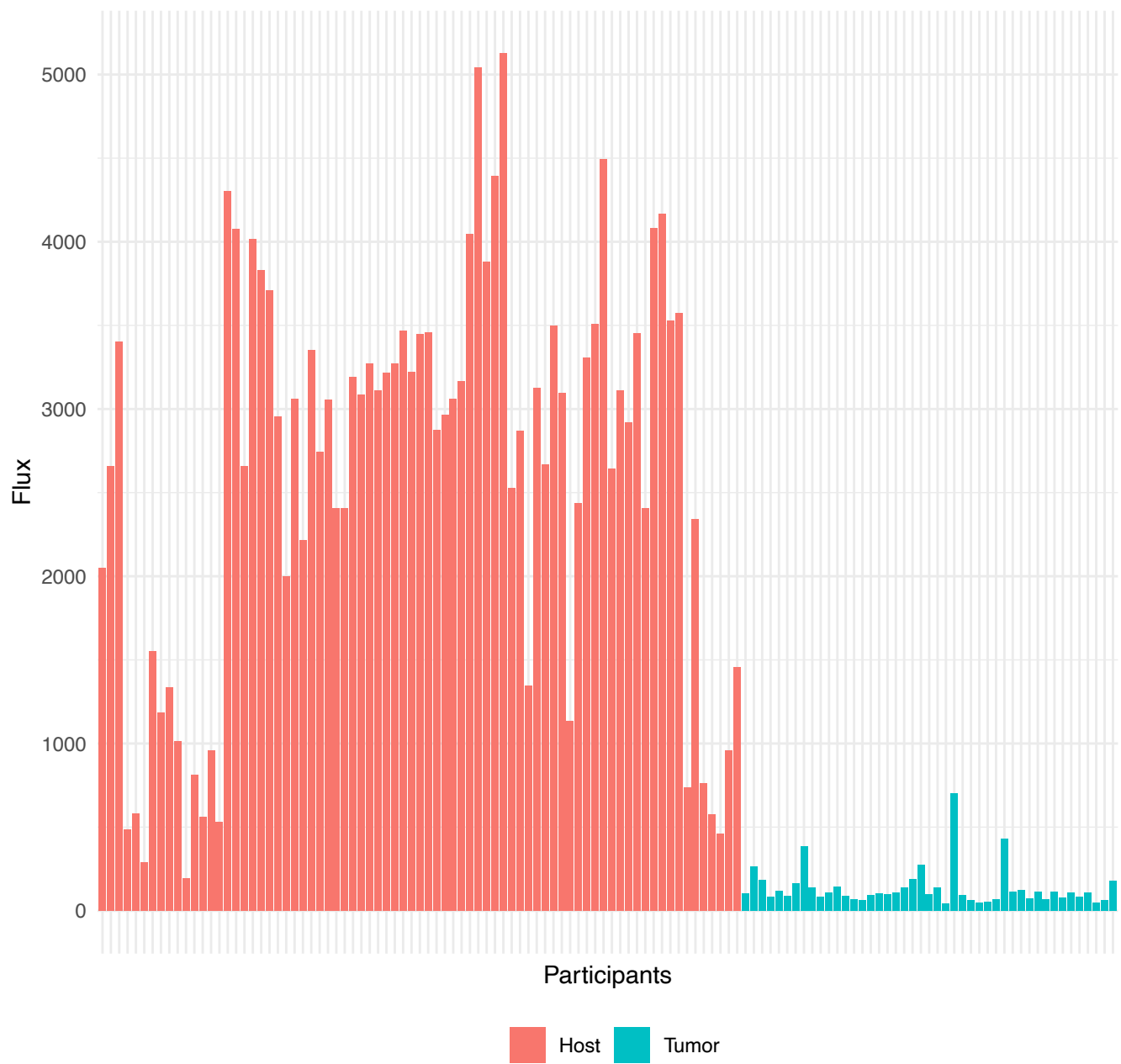
BCR.signaling



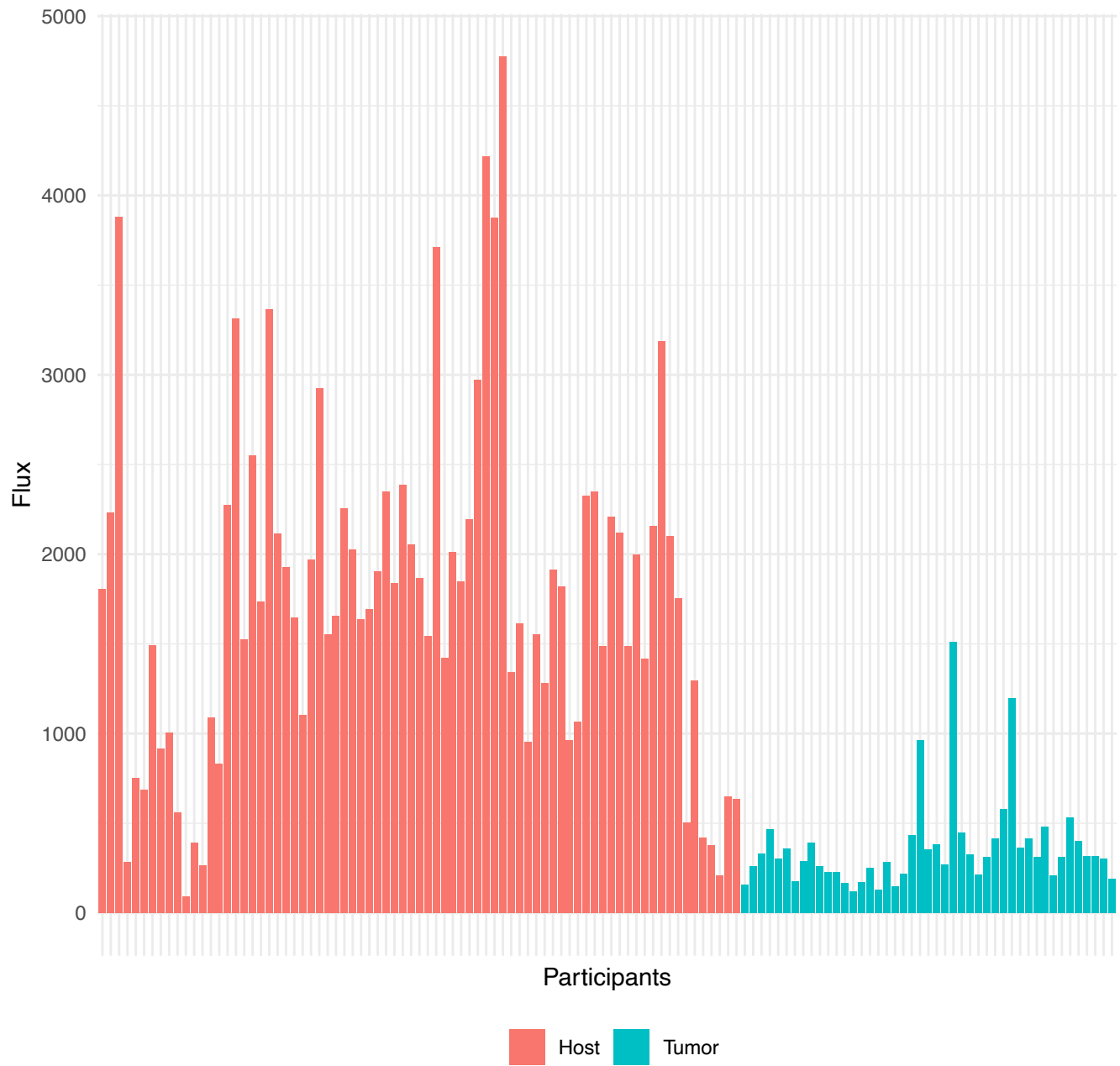
TCR.signaling



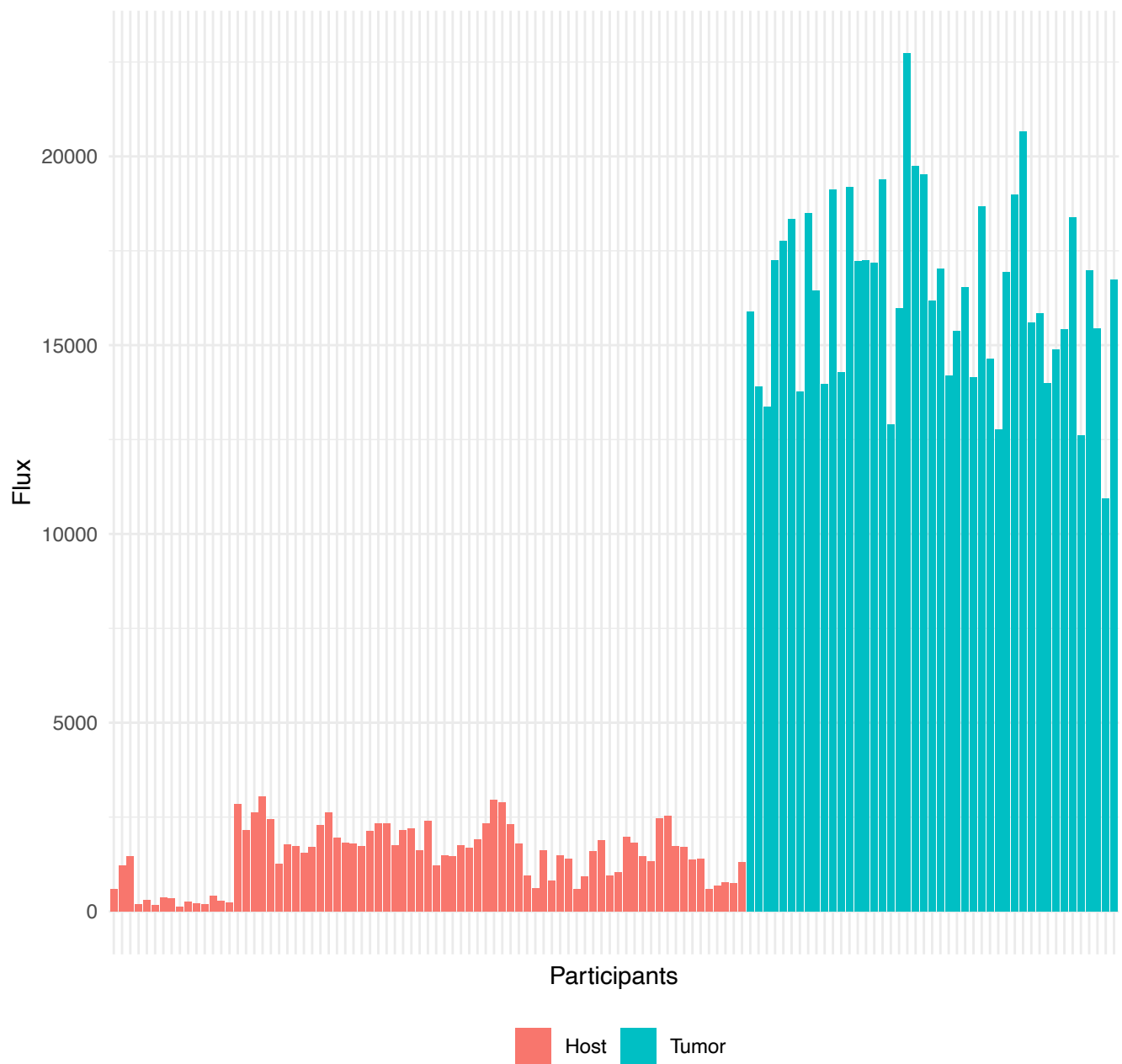
Integrin.signaling



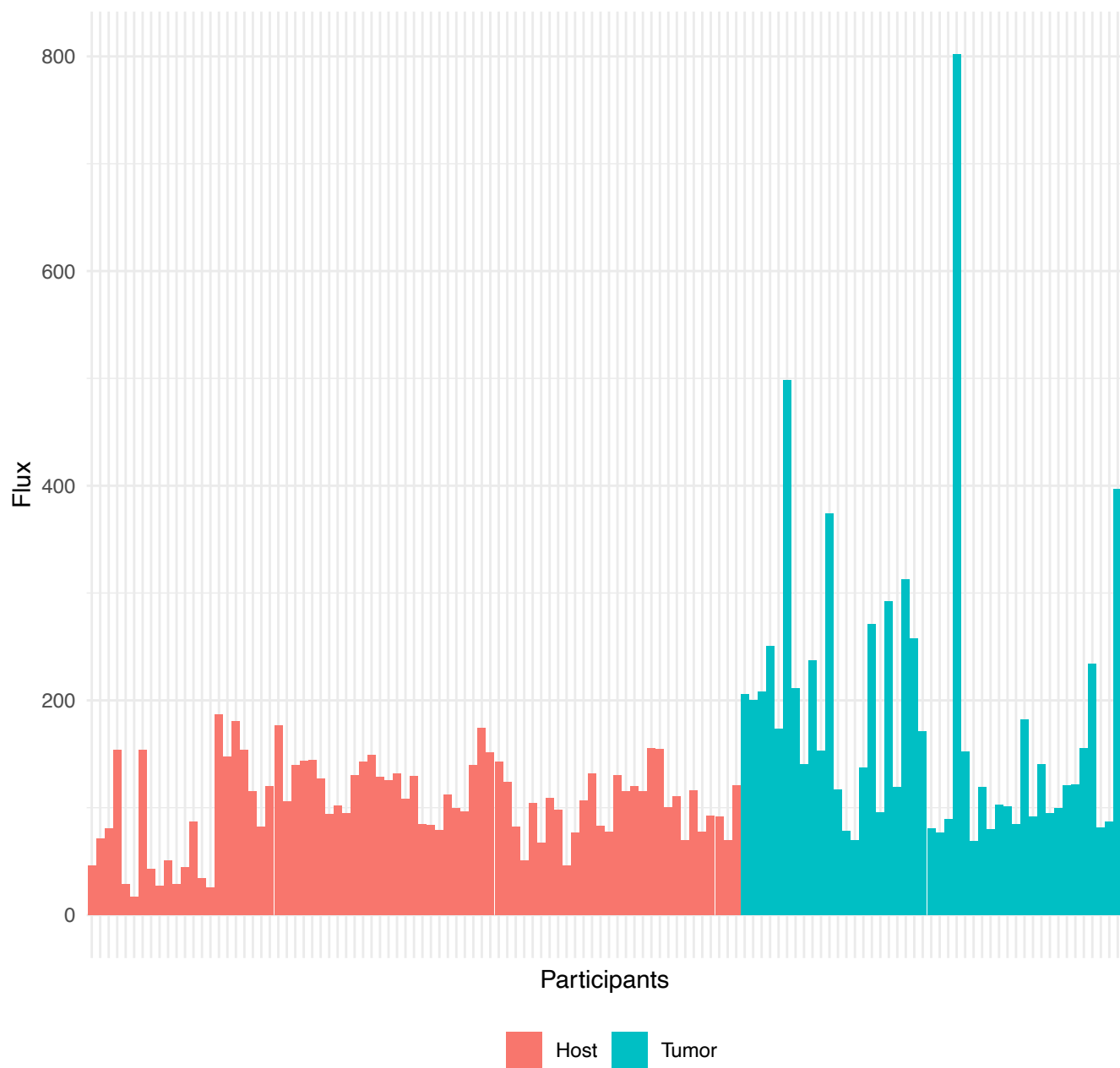
TLR



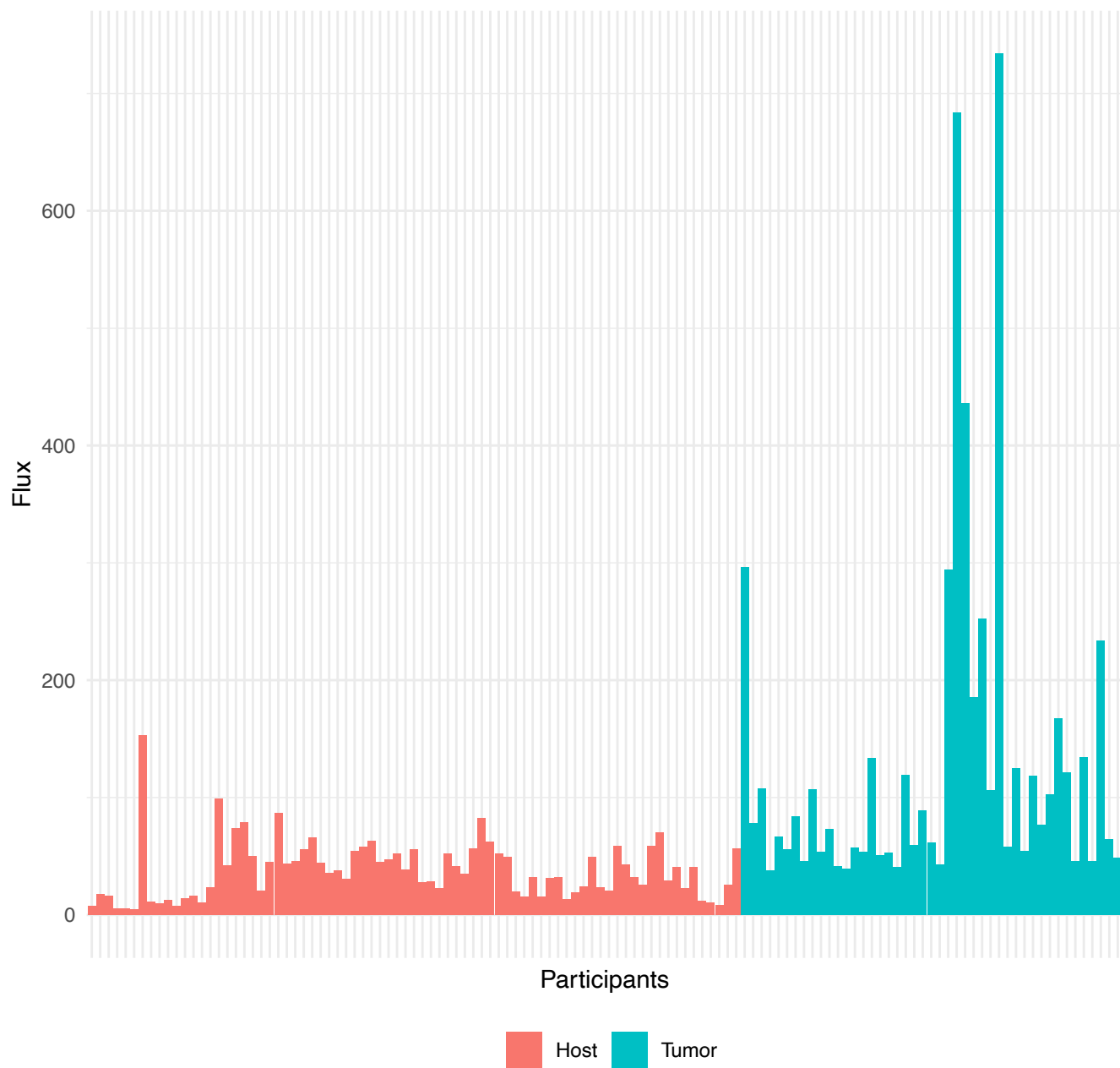
Ephrin.Eph.signaling



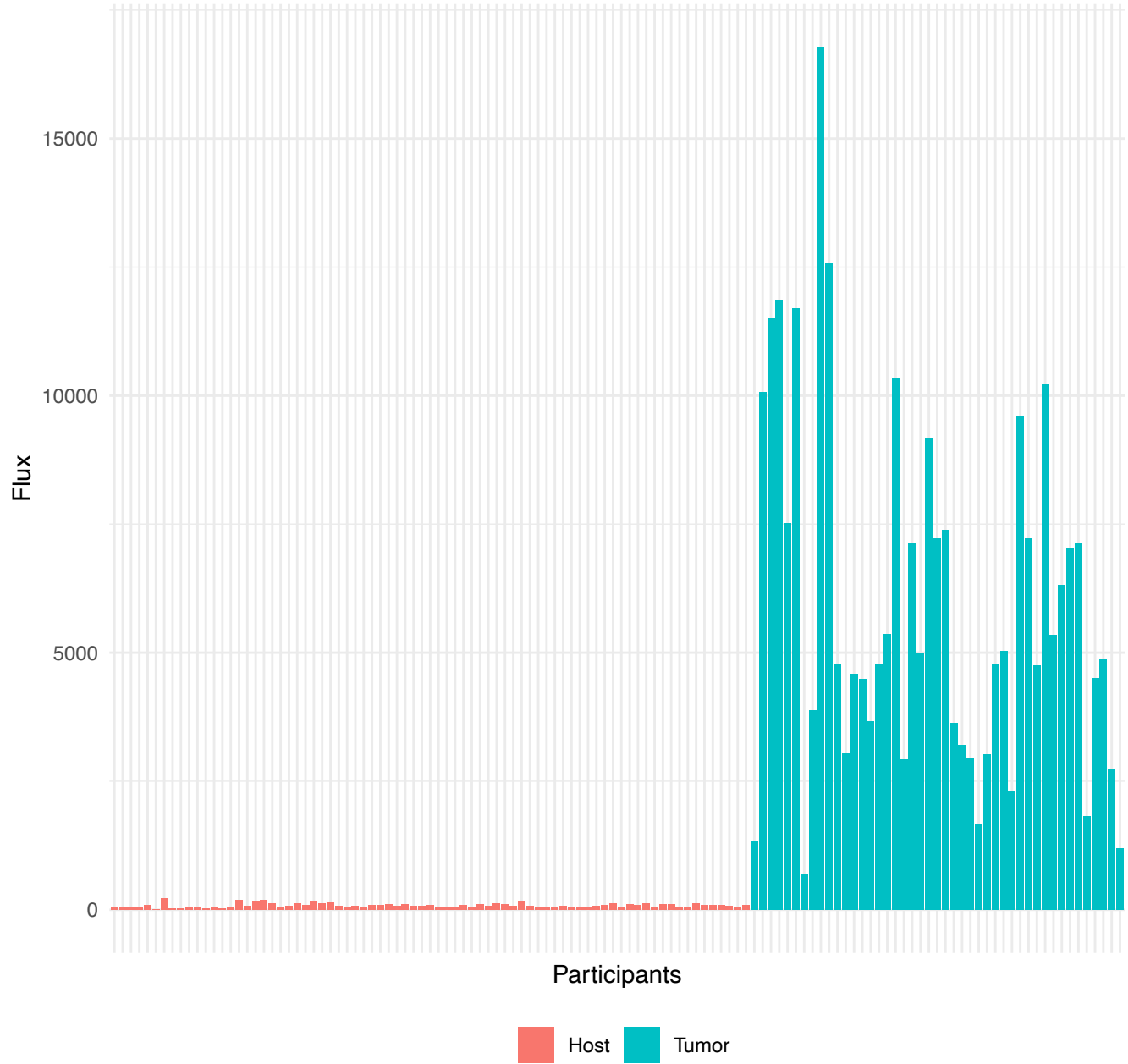
Prolactin.Receptor



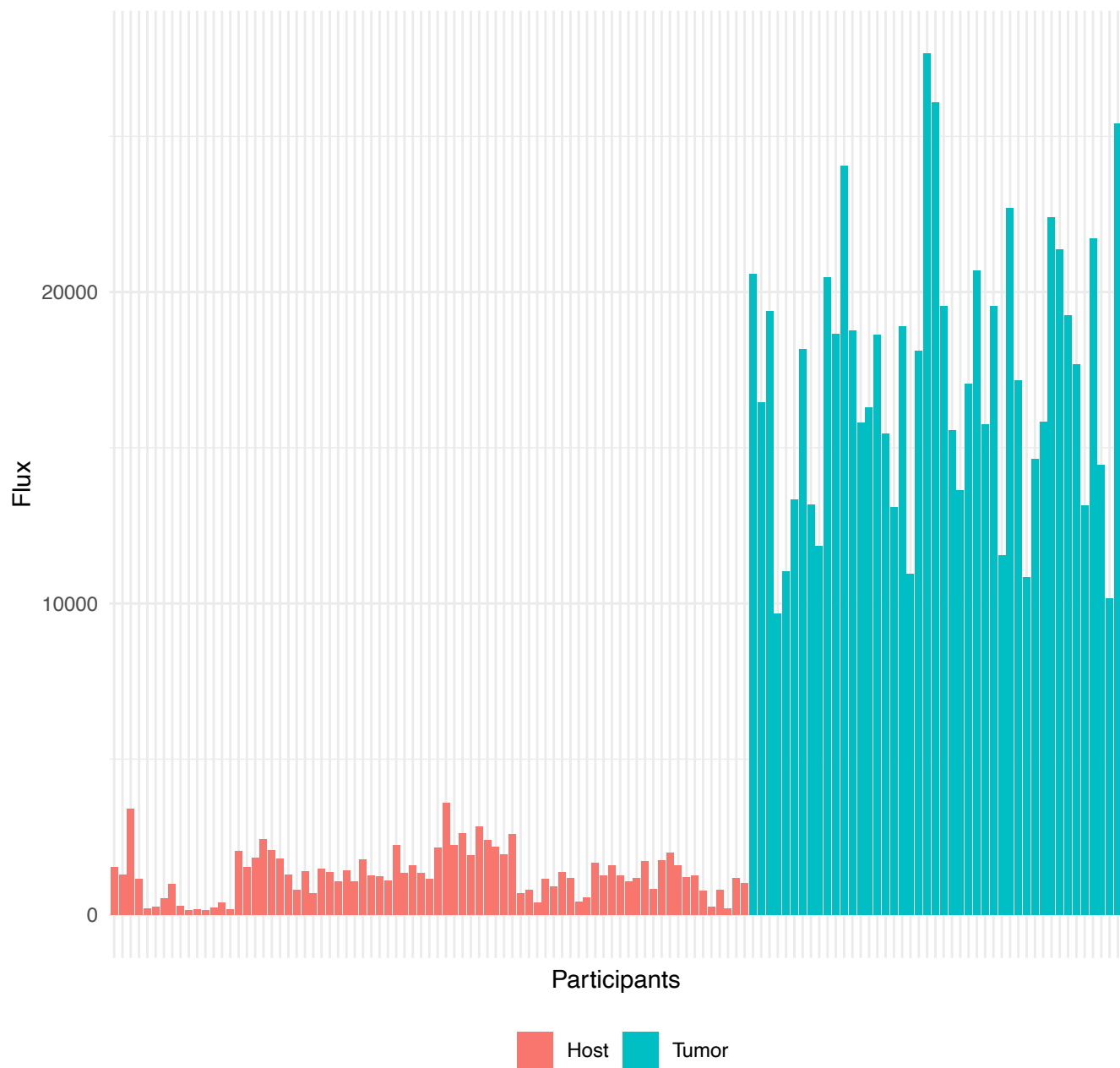
RET.signaling



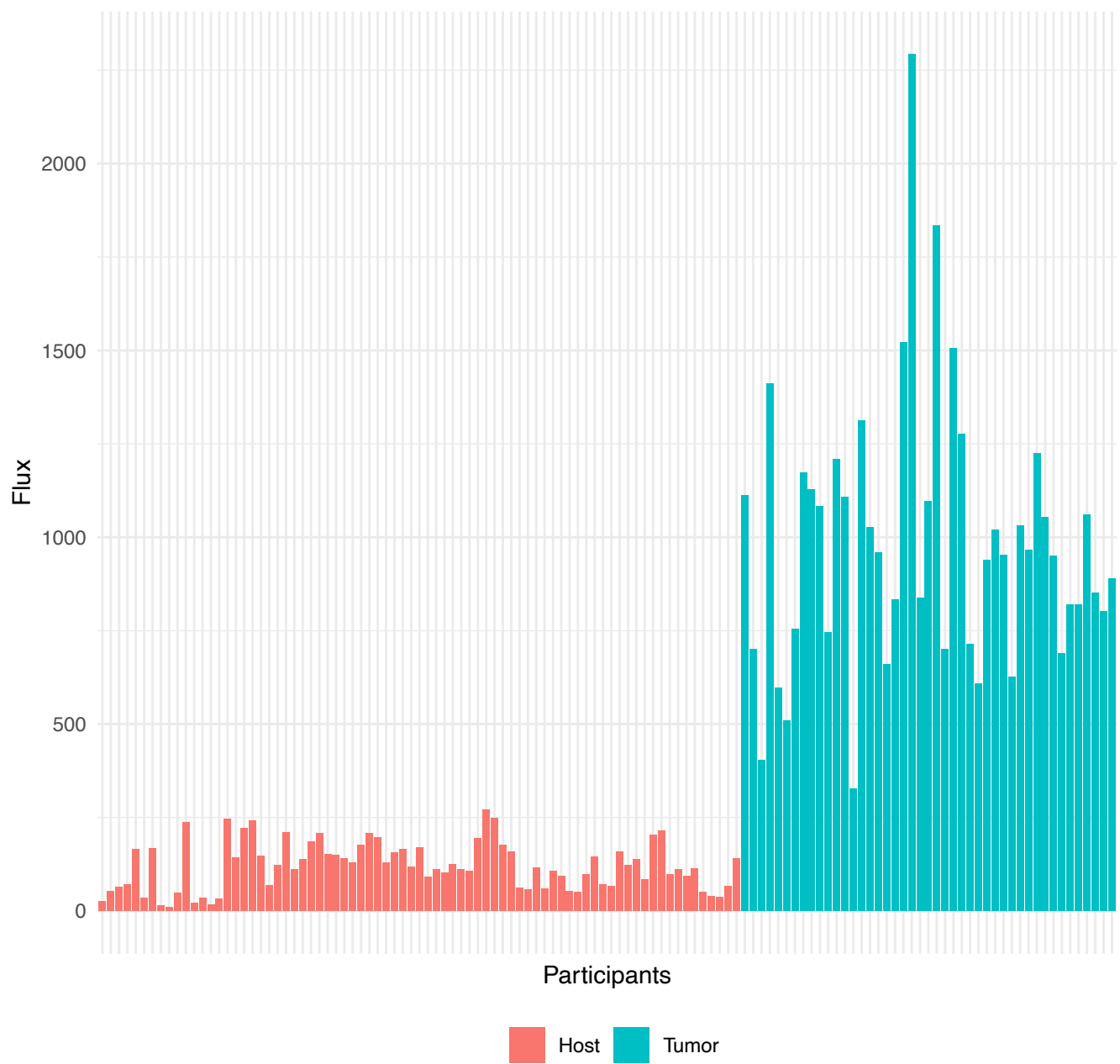
FGF



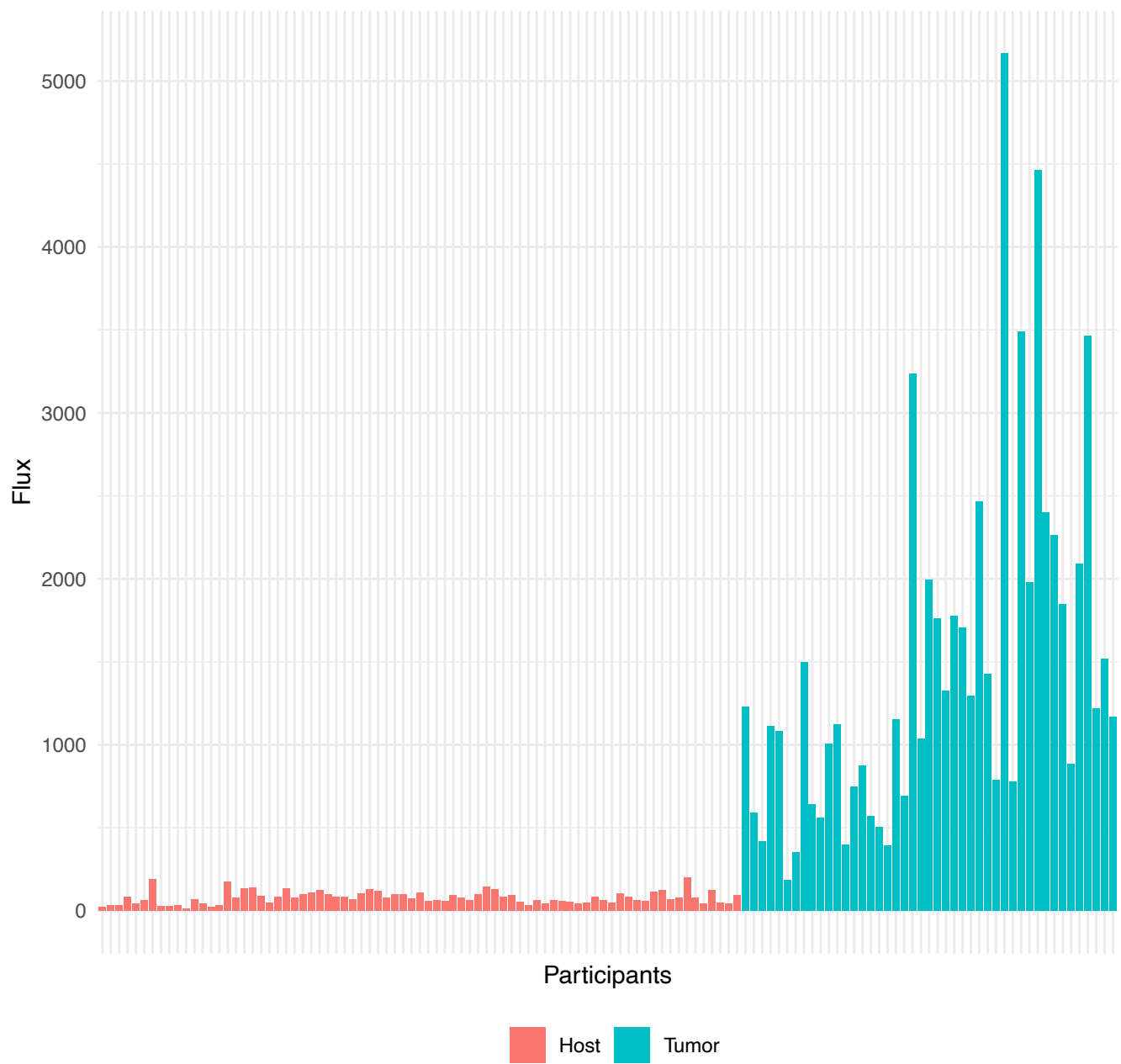
FOXO



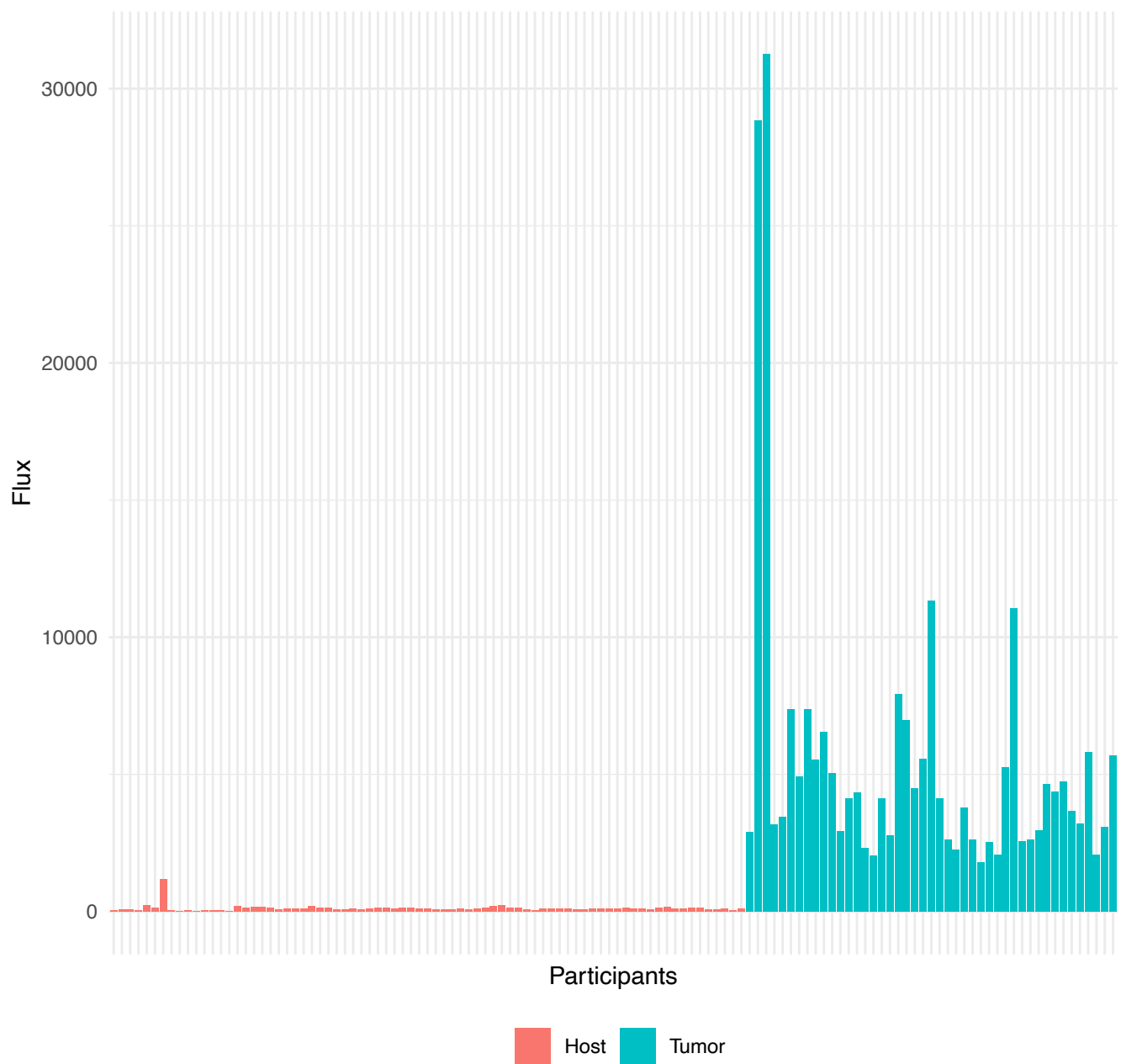
Met.Receptor



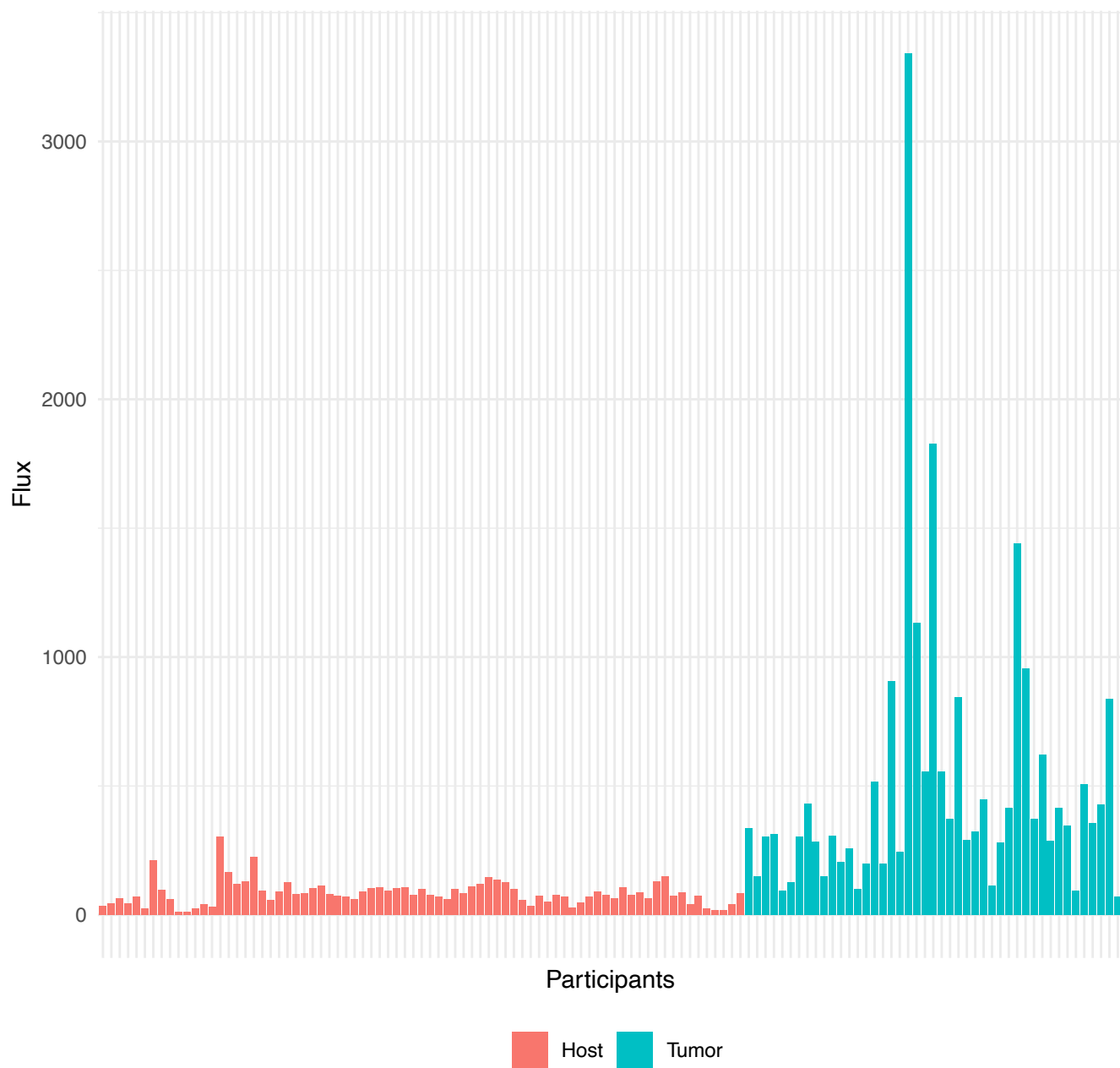
VEGF



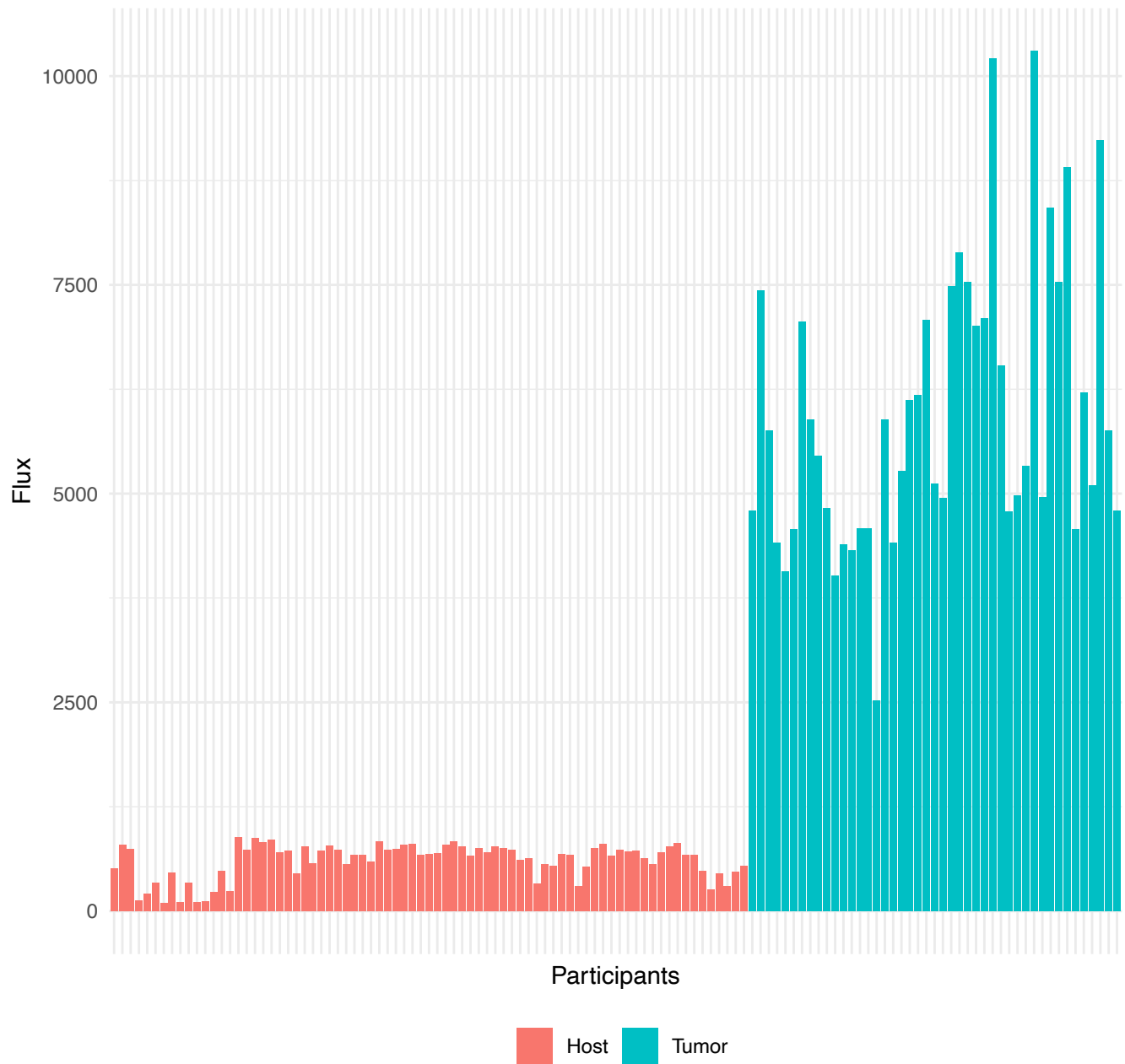
Estrogen



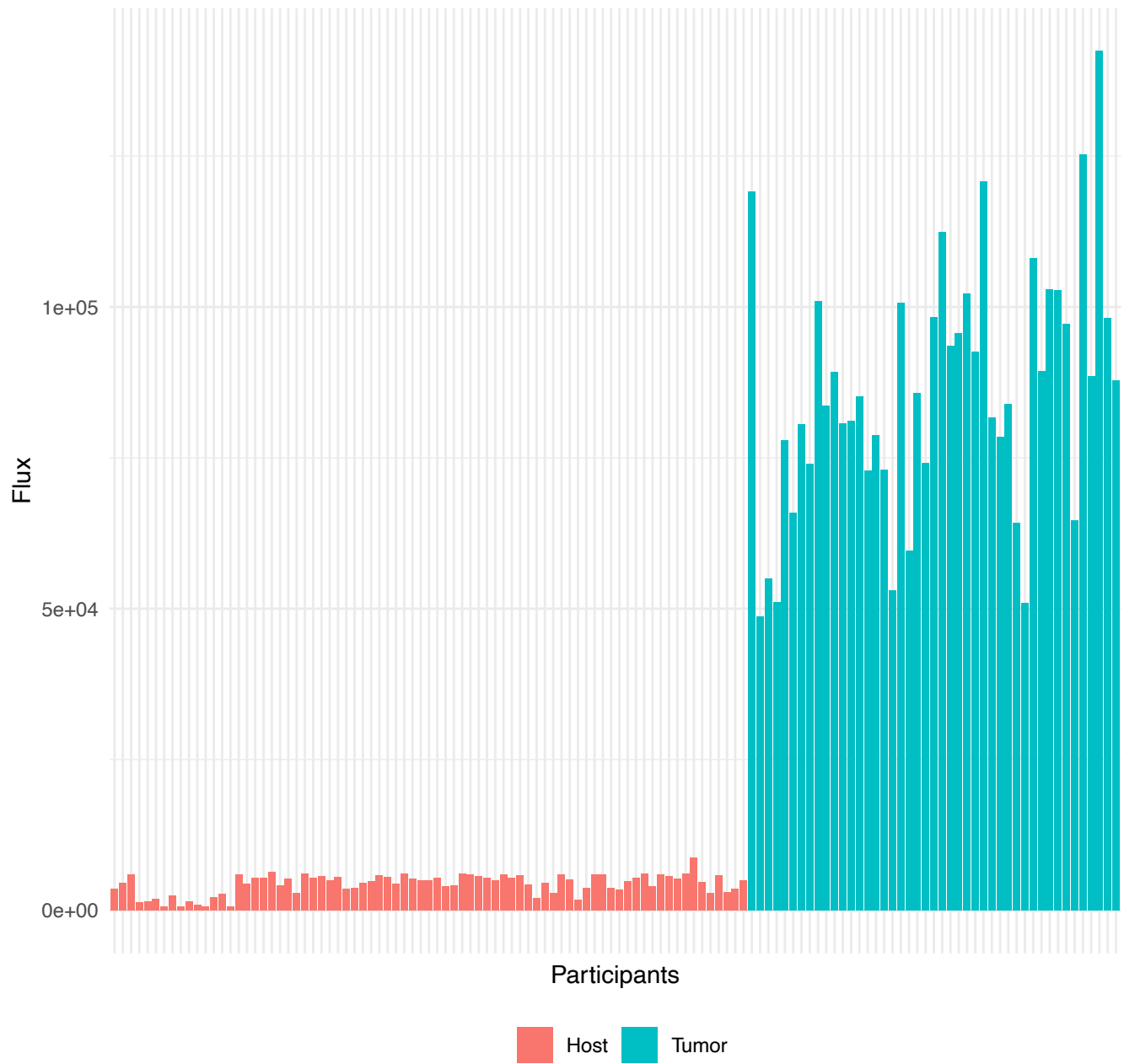
KIT



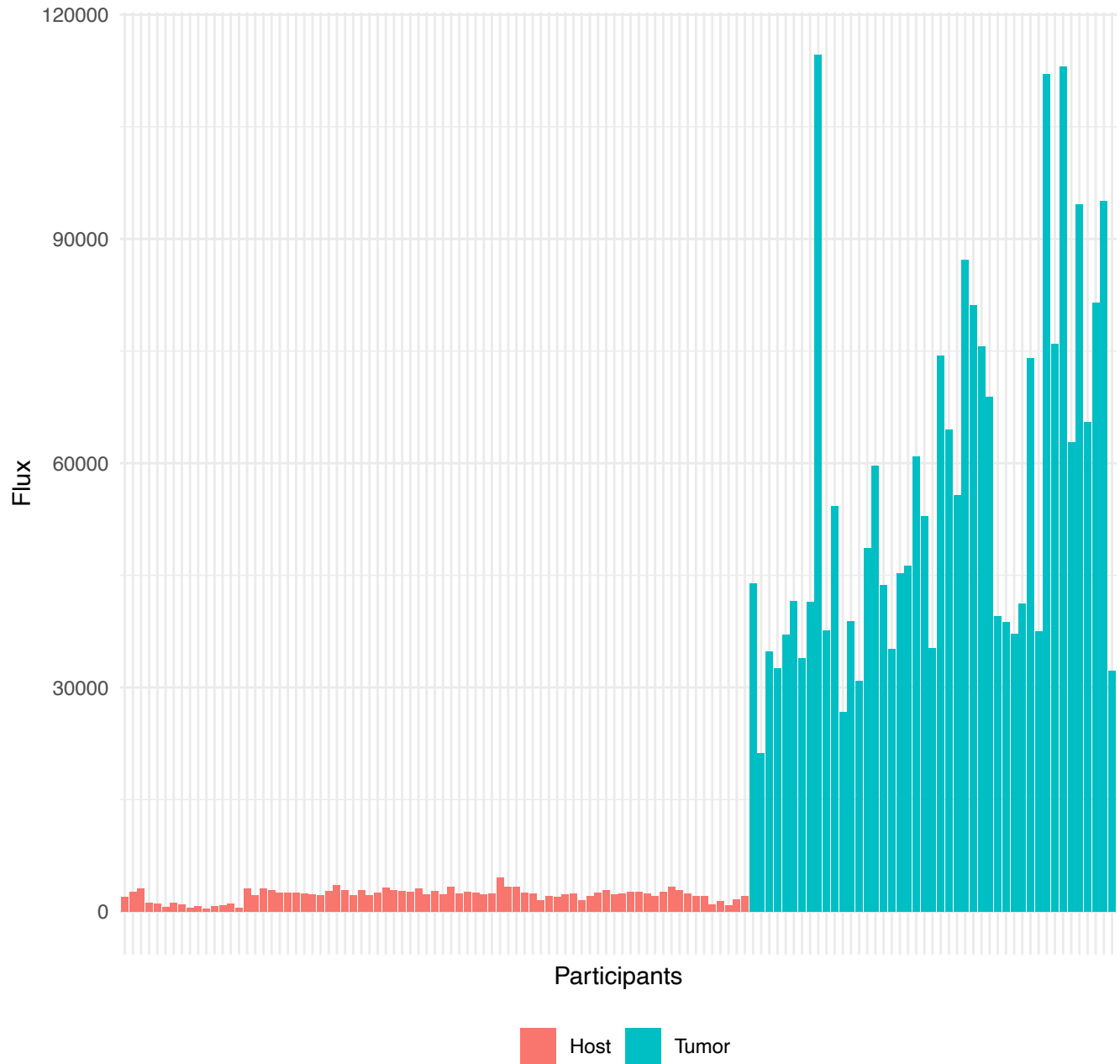
NOTCH



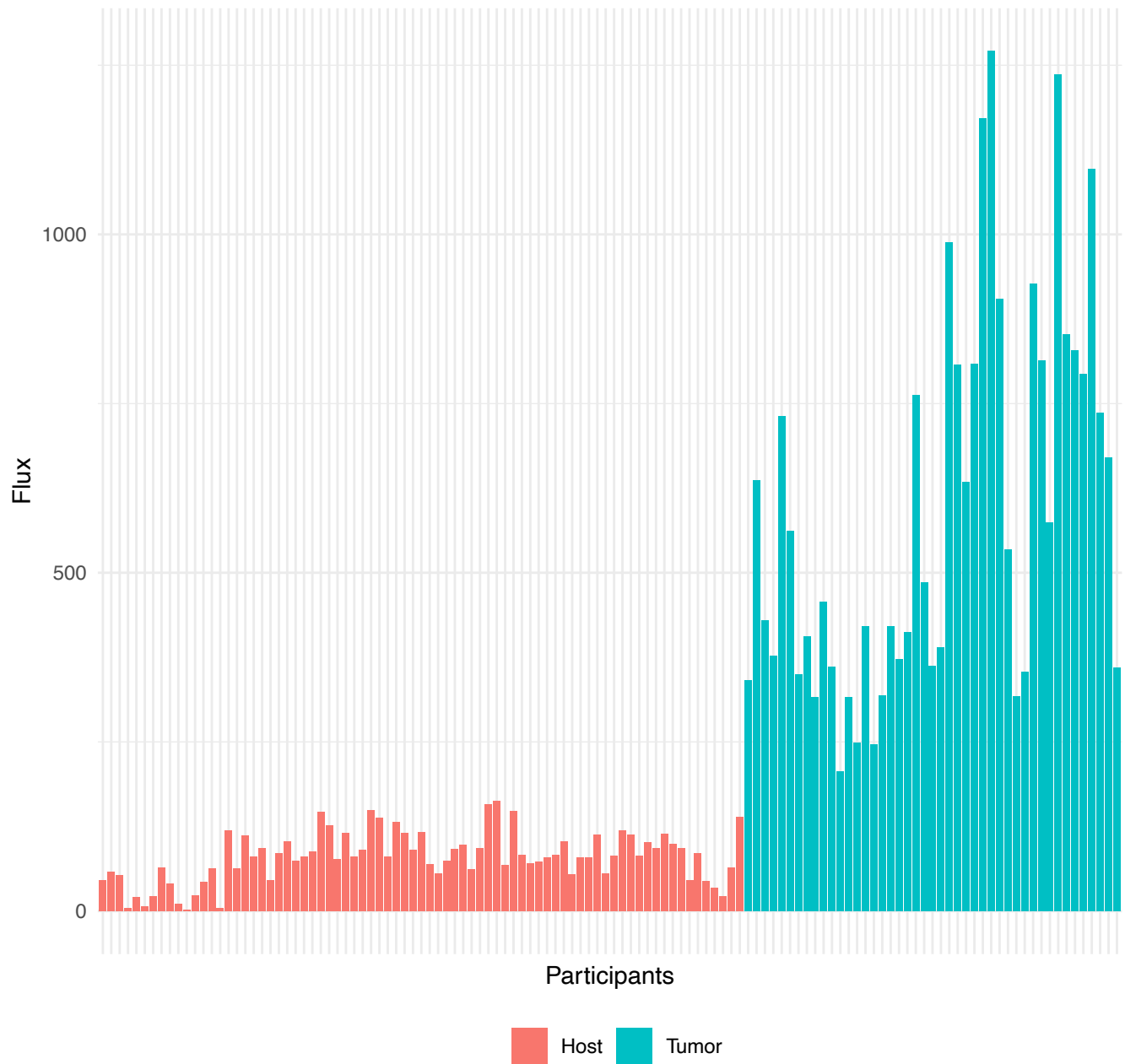
HIF.1



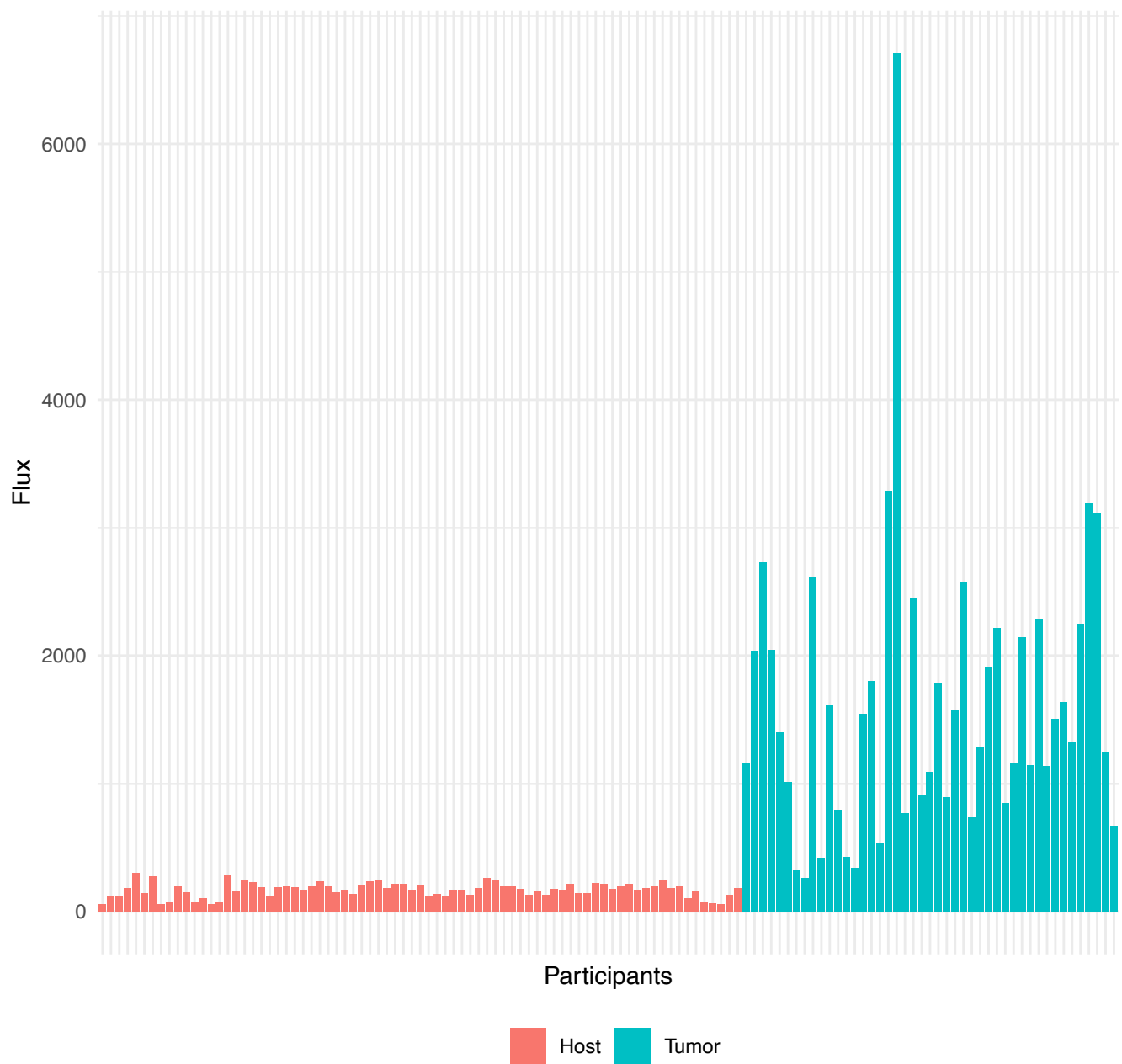
P53



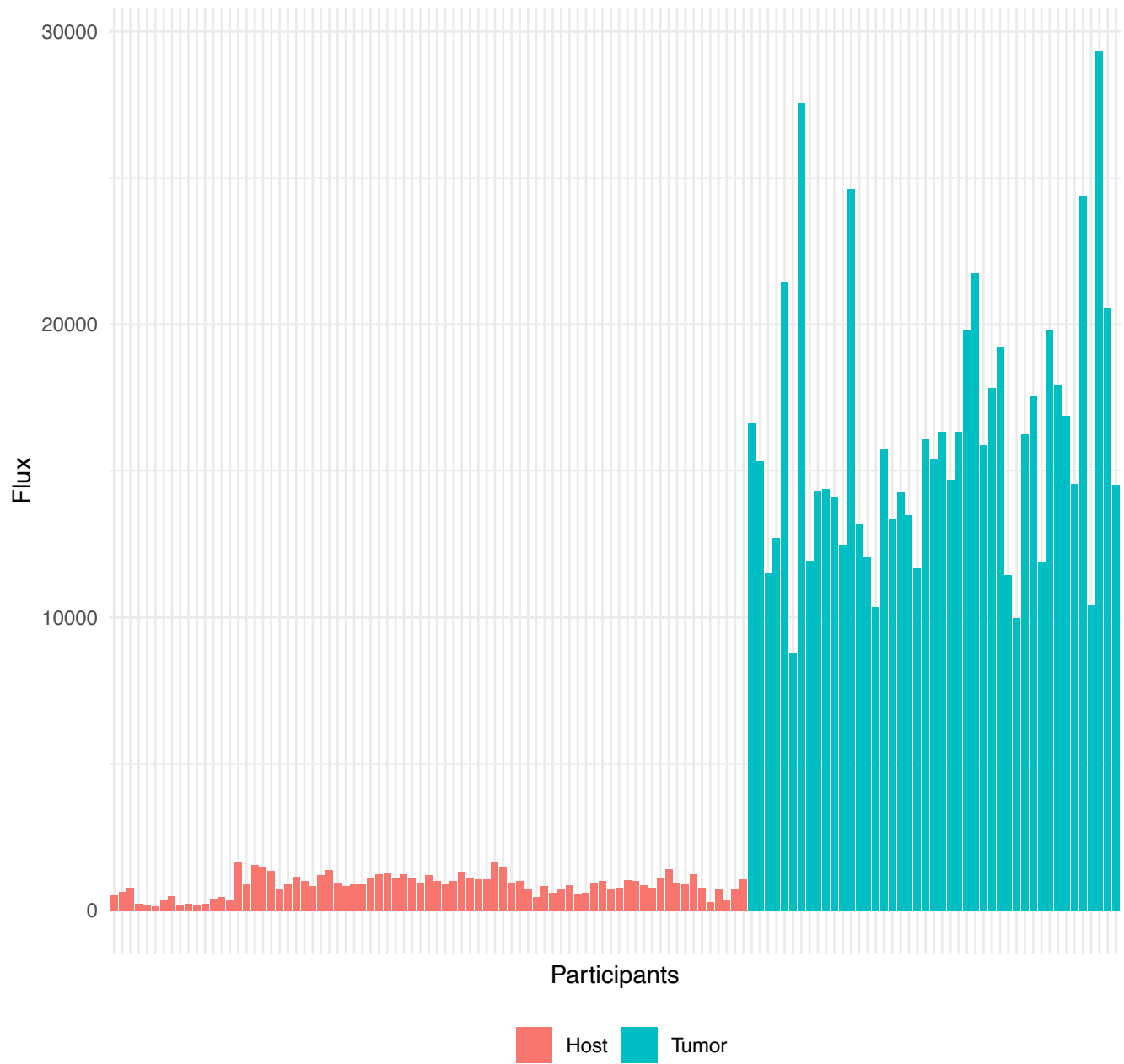
DYRK.signaling



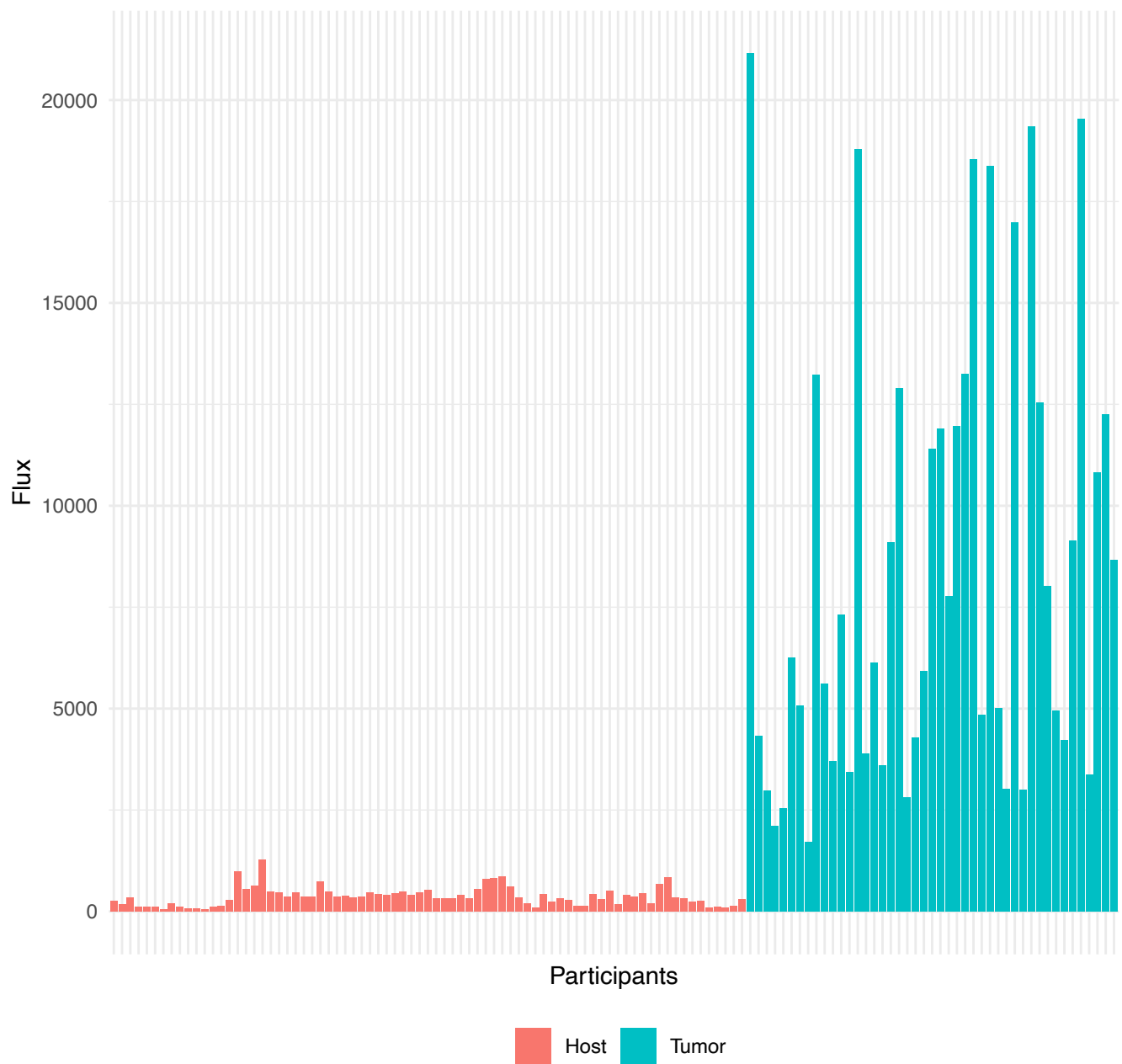
PDGF



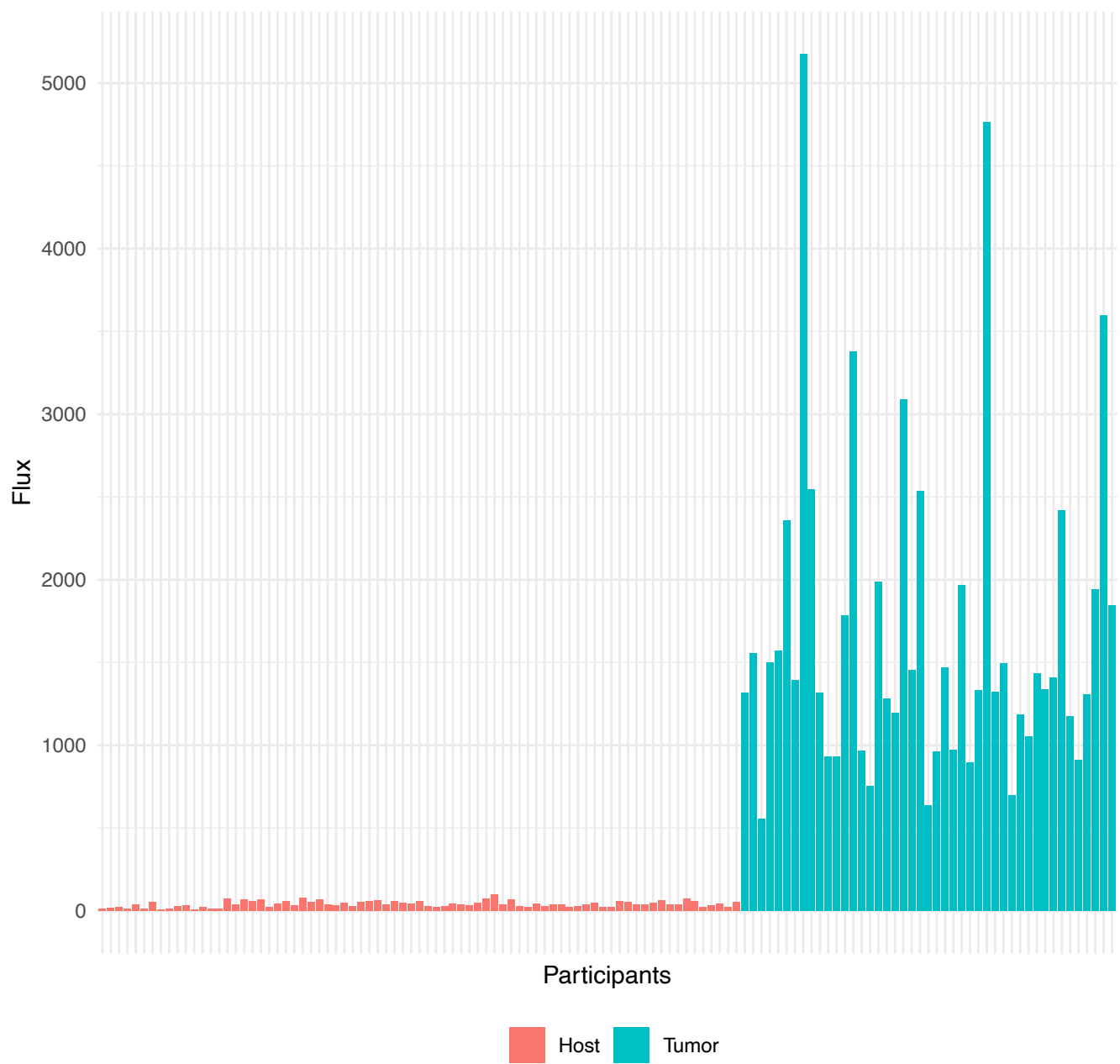
mTor



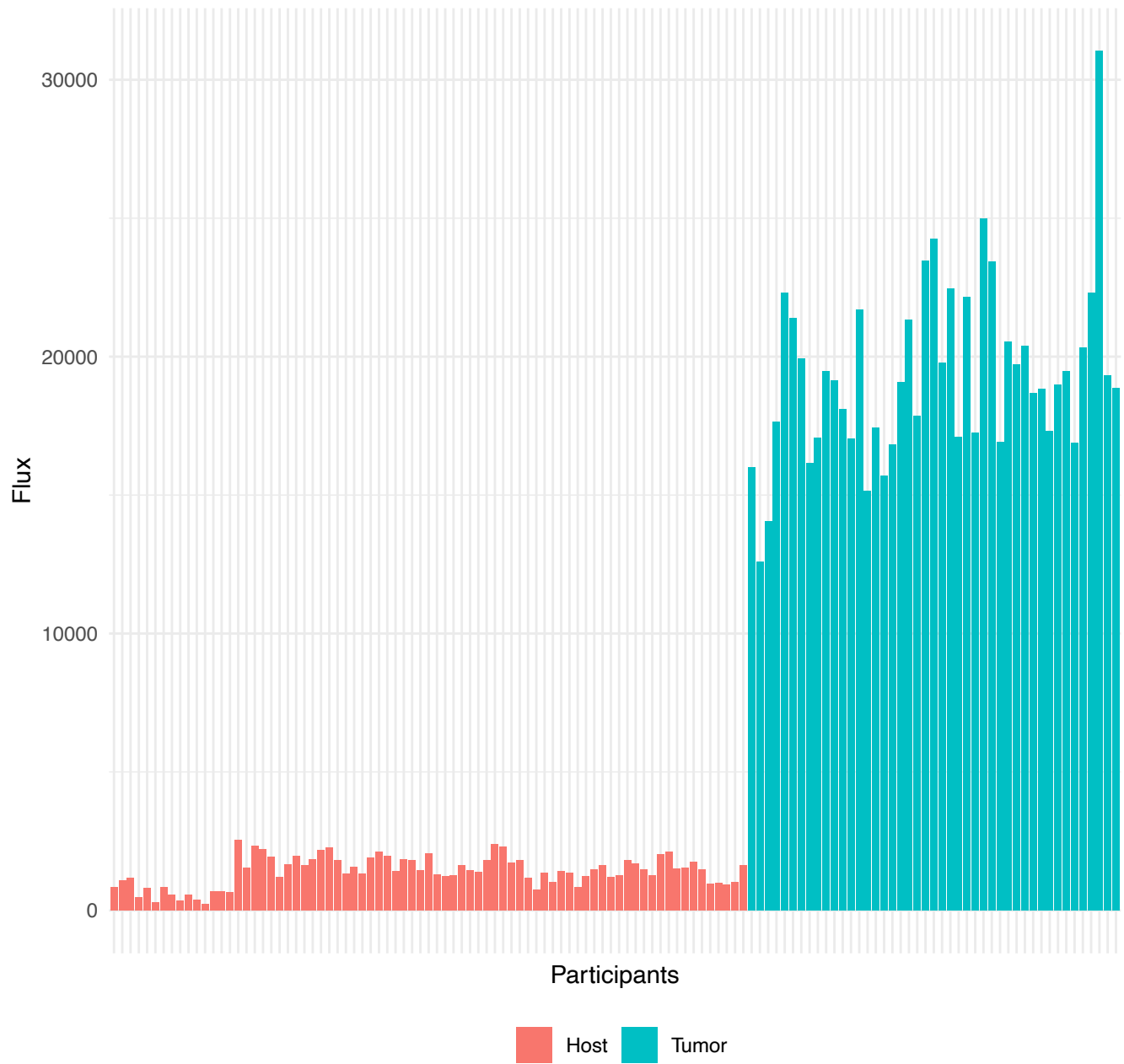
IGF1R



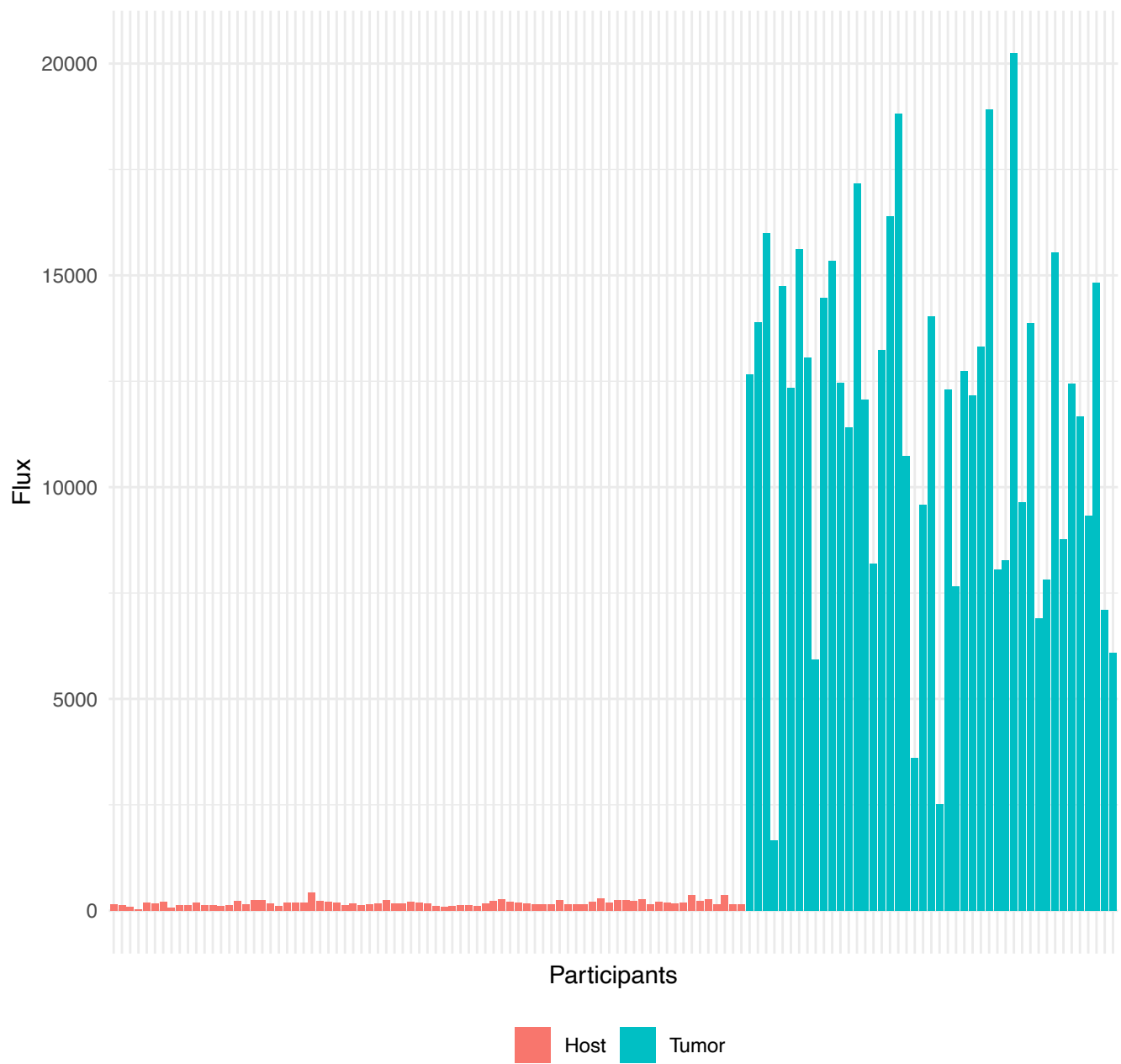
Activin.signaling



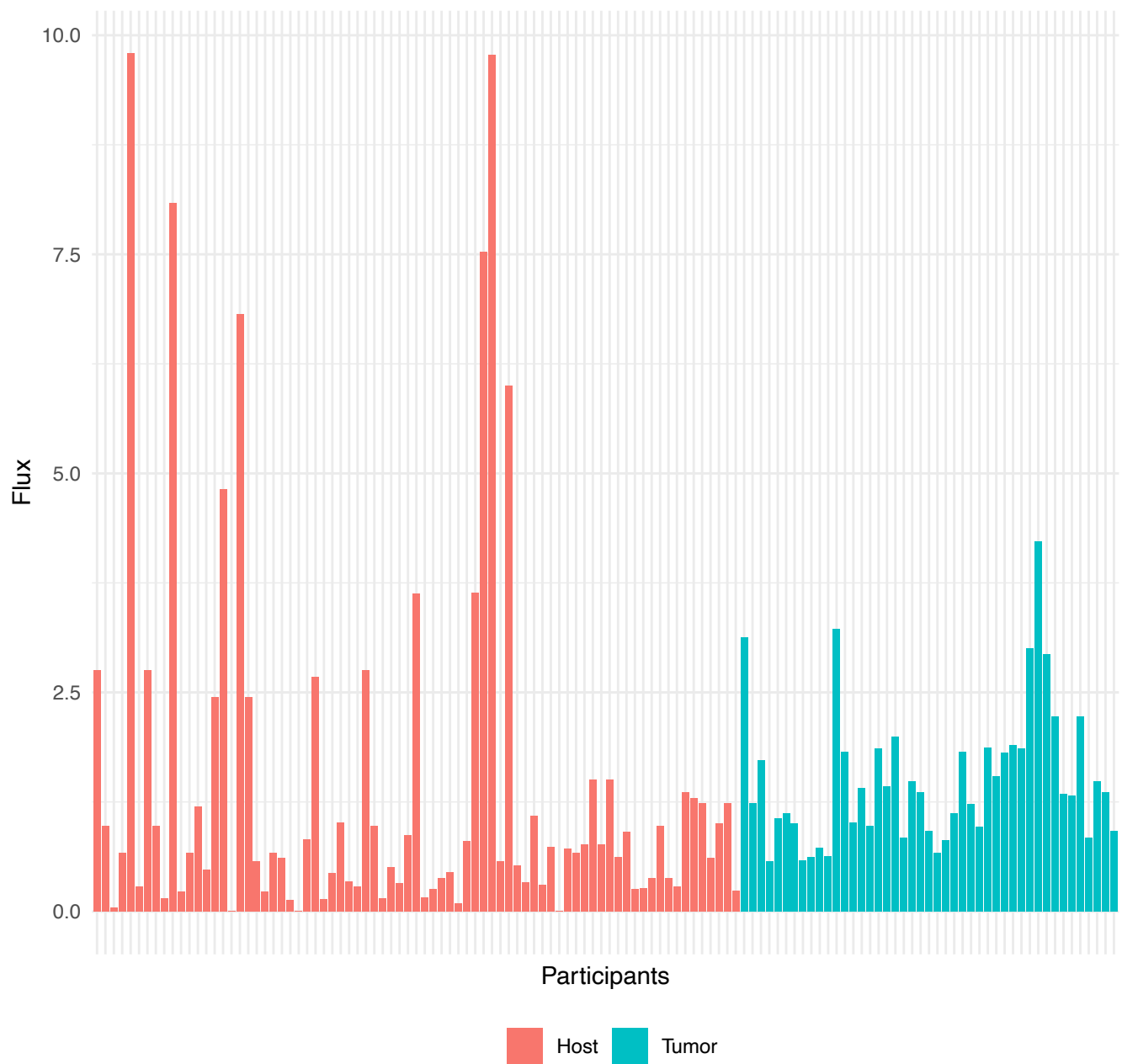
WNT



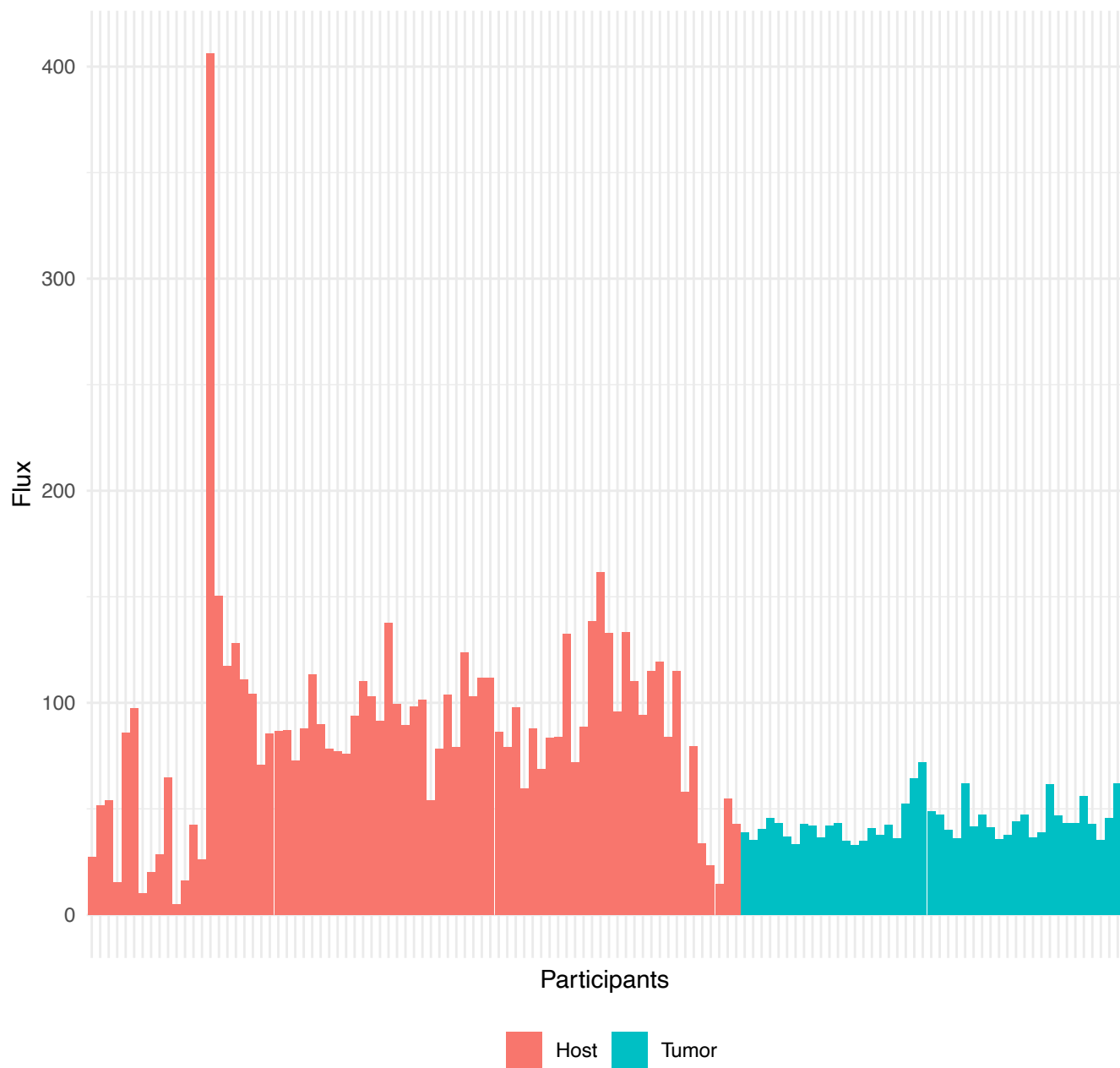
NGF



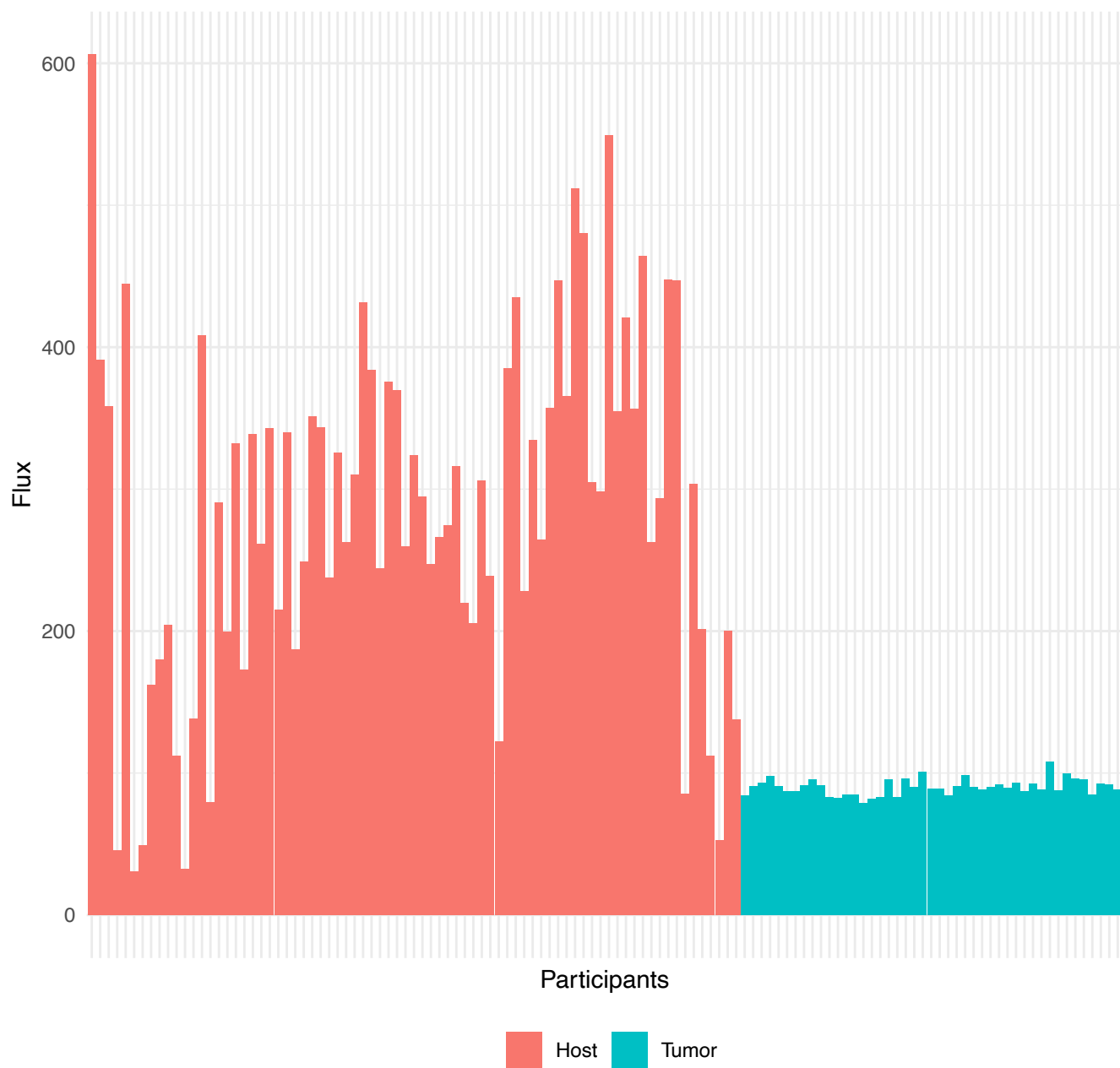
Ether_lipid_metabolism



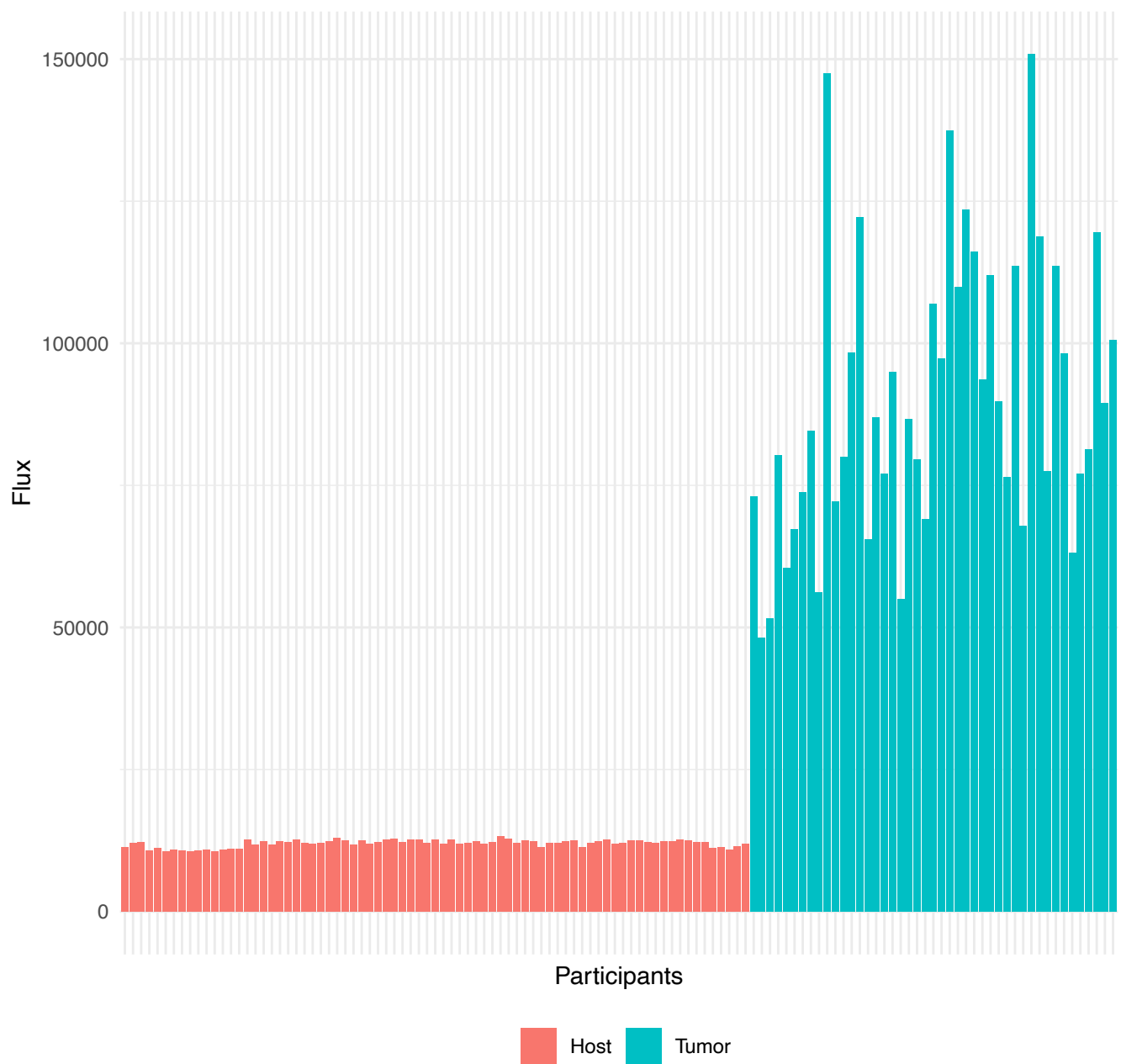
Ascorbate_aldarate_metabolism



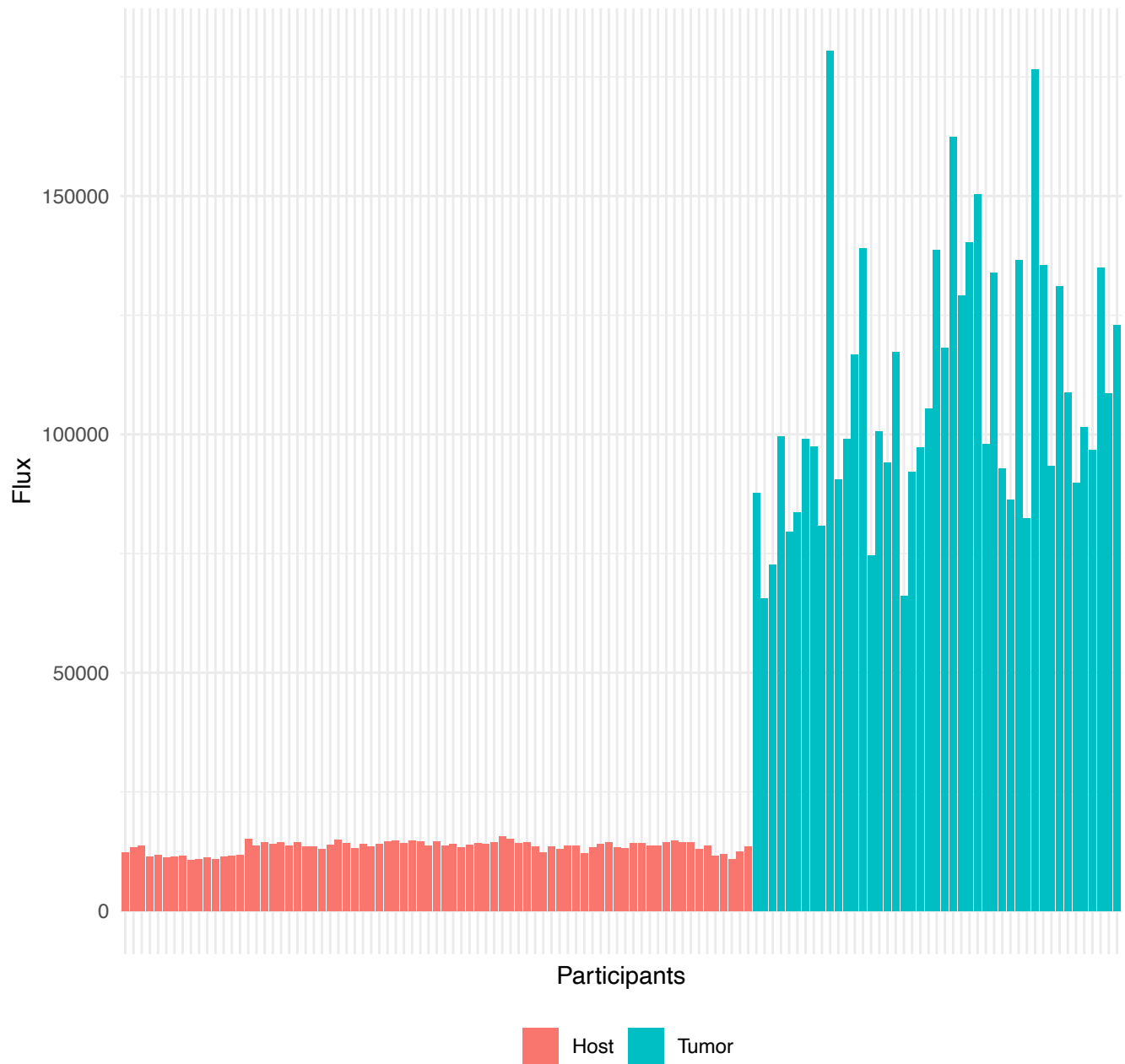
Retinol_metabolism



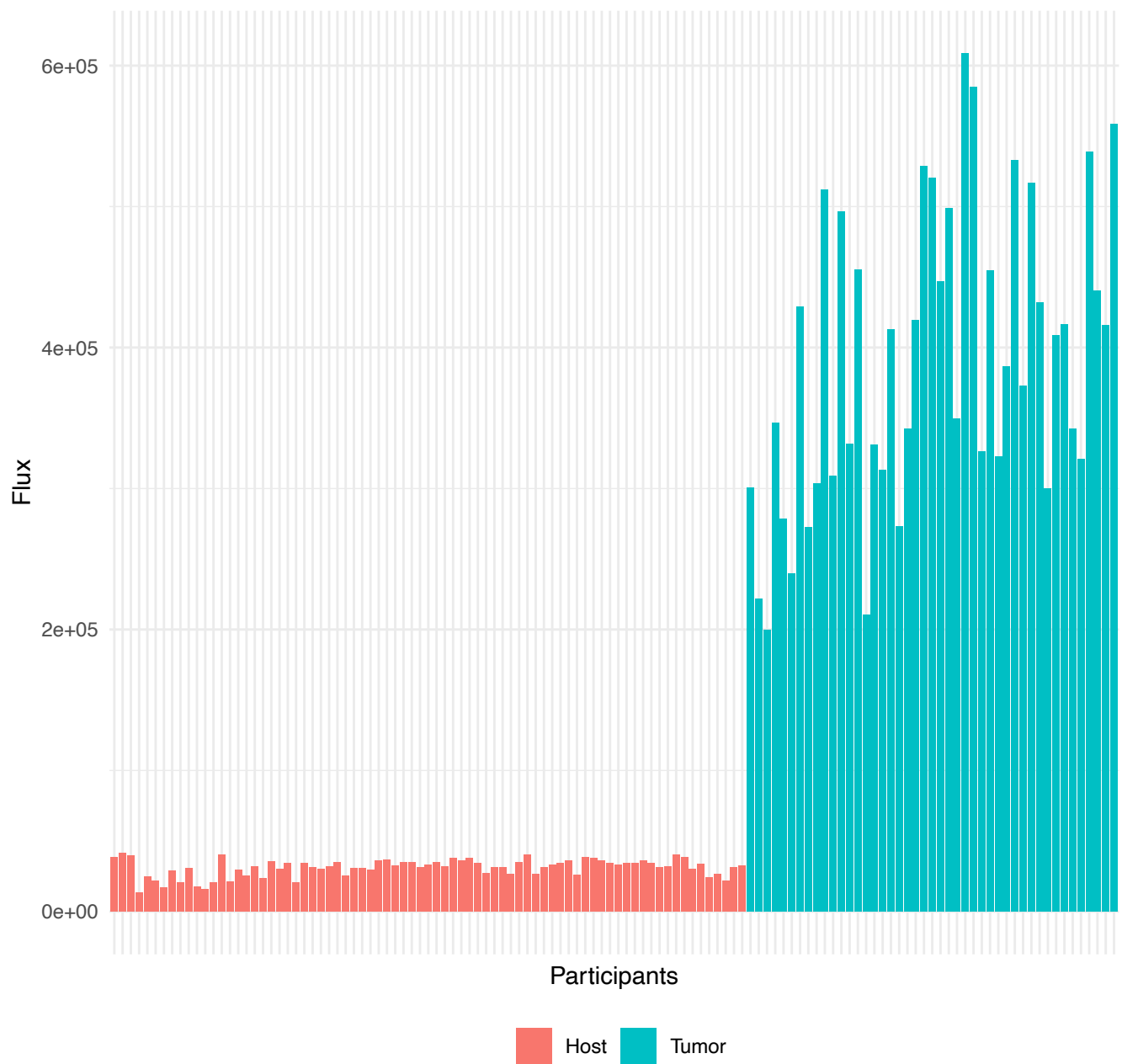
Arginine_a_proline_metabolism



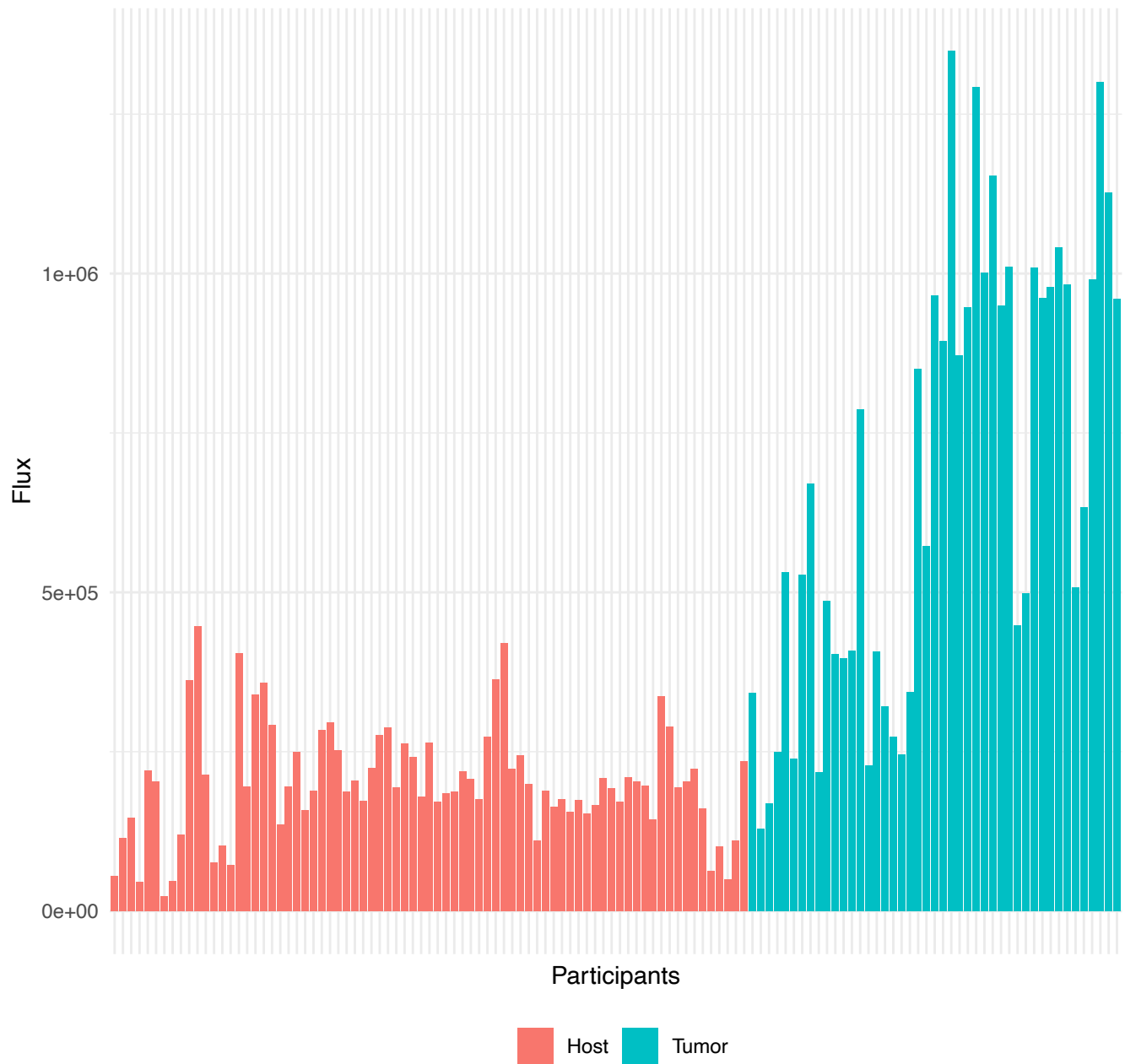
Citrate_cycle



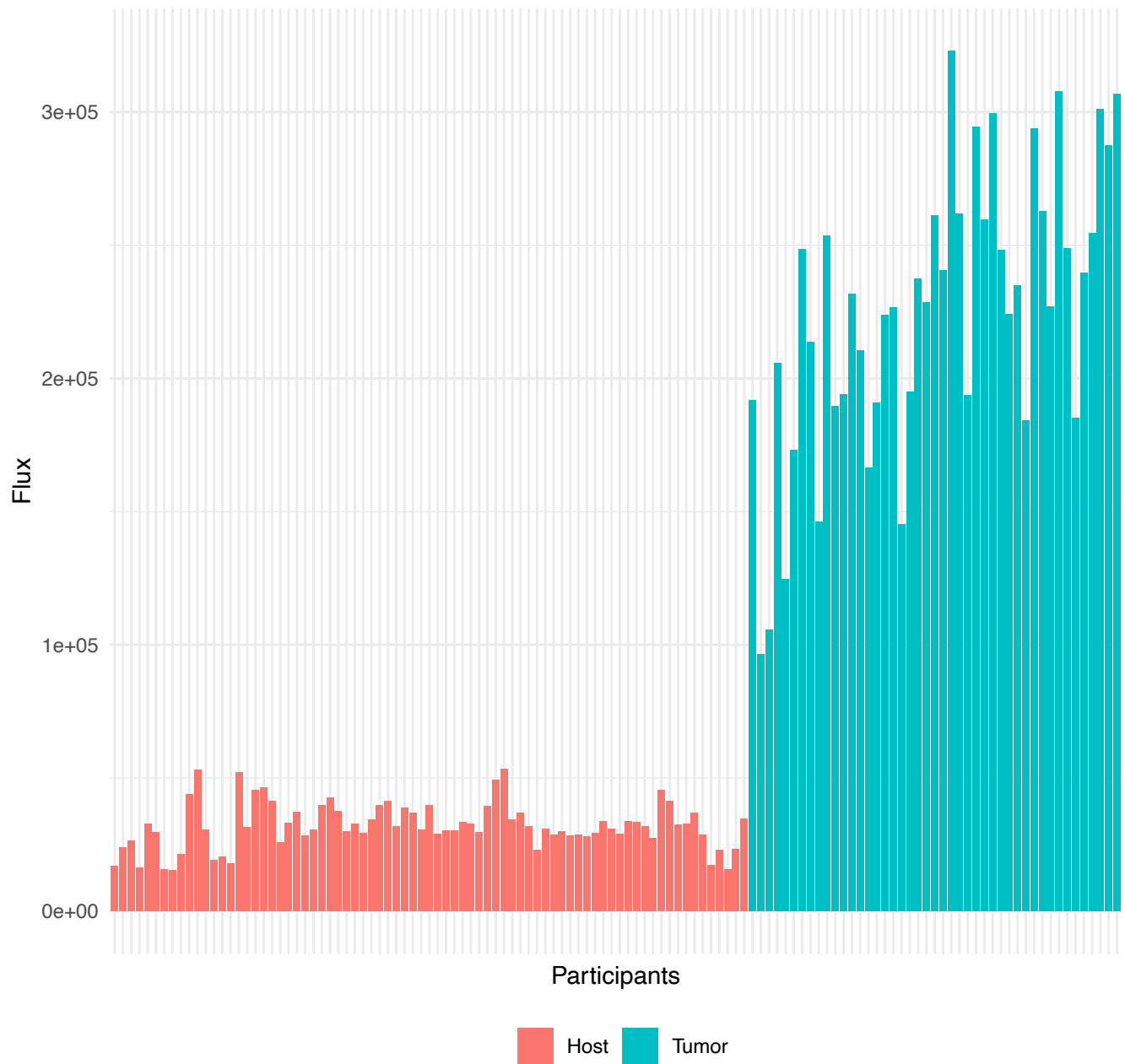
Glutathione_metabolism



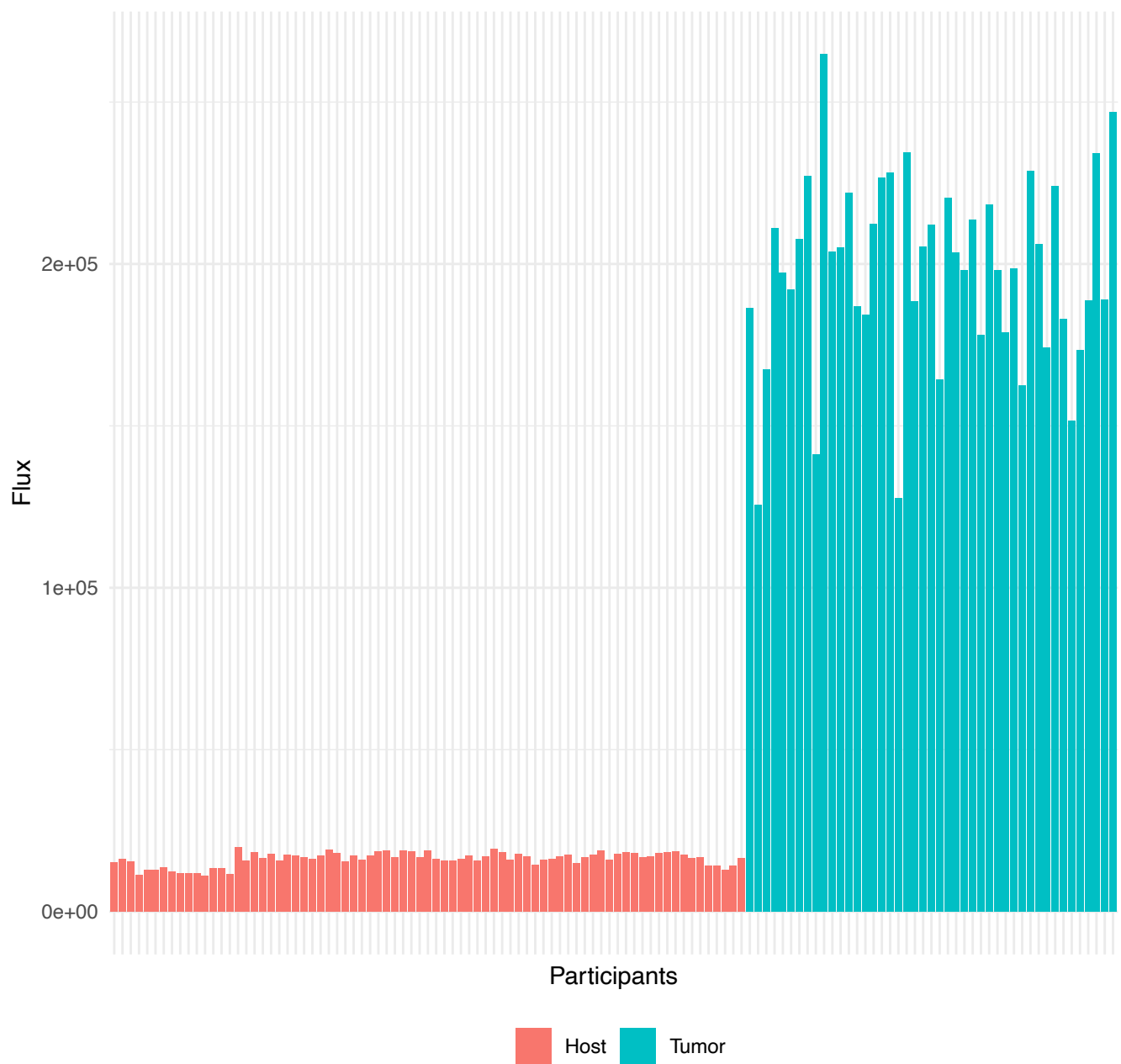
Glycolysis_Gluconeogenesis



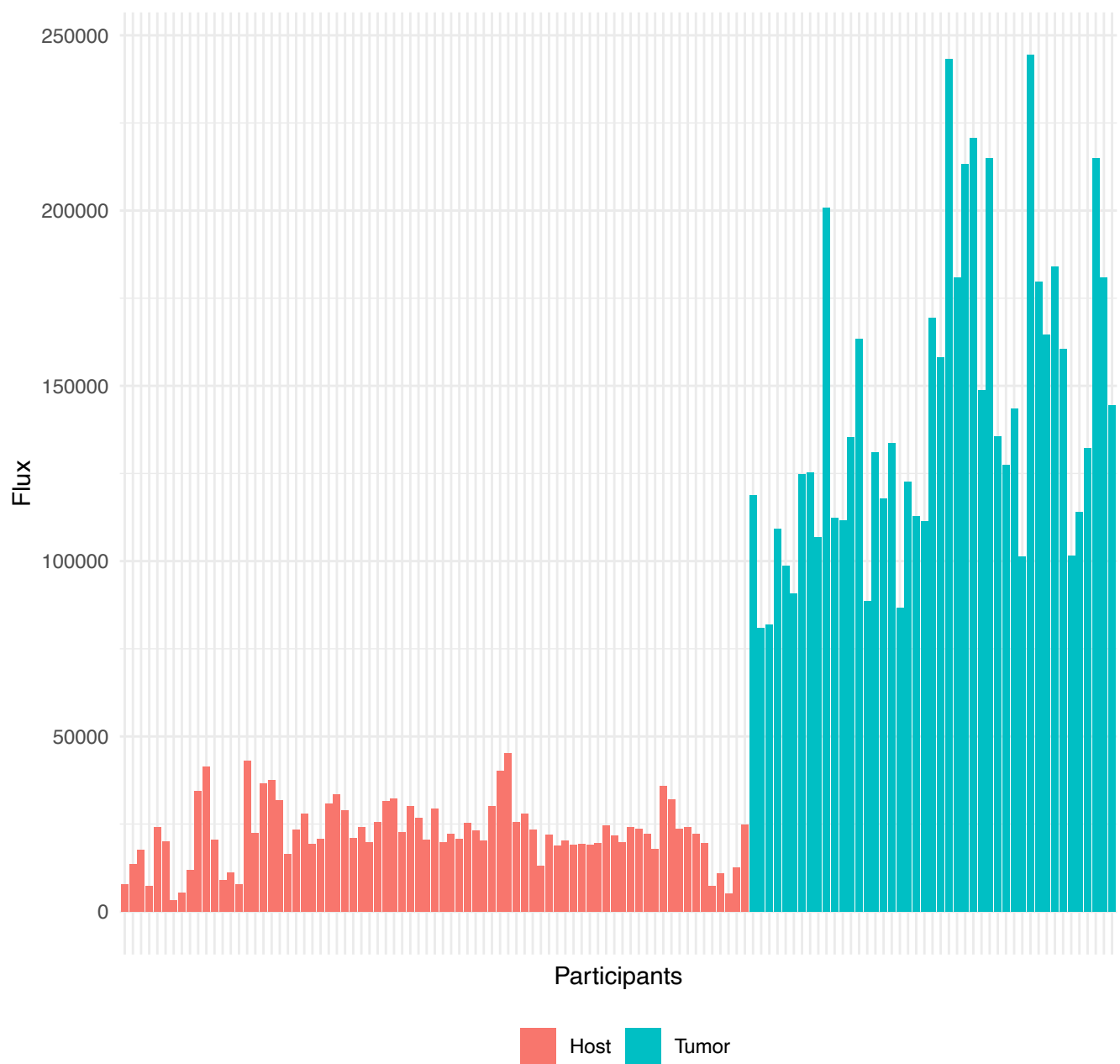
Propanoate_metabolism



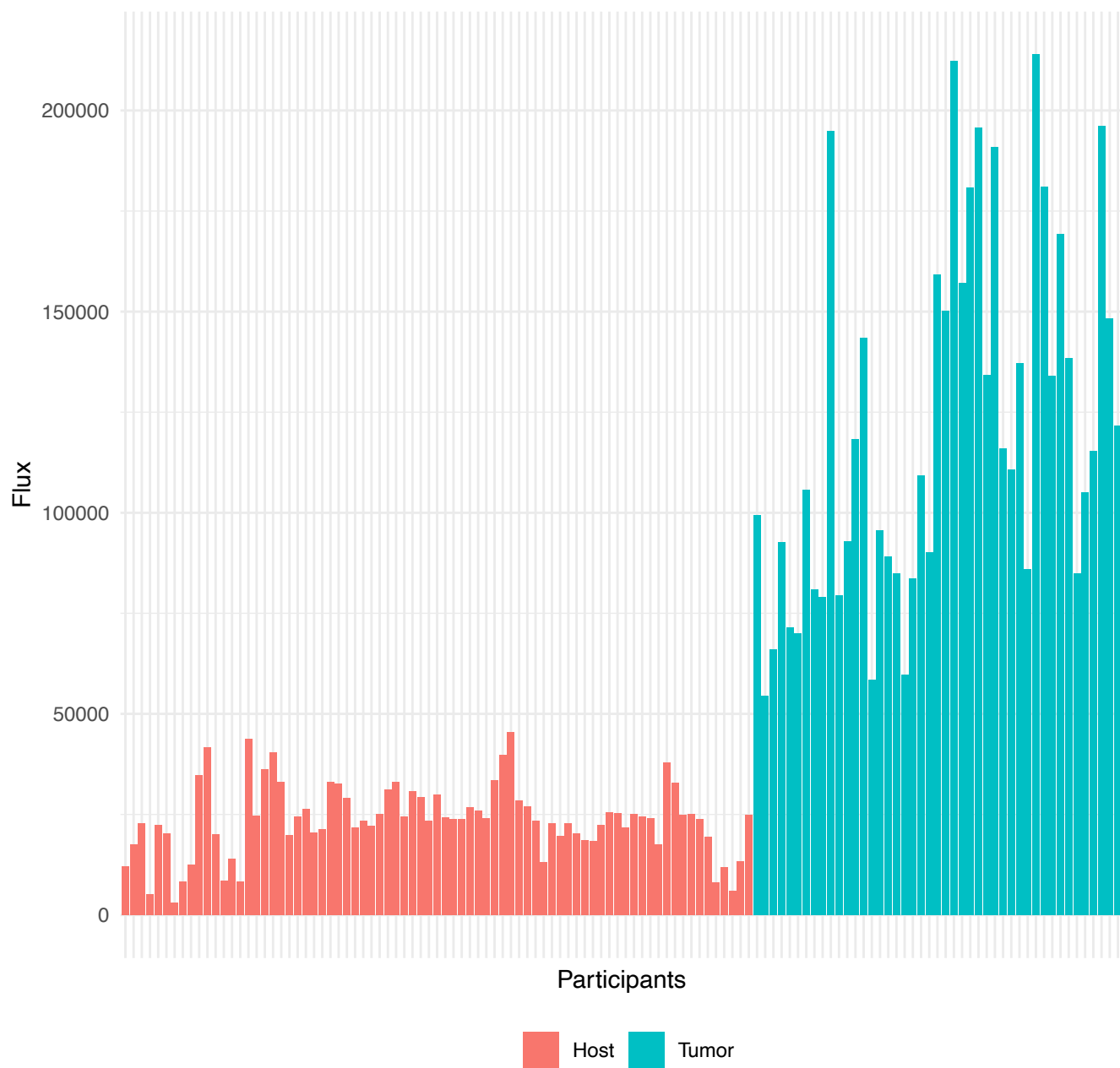
Cysteine_a_methionine_metabolism



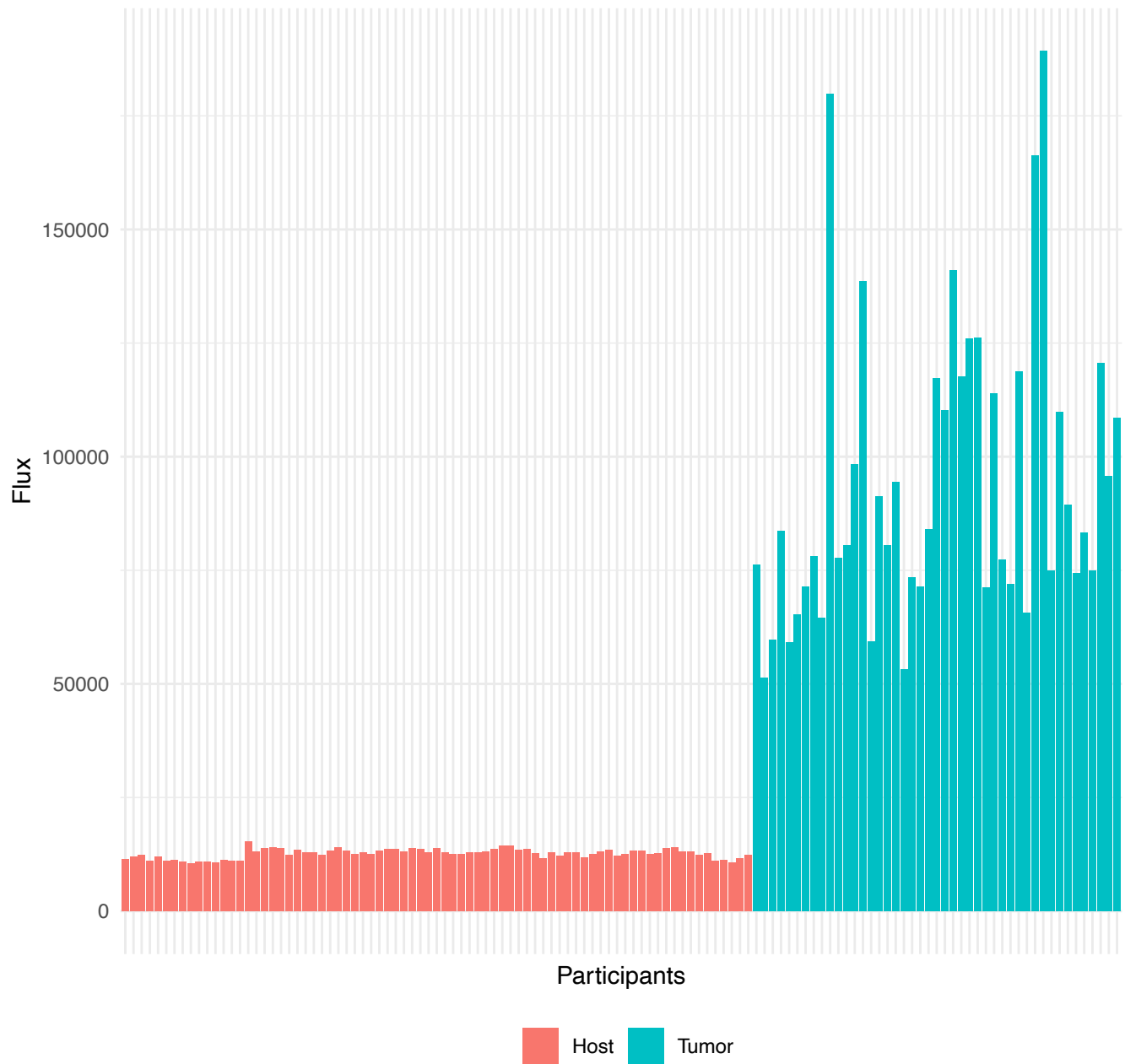
Fatty_acid_metabolism



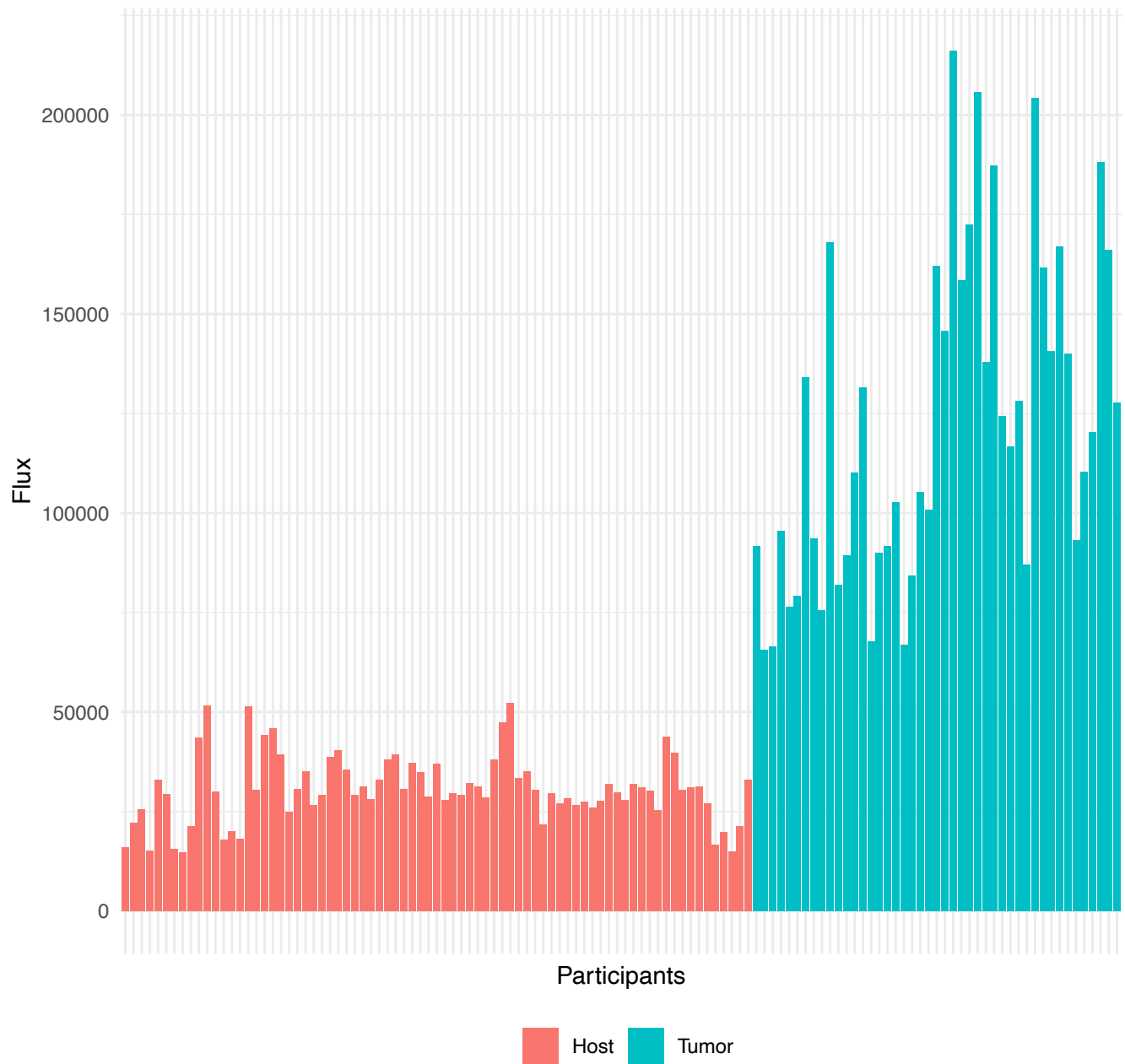
Pentose_phosphate_pathway



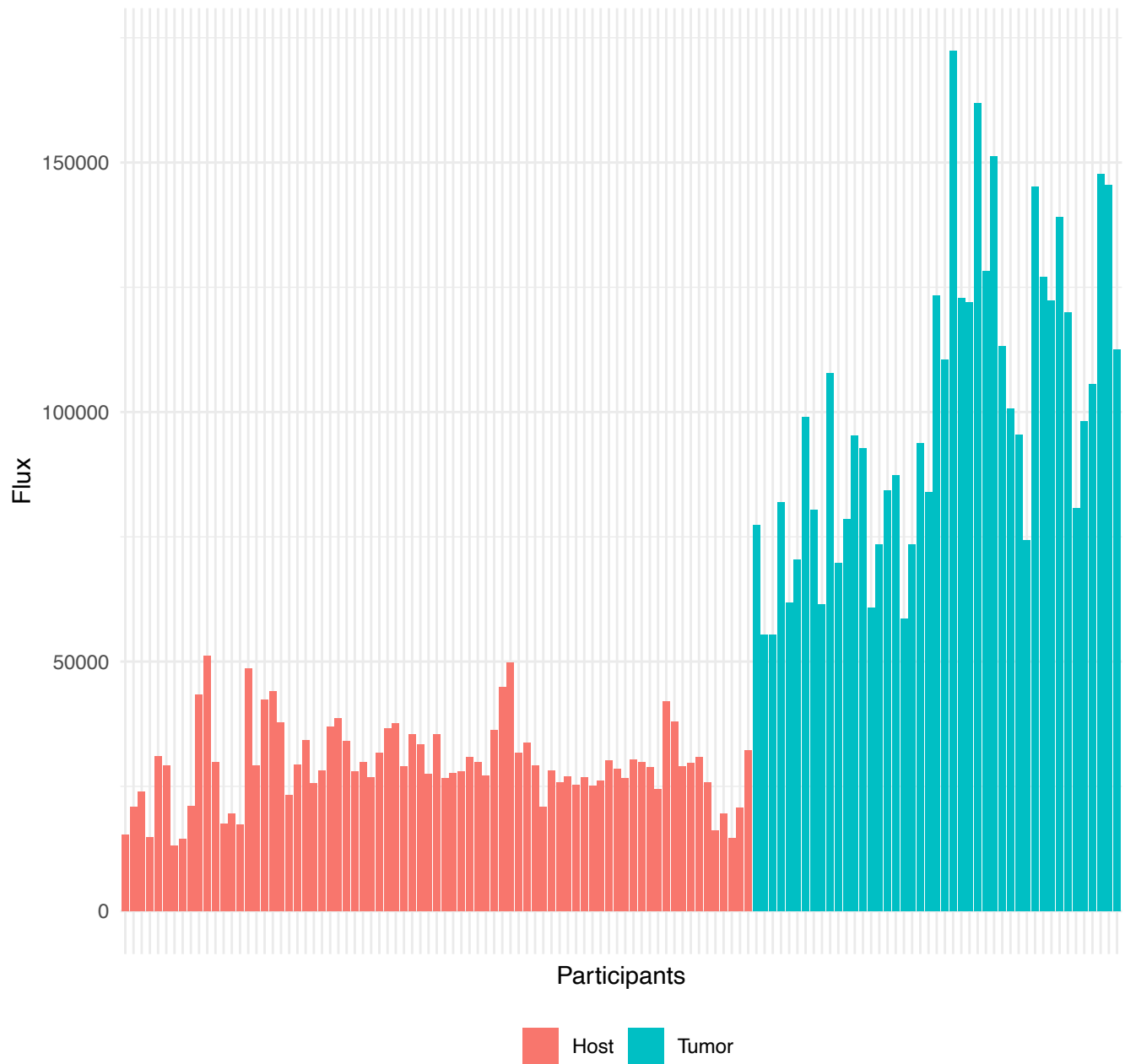
Tryptophan_metabolism



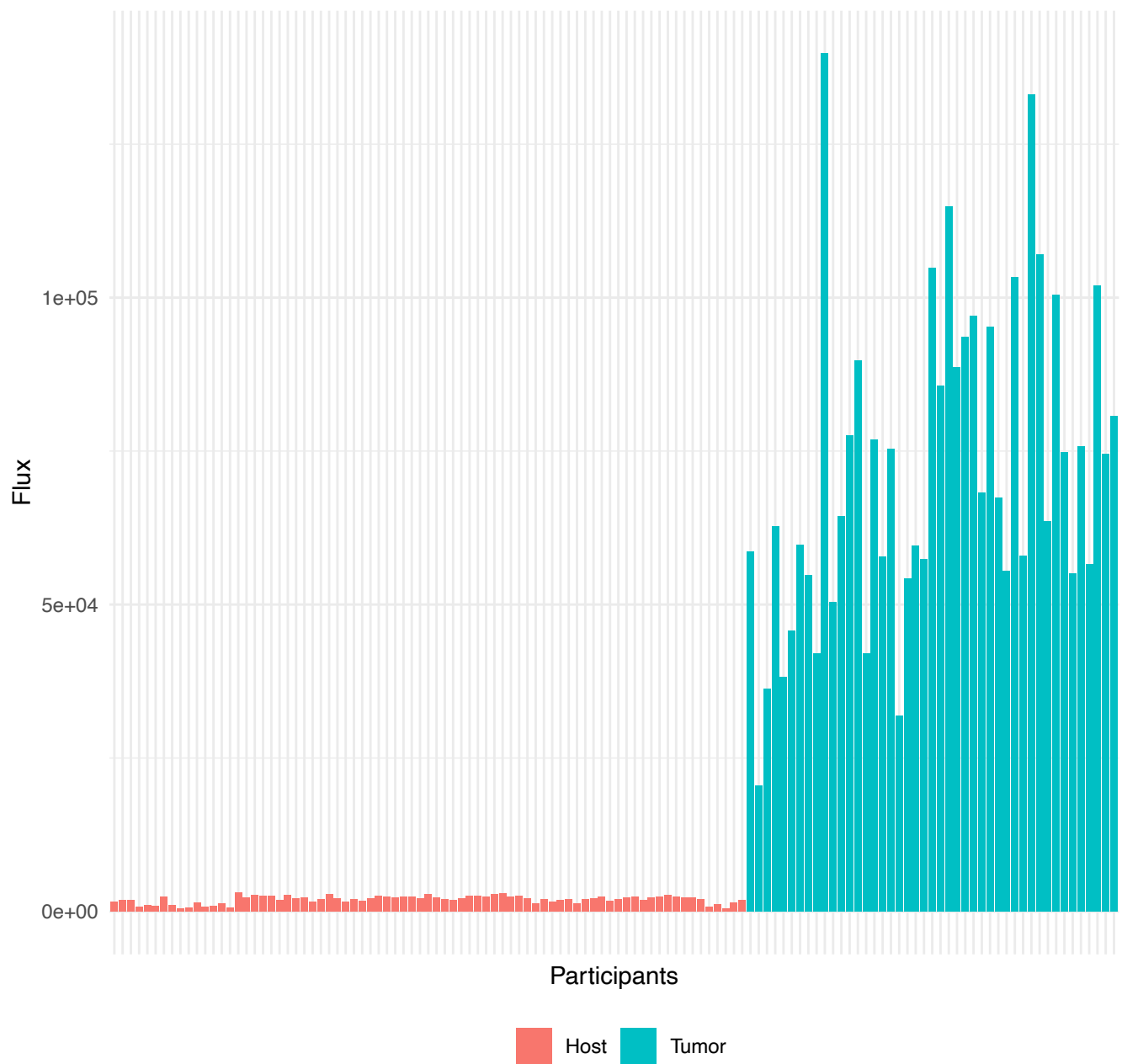
beta.Alanine_metabolism



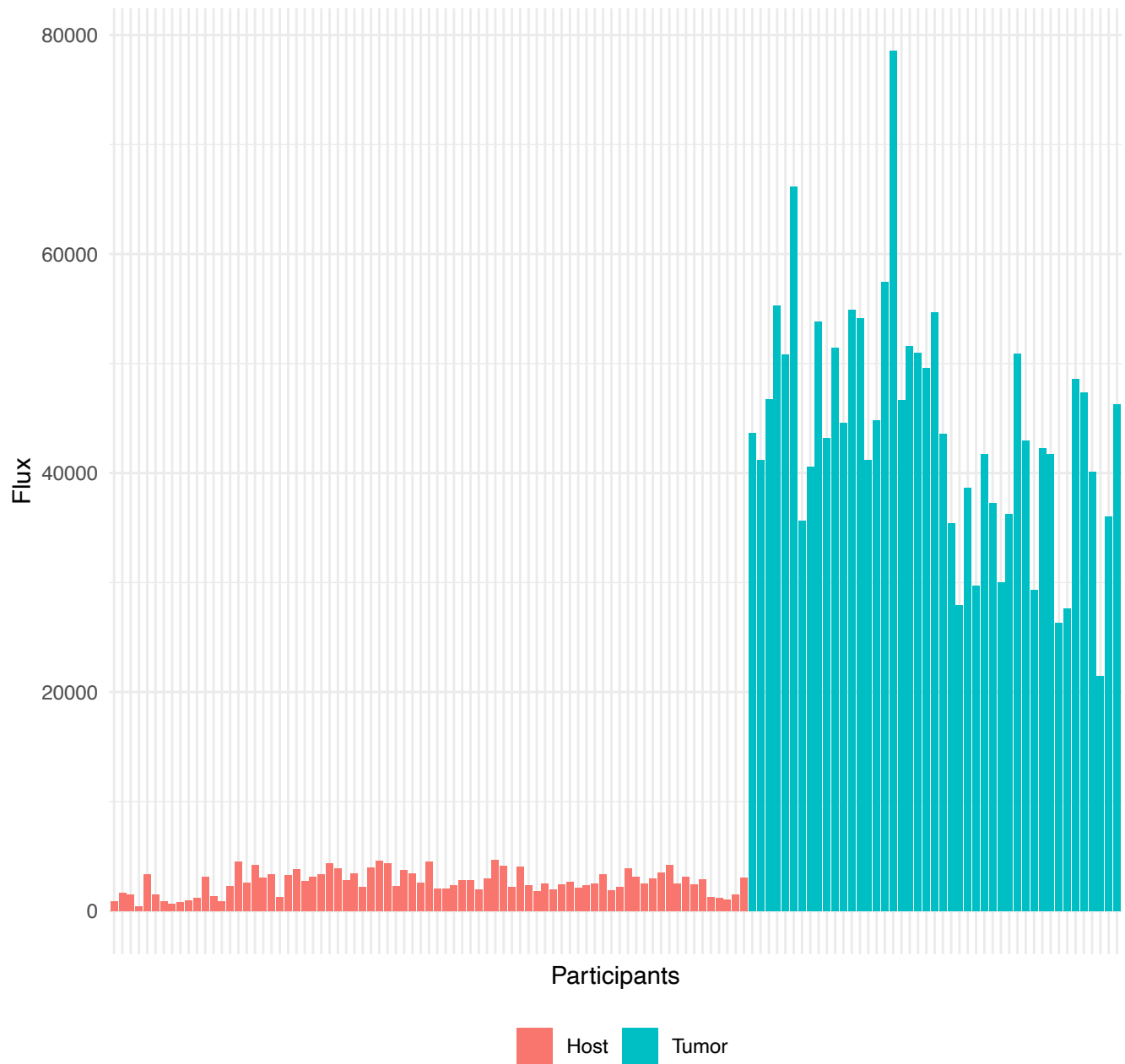
Butanoate_metabolism



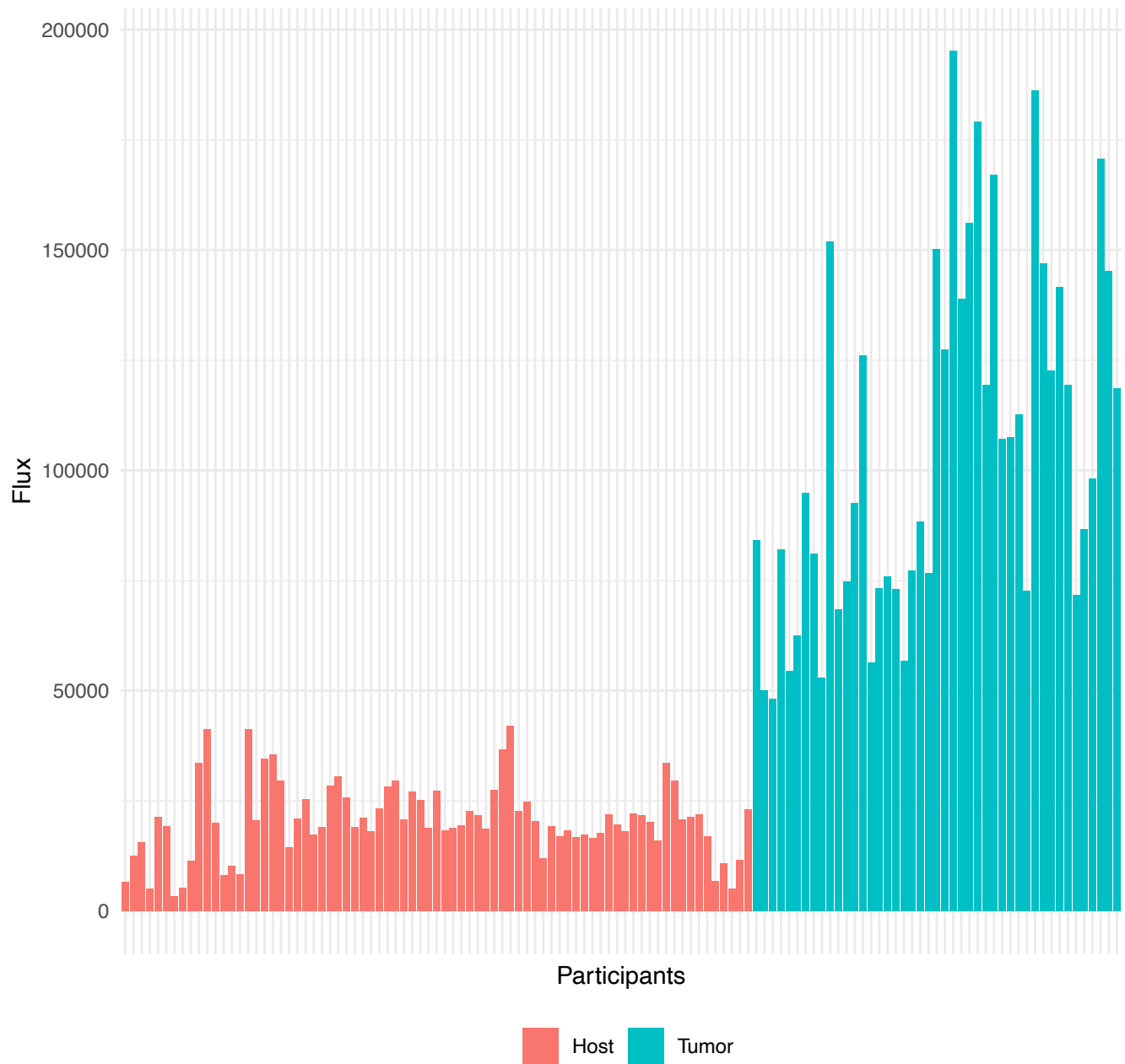
Steroid_biosynthesis



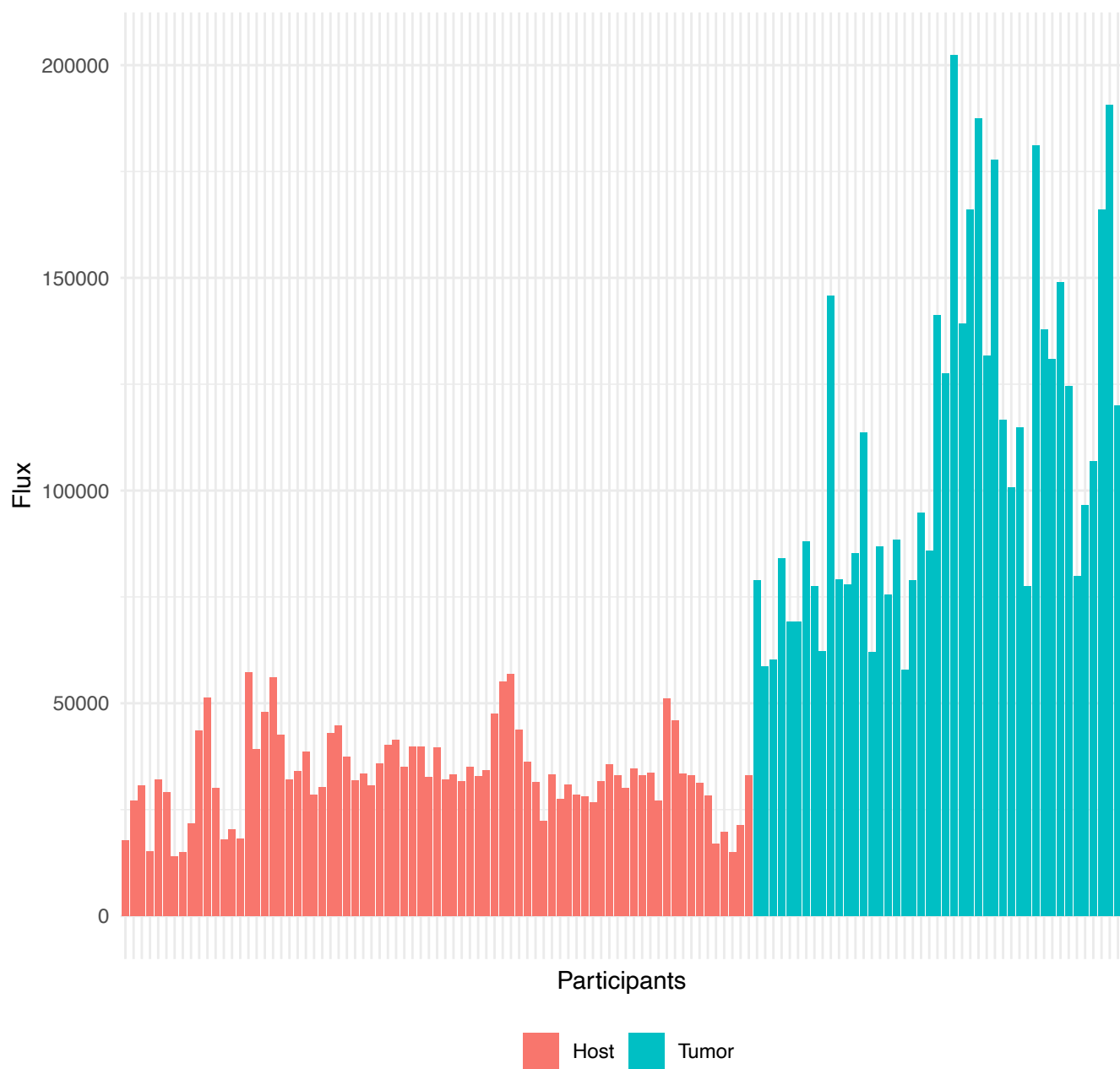
N.Glycan_biosynthesis



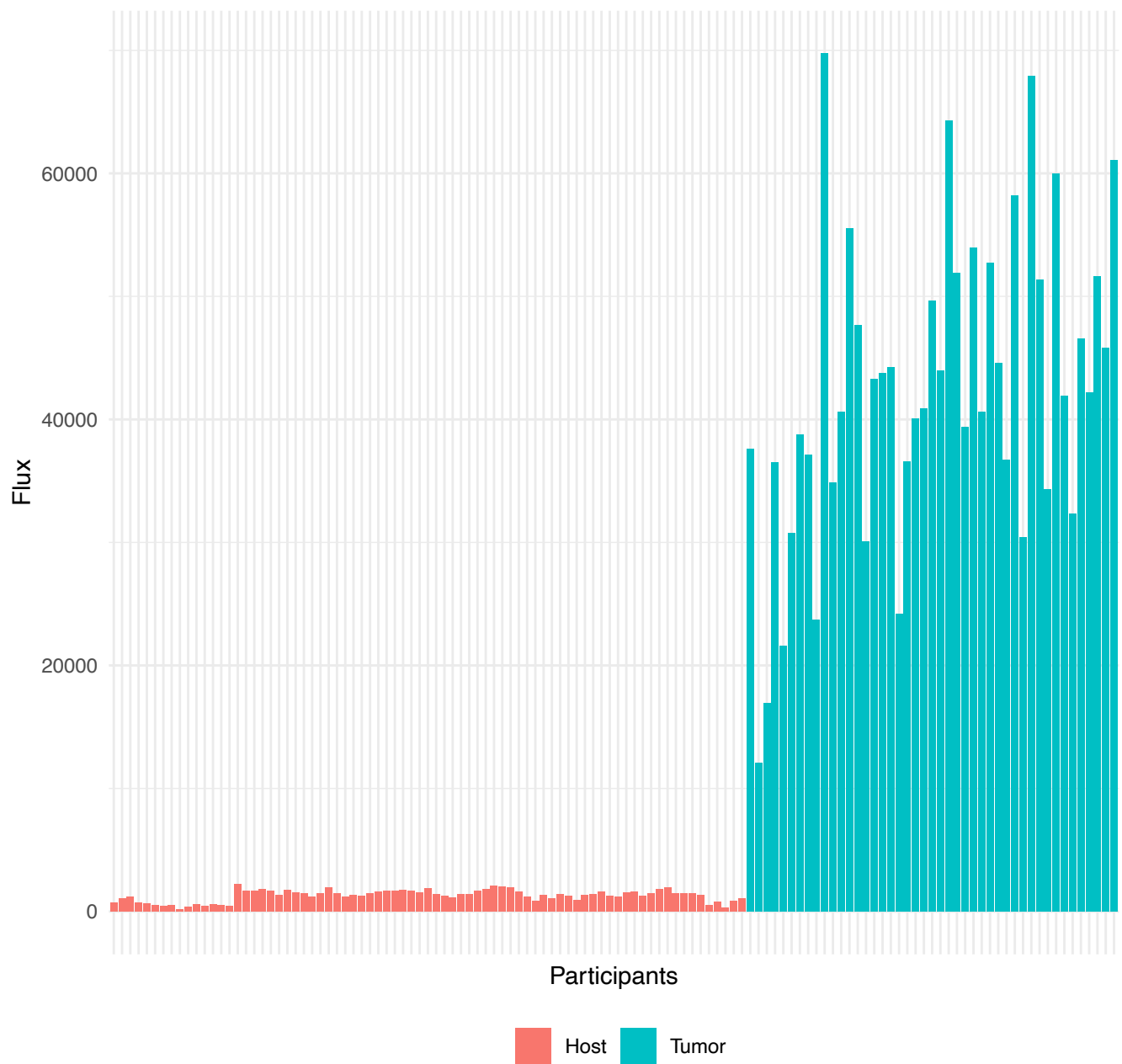
Porphyrin_a_chlorophyll_metabolism



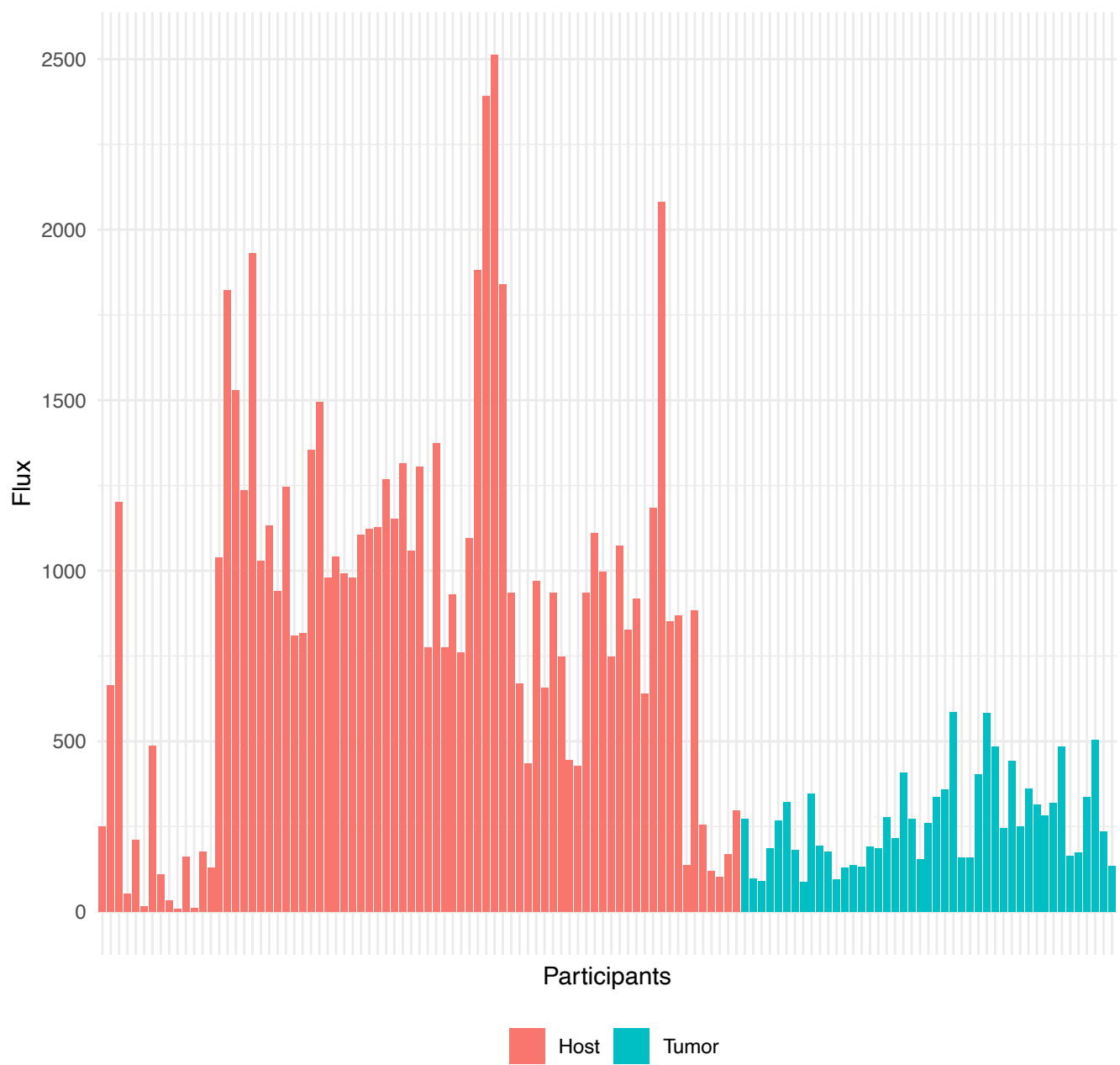
Pantothenate_CoA_biosynthesis



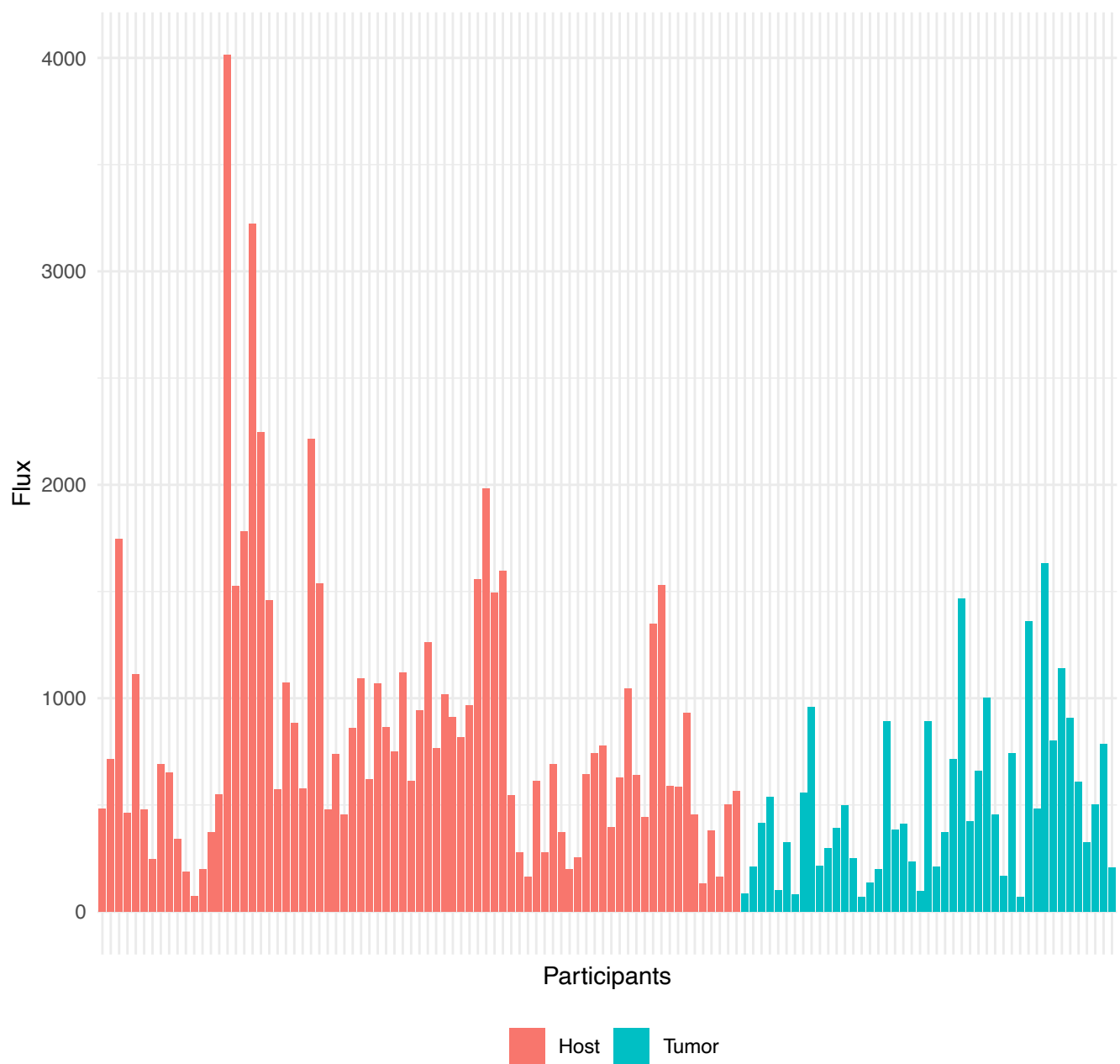
Ketone_bodies_metabolism



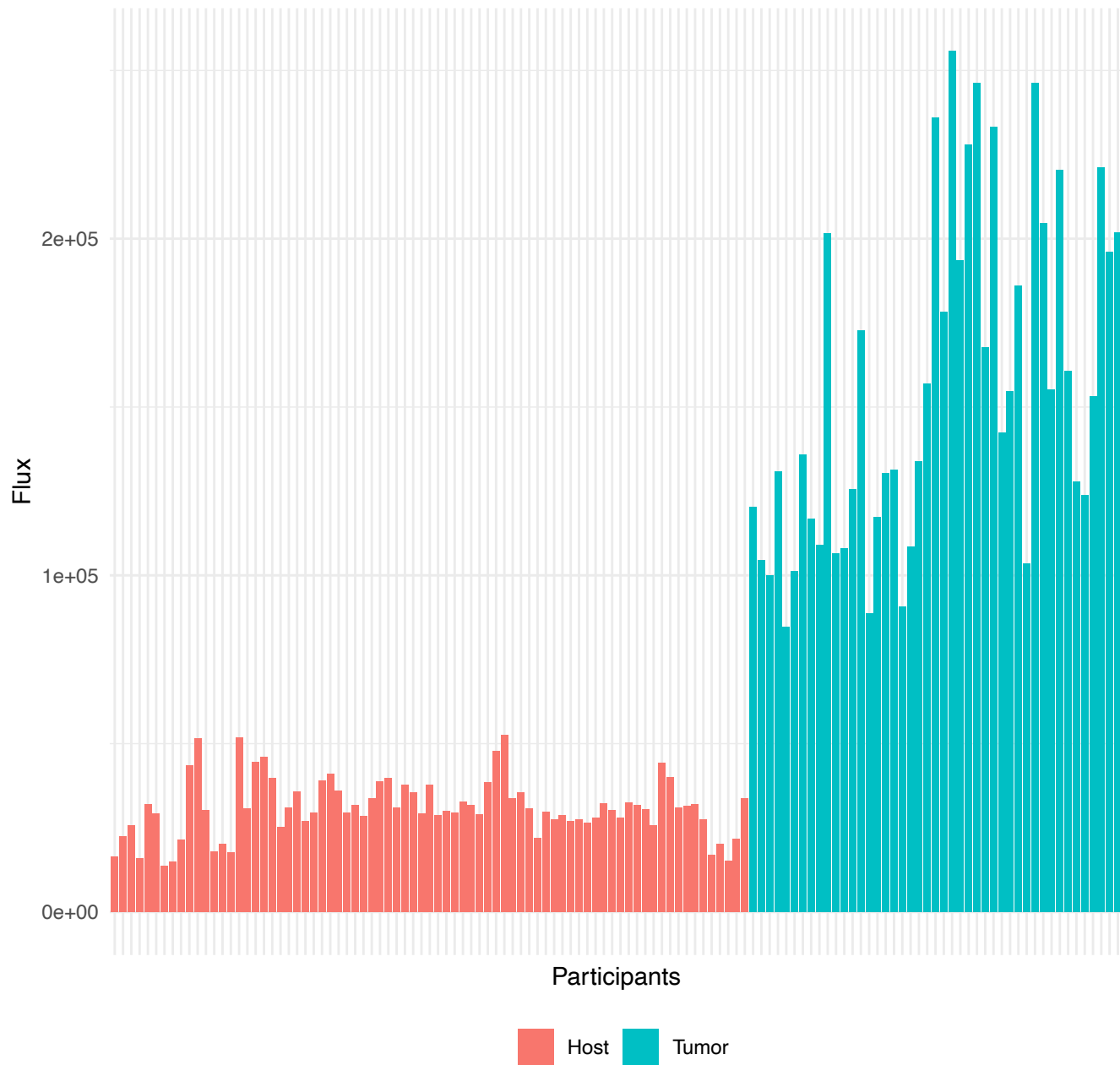
Glutamine_metabolism



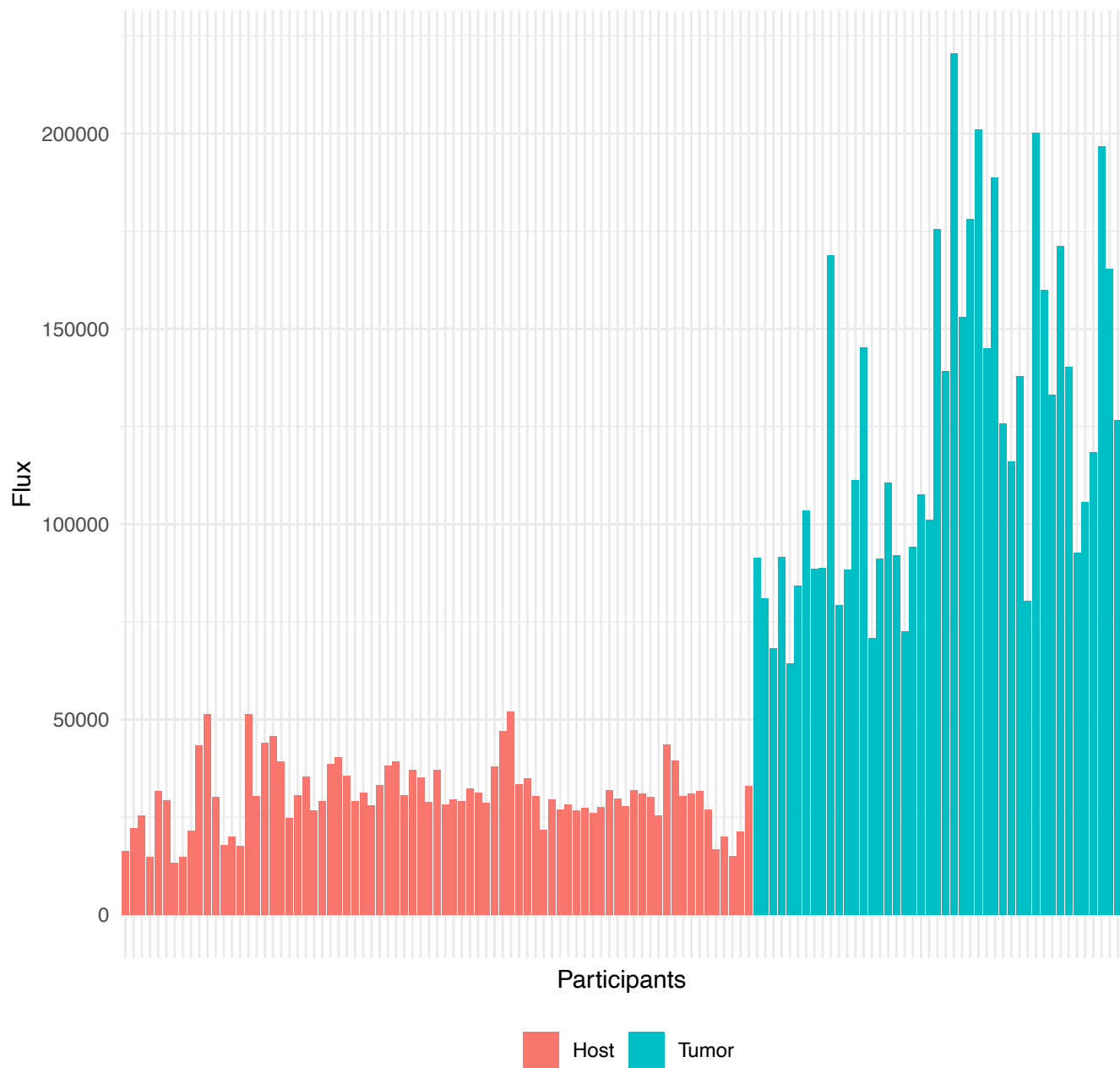
Phenylalanine_metabolism



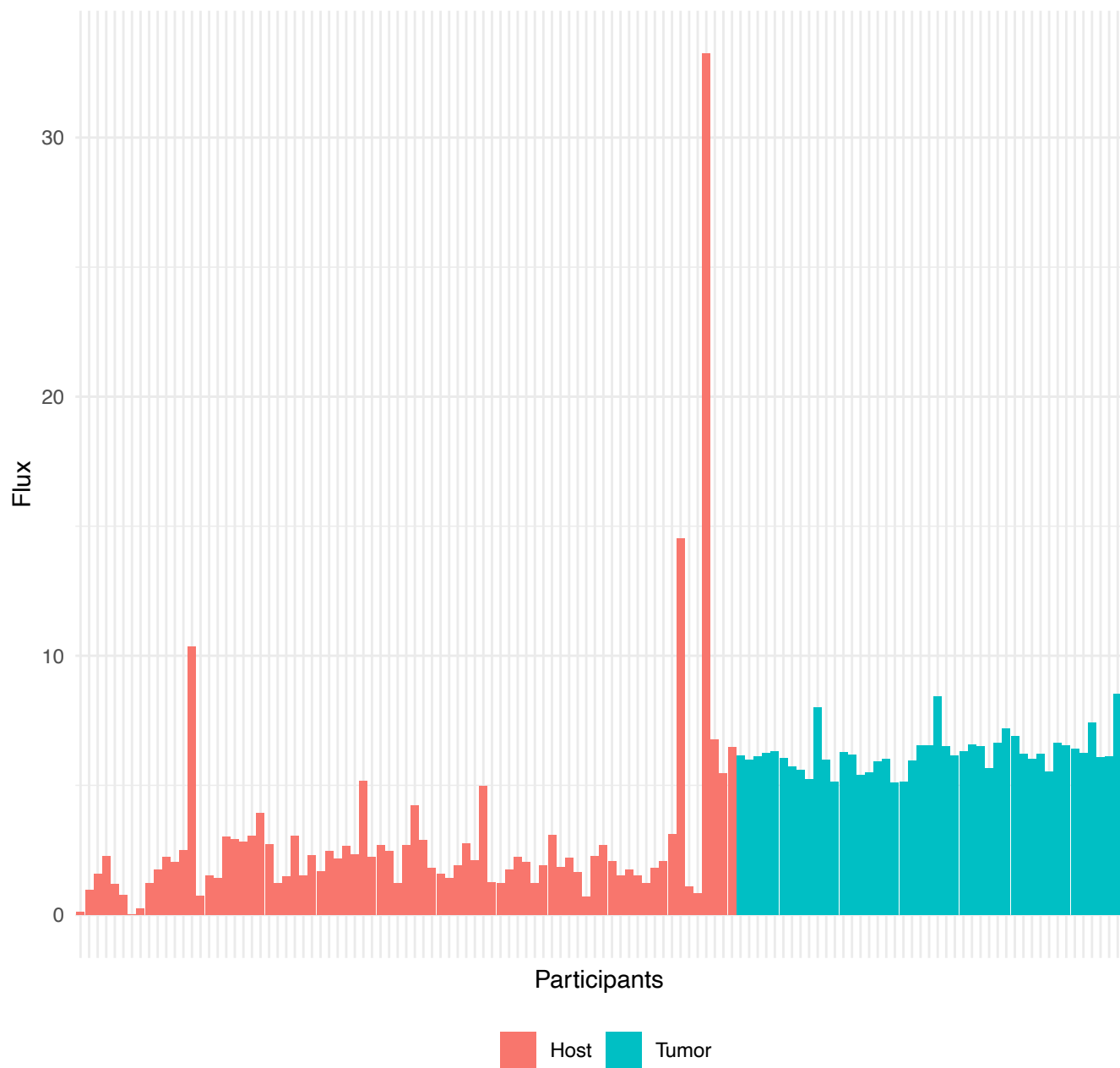
Alanine_aspartate_glutamate_metabolism



Arginine_biosynthesis



Tyrosine_metabolism



Nitrogen_metabolism

