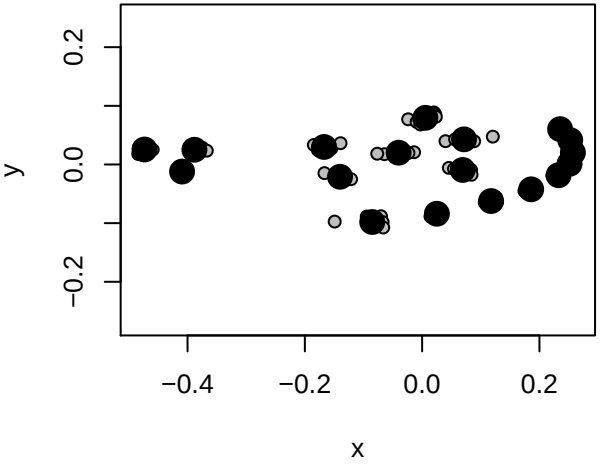
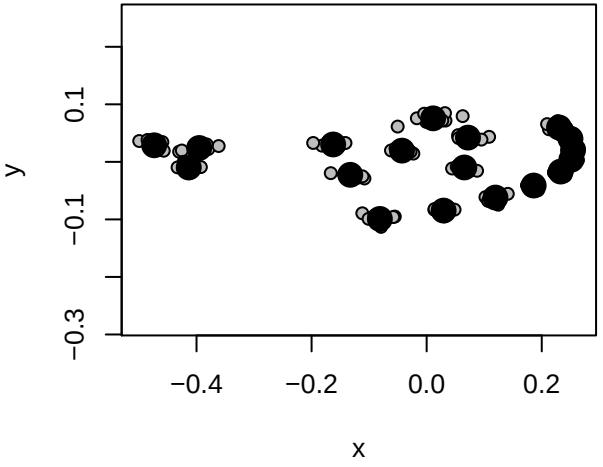
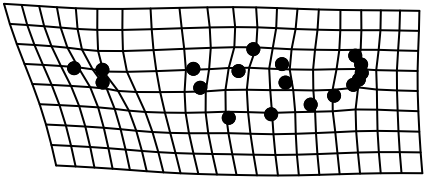
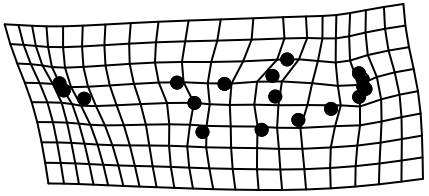
Symmetric Shape Component (left) and Asymmetric Shape Component (right)



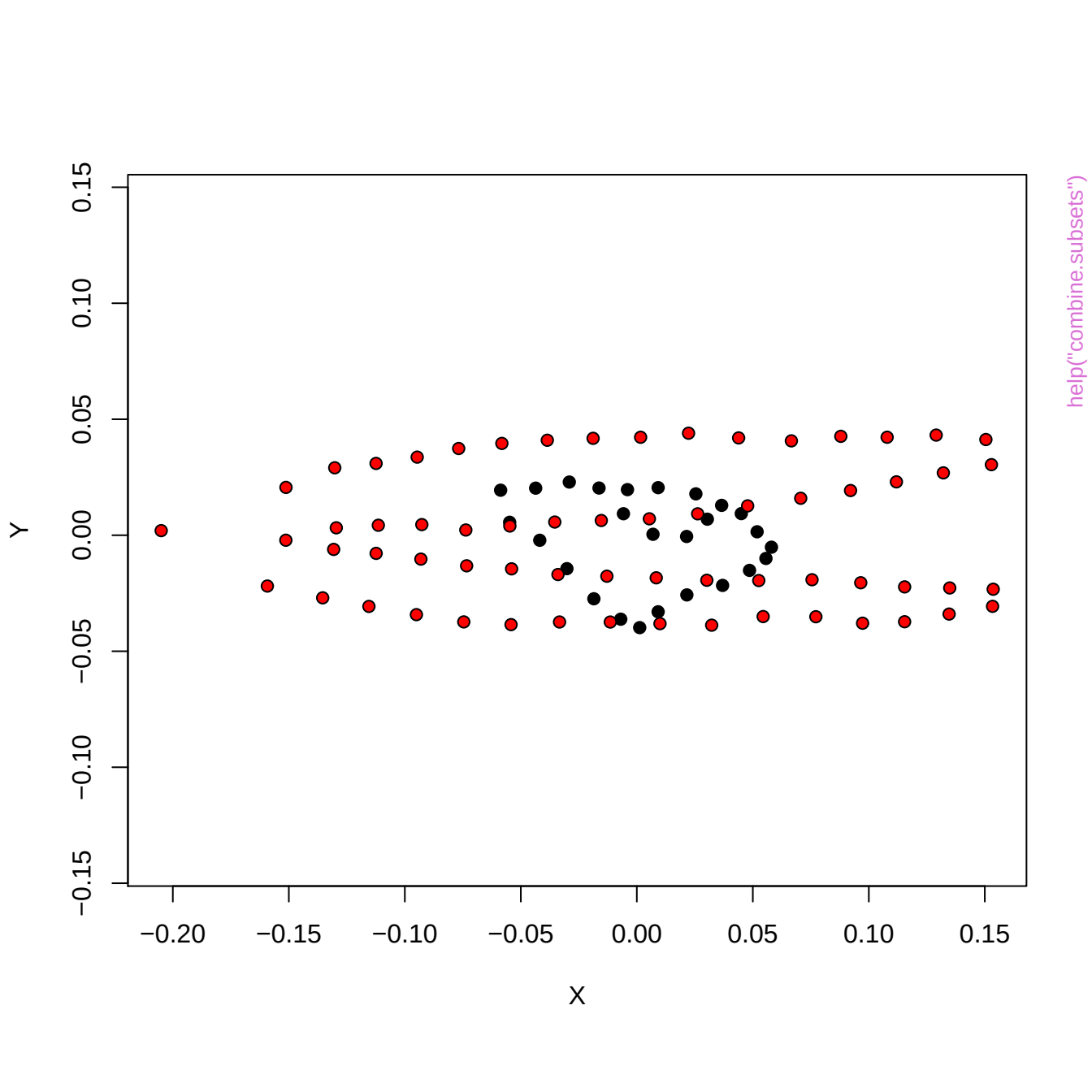



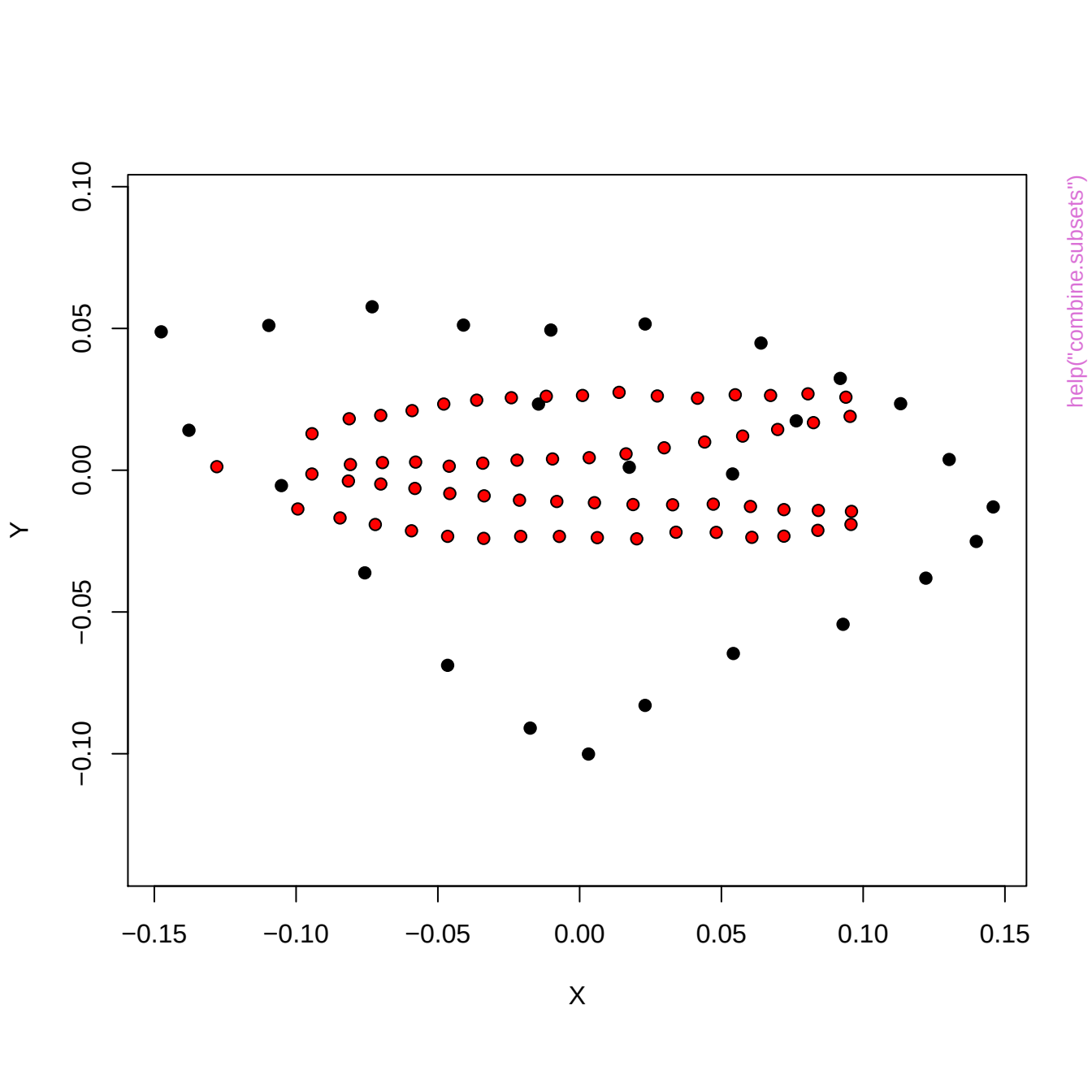

help("bilat.symmetry")

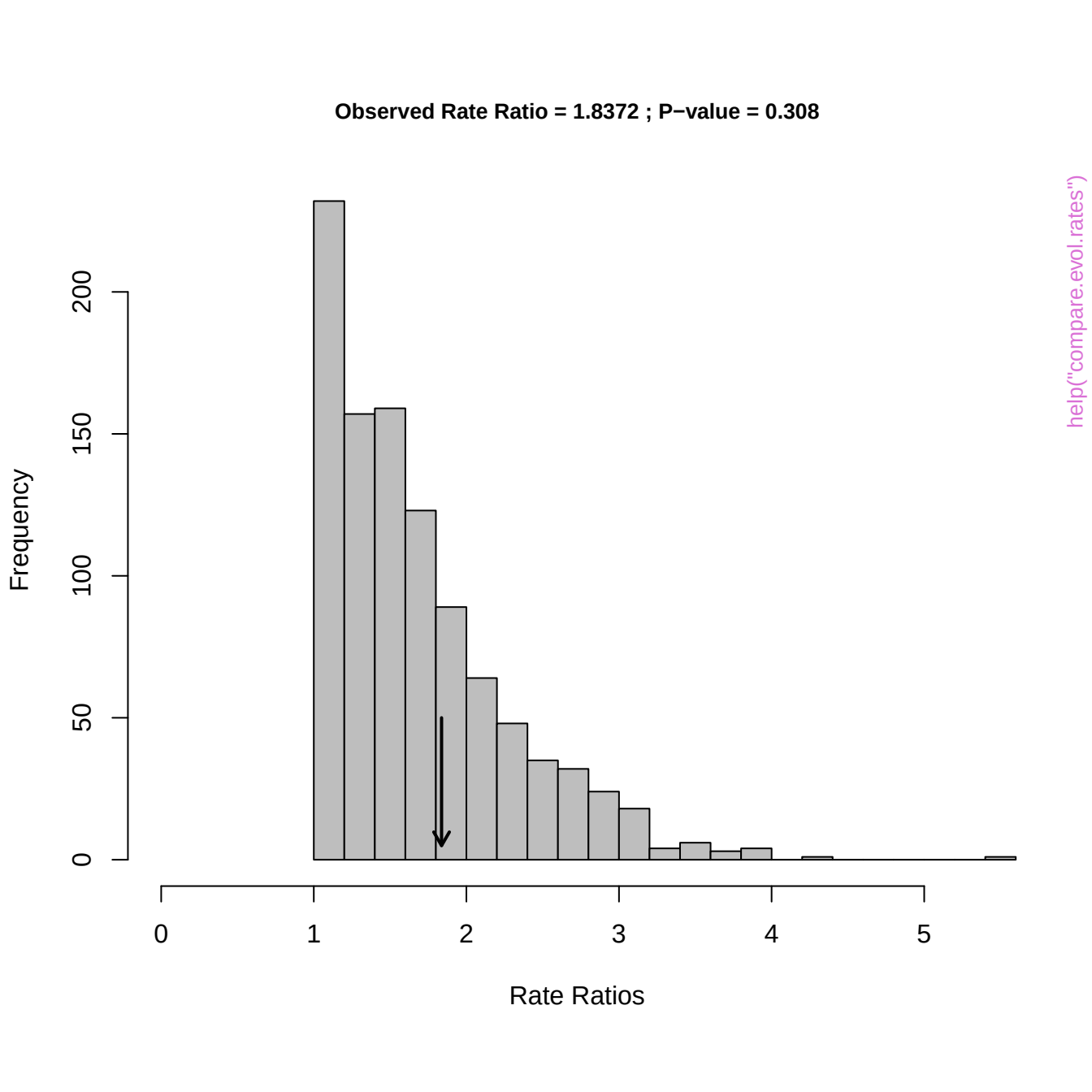


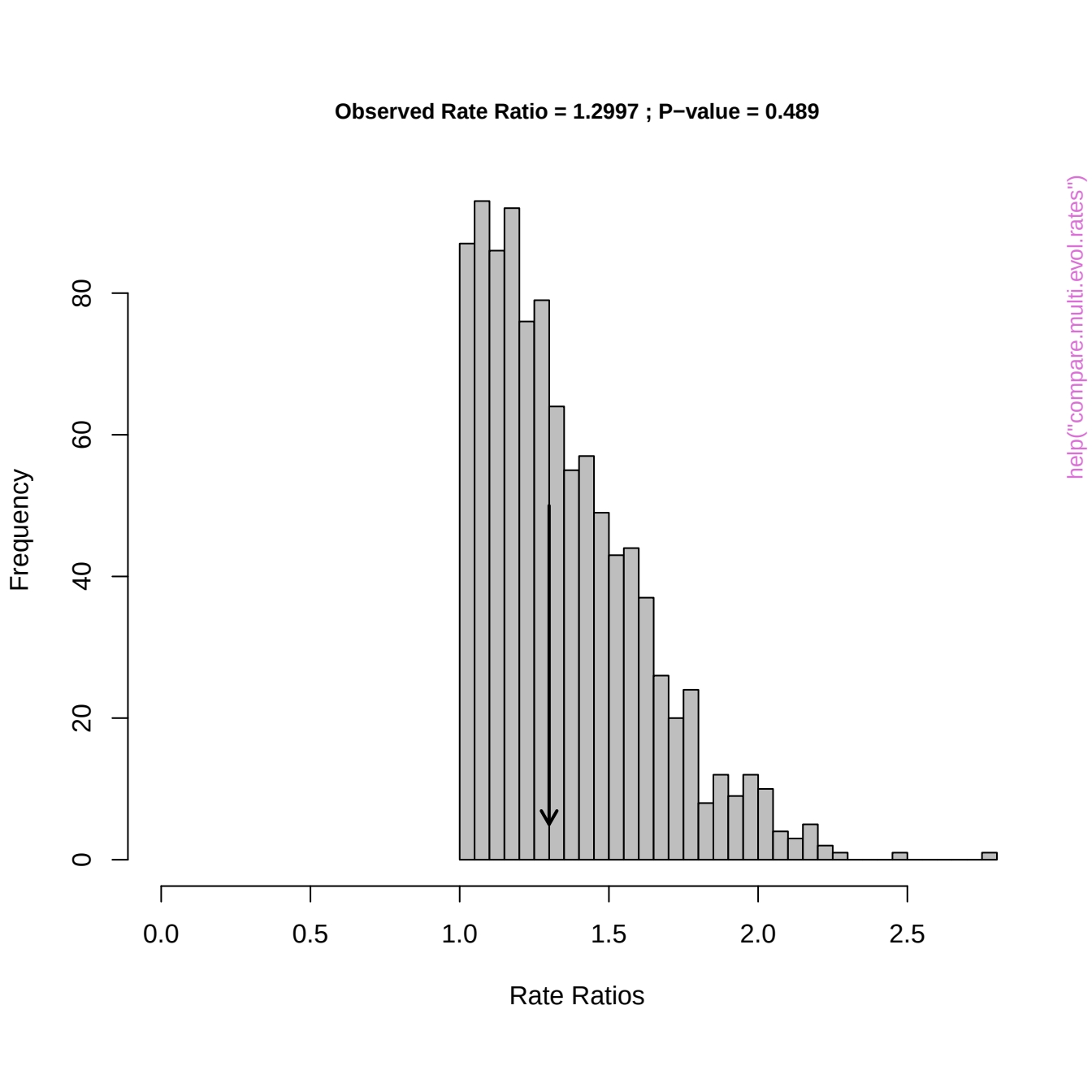


Mean directional (left) and fluctuating (right) asymmetry

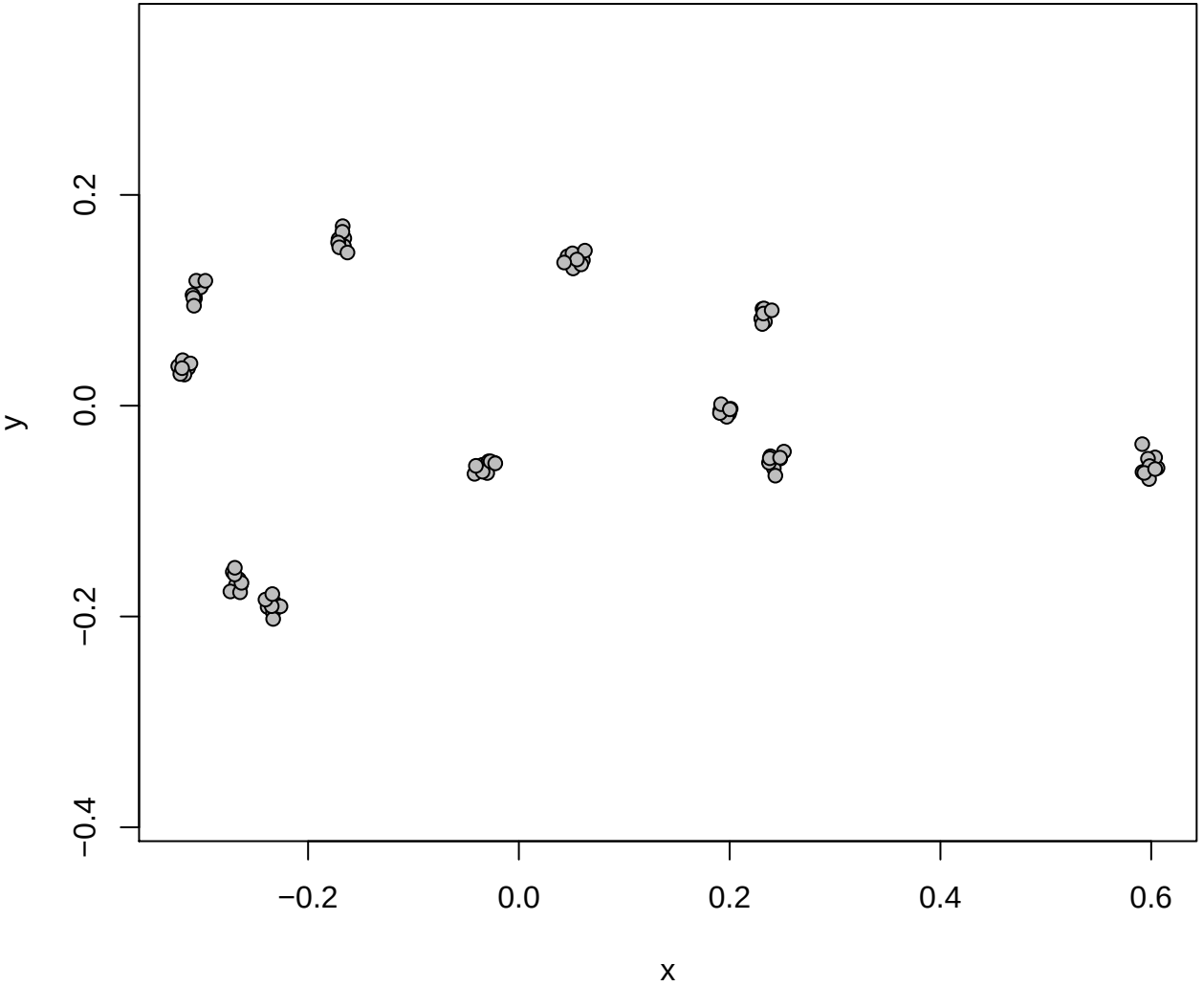

help("combine.subsets")
Y
X
0.15
0.10
0.05
0.00
−0.05
−0.10
−0.15
−0.20
−0.15
−0.10
−0.05
0.00
0.05
0.10
0.15


0.10
0.05
0.00
−0.05
−0.10
Y
−0.15
−0.10
−0.05
0.00
0.05
0.10
0.15
X
help("combine.subsets")

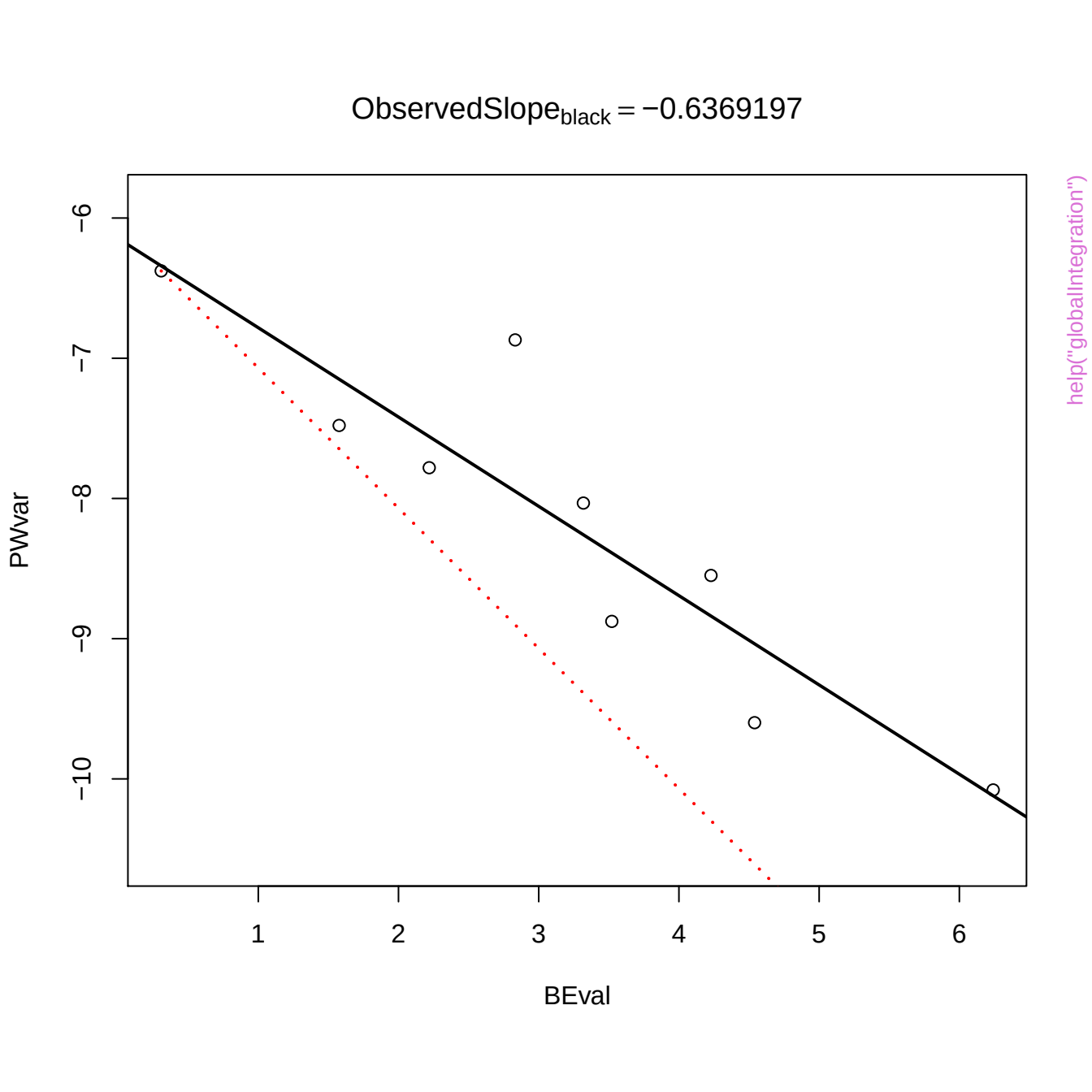

Observed Rate Ratio = 1.8372 ; P−value = 0.308
Frequency
0
50
100
150
200
0
1
2
3
4
5
Rate Ratios
help("compare.evol.rates")

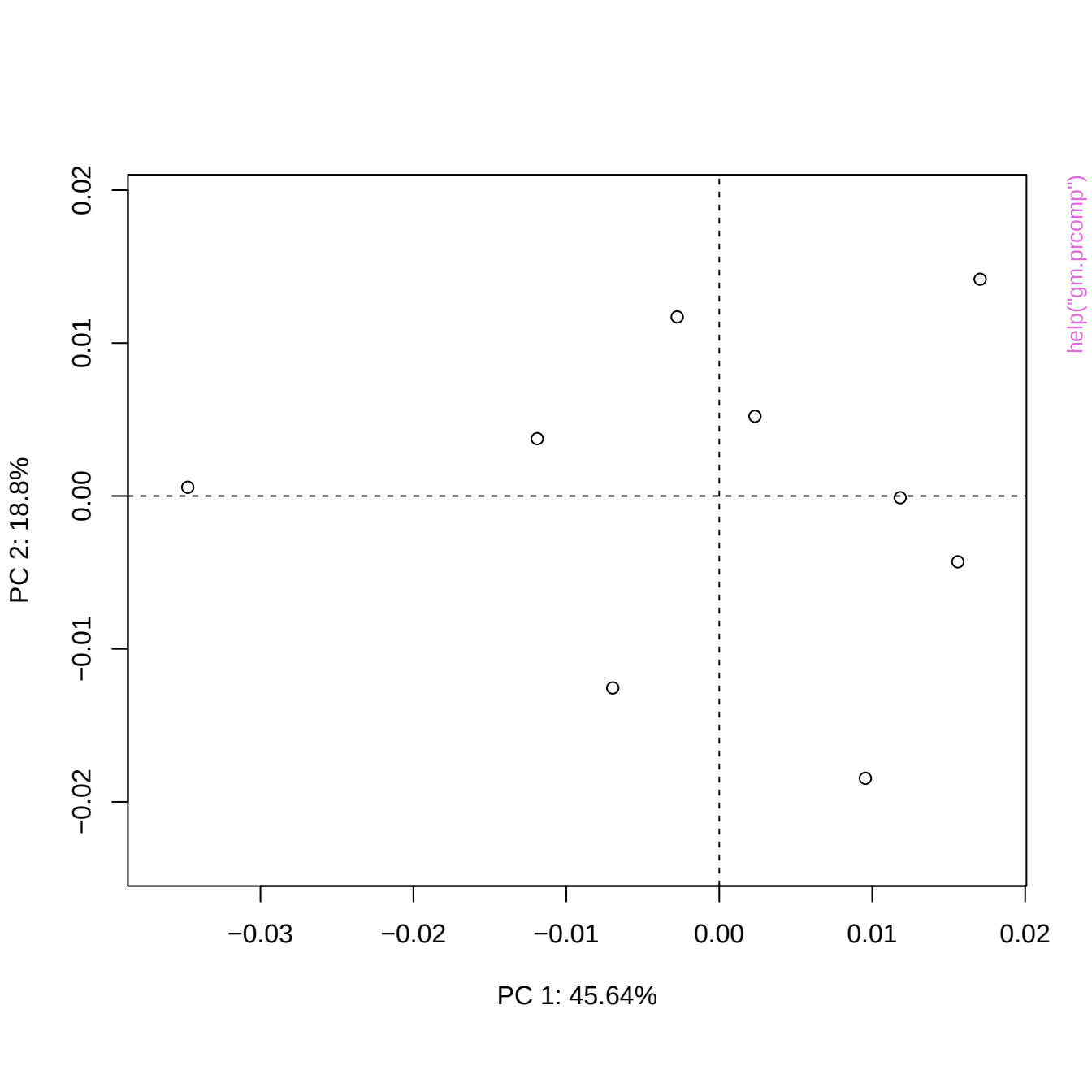

Observed Rate Ratio = 1.2997 ; P−value = 0.489
Frequency
0
20
40
60
80
0.0
0.5
1.0
1.5
2.0
2.5
Rate Ratios
help("compare.multi.evol.rates")

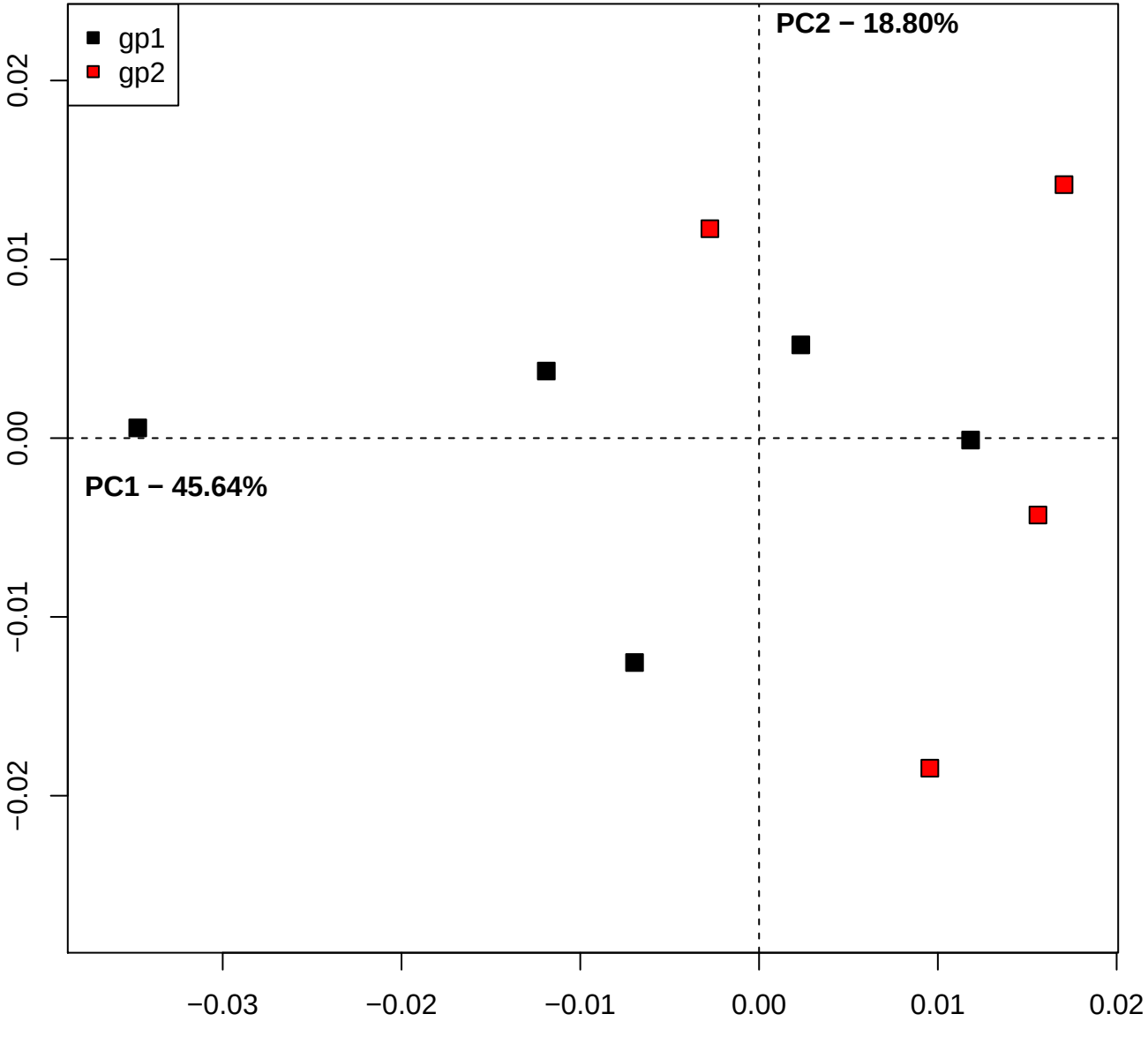
0.4
0.2
0.0
−0.2
−0.4
y
−0.2
0.0
0.2
0.4
0.6
x
help("fixed.angle")

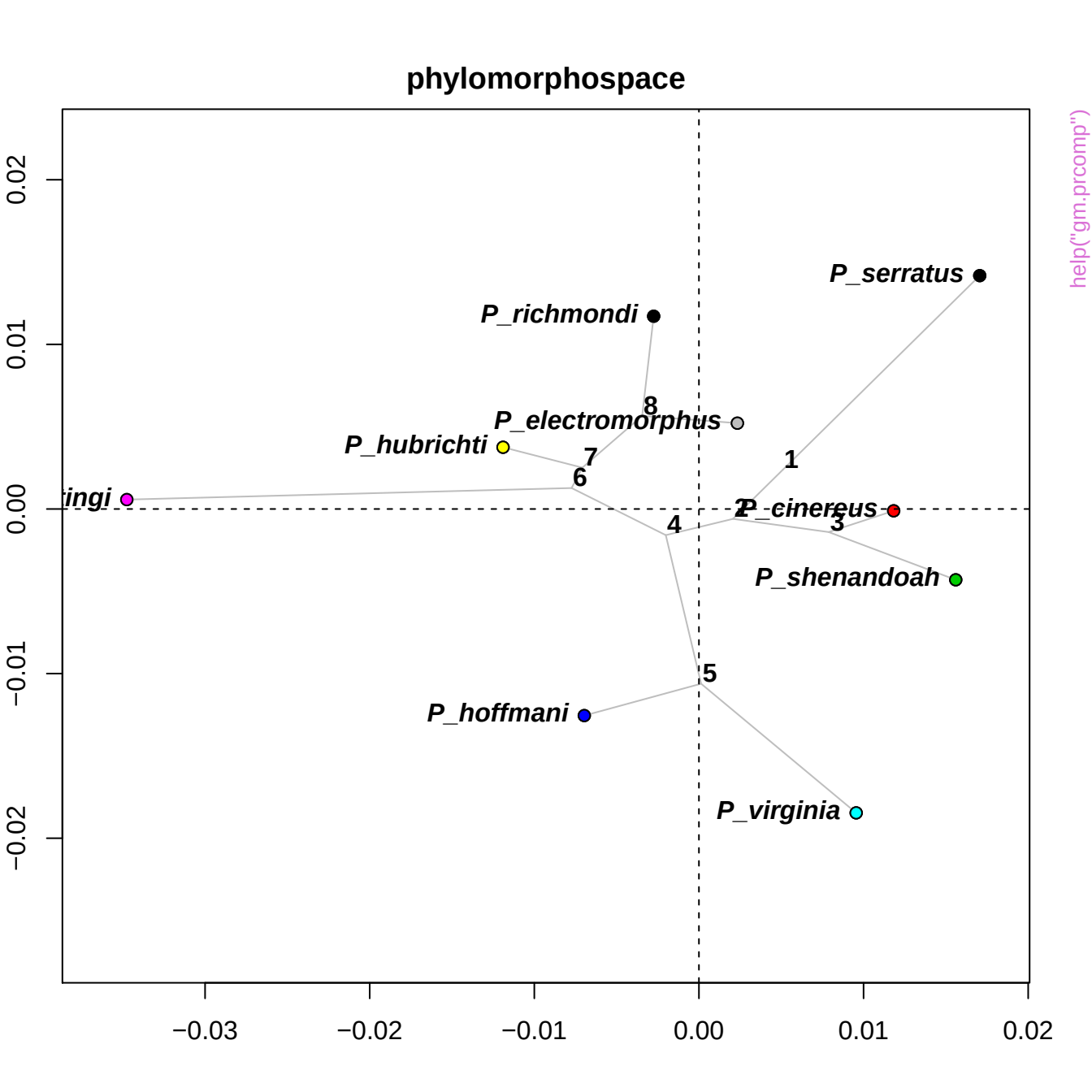


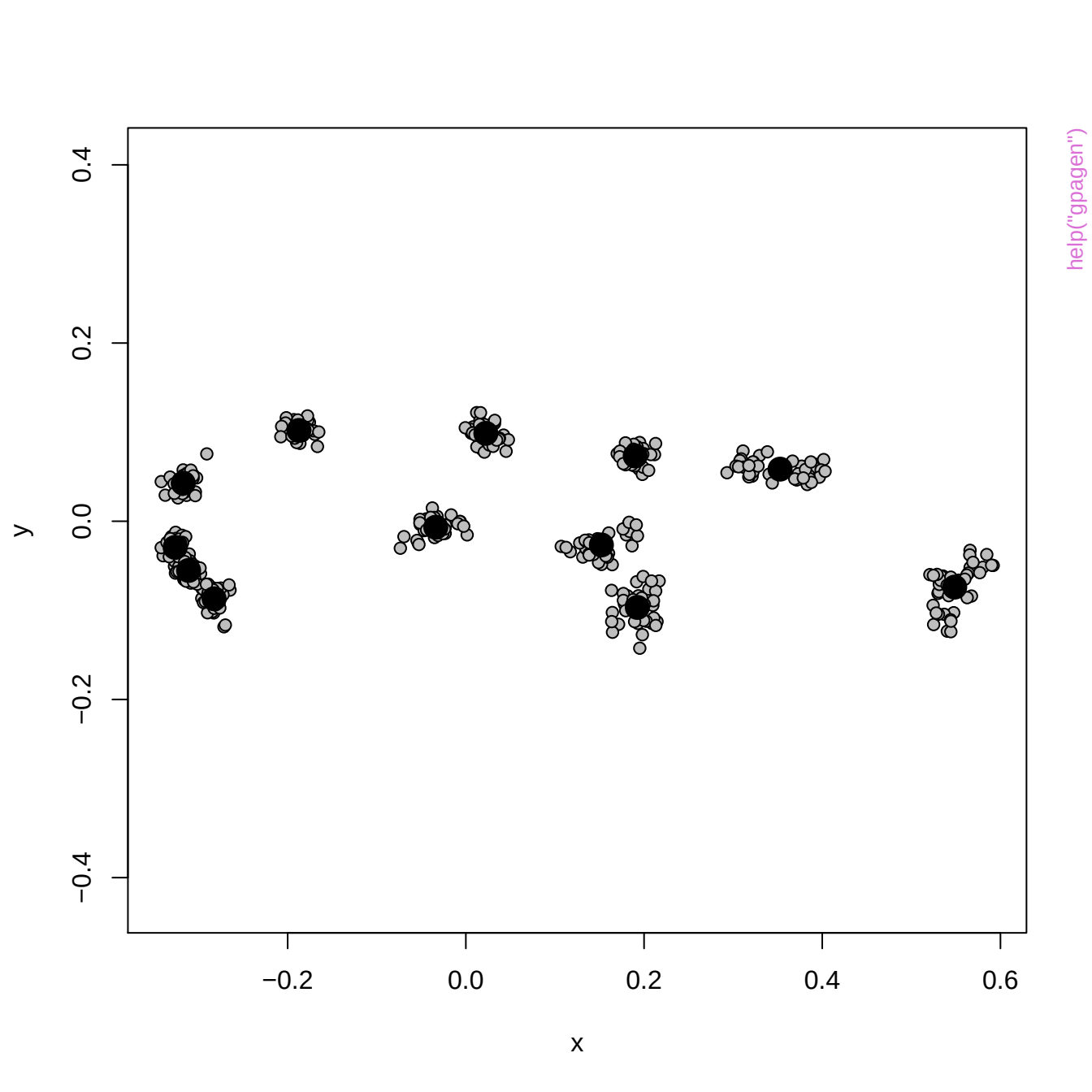

help("ffixed.angle")

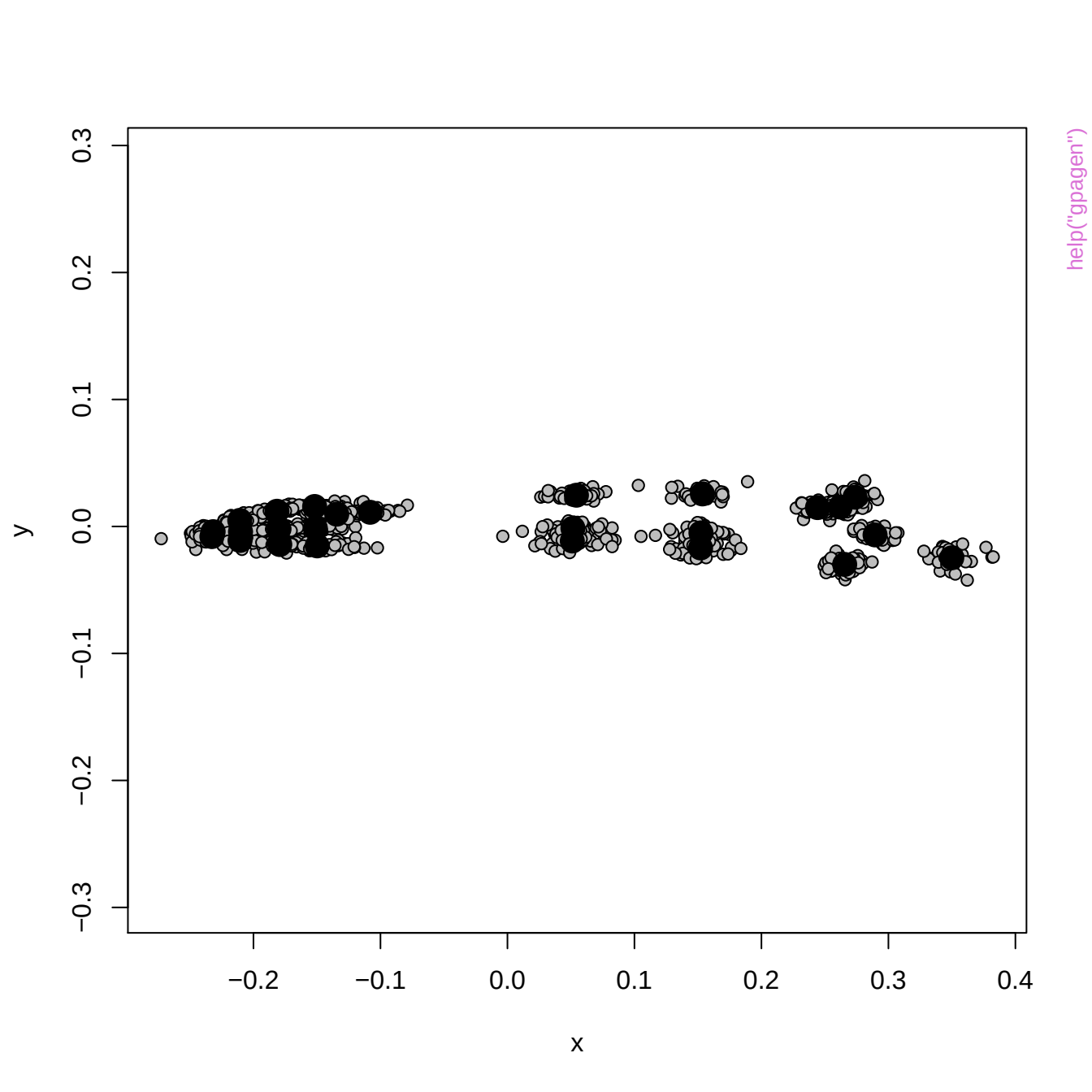

ObservedSlope$_{black}$ = −0.6369197
PWvar
−6
−7
−8
−9
−10
1
2
3
4
5
6
BEval
help("globalIntegration")

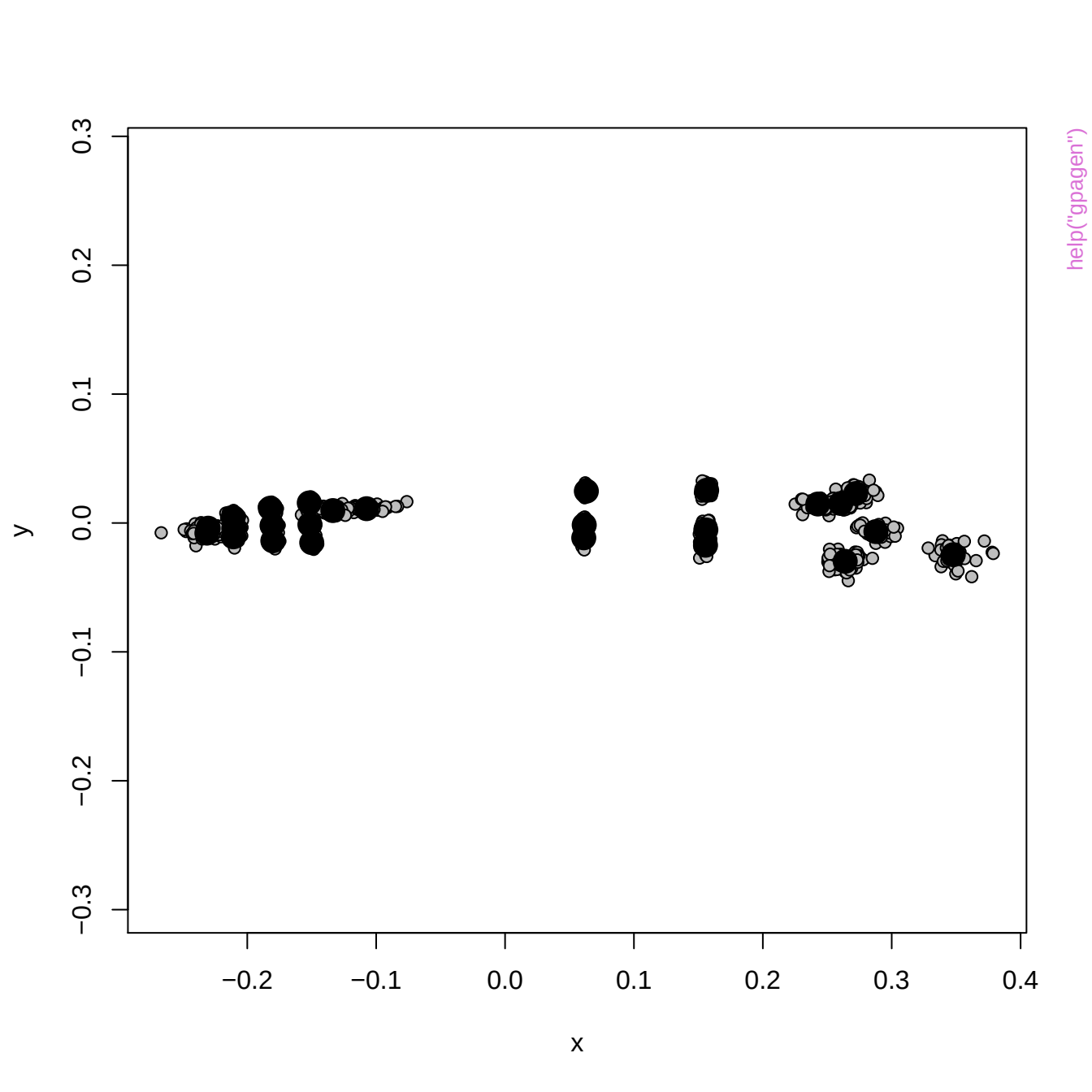

0.02
0.01
0.00
−0.01
−0.02
PC 2: 18.8%
−0.03
−0.02
−0.01
0.00
0.01
0.02
PC 1: 45.64%
help("gm.prcomp")

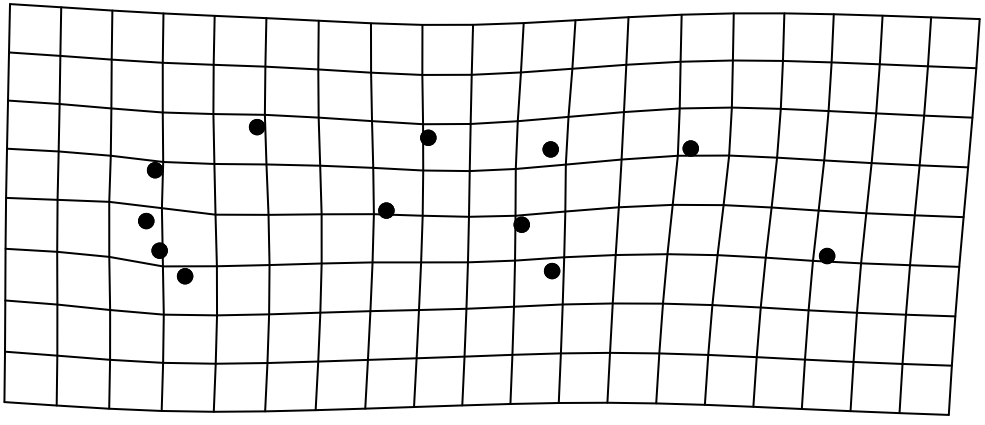

gp1
gp2
PC2 − 18.80%
PC1 − 45.64%
0.02
0.01
0.00
−0.01
−0.02
−0.03
−0.02
−0.01
0.00
0.01
0.02
help("gm.prcomp")


phylomorphospace
P_serratus
P_richmondi
P_electromorphus
P_hubrichti
ingi
P_cinereus
P_shenandoah
P_hoffmani
P_virginia
1
2
3
4
5
6
7
8
0.02
0.01
0.00
−0.01
−0.02
−0.03
−0.02
−0.01
0.00
0.01
0.02
help("gm.prcomp")

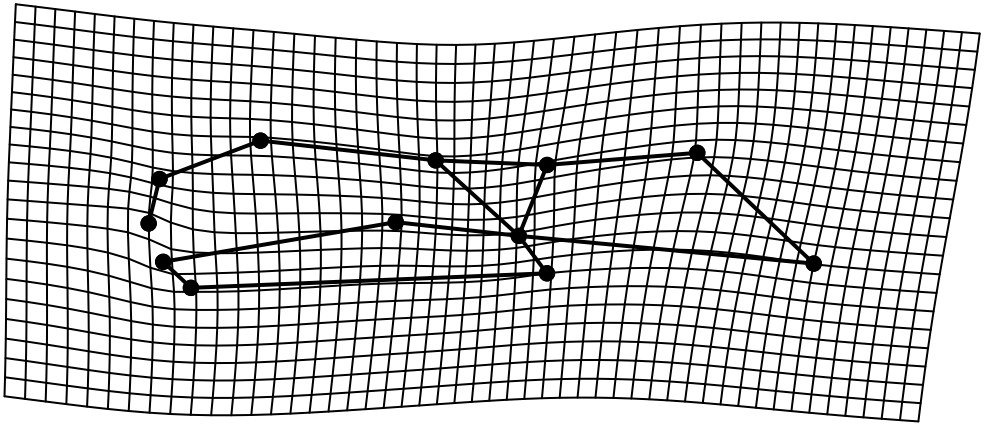

help("gpagen")
y
0.4
0.2
0.0
−0.2
−0.4
−0.2
0.0
0.2
0.4
0.6
x


help("gpagen")
y
x
0.3
0.2
0.1
0.0
−0.1
−0.2
−0.3
−0.2
−0.1
0.0
0.1
0.2
0.3
0.4

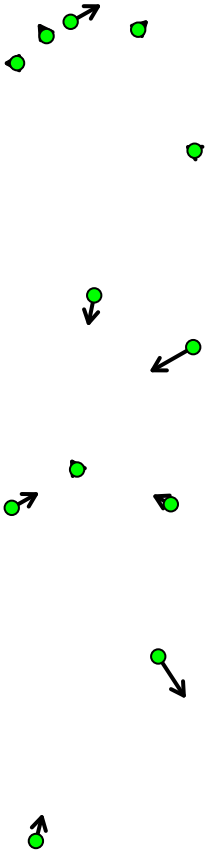

help("gpagen")
0.3
0.2
0.1
0.0
−0.1
−0.2
−0.3
y
−0.2
−0.1
0.0
0.1
0.2
0.3
0.4
x



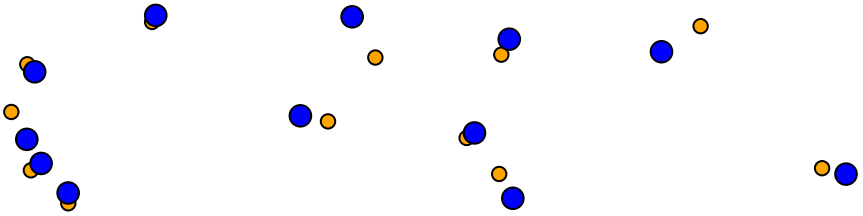
help("gridPar")



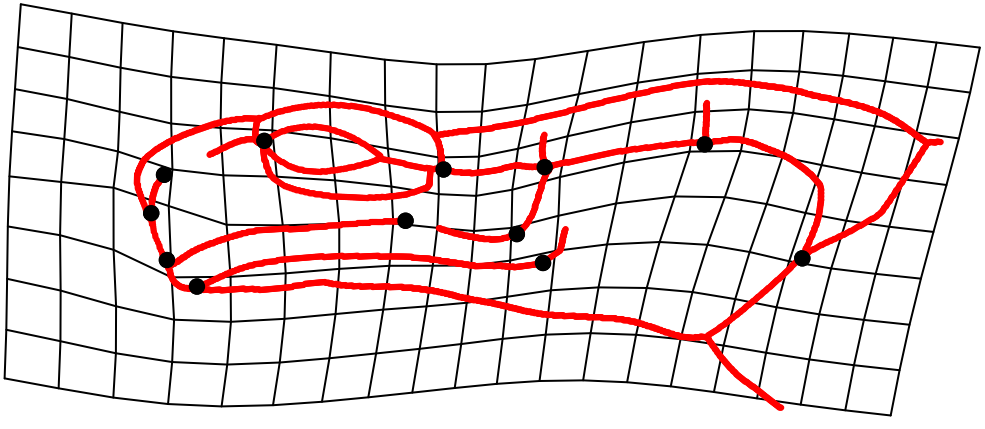
help("gridPar")



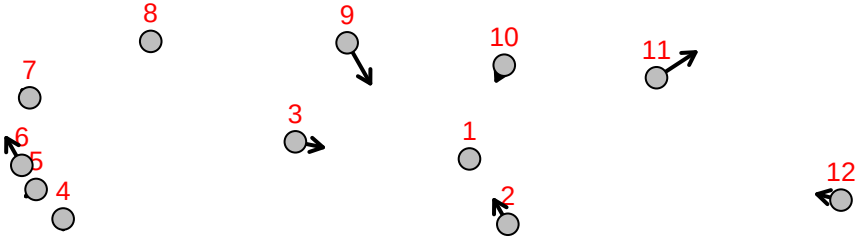
help("gridPar")



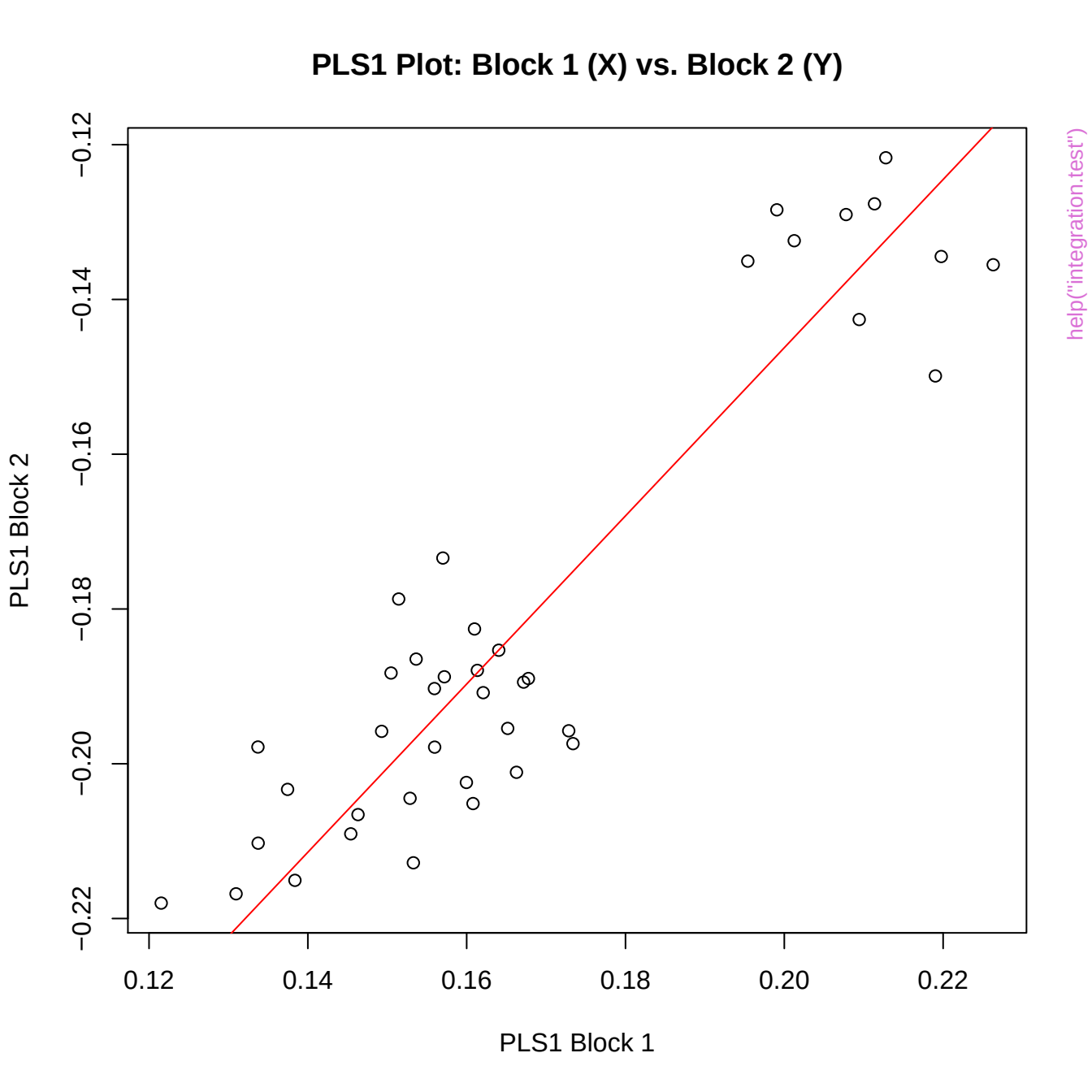
help("gridPar")

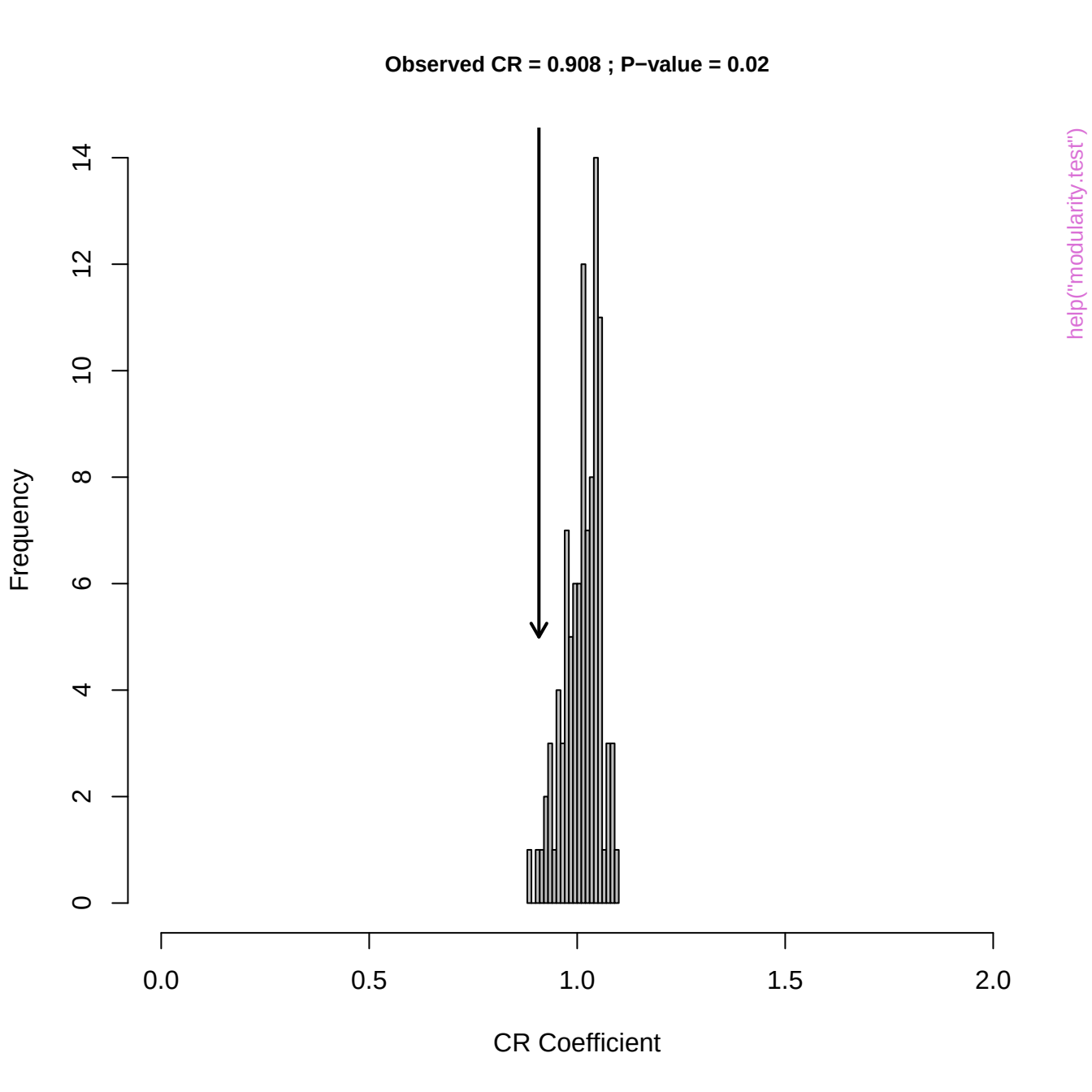


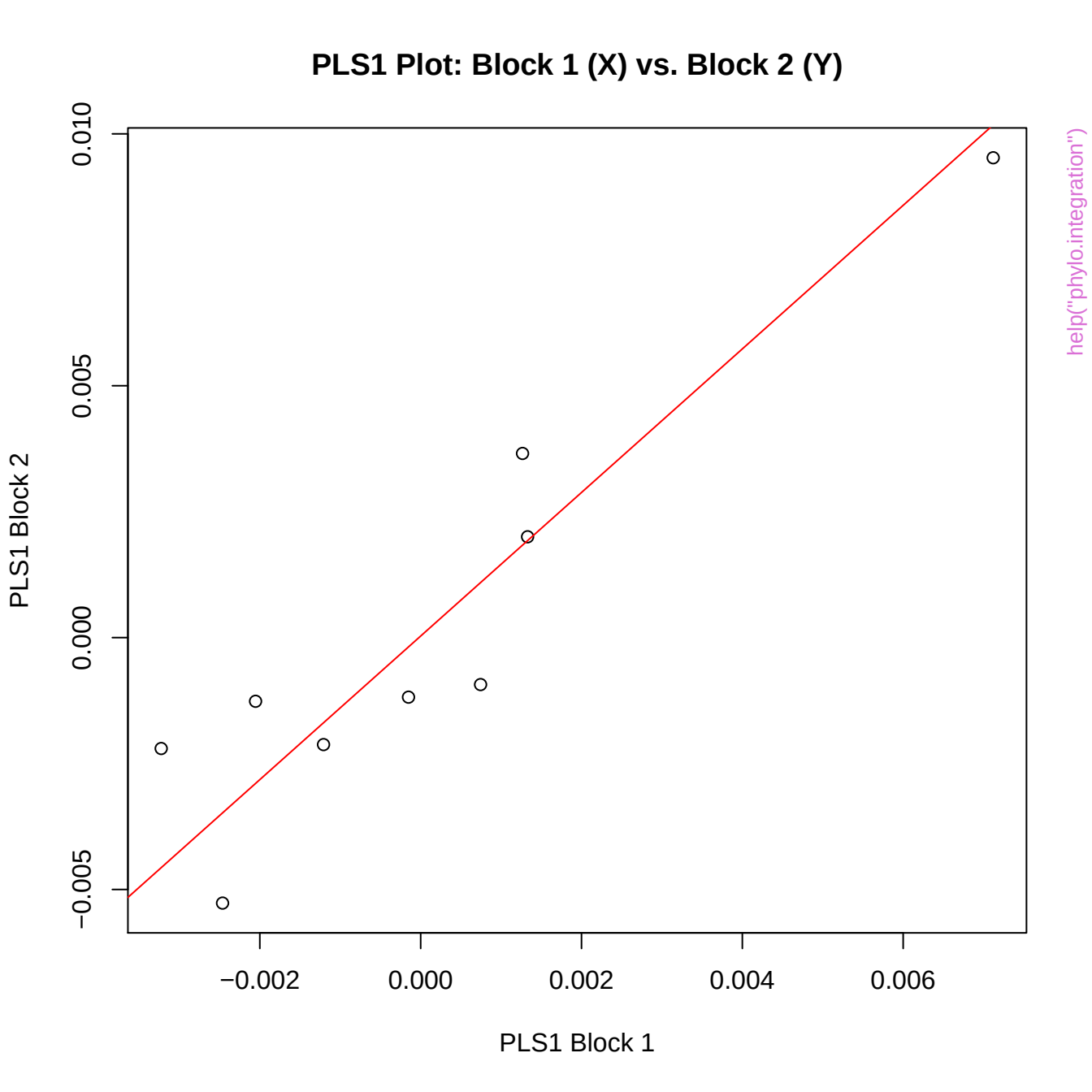
help("gridPar")

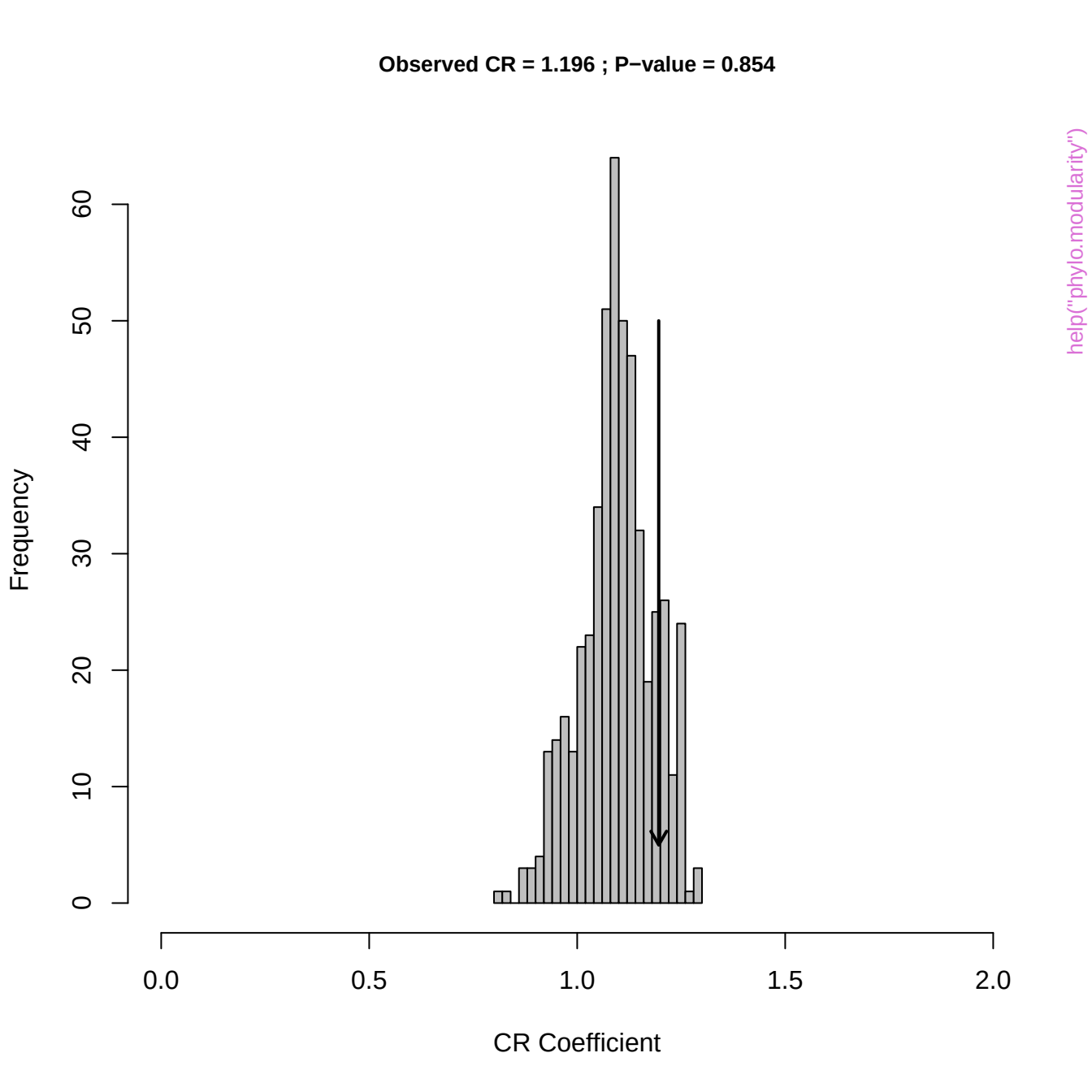


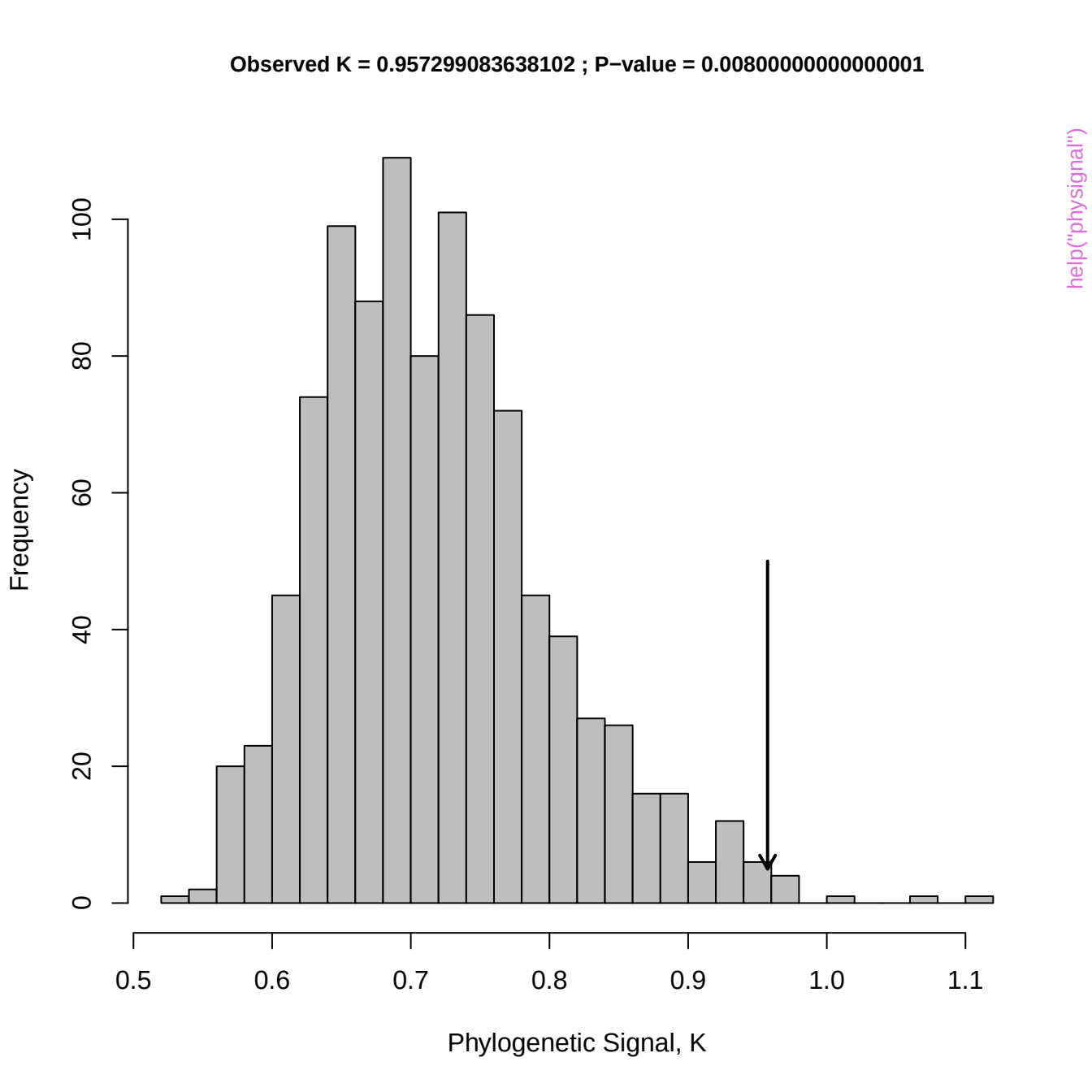

help("gridPar")

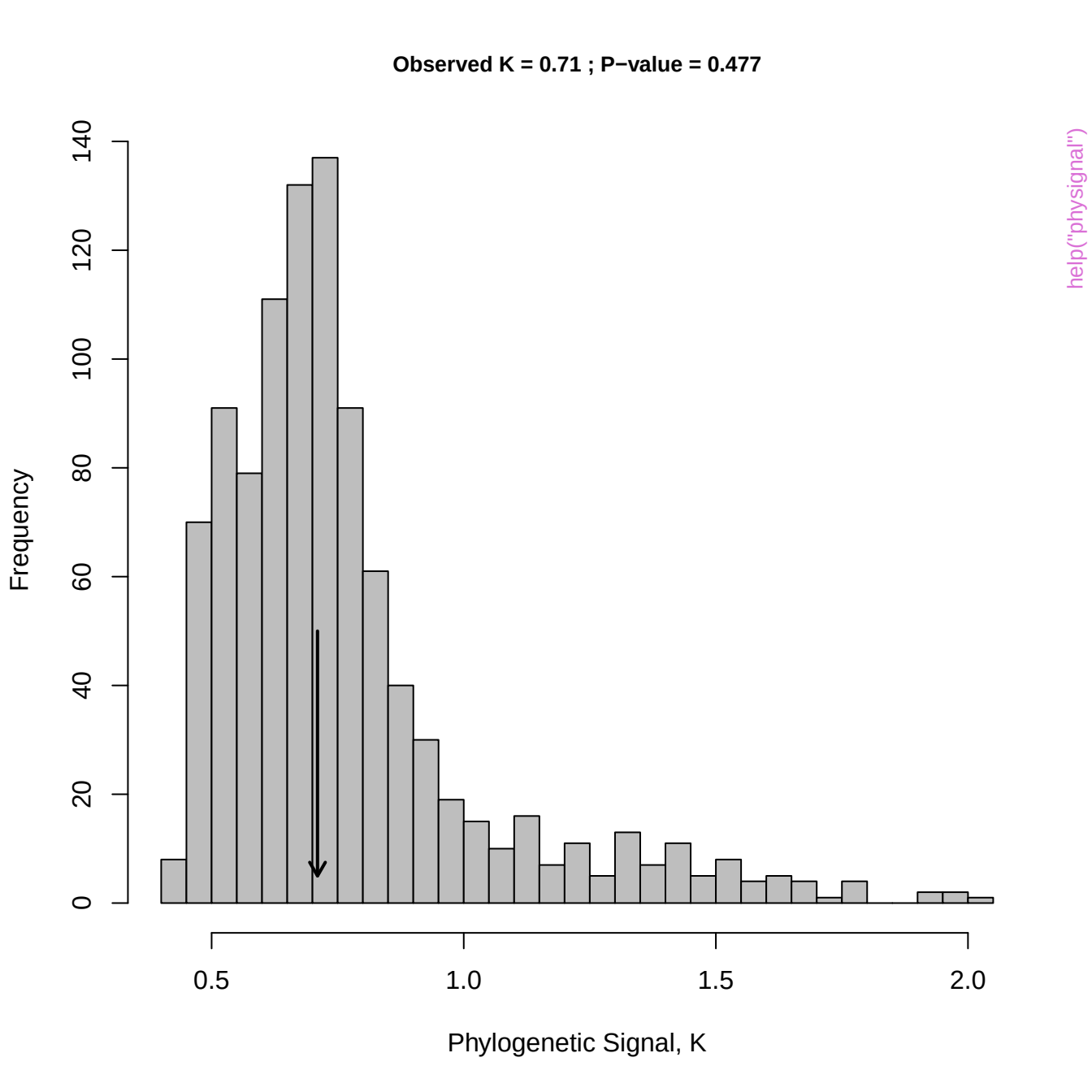

PLS1 Plot: Block 1 (X) vs. Block 2 (Y)
PLS1 Block 2
−0.12
−0.14
−0.16
−0.18
−0.20
−0.22
0.12
0.14
0.16
0.18
0.20
0.22
PLS1 Block 1
help("integration.test")

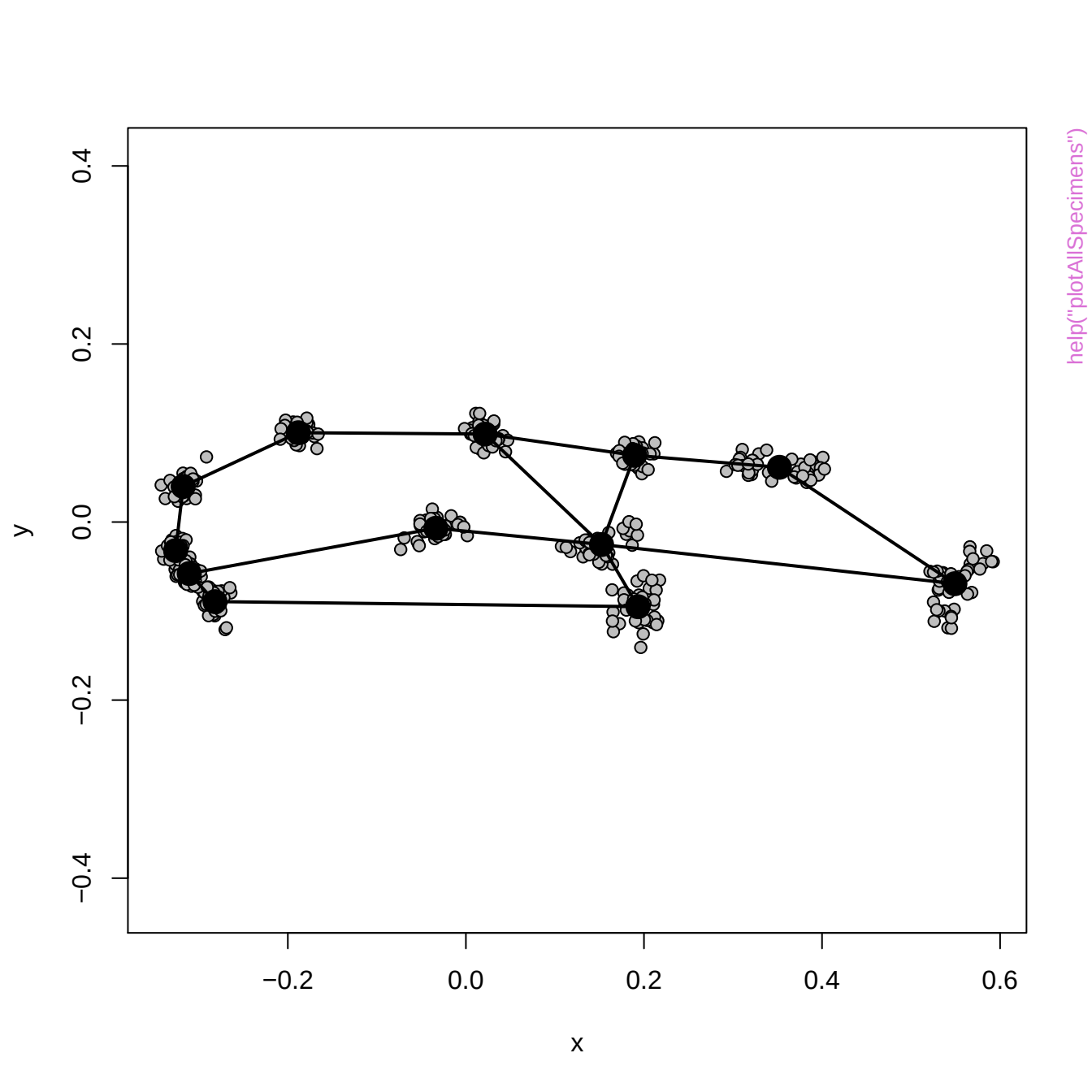

Observed CR = 0.908 ; P−value = 0.02
Frequency
0
2
4
6
8
10
12
14
0.0
0.5
1.0
1.5
2.0
CR Coefficient
help("modularity.test")

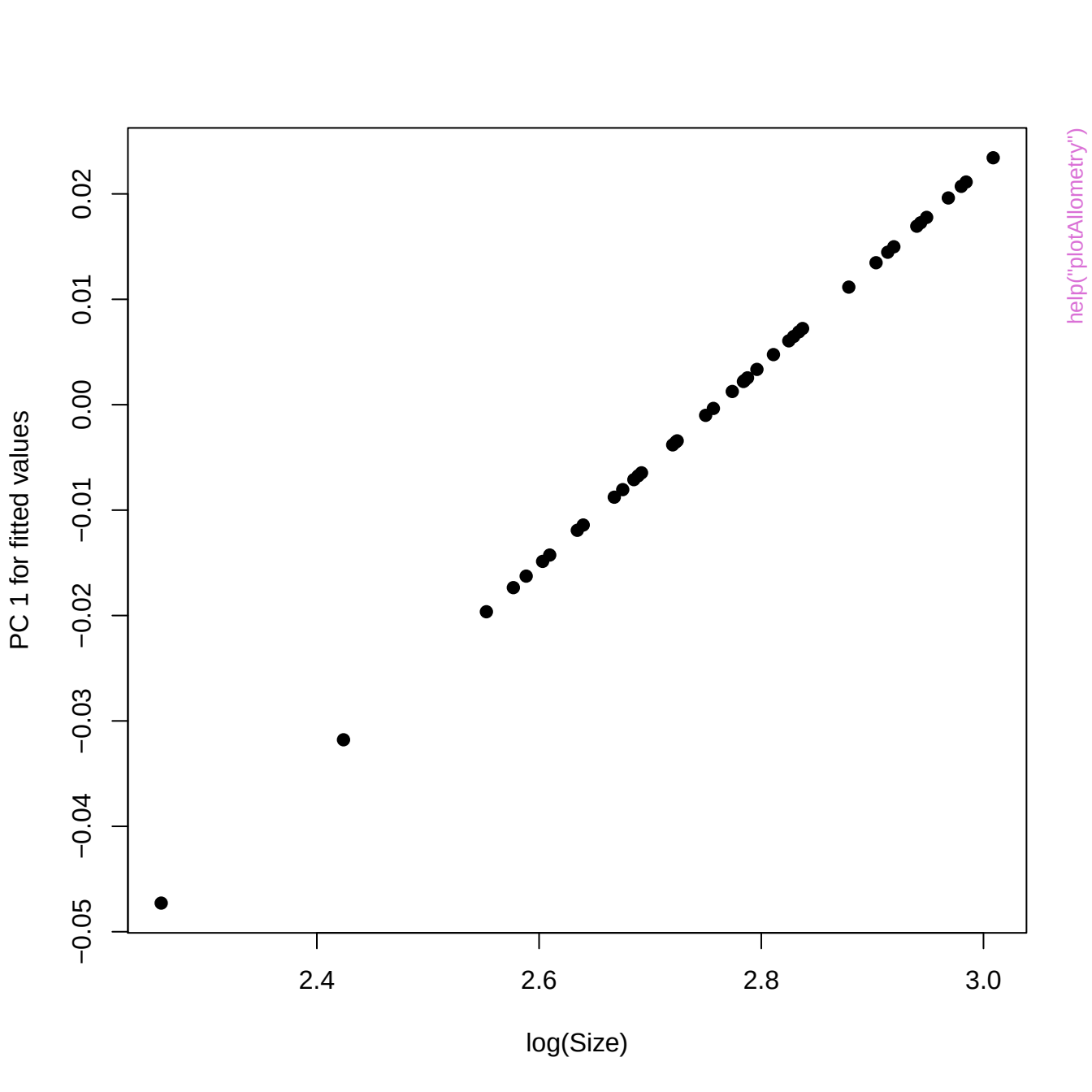

PLS1 Plot: Block 1 (X) vs. Block 2 (Y)
PLS1 Block 2
0.010
0.005
0.000
−0.005
−0.002
0.000
0.002
0.004
0.006
PLS1 Block 1
help("phylo.integration")

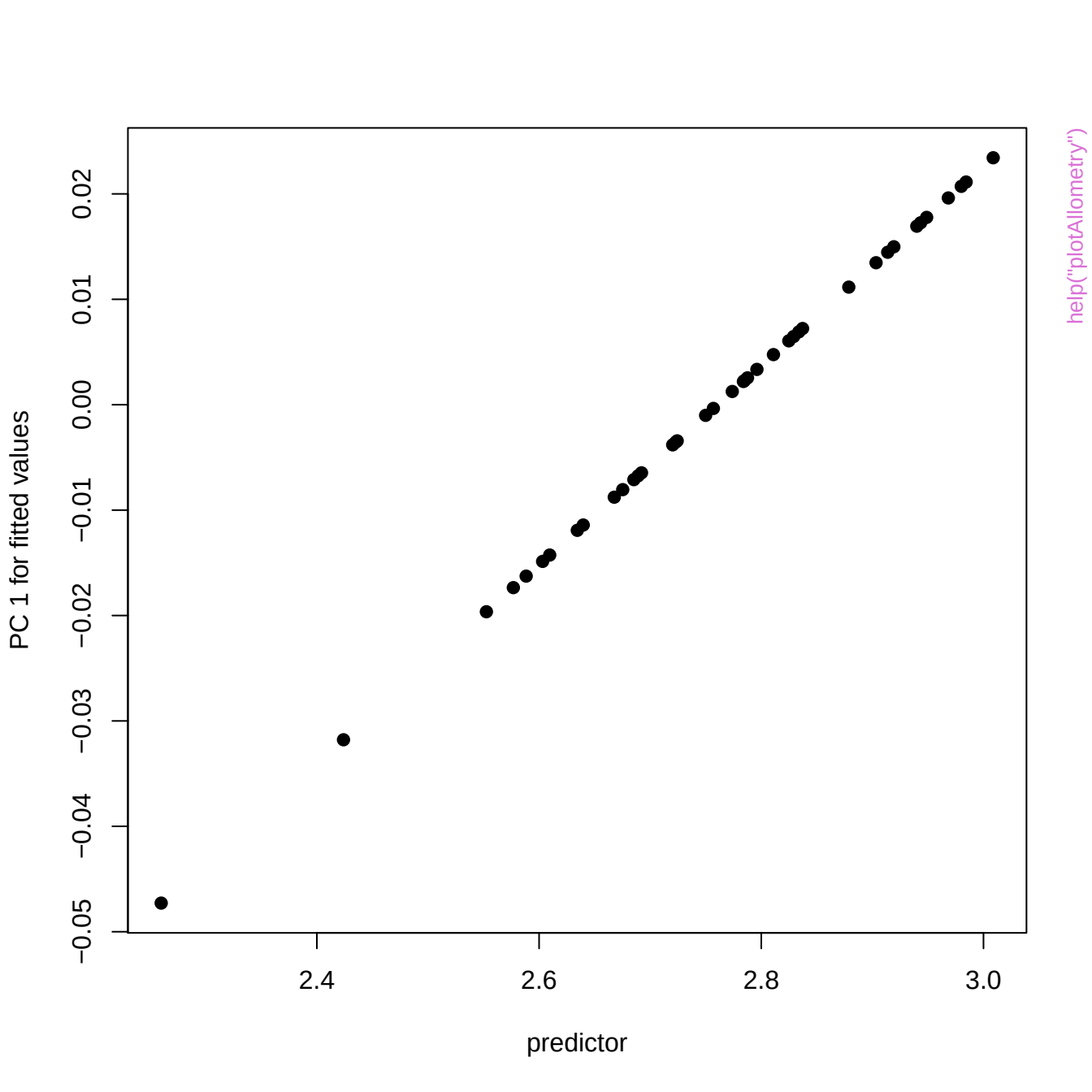

Observed CR = 1.196 ; P−value = 0.854
help("phylo.modularity")
Frequency
0
10
20
30
40
50
60
0.0
0.5
1.0
1.5
2.0
CR Coefficient

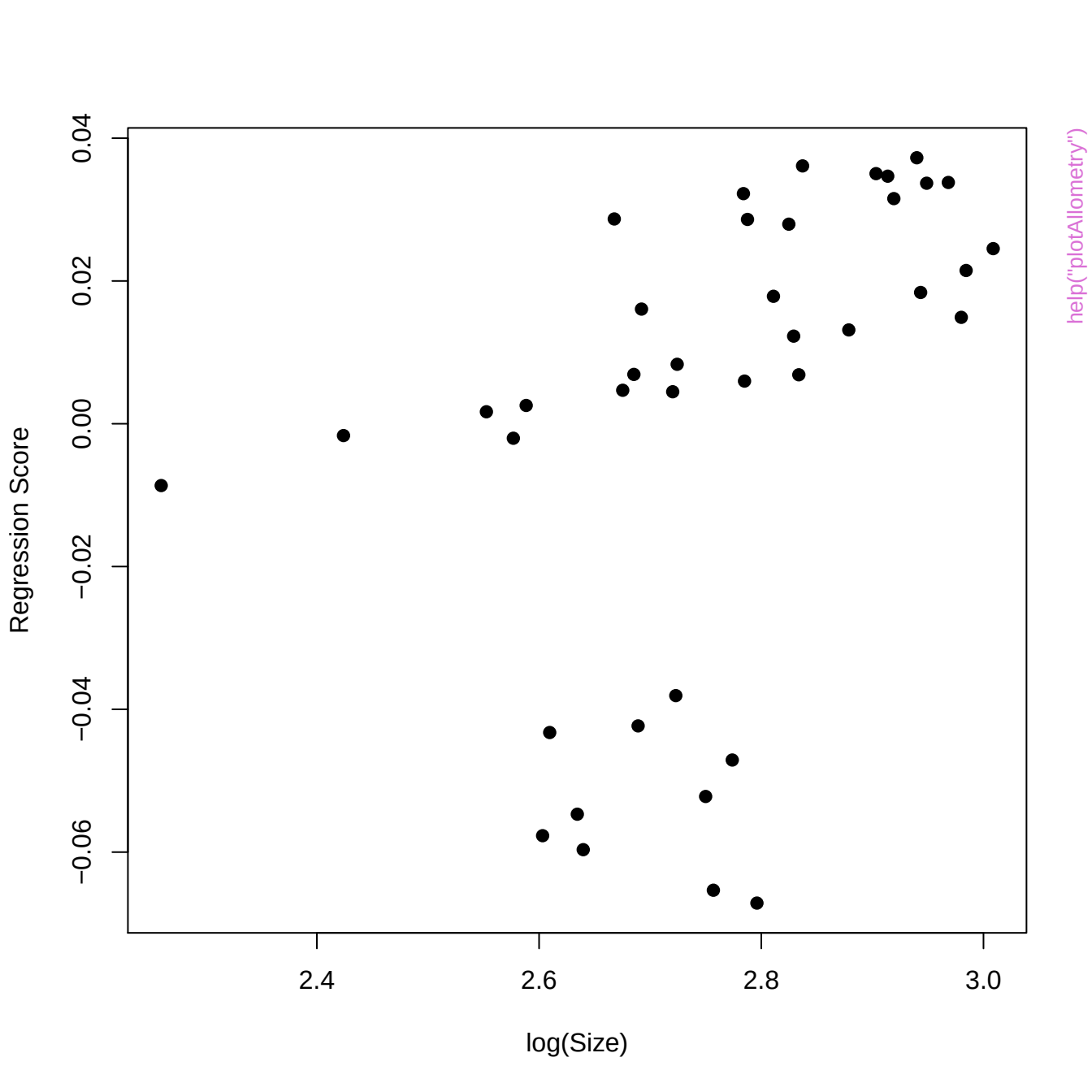

Observed K = 0.957299083638102 ; P−value = 0.00800000000000001
help("physignal")
Frequency
0
20
40
60
80
100
0.5
0.6
0.7
0.8
0.9
1.0
1.1
Phylogenetic Signal, K

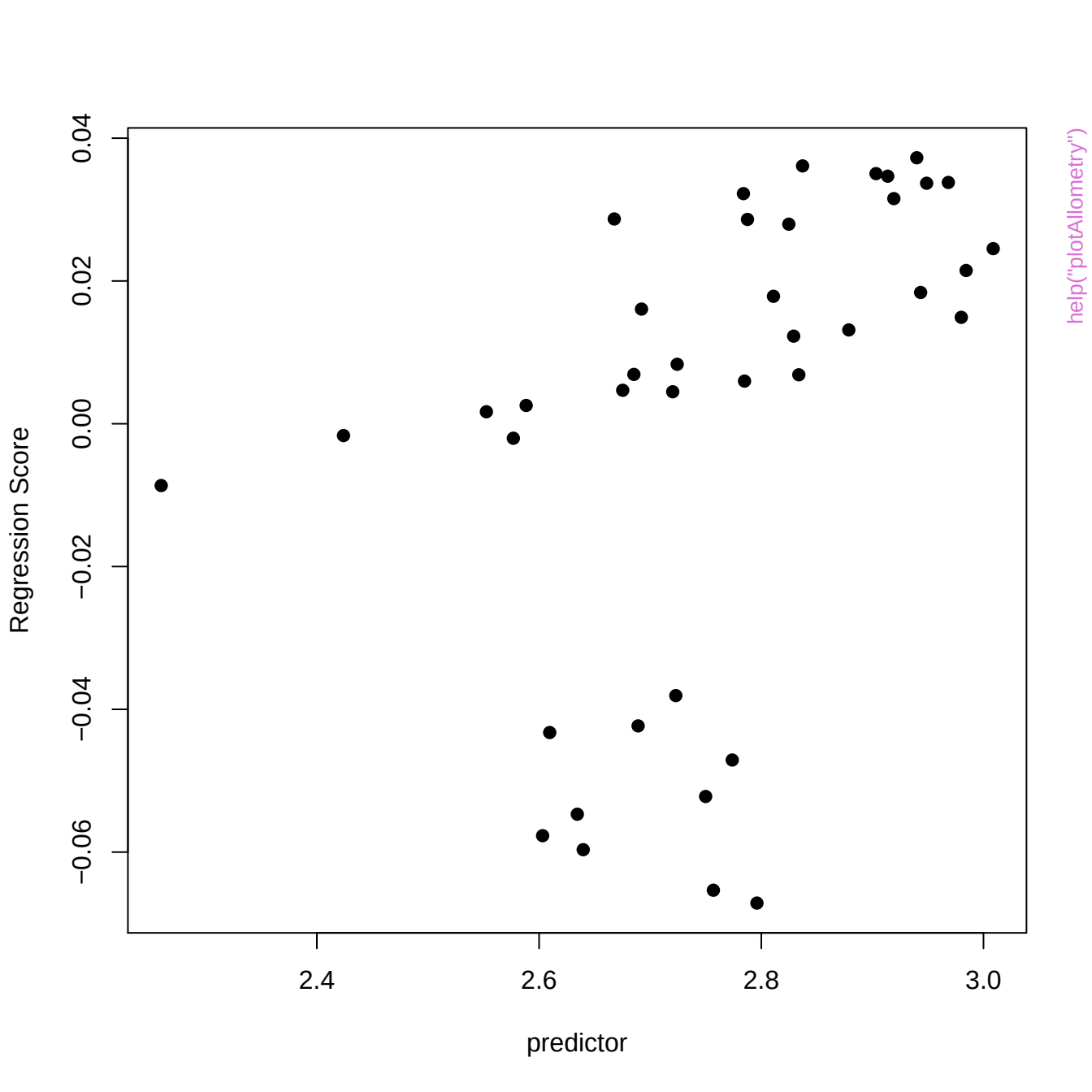

Observed K = 0.71 ; P−value = 0.477
Frequency
0
20
40
60
80
100
120
140
0.5
1.0
1.5
2.0
Phylogenetic Signal, K
help("physignal")

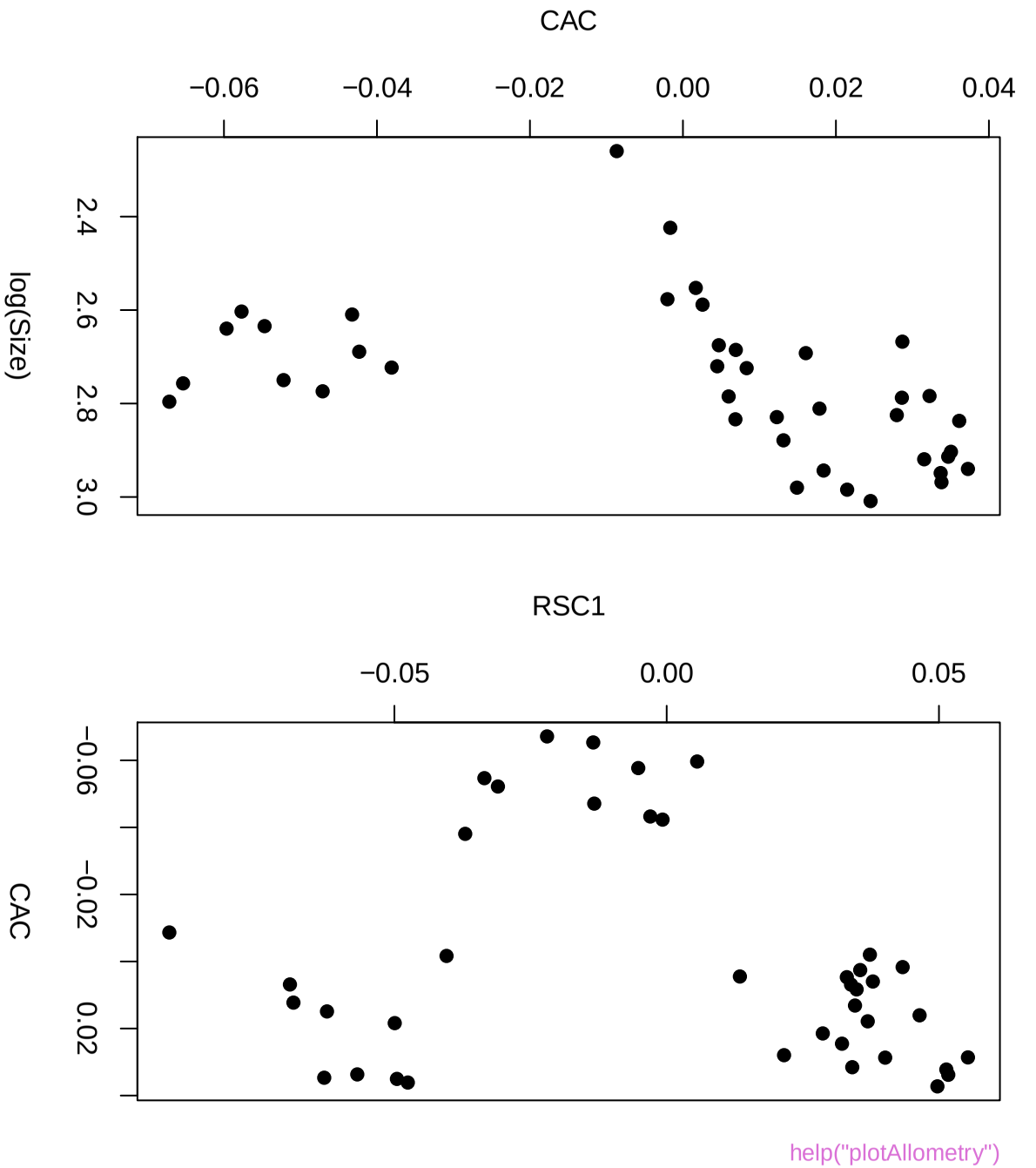

help("plotAllSpecimens")
y
x
0.4
0.2
0.0
−0.2
−0.4
−0.2
0.0
0.2
0.4
0.6


PC 1 for fitted values
−0.05
−0.04
−0.03
−0.02
−0.01
0.00
0.01
0.02
2.4
2.6
2.8
3.0
log(Size)
help("plotAllometry")

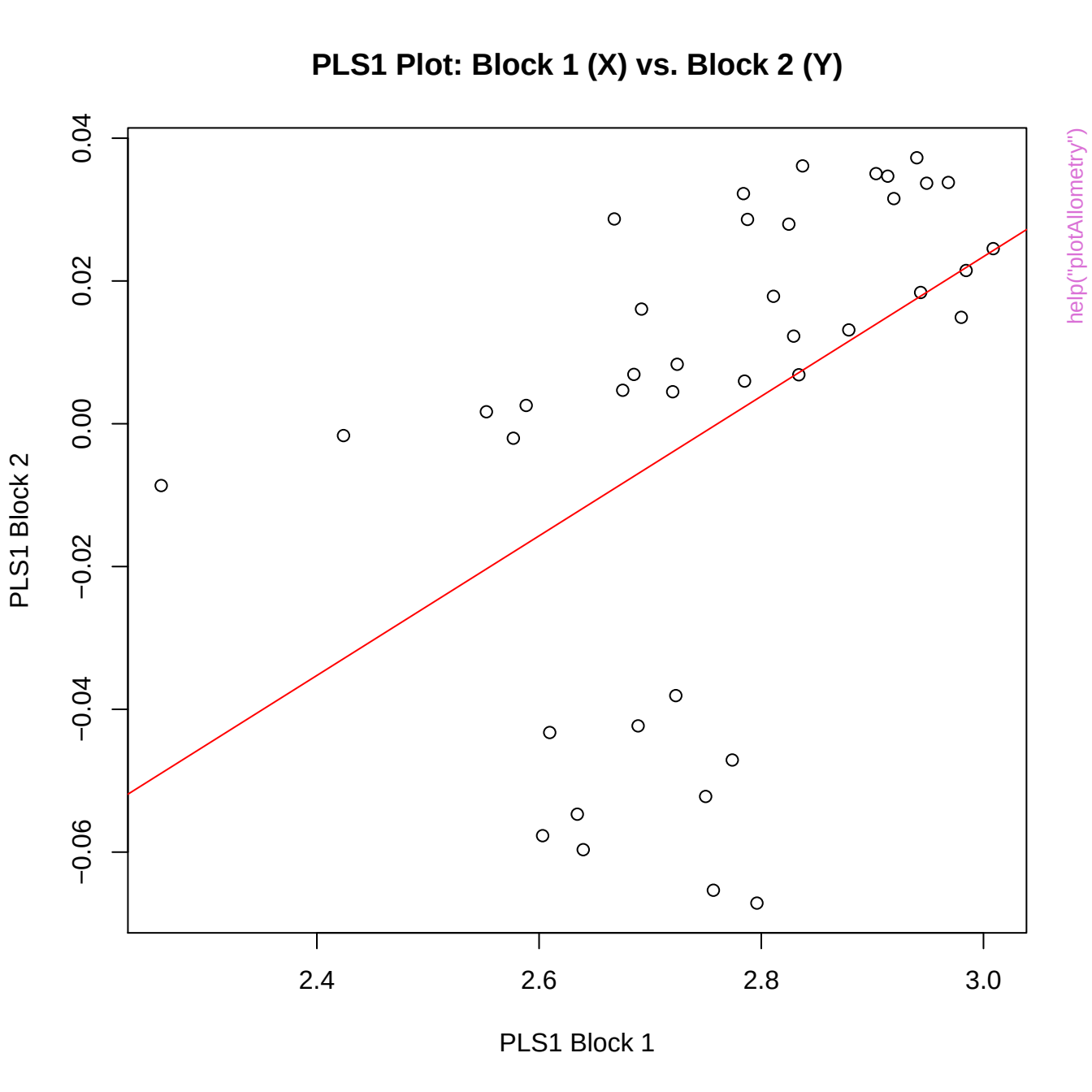

PC 1 for fitted values
−0.05
−0.04
−0.03
−0.02
−0.01
0.00
0.01
0.02
2.4
2.6
2.8
3.0
predictor
help("plotAllometry")

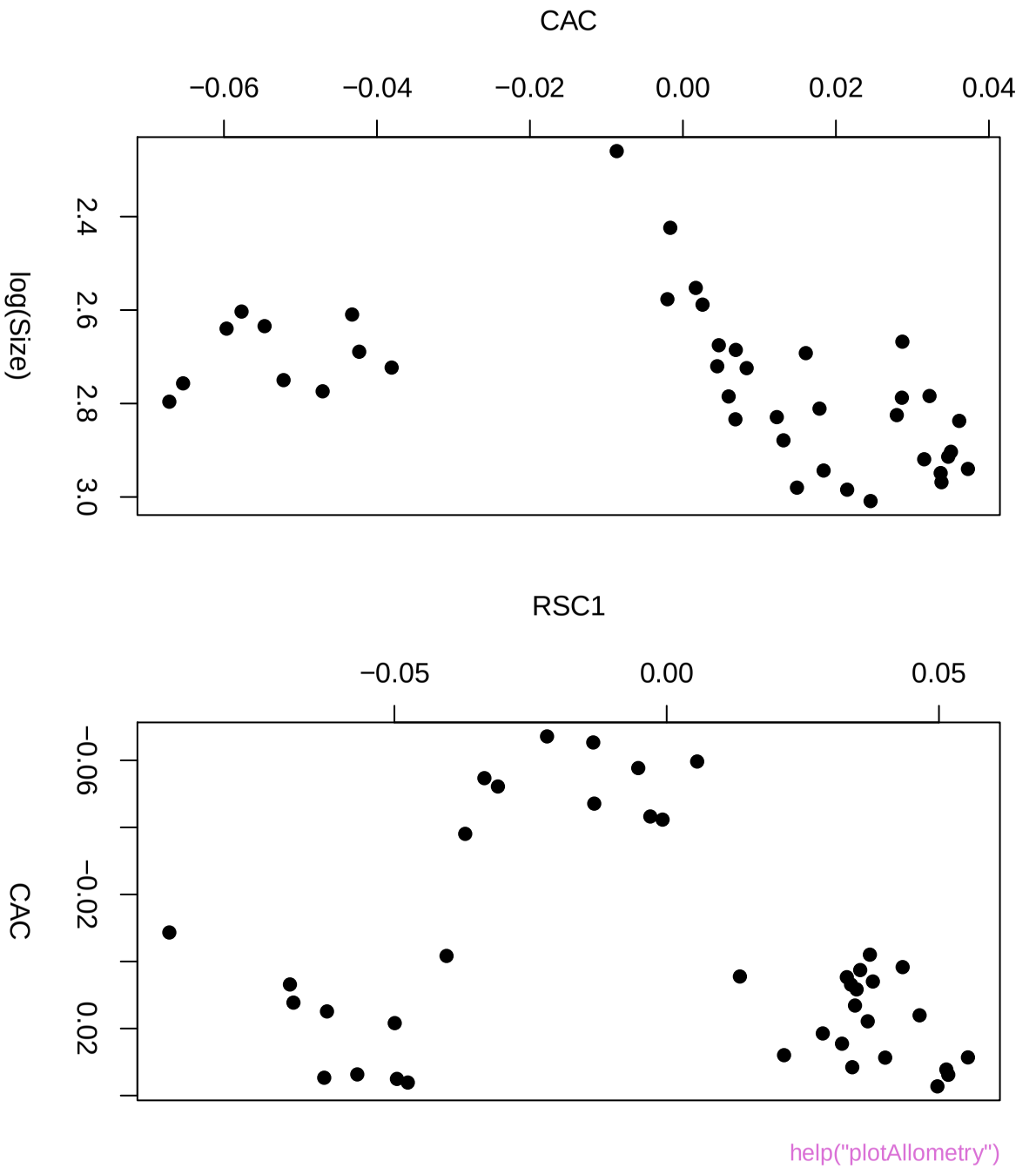

Regression Score
0.04
0.02
0.00
−0.02
−0.04
−0.06
2.4
2.6
2.8
3.0
log(Size)
help("plotAllometry")


Regression Score
0.04
0.02
0.00
−0.02
−0.04
−0.06
2.4
2.6
2.8
3.0
predictor
help("plotAllometry")

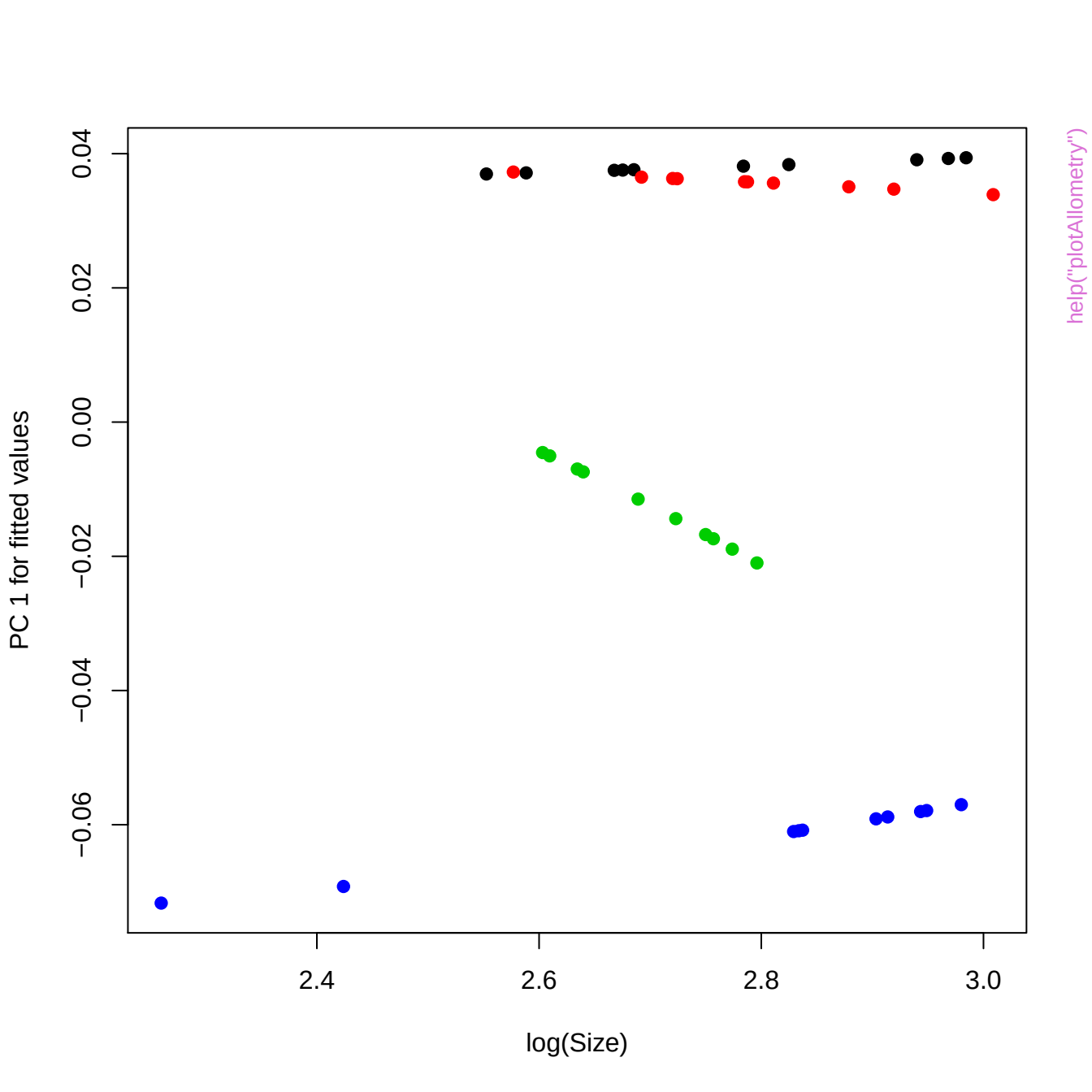


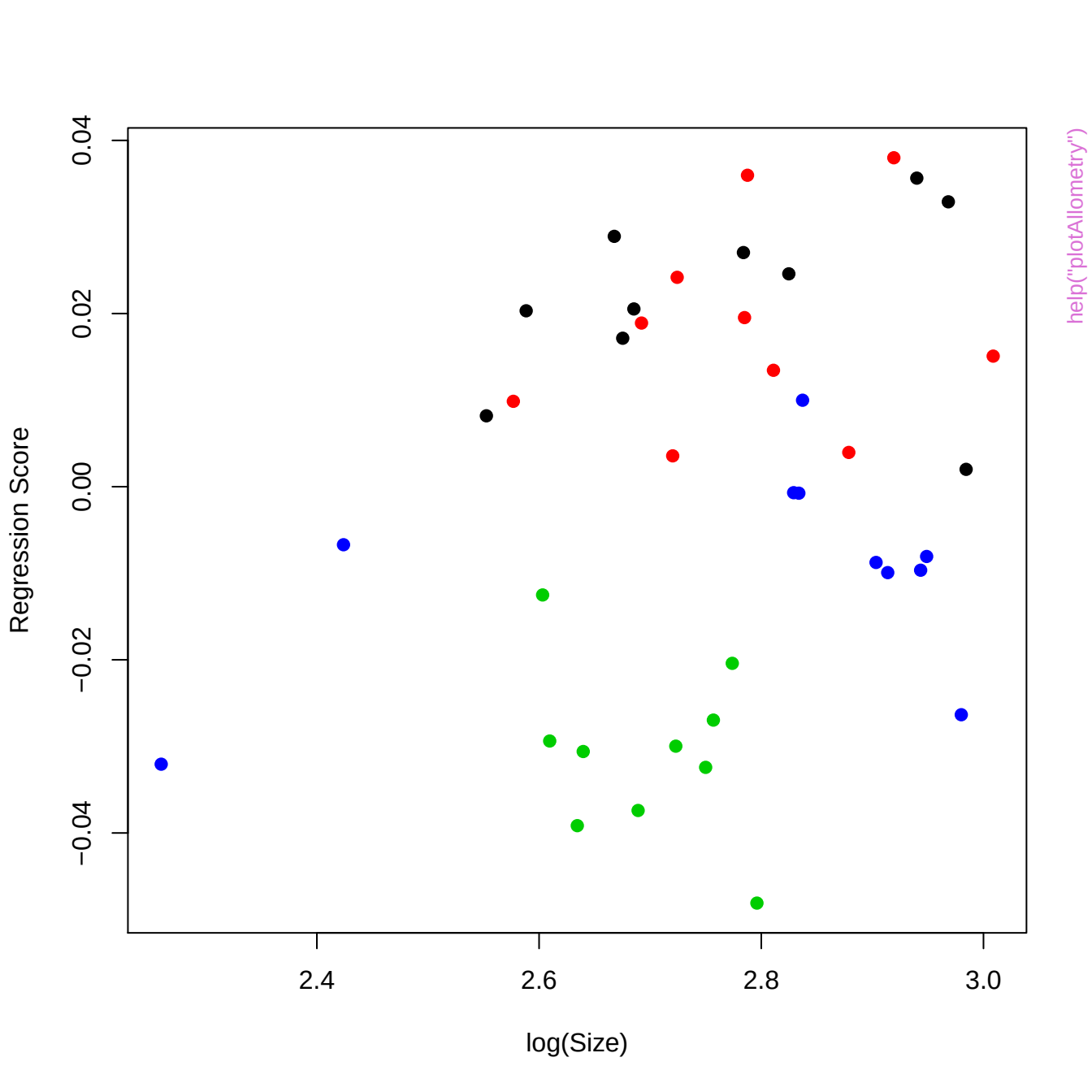

help("plotAllometry")

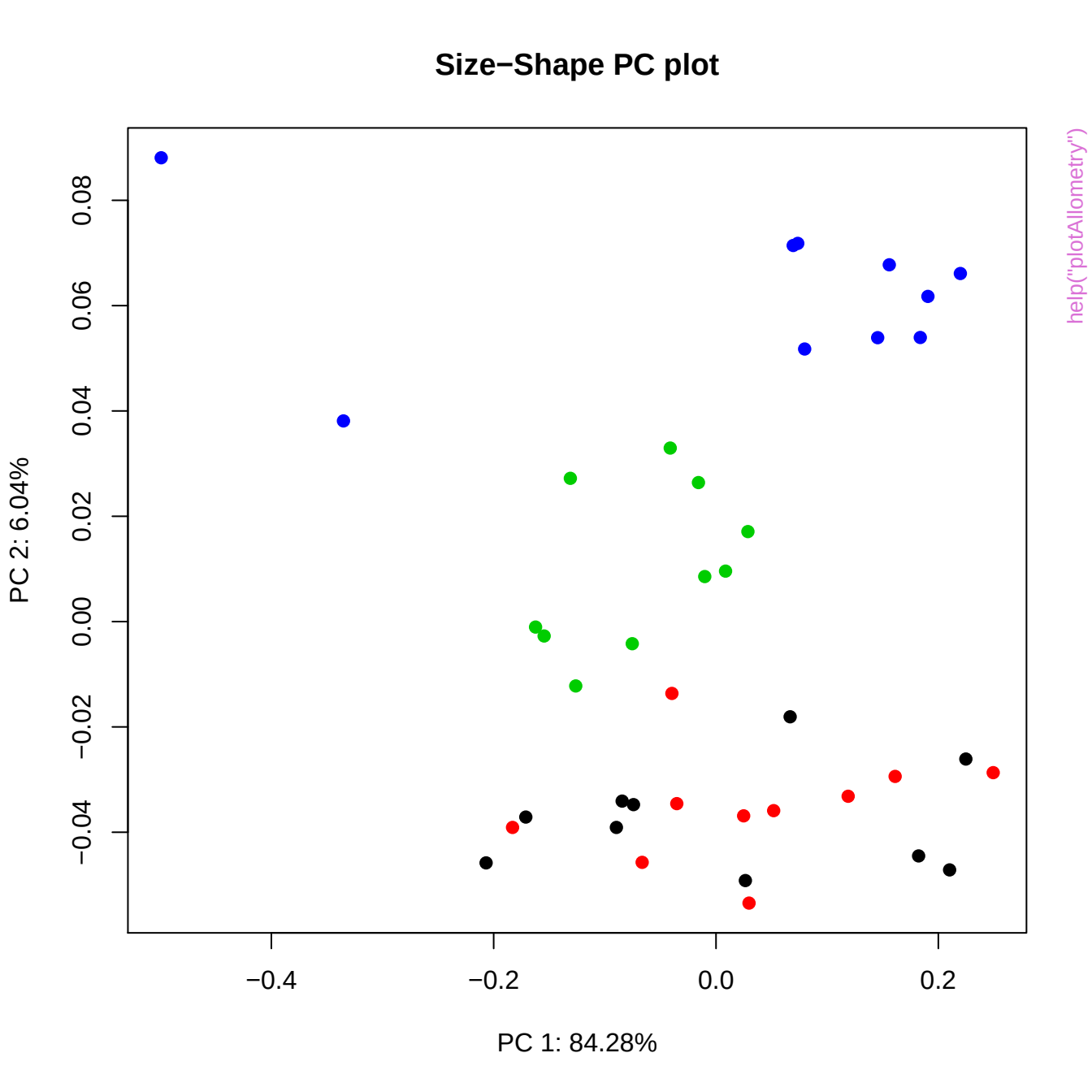

PLS1 Plot: Block 1 (X) vs. Block 2 (Y)
PLS1 Block 2
0.04
0.02
0.00
−0.02
−0.04
−0.06
2.4
2.6
2.8
3.0
PLS1 Block 1
help("plotAllometry")

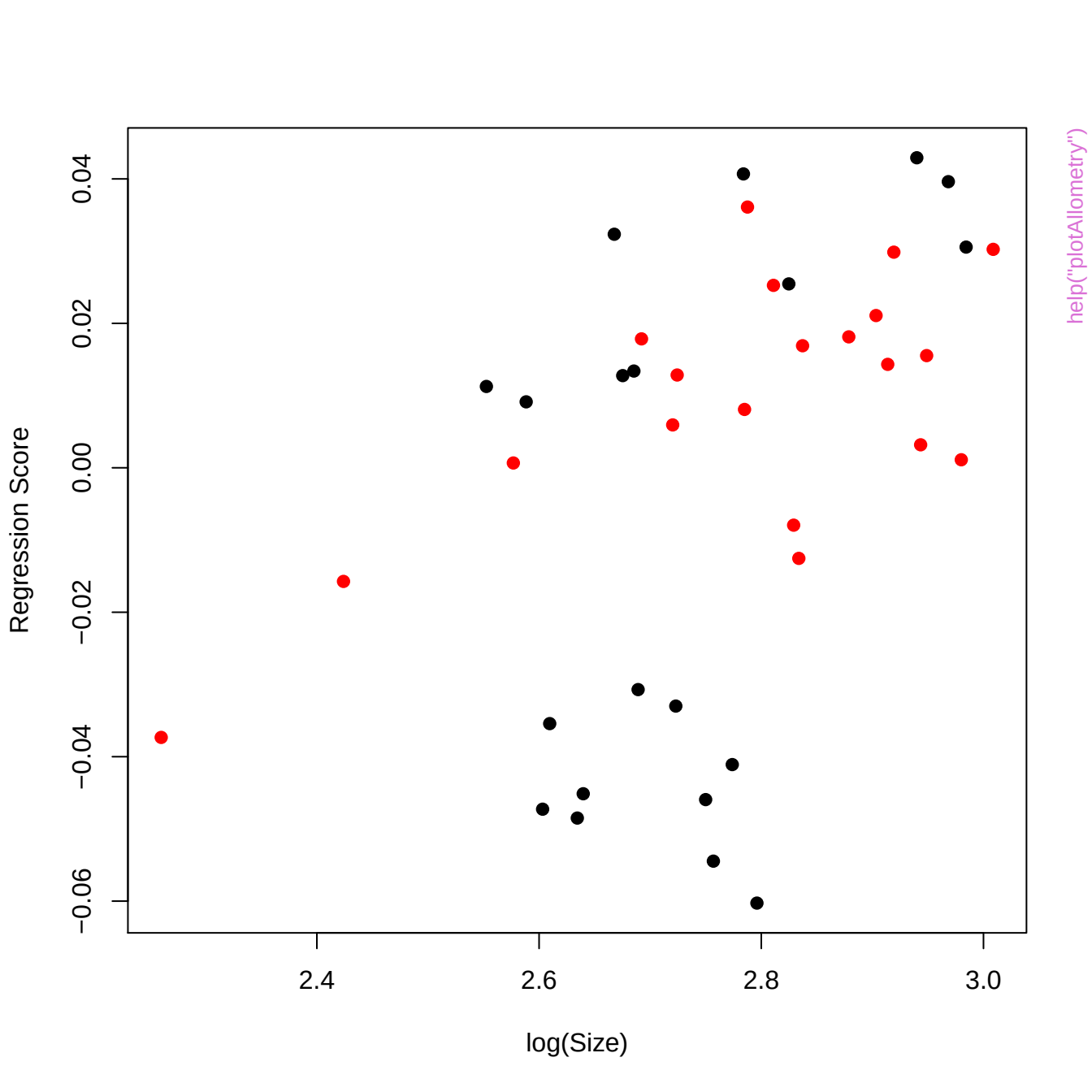


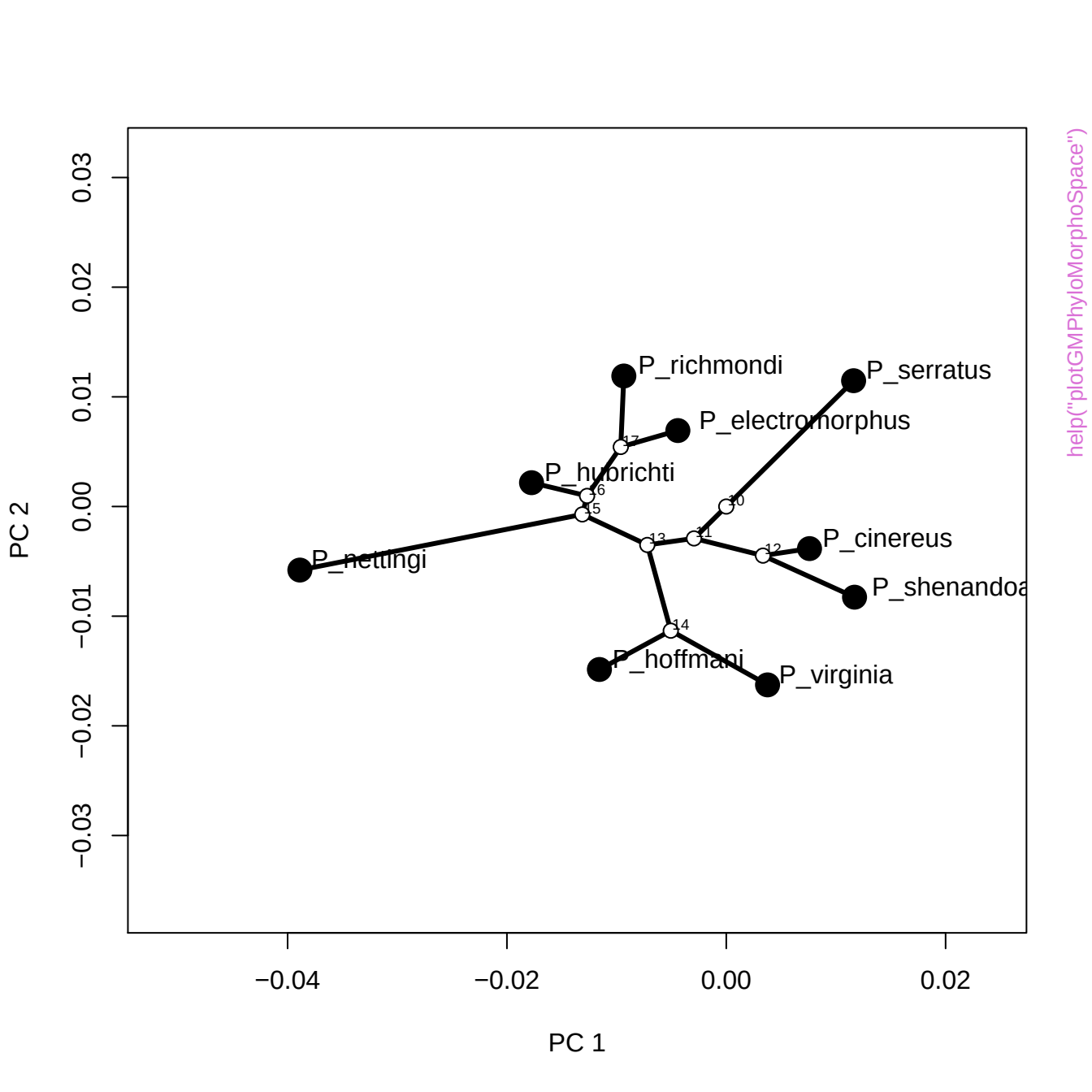

help("plotAllometry")

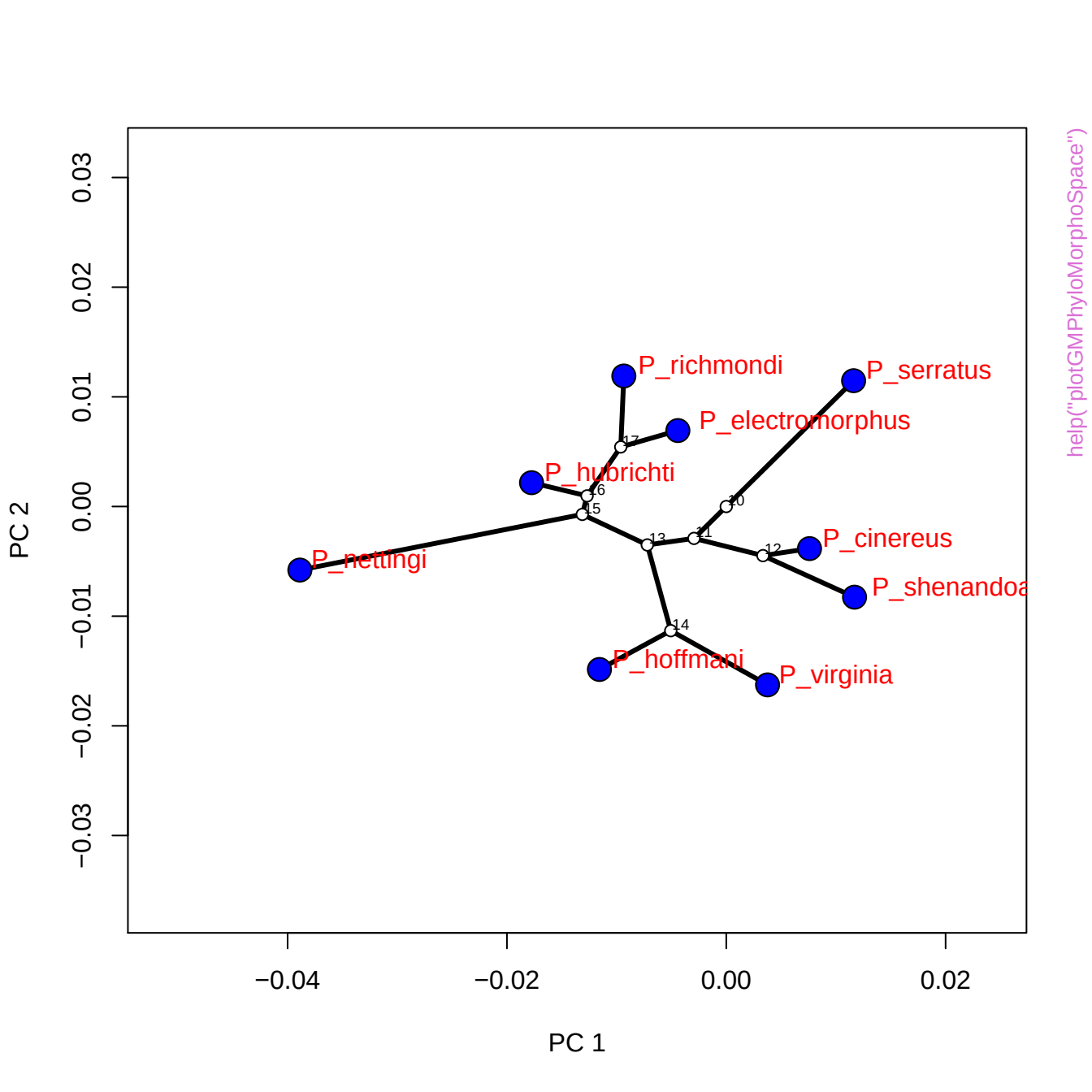

PC 1 for fitted values
0.04
0.02
0.00
−0.02
−0.04
−0.06
2.4
2.6
2.8
3.0
log(Size)
help("plotAllometry")

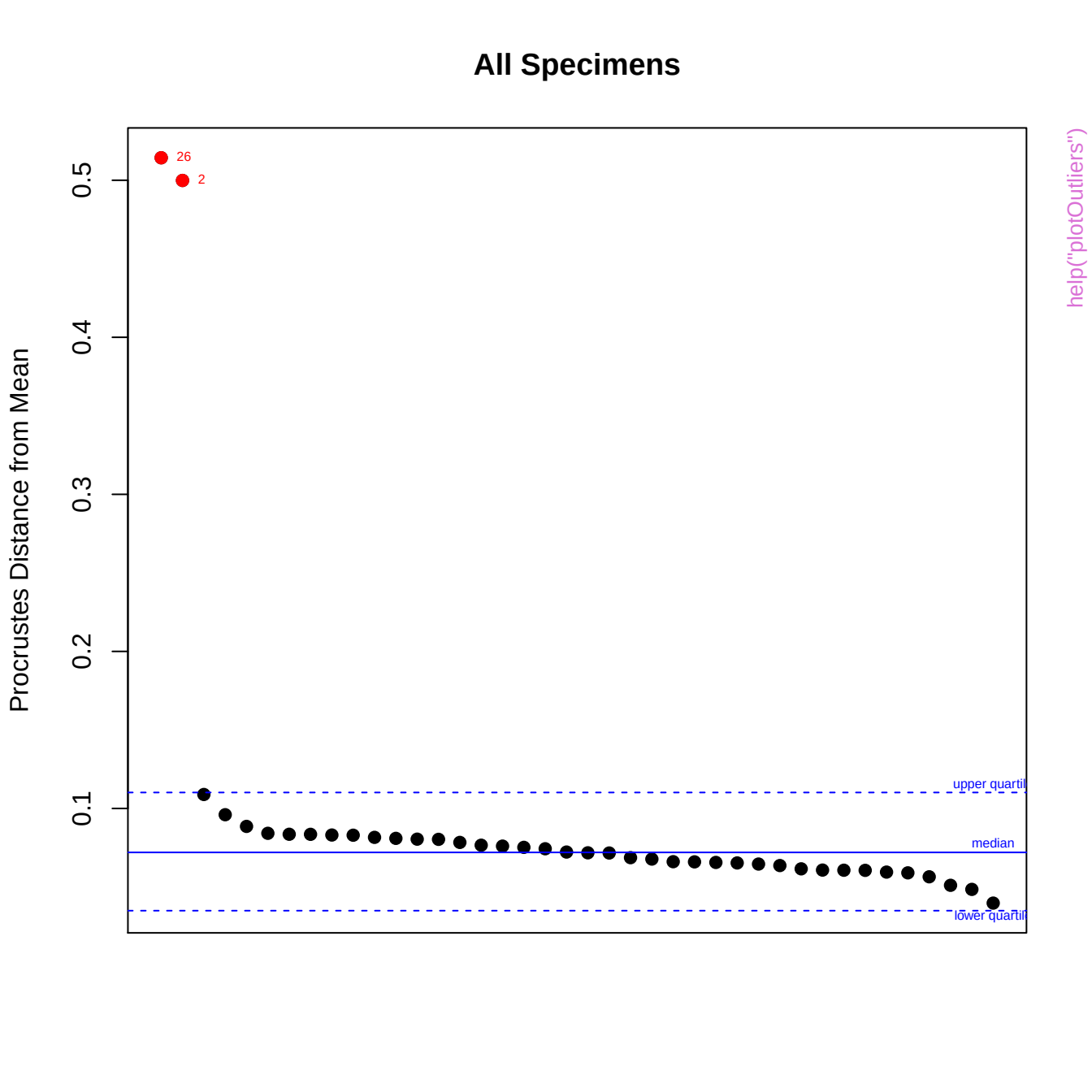

Regression Score
0.04
0.02
0.00
−0.02
−0.04
2.4
2.6
2.8
3.0
log(Size)
help("plotAllometry")

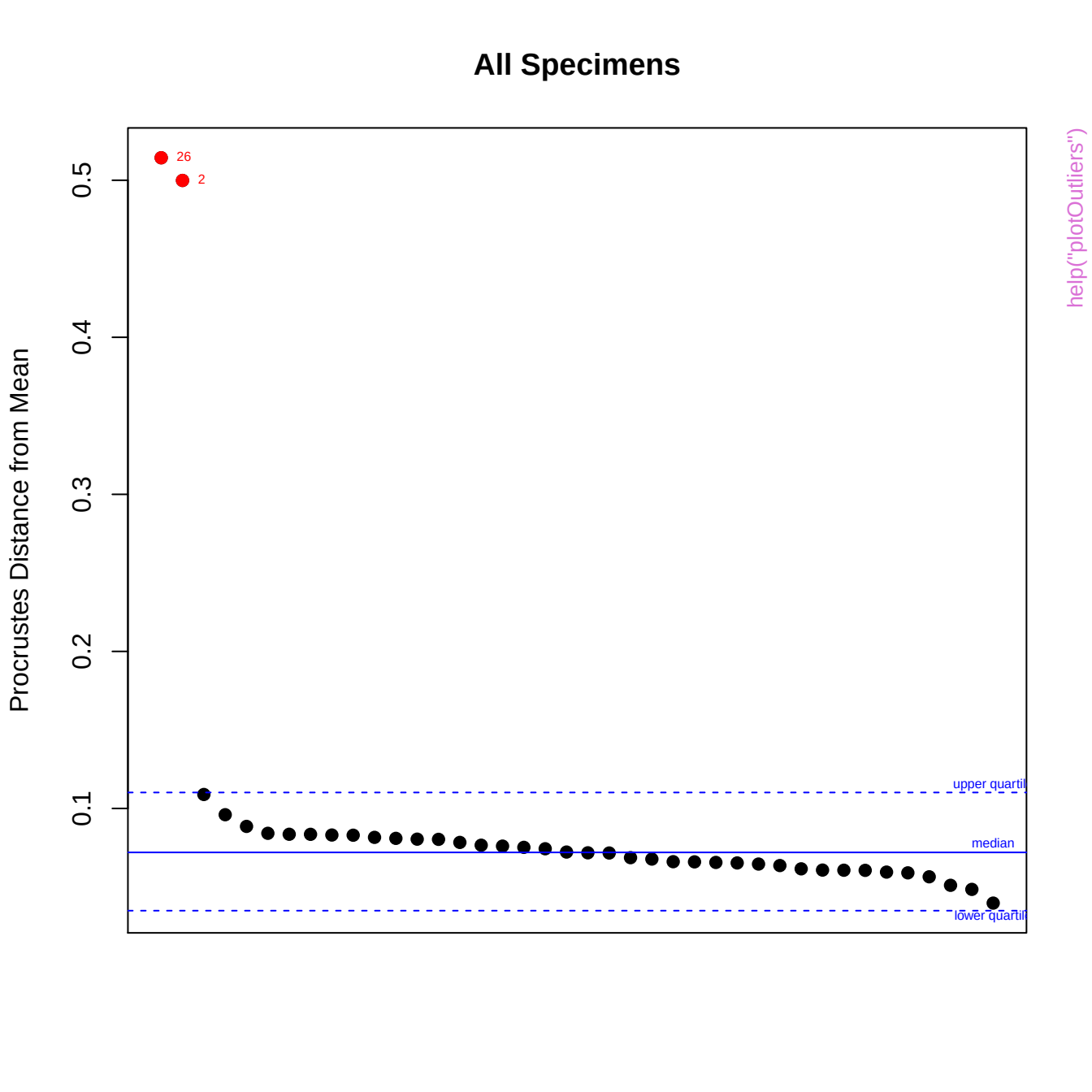

Size−Shape PC plot
PC 2: 6.04%
PC 1: 84.28%
0.08
0.06
0.04
0.02
0.00
−0.02
−0.04
−0.4
−0.2
0.0
0.2
help("plotAllometry")


Regression Score
0.04
0.02
0.00
−0.02
−0.04
−0.06
2.4
2.6
2.8
3.0
log(Size)
help("plotAllometry")

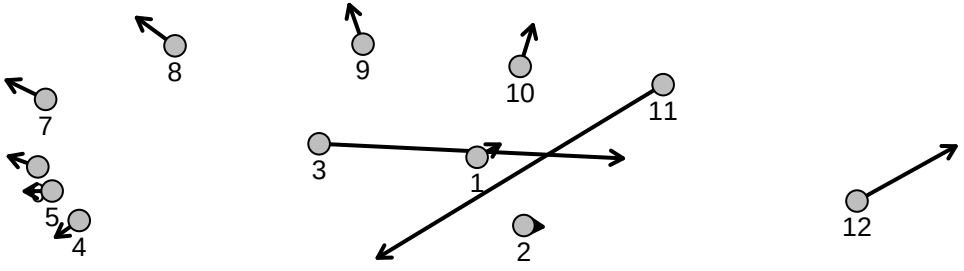

P_richmondi
P_serratus
P_electromorphus
P_hubrichti
P_nettingi
P_cinereus
P_shenandoa
P_hoffmani
P_virginia
17
16
15
10
13
11
12
14
PC 2
PC 1
0.03
0.02
0.01
0.00
−0.01
−0.02
−0.03
−0.04
−0.02
0.00
0.02
help("plotGMPhyloMorphoSpace")


P_richmondi
P_serratus
P_electromorphus
P_hubrichti
P_nettingi
P_cinereus
P_shenandoa
P_hoffmani
P_virginia
17
16
15
10
13
11
12
14
PC 1
PC 2
−0.04
−0.02
0.00
0.02
0.03
0.02
0.01
0.00
−0.01
−0.02
−0.03
help("plotGMPhyloMorphoSpace")


All Specimens
Procrustes Distance from Mean
0.1
0.2
0.3
0.4
0.5
26
2
upper quartil
median
lower quartil
help("plotOutliers")

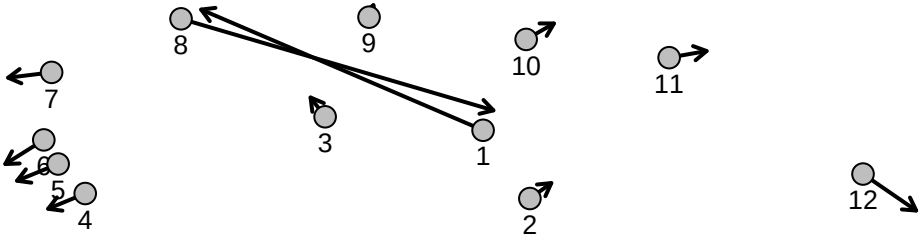

All Specimens
Procrustes Distance from Mean
0.1
0.2
0.3
0.4
0.5
26
2
upper quartil
median
lower quartil
help("plotOutliers")

# group: All Specimens, specimen: 26

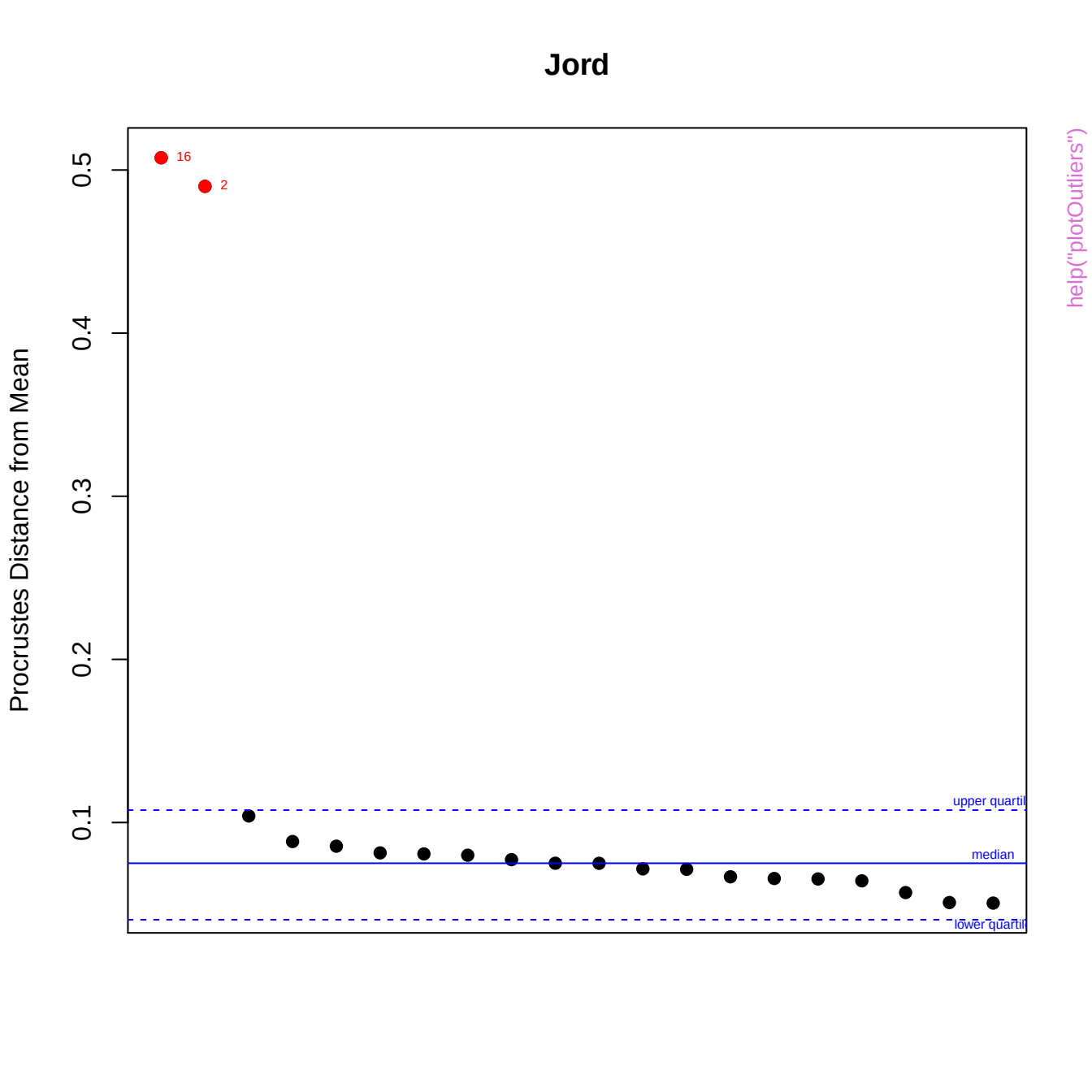



help("plotOutliers")

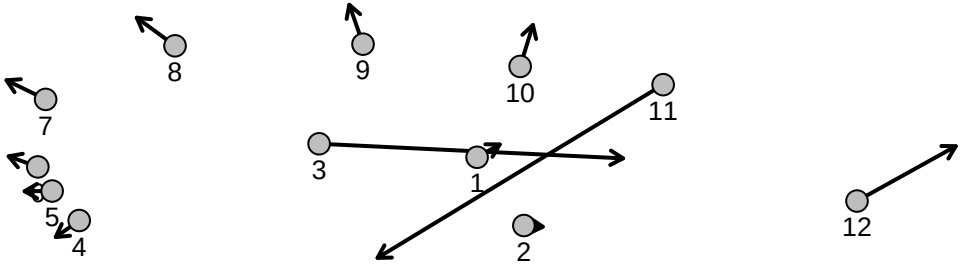
## group: All Specimens, specimen: 2



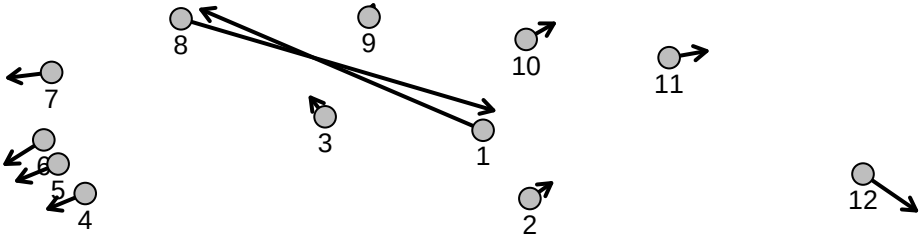

help("plotOutliers")

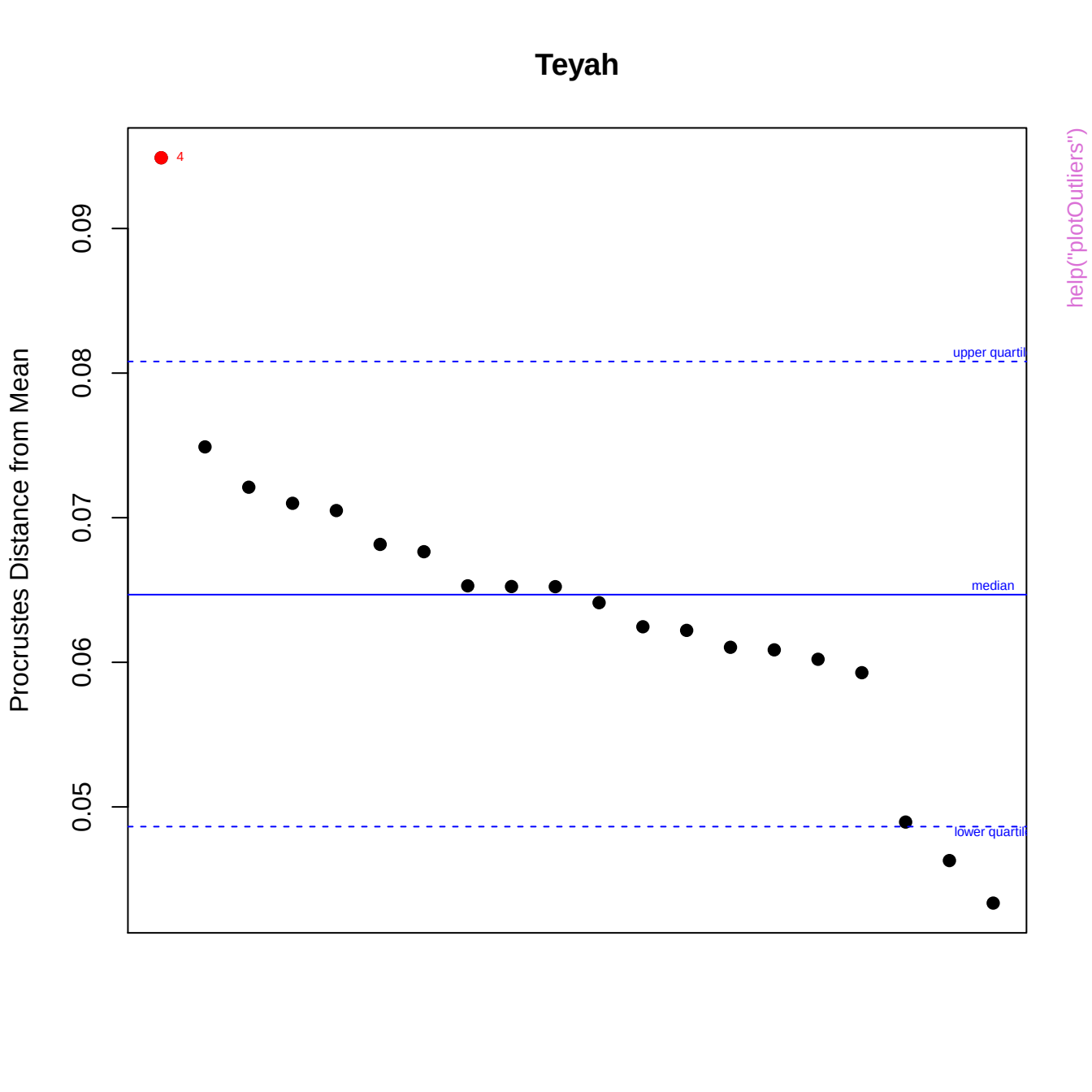

Jord
Procrustes Distance from Mean
0.1
0.2
0.3
0.4
0.5
16
2
upper quartil
median
lower quartil
help("plotOutliers")

# group: Jord, specimen: 16

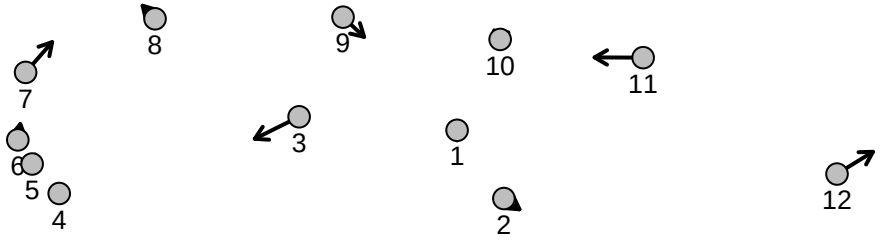


# group: Jord, specimen: 2

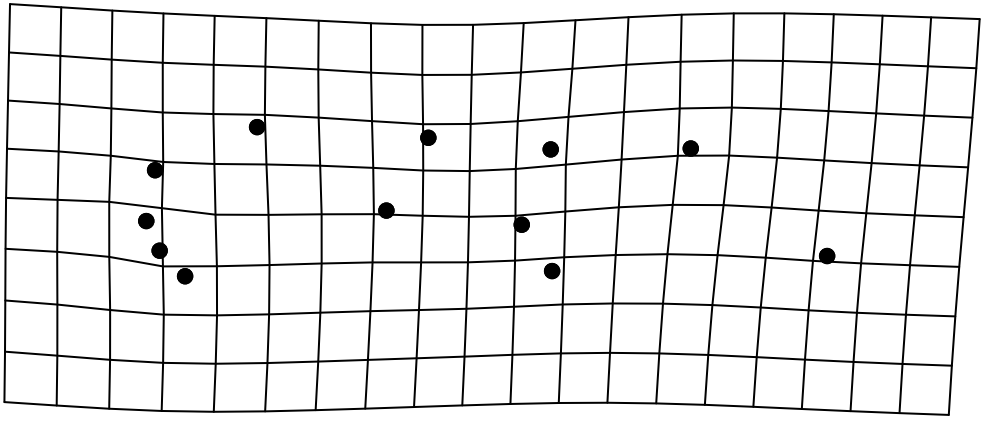



Teyah
Procrustes Distance from Mean
0.09
0.08
0.07
0.06
0.05
4
upper quartil
median
lower quartil
help("plotOutliers")

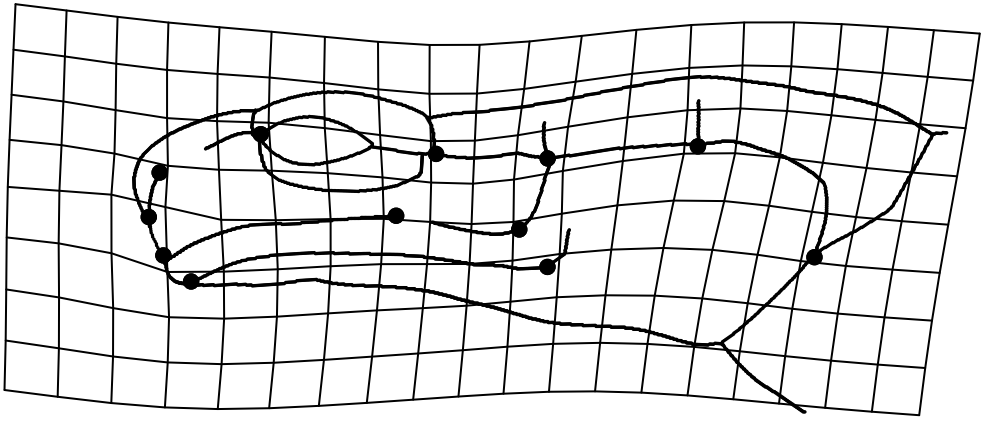
## group: Teyah, specimen: 4



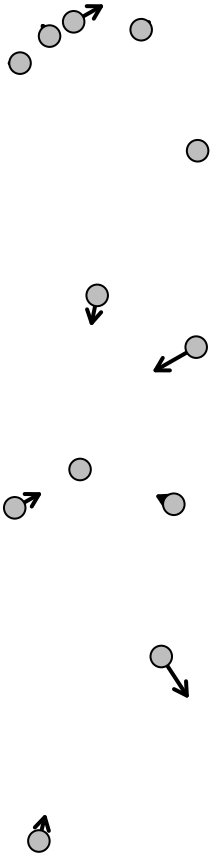

help("plotOutliers")



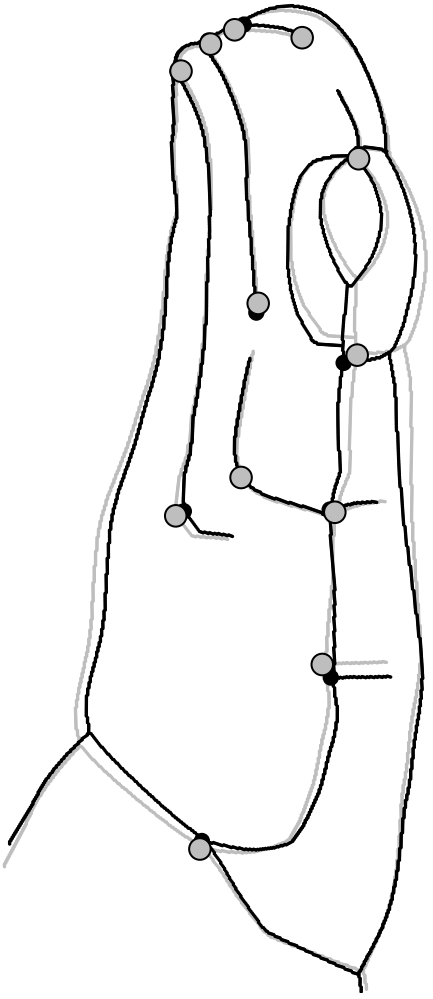
help("plotRefToTarget")



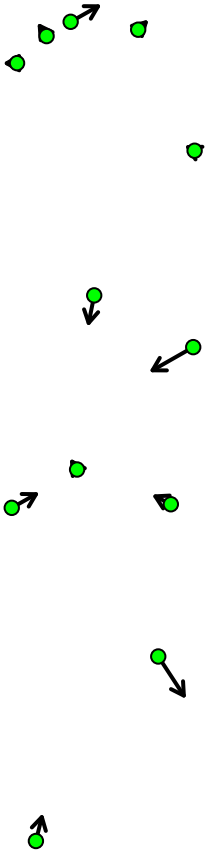
help("plotRefToTarget")



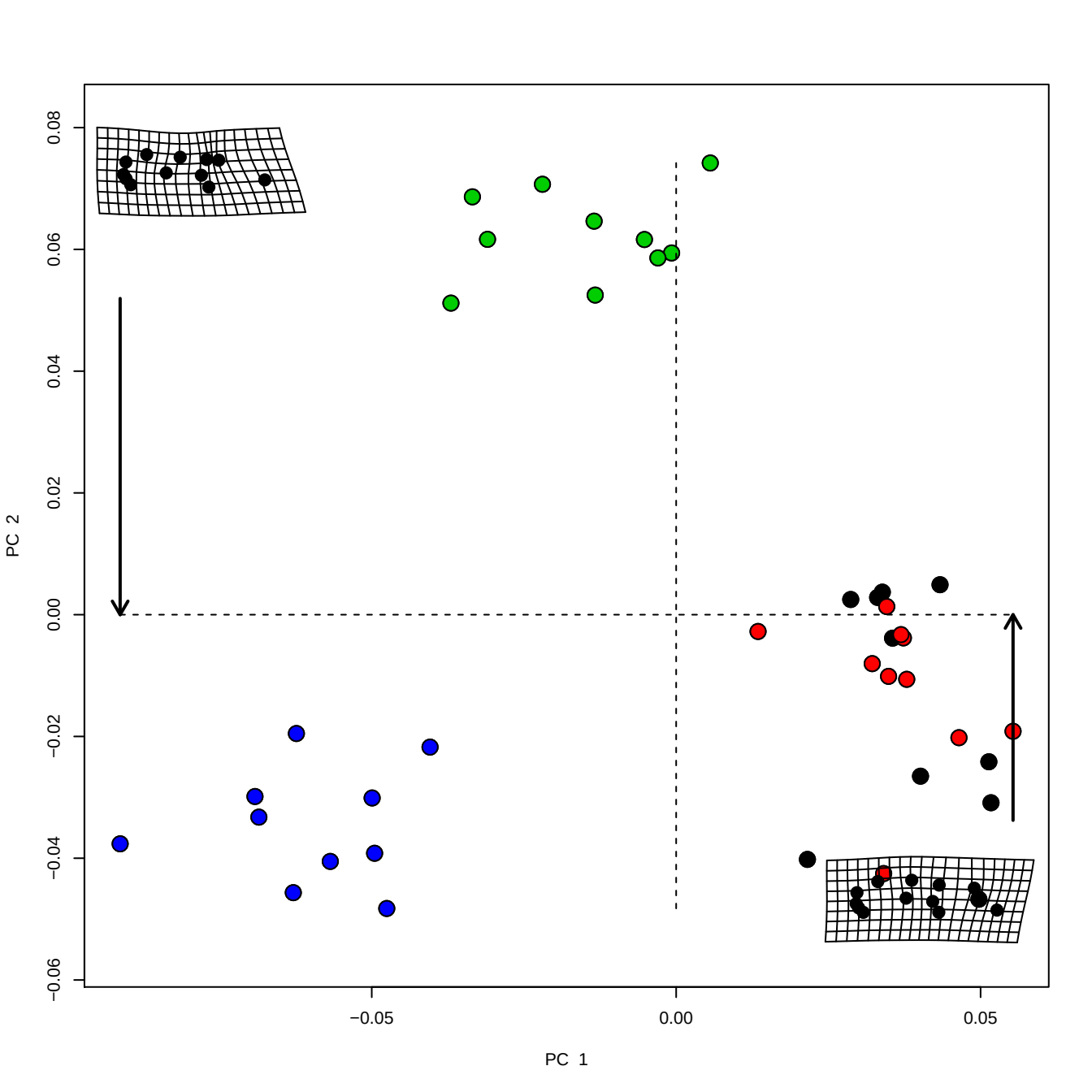
help("plotRefToTarget")

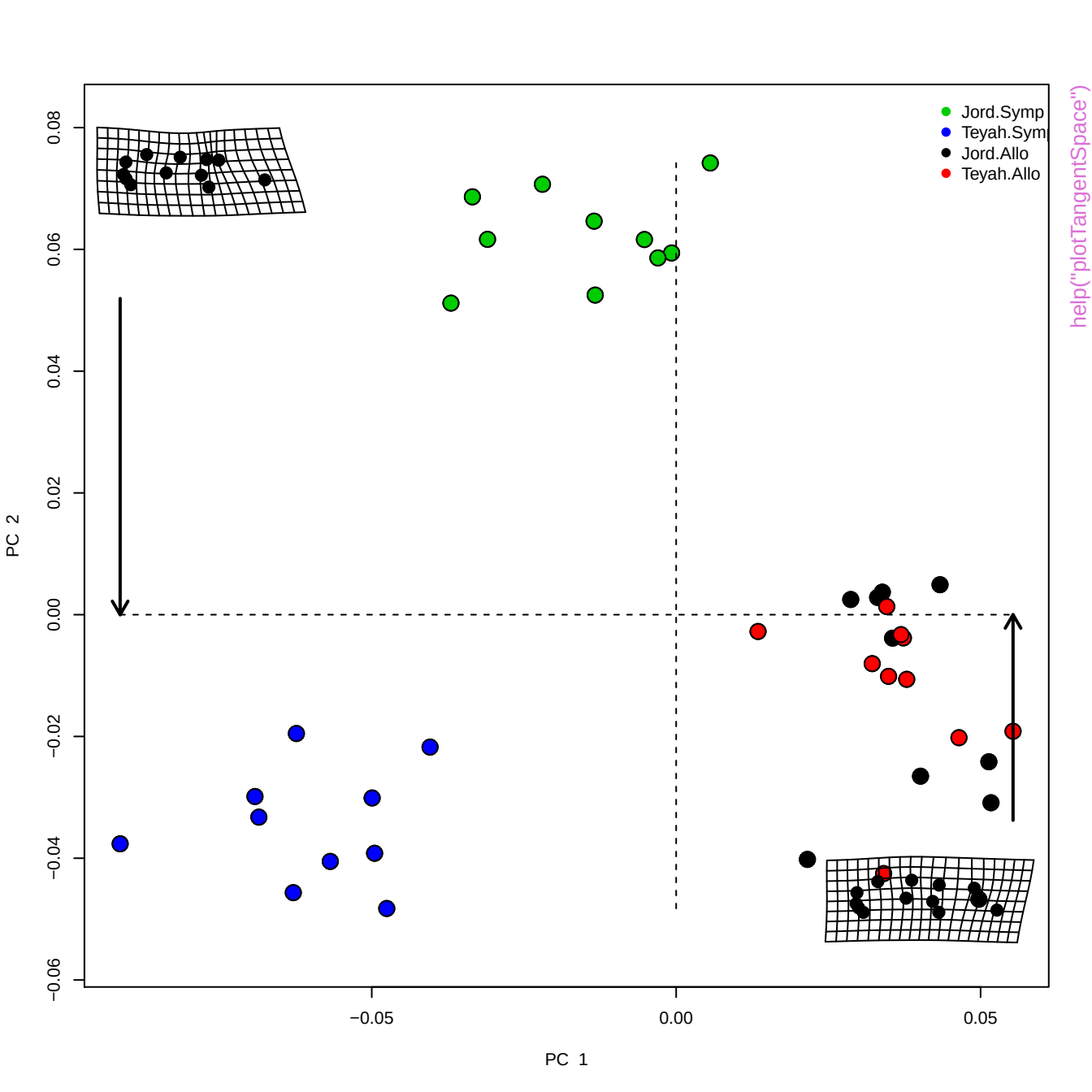


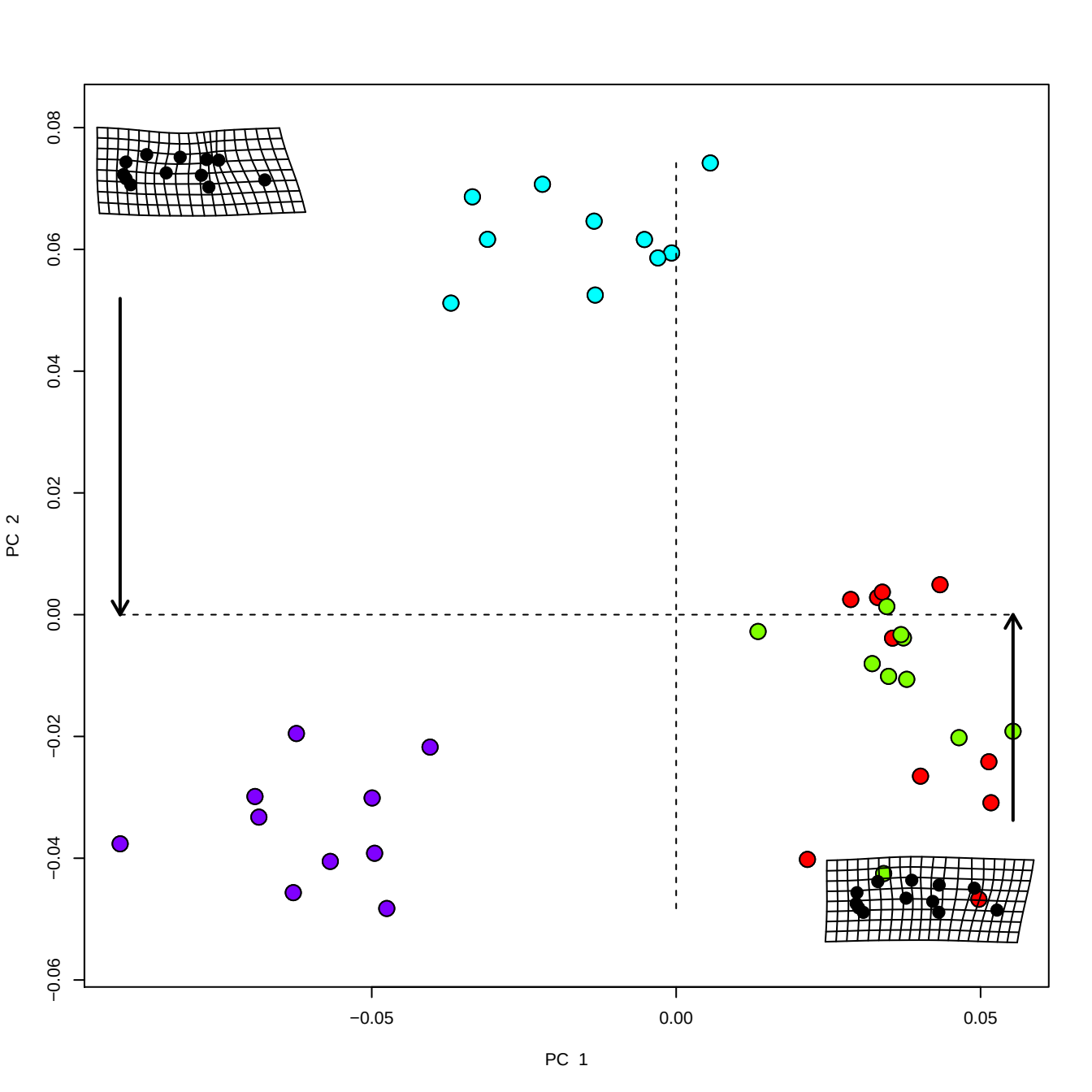
help("plotRefToTarget")

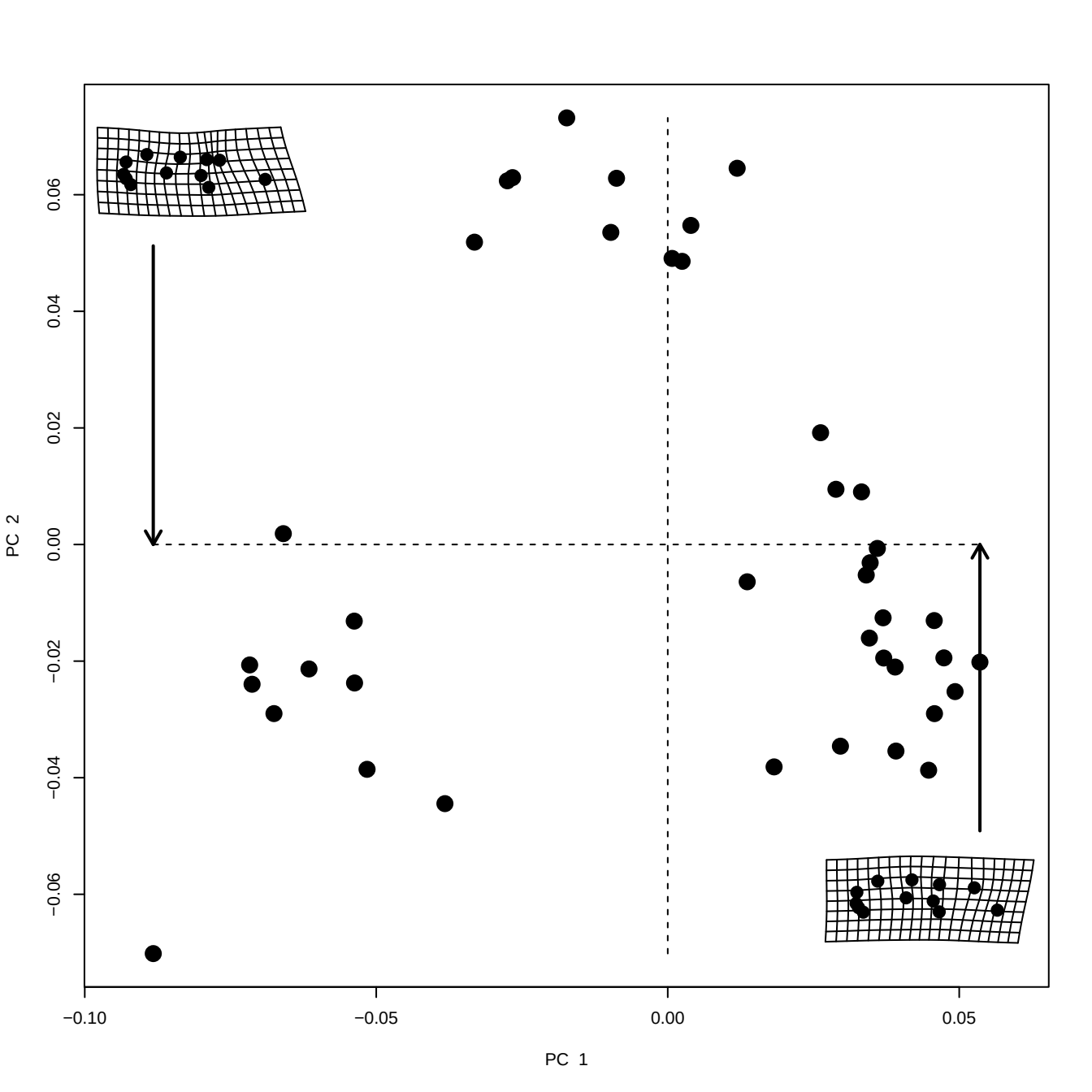


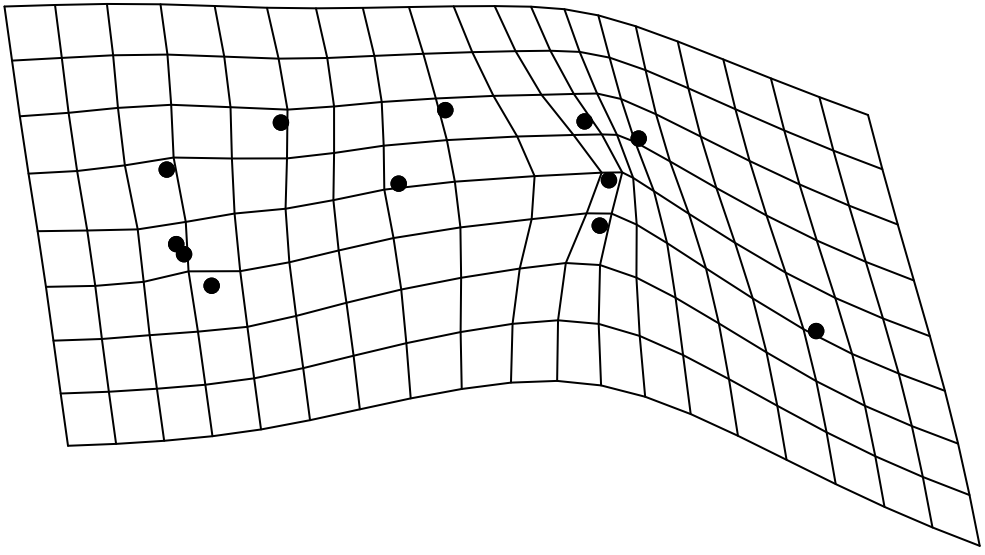
help("plotRefToTarget")


0.08
0.06
0.04
0.02
0.00
−0.02
−0.04
−0.06
PC 2
−0.05
0.00
0.05
PC 1

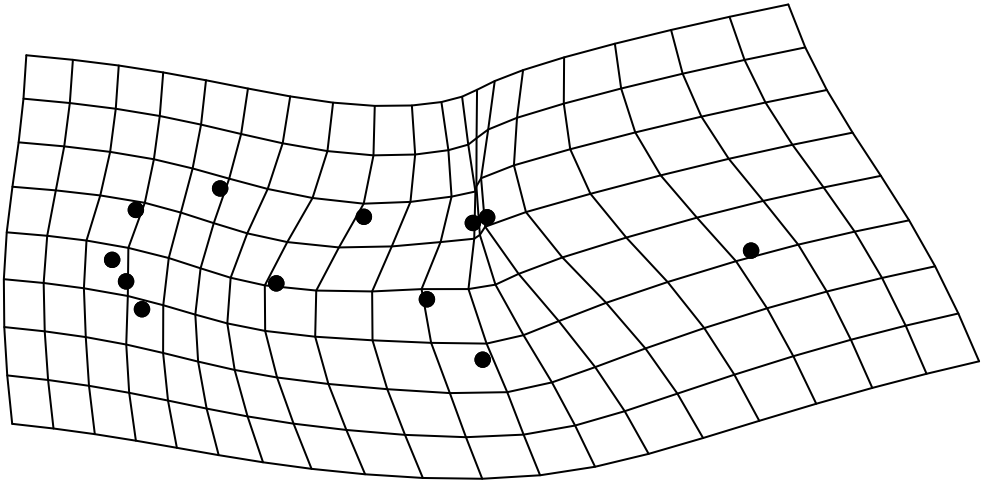

Jord.Symp
Teyah.Sym
Jord.Allo
Teyah.Allo
PC 2
PC 1
0.08
0.06
0.04
0.02
0.00
−0.02
−0.04
−0.06
−0.05
0.00
0.05
help("plotTangentSpace")


0.08
0.06
0.04
0.02
0.00
−0.02
−0.04
−0.06
PC 2
−0.05
0.00
0.05
PC 1

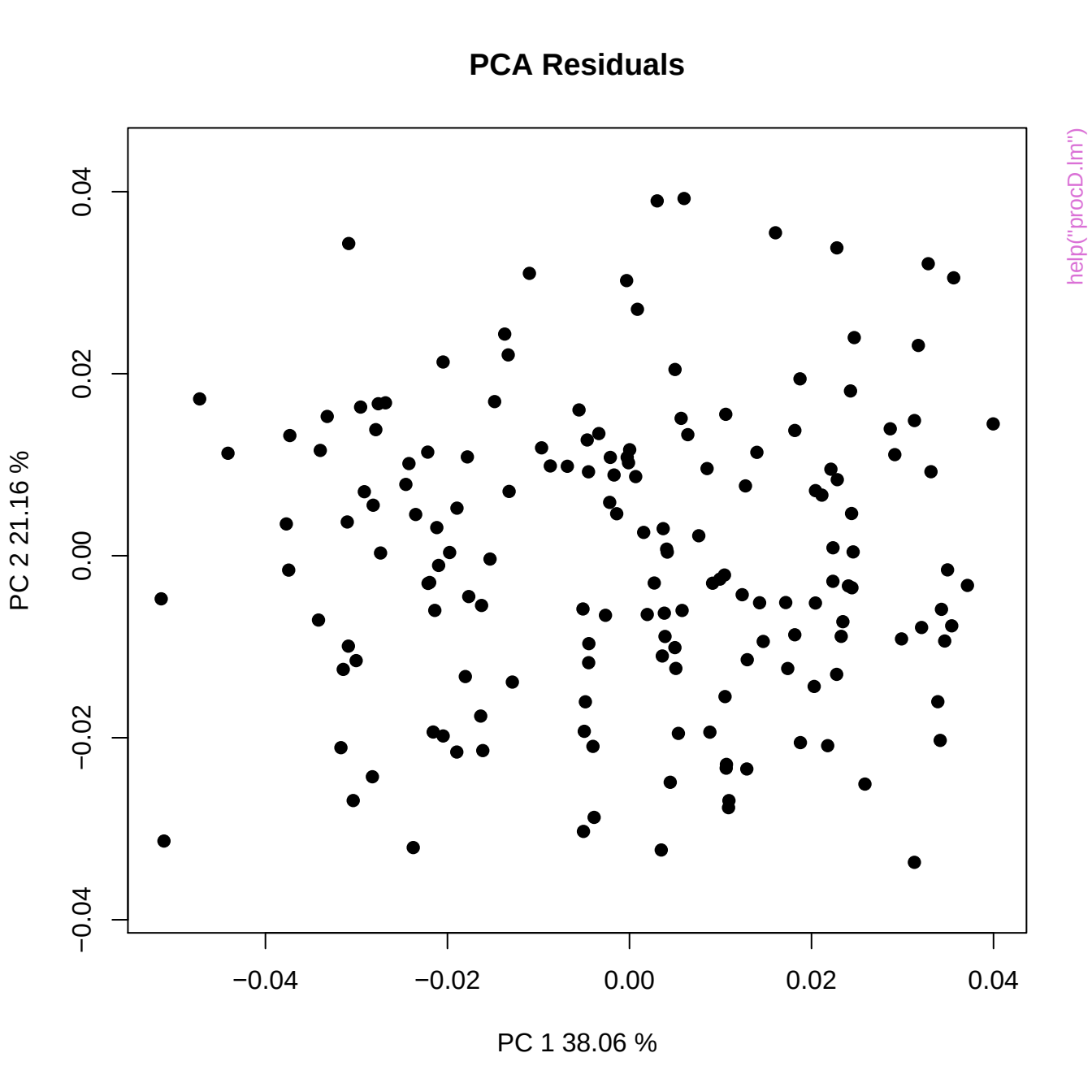

PC 2
0.06
0.04
0.02
0.00
−0.02
−0.04
−0.06
−0.10
−0.05
0.00
0.05
PC 1

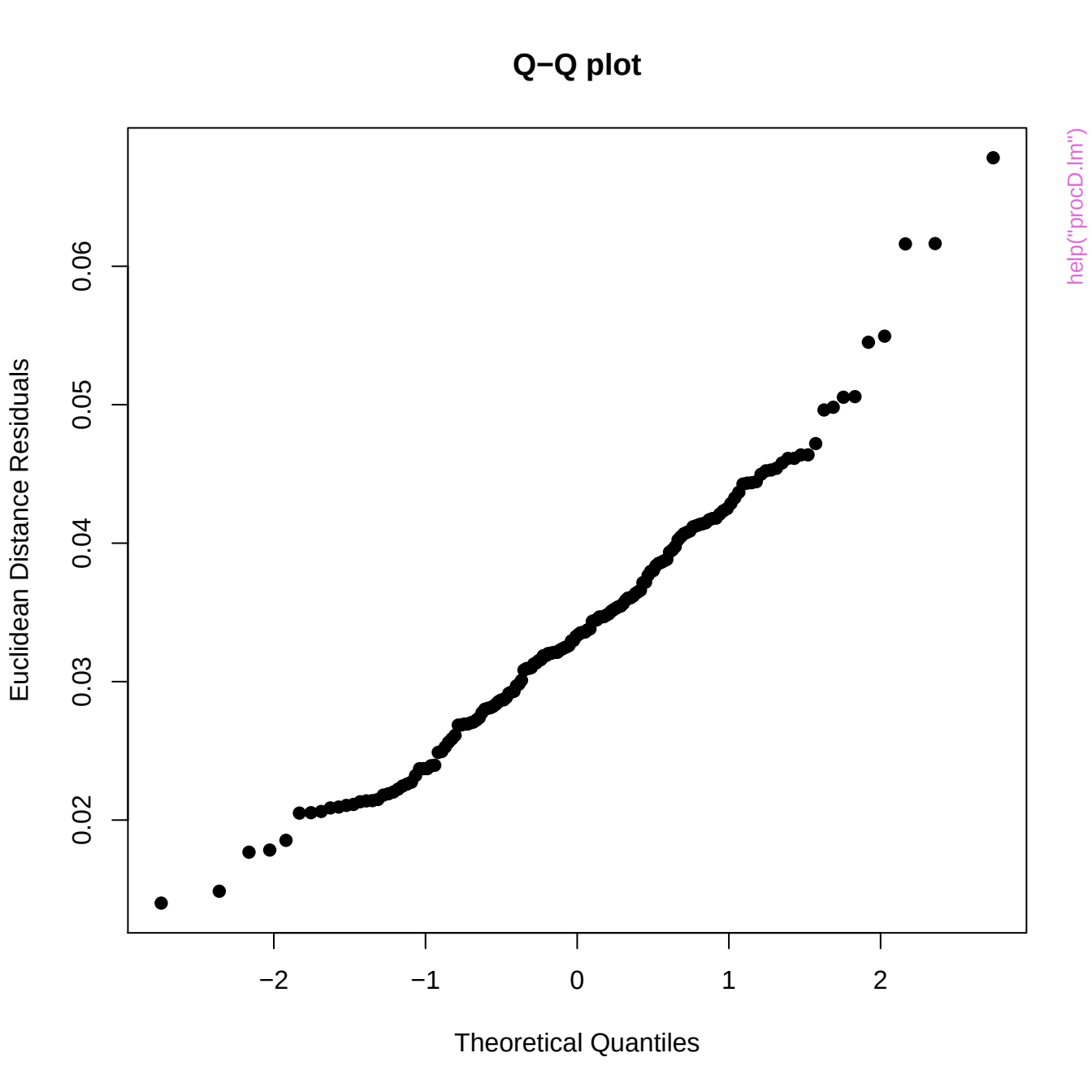


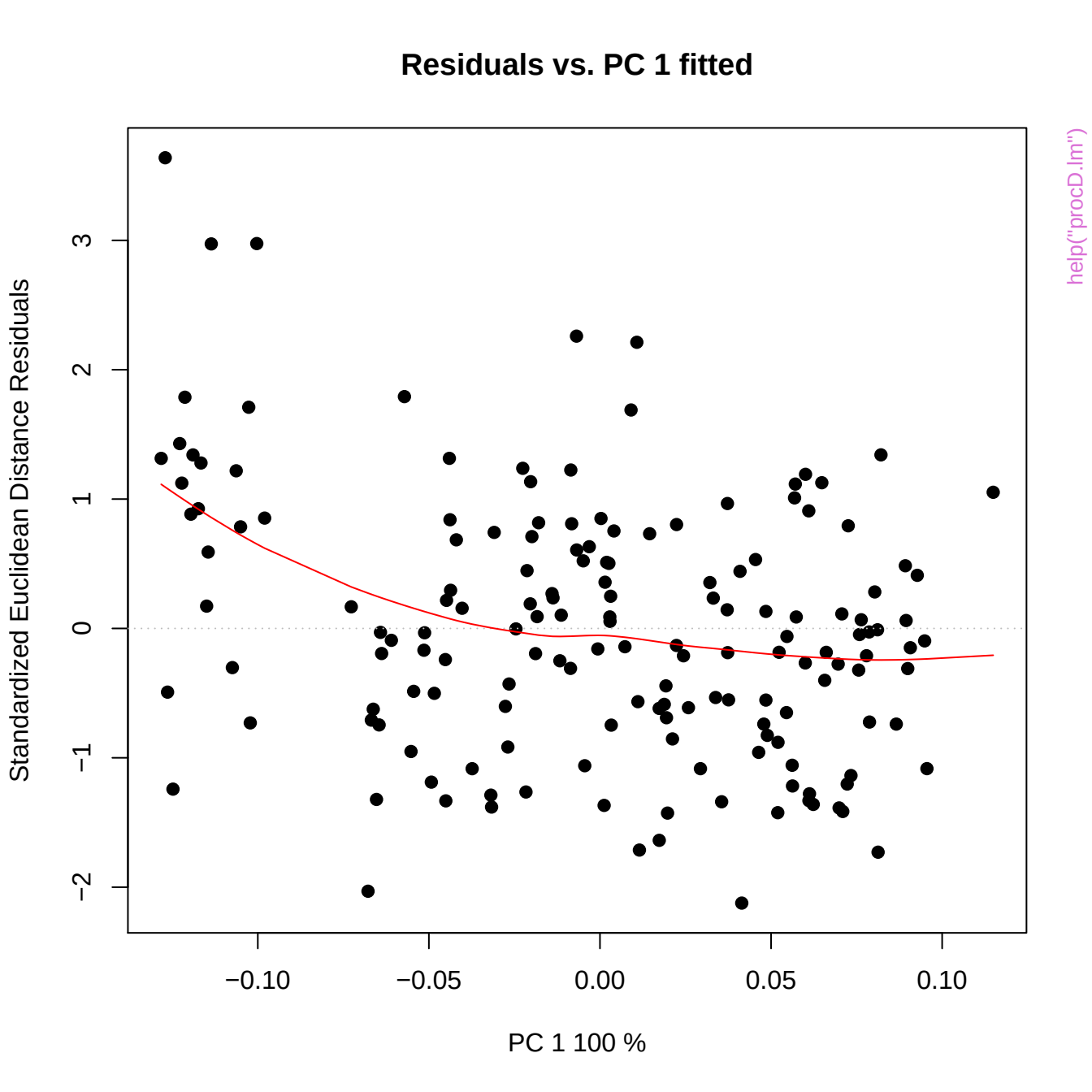
help("procD.lm")

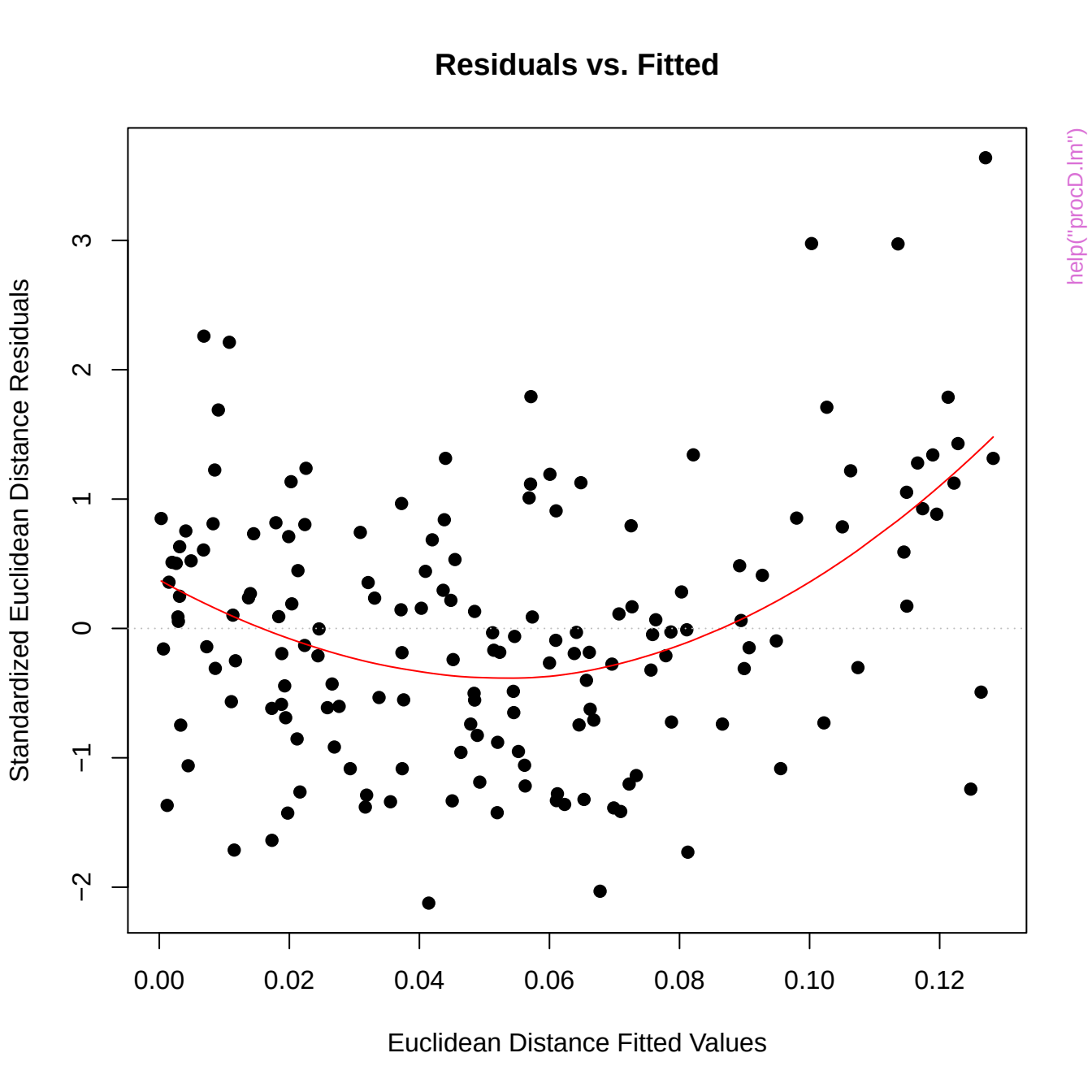


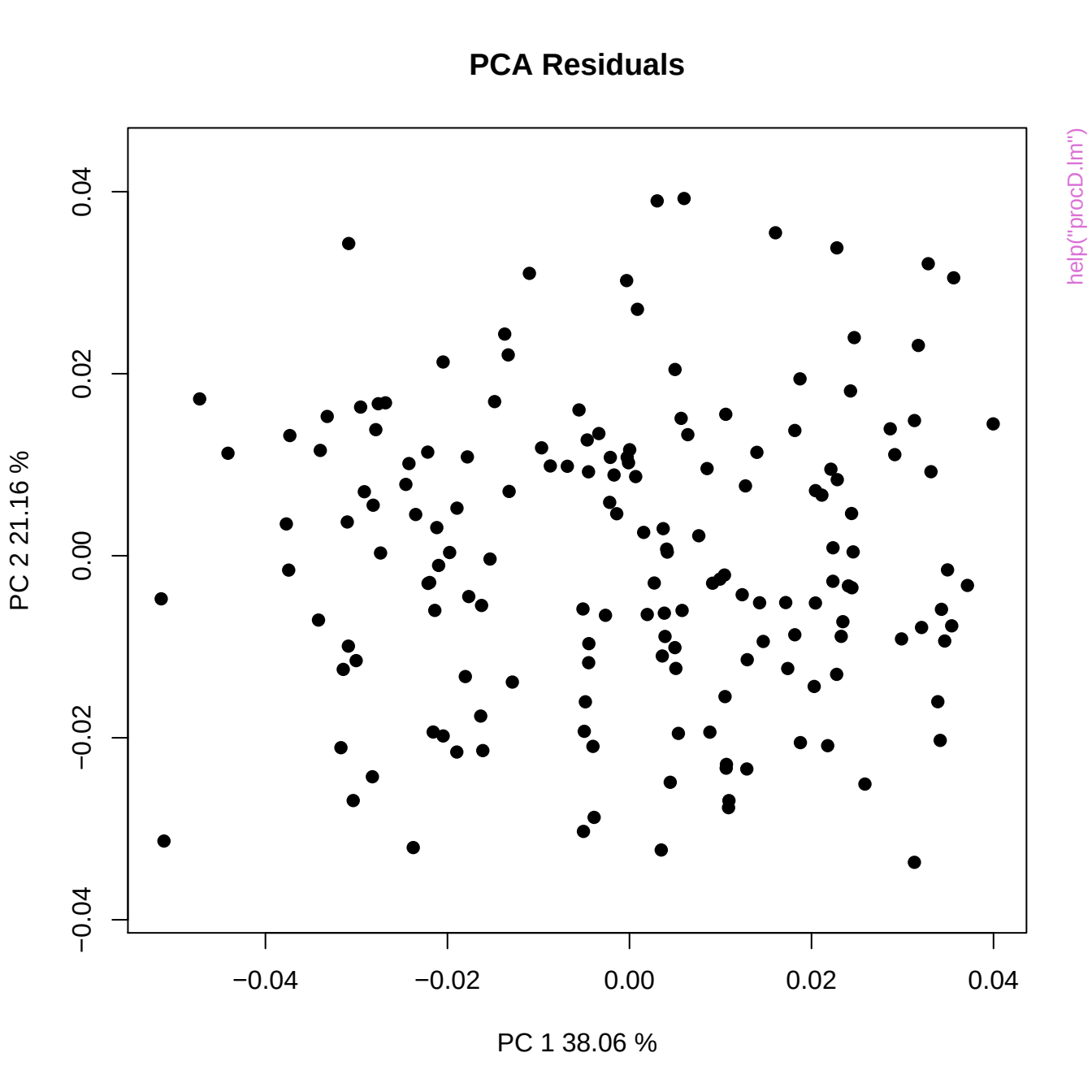
help("procD.lm")

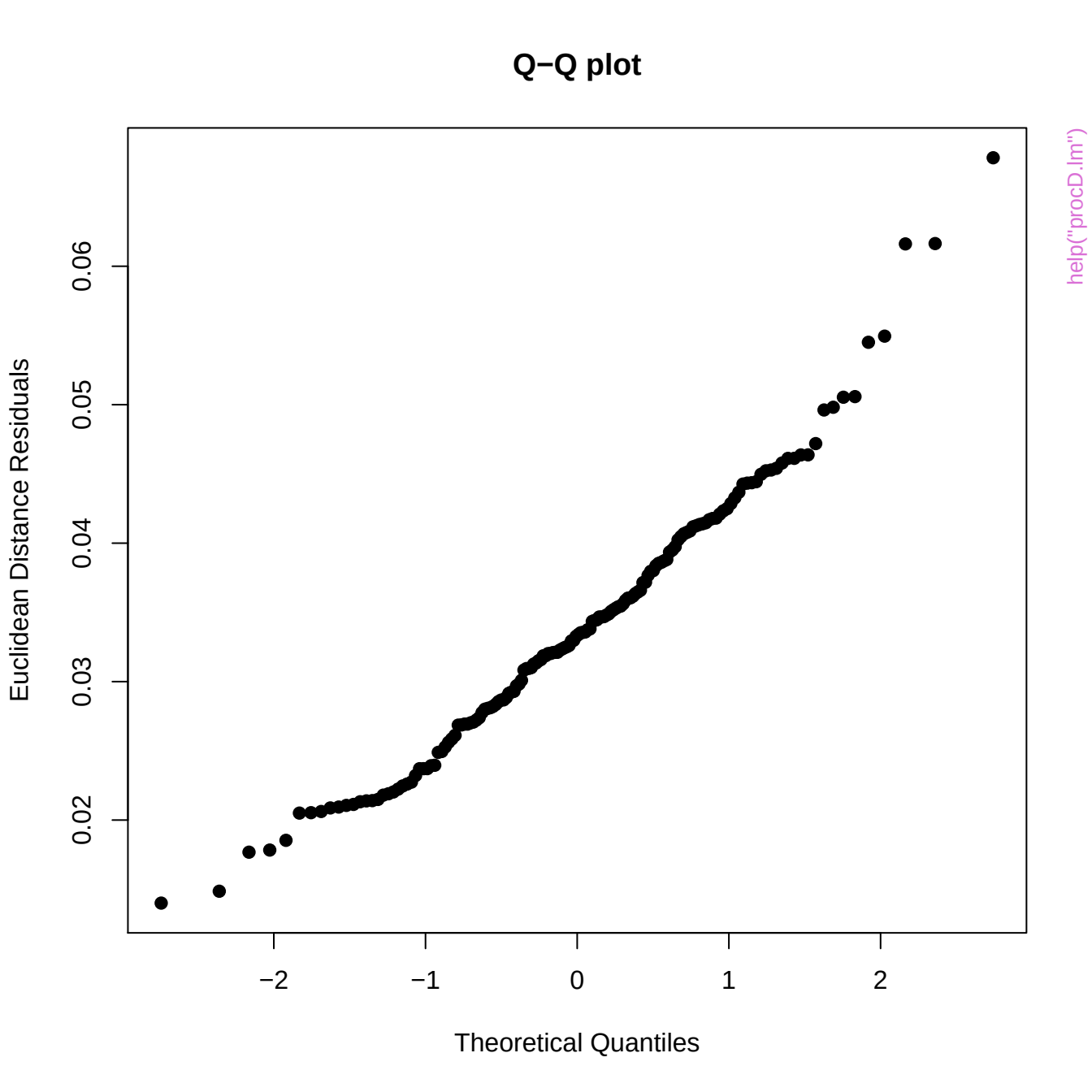

PCA Residuals
PC 1 38.06 %
PC 2 21.16 %
−0.04
−0.02
0.00
0.02
0.04
help("procD.lm")

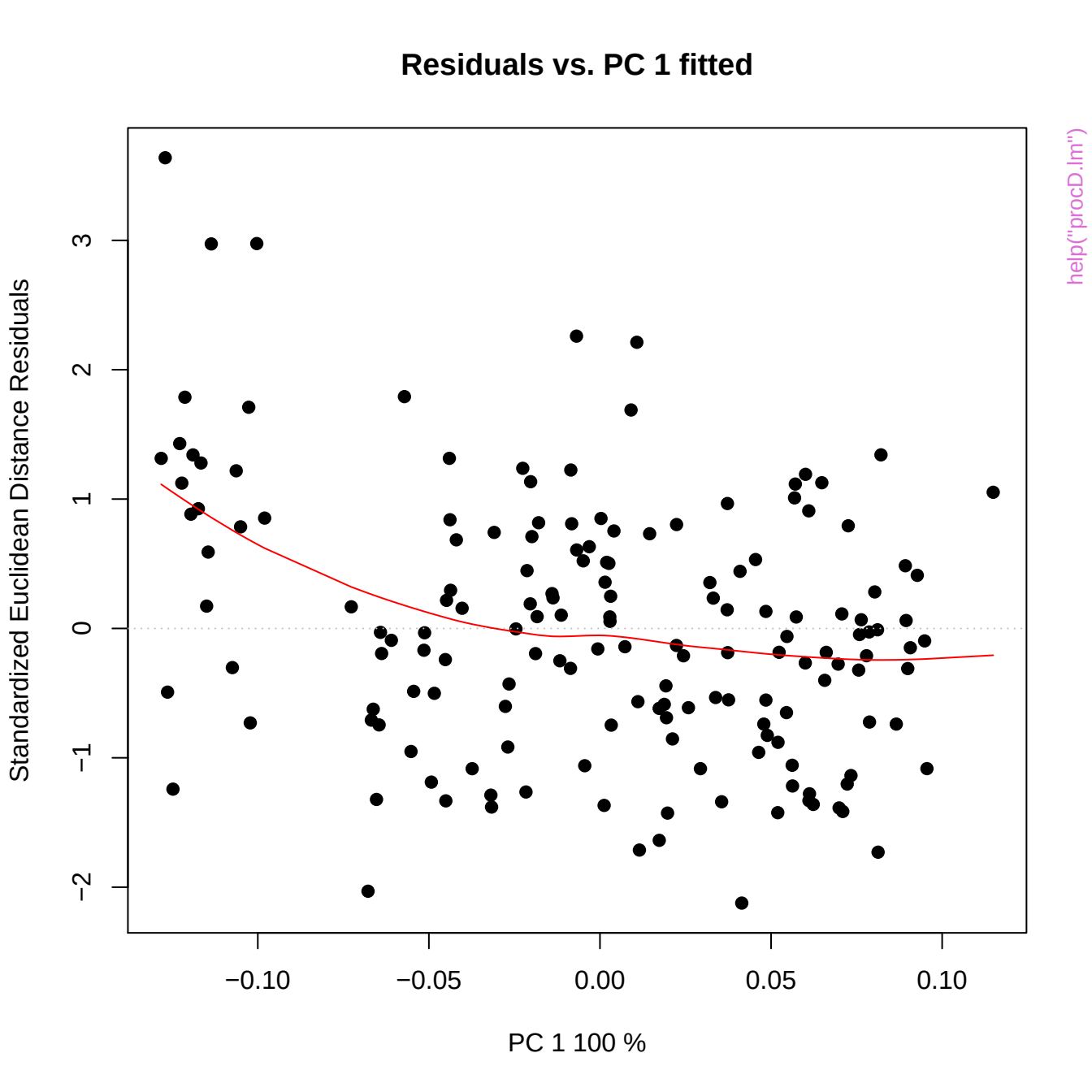

Q−Q plot
Euclidean Distance Residuals
0.02
0.03
0.04
0.05
0.06
−2
−1
0
1
2
Theoretical Quantiles
help("procD.lm")

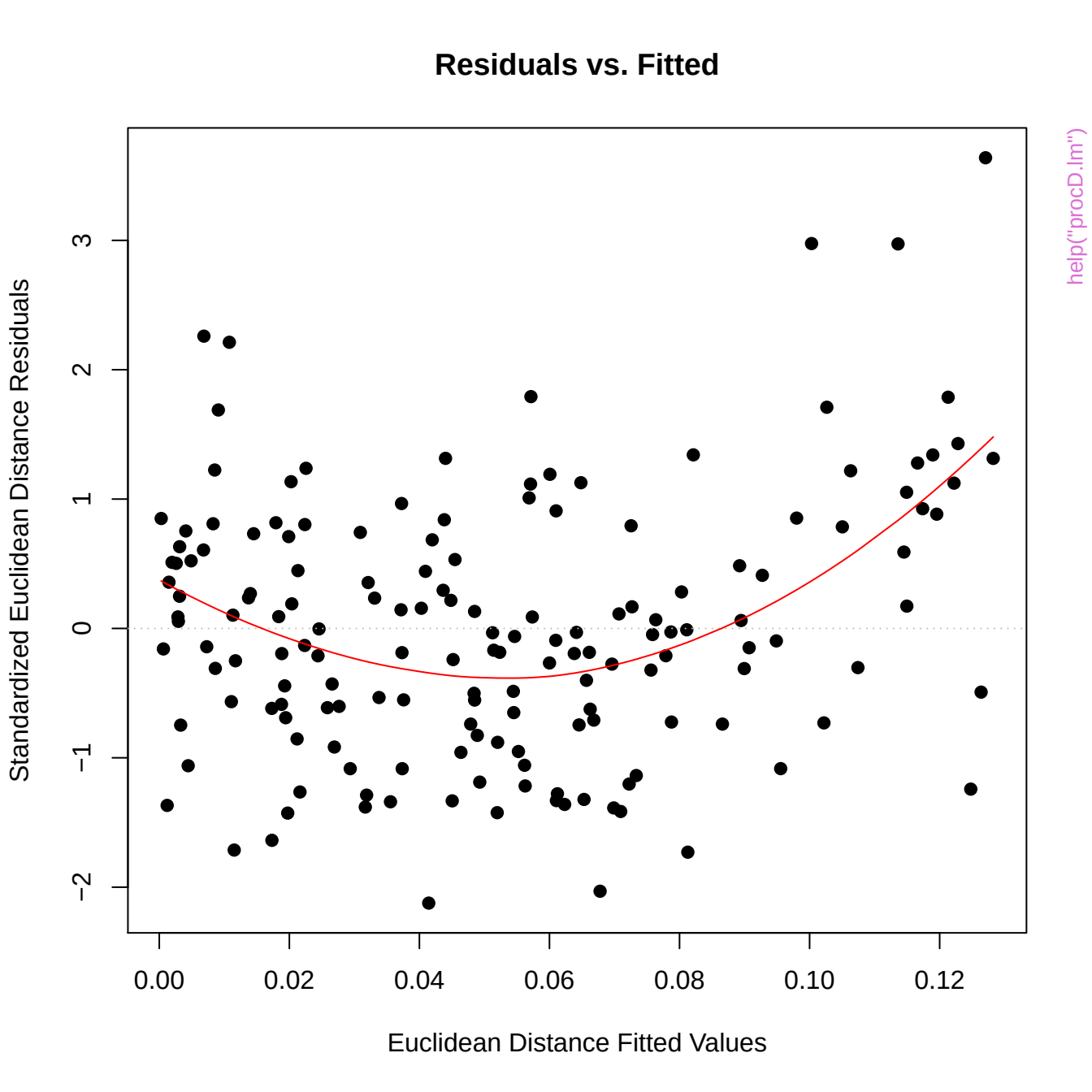

Residuals vs. PC 1 fitted
Standardized Euclidean Distance Residuals
3
2
1
0
−1
−2
−0.10
−0.05
0.00
0.05
0.10
PC 1 100 %
help("procD.lm")

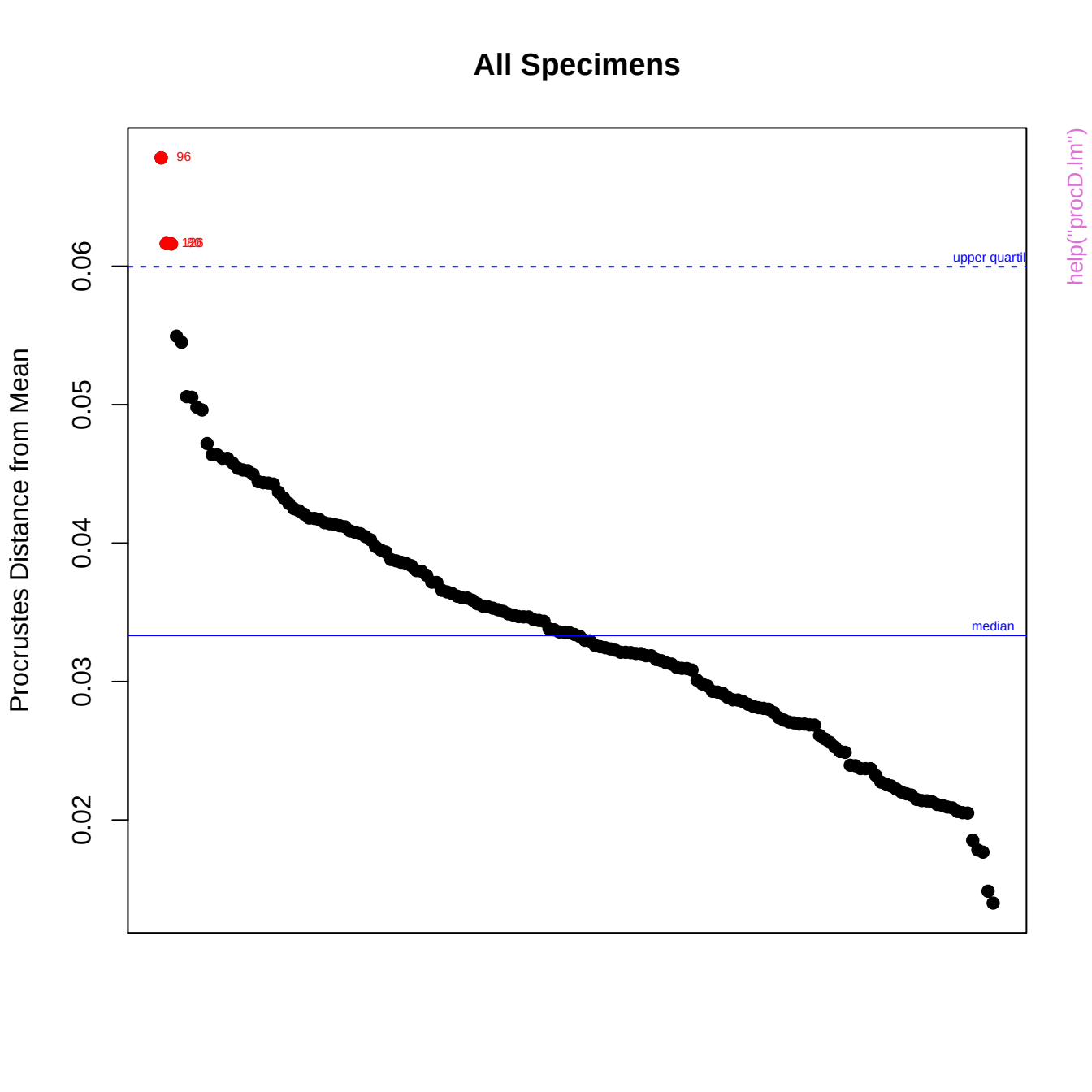

Residuals vs. Fitted
Standardized Euclidean Distance Residuals
Euclidean Distance Fitted Values
help("procD.lm")
−2
−1
0
1
2
3
0.00
0.02
0.04
0.06
0.08
0.10
0.12

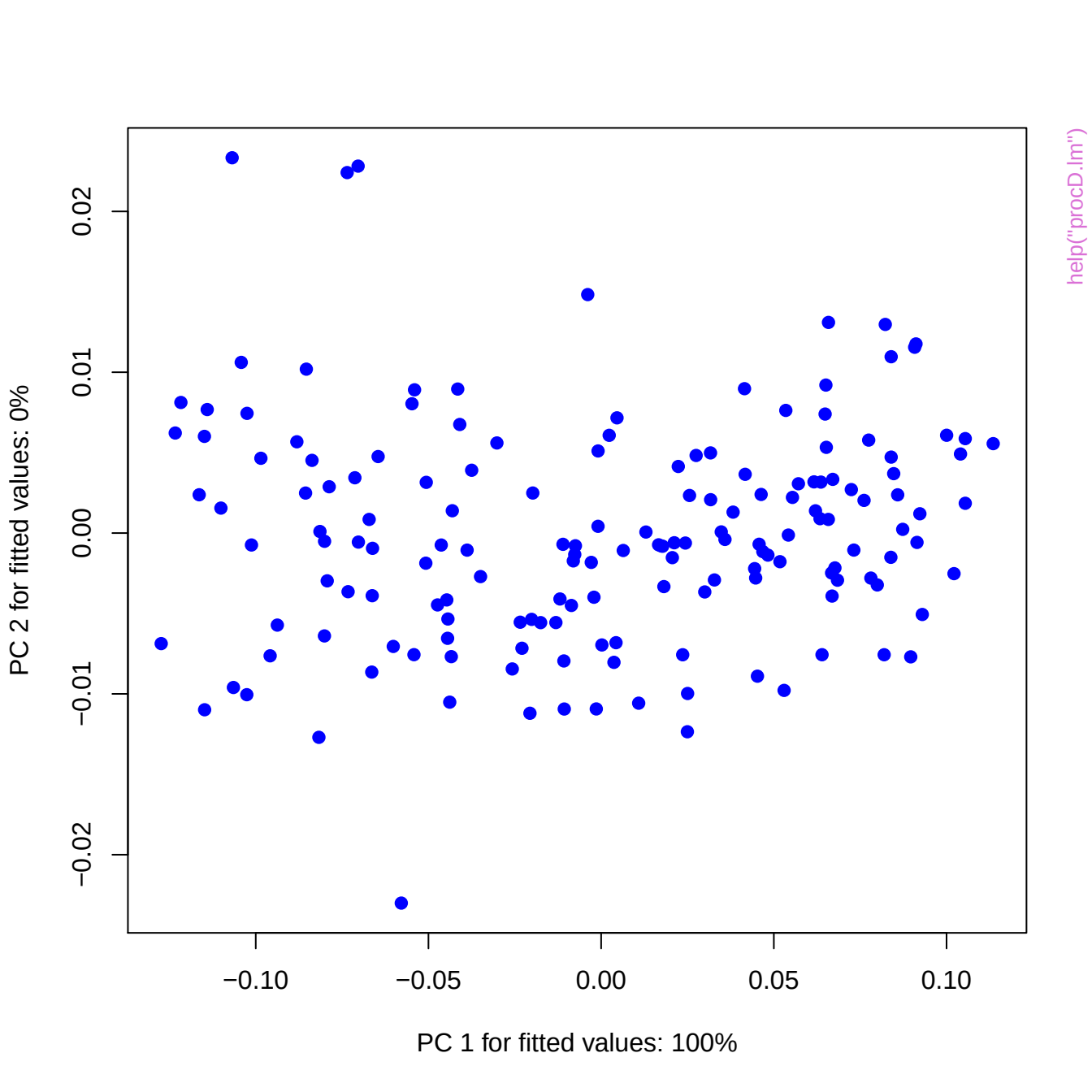

PCA Residuals
PC 1 38.06 %
PC 2 21.16 %
−0.04
−0.02
0.00
0.02
0.04
help("procD.lm")

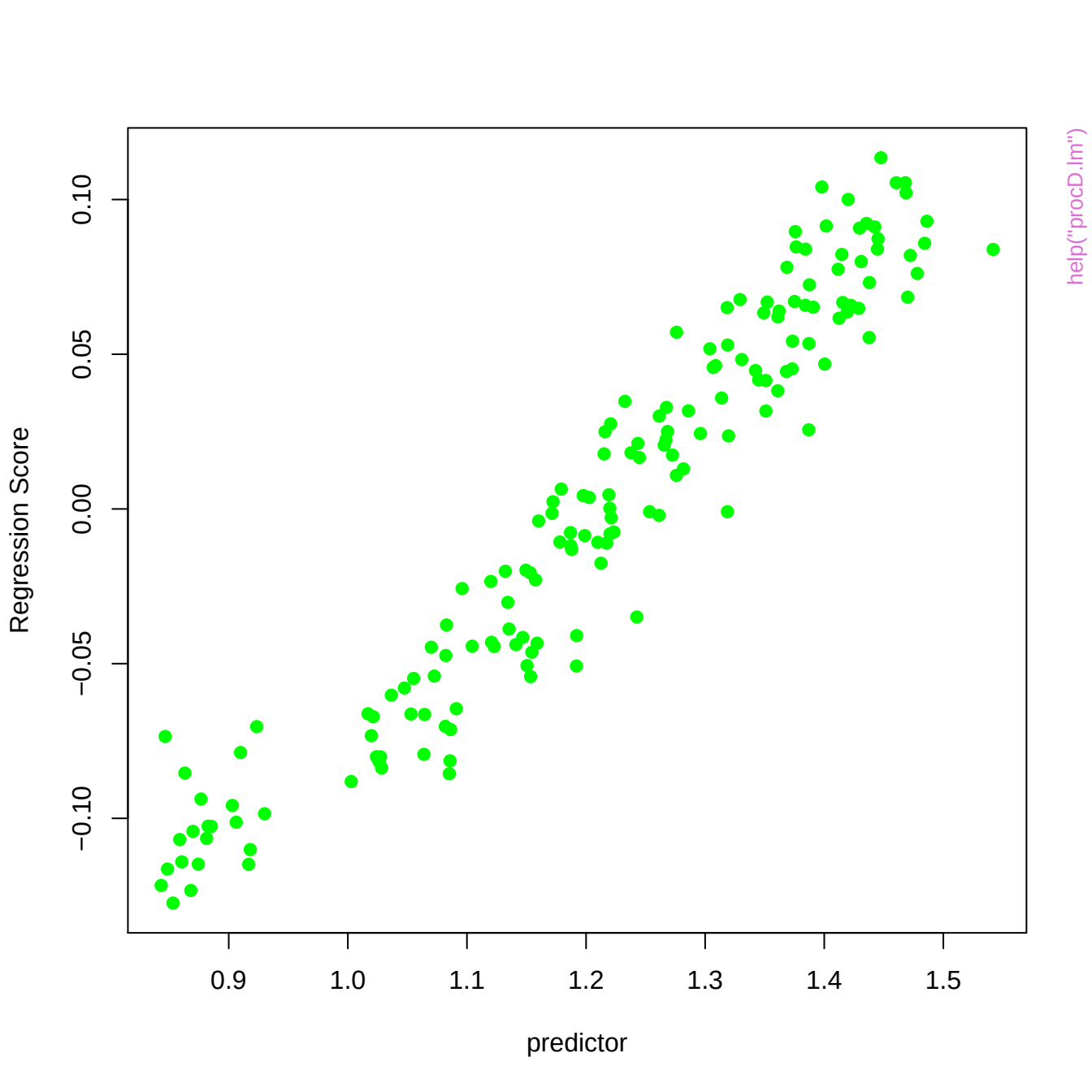

Q−Q plot
Euclidean Distance Residuals
0.02
0.03
0.04
0.05
0.06
−2
−1
0
1
2
Theoretical Quantiles
help("procD.lm")

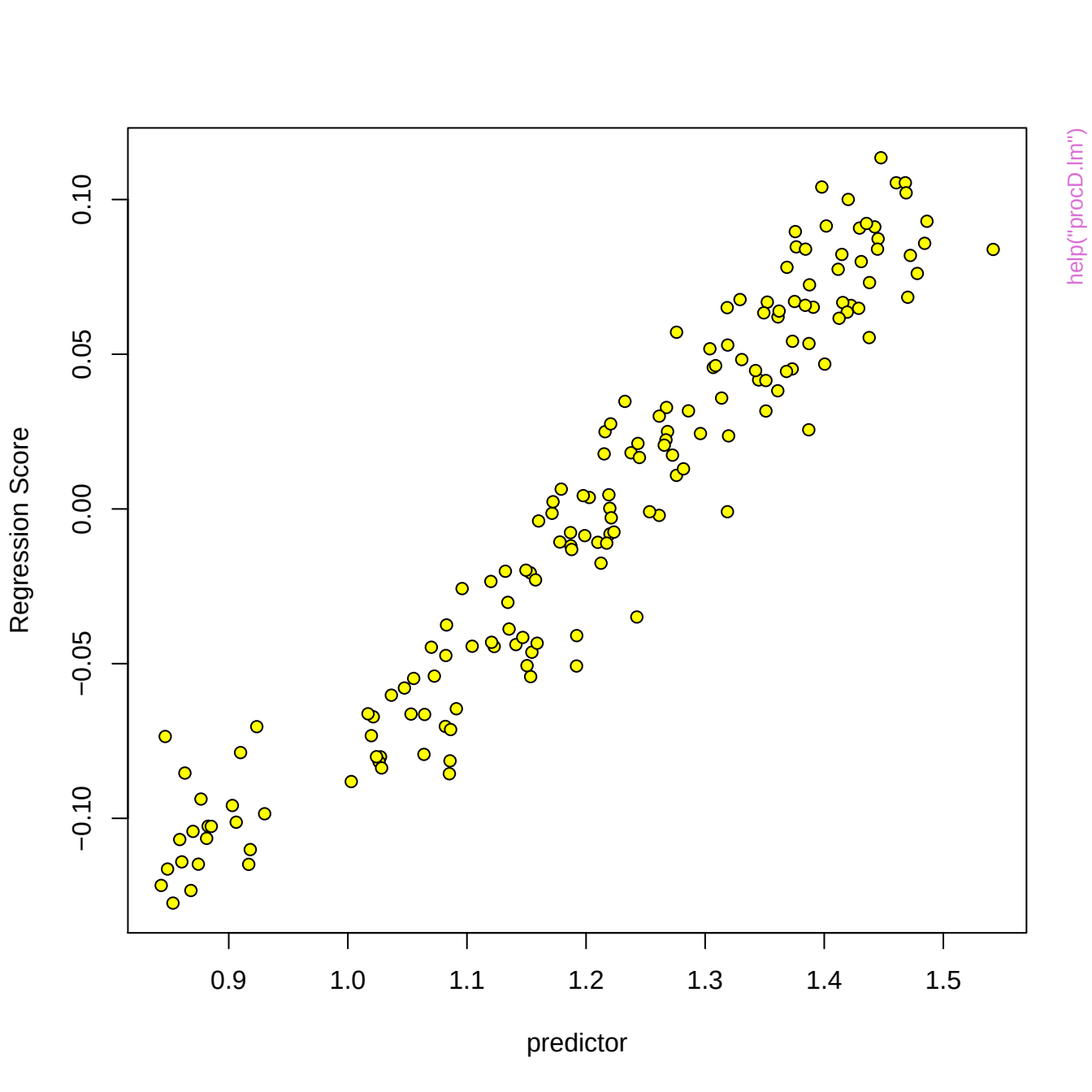

Residuals vs. PC 1 fitted
Standardized Euclidean Distance Residuals
3
2
1
0
−1
−2
−0.10
−0.05
0.00
0.05
0.10
PC 1 100 %
help("procD.lm")

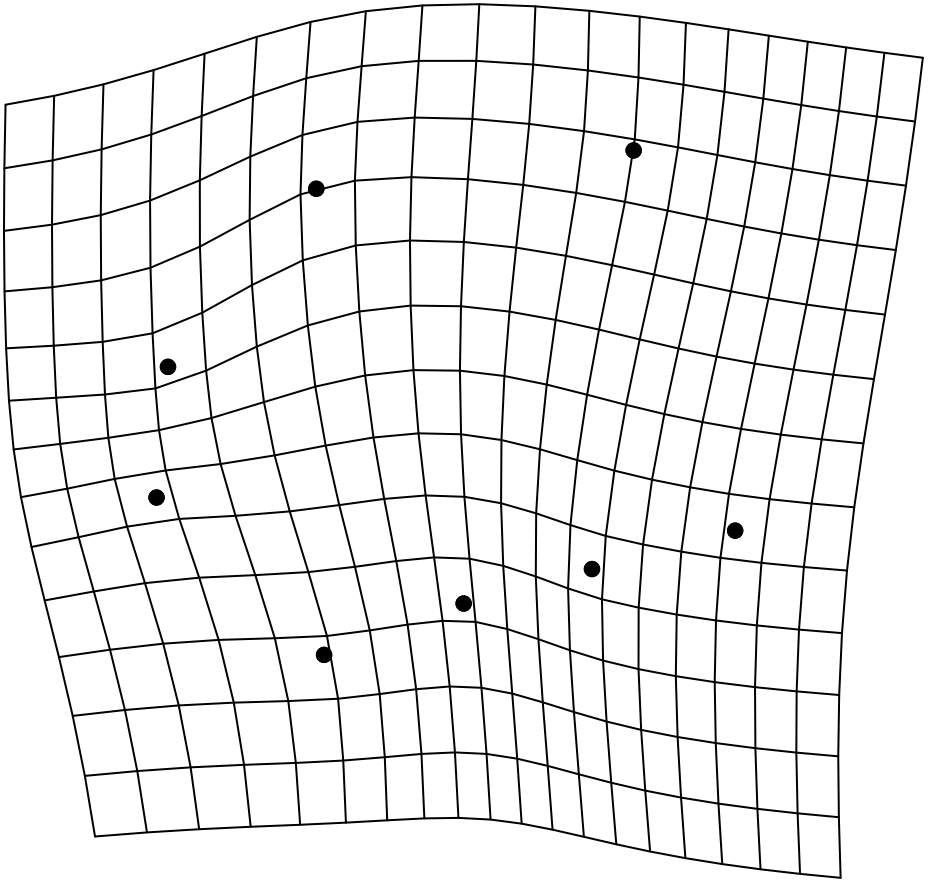

Residuals vs. Fitted
Standardized Euclidean Distance Residuals
Euclidean Distance Fitted Values
help("procD.lm")
−2
−1
0
1
2
3
0.00
0.02
0.04
0.06
0.08
0.10
0.12


All Specimens
Procrustes Distance from Mean
0.02
0.03
0.04
0.05
0.06
96
upper quartil
median
help("procD.lm")

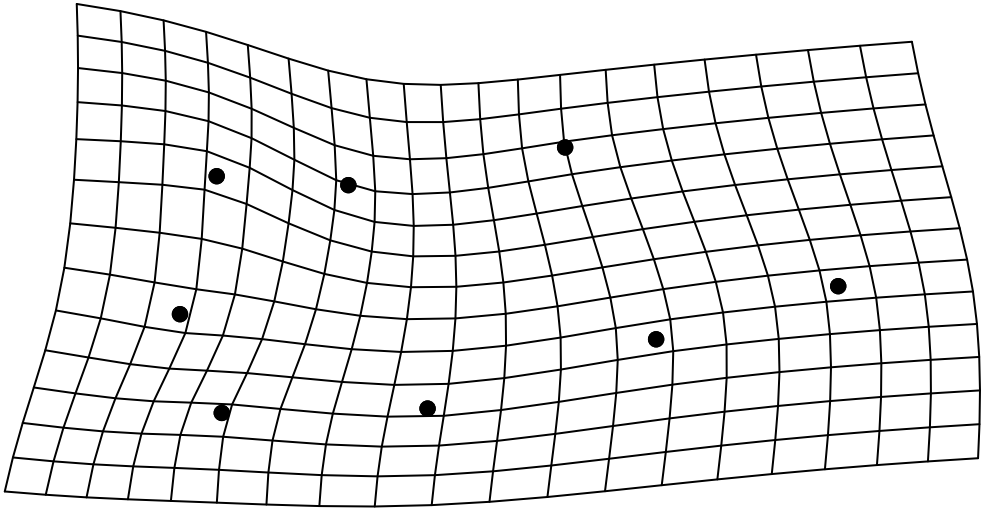

help("procD.lm")
PC 2 for fitted values: 0%
0.02
0.01
0.00
−0.01
−0.02
−0.10
−0.05
0.00
0.05
0.10
PC 1 for fitted values: 100%


Regression Score
0.10
0.05
0.00
−0.05
−0.10
0.9
1.0
1.1
1.2
1.3
1.4
1.5
predictor
help("procD.lm")

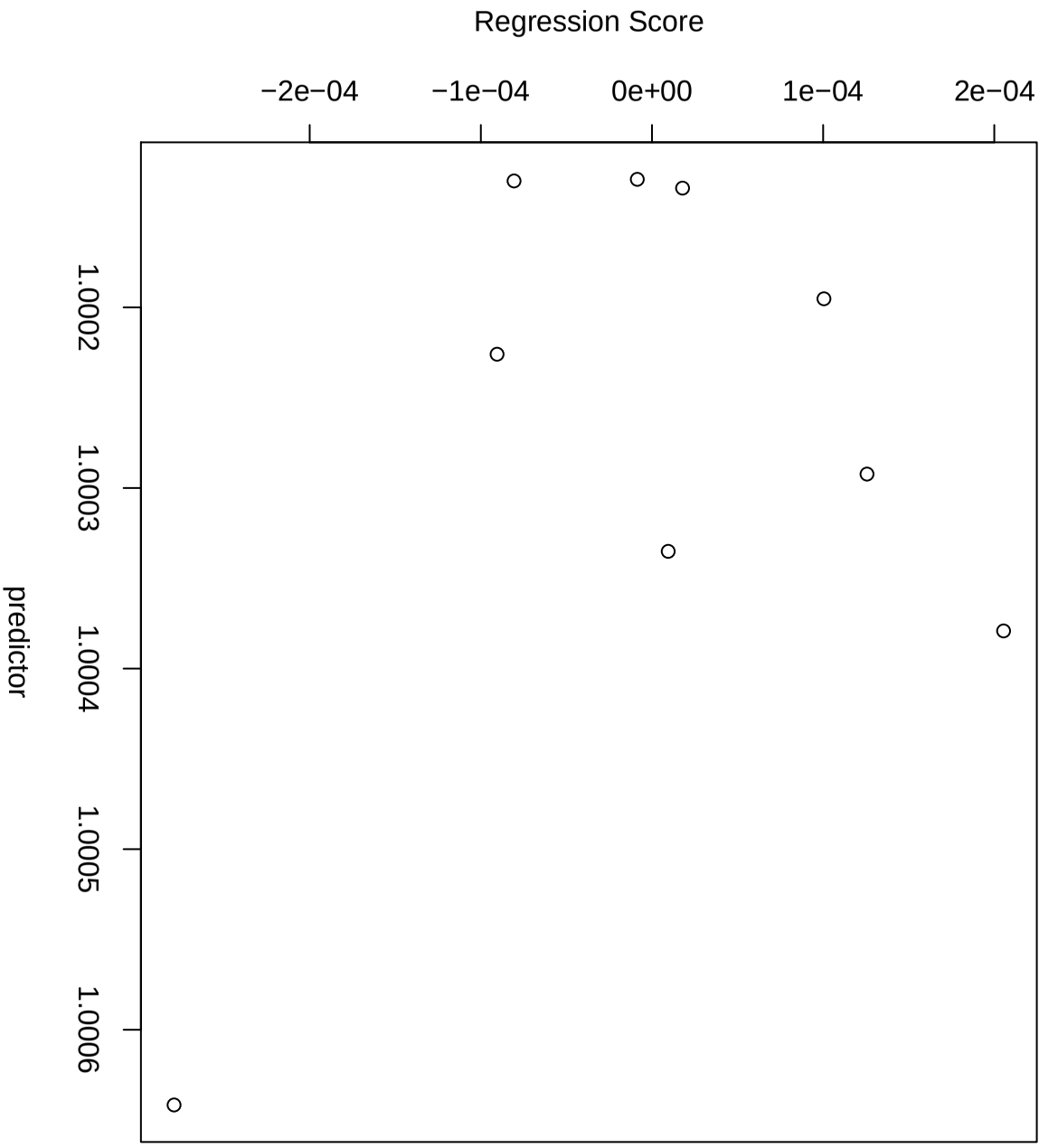

Regression Score
0.10
0.05
0.00
−0.05
−0.10
0.9
1.0
1.1
1.2
1.3
1.4
1.5
predictor
help("procD.lm")



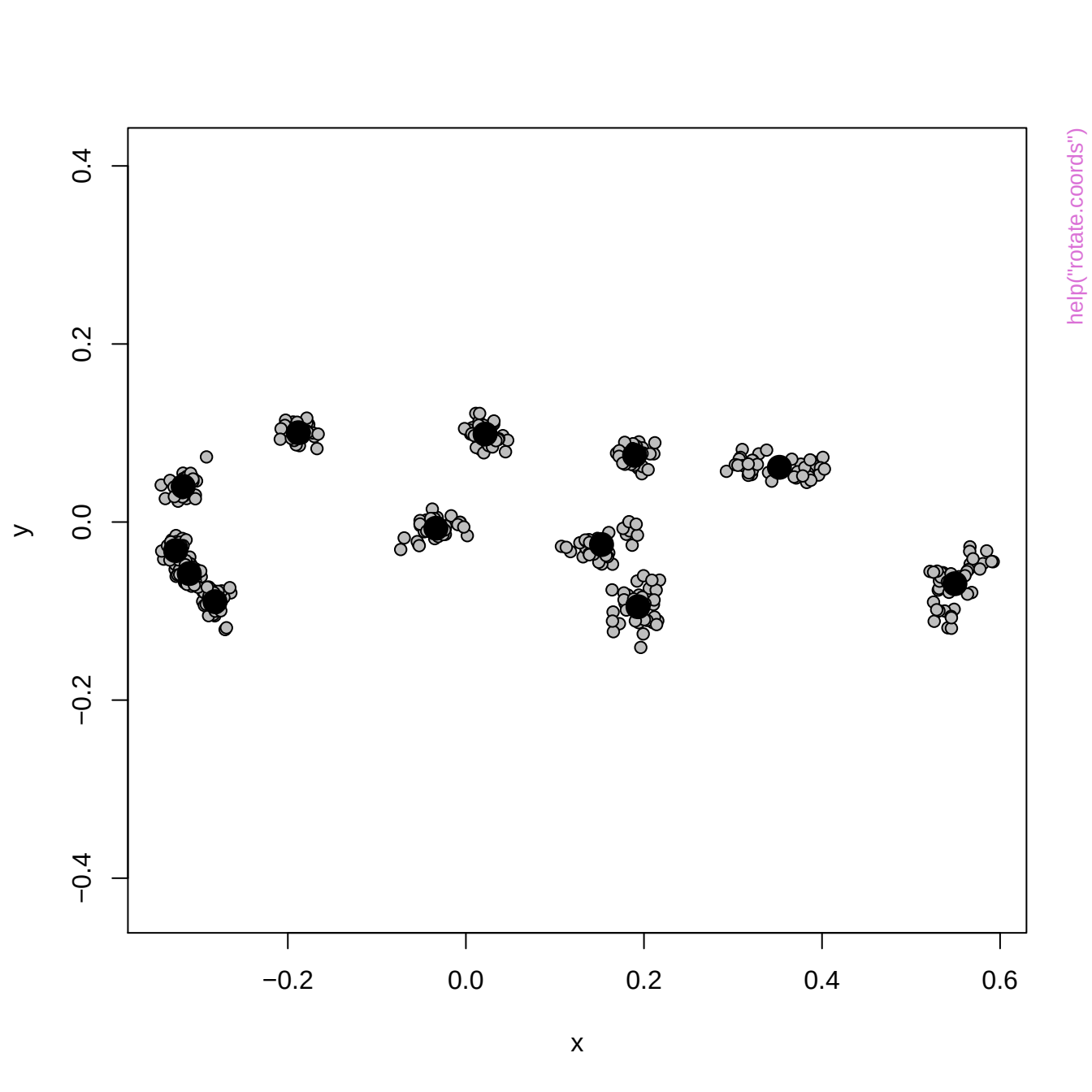
help("procD.lm")

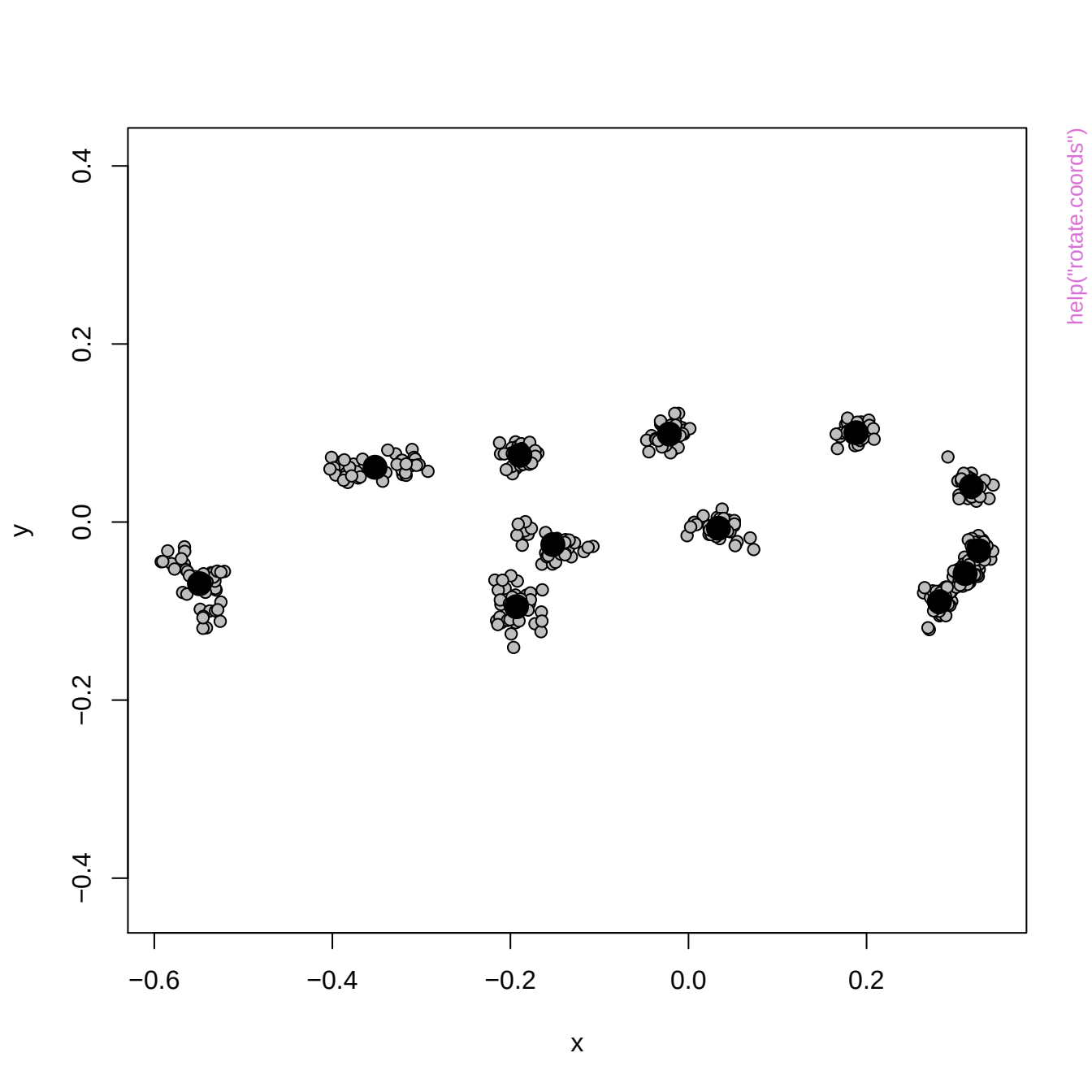


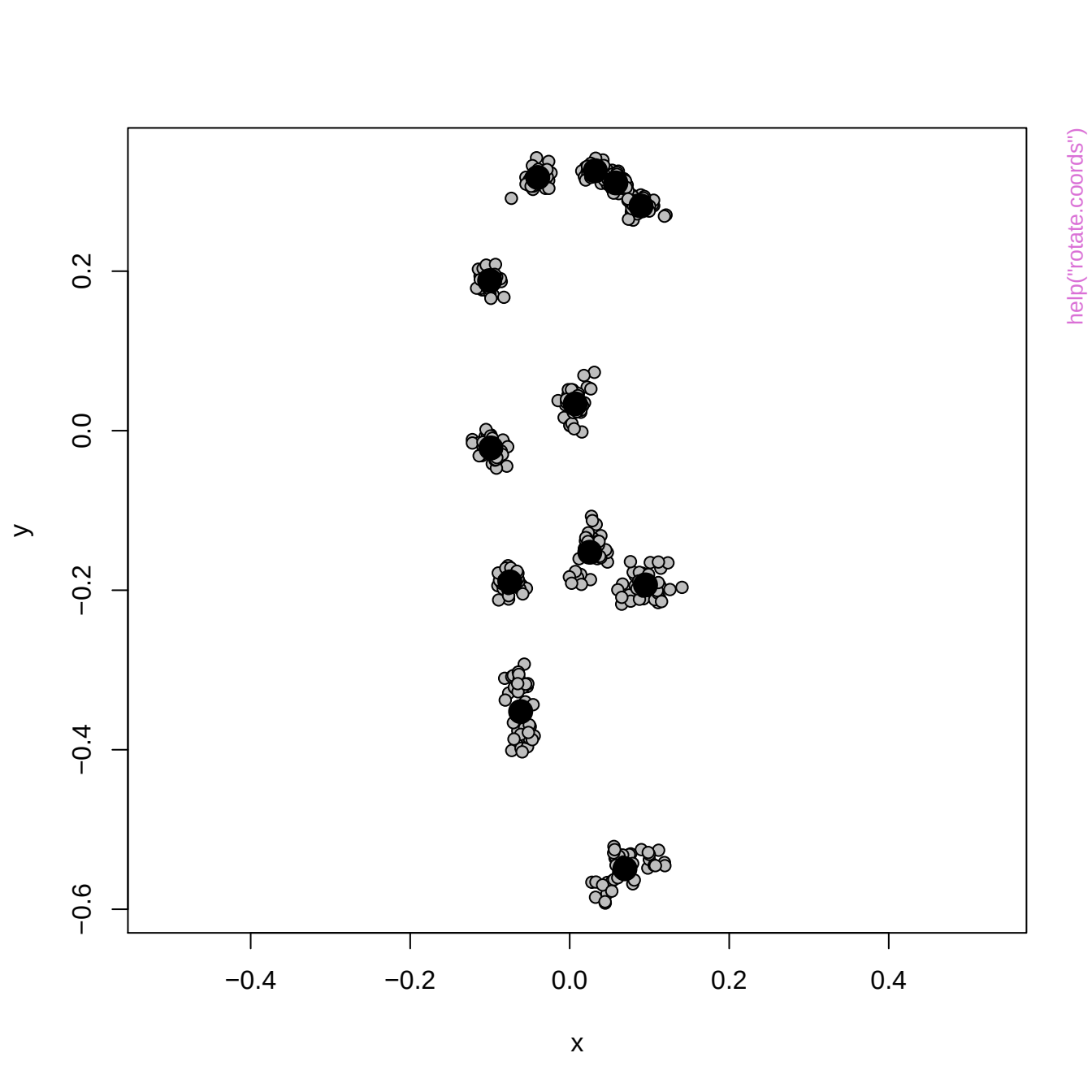
help("procD.lm")



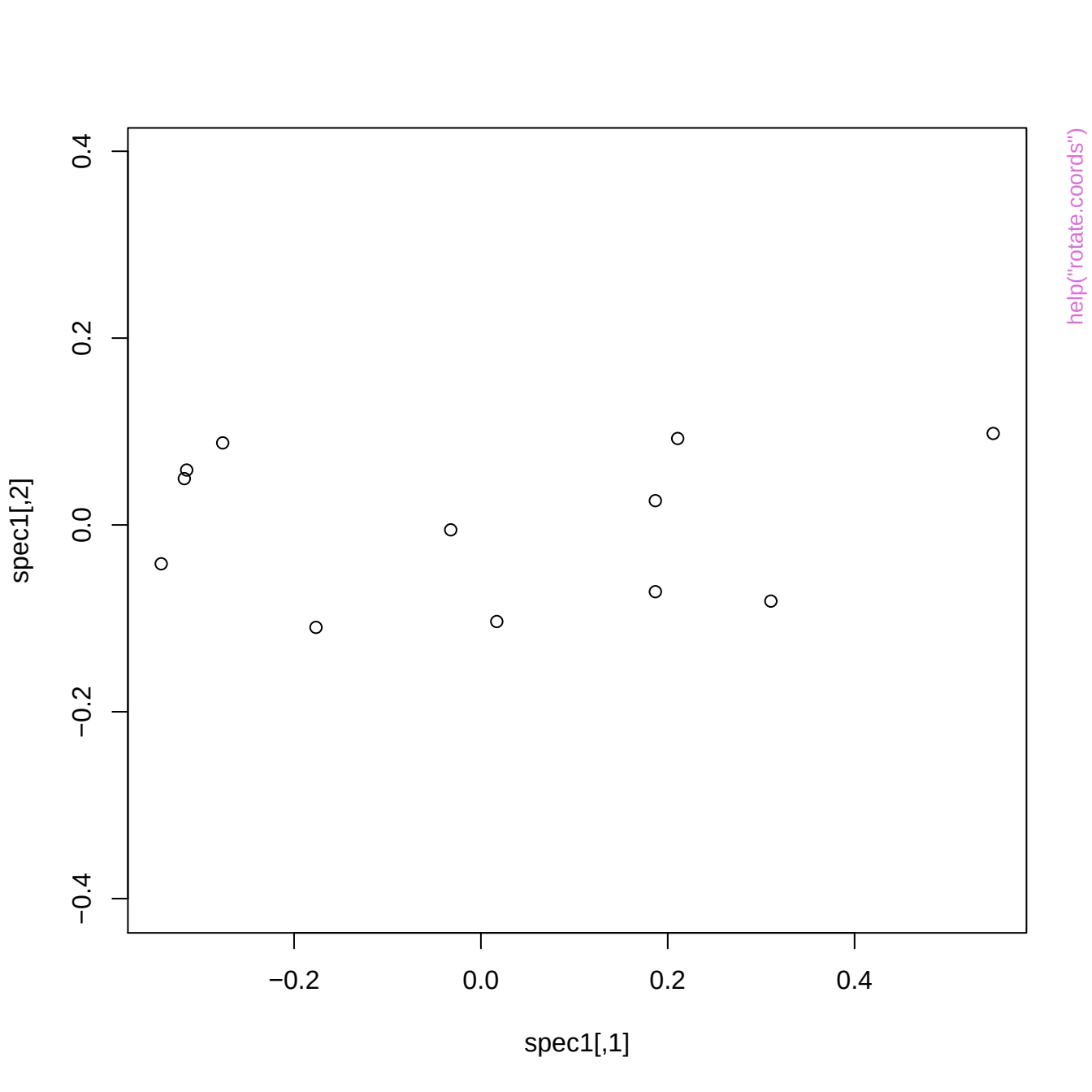

help("procD.pgls")

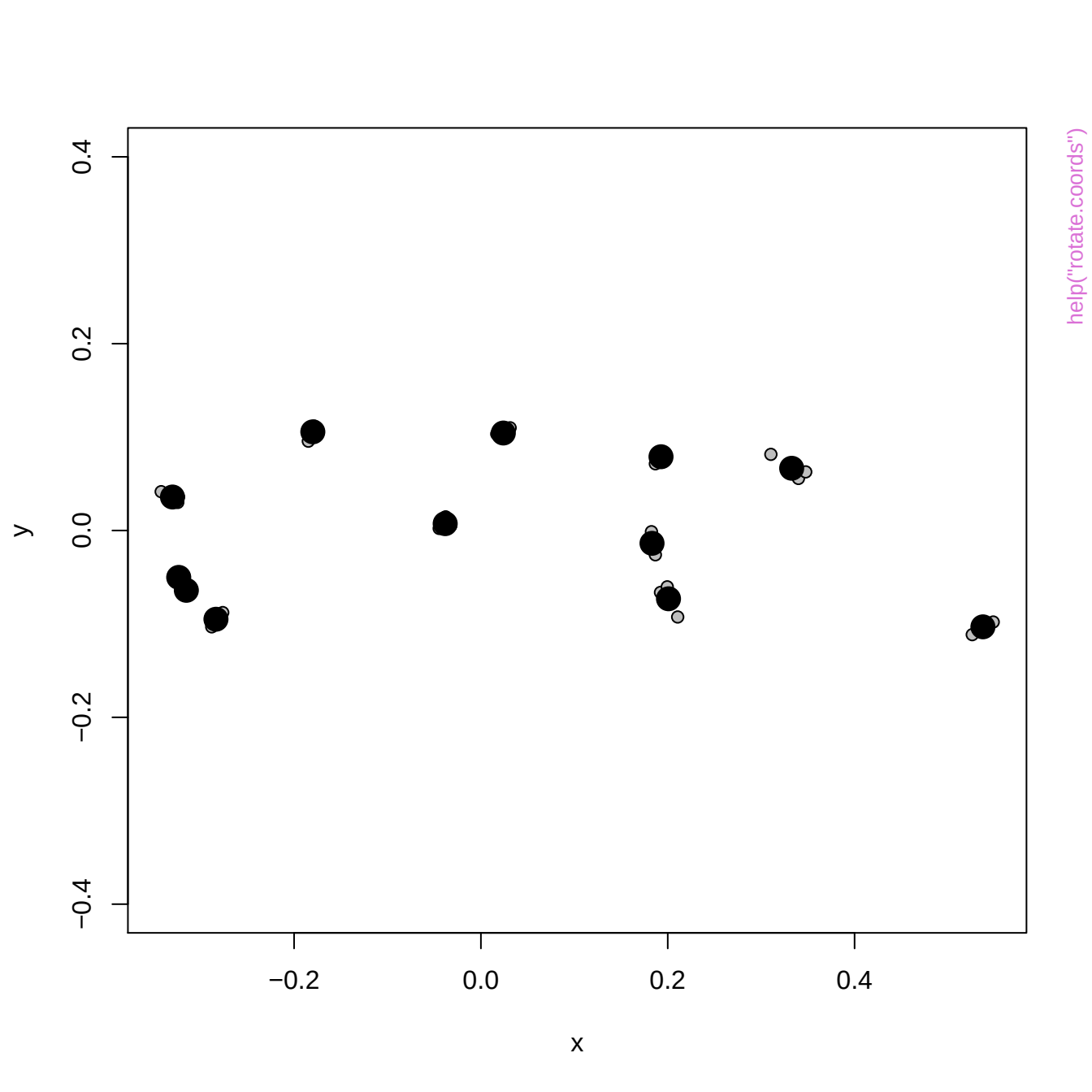

0.4
0.2
0.0
−0.2
−0.4
y
−0.2
0.0
0.2
0.4
0.6
x
help("rotate.coords")

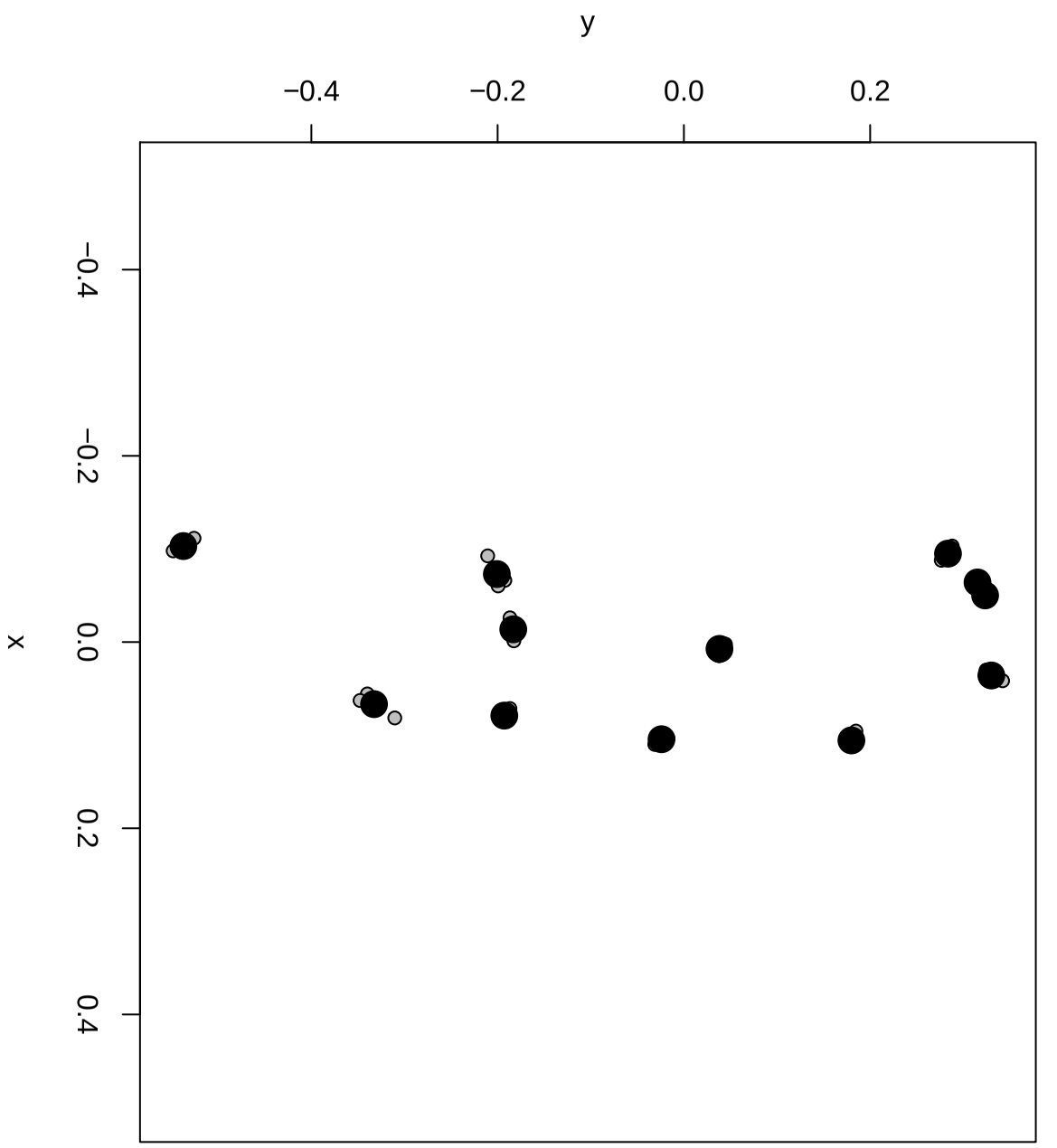

0.4
0.2
0.0
−0.2
−0.4
y
−0.6
−0.4
−0.2
0.0
0.2
x
help("rotate.coords")


help("rotate.coords")
y
0.2
0.0
−0.2
−0.4
−0.6
−0.4
−0.2
0.0
0.2
0.4
x

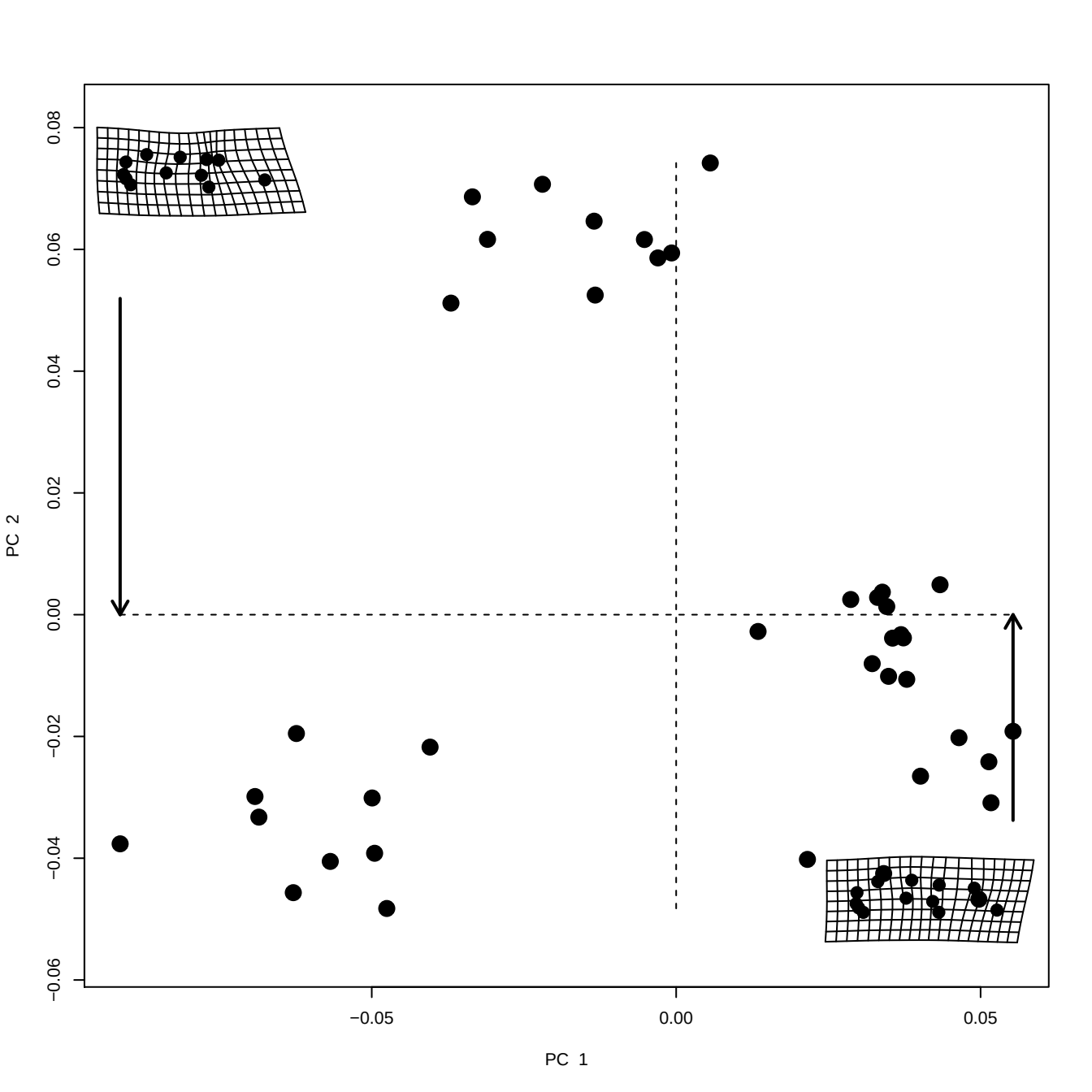
0.4
0.2
0.0
−0.2
−0.4
Y
−0.2
0.0
0.2
0.4
X
help("rotate.coords")

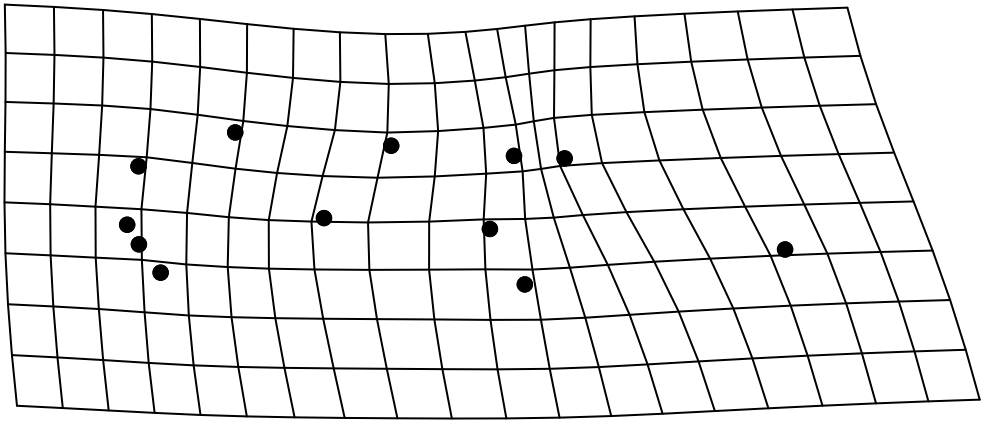

0.4
0.2
0.0
−0.2
−0.4
spec1[,2]
−0.2
0.0
0.2
0.4
spec1[,1]
help("rotate.coords")


0.4
0.2
0.0
−0.2
−0.4
y
−0.2
0.0
0.2
0.4
x
help("rotate.coords")

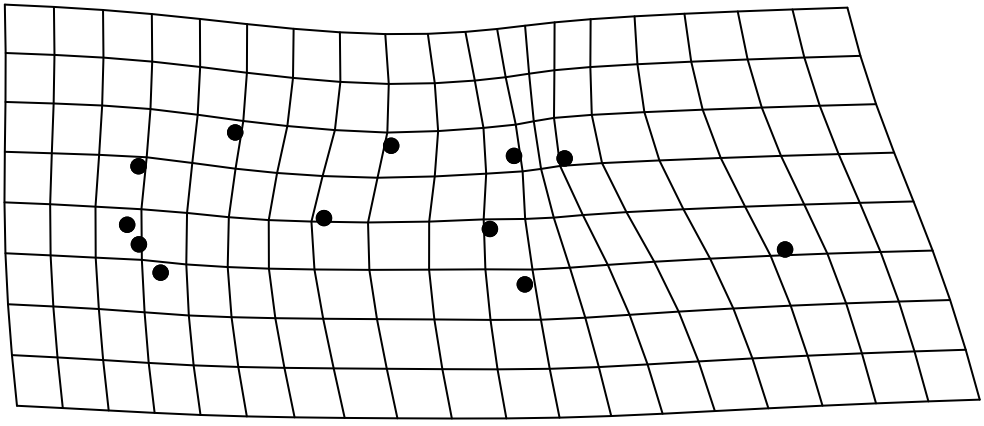



help("rotate.coords")

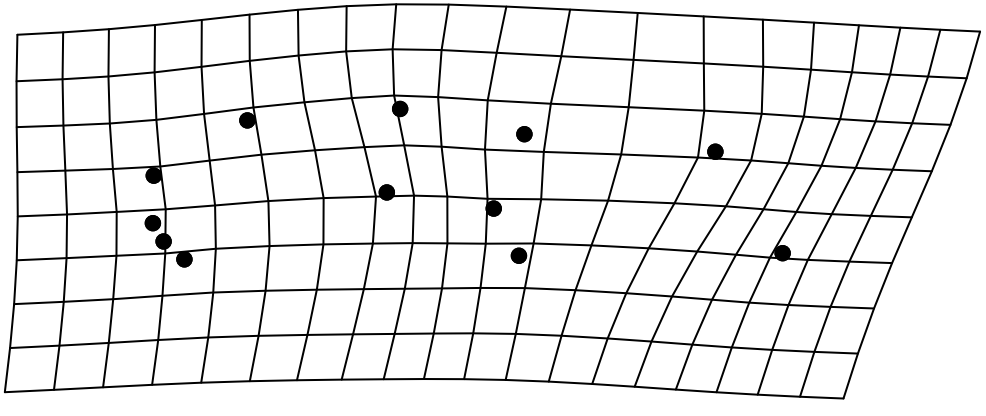

0.08
0.06
0.04
0.02
0.00
−0.02
−0.04
−0.06
PC 2
−0.05
0.00
0.05
PC 1



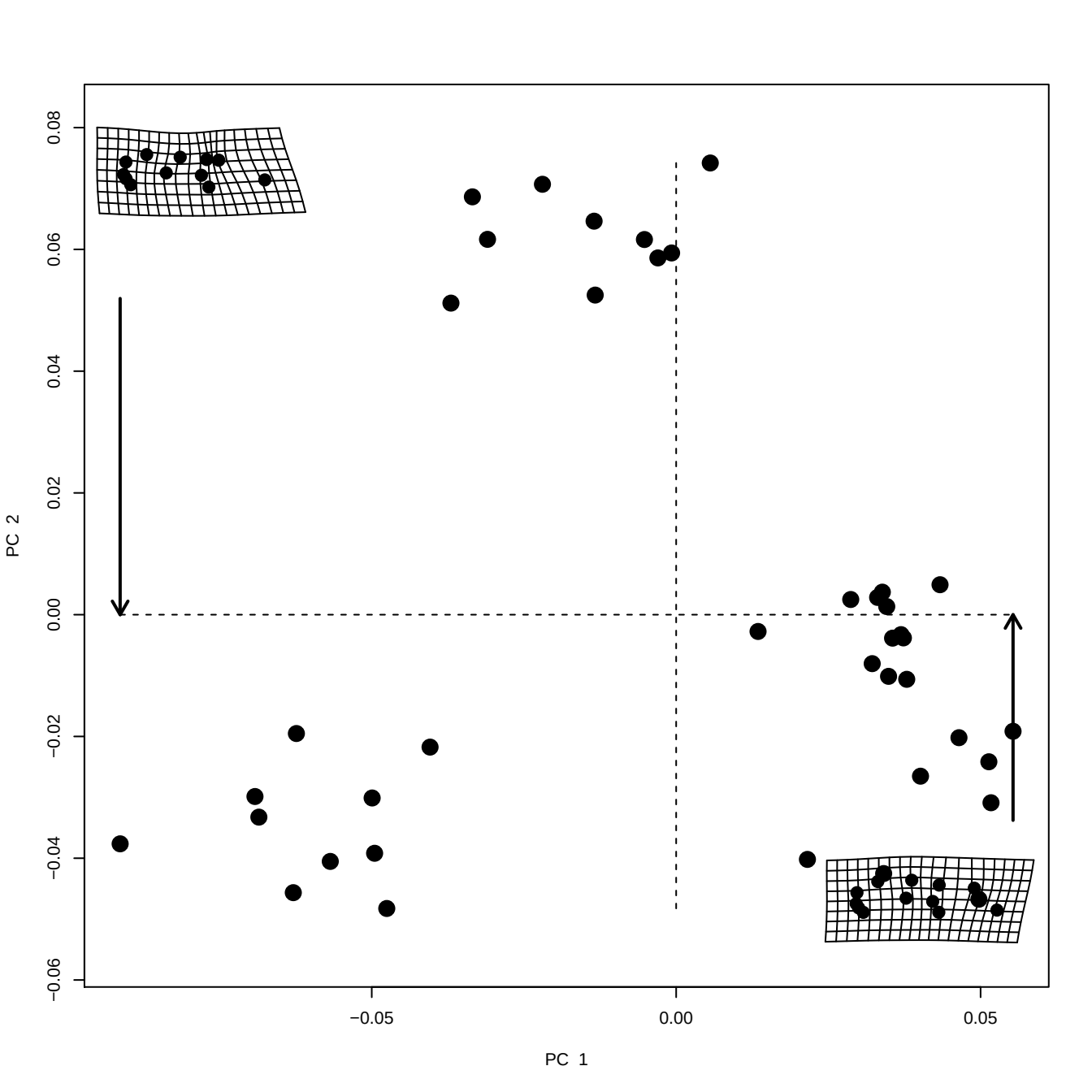
help("shape.predictor")

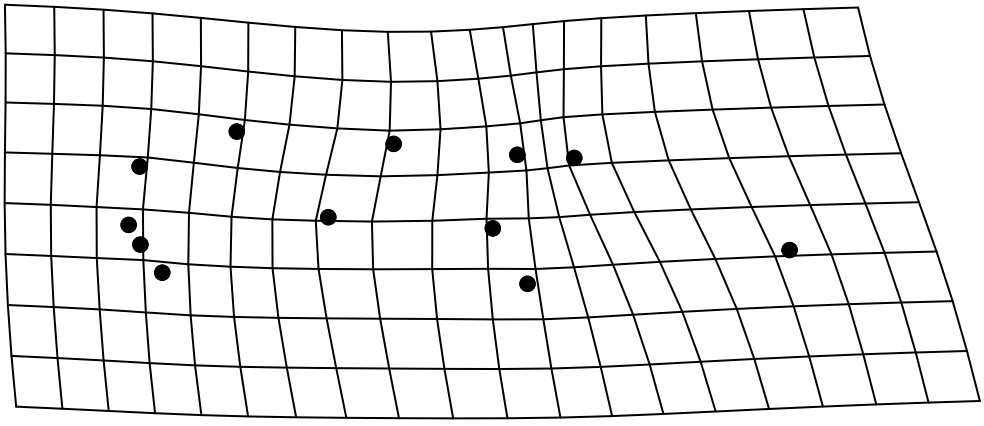


help("shape.predictor")

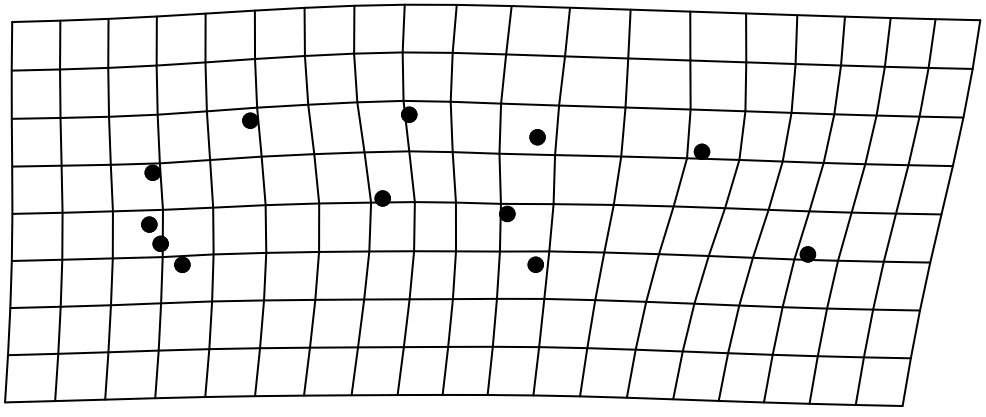


help("shape.predictor")

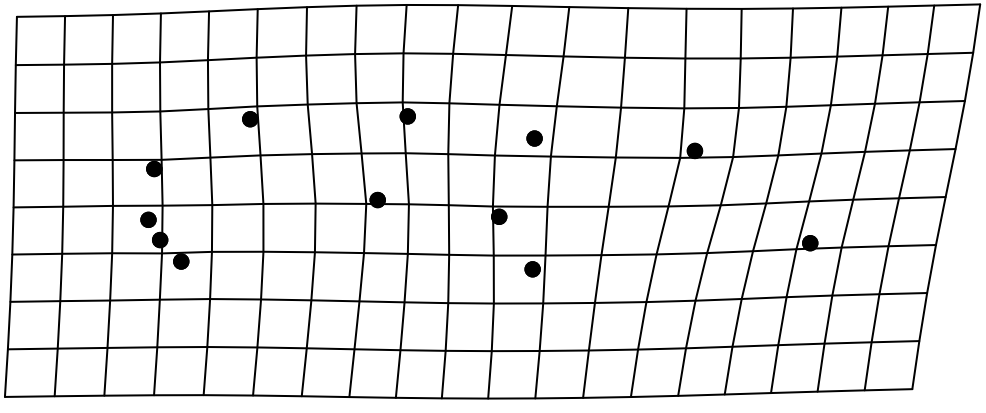

0.08
0.06
0.04
0.02
0.00
−0.02
−0.04
−0.06
PC 2
−0.05
0.00
0.05
PC 1



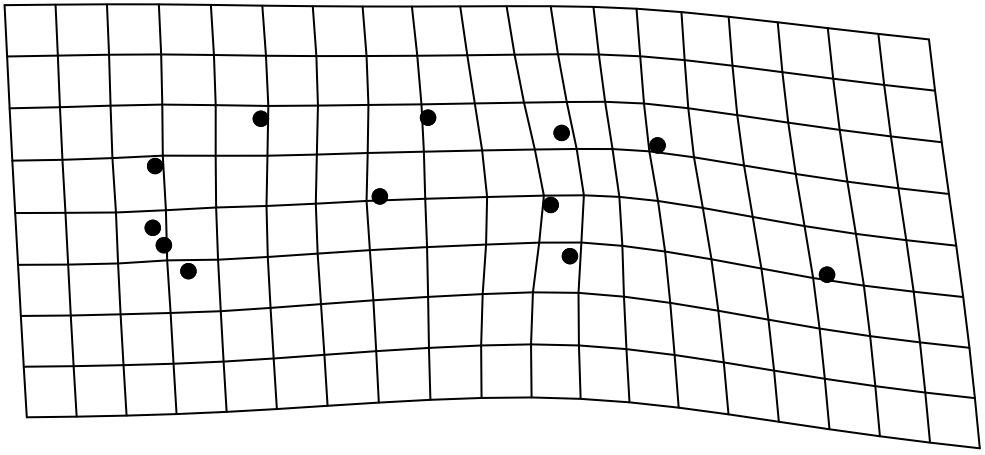
help("shape.predictor")



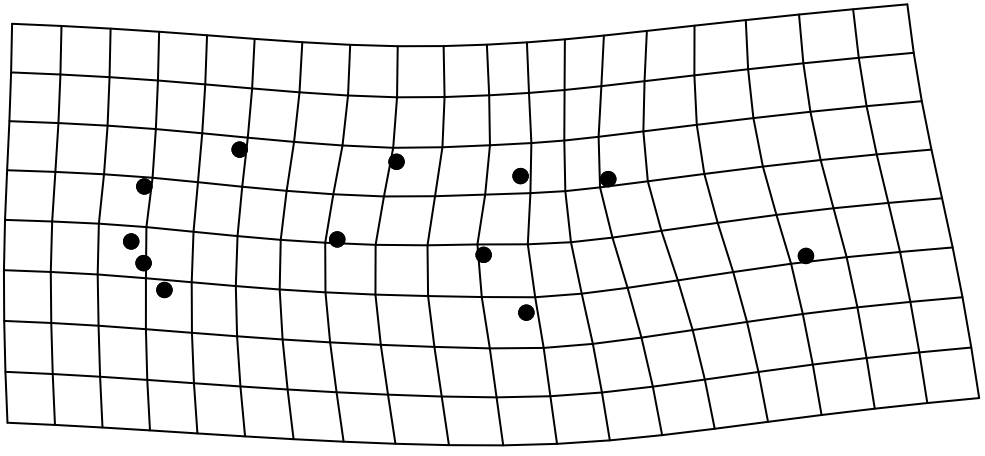
help("shape.predictor")



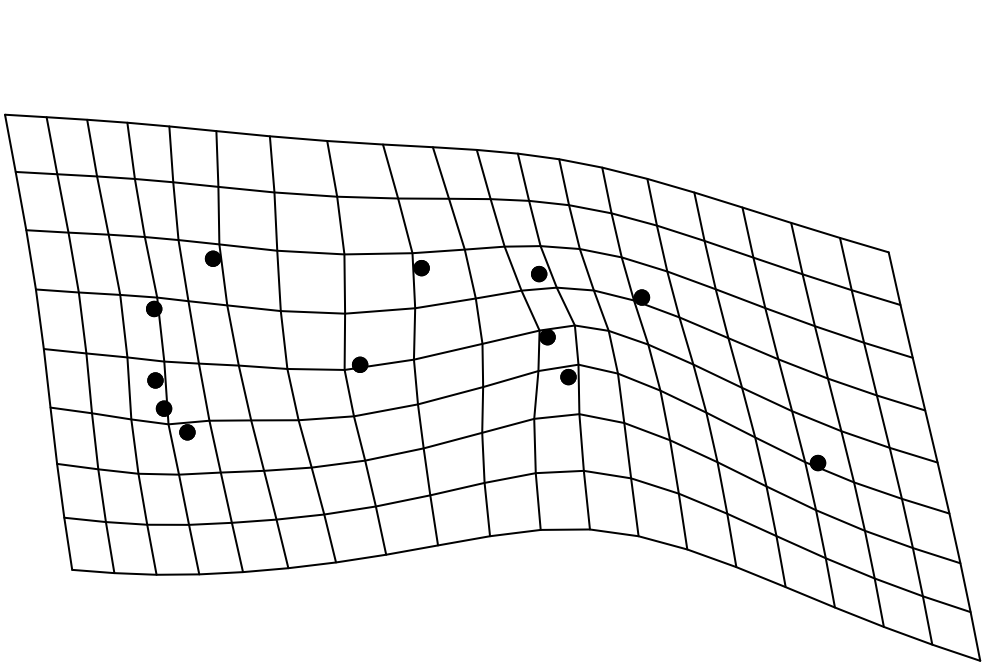
help("shape.predictor")



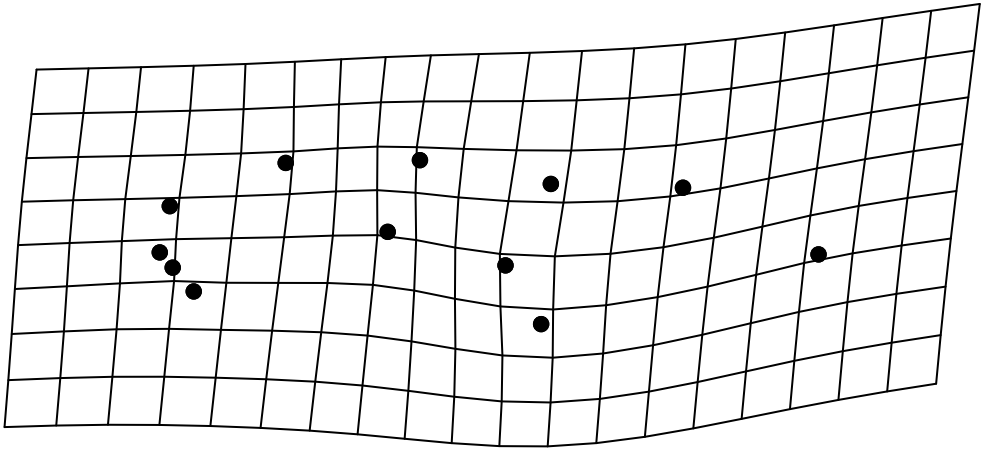
help("shape.predictor")



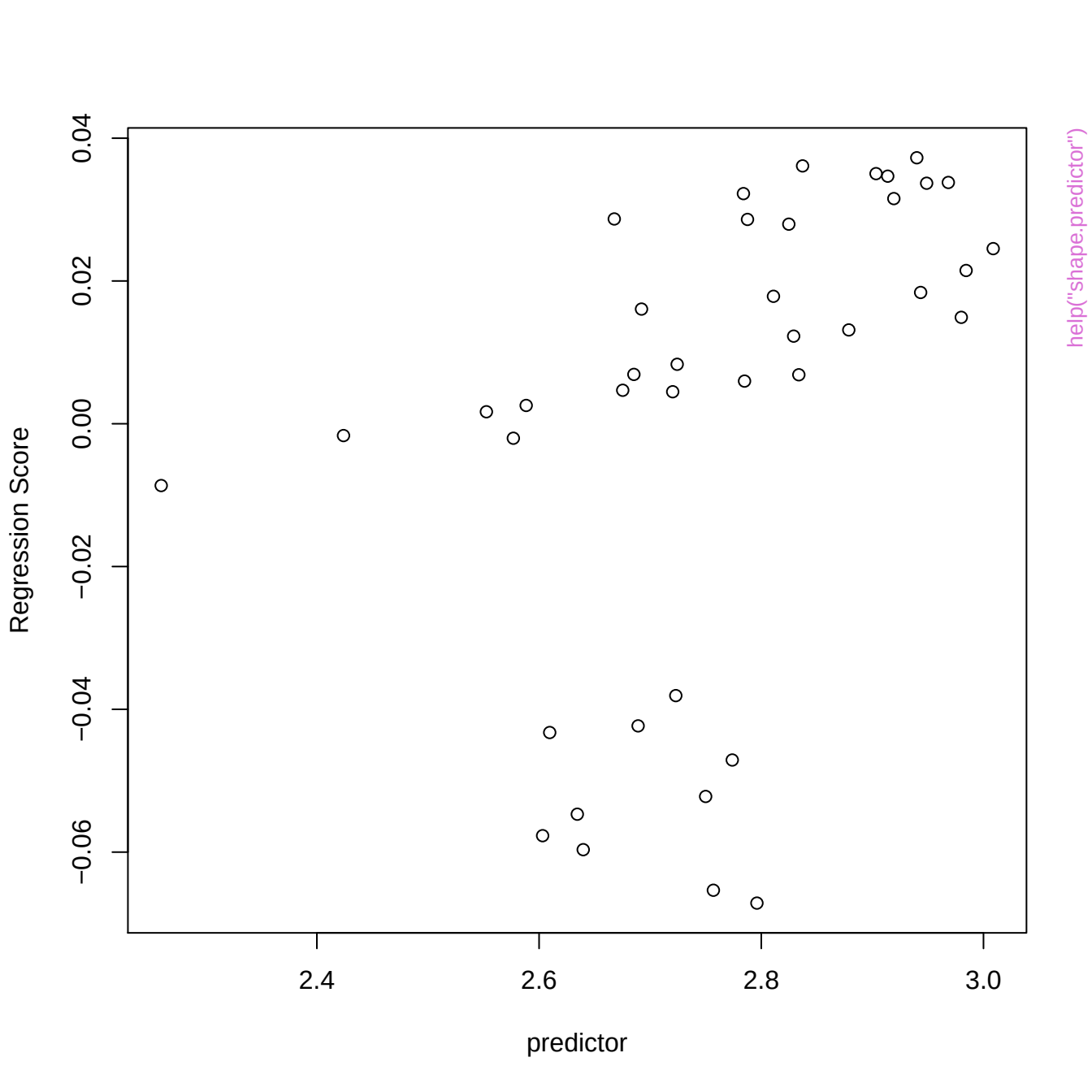
help("shape.predictor")



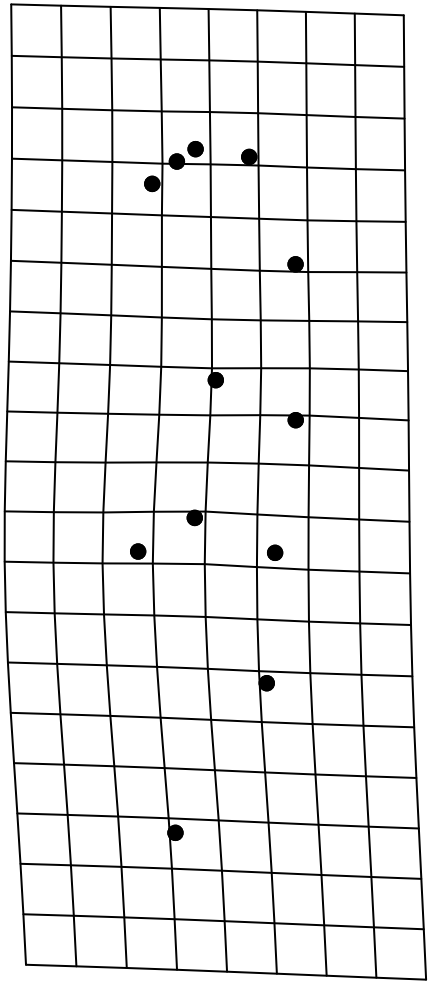
help("shape.predictor")



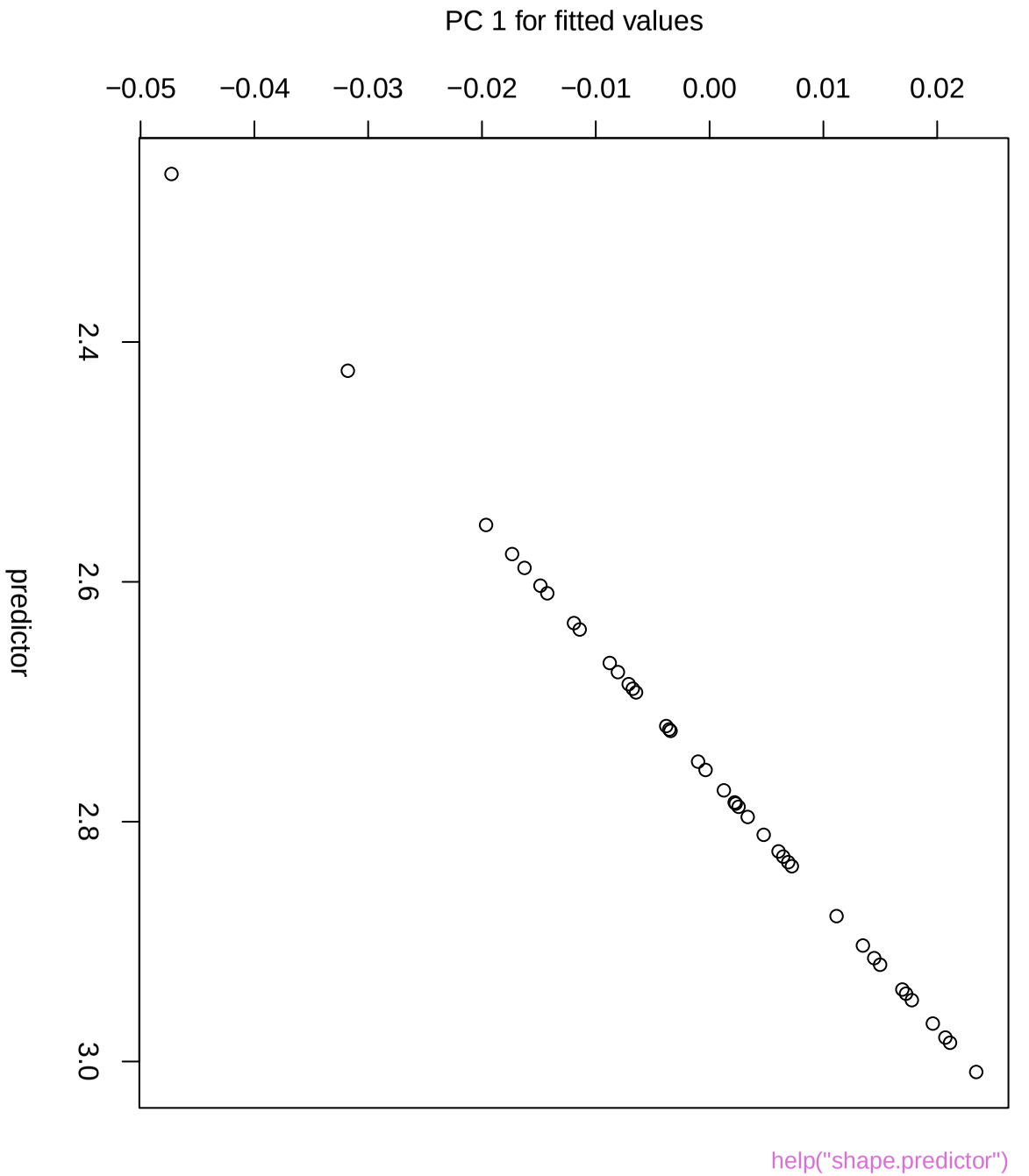
help("shape.predictor")


Regression Score
0.04
0.02
0.00
−0.02
−0.04
−0.06
2.4
2.6
2.8
3.0
predictor
help("shape.predictor")

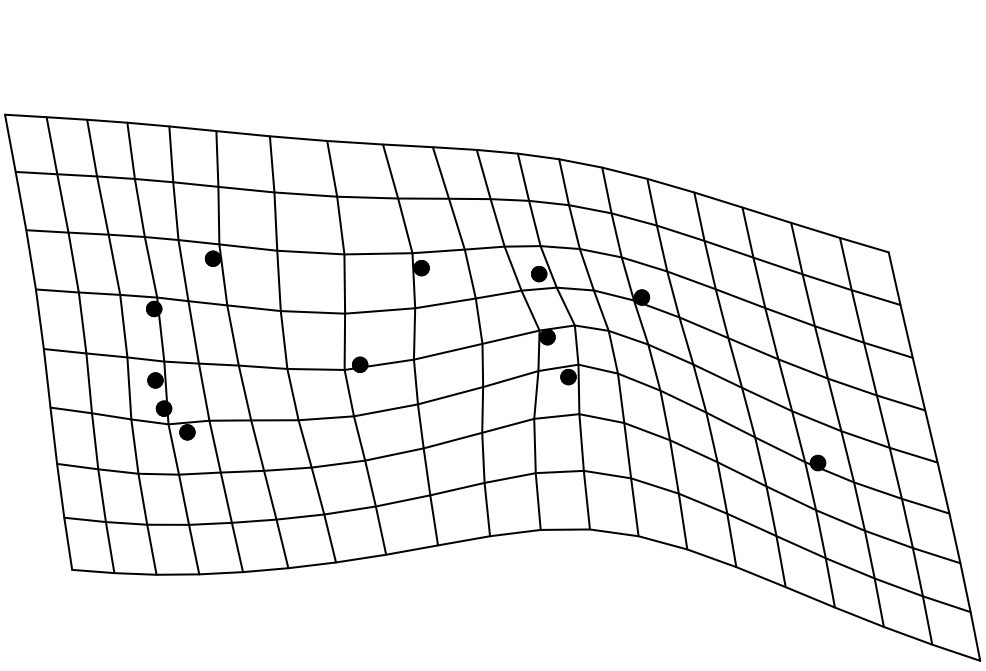
help("shape.predictor")



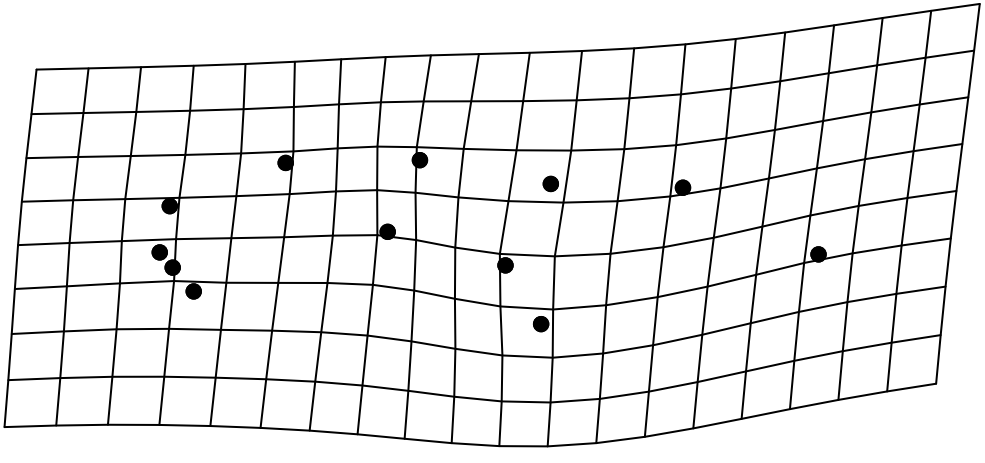
help("shape.predictor")



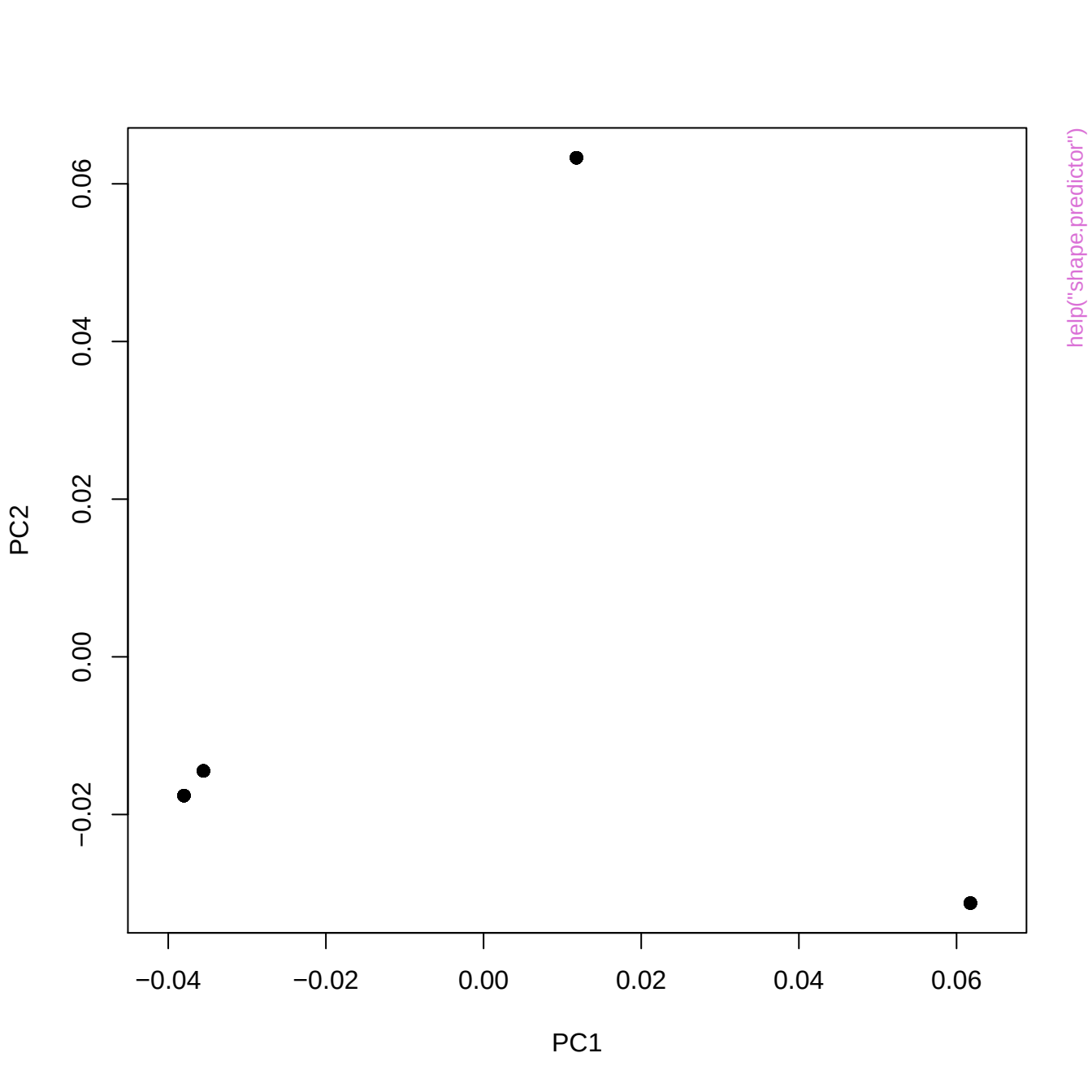

help("shape.predictor")

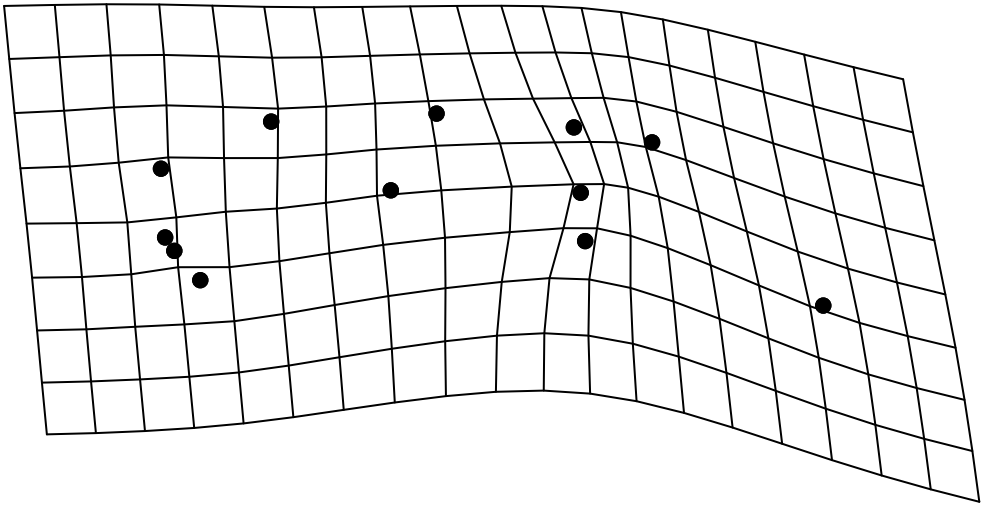


help("shape.predictor")

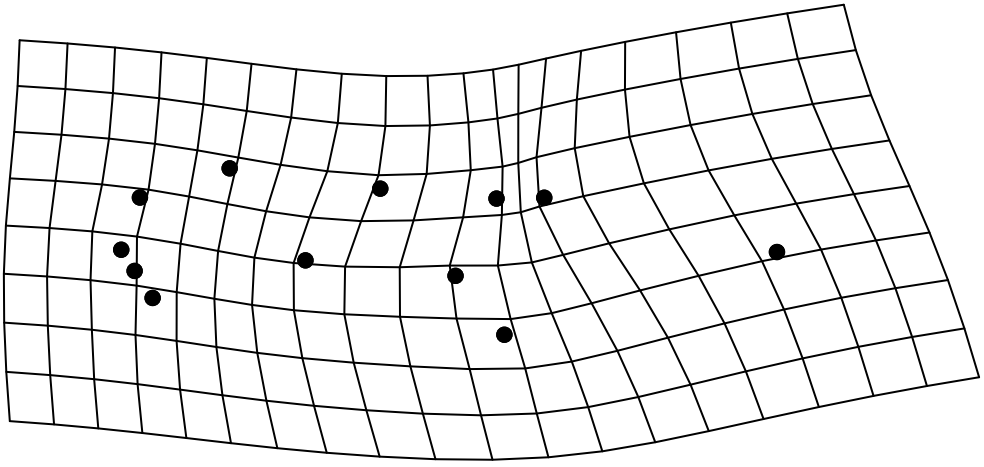


help("shape.predictor")

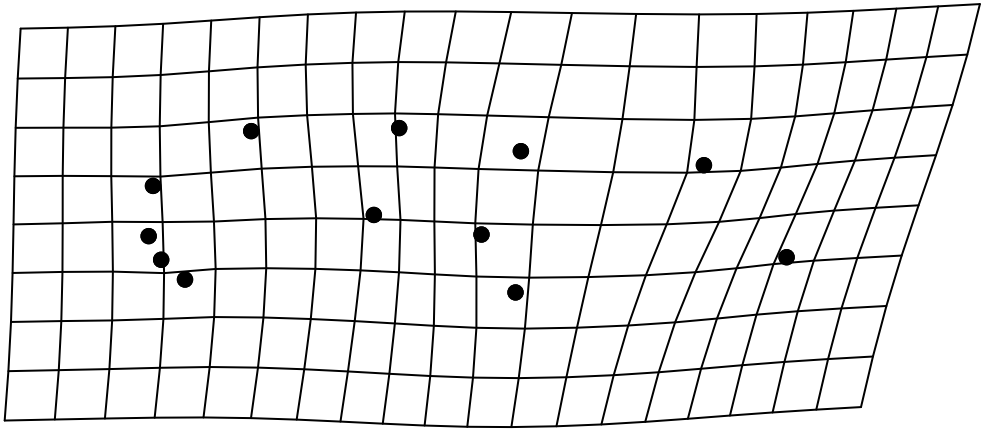

PC2
0.06
0.04
0.02
0.00
−0.02
−0.04
−0.02
0.00
0.02
0.04
0.06
PC1
help("shape.predictor")



help("shape.predictor")

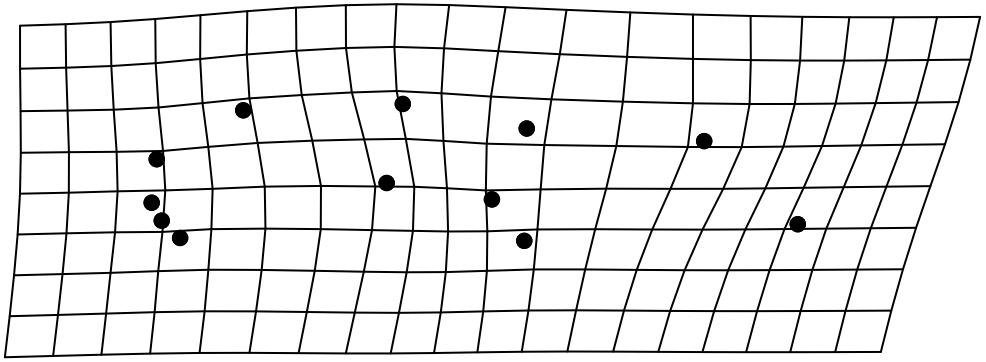


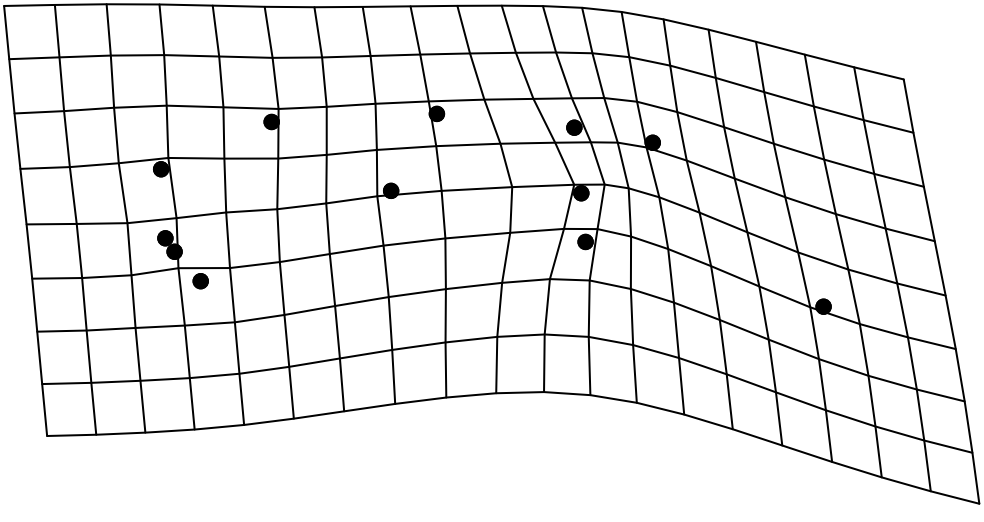
help("shape.predictor")



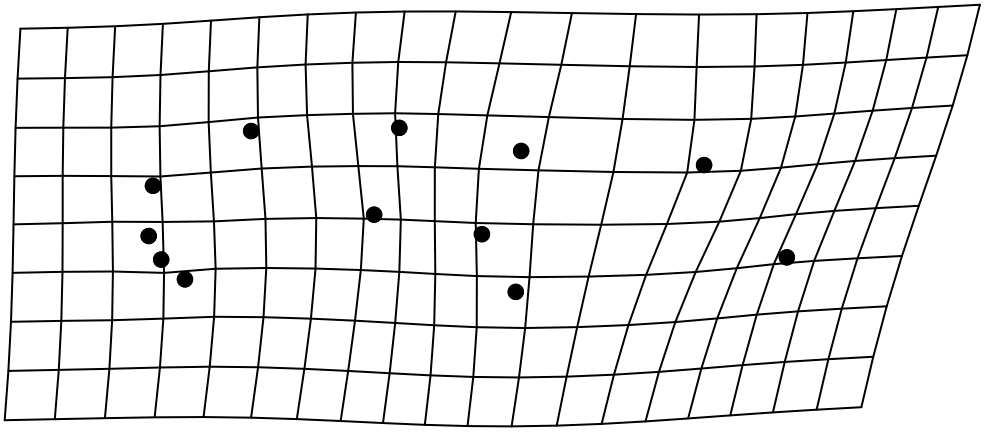
help("shape.predictor")

help("shape.predictor")

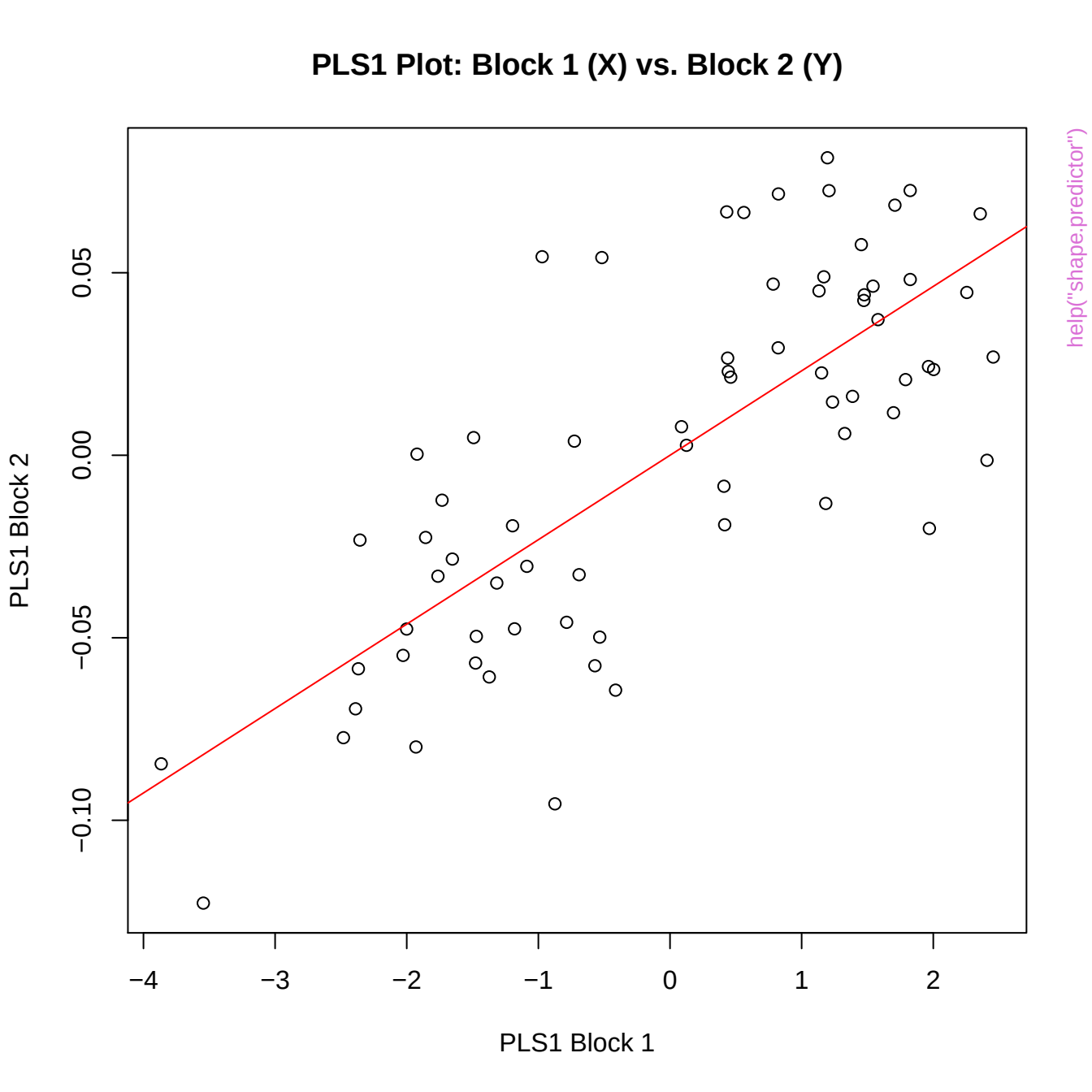


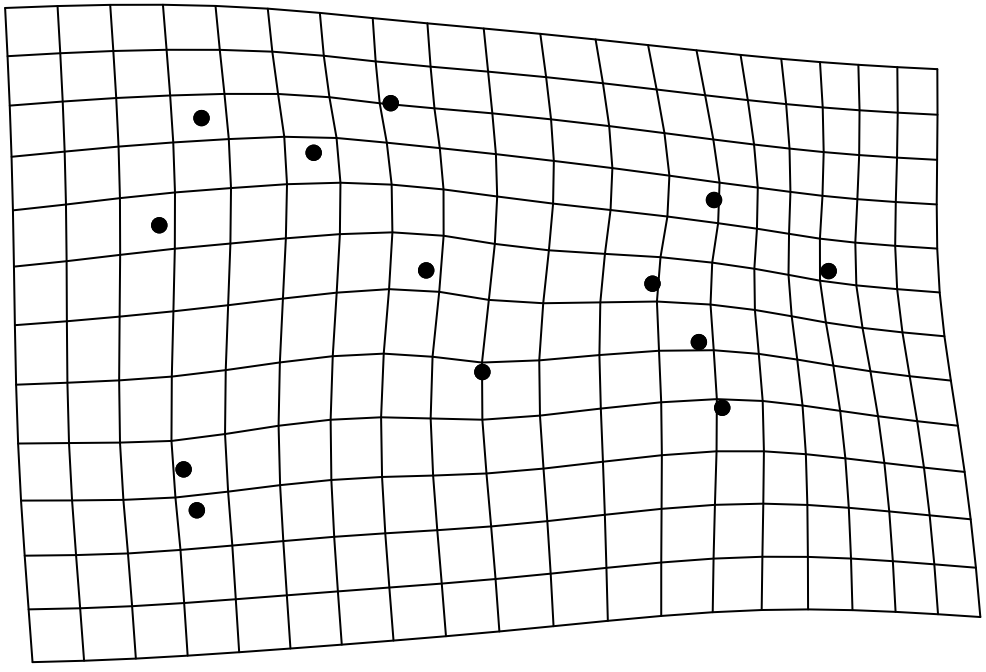


help("shape.predictor")

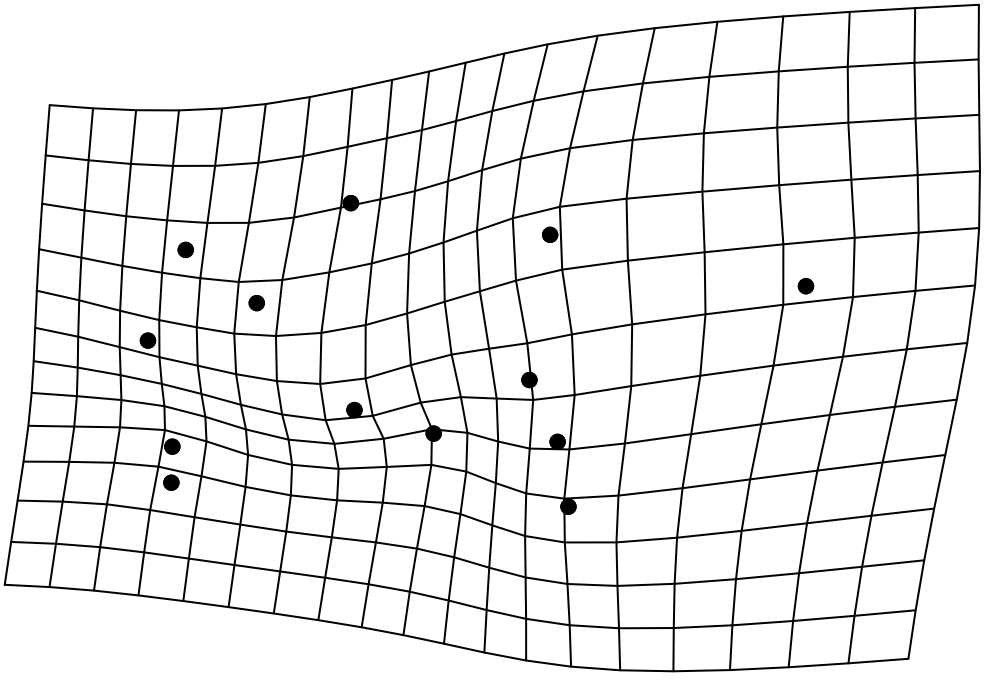


help("shape.predictor")

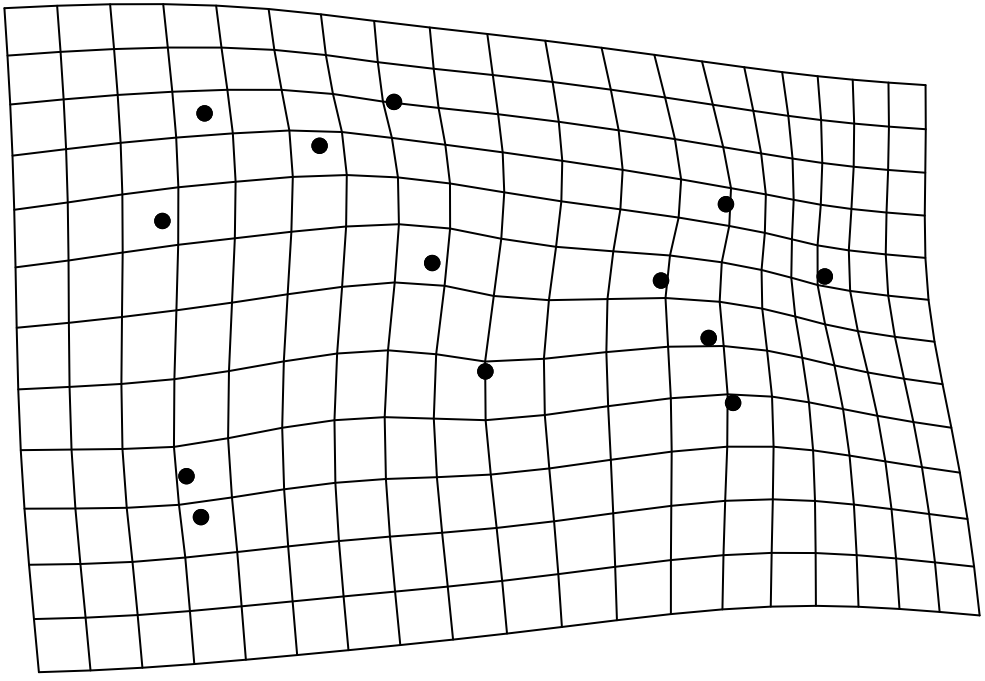

PLS1 Plot: Block 1 (X) vs. Block 2 (Y)
PLS1 Block 2
0.05
0.00
−0.05
−0.10
−4
−3
−2
−1
0
1
2
PLS1 Block 1
help("shape.predictor")



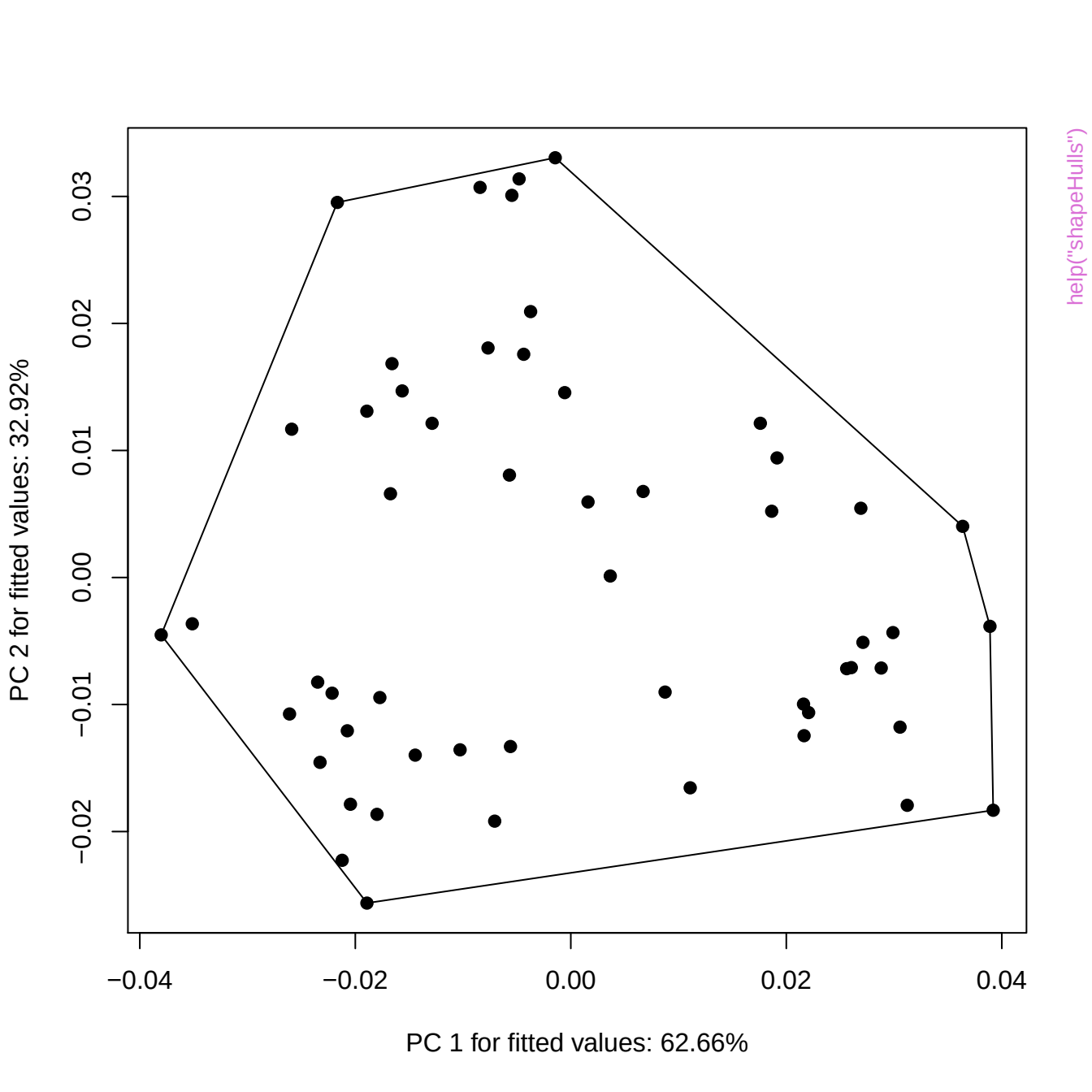
help("shape.predictor")

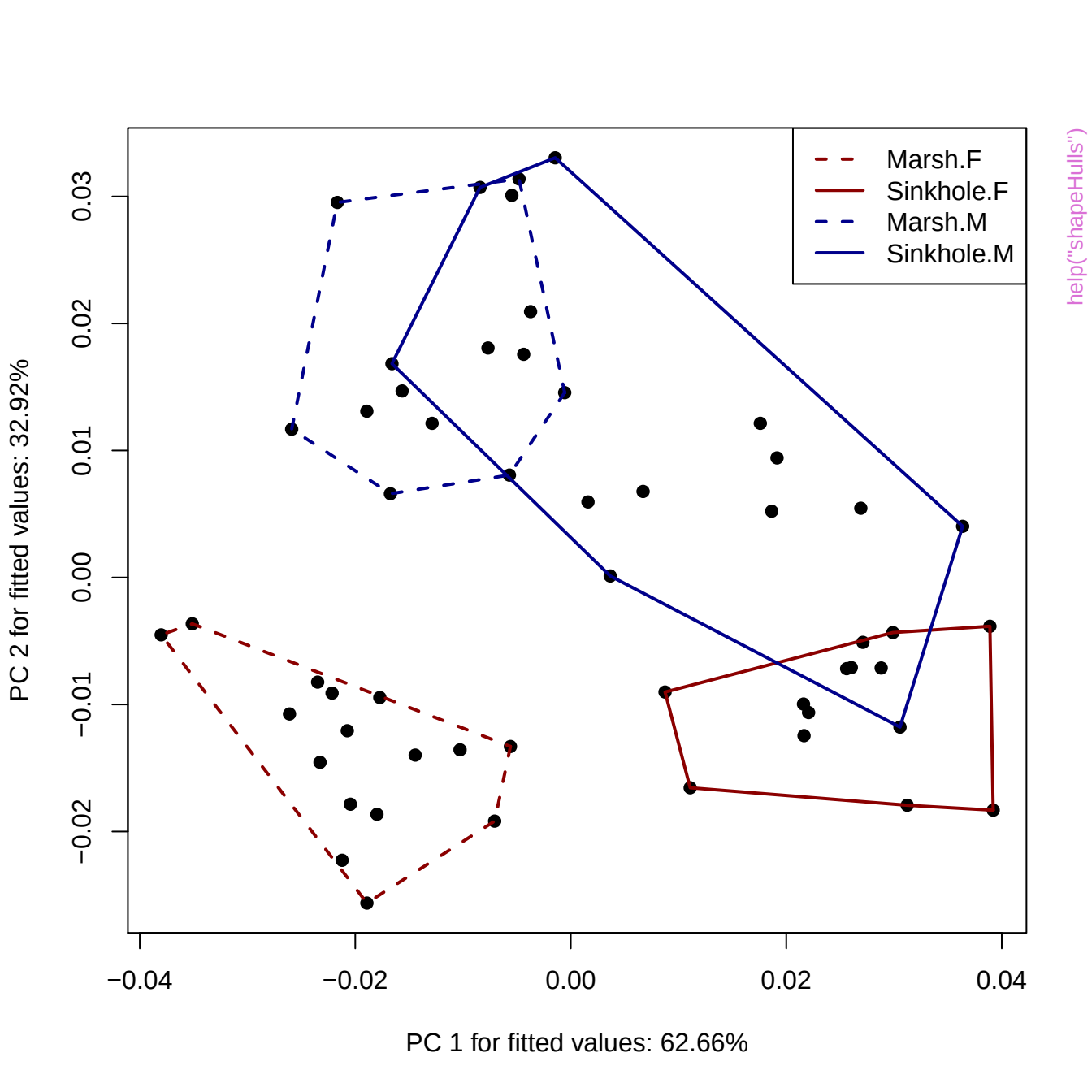


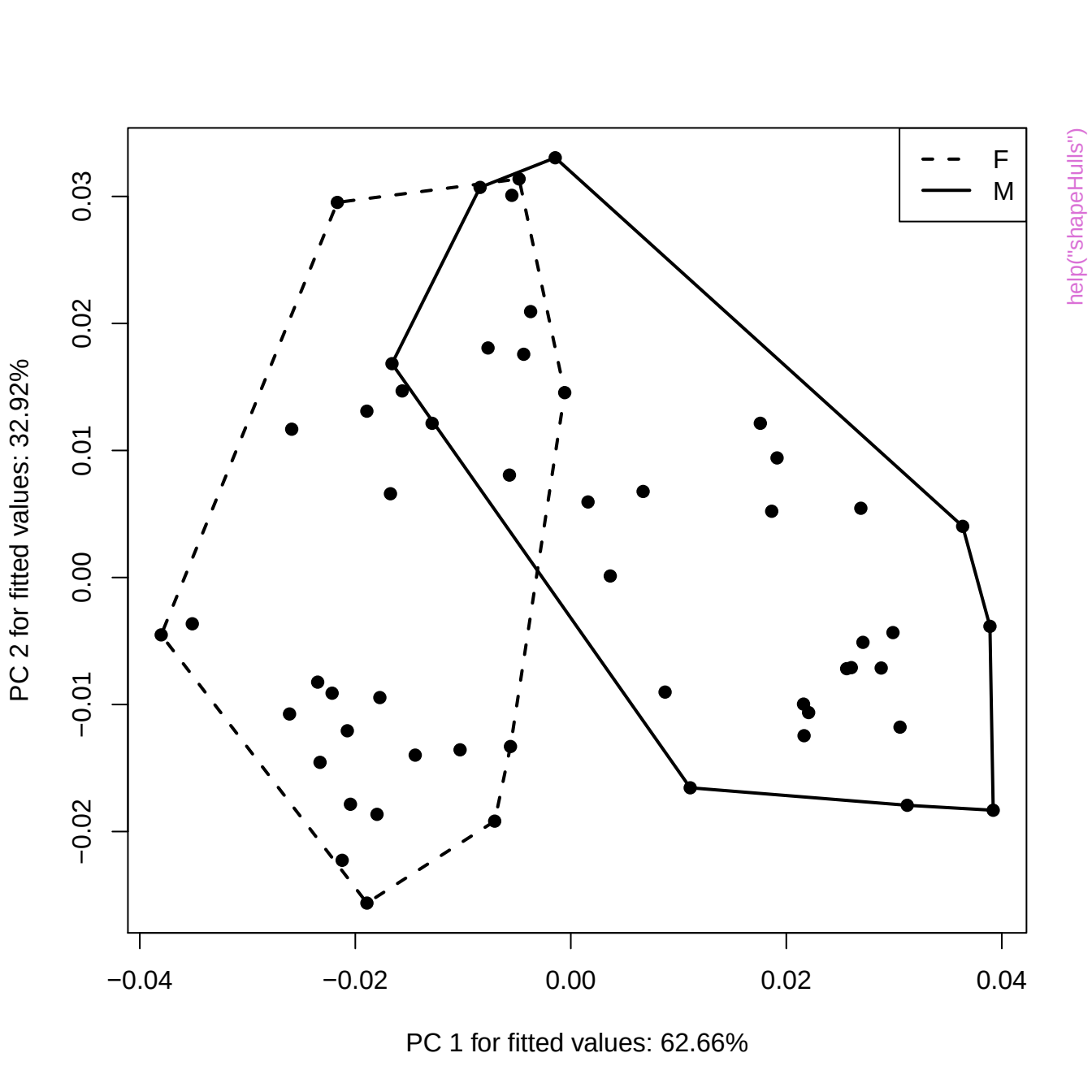
help("shape.predictor")

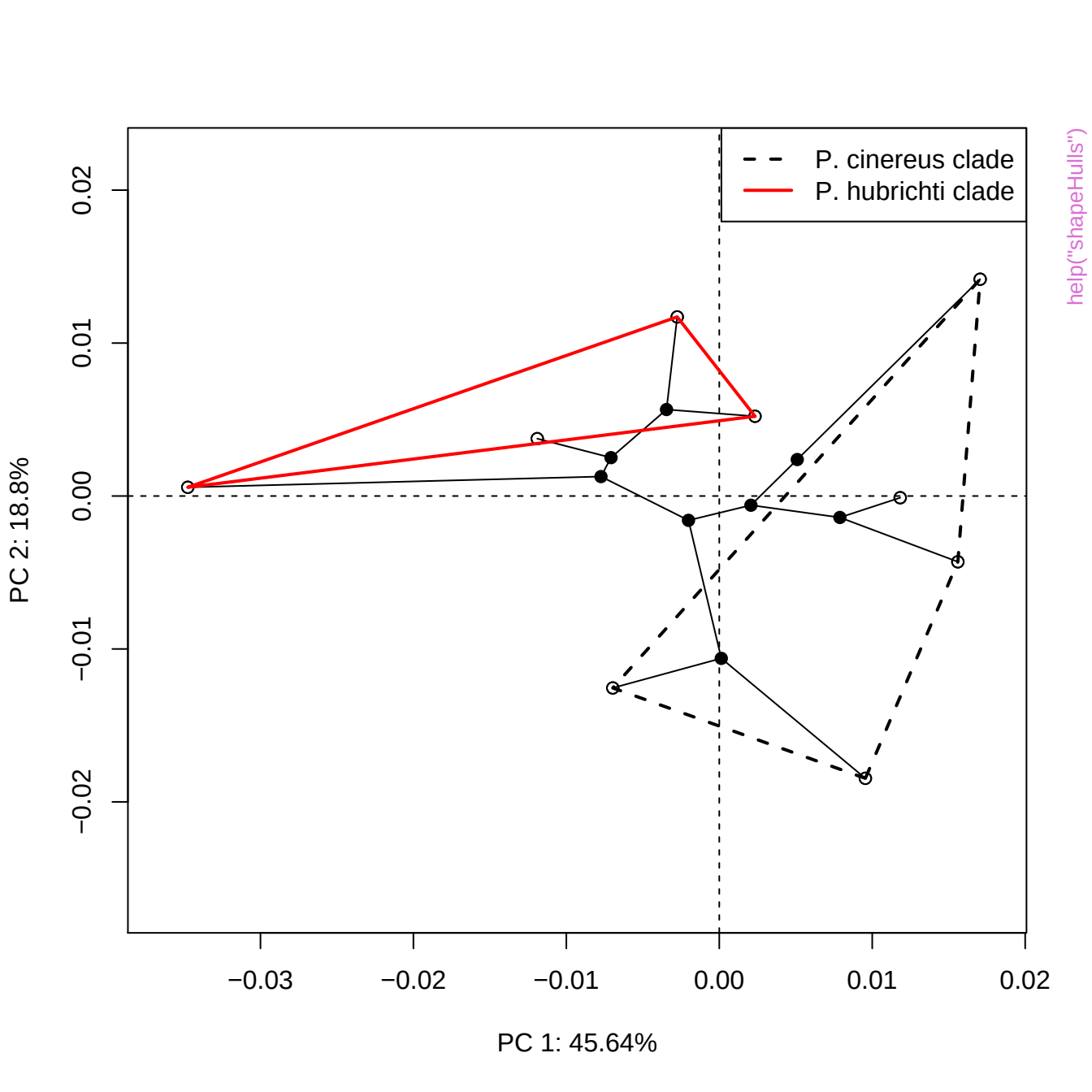


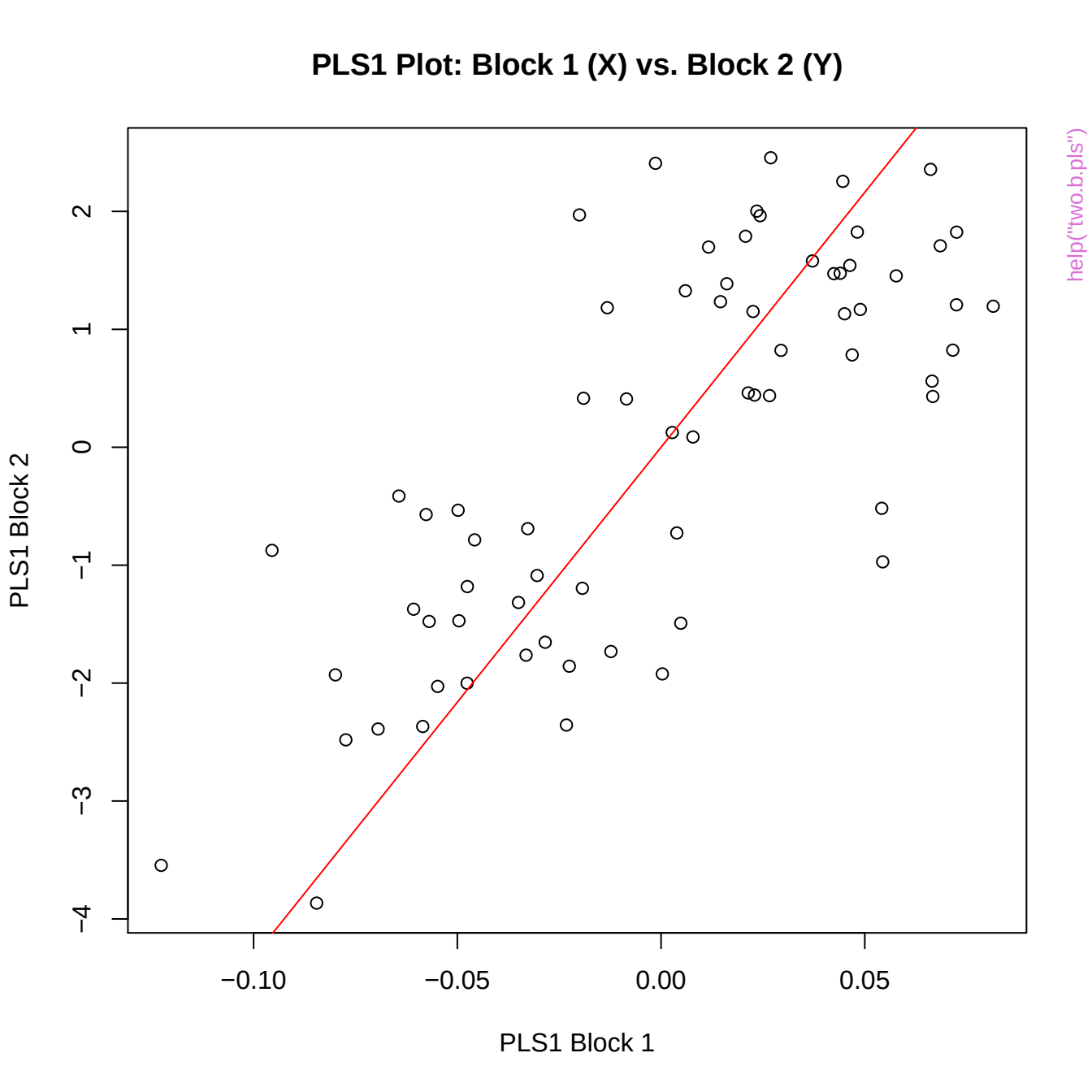
help("shape.predictor")


help("shapeHulls")
PC 2 for fitted values: 32.92%
0.03
0.02
0.01
0.00
−0.01
−0.02
−0.04
−0.02
0.00
0.02
0.04
PC 1 for fitted values: 62.66%


Marsh.F
Sinkhole.F
Marsh.M
Sinkhole.M
PC 2 for fitted values: 32.92%
PC 1 for fitted values: 62.66%
0.03
0.02
0.01
0.00
−0.01
−0.02
−0.04
−0.02
0.00
0.02
0.04
help("shapeHulls")


F
M
PC 2 for fitted values: 32.92%
PC 1 for fitted values: 62.66%
0.03
0.02
0.01
0.00
−0.01
−0.02
−0.04
−0.02
0.00
0.02
0.04
help("shapeHulls")


P. cinereus clade
P. hubrichti clade
help("shapeHulls")
PC 2: 18.8%
PC 1: 45.64%
0.02
0.01
0.00
−0.01
−0.02
−0.03
−0.02
−0.01
0.00
0.01
0.02


PLS1 Plot: Block 1 (X) vs. Block 2 (Y)
PLS1 Block 2
PLS1 Block 1
2
1
0
−1
−2
−3
−4
−0.10
−0.05
0.00
0.05
help("two.b.pls")