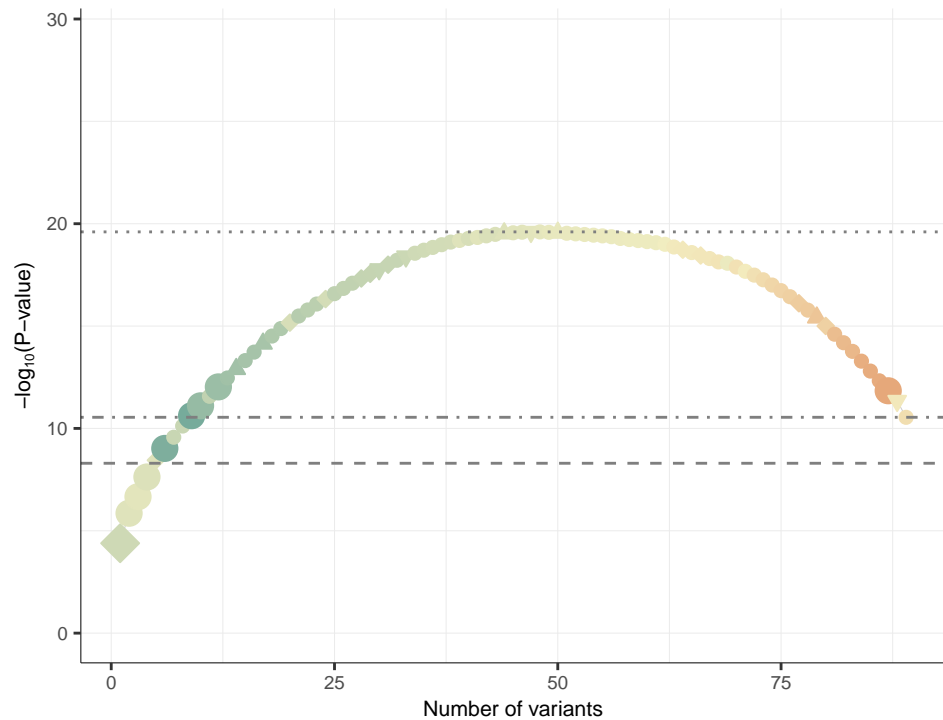


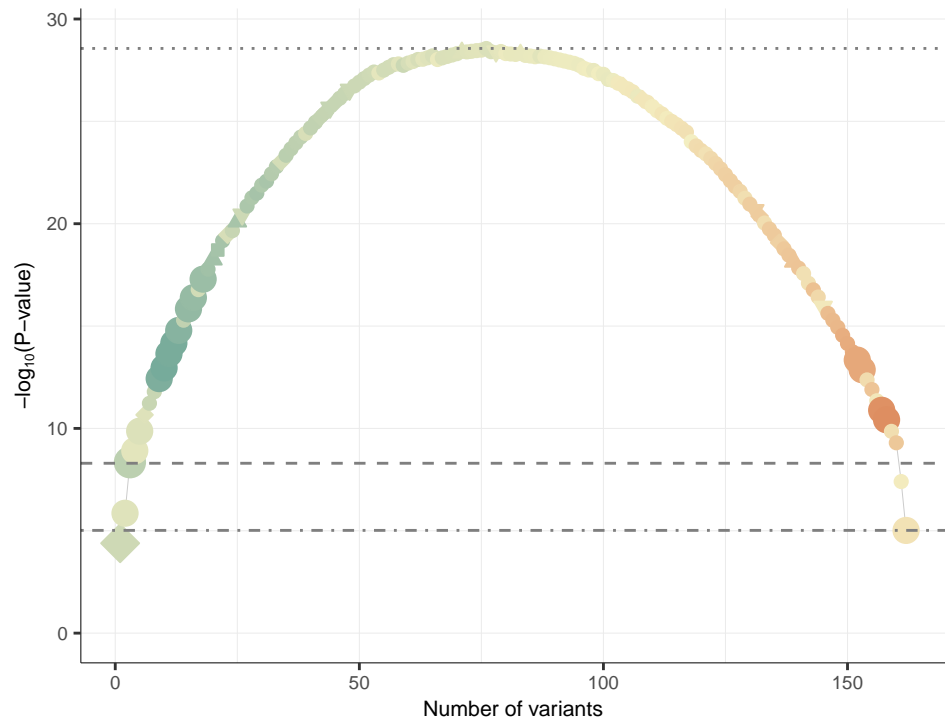
Supplementary Data 2: Contribution of individual QVs to their gene-based association signal with plasma and urine metabolite levels.

For each significant gene-metabolite pair in plasma and/or in urine (sorted by gene and metabolite's biochemical name), the symbols visualize the $-\log_{10}(\text{P-value})$ (y-axis) for the successive aggregation of the most influential QVs with respect to the forward selection procedure (Bomba et al. 2022, PMID: 35568032, Methods) based on burden tests for both masks (LoF_mis on the left, HI_mis on the right). The number of QVs aggregated for burden testing is given on the x-axis. Symbol shape indicates the variant's consequence. The symbol color and size reflect the effect size and the P-value of the variant based on its single-variant association test. The gray dashed lines represent the significance threshold ($-\log_{10}(5.04\text{e-}9)$ for plasma and $-\log_{10}(4.46\text{e-}9)$ for urine), the total $-\log_{10}(\text{P-value})$ of the aggregate variant test including all QVs in the respective gene and mask, and the $-\log_{10}(\text{lowest P-value})$ that can be reached by aggregating only the driver variants from the forward selection procedure. Hence, the variants sorted on the left, which provide the lowest P-value when aggregated, represent the driver variants (for further variant annotation see **Supplementary Tables 7a,b**).

lactosyl-N-nervonoyl-sphingosine (d18:1/24:1)* in plasma at ABCA7 (LoF_mis)

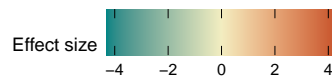


lactosyl-N-nervonoyl-sphingosine (d18:1/24:1)* in plasma at ABCA7 (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- ▽ splicing
- start/stop lost
- △ stop gained

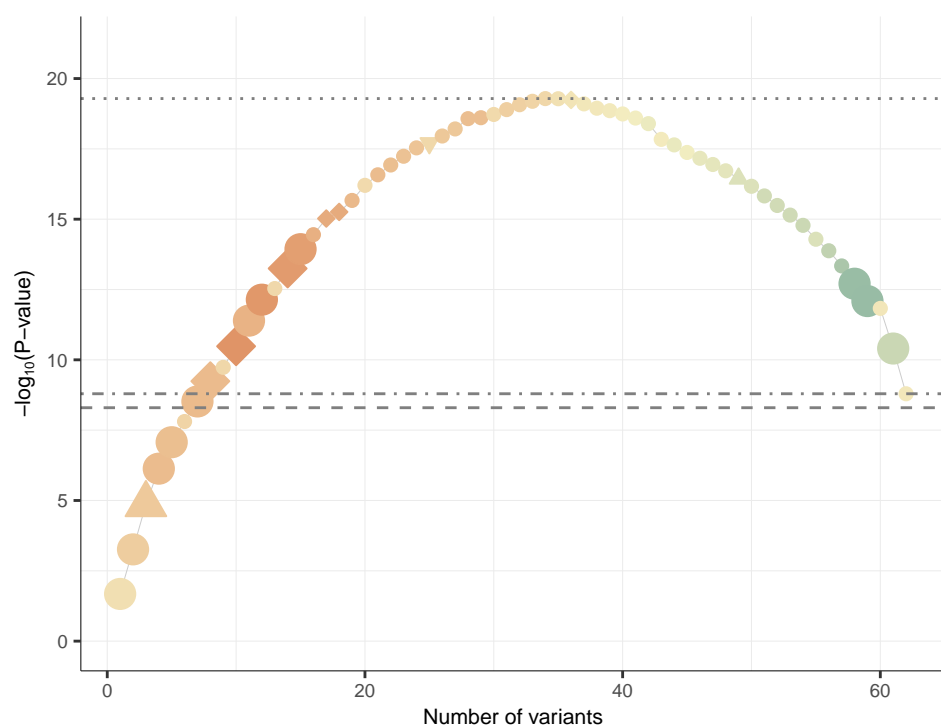
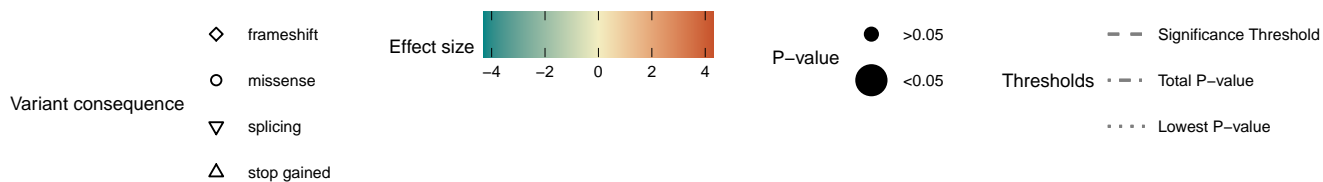
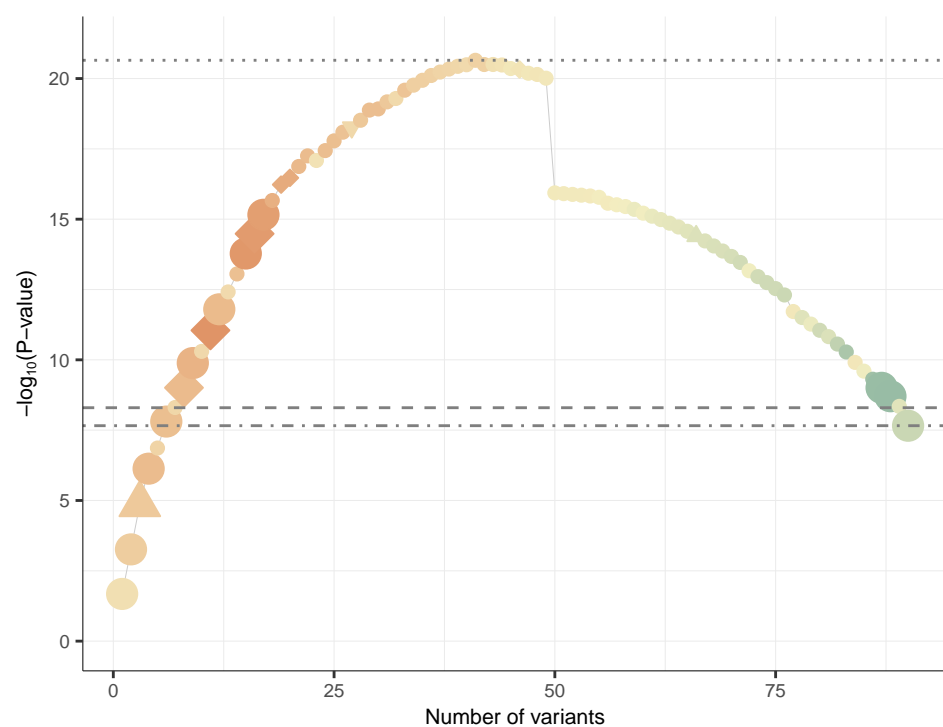


P-value

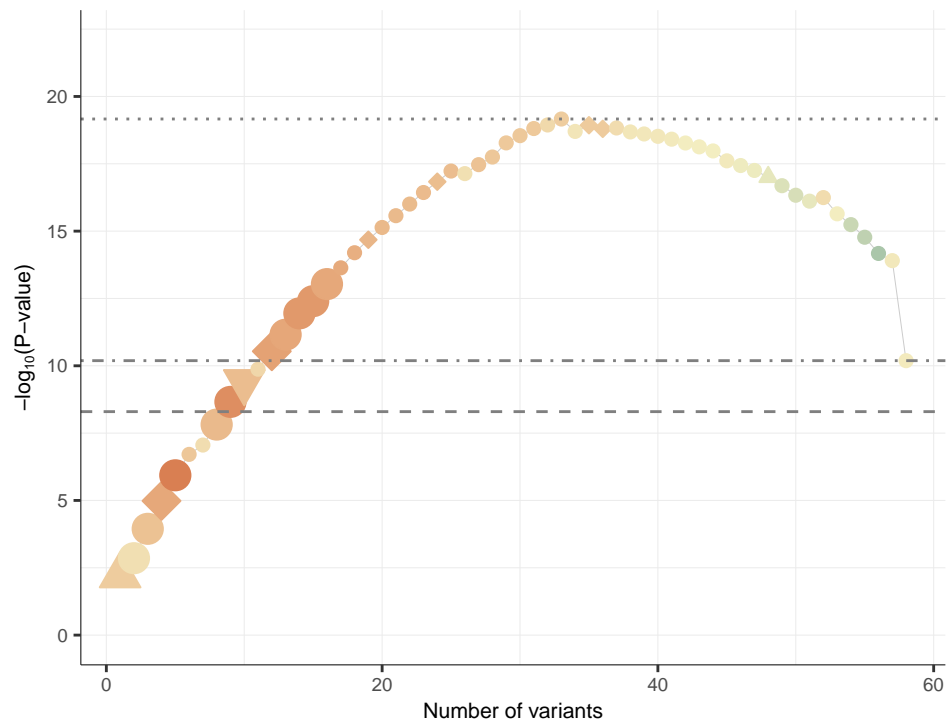
- >0.05
- <0.05
- <1e-3

Thresholds

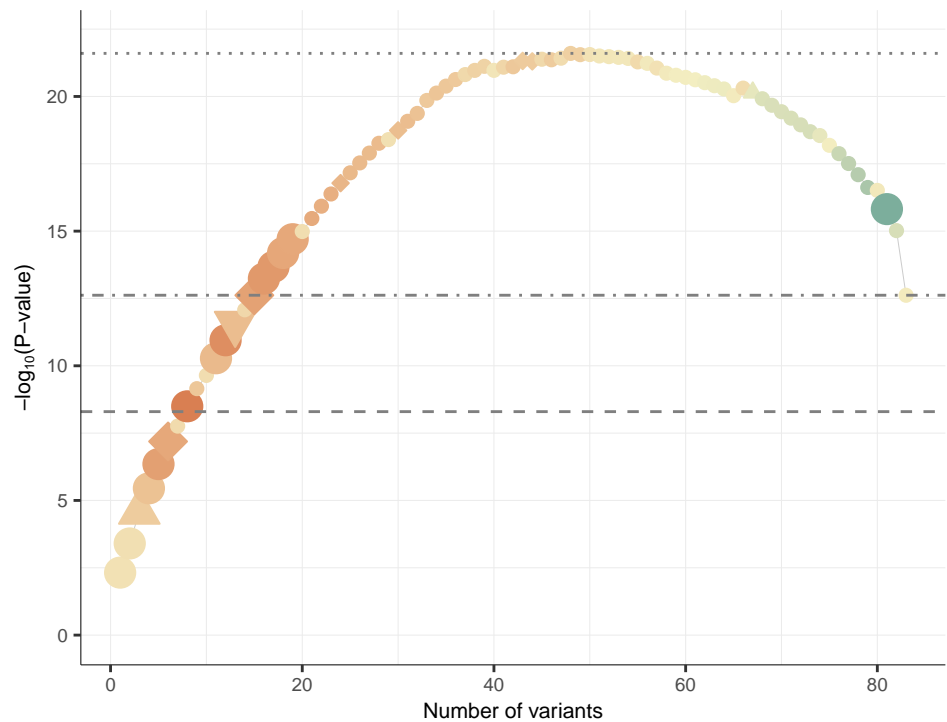
- Significance Threshold
- - - Total P-value
- ... Lowest P-value

glycocholenate sulfate* in plasma at *ABCC2* (LoF_mis)glycocholenate sulfate* in plasma at *ABCC2* (HI_mis)

X - 21441 in plasma at *ABCC2* (LoF_mis)



X - 21441 in plasma at *ABCC2* (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- ▽ splicing
- △ stop gained

Effect size

Color scale: -4 (dark green) to 4 (dark red), with 0 being light green.

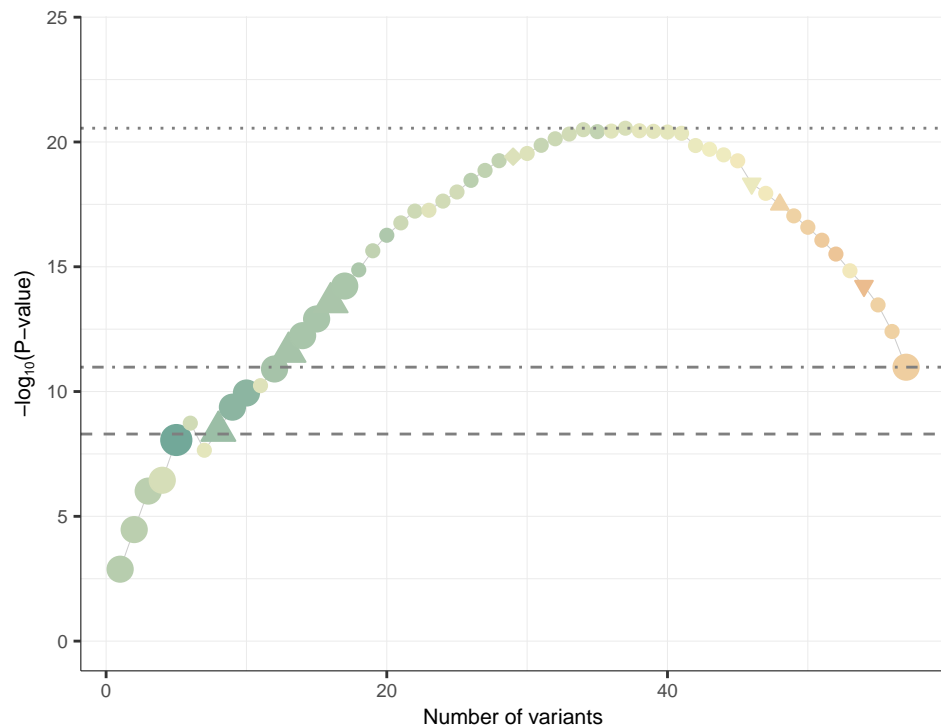
P-value

- >0.05
- <0.05

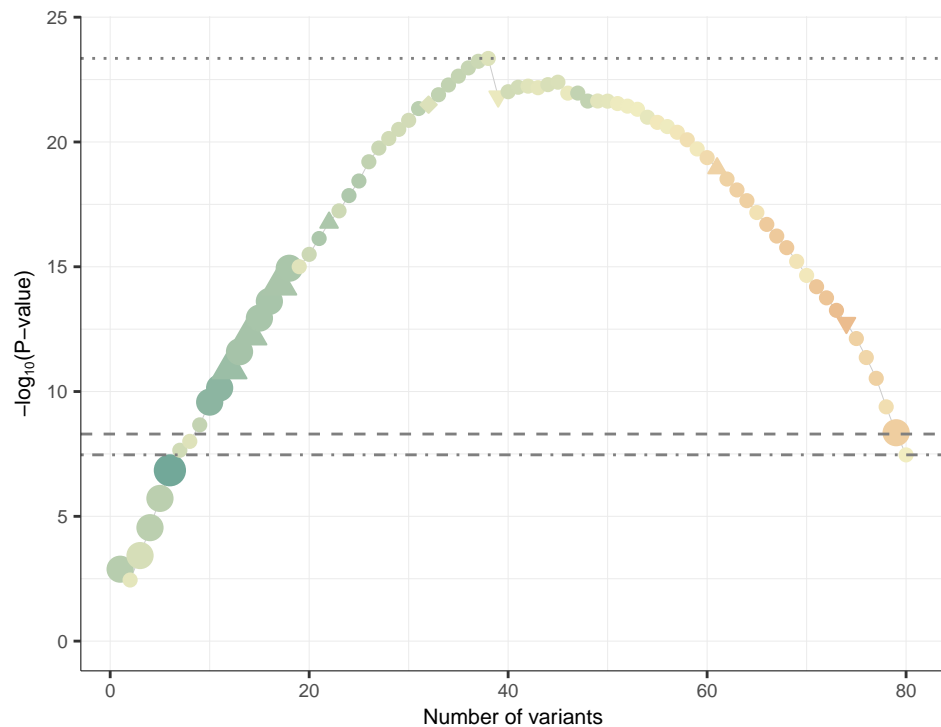
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

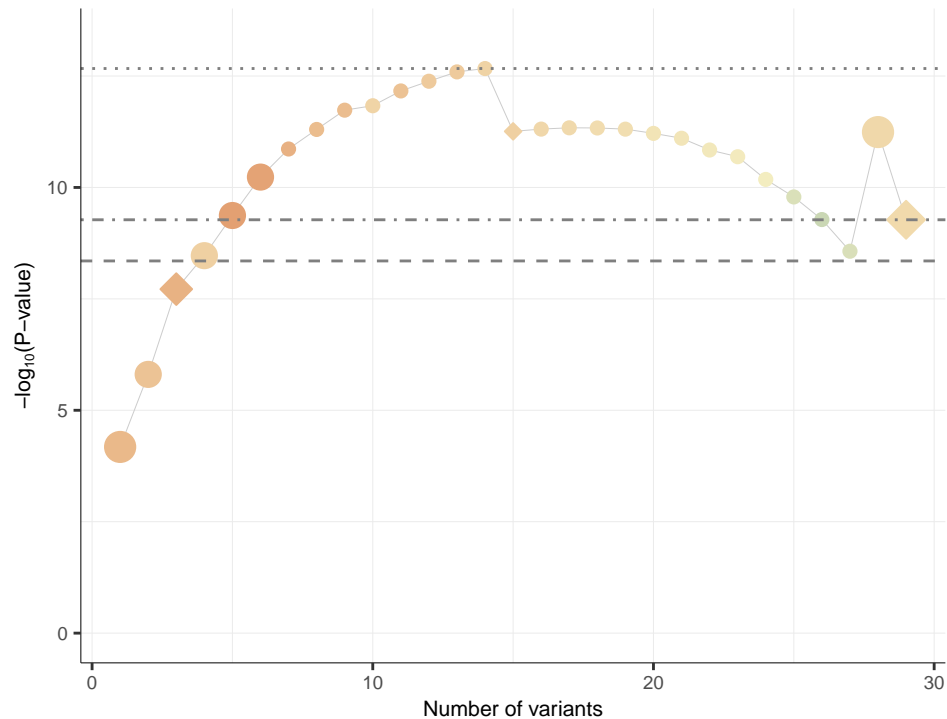
X - 24588 in plasma at *ABCC3* (LoF_mis)



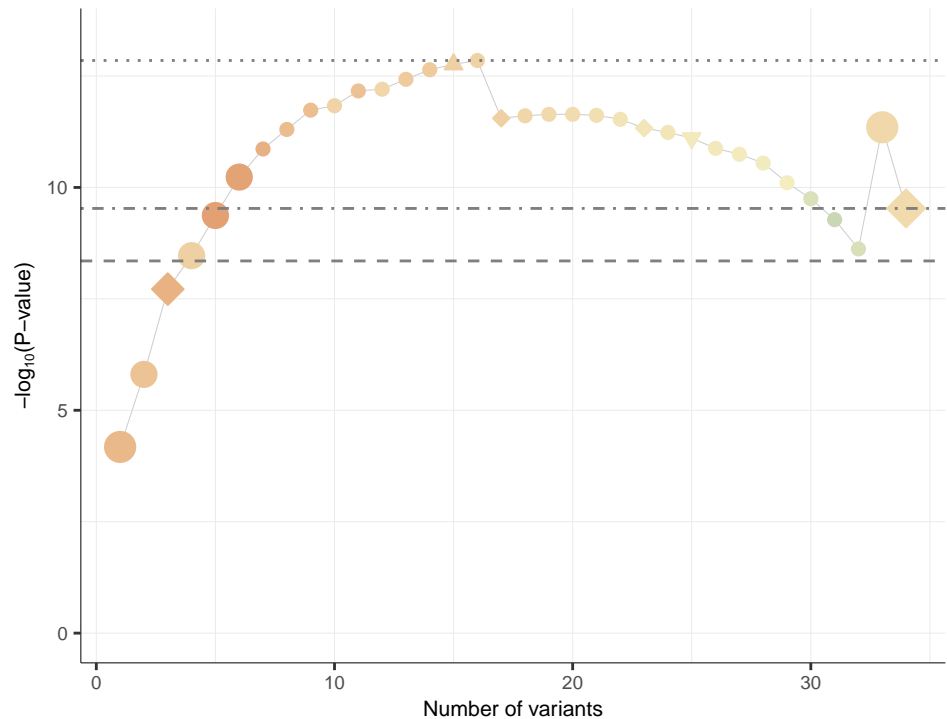
X - 24588 in plasma at *ABCC3* (HI_mis)



glycine conjugate of C9H16O2* in urine at ACADL (LoF_mis)

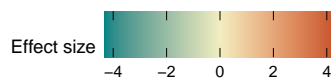


glycine conjugate of C9H16O2* in urine at ACADL (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- ▽ splicing
- △ stop gained



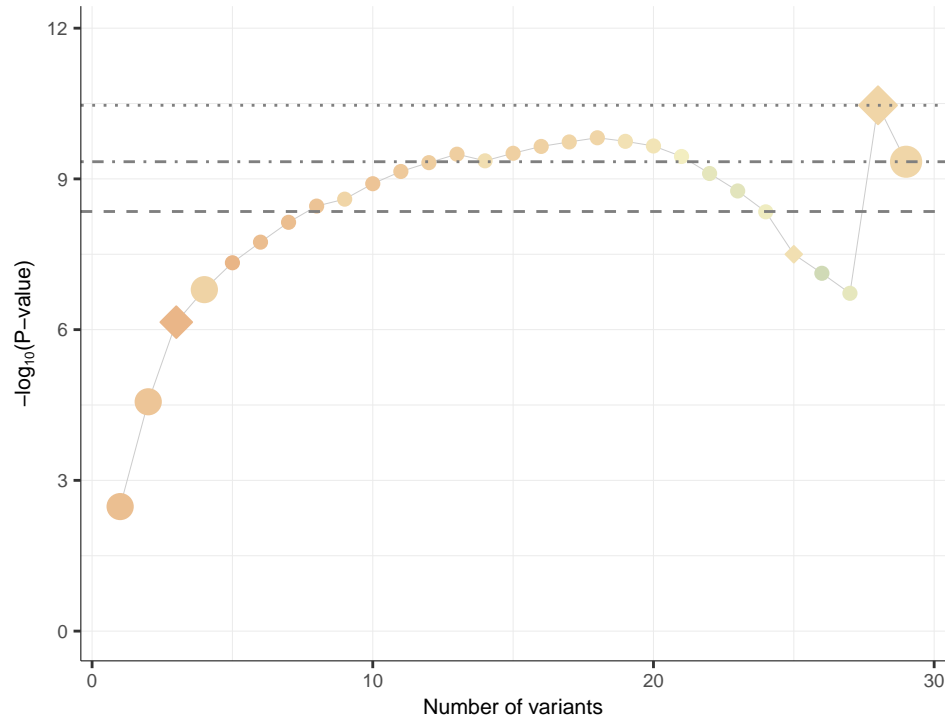
P-value

- >0.05
- <0.05
- <1e-3

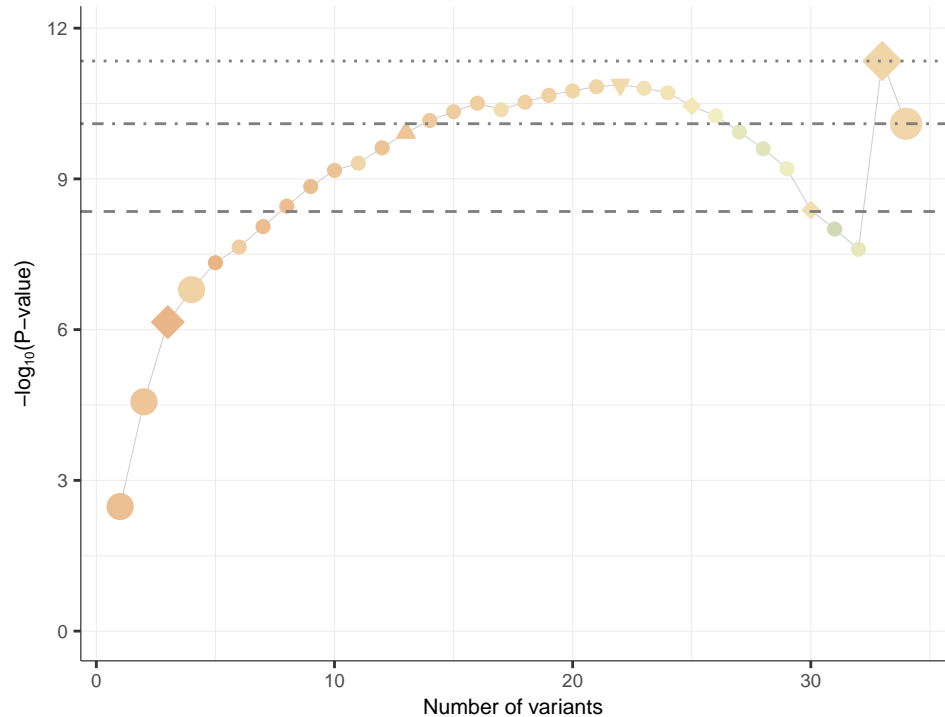
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

X – 24798 in urine at ACADL (LoF_mis)

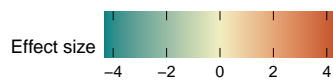


X – 24798 in urine at ACADL (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- ▽ splicing
- △ stop gained



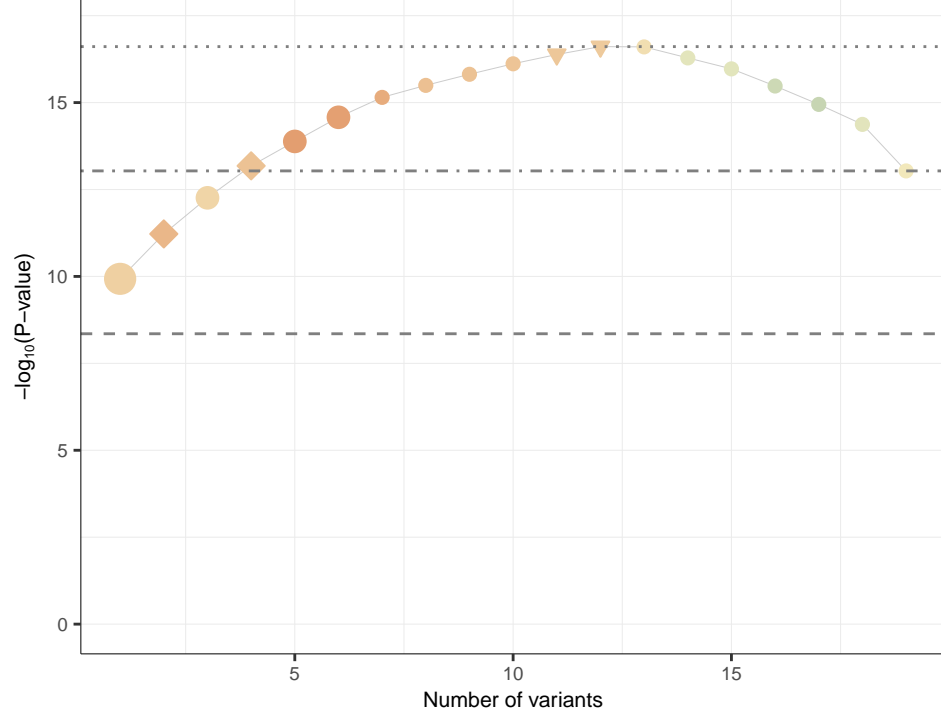
P-value

- >0.05
- <0.05
- <1e-3

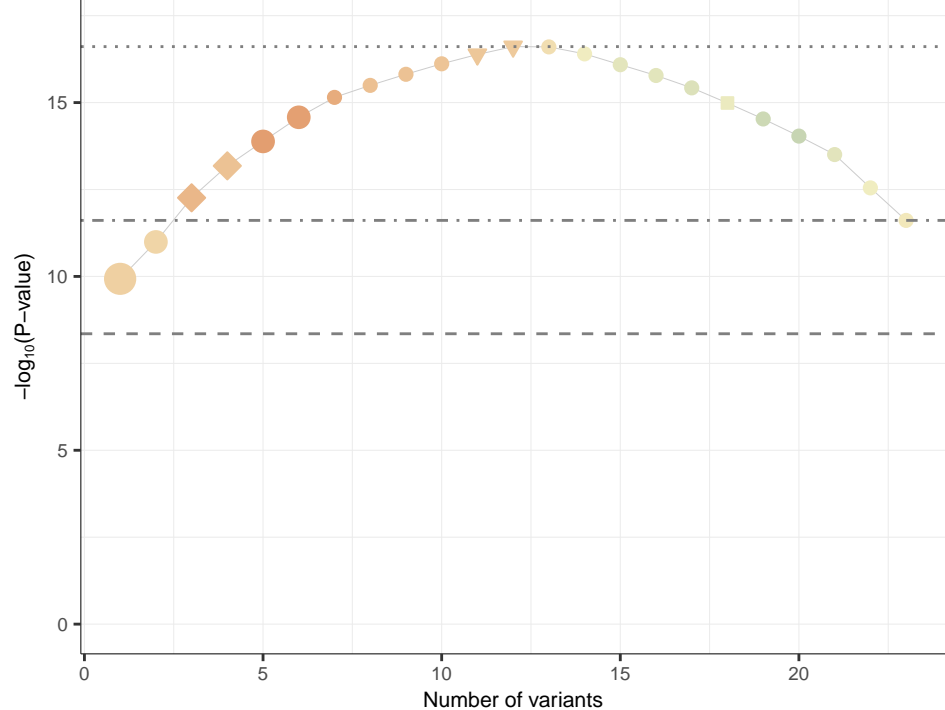
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

4-methylhexanoylglutamine in urine at ACADM (LoF_mis)



4-methylhexanoylglutamine in urine at ACADM (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- ▽ splicing
- start/stop lost

Effect size

-4 -2 0 2 4

P-value

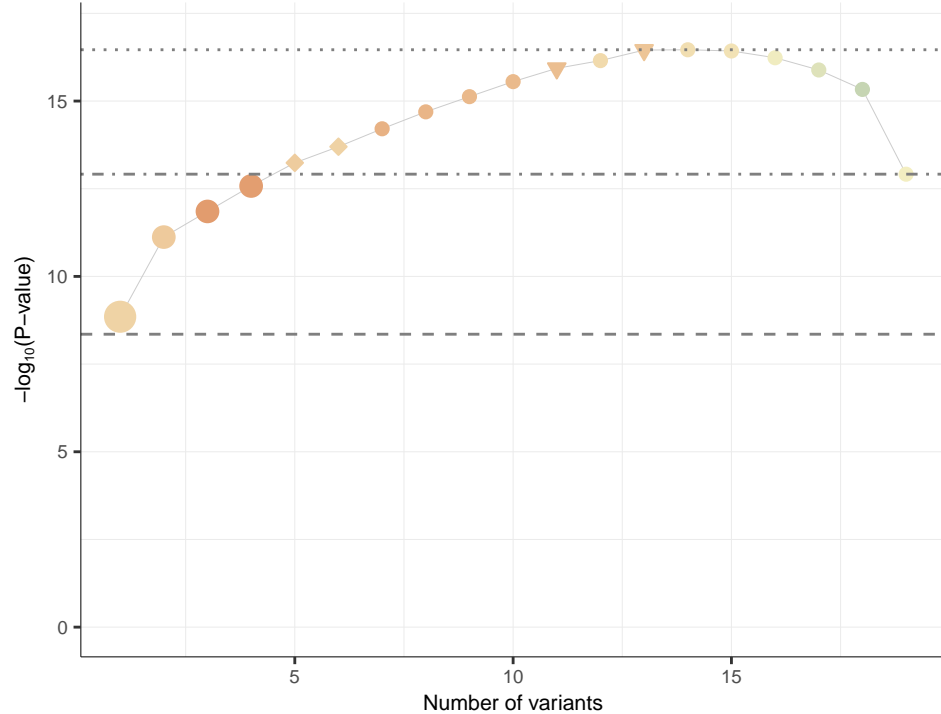
- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8

Significance Threshold

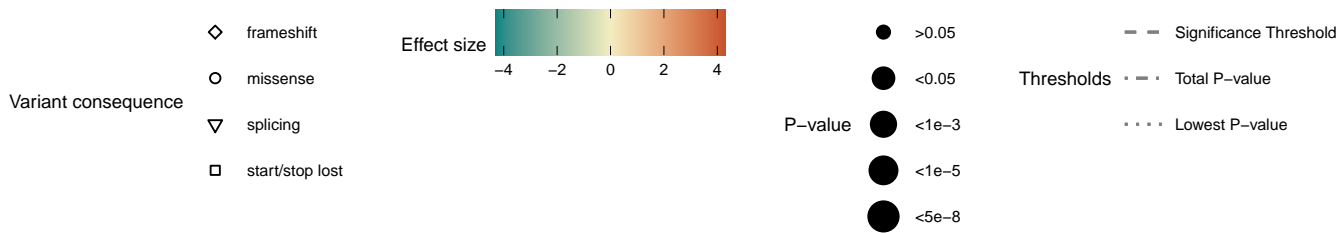
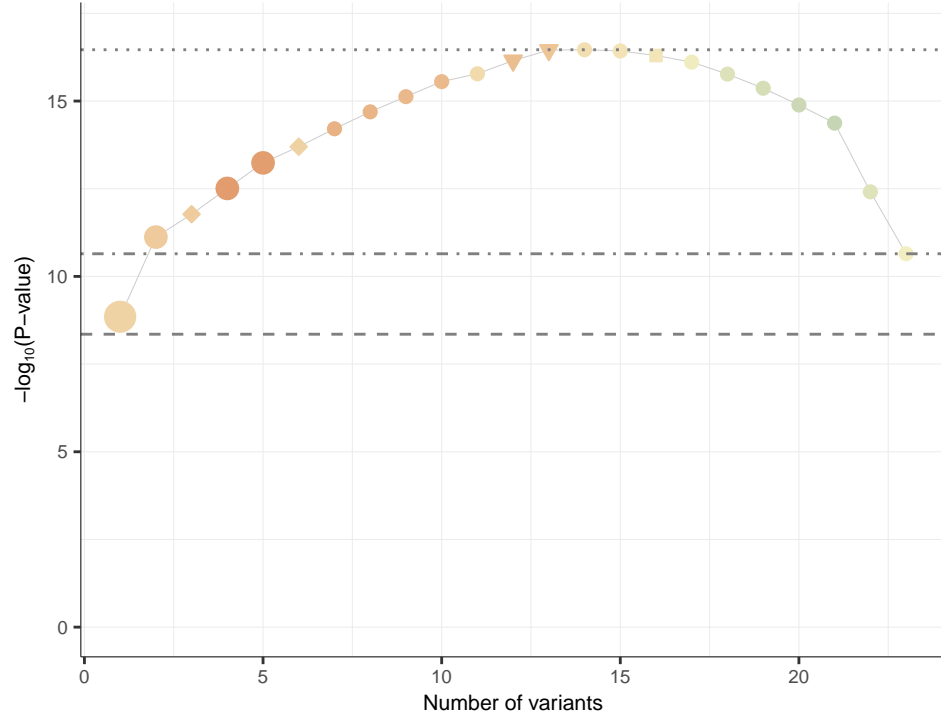
Thresholds

- - - Total P-value
- ... Lowest P-value

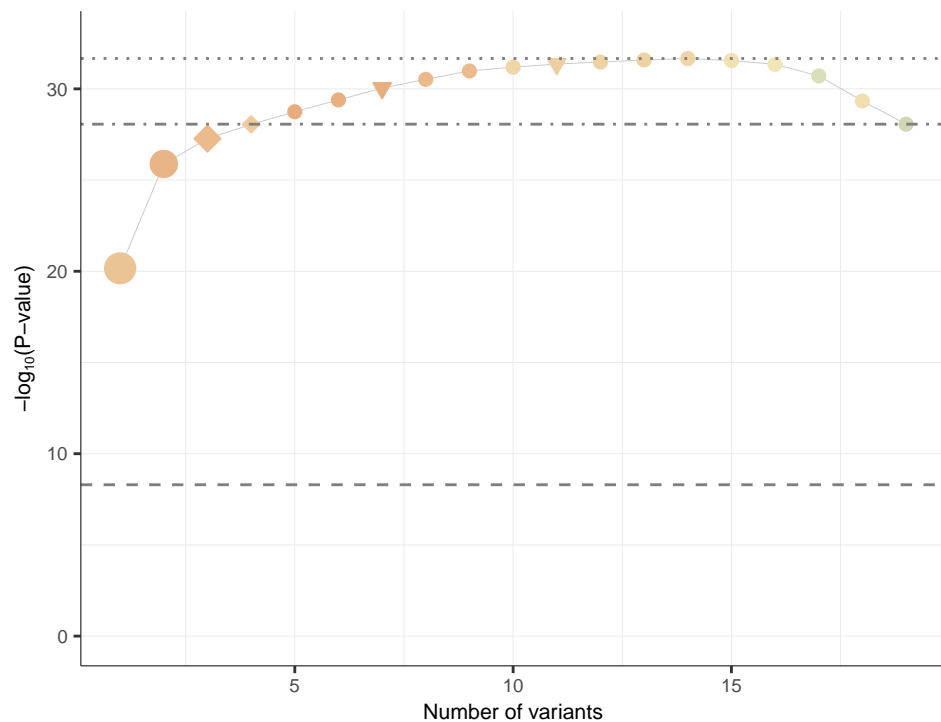
4-methylhexanoylglycine in urine at ACADM (LoF_mis)



4-methylhexanoylglycine in urine at ACADM (HI_mis)

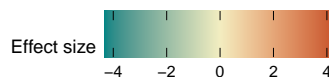


cis-4-decenoate (10:1n6)* in plasma at ACADM (LoF_mis)

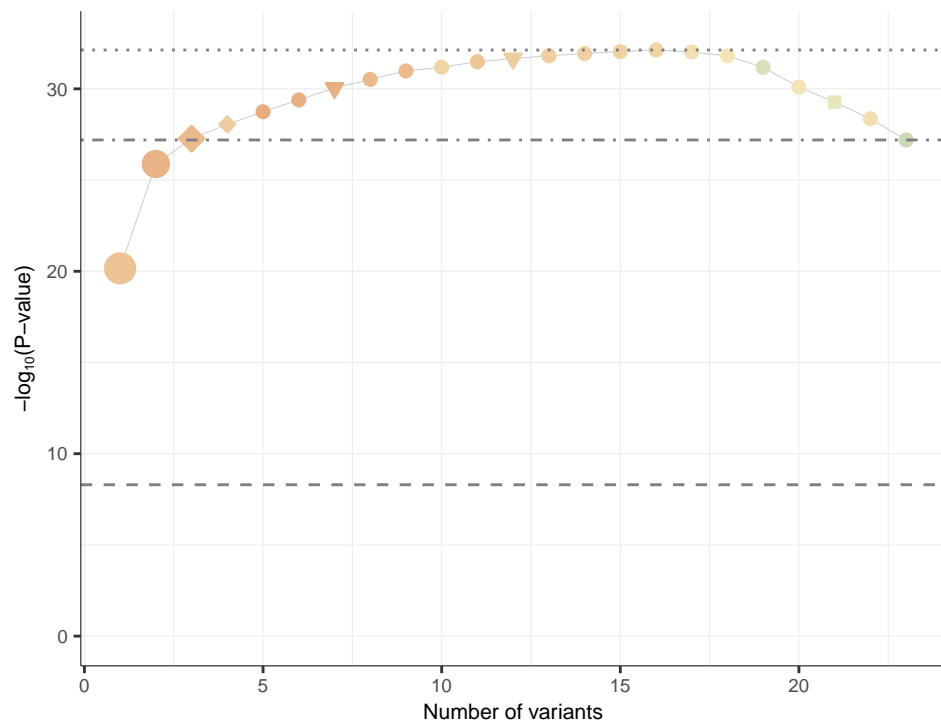


Variant consequence

- ◇ frameshift
- missense
- ▽ splicing
- start/stop lost



cis-4-decenoate (10:1n6)* in plasma at ACADM (HI_mis)



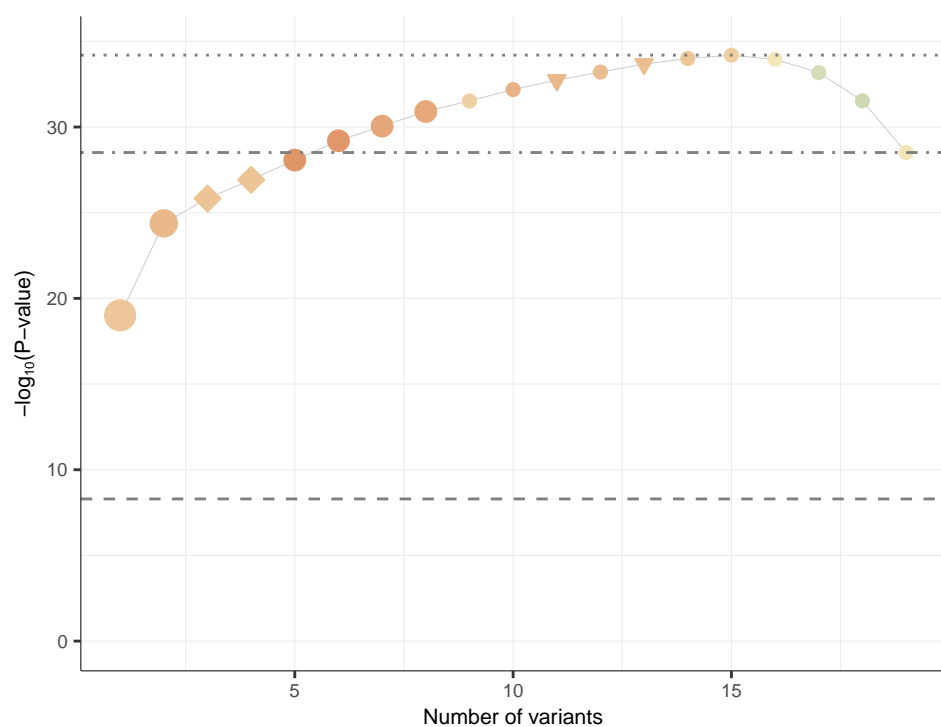
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8
- <1e-11

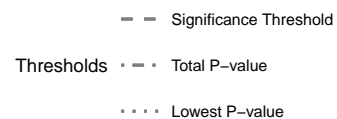
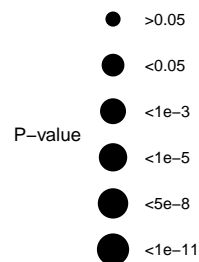
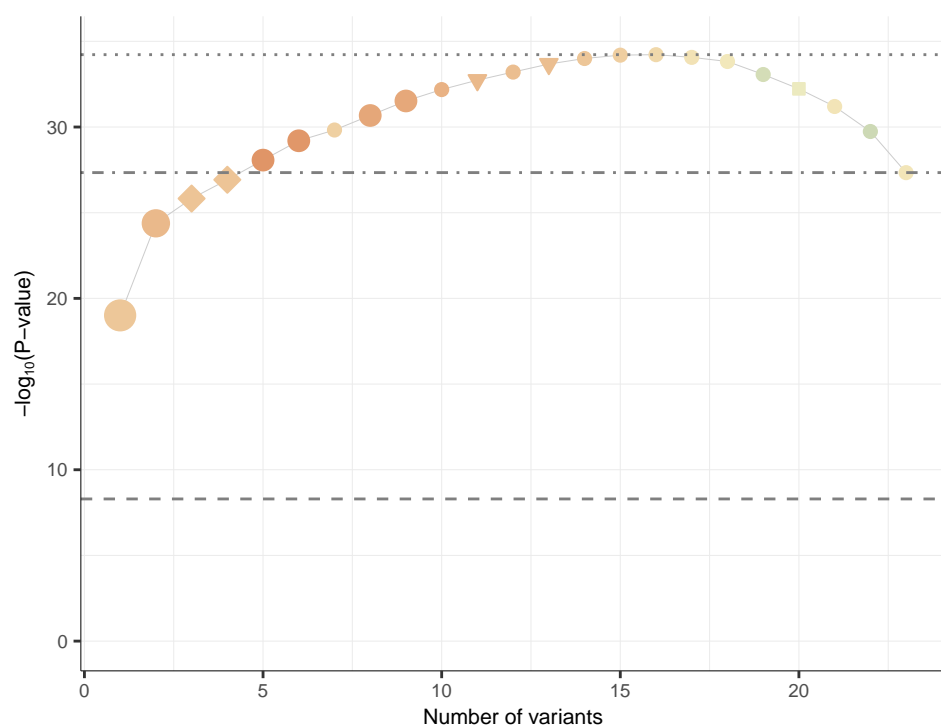
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

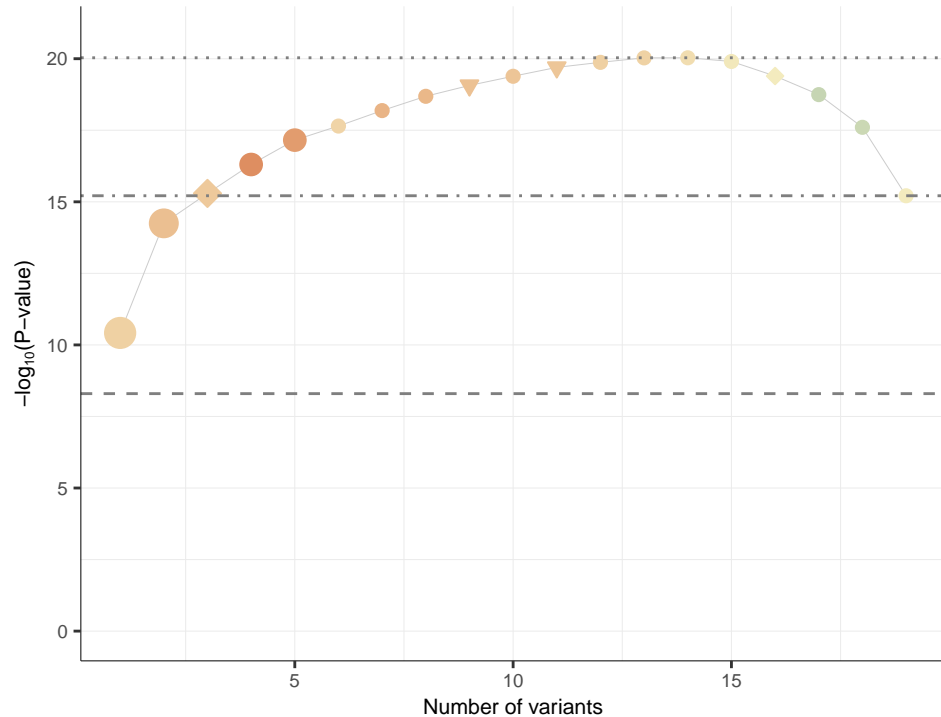
cis-4-decenoylcarnitine (C10:1) in plasma at ACADM (LoF_mis)



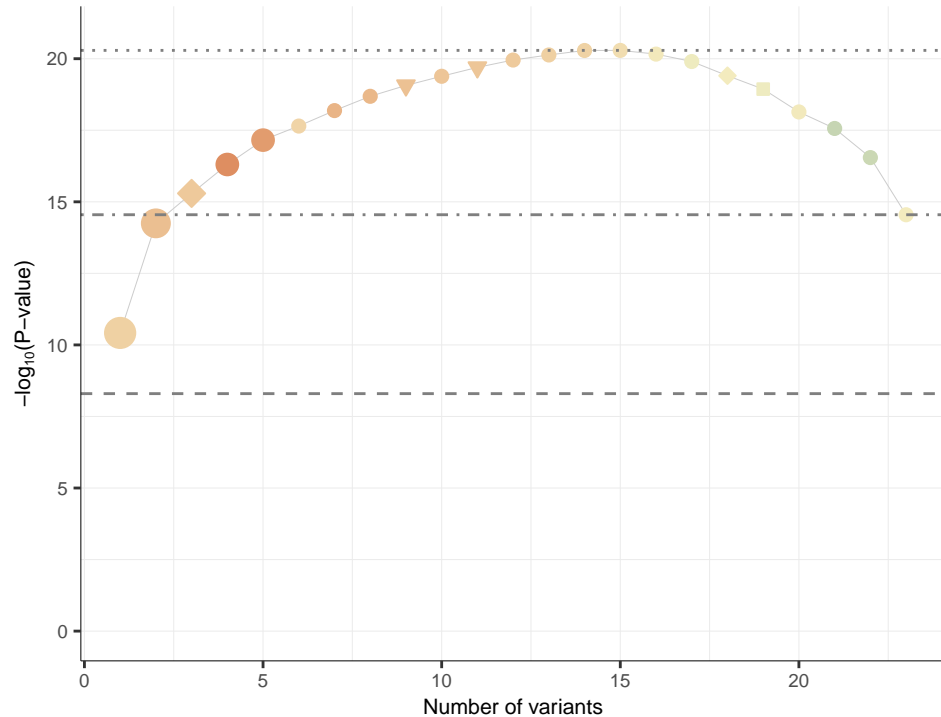
cis-4-decenoylcarnitine (C10:1) in plasma at ACADM (HI_mis)



decanoylcarnitine (C10) in plasma at ACADM (LoF_mis)

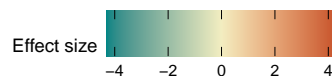


decanoylcarnitine (C10) in plasma at ACADM (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- ▽ splicing
- start/stop lost



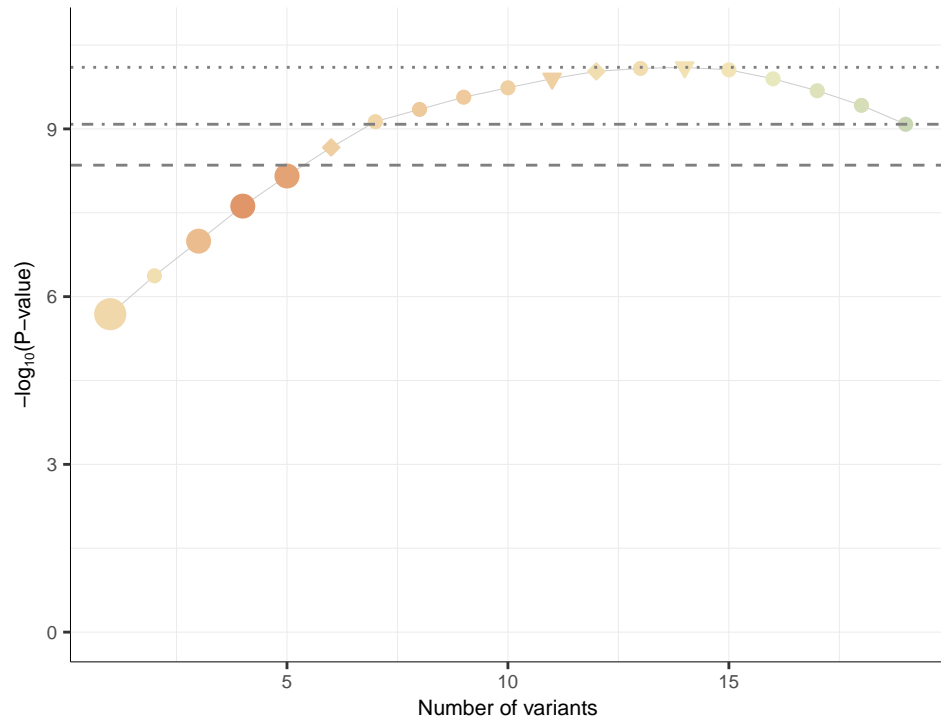
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8

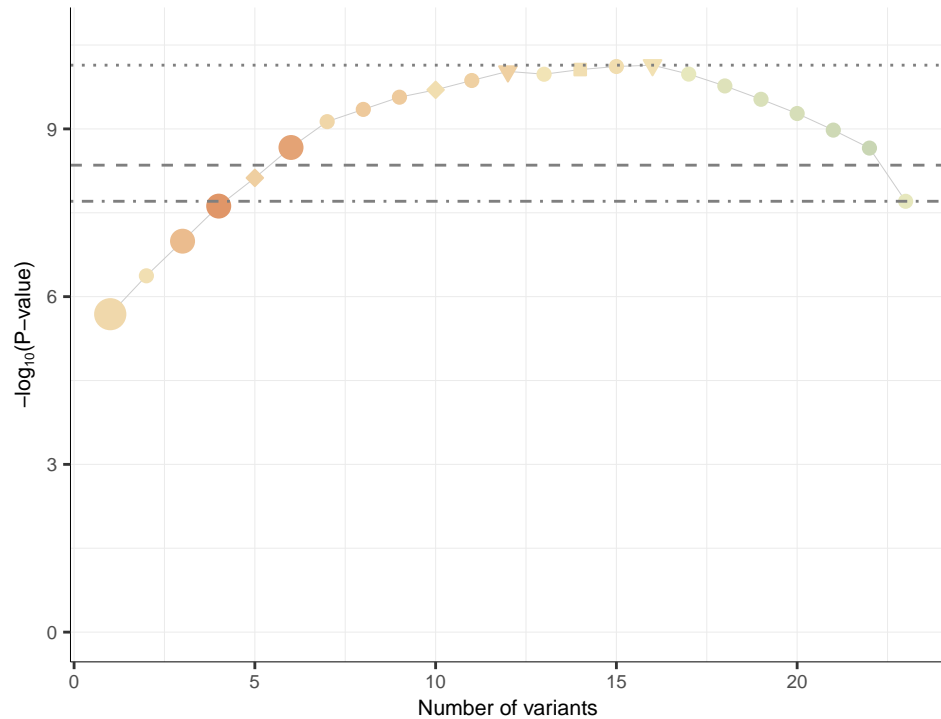
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

glycine conjugate of C6H10O2 (1)* in urine at ACADM (LoF_mis)

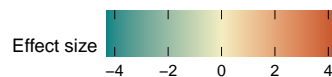


glycine conjugate of C6H10O2 (1)* in urine at ACADM (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- ▽ splicing
- start/stop lost



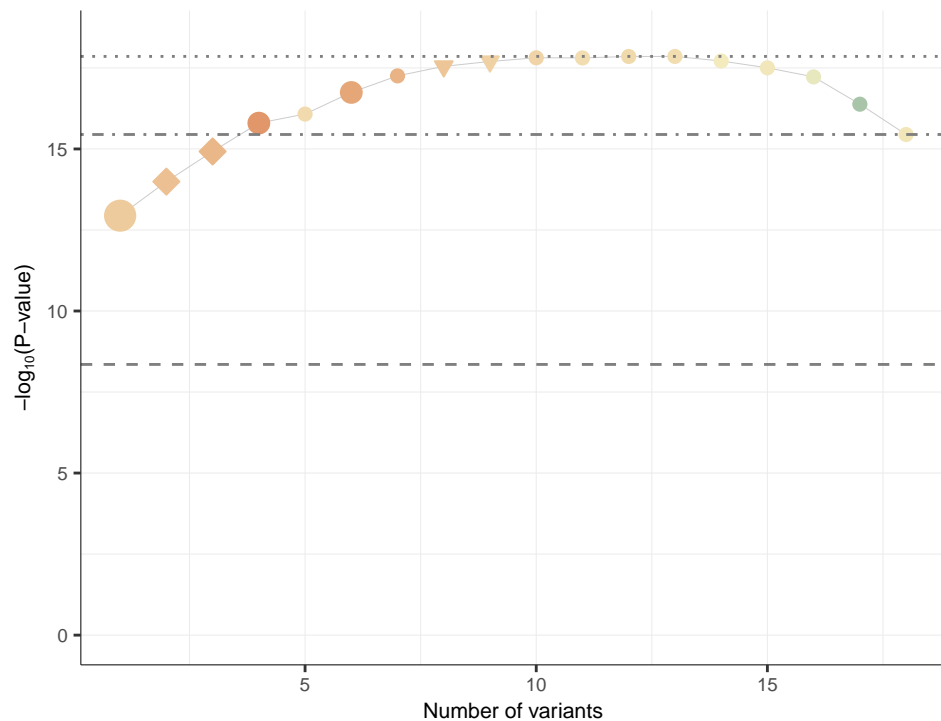
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5

Thresholds

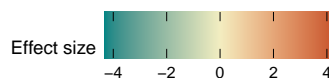
- Significance Threshold
- - - Total P-value
- ... Lowest P-value

heptanoylglutamine in urine at ACADM (LoF_mis)

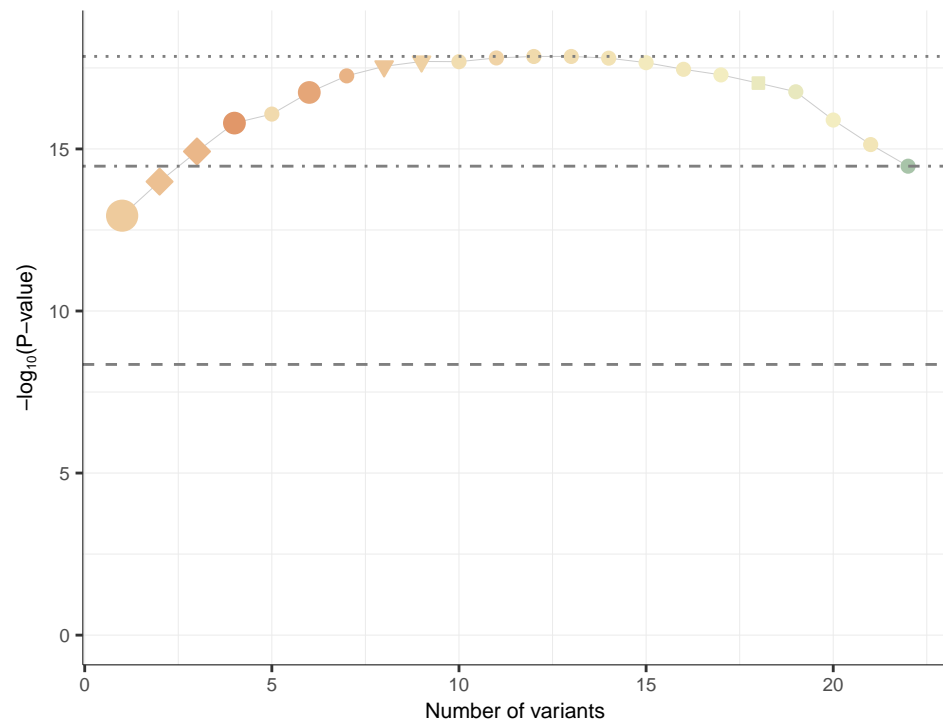


Variant consequence

- ◇ frameshift
- missense
- ▽ splicing
- start/stop lost



heptanoylglutamine in urine at ACADM (HI_mis)

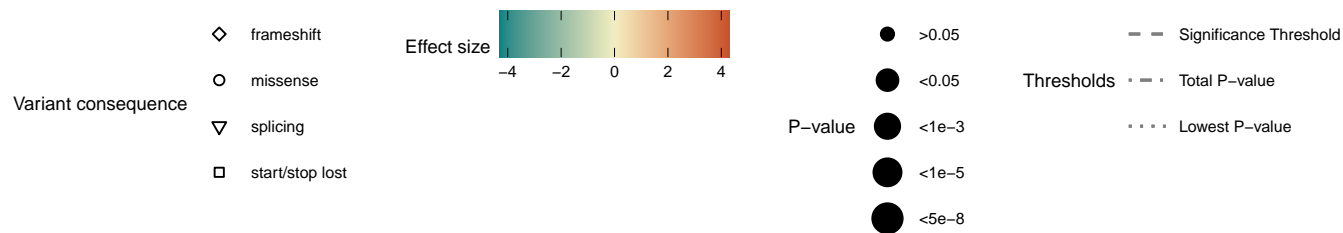
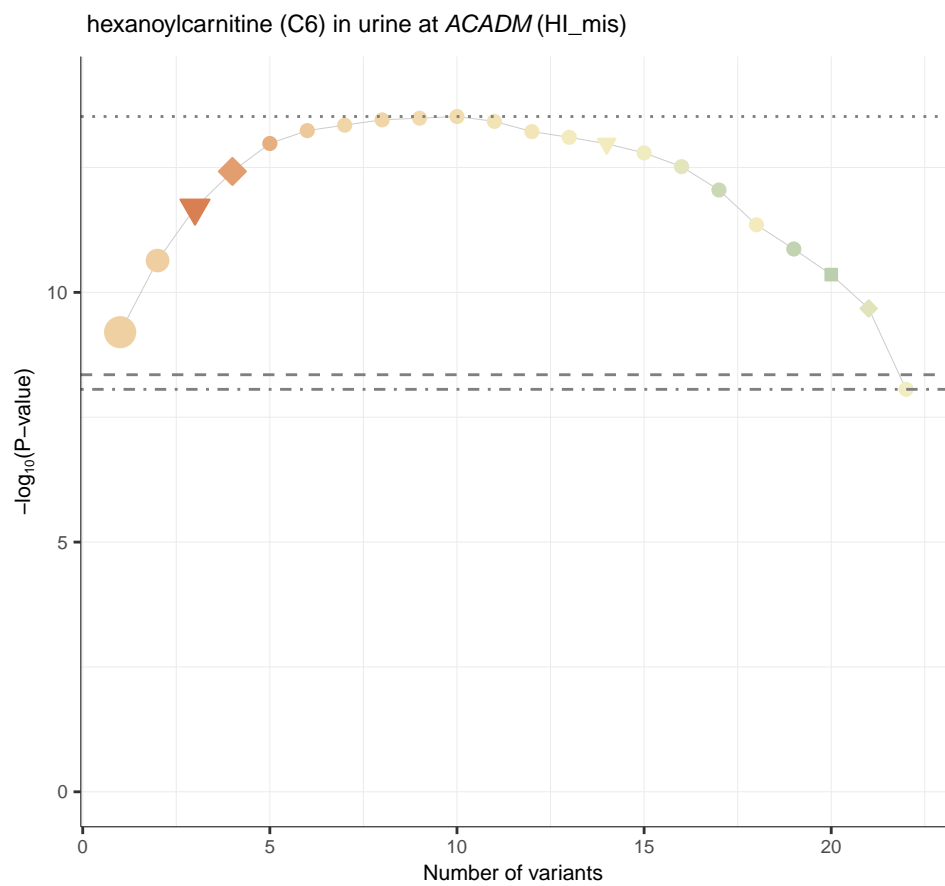
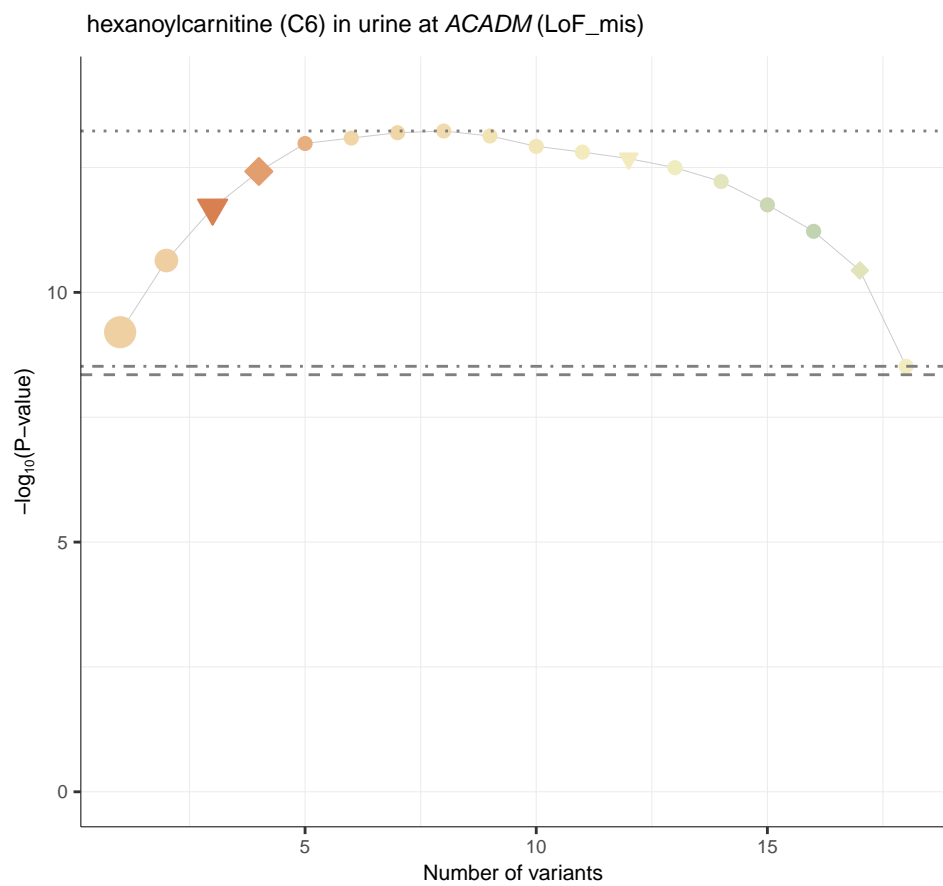
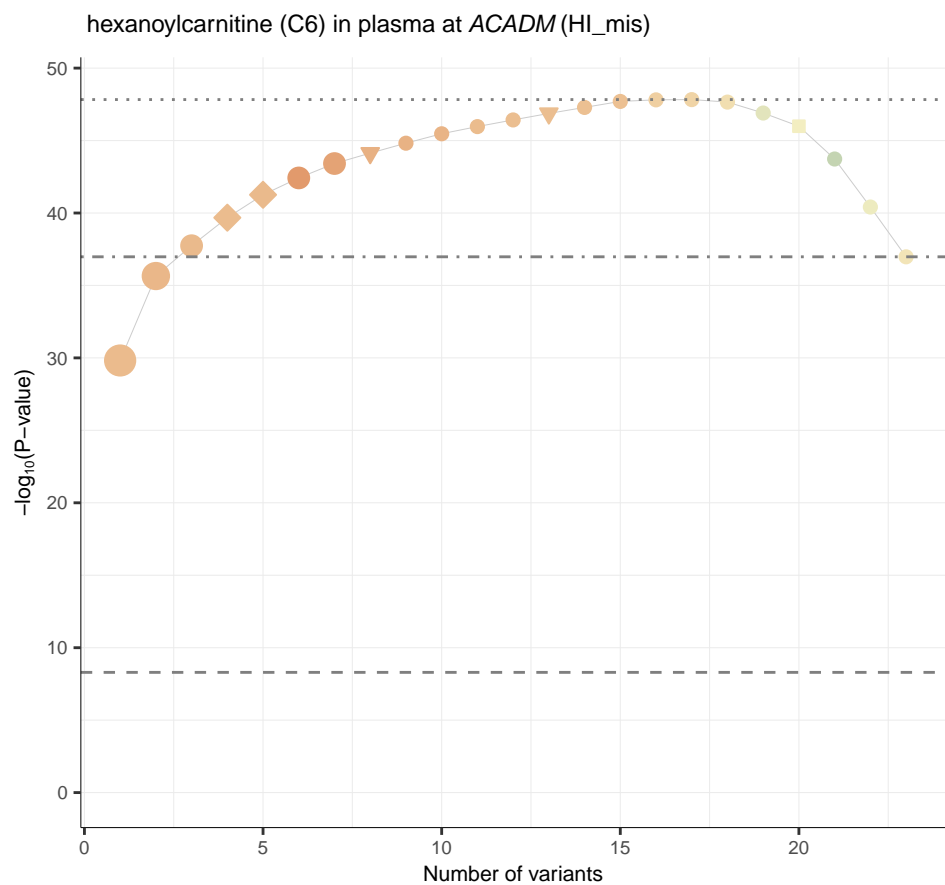
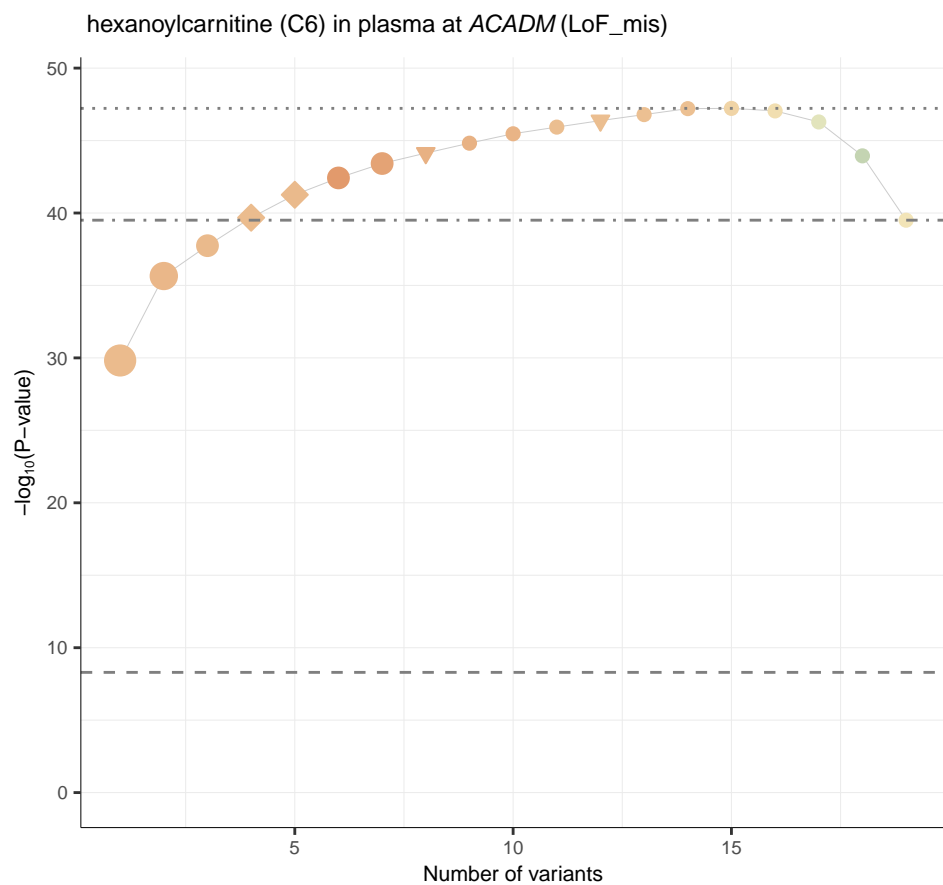


P-value

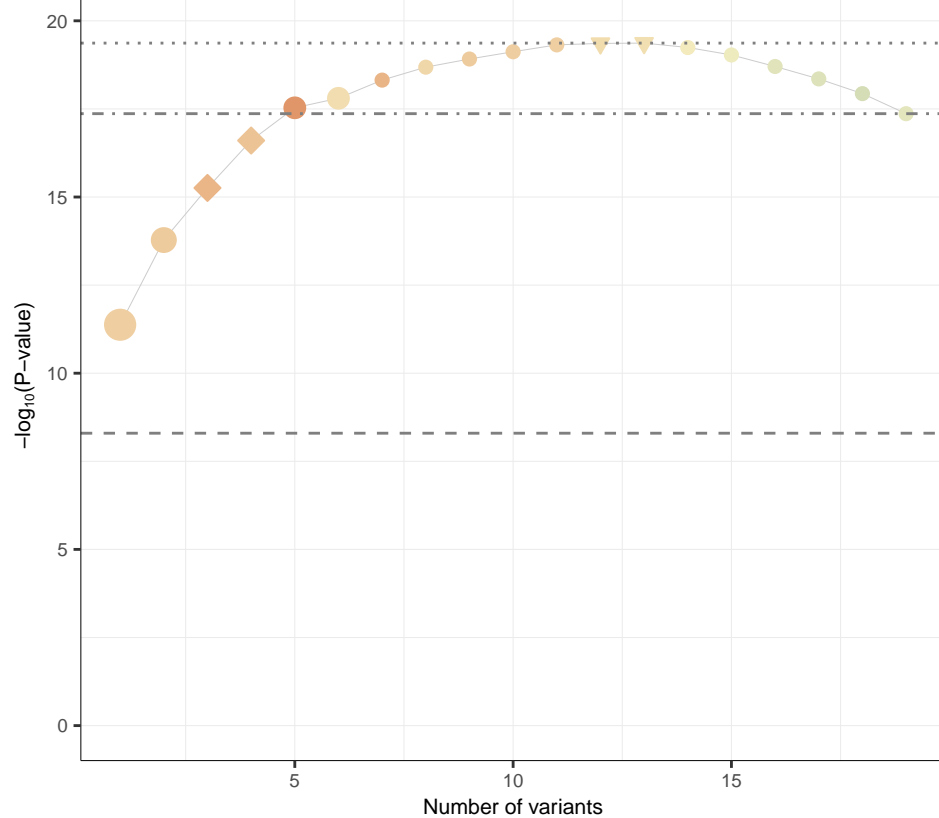
- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8
- <1e-11

Thresholds

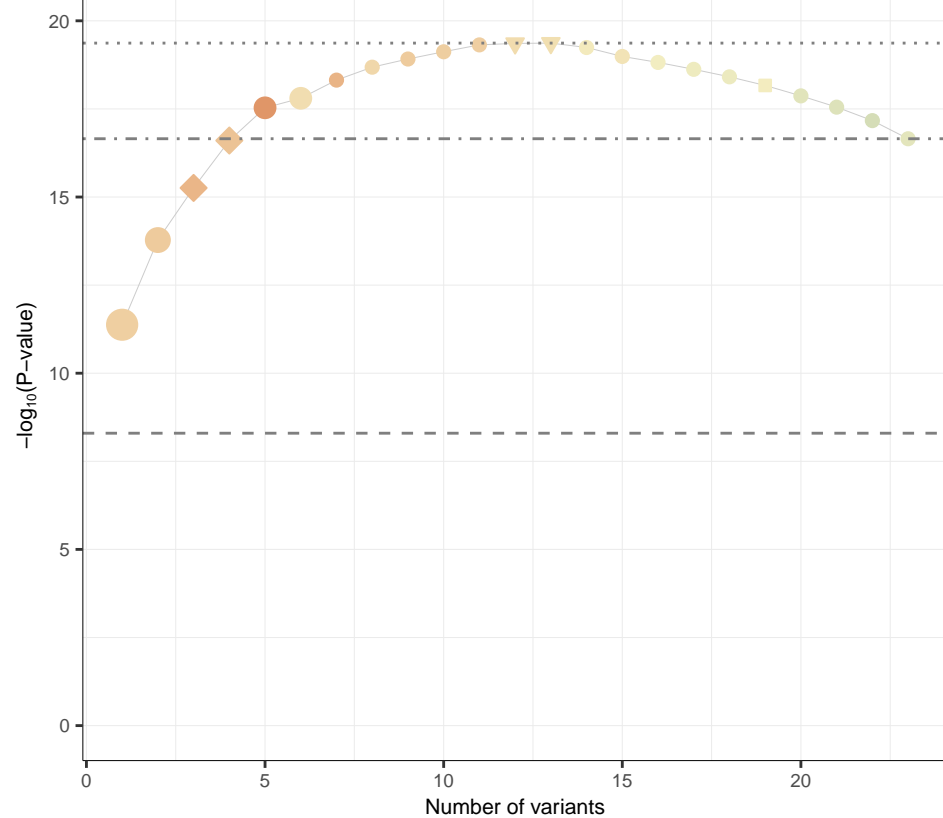
- Significance Threshold
- - - Total P-value
- ... Lowest P-value



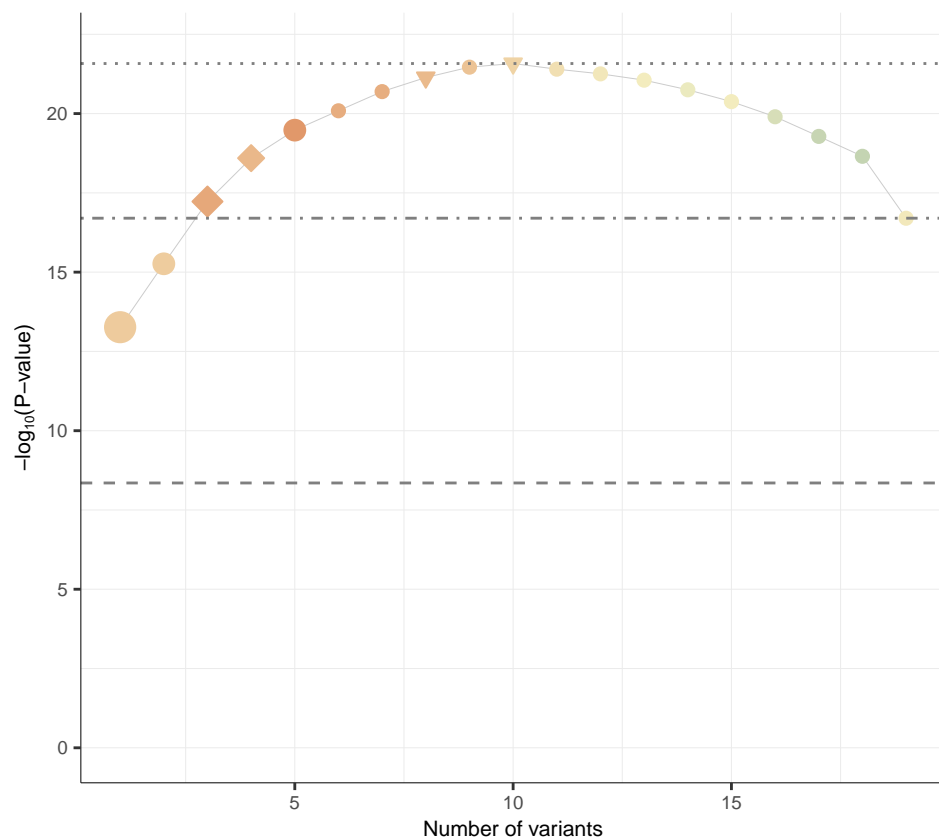
hexanoylglutamine in plasma at ACADM (LoF_mis)



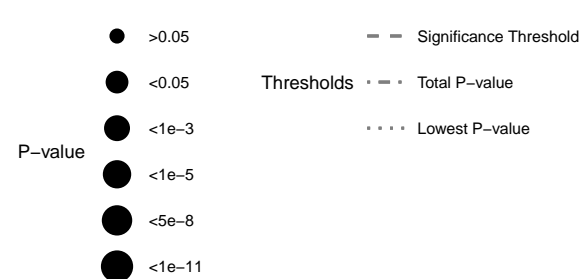
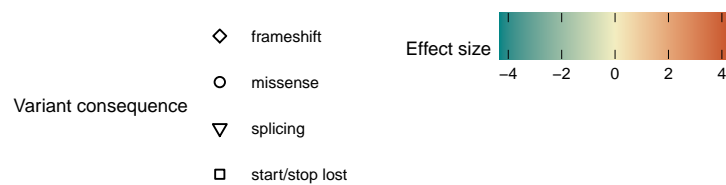
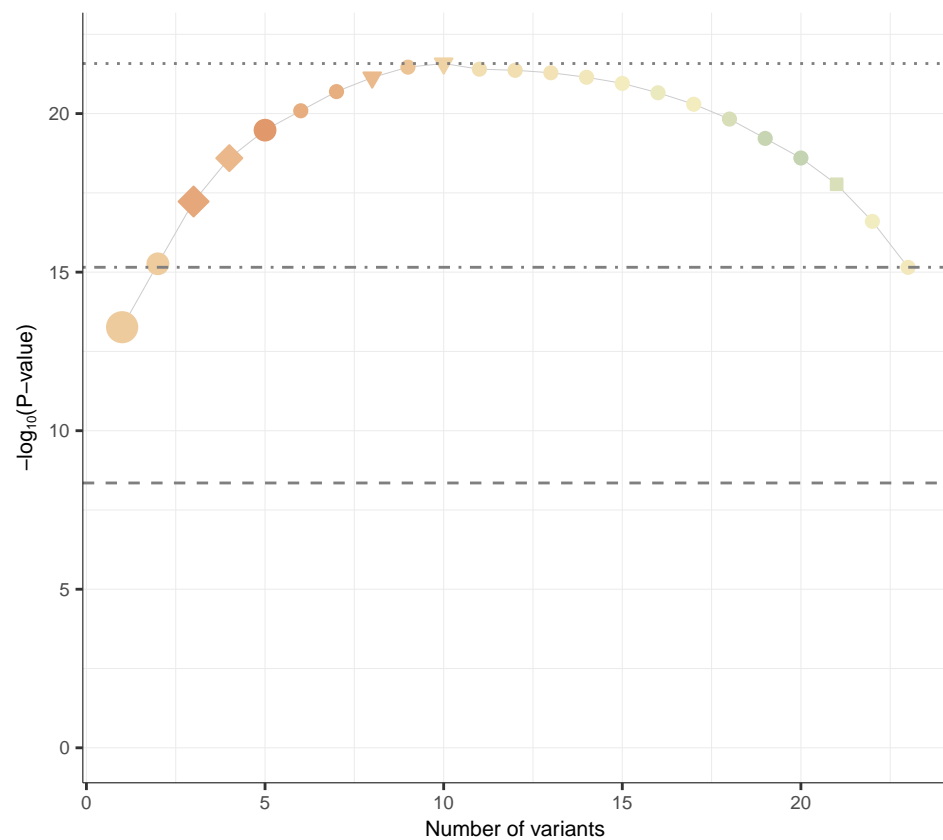
hexanoylglutamine in plasma at ACADM (HI_mis)



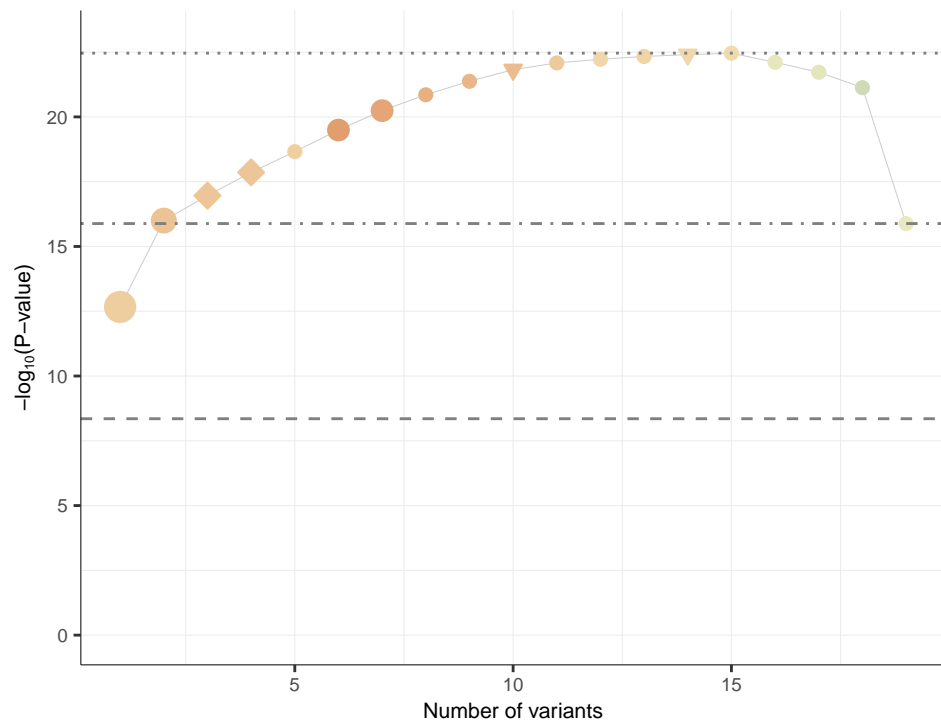
hexanoylglutamine in urine at ACADM (LoF_mis)



hexanoylglutamine in urine at ACADM (HI_mis)

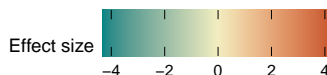


hexanoylglycine in urine at ACADM (LoF_mis)

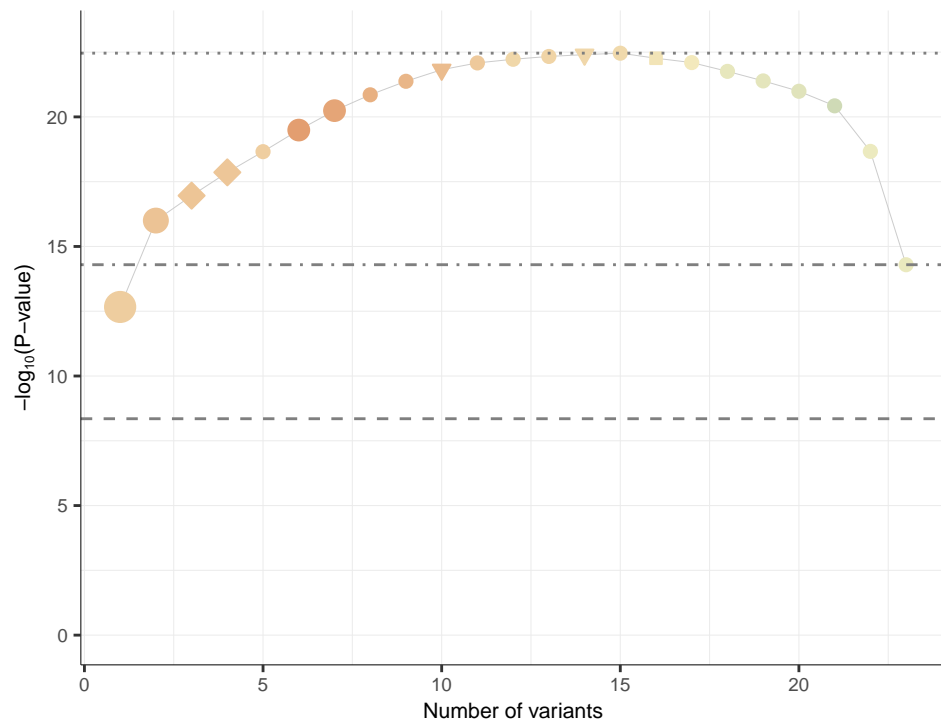


Variant consequence

- ◇ frameshift
- missense
- ▽ splicing
- start/stop lost



hexanoylglycine in urine at ACADM (HI_mis)



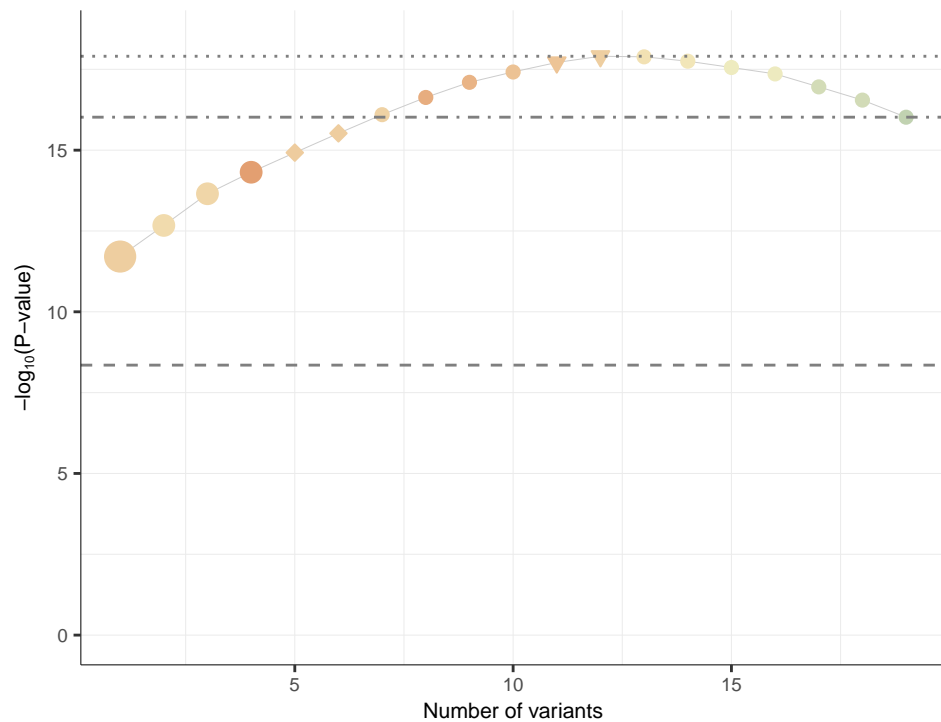
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8
- <1e-11

Thresholds

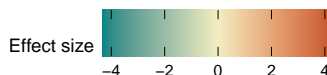
- Significance Threshold
- - - Total P-value
- ... Lowest P-value

hexanoyltaurine in urine at ACADM (LoF_mis)

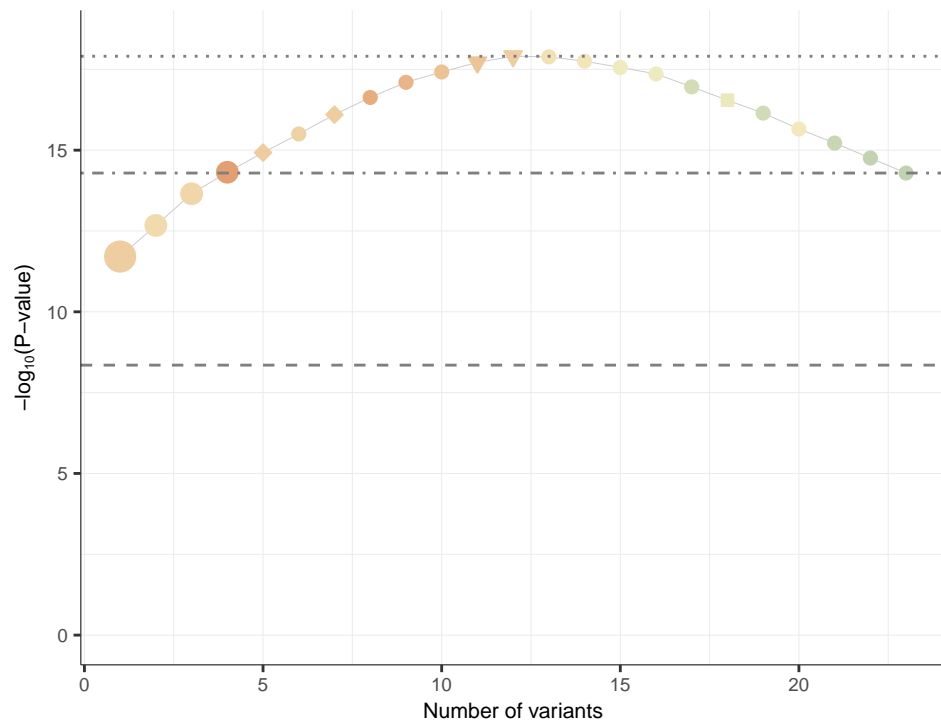


Variant consequence

- ◇ frameshift
- missense
- ▽ splicing
- start/stop lost



hexanoyltaurine in urine at ACADM (HI_mis)



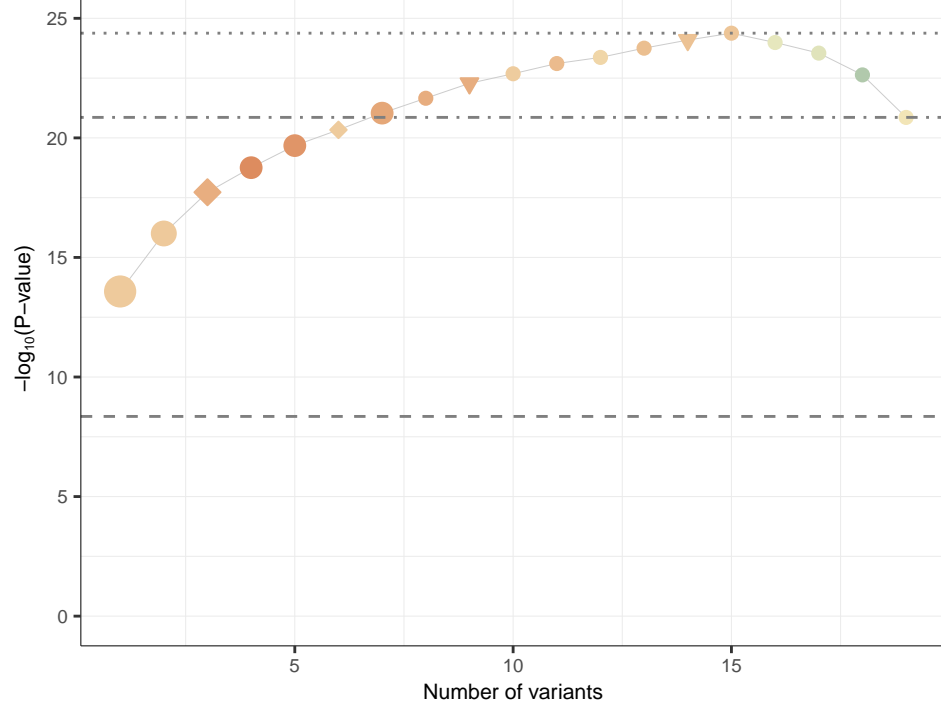
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8
- <1e-11

Thresholds

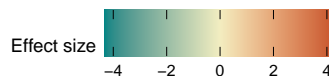
- Significance Threshold
- - - Total P-value
- ... Lowest P-value

isocaproylglutamine in urine at ACADM (LoF_mis)

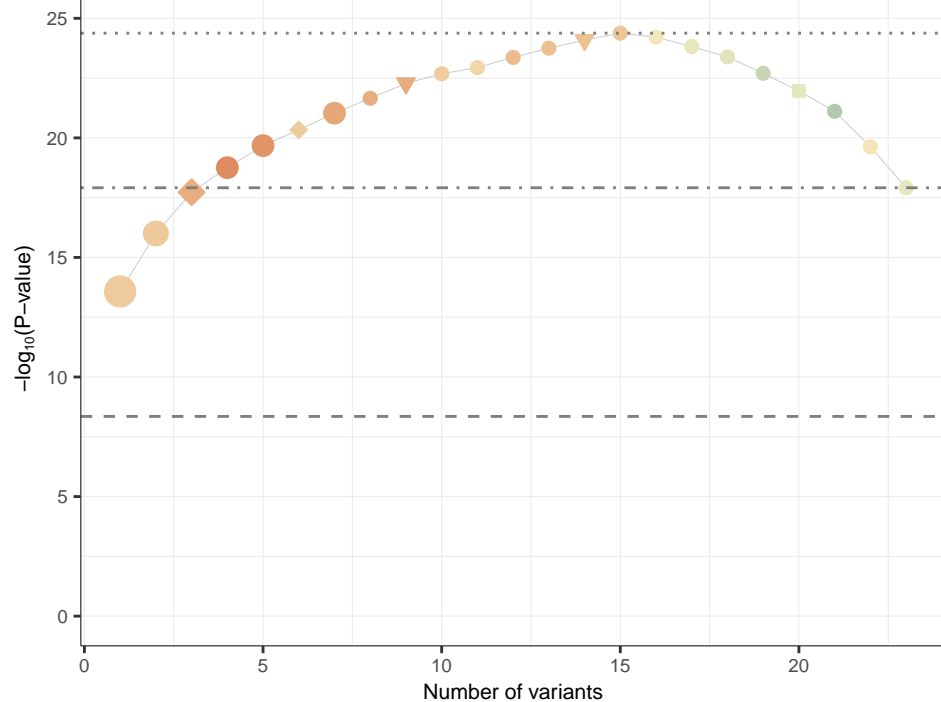


Variant consequence

- ◇ frameshift
- missense
- ▽ splicing
- start/stop lost



isocaproylglutamine in urine at ACADM (HI_mis)



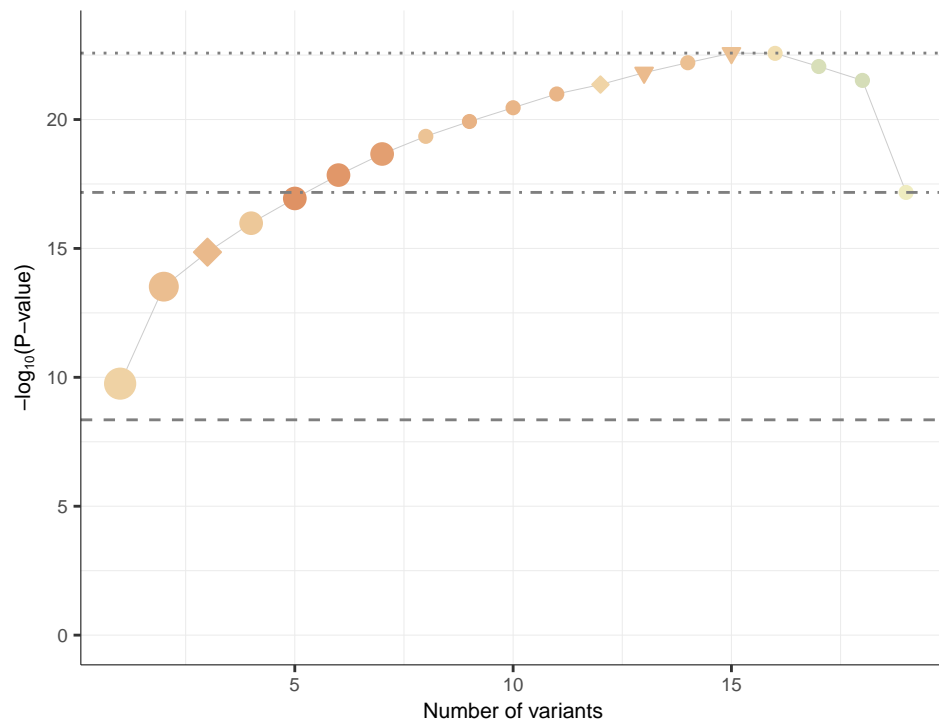
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8
- <1e-11

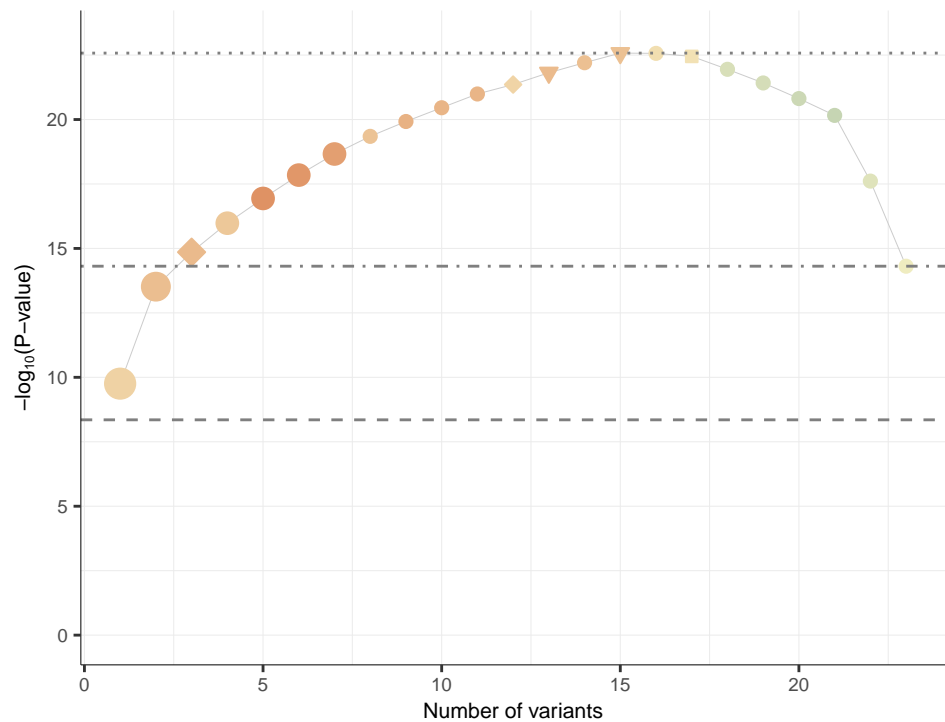
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

isocaproylglycine in urine at ACADM (LoF_mis)



isocaproylglycine in urine at ACADM (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- ▽ splicing
- start/stop lost

Effect size

-4 -2 0 2 4

P-value

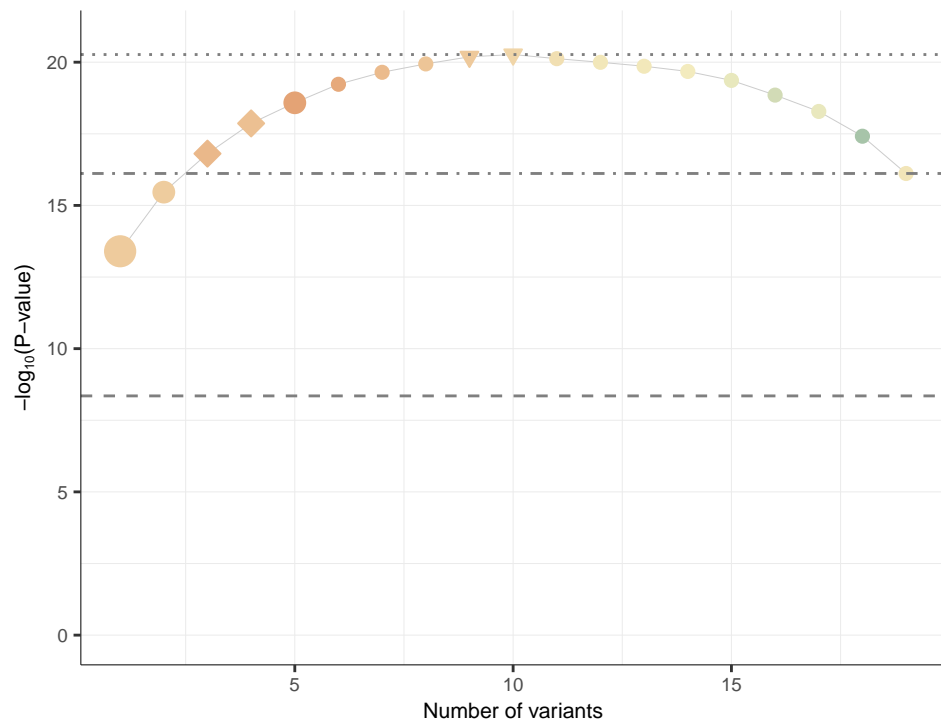
- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8

Significance Threshold

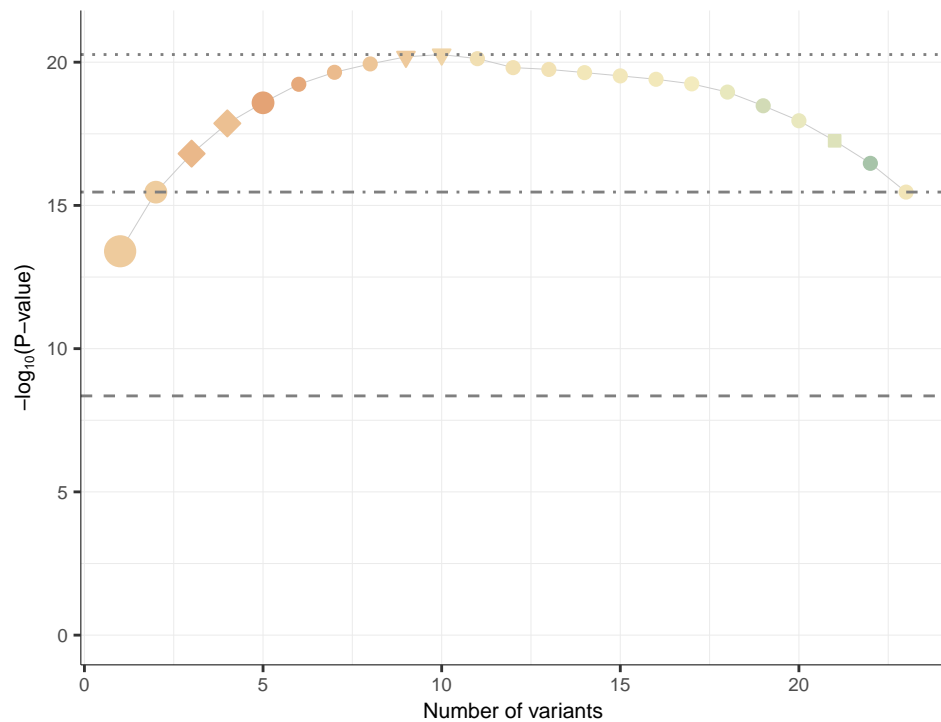
Thresholds

- - - Total P-value
- · · · · Lowest P-value

N-octanoylglutamine in urine at *ACADM* (LoF_mis)

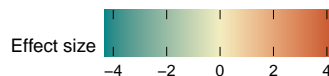


N-octanoylglutamine in urine at *ACADM* (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- ▽ splicing
- start/stop lost



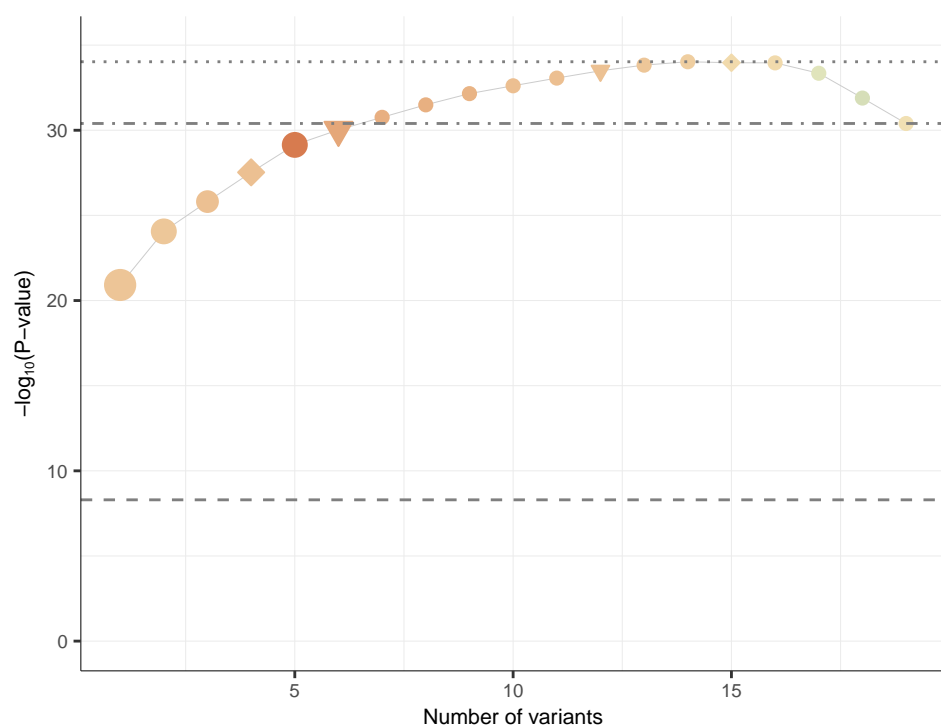
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8
- <1e-11

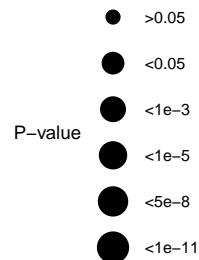
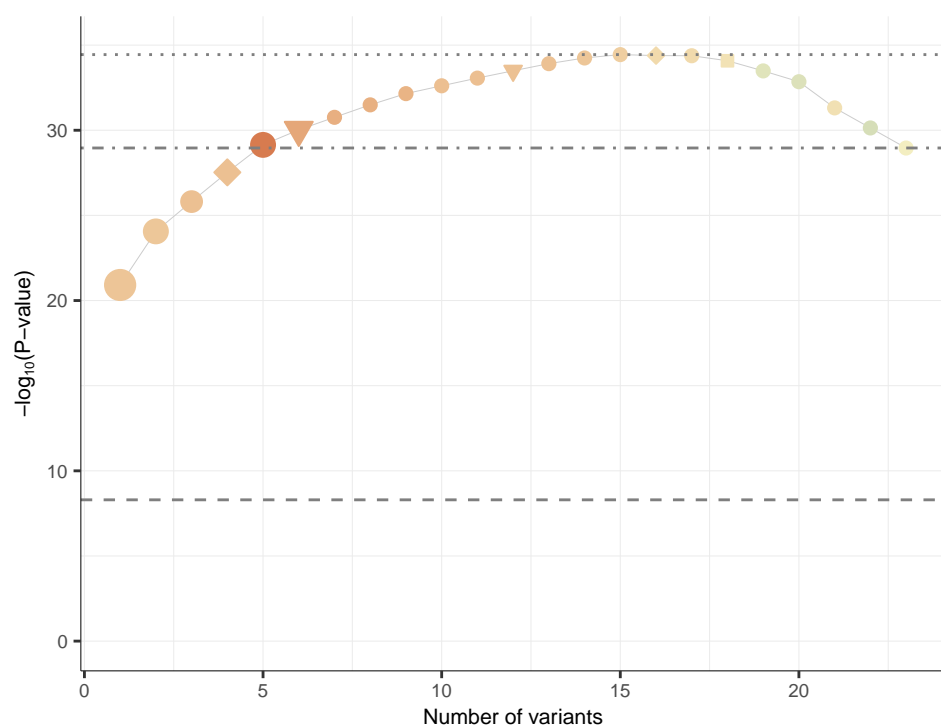
Thresholds

- Significance Threshold
- - - Total P-value
- Lowest P-value

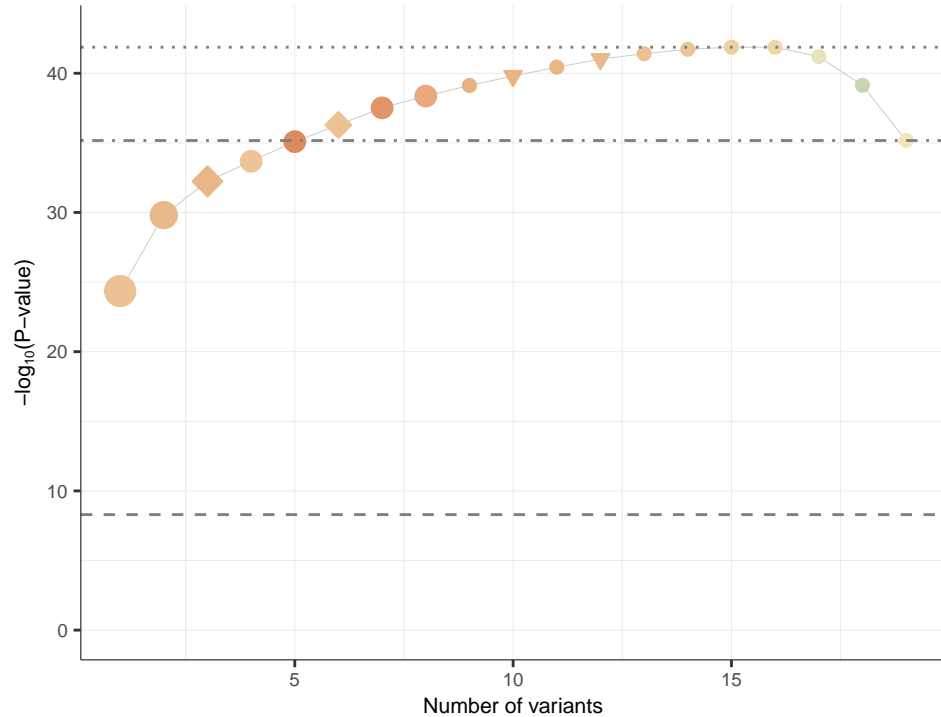
nonanoylcarnitine (C9) in plasma at ACADM (LoF_mis)



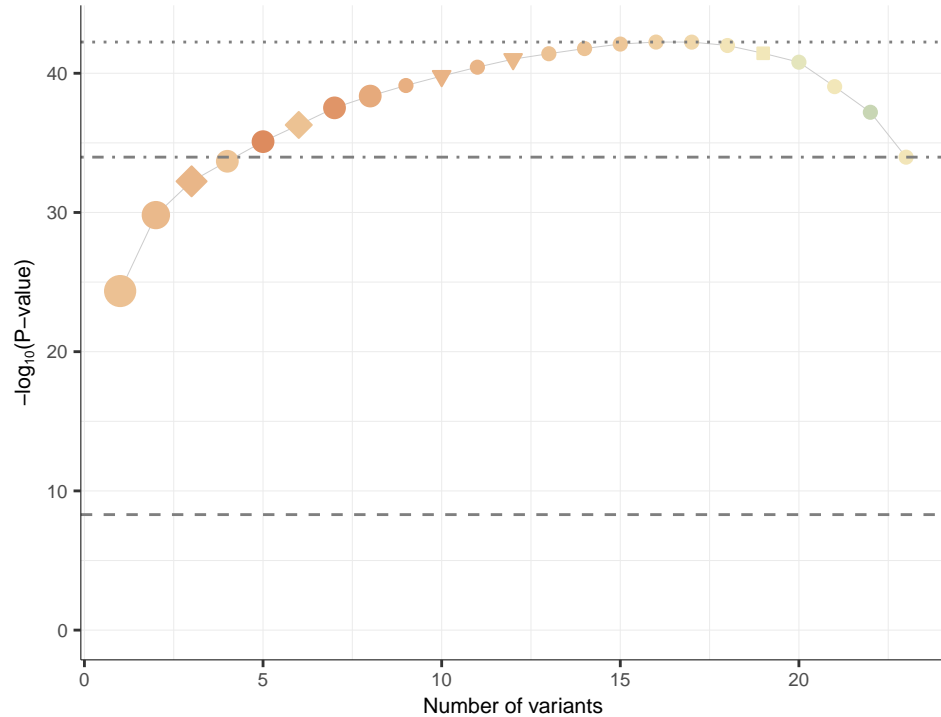
nonanoylcarnitine (C9) in plasma at ACADM (HI_mis)



octanoylcarnitine (C8) in plasma at ACADM (LoF_mis)



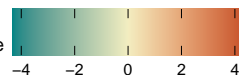
octanoylcarnitine (C8) in plasma at ACADM (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- ▽ splicing
- start/stop lost

Effect size

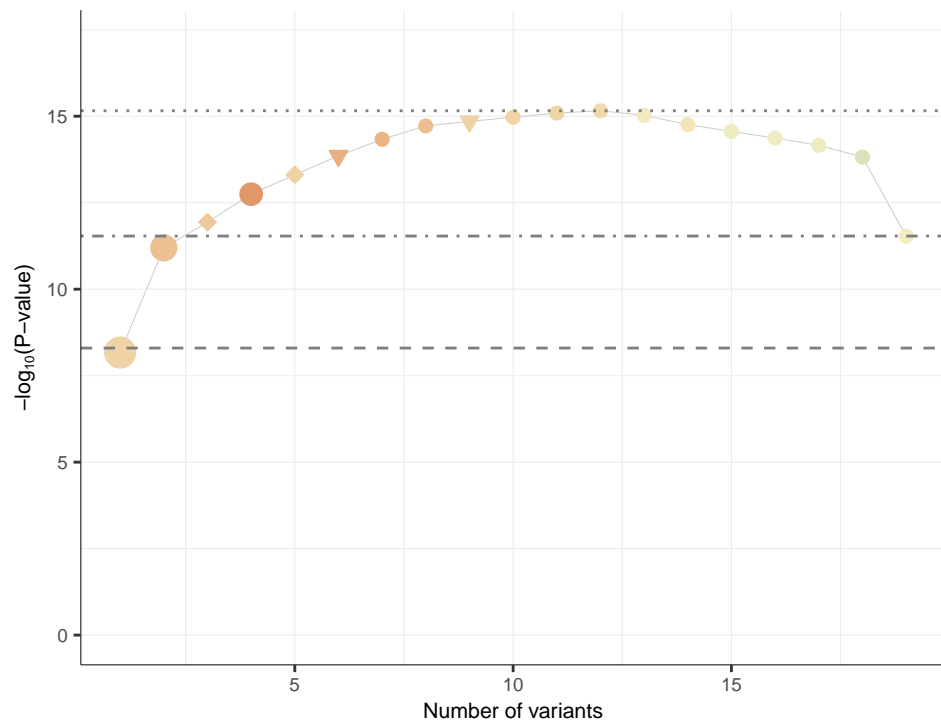


P-value

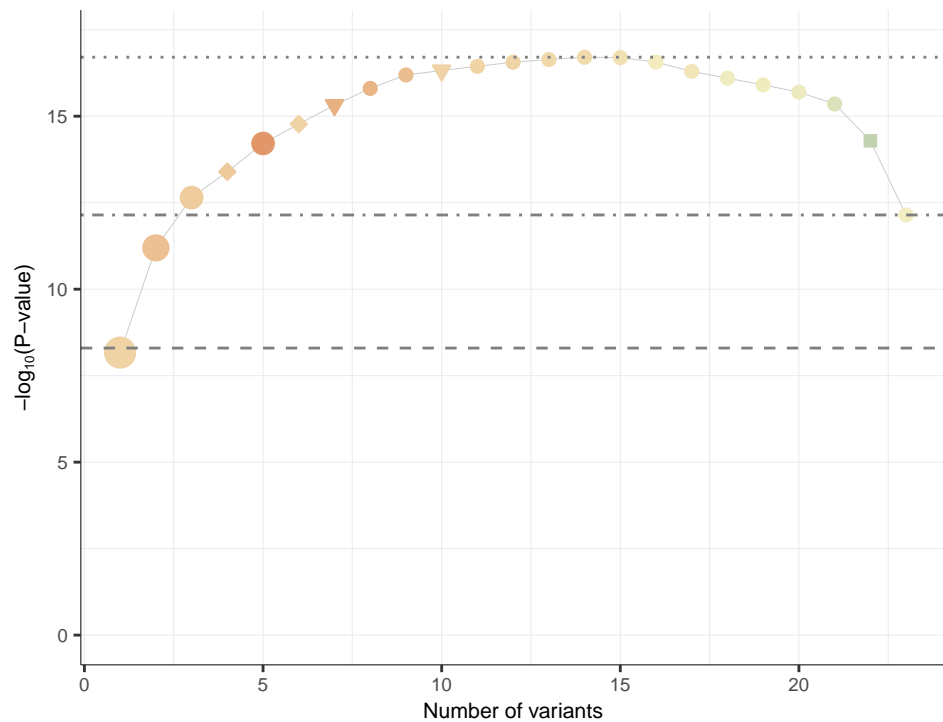
- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8
- <1e-11

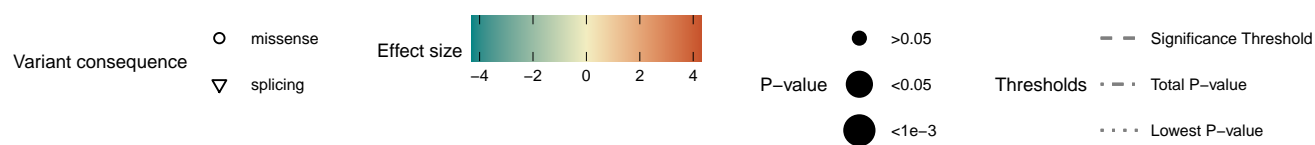
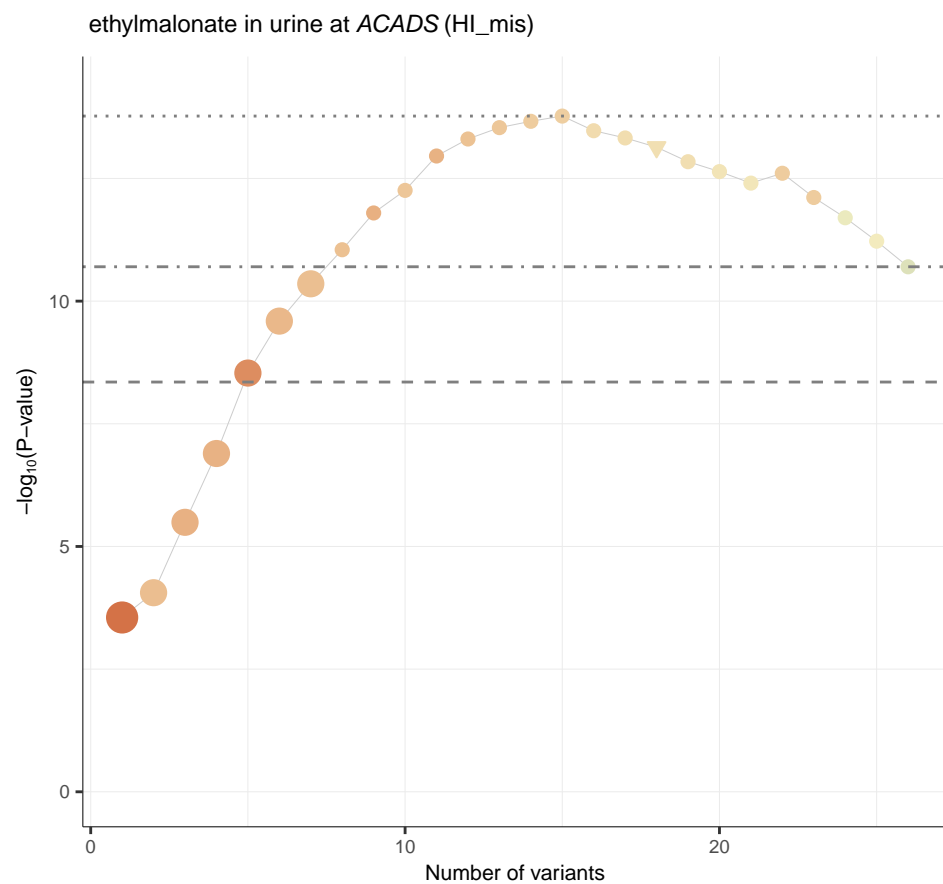
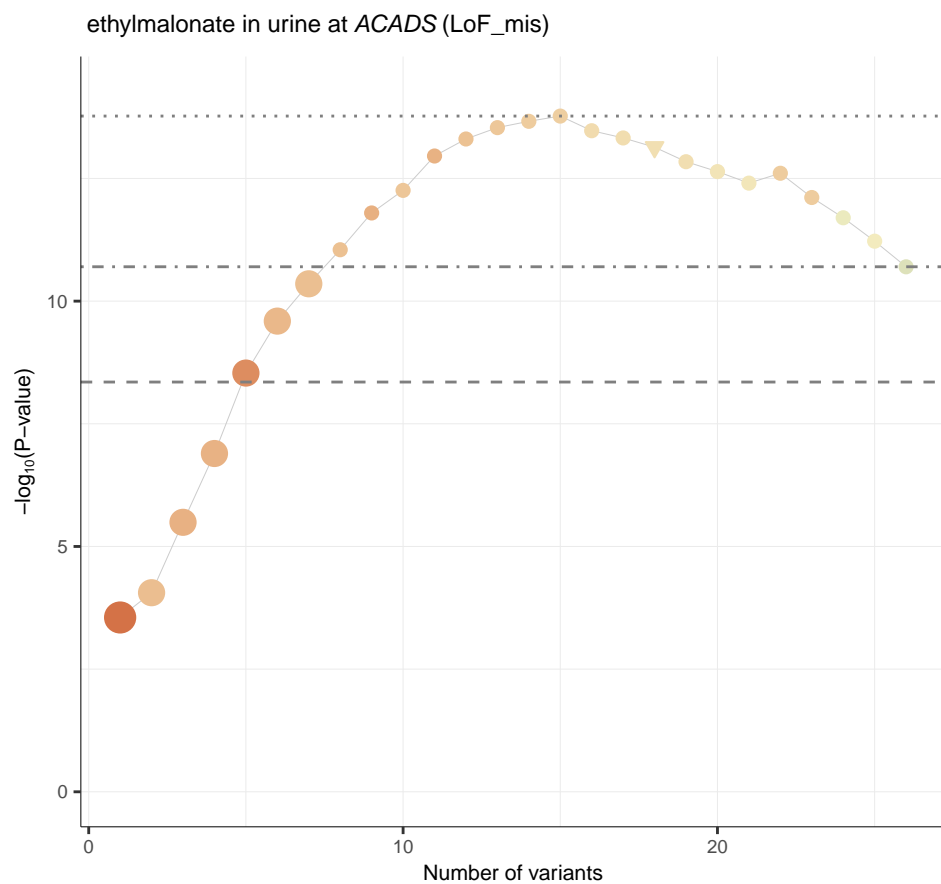
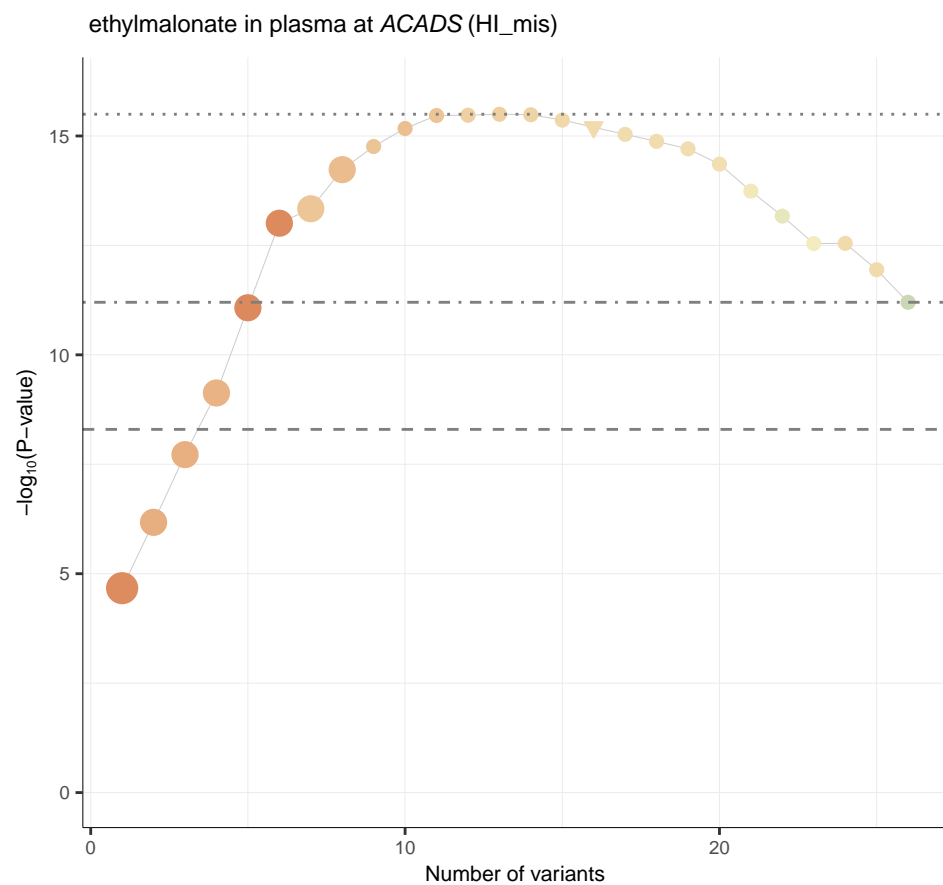
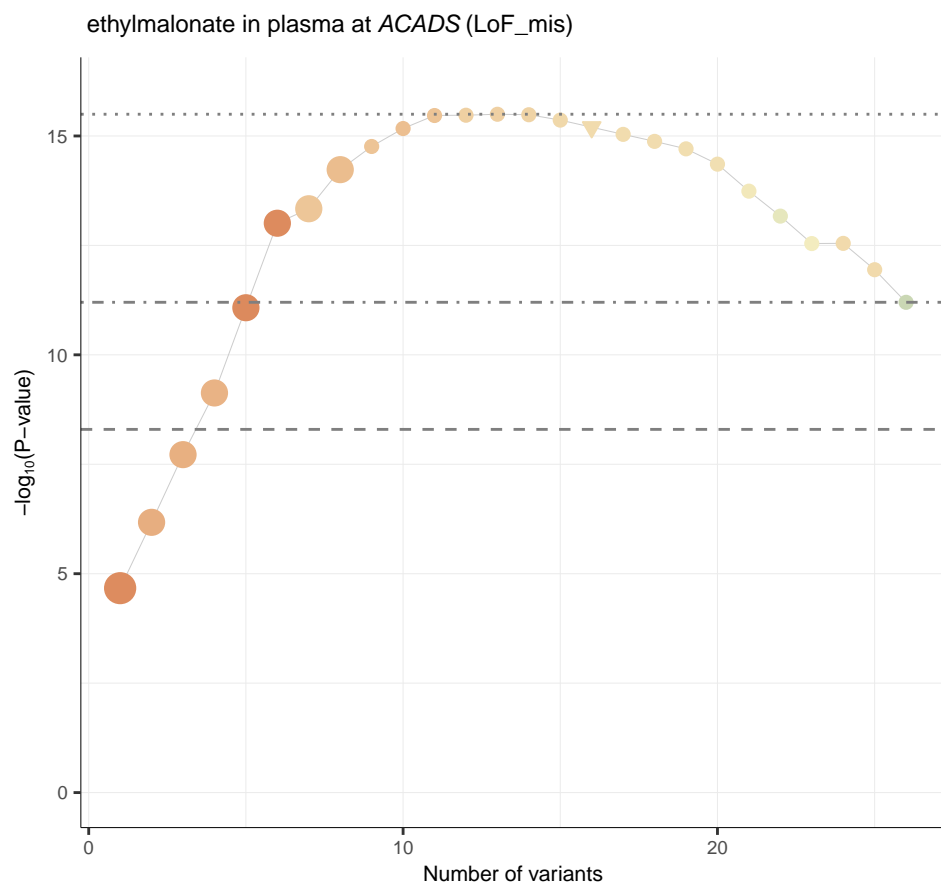
- Significance Threshold
- - - Total P-value
- Lowest P-value

X - 21607 in plasma at ACADM (LoF_mis)

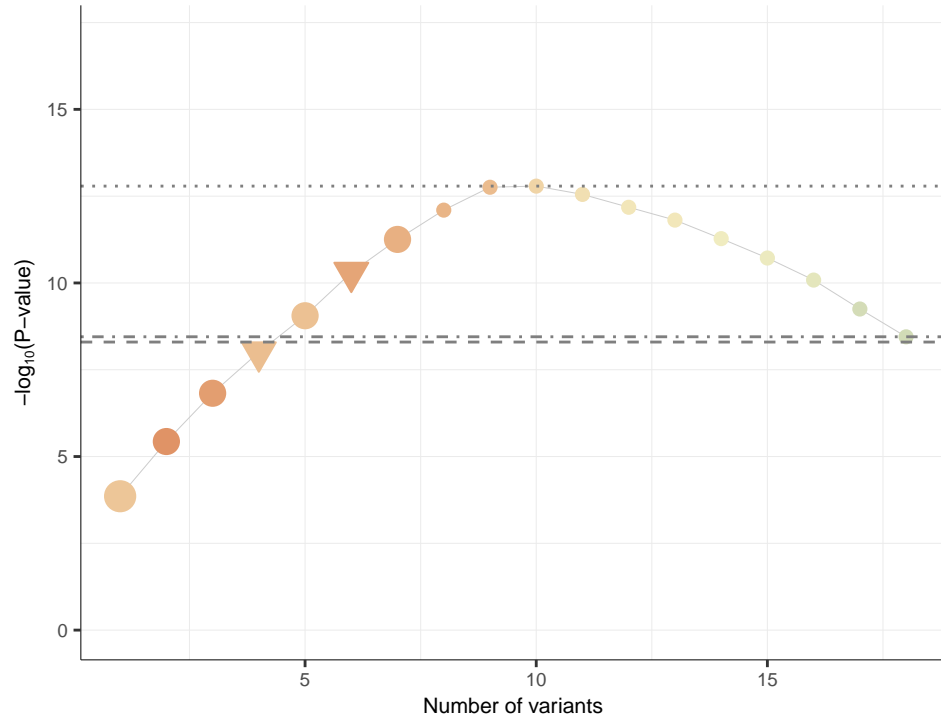


X - 21607 in plasma at ACADM (HI_mis)

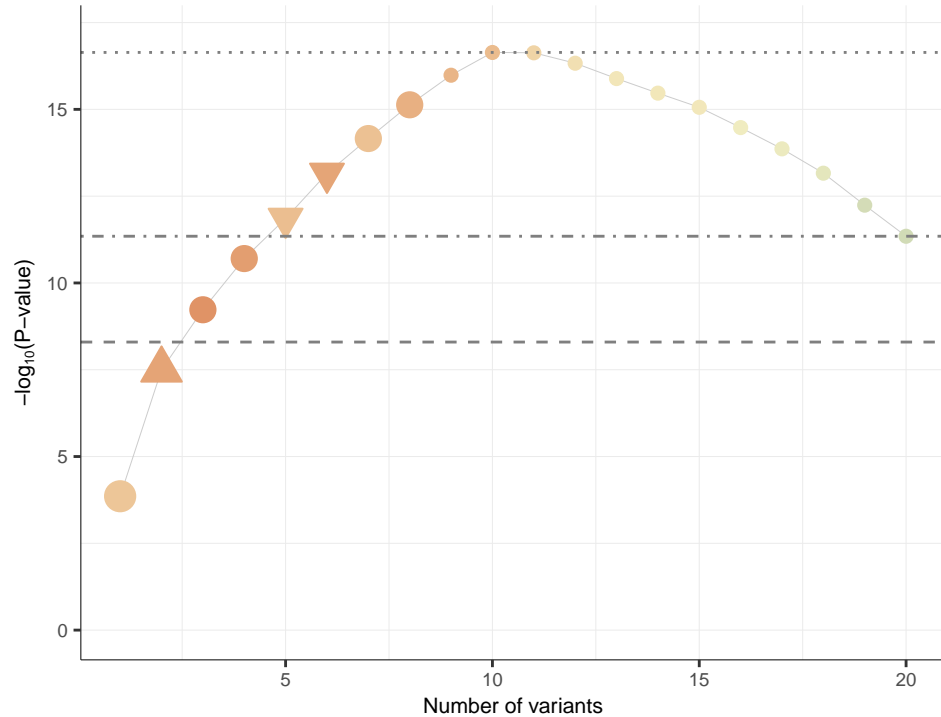




2-methylbutyrylcarnitine (C5) in plasma at *ACADSB* (LoF_mis)



2-methylbutyrylcarnitine (C5) in plasma at *ACADSB* (HI_mis)



Variant consequence

- missense
- ▽ splicing
- △ stop gained

Effect size

-4 -2 0 2 4

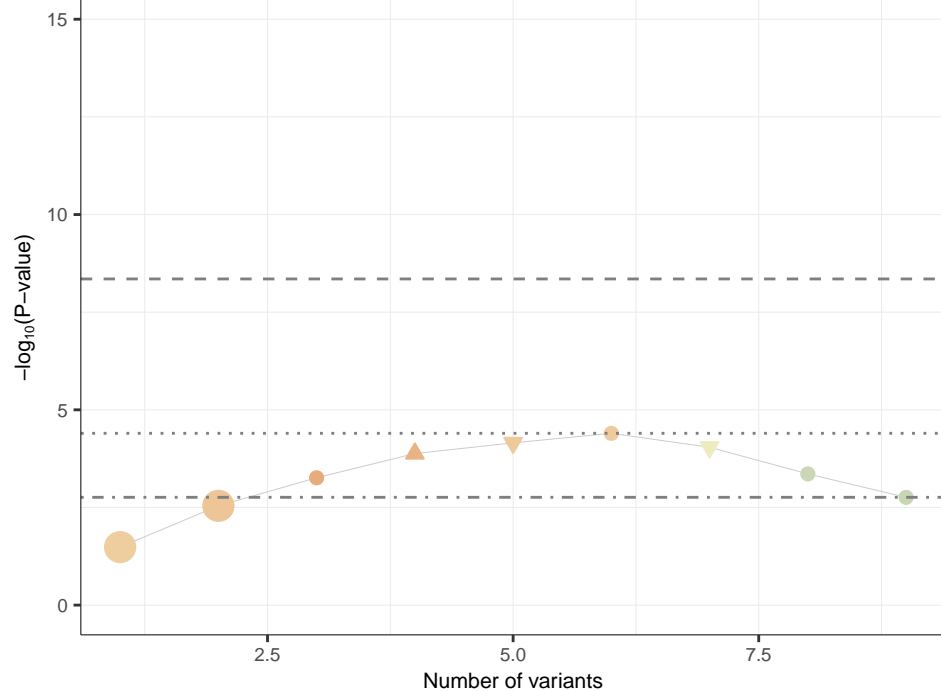
P-value

- >0.05
- <0.05
- <1e-3

Thresholds

- — Significance Threshold
- - - Total P-value
- ... Lowest P-value

ethylmalonate in urine at ACSF3 (LoF_mis)



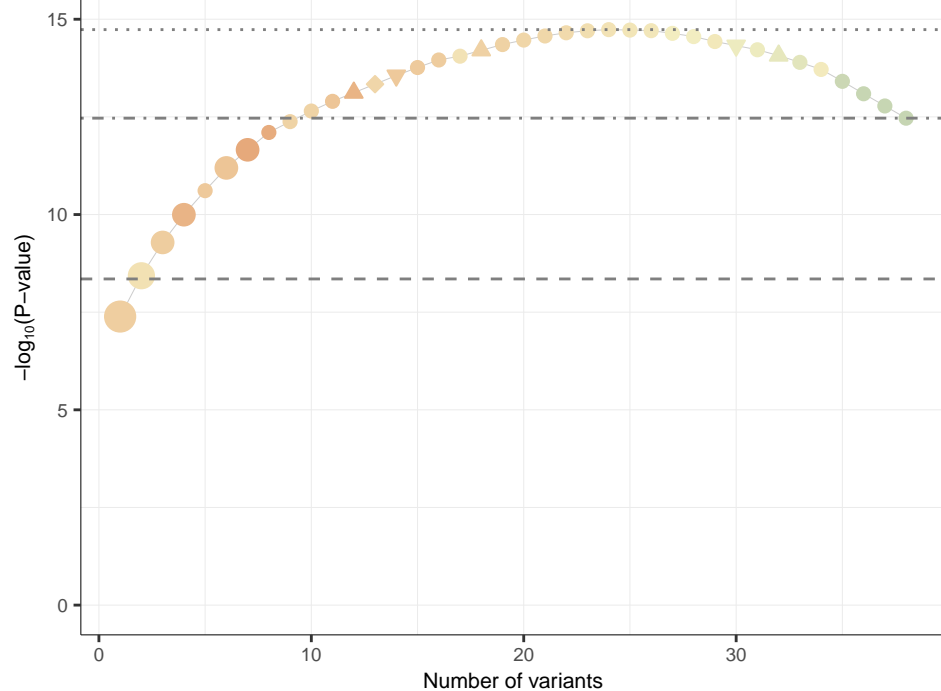
Variant consequence

- ◇ frameshift
- missense
- ▽ splicing
- △ stop gained

Effect size

-4 -2 0 2 4

ethylmalonate in urine at ACSF3 (HI_mis)



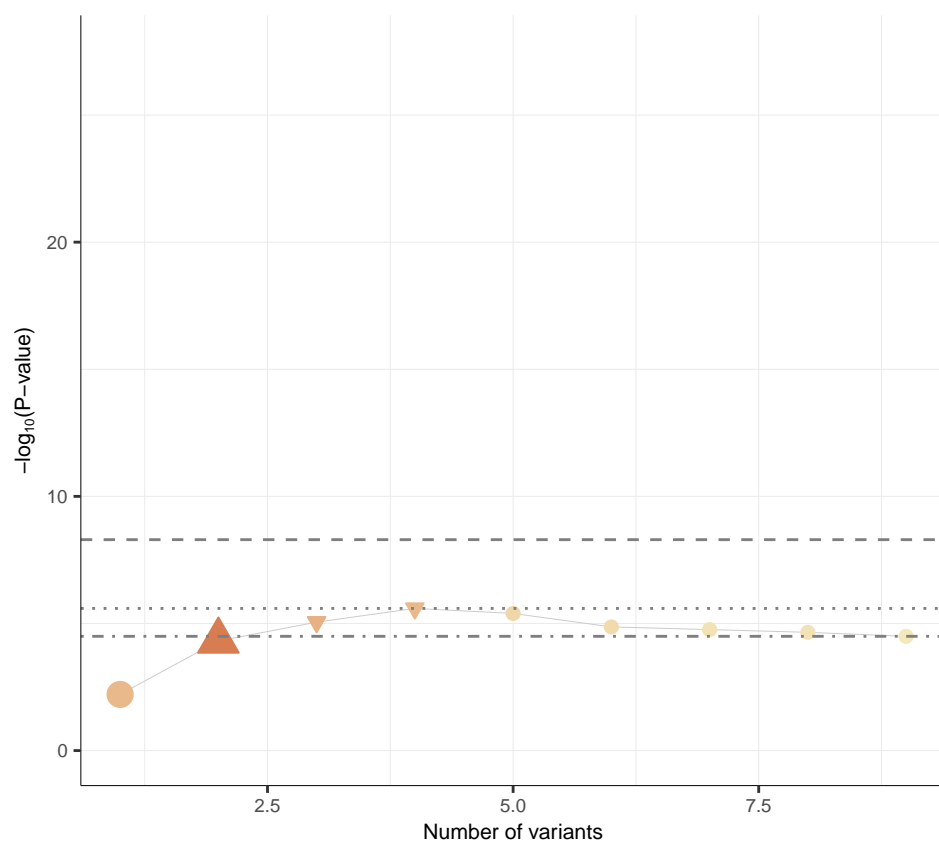
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8

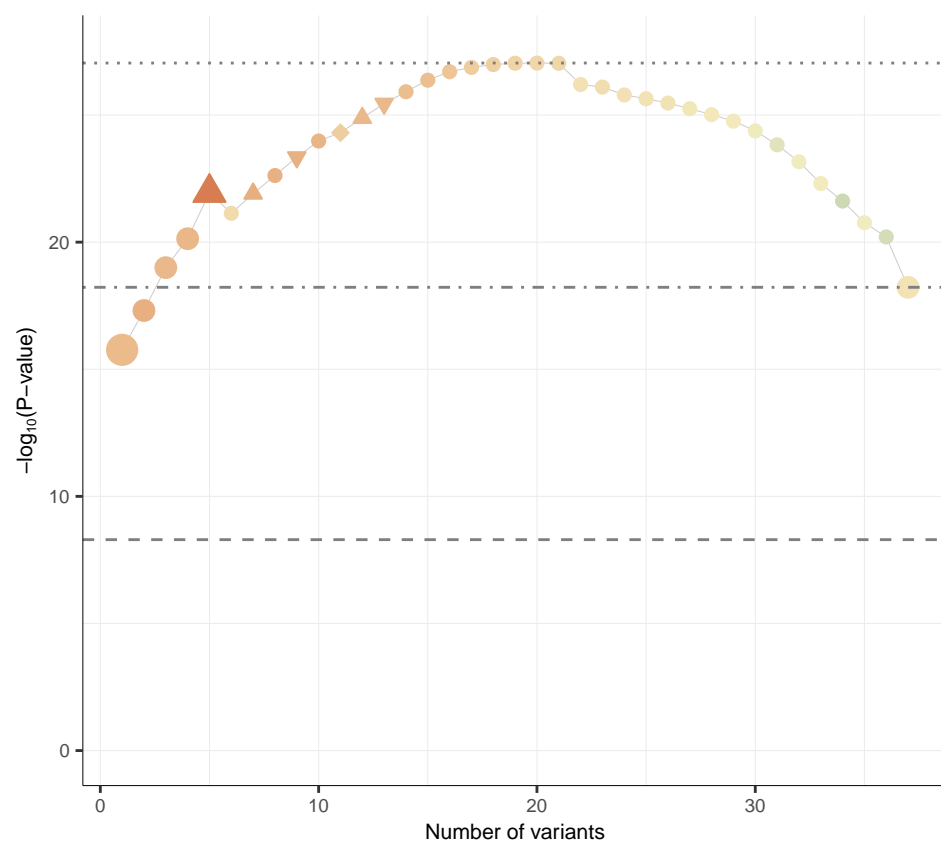
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

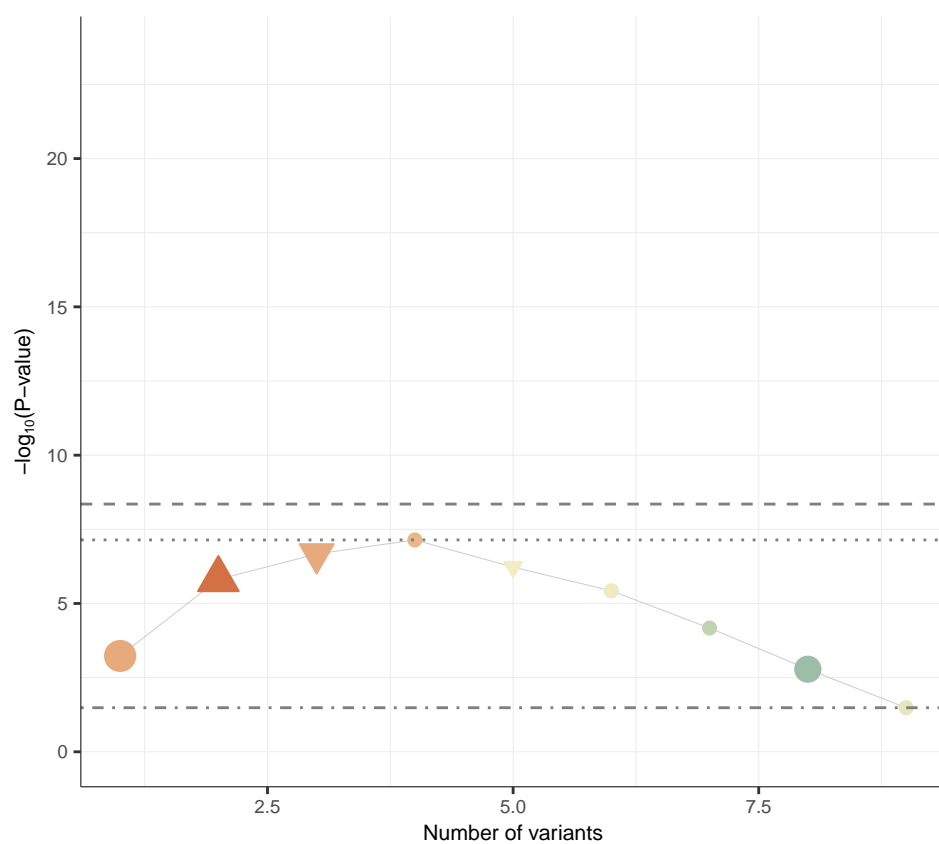
methylmalonate (MMA) in plasma at ACSF3 (LoF_mis)



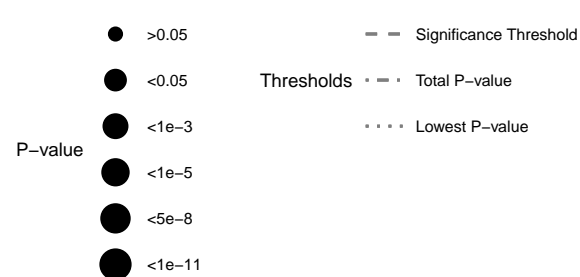
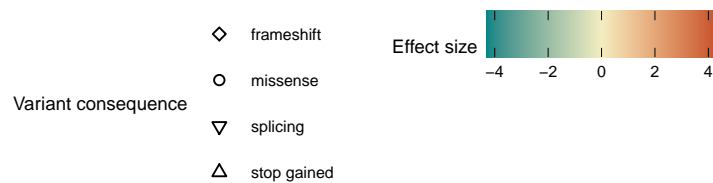
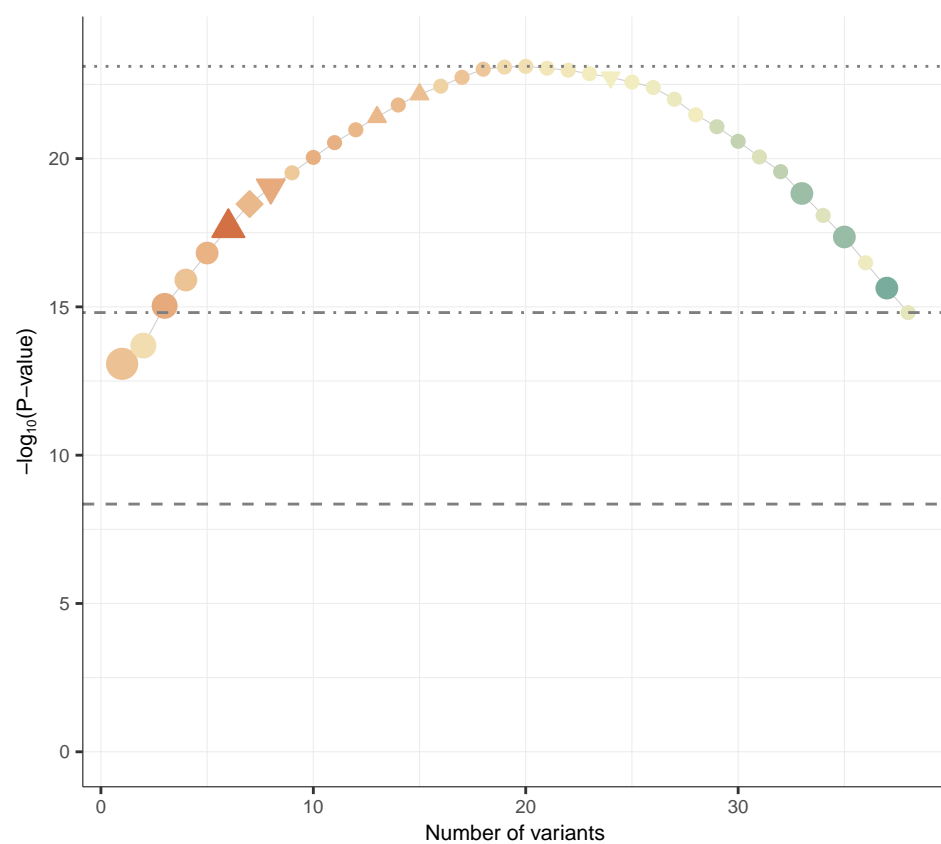
methylmalonate (MMA) in plasma at ACSF3 (HI_mis)



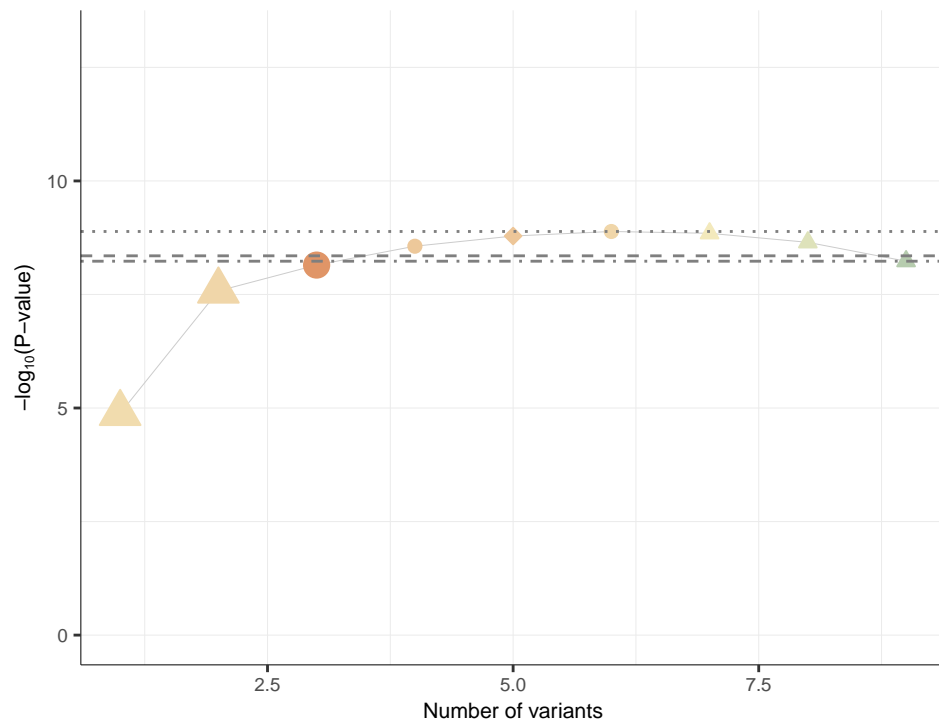
methylmalonate (MMA) in urine at ACSF3 (LoF_mis)



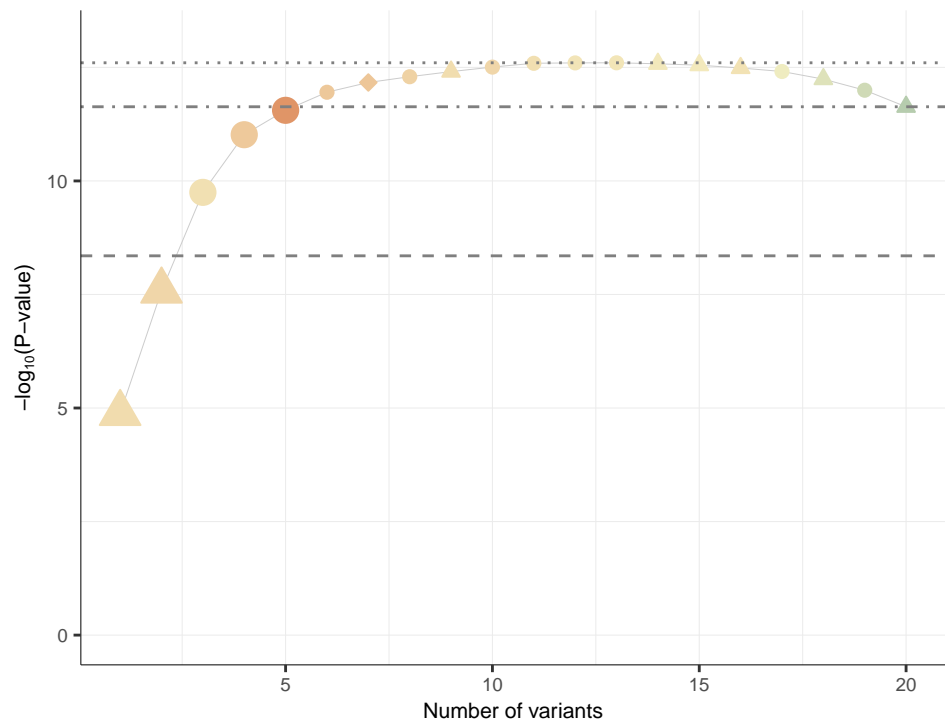
methylmalonate (MMA) in urine at ACSF3 (HI_mis)



3-(3-hydroxyphenyl)propionate in urine at ACSM2A (LoF_mis)



3-(3-hydroxyphenyl)propionate in urine at ACSM2A (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- △ stop gained



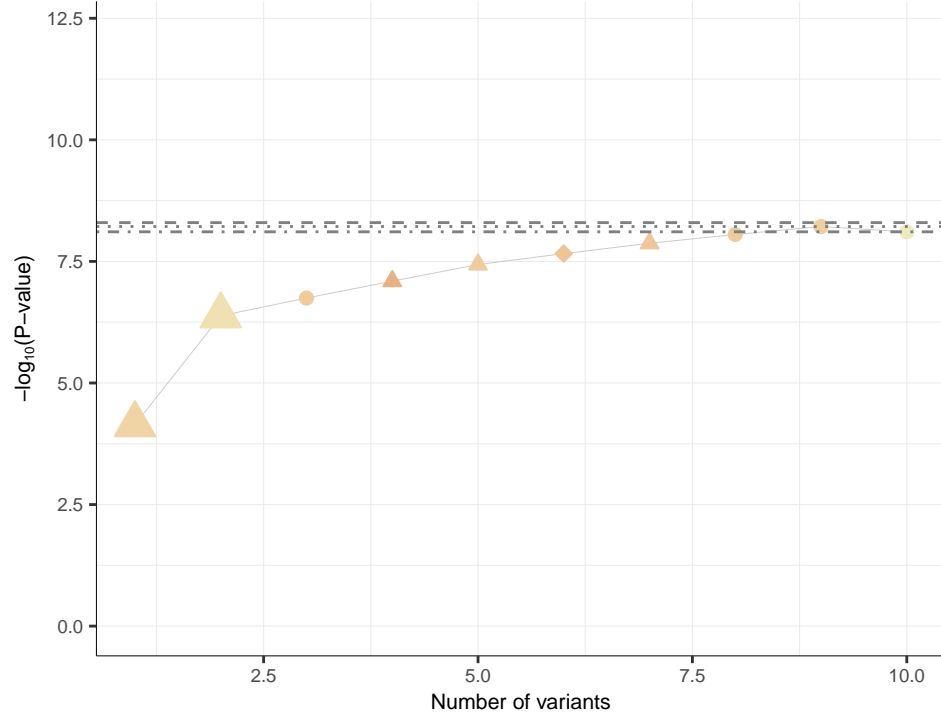
P-value

- >0.05
- <0.05
- <1e-3

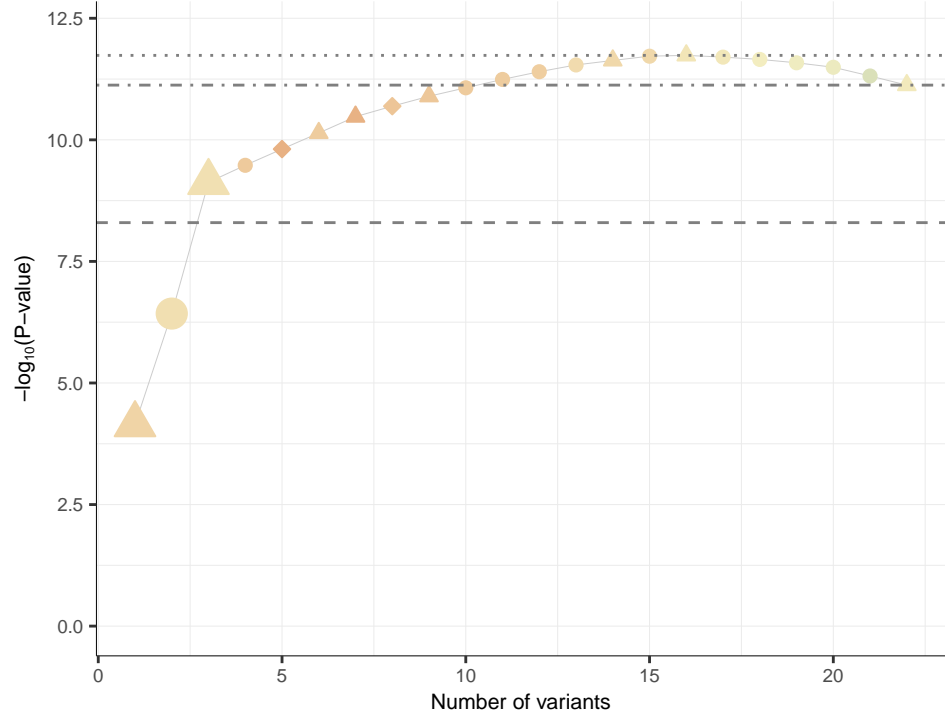
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

3-hydroxyhexanoate in plasma at ACSM2A (LoF_mis)

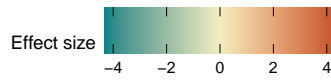


3-hydroxyhexanoate in plasma at ACSM2A (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- △ stop gained



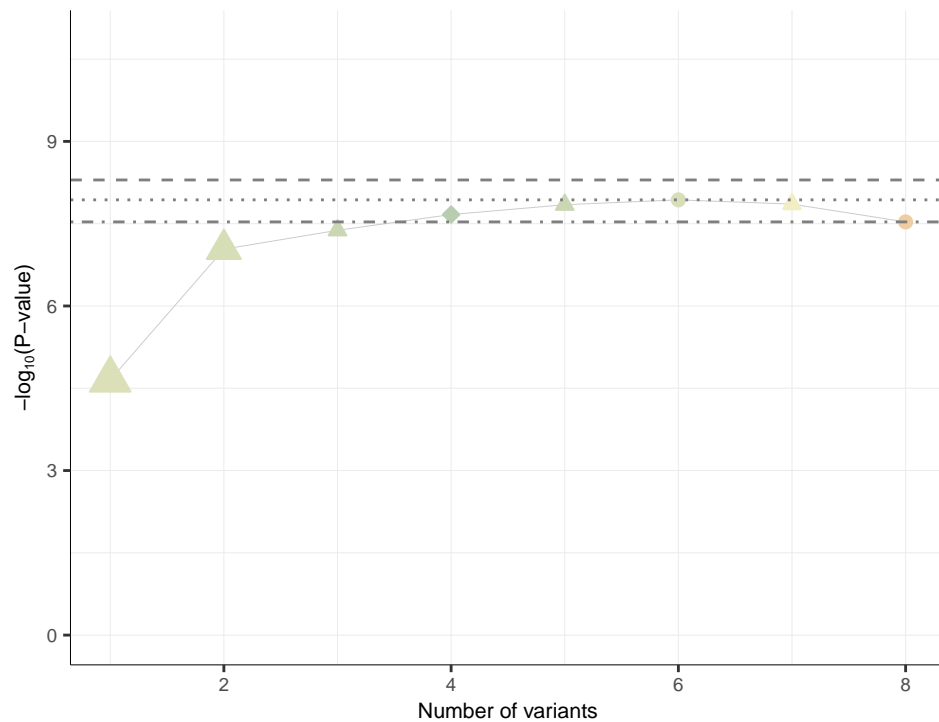
P-value

- >0.05
- <0.05
- <1e-3

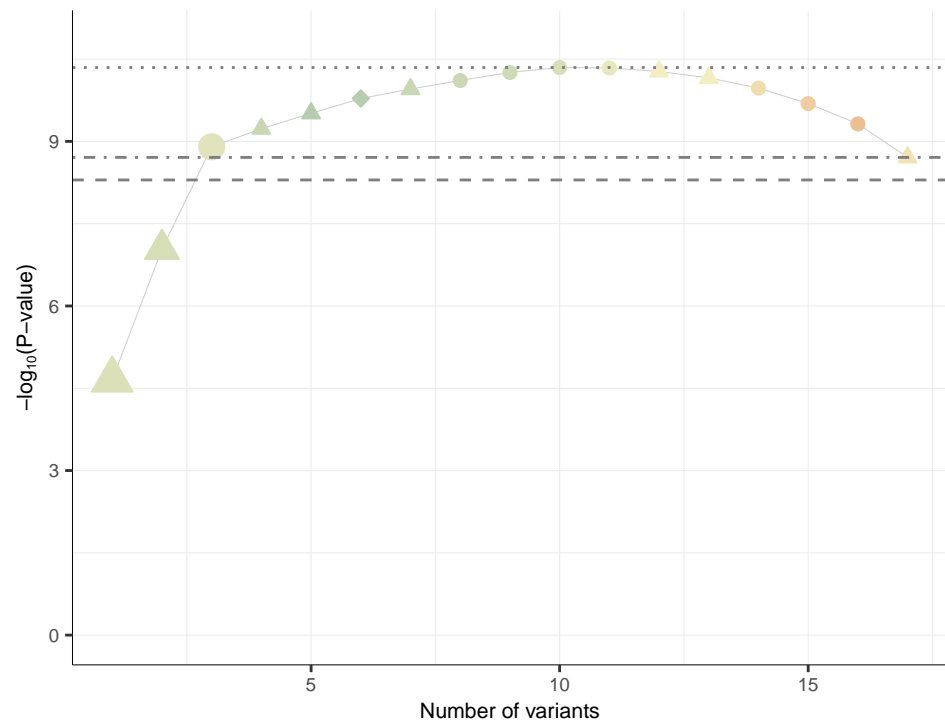
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

indoleacetyl carnitine* in plasma at ACSM2A (LoF_mis)

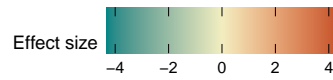


indoleacetyl carnitine* in plasma at ACSM2A (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- △ stop gained



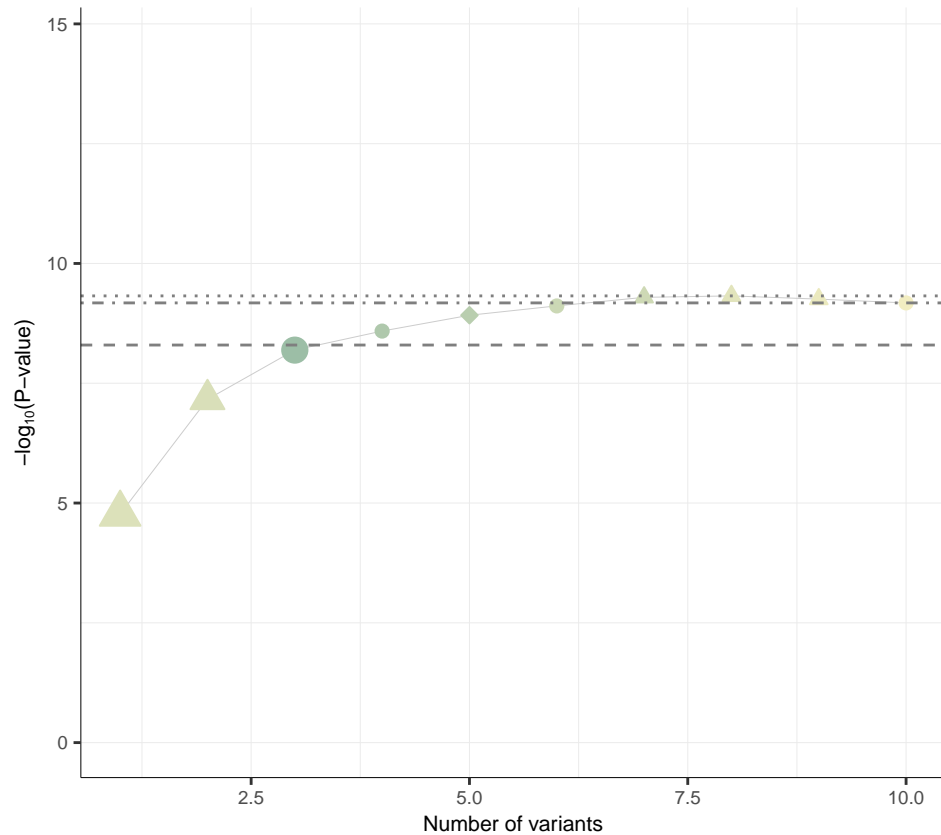
P-value

- >0.05
- <0.05
- <1e-3

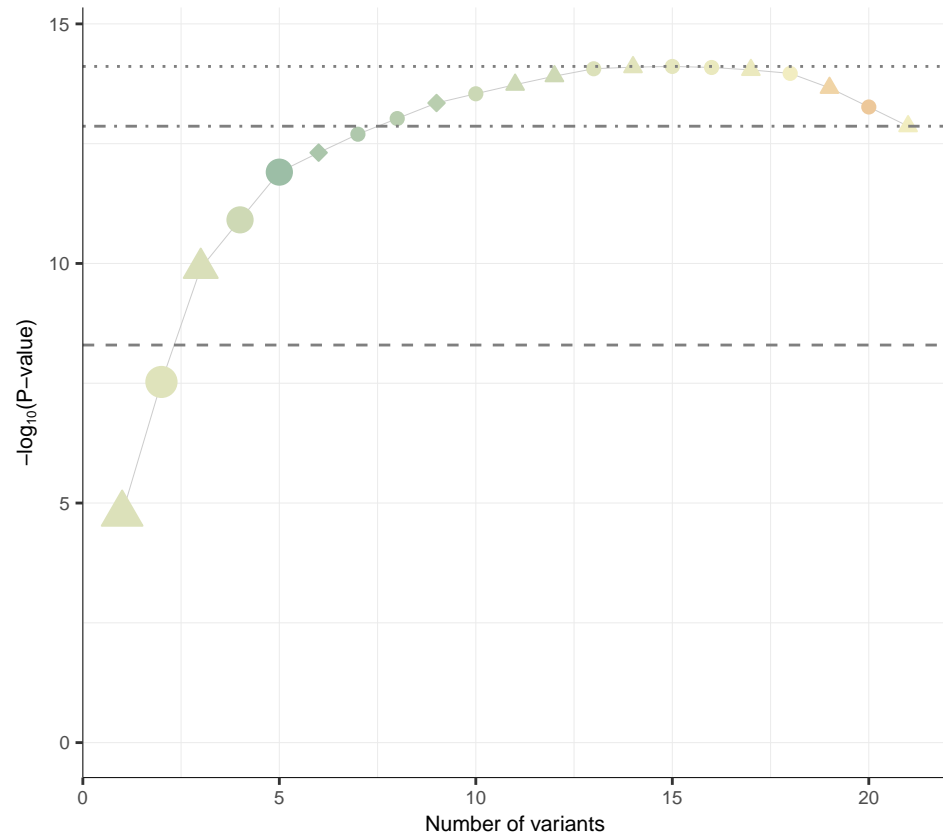
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

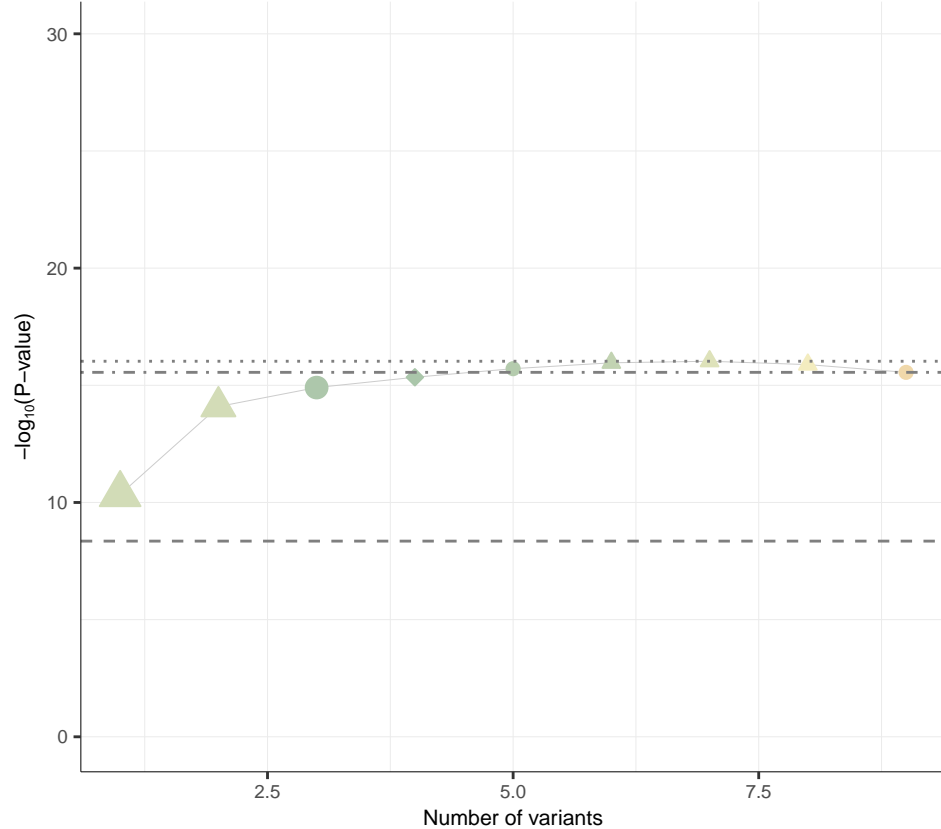
indoleacetylglutamine in plasma at ACSM2A (LoF_mis)



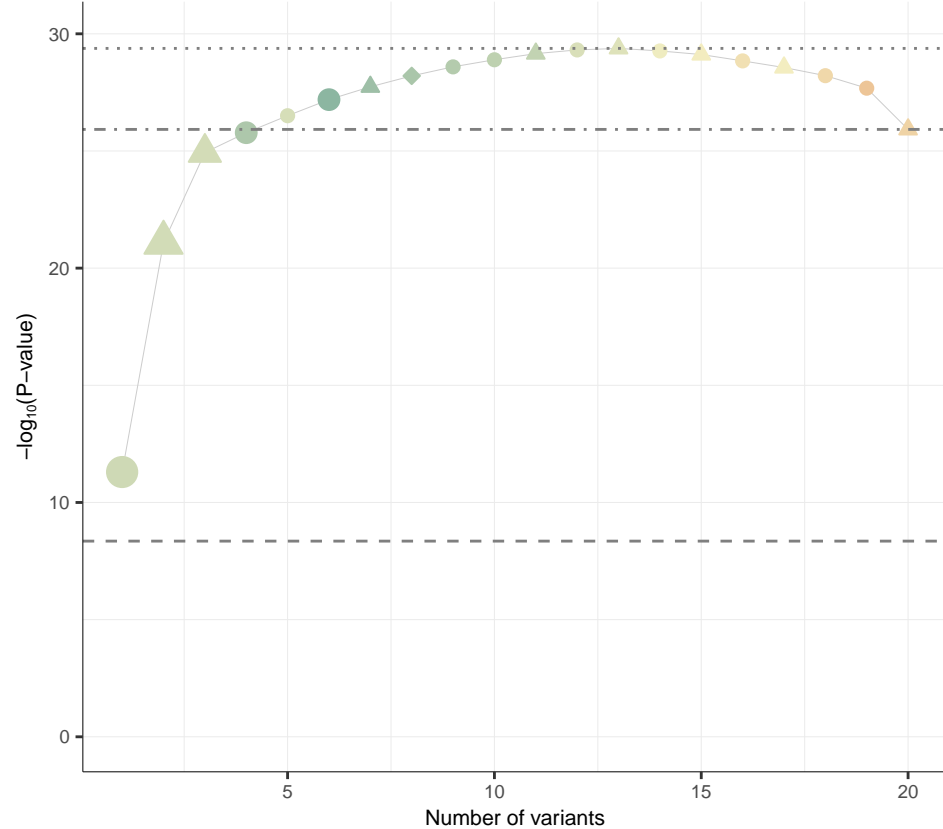
indoleacetylglutamine in plasma at ACSM2A (HI_mis)



indoleacetylglutamine in urine at ACSM2A (LoF_mis)

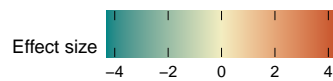


indoleacetylglutamine in urine at ACSM2A (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- △ stop gained



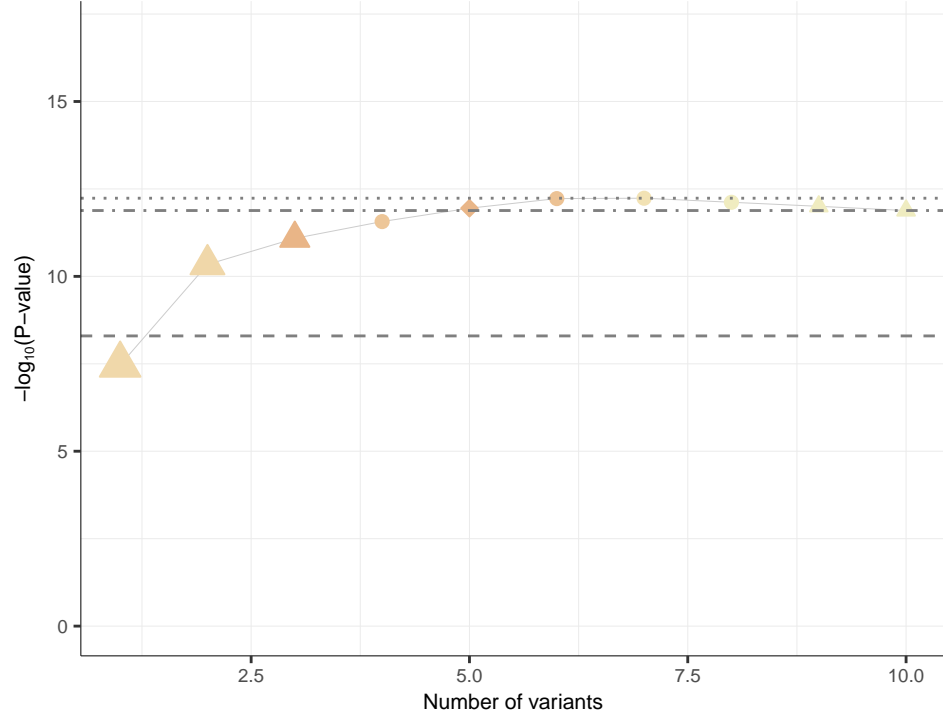
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8
- <1e-11

Thresholds

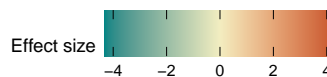
- Significance Threshold
- - - Total P-value
- ... Lowest P-value

indolepropionate in plasma at ACSM2A (LoF_mis)

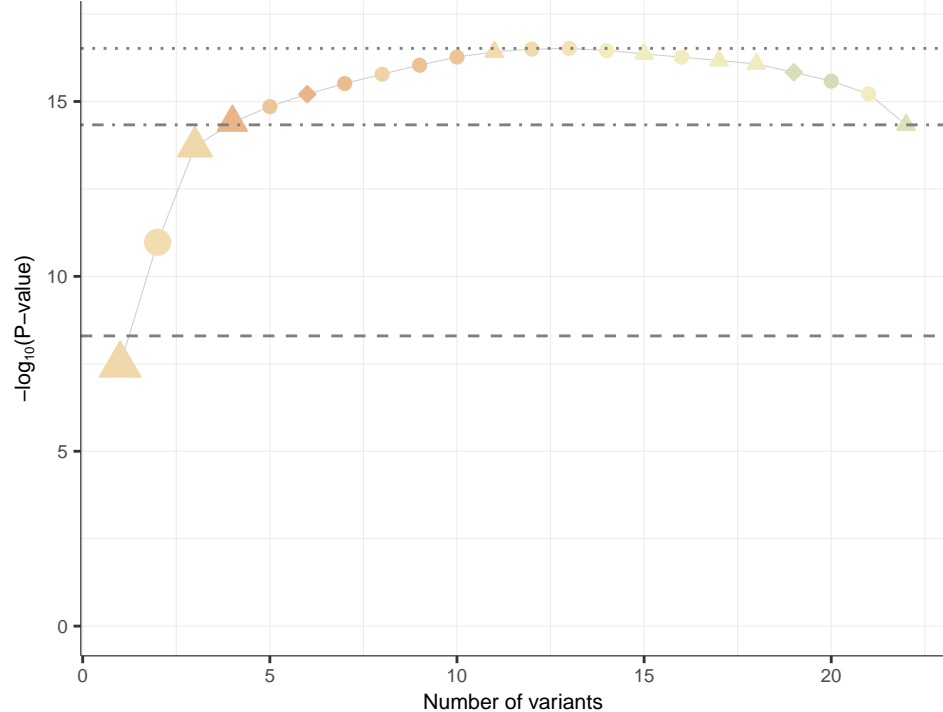


Variant consequence

- ◇ frameshift
- missense
- △ stop gained



indolepropionate in plasma at ACSM2A (HI_mis)



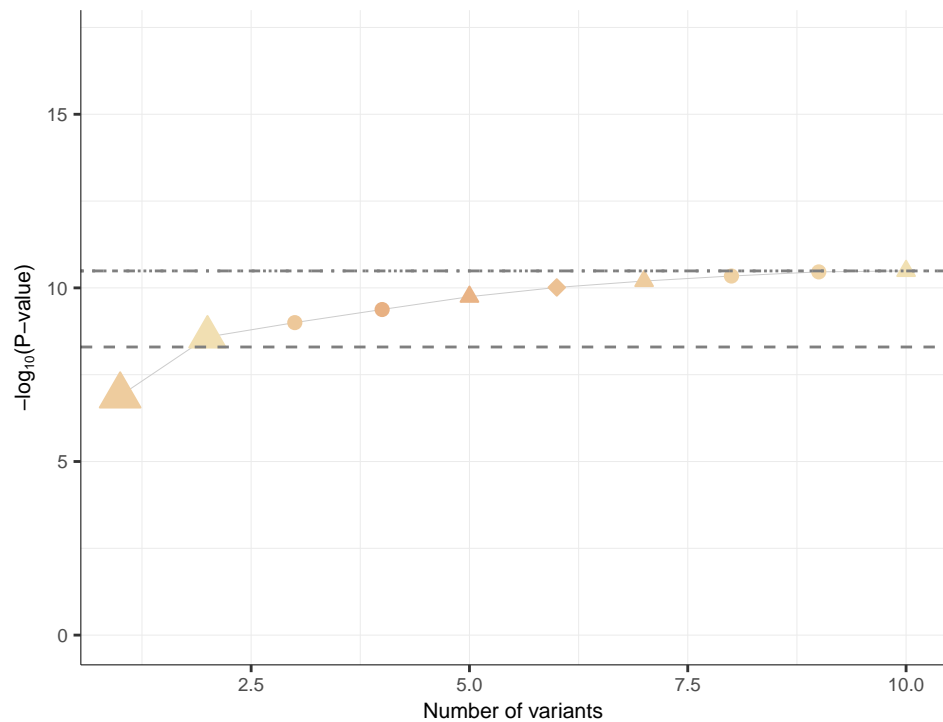
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8

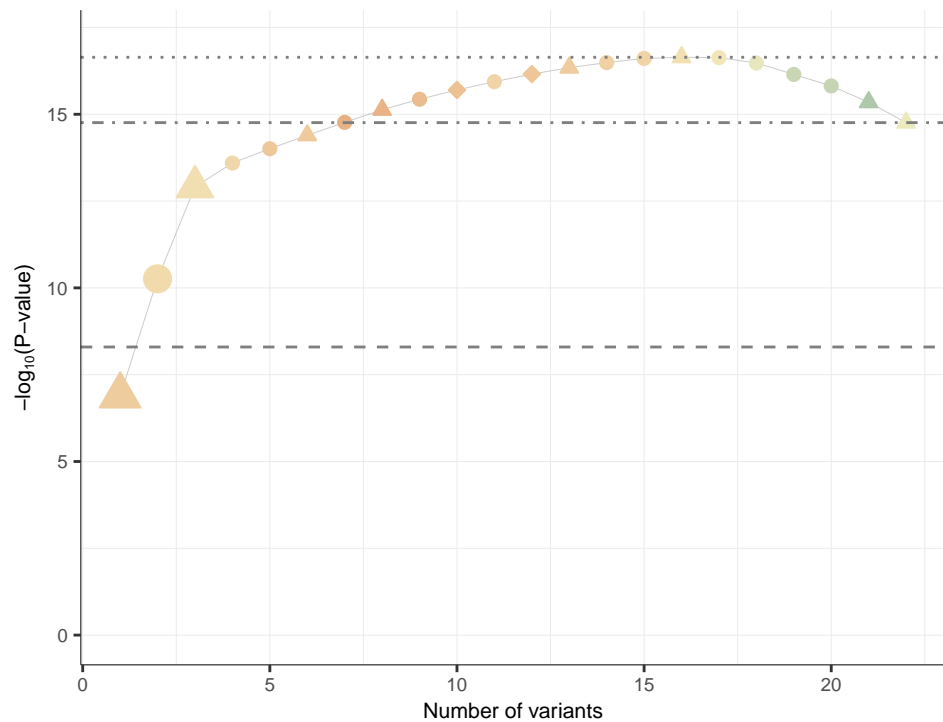
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

X - 11478 in plasma at ACSM2A (LoF_mis)

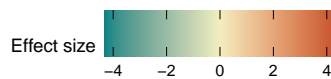


X - 11478 in plasma at ACSM2A (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- △ stop gained



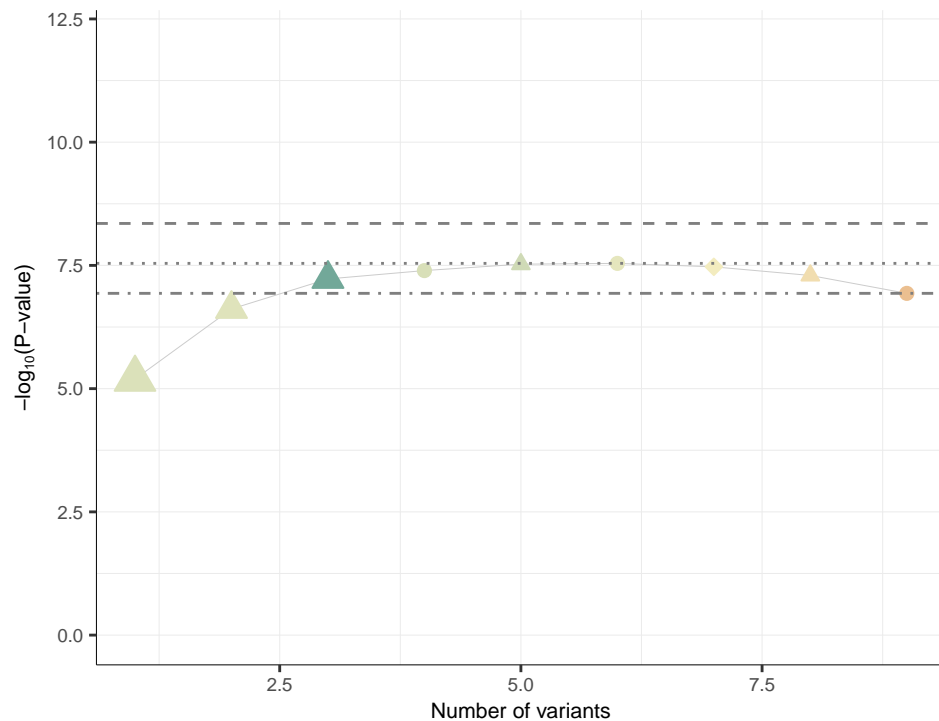
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5

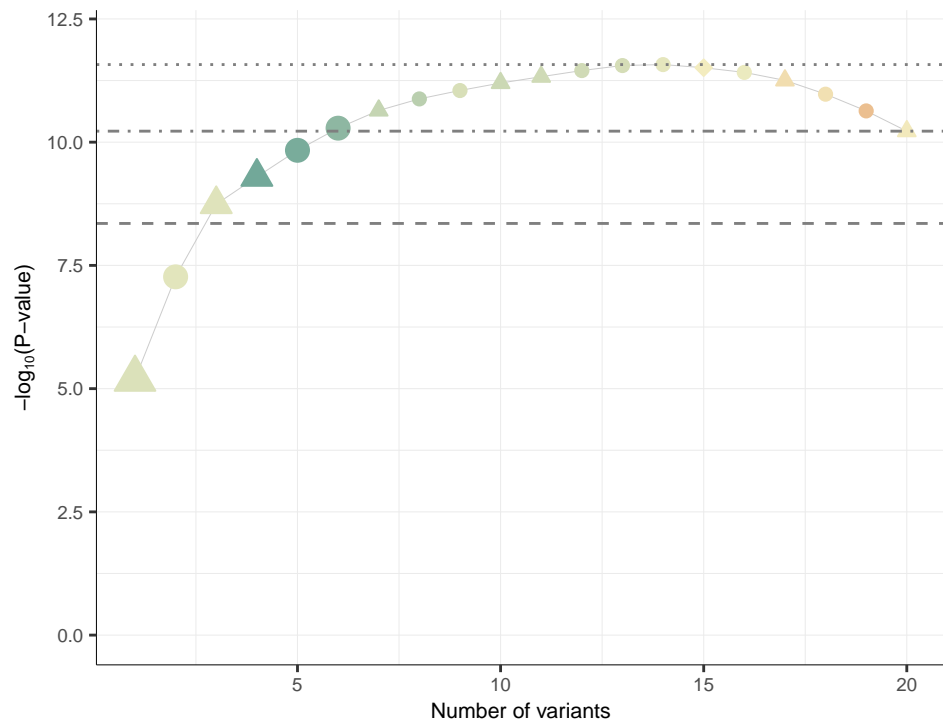
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

X - 17328 in urine at ACSM2A (LoF_mis)

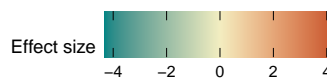


X - 17328 in urine at ACSM2A (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- △ stop gained



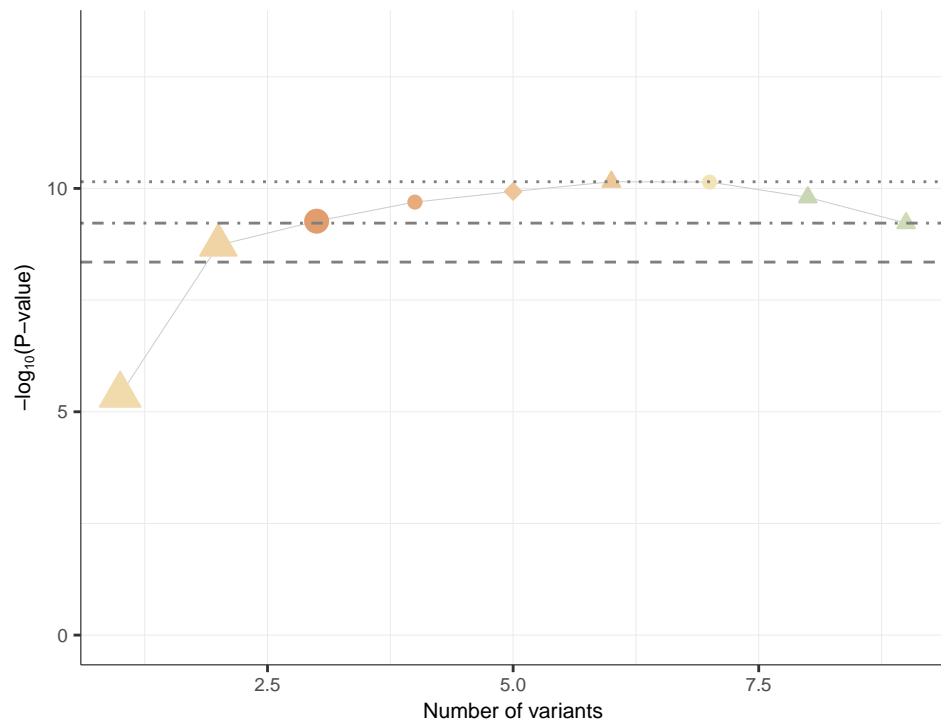
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5

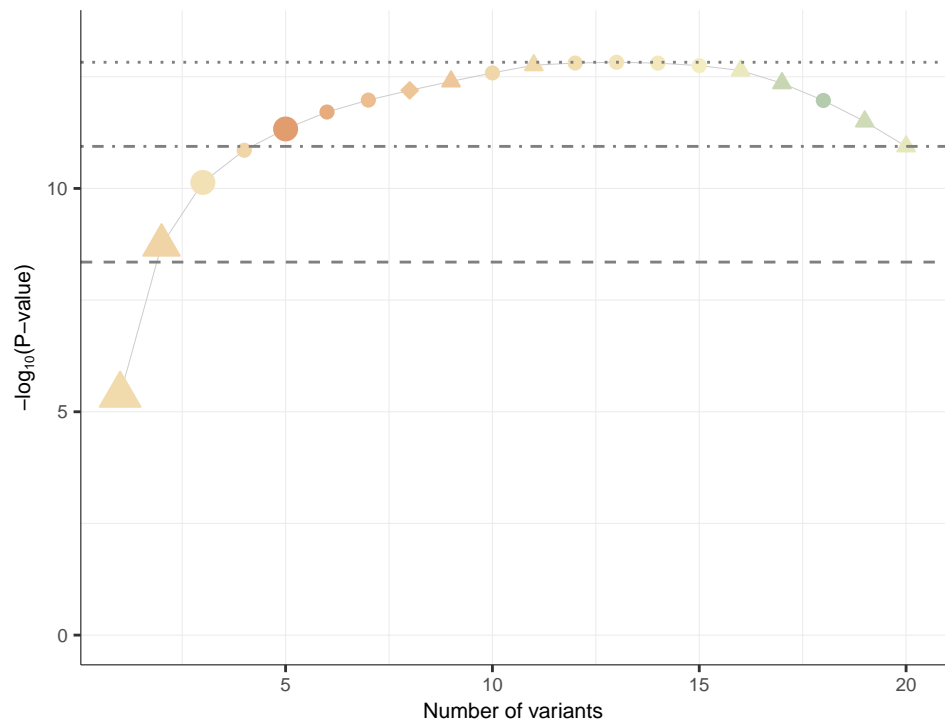
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

X - 24270 in urine at ACSM2A (LoF_mis)

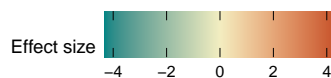


X - 24270 in urine at ACSM2A (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- △ stop gained



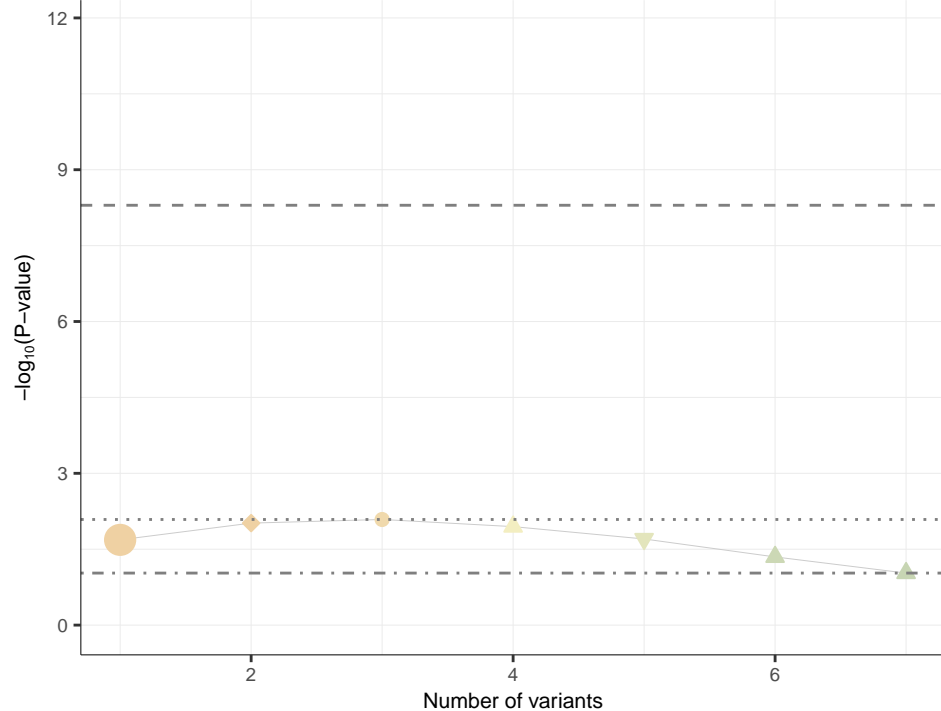
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5

Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

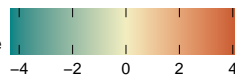
picolinate in plasma at ACSM2B (LoF_mis)



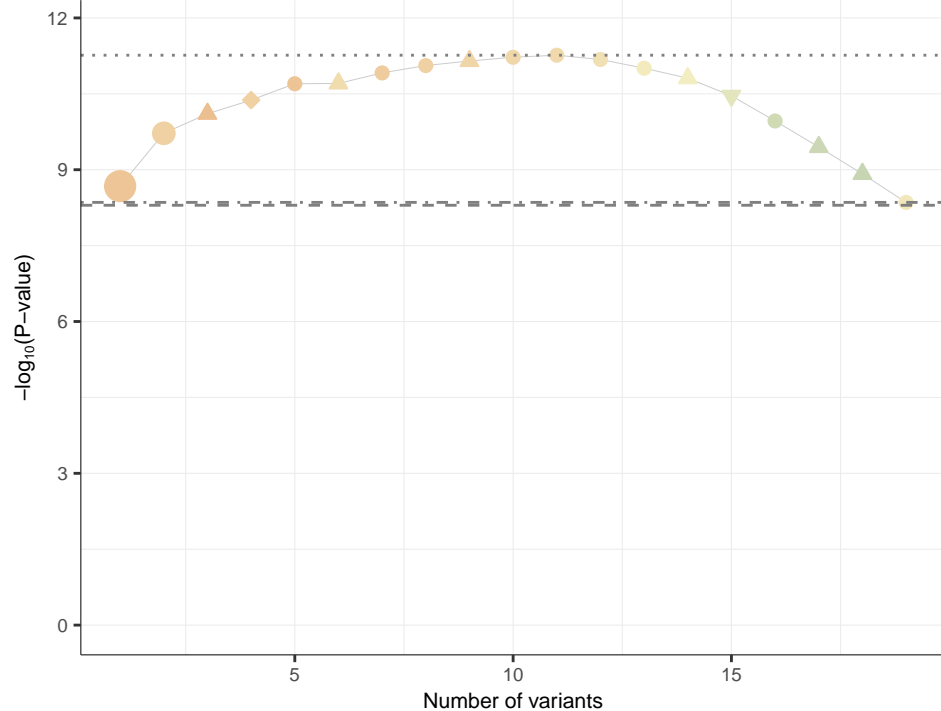
Variant consequence

- ◇ frameshift
- missense
- ▽ splicing
- △ stop gained

Effect size



picolinate in plasma at ACSM2B (HI_mis)



P-value

- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8

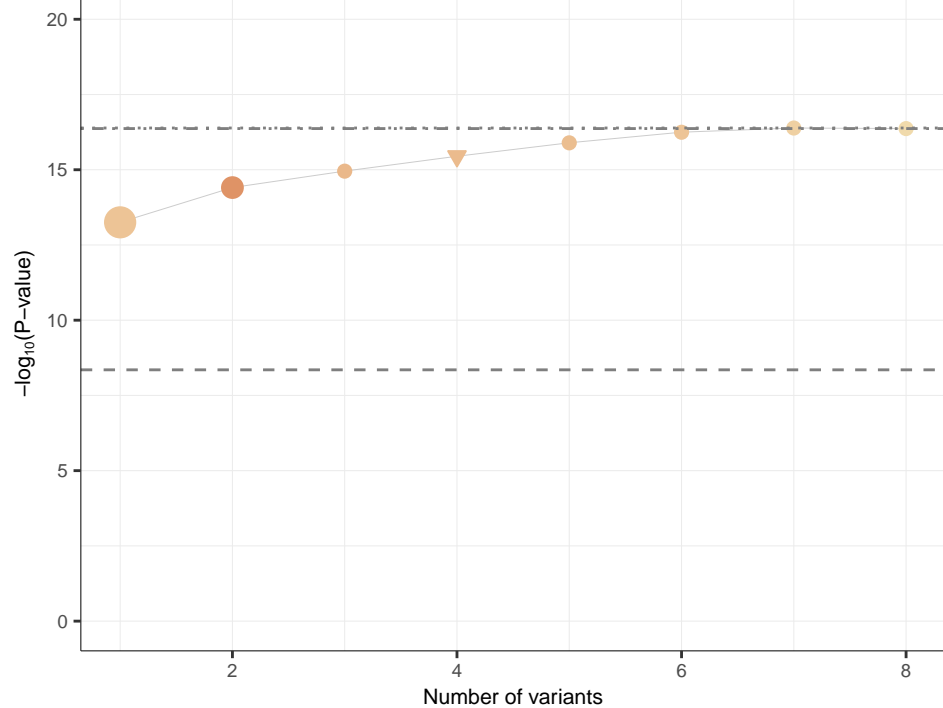
Significance Threshold

Thresholds

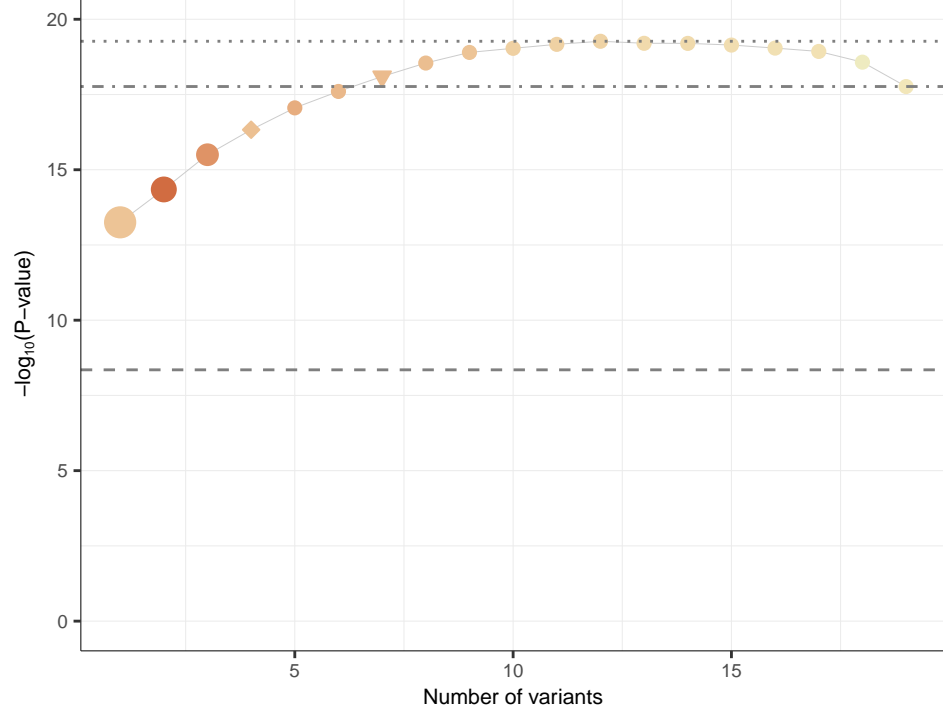
--- Total P-value

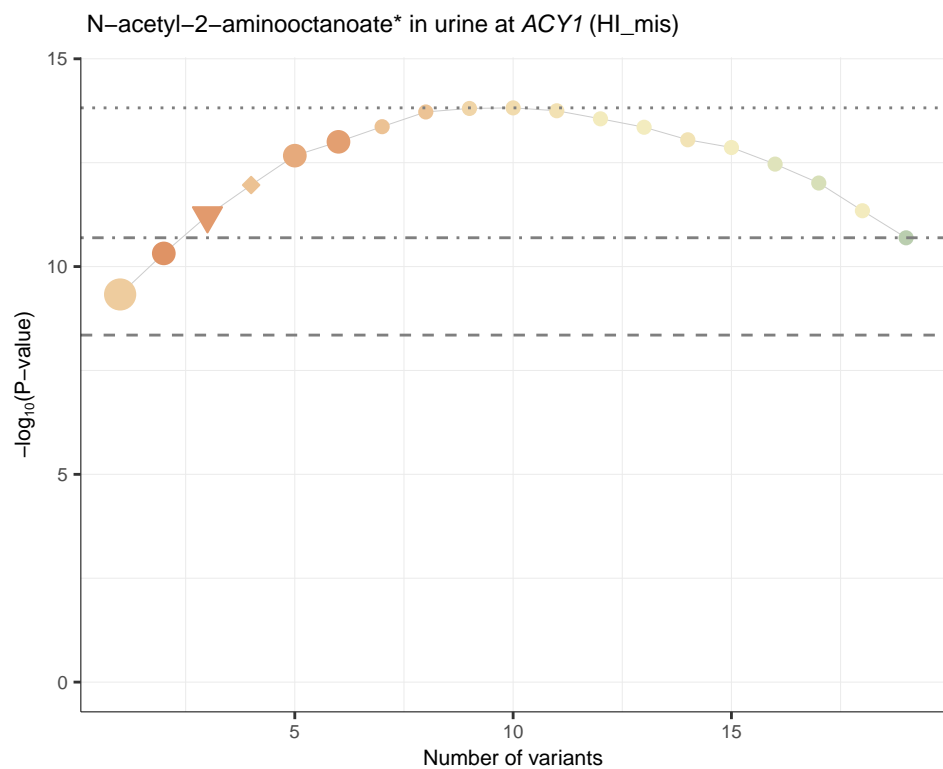
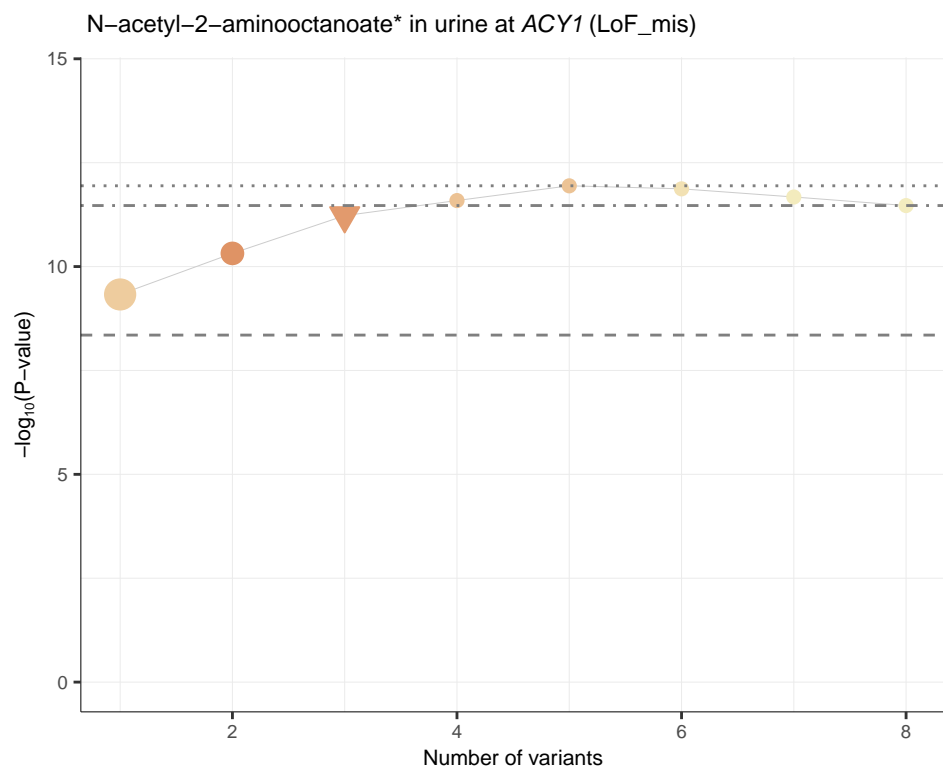
.... Lowest P-value

2-butenoylglycine in urine at ACY1 (LoF_mis)

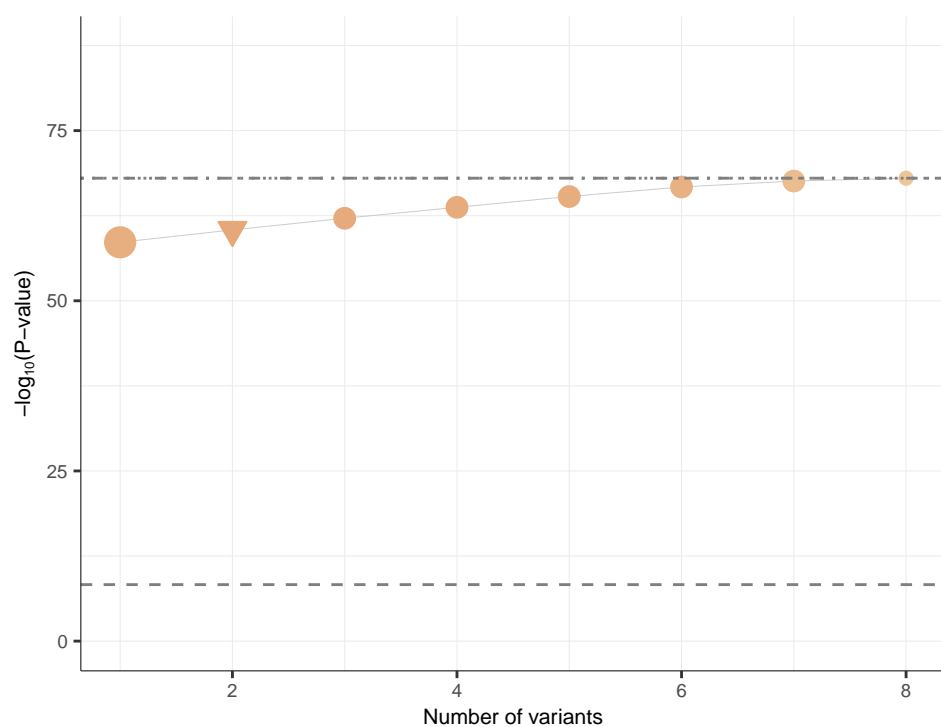


2-butenoylglycine in urine at ACY1 (HI_mis)

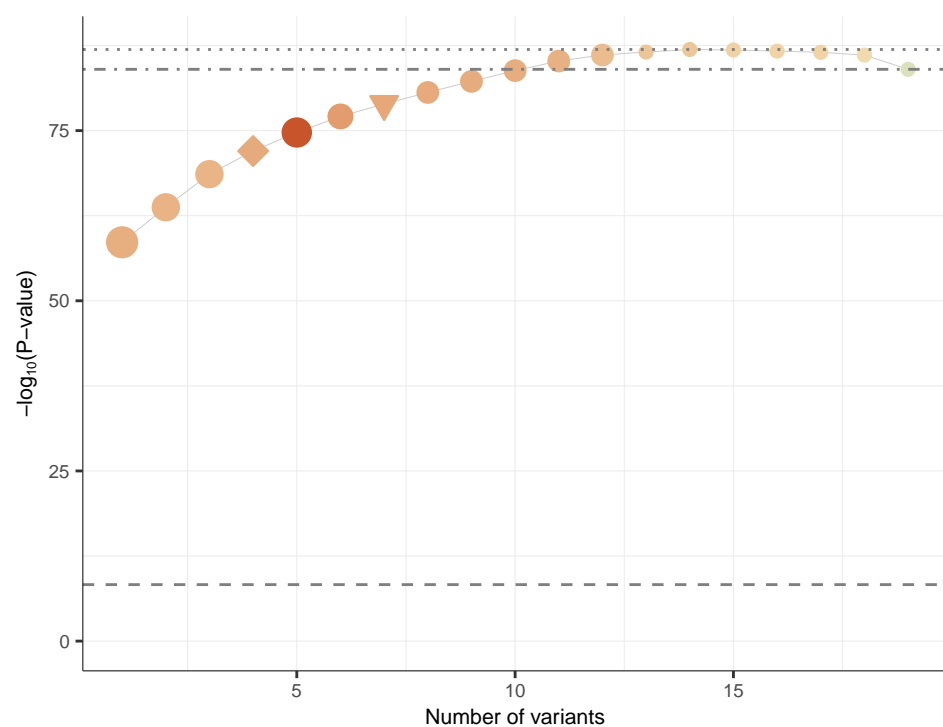




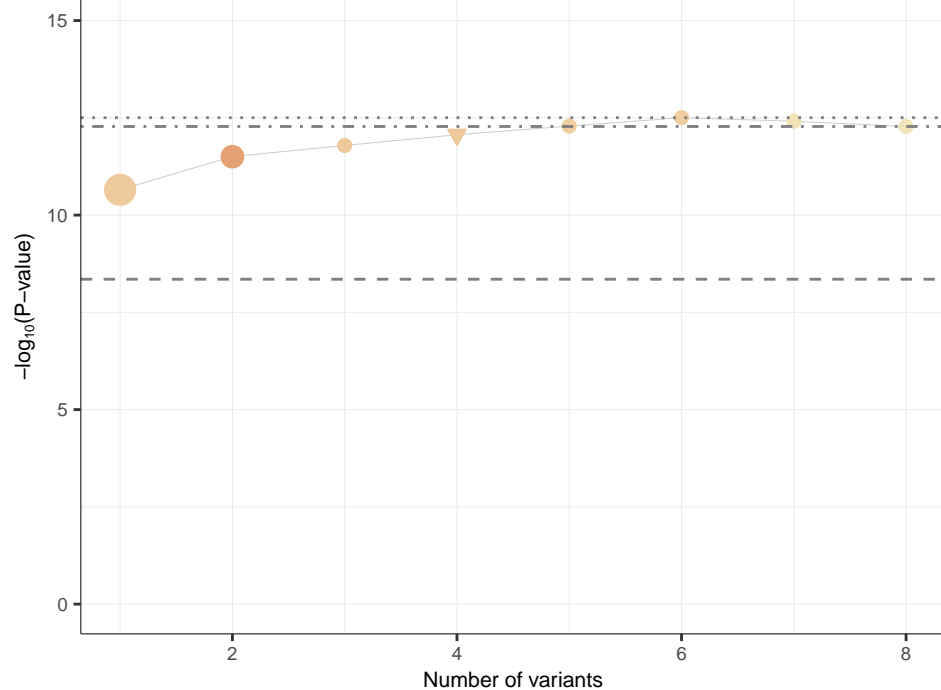
N-acetylalanine in plasma at ACY1 (LoF_mis)



N-acetylalanine in plasma at ACY1 (HI_mis)

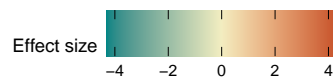


N-acetylasparagine in urine at *ACY1* (LoF_mis)

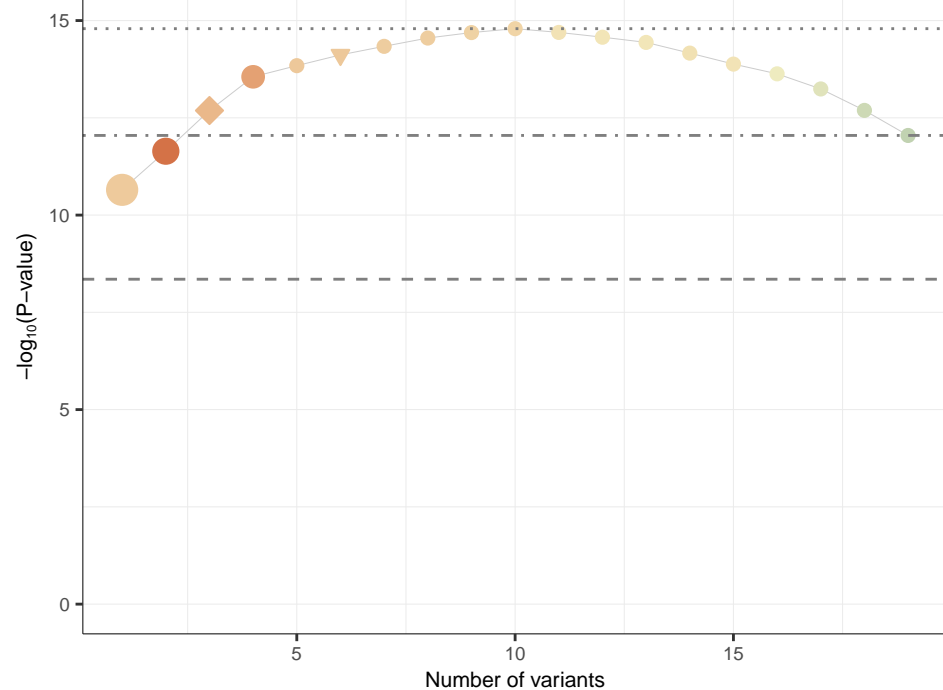


Variant consequence

- ◇ frameshift
- missense
- ▽ splicing



N-acetylasparagine in urine at *ACY1* (HI_mis)



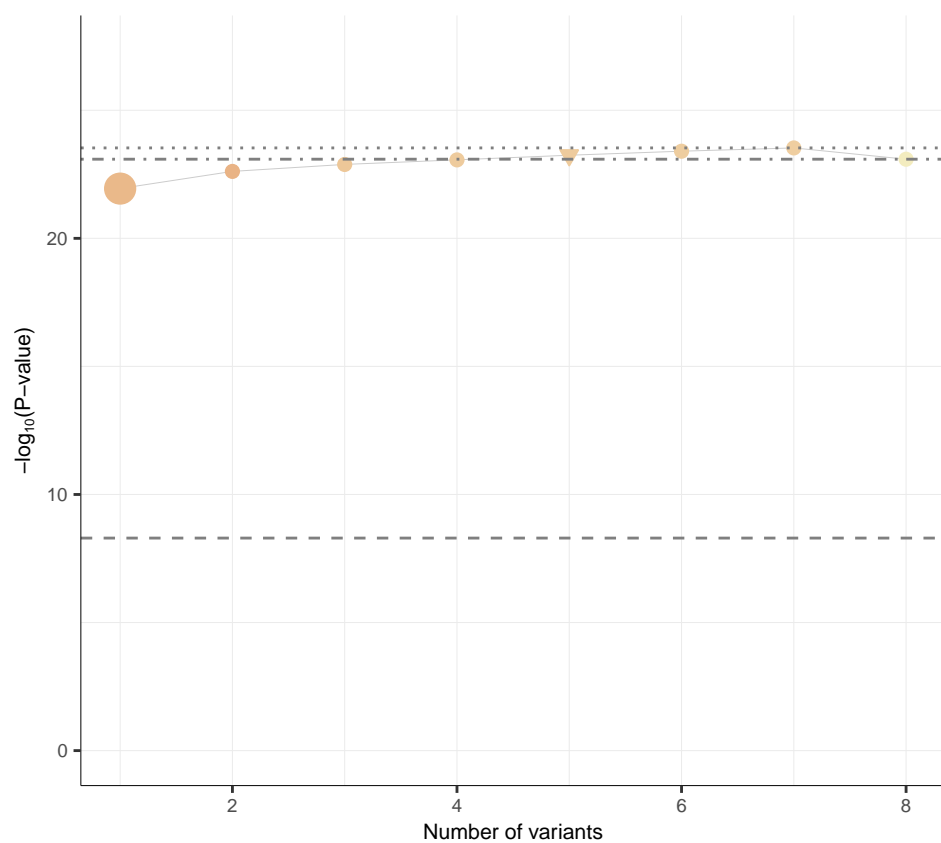
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8

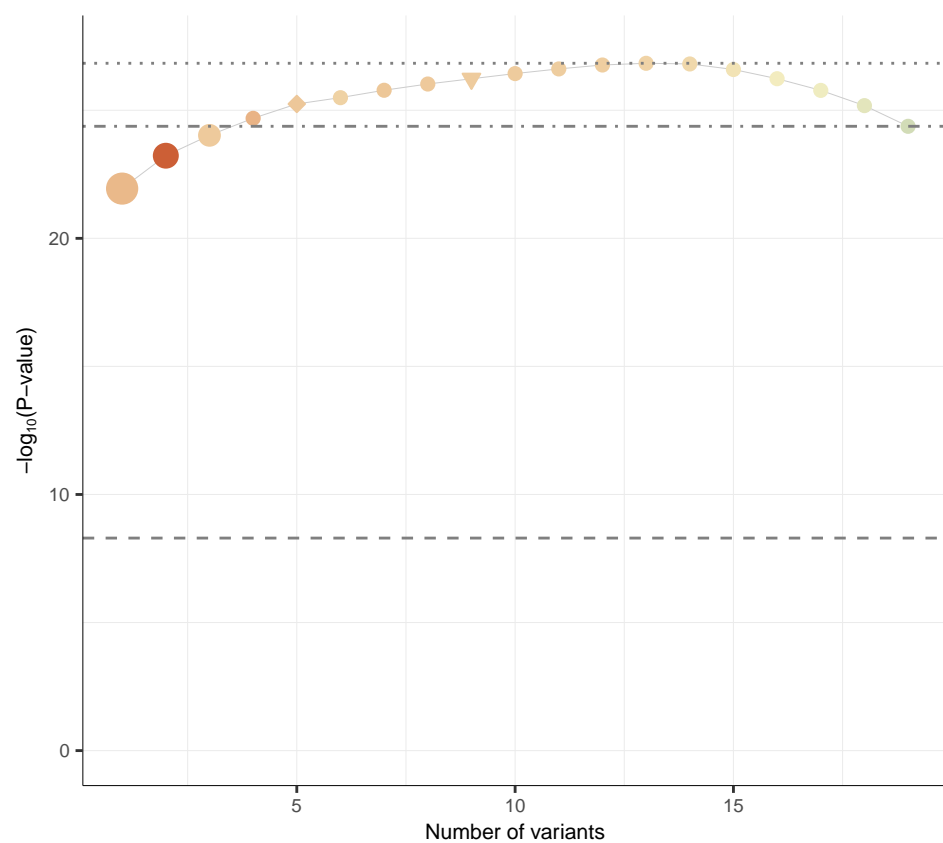
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

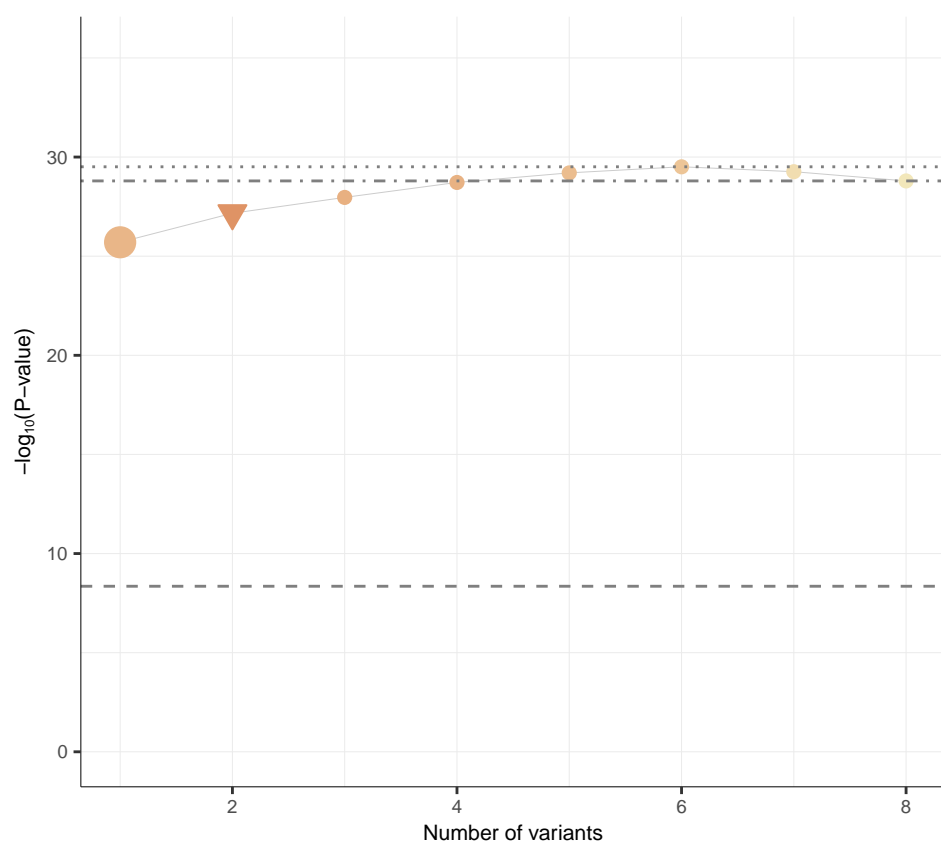
N-acetylglutamate in plasma at ACY1 (LoF_mis)



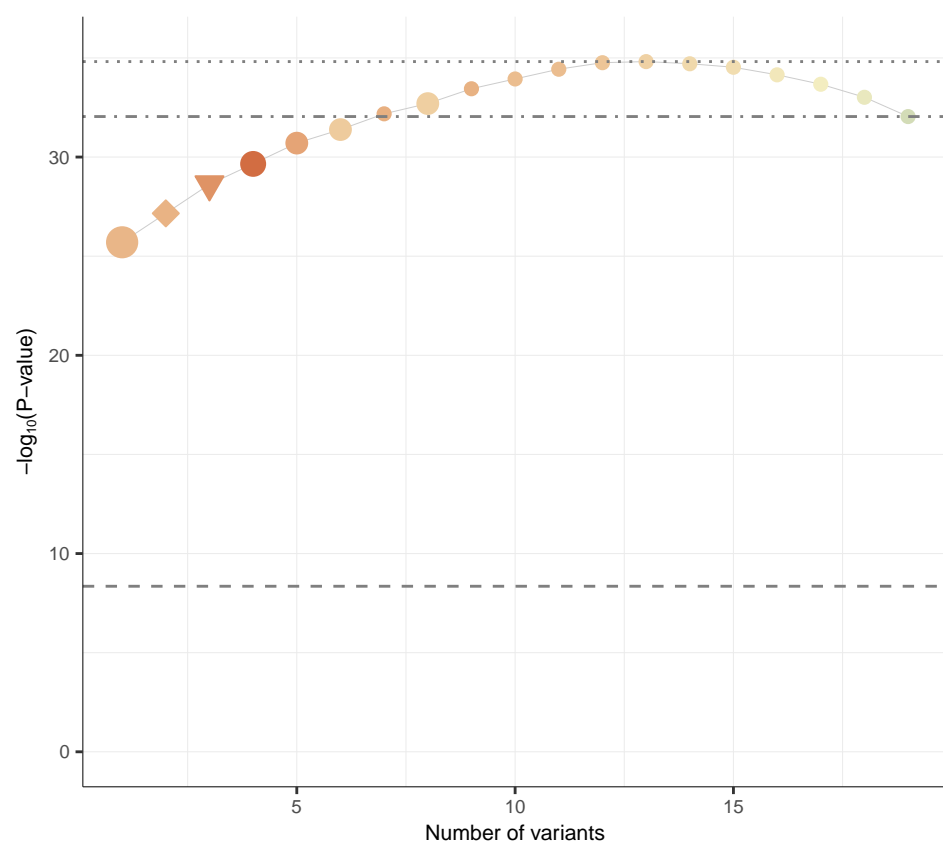
N-acetylglutamate in plasma at ACY1 (HI_mis)



N-acetylglutamate in urine at ACY1 (LoF_mis)



N-acetylglutamate in urine at ACY1 (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- ▽ splicing

Effect size

-4 -2 0 2 4

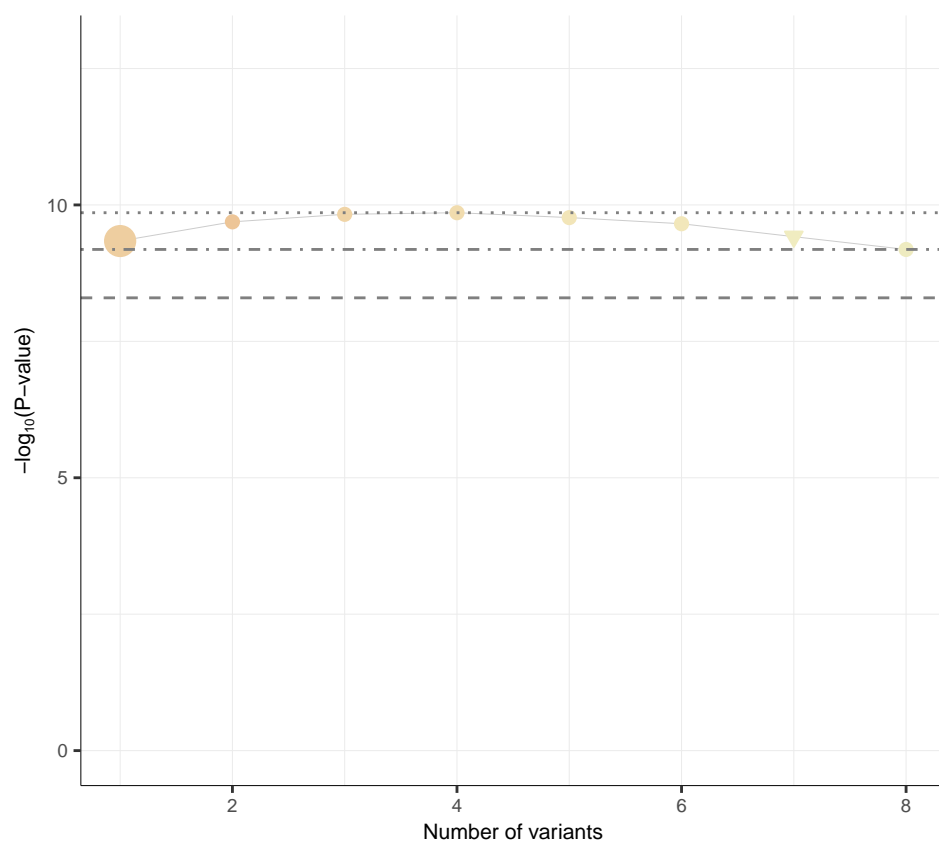
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8
- <1e-11

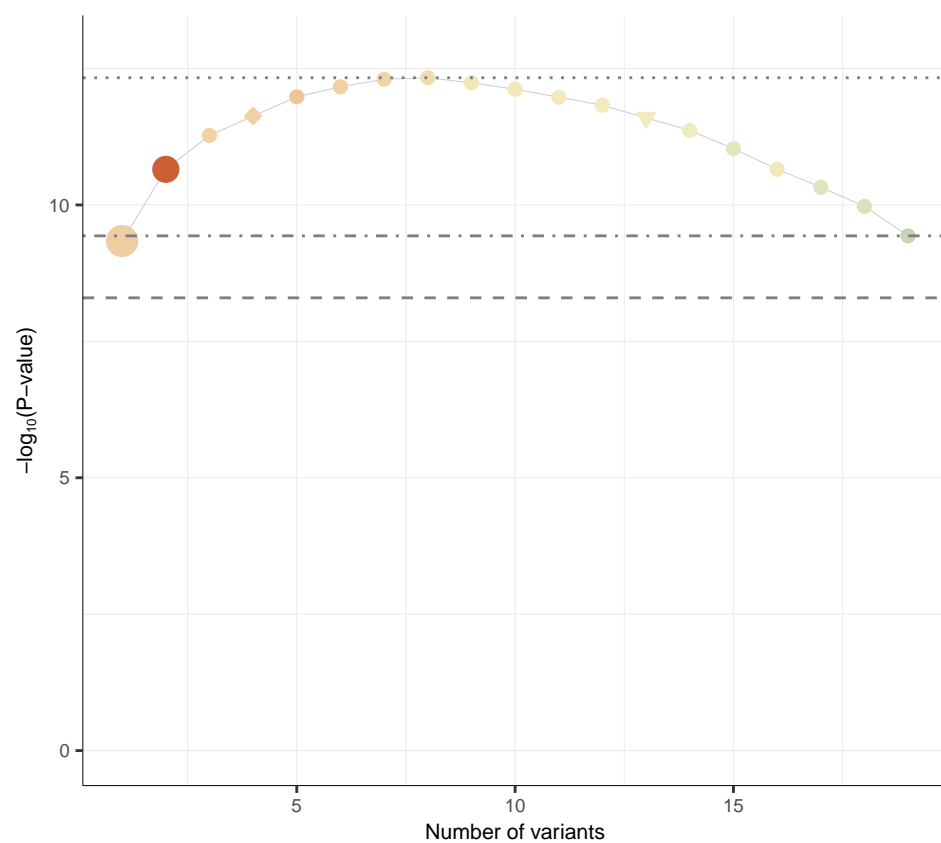
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

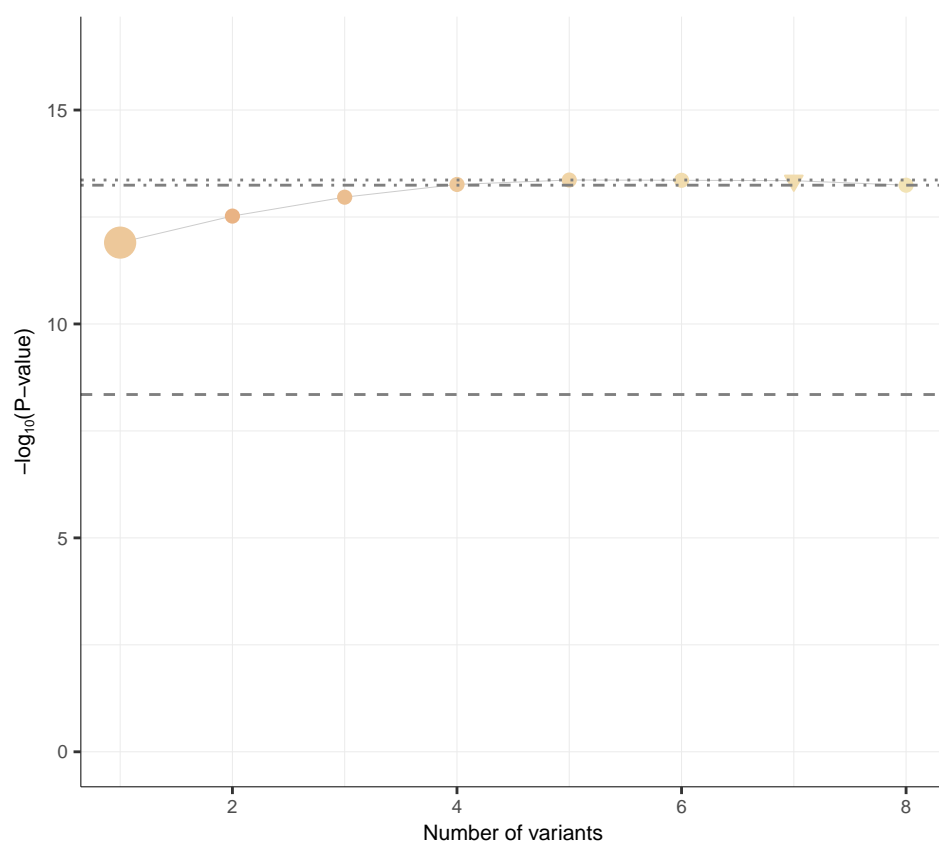
N-acetylglutamine in plasma at ACY1 (LoF_mis)



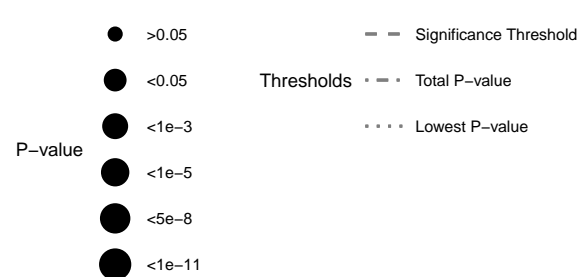
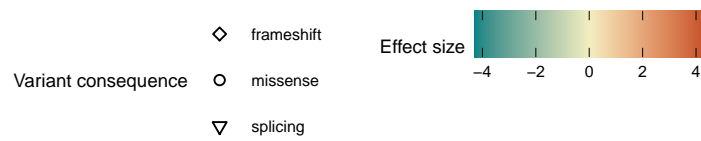
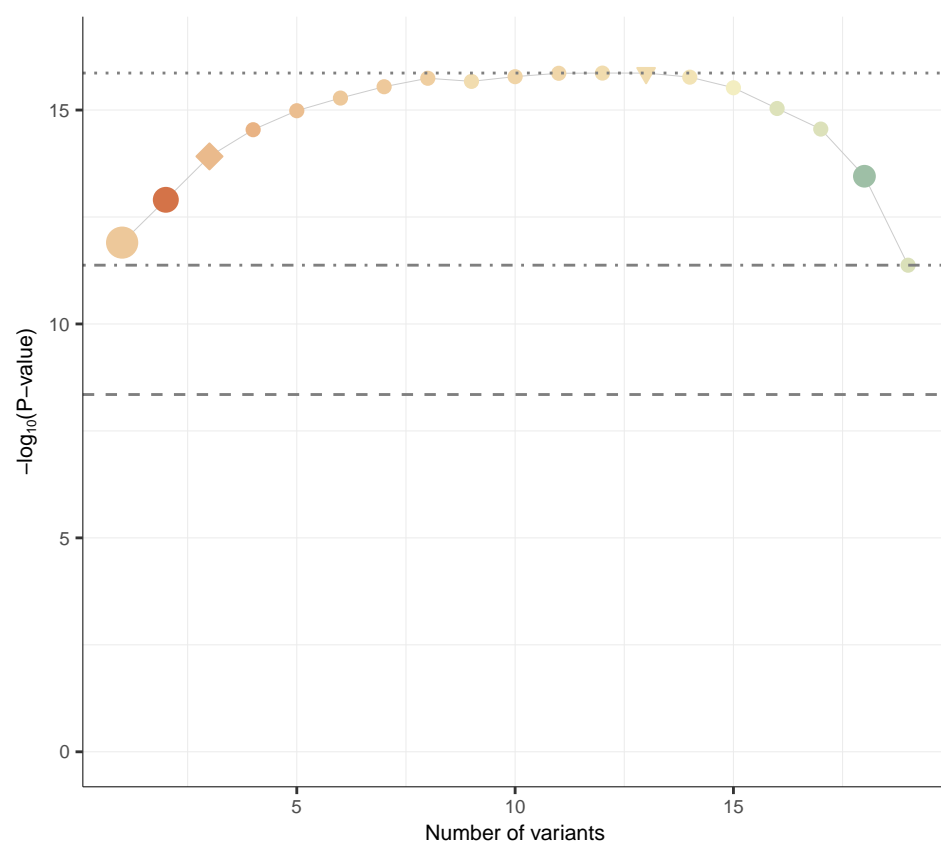
N-acetylglutamine in plasma at ACY1 (HI_mis)



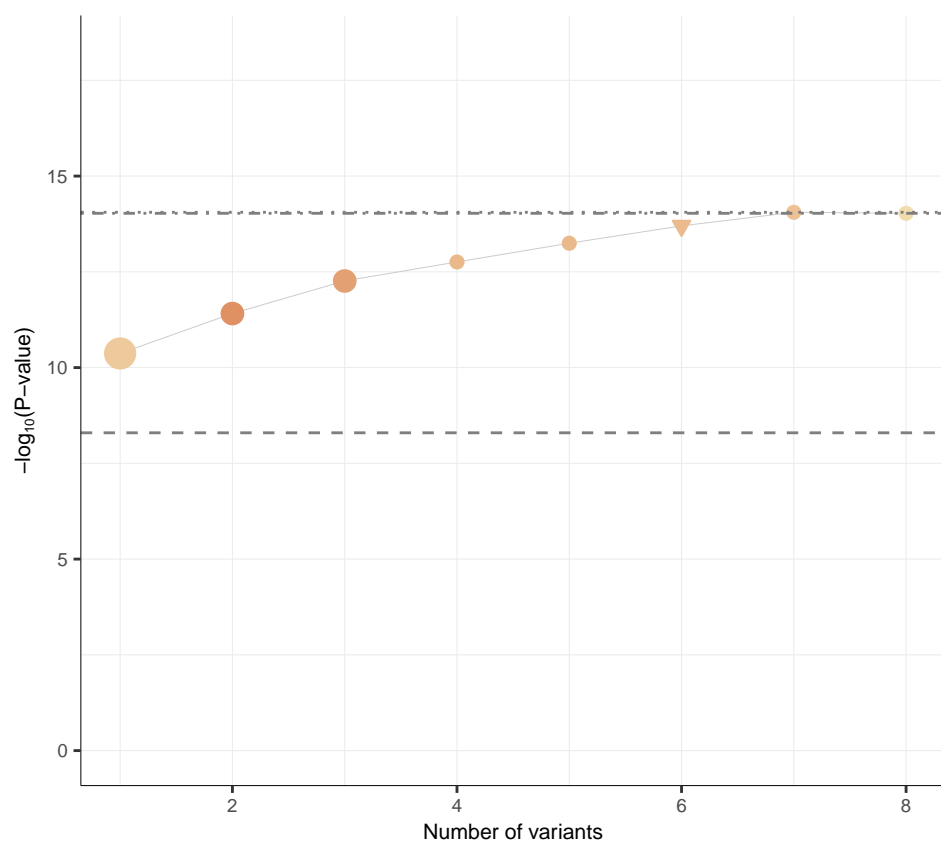
N-acetylglutamine in urine at ACY1 (LoF_mis)



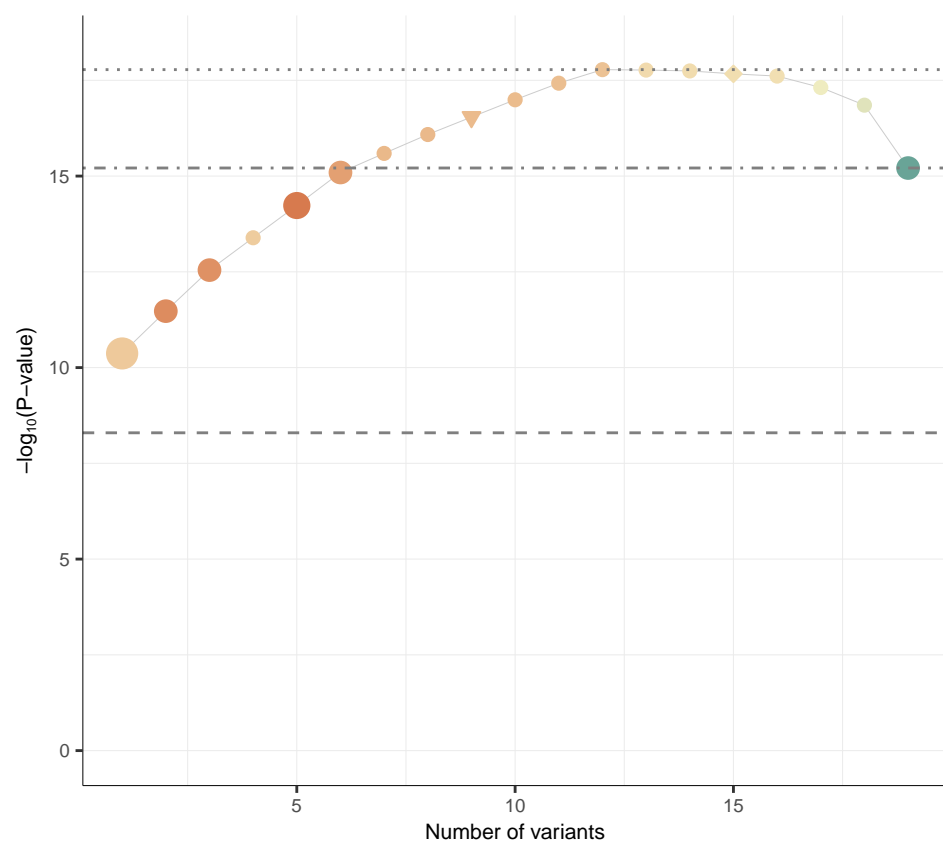
N-acetylglutamine in urine at ACY1 (HI_mis)



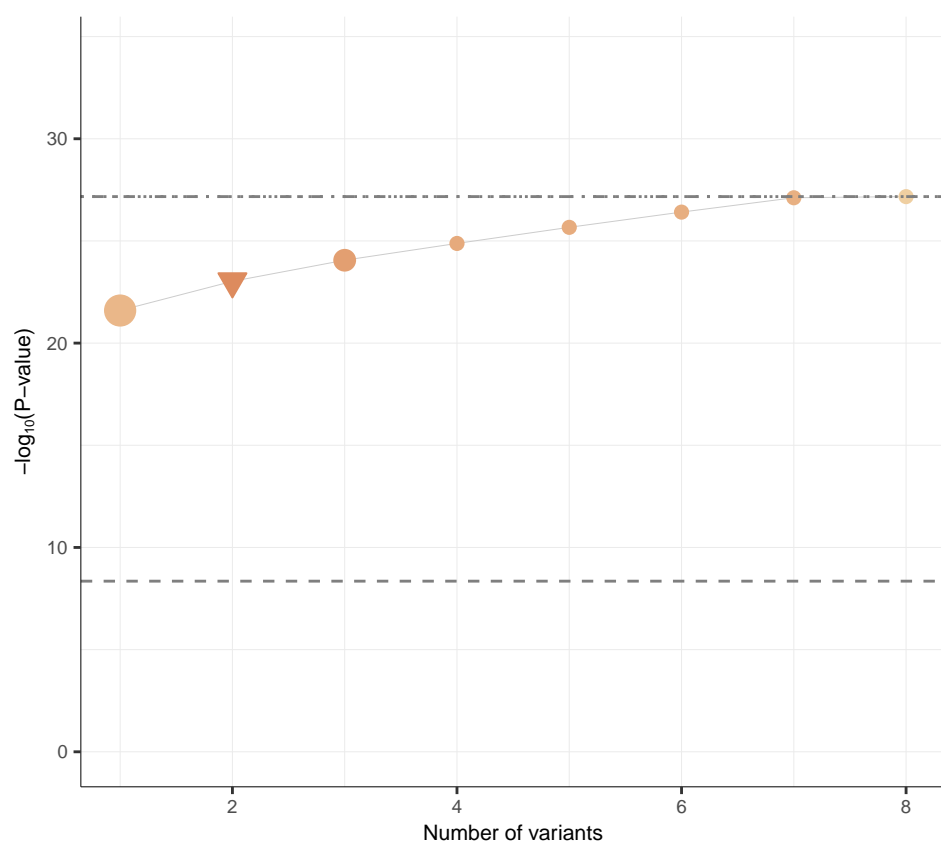
N-acetylglycine in plasma at ACY1 (LoF_mis)



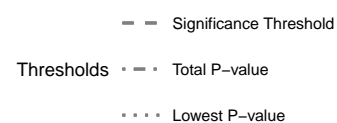
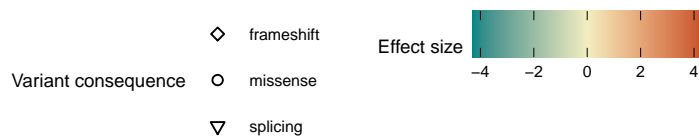
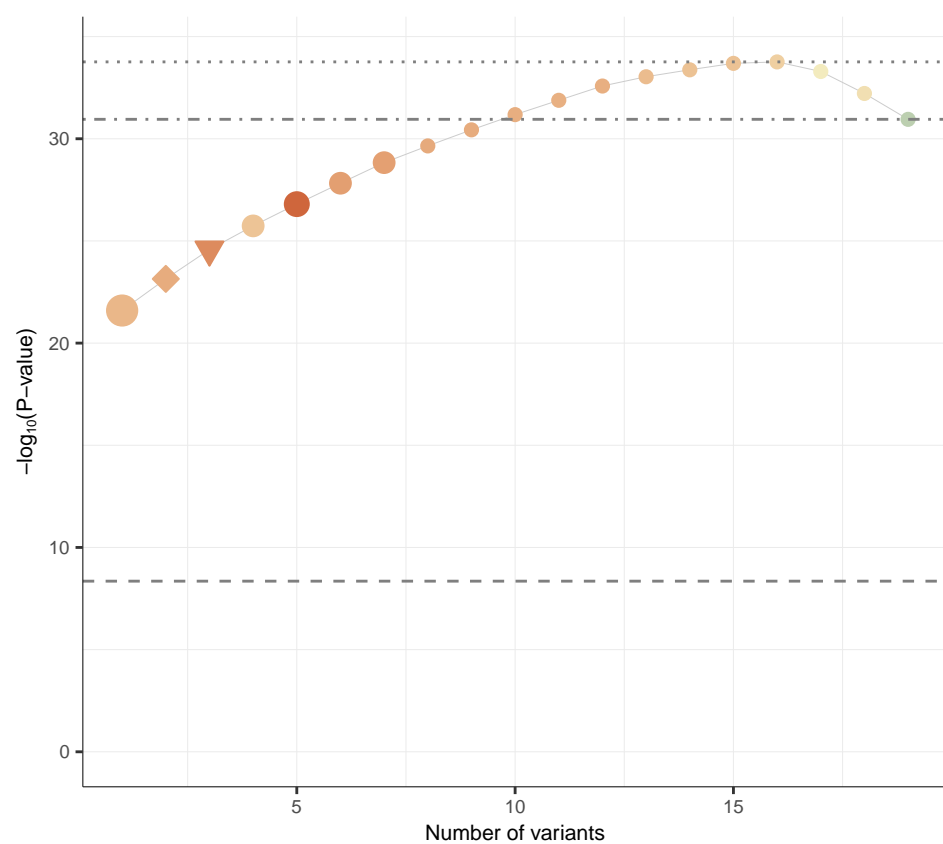
N-acetylglycine in plasma at ACY1 (HI_mis)



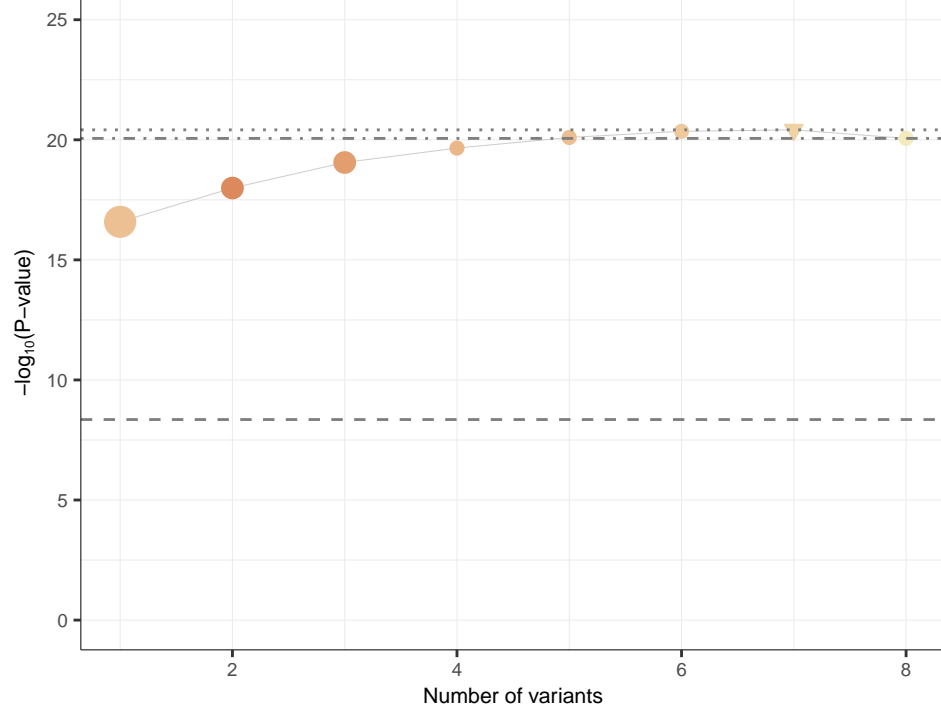
N-acetylglycine in urine at ACY1 (LoF_mis)



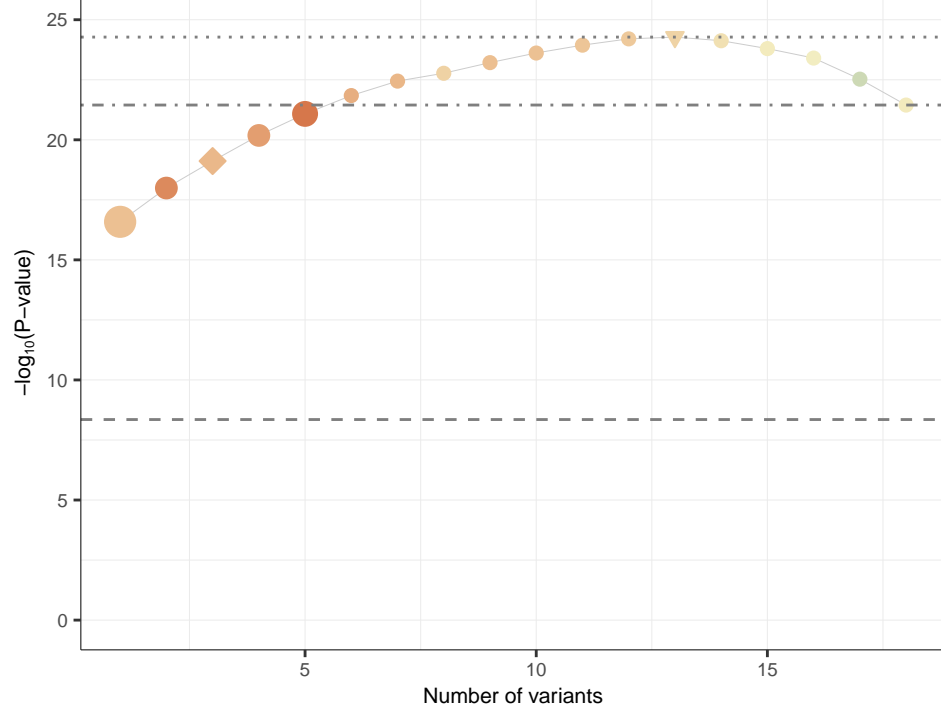
N-acetylglycine in urine at ACY1 (HI_mis)



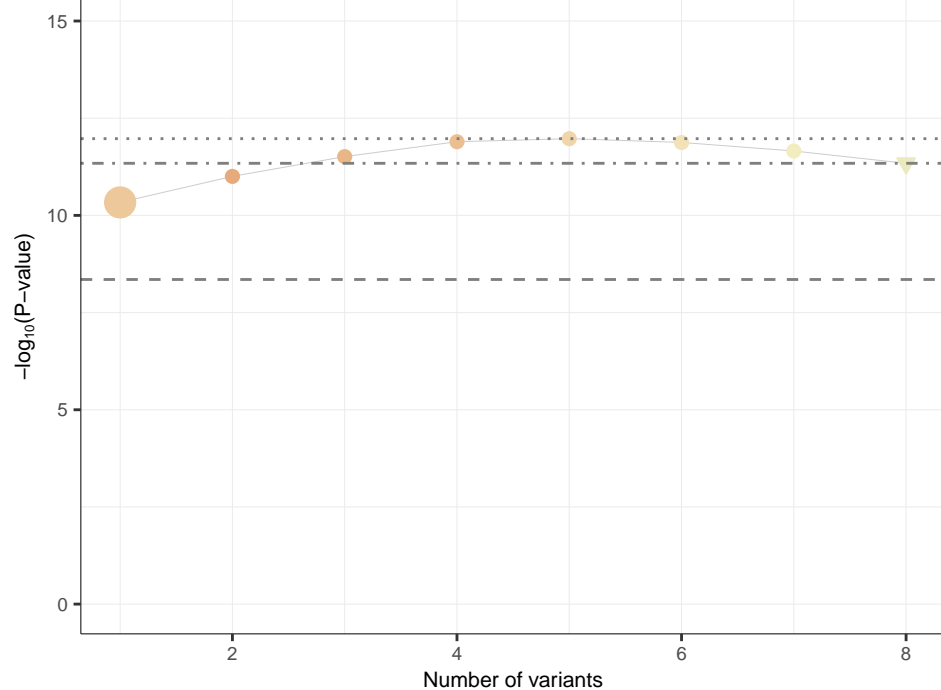
N-acetylisoIeucine in urine at ACY1 (LoF_mis)



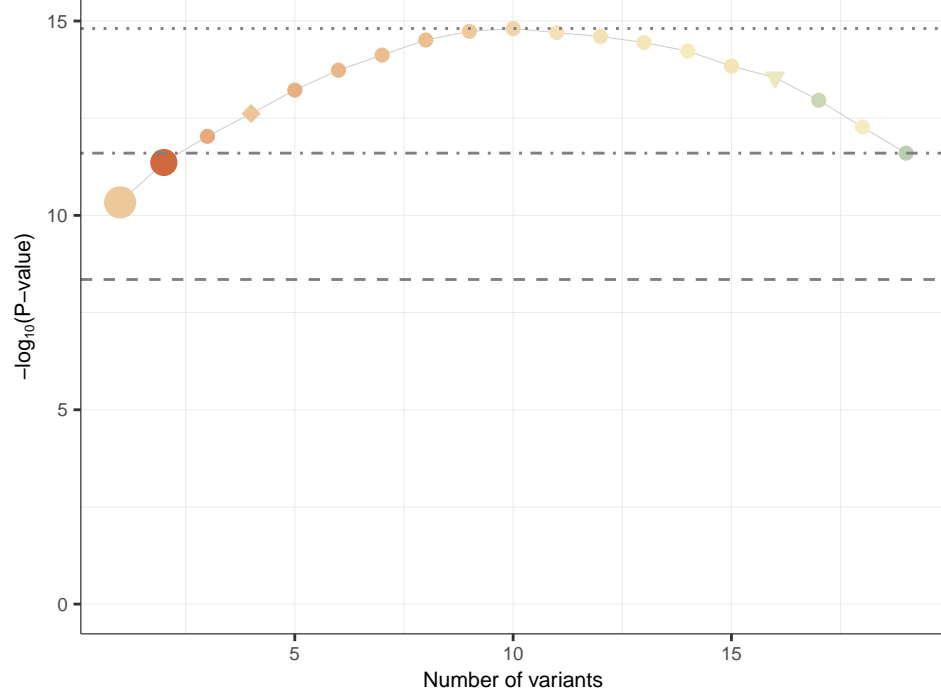
N-acetylisoIeucine in urine at ACY1 (HI_mis)



N-acetyllecucine in urine at ACY1 (LoF_mis)

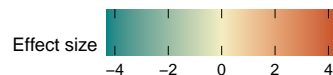


N-acetyllecucine in urine at ACY1 (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- ▽ splicing



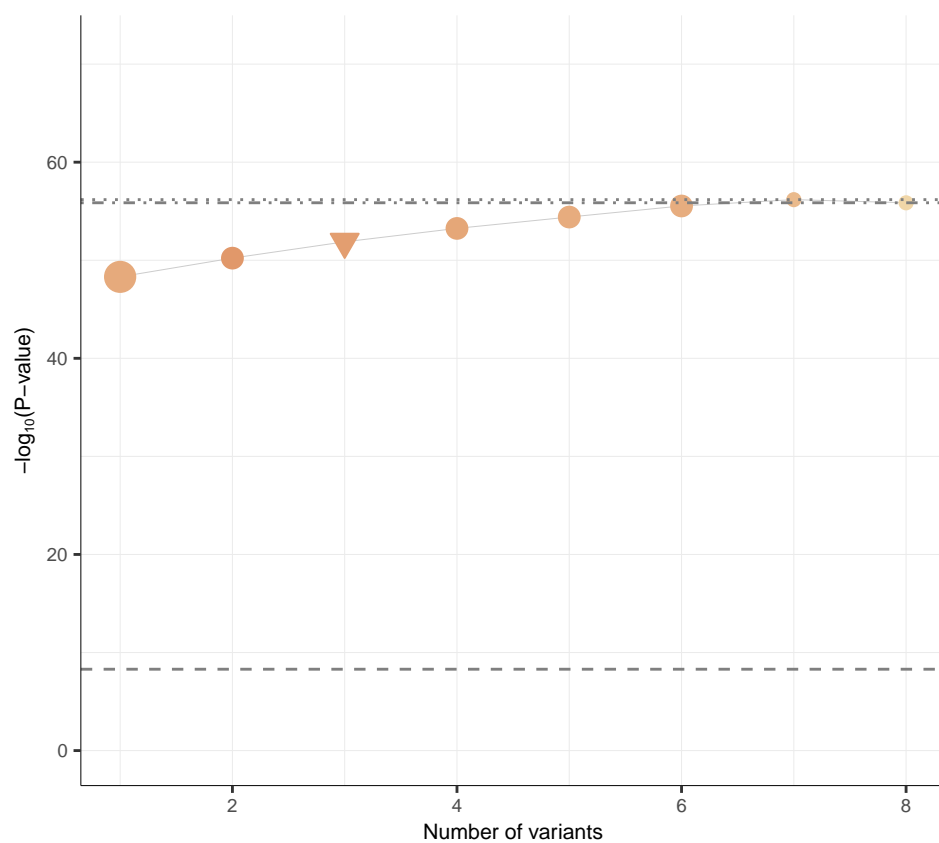
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8

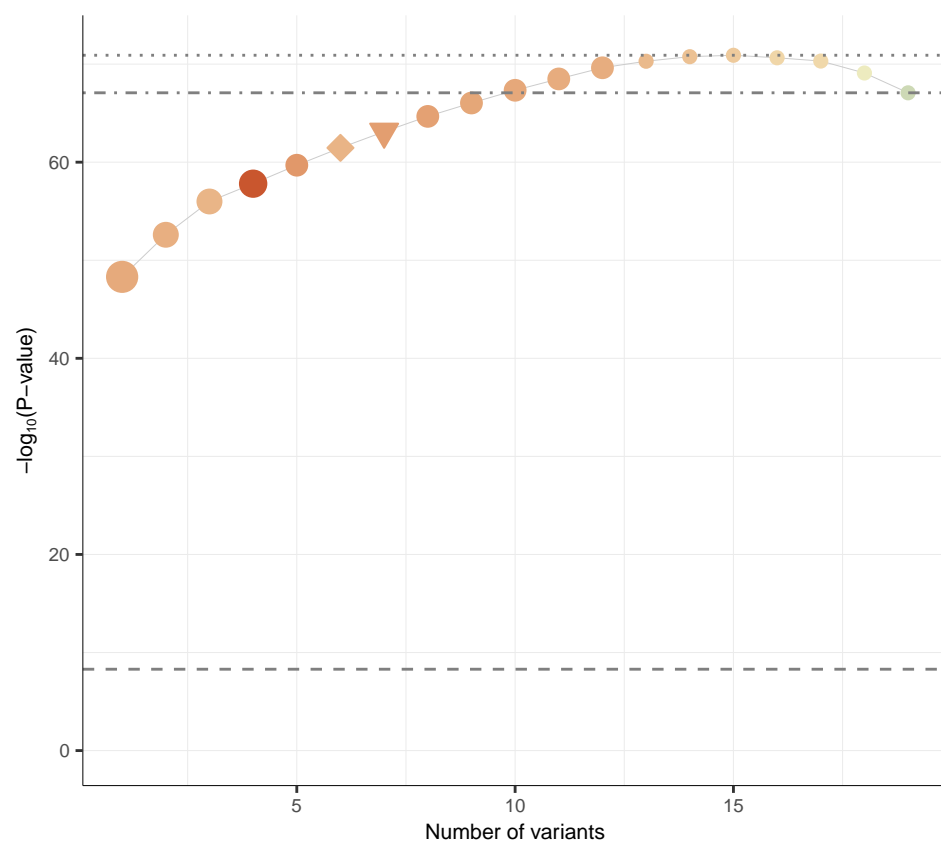
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

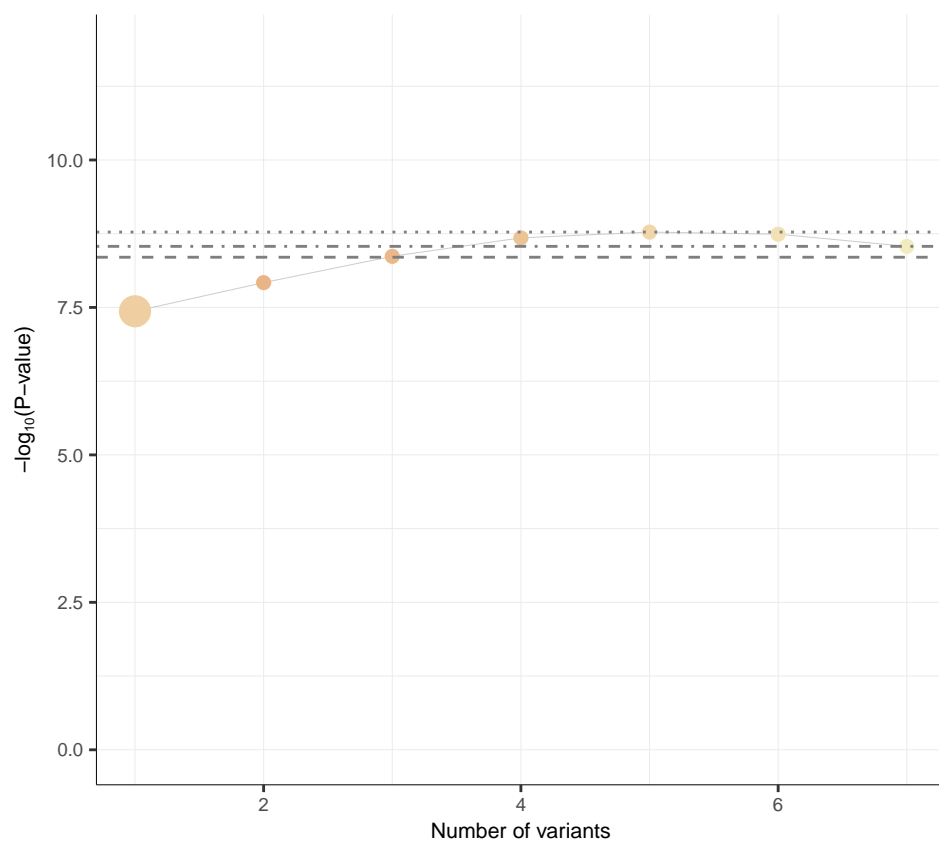
N-acetylmethionine in plasma at ACY1 (LoF_mis)



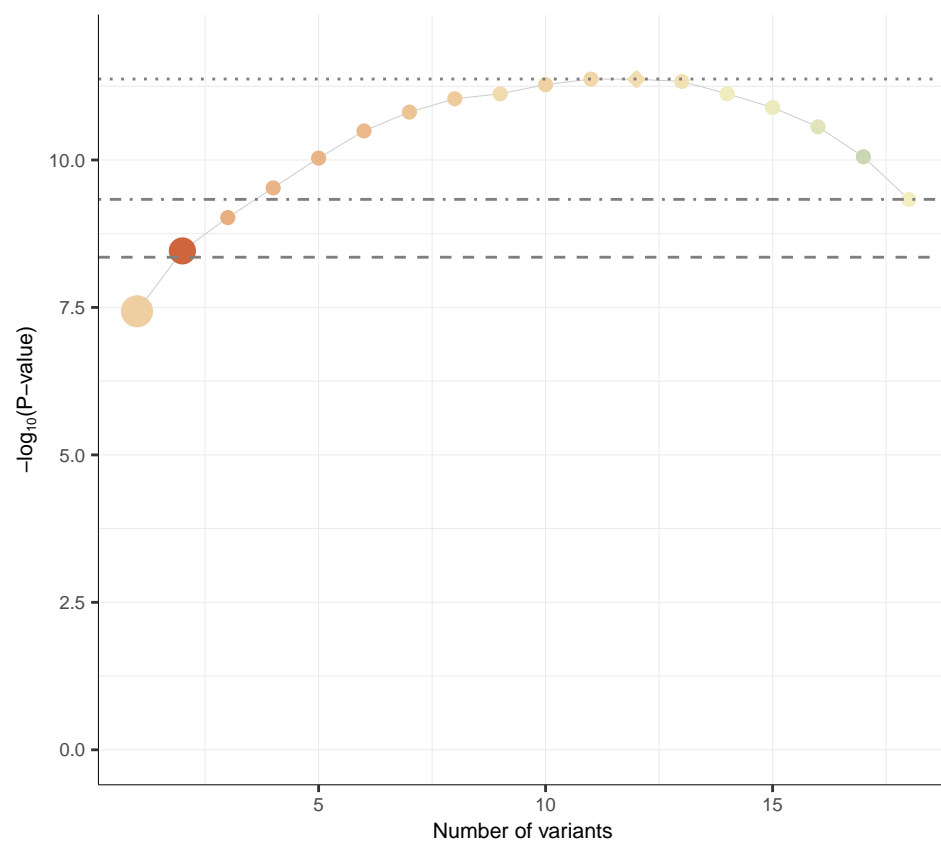
N-acetylmethionine in plasma at ACY1 (HI_mis)



N-acetylmethionine in urine at ACY1 (LoF_mis)



N-acetylmethionine in urine at ACY1 (HI_mis)



Variant consequence

- ◇ frameshift
- missense

Effect size

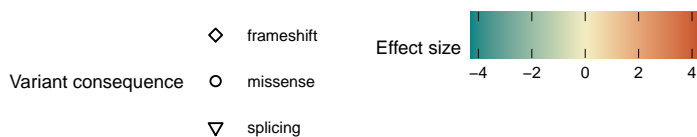
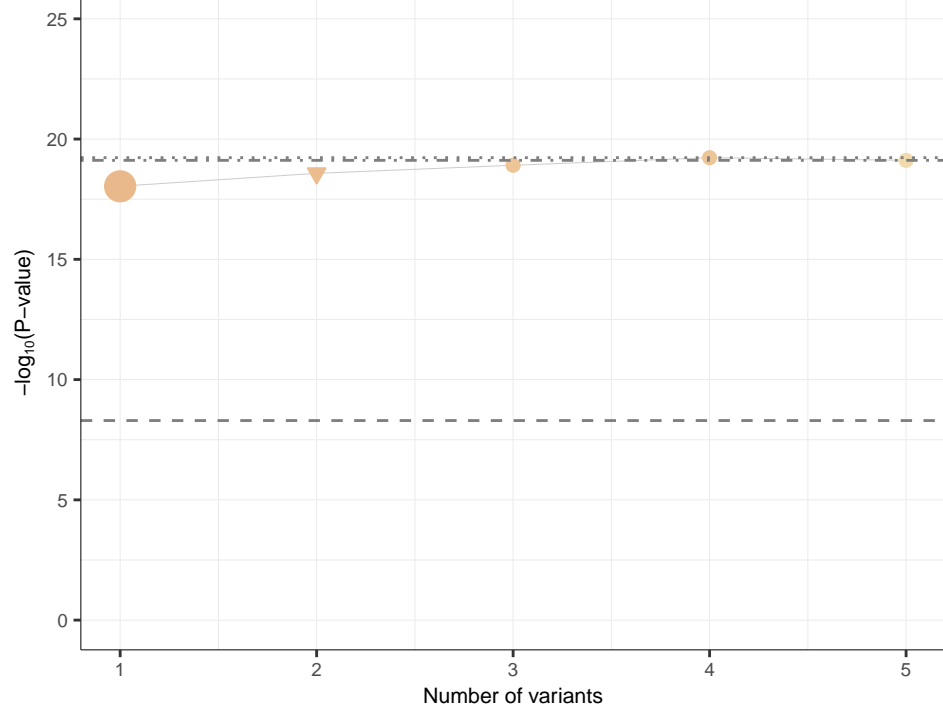
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8

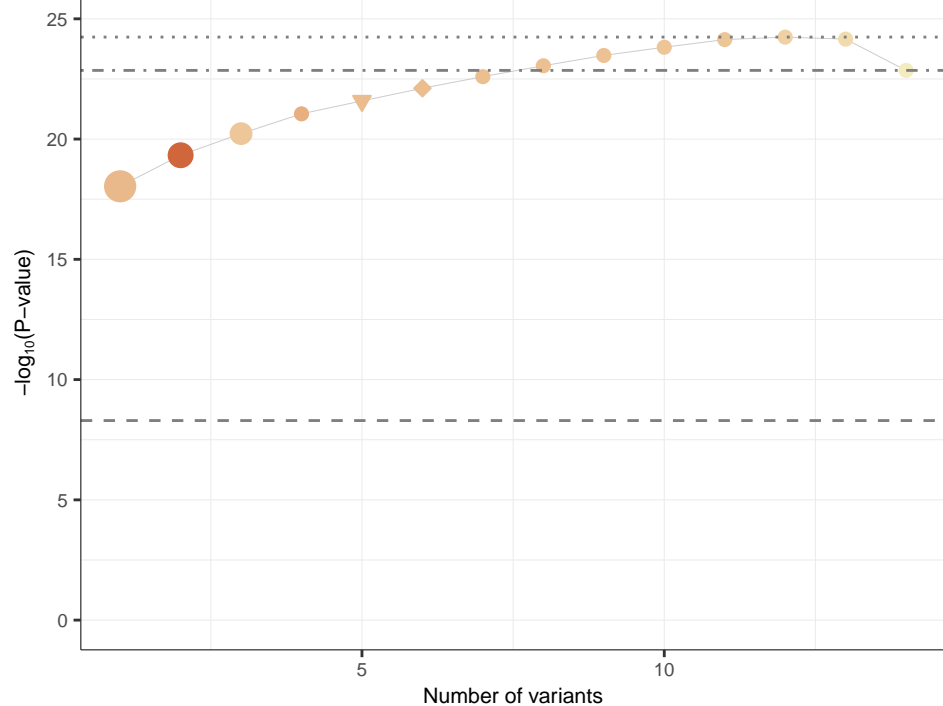
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

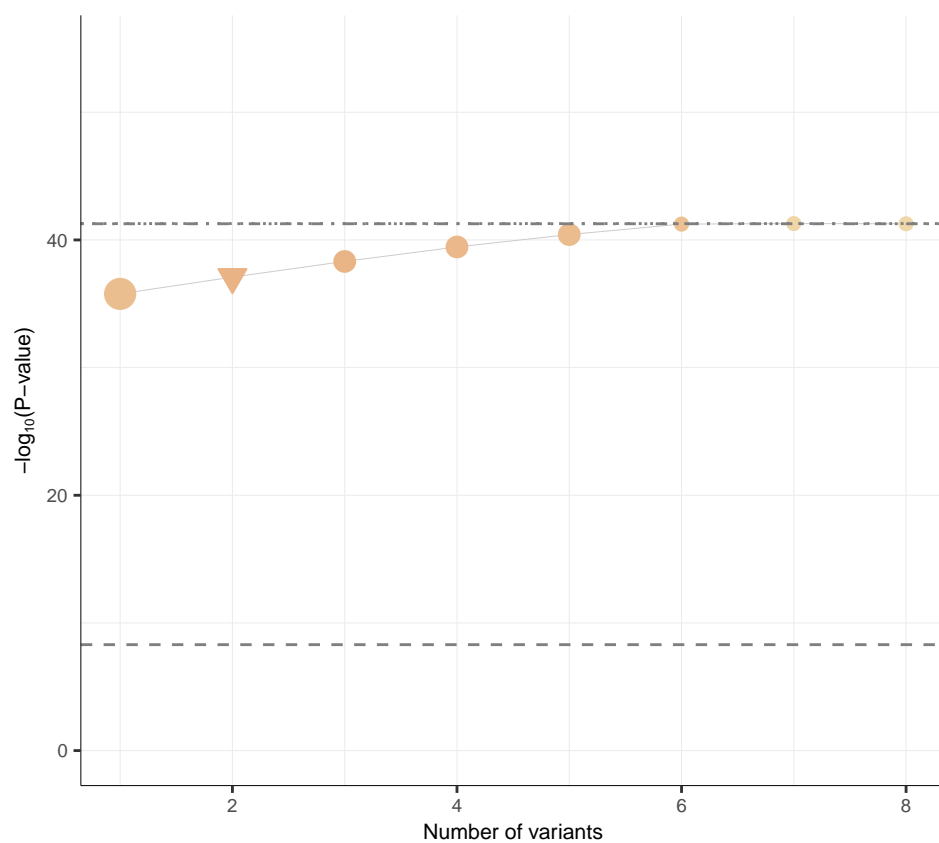
N-acetylmethionine sulfoxide in plasma at ACY1 (LoF_mis)



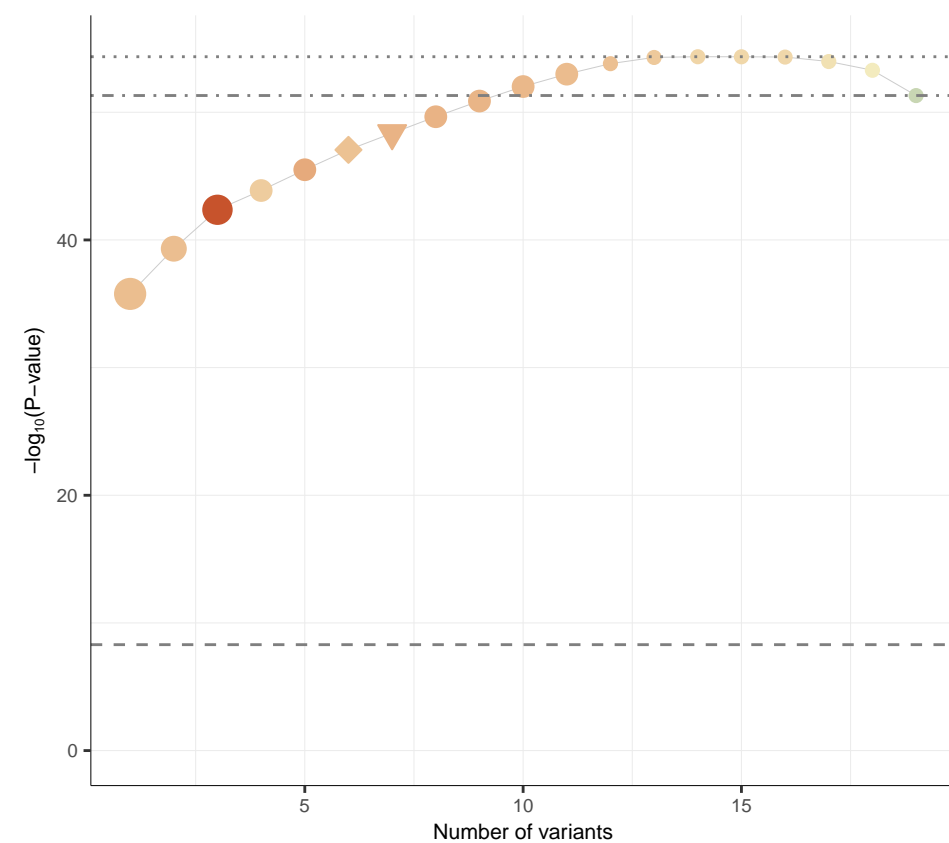
N-acetylmethionine sulfoxide in plasma at ACY1 (HI_mis)



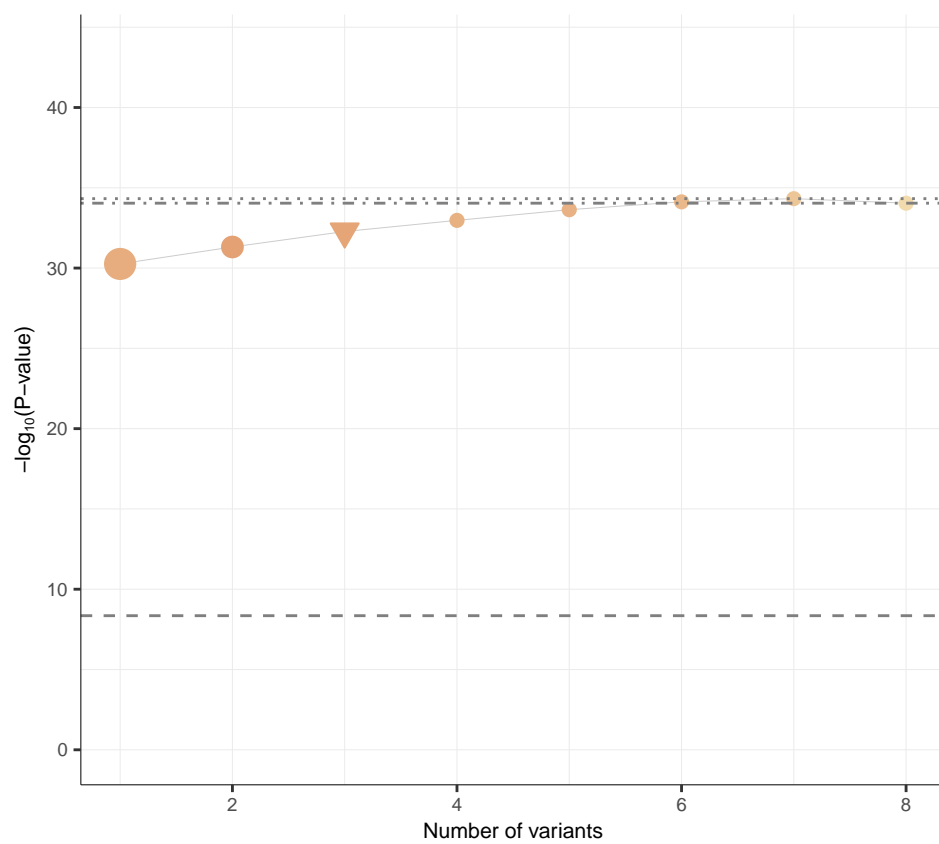
N-acetylserine in plasma at ACY1 (LoF_mis)



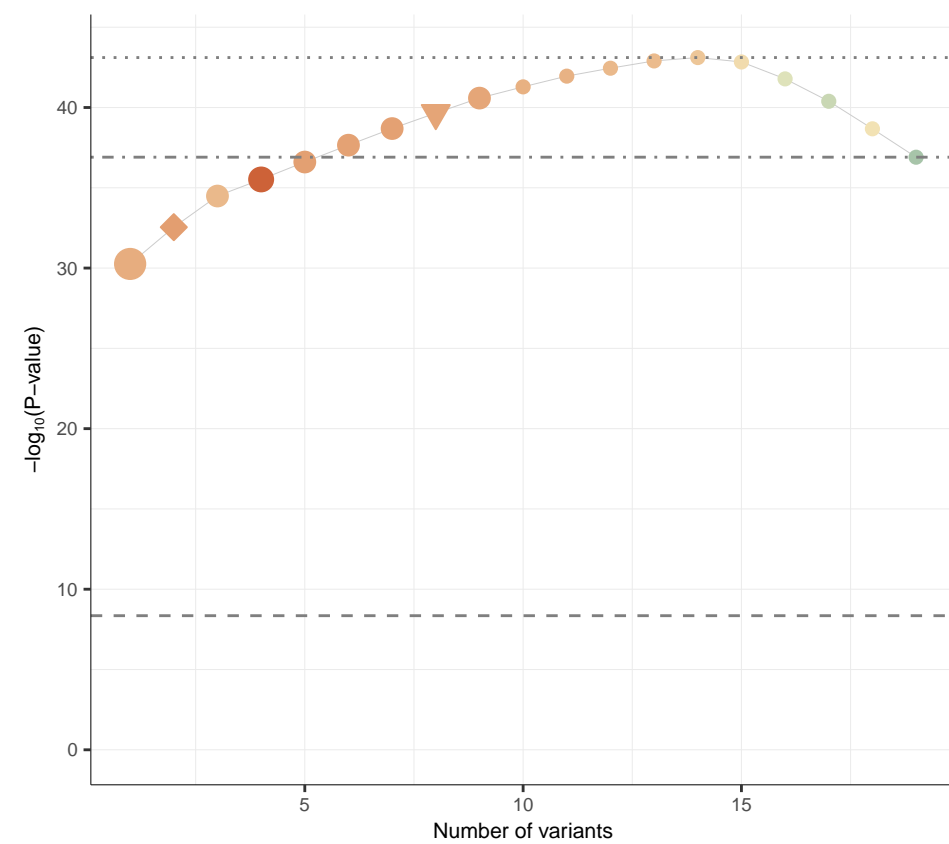
N-acetylserine in plasma at ACY1 (HI_mis)



N-acetylserine in urine at ACY1 (LoF_mis)

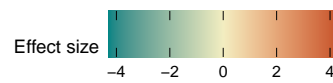


N-acetylserine in urine at ACY1 (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- ▽ splicing



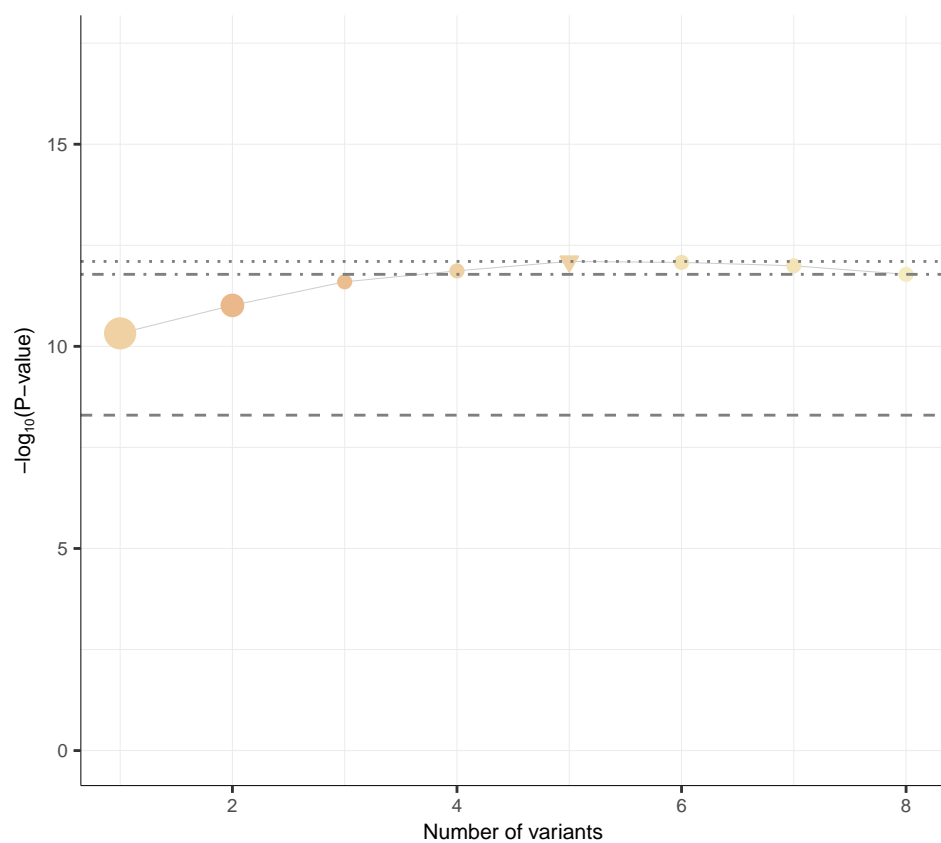
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8
- <1e-11

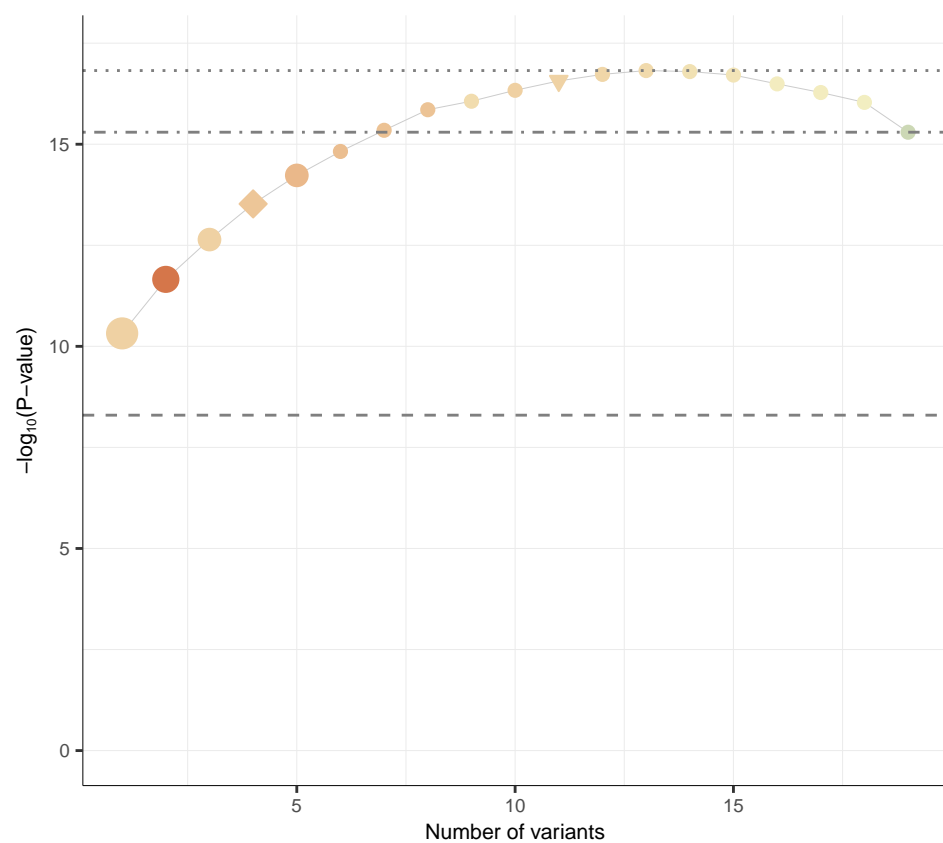
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

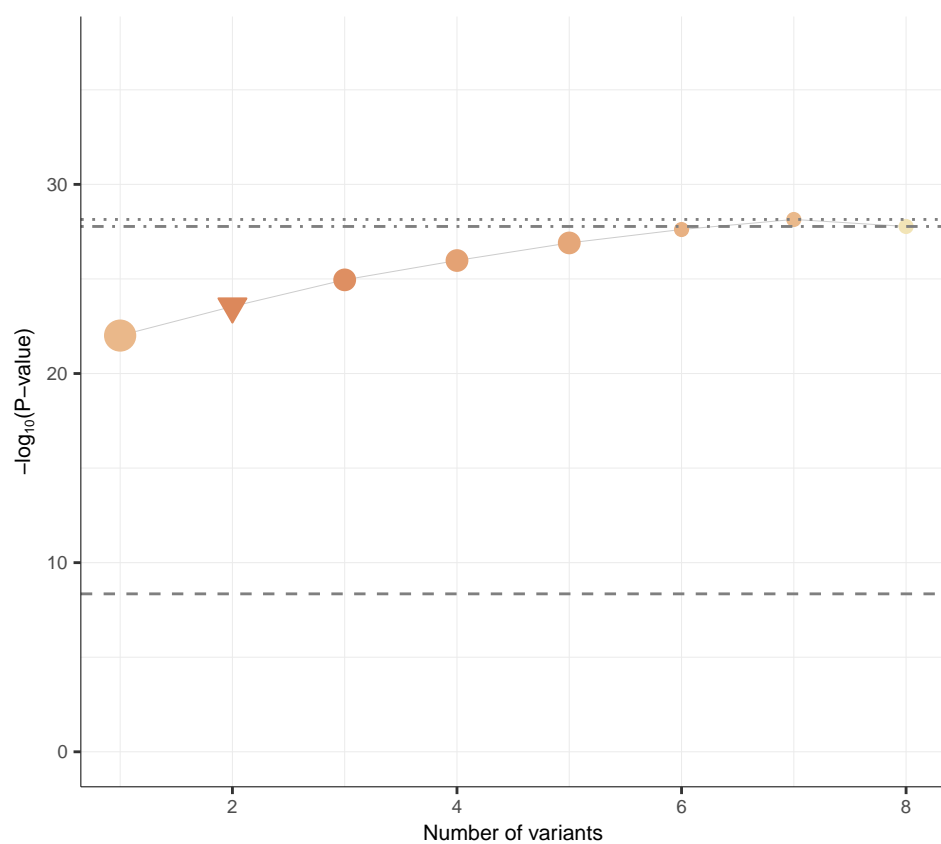
N-acetylthreonine in plasma at ACY1 (LoF_mis)



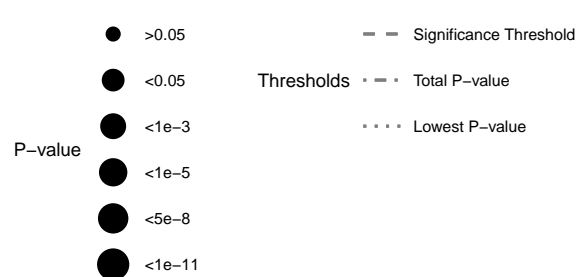
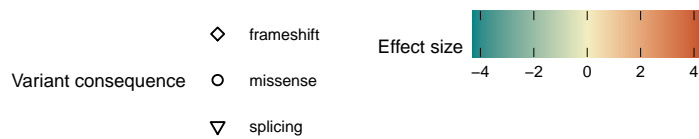
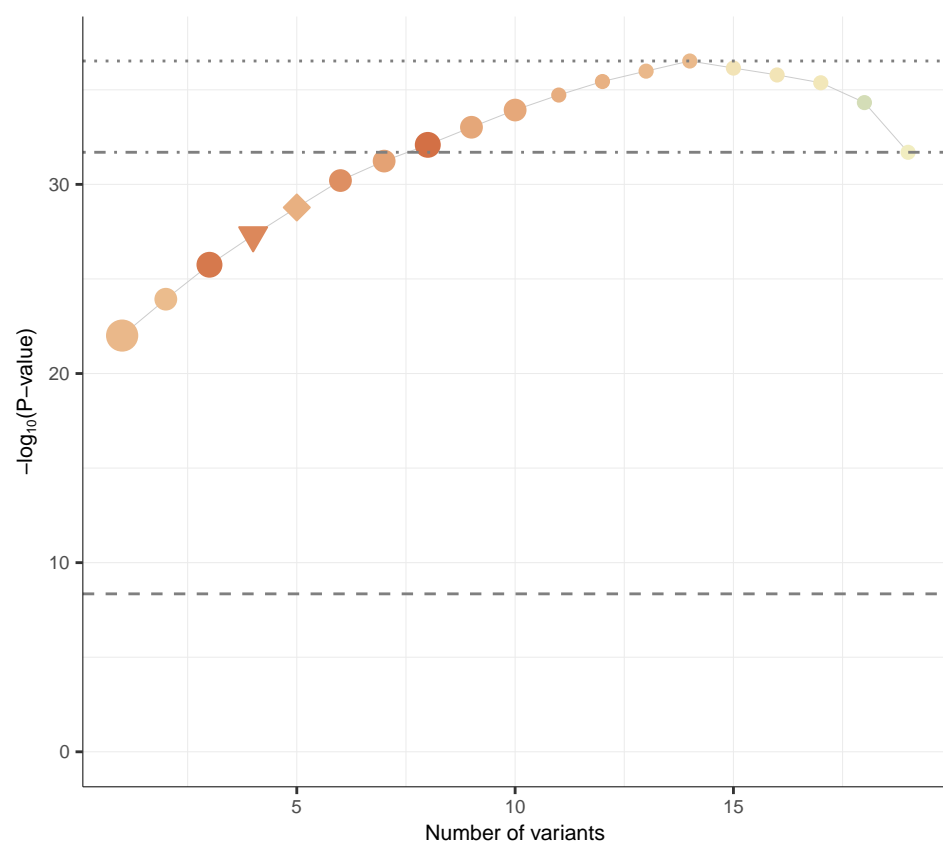
N-acetylthreonine in plasma at ACY1 (HI_mis)



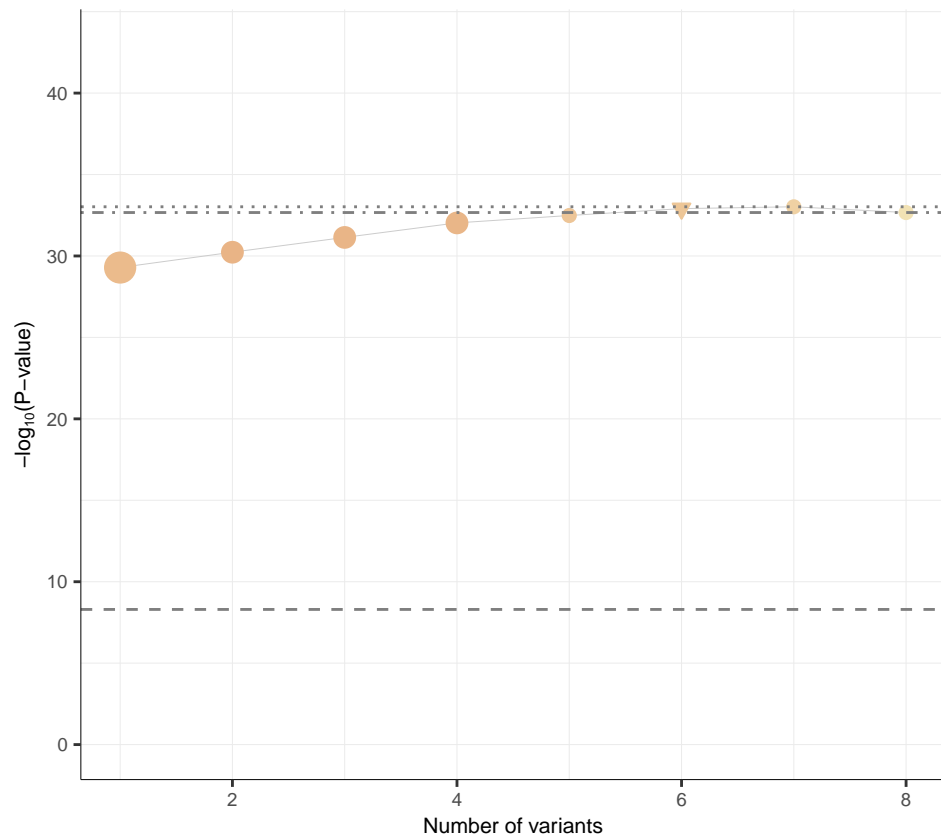
N-acetylthreonine in urine at ACY1 (LoF_mis)



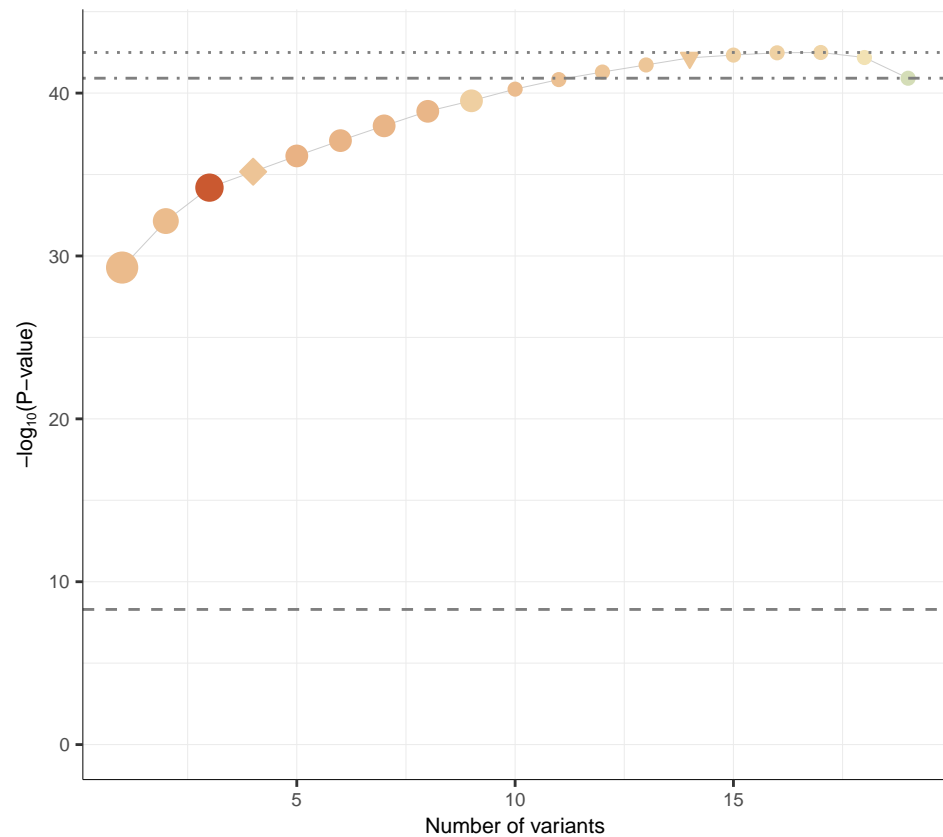
N-acetylthreonine in urine at ACY1 (HI_mis)



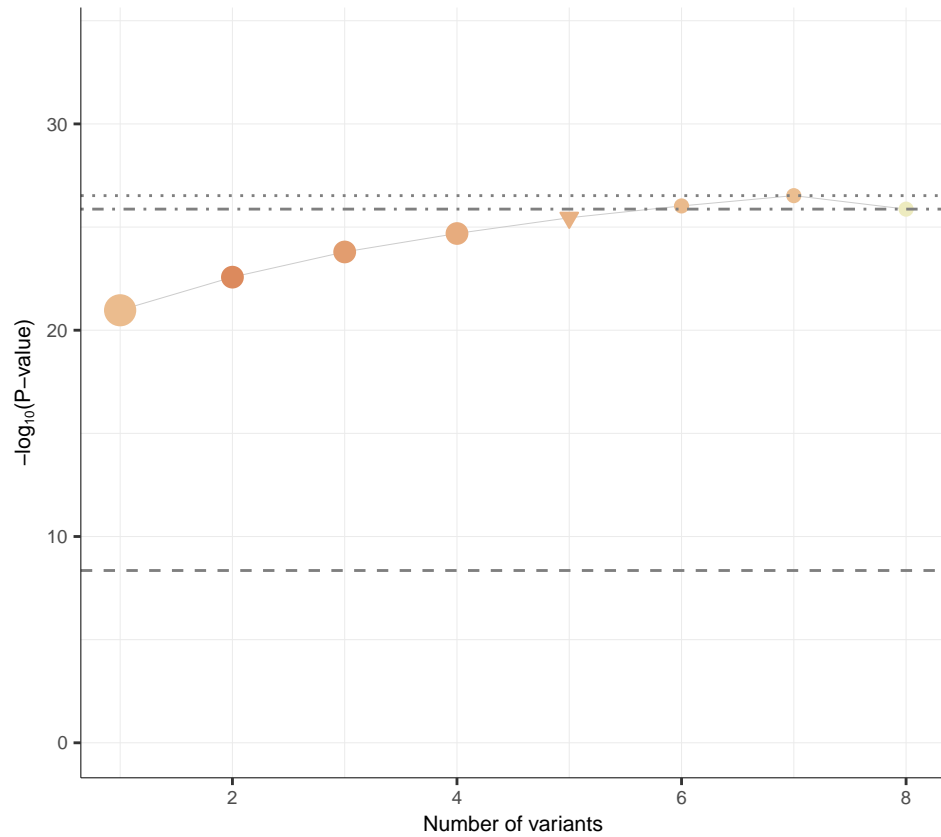
N-acetylvaline in plasma at ACY1 (LoF_mis)



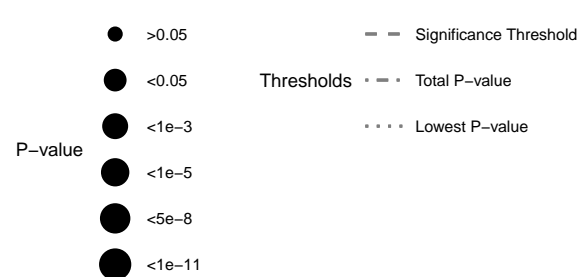
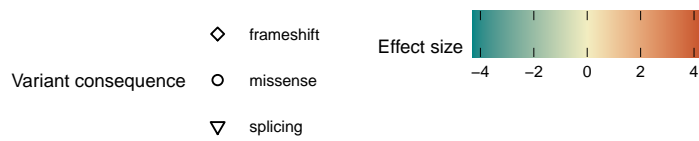
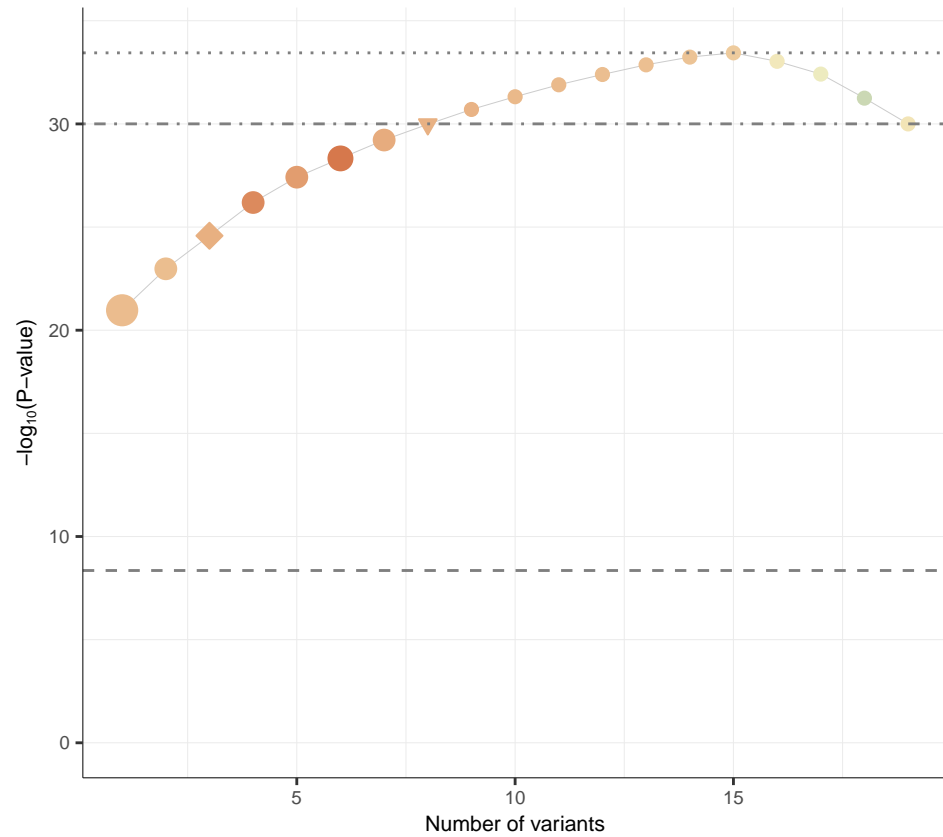
N-acetylvaline in plasma at ACY1 (HI_mis)



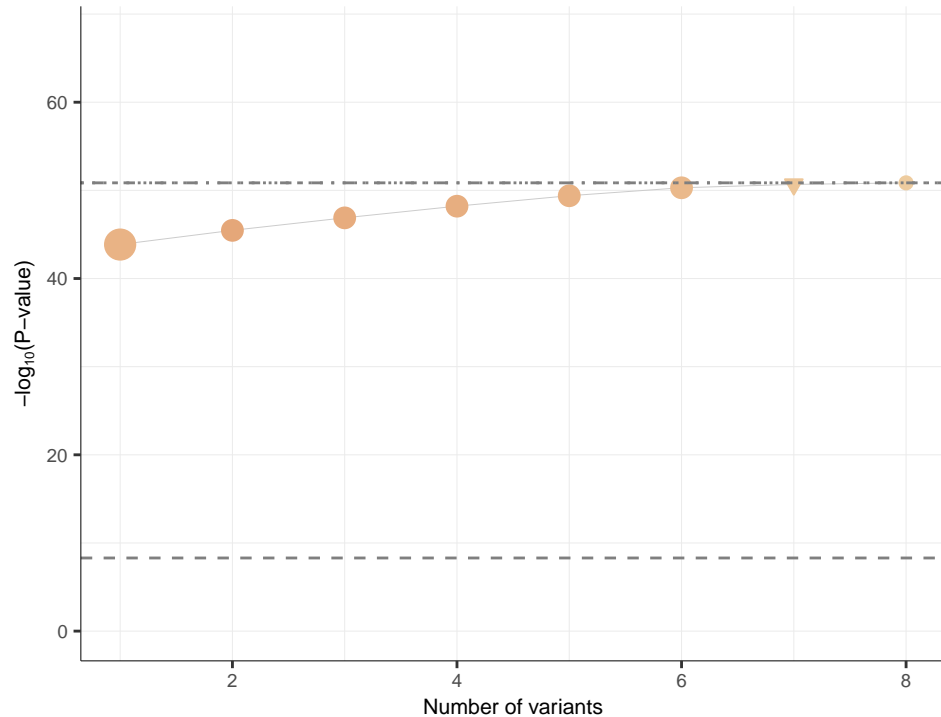
N-acetylvaline in urine at ACY1 (LoF_mis)



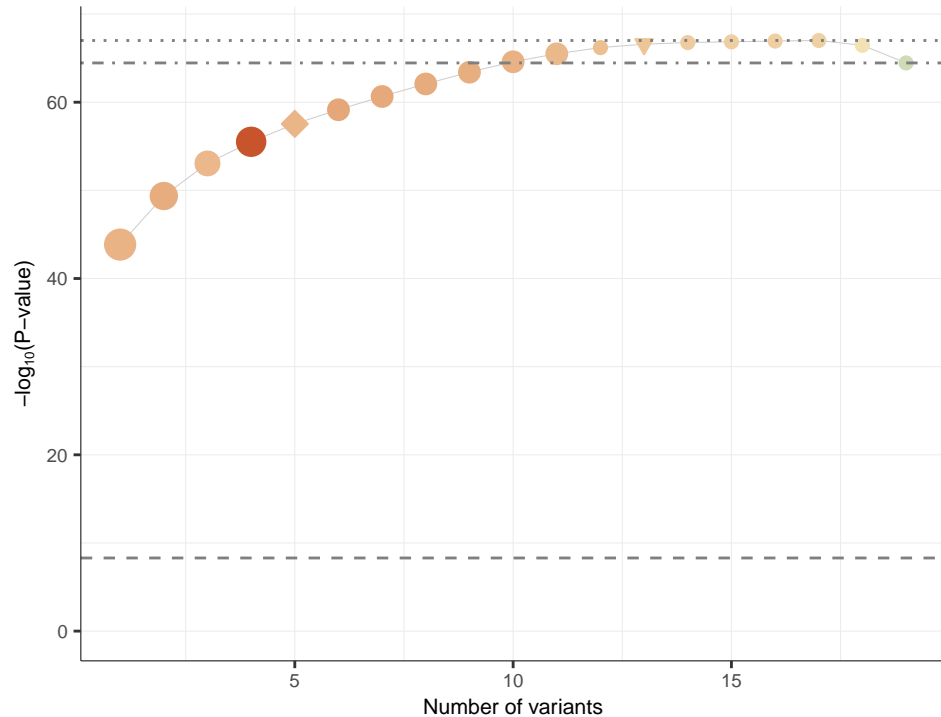
N-acetylvaline in urine at ACY1 (HI_mis)



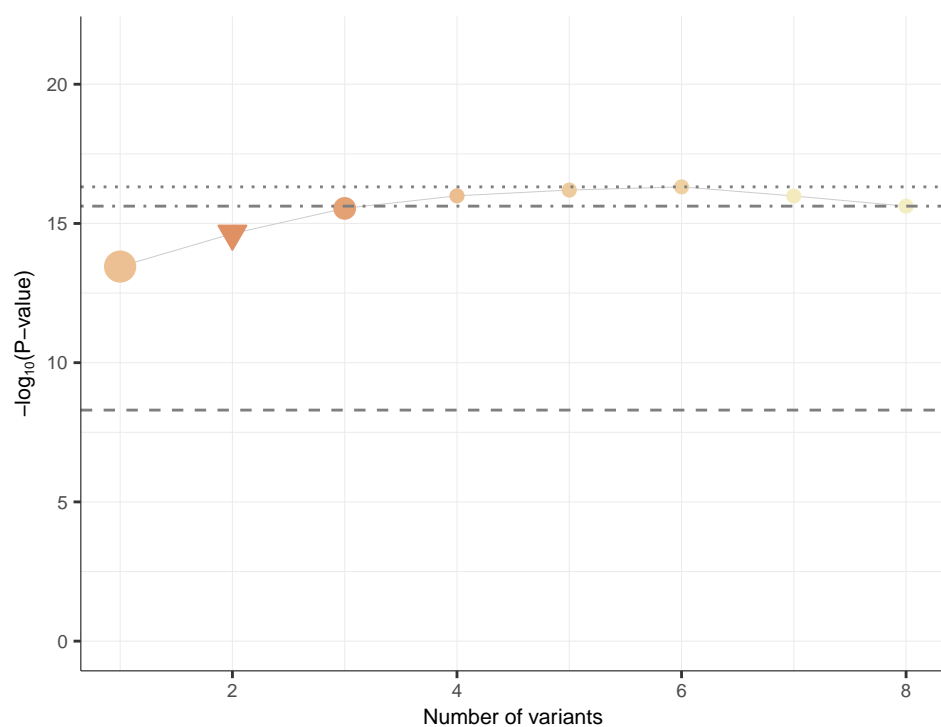
N-formylmethionine in plasma at ACY1 (LoF_mis)



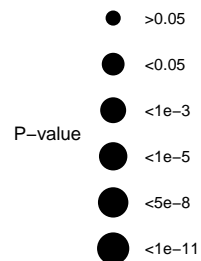
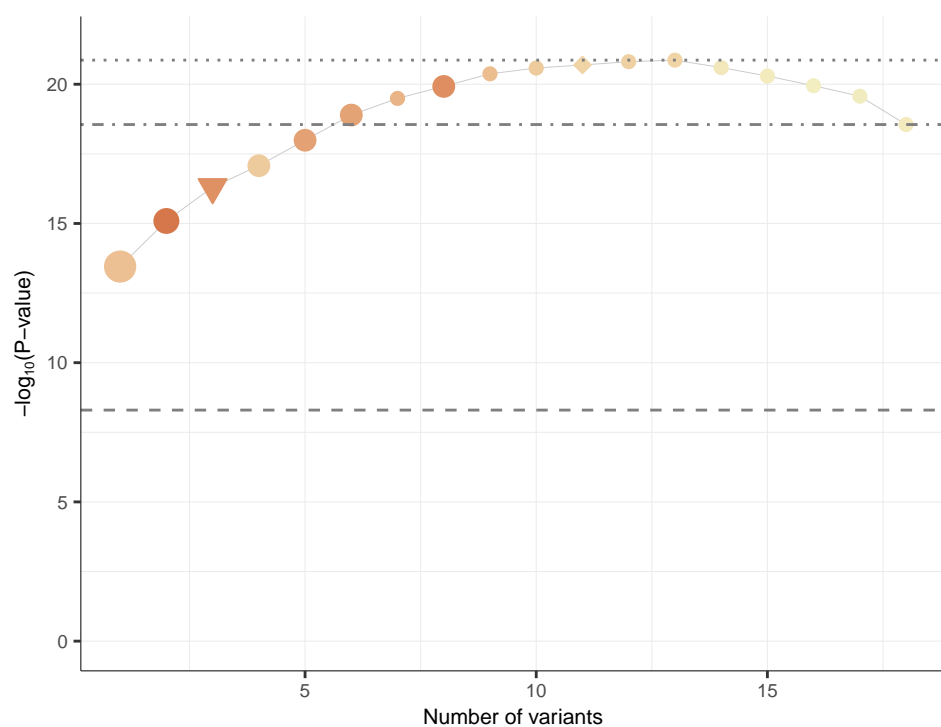
N-formylmethionine in plasma at ACY1 (HI_mis)



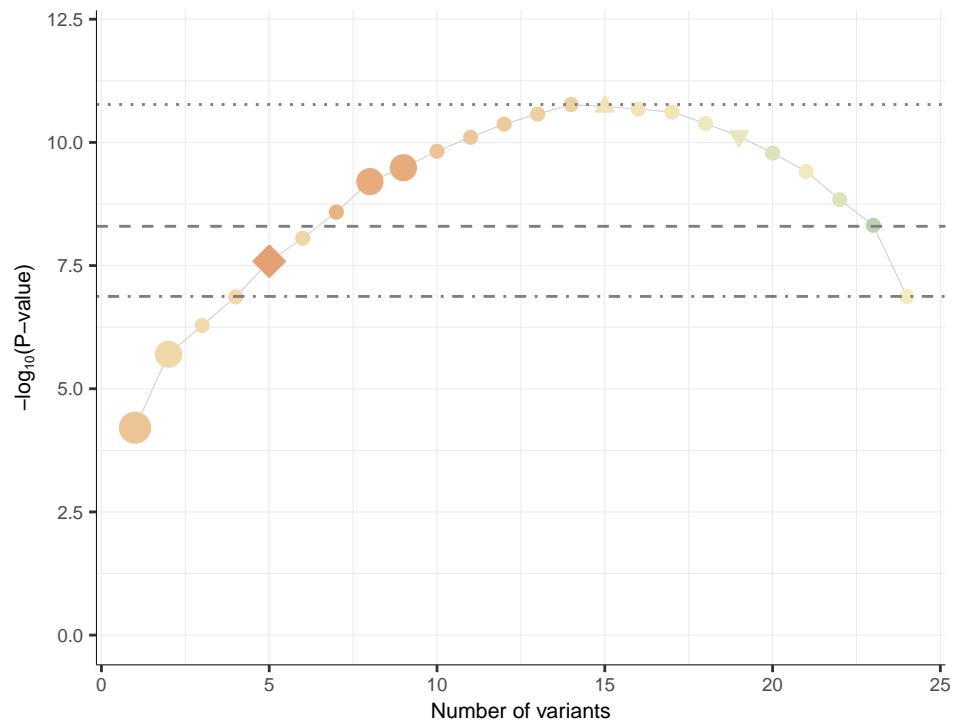
propionylglycine in plasma at ACY1 (LoF_mis)



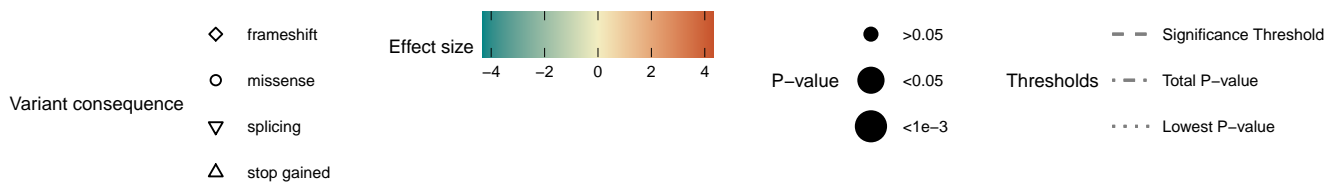
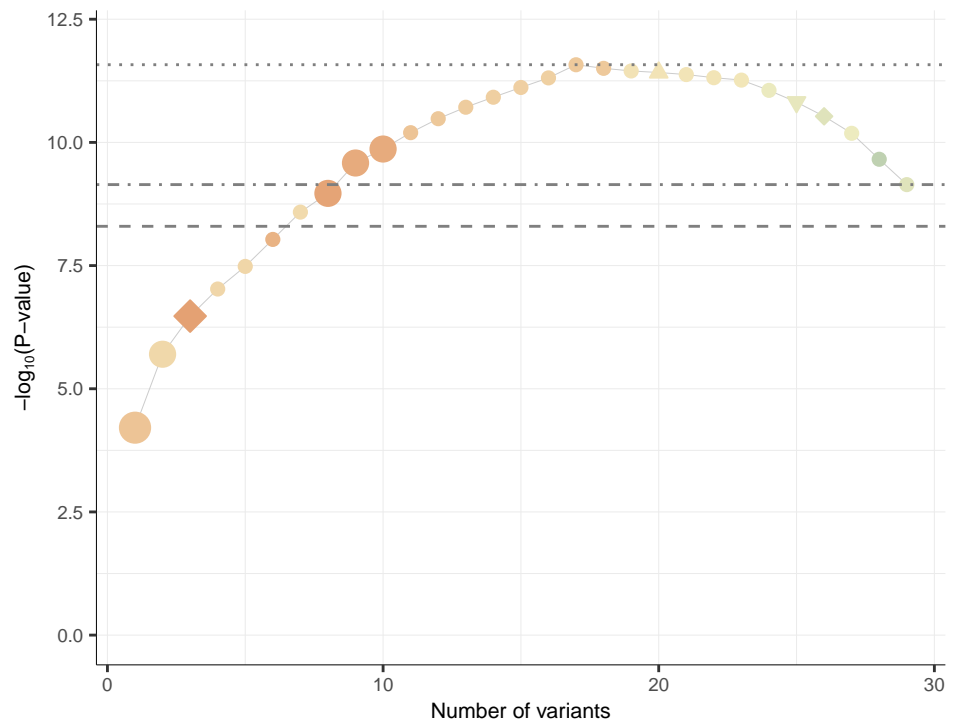
propionylglycine in plasma at ACY1 (HI_mis)



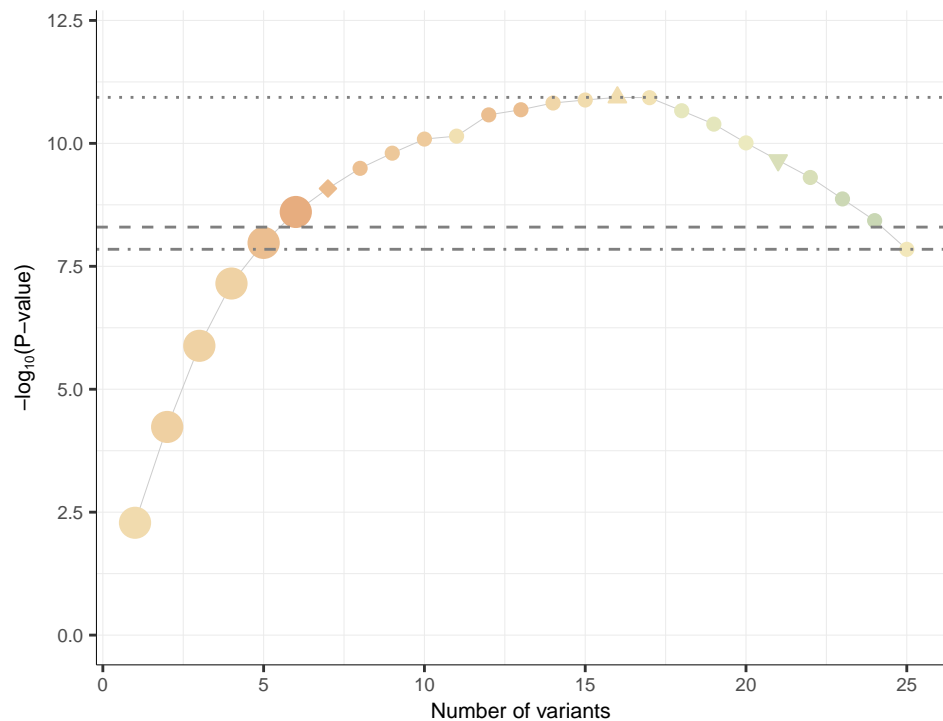
N-acetylkynurenine (2) in plasma at ACY3 (LoF_mis)



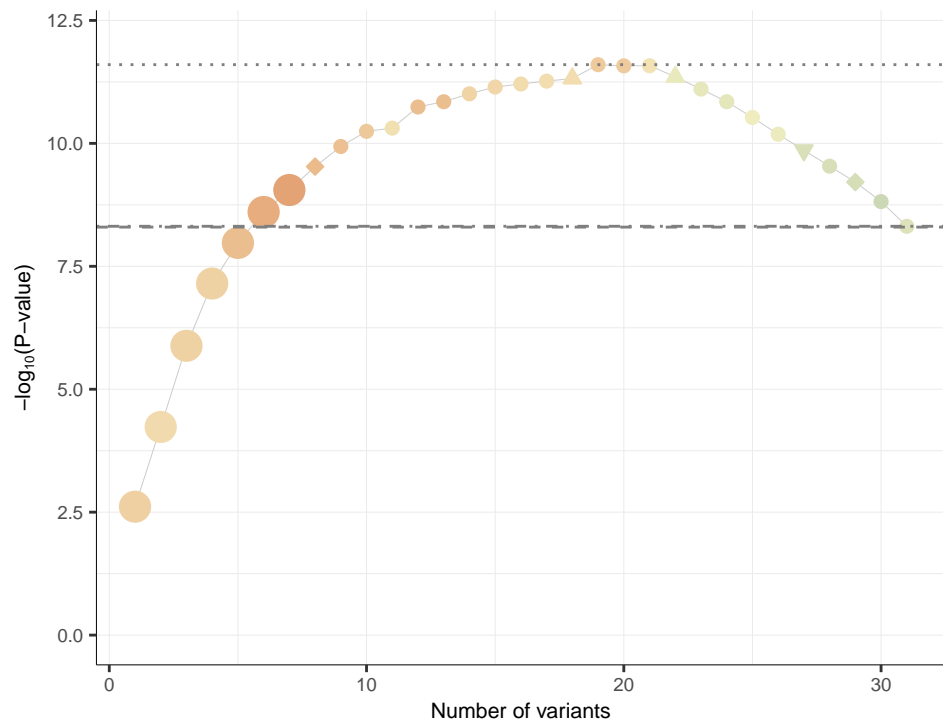
N-acetylkynurenine (2) in plasma at ACY3 (HI_mis)



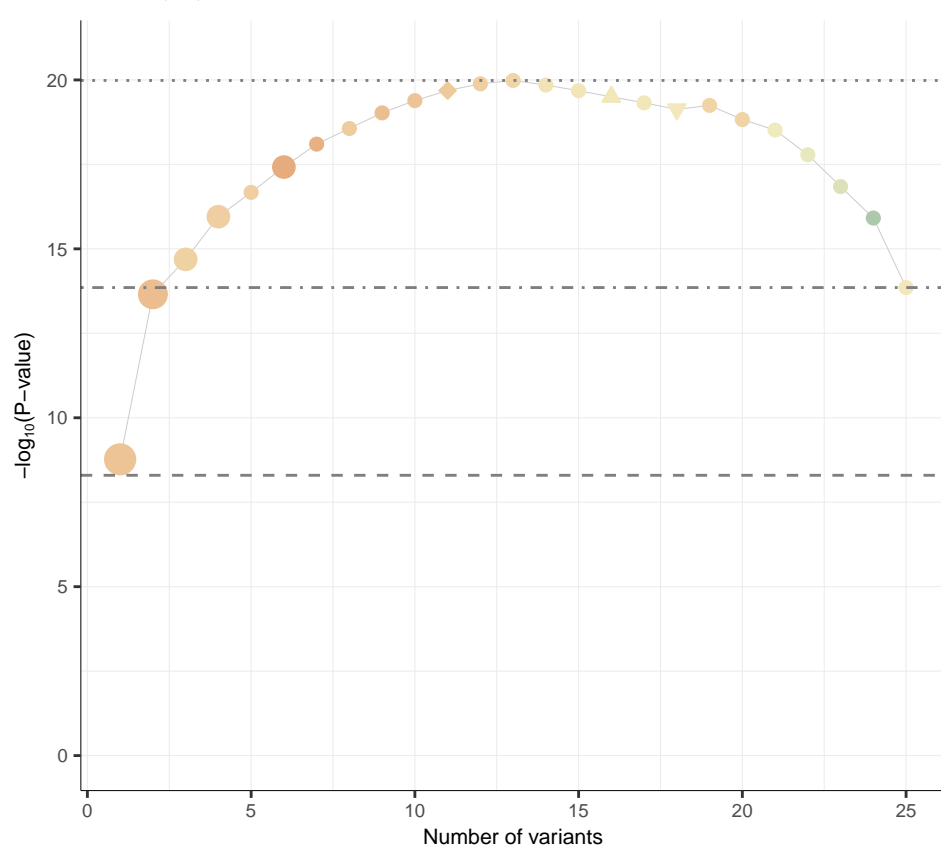
N-acetylphenylalanine in plasma at ACY3 (LoF_mis)



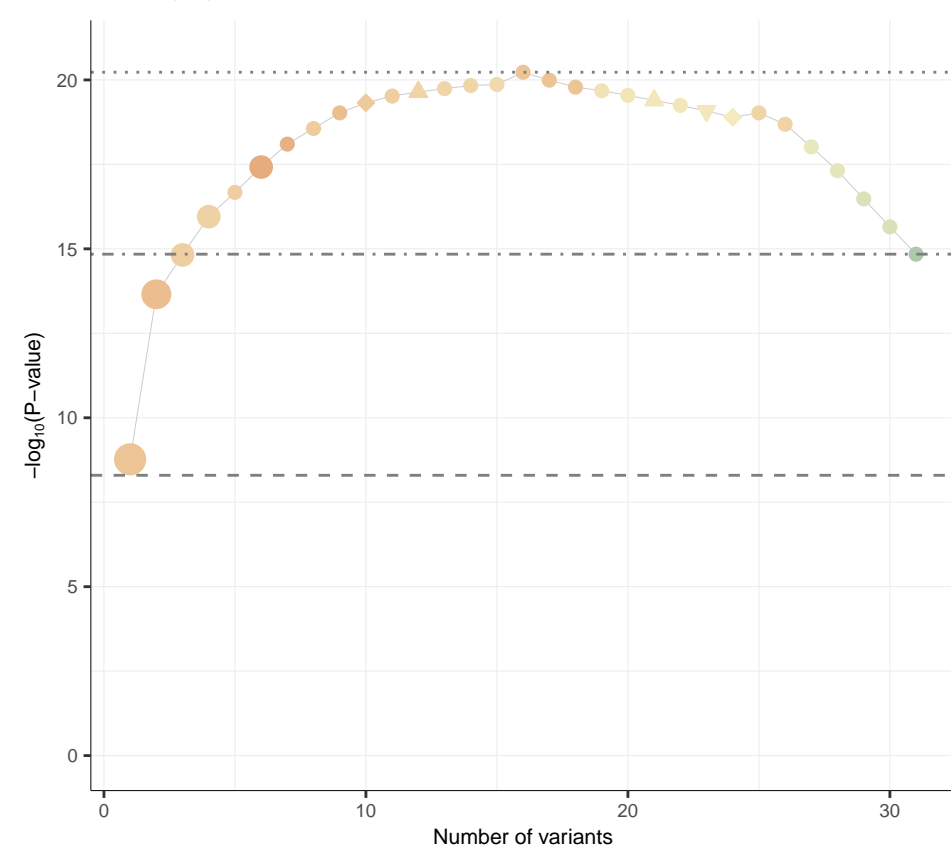
N-acetylphenylalanine in plasma at ACY3 (HI_mis)



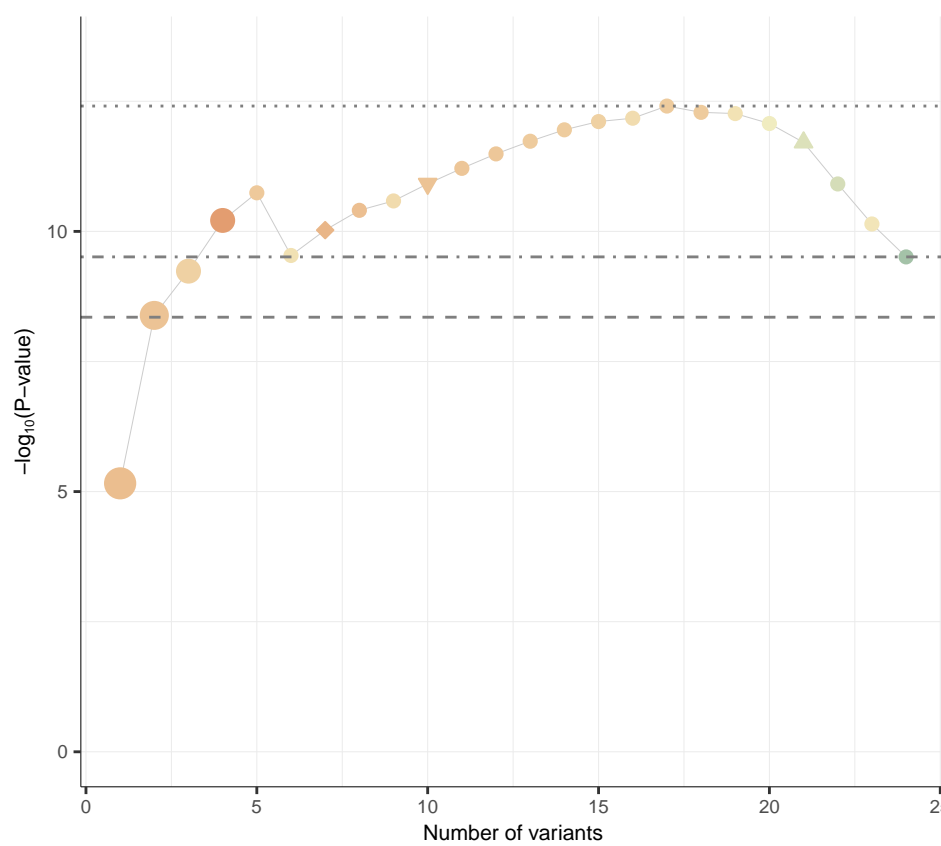
N-acetyltryptophan in plasma at ACY3 (LoF_mis)



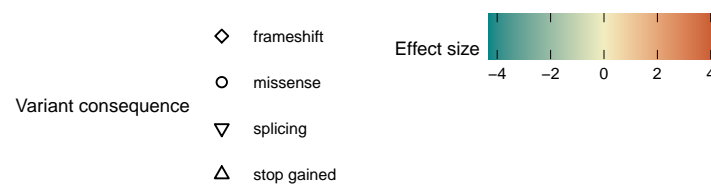
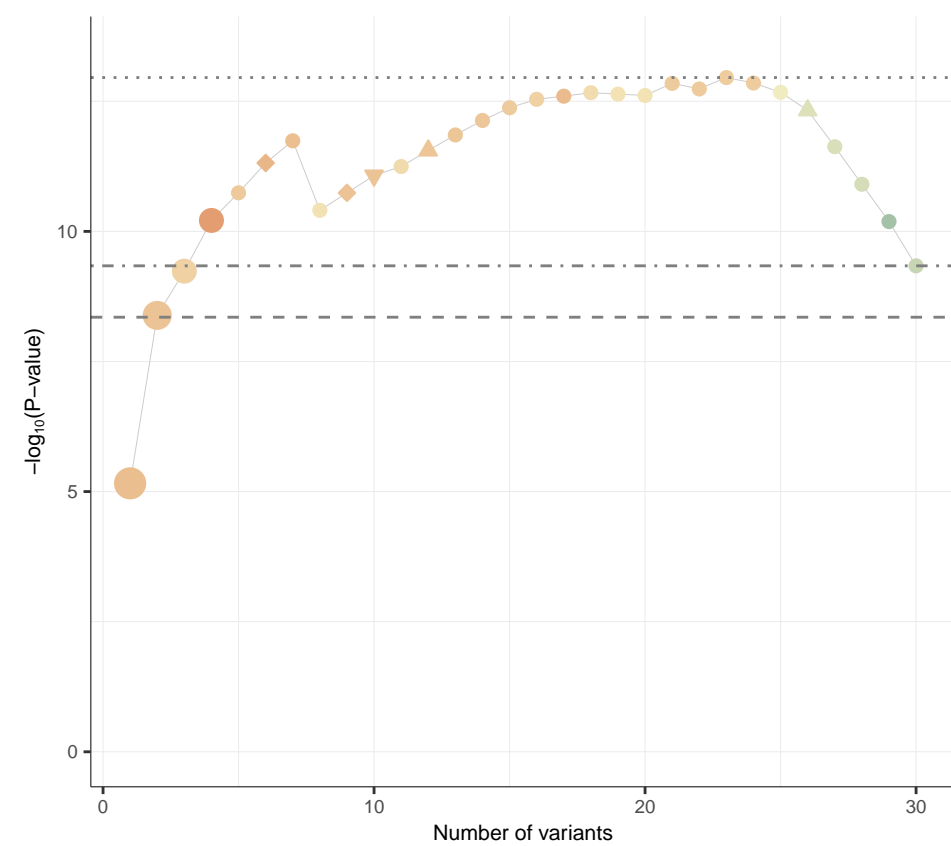
N-acetyltryptophan in plasma at ACY3 (HI_mis)



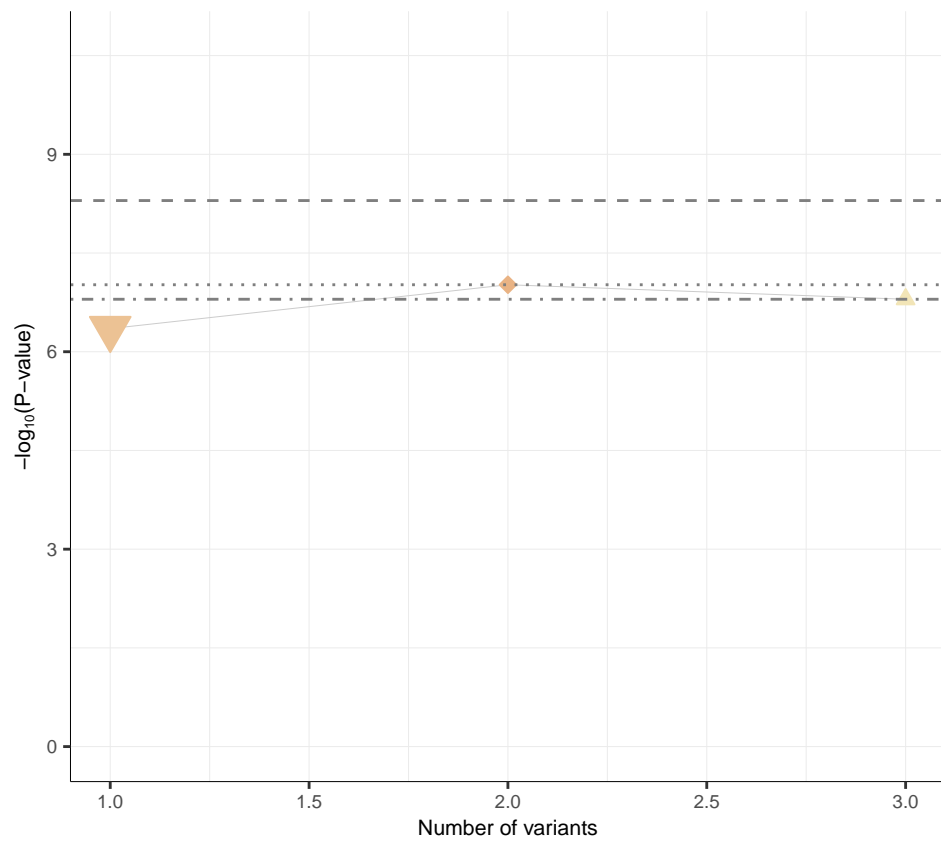
N-acetyltryptophan in urine at ACY3 (LoF_mis)



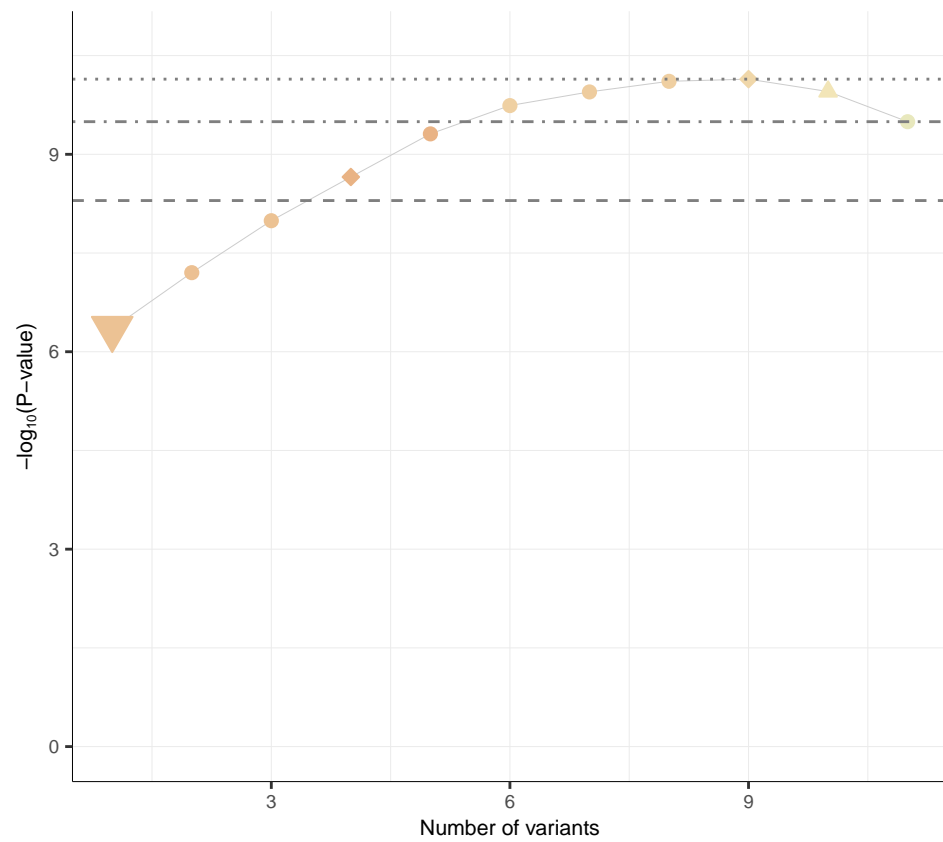
N-acetyltryptophan in urine at ACY3 (HI_mis)



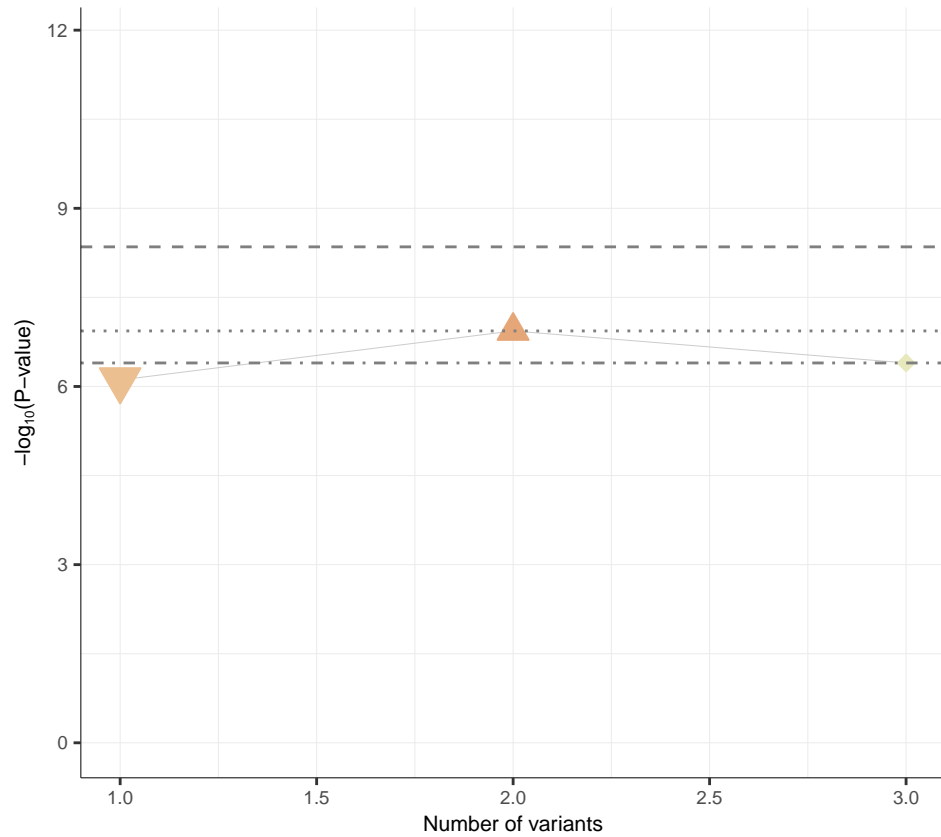
N-formylanthranilic acid in plasma at *AFMID* (LoF_mis)



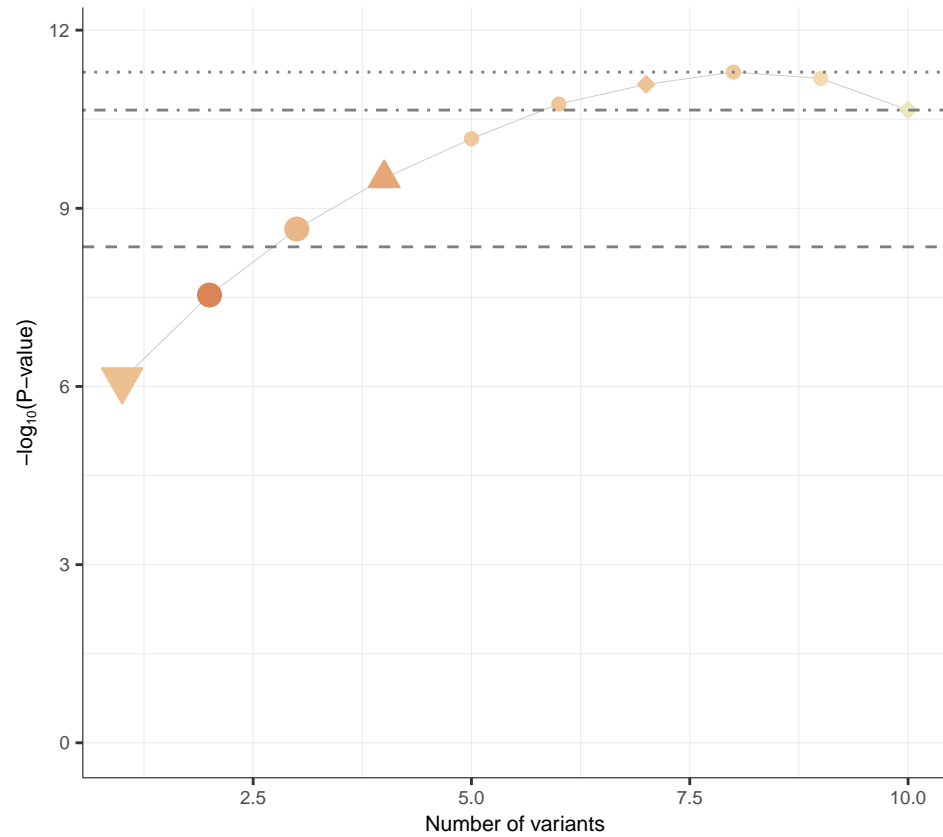
N-formylanthranilic acid in plasma at *AFMID* (HI_mis)



N-formylanthranilic acid in urine at *AFMID* (LoF_mis)



N-formylanthranilic acid in urine at *AFMID* (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- ▽ splicing
- △ stop gained

Effect size

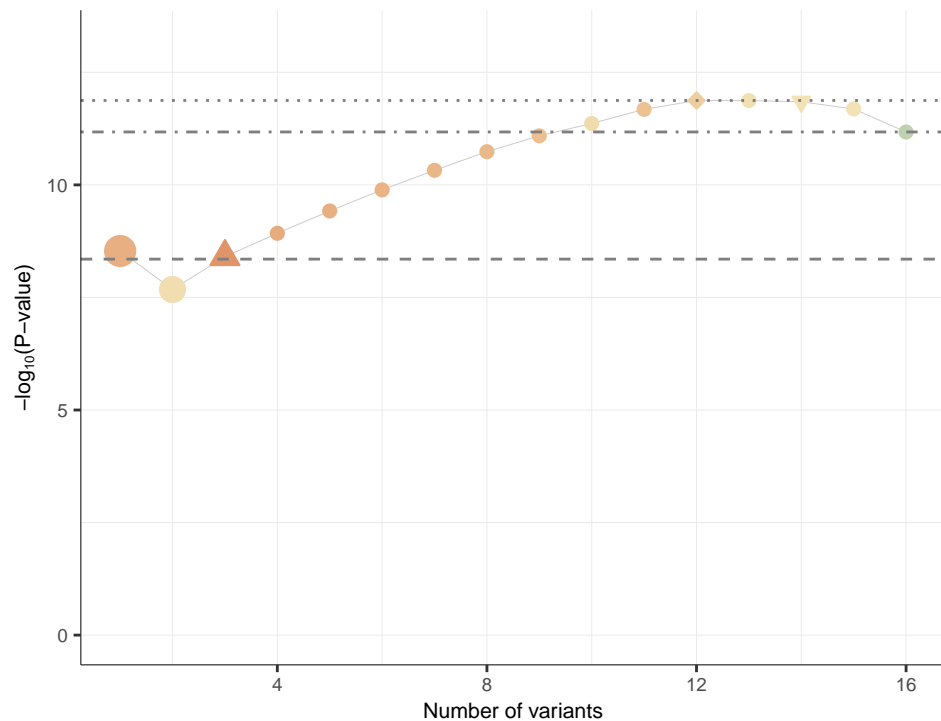
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5

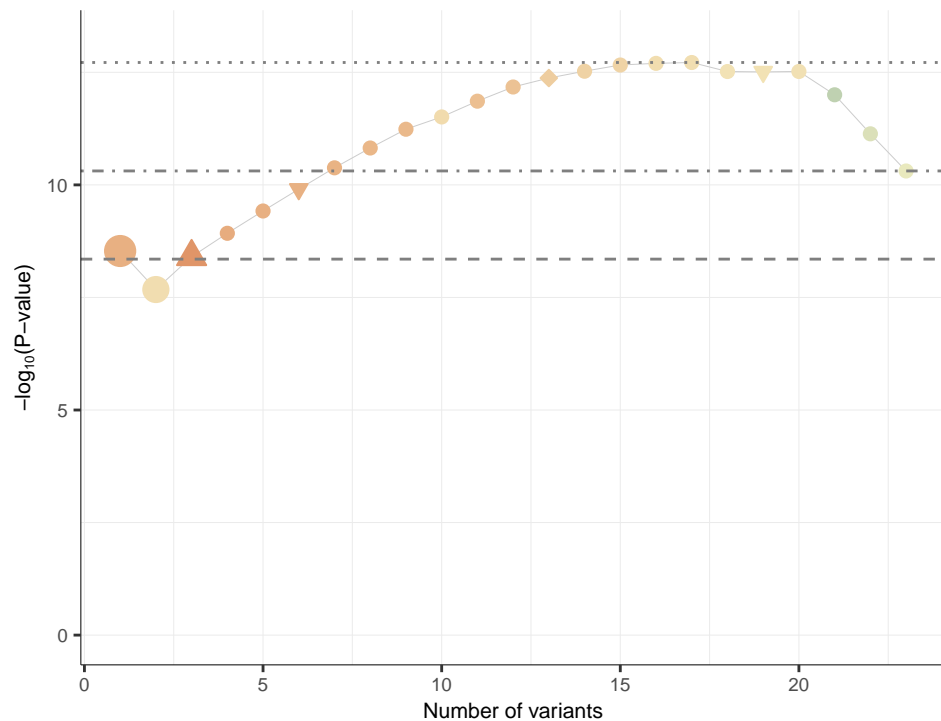
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

3-hydroxyisobutyrate in urine at *ALDH6A1* (LoF_mis)



3-hydroxyisobutyrate in urine at *ALDH6A1* (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- ▽ splicing
- △ stop gained

Effect size

Color scale: -4 (dark blue) to 4 (dark red)

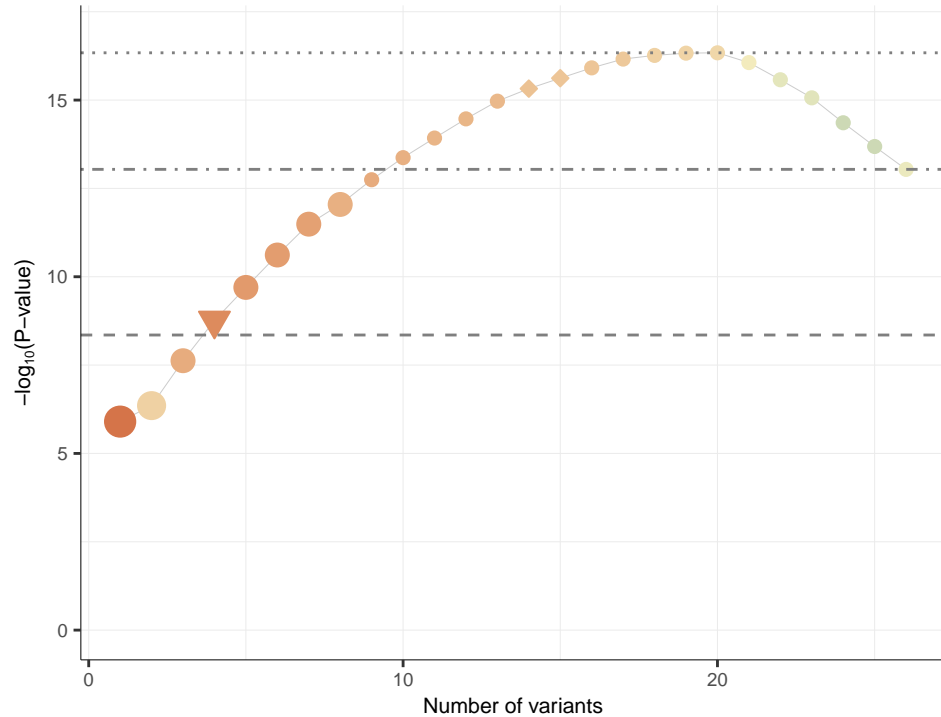
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8

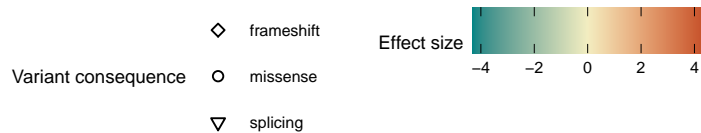
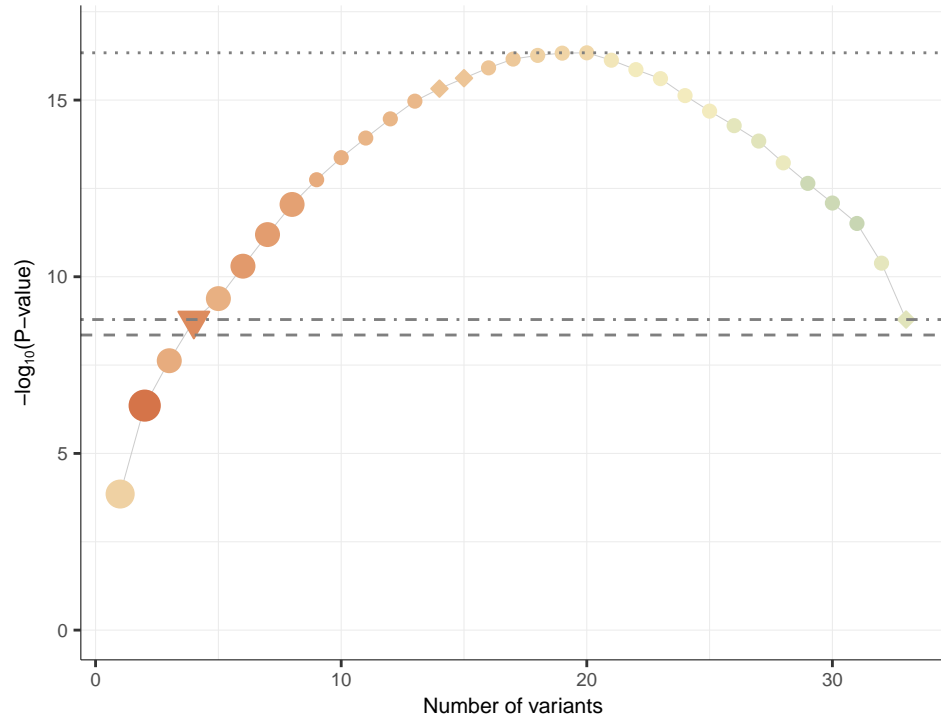
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

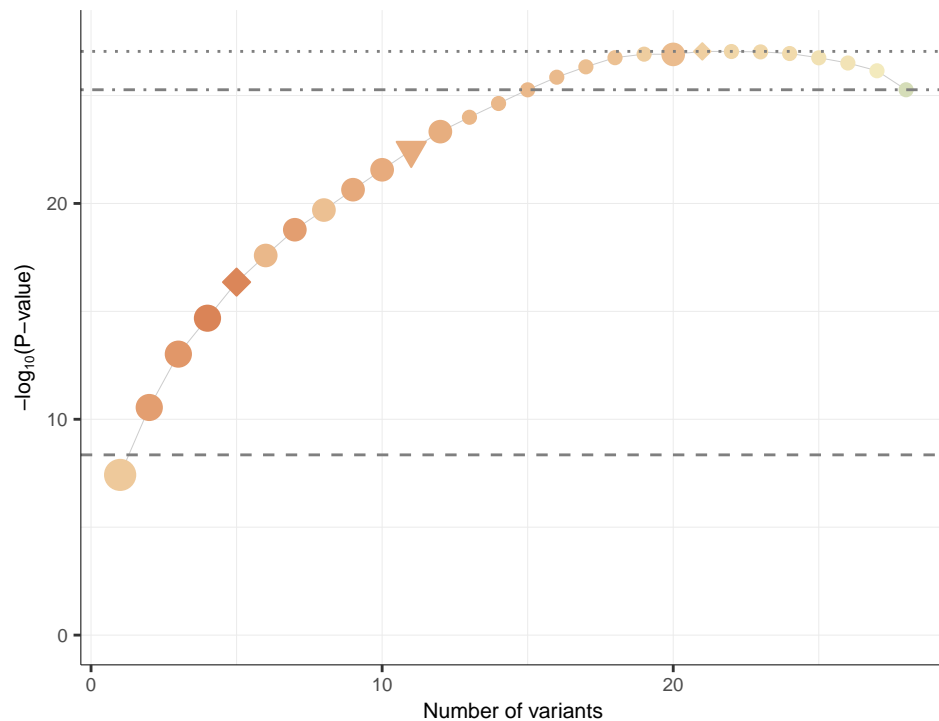
3-phosphoglycerate in urine at *ALPL* (LoF_mis)



3-phosphoglycerate in urine at *ALPL* (HI_mis)

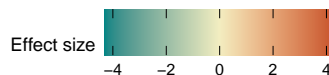


choline phosphate in urine at *ALPL* (LoF_mis)

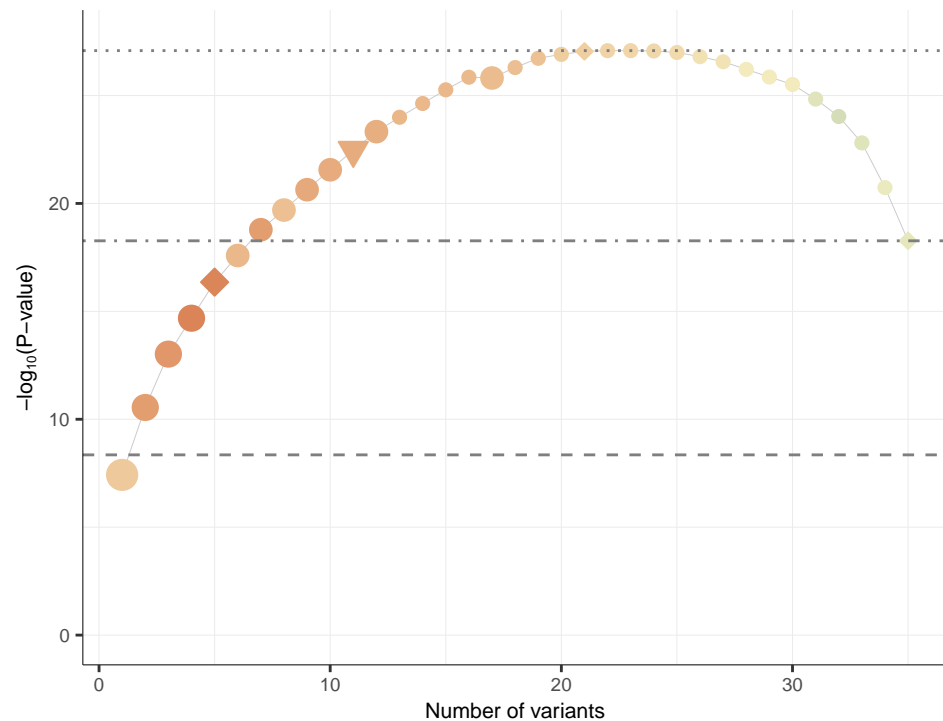


Variant consequence

- ◇ frameshift
- missense
- ▽ splicing



choline phosphate in urine at *ALPL* (HI_mis)



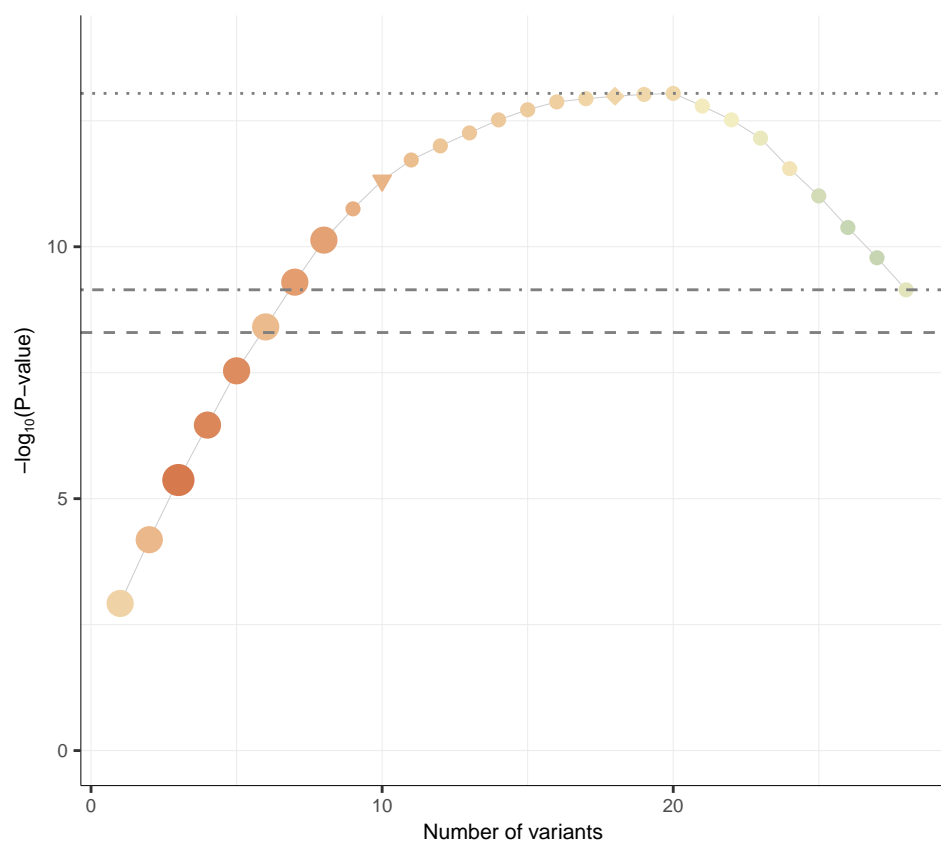
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8

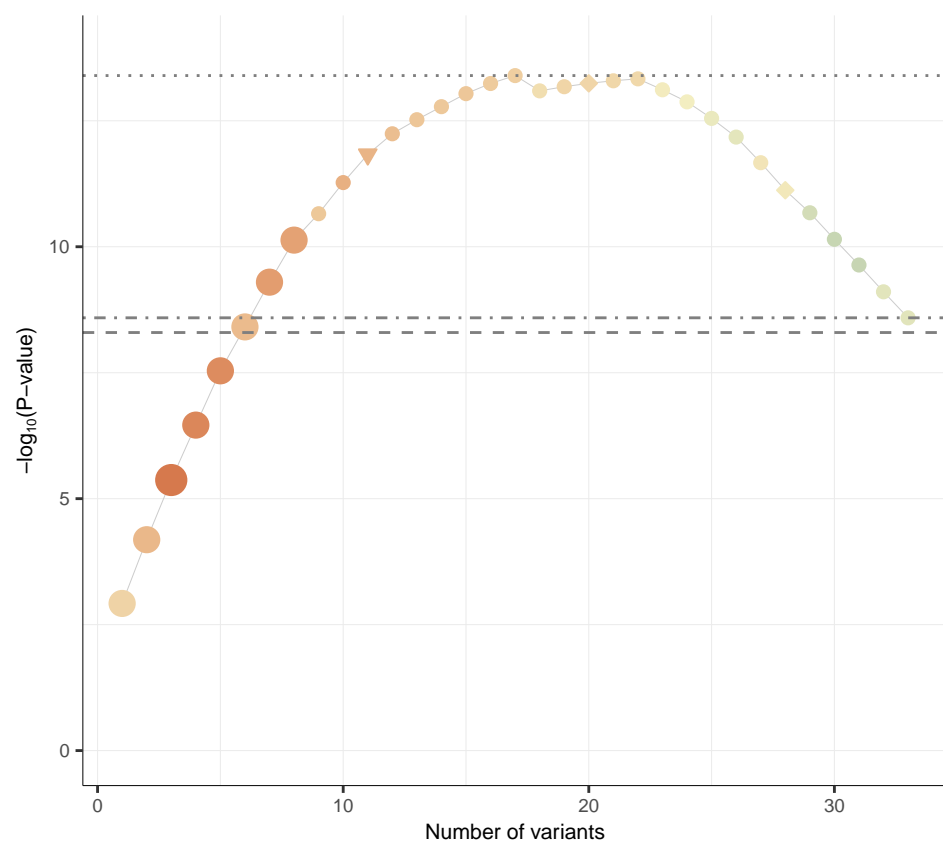
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

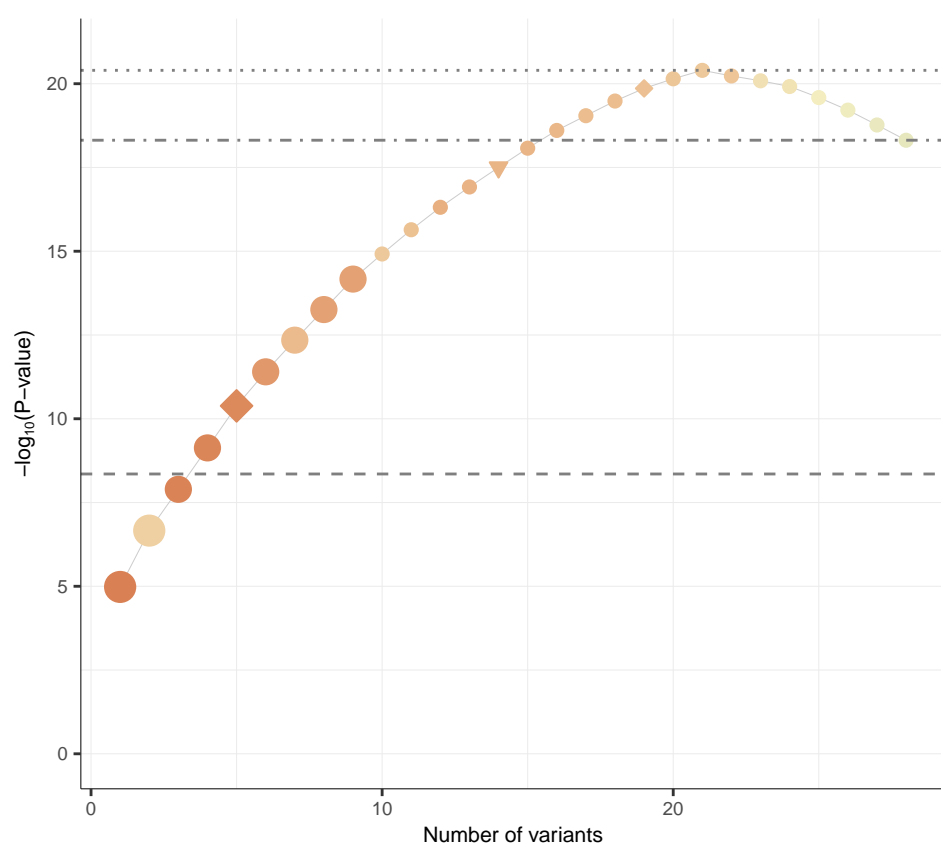
glycerol 3-phosphate in plasma at *ALPL* (LoF_mis)



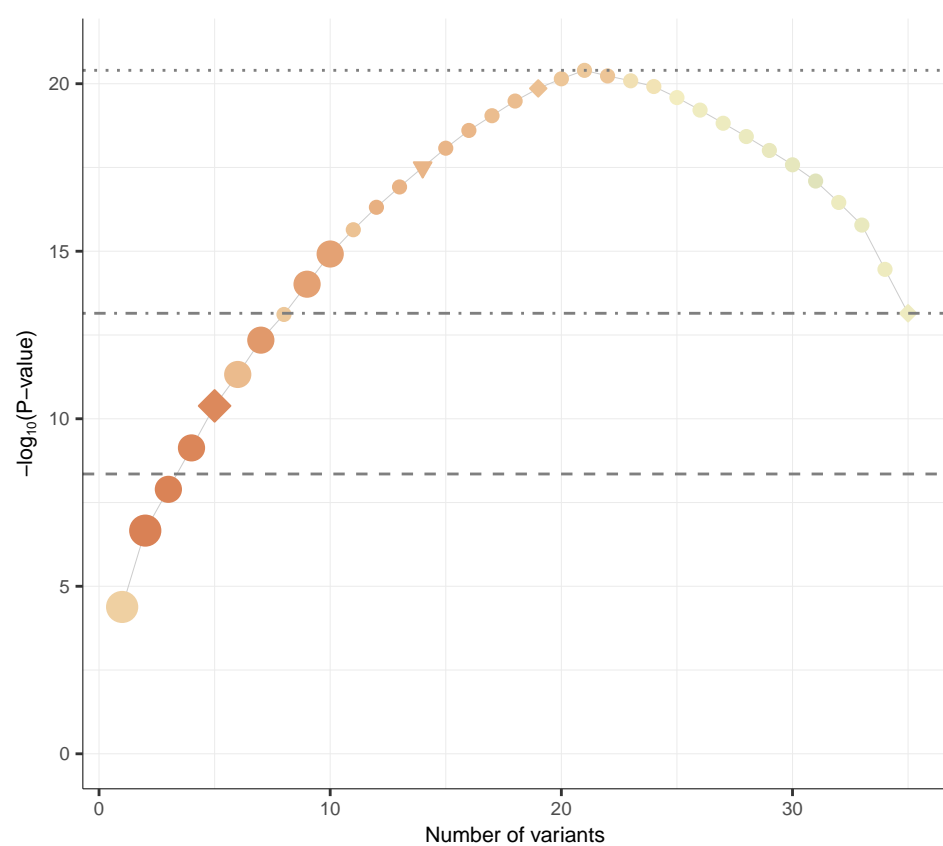
glycerol 3-phosphate in plasma at *ALPL* (HI_mis)



glycerol 3-phosphate in urine at *ALPL* (LoF_mis)



glycerol 3-phosphate in urine at *ALPL* (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- ▽ splicing

Effect size

-4 -2 0 2 4

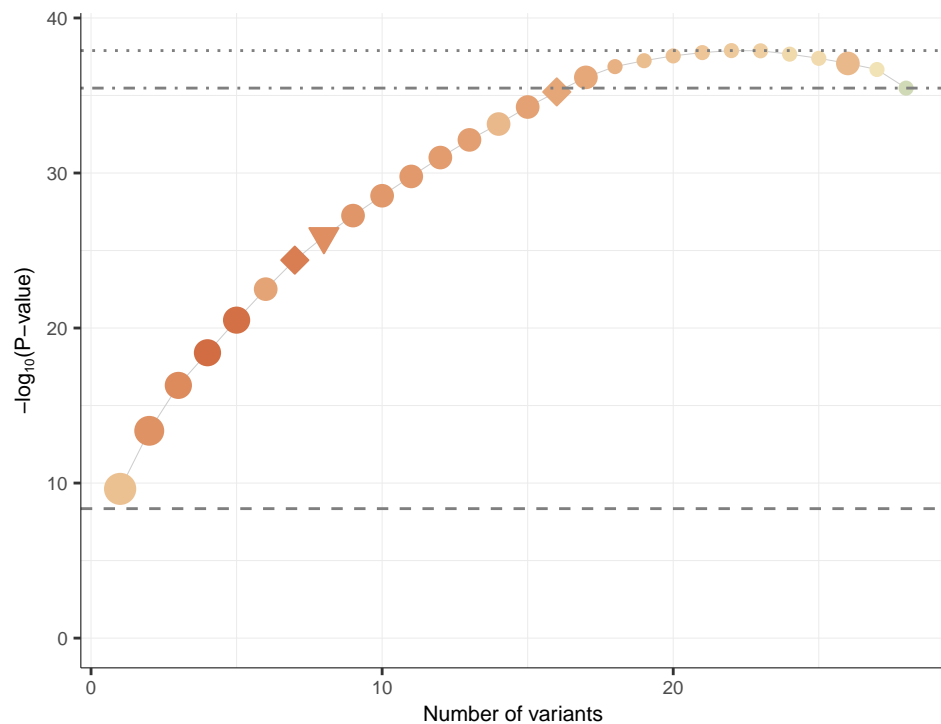
P-value

- >0.05
- <0.05
- <1e-3

Thresholds

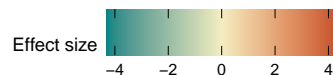
- Significance Threshold
- - - Total P-value
- ... Lowest P-value

phosphoethanolamine in urine at *ALPL* (LoF_mis)

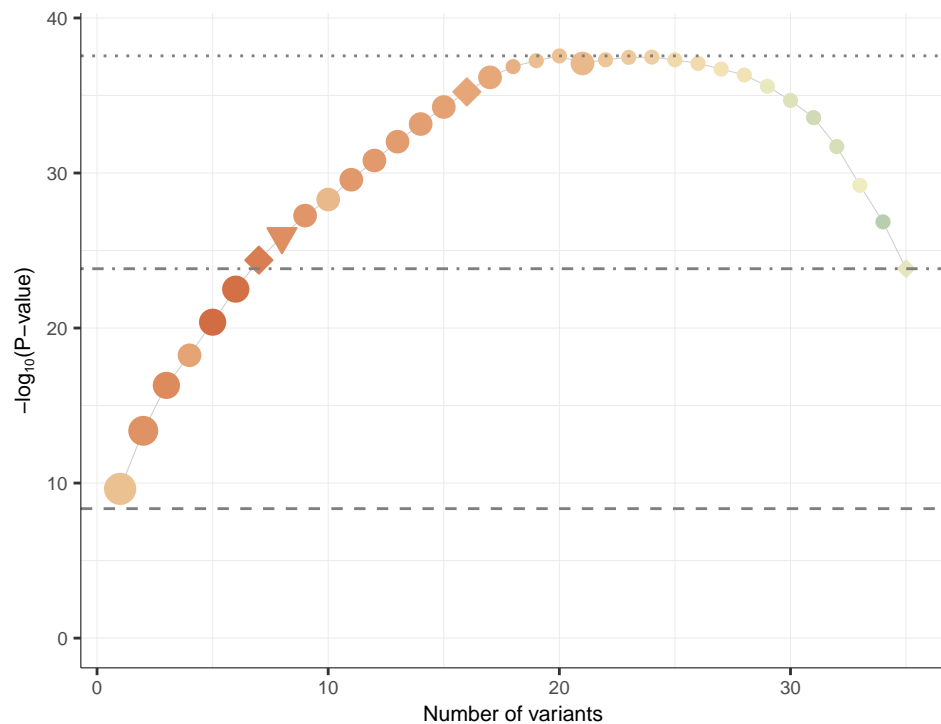


Variant consequence

- ◇ frameshift
- missense
- ▽ splicing



phosphoethanolamine in urine at *ALPL* (HI_mis)



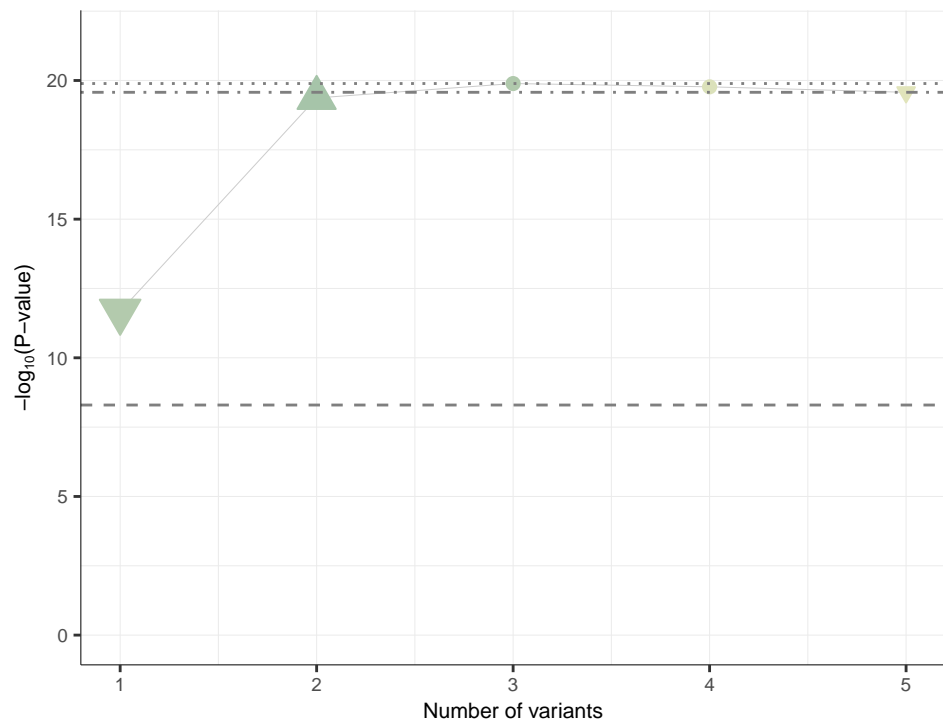
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8

Thresholds

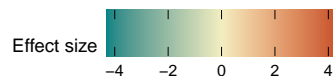
- Significance Threshold
- - - Total P-value
- ... Lowest P-value

1-oleoyl-2-arachidonoyl-GPE (18:1/20:4)* in plasma at APOC3 (LoF_mis)

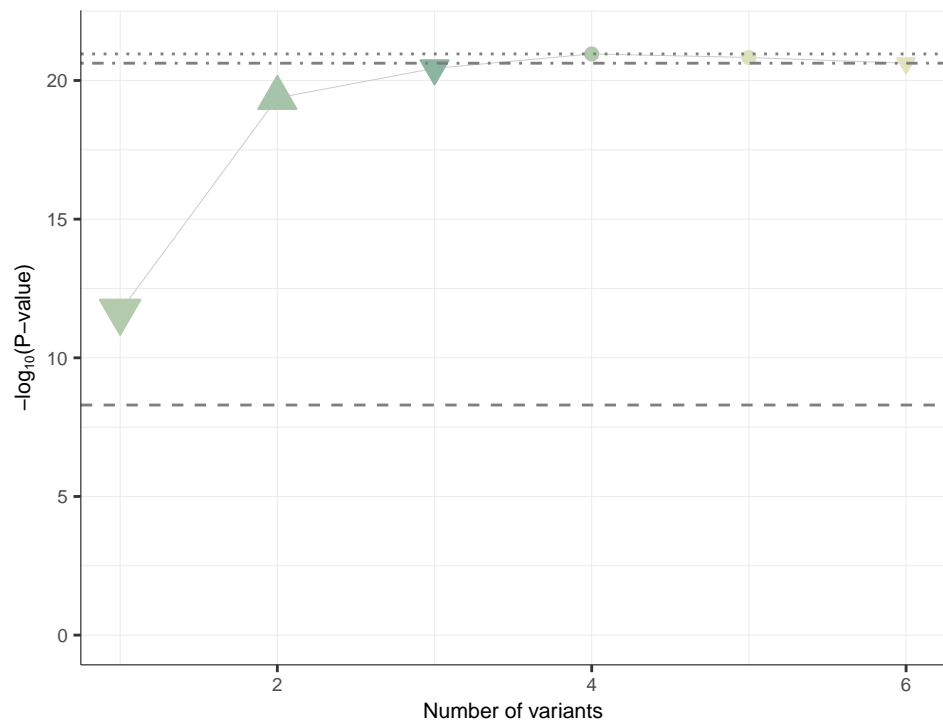


Variant consequence

- missense
- ▽ splicing
- △ stop gained



1-oleoyl-2-arachidonoyl-GPE (18:1/20:4)* in plasma at APOC3 (HI_mis)



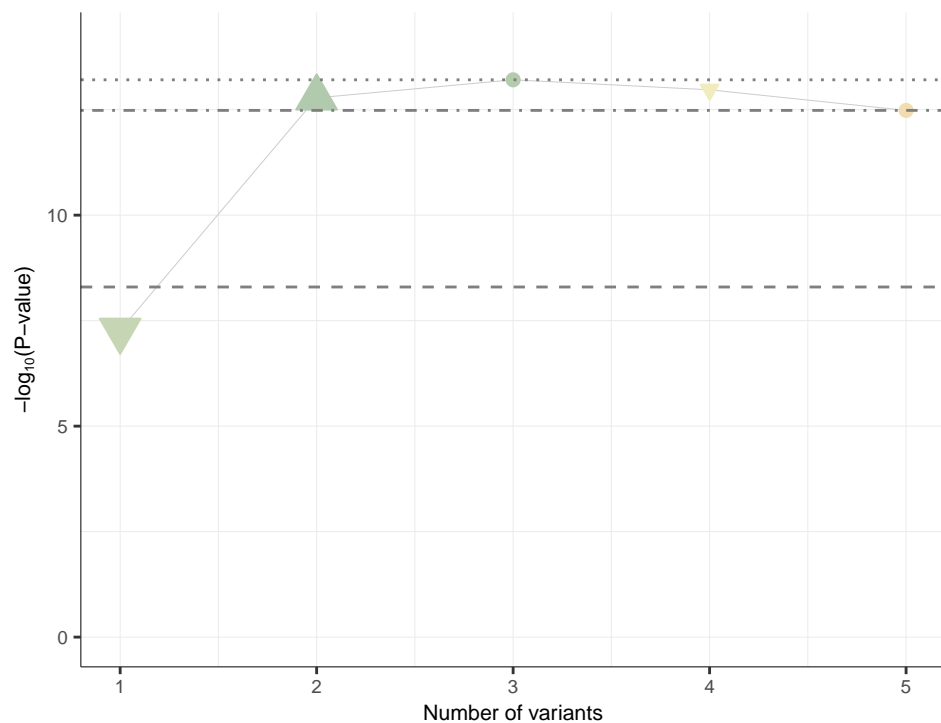
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8
- <1e-11

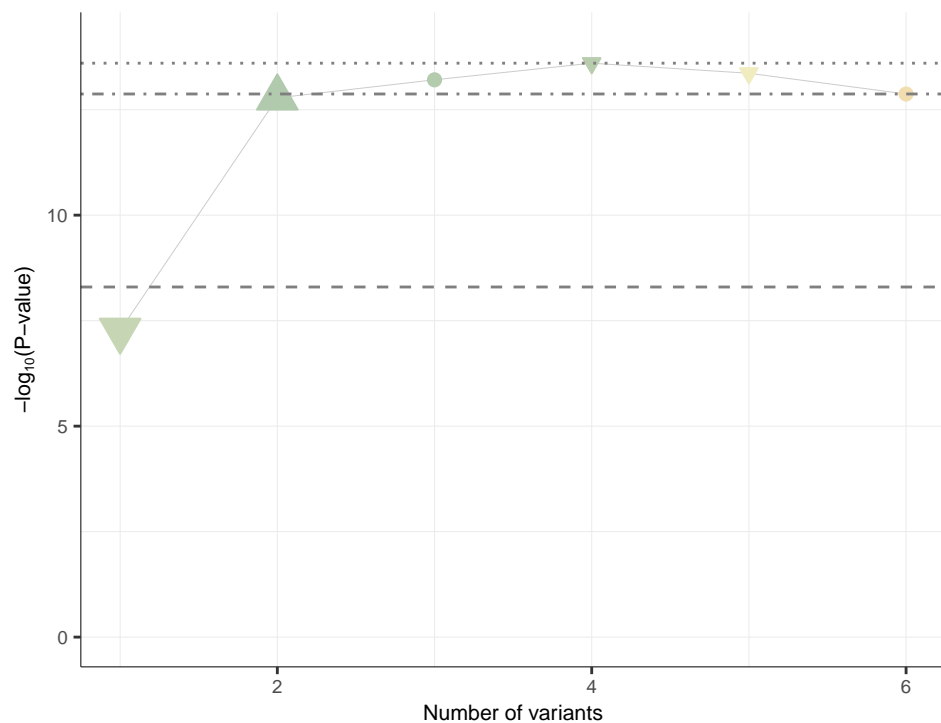
Thresholds

- Significance Threshold
- · - Total P-value
- · · Lowest P-value

1-oleoyl-2-linoleoyl-GPE (18:1/18:2)* in plasma at *APOC3* (LoF_mis)

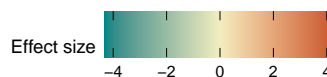


1-oleoyl-2-linoleoyl-GPE (18:1/18:2)* in plasma at *APOC3* (HI_mis)



Variant consequence

- missense
- ▽ splicing
- △ stop gained



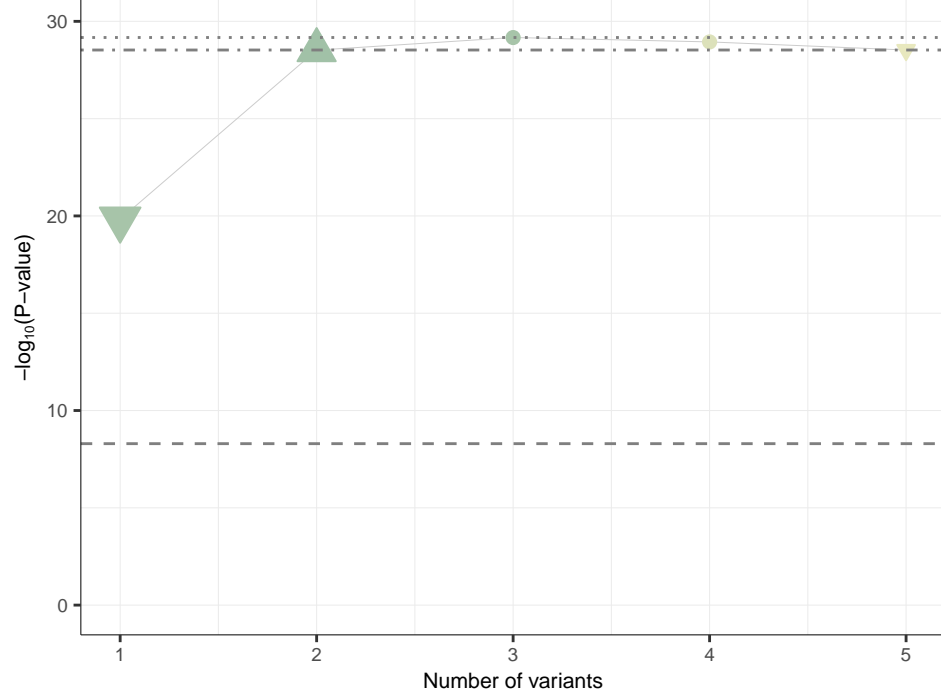
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5

Thresholds

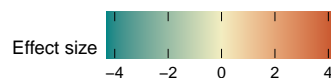
- Significance Threshold
- - - Total P-value
- ... Lowest P-value

1-palmitoyl-2-arachidonoyl-GPE (16:0/20:4)* in plasma at APOC3 (LoF_mis)

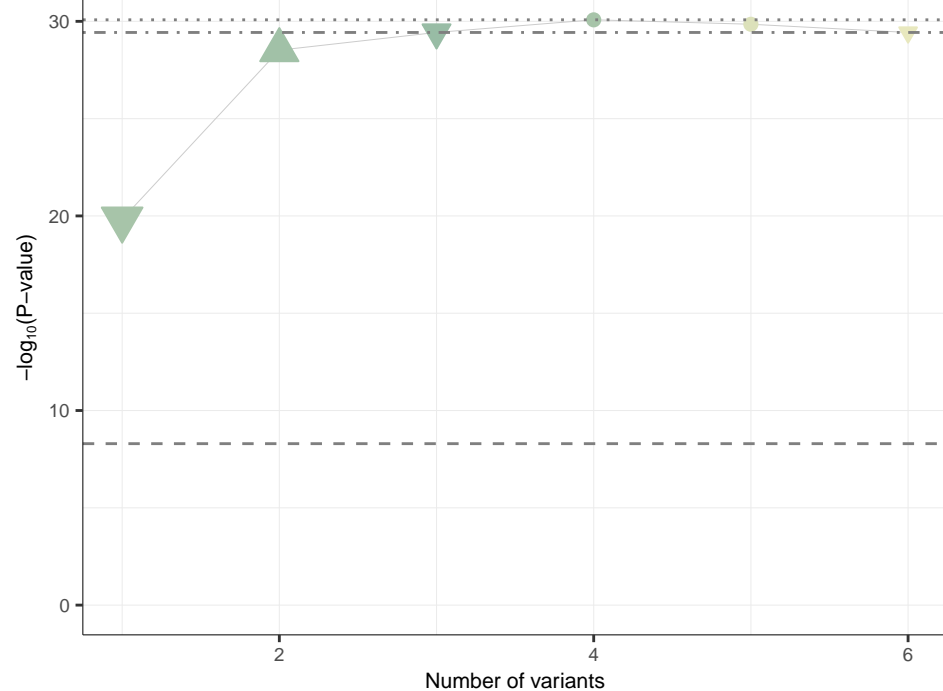


Variant consequence

- missense
- ▽ splicing
- △ stop gained



1-palmitoyl-2-arachidonoyl-GPE (16:0/20:4)* in plasma at APOC3 (HI_mis)



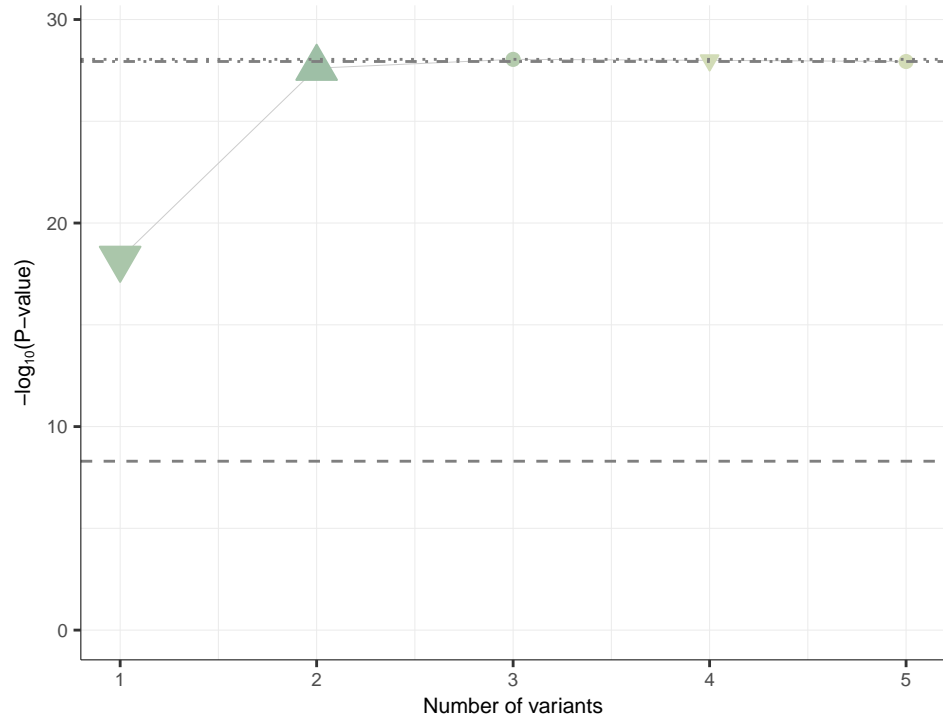
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8
- <1e-11

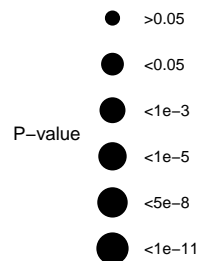
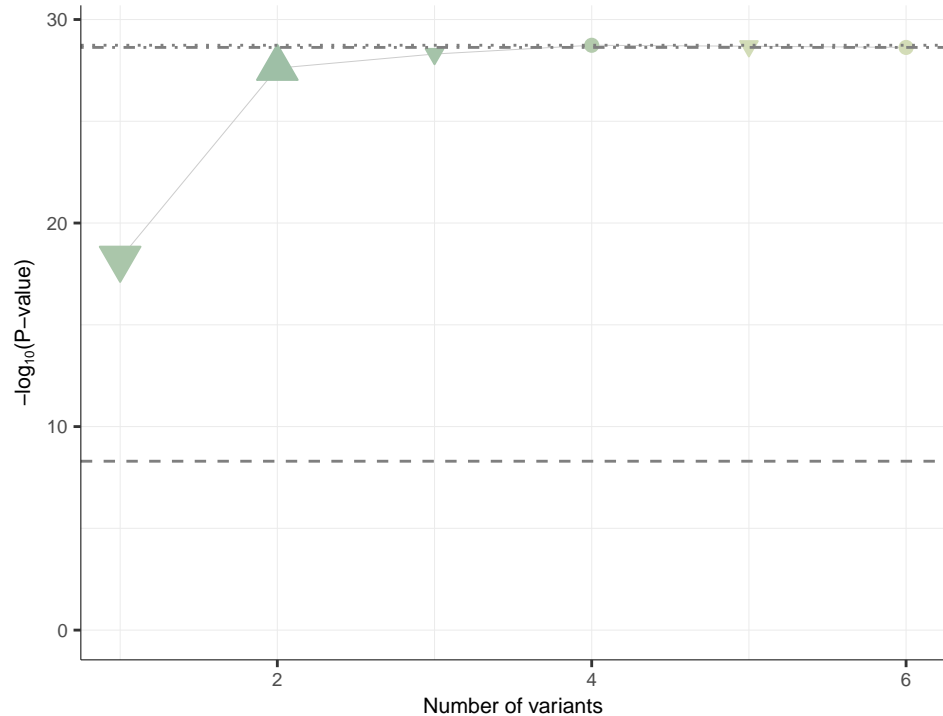
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

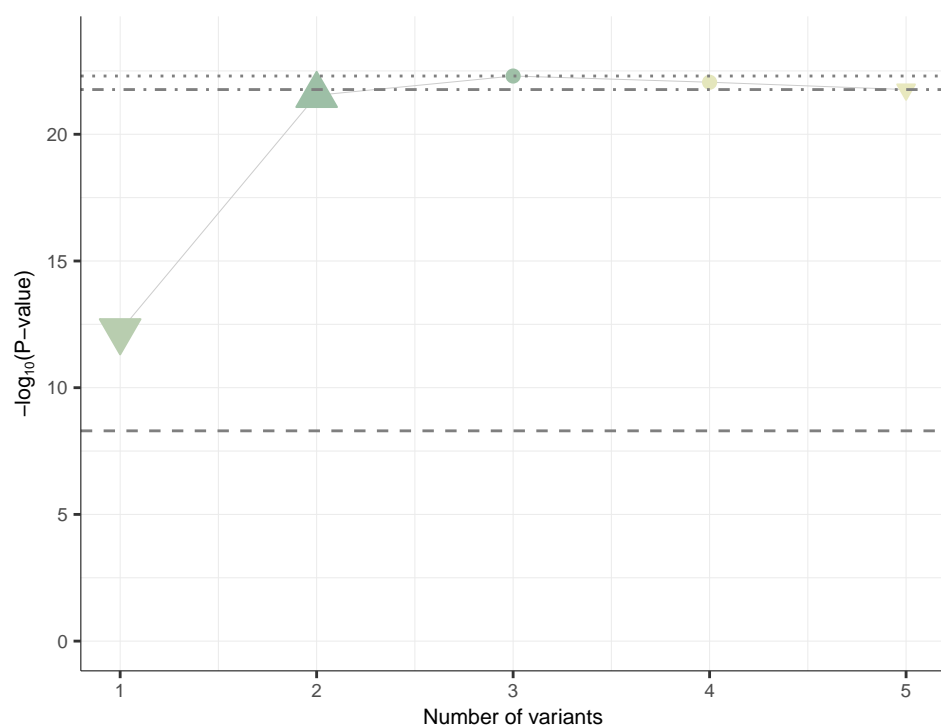
1-palmitoyl-2-docosahexaenoyl-GPE (16:0/22:6)* in plasma at APOC3 (LoF_mis)



1-palmitoyl-2-docosahexaenoyl-GPE (16:0/22:6)* in plasma at APOC3 (HI_mis)

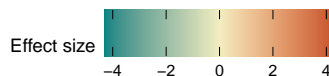


1-palmitoyl-2-linoleoyl-GPE (16:0/18:2) in plasma at APOC3 (LoF_mis)

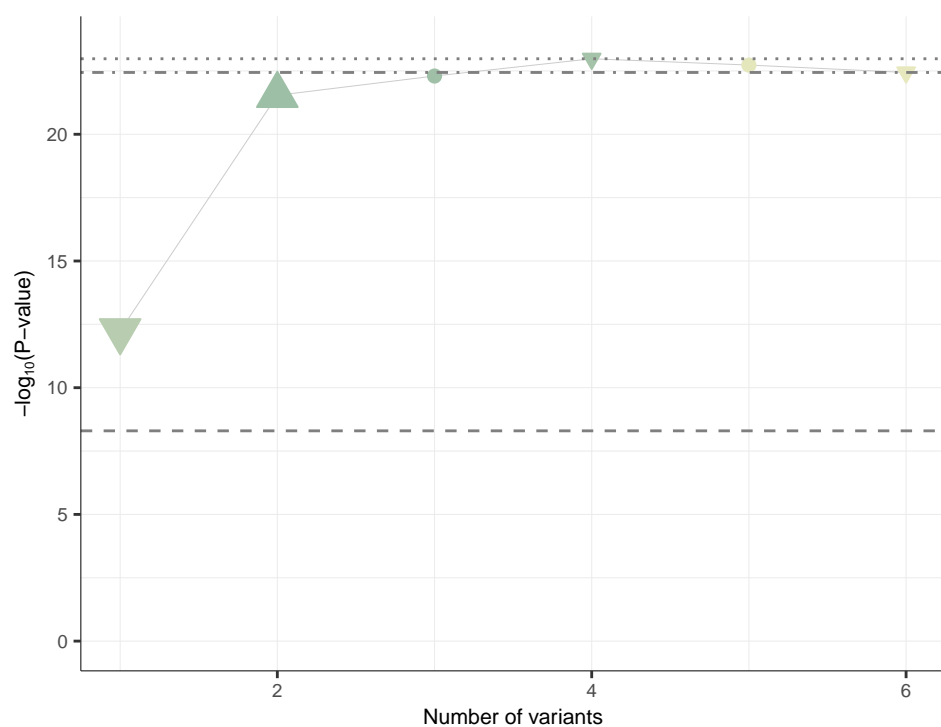


Variant consequence

- missense
- ▽ splicing
- △ stop gained



1-palmitoyl-2-linoleoyl-GPE (16:0/18:2) in plasma at APOC3 (HI_mis)



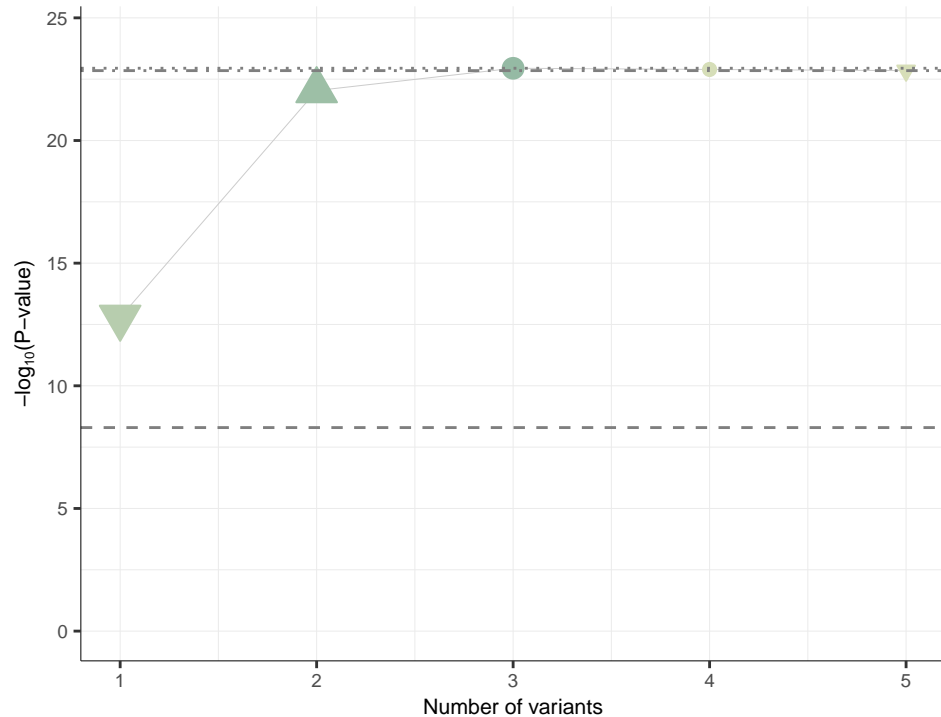
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8
- <1e-11

Thresholds

- — Significance Threshold
- · - · Total P-value
- · · · Lowest P-value

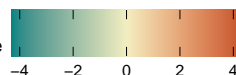
1-palmitoyl-2-oleoyl-GPE (16:0/18:1) in plasma at *APOC3* (LoF_mis)



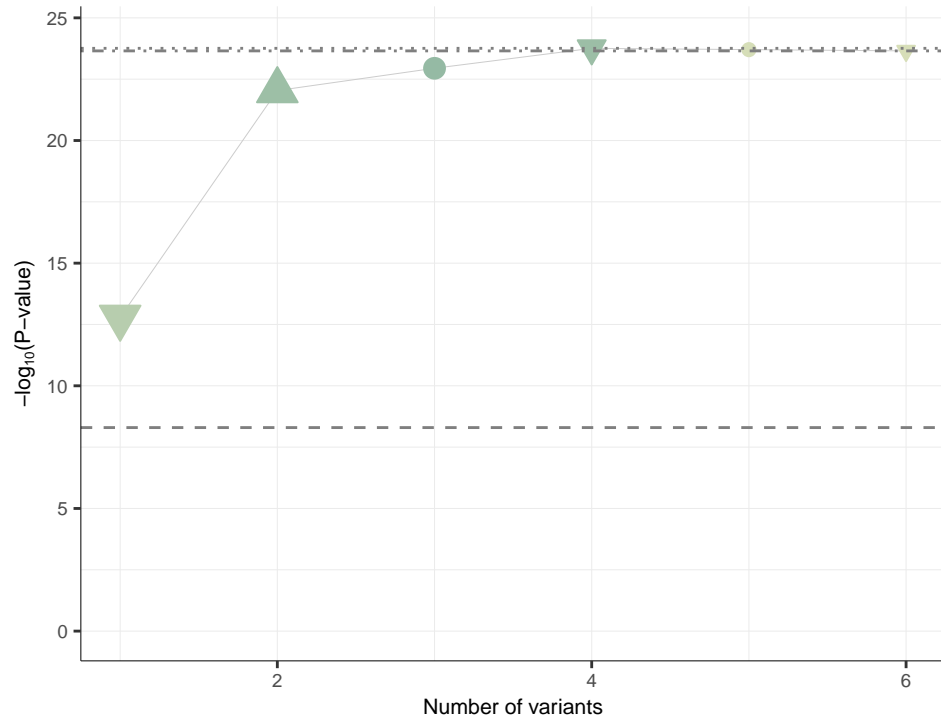
Variant consequence

- missense
- ▽ splicing
- △ stop gained

Effect size



1-palmitoyl-2-oleoyl-GPE (16:0/18:1) in plasma at *APOC3* (HI_mis)

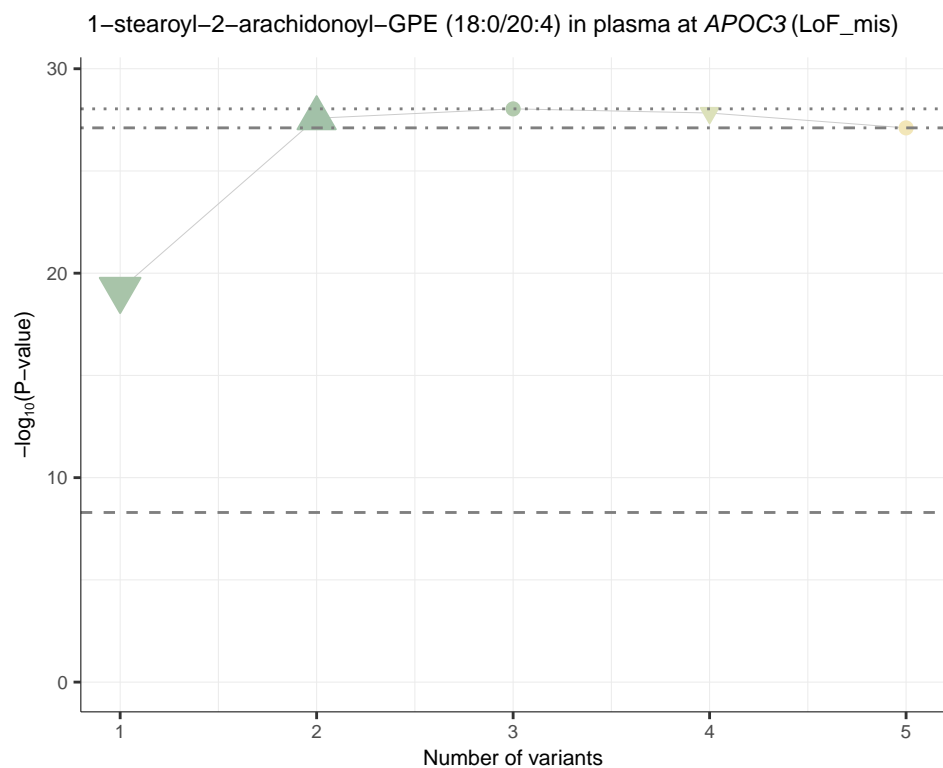


P-value

- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8
- <1e-11

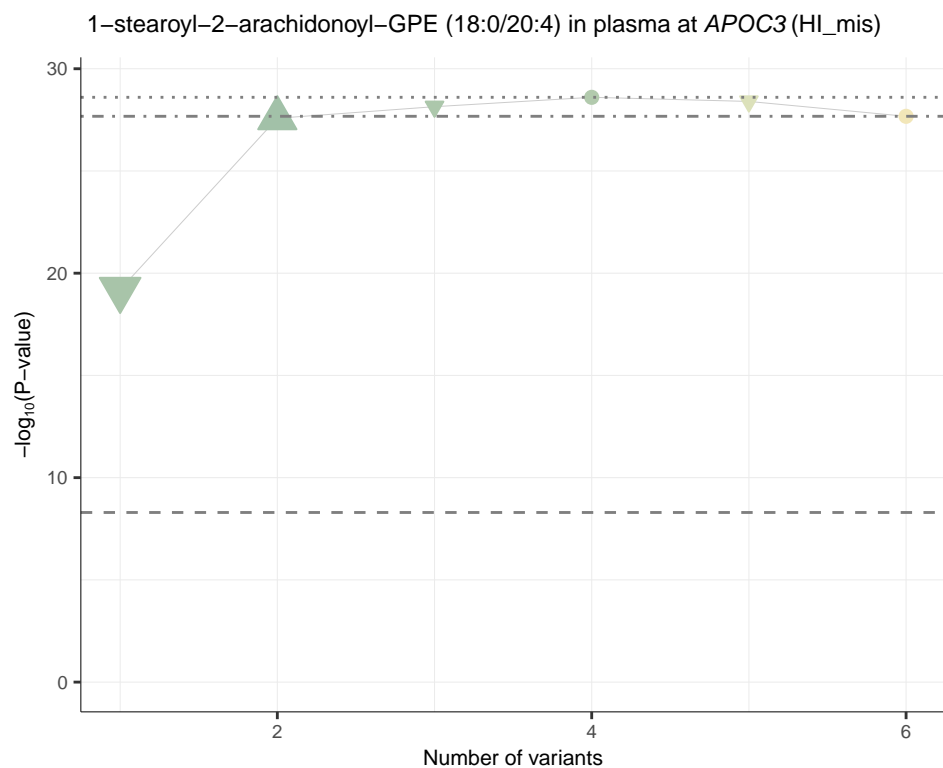
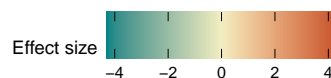
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value



Variant consequence

- missense
- ▽ splicing
- △ stop gained



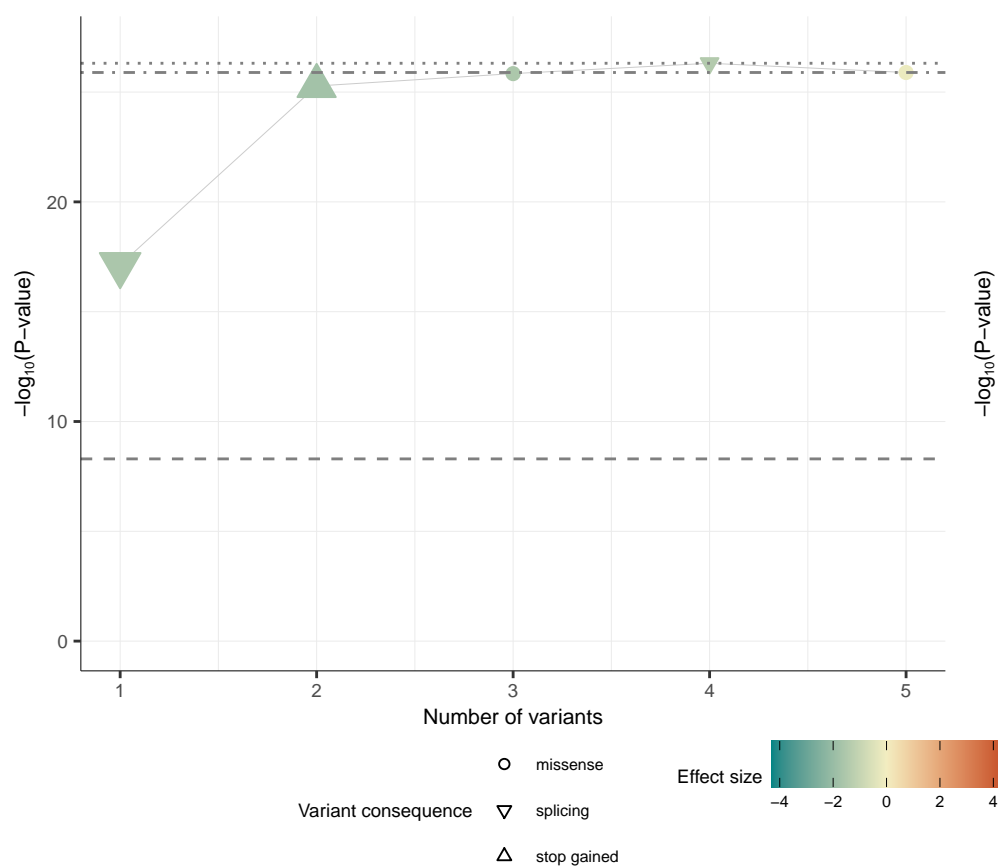
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8
- <1e-11

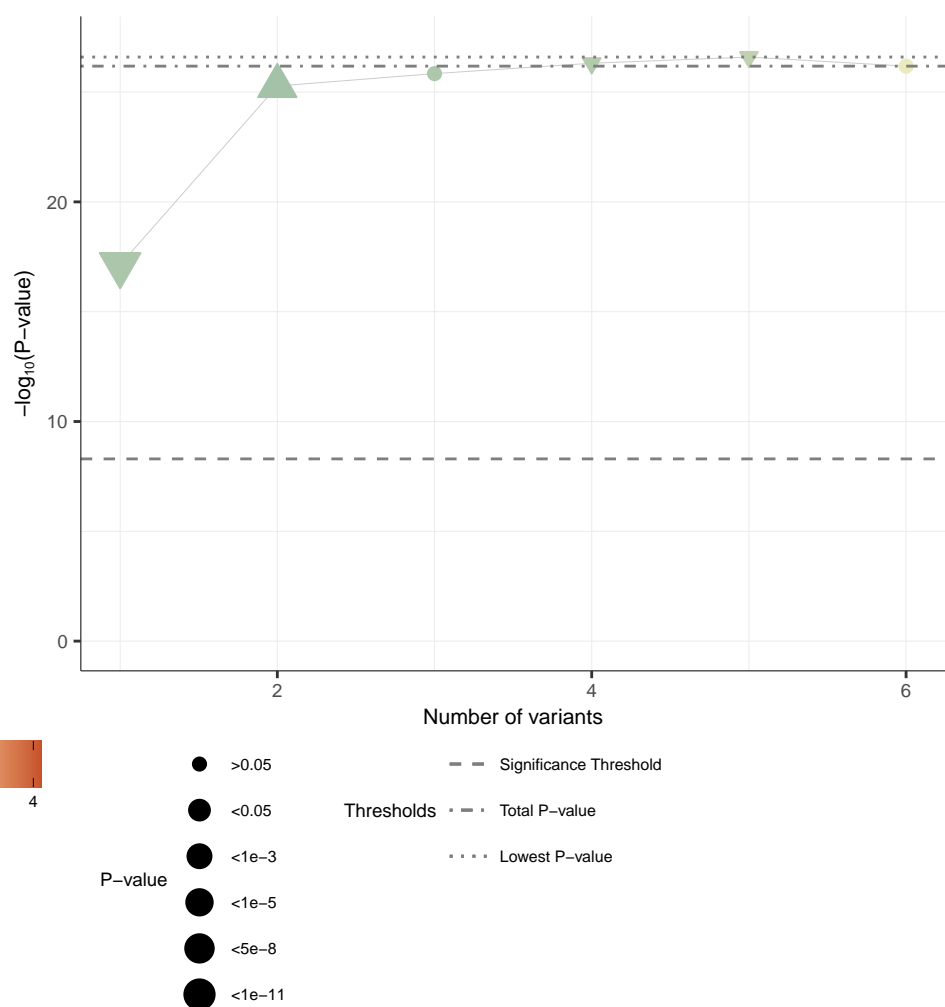
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

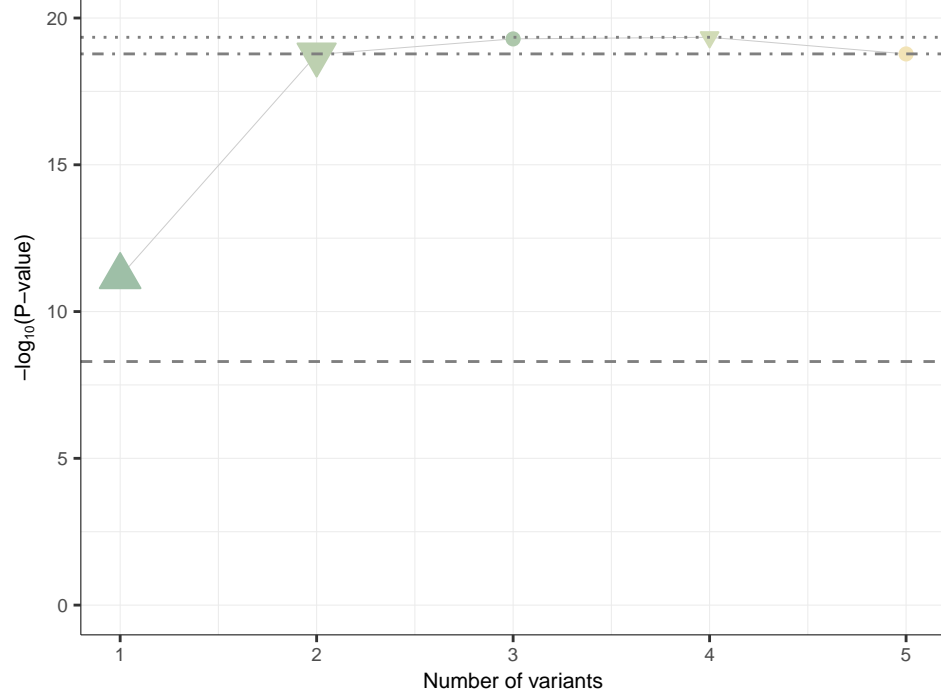
1-stearoyl-2-docosahexaenoyl-GPE (18:0/22:6)* in plasma at APOC3 (LoF_mis)



1-stearoyl-2-docosahexaenoyl-GPE (18:0/22:6)* in plasma at APOC3 (HI_mis)



1-stearoyl-2-linoleoyl-GPE (18:0/18:2)* in plasma at APOC3 (LoF_mis)



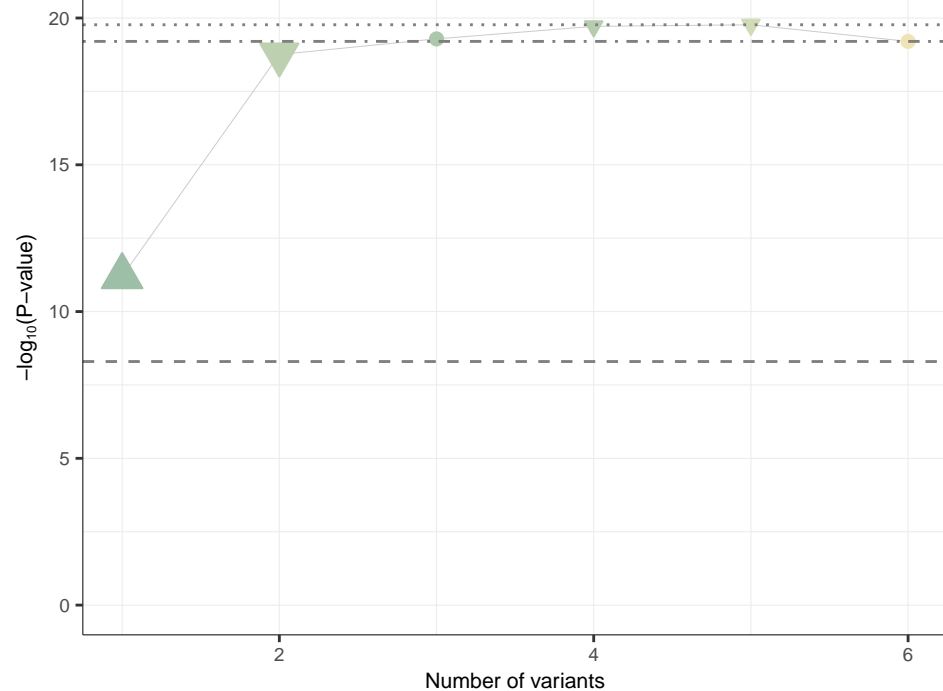
Variant consequence

- missense
- ▽ splicing
- △ stop gained

Effect size

Color scale: -4 (dark green) to 4 (dark red)

1-stearoyl-2-linoleoyl-GPE (18:0/18:2)* in plasma at APOC3 (HI_mis)



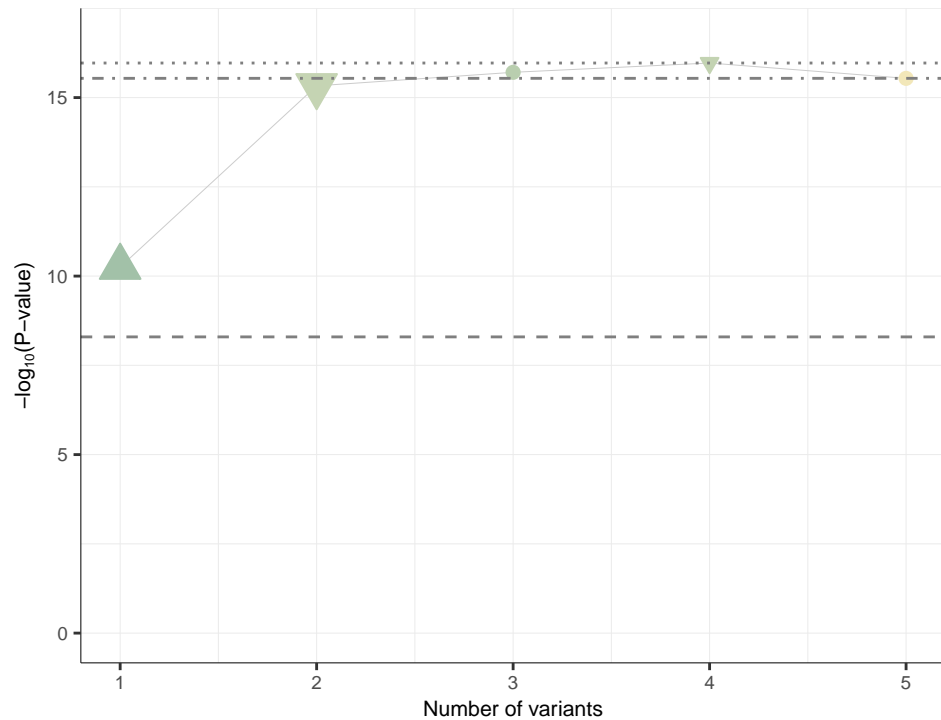
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8
- <1e-11

Thresholds

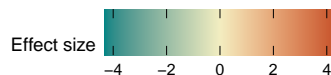
- Significance Threshold
- - - Total P-value
- ... Lowest P-value

1-stearoyl-2-oleoyl-GPE (18:0/18:1) in plasma at APOC3 (LoF_mis)

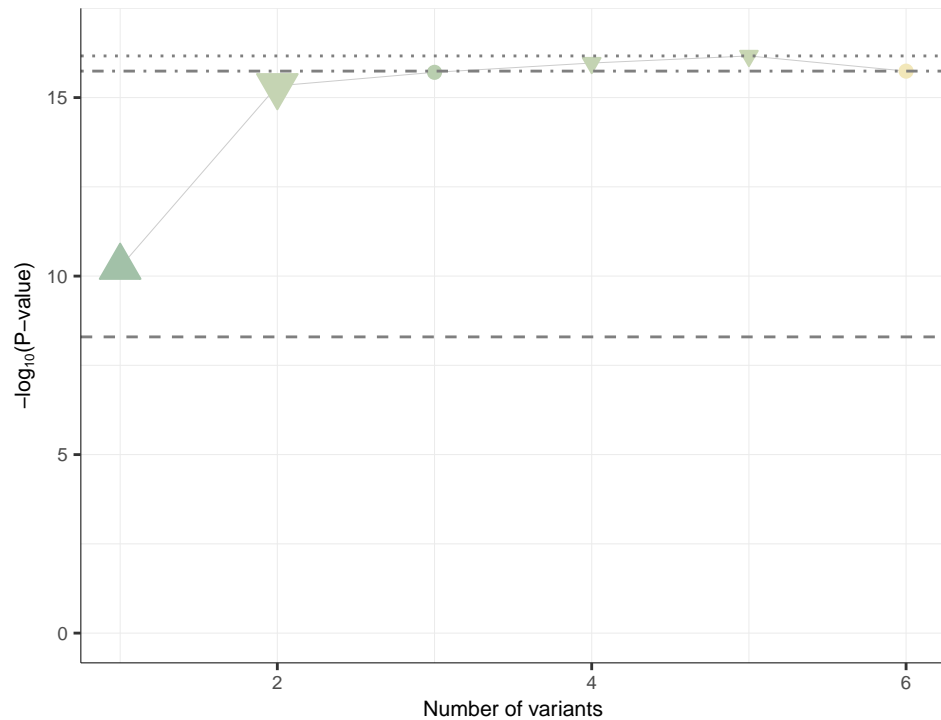


Variant consequence

- missense
- ▽ splicing
- △ stop gained



1-stearoyl-2-oleoyl-GPE (18:0/18:1) in plasma at APOC3 (HI_mis)



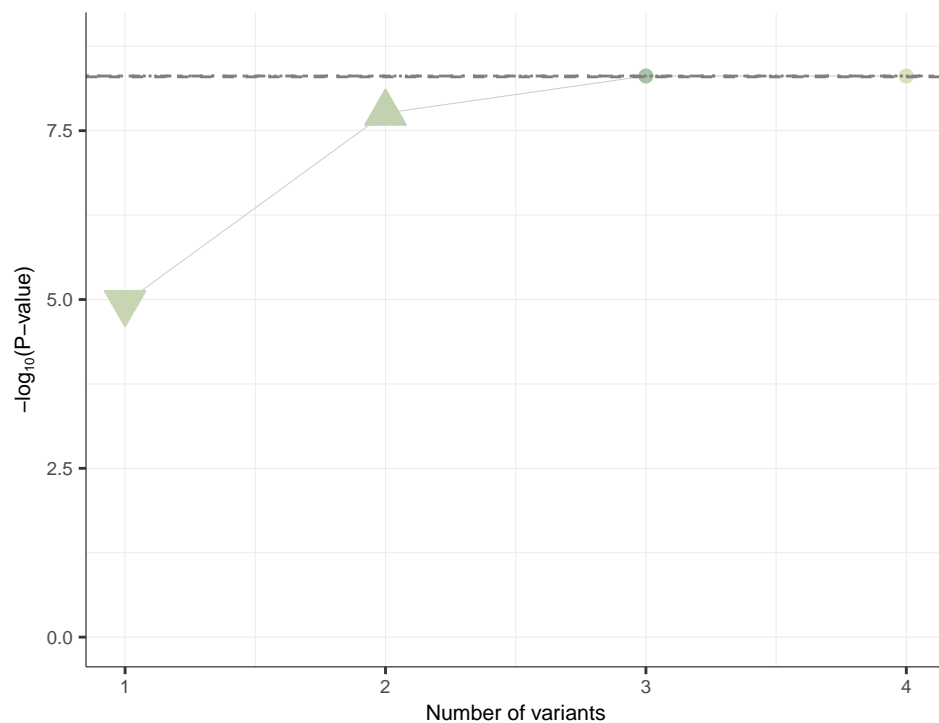
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8

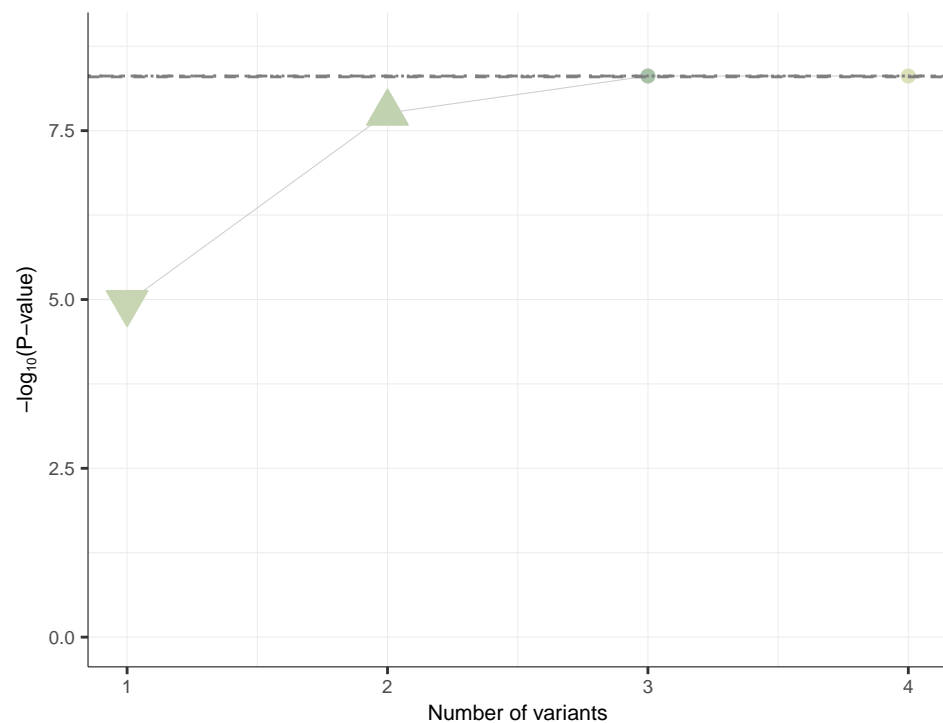
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

diacylglycerol (16:1/18:2 [2], 16:0/18:3 [1])* in plasma at APOC3 (LoF_mis)



diacylglycerol (16:1/18:2 [2], 16:0/18:3 [1])* in plasma at APOC3 (HI_mis)



Variant consequence

- missense
- ▽ splicing
- △ stop gained



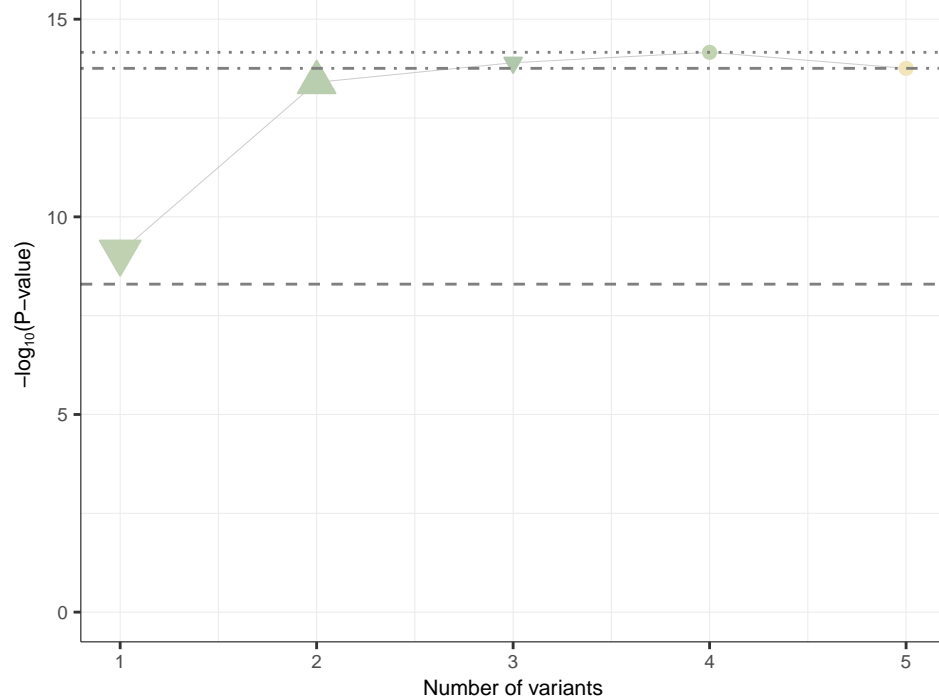
P-value

- >0.05
- <0.05
- <1e-3

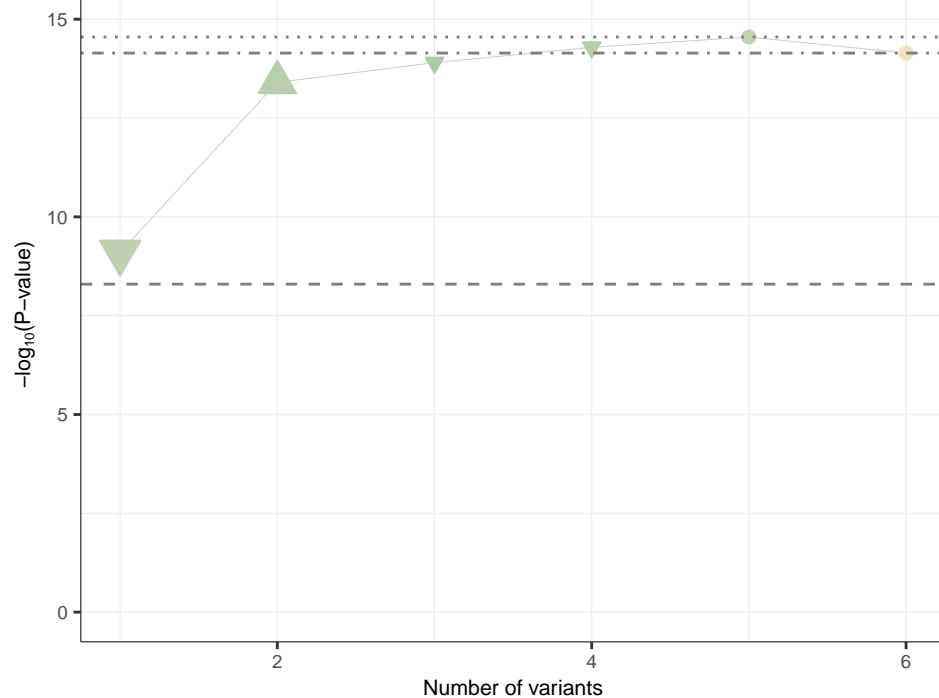
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

linoleoyl–linoleoyl–glycerol (18:2/18:2) [1]* in plasma at APOC3 (LoF_mis)



linoleoyl–linoleoyl–glycerol (18:2/18:2) [1]* in plasma at APOC3 (HI_mis)



Variant consequence

- missense
- ▽ splicing
- △ stop gained

Effect size

Effect size scale: -4, -2, 0, 2, 4

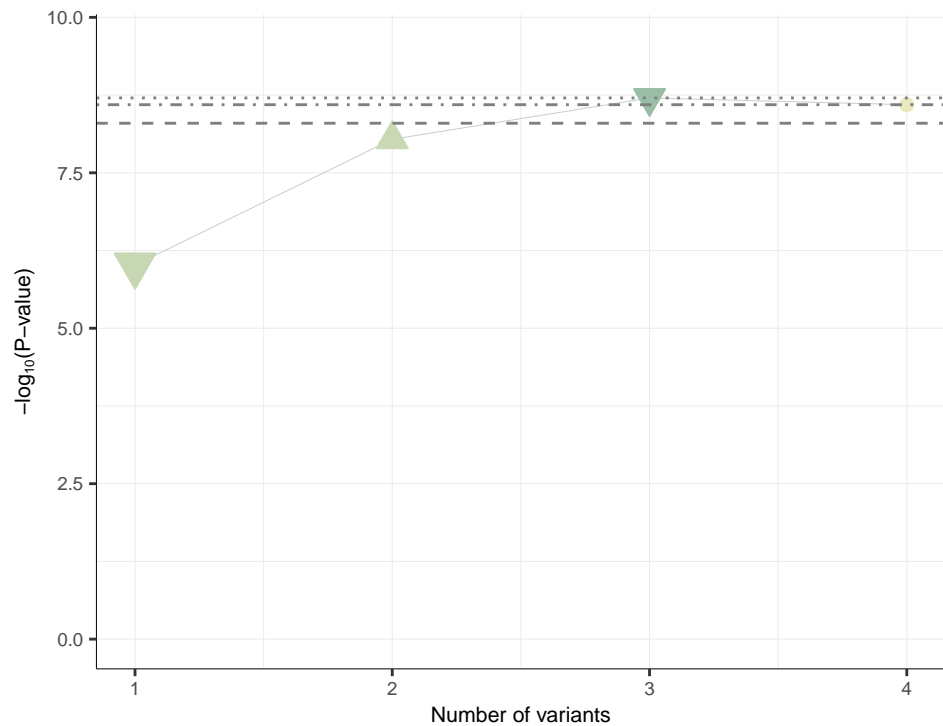
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8

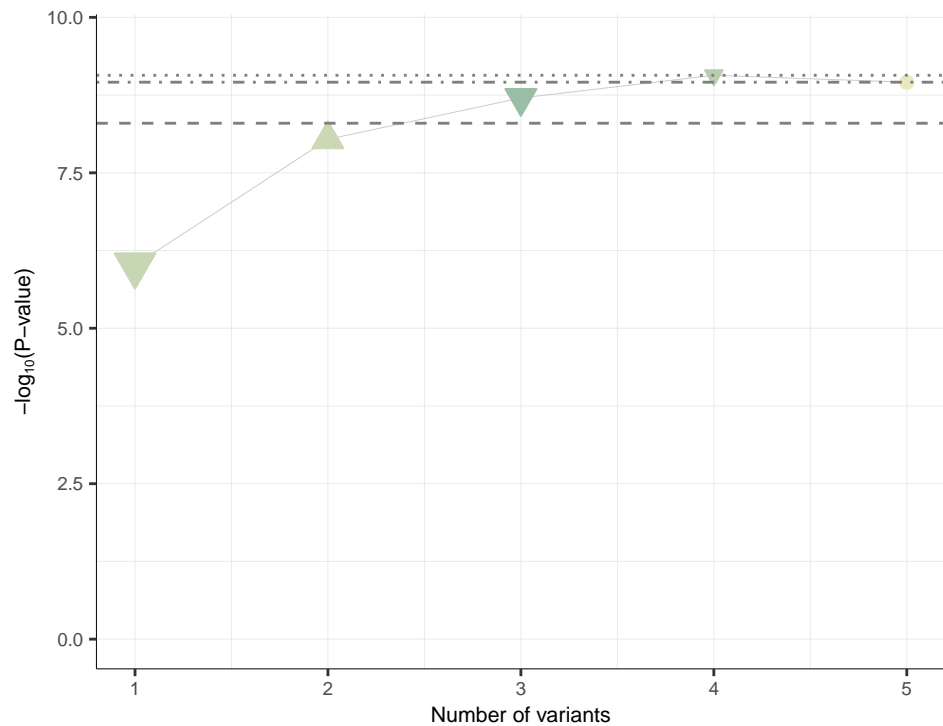
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

oleoyl–arachidonoyl–glycerol (18:1/20:4) [1]* in plasma at APOC3 (LoF_mis)

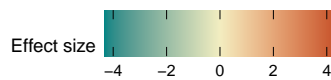


oleoyl–arachidonoyl–glycerol (18:1/20:4) [1]* in plasma at APOC3 (HI_mis)



Variant consequence

- missense
- ▽ splicing
- △ stop gained



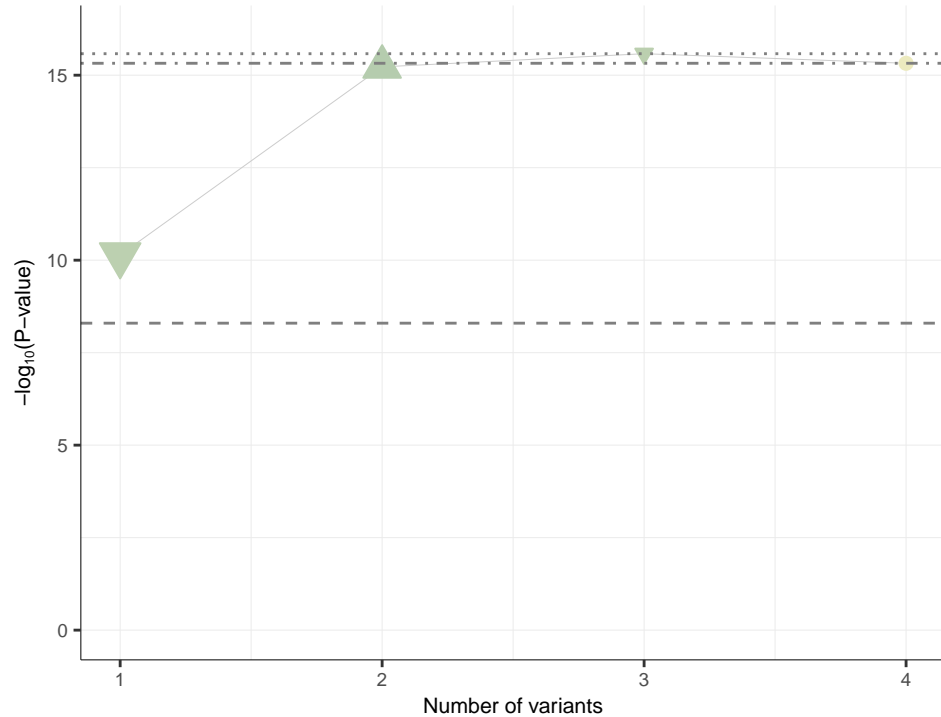
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5

Thresholds

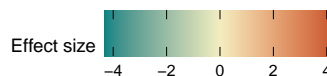
- Significance Threshold
- - - Total P-value
- ... Lowest P-value

oleoyl–linoleoyl–glycerol (18:1/18:2) [1] in plasma at APOC3 (LoF_mis)

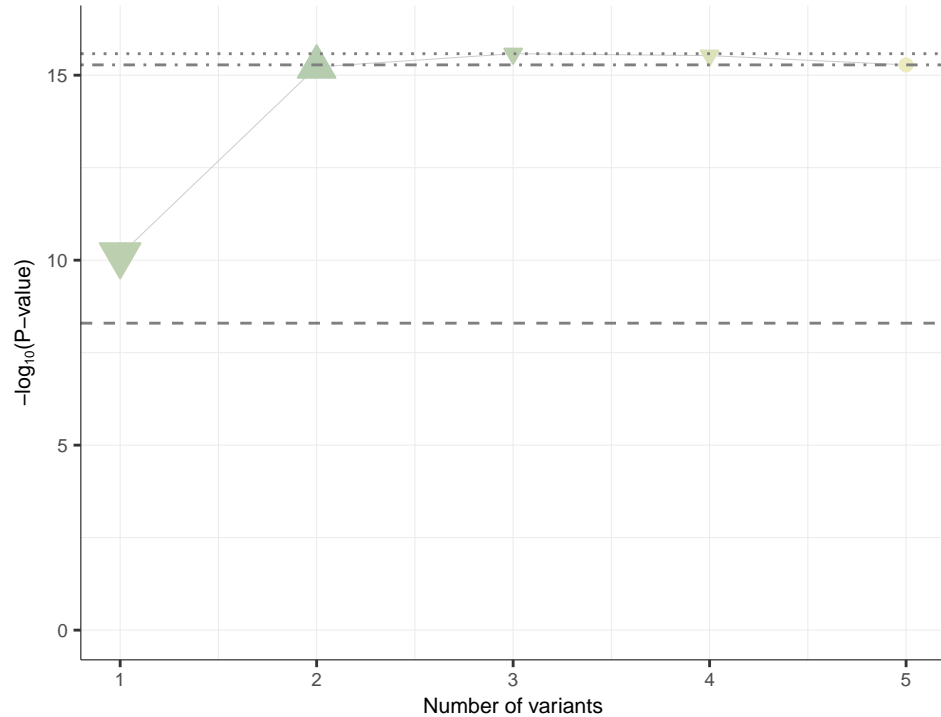


Variant consequence

- missense
- ▽ splicing
- △ stop gained



oleoyl–linoleoyl–glycerol (18:1/18:2) [1] in plasma at APOC3 (HI_mis)



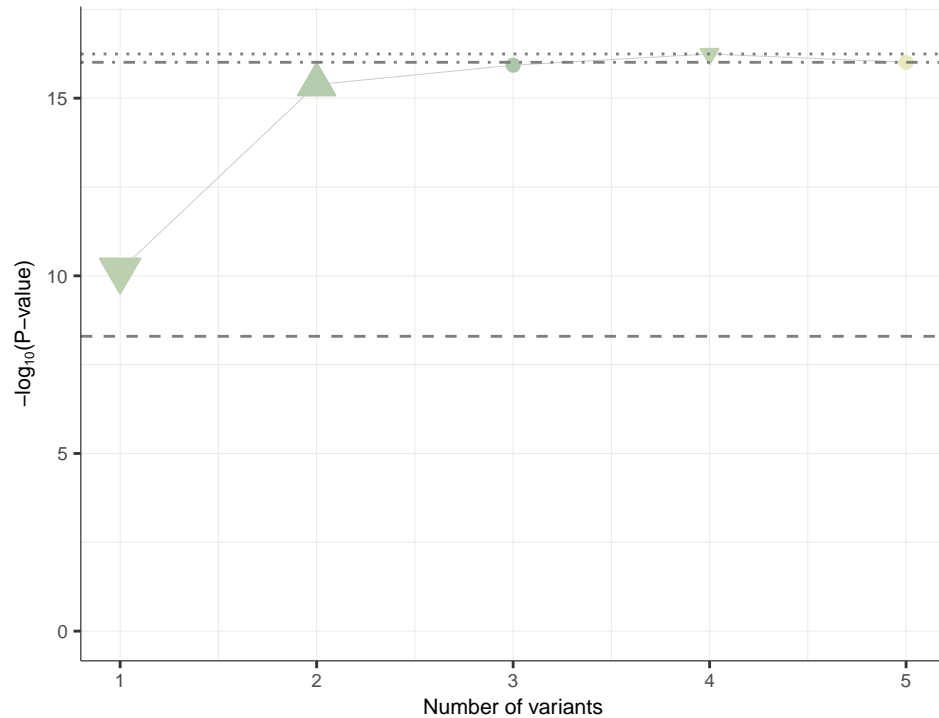
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8

Thresholds

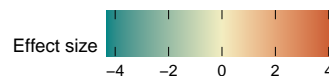
- Significance Threshold
- - - Total P-value
- ... Lowest P-value

oleoyl–linoleoyl–glycerol (18:1/18:2) [2] in plasma at APOC3 (LoF_mis)

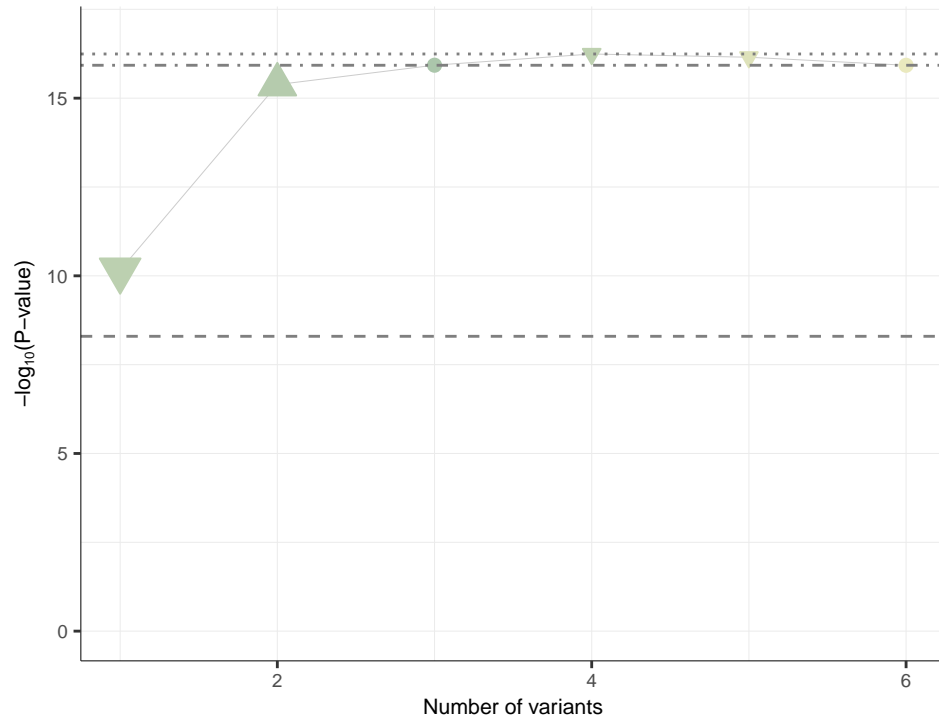


Variant consequence

- missense
- ▽ splicing
- △ stop gained



oleoyl–linoleoyl–glycerol (18:1/18:2) [2] in plasma at APOC3 (HI_mis)



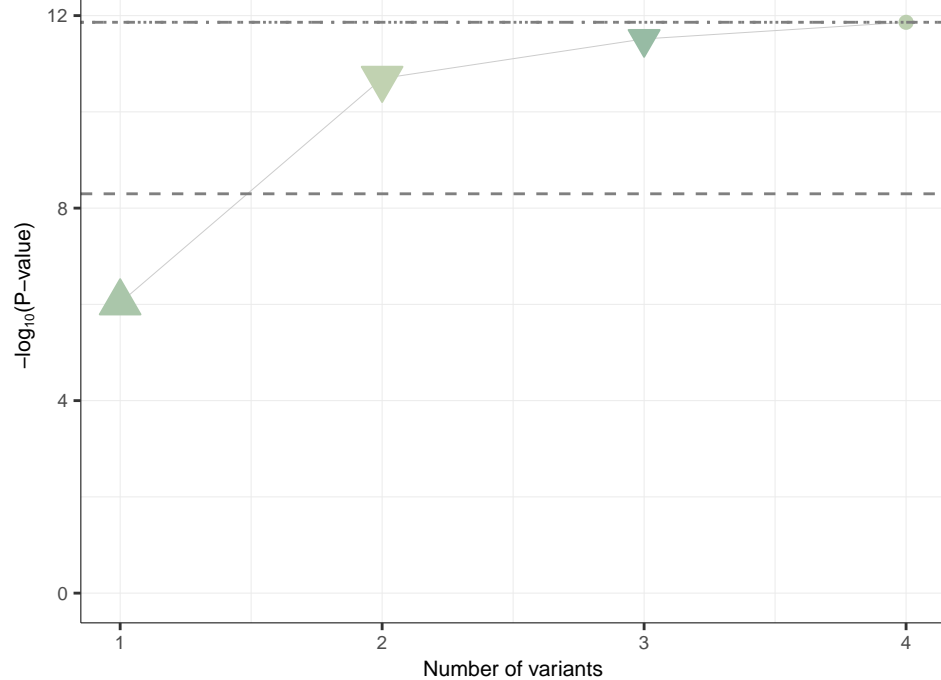
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8

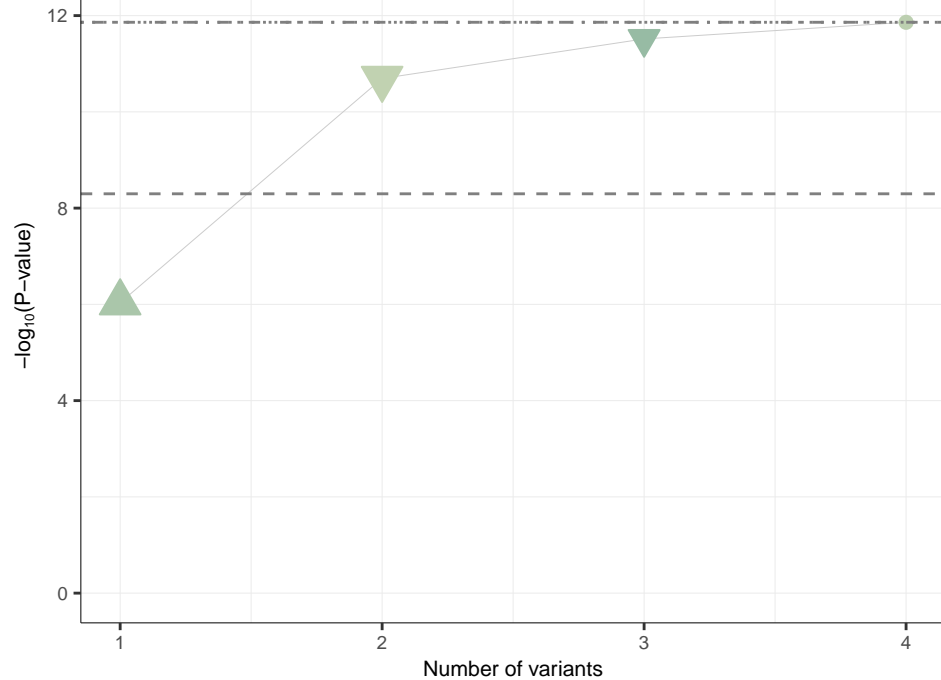
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

oleoyl-oleoyl-glycerol (18:1/18:1) [1]* in plasma at APOC3 (LoF_mis)

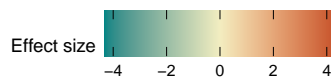


oleoyl-oleoyl-glycerol (18:1/18:1) [1]* in plasma at APOC3 (HI_mis)



Variant consequence

- missense
- ▽ splicing
- △ stop gained



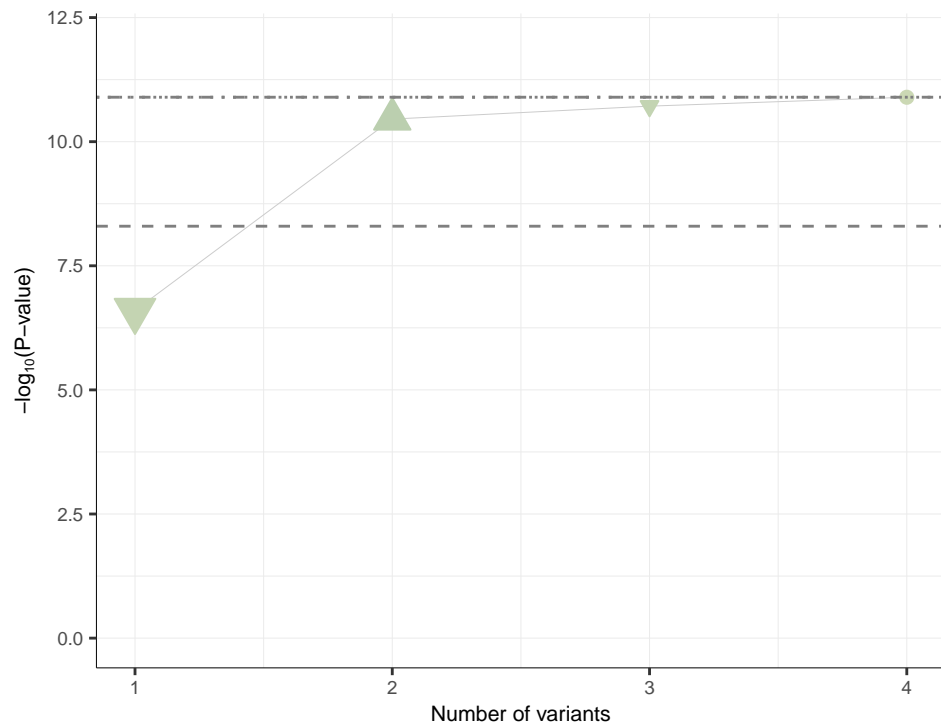
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5

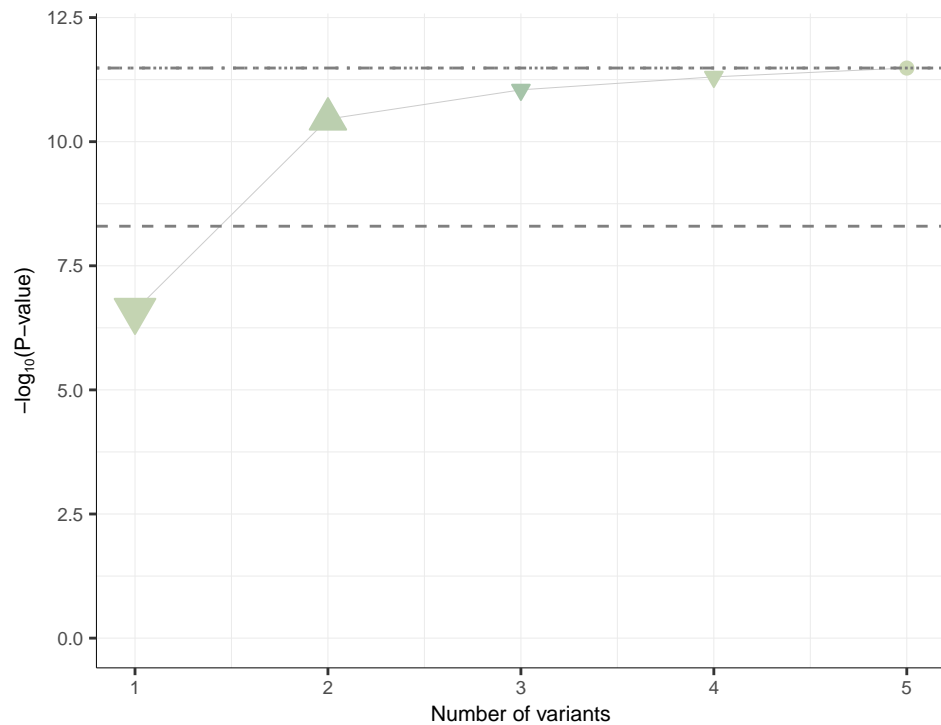
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

oleoyl-oleoyl-glycerol (18:1/18:1) [2]* in plasma at APOC3 (LoF_mis)

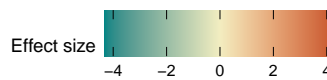


oleoyl-oleoyl-glycerol (18:1/18:1) [2]* in plasma at APOC3 (HI_mis)



Variant consequence

- missense
- ▽ splicing
- △ stop gained



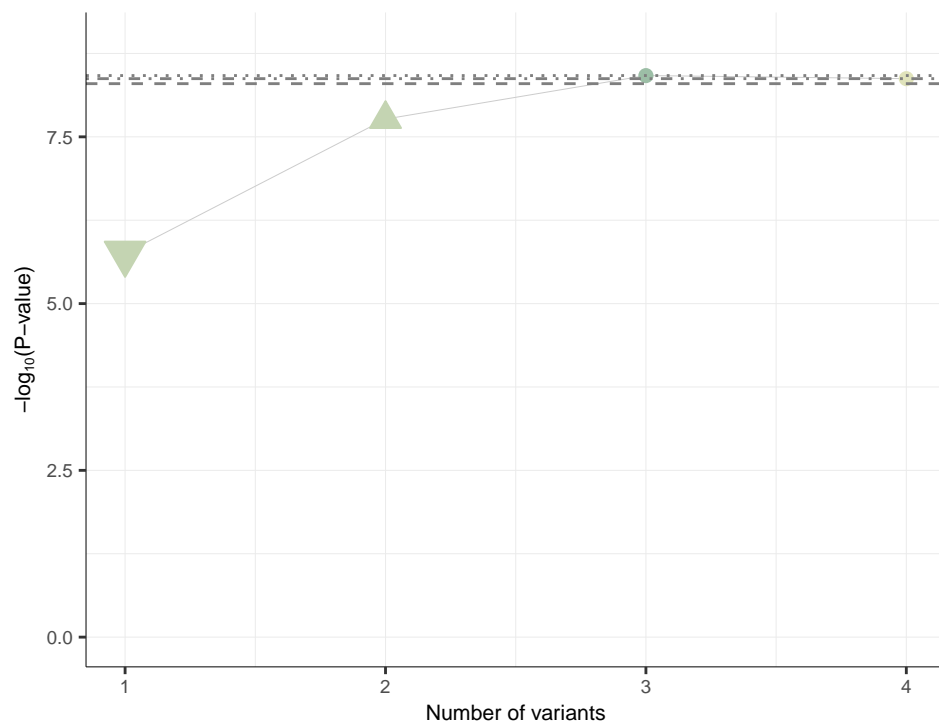
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5

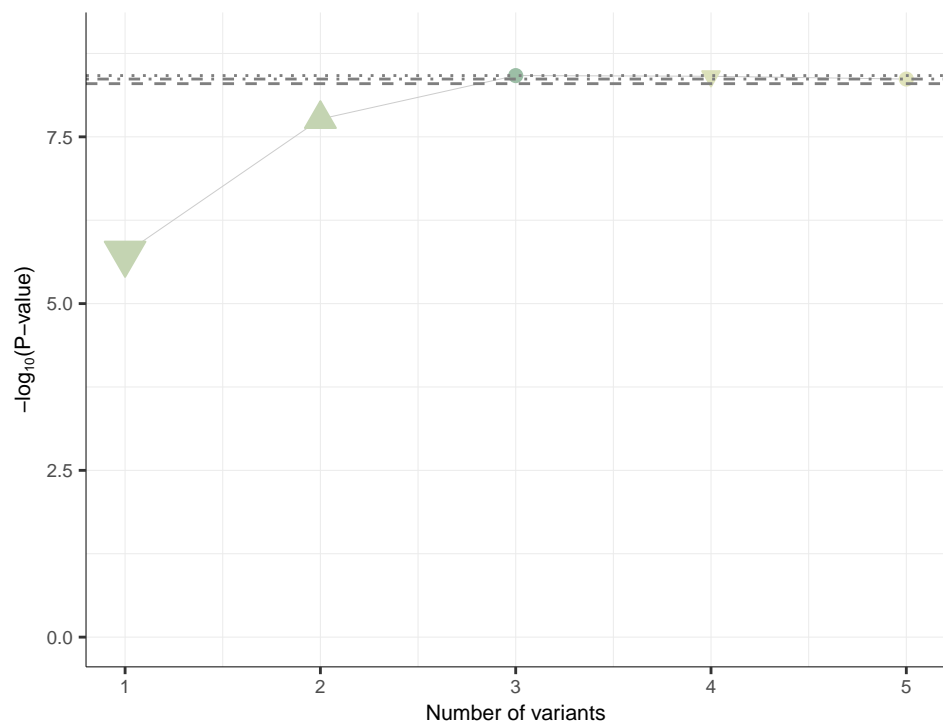
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

palmitoleoyl–linoleoyl–glycerol (16:1/18:2) [1]* in plasma at APOC3 (LoF_mis)

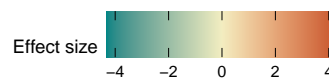


palmitoleoyl–linoleoyl–glycerol (16:1/18:2) [1]* in plasma at APOC3 (HI_mis)



Variant consequence

- missense
- ▽ splicing
- △ stop gained



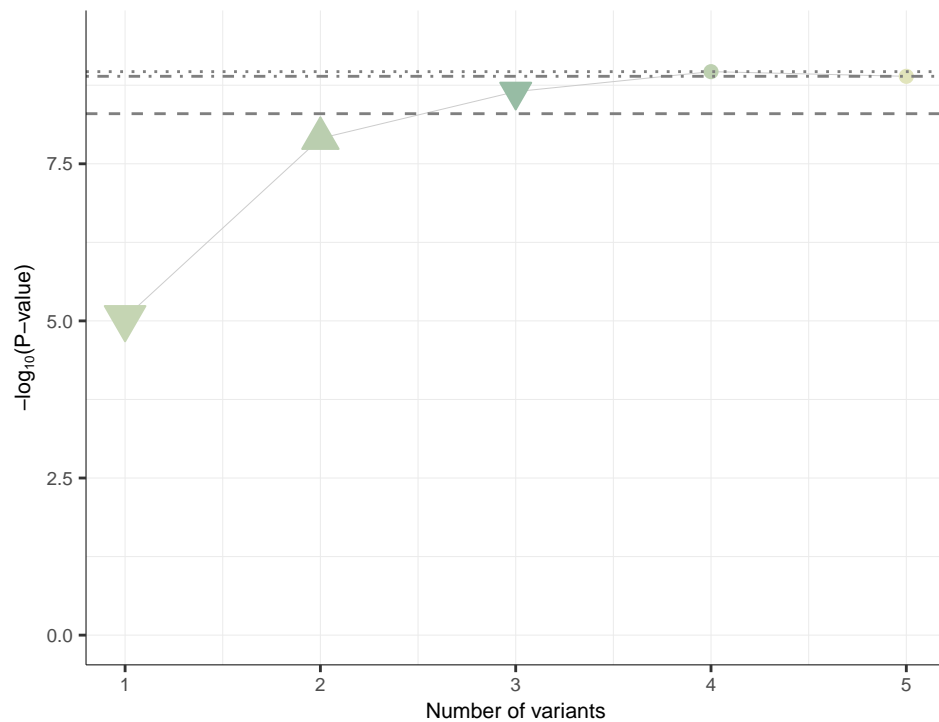
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5

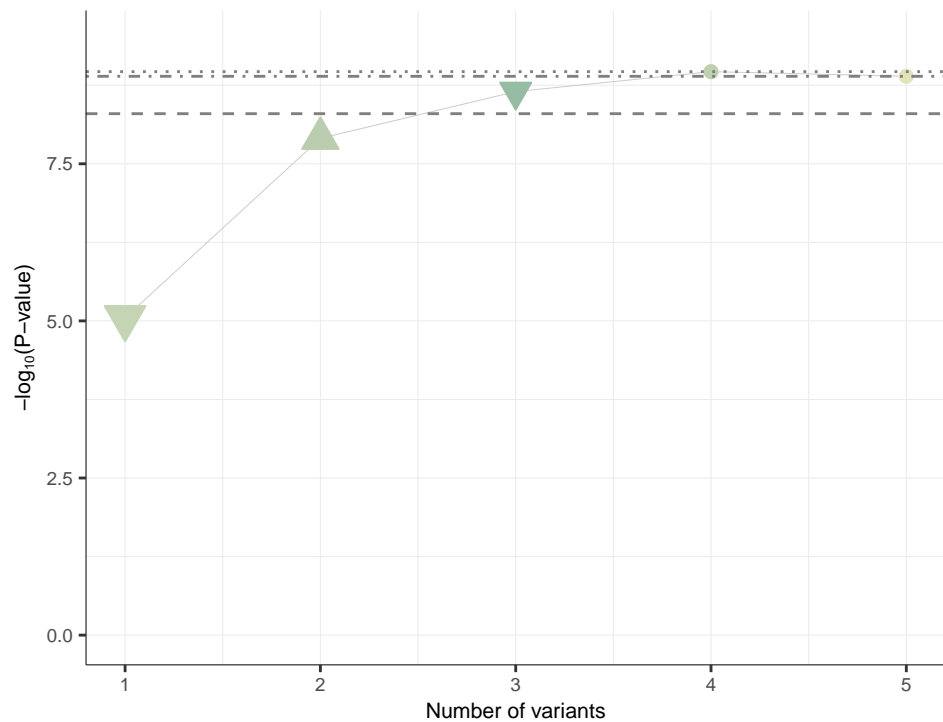
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

palmitoyl–linoleoyl–glycerol (16:0/18:2) [1]* in plasma at APOC3 (LoF_mis)



palmitoyl–linoleoyl–glycerol (16:0/18:2) [1]* in plasma at APOC3 (HI_mis)



Variant consequence

- missense
- ▽ splicing
- △ stop gained

Effect size

-4 -2 0 2 4

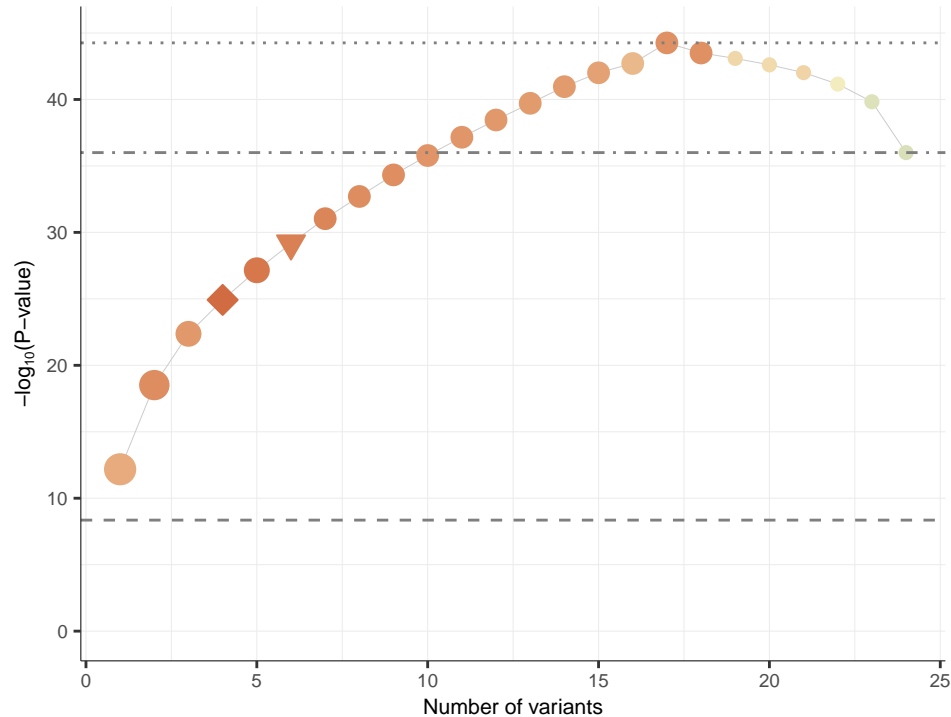
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5

Thresholds

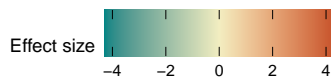
- Significance Threshold
- - - Total P-value
- ... Lowest P-value

argininosuccinate in urine at ASL (LoF_mis)

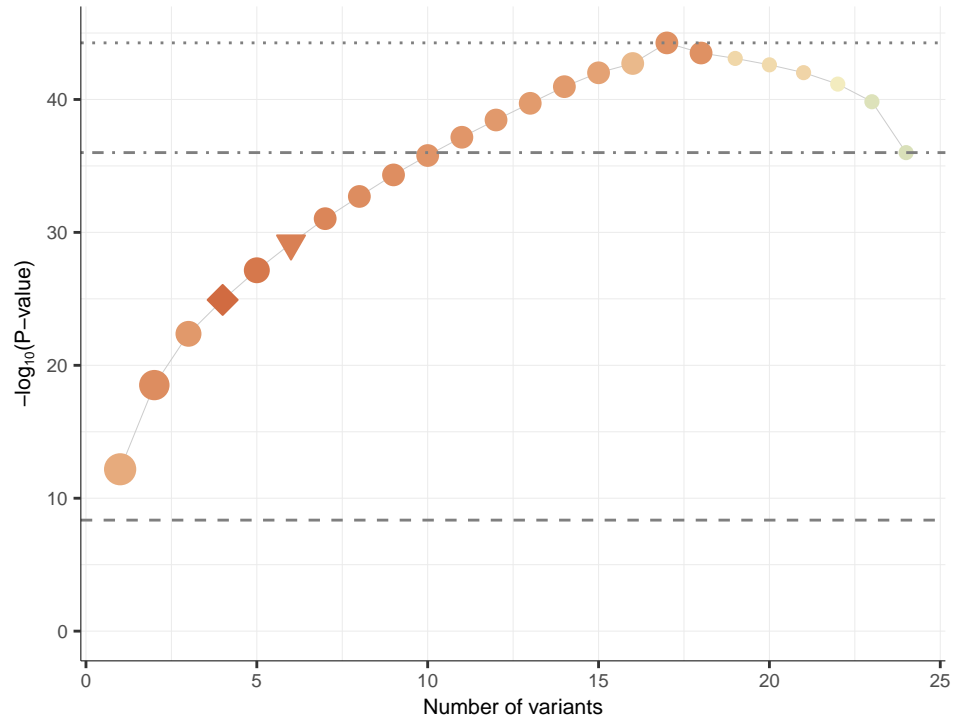


Variant consequence

- ◇ frameshift
- missense
- ▽ splicing



argininosuccinate in urine at ASL (HI_mis)

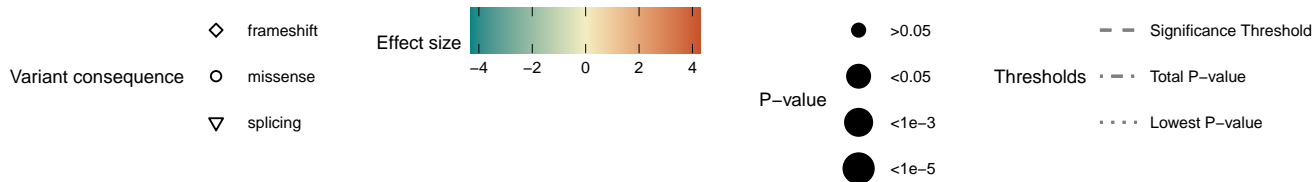
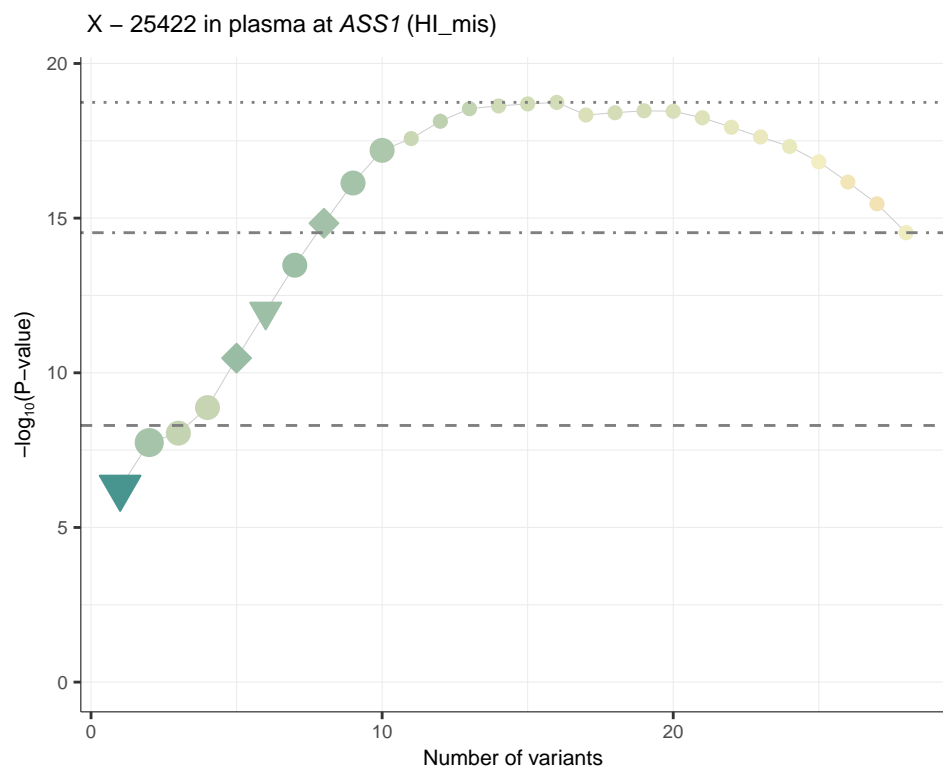
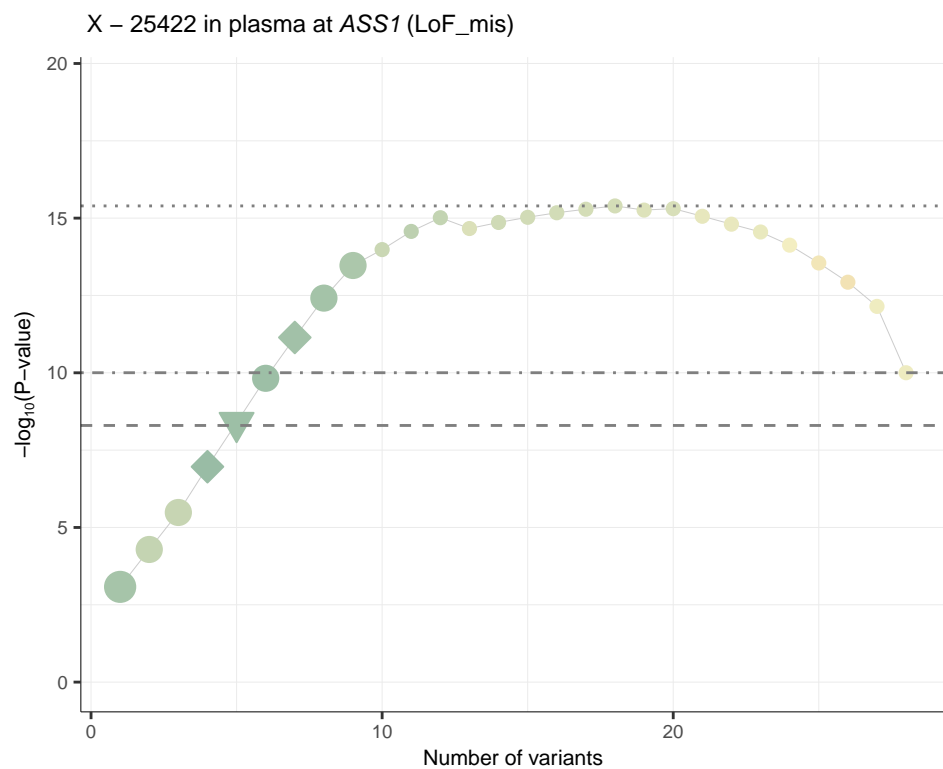


P-value

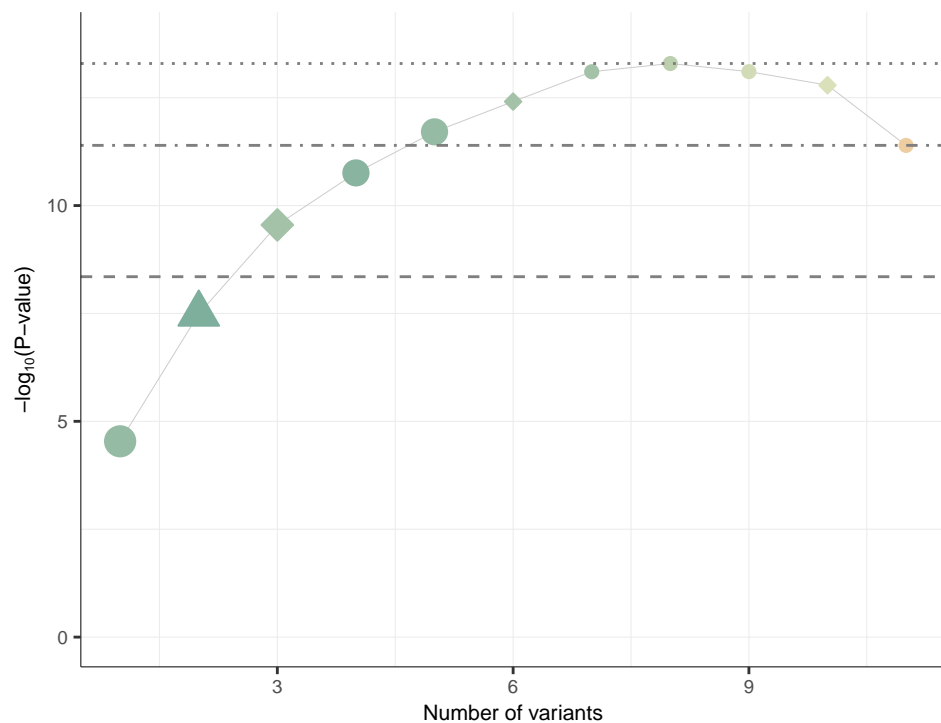
- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8
- <1e-11

Thresholds

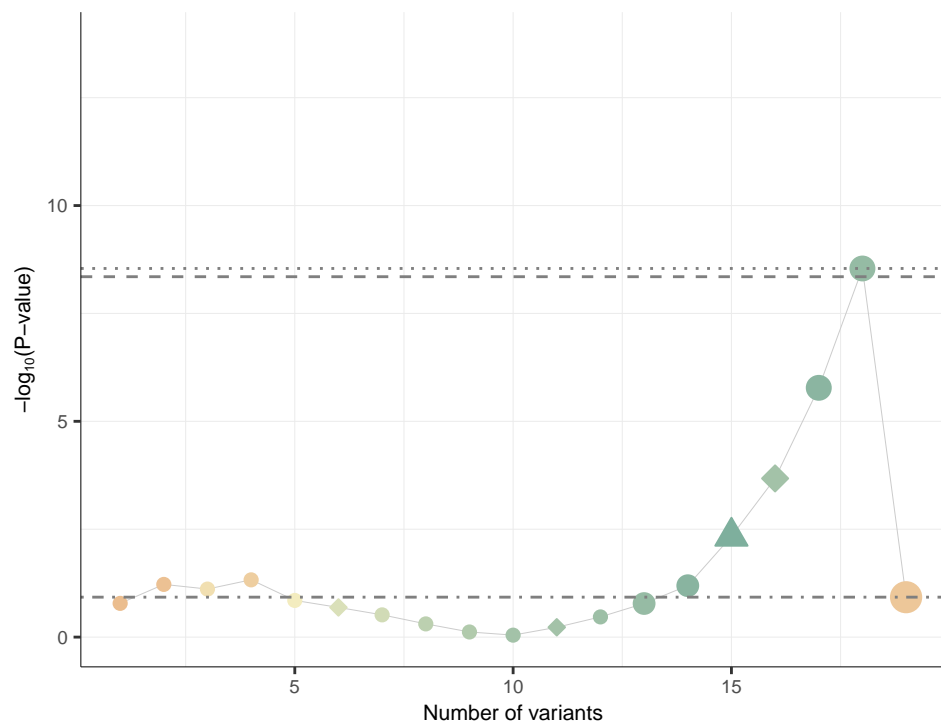
- Significance Threshold
- - - Total P-value
- ... Lowest P-value



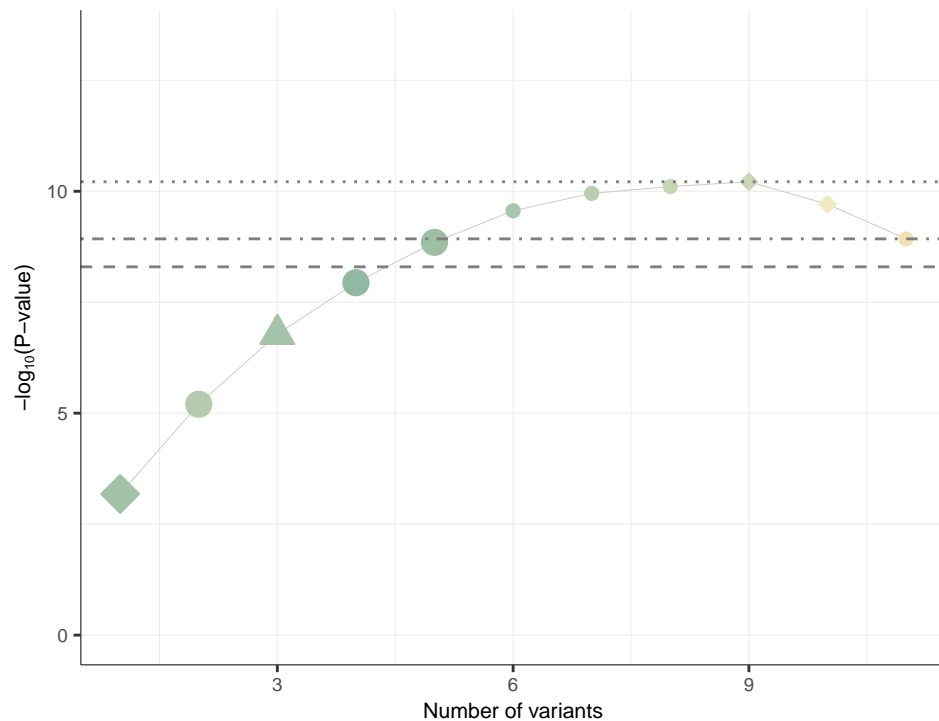
X – 23654 in urine at *BBOX1* (LoF_mis)



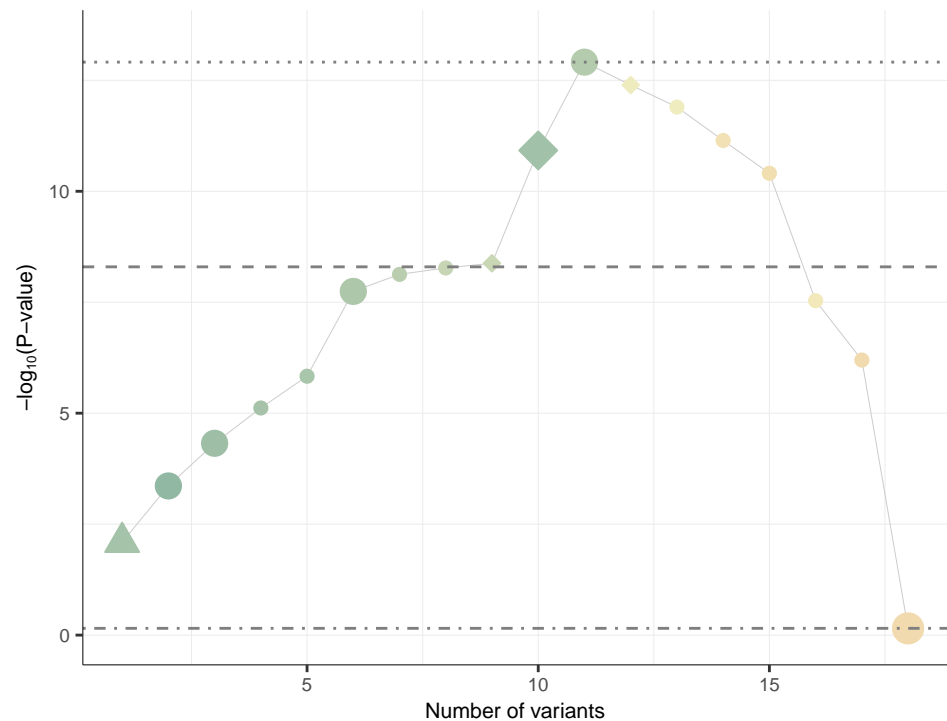
X – 23654 in urine at *BBOX1* (HI_mis)



X – 24801 in plasma at *BBOX1* (LoF_mis)

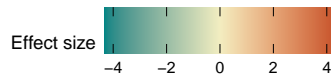


X – 24801 in plasma at *BBOX1* (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- △ stop gained



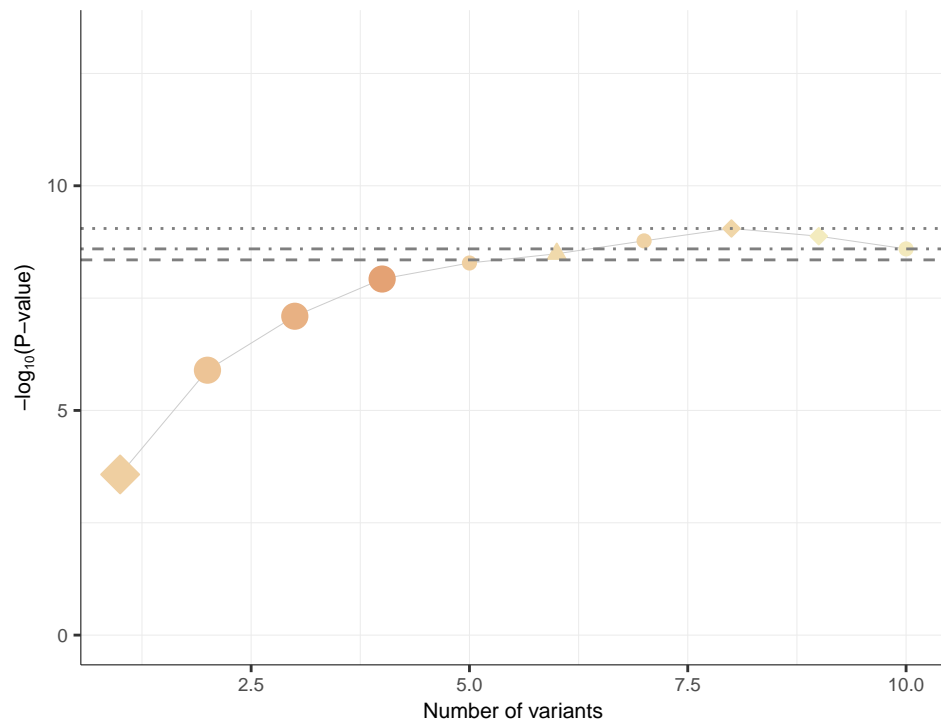
P-value

- >0.05
- <0.05
- <1e-3

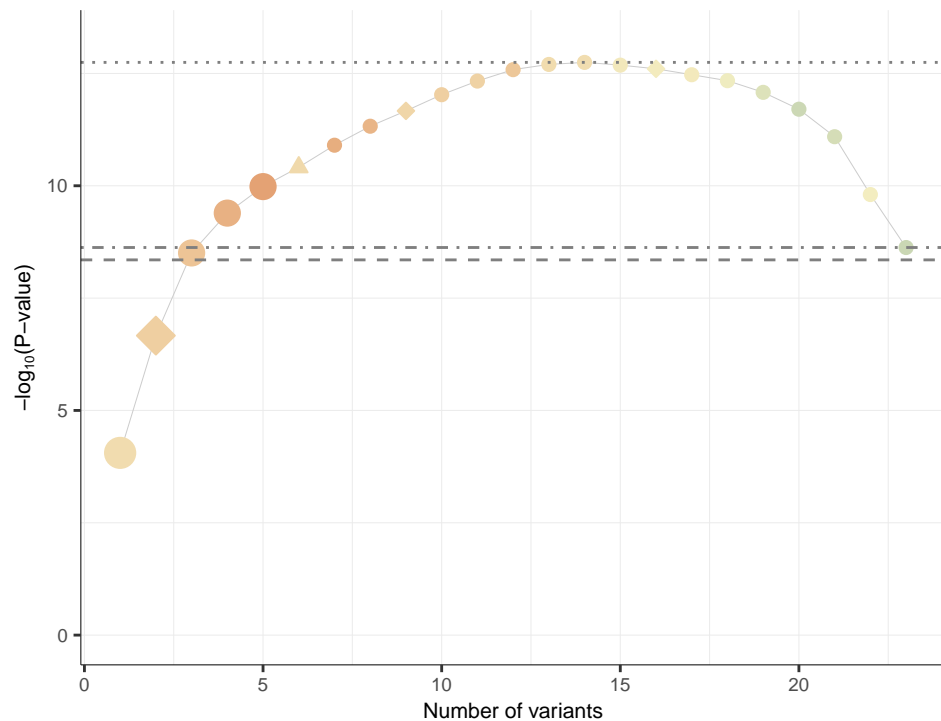
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

carnosine in urine at *CNDP1* (LoF_mis)



carnosine in urine at *CNDP1* (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- △ stop gained

Effect size

-4 -2 0 2 4

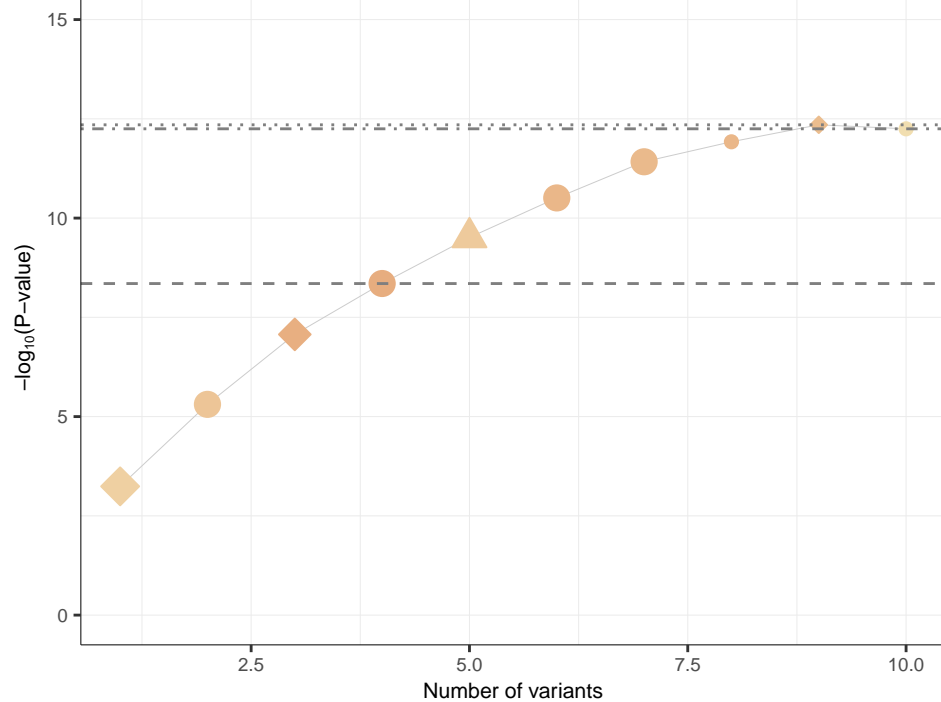
P-value

- >0.05
- <0.05
- <1e-3

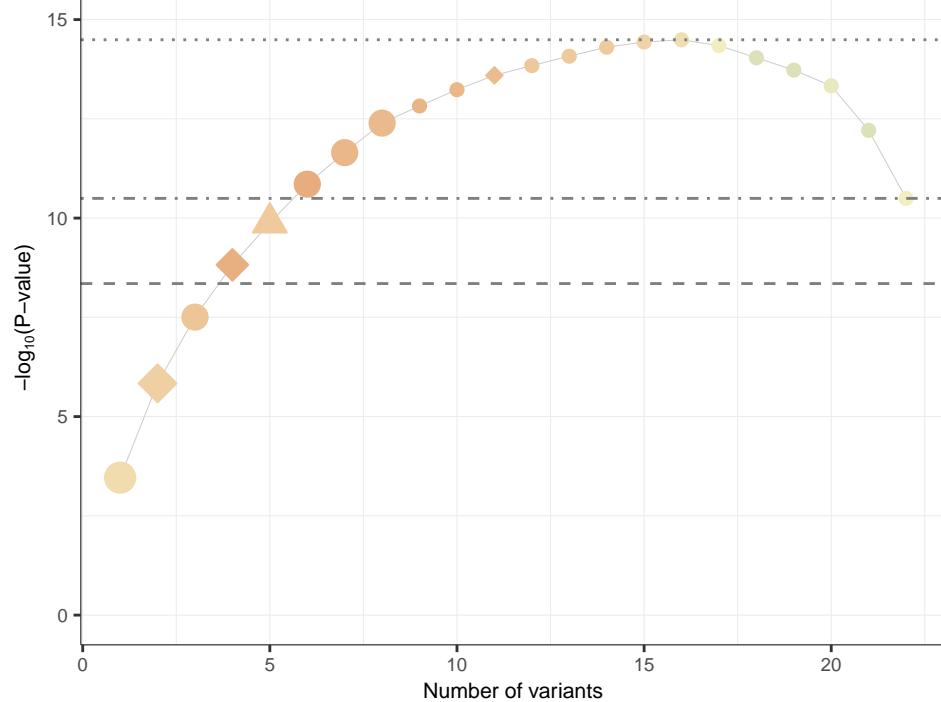
Thresholds

- Significance Threshold
- - - Total P-value
- . . . Lowest P-value

homocarnosine in urine at *CNDP1* (LoF_mis)

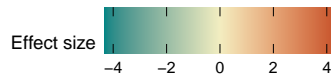


homocarnosine in urine at *CNDP1* (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- △ stop gained



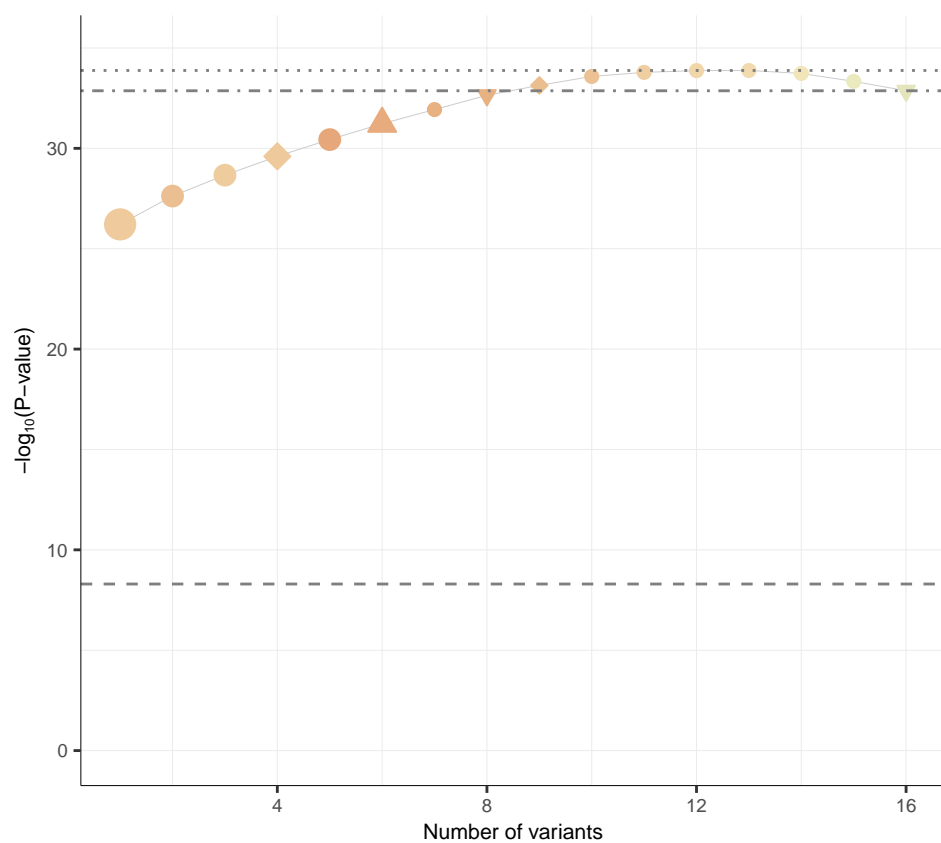
P-value

- >0.05
- <0.05
- <1e-3

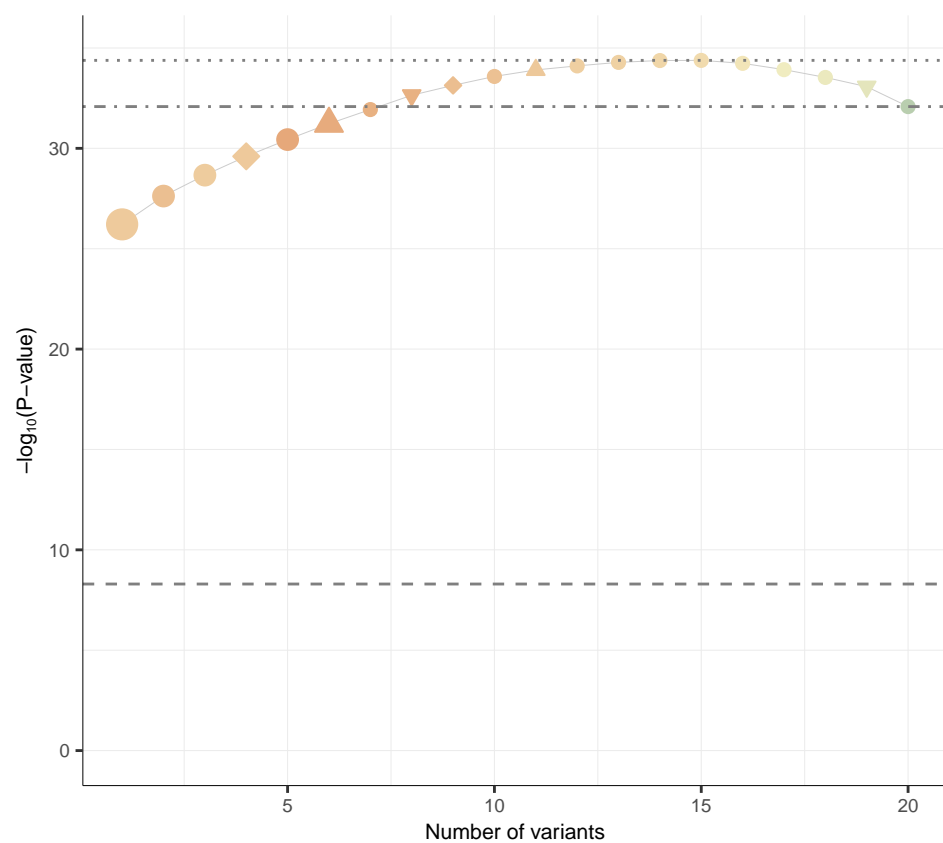
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

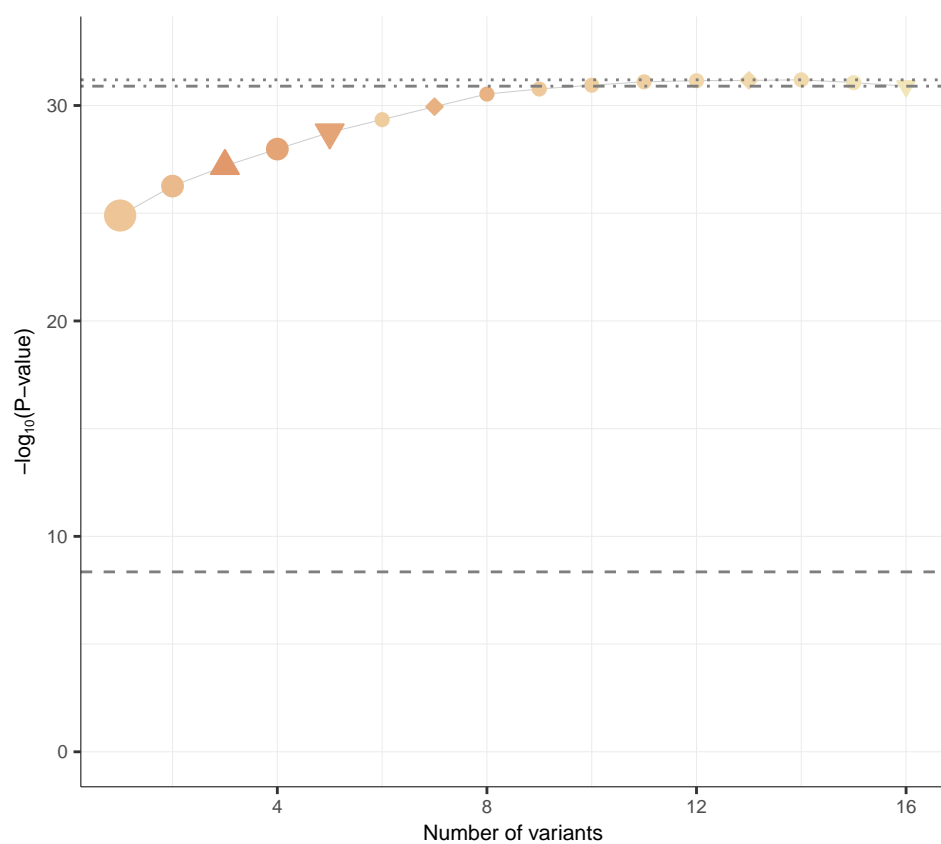
cystathionine in plasma at *CTH* (LoF_mis)



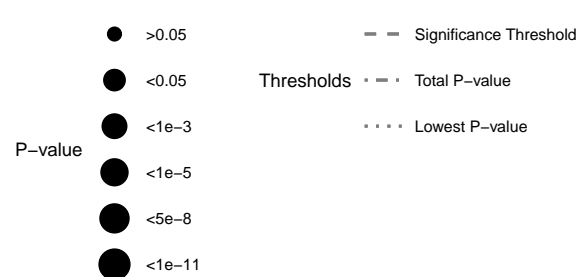
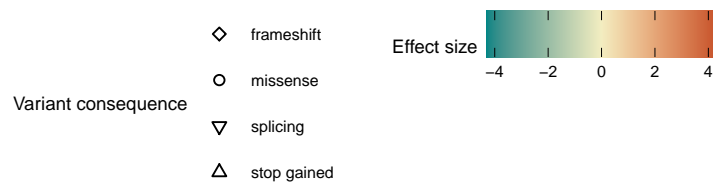
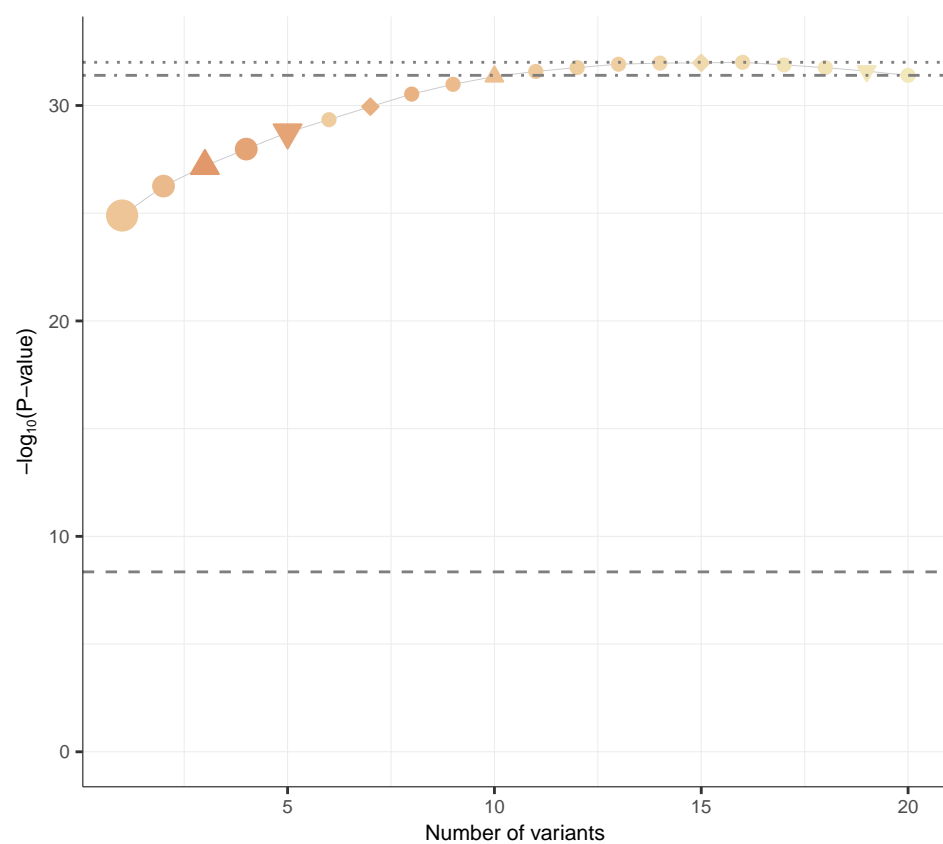
cystathionine in plasma at *CTH* (HI_mis)



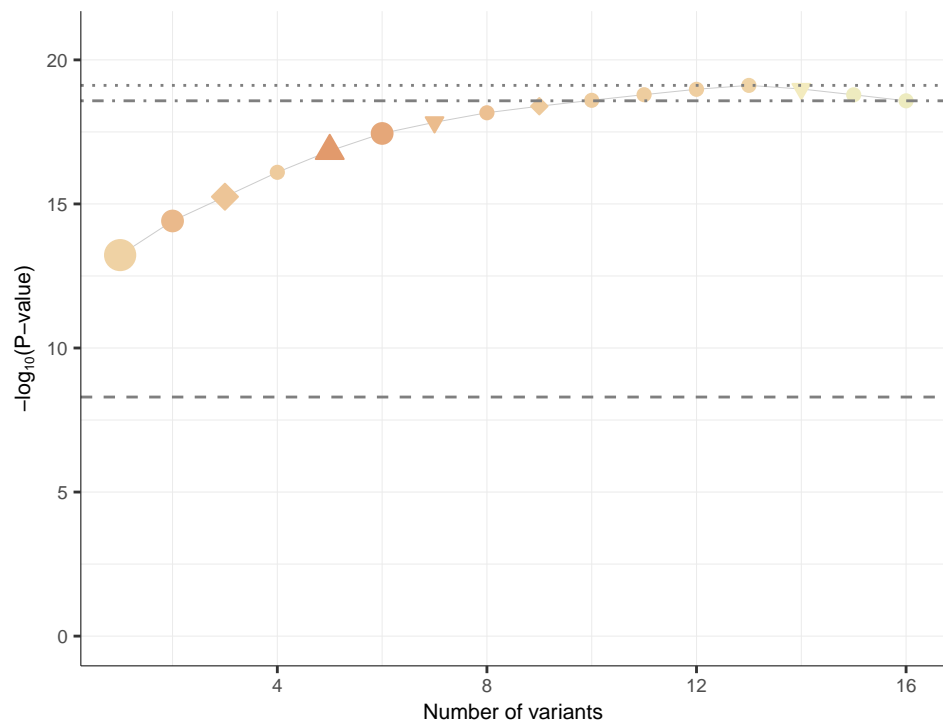
cystathionine in urine at *CTH* (LoF_mis)



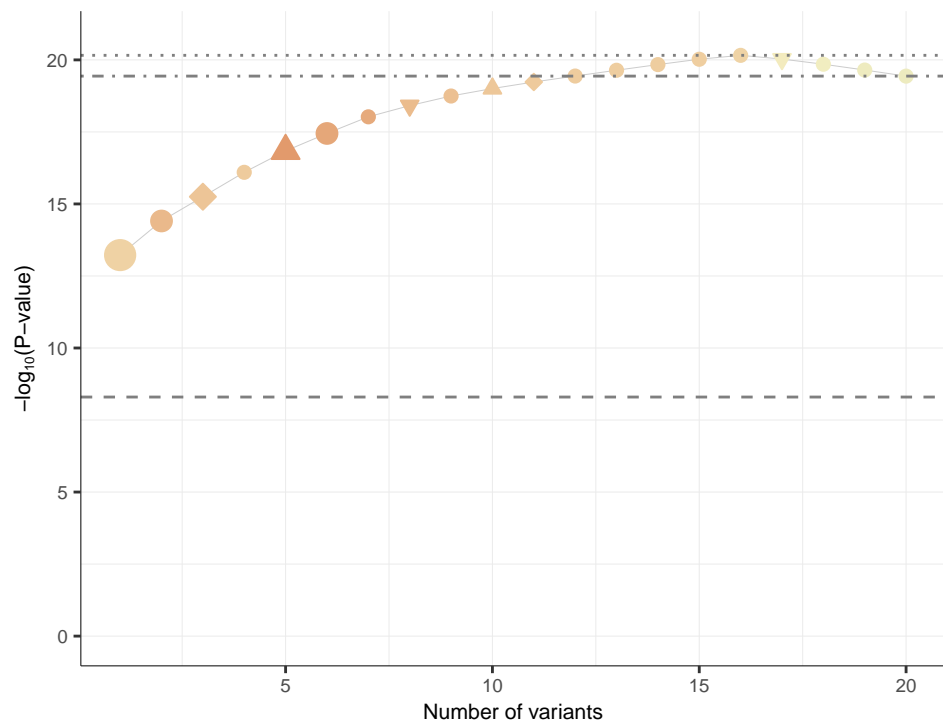
cystathionine in urine at *CTH* (HI_mis)



X - 11795 in plasma at *CTH* (LoF_mis)



X - 11795 in plasma at *CTH* (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- ▽ splicing
- △ stop gained

Effect size

-4 -2 0 2 4

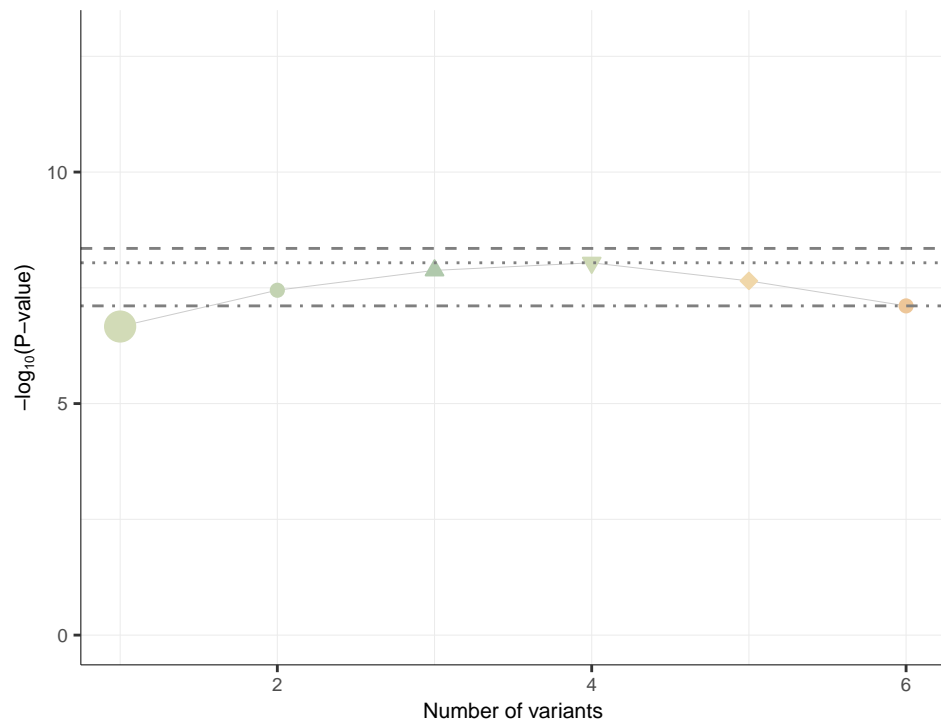
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8
- <1e-11

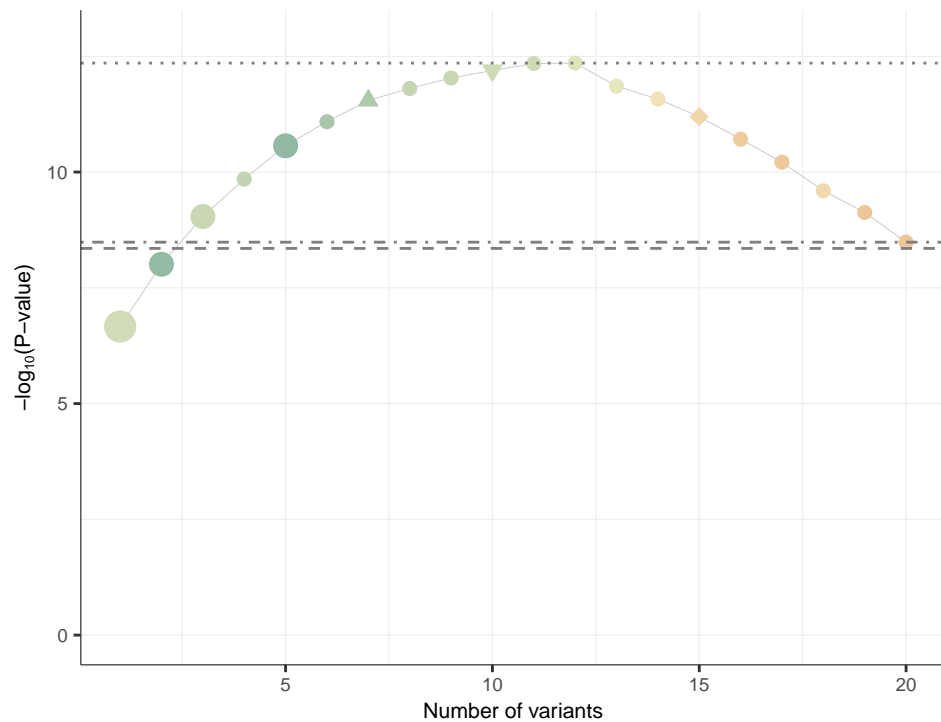
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

X - 24339 in urine at *DECR2* (LoF_mis)

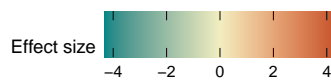


X - 24339 in urine at *DECR2* (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- ▽ splicing
- △ stop gained



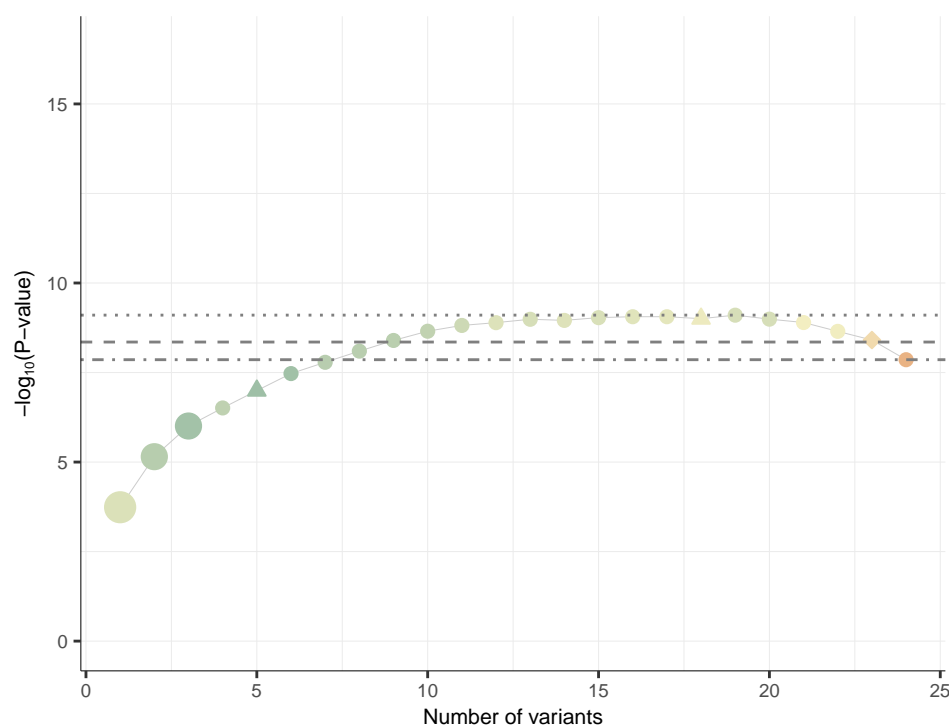
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5

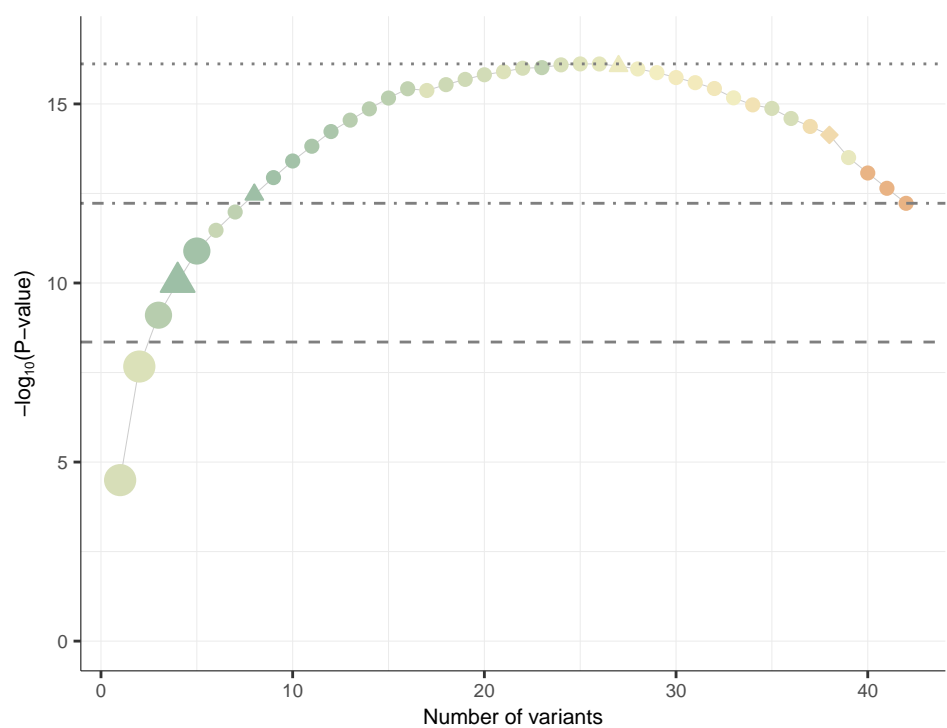
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

4-ureidobutyrate in urine at *DHTKD1* (LoF_mis)



4-ureidobutyrate in urine at *DHTKD1* (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- △ stop gained

Effect size

-4 -2 0 2 4

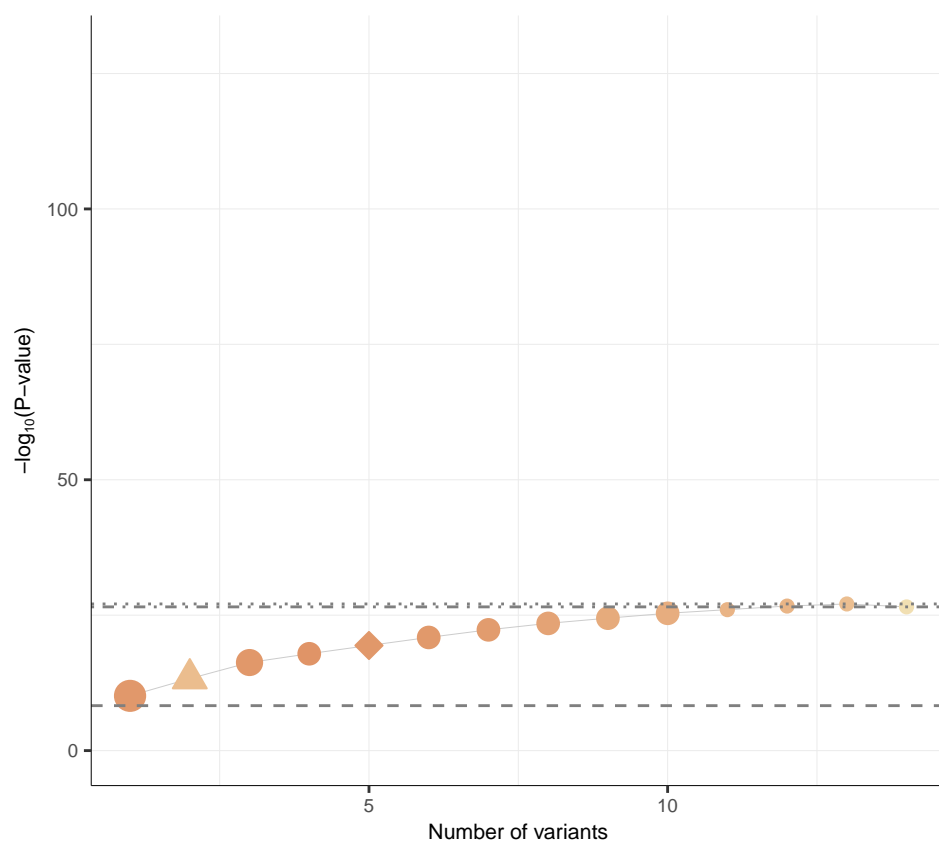
P-value

- >0.05
- <0.05
- <1e-3

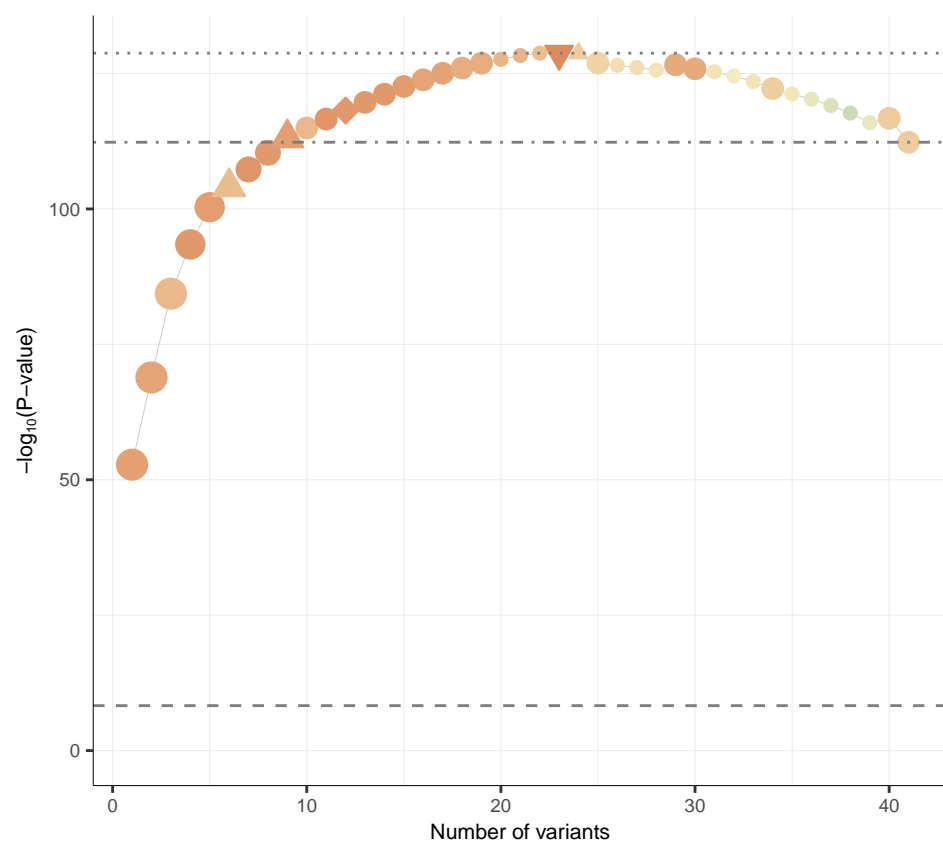
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

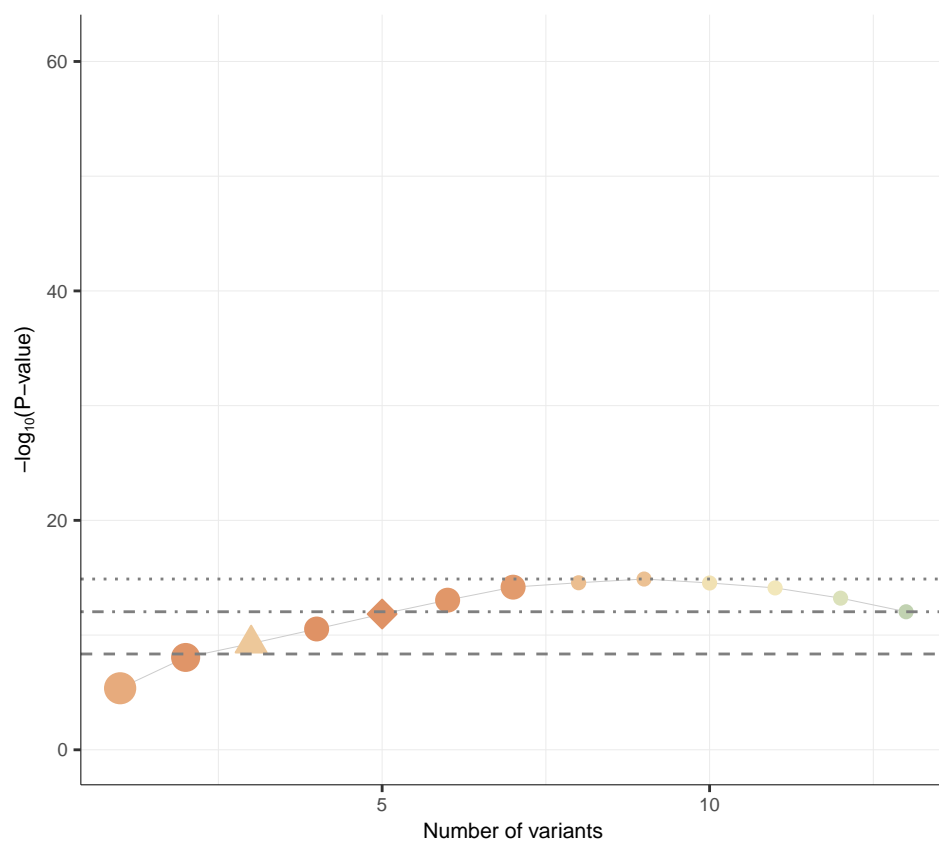
dimethylglycine in plasma at *DMGDH* (LoF_mis)



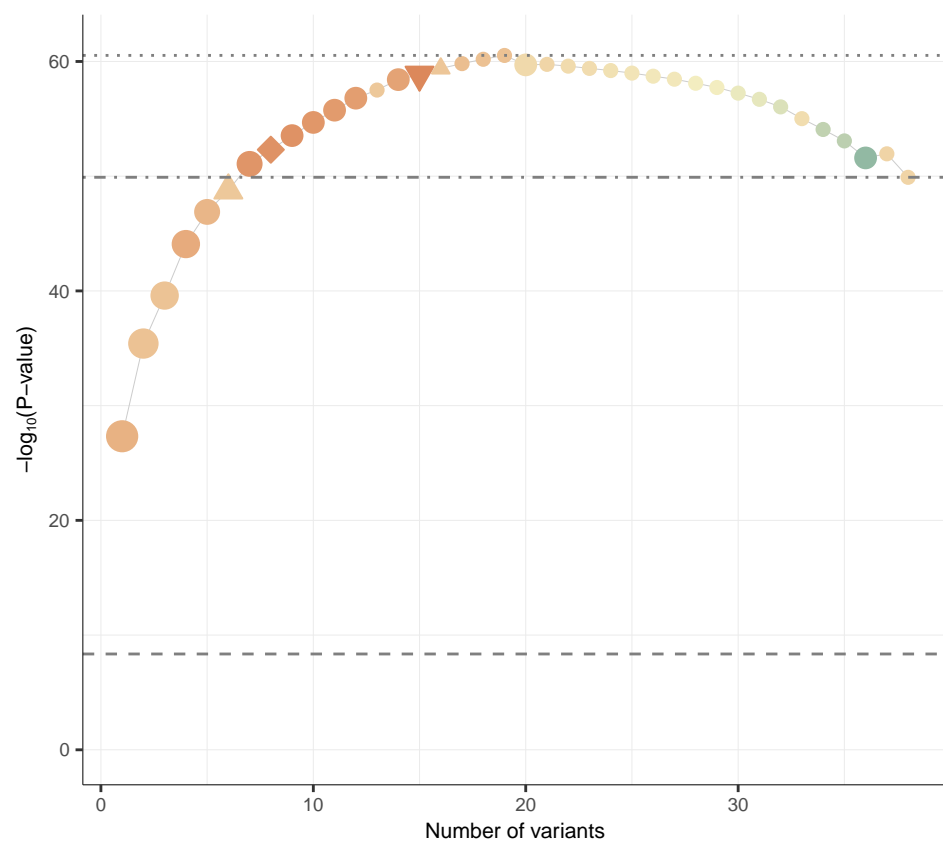
dimethylglycine in plasma at *DMGDH* (HI_mis)



dimethylglycine in urine at *DMGDH* (LoF_mis)

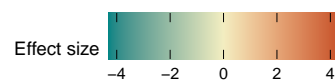


dimethylglycine in urine at *DMGDH* (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- ▽ splicing
- △ stop gained



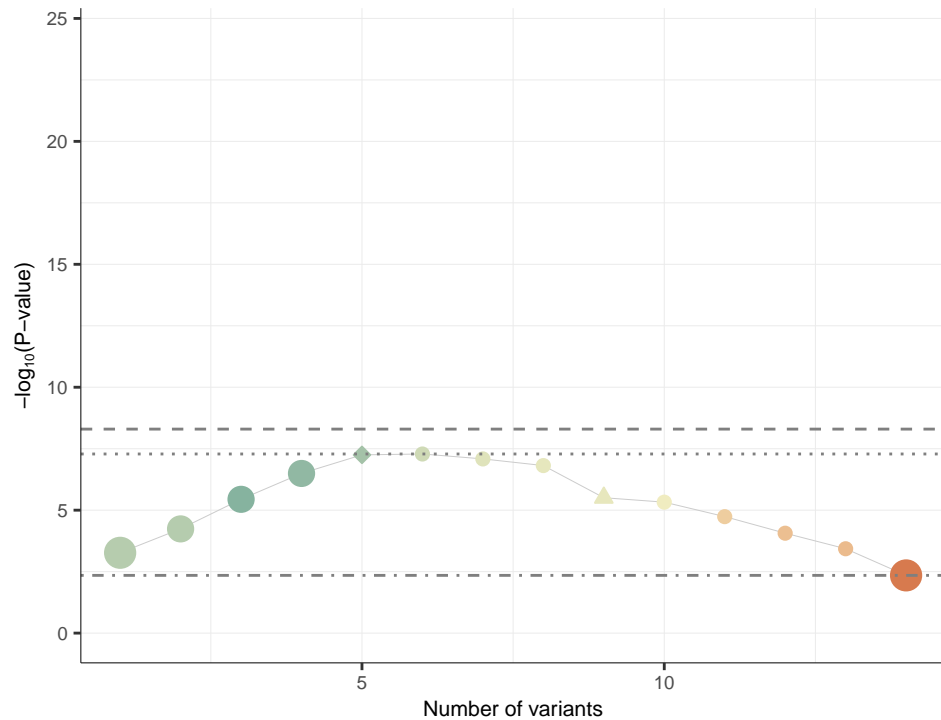
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8
- <1e-11

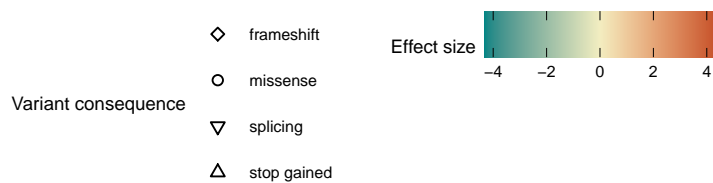
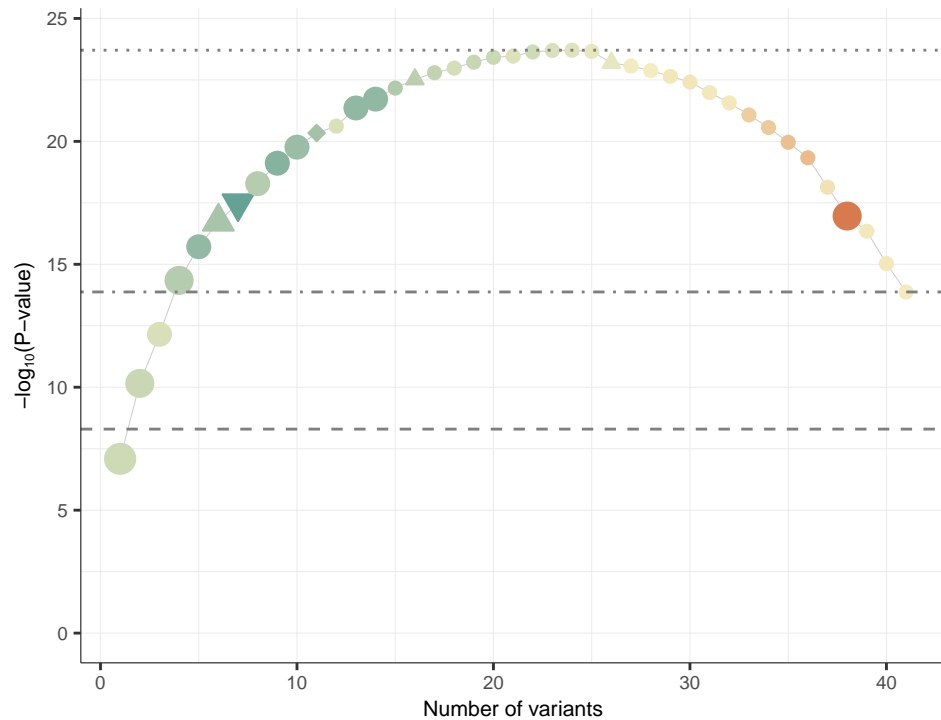
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

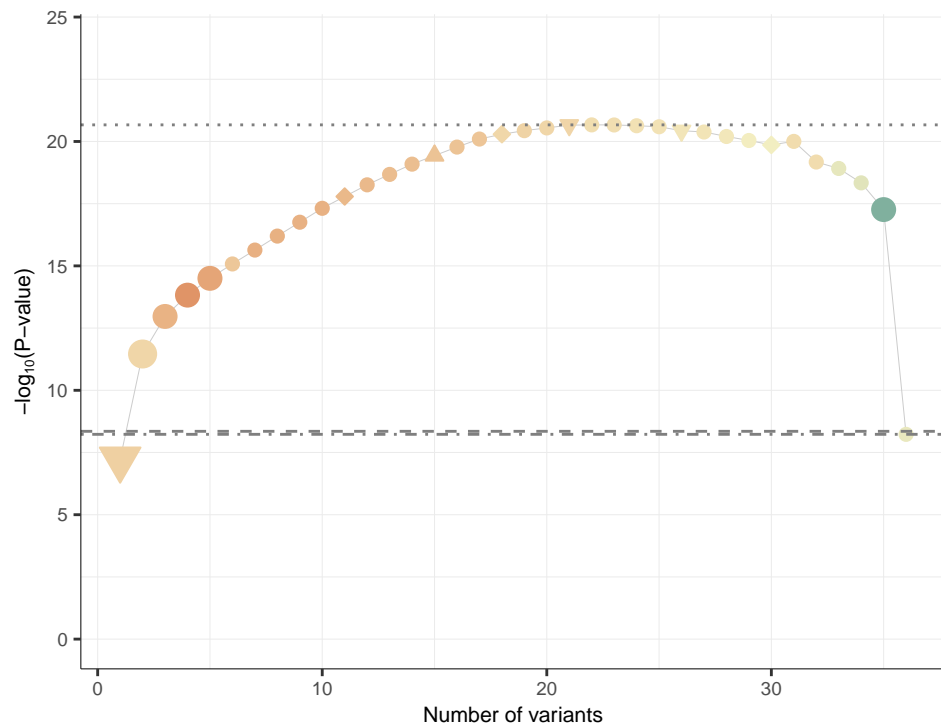
X - 23636 in plasma at *DMGDH* (LoF_mis)



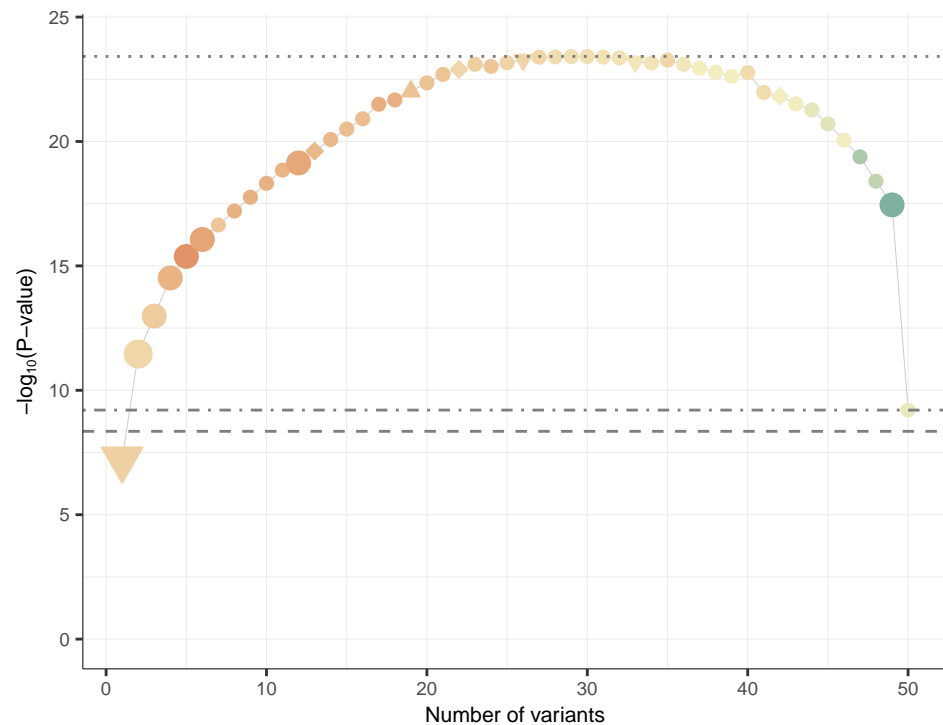
X - 23636 in plasma at *DMGDH* (HI_mis)



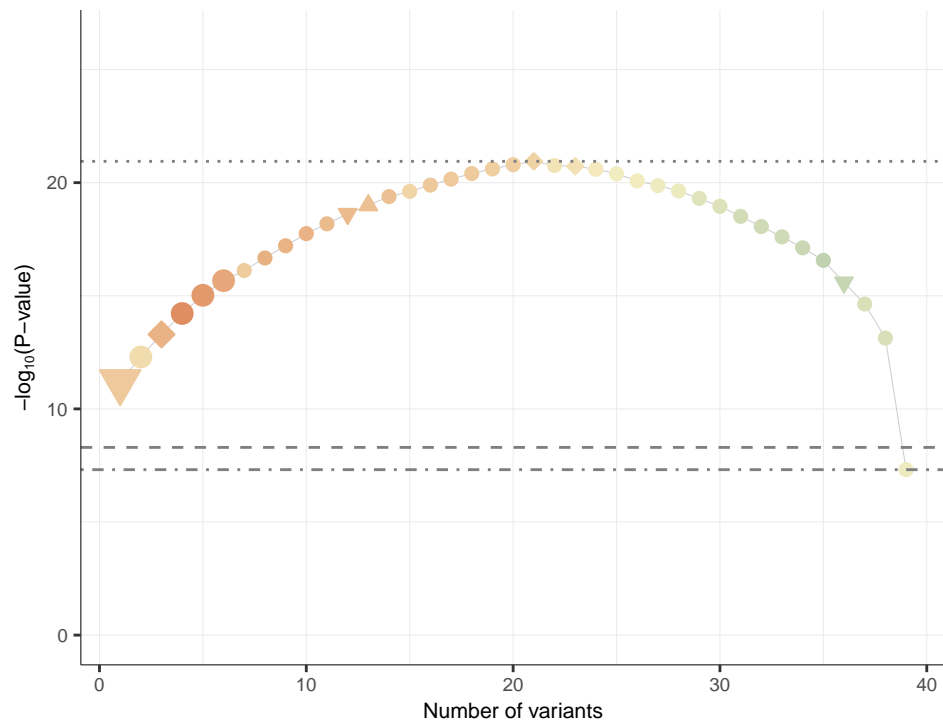
thymine in urine at *DPYD* (LoF_mis)



thymine in urine at *DPYD* (HI_mis)

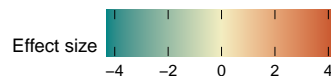


uracil in plasma at *DPYD* (LoF_mis)

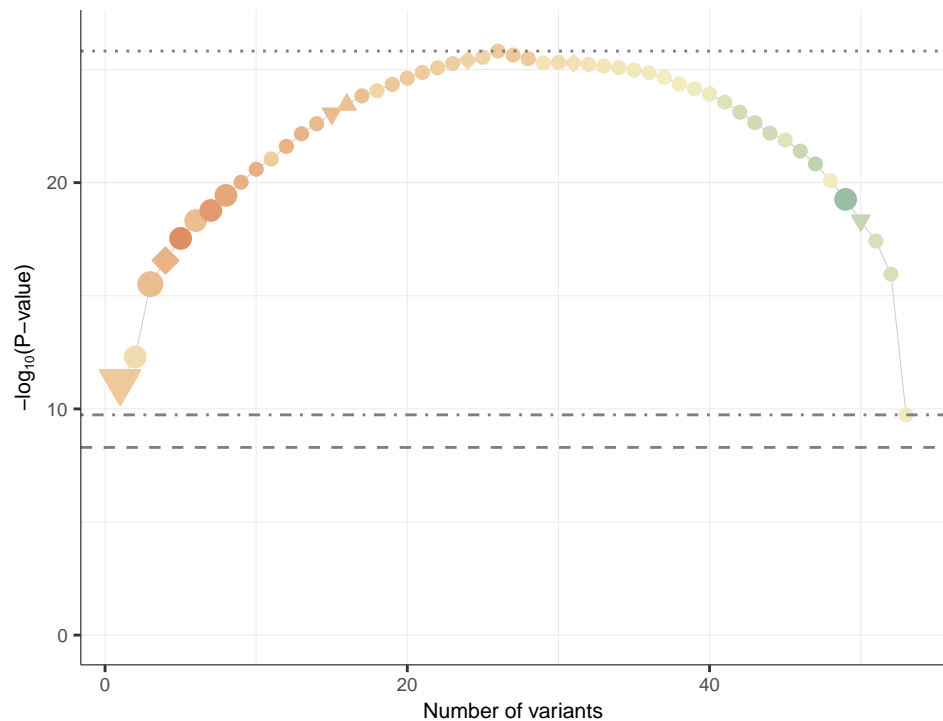


Variant consequence

- ◇ frameshift
- missense
- ▽ splicing
- △ stop gained



uracil in plasma at *DPYD* (HI_mis)

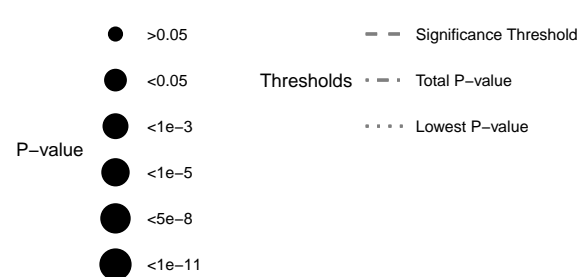
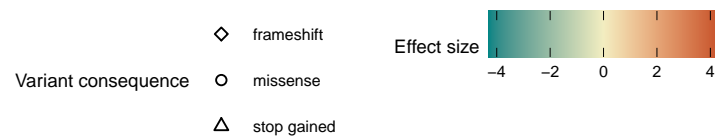
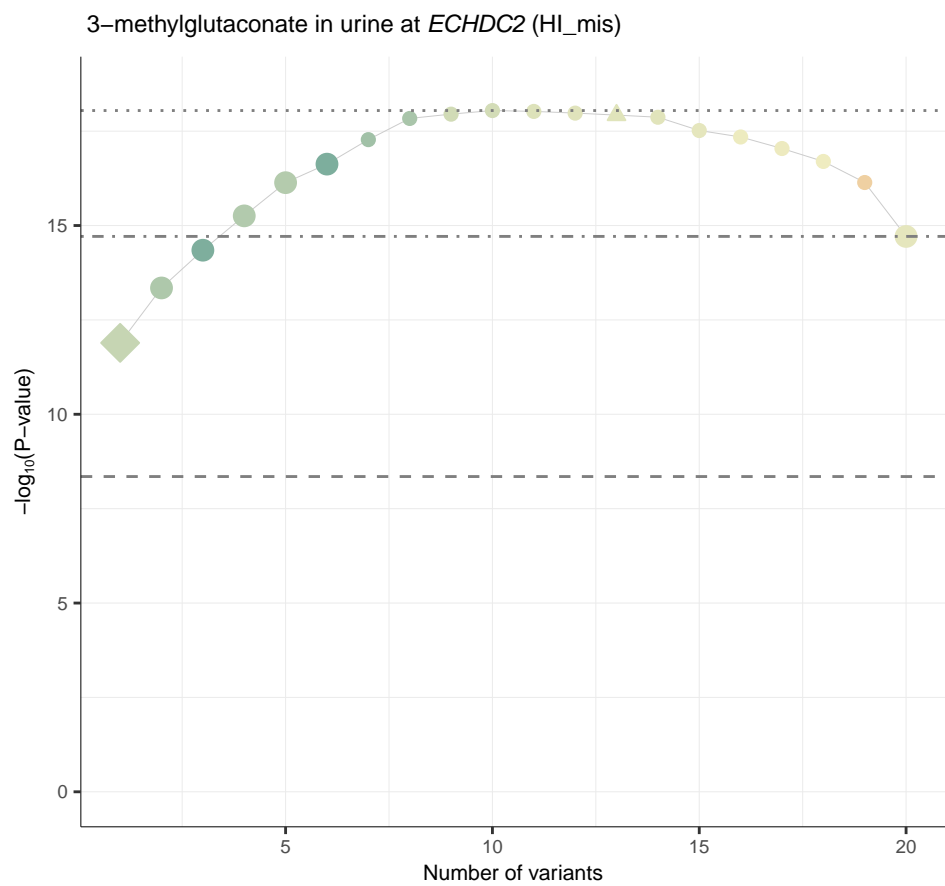
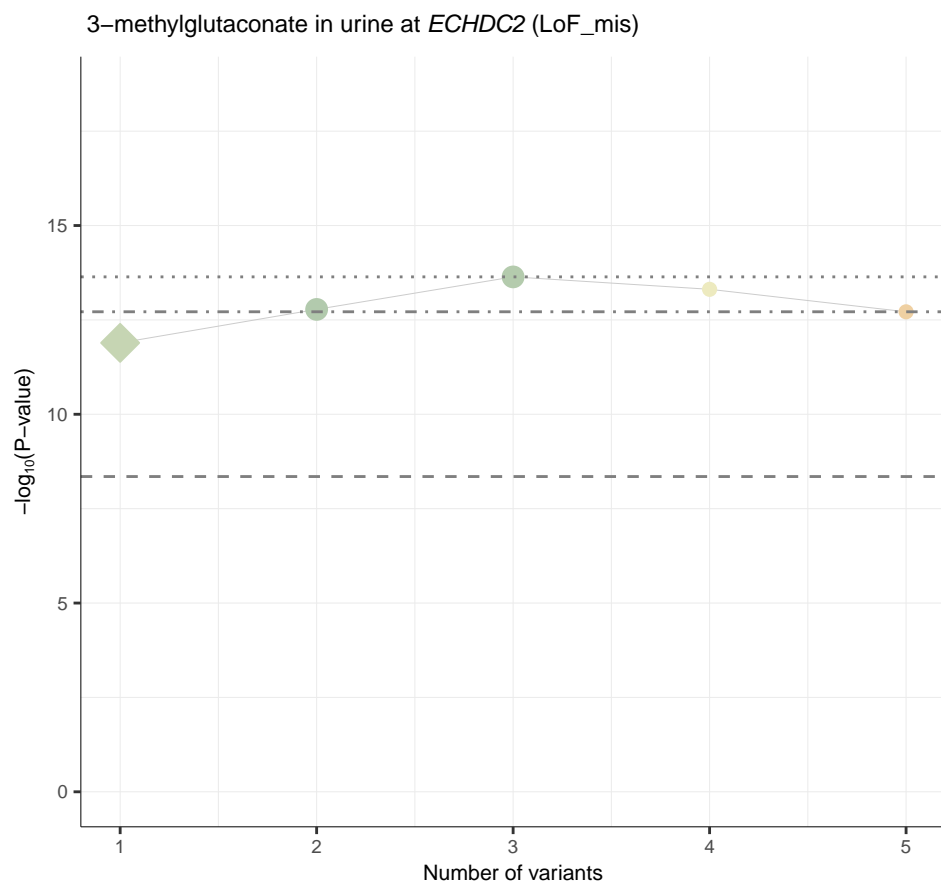
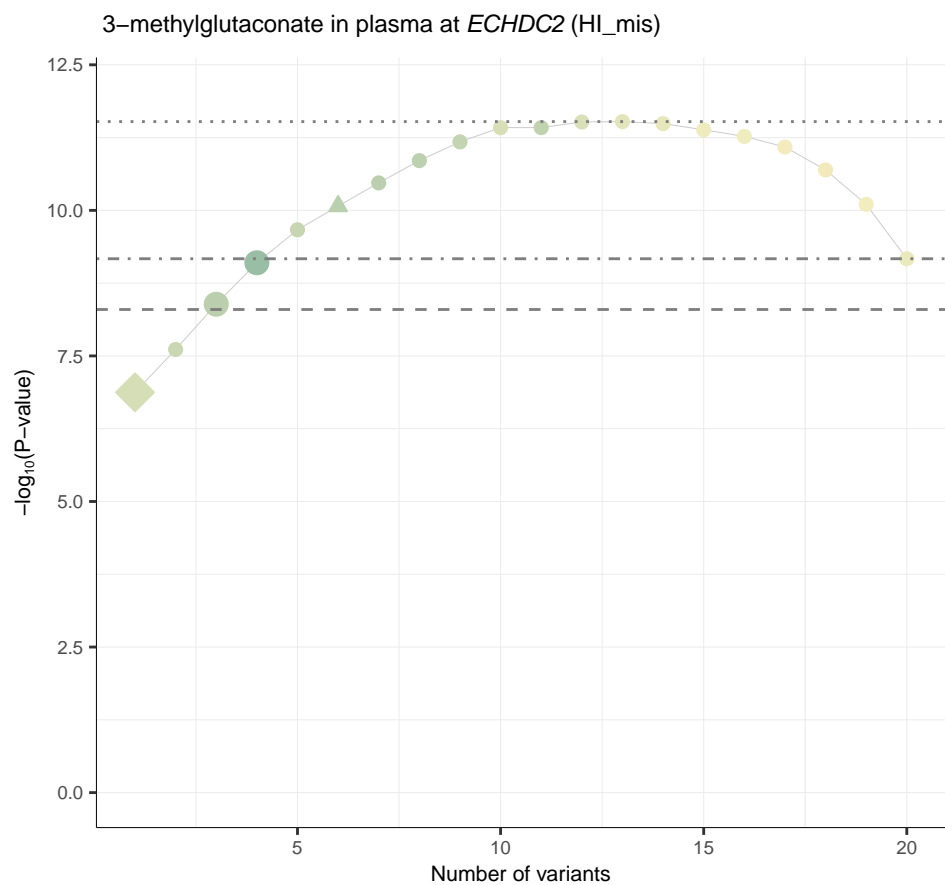
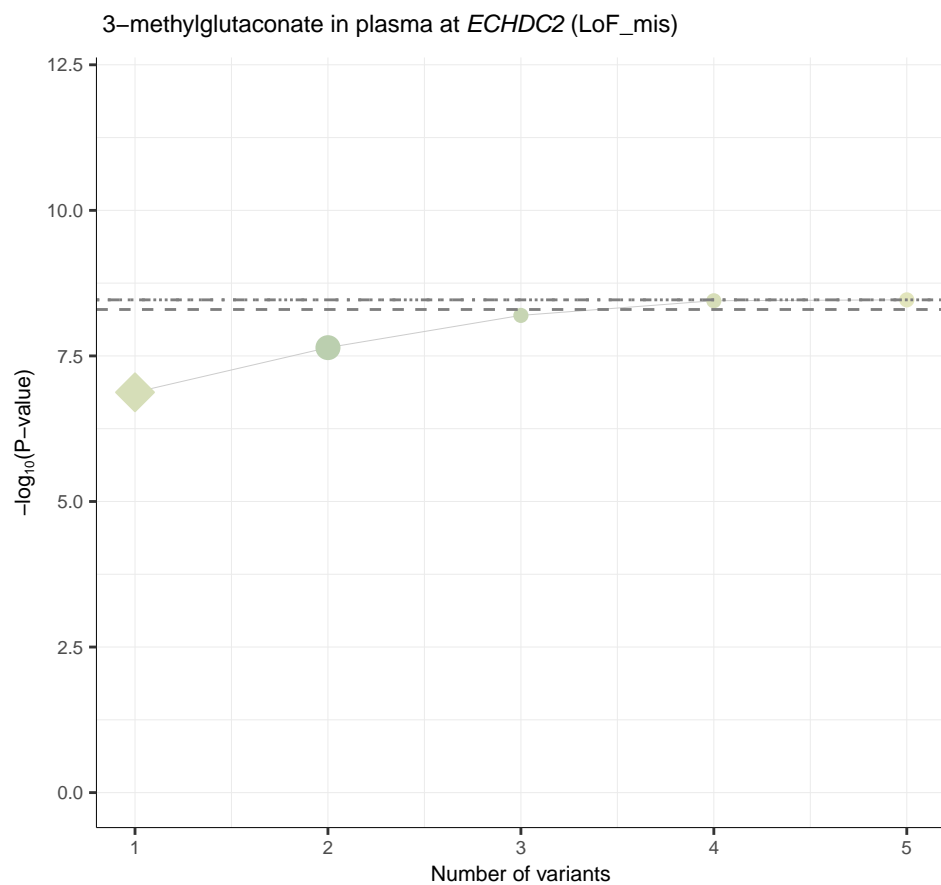


P-value

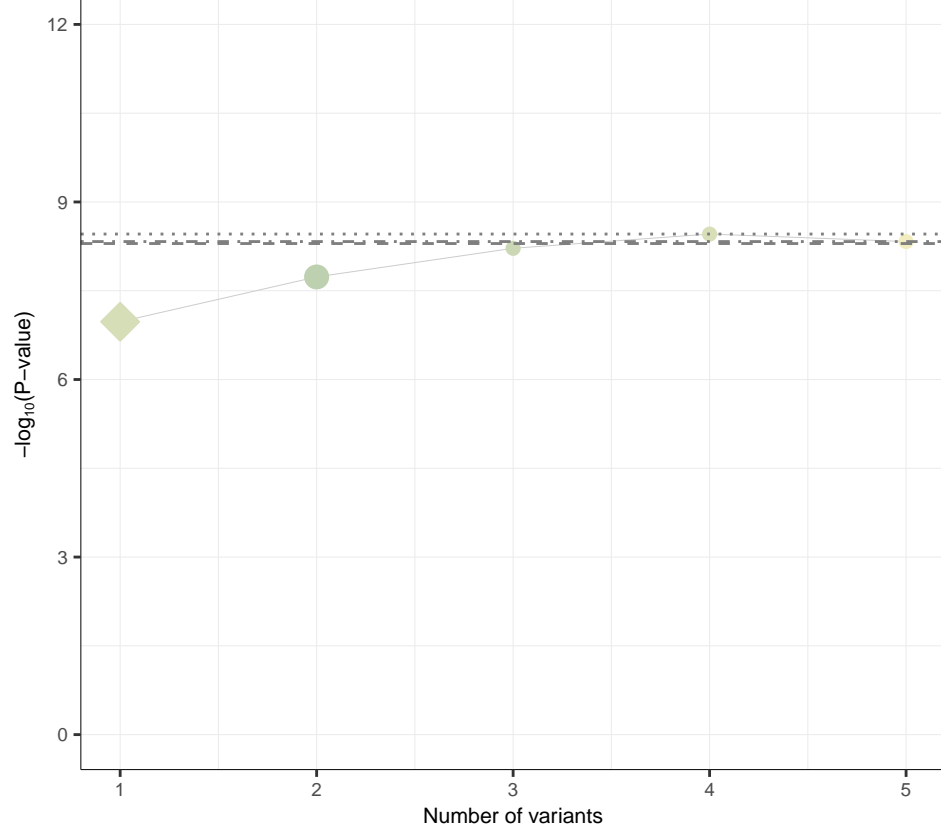
- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8
- <1e-11

Thresholds

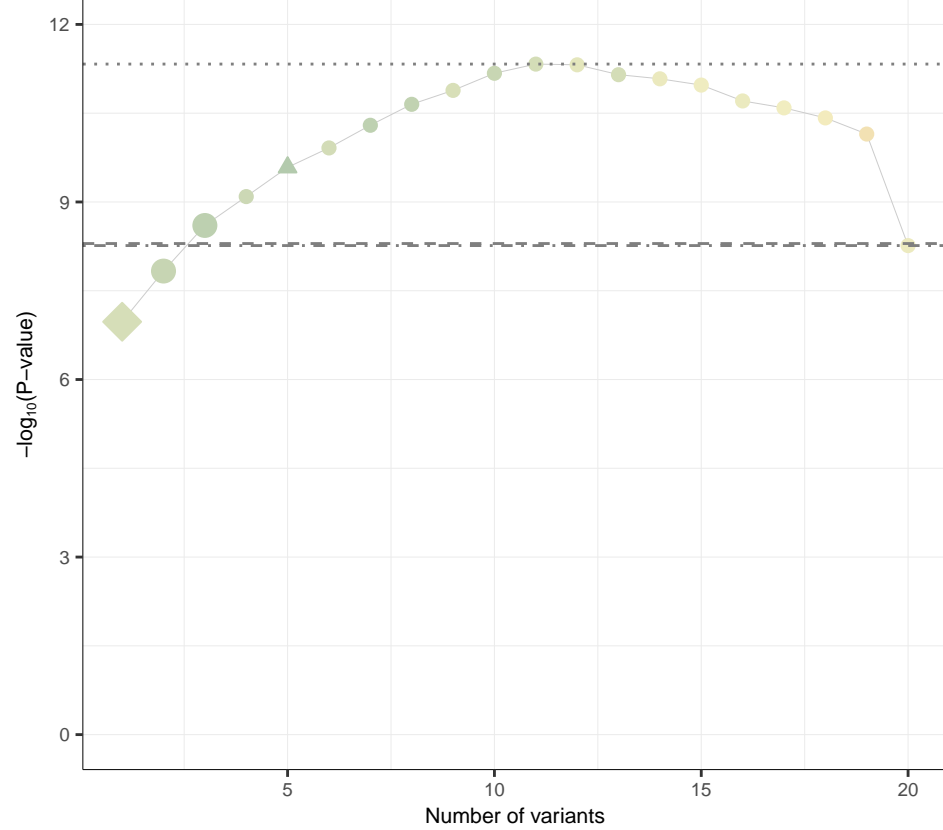
- Significance Threshold
- · - Total P-value
- · · · Lowest P-value



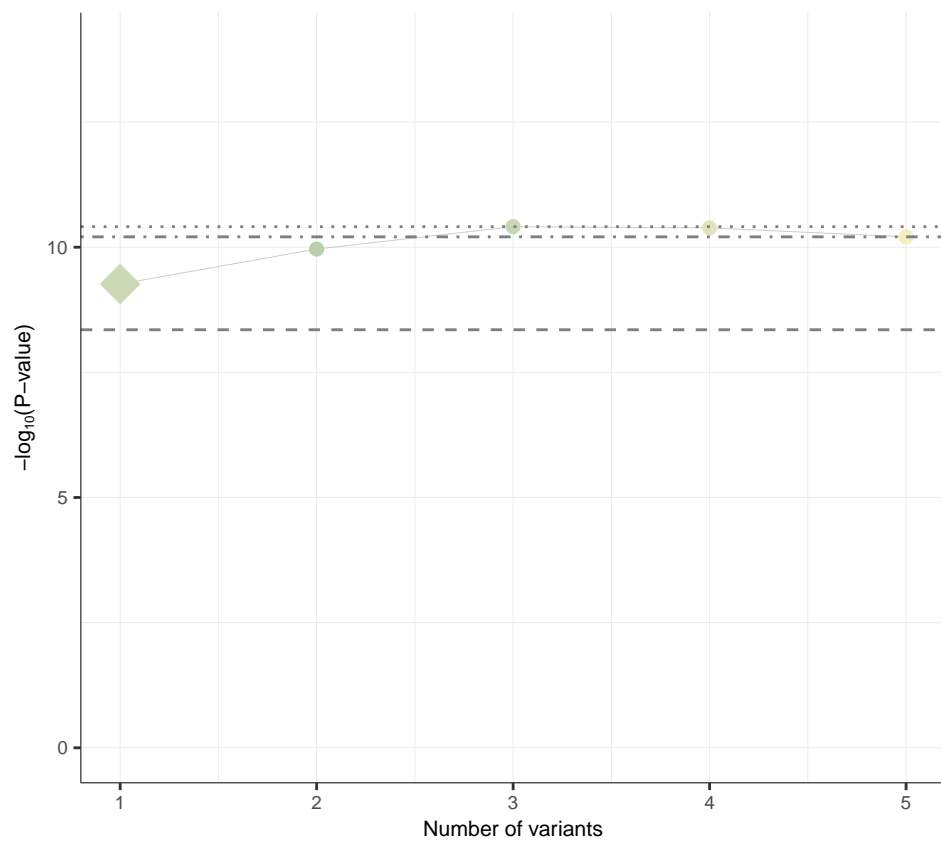
3-methylglutarylcoarnitine (2) in plasma at *ECHDC2* (LoF_mis)



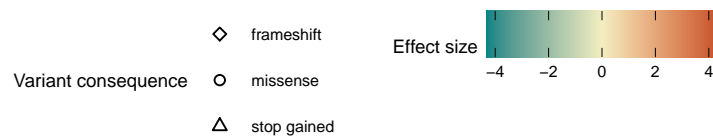
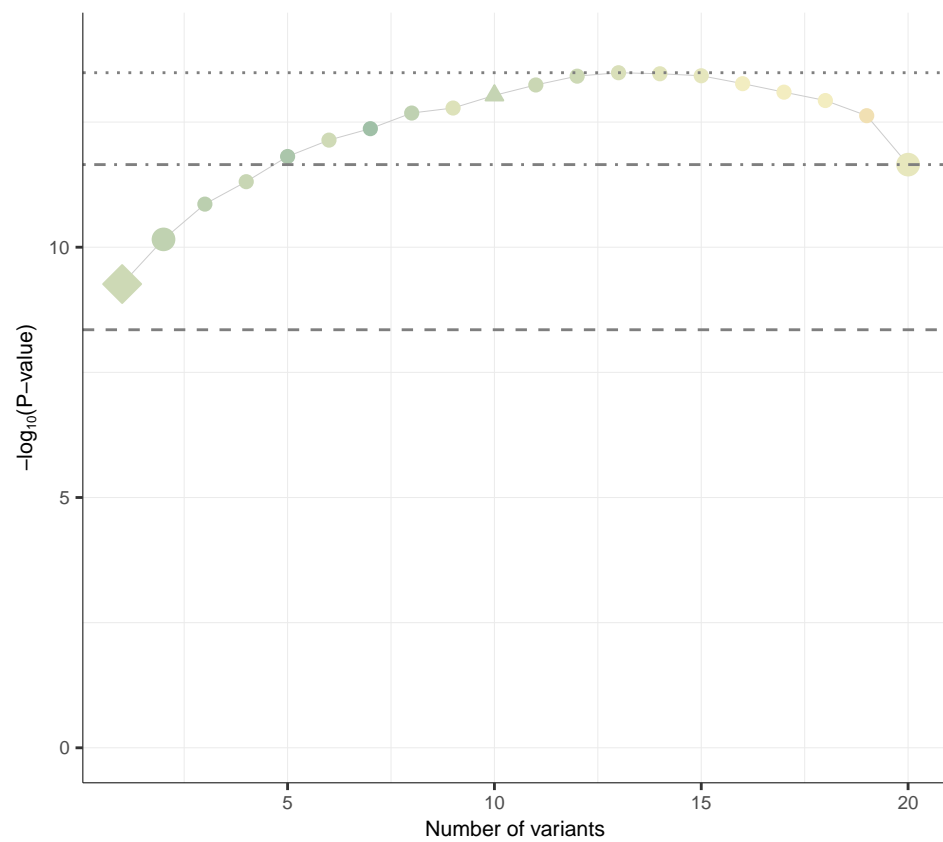
3-methylglutarylcoarnitine (2) in plasma at *ECHDC2* (HI_mis)



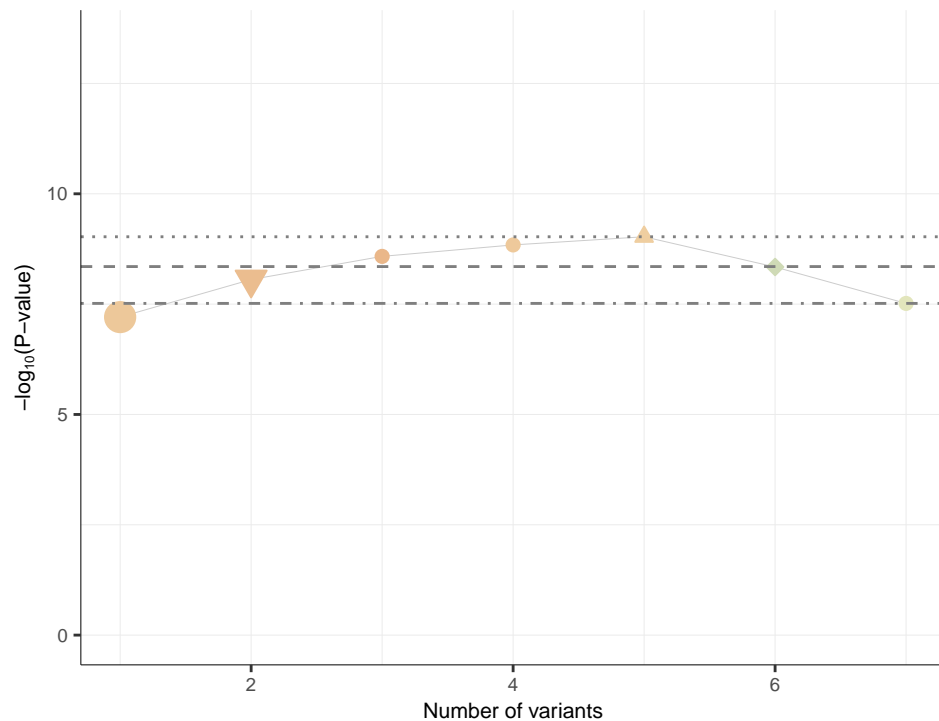
3-methylglutarylcoarnitine (2) in urine at *ECHDC2* (LoF_mis)



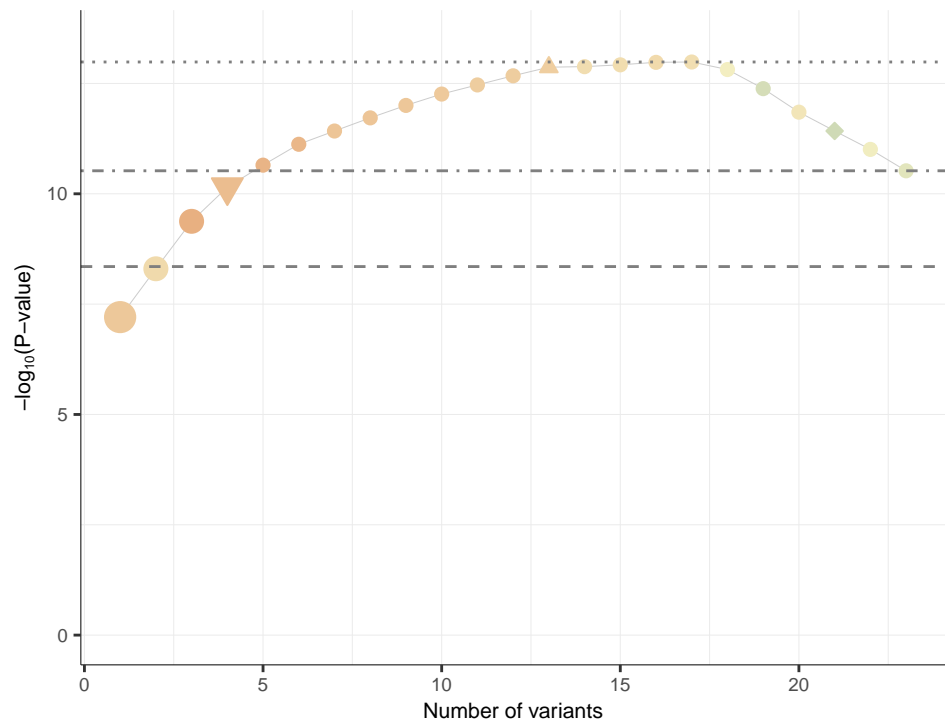
3-methylglutarylcoarnitine (2) in urine at *ECHDC2* (HI_mis)



ribonate in urine at *ENOSF1* (LoF_mis)



ribonate in urine at *ENOSF1* (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- ▽ splicing
- △ stop gained

Effect size

-4 -2 0 2 4

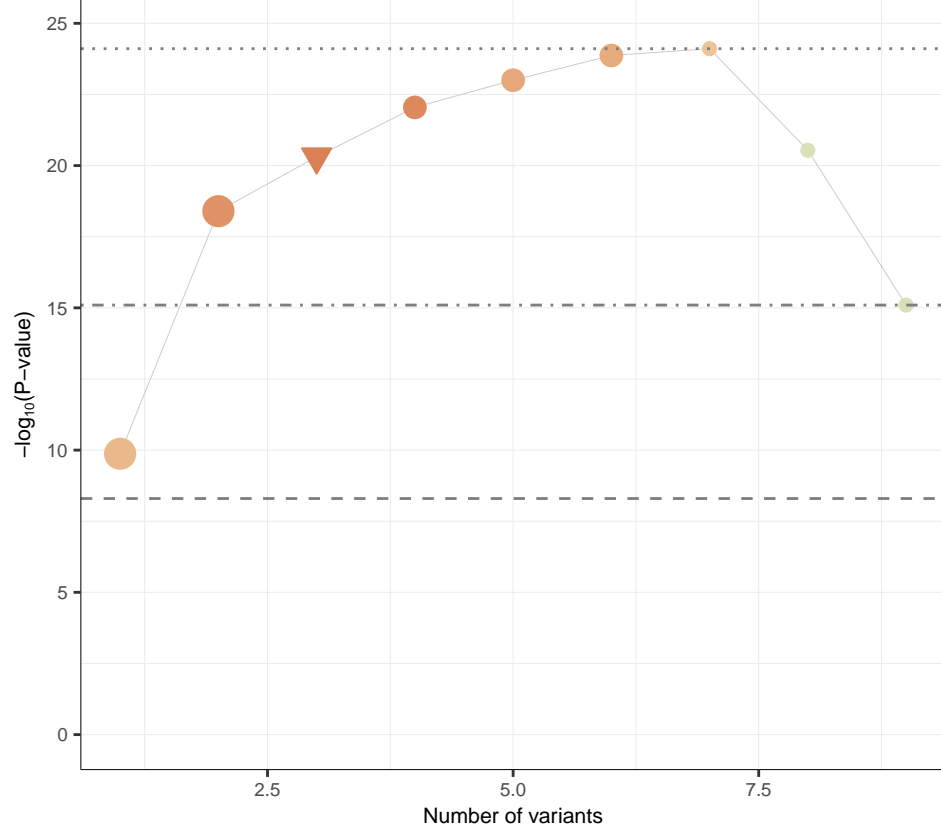
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5

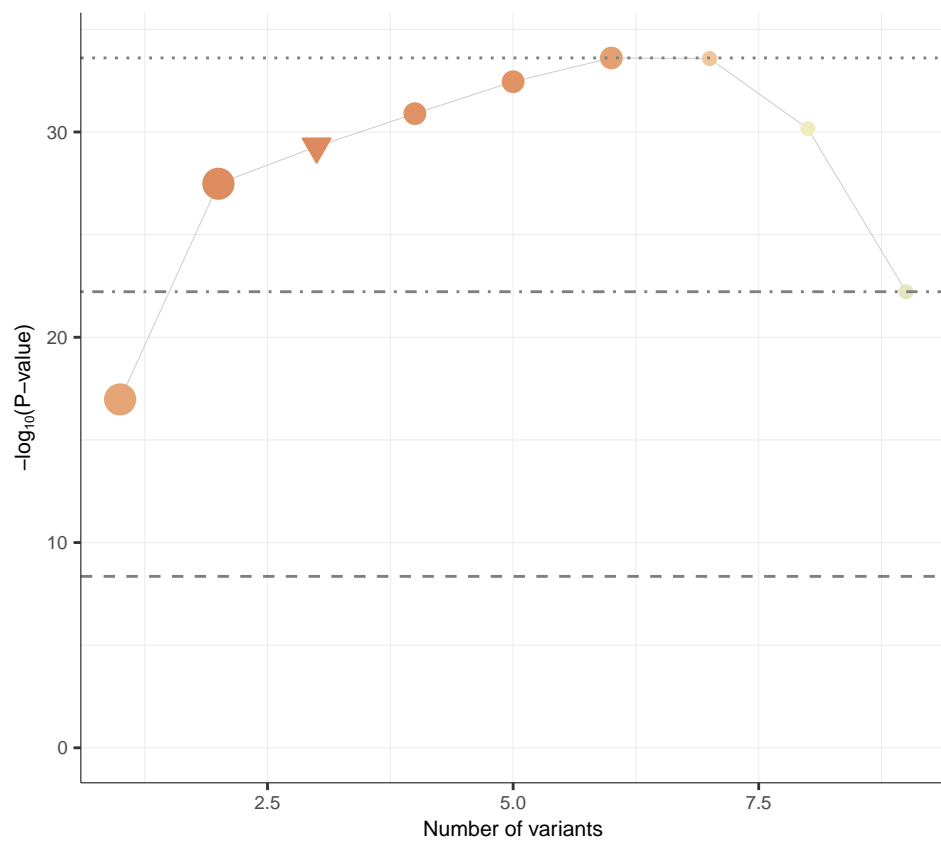
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

N-acetyl-aspartyl-glutamate (NAAG) in plasma at *FOLH1* (HI_mis)



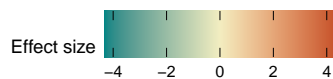
N-acetyl-aspartyl-glutamate (NAAG) in urine at *FOLH1* (HI_mis)



Variant consequence

○ missense

▽ splicing



P-value

● >0.05

● <0.05

● <1e-3

● <1e-5

● <5e-8

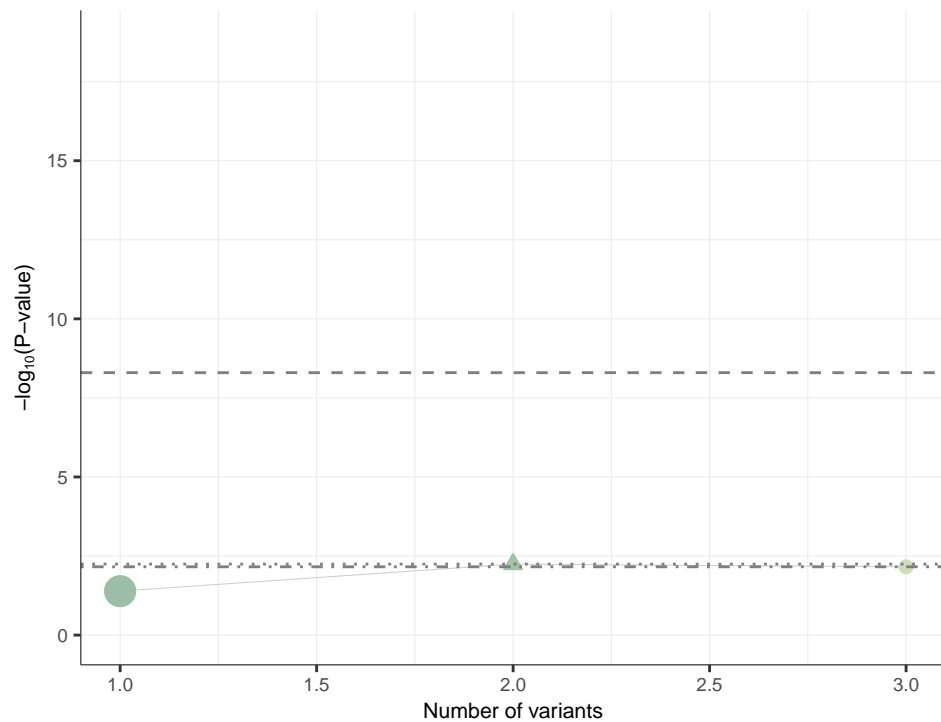
● <1e-11

Thresholds

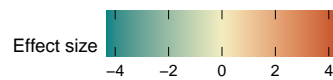
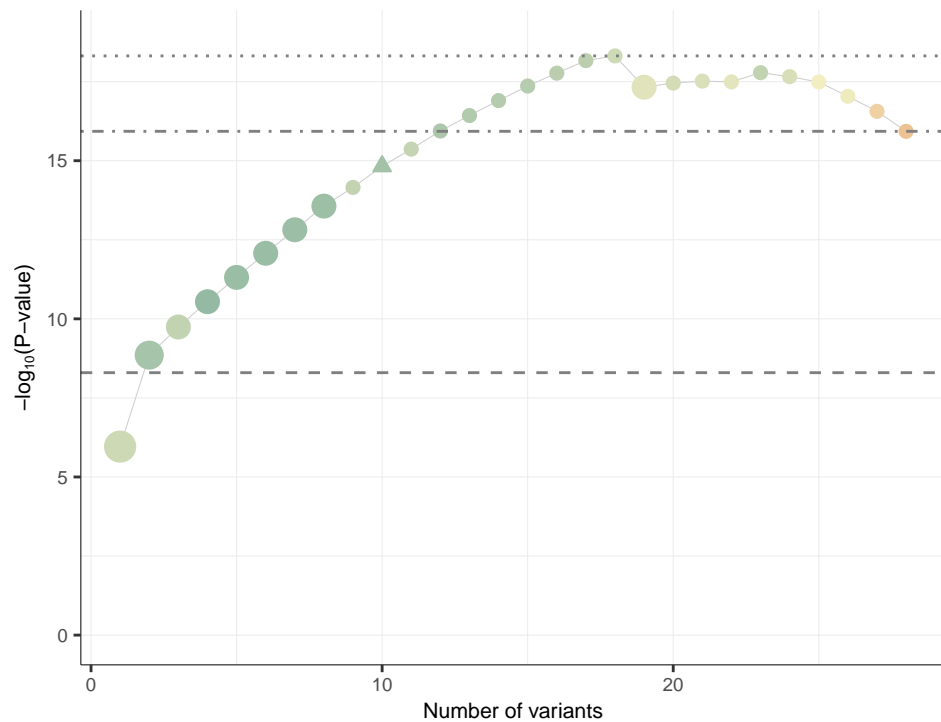
— Significance Threshold

- - - Total P-value

... Lowest P-value

6-bromotryptophan in plasma at *FOXRED2* (LoF_mis)

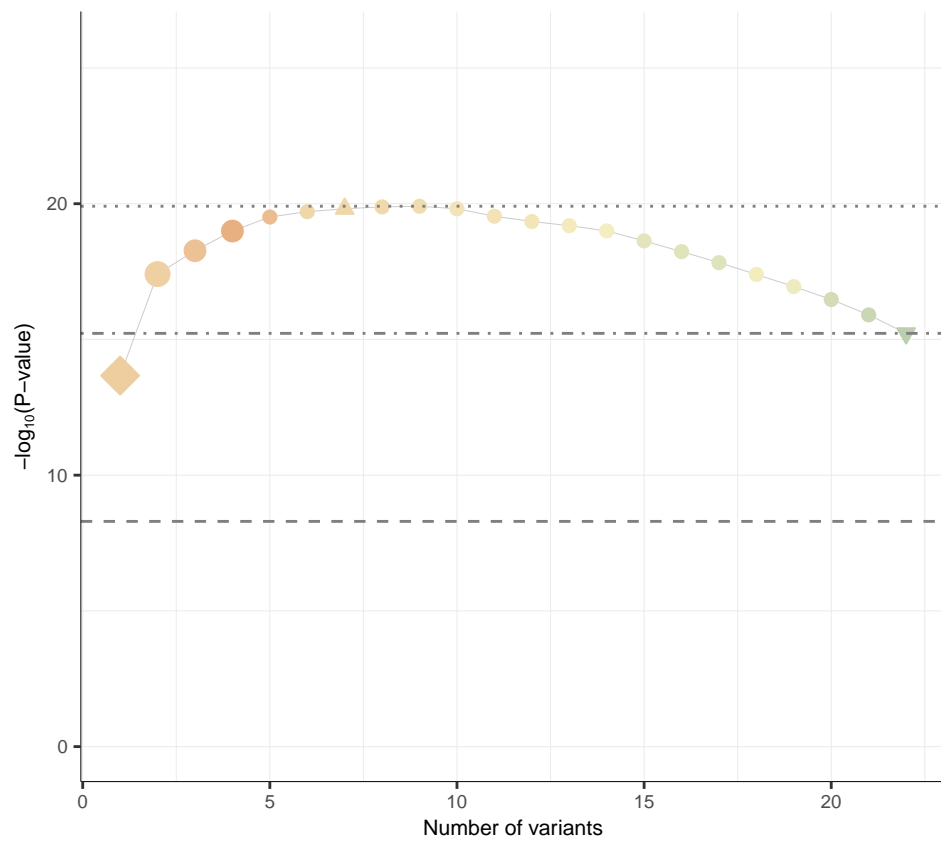
Variant consequence
○ missense
△ stop gained

6-bromotryptophan in plasma at *FOXRED2* (HI_mis)

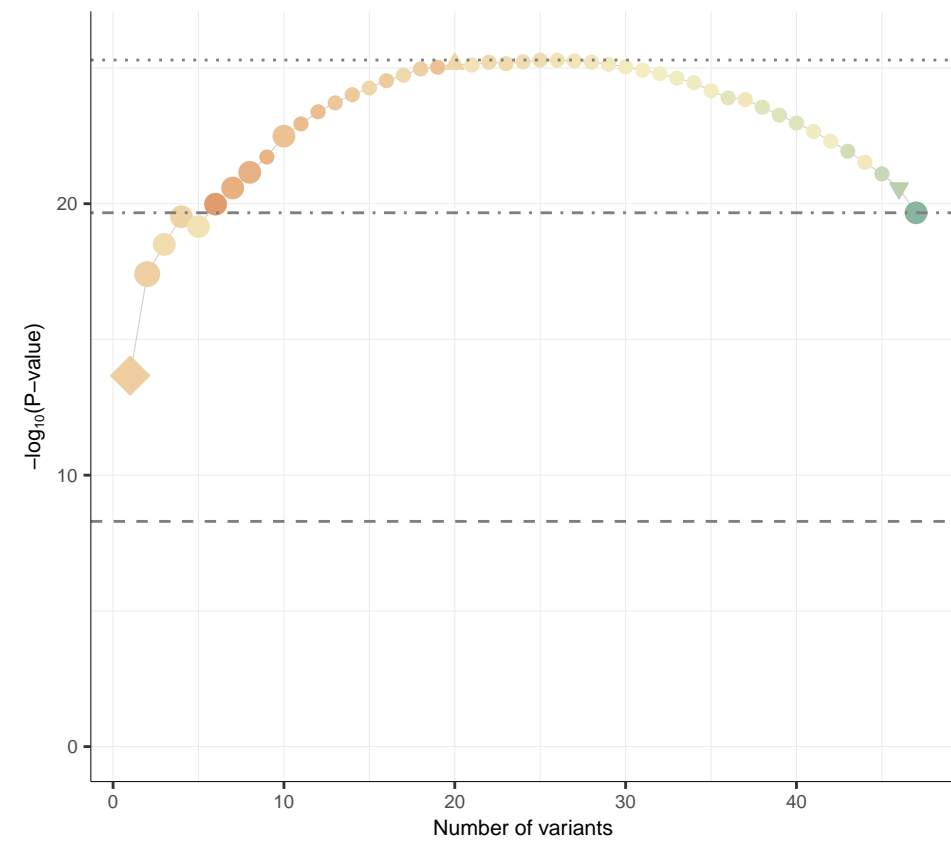
P-value
● >0.05
● <0.05
● <1e-3
● <1e-5

Thresholds
--- Significance Threshold
- - - Total P-value
... Lowest P-value

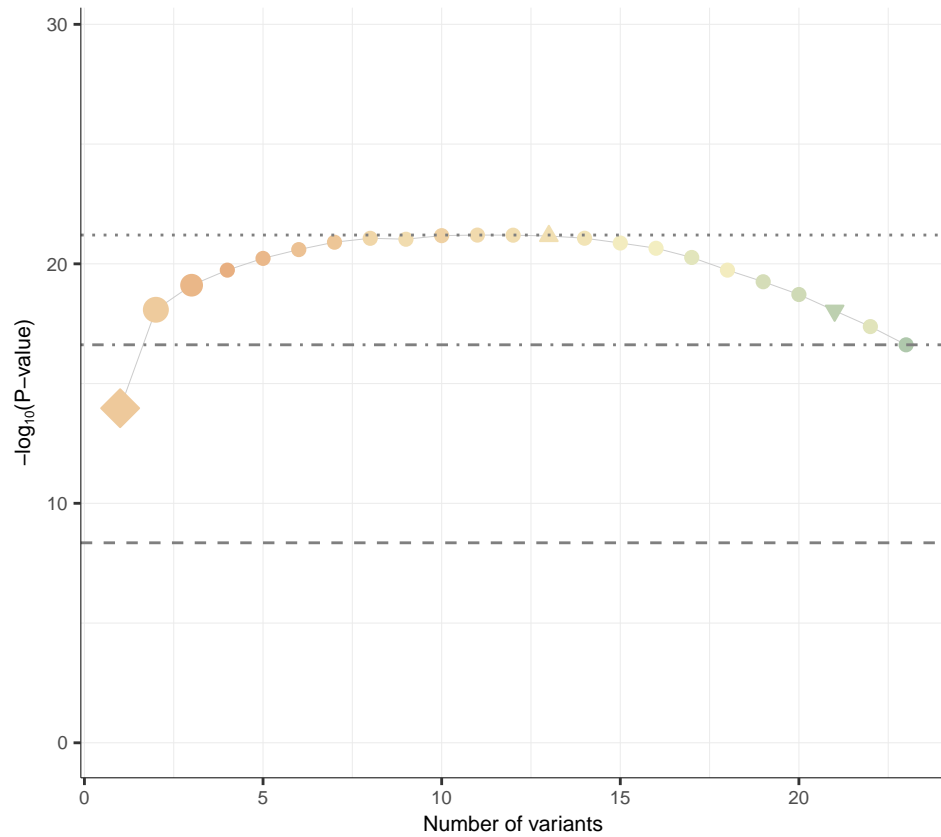
formiminoglutamate in plasma at *FTCD* (LoF_mis)



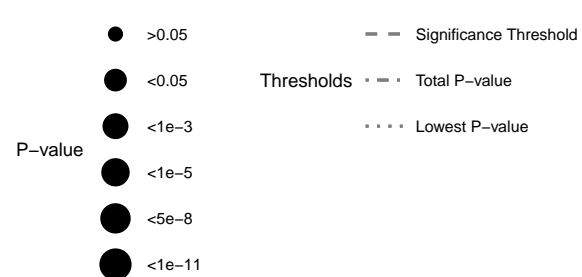
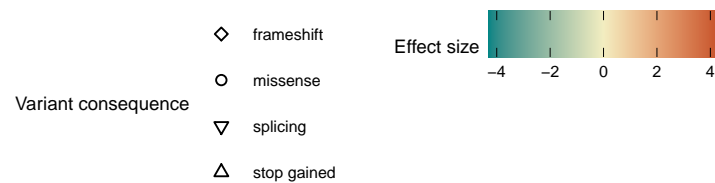
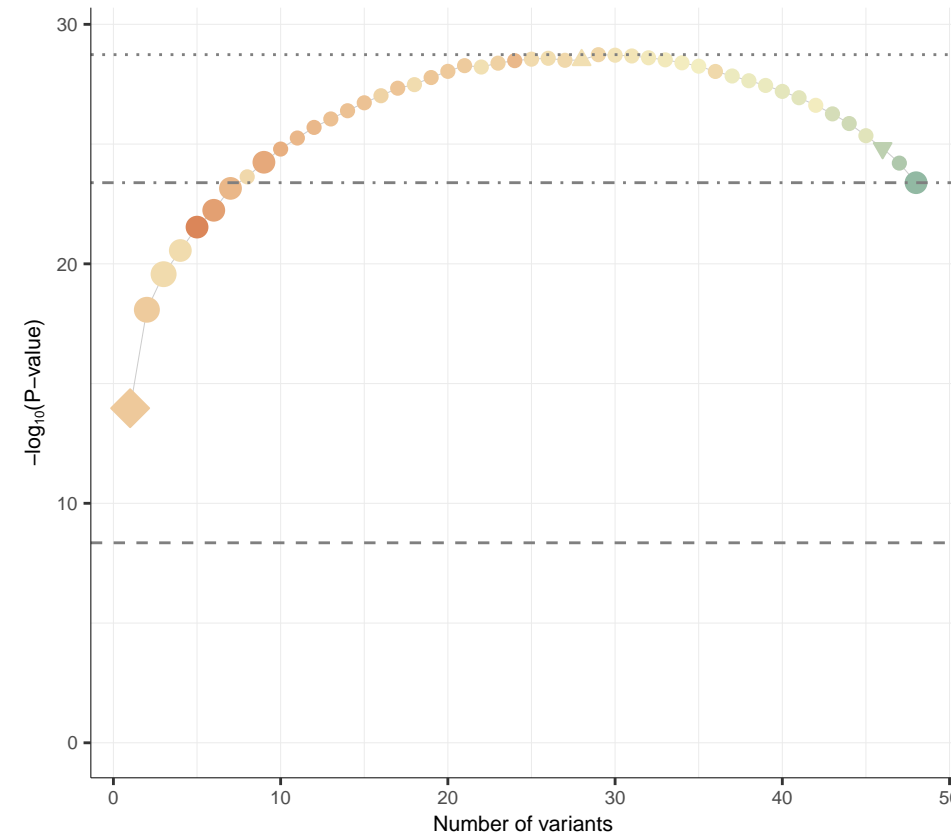
formiminoglutamate in plasma at *FTCD* (HI_mis)



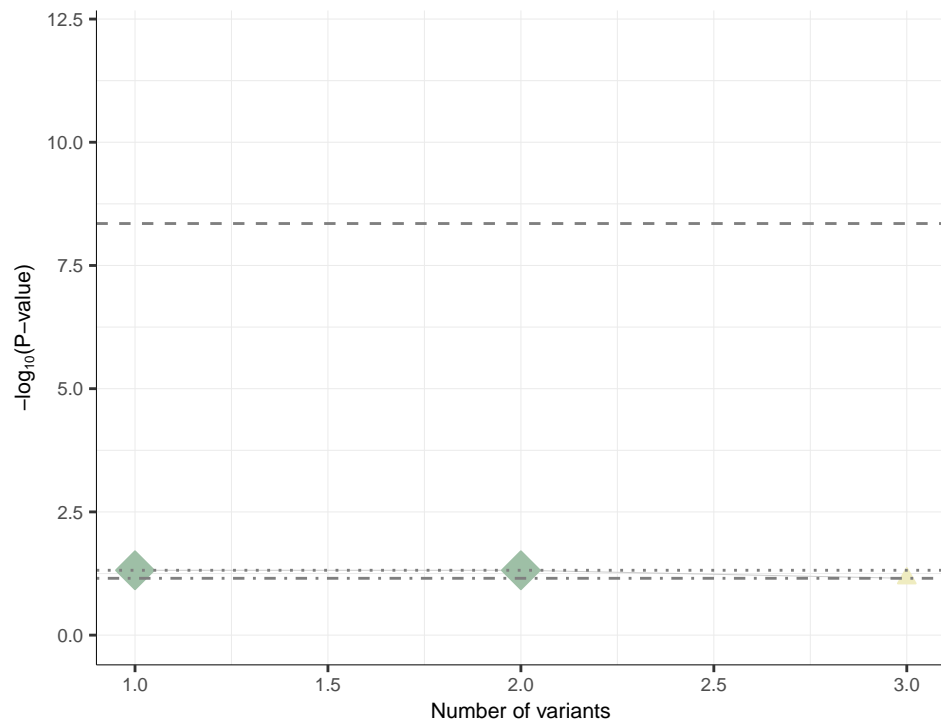
formiminoglutamate in urine at *FTCD* (LoF_mis)



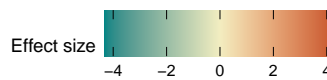
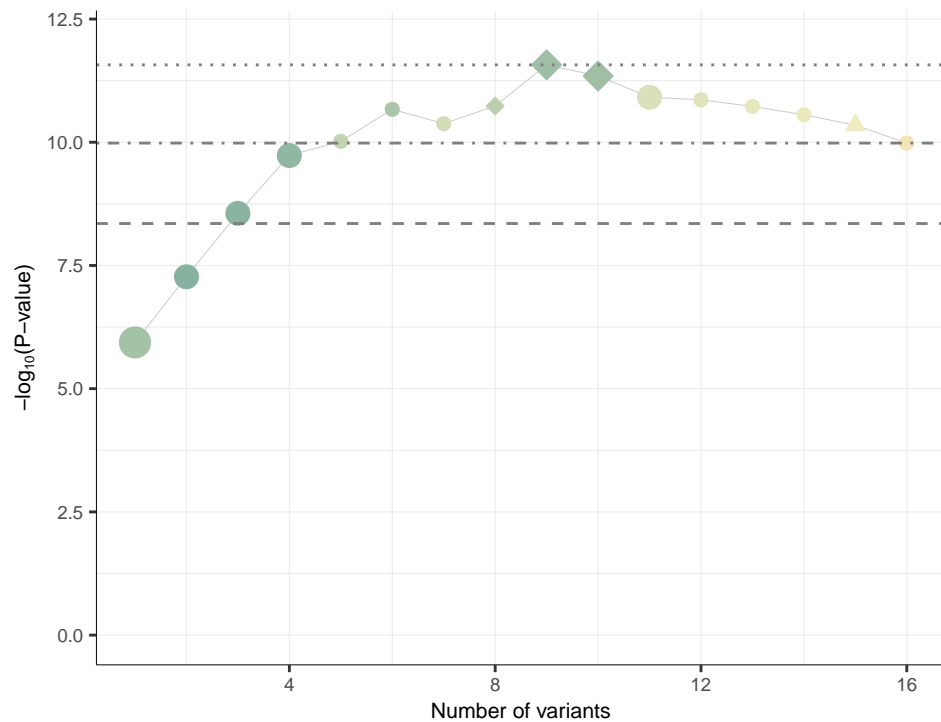
formiminoglutamate in urine at *FTCD* (HI_mis)



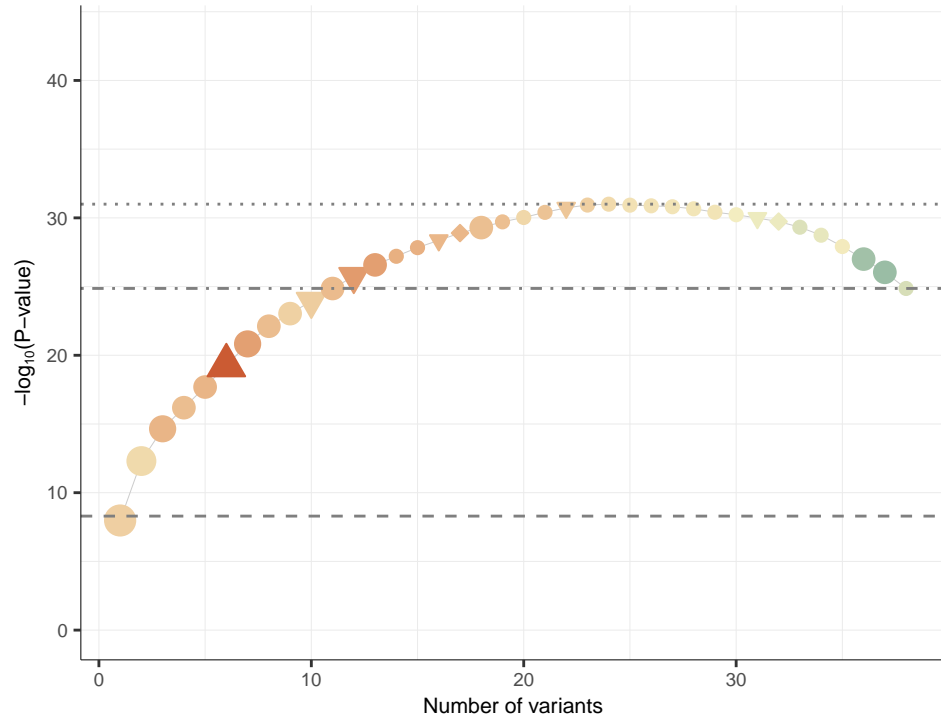
tigloylglycine in urine at *GLYAT* (LoF_mis)



tigloylglycine in urine at *GLYAT* (HI_mis)

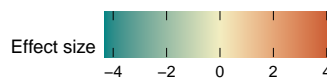


gamma-glutamylhistidine in plasma at *HAL* (LoF_mis)

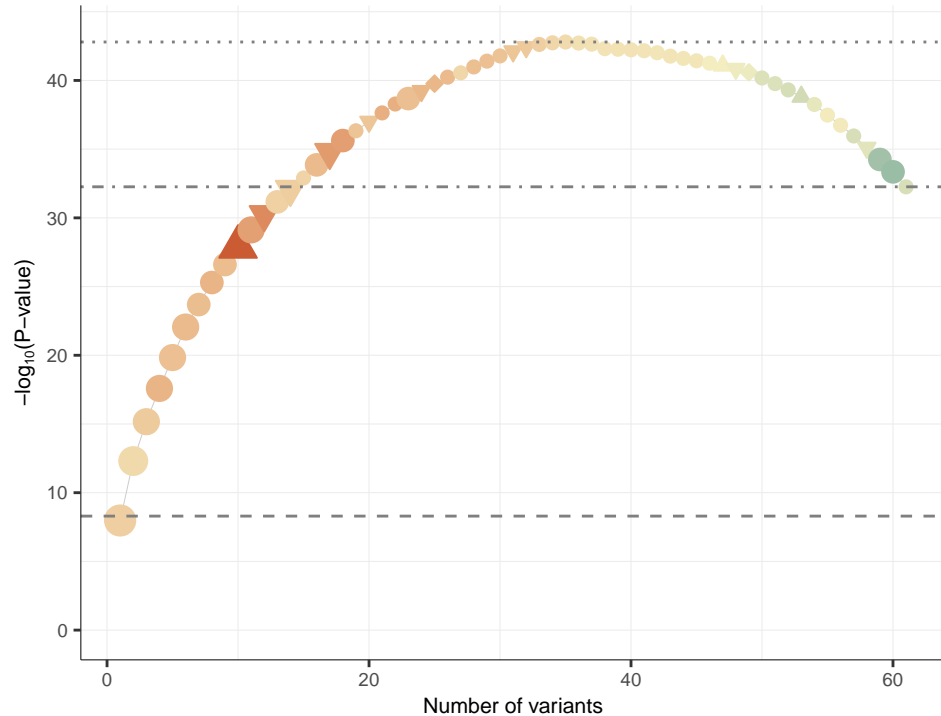


Variant consequence

- ◇ frameshift
- missense
- ▽ splicing
- △ stop gained



gamma-glutamylhistidine in plasma at *HAL* (HI_mis)



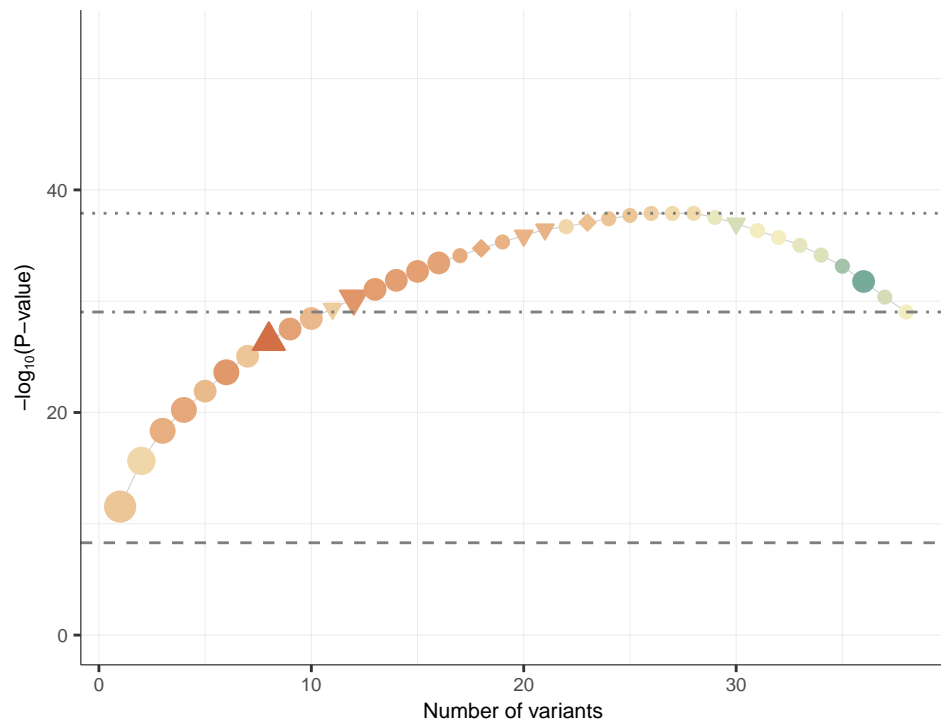
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8

Thresholds

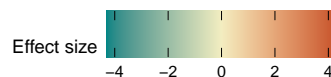
- Significance Threshold
- - - Total P-value
- ... Lowest P-value

histidine in plasma at *HAL* (LoF_mis)

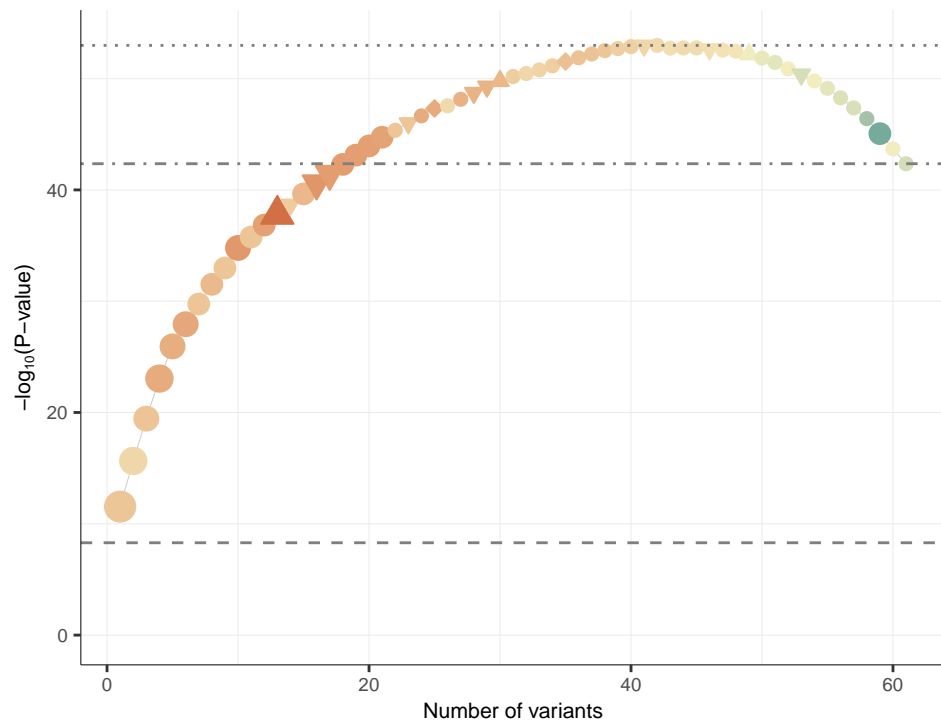


Variant consequence

- ◇ frameshift
- missense
- ▽ splicing
- △ stop gained



histidine in plasma at *HAL* (HI_mis)

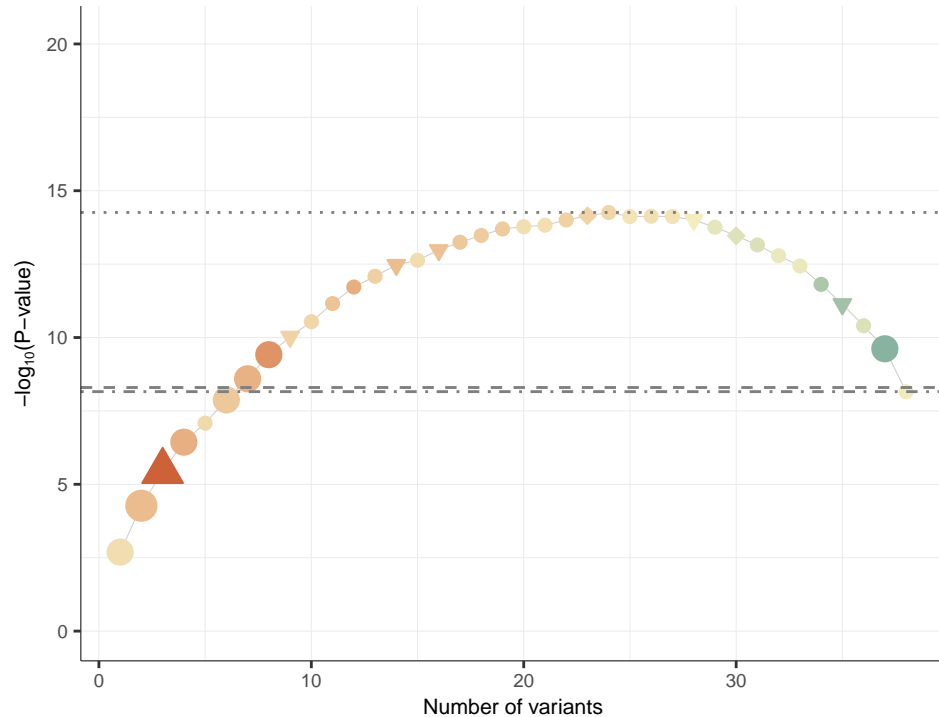
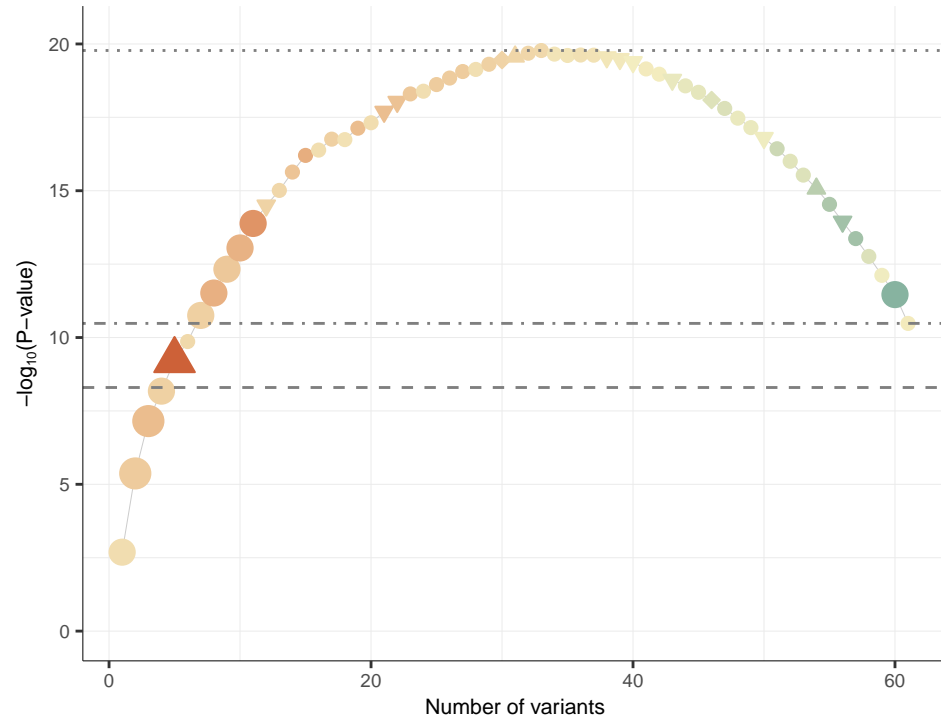


P-value

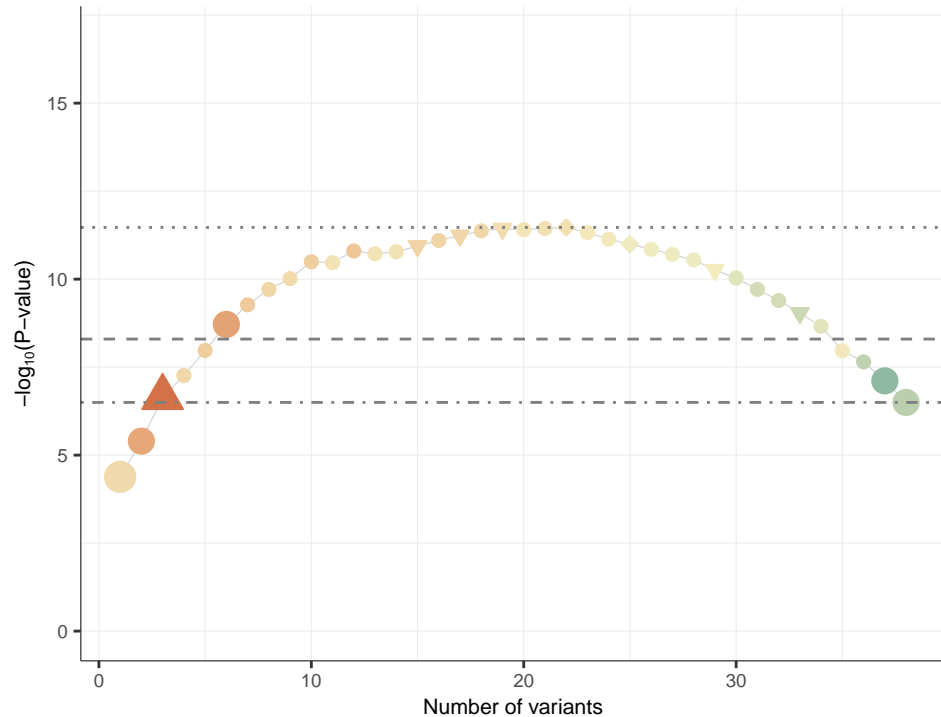
- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8
- <1e-11

Thresholds

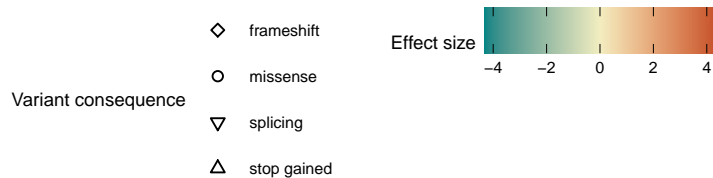
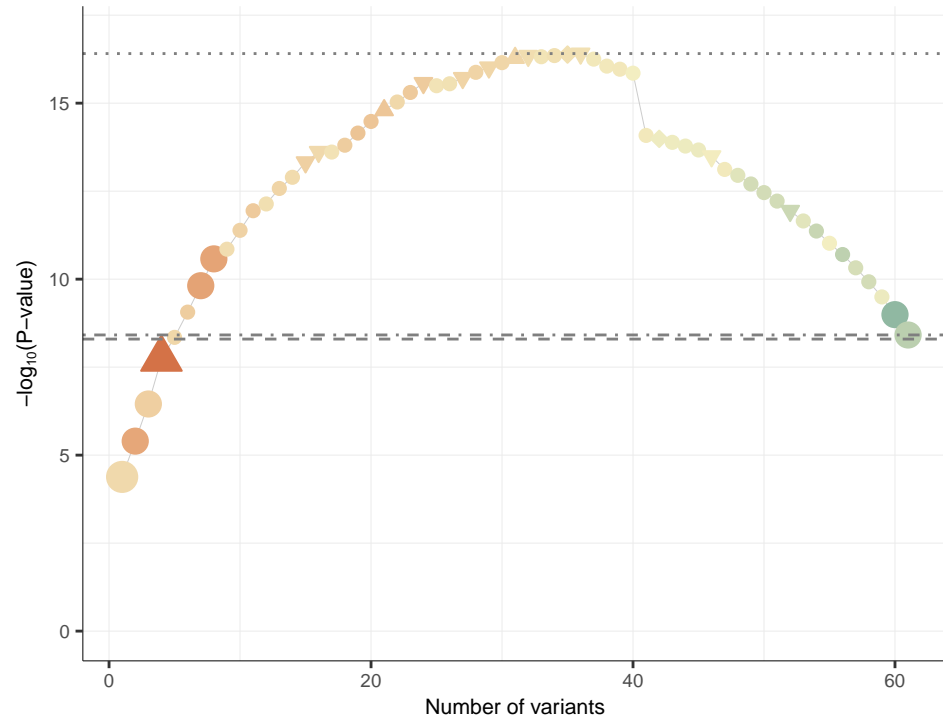
- Significance Threshold
- - - Total P-value
- ... Lowest P-value

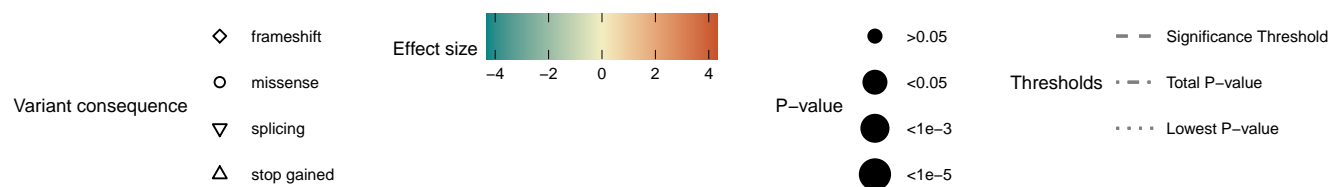
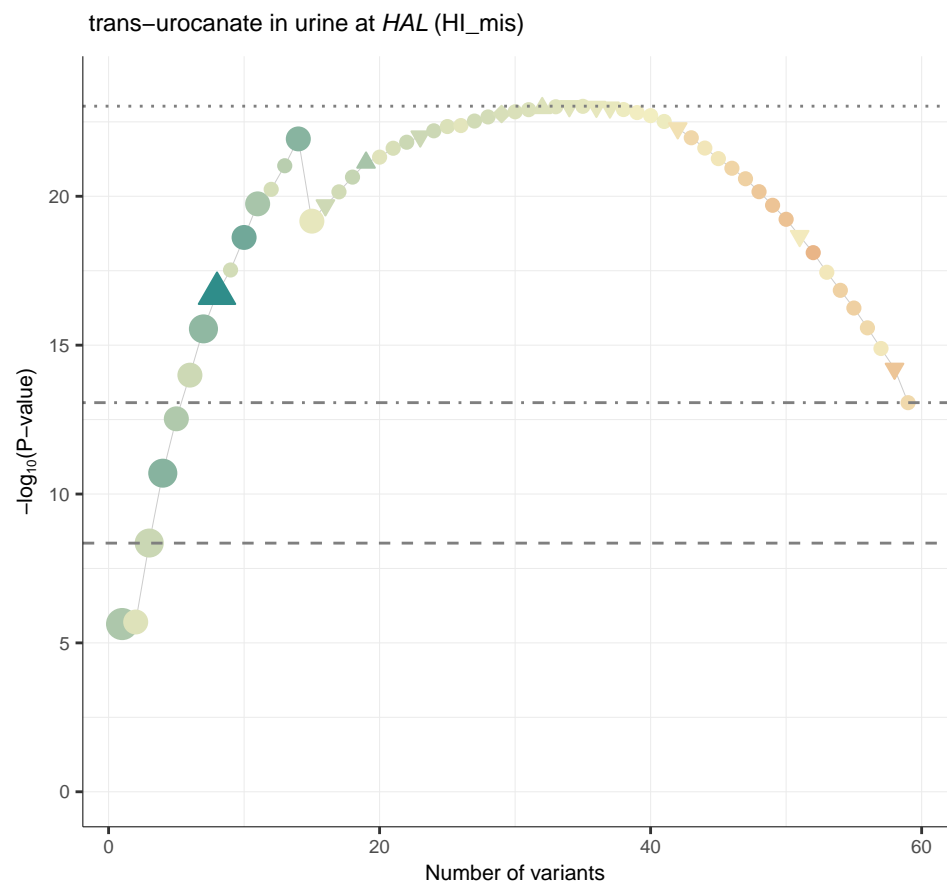
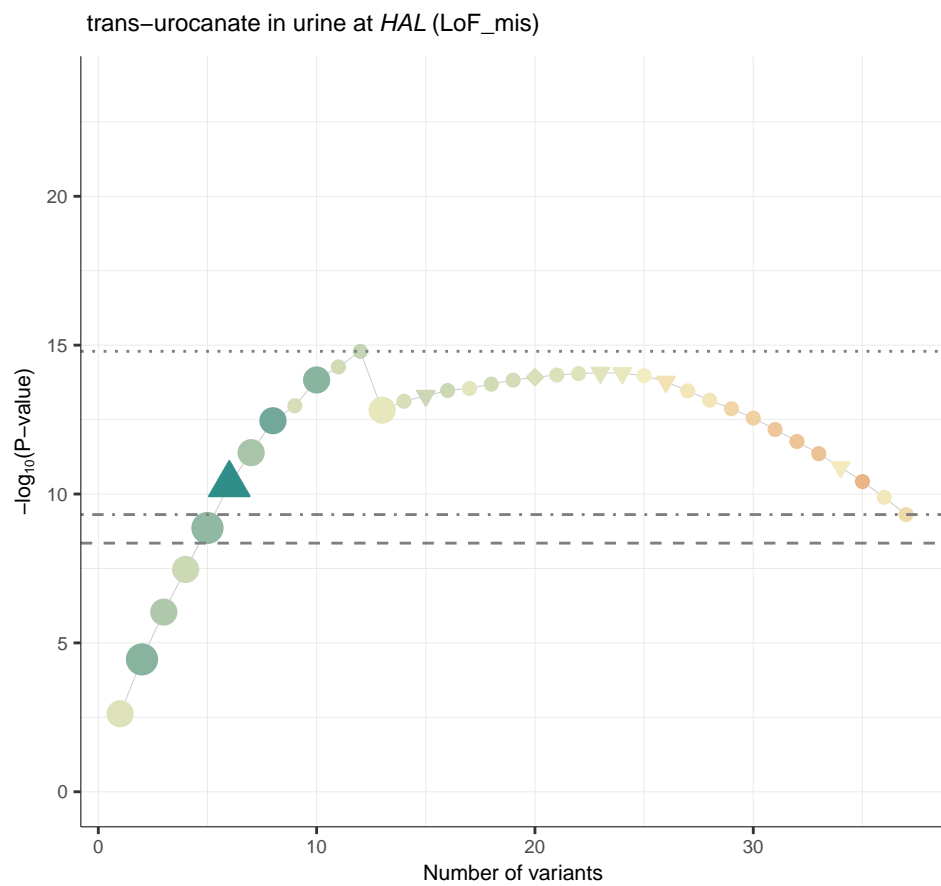
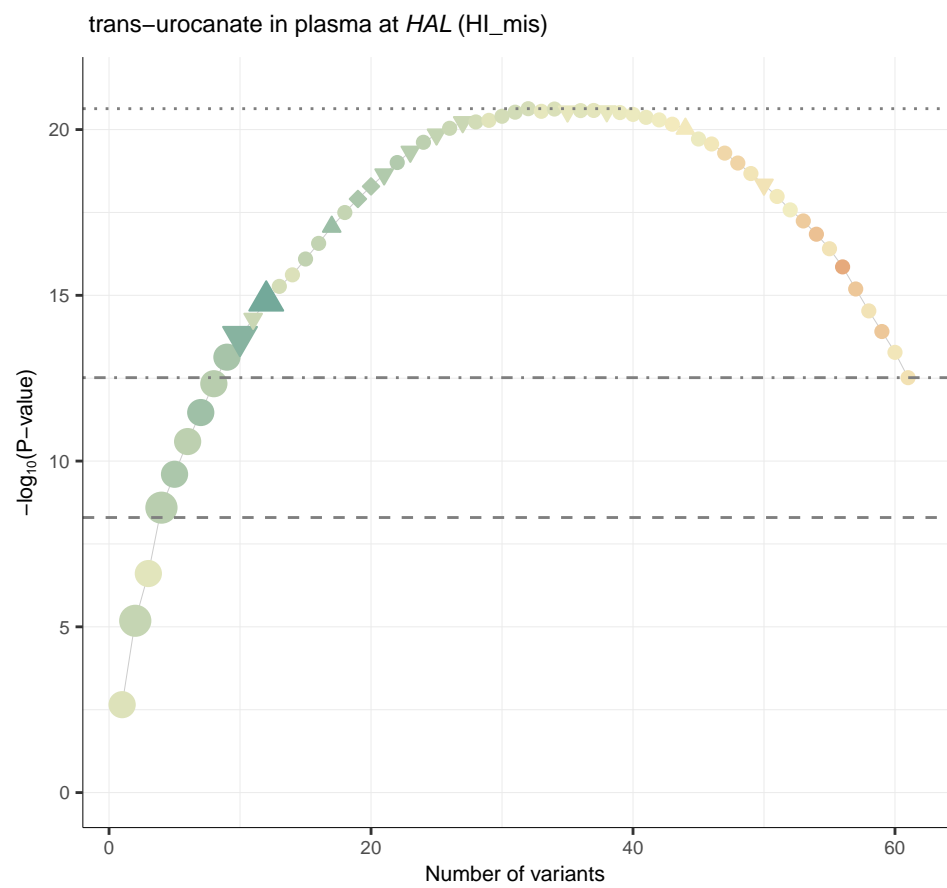
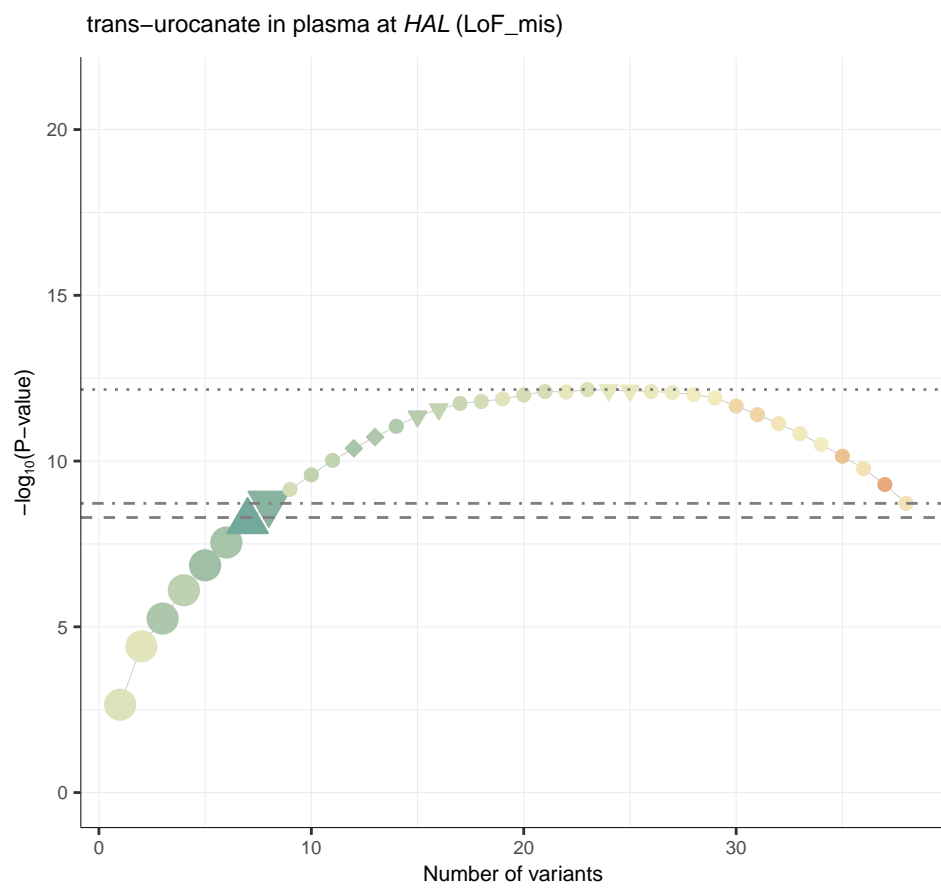
imidazole lactate in plasma at *HAL* (LoF_mis)imidazole lactate in plasma at *HAL* (HI_mis)

N-acetylhistidine in plasma at *HAL* (LoF_mis)

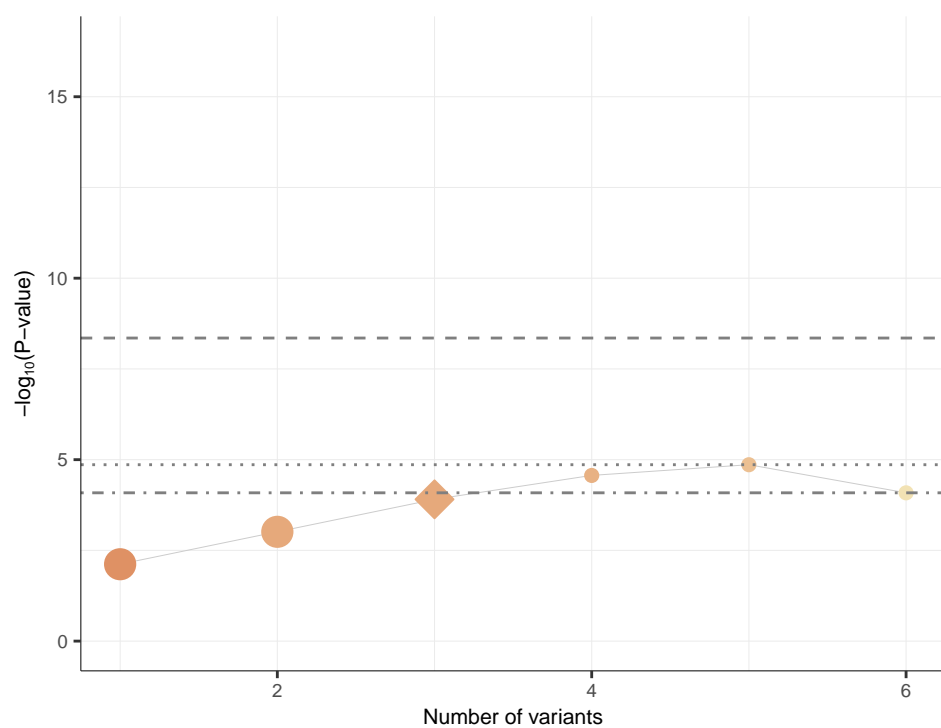


N-acetylhistidine in plasma at *HAL* (HI_mis)



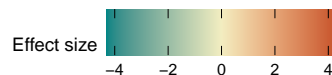


3-(4-hydroxyphenyl)lactate in urine at *HAO2* (LoF_mis)

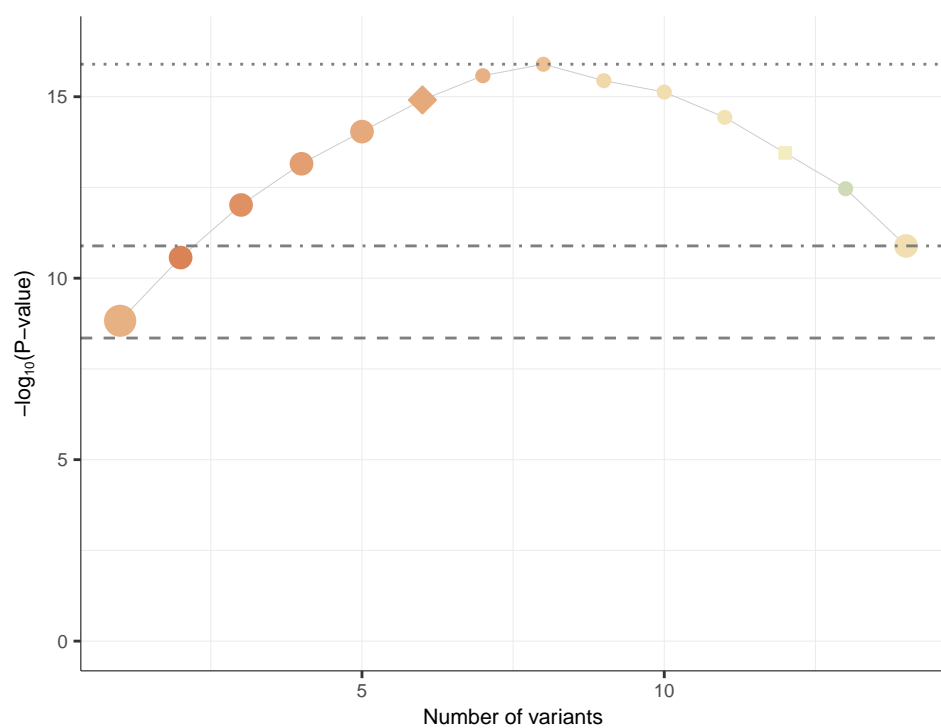


Variant consequence

- ◇ frameshift
- missense
- start/stop lost



3-(4-hydroxyphenyl)lactate in urine at *HAO2* (HI_mis)

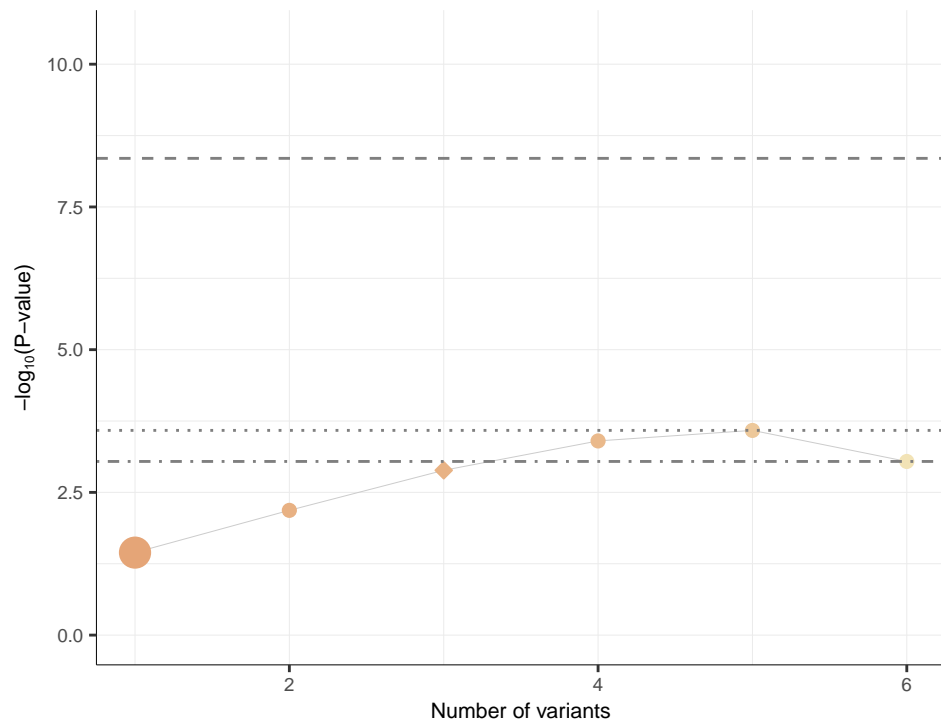
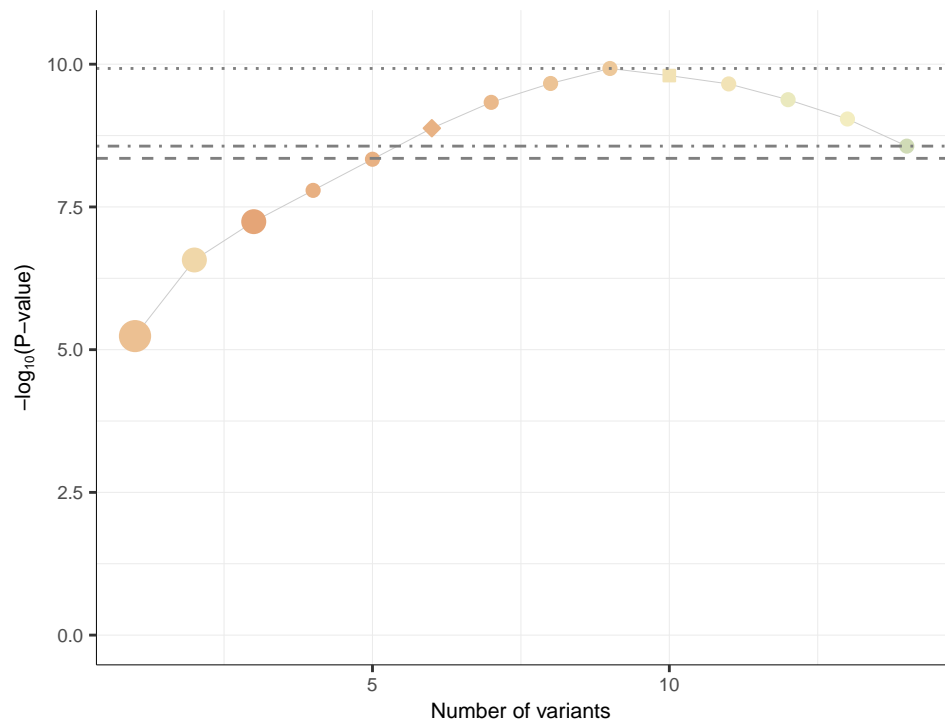


P-value

- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8

Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

indolelactate in urine at *HAO2* (LoF_mis)

indolelactate in urine at *HAO2* (HI_mis)


Variant consequence

- ◇ frameshift
- missense
- start/stop lost

Effect size

Color scale: -4 (dark green) to 4 (dark red), with 0 (yellow) in the middle.

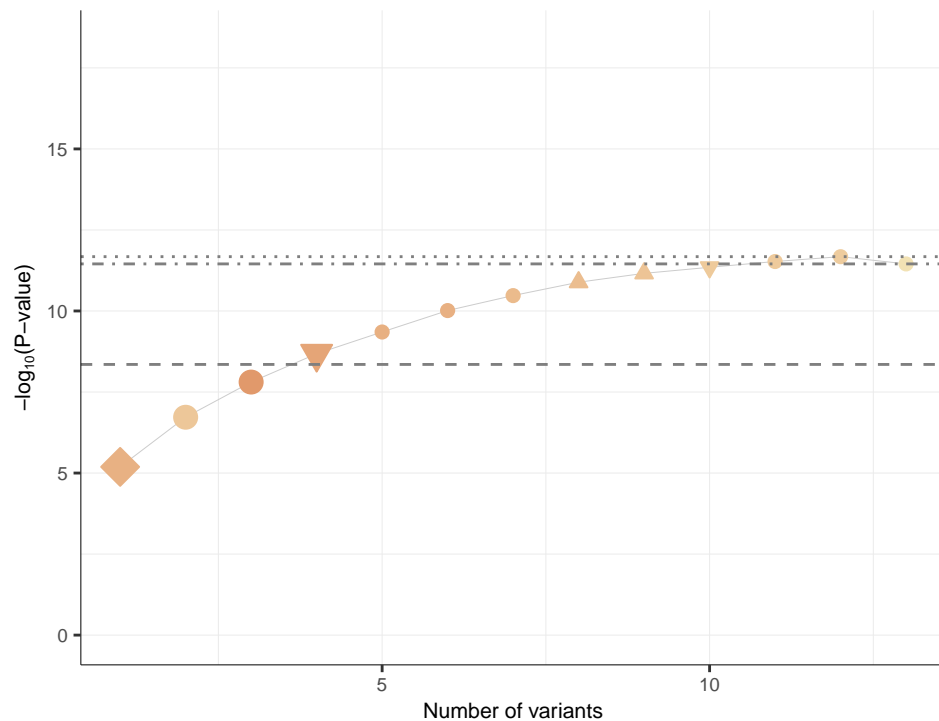
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5

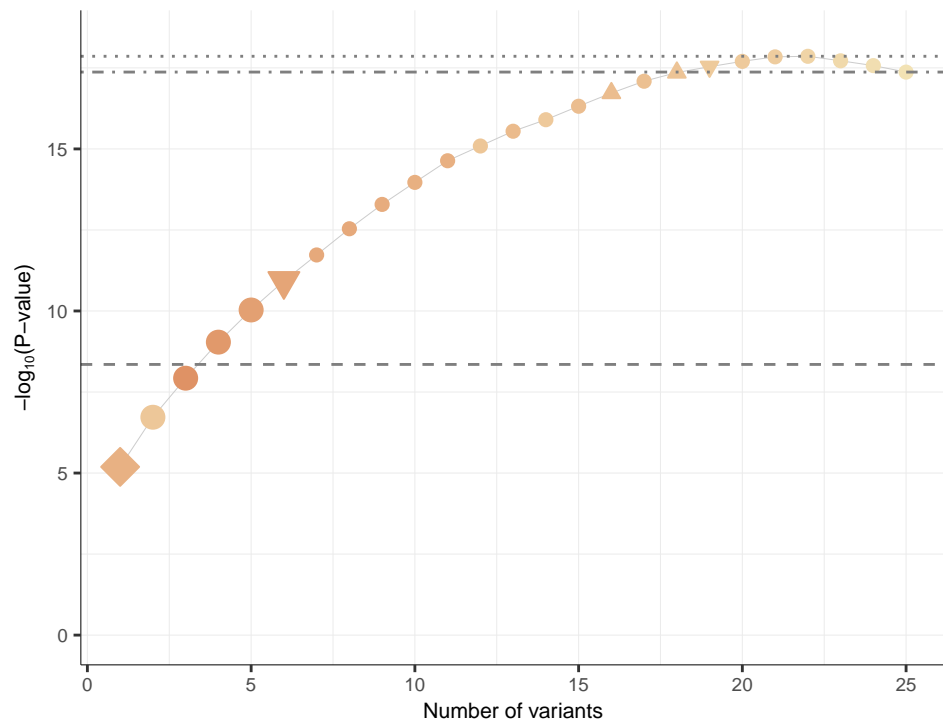
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

diacetylspermidine* in urine at *HDAC10* (LoF_mis)

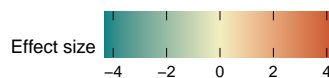


diacetylspermidine* in urine at *HDAC10* (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- ▽ splicing
- △ stop gained



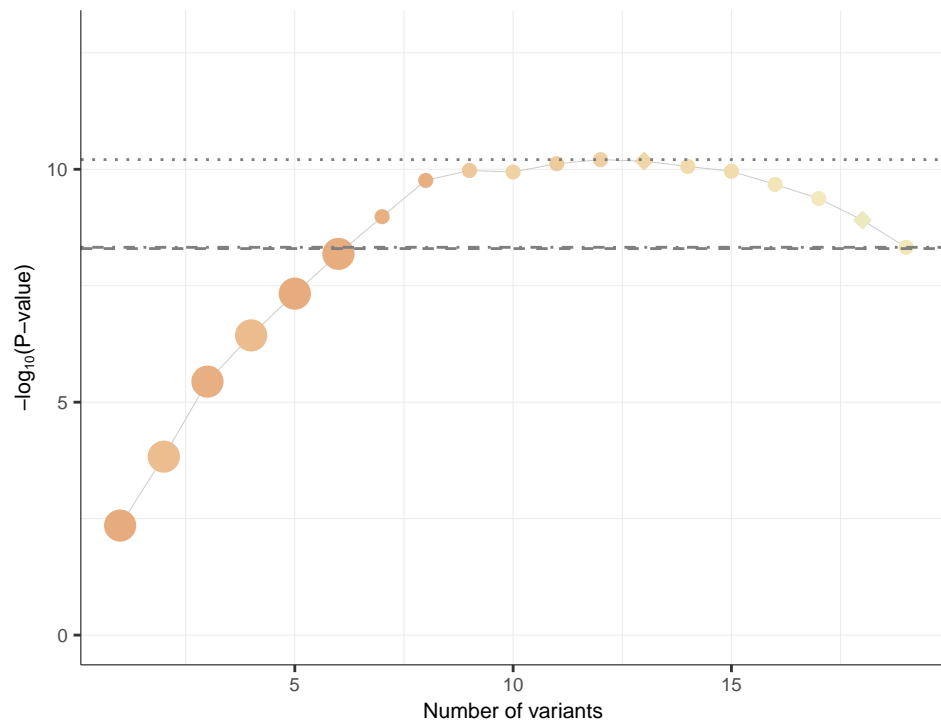
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5

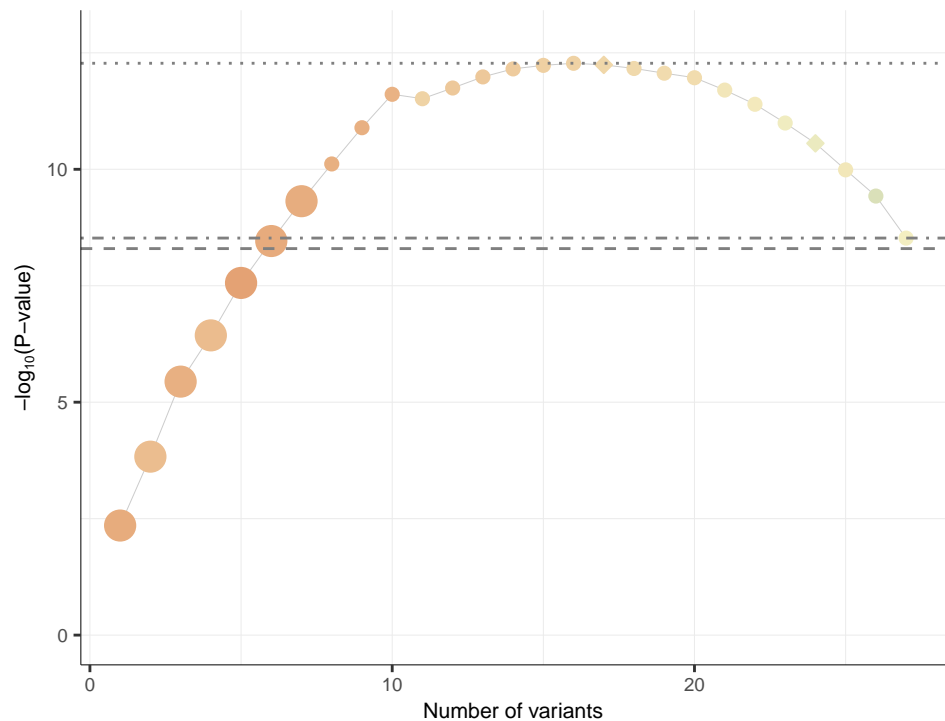
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

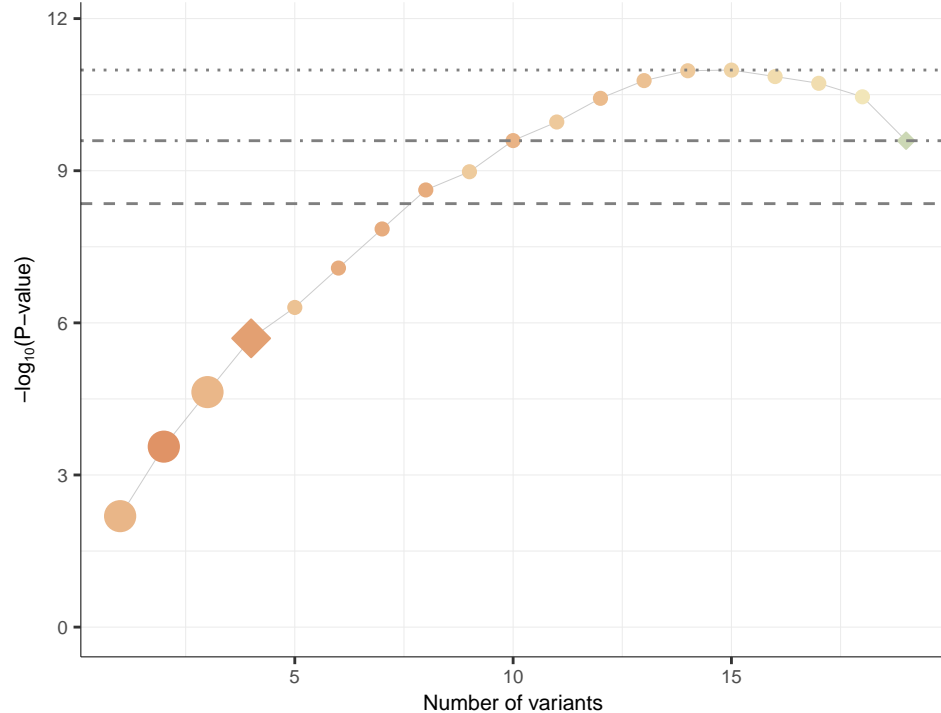
3-(4-hydroxyphenyl)lactate in plasma at *KYAT1* (LoF_mis)



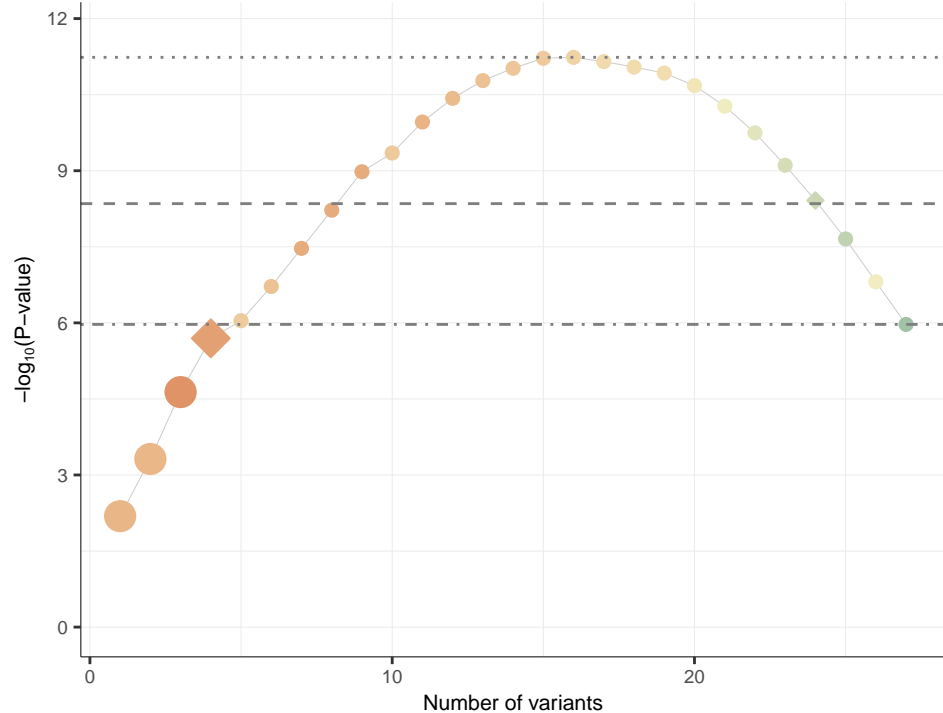
3-(4-hydroxyphenyl)lactate in plasma at *KYAT1* (HI_mis)



3-formylindole in urine at *KYA71* (LoF_mis)

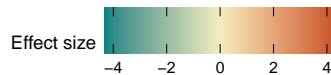


3-formylindole in urine at *KYA71* (HI_mis)



Variant consequence

- ◇ frameshift
- missense



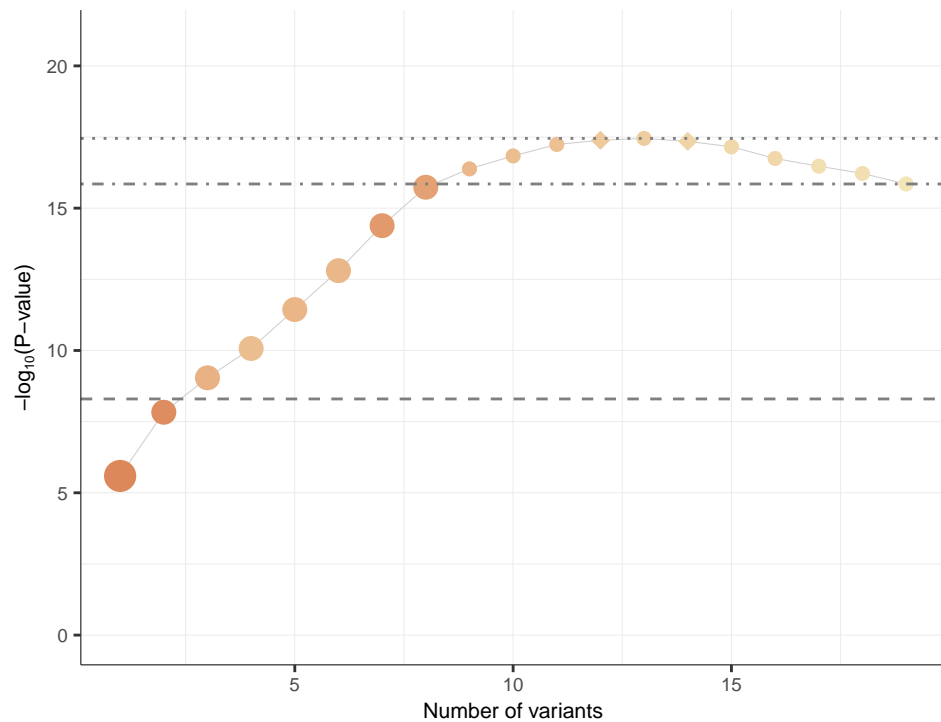
P-value

- >0.05
- <0.05

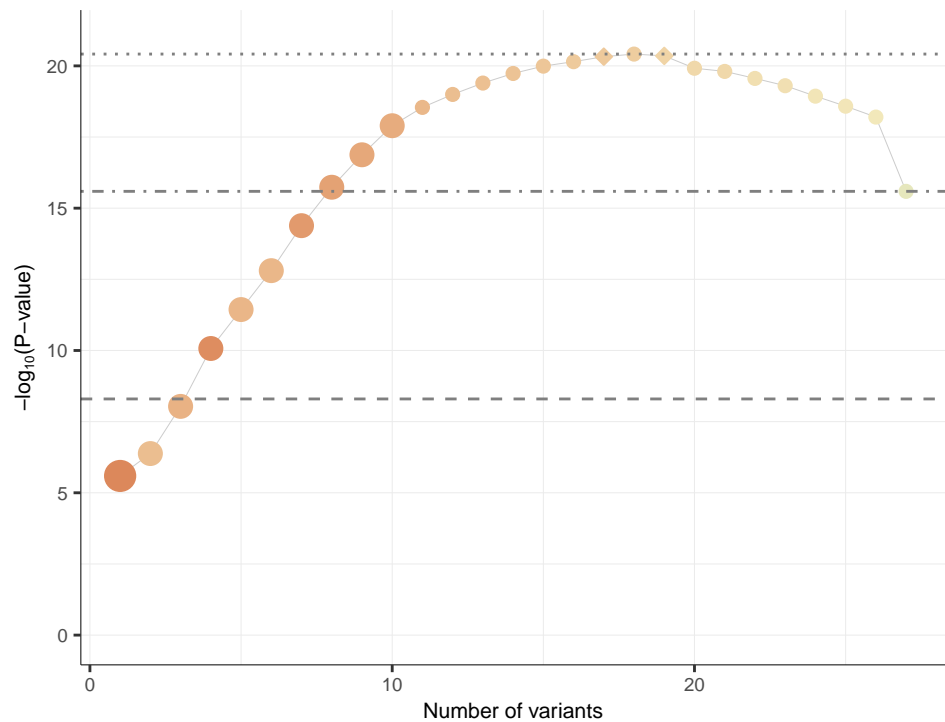
Thresholds

- — Significance Threshold
- - - Total P-value
- ... Lowest P-value

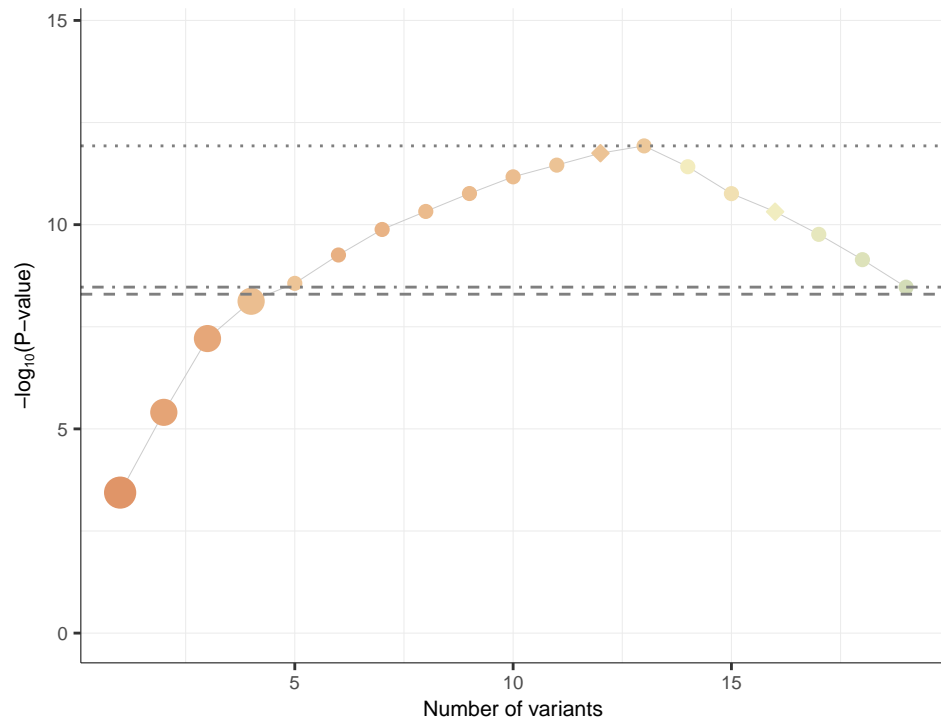
indolelactate in plasma at *KYAT1* (LoF_mis)



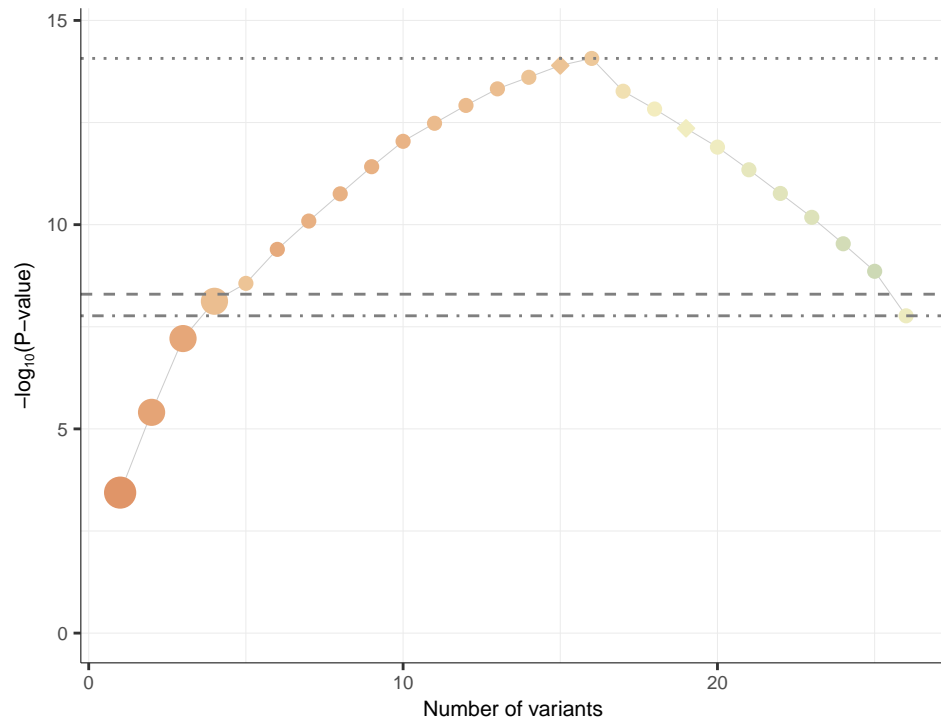
indolelactate in plasma at *KYAT1* (HI_mis)



phenylpyruvate in plasma at *KYAT1* (LoF_mis)

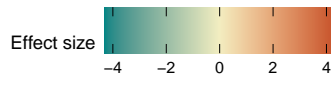


phenylpyruvate in plasma at *KYAT1* (HI_mis)



Variant consequence

- ◇ frameshift
- missense



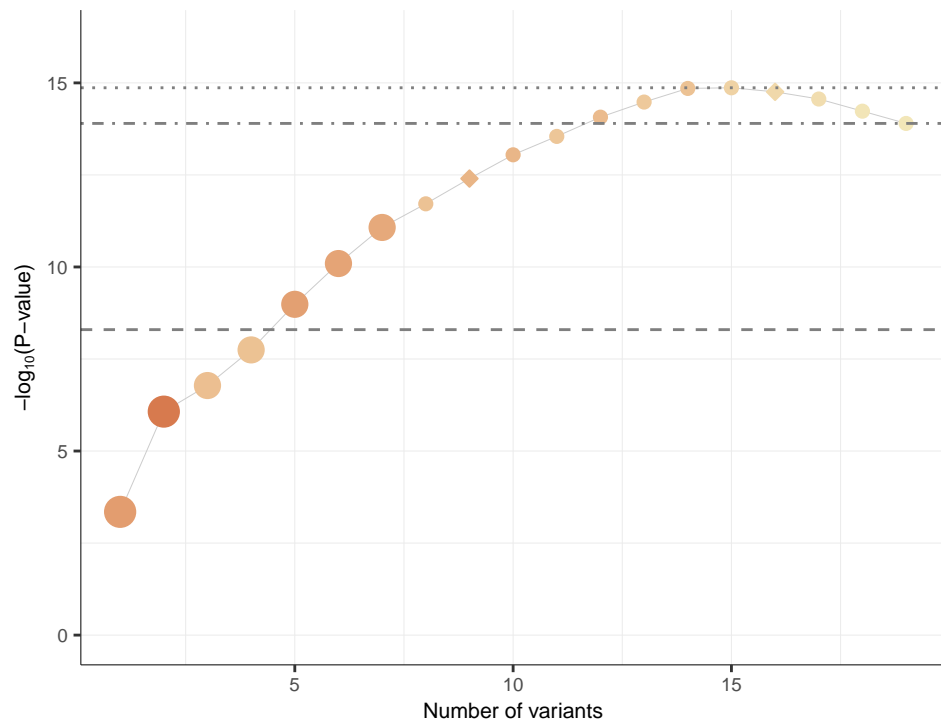
P-value

- >0.05
- <0.05
- <1e-3

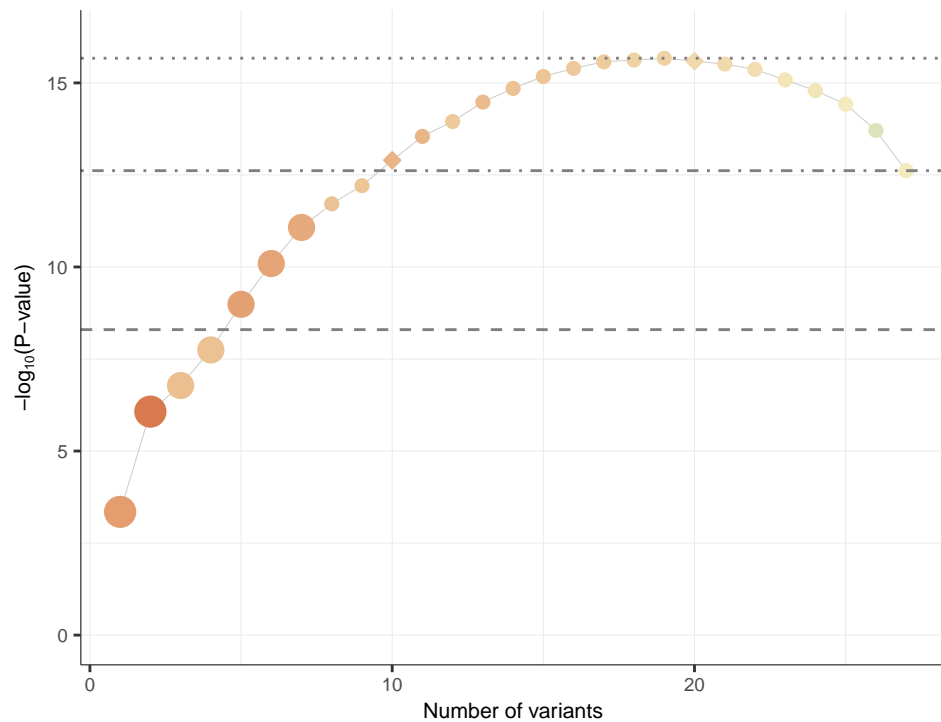
Thresholds

- — Significance Threshold
- - - Total P-value
- ... Lowest P-value

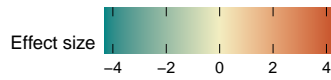
X - 24585 in plasma at *KYAT1* (LoF_mis)



X - 24585 in plasma at *KYAT1* (HI_mis)



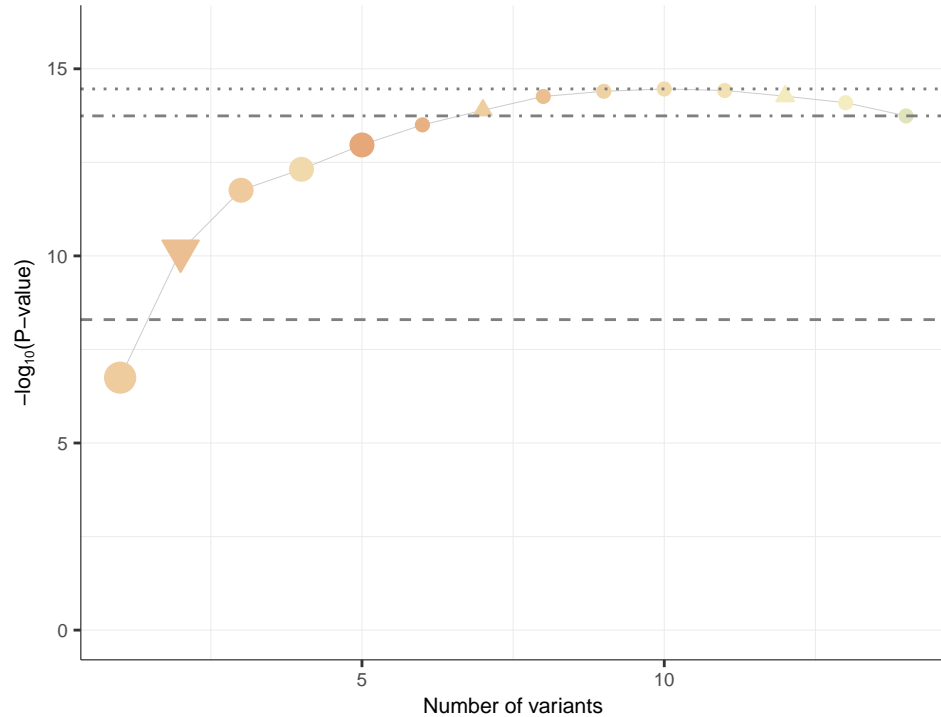
Variant consequence
 ◇ frameshift
 ○ missense



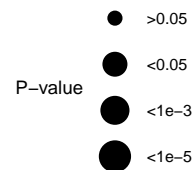
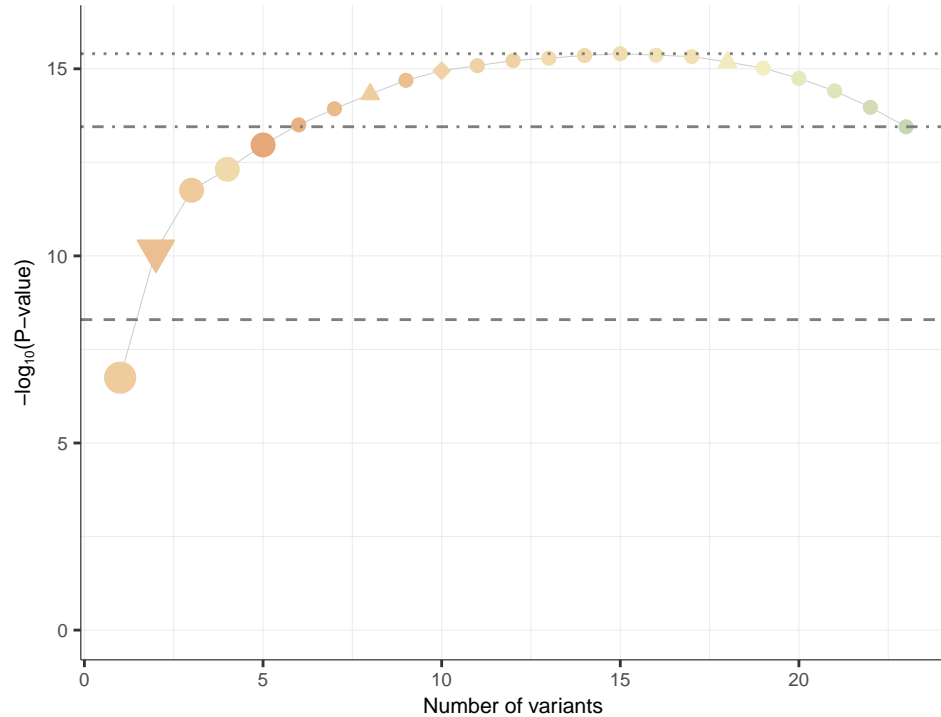
P-value
 ● >0.05
 ● <0.05
 ● <1e-3

Thresholds
 - - Significance Threshold
 - - - Total P-value
 . . . Lowest P-value

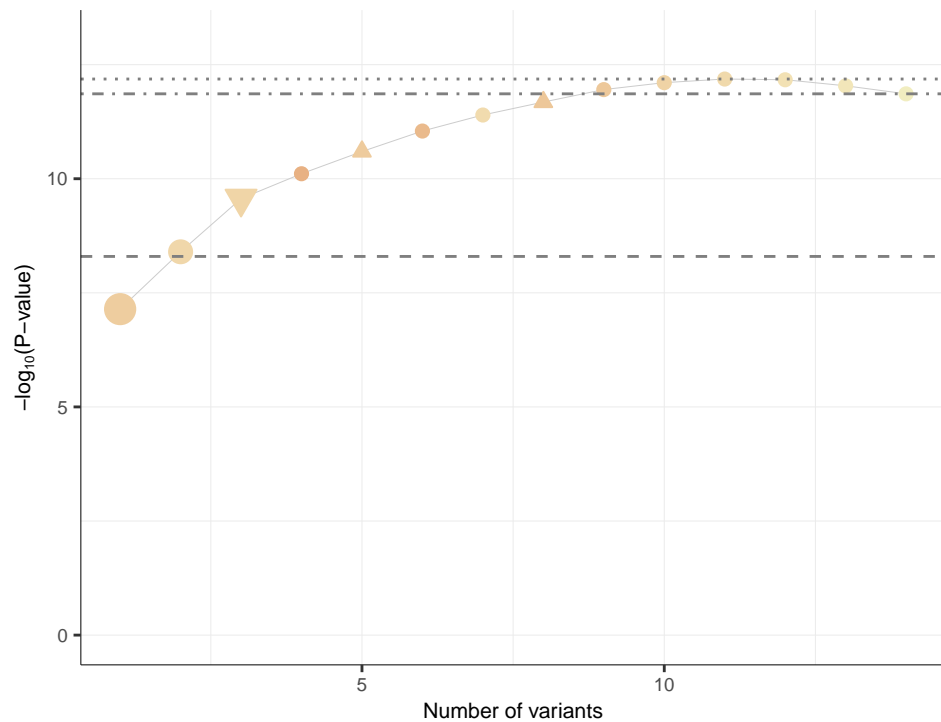
2-hydroxy-4-(methylthio)butanoic acid in plasma at KYAT3 (LoF_mis)



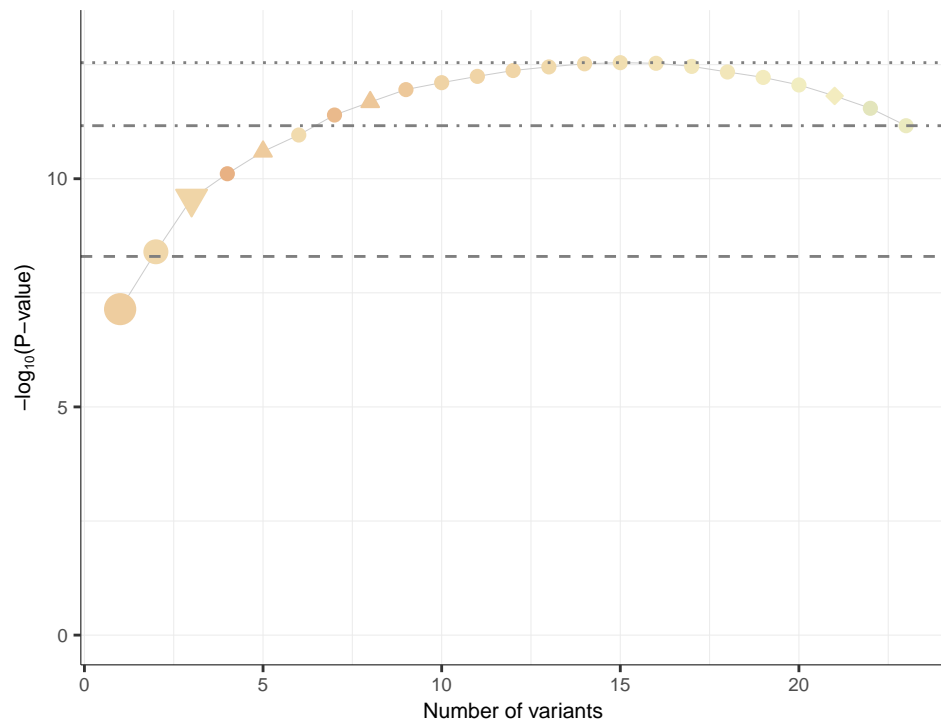
2-hydroxy-4-(methylthio)butanoic acid in plasma at KYAT3 (HI_mis)



imidazole lactate in plasma at KYAT3 (LoF_mis)

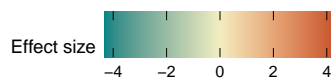


imidazole lactate in plasma at KYAT3 (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- ▽ splicing
- △ stop gained



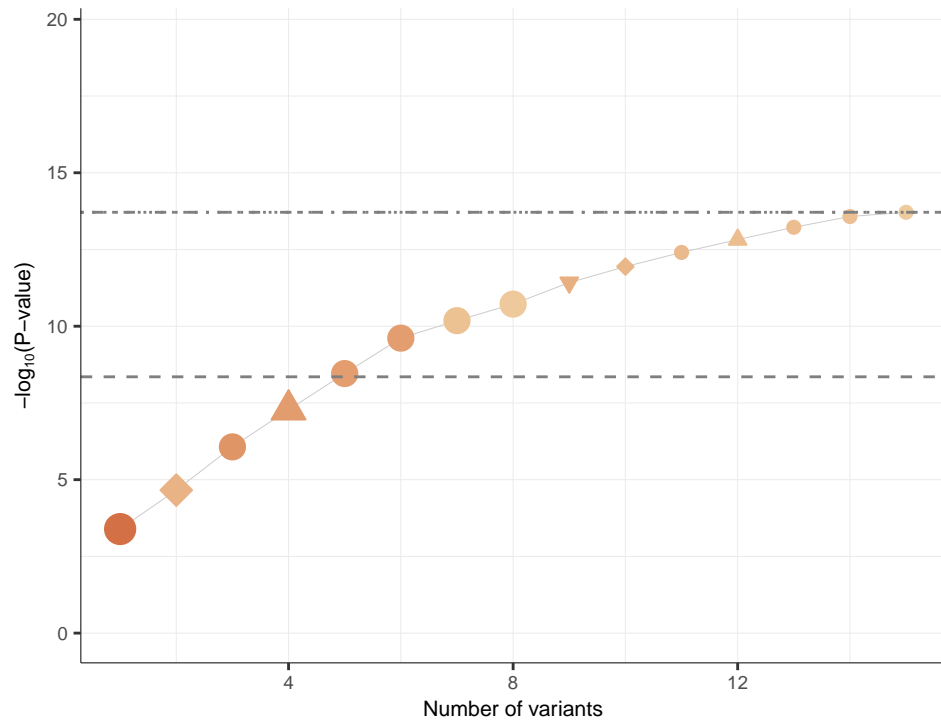
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5

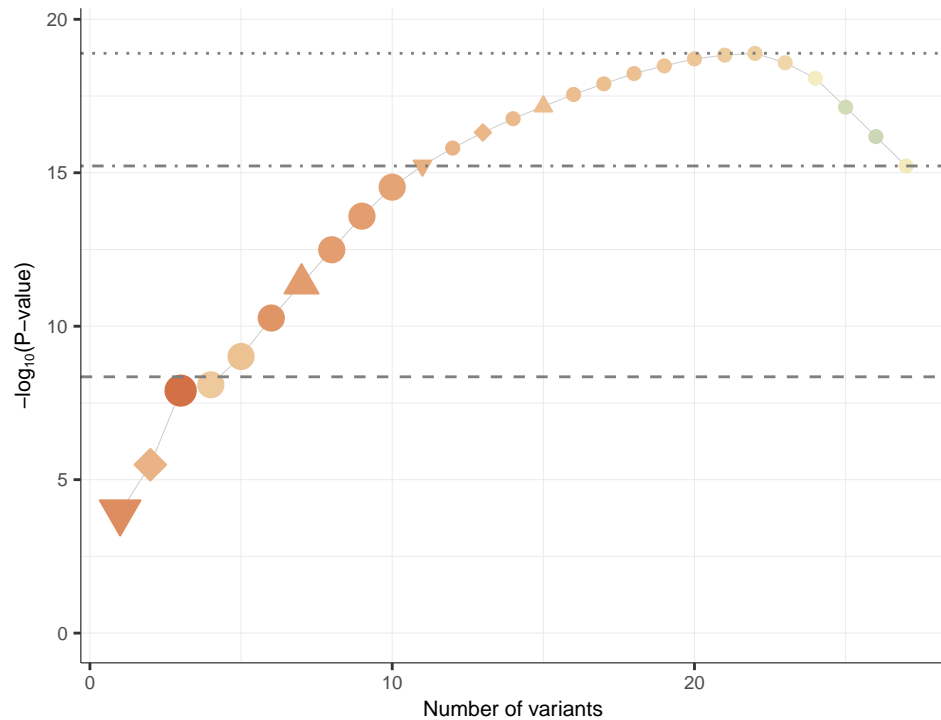
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

3-hydroxykynurenine in urine at *KYNU* (LoF_mis)



3-hydroxykynurenine in urine at *KYNU* (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- ▽ splicing
- △ stop gained



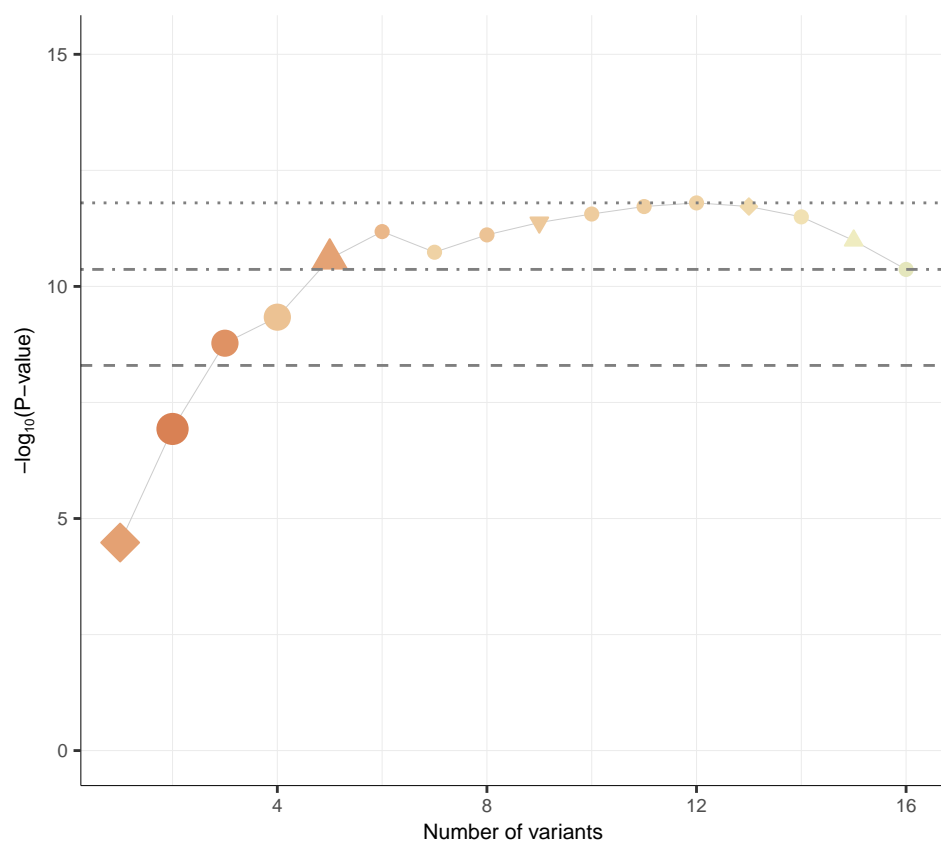
P-value

- >0.05
- <0.05
- <1e-3

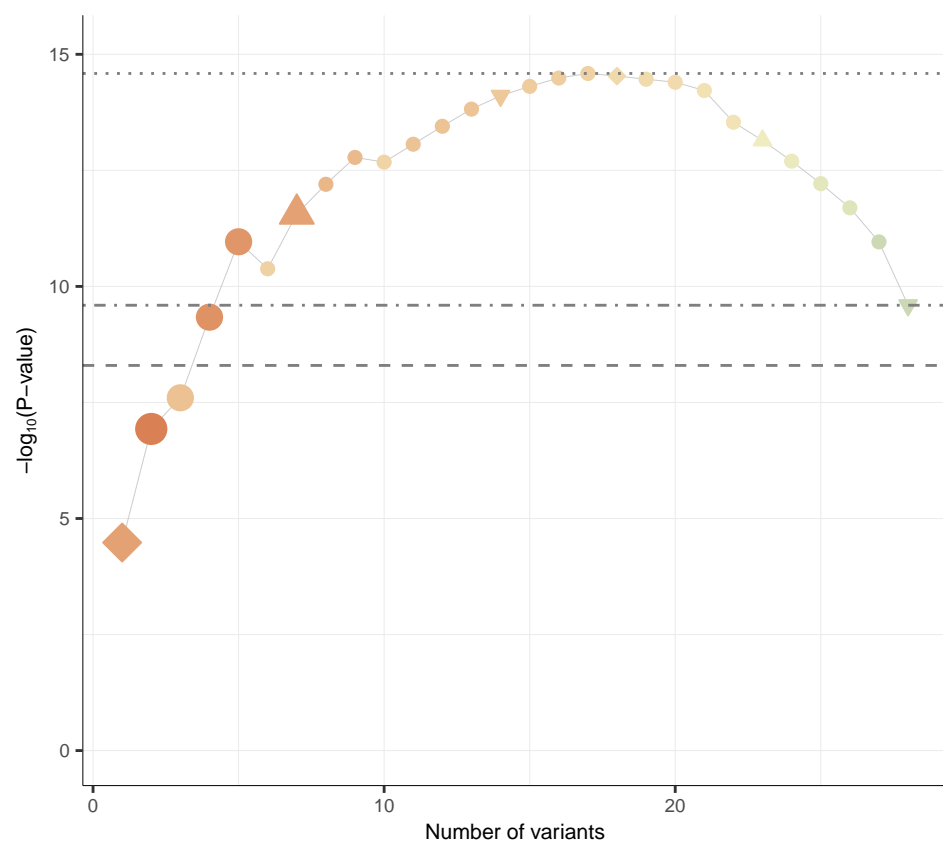
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

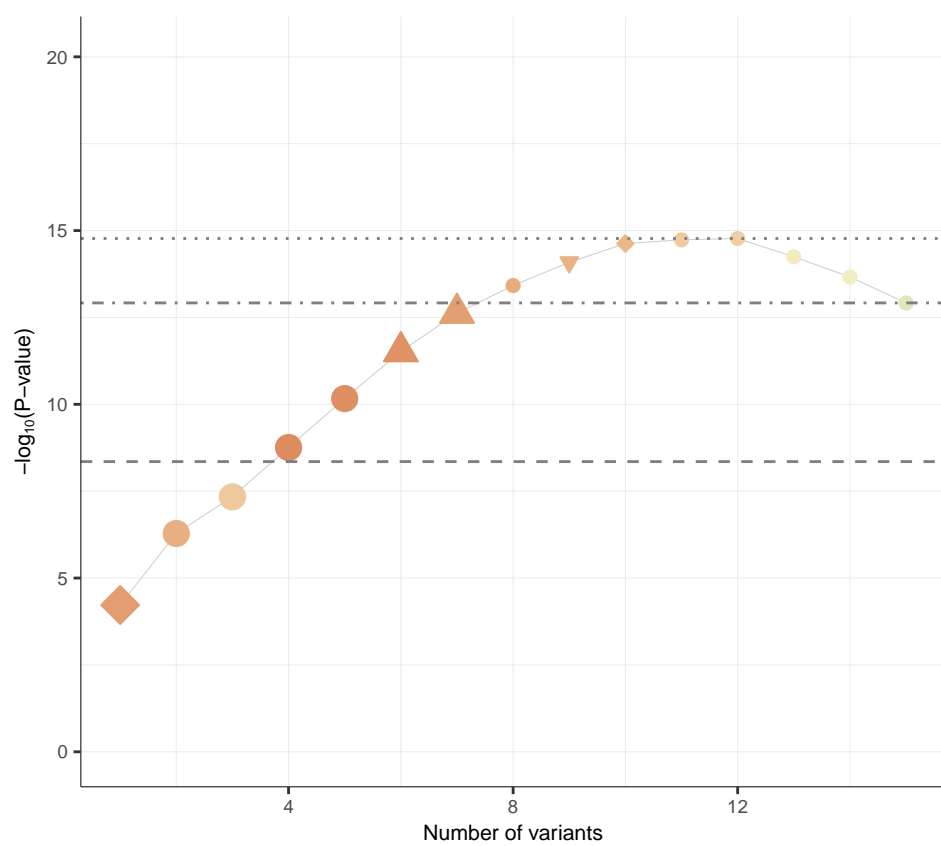
8-methoxykynurenate in plasma at *KYNU* (LoF_mis)



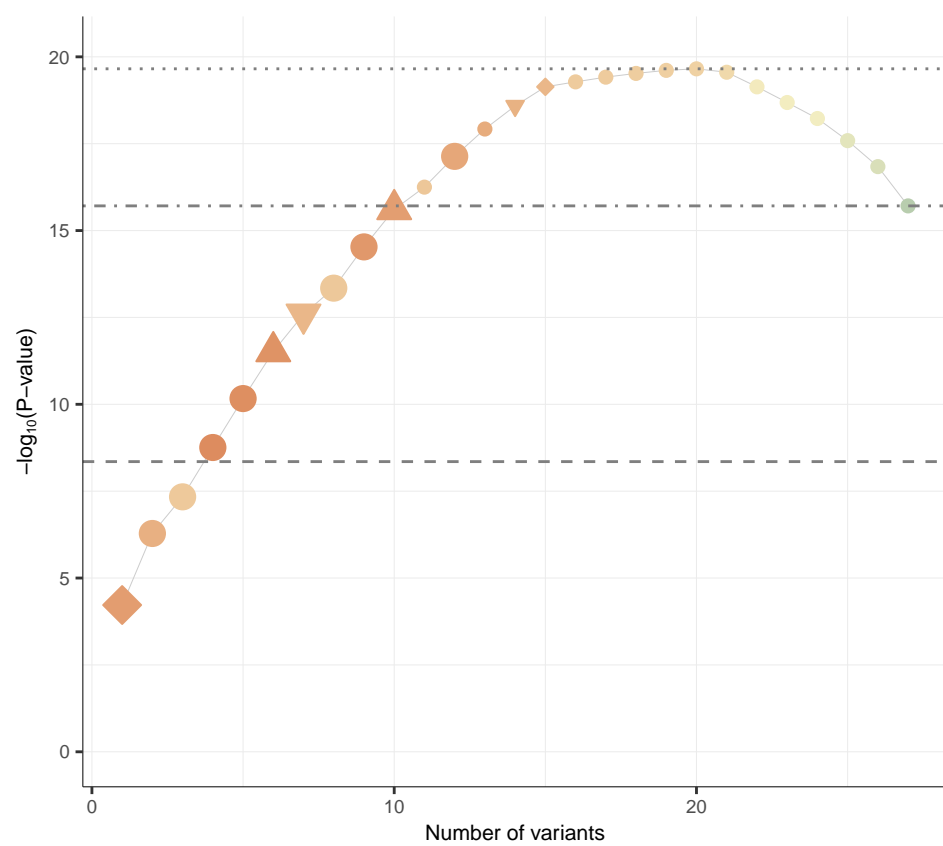
8-methoxykynurenate in plasma at *KYNU* (HI_mis)



8-methoxykynurenate in urine at *KYNU* (LoF_mis)



8-methoxykynurenate in urine at *KYNU* (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- ▽ splicing
- △ stop gained

Effect size

-4 -2 0 2 4

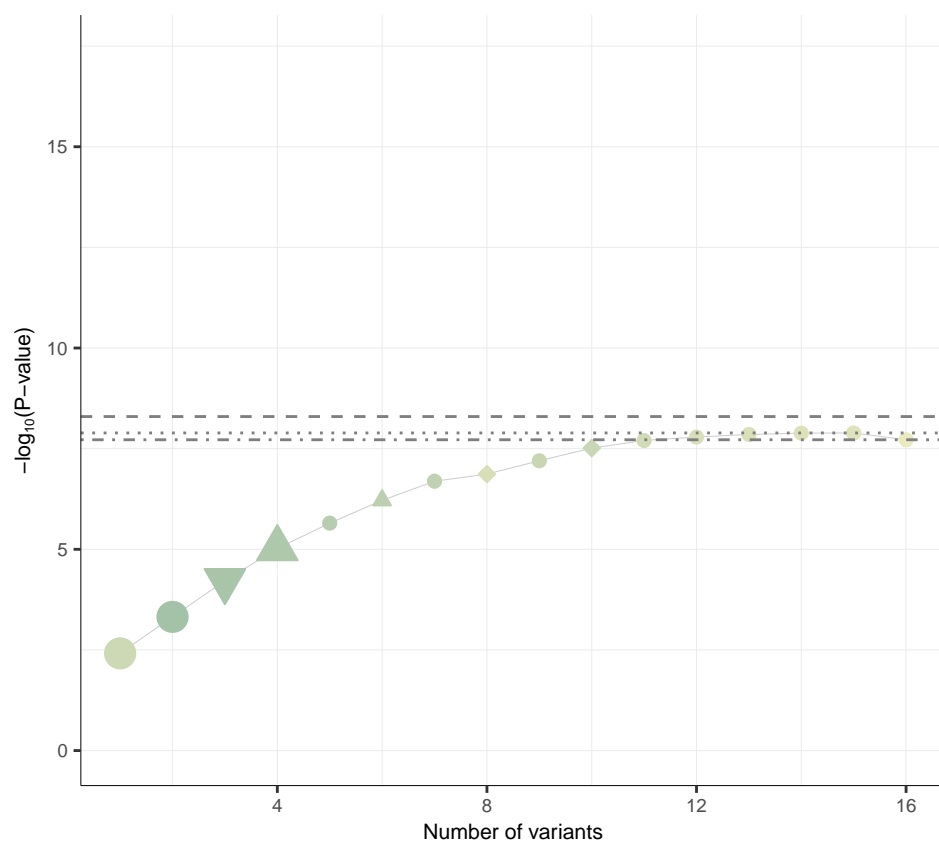
P-value

- >0.05
- <0.05
- <1e-3

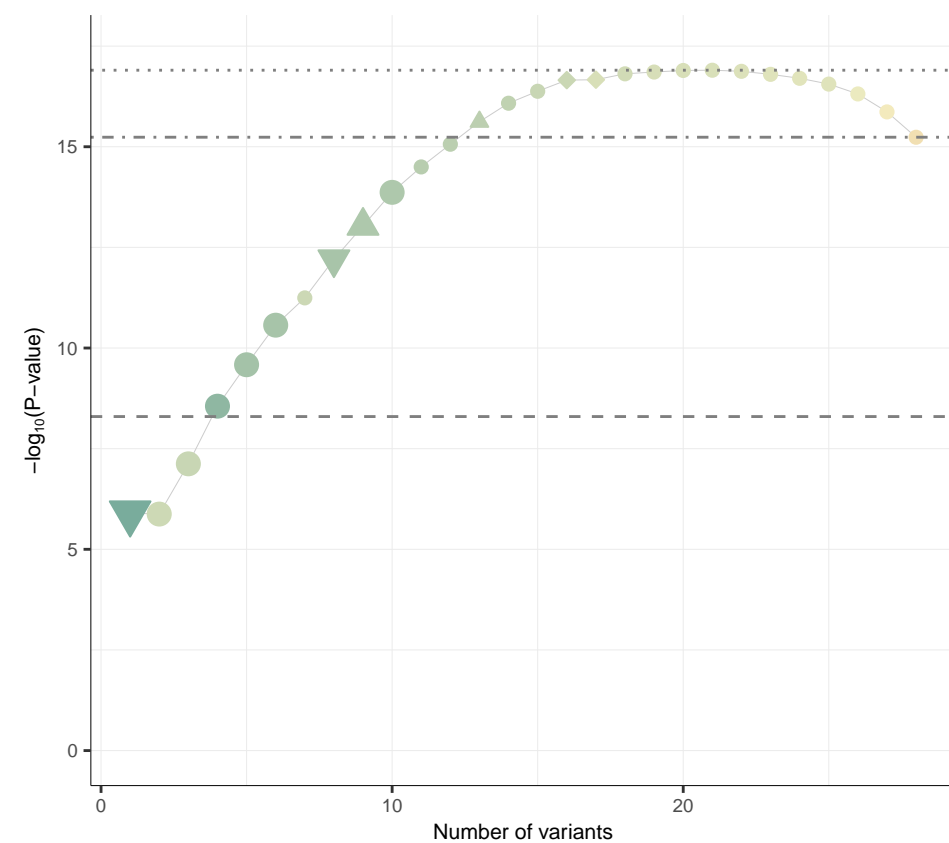
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

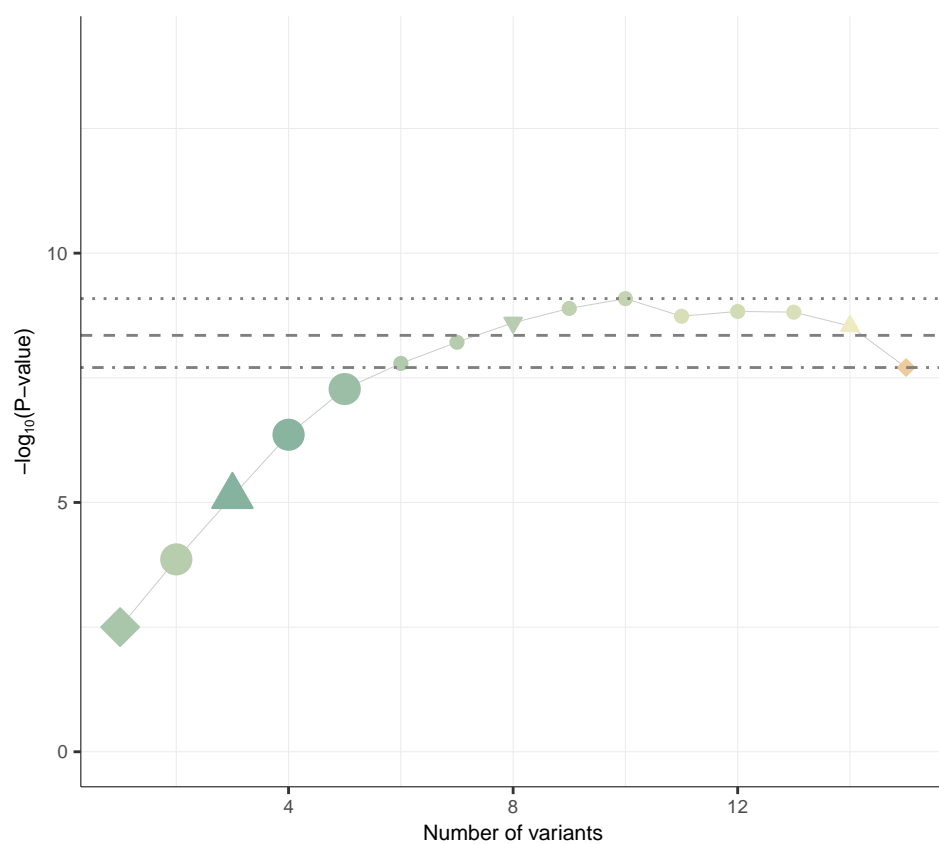
X – 15503 in plasma at *KYNU* (LoF_mis)



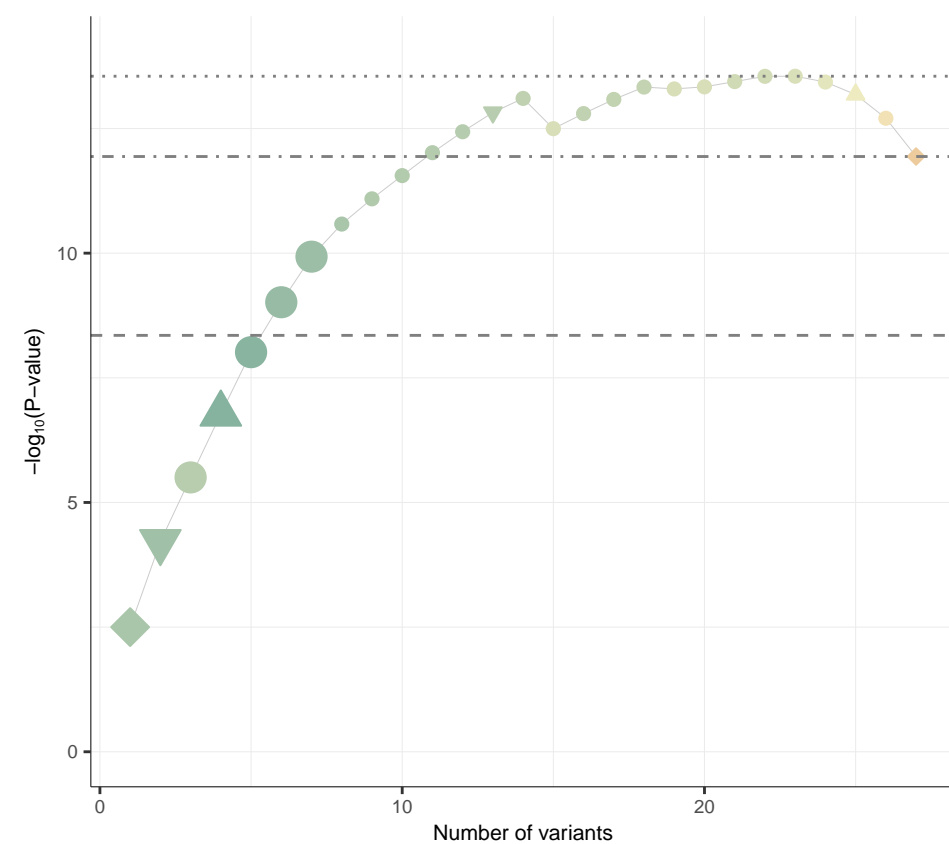
X – 15503 in plasma at *KYNU* (HI_mis)



X – 15503 in urine at *KYNU* (LoF_mis)



X – 15503 in urine at *KYNU* (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- ▽ splicing
- △ stop gained

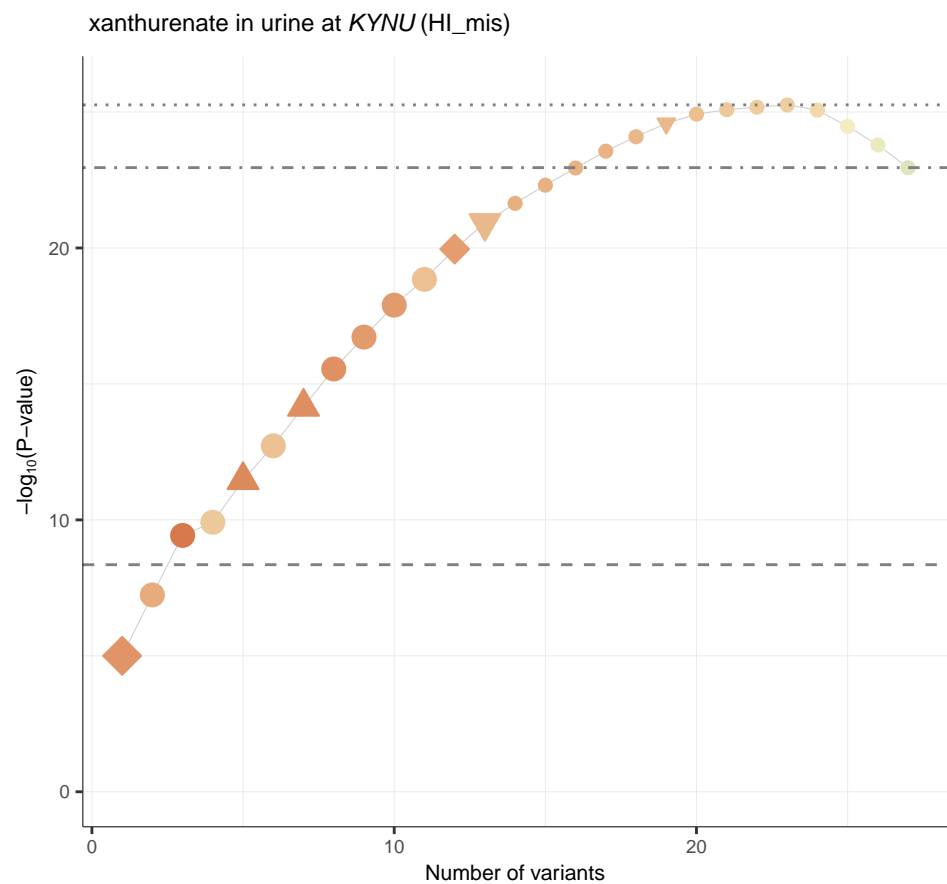
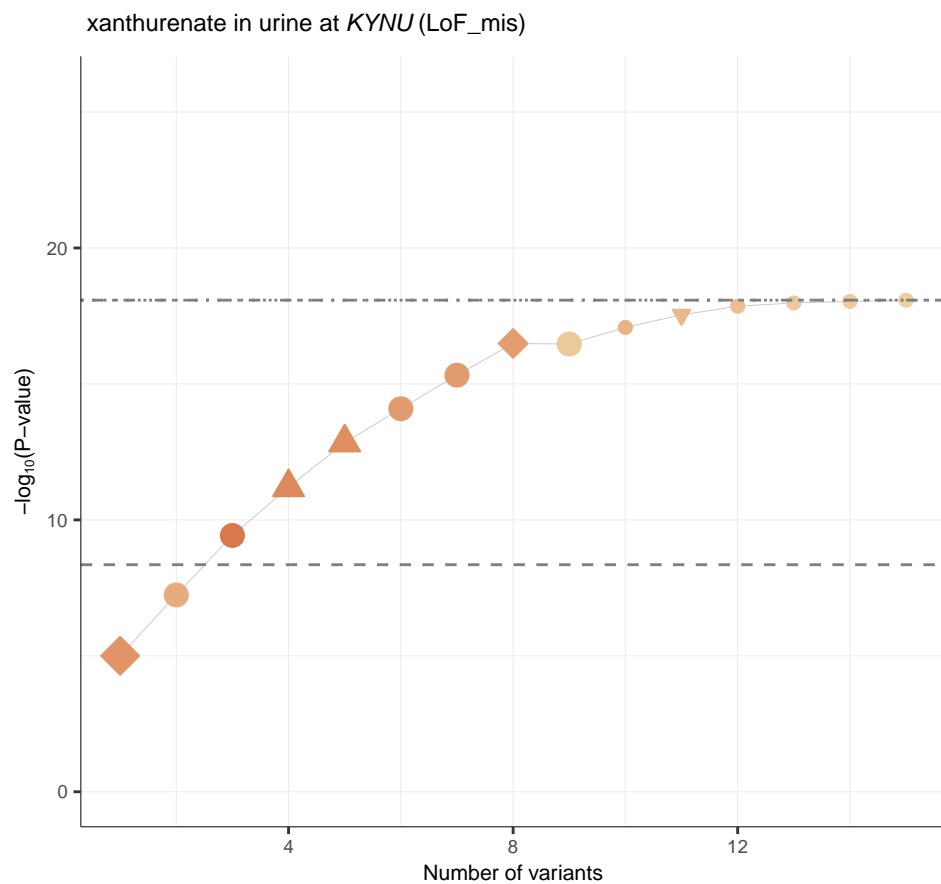
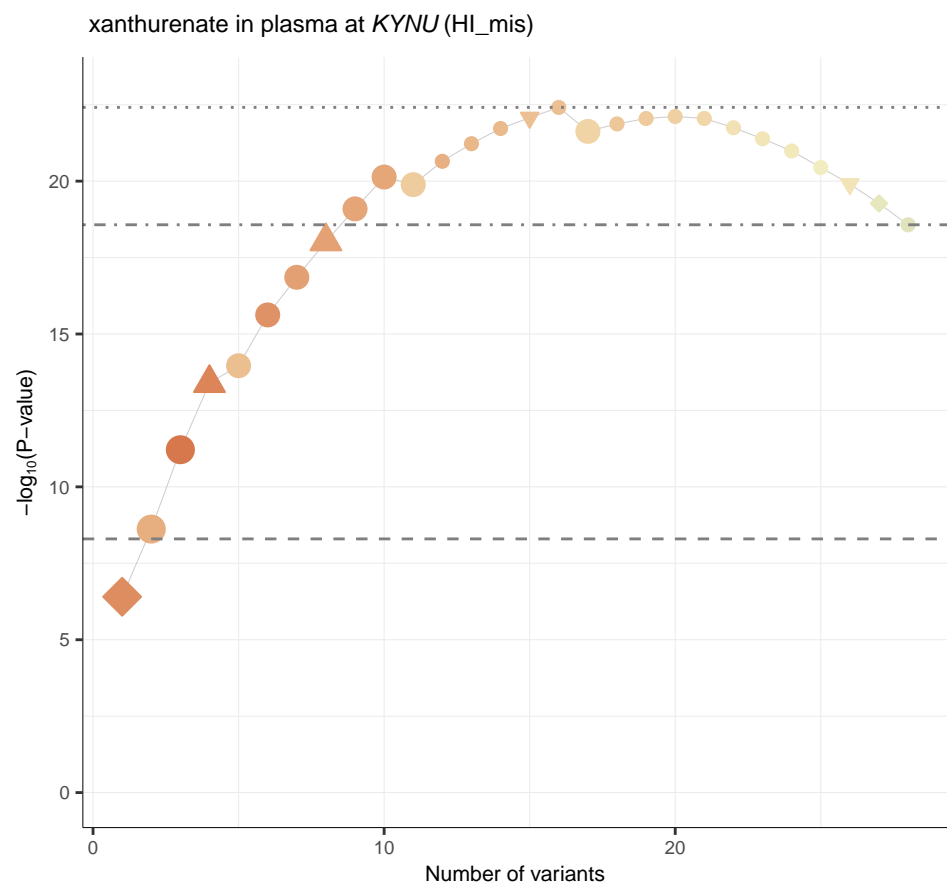
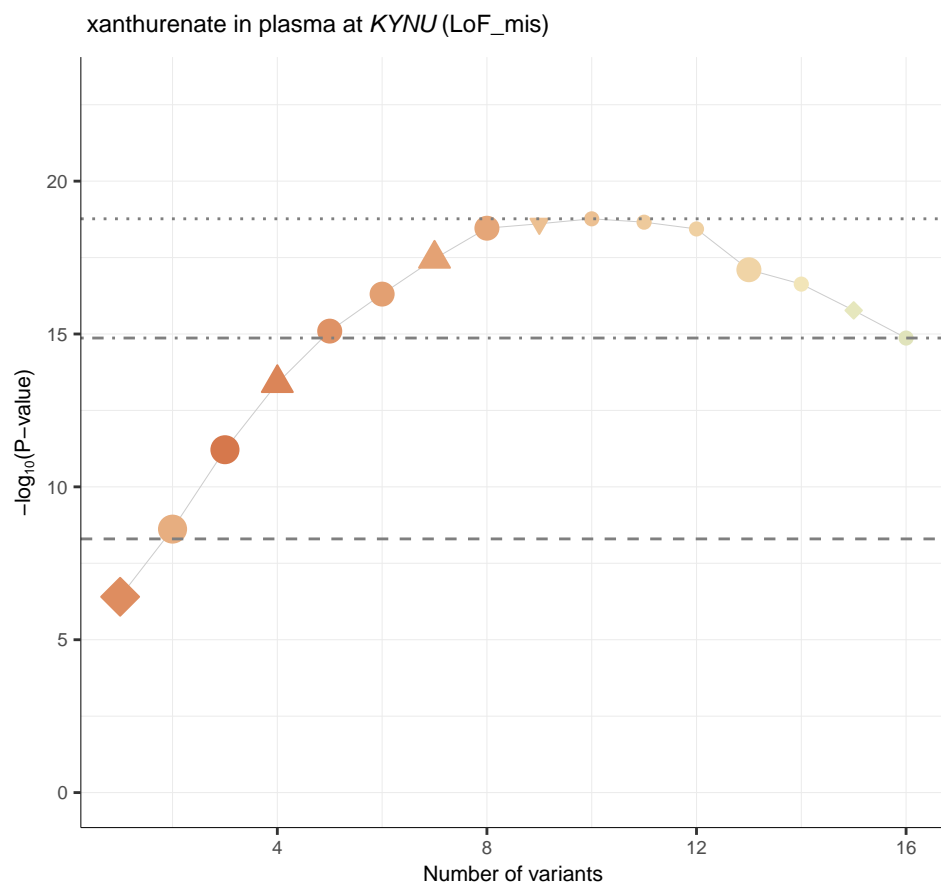
Effect size

P-value

- >0.05
- <0.05

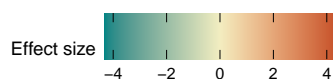
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value



Variant consequence

- ◇ frameshift
- missense
- ▽ splicing
- △ stop gained



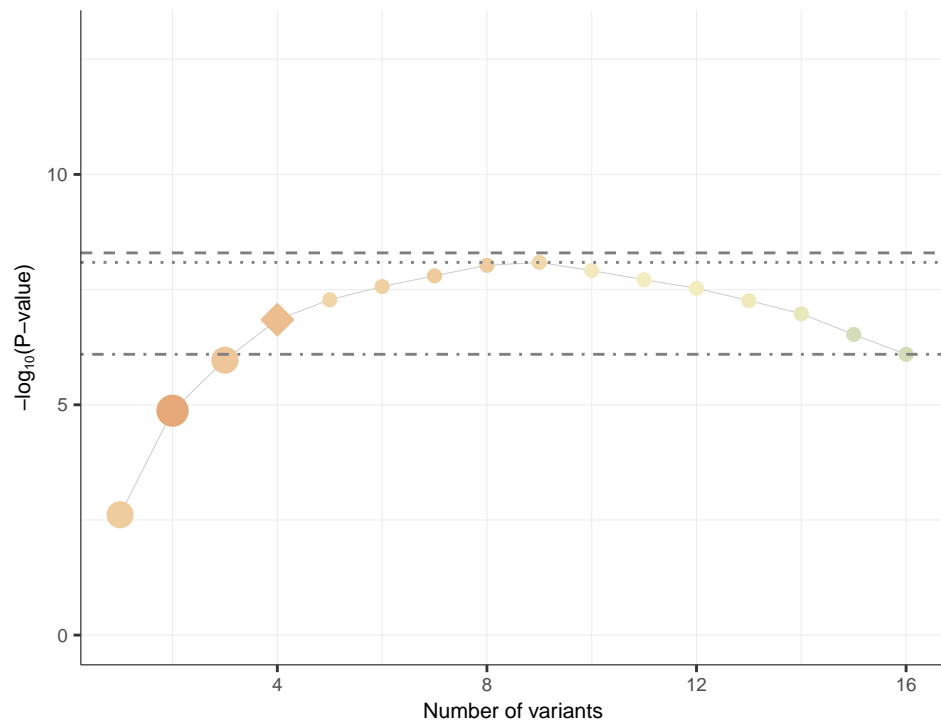
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5

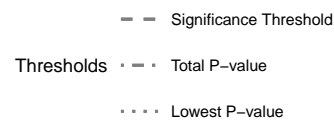
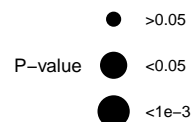
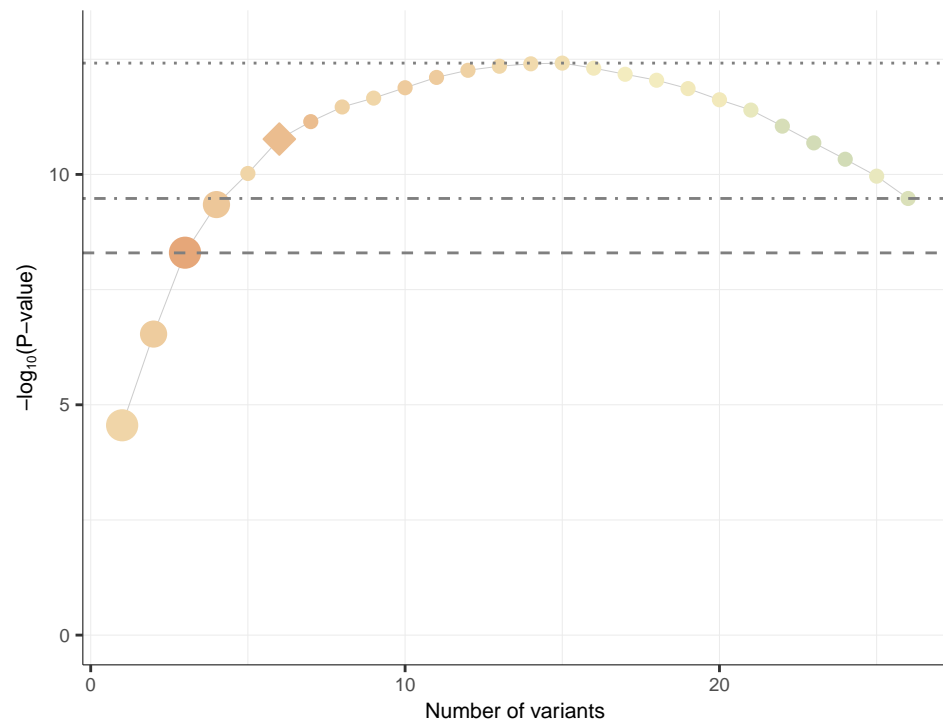
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

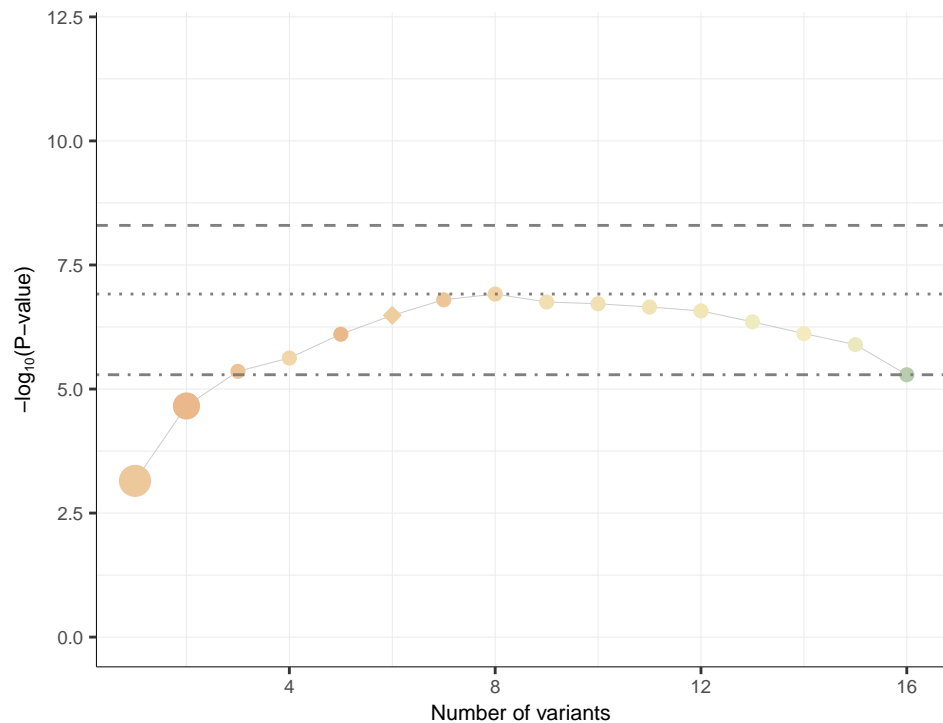
1-palmitoyl-2-arachidonoyl-GPE (16:0/20:4)* in plasma at *LIPC* (LoF_mis)



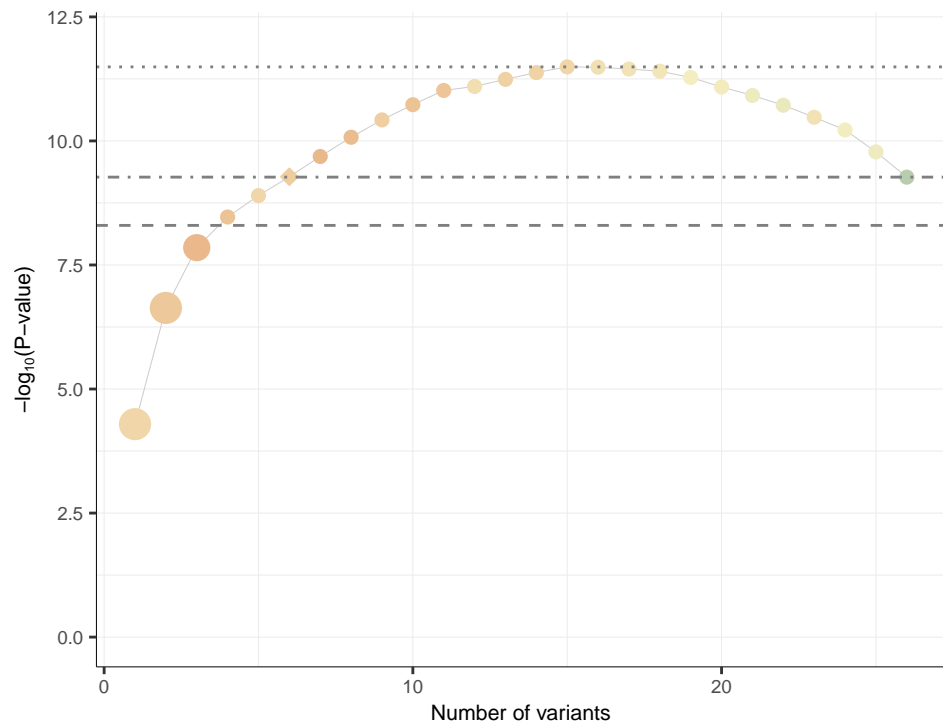
1-palmitoyl-2-arachidonoyl-GPE (16:0/20:4)* in plasma at *LIPC* (HI_mis)



1-palmitoyl-2-docosaehaenoyl-GPE (16:0/22:6)* in plasma at *L/PC* (LoF_mis)



1-palmitoyl-2-docosaehaenoyl-GPE (16:0/22:6)* in plasma at *L/PC* (HI_mis)



Variant consequence

- ◇ frameshift
- missense



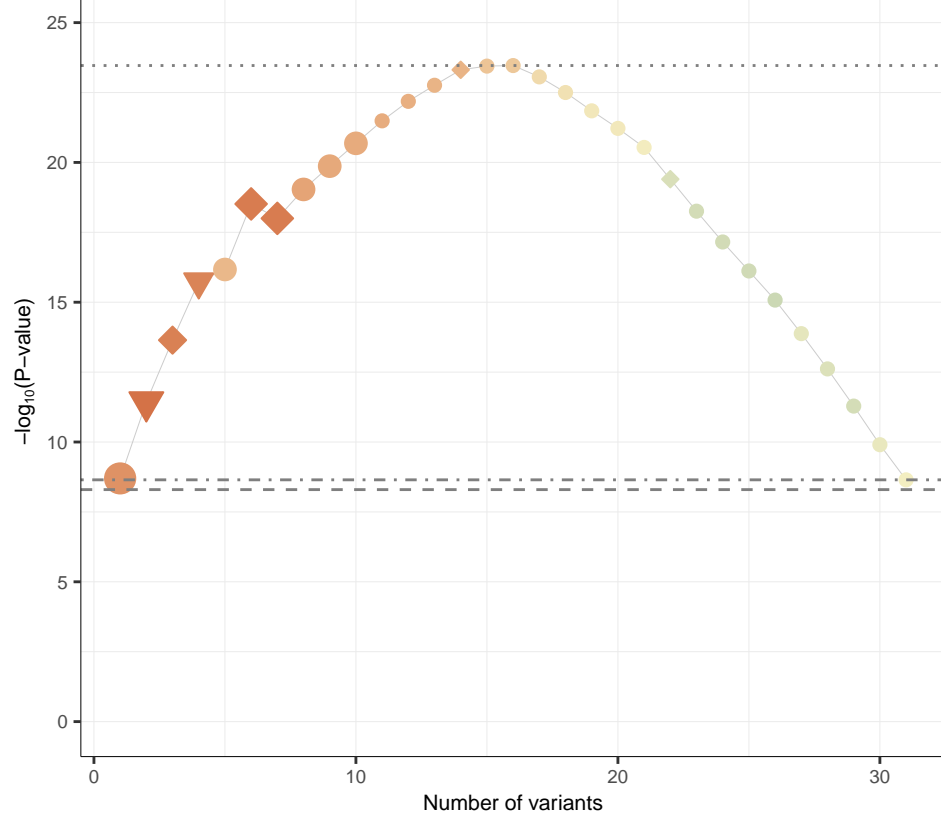
P-value

- >0.05
- <0.05
- <1e-3

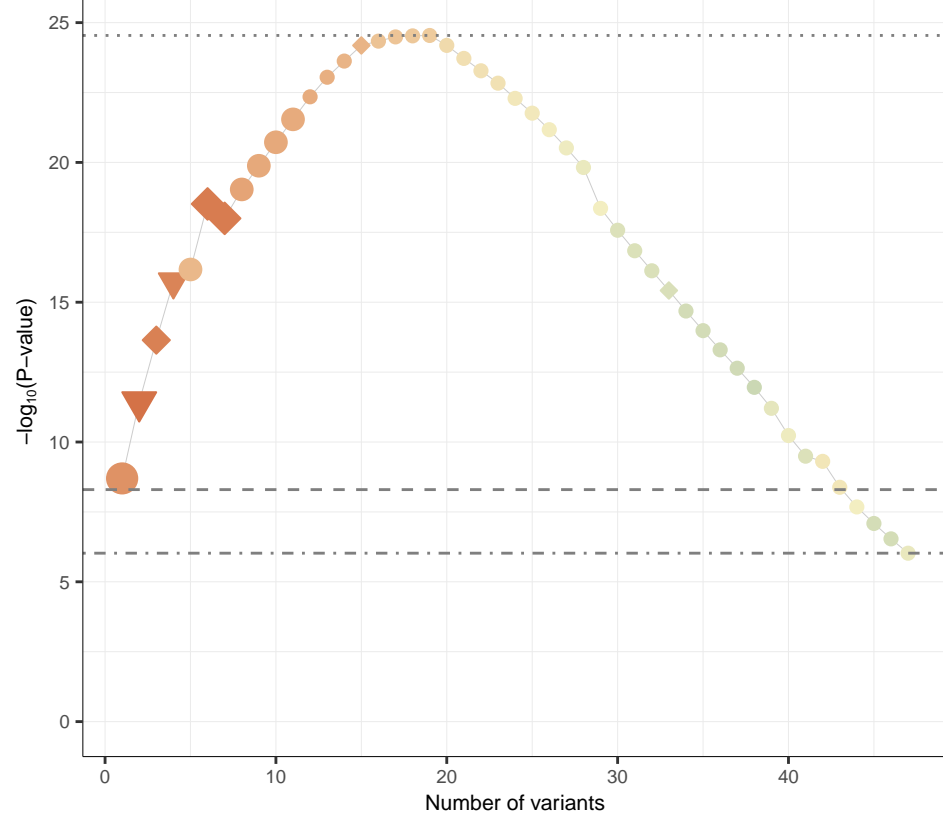
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

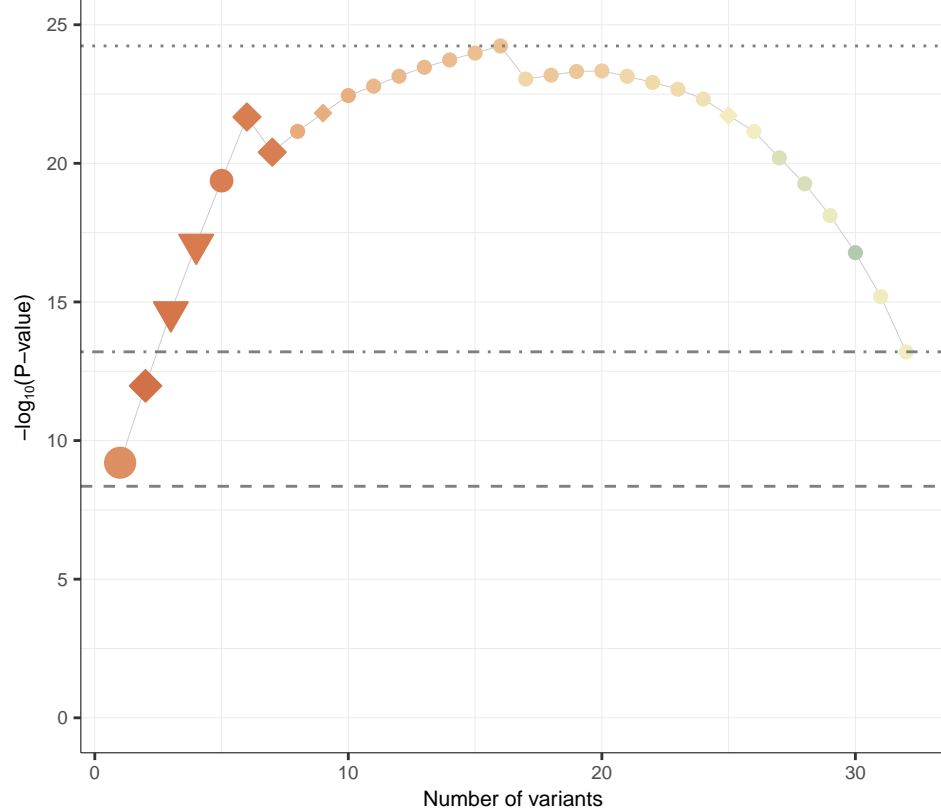
3-methylcrotonylglycine in plasma at *MCCC1* (LoF_mis)



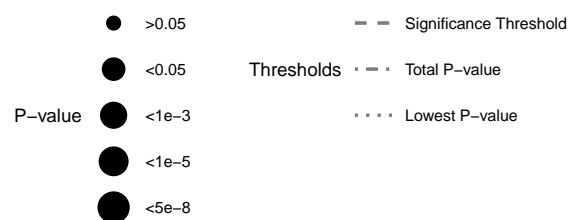
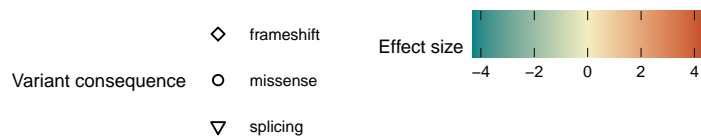
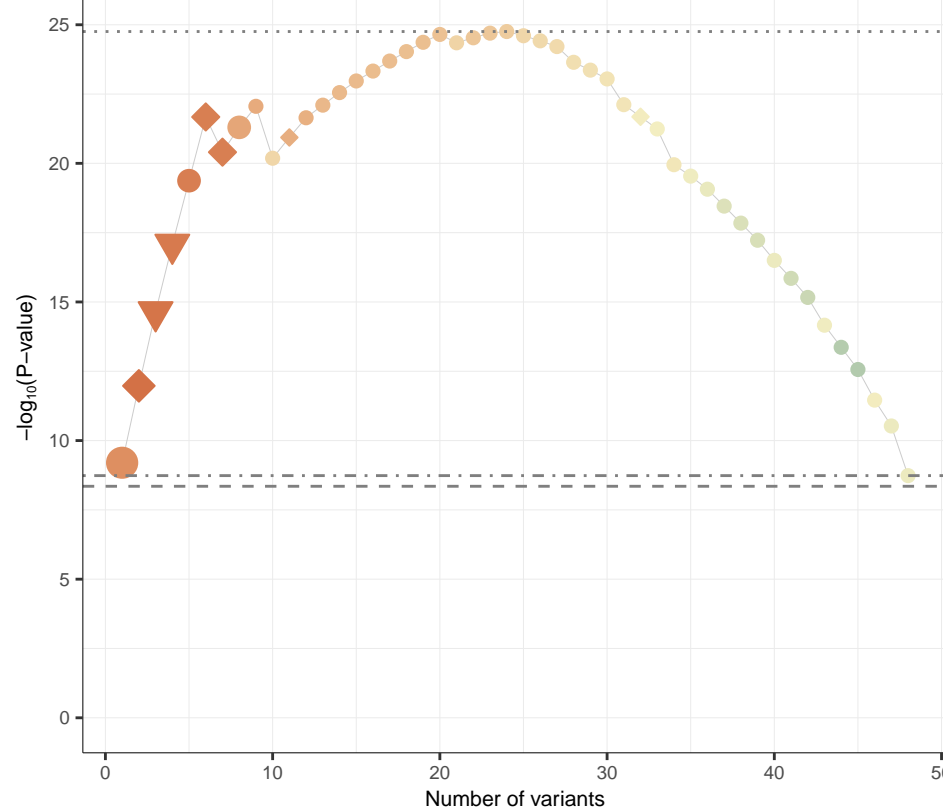
3-methylcrotonylglycine in plasma at *MCCC1* (HI_mis)



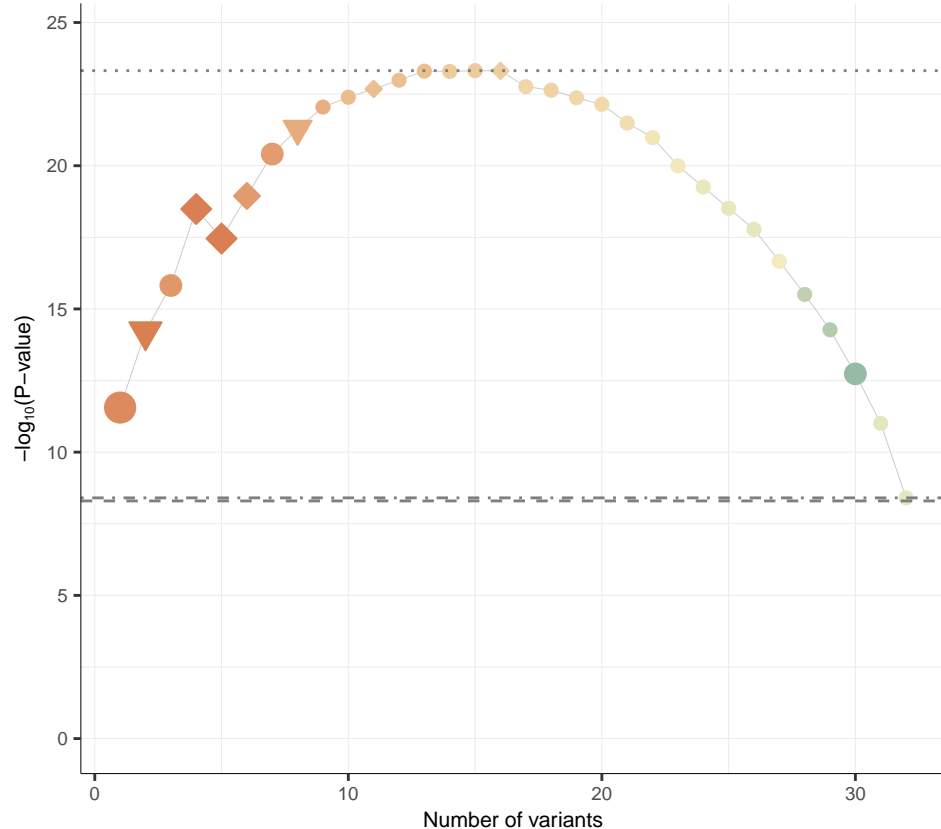
3-methylcrotonylglycine in urine at *MCCC1* (LoF_mis)



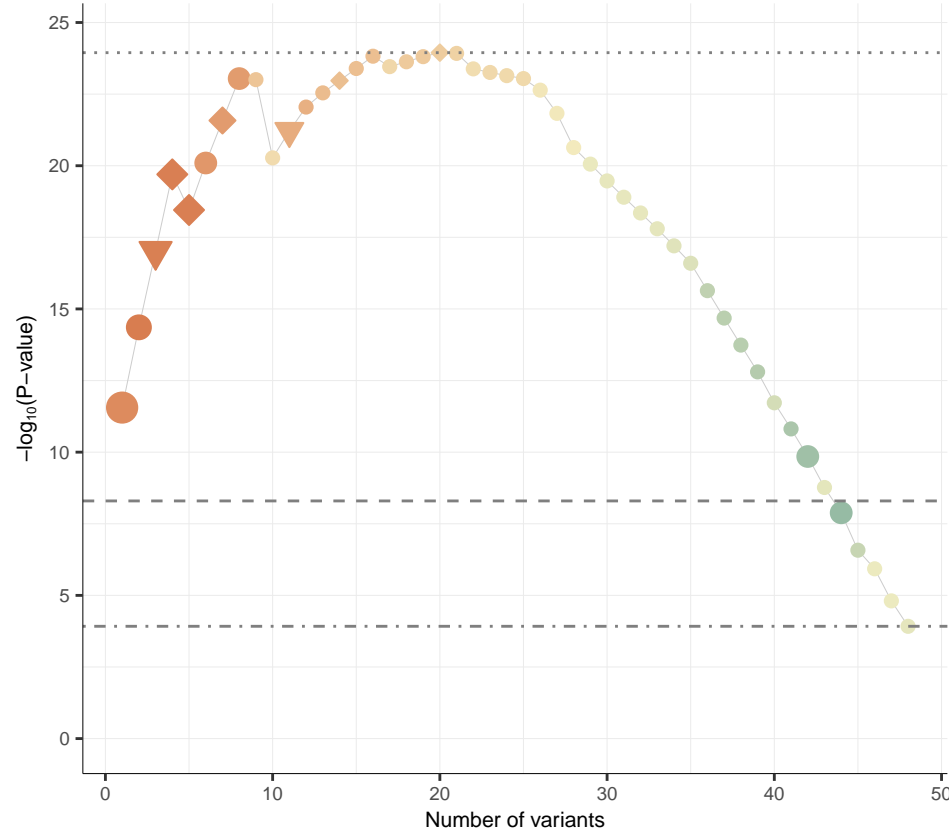
3-methylcrotonylglycine in urine at *MCCC1* (HI_mis)



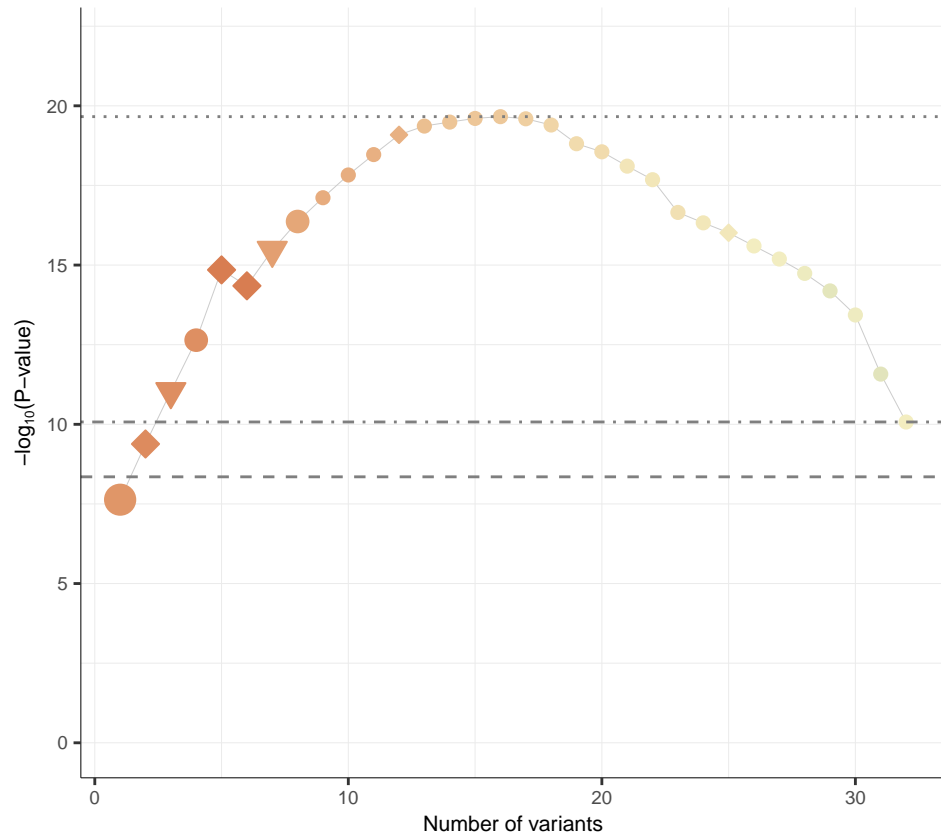
beta-hydroxyisovaleroylcarnitine in plasma at *MCCC1* (LoF_mis)



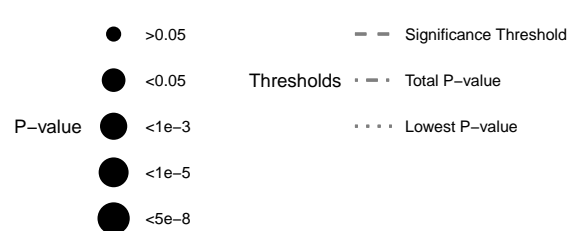
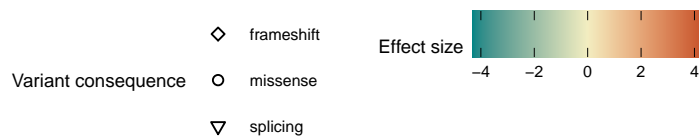
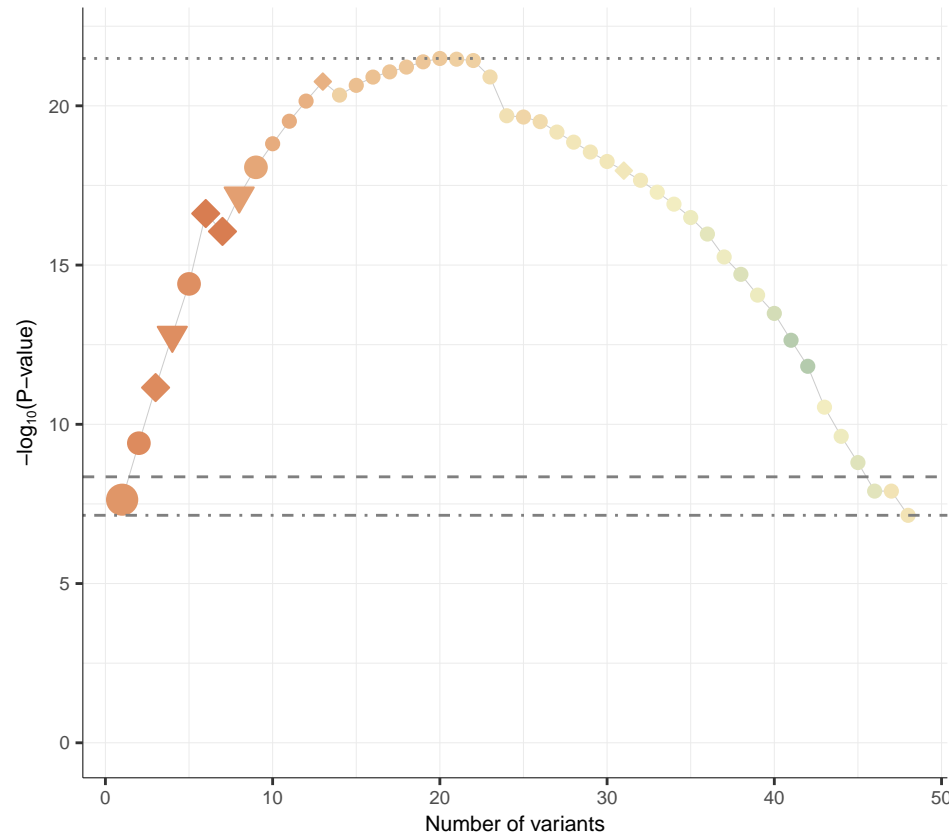
beta-hydroxyisovaleroylcarnitine in plasma at *MCCC1* (HI_mis)



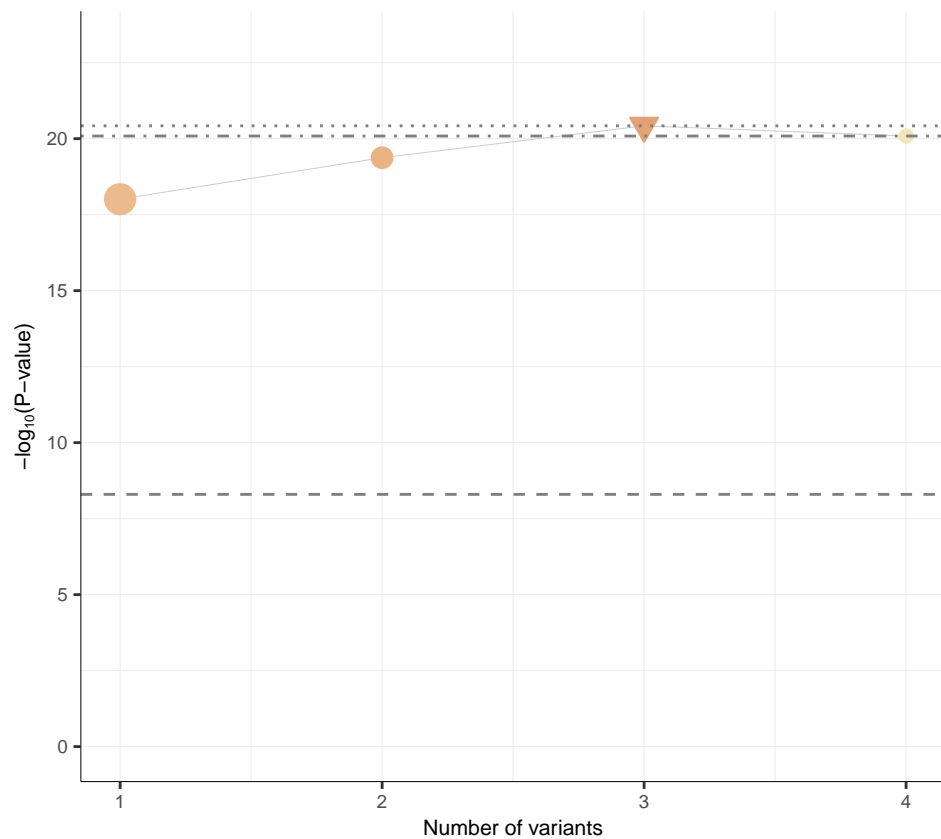
beta-hydroxyisovaleroylcarnitine in urine at *MCCC1* (LoF_mis)



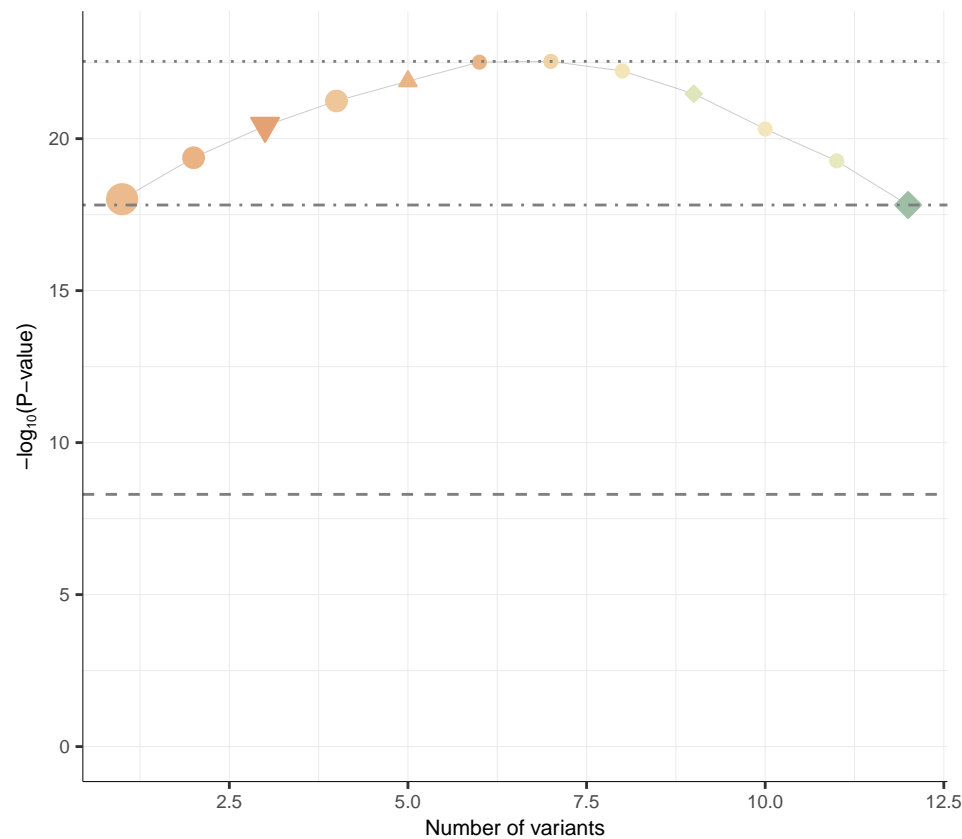
beta-hydroxyisovaleroylcarnitine in urine at *MCCC1* (HI_mis)



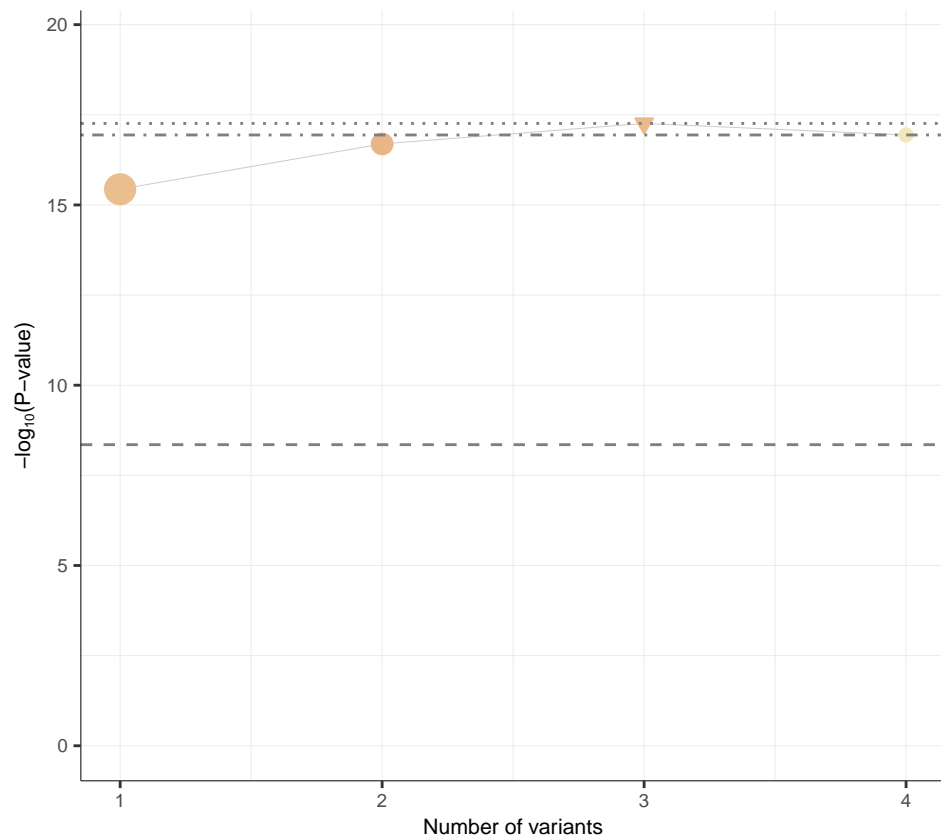
X – 13684 in plasma at *MPST* (LoF_mis)



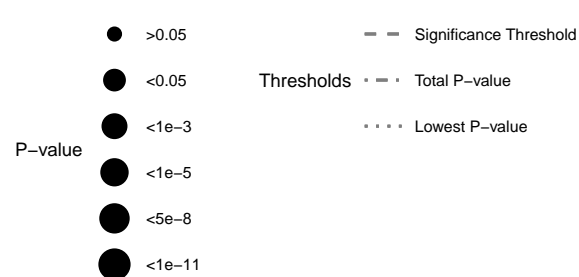
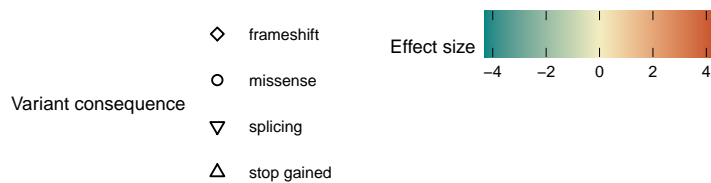
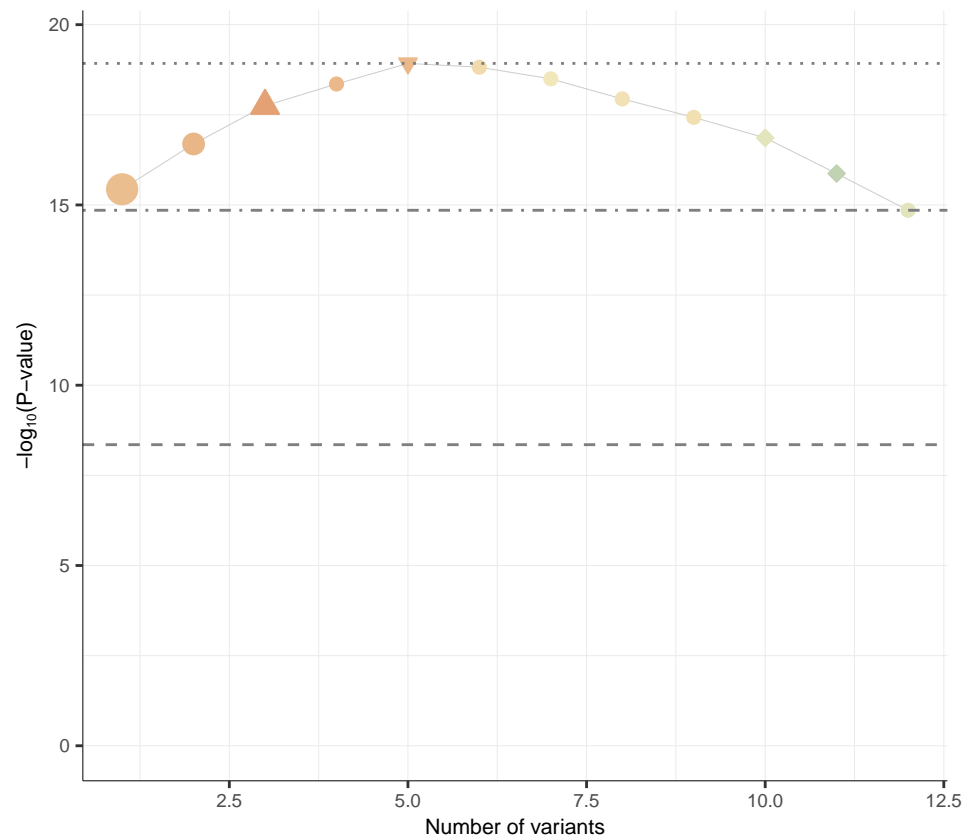
X – 13684 in plasma at *MPST* (HI_mis)

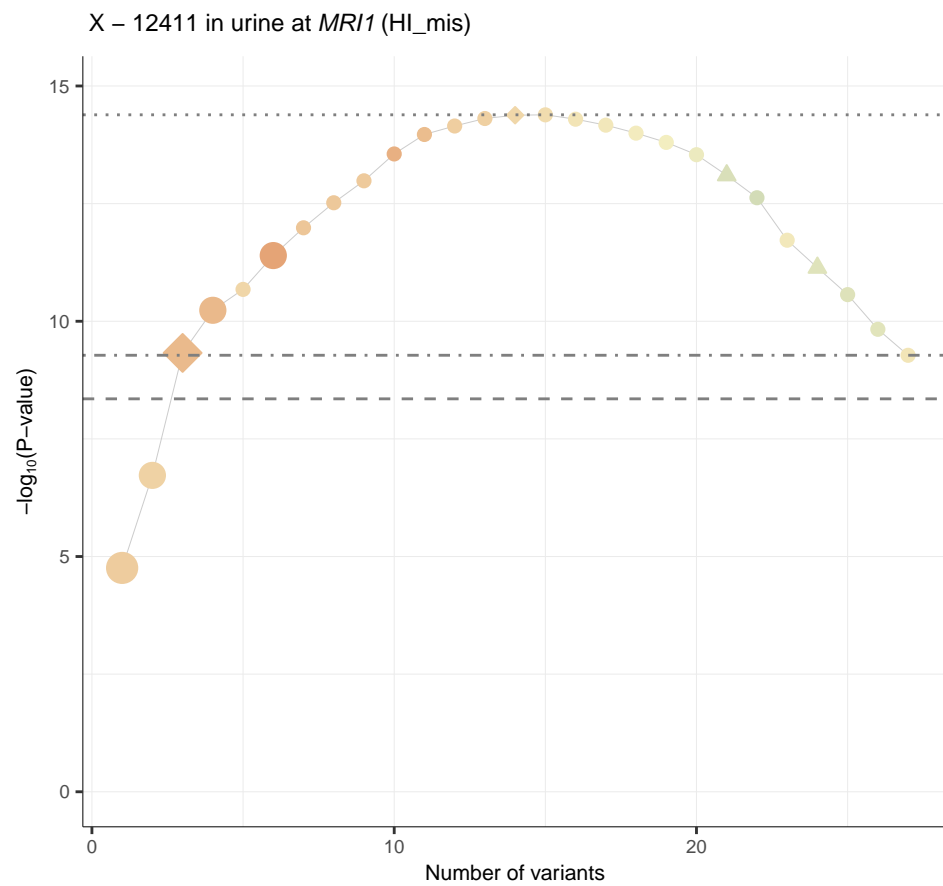
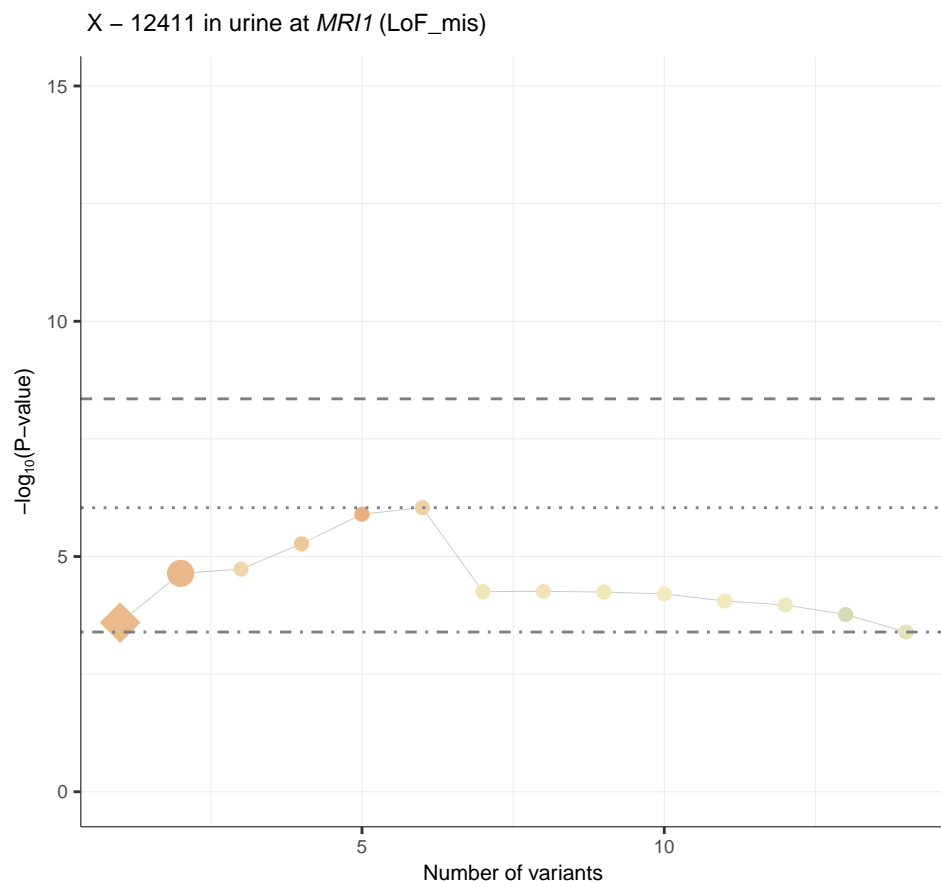
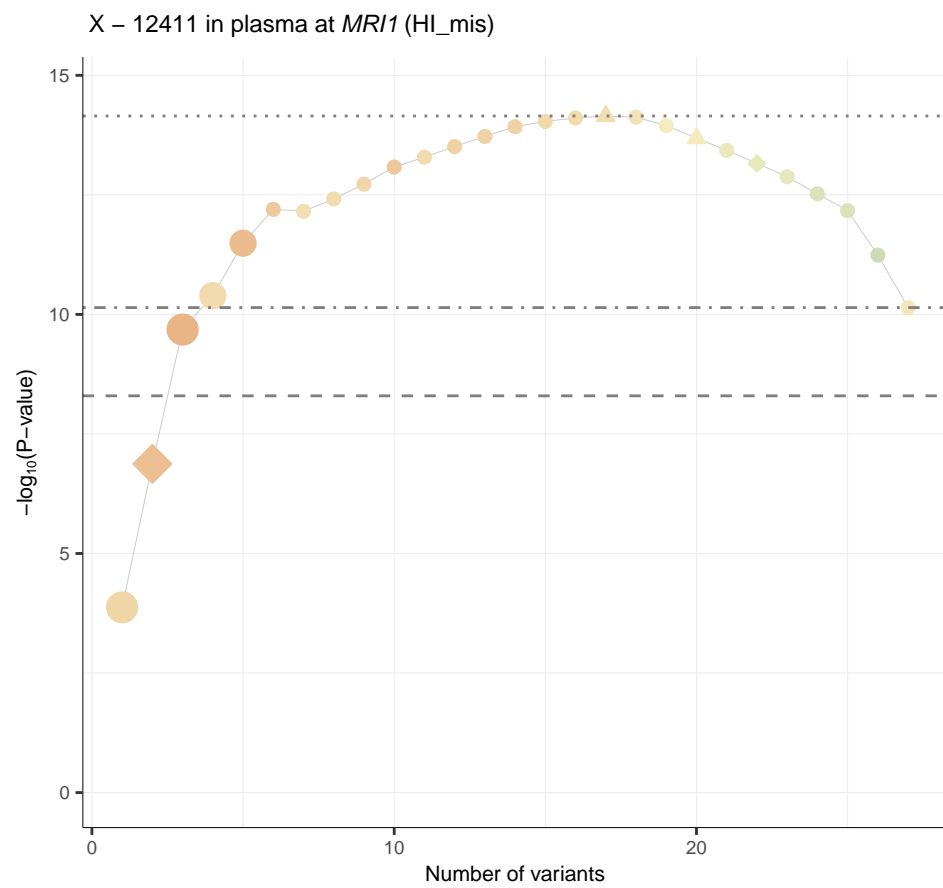
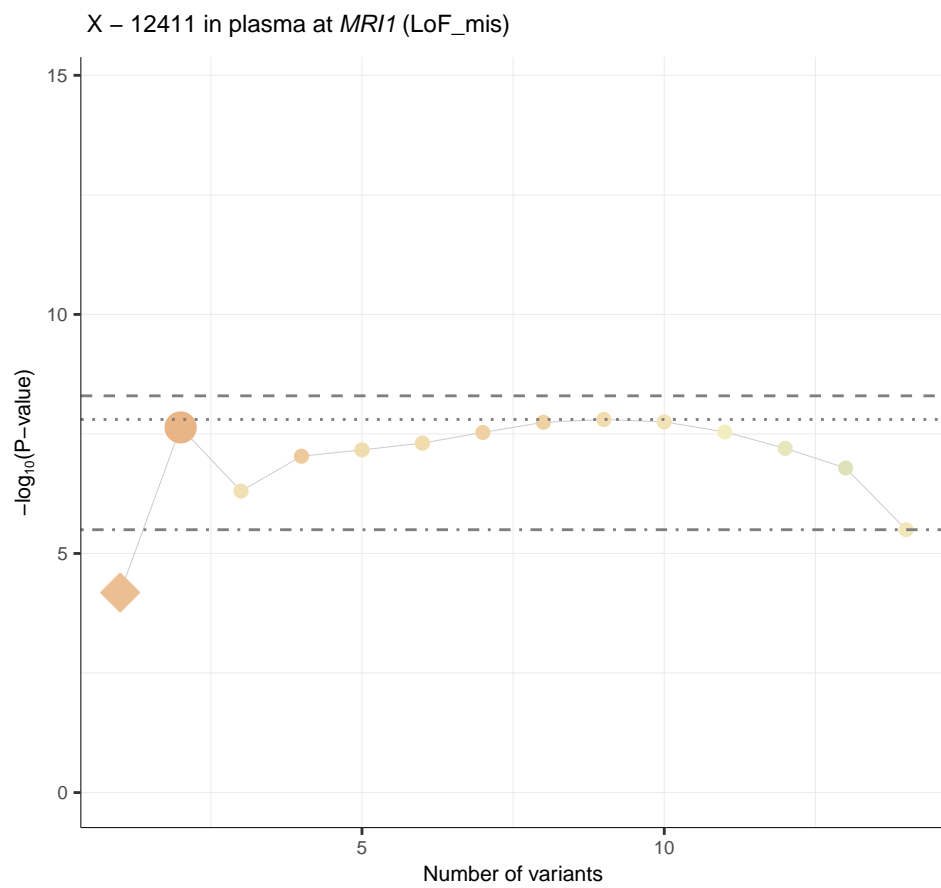


X – 13684 in urine at *MPST* (LoF_mis)



X – 13684 in urine at *MPST* (HI_mis)





Variant consequence

- ◇ frameshift
- missense
- △ stop gained

Effect size

-4 -2 0 2 4

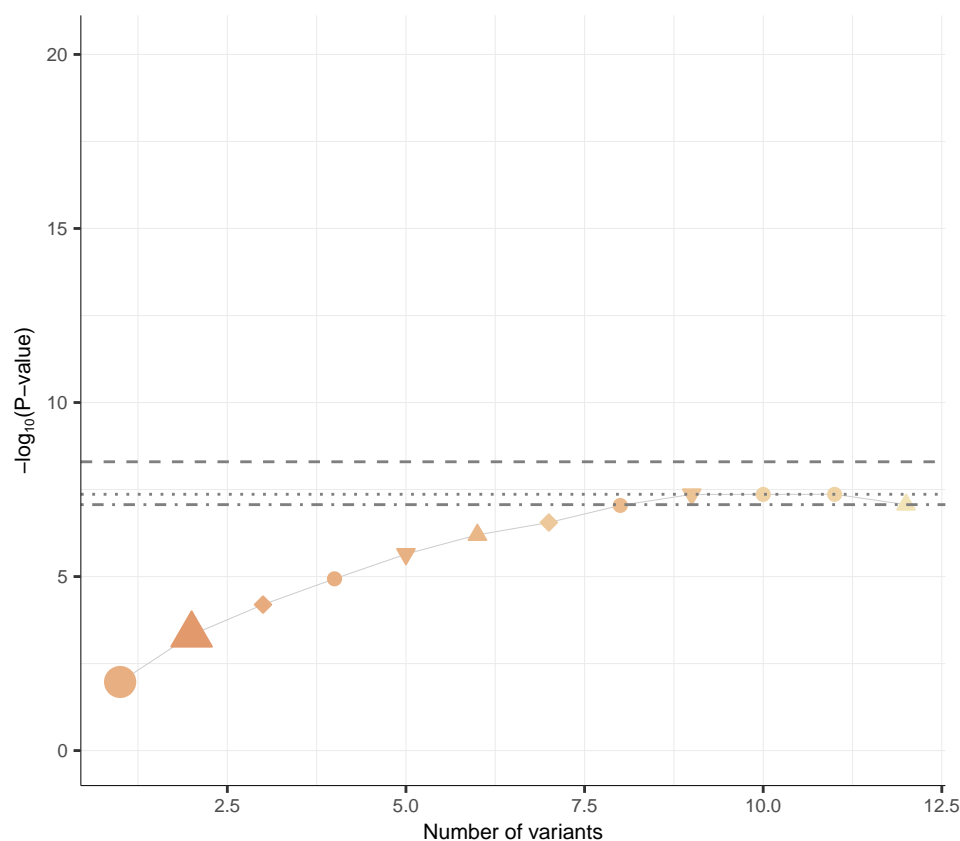
P-value

- >0.05
- <0.05
- <1e-3

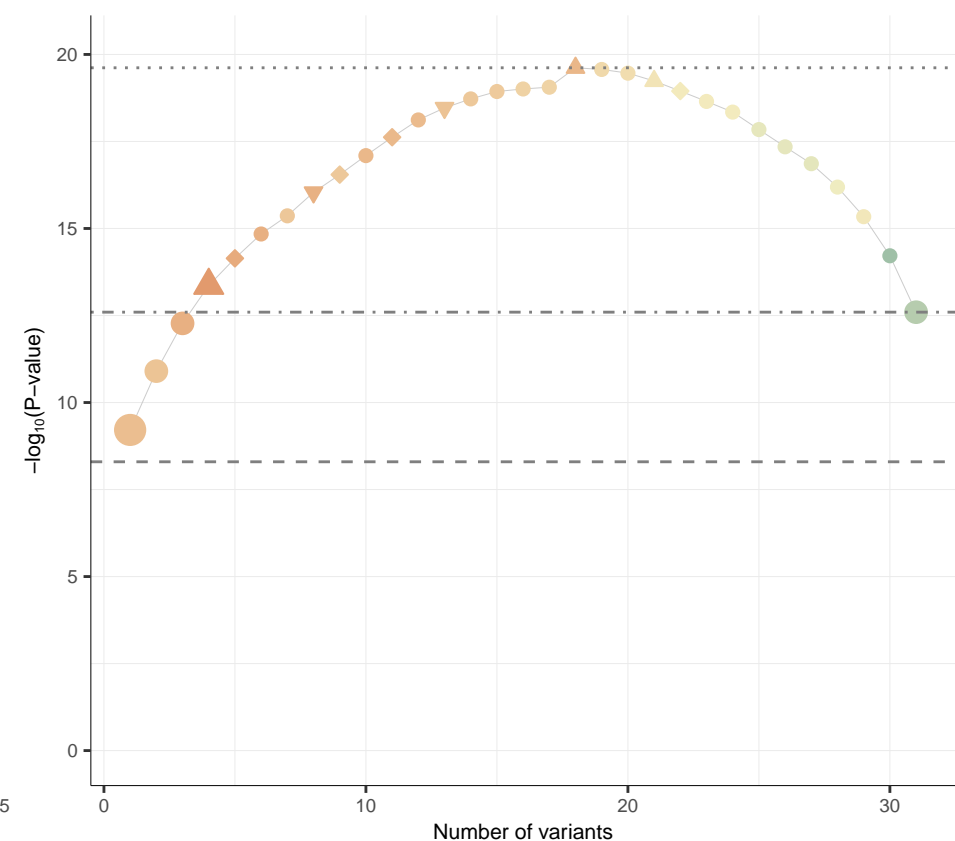
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

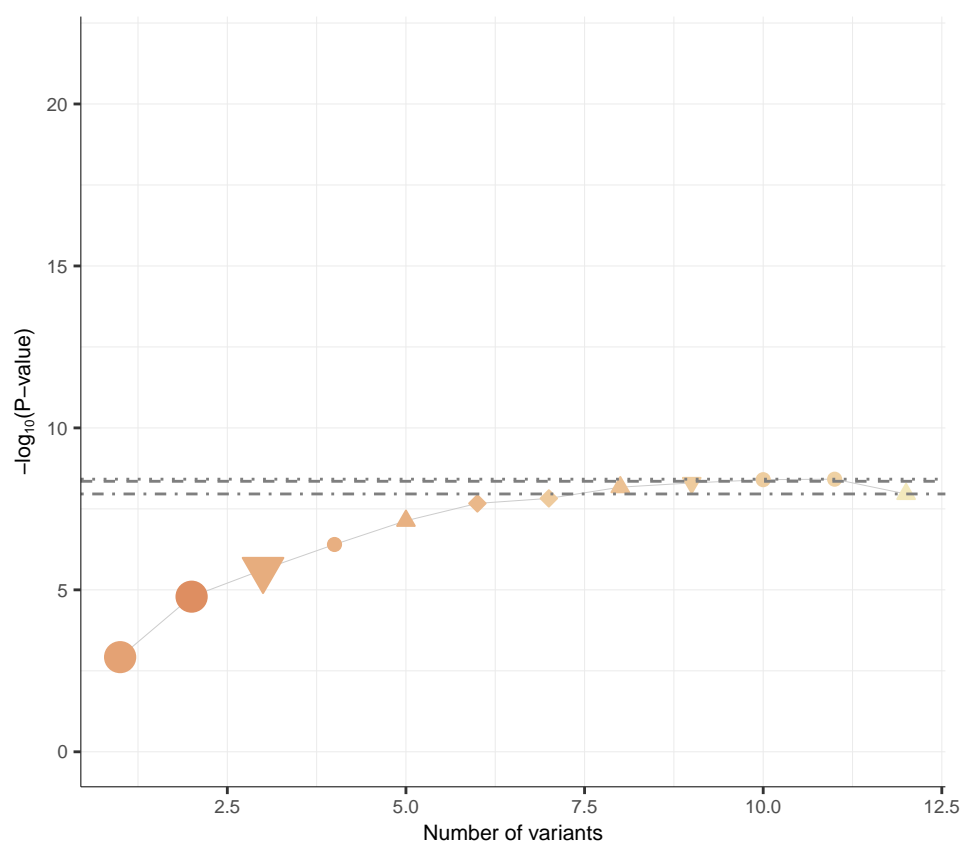
beta-citrylglutamate in plasma at NAALAD2 (LoF_mis)



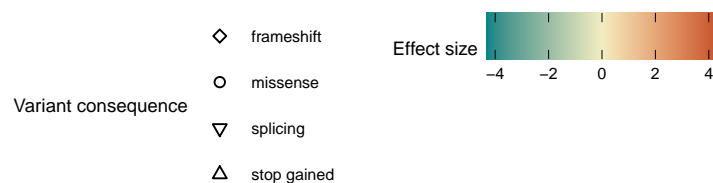
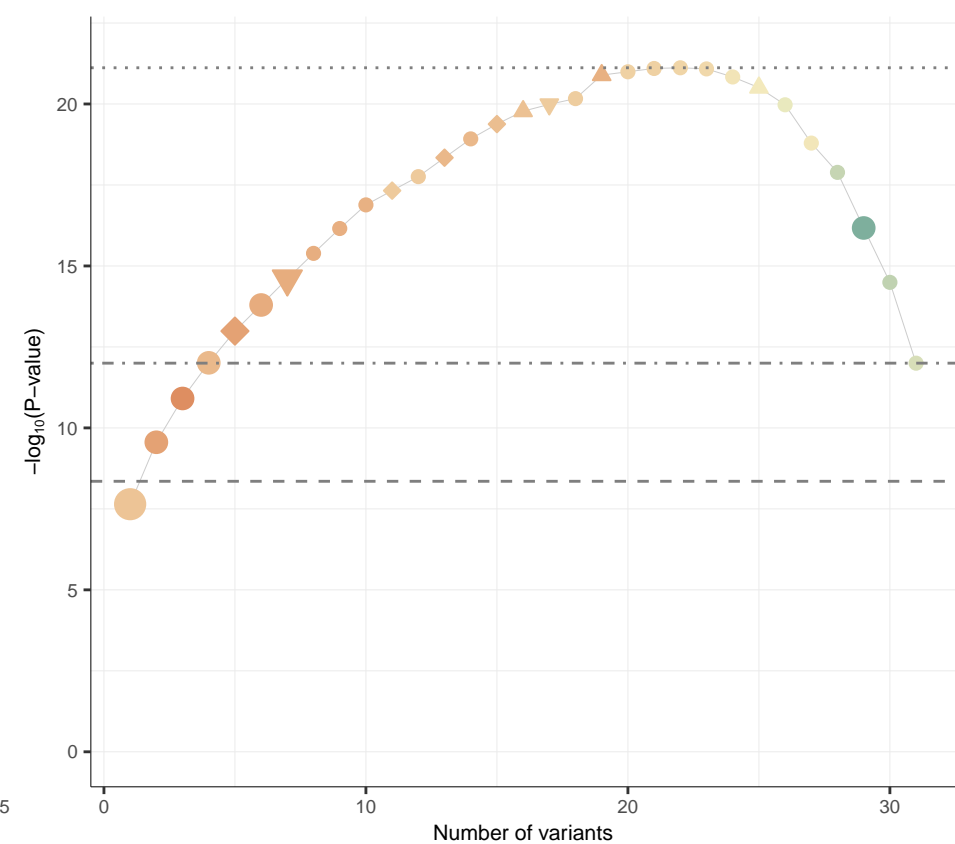
beta-citrylglutamate in plasma at NAALAD2 (HI_mis)



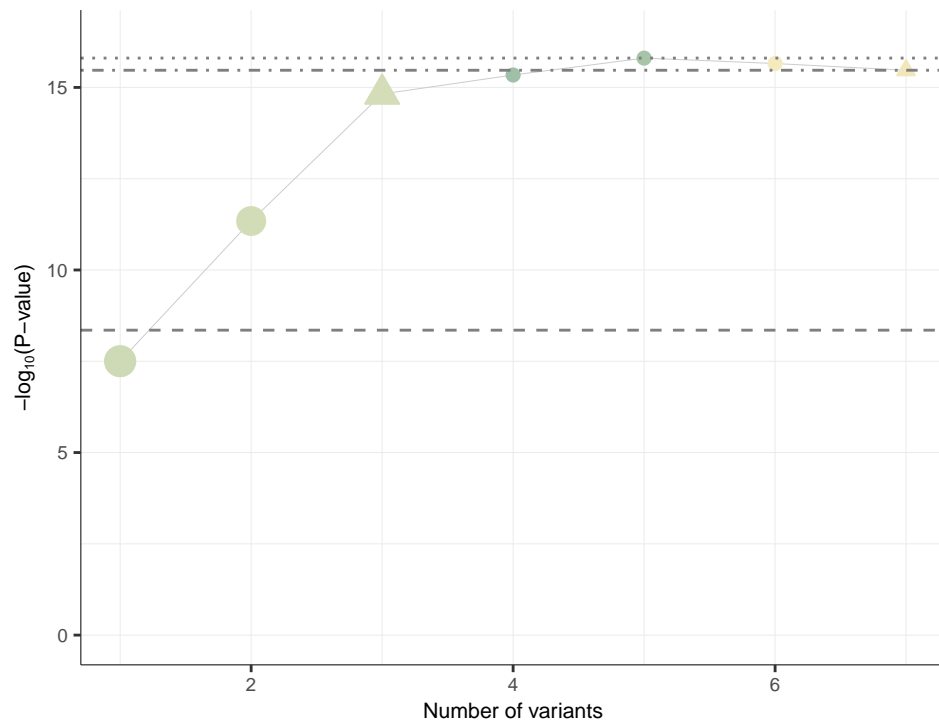
beta-citrylglutamate in urine at NAALAD2 (LoF_mis)



beta-citrylglutamate in urine at NAALAD2 (HI_mis)



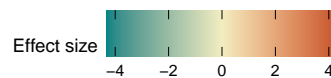
X – 12410 in urine at NAT1 (HI_mis)



Variant consequence

○ missense

△ stop gained



P-value

● >0.05

● <0.05

● <1e-3

● <1e-5

● <5e-8

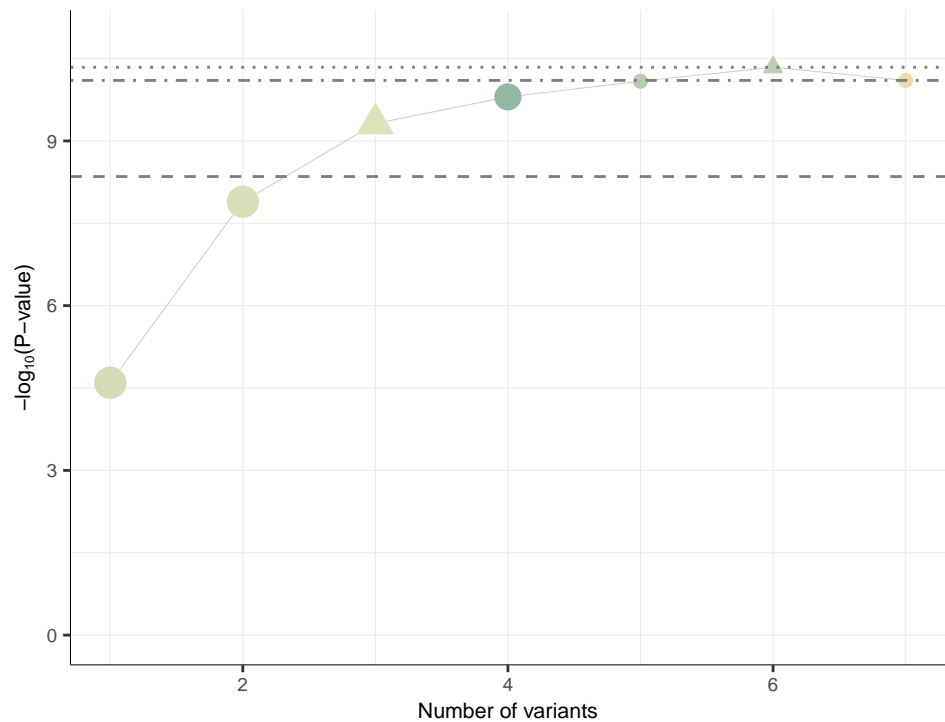
Thresholds

— Significance Threshold

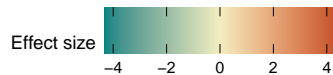
- - - Total P-value

... Lowest P-value

X – 15461 in urine at *NAT1* (HI_mis)



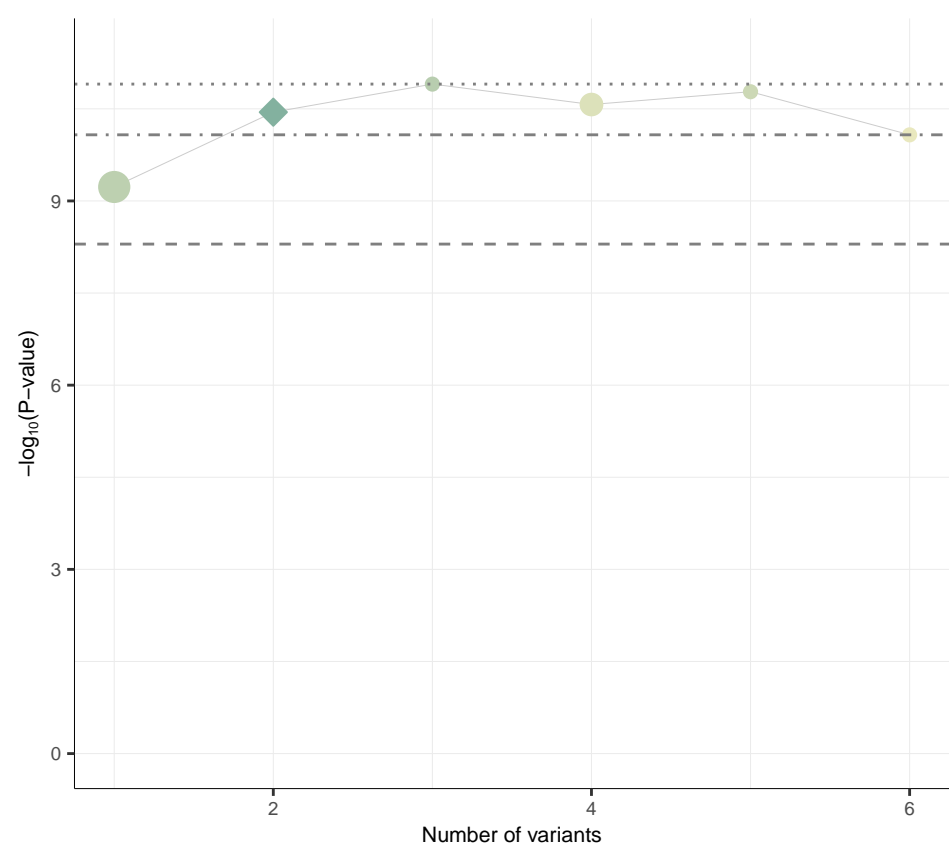
Variant consequence
 ○ missense
 △ stop gained



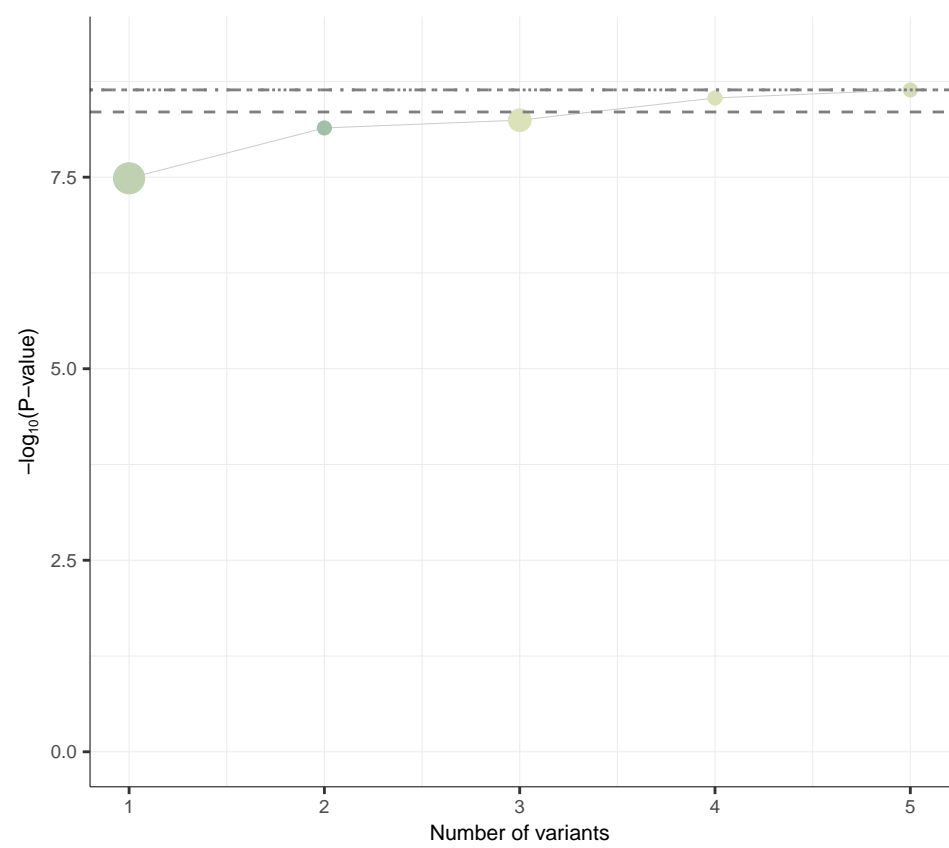
P-value
 ● >0.05
 ● <0.05
 ● <1e-3

Thresholds
 - - Significance Threshold
 - - - Total P-value
 . . . Lowest P-value

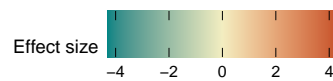
N-acetylarginine in plasma at *NAT8* (HI_mis)



N-acetylarginine in urine at *NAT8* (HI_mis)



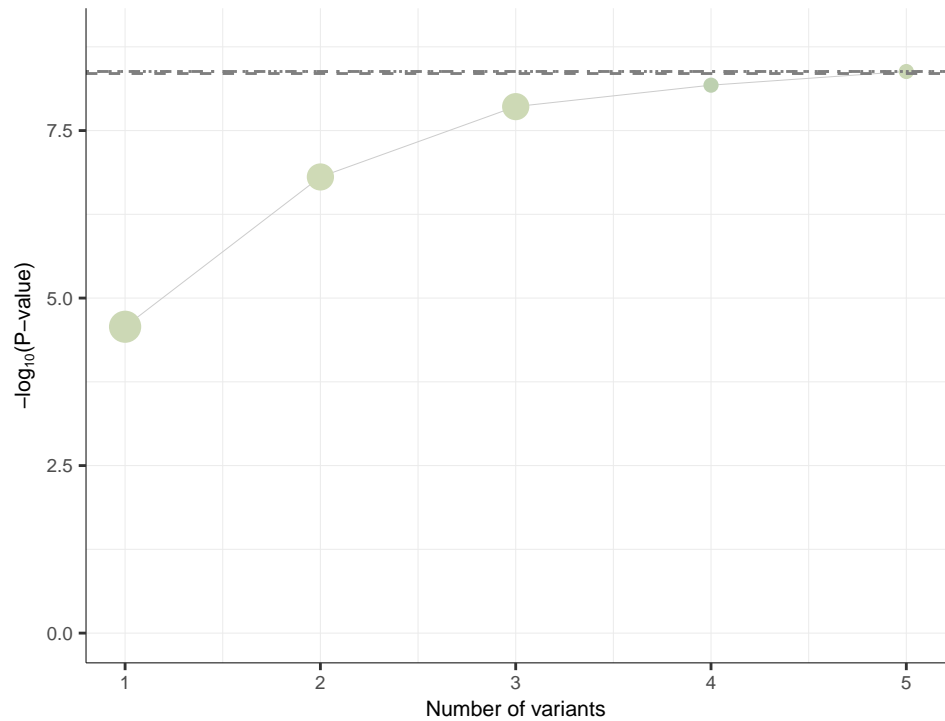
Variant consequence ○ missense



P-value
 ● >0.05
 ● <0.05
 ● <1e-3
 ● <1e-5
 ● <5e-8

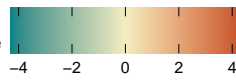
Thresholds
 --- Significance Threshold
 - - - Total P-value
 Lowest P-value

N-acetylhistidine in urine at NAT8 (HI_mis)



Variant consequence ○ missense

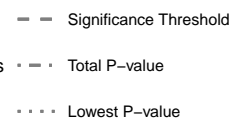
Effect size



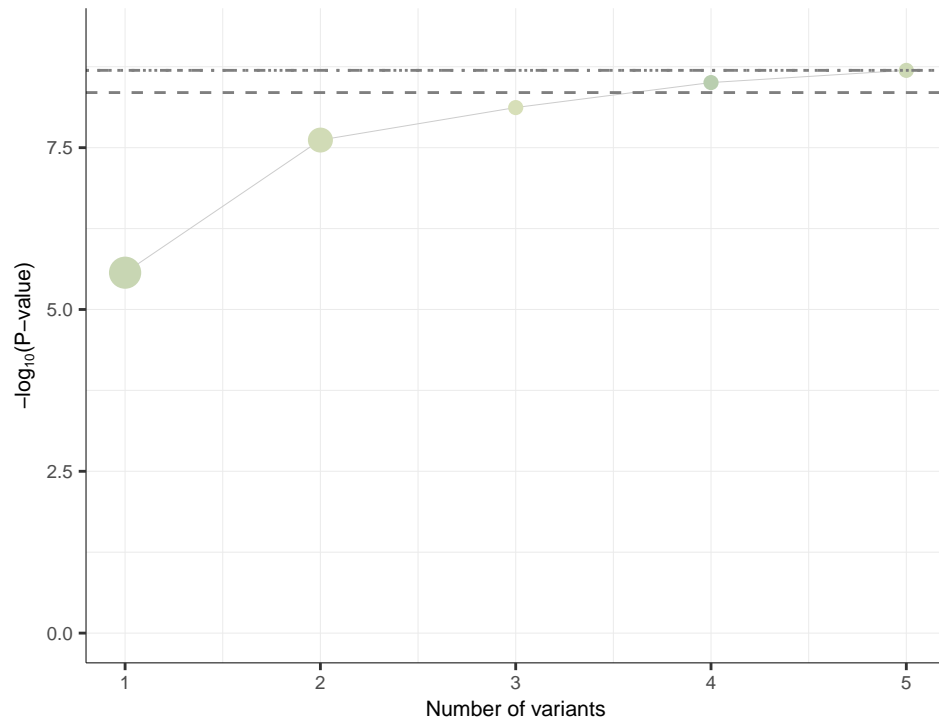
P-value



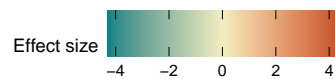
Thresholds



N-acetylisooleucine in urine at *NAT8* (HI_mis)



Variant consequence ○ missense



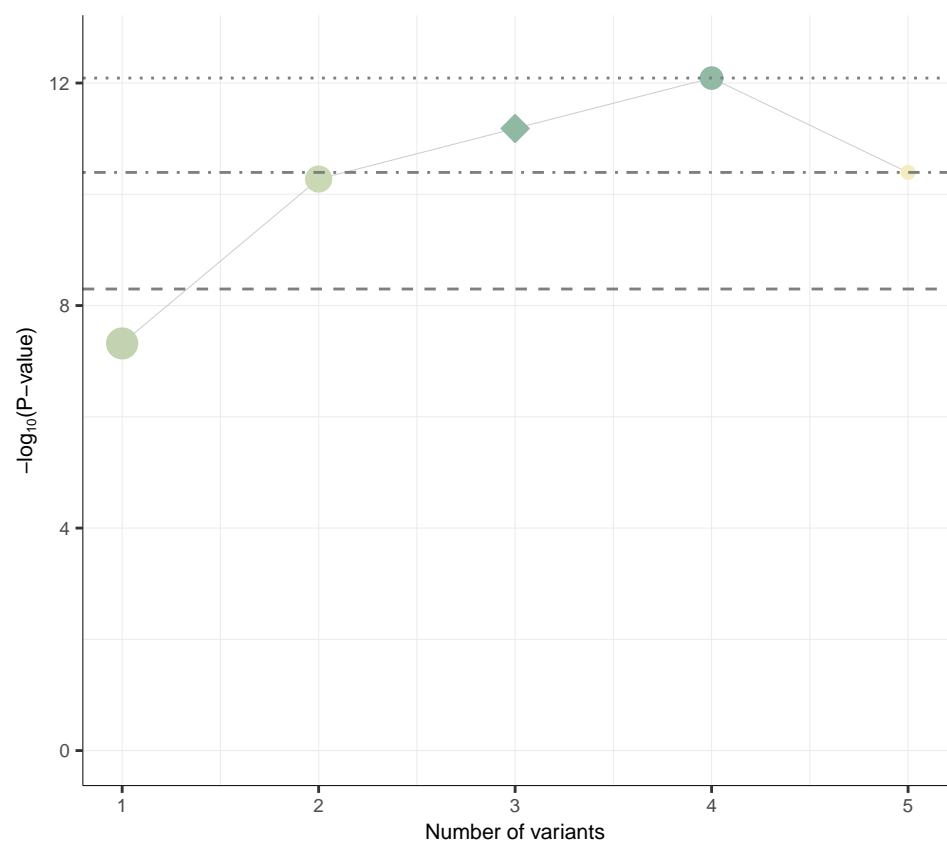
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5

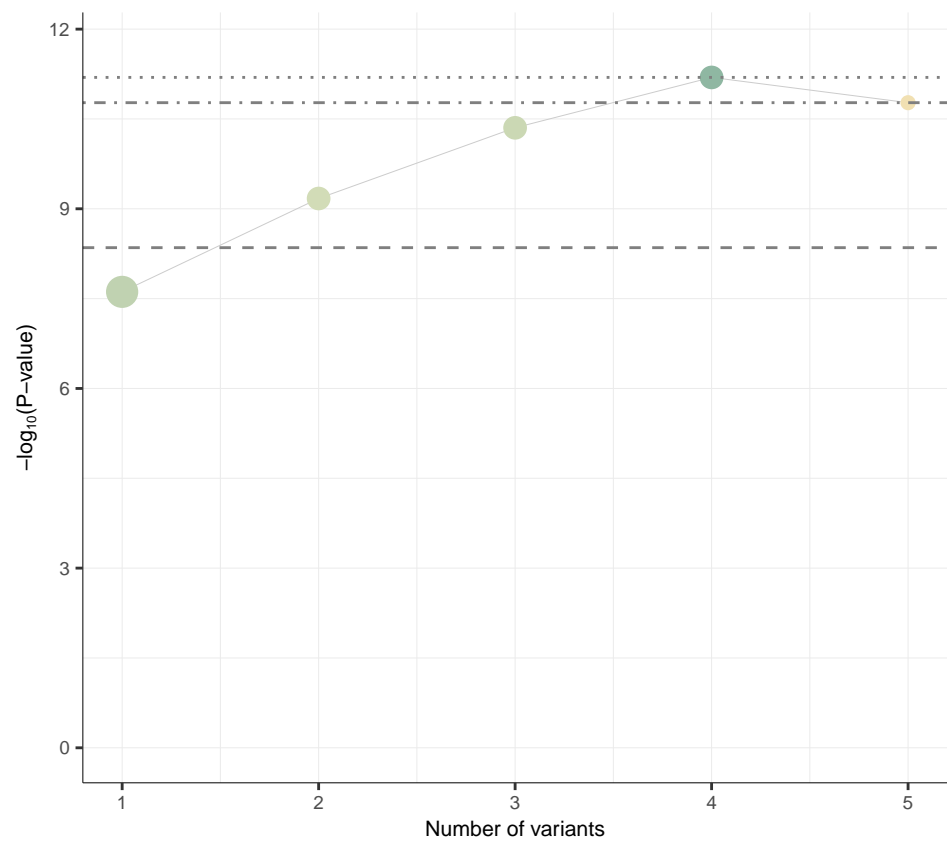
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

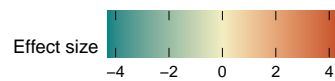
N-acetyltryptophan in plasma at *NAT8* (HI_mis)



N-acetyltryptophan in urine at *NAT8* (HI_mis)



Variant consequence ○ missense



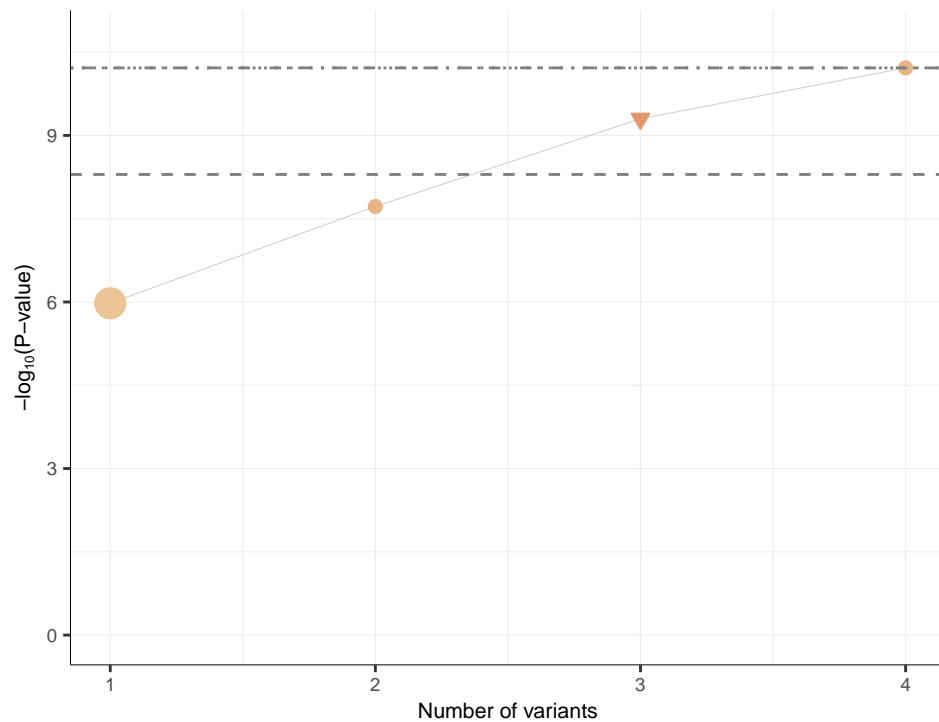
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8

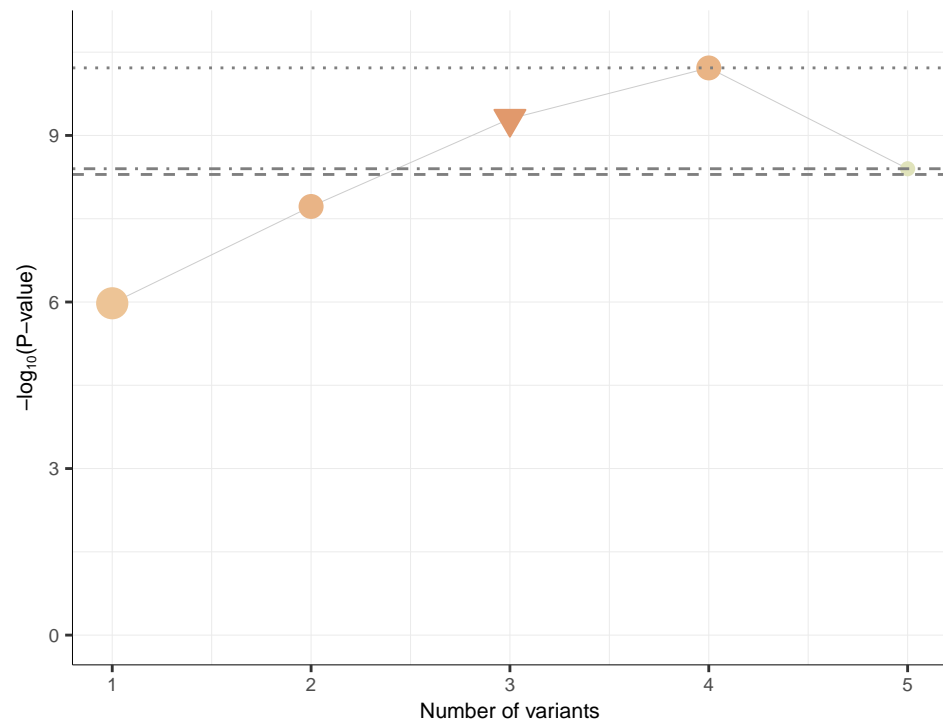
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

alpha-ketoglutarate* in plasma at *N/T2* (LoF_mis)



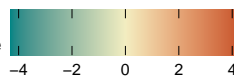
alpha-ketoglutarate* in plasma at *N/T2* (HI_mis)



Variant consequence

- missense
- ▽ splicing

Effect size



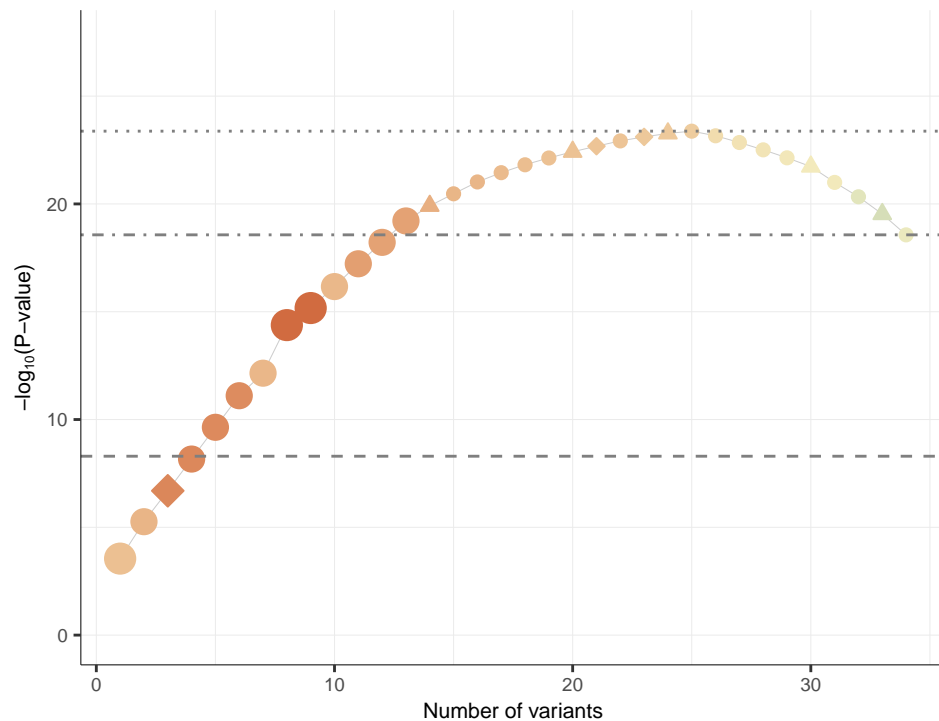
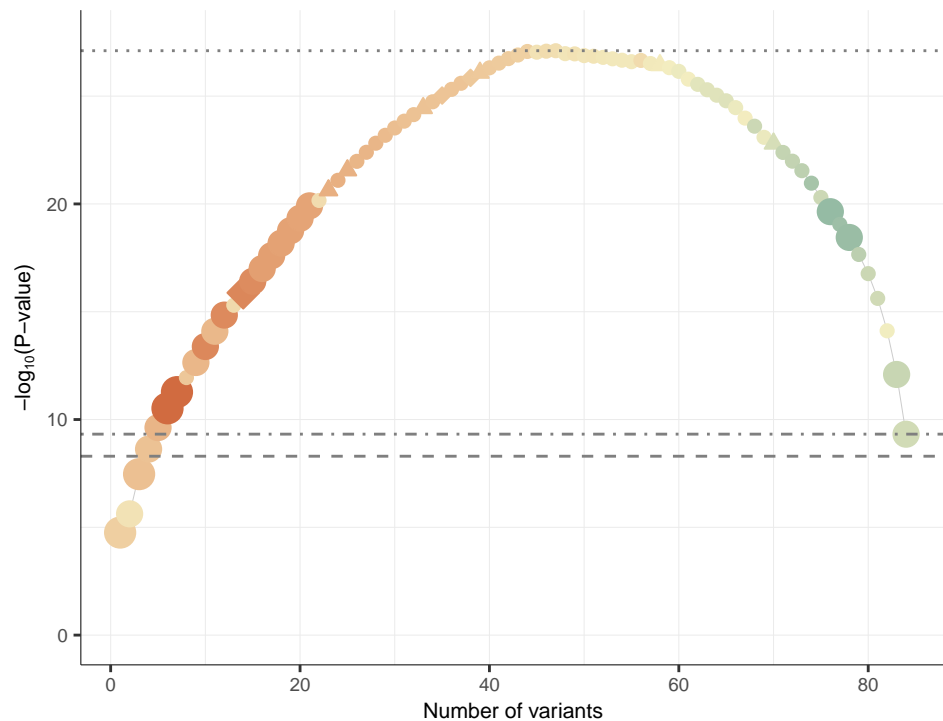
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5

Significance Threshold

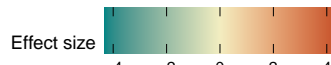
Thresholds

- - - Total P-value
- ... Lowest P-value

5-oxoproline in plasma at *OPLAH* (LoF_mis)

5-oxoproline in plasma at *OPLAH* (HI_mis)


Variant consequence

- ◇ frameshift
- missense
- △ stop gained



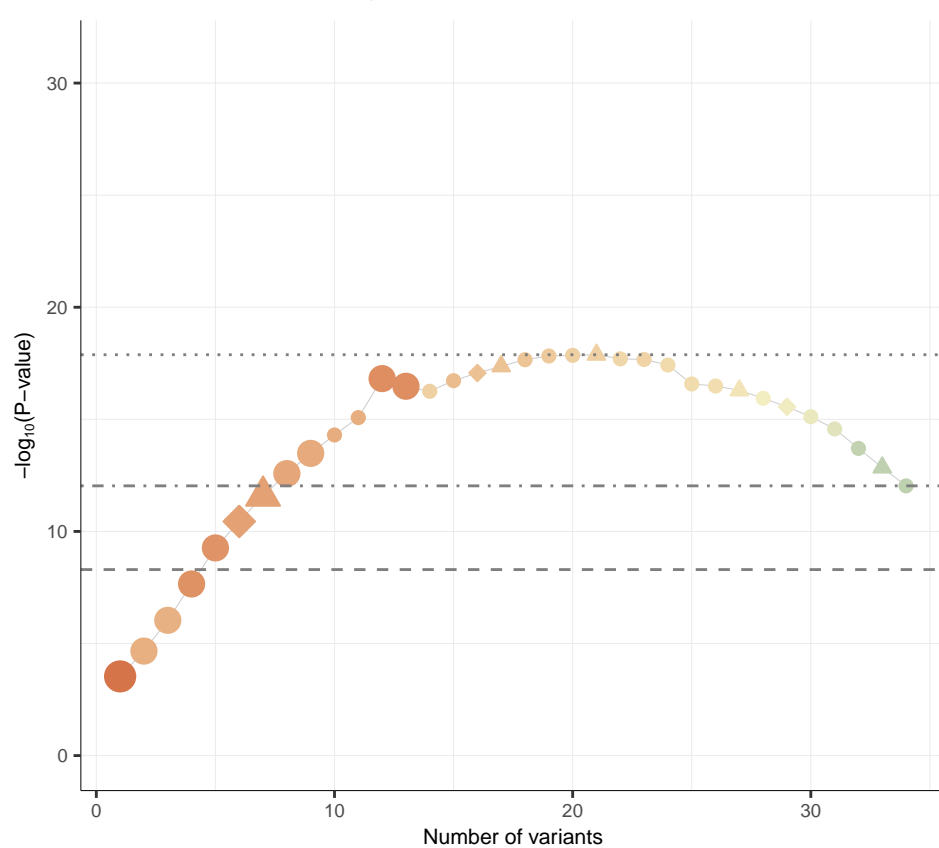
P-value

- >0.05
- <0.05
- <1e-3

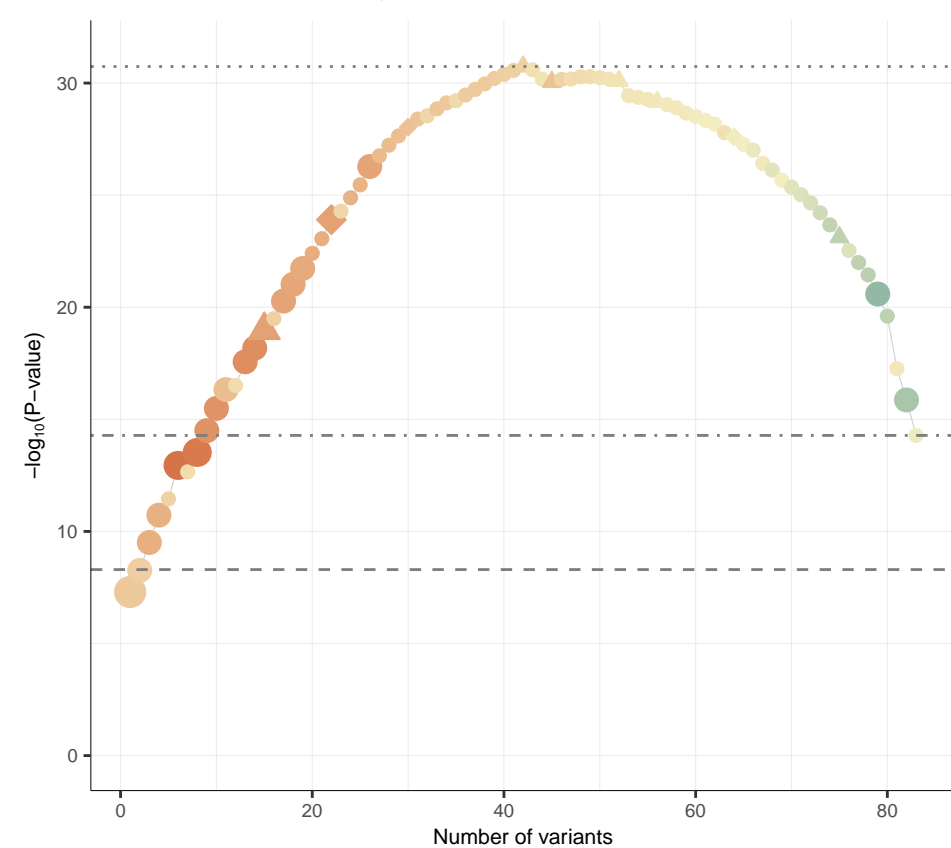
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

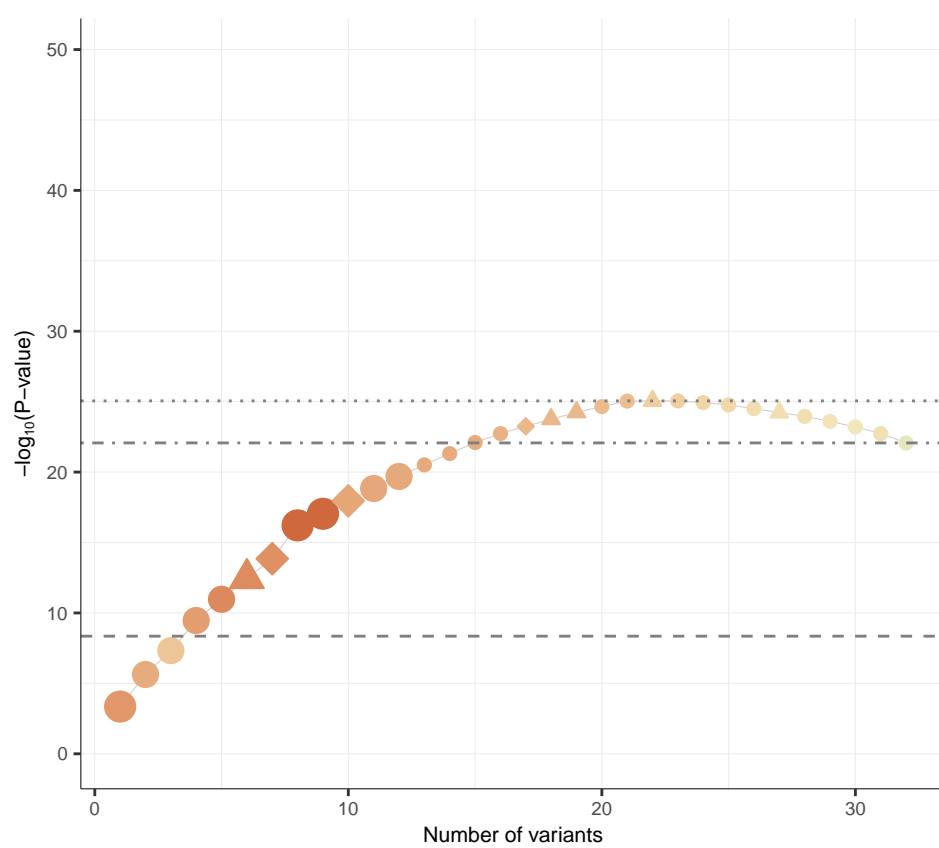
6-oxopiperidine-2-carboxylate in plasma at *OPLAH* (LoF_mis)



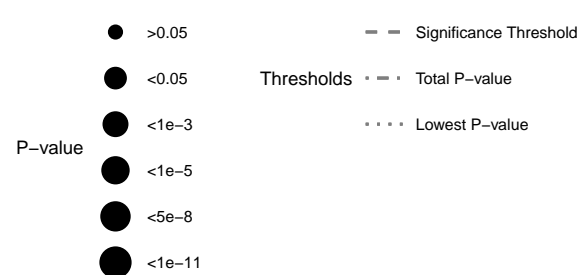
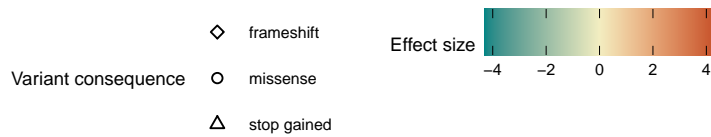
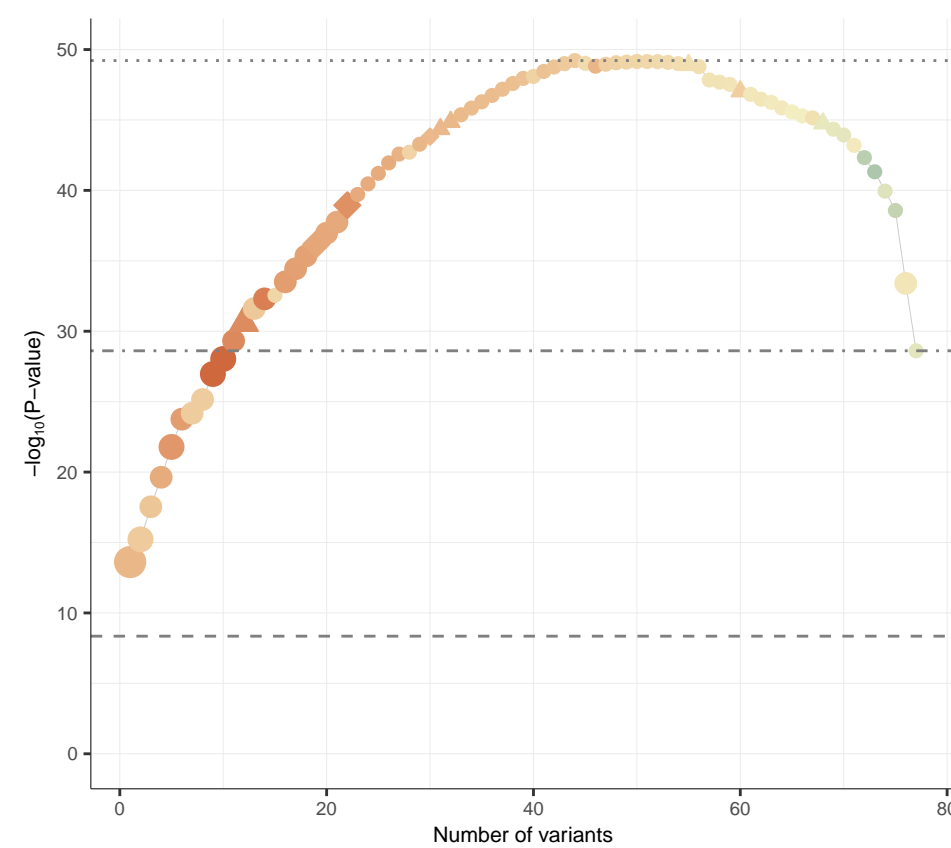
6-oxopiperidine-2-carboxylate in plasma at *OPLAH* (HI_mis)



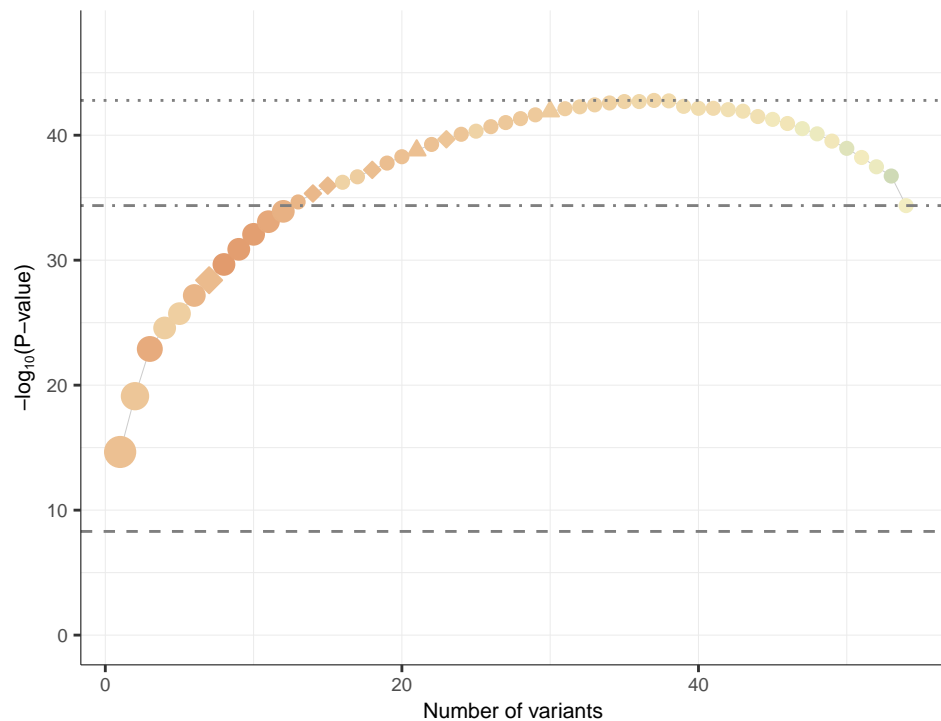
6-oxopiperidine-2-carboxylate in urine at *OPLAH* (LoF_mis)



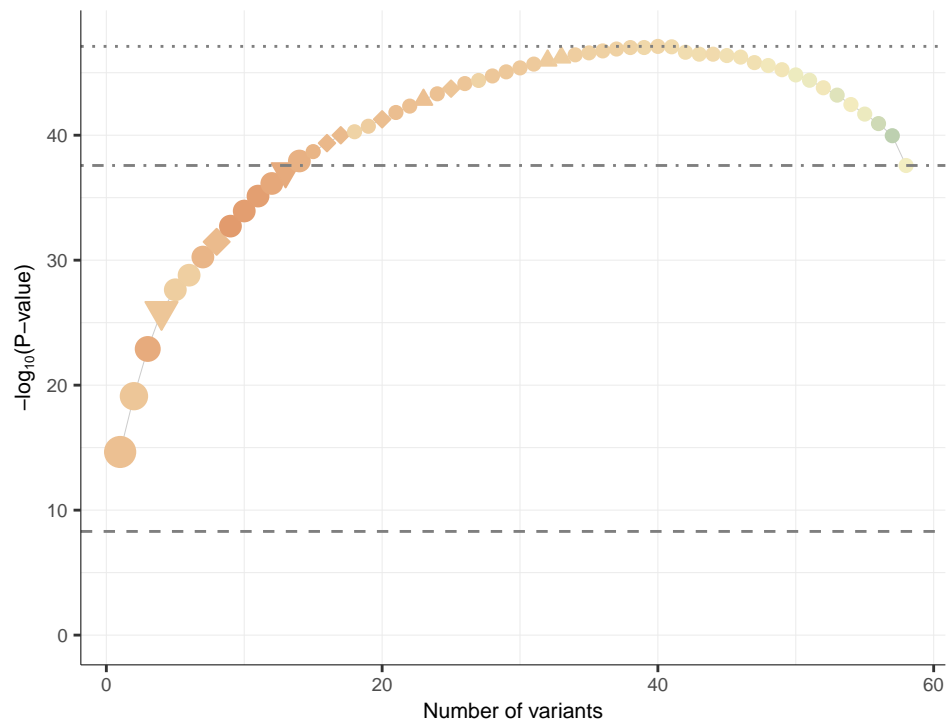
6-oxopiperidine-2-carboxylate in urine at *OPLAH* (HI_mis)



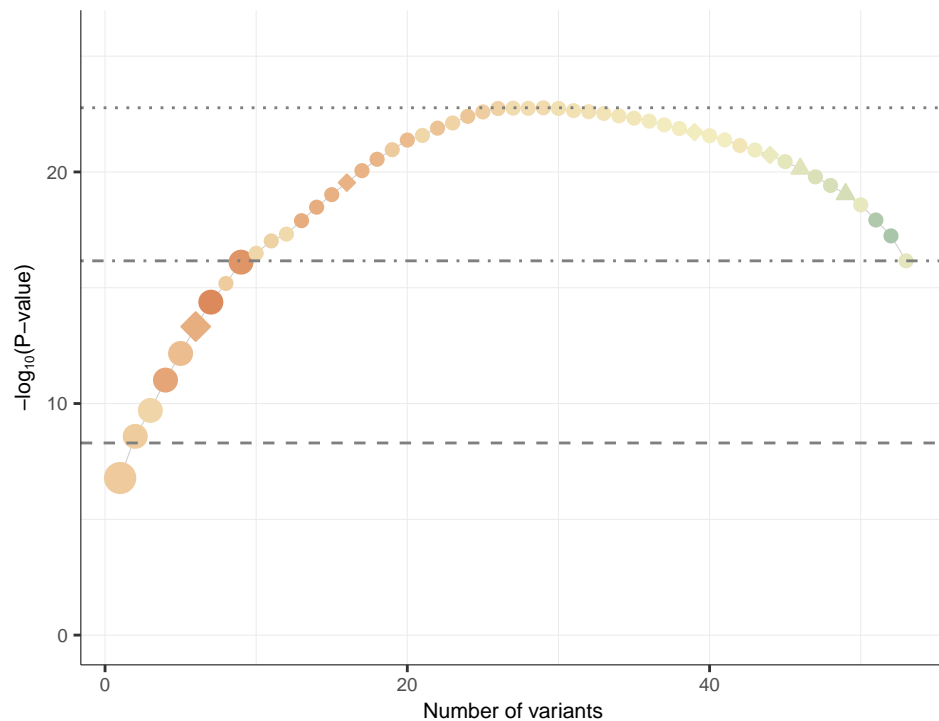
gamma-glutamylphenylalanine in plasma at *PAH* (LoF_mis)



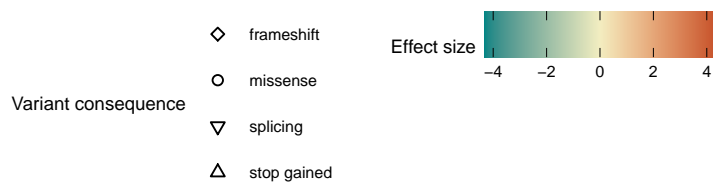
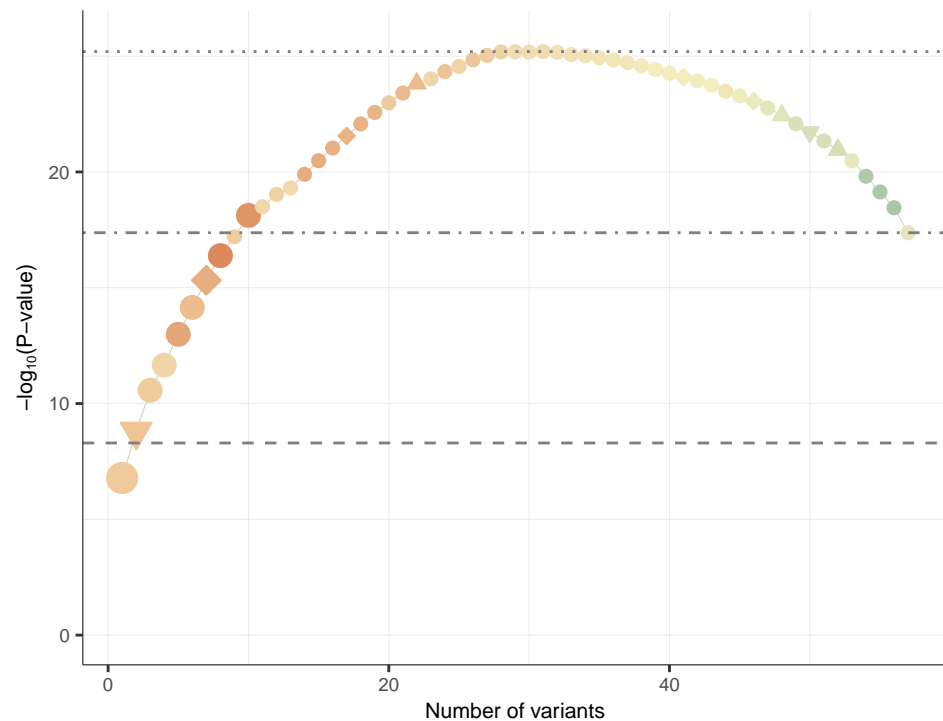
gamma-glutamylphenylalanine in plasma at *PAH* (HI_mis)



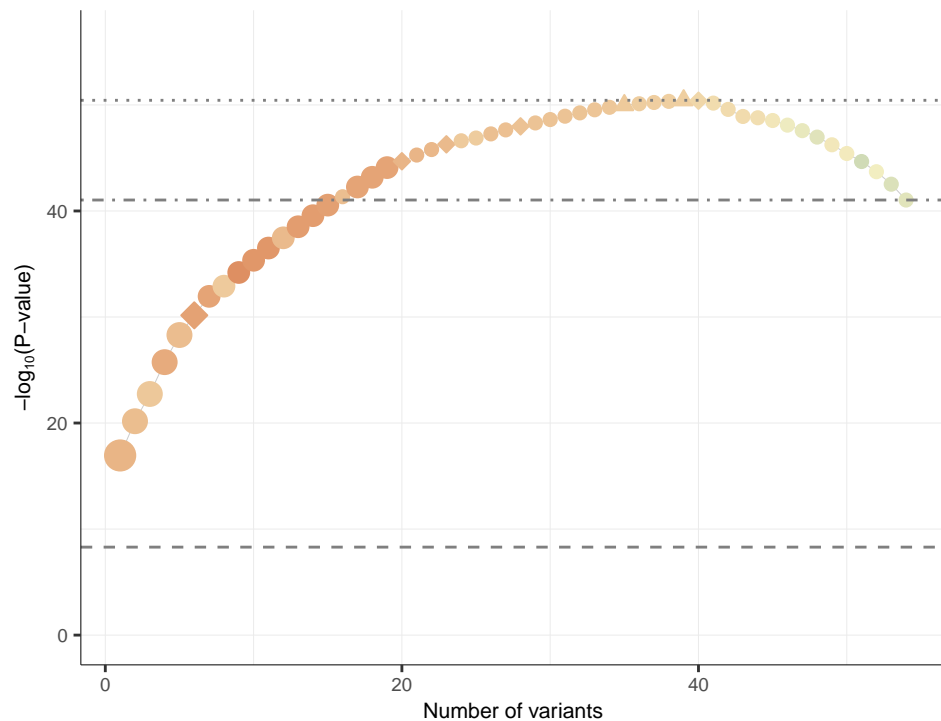
N-formylphenylalanine in plasma at *PAH* (LoF_mis)



N-formylphenylalanine in plasma at *PAH* (HI_mis)

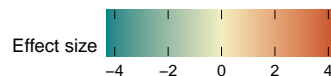


phenylalanine in plasma at *PAH* (LoF_mis)

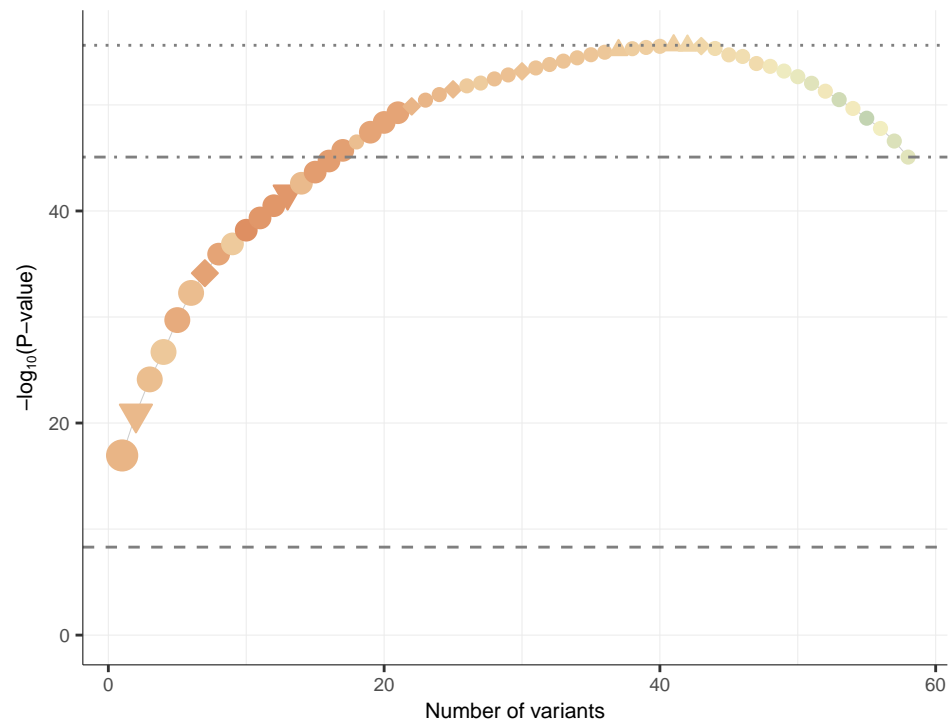


Variant consequence

- ◇ frameshift
- missense
- ▽ splicing
- △ stop gained



phenylalanine in plasma at *PAH* (HI_mis)



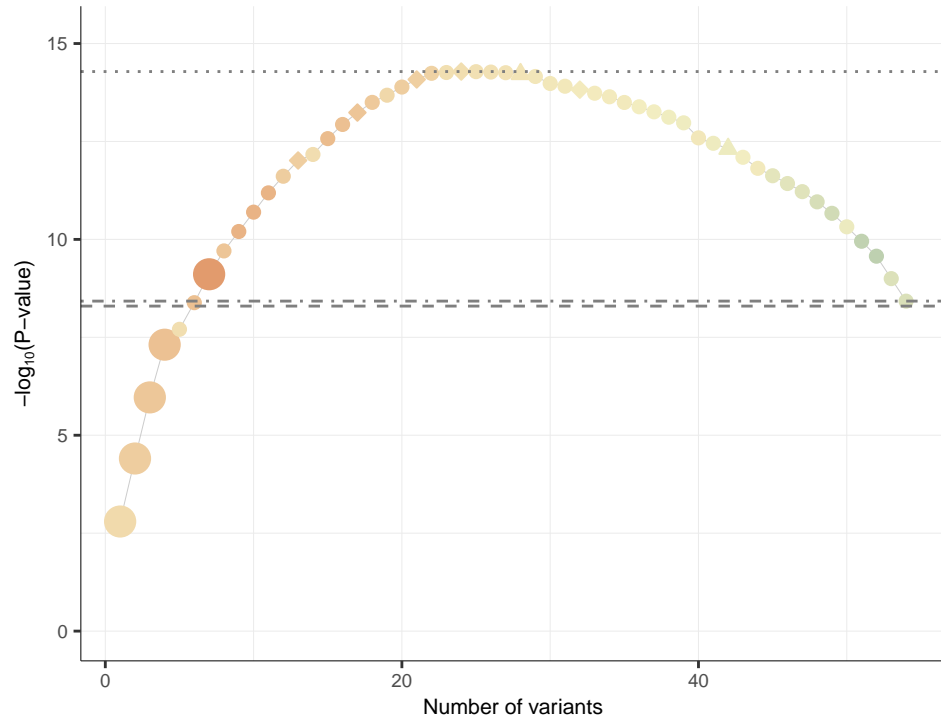
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8
- <1e-11

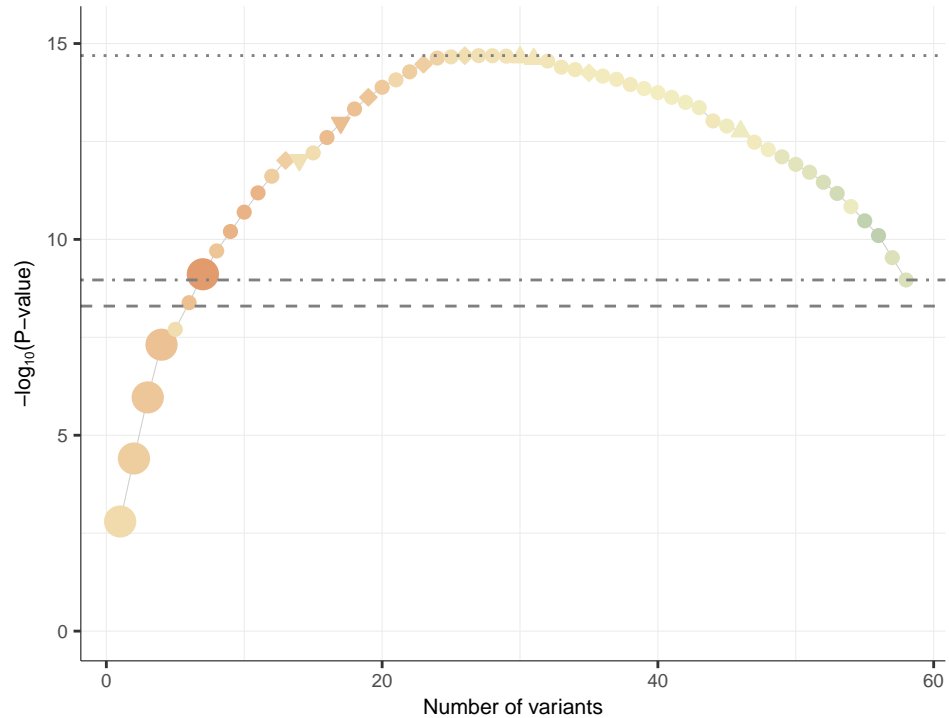
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

phenyllactate (PLA) in plasma at *PAH* (LoF_mis)



phenyllactate (PLA) in plasma at *PAH* (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- ▽ splicing
- △ stop gained

Effect size

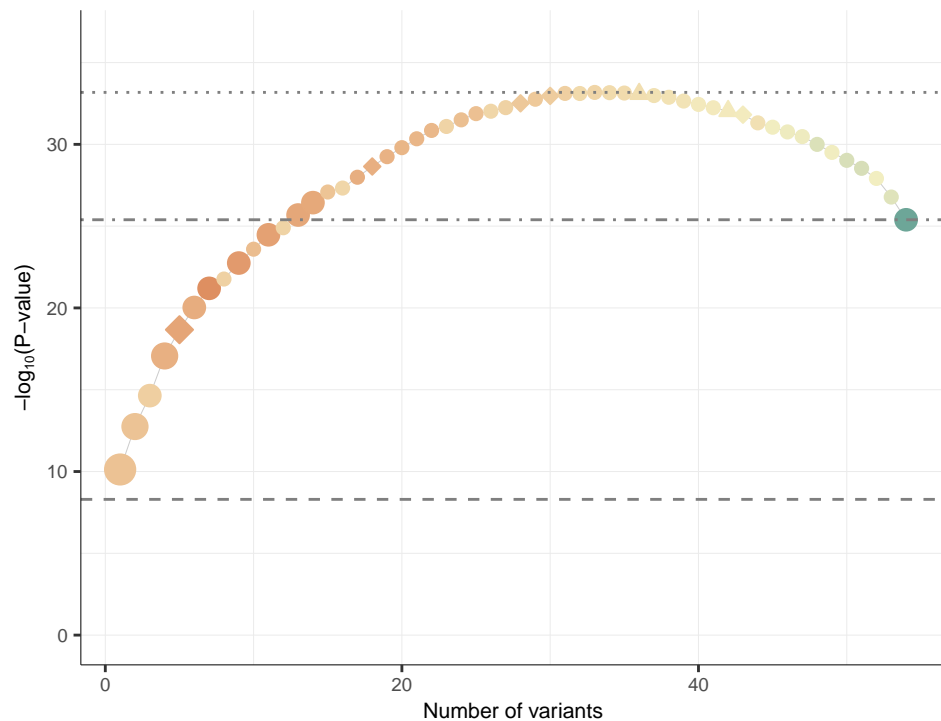
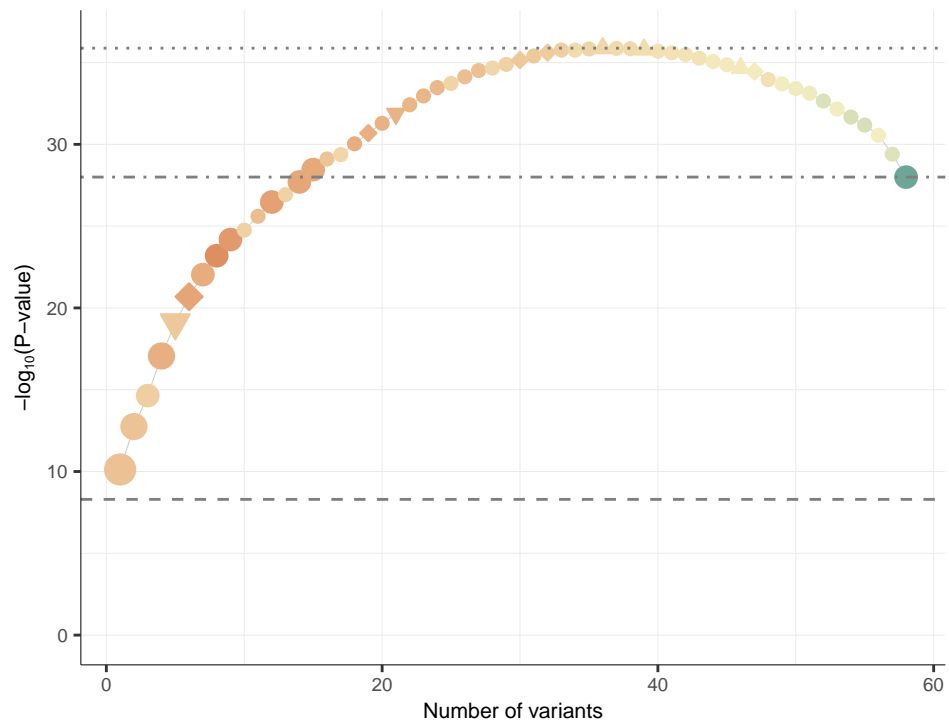
-4 -2 0 2 4

P-value

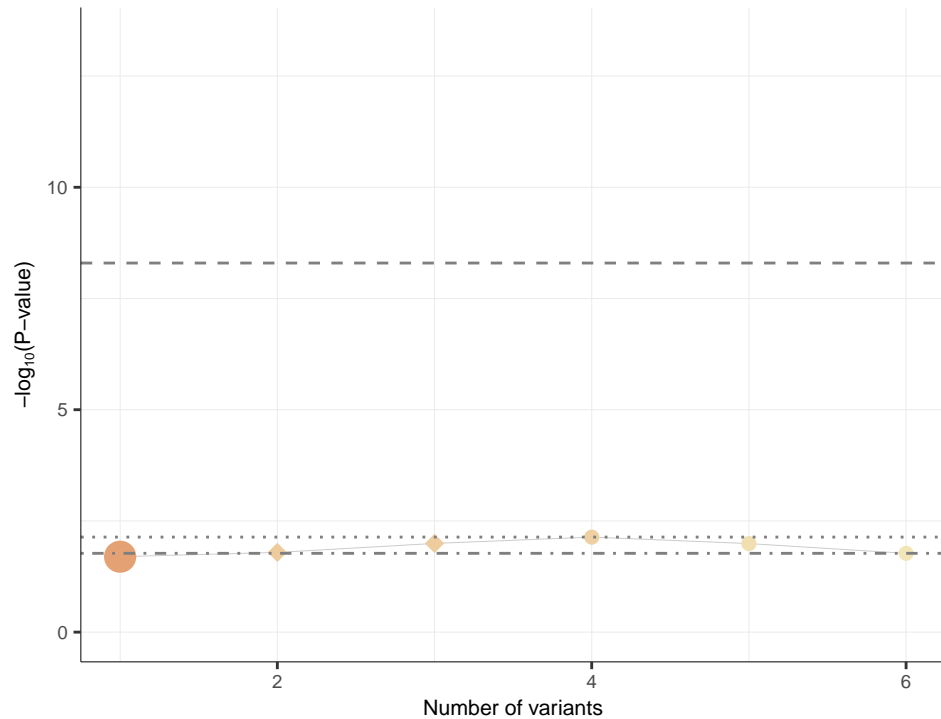
- >0.05
- <0.05

Thresholds

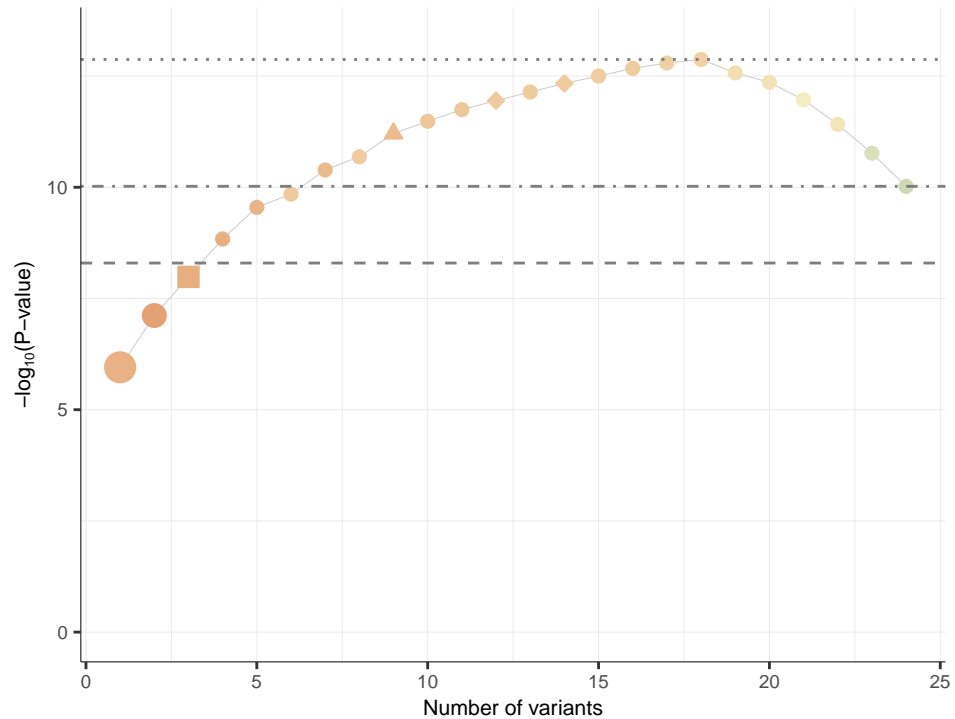
- — Significance Threshold
- - - Total P-value
- · · Lowest P-value

phenylpyruvate in plasma at *PAH* (LoF_mis)phenylpyruvate in plasma at *PAH* (HI_mis)

acisoga in plasma at PAOX (LoF_mis)



acisoga in plasma at PAOX (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- start/stop lost
- △ stop gained



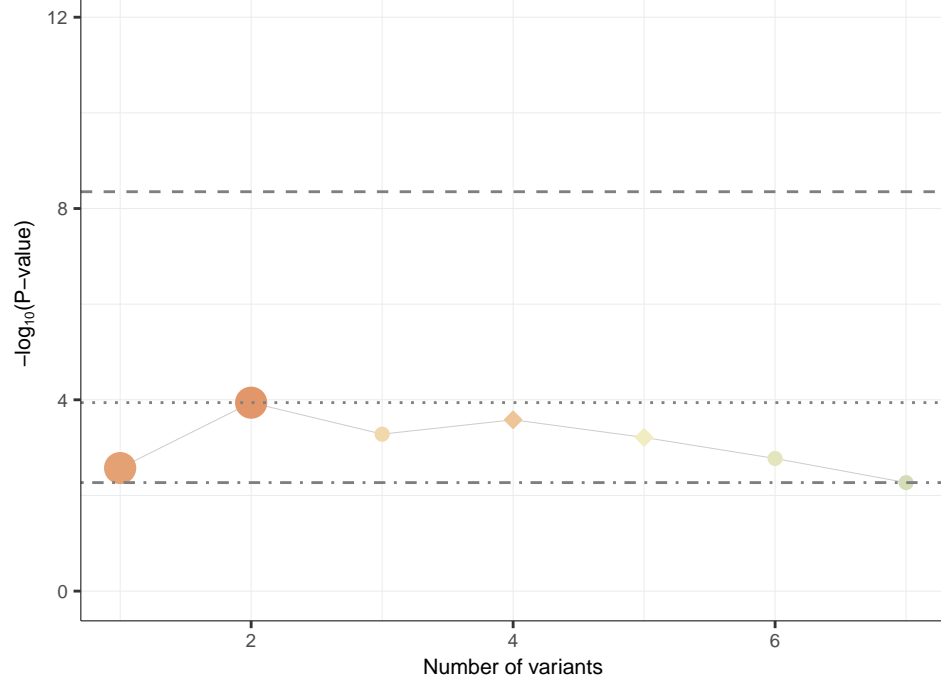
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5

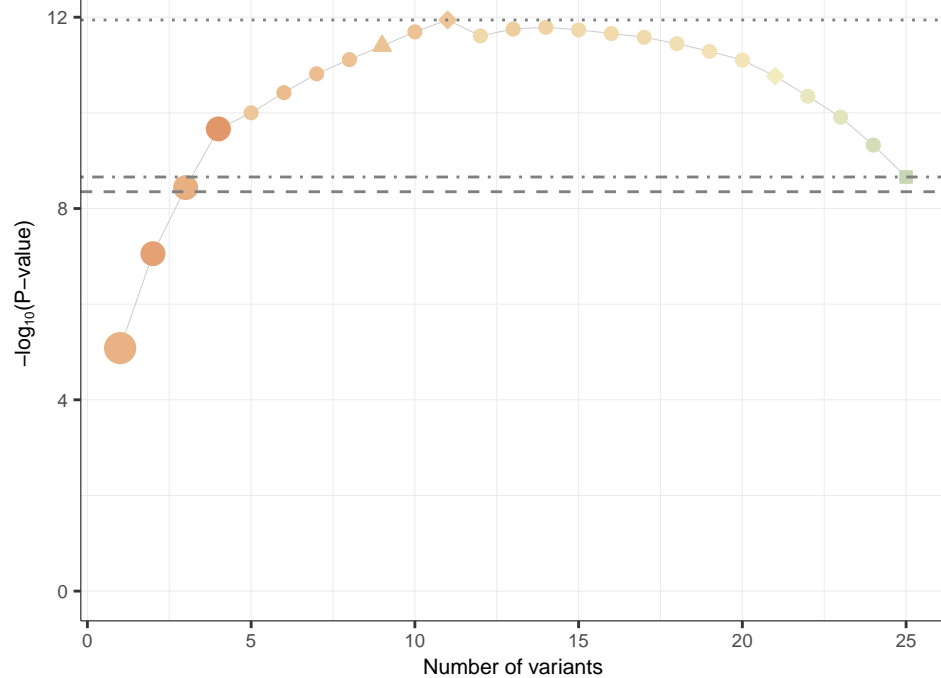
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

diacetylpermidine* in urine at PAOX (LoF_mis)

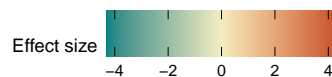


diacetylpermidine* in urine at PAOX (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- start/stop lost
- △ stop gained



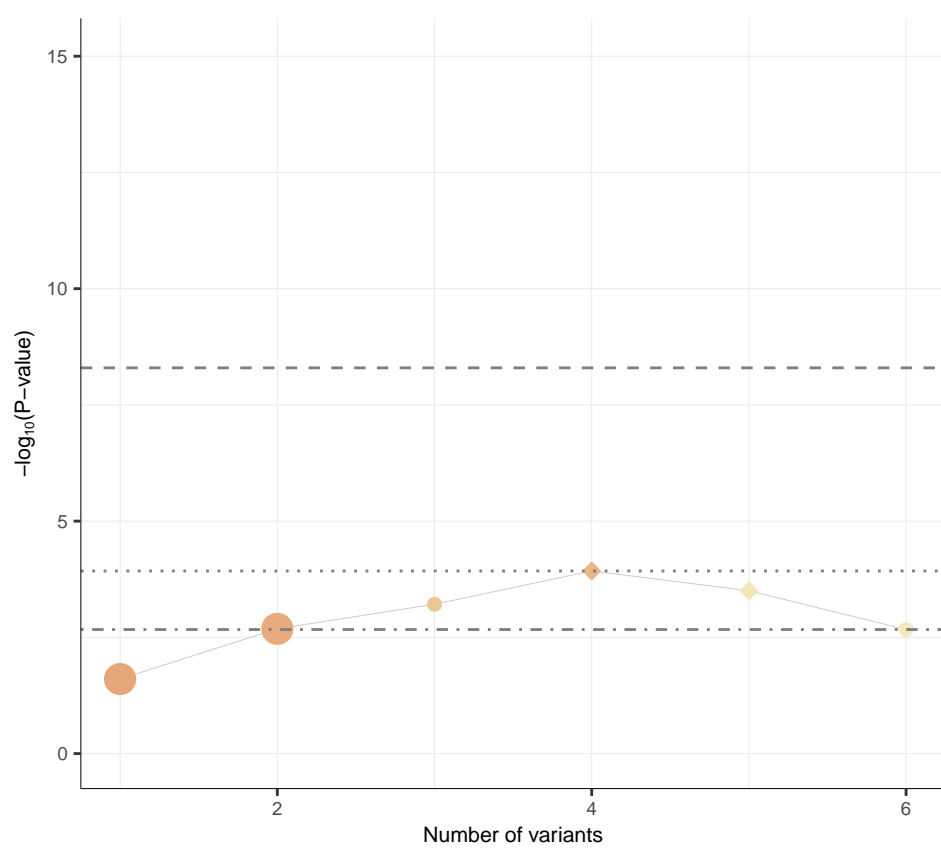
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5

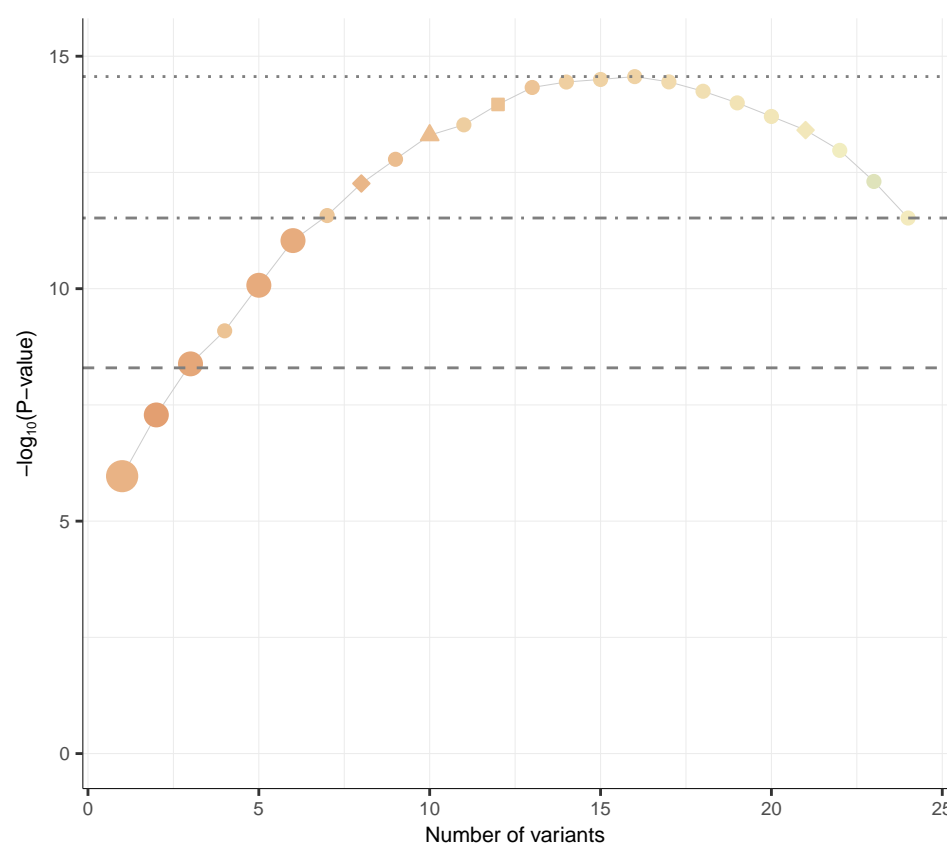
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

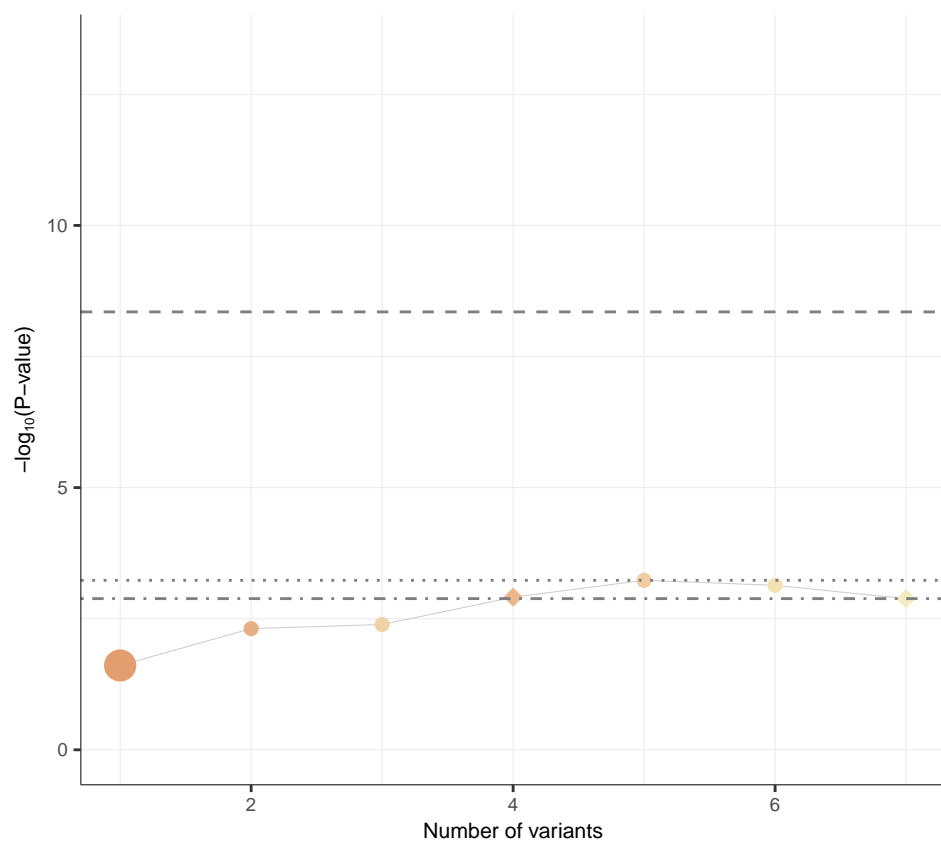
N-acetyl-isoptureanine in plasma at *PAOX* (LoF_mis)



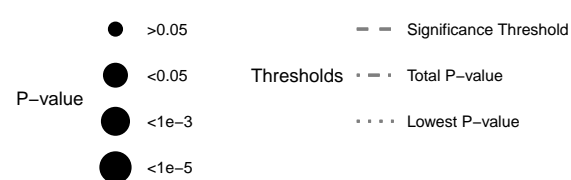
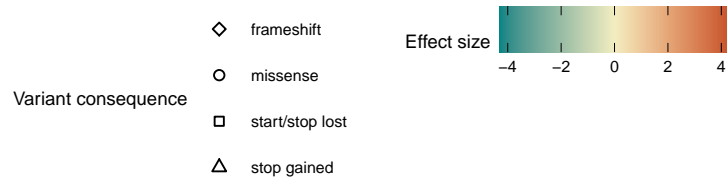
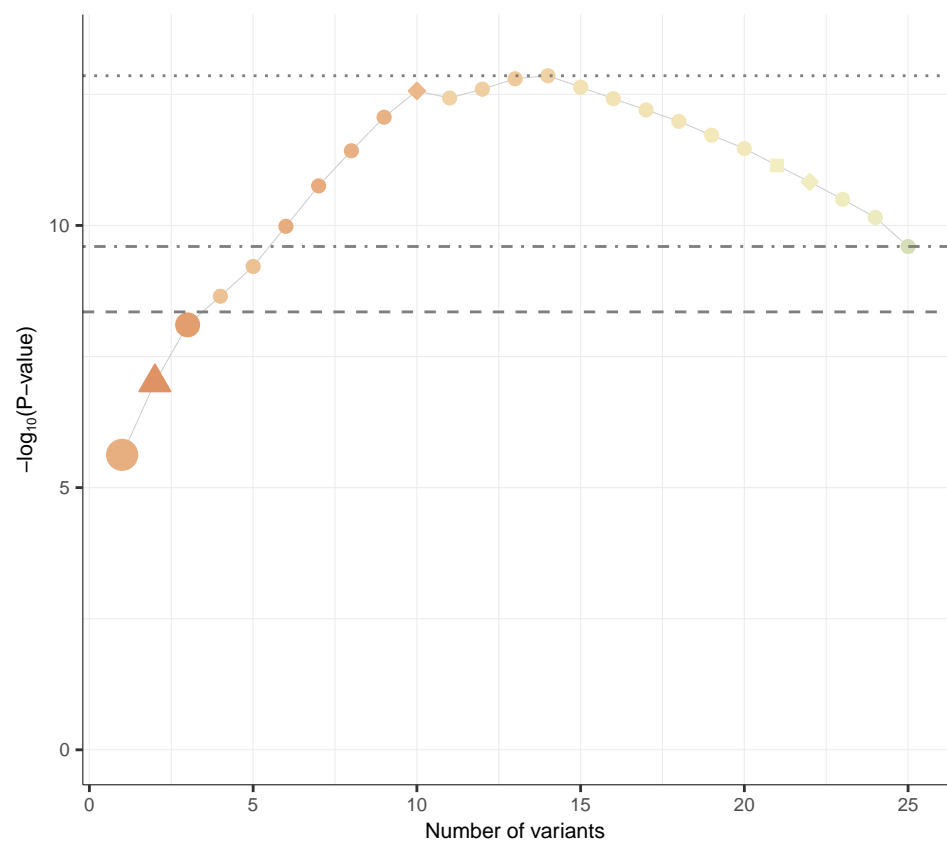
N-acetyl-isoptureanine in plasma at *PAOX* (HI_mis)



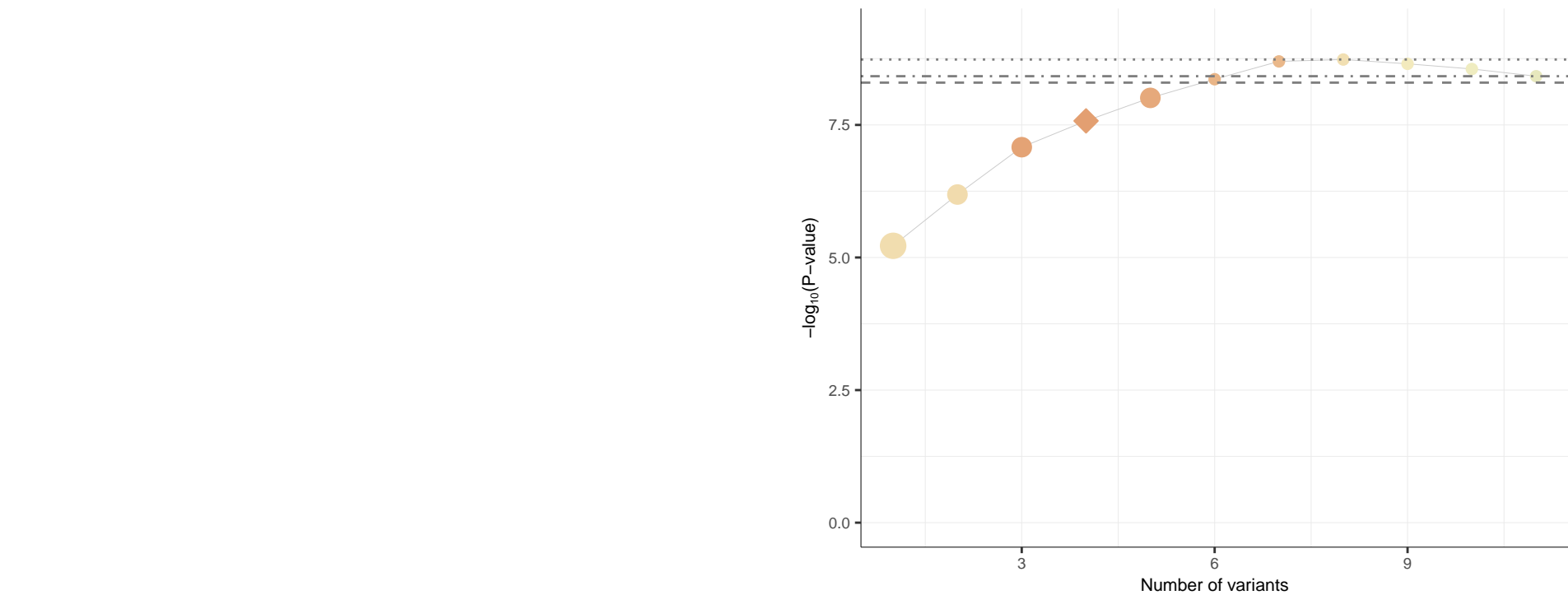
N-acetyl-isoptureanine in urine at *PAOX* (LoF_mis)



N-acetyl-isoptureanine in urine at *PAOX* (HI_mis)

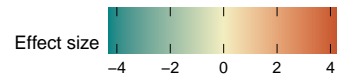


1-stearoyl-2-linoleoyl-GPI (18:0/18:2) in plasma at PAQR7 (HI_mis)



Variant consequence

- ◇ frameshift
- missense



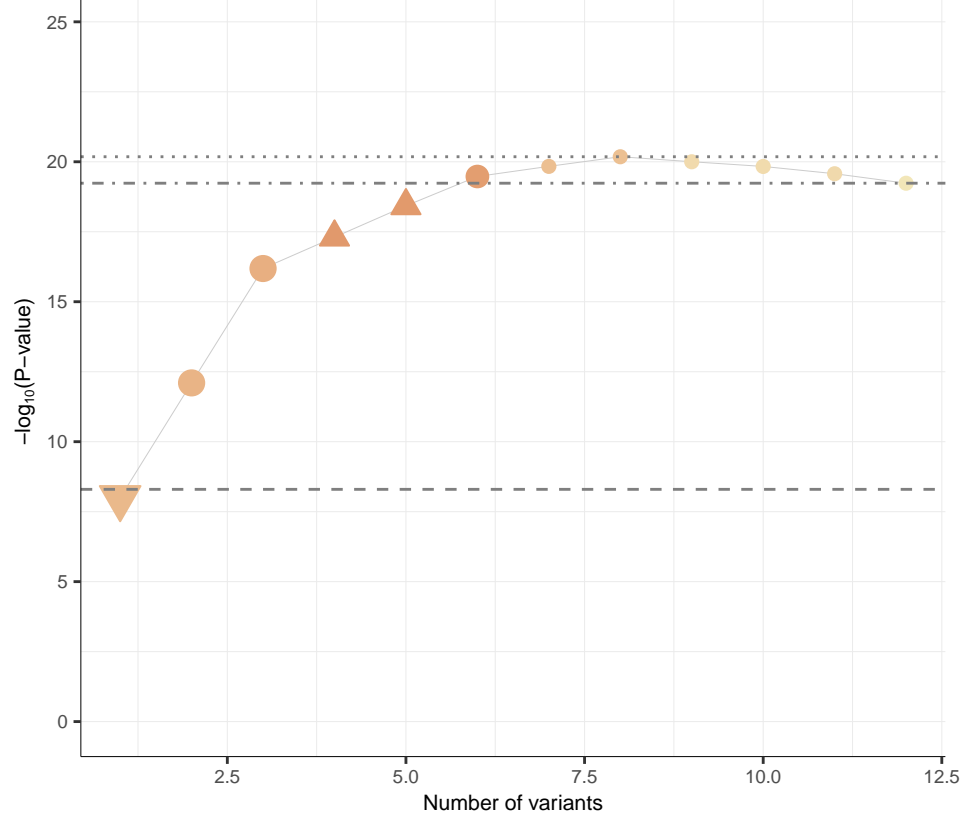
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5

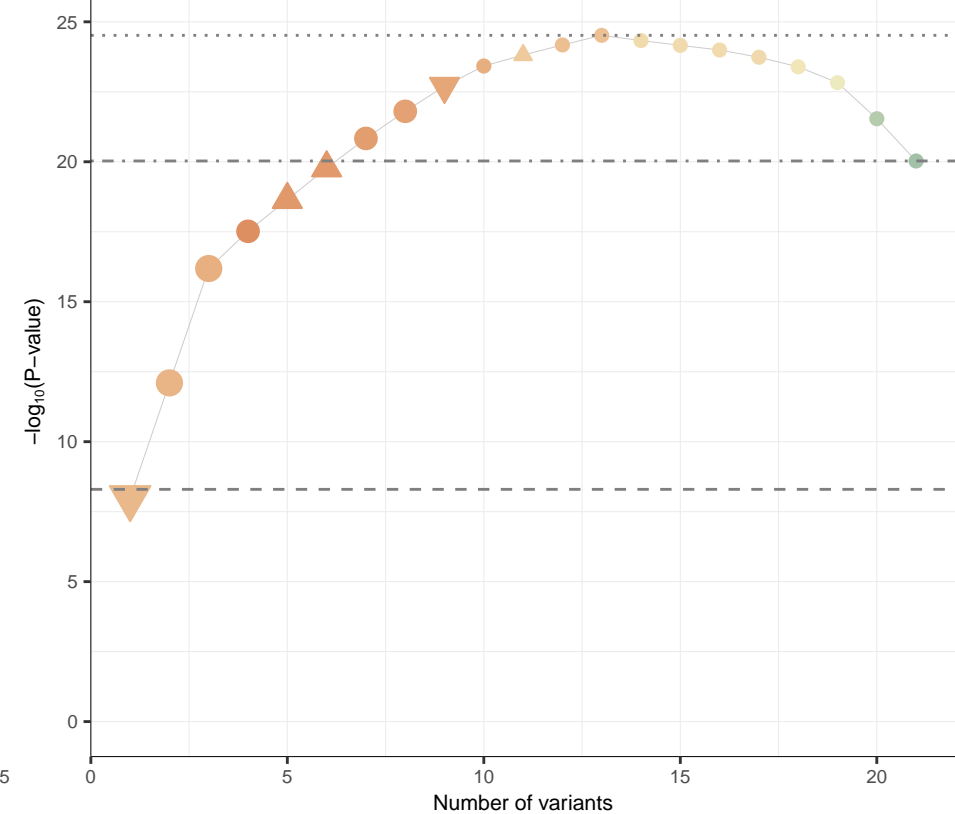
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

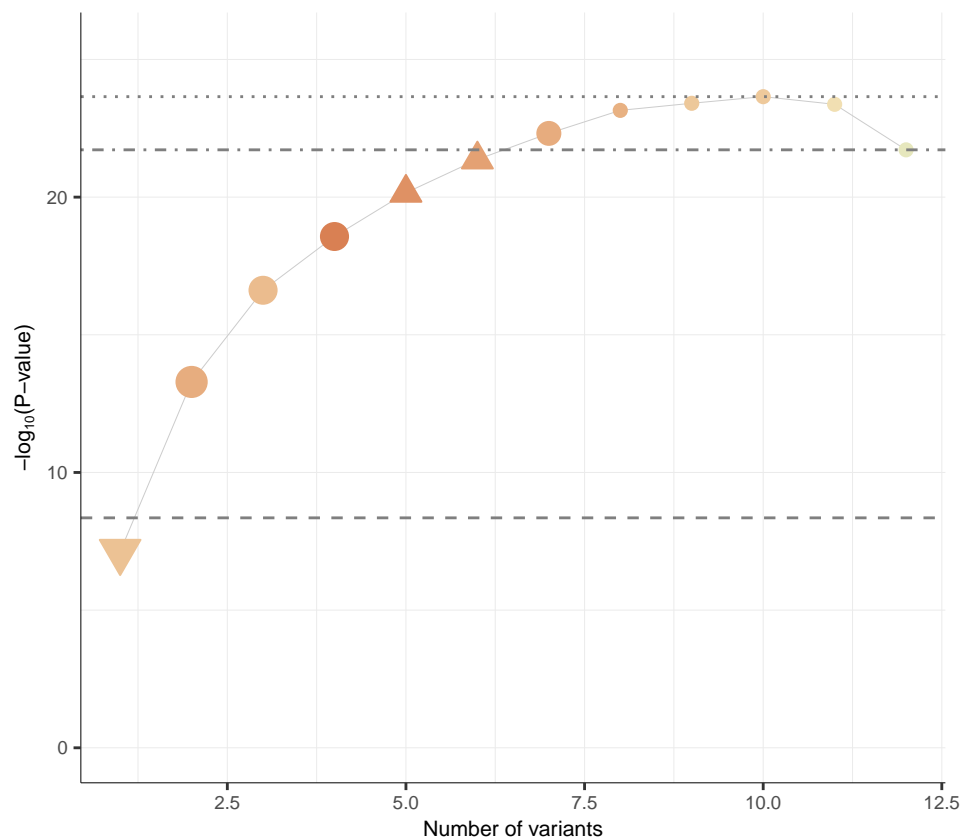
2'-O-methylcytidine in plasma at *PHYHD1* (LoF_mis)



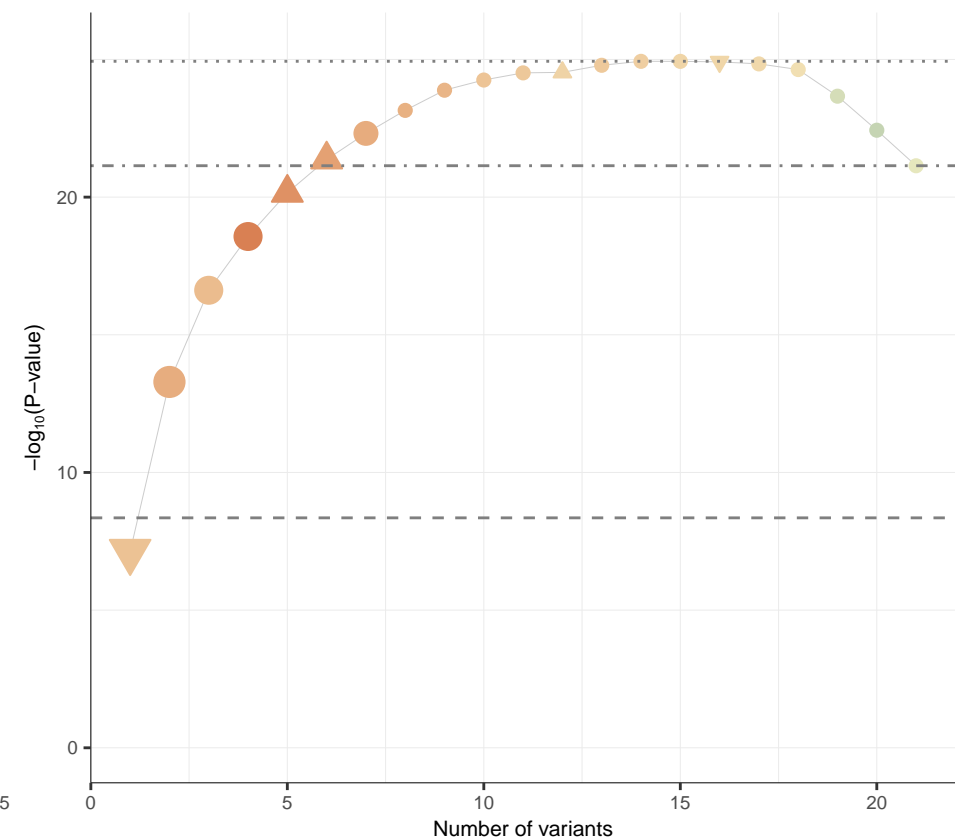
2'-O-methylcytidine in plasma at *PHYHD1* (HI_mis)



2'-O-methylcytidine in urine at *PHYHD1* (LoF_mis)



2'-O-methylcytidine in urine at *PHYHD1* (HI_mis)



Variant consequence

- missense
- ▽ splicing
- △ stop gained

Effect size

-4 -2 0 2 4

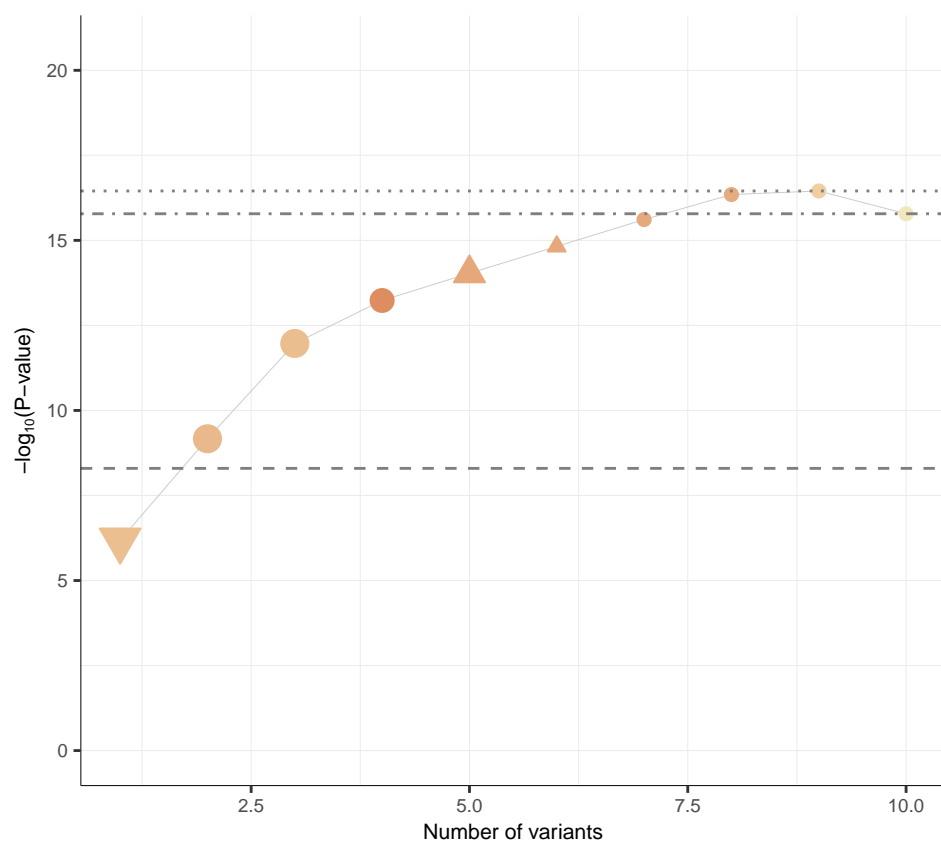
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5

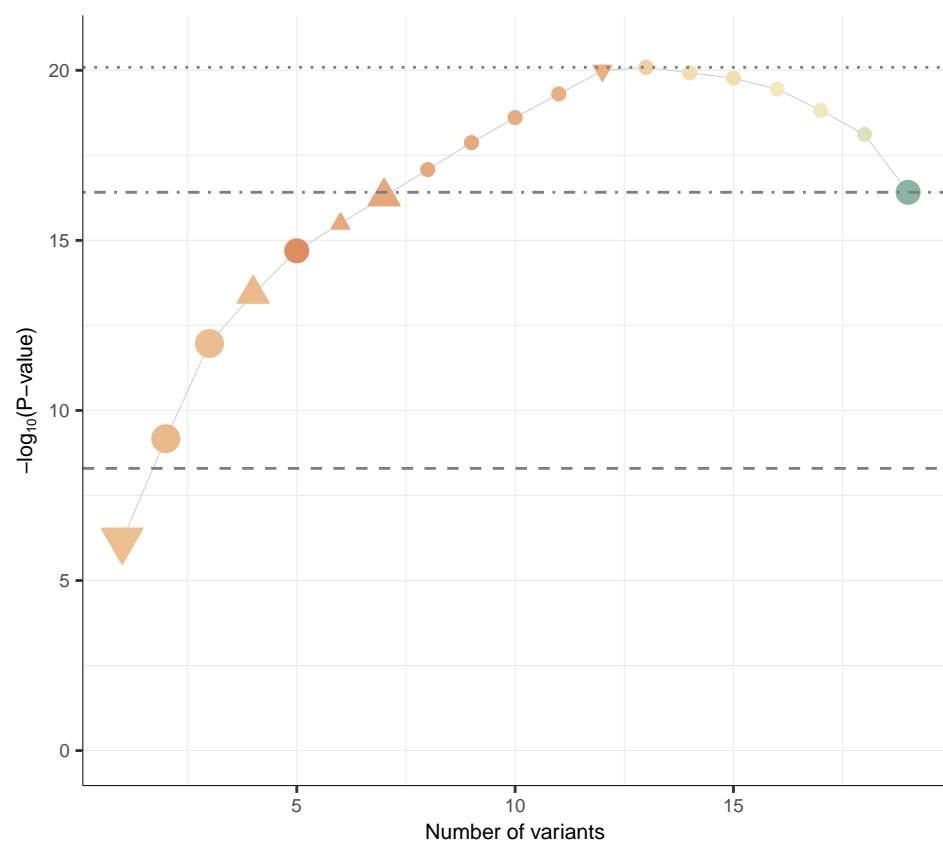
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

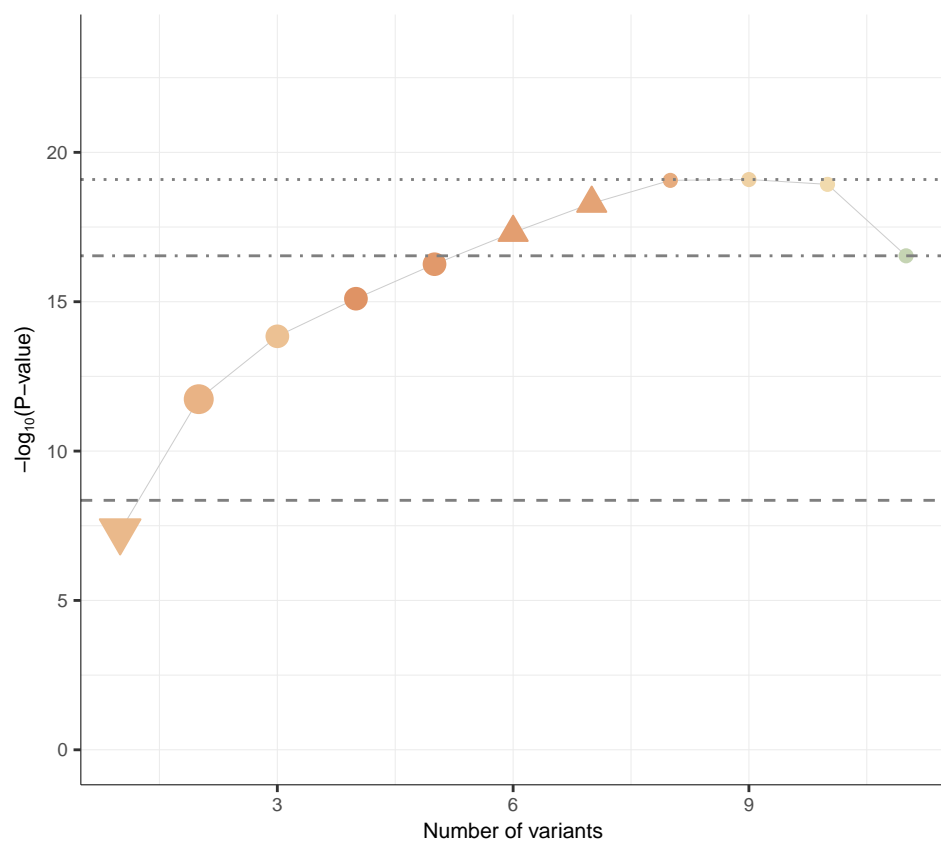
2'-O-methyluridine in plasma at *PHYHD1* (LoF_mis)



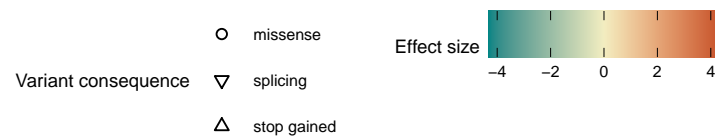
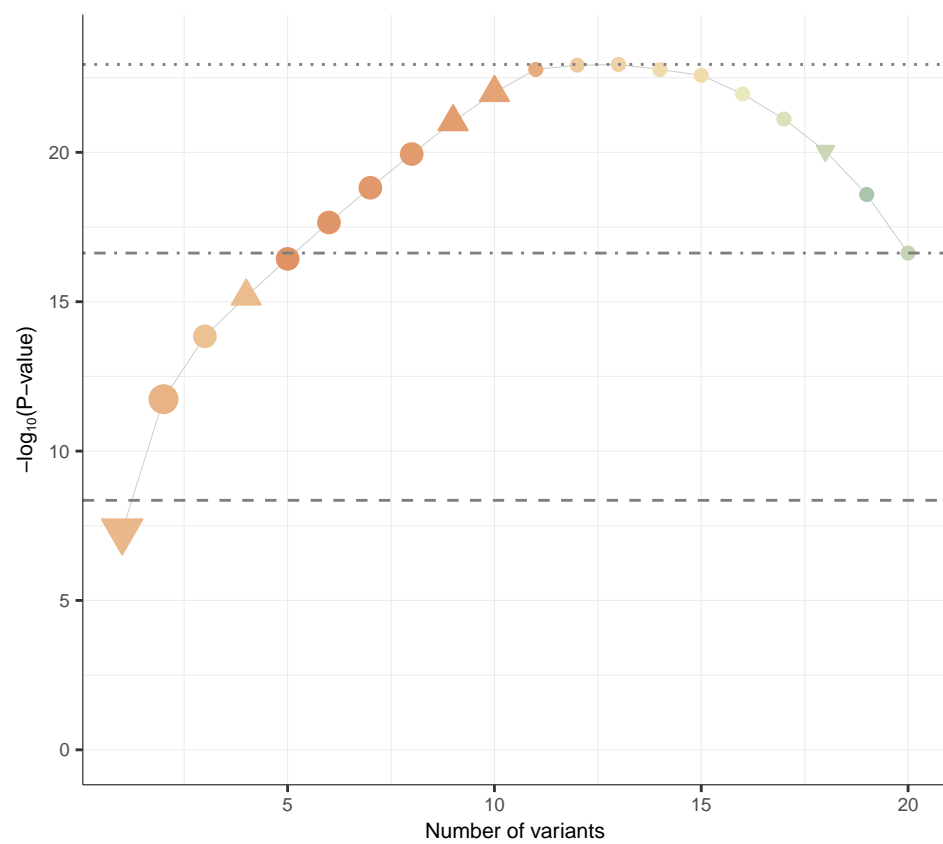
2'-O-methyluridine in plasma at *PHYHD1* (HI_mis)



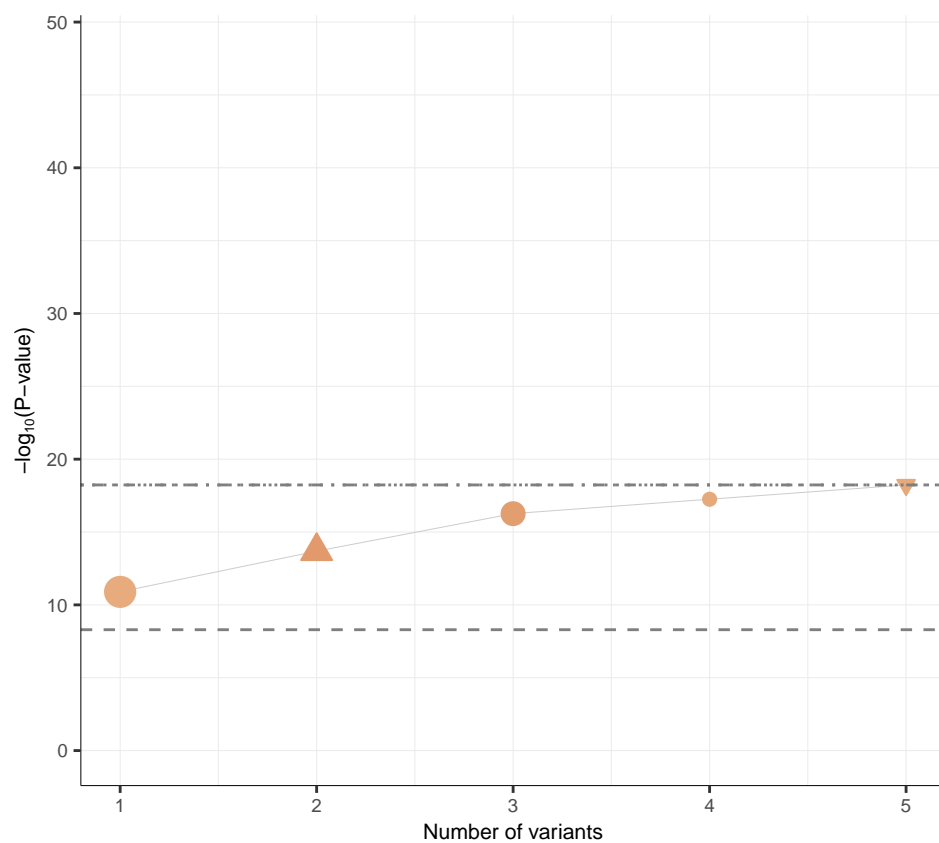
2'-O-methyluridine in urine at *PHYHD1* (LoF_mis)



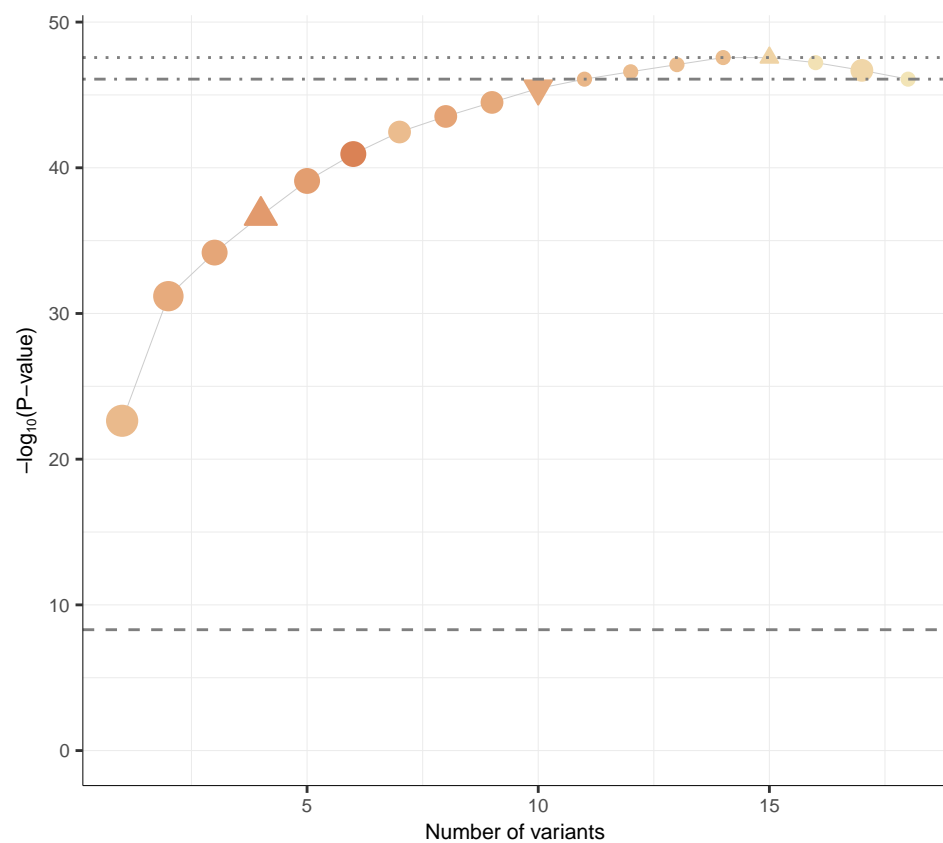
2'-O-methyluridine in urine at *PHYHD1* (HI_mis)



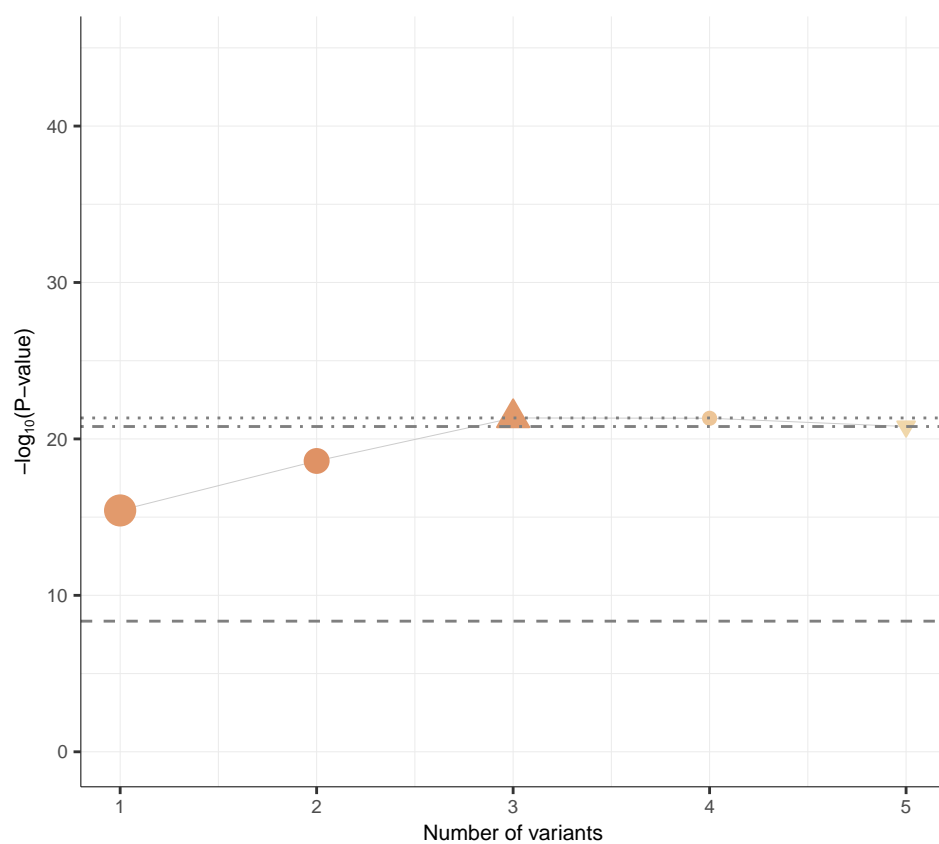
N-acetyl-beta-alanine in plasma at *PTER* (LoF_mis)



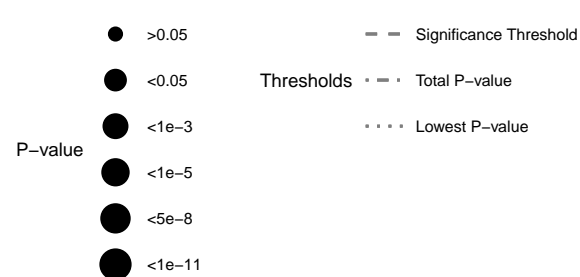
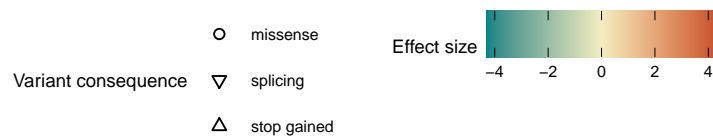
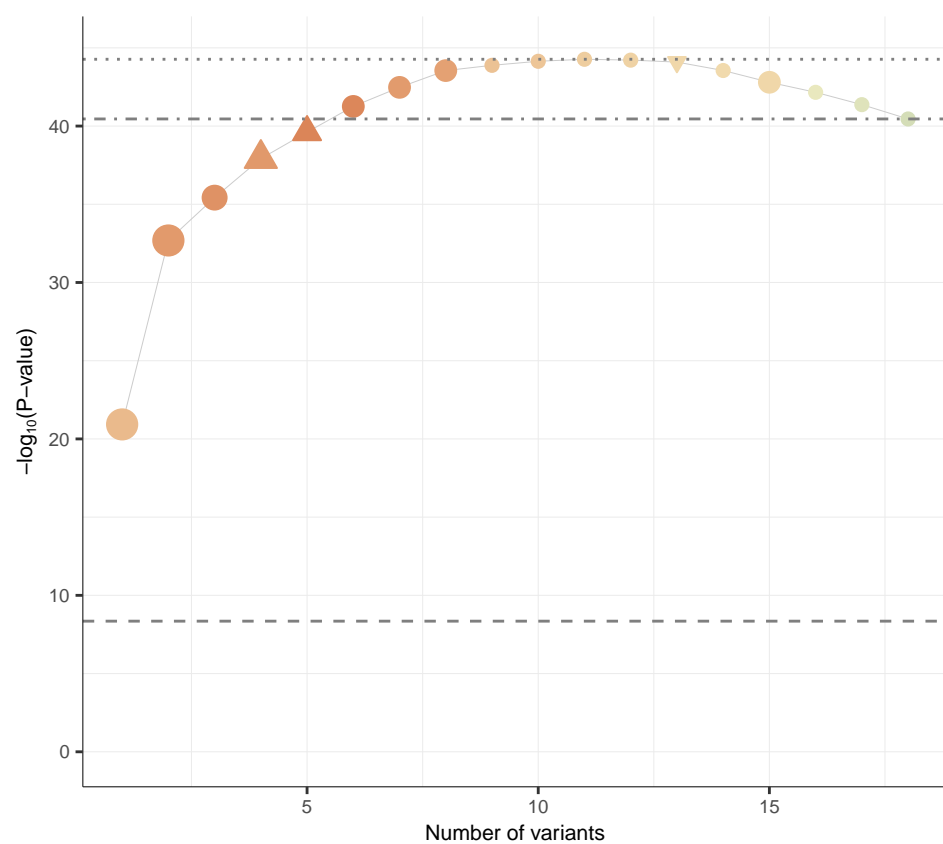
N-acetyl-beta-alanine in plasma at *PTER* (HI_mis)



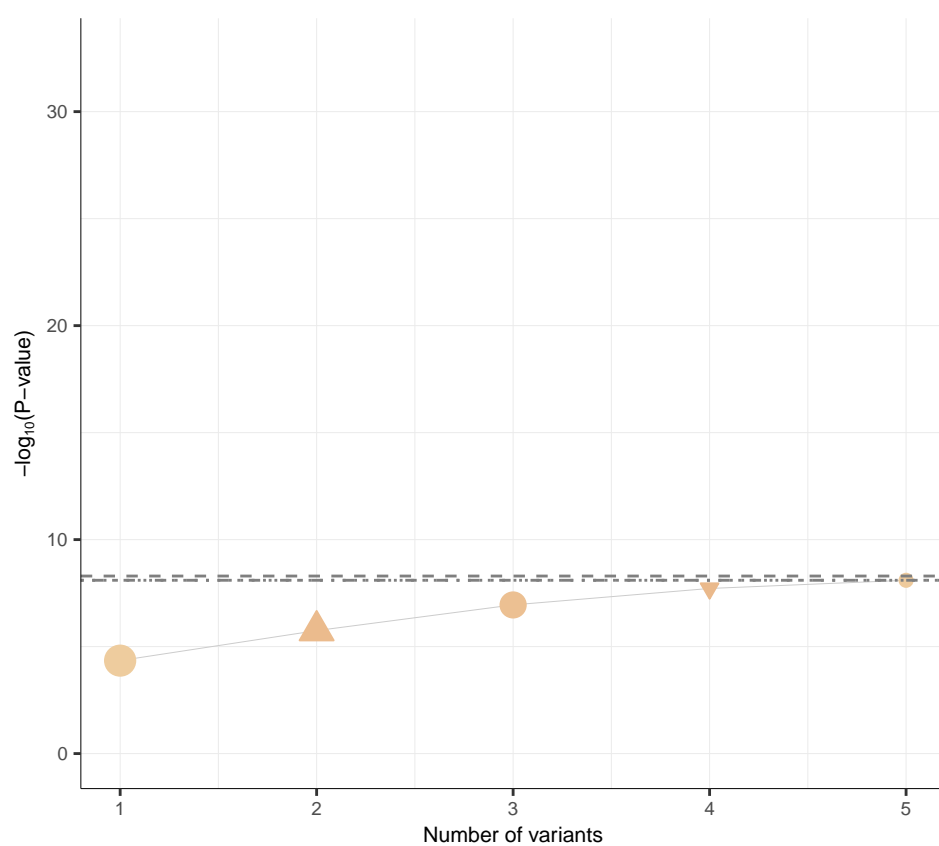
N-acetyl-beta-alanine in urine at *PTER* (LoF_mis)



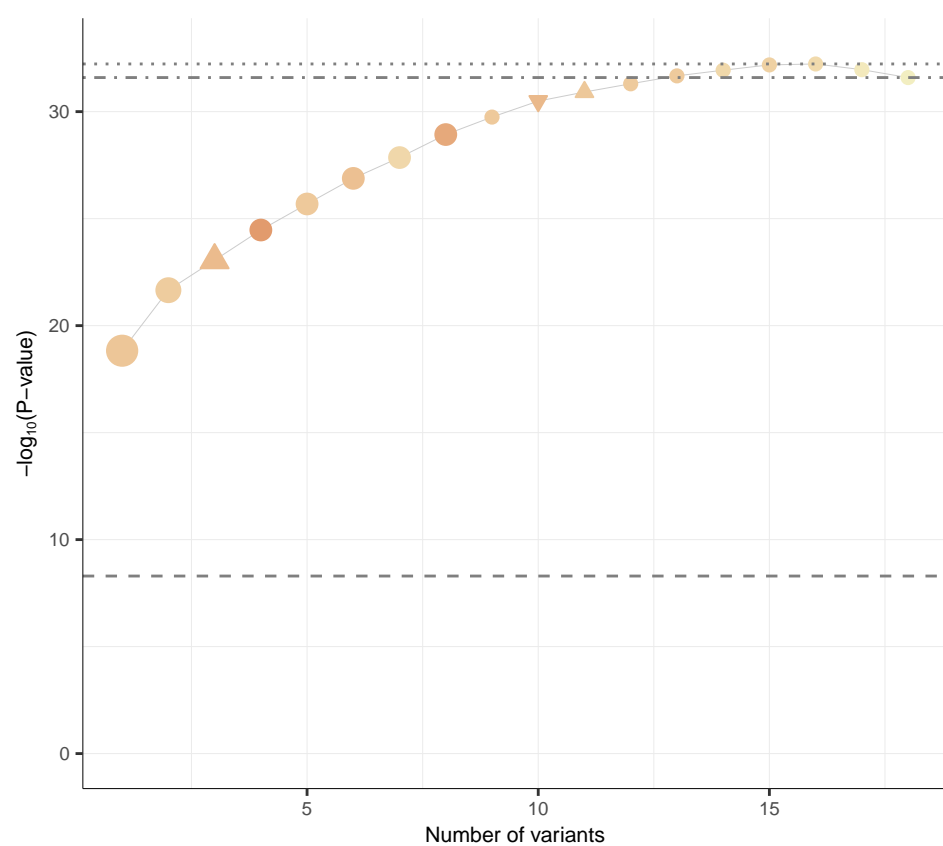
N-acetyl-beta-alanine in urine at *PTER* (HI_mis)



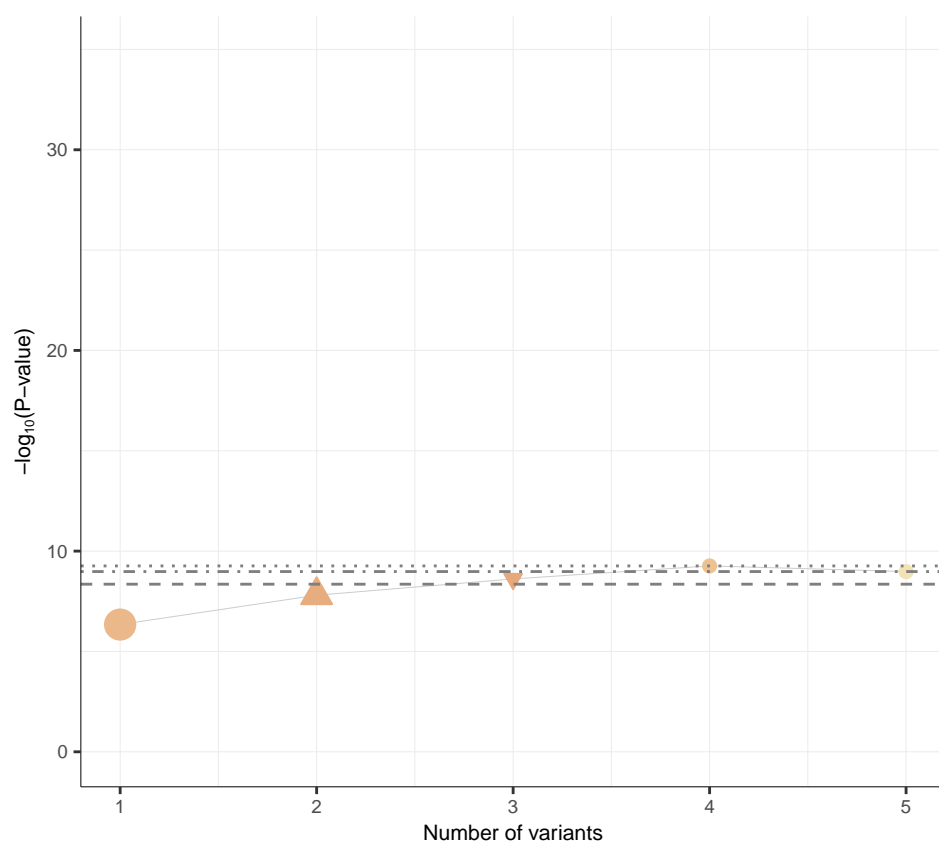
N-acetyltaurine in plasma at *PTER* (LoF_mis)



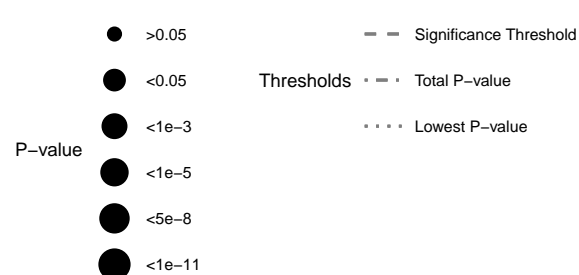
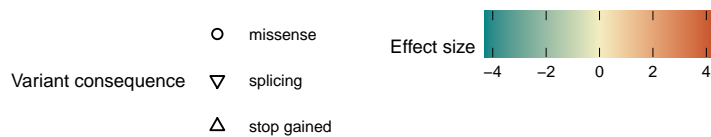
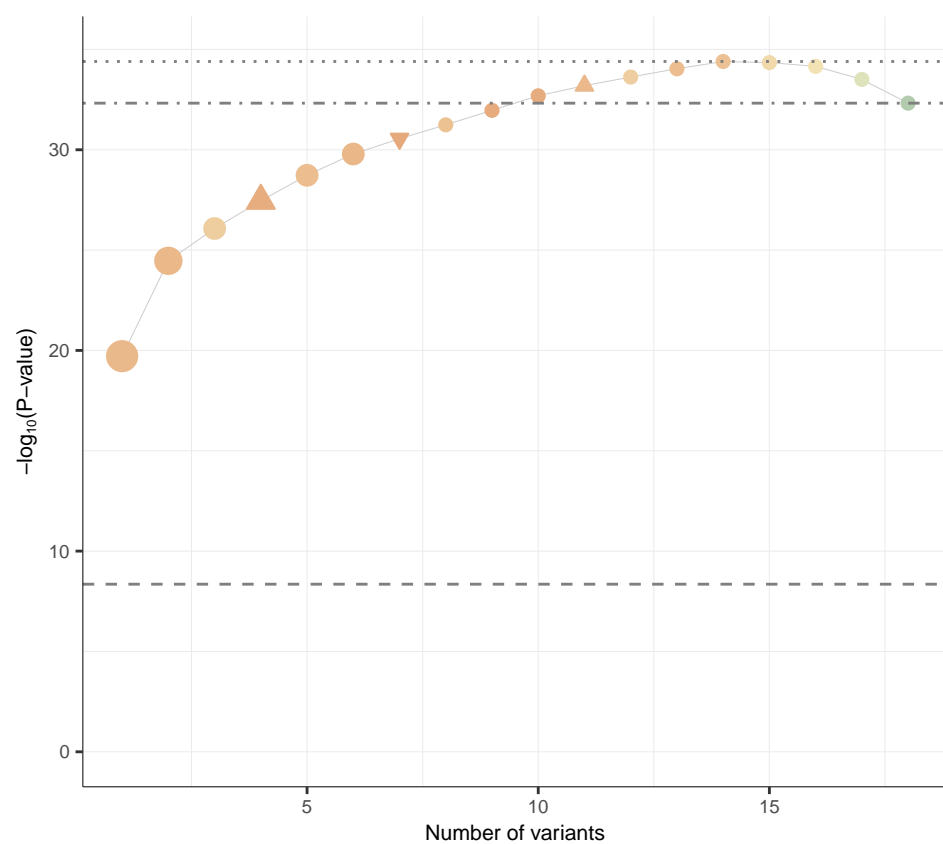
N-acetyltaurine in plasma at *PTER* (HI_mis)



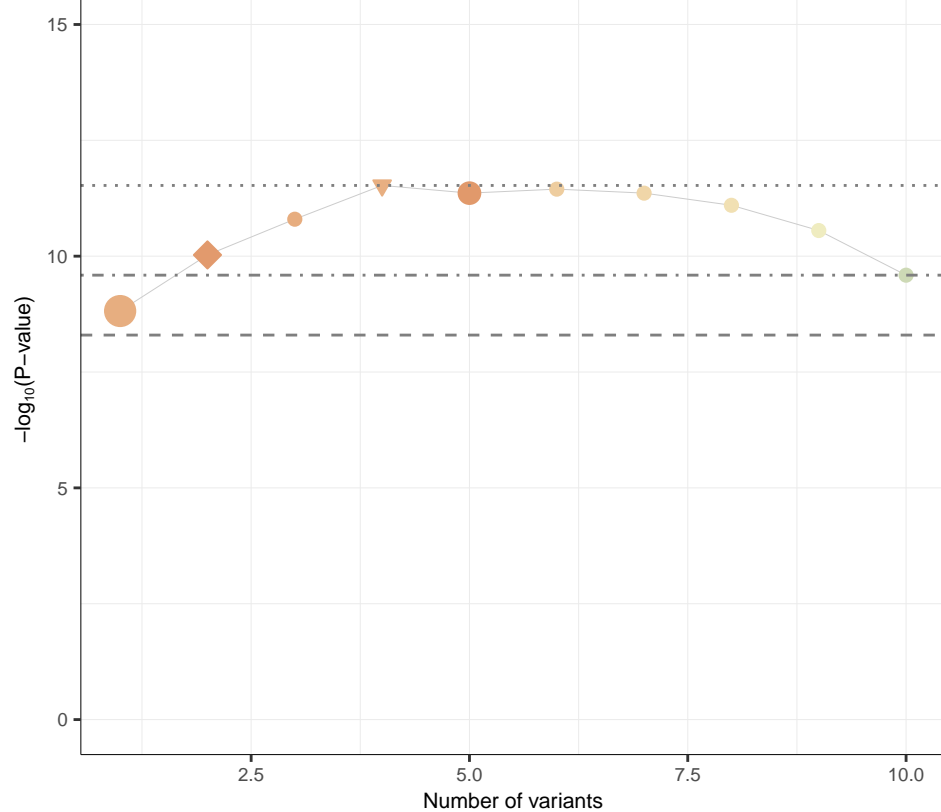
N-acetyltaurine in urine at *PTER* (LoF_mis)



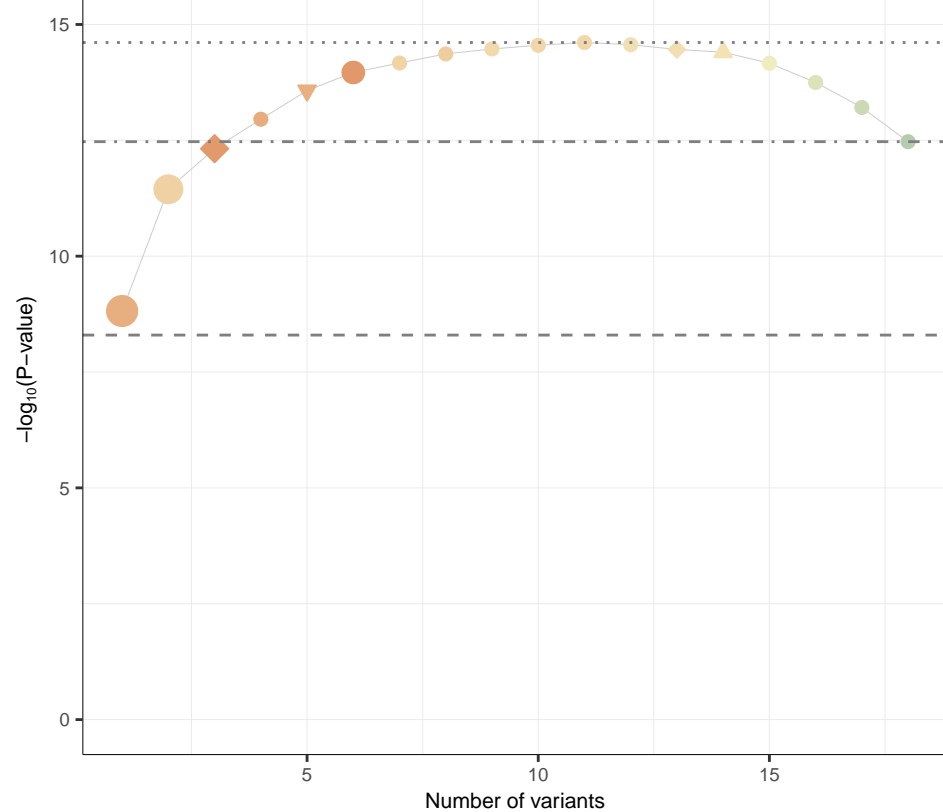
N-acetyltaurine in urine at *PTER* (HI_mis)



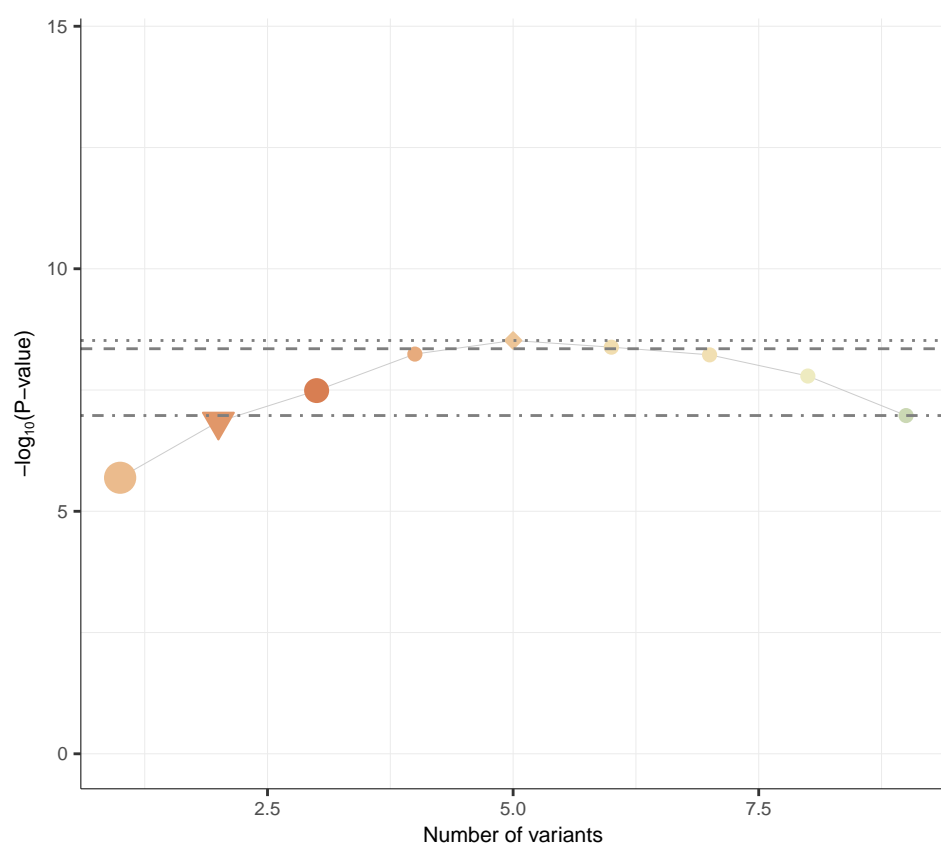
S-1-pyrroline-5-carboxylate in plasma at *PYCR3* (LoF_mis)



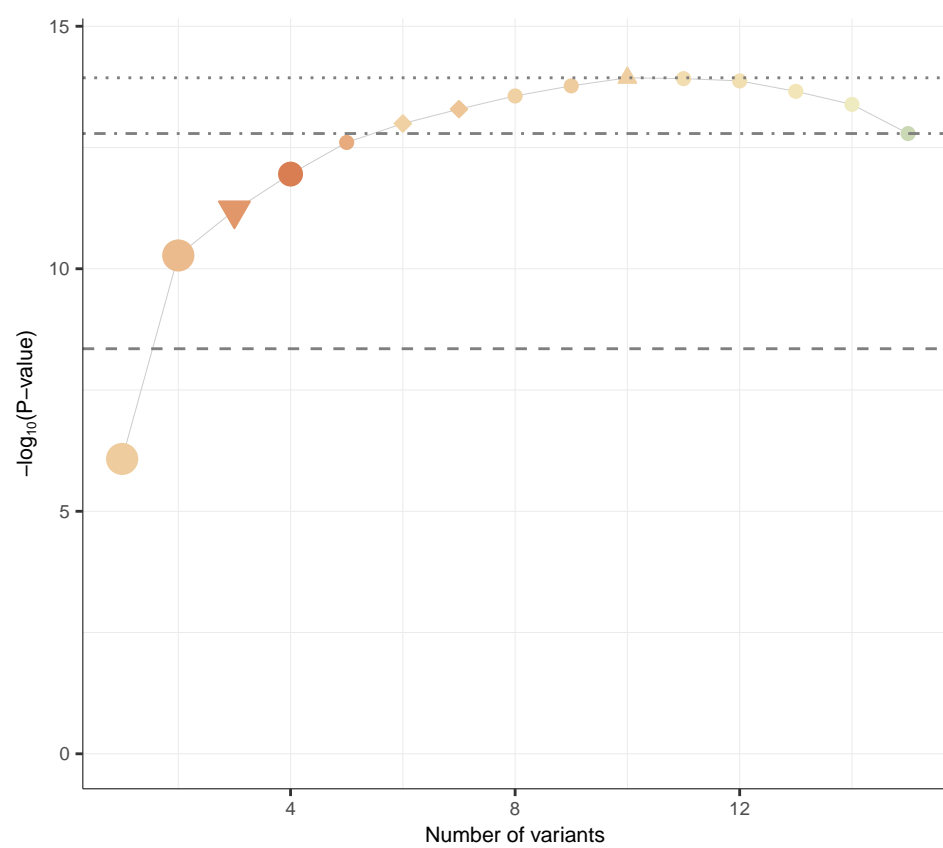
S-1-pyrroline-5-carboxylate in plasma at *PYCR3* (HI_mis)



S-1-pyrroline-5-carboxylate in urine at *PYCR3* (LoF_mis)



S-1-pyrroline-5-carboxylate in urine at *PYCR3* (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- ▽ splicing
- △ stop gained

Effect size

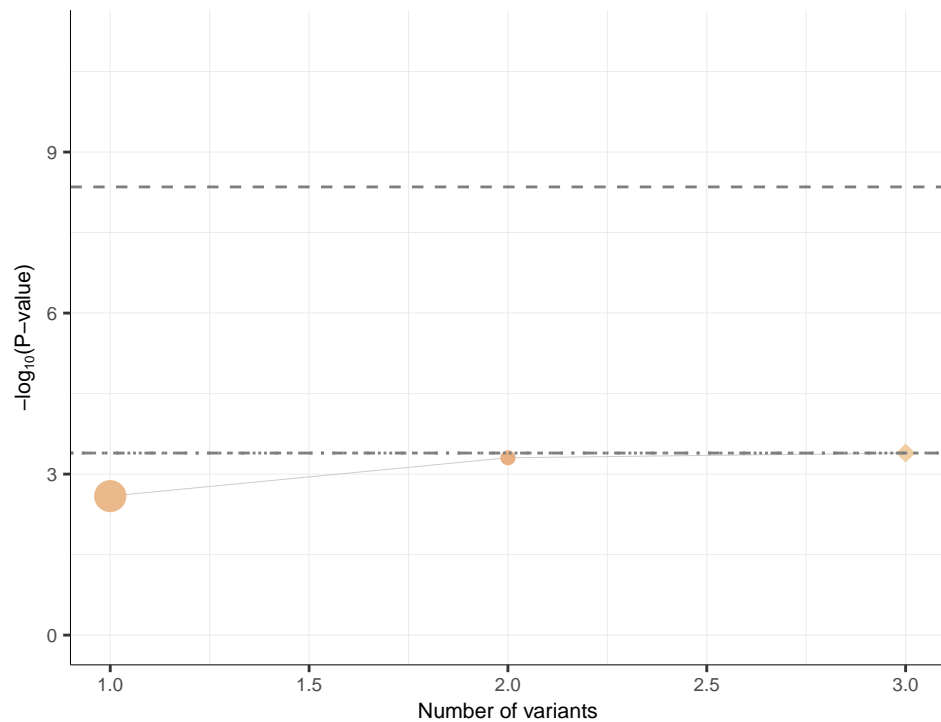
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5

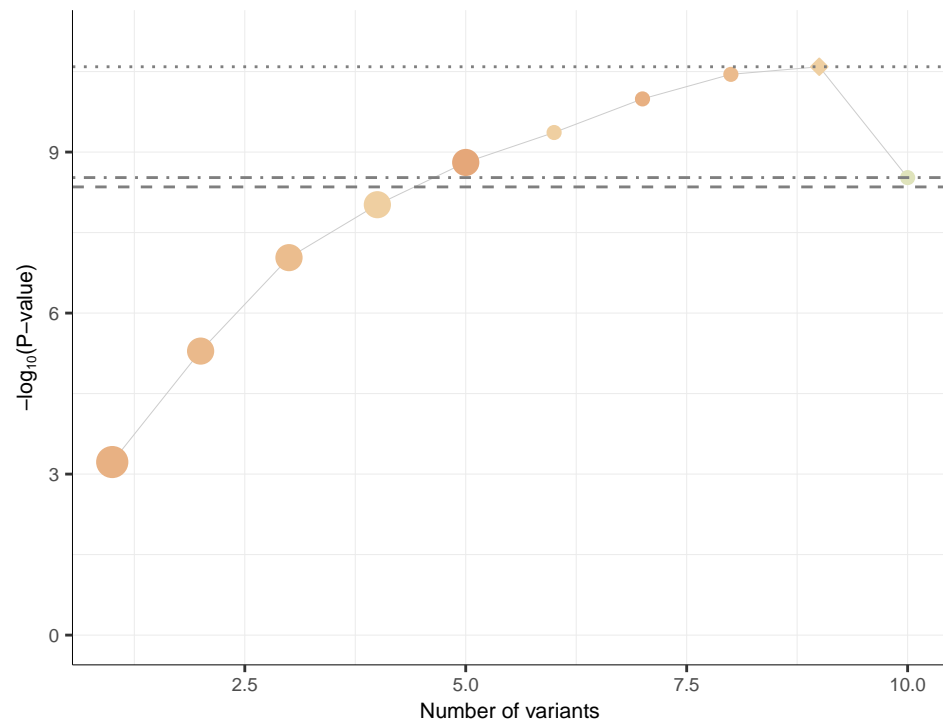
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

X – 23436 in urine at *RGN* (LoF_mis)

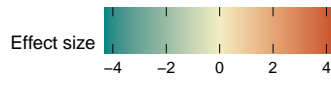


X – 23436 in urine at *RGN* (HI_mis)



Variant consequence

- ◇ frameshift
- missense



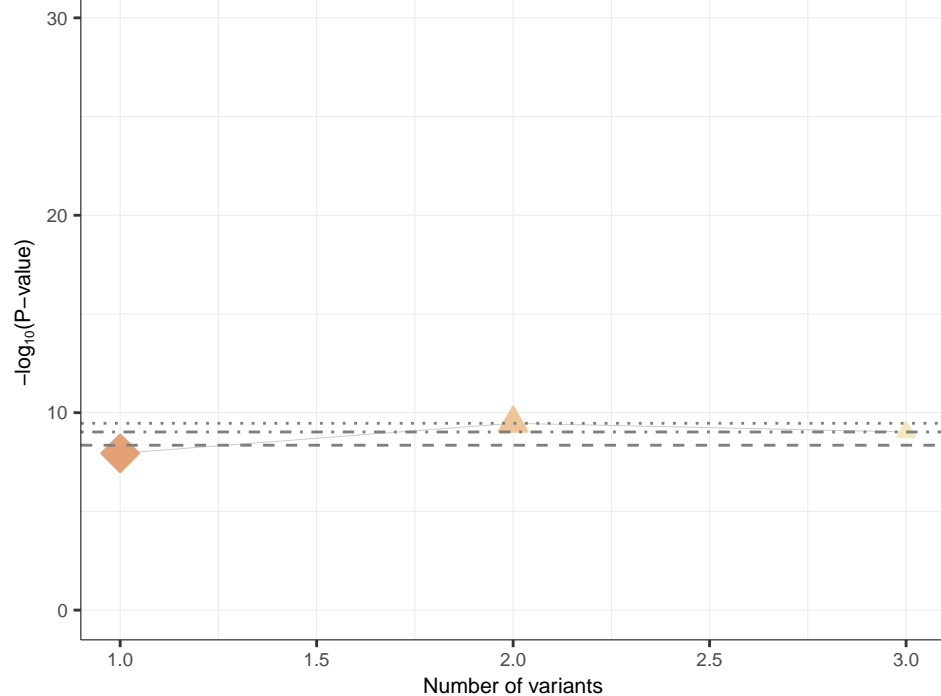
P-value

- >0.05
- <0.05
- <1e-3

Thresholds

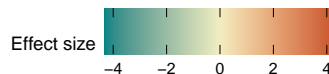
- Significance Threshold
- - - Total P-value
- ... Lowest P-value

X - 10457 in urine at *RNPEP* (LoF_mis)

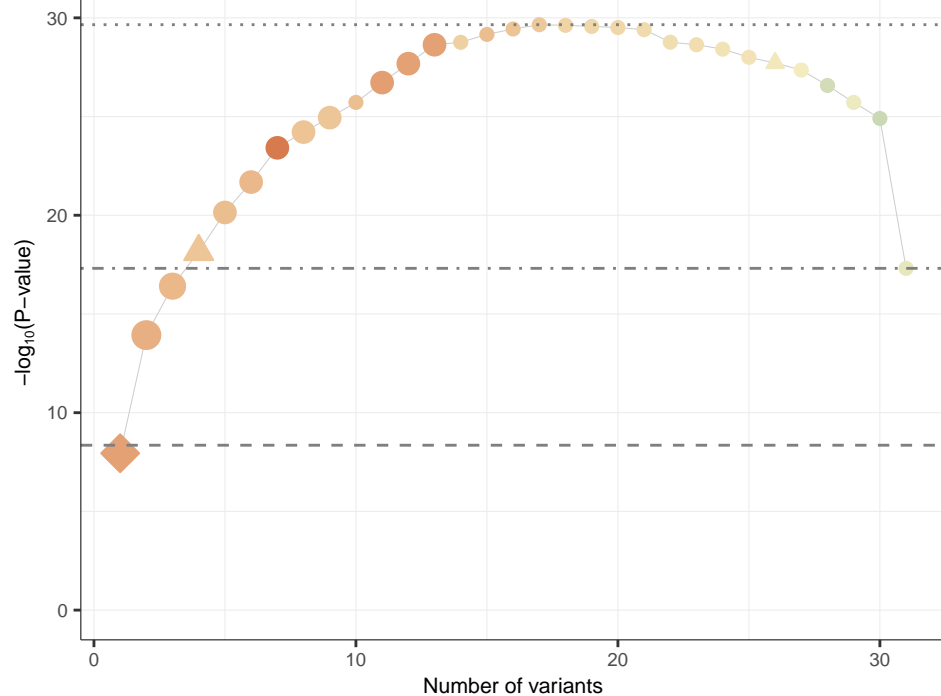


Variant consequence

- ◇ frameshift
- missense
- △ stop gained



X - 10457 in urine at *RNPEP* (HI_mis)



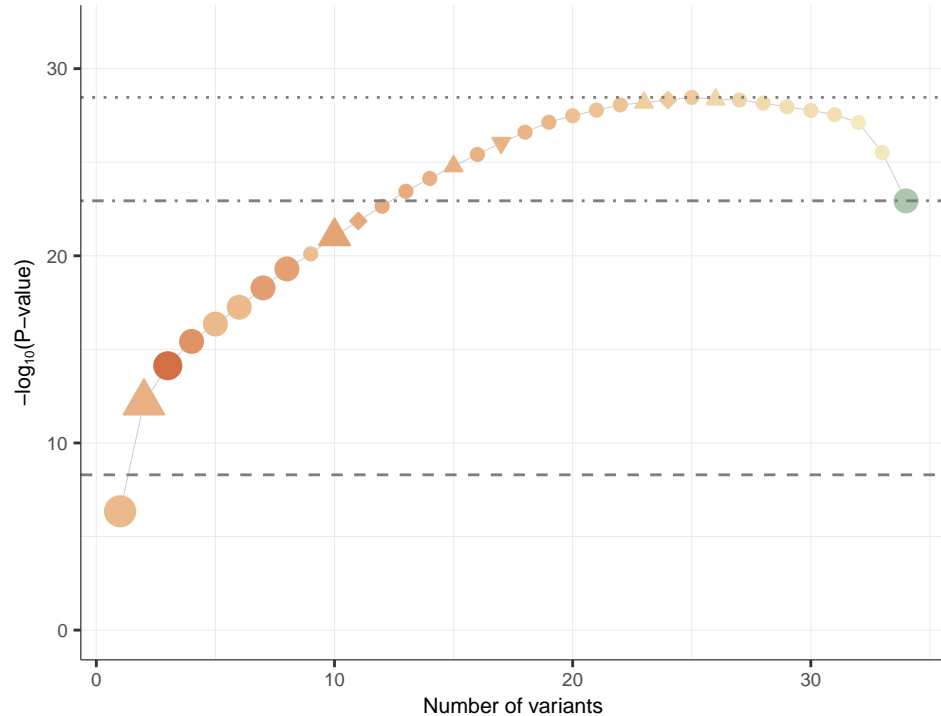
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8

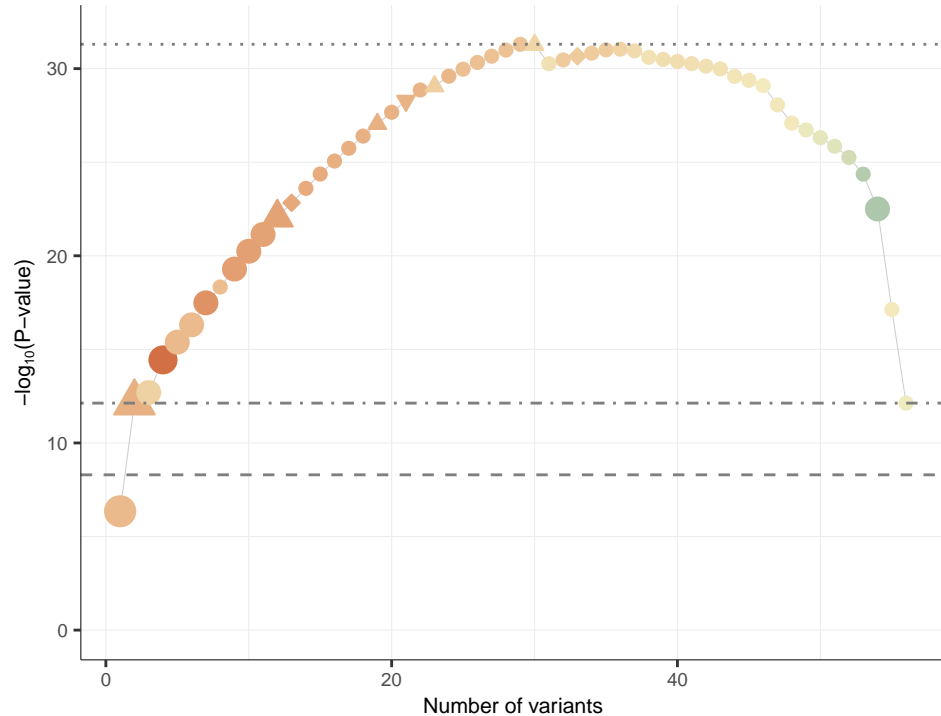
Thresholds

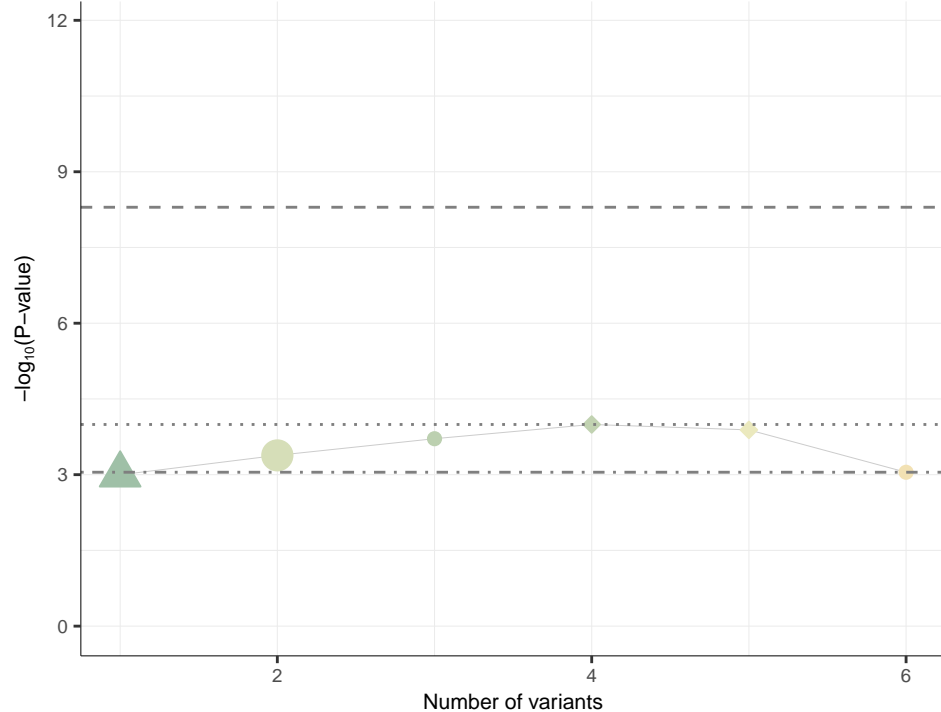
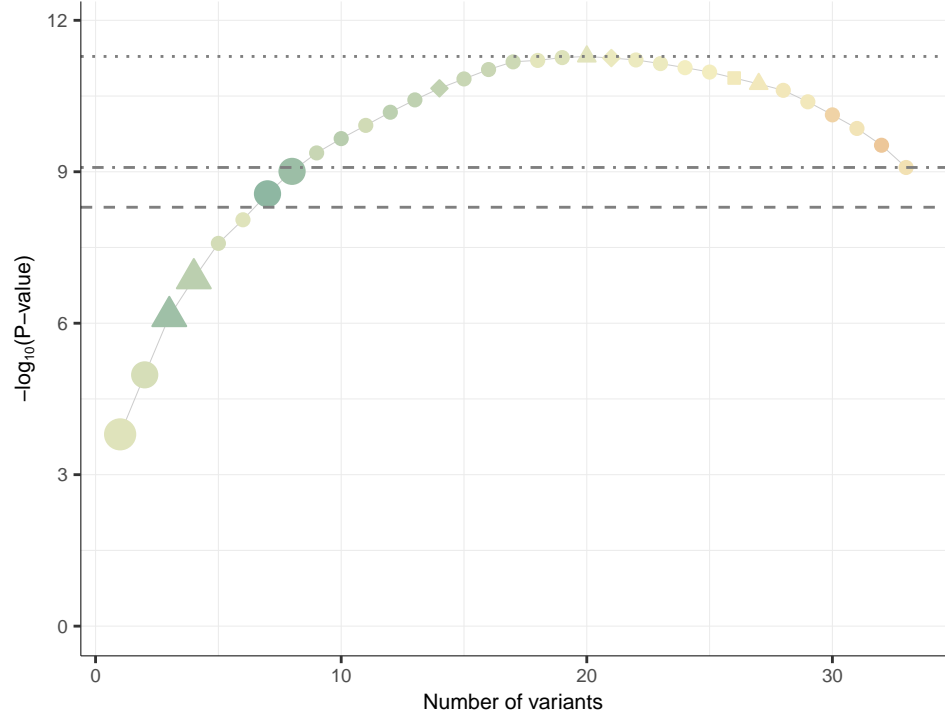
- Significance Threshold
- - - Total P-value
- ... Lowest P-value

sarcosine in plasma at *SARDH* (LoF_mis)



sarcosine in plasma at *SARDH* (HI_mis)



glycochenodeoxycholate 3-sulfate in plasma at *SLC10A2* (LoF_mis)glycochenodeoxycholate 3-sulfate in plasma at *SLC10A2* (HI_mis)

Variant consequence

- ◇ frameshift
- missense
- start/stop lost
- △ stop gained

Effect size

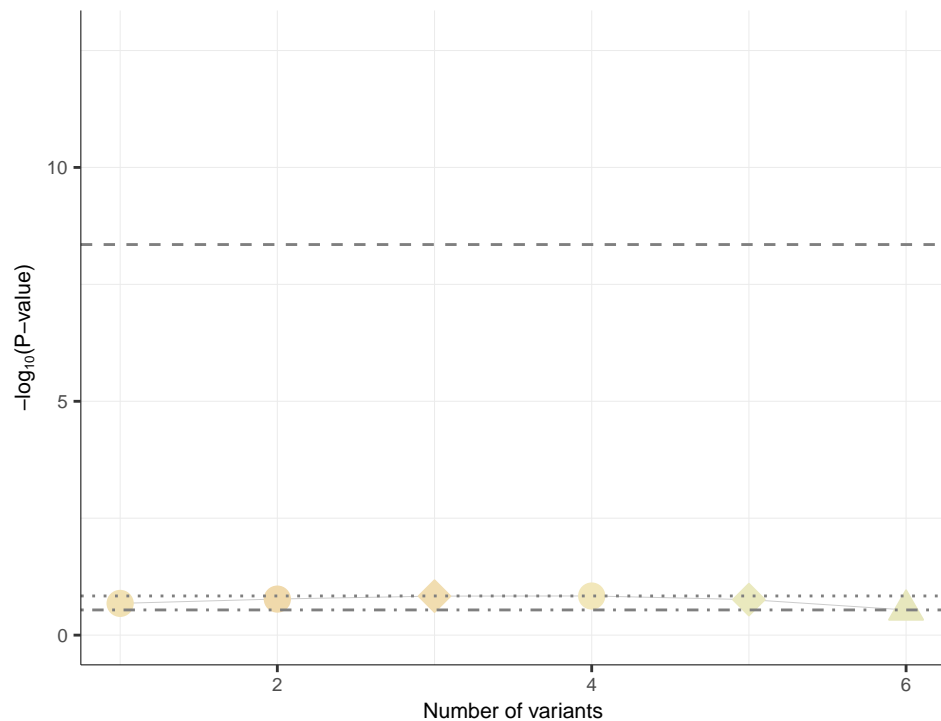
Color scale: -4 (dark green) to 4 (dark red), with 0 (yellow) in the middle.

P-value

- >0.05
- <0.05
- <1e-3

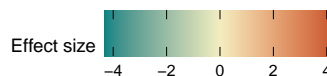
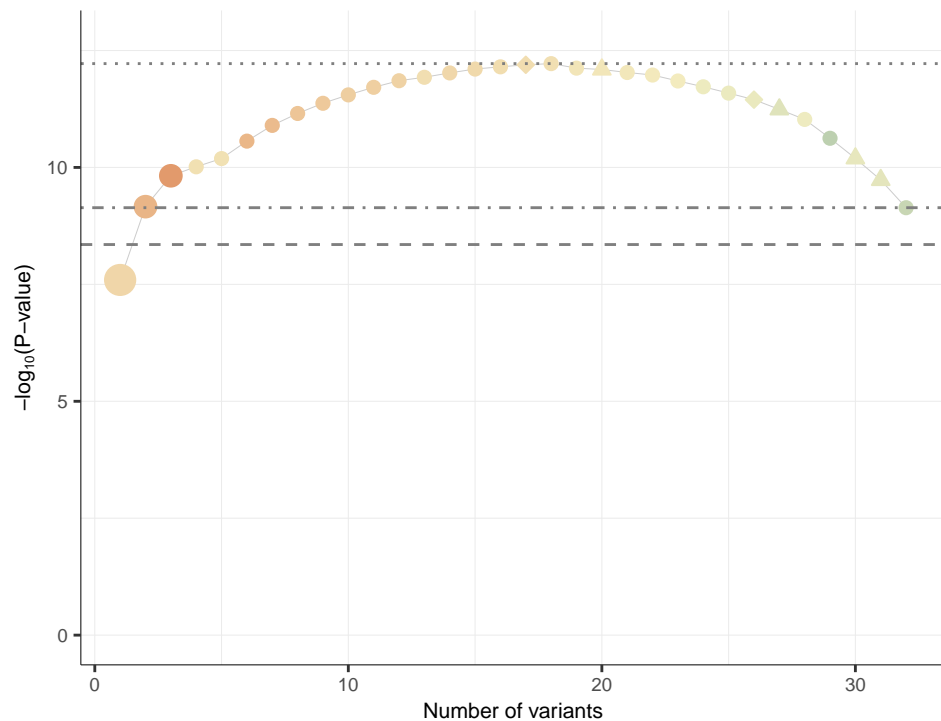
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

glycocholate in urine at *SLC10A2* (LoF_mis)

Variant consequence

- ◇ frameshift
- missense
- △ stop gained

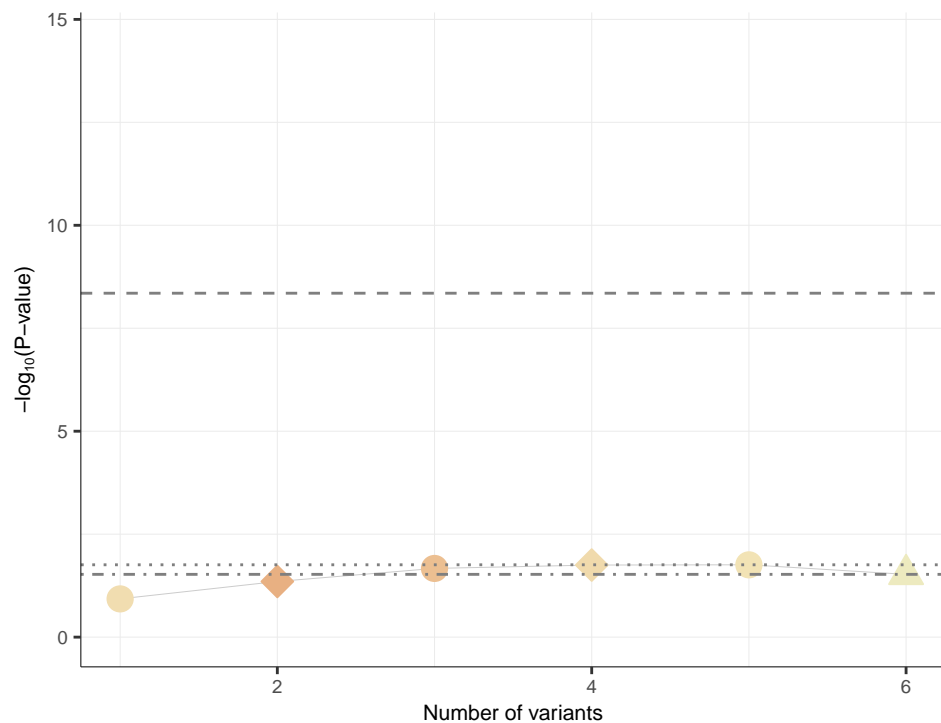
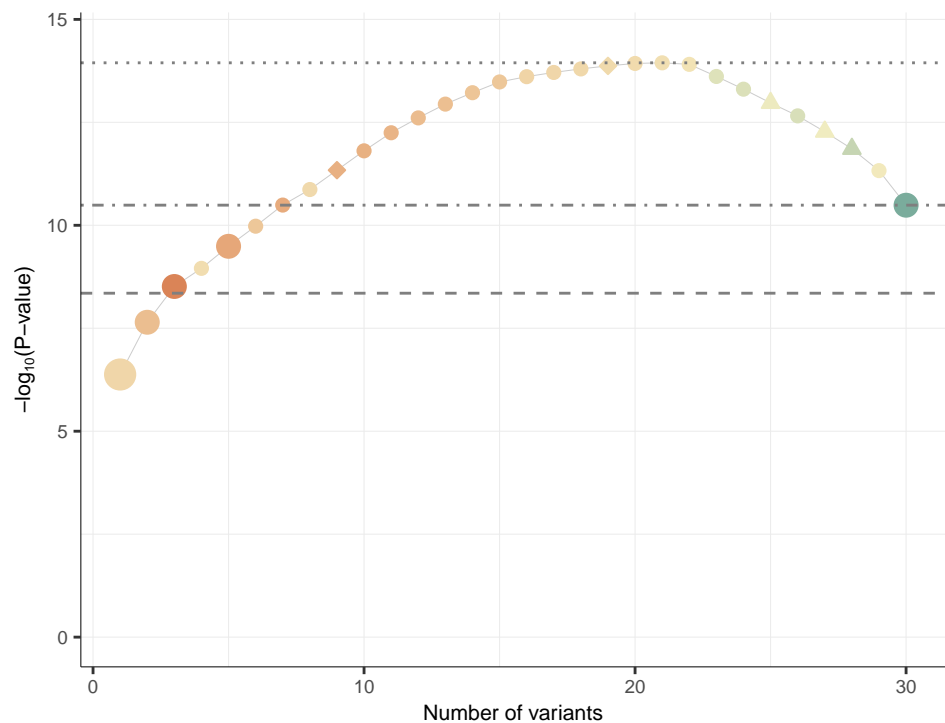
glycocholate in urine at *SLC10A2* (HI_mis)

P-value

- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8

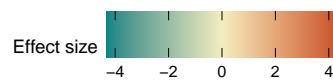
Thresholds

- Significance Threshold
- - - Total P-value
- · · Lowest P-value

glycoursodeoxycholate in urine at *SLC10A2* (LoF_mis)glycoursodeoxycholate in urine at *SLC10A2* (HI_mis)

Variant consequence

- ◇ frameshift
- missense
- △ stop gained

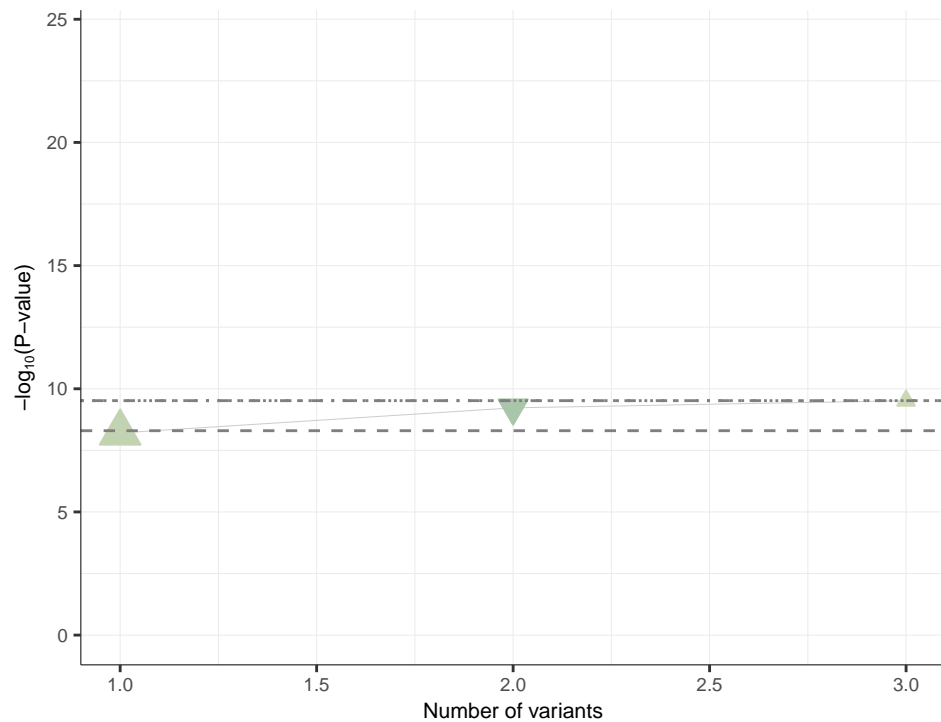


P-value

- >0.05
- <0.05
- <1e-3
- <1e-5

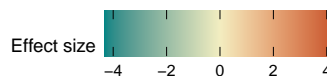
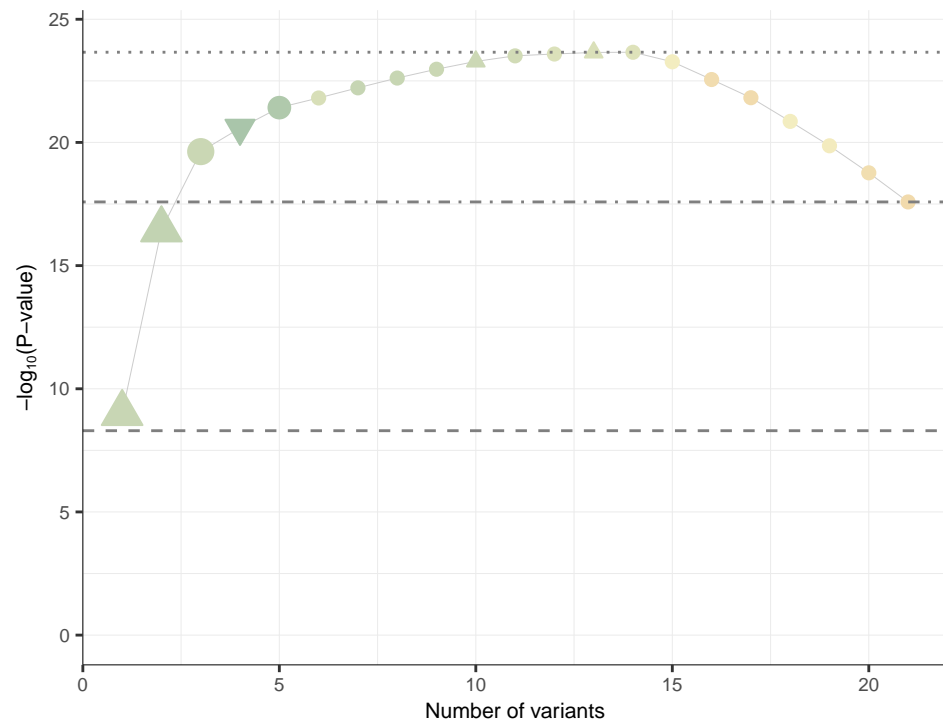
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

sulfate* in plasma at *SLC13A1* (LoF_mis)

Variant consequence

- missense
- ▽ splicing
- △ stop gained

sulfate* in plasma at *SLC13A1* (HI_mis)

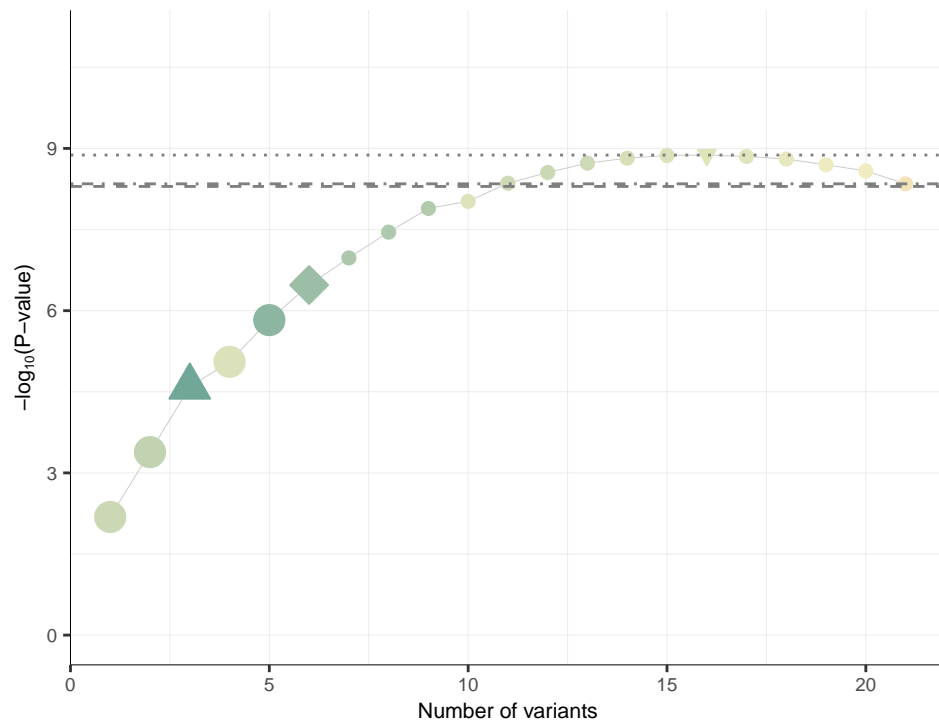
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8

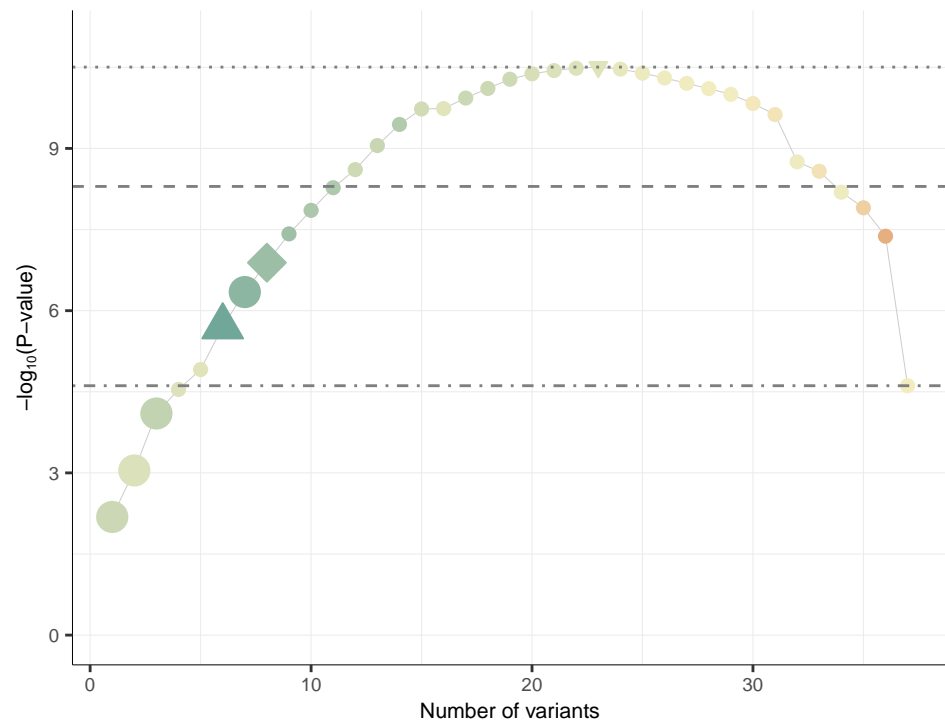
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

arachidonoylcarnitine (C20:4) in plasma at *SLC22A5* (LoF_mis)



arachidonoylcarnitine (C20:4) in plasma at *SLC22A5* (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- ▽ splicing
- △ stop gained

Effect size

-4 -2 0 2 4

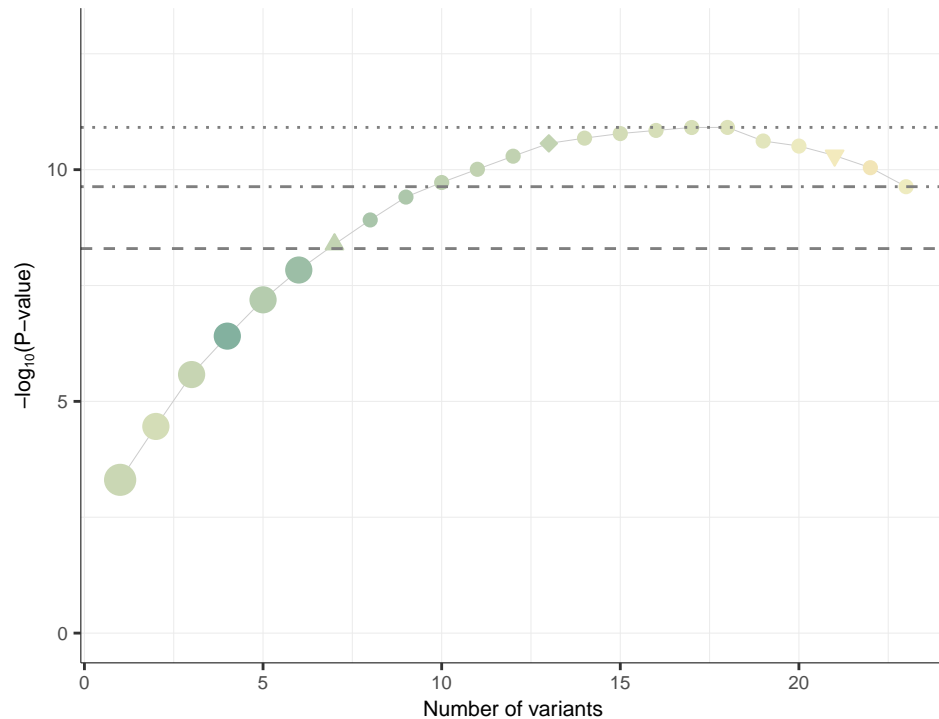
P-value

- >0.05
- <0.05

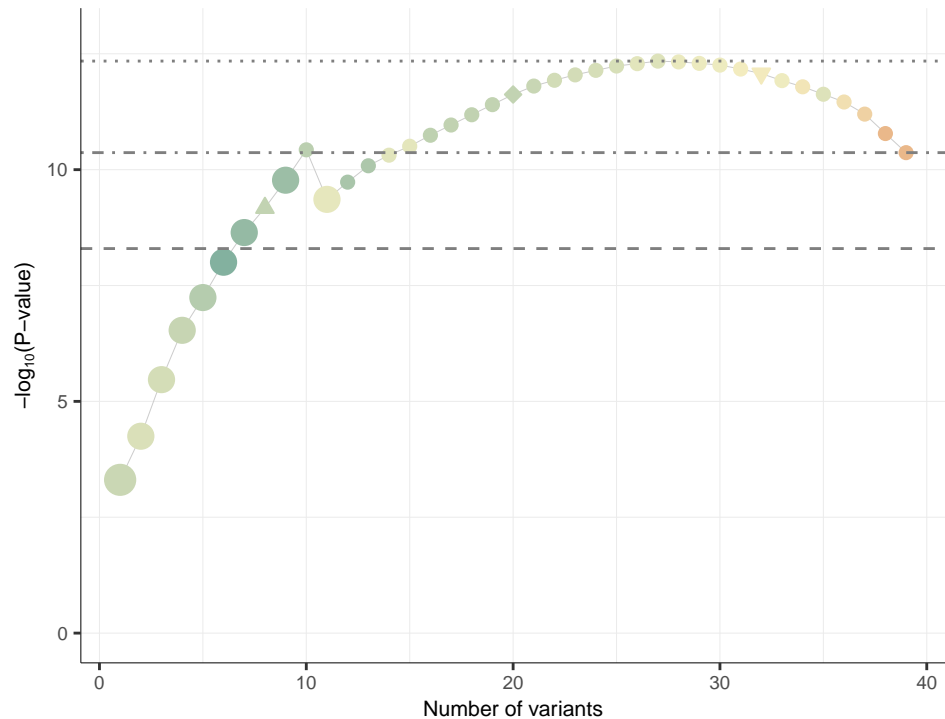
Thresholds

- - Significance Threshold
- . - Total P-value
- . . . Lowest P-value

carnitine in plasma at *SLC22A5* (LoF_mis)

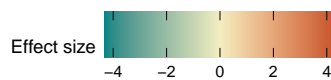


carnitine in plasma at *SLC22A5* (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- ▽ splicing
- △ stop gained



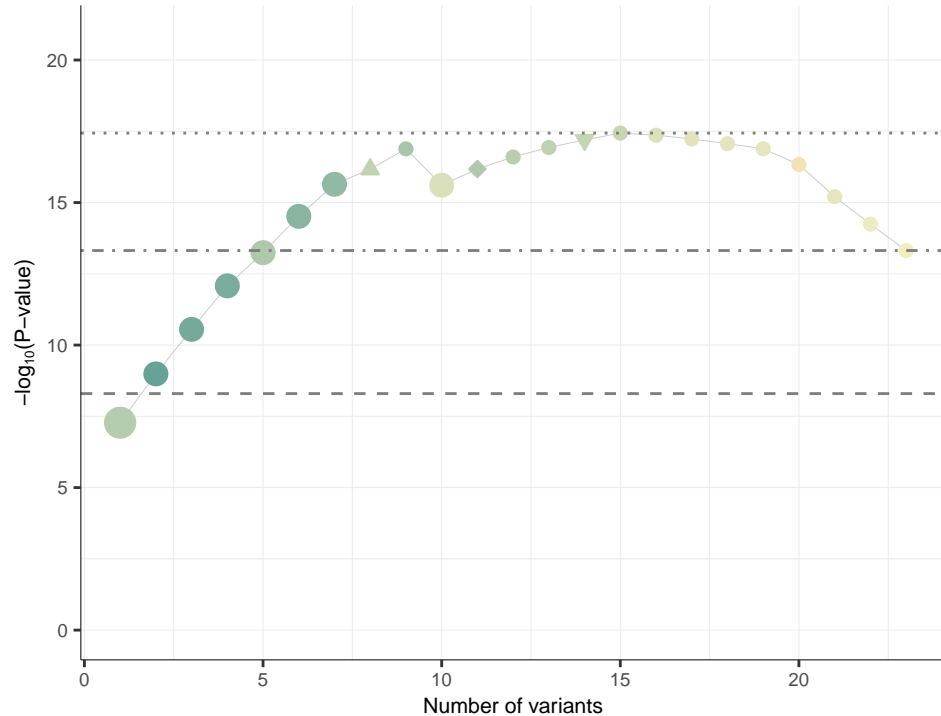
P-value

- >0.05
- <0.05
- <1e-3

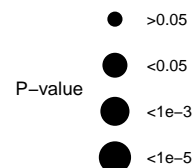
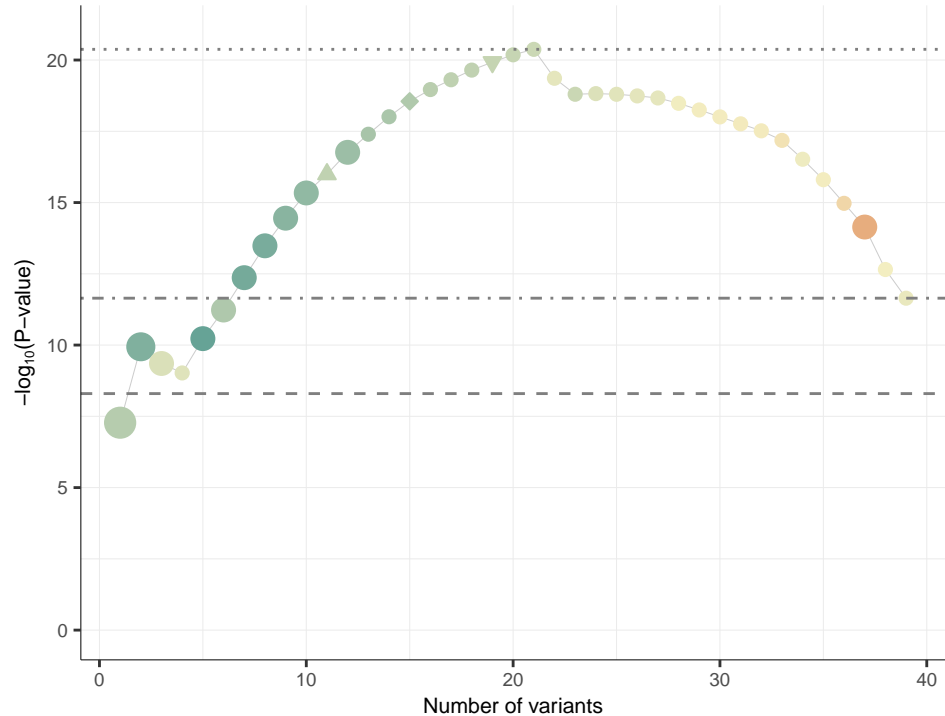
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

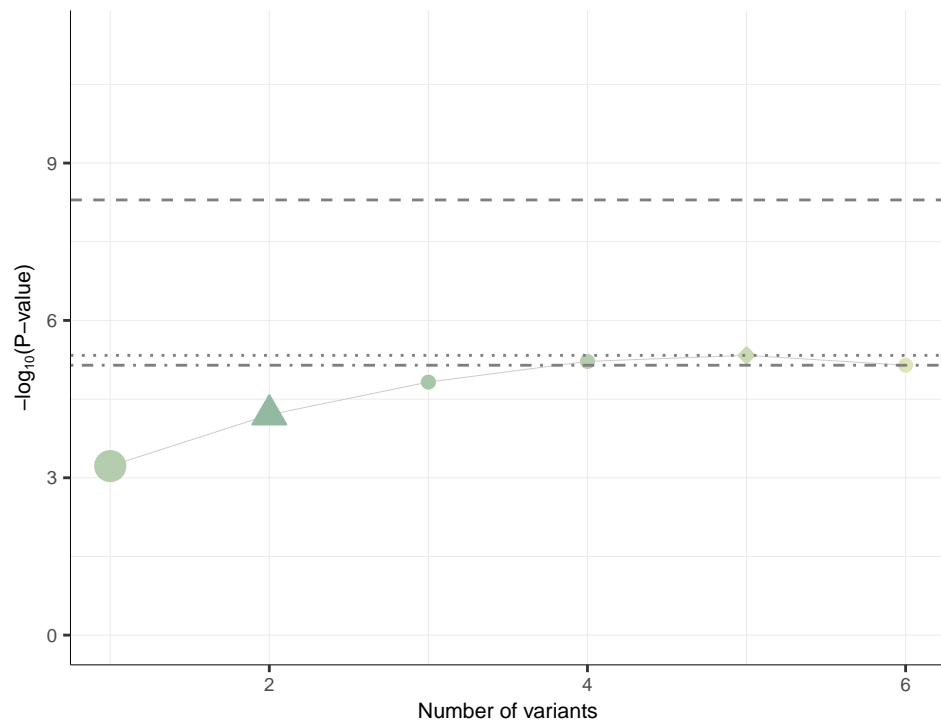
N,N,N-trimethyl-5-aminovalerate in plasma at *SLC22A5* (LoF_mis)



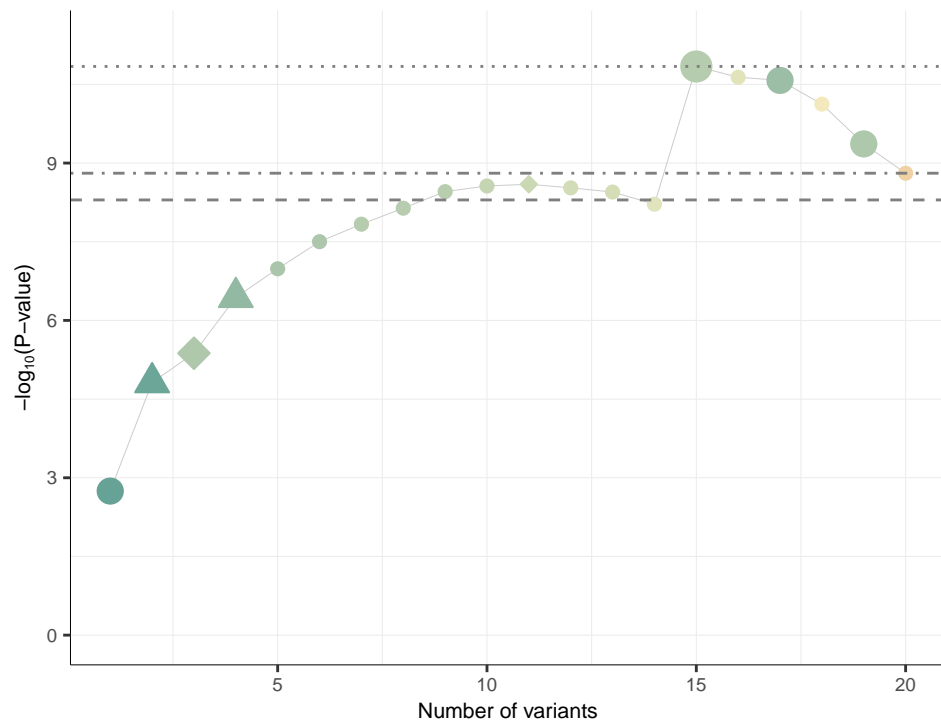
N,N,N-trimethyl-5-aminovalerate in plasma at *SLC22A5* (HI_mis)



gamma-glutamylglutamate in plasma at *SLC22A7* (LoF_mis)

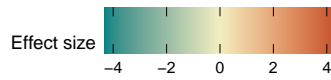


gamma-glutamylglutamate in plasma at *SLC22A7* (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- △ stop gained



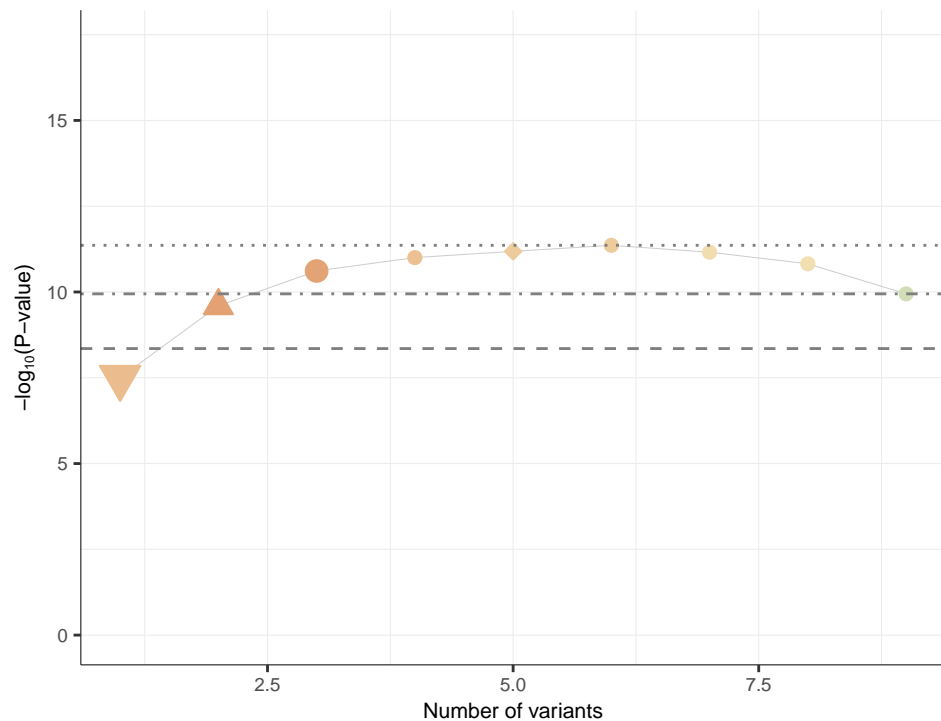
P-value

- >0.05
- <0.05
- <1e-3

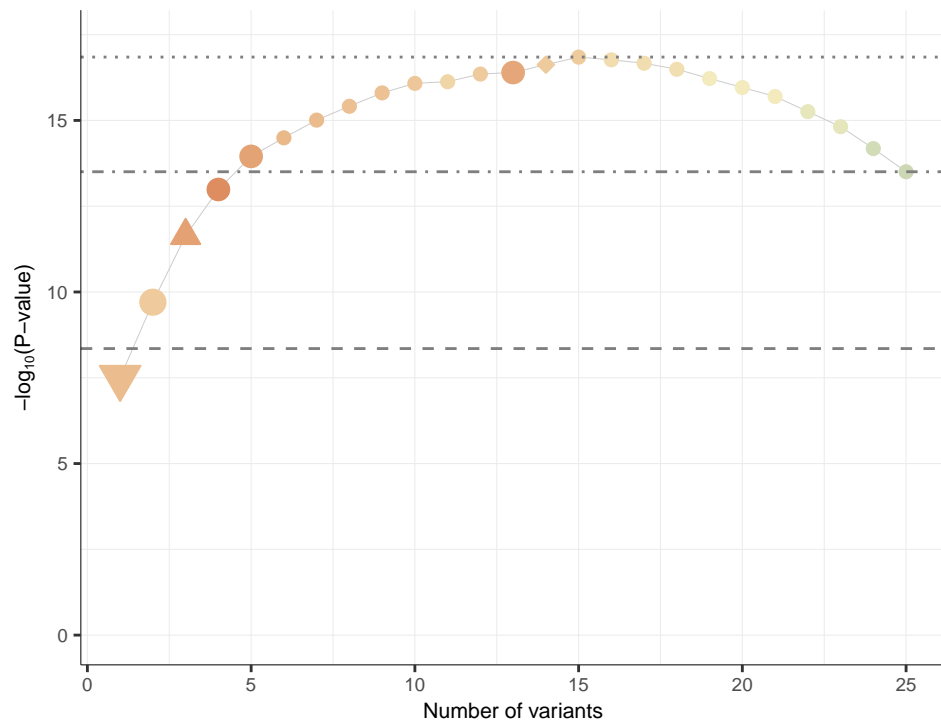
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

choline in urine at *SLC25A48* (LoF_mis)



choline in urine at *SLC25A48* (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- ▽ splicing
- △ stop gained

Effect size

Color scale: -4 (blue) to 4 (red)

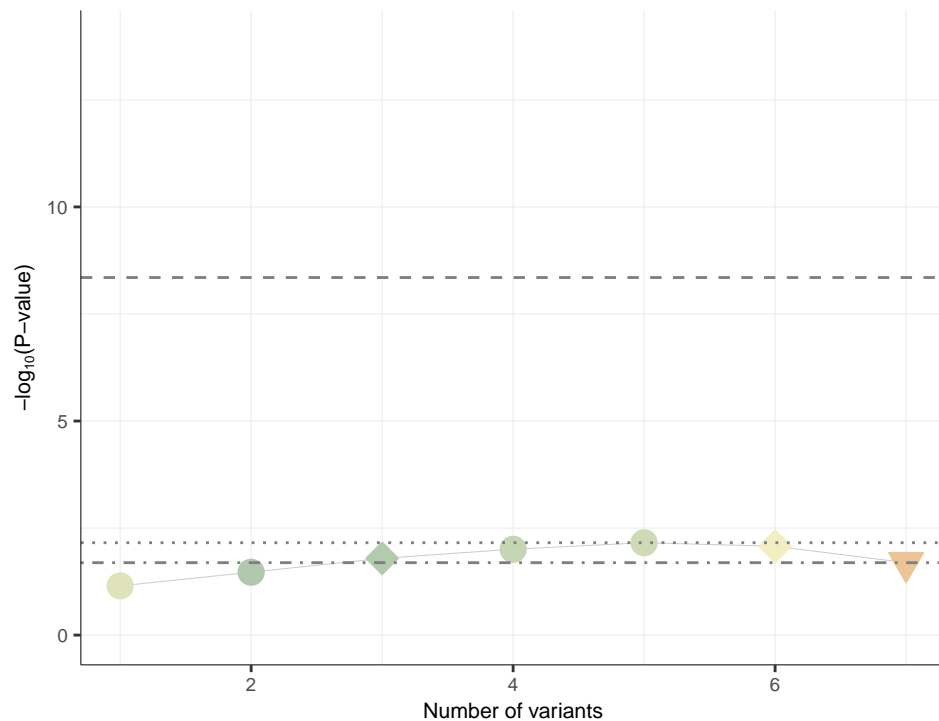
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8

Thresholds

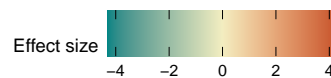
- Significance Threshold
- - - Total P-value
- ... Lowest P-value

(N(1) + N(8))–acetylspermidine in urine at *SLC47A1* (LoF_mis)

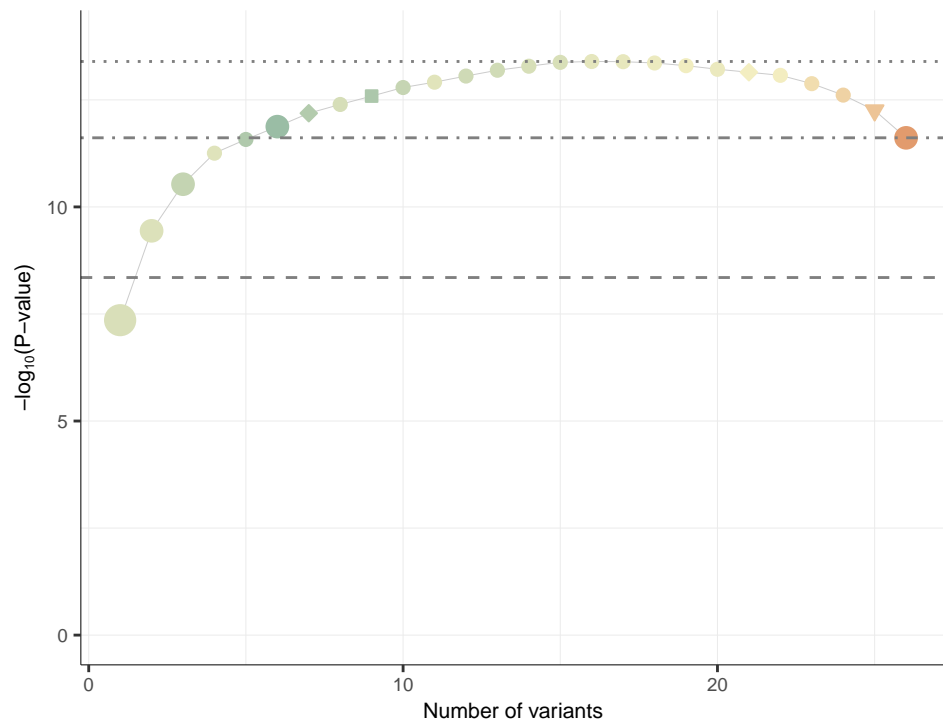


Variant consequence

- ◇ frameshift
- missense
- ▽ splicing
- start/stop lost



(N(1) + N(8))–acetylspermidine in urine at *SLC47A1* (HI_mis)



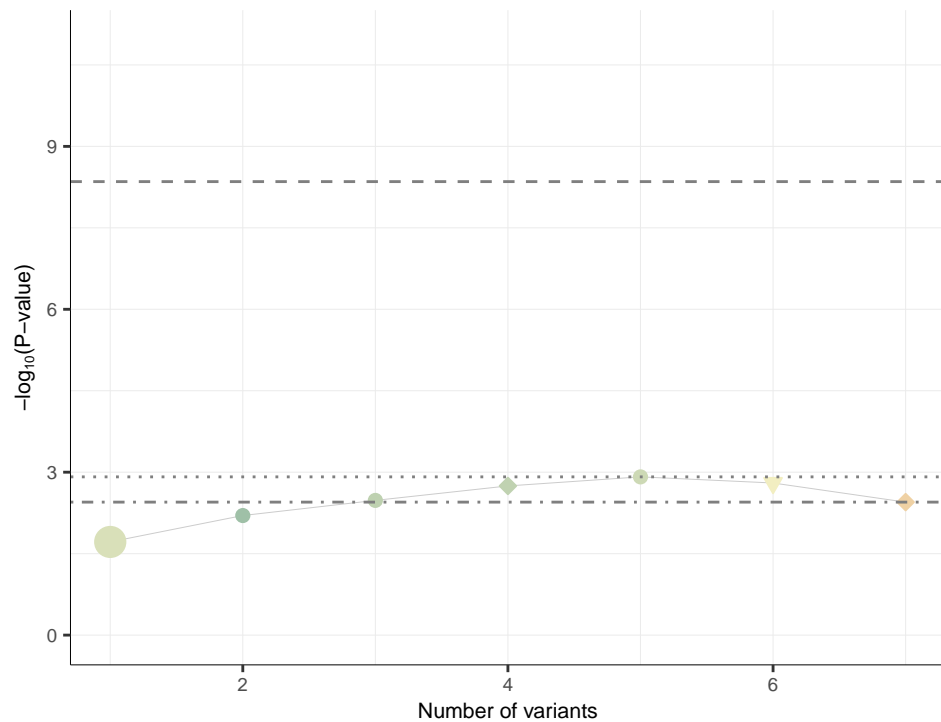
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8

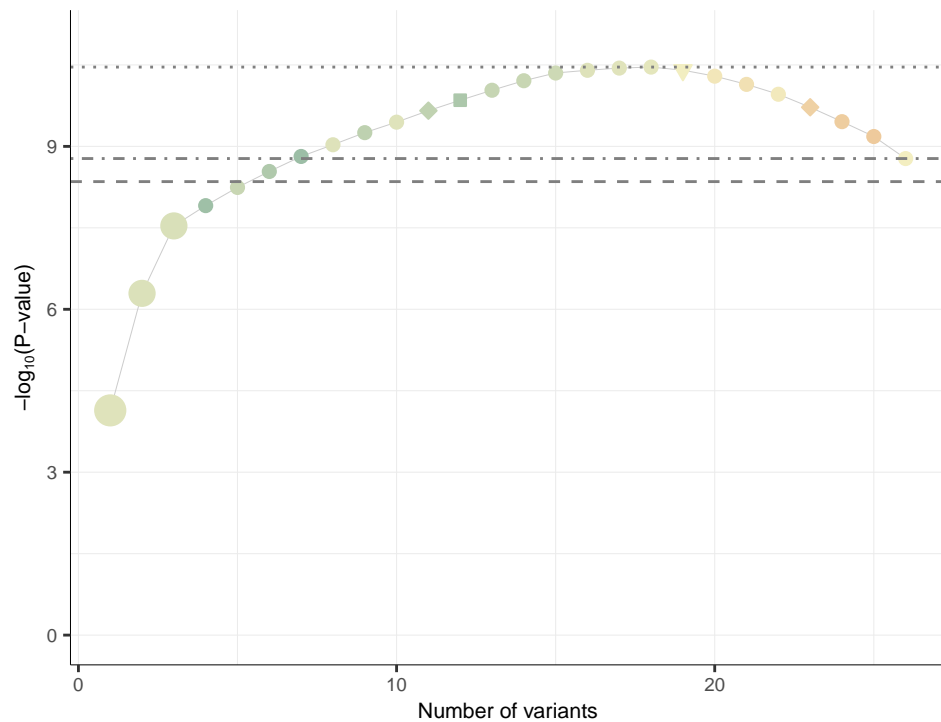
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

dopamine in urine at SLC47A1 (LoF_mis)

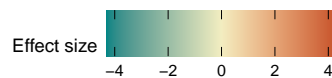


dopamine in urine at SLC47A1 (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- ▽ splicing
- start/stop lost



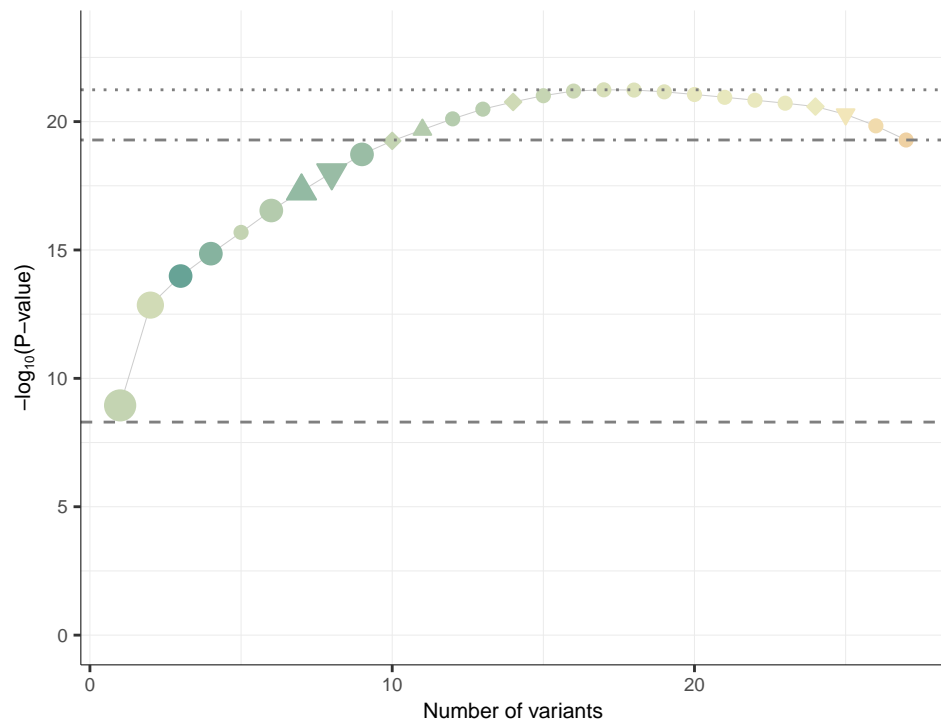
P-value

- >0.05
- <0.05
- <1e-3

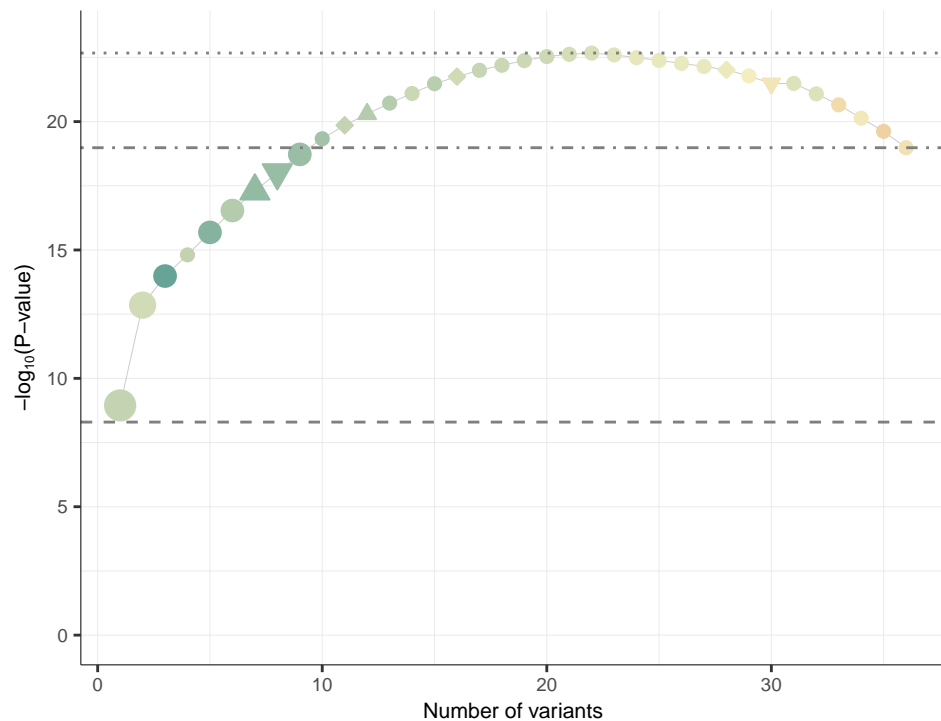
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

1,5-anhydroglucitol (1,5-AG) in plasma at *SLC5A10* (LoF_mis)



1,5-anhydroglucitol (1,5-AG) in plasma at *SLC5A10* (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- ▽ splicing
- △ stop gained

Effect size

-4 -2 0 2 4

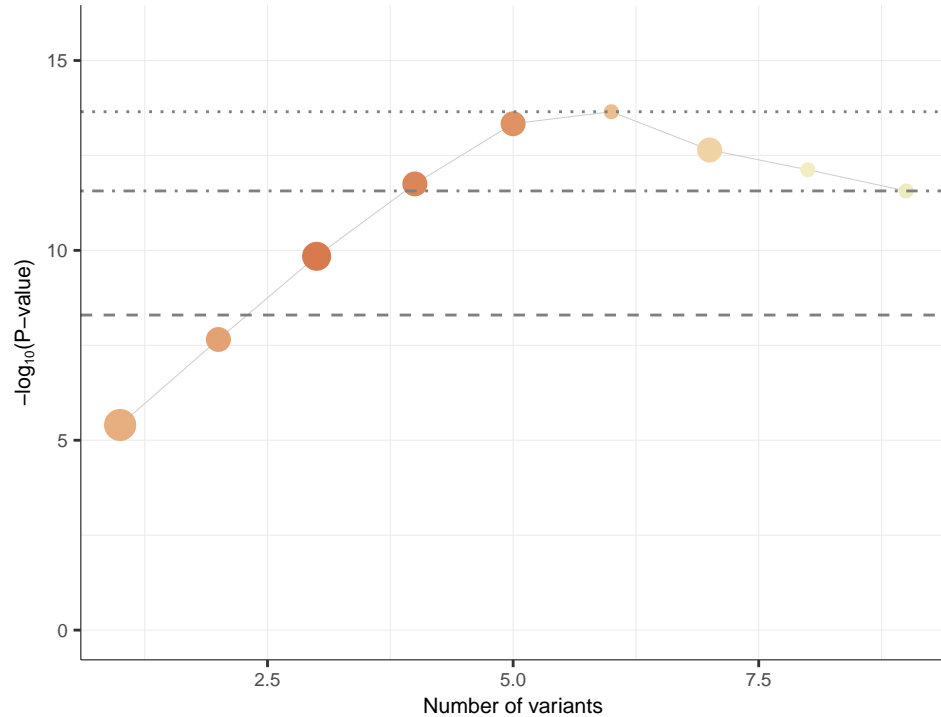
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8

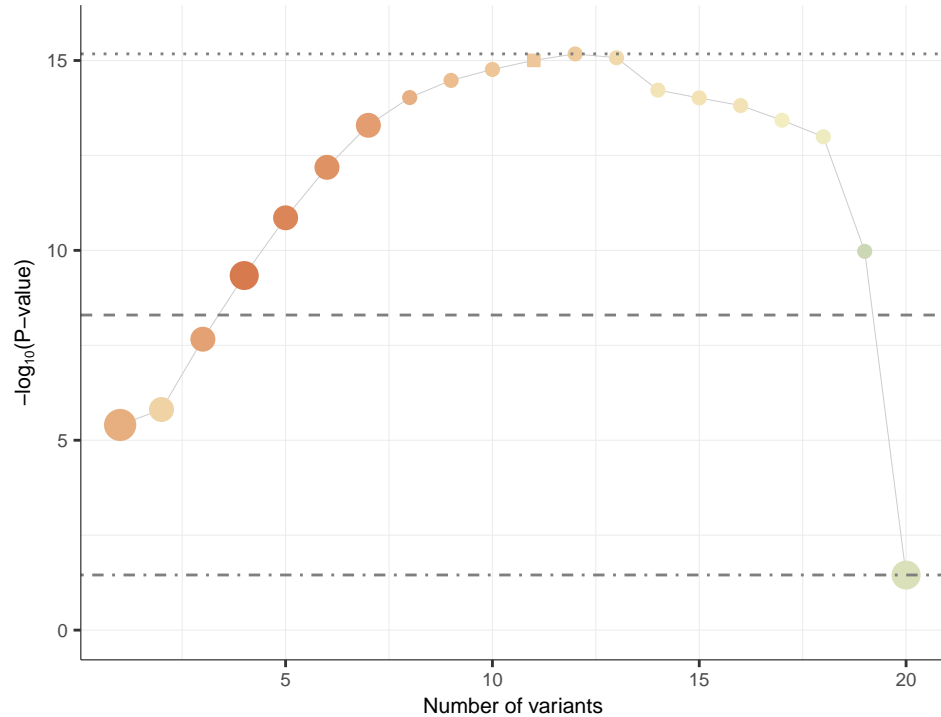
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

betaine in plasma at *SLC6A12* (LoF_mis)



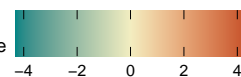
betaine in plasma at *SLC6A12* (HI_mis)



Variant consequence

- missense
- start/stop lost

Effect size



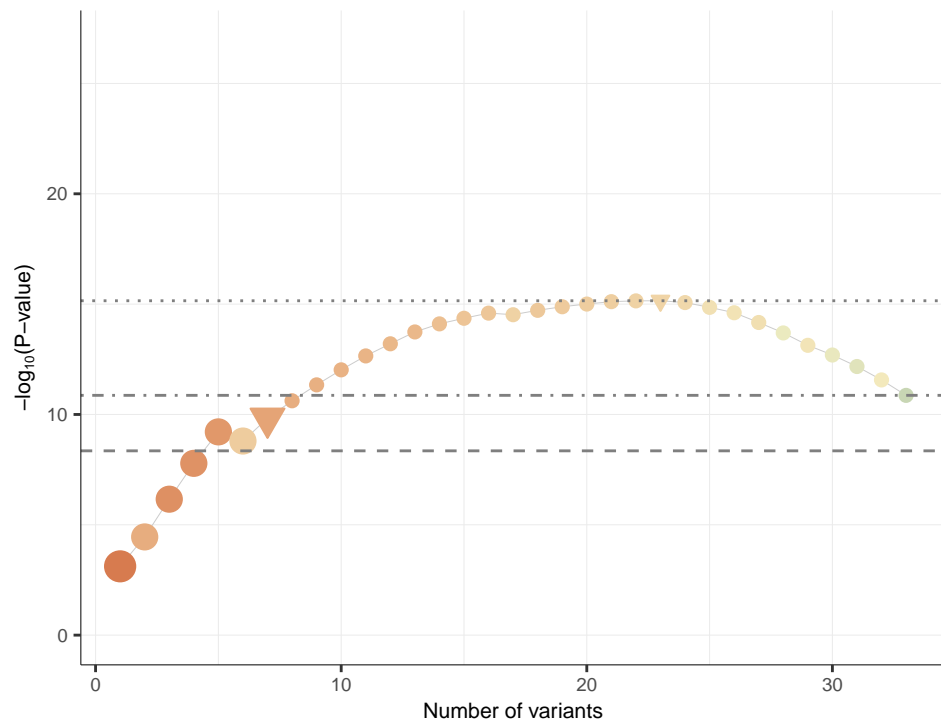
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5

Thresholds

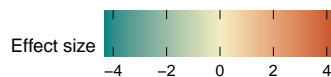
- Significance Threshold
- - - Total P-value
- ... Lowest P-value

asparagine in urine at *SLC6A19* (LoF_mis)

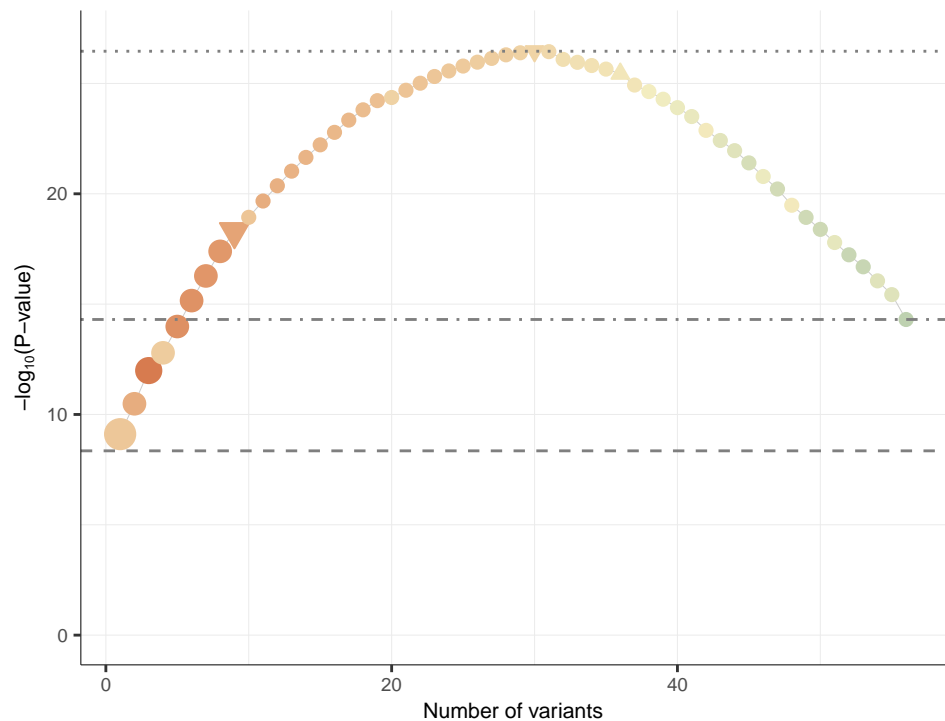


Variant consequence

- missense
- ▽ splicing
- △ stop gained



asparagine in urine at *SLC6A19* (HI_mis)



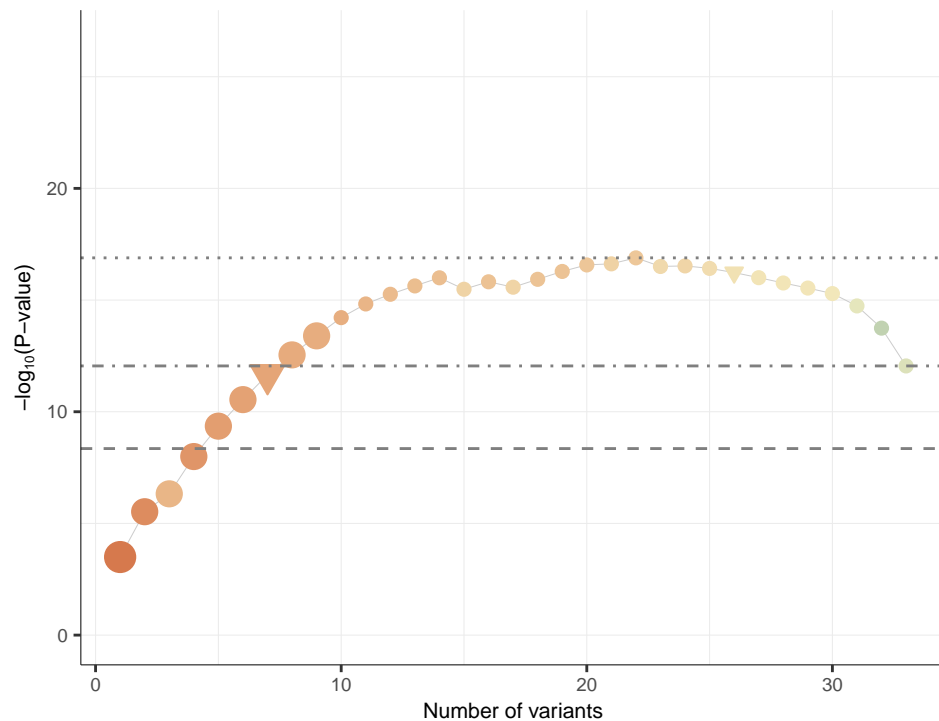
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8

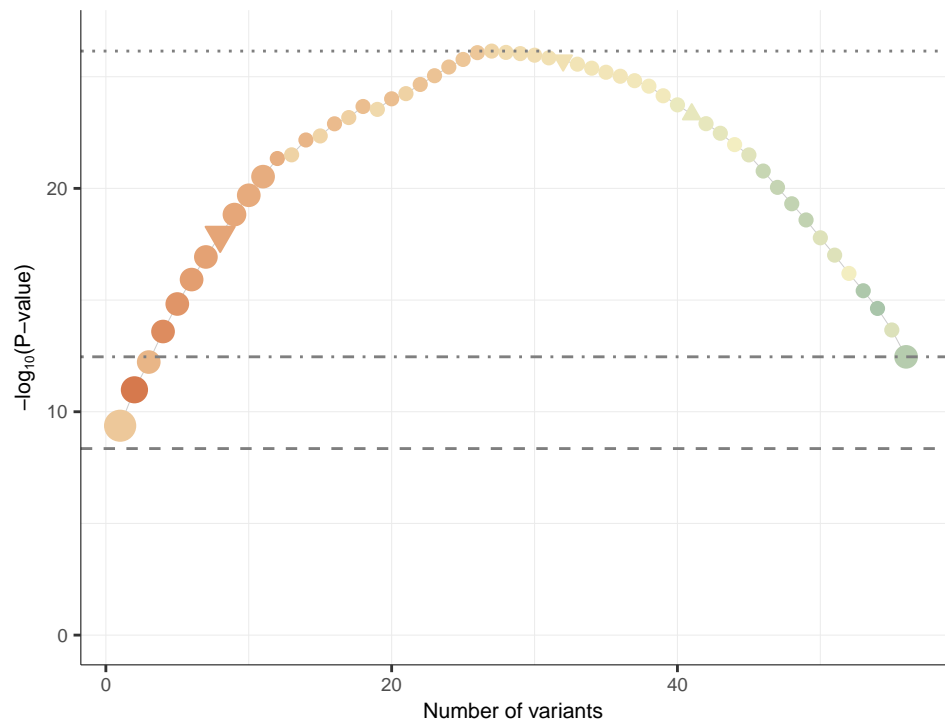
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

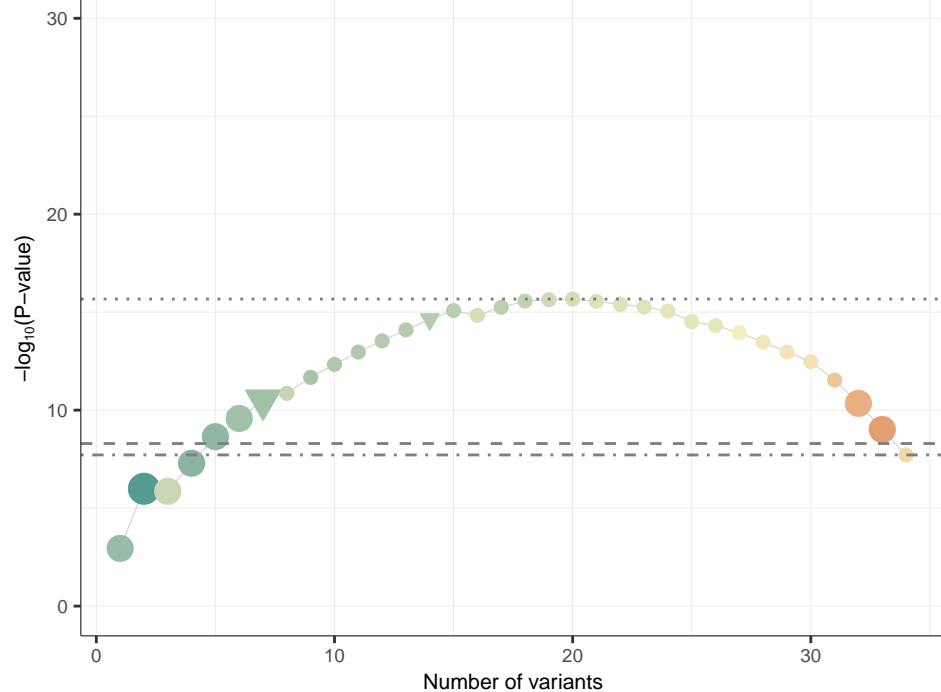
histidine in urine at *SLC6A19* (LoF_mis)



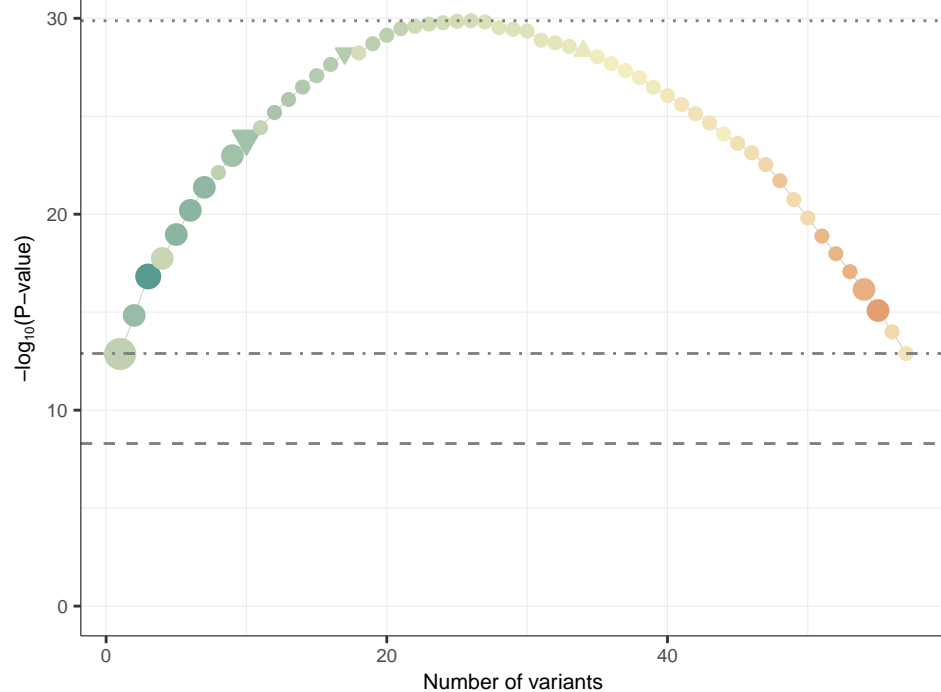
histidine in urine at *SLC6A19* (HI_mis)



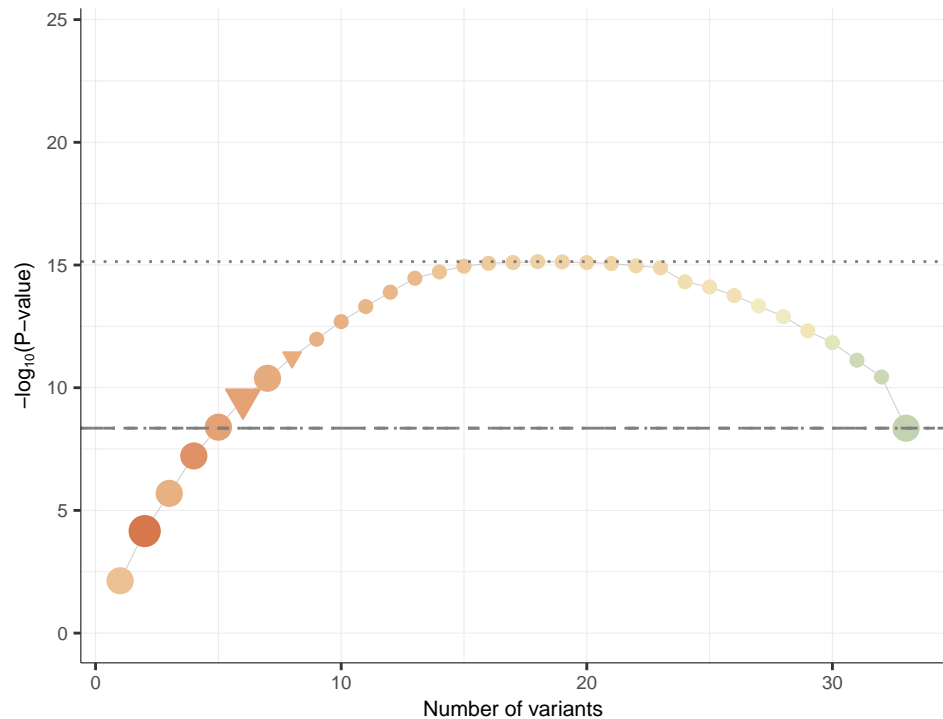
methionine sulfone in plasma at *SLC6A19* (LoF_mis)



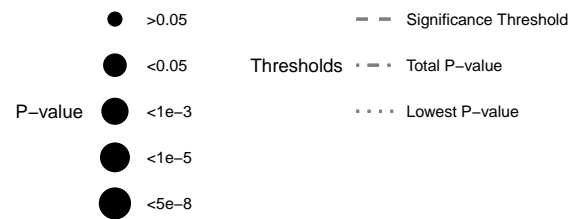
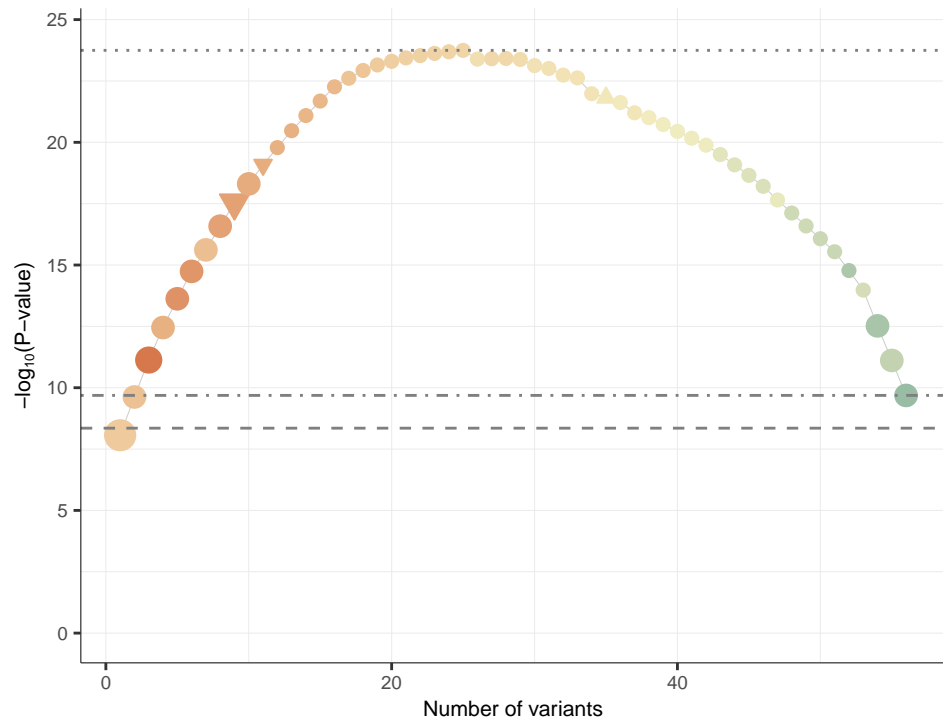
methionine sulfone in plasma at *SLC6A19* (HI_mis)

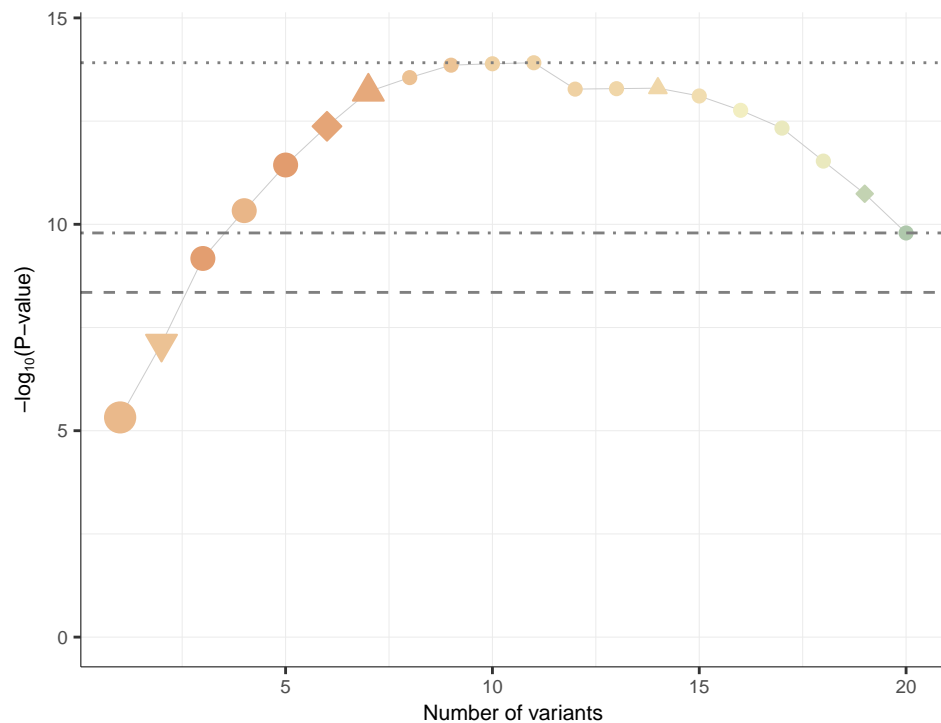
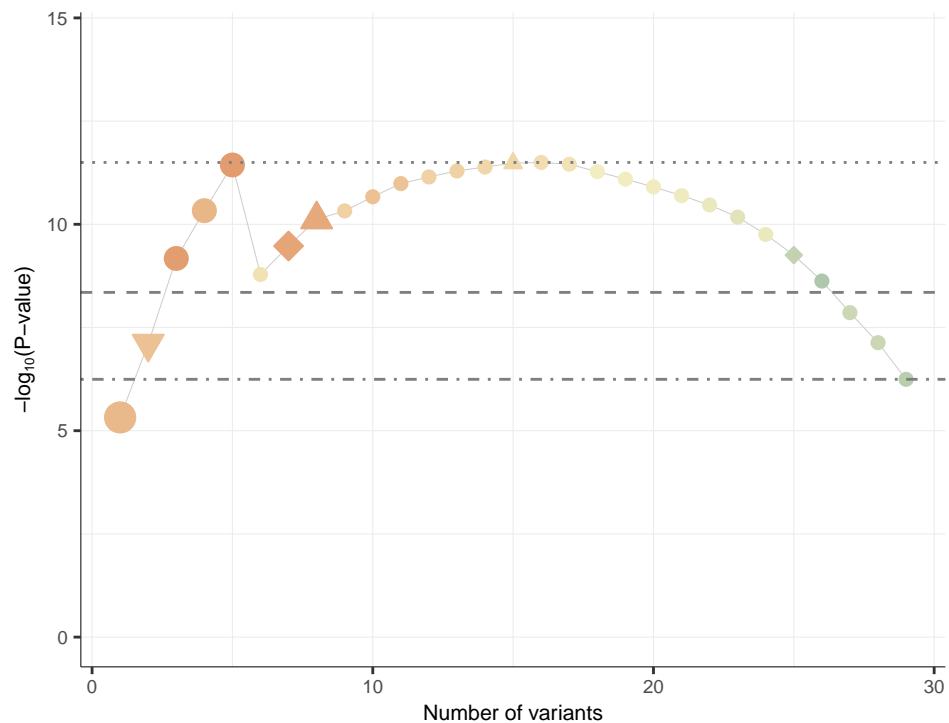


tryptophan in urine at *SLC6A19* (LoF_mis)



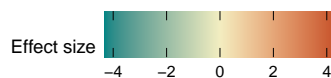
tryptophan in urine at *SLC6A19* (HI_mis)



5-hydroxylysine in urine at *SLC7A9* (LoF_mis)

5-hydroxylysine in urine at *SLC7A9* (HI_mis)


Variant consequence

- ◇ frameshift
- missense
- ▽ splicing
- △ stop gained



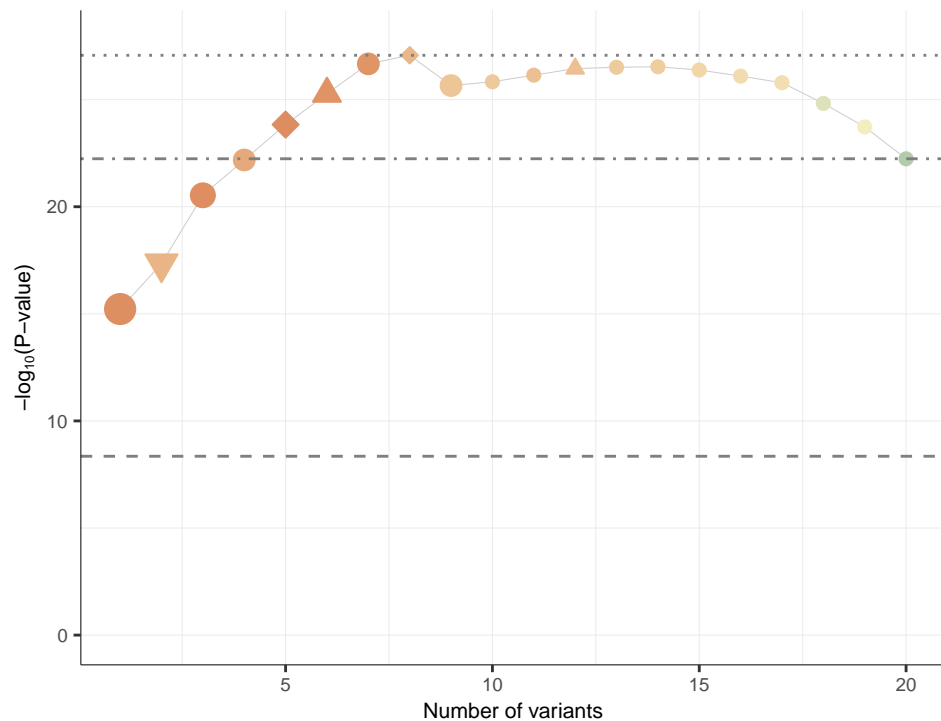
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5

Thresholds

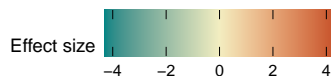
- Significance Threshold
- - - Total P-value
- ... Lowest P-value

cystine in urine at *SLC7A9* (LoF_mis)

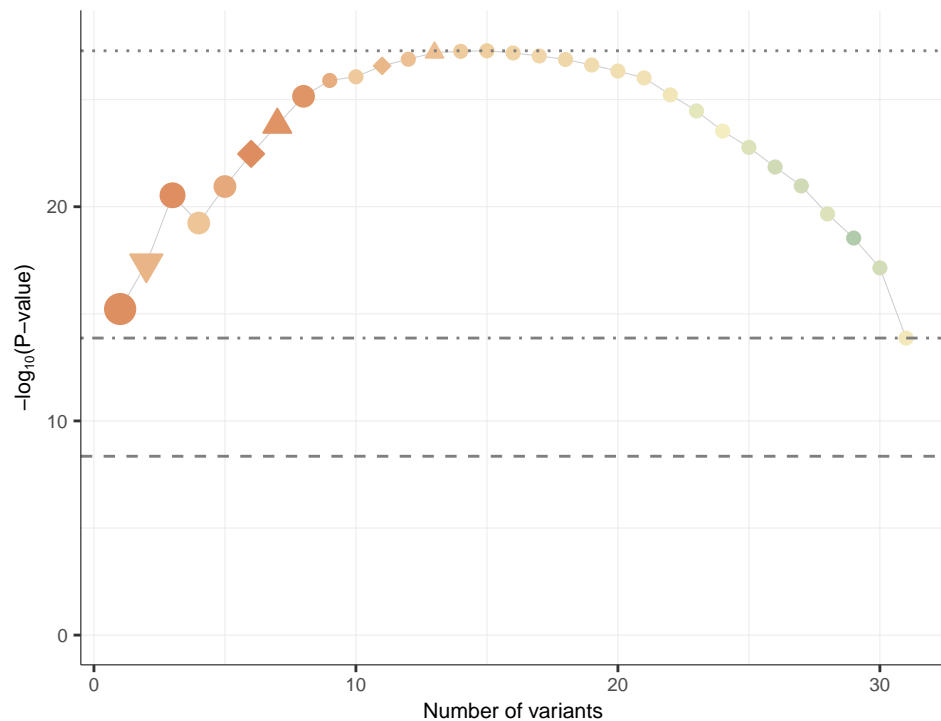


Variant consequence

- ◇ frameshift
- missense
- ▽ splicing
- △ stop gained



cystine in urine at *SLC7A9* (HI_mis)

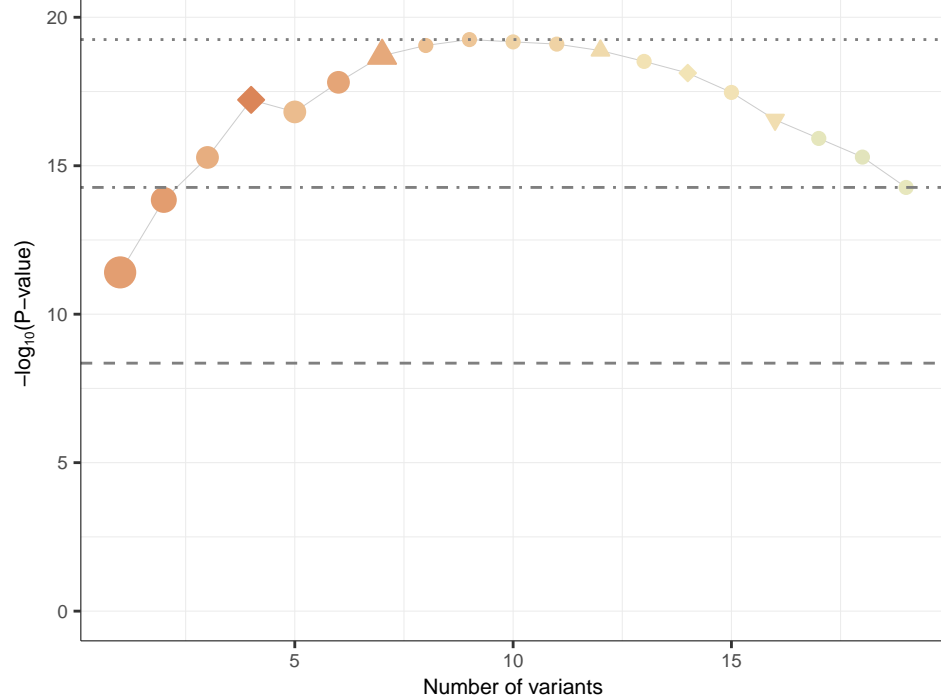
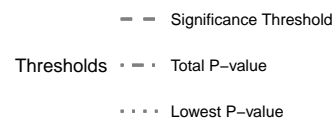
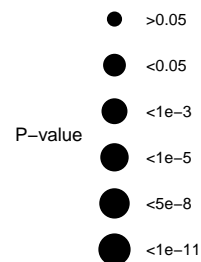
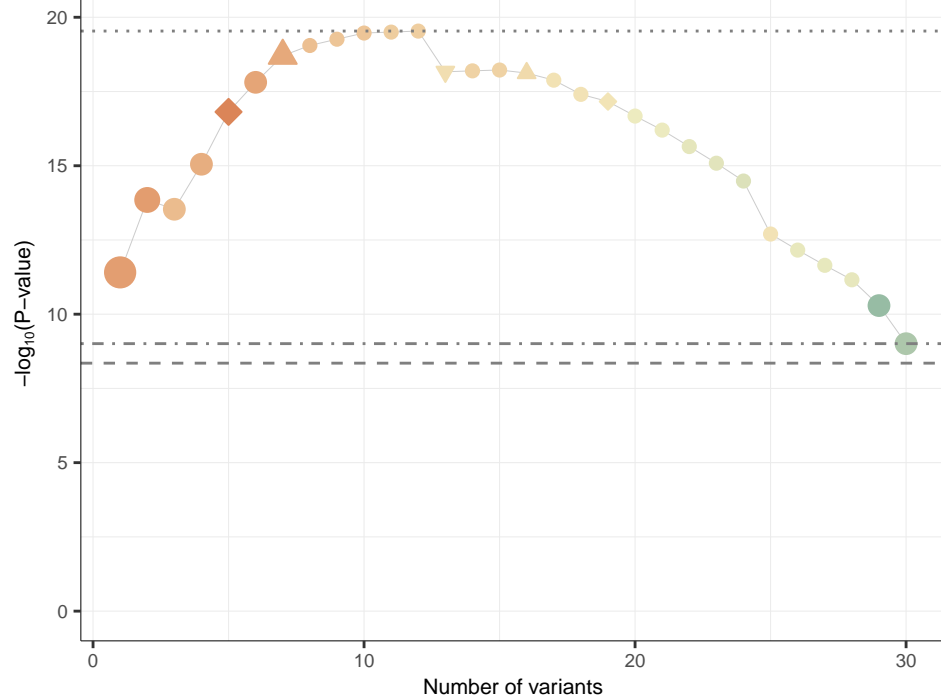


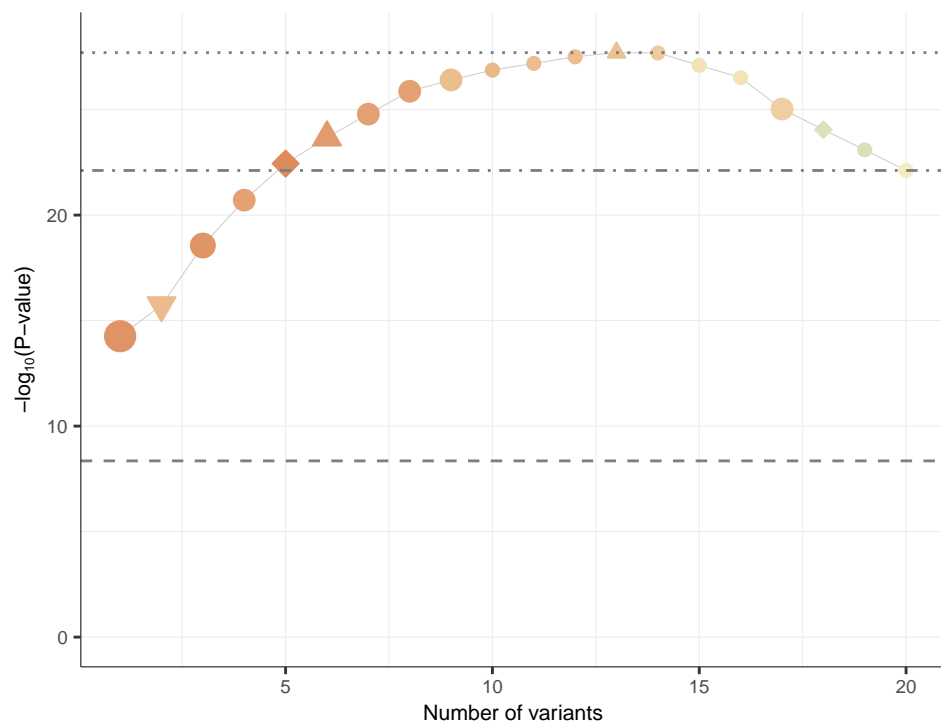
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8
- <1e-11

Thresholds

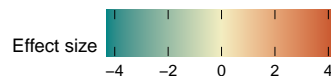
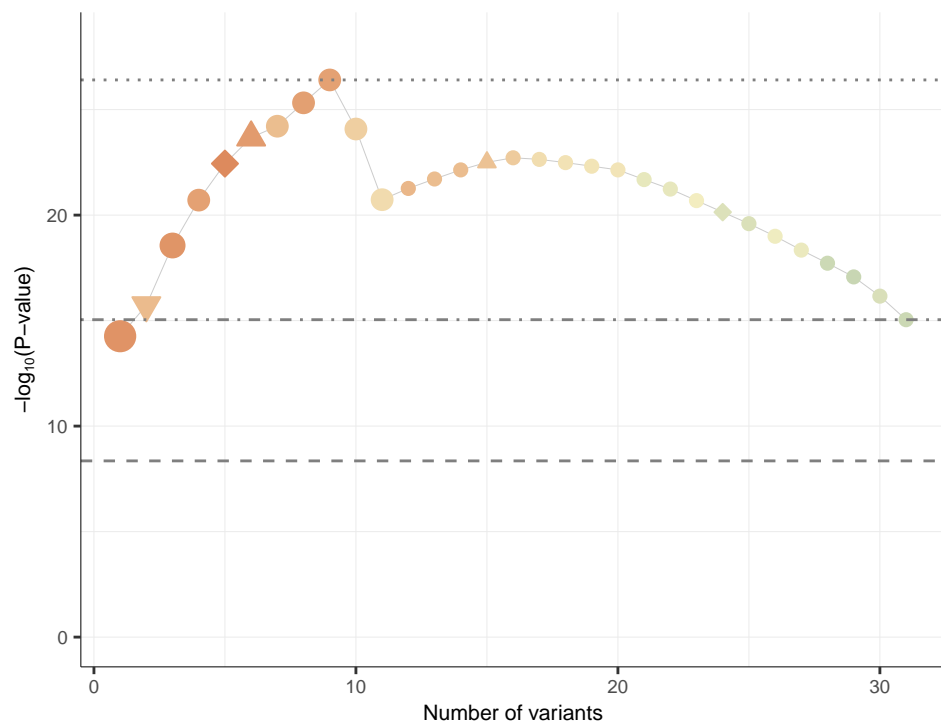
- Significance Threshold
- - - Total P-value
- ... Lowest P-value

homoarginine in urine at *SLC7A9* (LoF_mis)

homoarginine in urine at *SLC7A9* (HI_mis)


lysine in urine at *SLC7A9* (LoF_mis)

Variant consequence

- ◇ frameshift
- missense
- ▽ splicing
- △ stop gained

lysine in urine at *SLC7A9* (HI_mis)

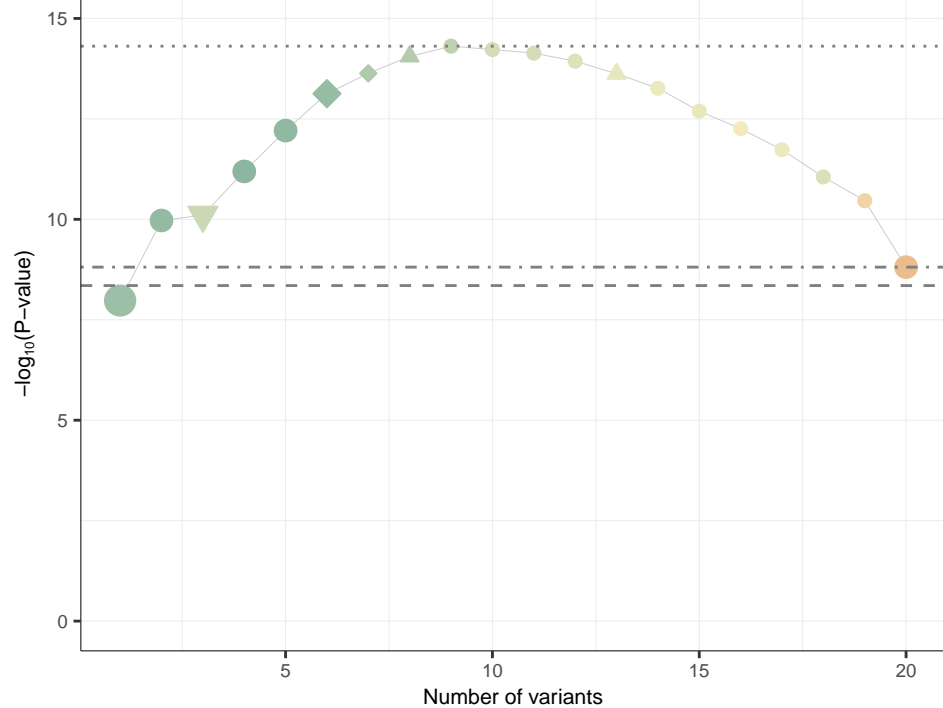
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8
- <1e-11

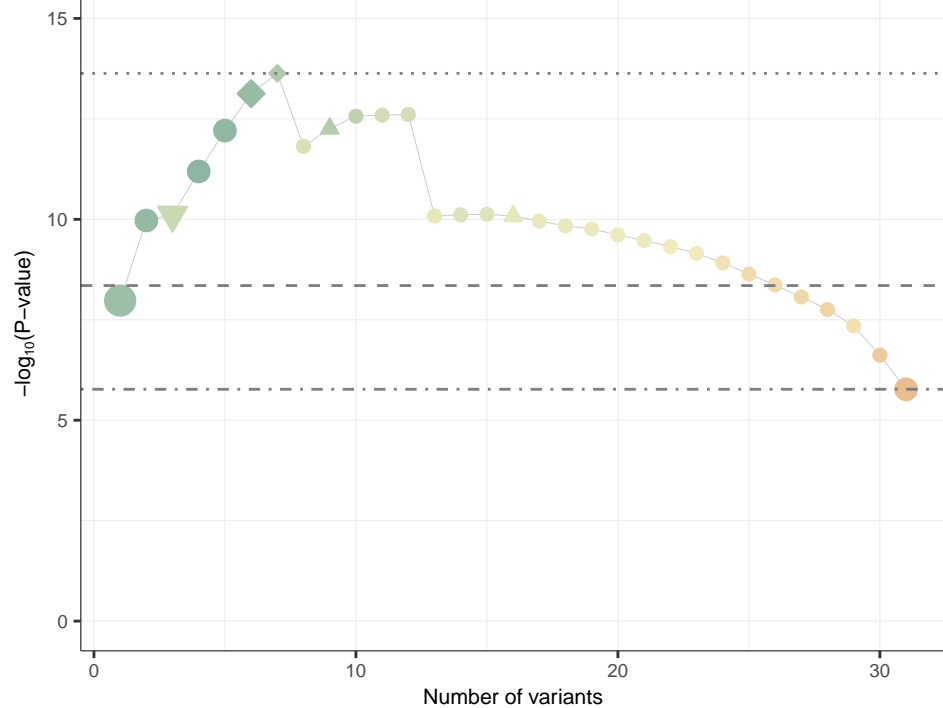
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

N-acetylhomocitrulline in urine at SLC7A9 (LoF_mis)



N-acetylhomocitrulline in urine at SLC7A9 (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- ▽ splicing
- △ stop gained

Effect size

Color scale: -4 (dark green) to 4 (dark red)

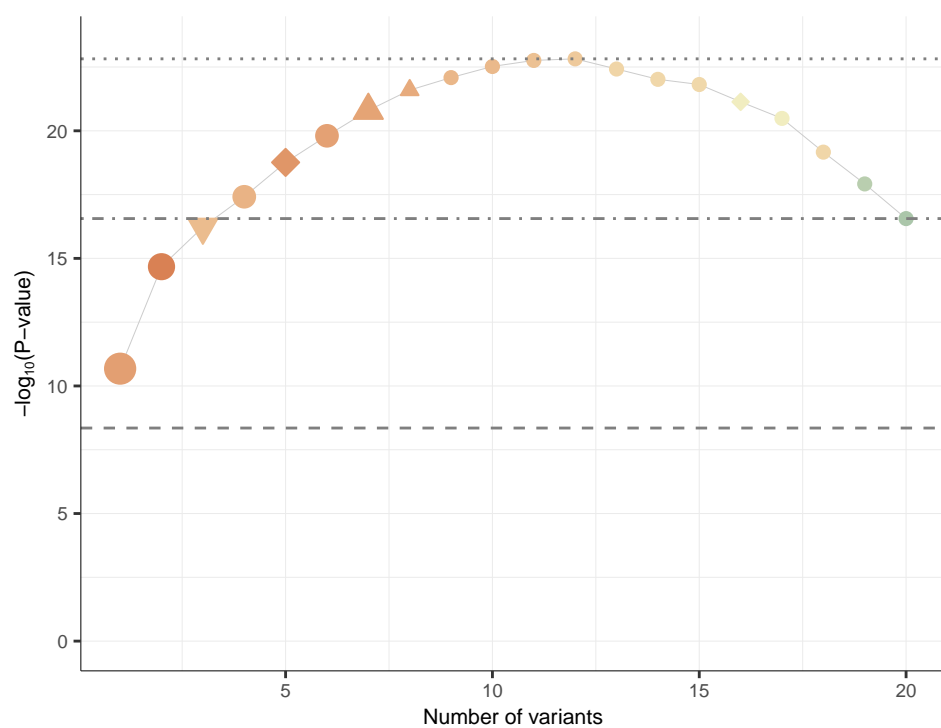
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8

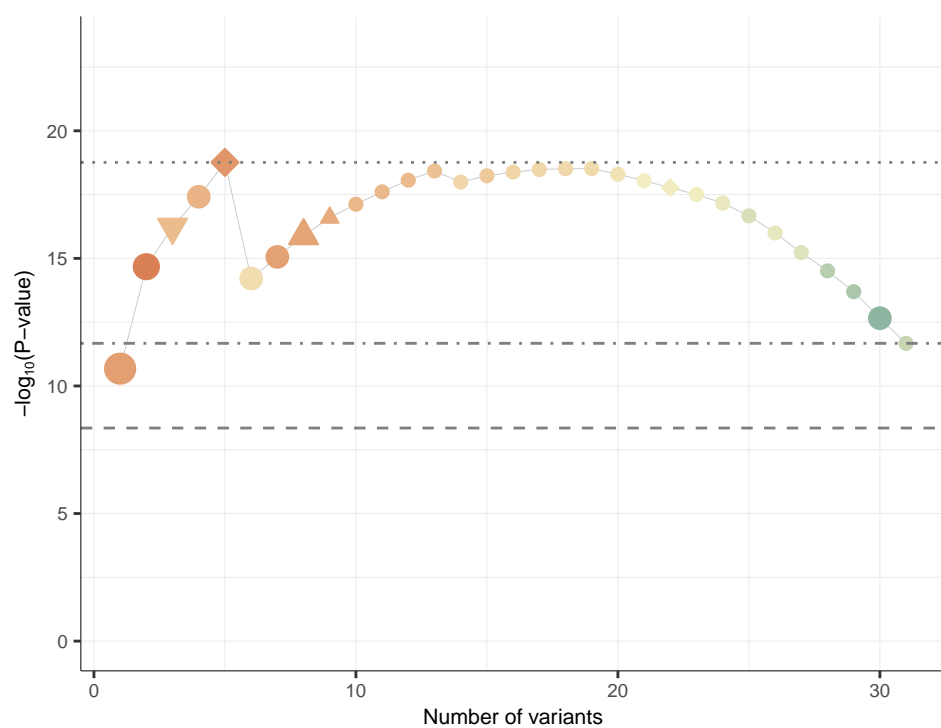
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

N6-methyllysine in urine at *SLC7A9* (LoF_mis)

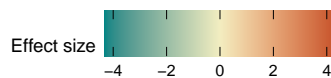


N6-methyllysine in urine at *SLC7A9* (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- ▽ splicing
- △ stop gained



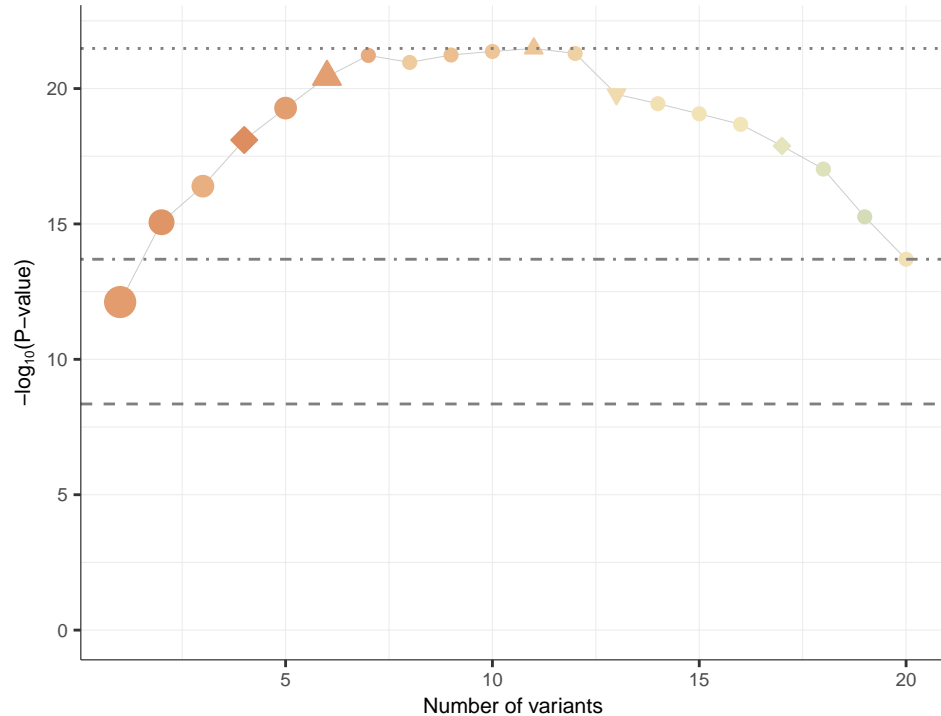
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8

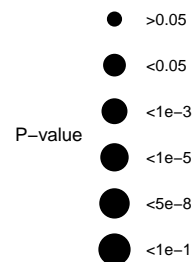
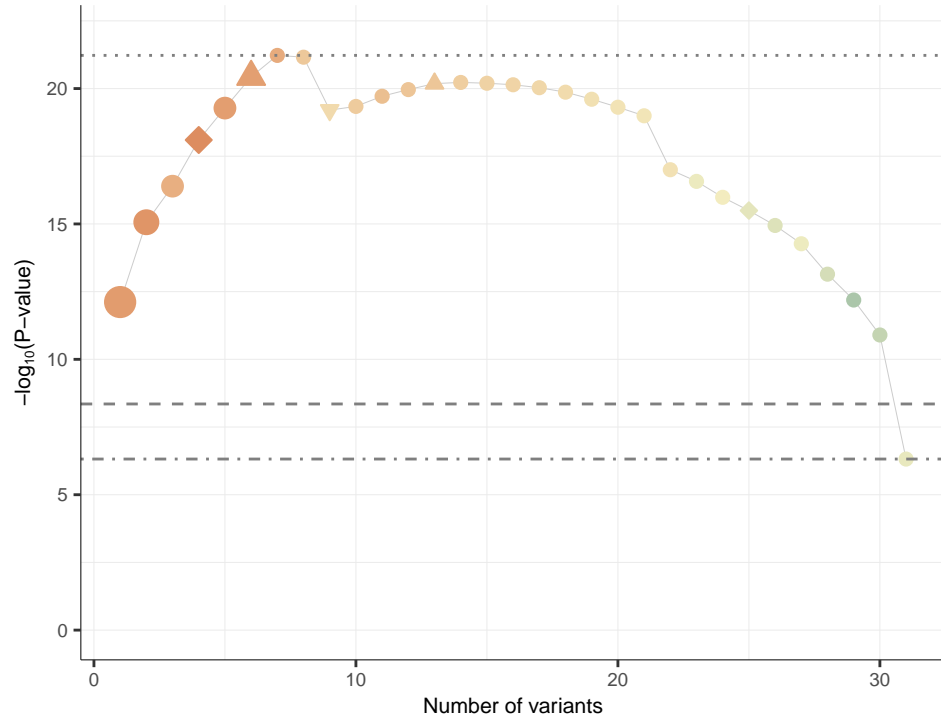
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

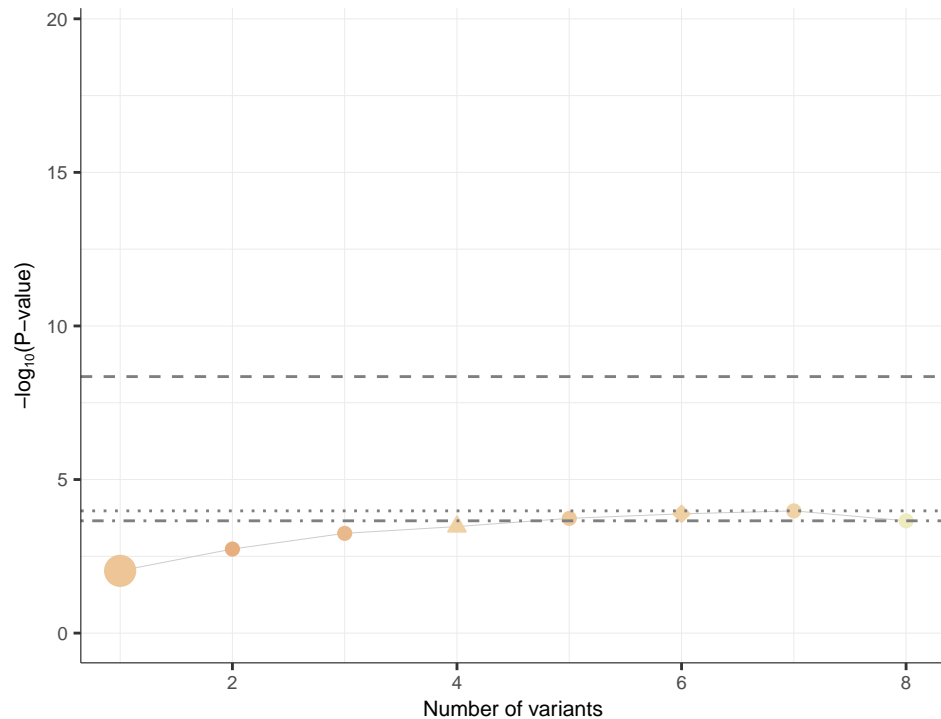
ornithine in urine at *SLC7A9* (LoF_mis)



ornithine in urine at *SLC7A9* (HI_mis)

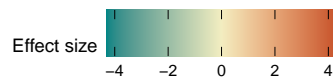


adipate (C6-DC) in urine at *SUGCT* (LoF_mis)

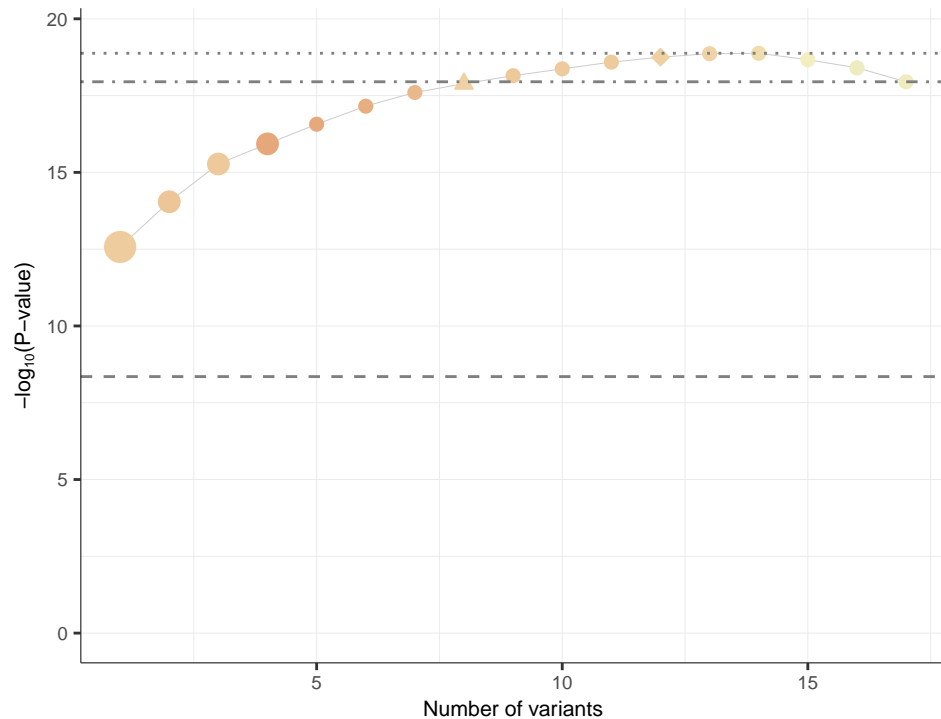


Variant consequence

- ◇ frameshift
- missense
- △ stop gained



adipate (C6-DC) in urine at *SUGCT* (HI_mis)



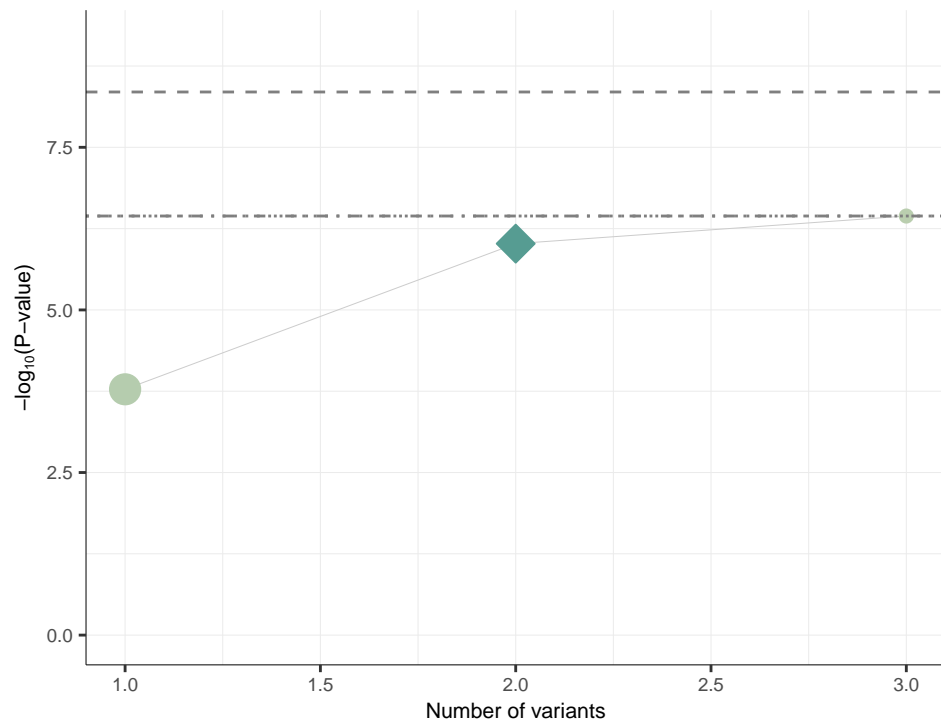
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8
- <1e-11

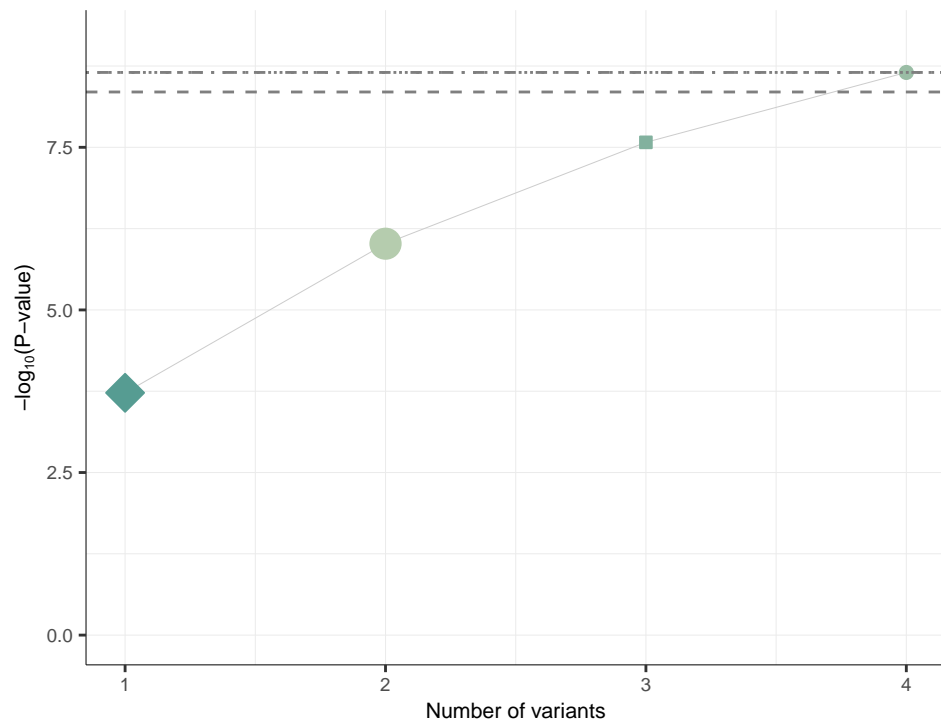
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

androstenediol (3beta,17beta) disulfate (1) in urine at *SULT2A1* (LoF_mis)

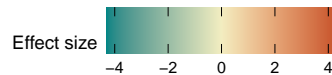


androstenediol (3beta,17beta) disulfate (1) in urine at *SULT2A1* (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- start/stop lost



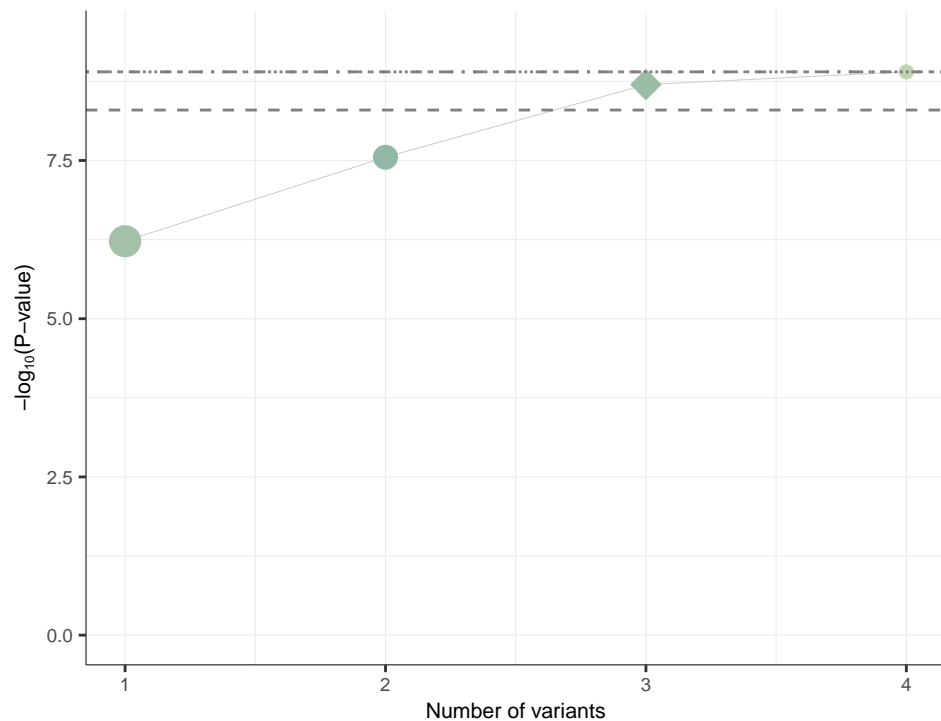
P-value

- <0.05
- <1e-3

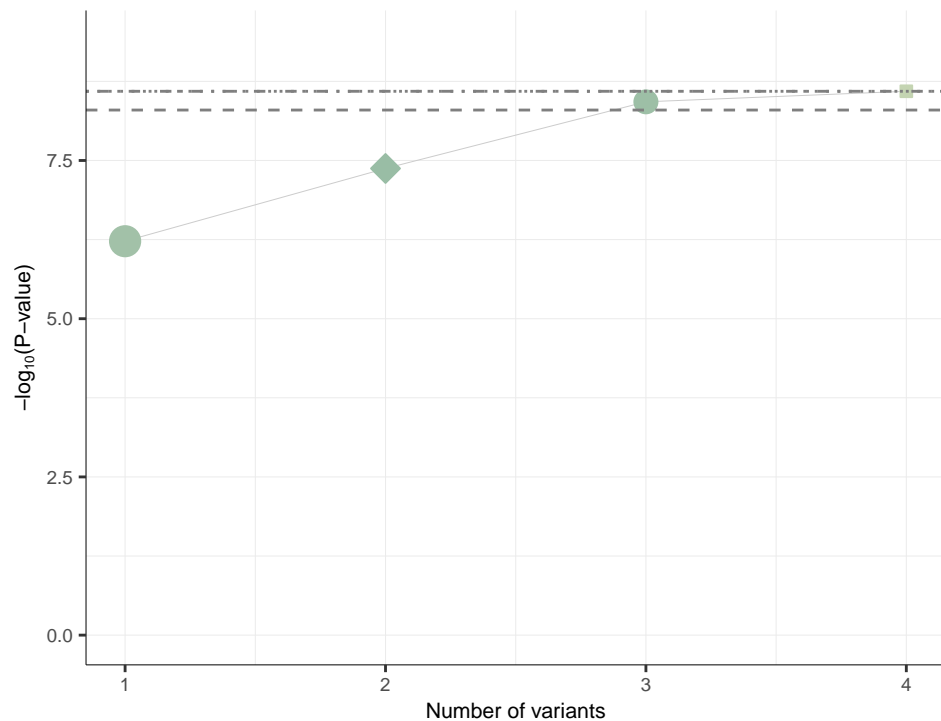
Thresholds

- Significance Threshold
- · · Total P-value
- · · · Lowest P-value

pregnenediol disulfate (C21H34O8S2)* in plasma at *SULT2A1* (LoF_mis)



pregnenediol disulfate (C21H34O8S2)* in plasma at *SULT2A1* (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- start/stop lost

Effect size

-4 -2 0 2 4

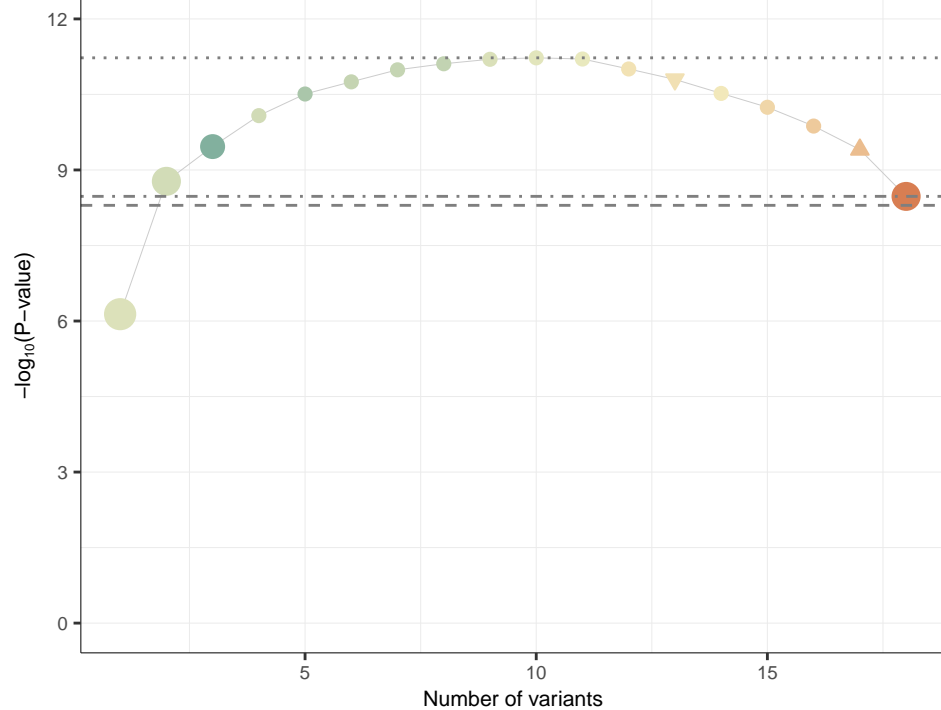
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5

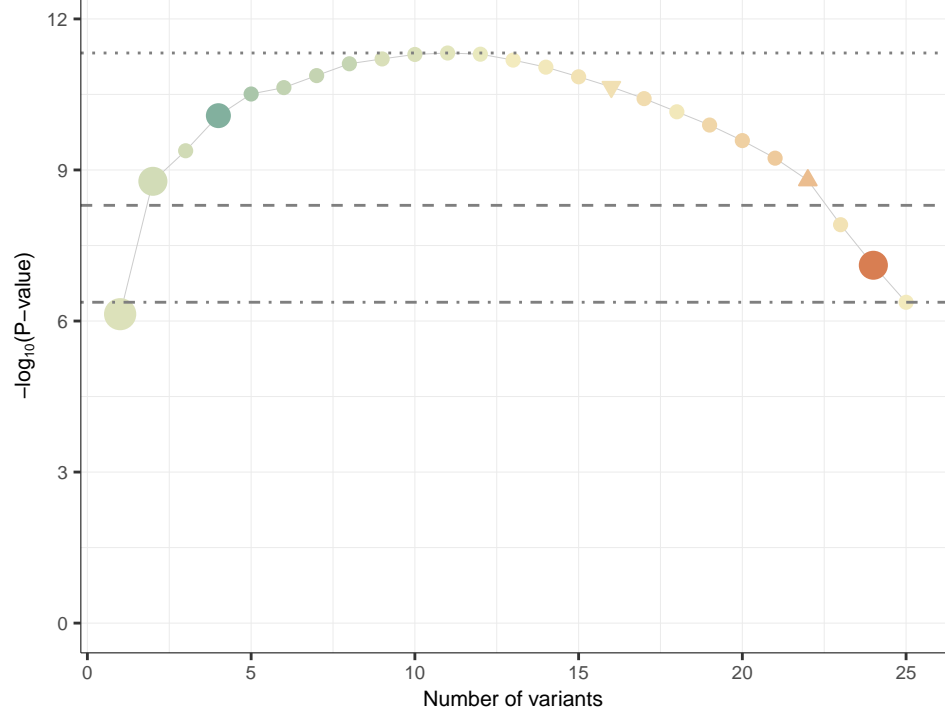
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

X – 11470 in plasma at *TAP2* (LoF_mis)

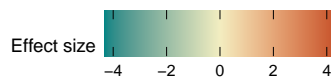


X – 11470 in plasma at *TAP2* (HI_mis)



Variant consequence

- missense
- ▽ splicing
- △ stop gained



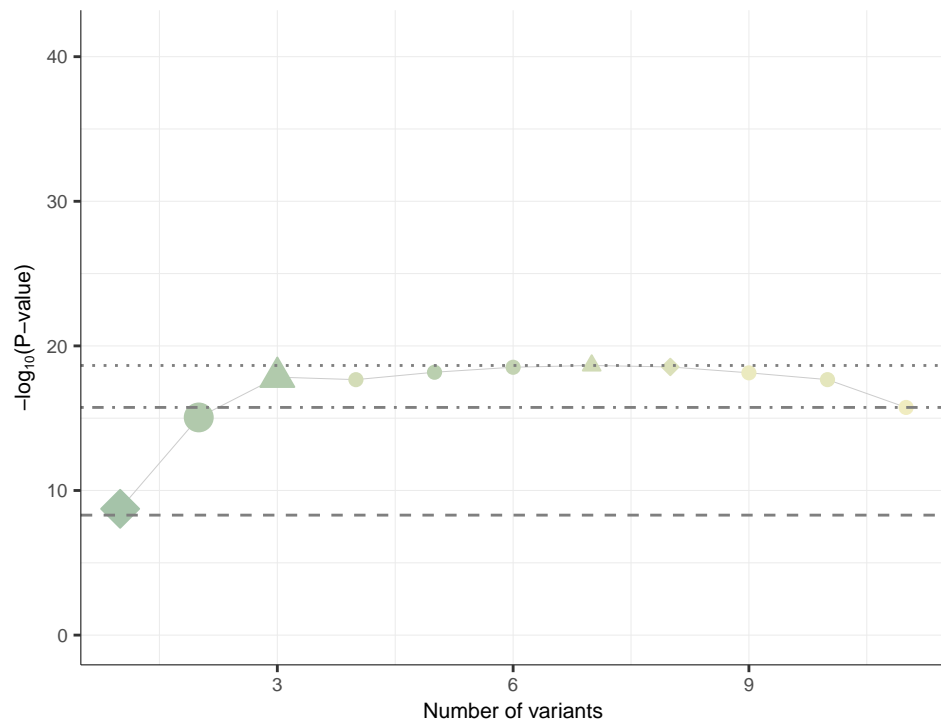
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5

Thresholds

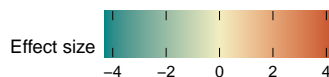
- Significance Threshold
- - - Total P-value
- ... Lowest P-value

deoxycarnitine in plasma at *TMLHE* (LoF_mis)

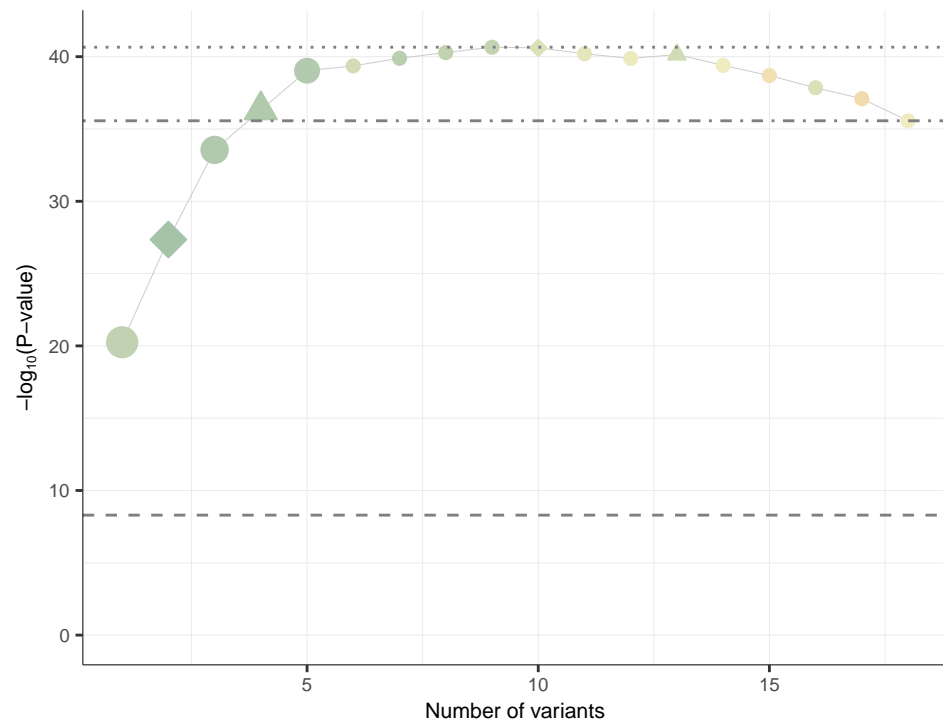


Variant consequence

- ◇ frameshift
- missense
- △ stop gained



deoxycarnitine in plasma at *TMLHE* (HI_mis)



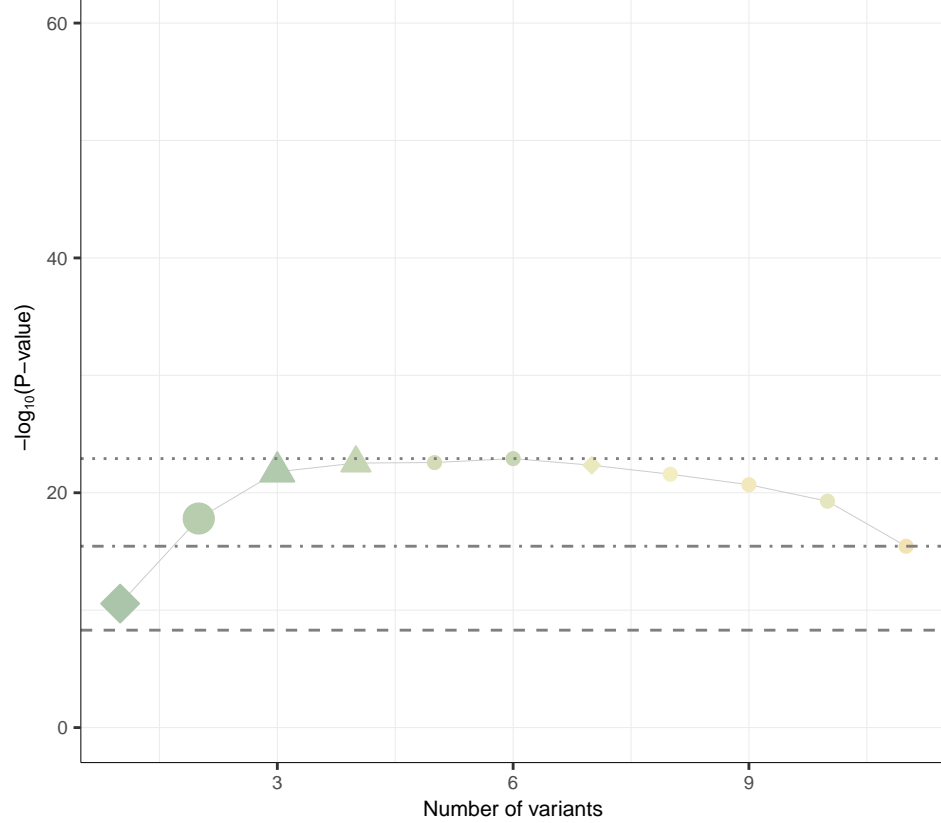
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8
- <1e-11

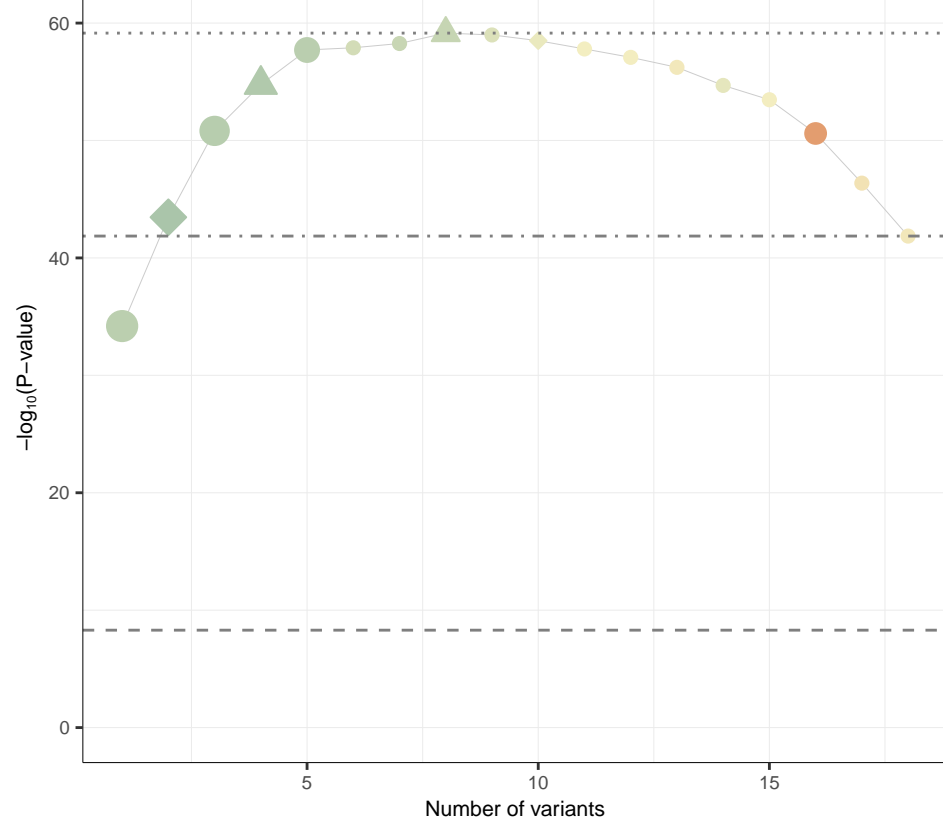
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

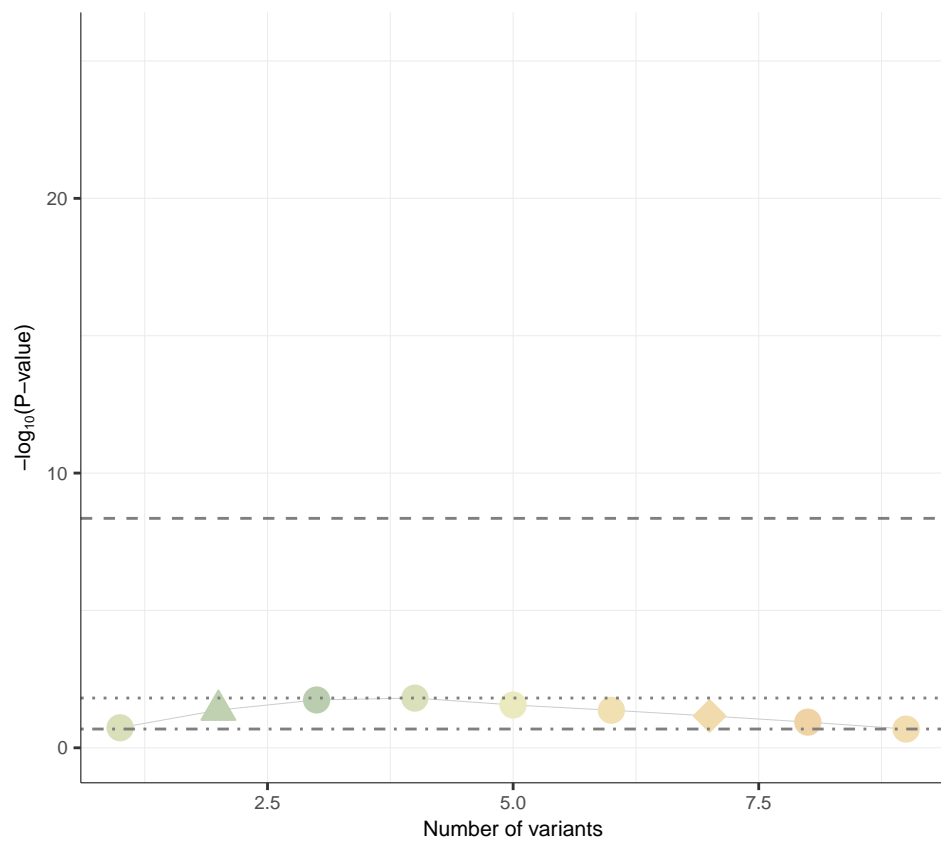
hydroxy-N6,N6,N6-trimethyllysine* in plasma at *TMLHE* (LoF_mis)



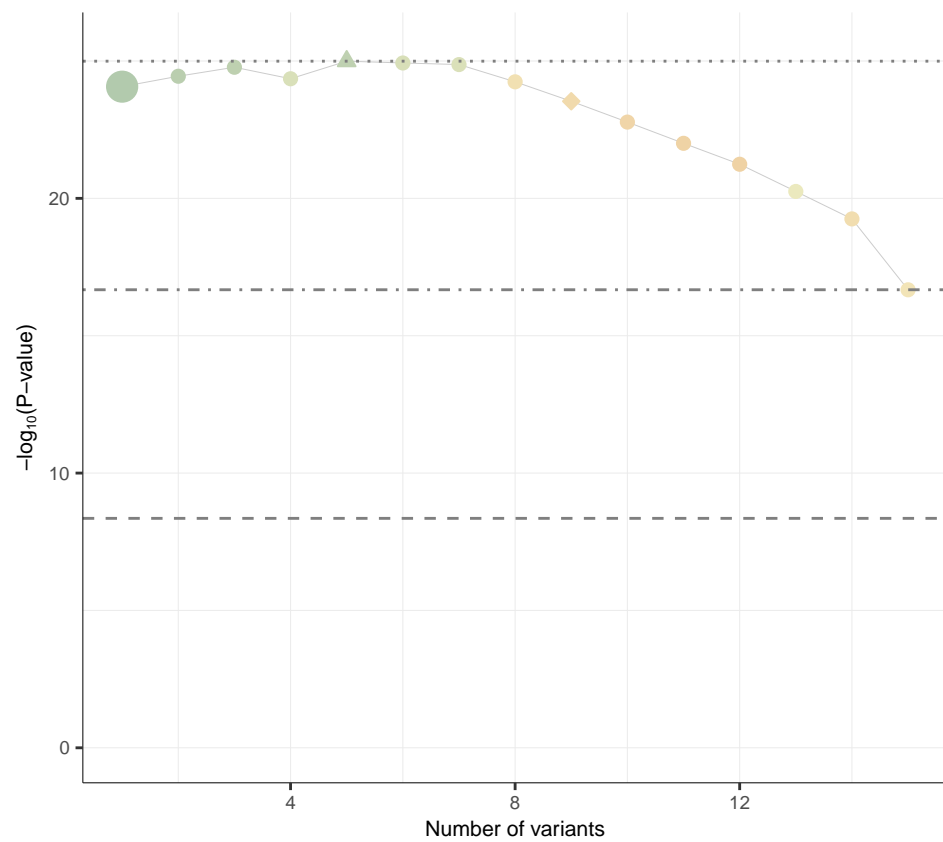
hydroxy-N6,N6,N6-trimethyllysine* in plasma at *TMLHE* (HI_mis)



hydroxy-N6,N6,N6-trimethyllysine* in urine at *TMLHE* (LoF_mis)

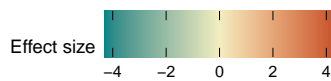


hydroxy-N6,N6,N6-trimethyllysine* in urine at *TMLHE* (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- △ stop gained



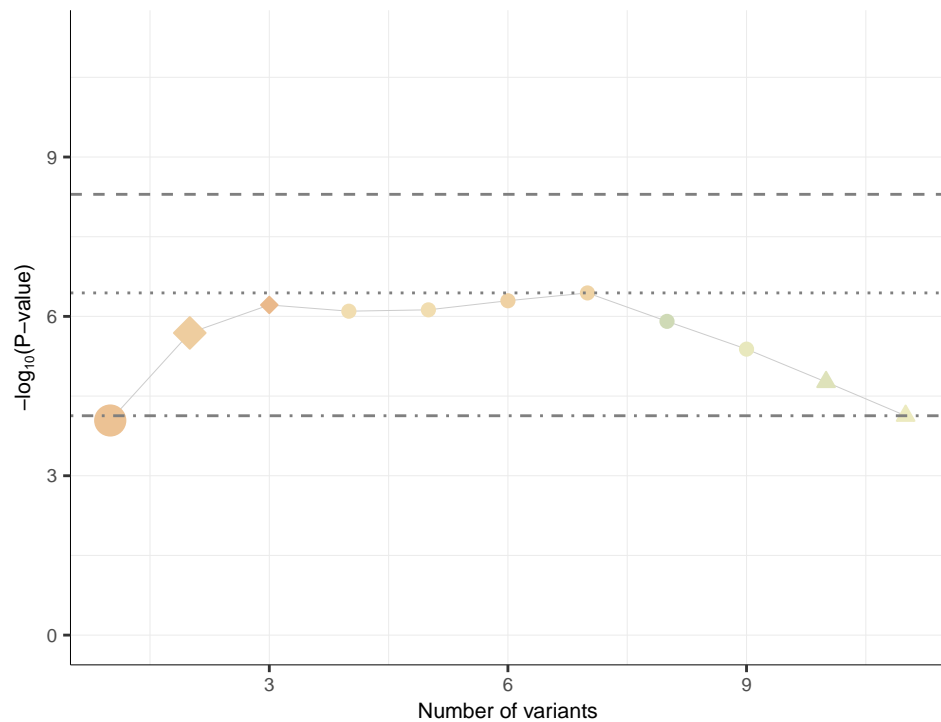
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8
- <1e-11

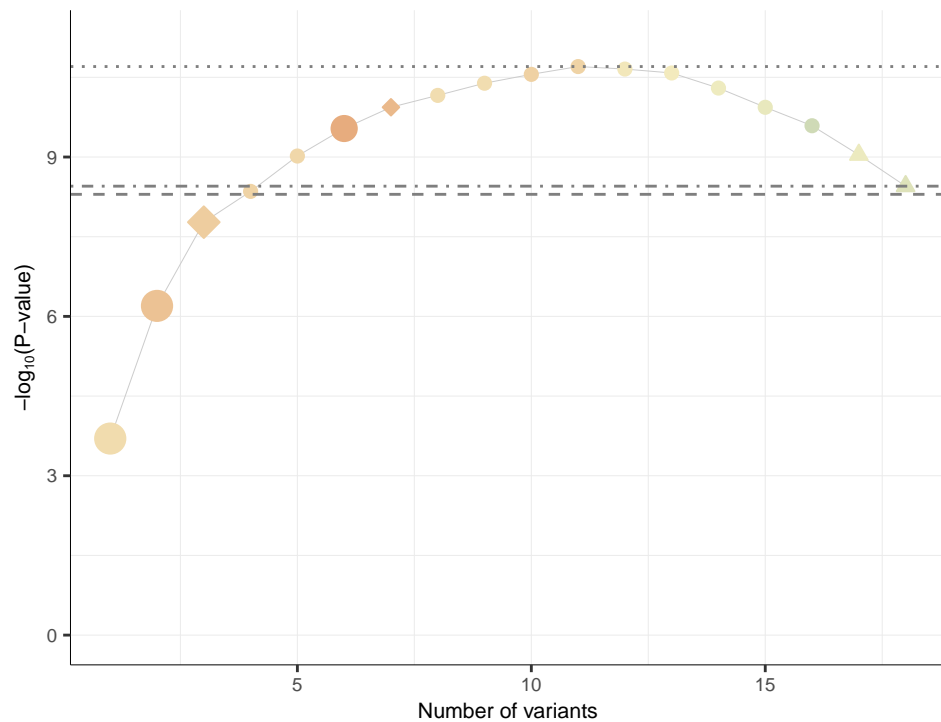
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

N,N,N-trimethyl-5-aminovalerate in plasma at *TMLHE* (LoF_mis)

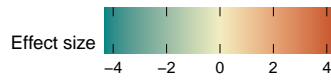


N,N,N-trimethyl-5-aminovalerate in plasma at *TMLHE* (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- △ stop gained



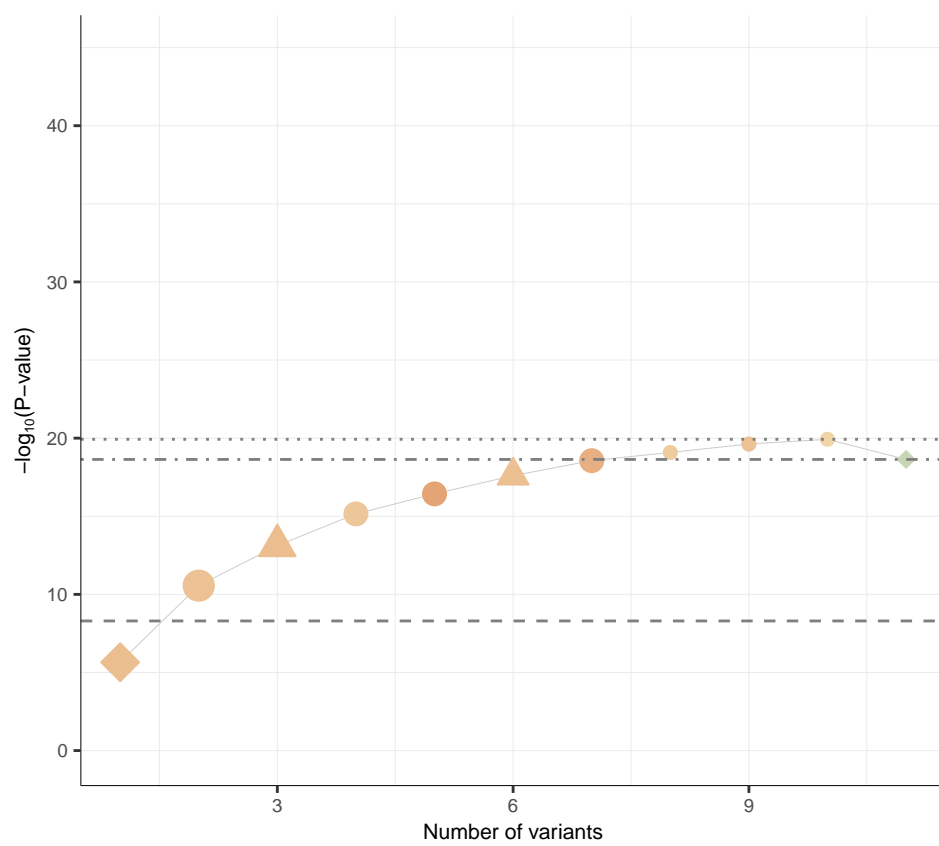
P-value

- >0.05
- <0.05
- <1e-3

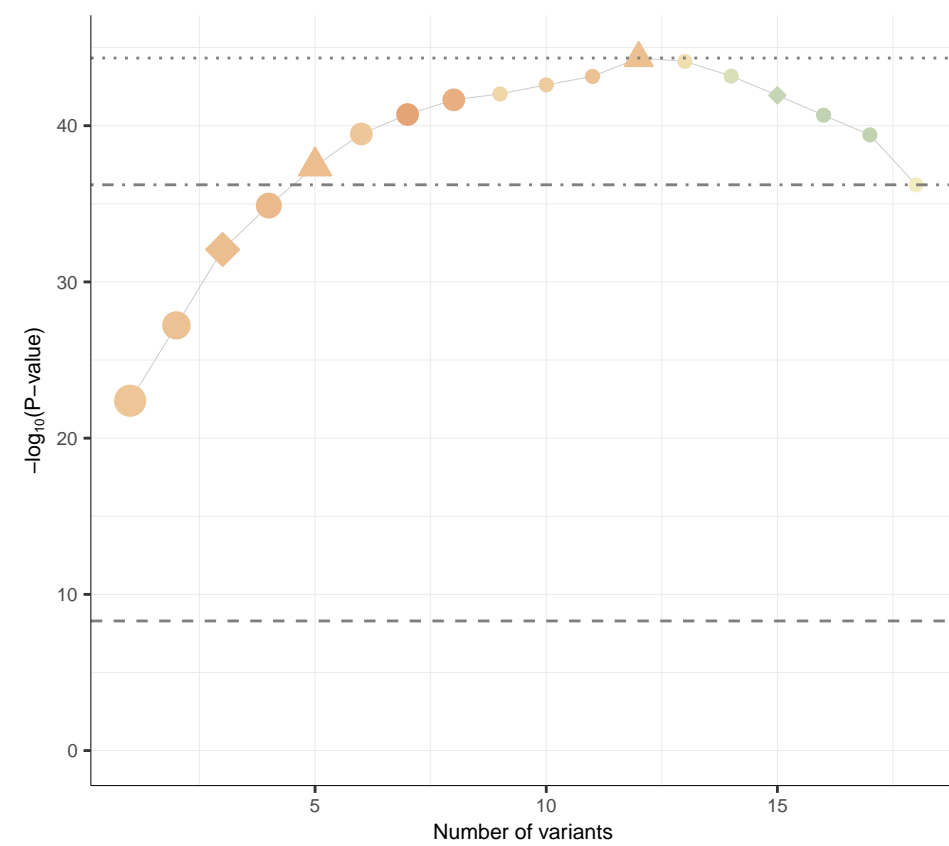
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

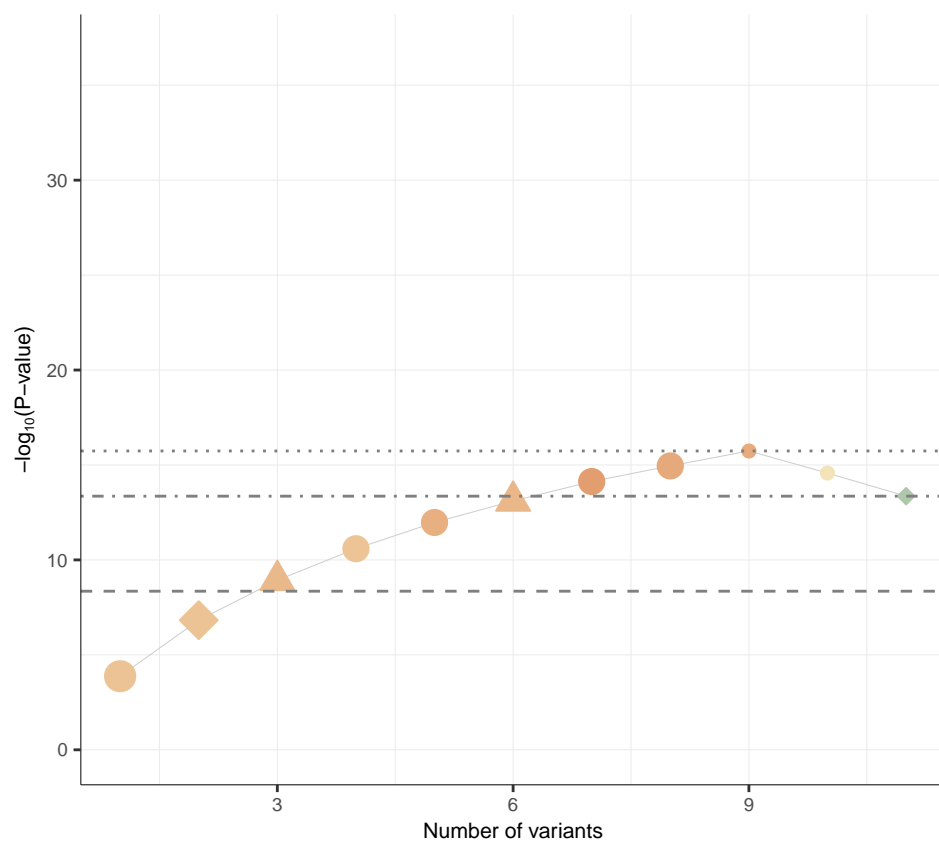
N6,N6,N6-trimethyllysine in plasma at *TMLHE* (LoF_mis)



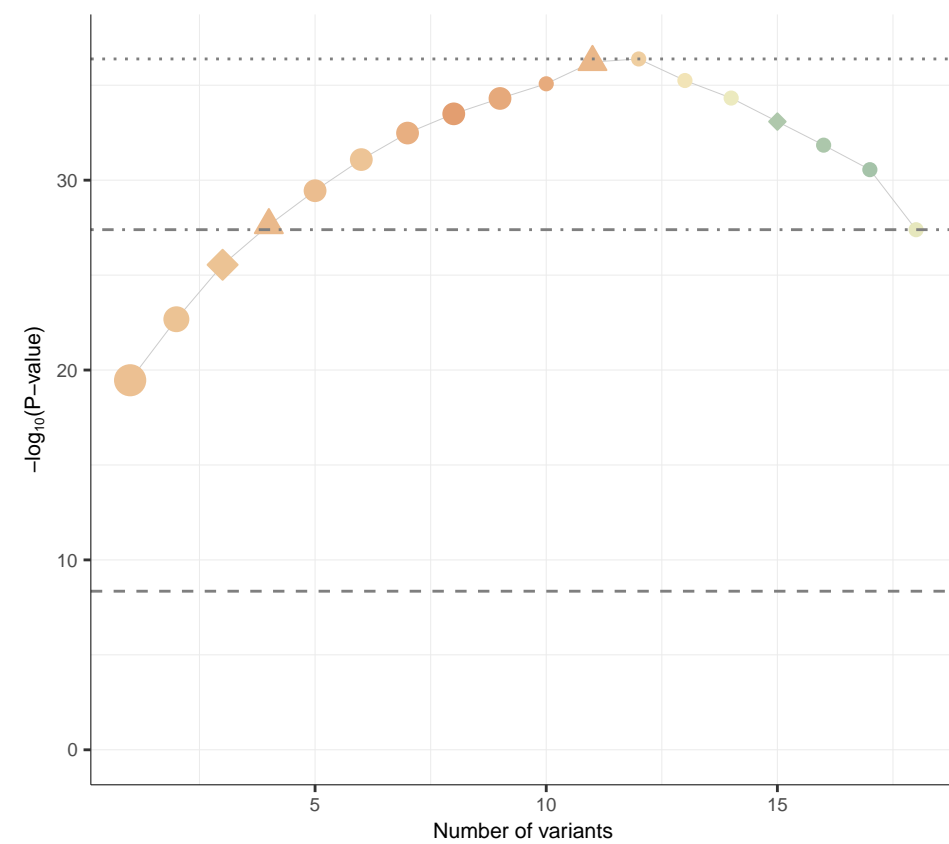
N6,N6,N6-trimethyllysine in plasma at *TMLHE* (HI_mis)



N6,N6,N6-trimethyllysine in urine at *TMLHE* (LoF_mis)



N6,N6,N6-trimethyllysine in urine at *TMLHE* (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- △ stop gained

Effect size

Color scale: -4 (dark green) to 4 (dark red)

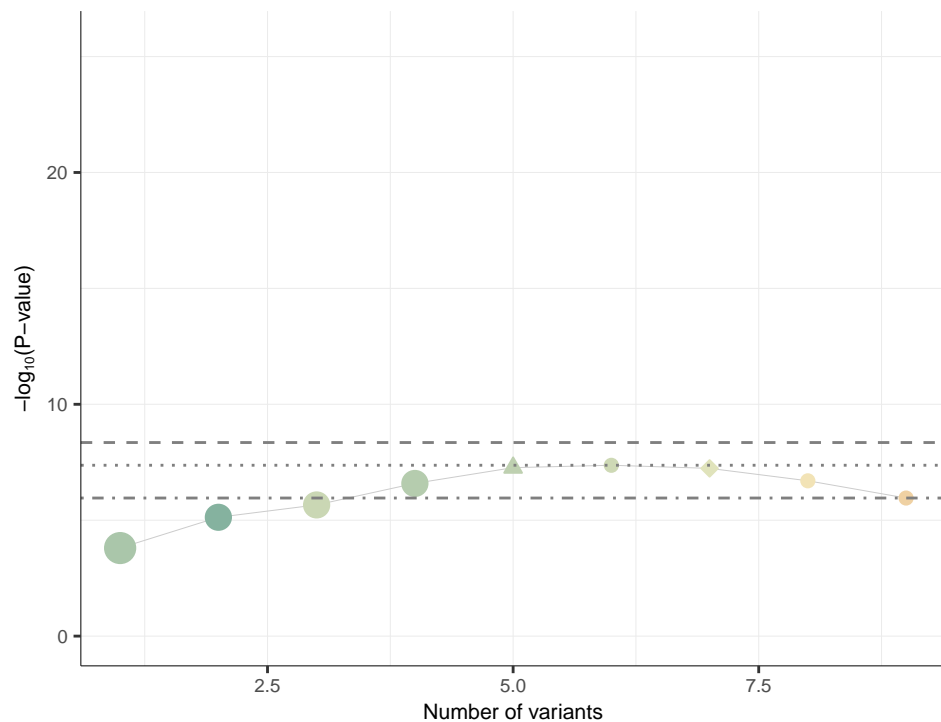
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8
- <1e-11

Thresholds

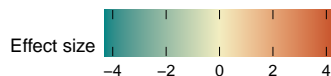
- Significance Threshold
- - - Total P-value
- ... Lowest P-value

X – 23666 in urine at *TMLHE* (LoF_mis)

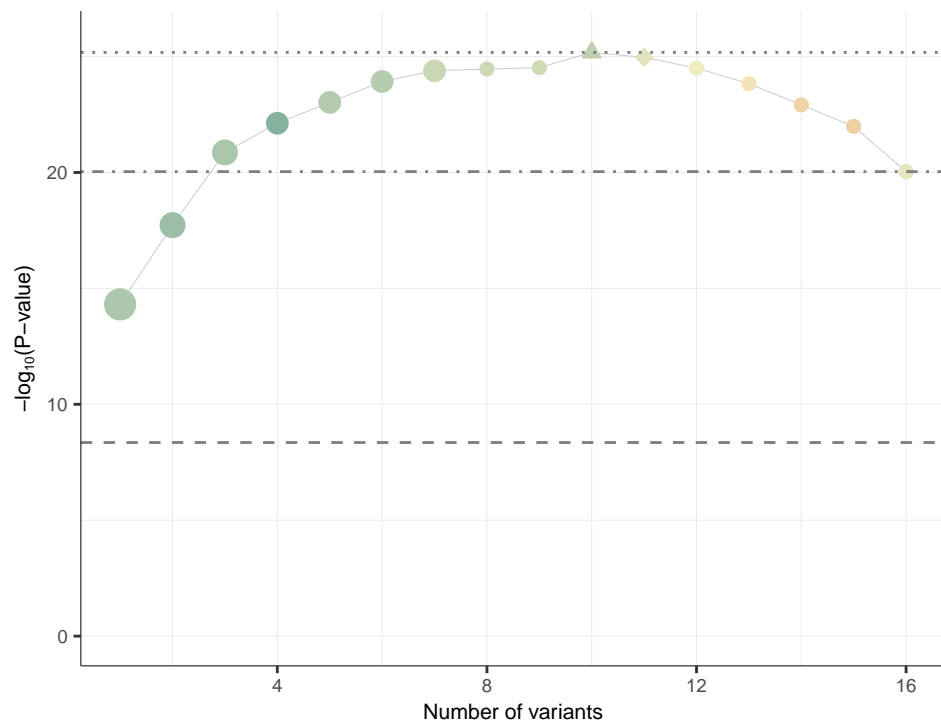


Variant consequence

- ◇ frameshift
- missense
- △ stop gained



X – 23666 in urine at *TMLHE* (HI_mis)



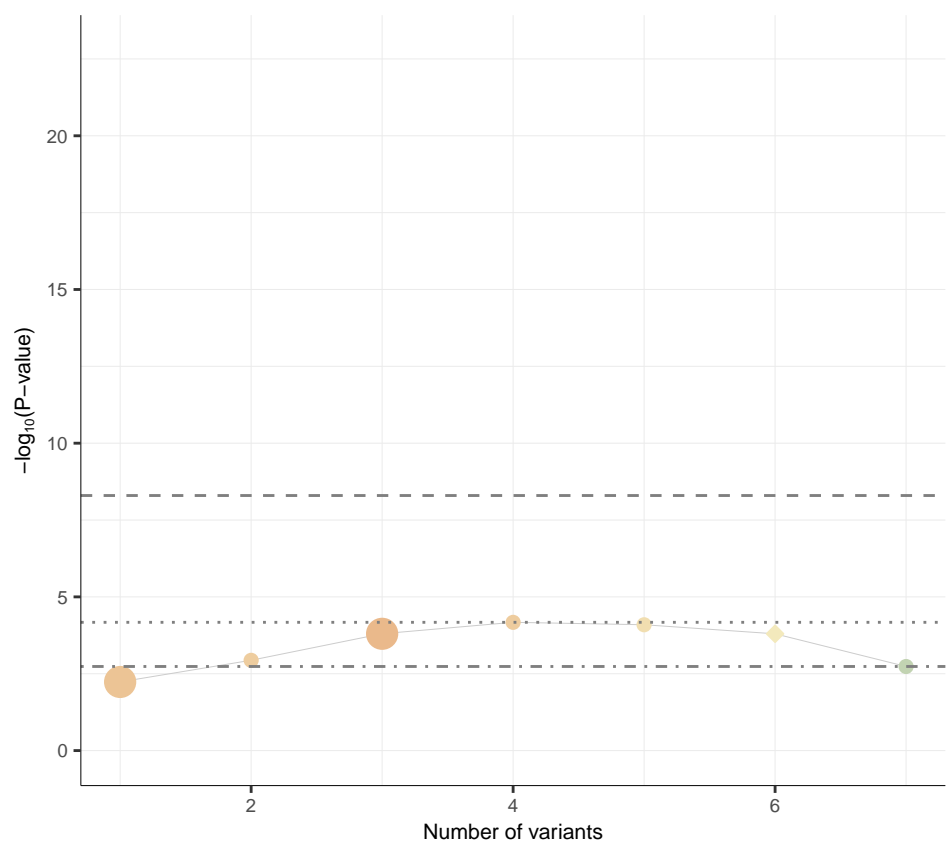
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8
- <1e-11

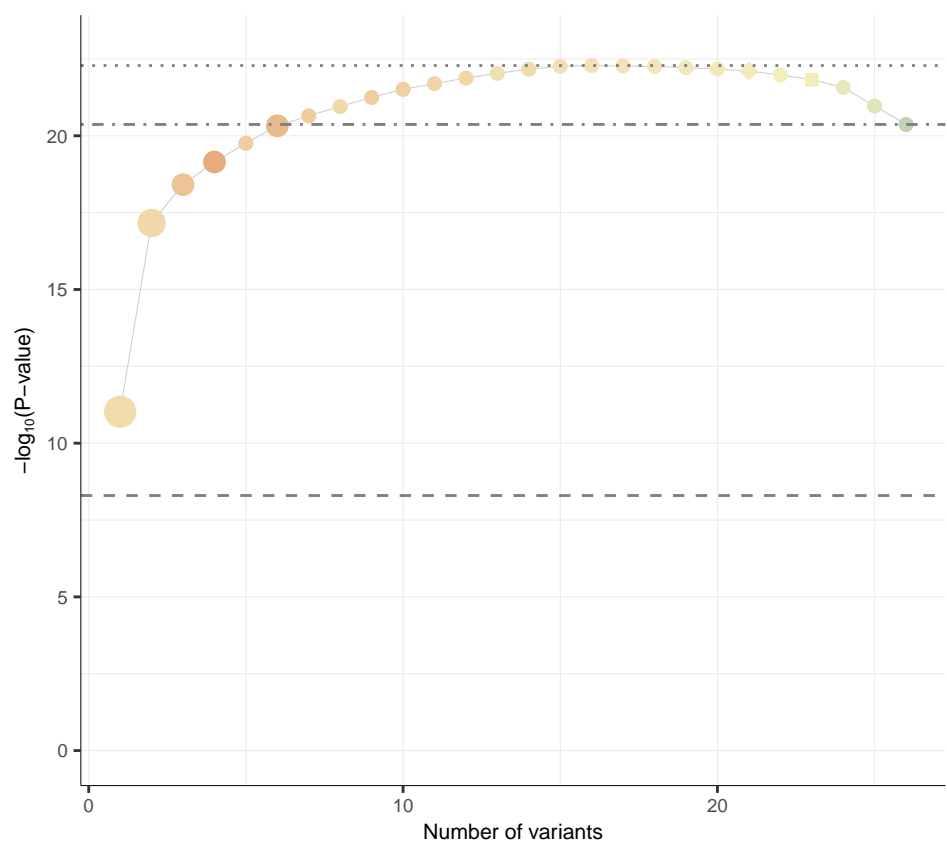
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

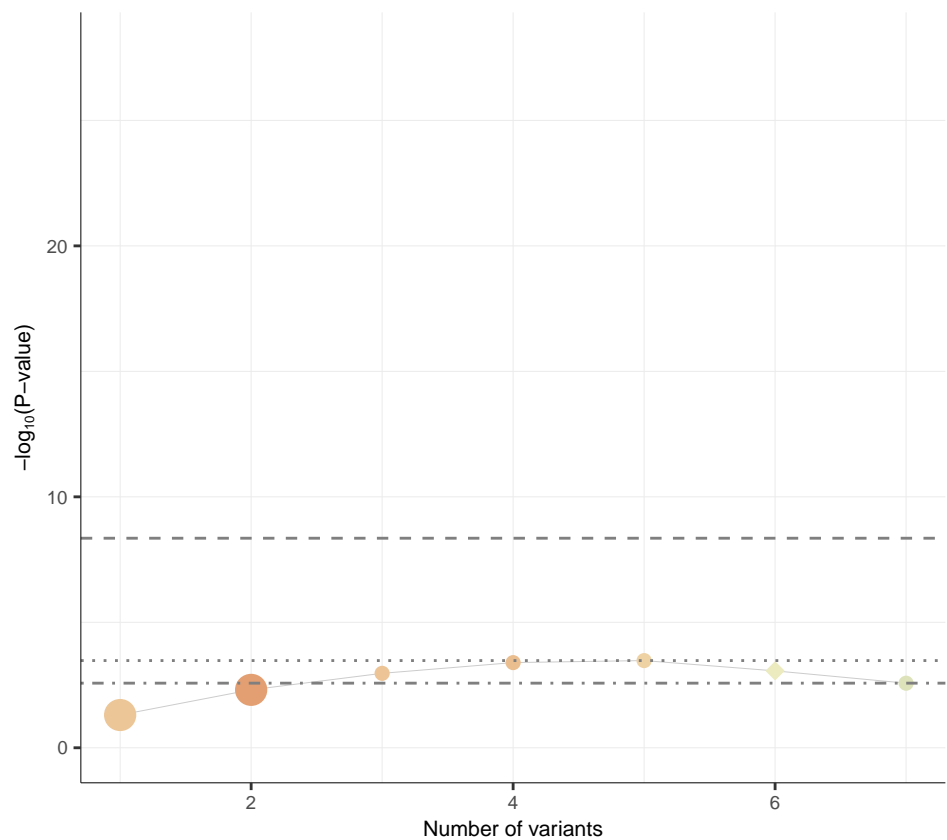
X – 22162 in plasma at *TTC38* (LoF_mis)



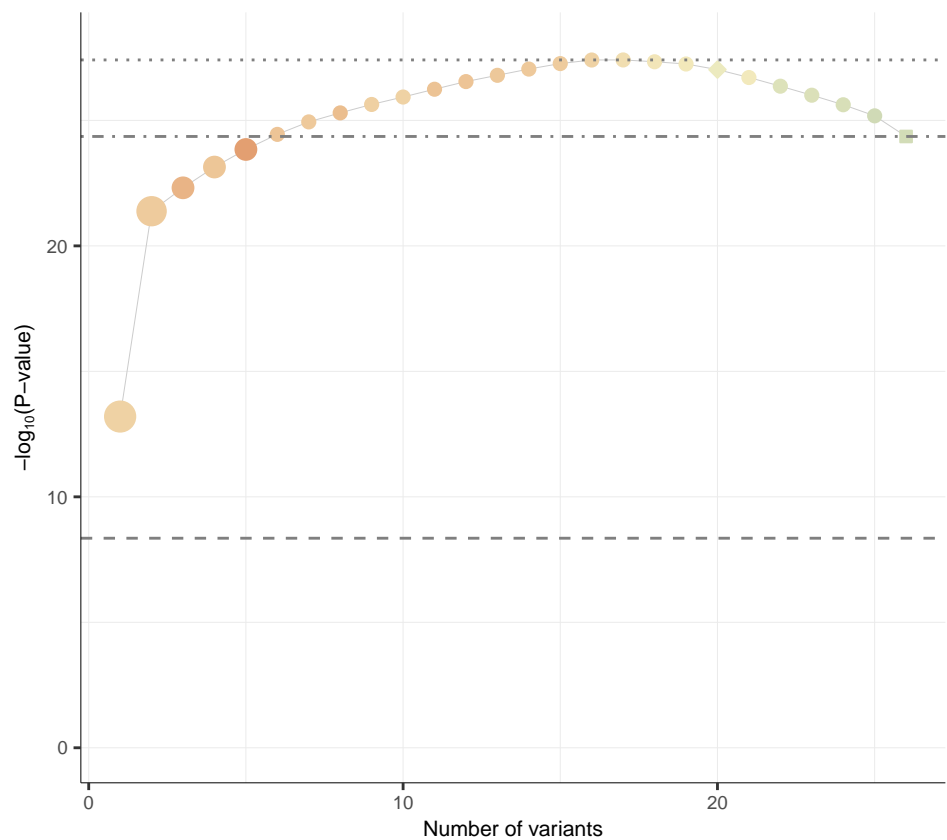
X – 22162 in plasma at *TTC38* (HI_mis)



X – 22162 in urine at *TTC38* (LoF_mis)

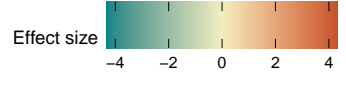


X – 22162 in urine at *TTC38* (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- start/stop lost



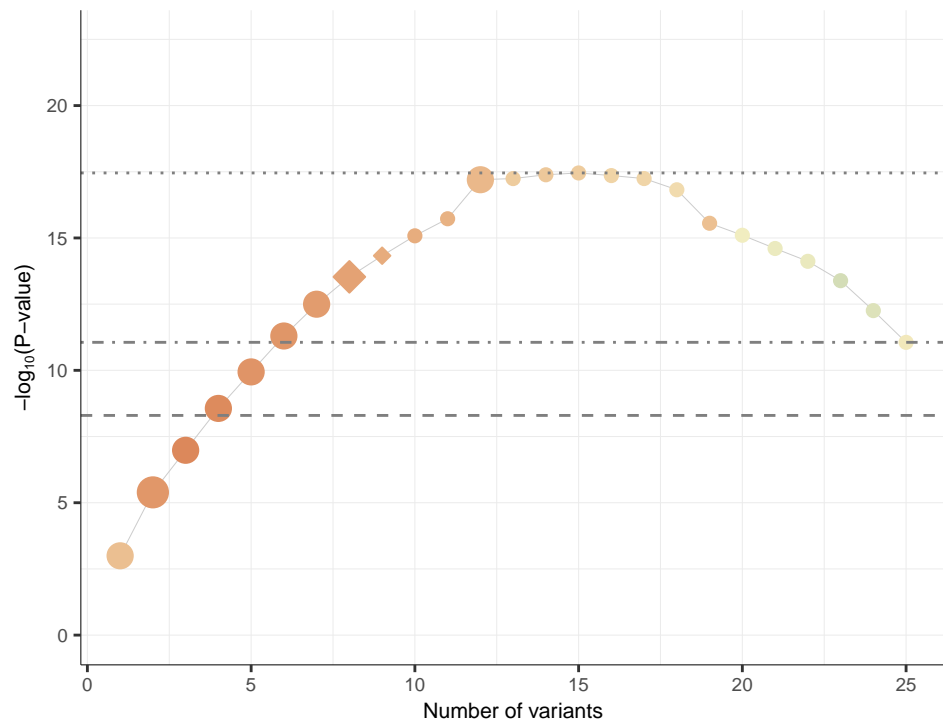
P-value

- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8
- <1e-11

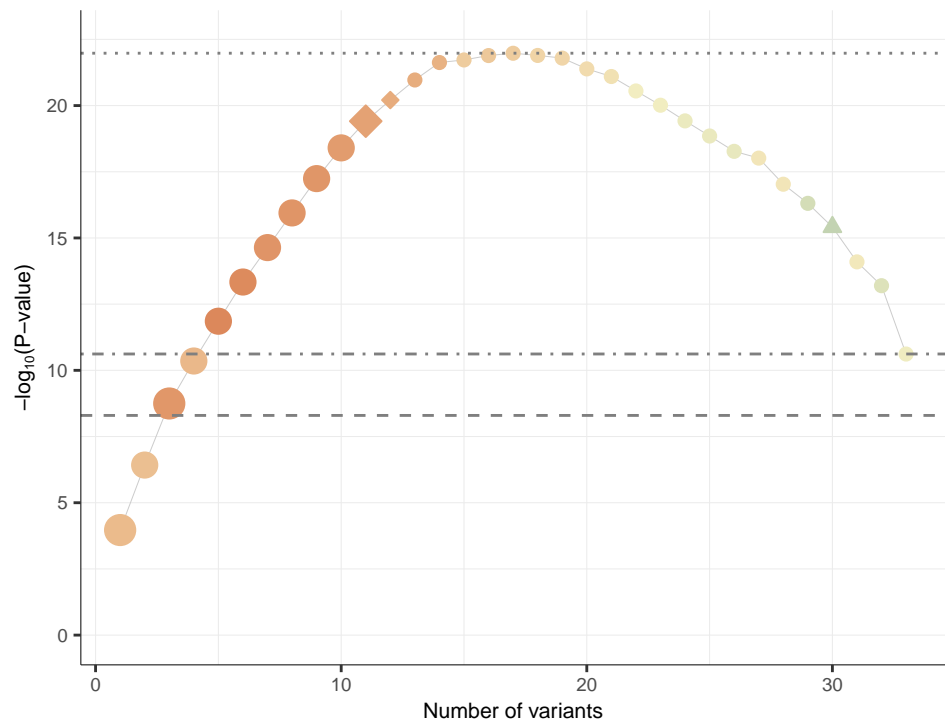
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

5-methyluridine (ribothymidine) in plasma at *TYMP* (LoF_mis)

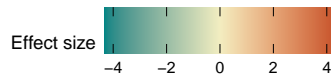


5-methyluridine (ribothymidine) in plasma at *TYMP* (HI_mis)



Variant consequence

- ◇ frameshift
- missense
- △ stop gained



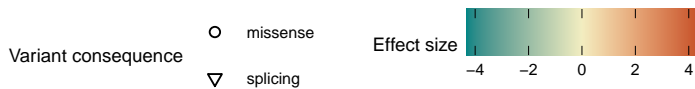
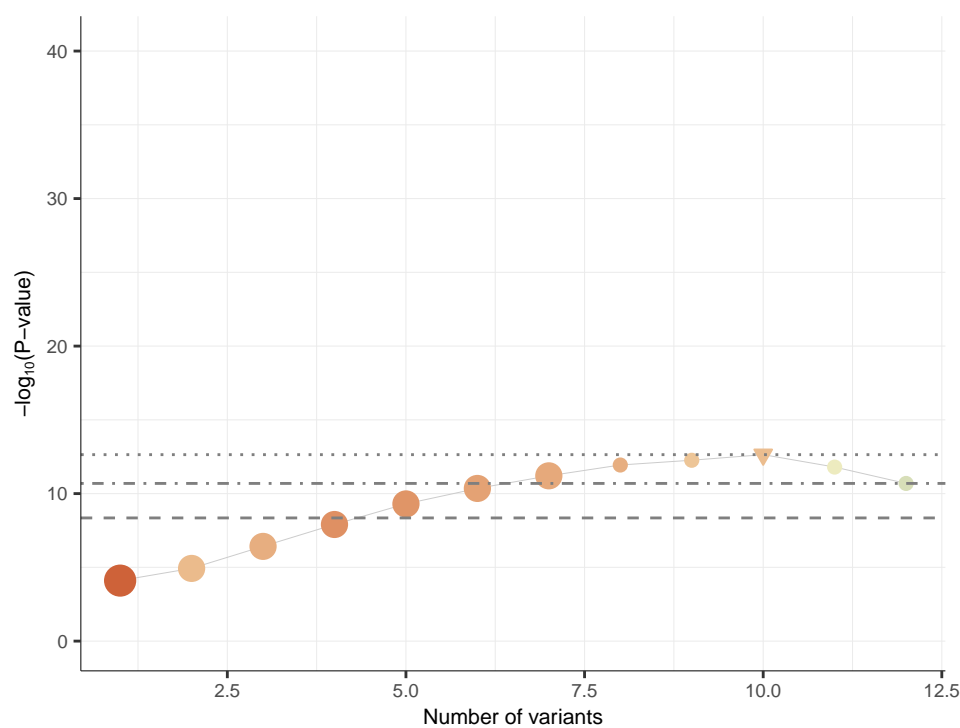
P-value

- >0.05
- <0.05
- <1e-3

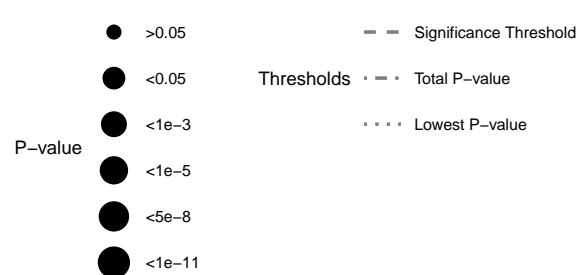
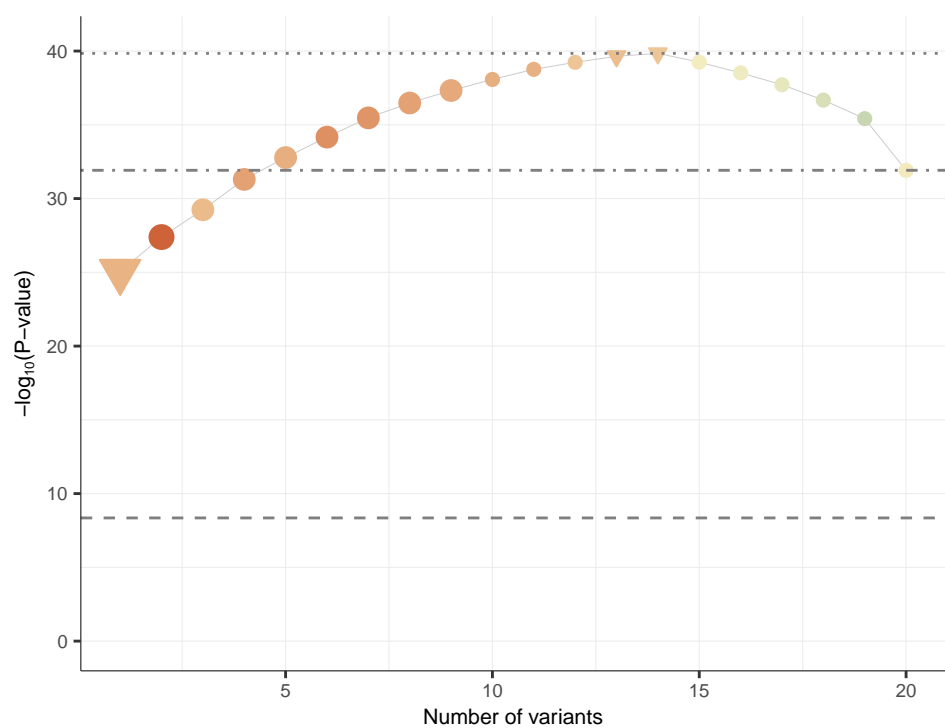
Thresholds

- Significance Threshold
- - - Total P-value
- ... Lowest P-value

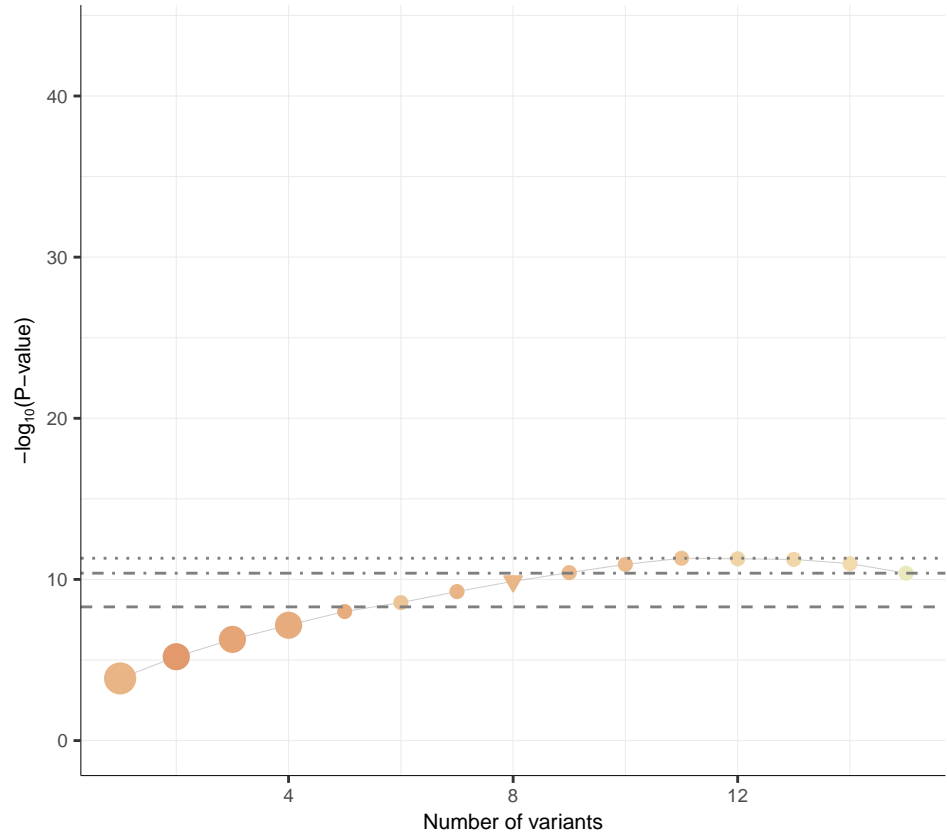
3-ureidoisobutyrate in urine at *UPB1* (LoF_mis)



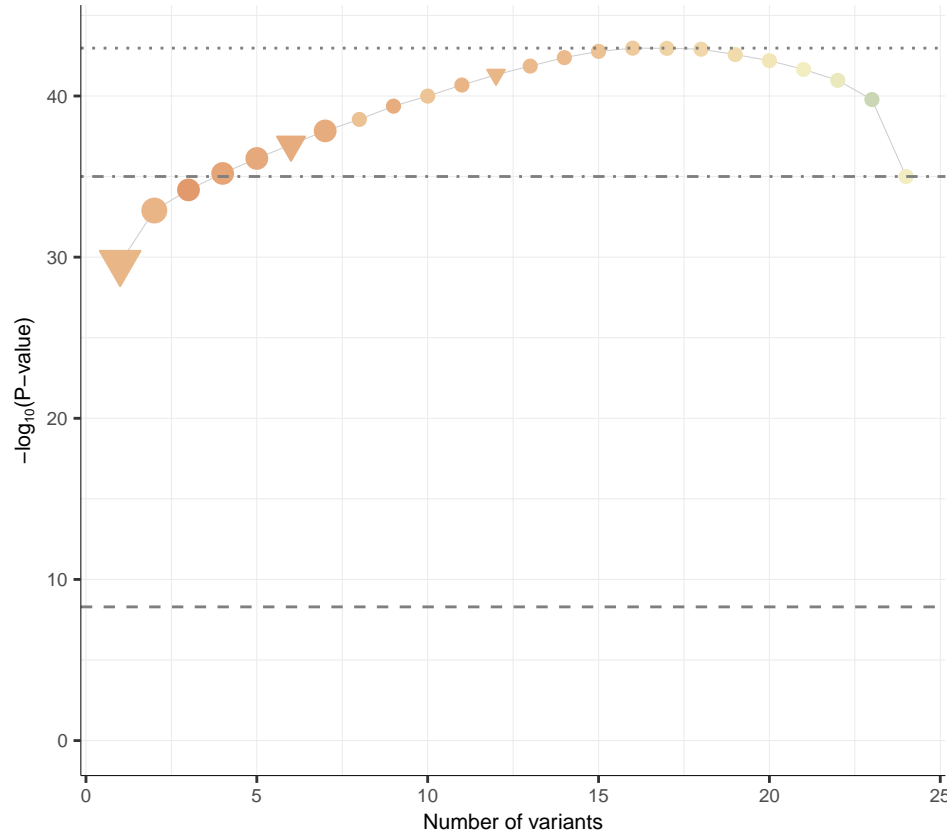
3-ureidoisobutyrate in urine at *UPB1* (HI_mis)



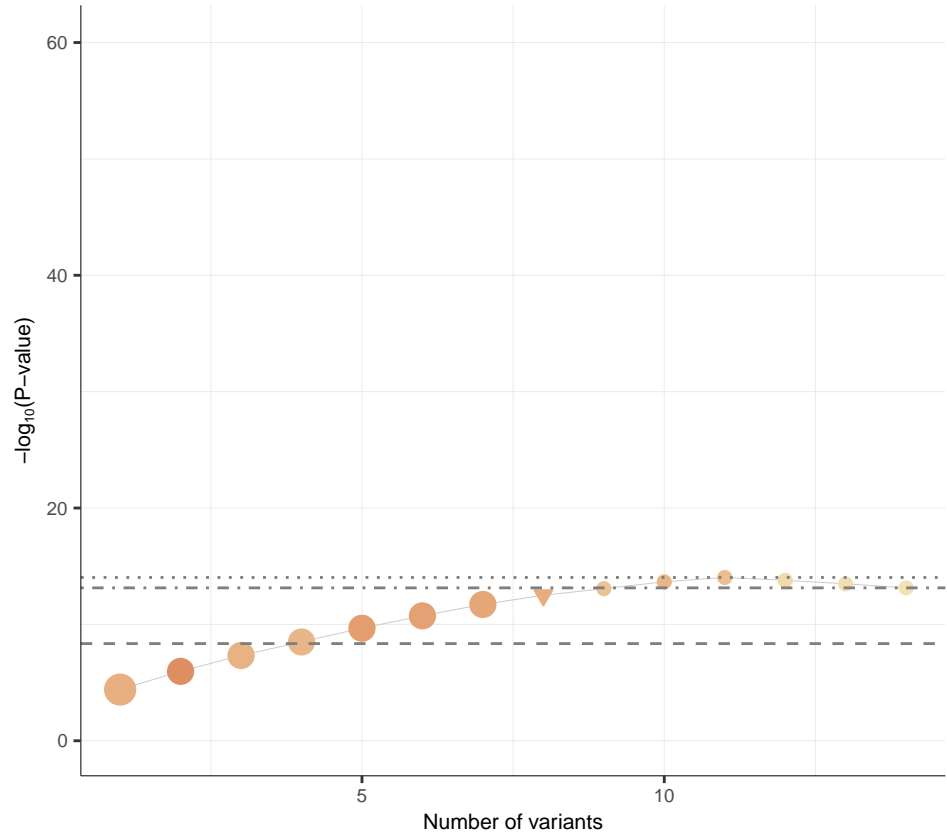
3-ureidopropionate in plasma at *UPB1* (LoF_mis)



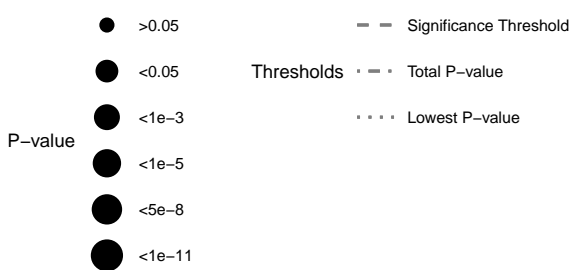
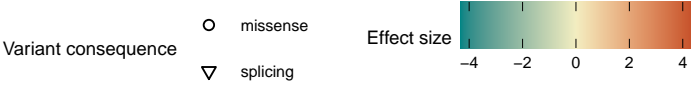
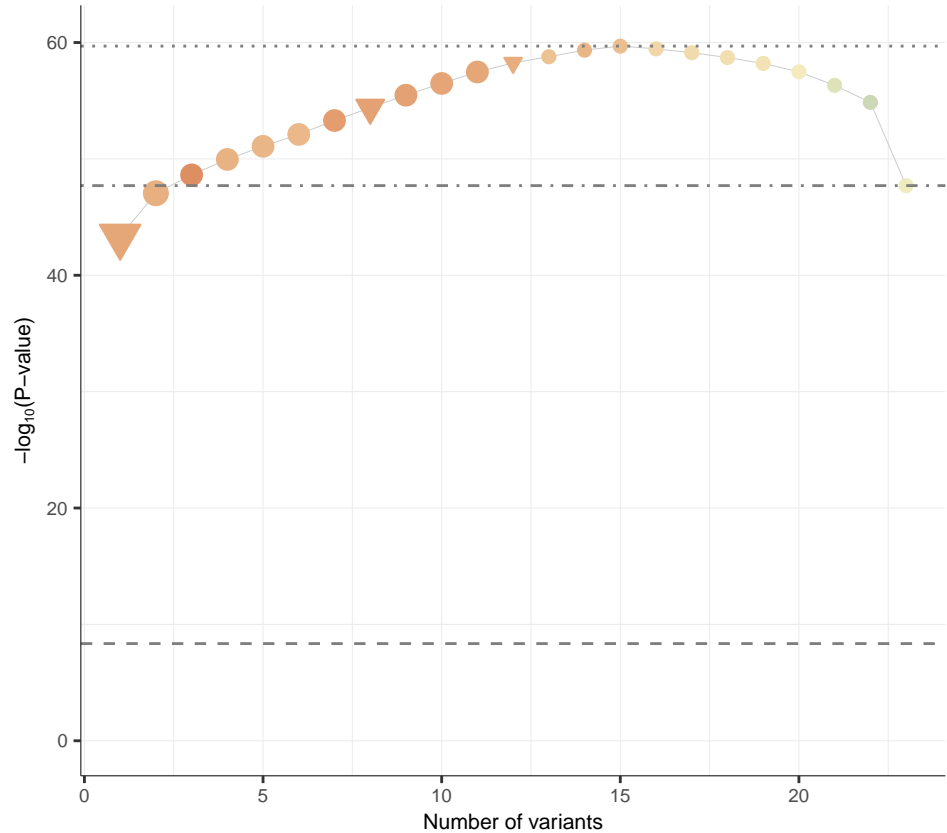
3-ureidopropionate in plasma at *UPB1* (HI_mis)



3-ureidopropionate in urine at *UPB1* (LoF_mis)



3-ureidopropionate in urine at *UPB1* (HI_mis)





missense

- >0.05
- <0.05
- <1e-3
- <1e-5
- <5e-8
- <1e-11

>0.05
<0.05
<1e-3
<1e-5
<5e-8
<1e-11

 $<1e-3$ $\leq 1e-5$

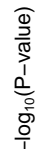
4509

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epiandrosterone sulfate in plasma at *ZNF655* (HI_mis)

