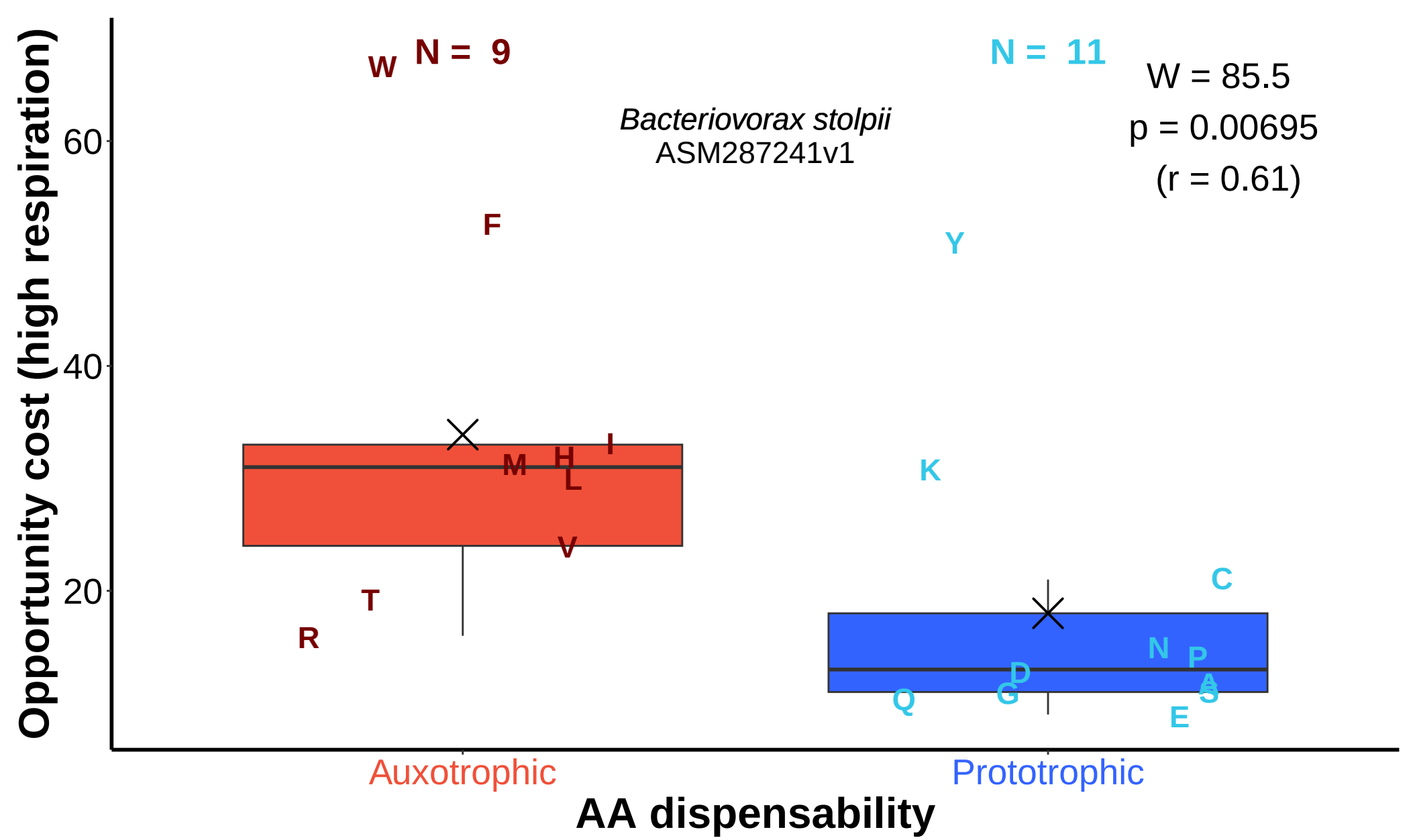
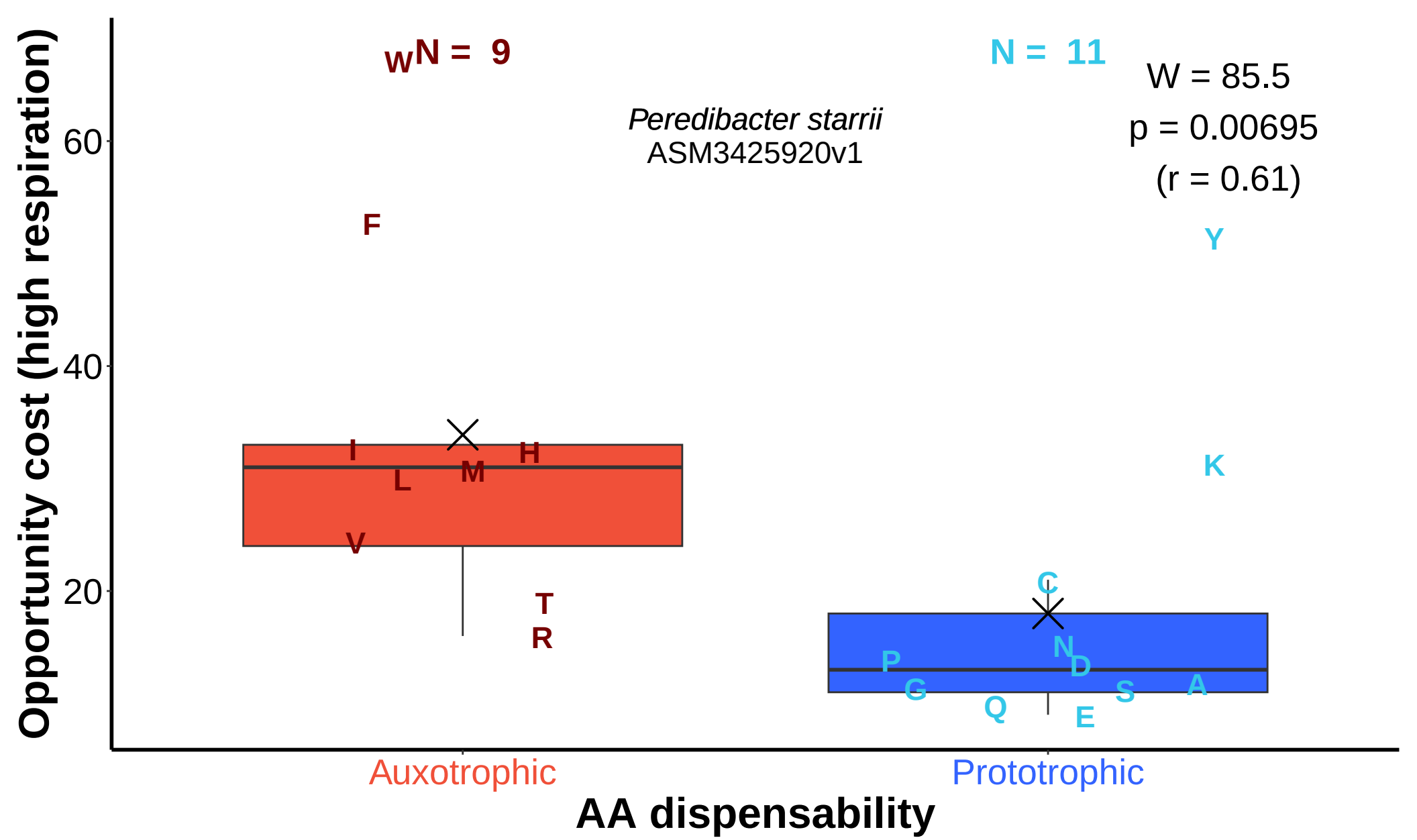
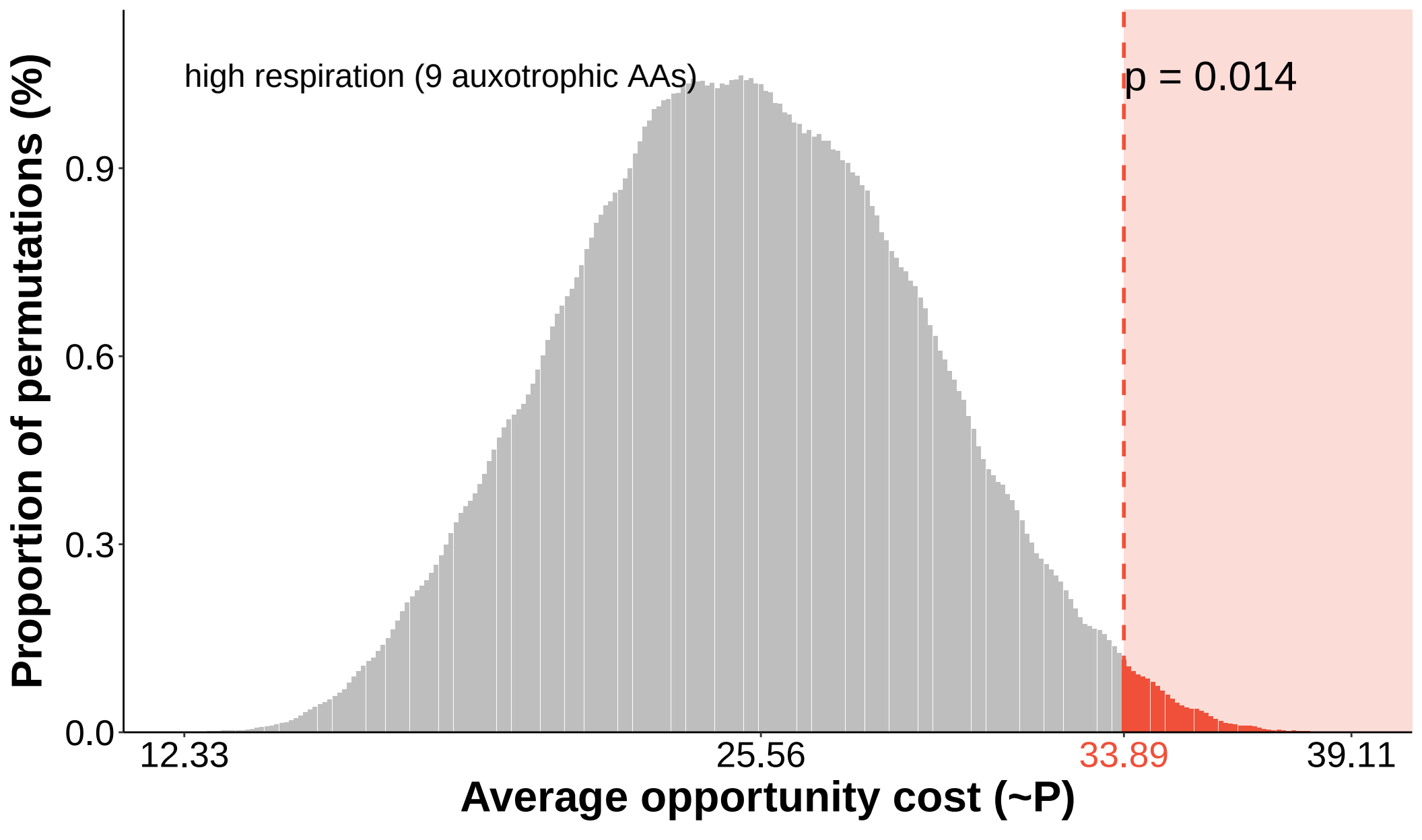
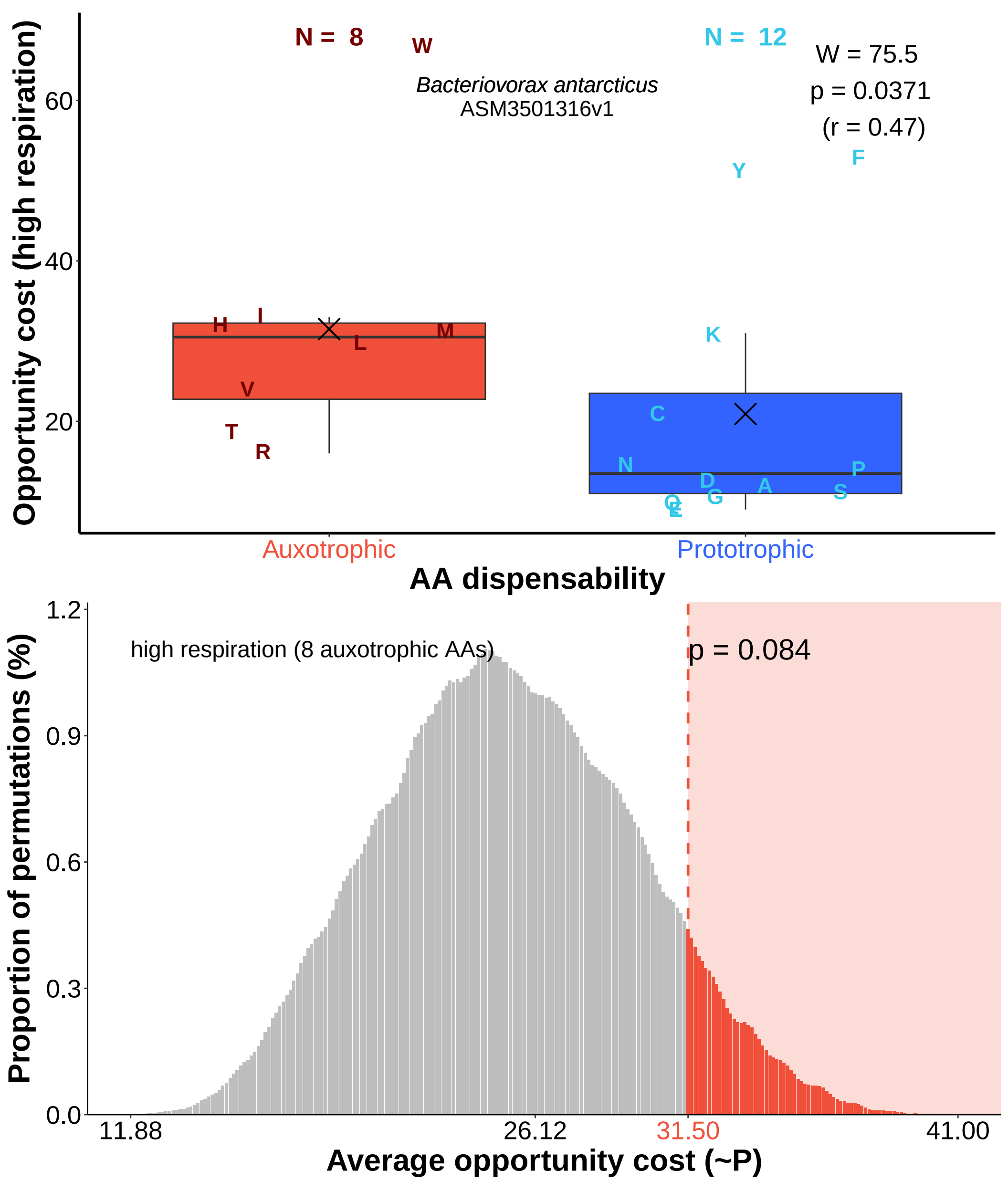
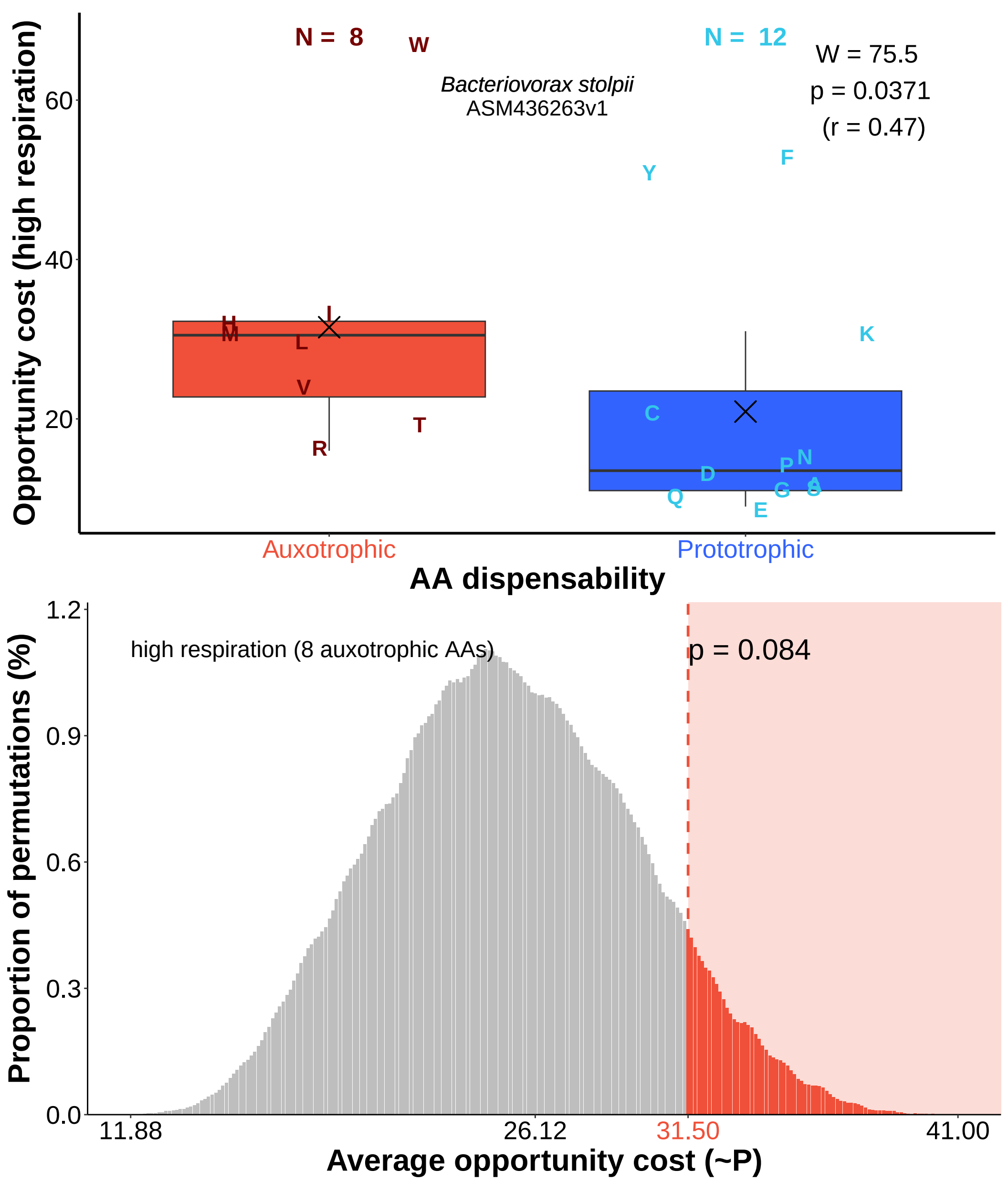

N = 9
N = 11
W = 85.5
p = 0.00695
(r = 0.61)
Bacteriovorax stolpii
ASM287241v1
W
F
Y
K
M
H
I
L
V
T
R
C
N
P
D
A
G
S
Q
E
60
40
20
Opportunity cost (high respiration)
Auxotrophic
Prototrophic
AA dispensability
high respiration (9 auxotrophic AAs)
p = 0.014
0.9
0.6
0.3
0.0
Proportion of permutations (%)
12.33
25.56
33.89
39.11
Average opportunity cost (~P)


wN = 9
N = 11
Peredibacter starrii
ASM3425920v1
W = 85.5
p = 0.00695
(r = 0.61)
Opportunity cost (high respiration)
60
40
20
F
I
L
M
H
V
T
R
Y
K
C
N
P
D
G
S
A
Q
E
Auxotrophic
Prototrophic
AA dispensability

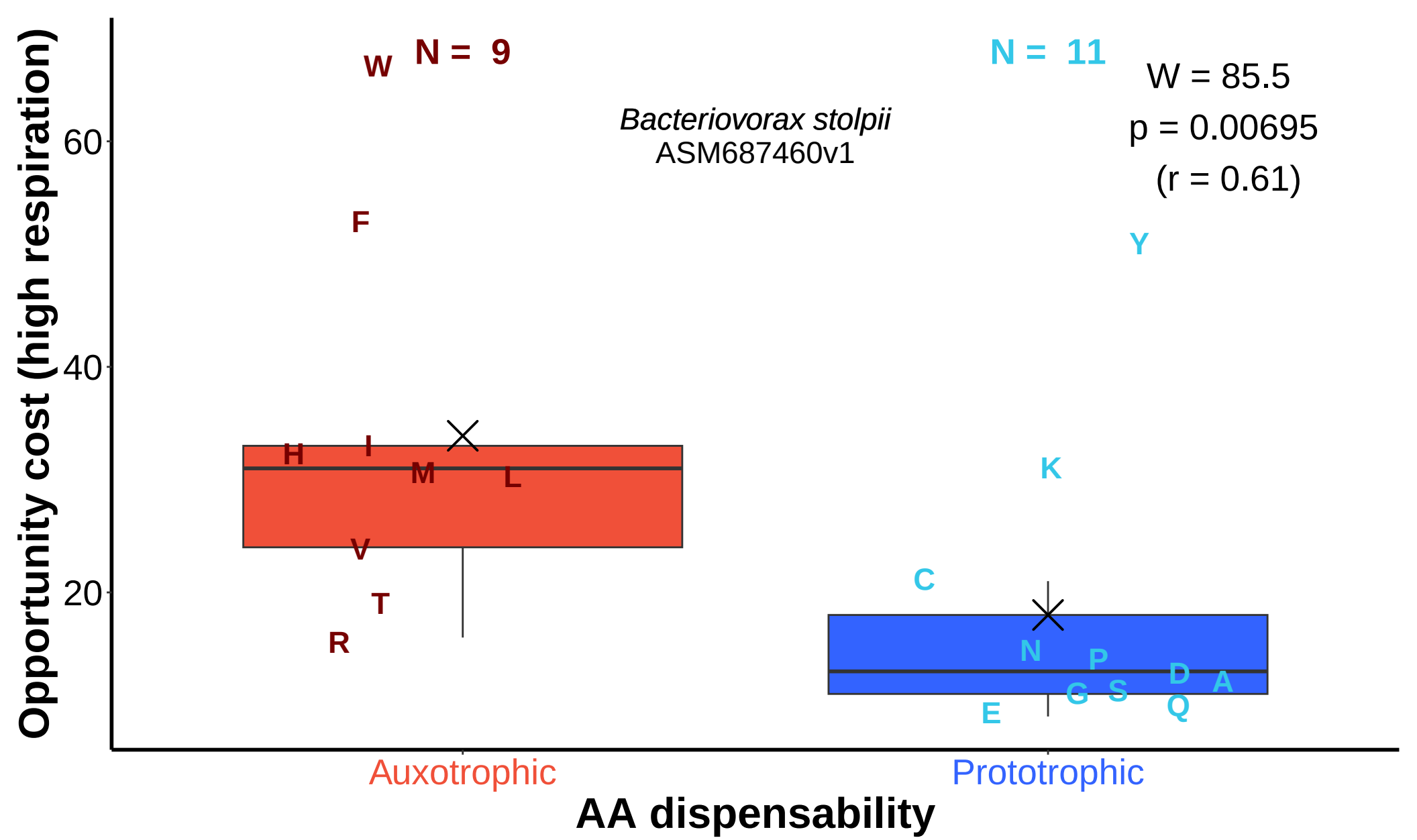

high respiration (9 auxotrophic AAs)
p = 0.014
Proportion of permutations (%)
0.9
0.6
0.3
0.0
12.33
25.56
33.89
39.11
Average opportunity cost (~P)



N = 8
W
N = 12
W = 75.5
p = 0.0371
(r = 0.47)
Bacteriovorax antarcticus
ASM3501316v1
Y
F
H
I
L
M
V
T
R
K
C
N
D
A
P
S
G
Q
E
Opportunity cost (high respiration)
60
40
20
Auxotrophic
Prototrophic
AA dispensability
high respiration (8 auxotrophic AAs)
p = 0.084
Proportion of permutations (%)
1.2
0.9
0.6
0.3
0.0
11.88
26.12
31.50
41.00
Average opportunity cost (~P)



N = 8
W
N = 12
W = 75.5
p = 0.0371
(r = 0.47)
Bacteriovorax stolpii
ASM436263v1
Y
F
H
M
L
I
V
R
T
K
C
P
N
D
G
S
A
Q
E
Opportunity cost (high respiration)
60
40
20
Auxotrophic
Prototrophic
AA dispensability
high respiration (8 auxotrophic AAs)
p = 0.084
Proportion of permutations (%)
1.2
0.9
0.6
0.3
0.0
11.88
26.12
31.50
41.00
Average opportunity cost (~P)


N = 9
N = 11
W = 85.5
p = 0.00695
(r = 0.61)
Bacteriovorax stolpii
ASM687460v1
W
F
Y
K
H
I
M
L
V
T
R
C
N
P
D
A
G
S
Q
E
60
40
20
Opportunity cost (high respiration)
Auxotrophic
Prototrophic
AA dispensability
high respiration (9 auxotrophic AAs)
p = 0.014
0.9
0.6
0.3
0.0
Proportion of permutations (%)
12.33
25.56
33.89
39.11
Average opportunity cost (~P)

N = 8

N = 12

W = 75.5

p = 0.0371

(r = 0.47)

Bacteriovorax sp. Seq25_V
CLC Hybrid Filtered

Opportunity cost (high respiration)

60

40

20

Auxotrophic

Prototrophic

AA dispensability

high respiration (8 auxotrophic AAs)

p = 0.084

Proportion of permutations (%)

1.2

0.9

0.6

0.3

0.0

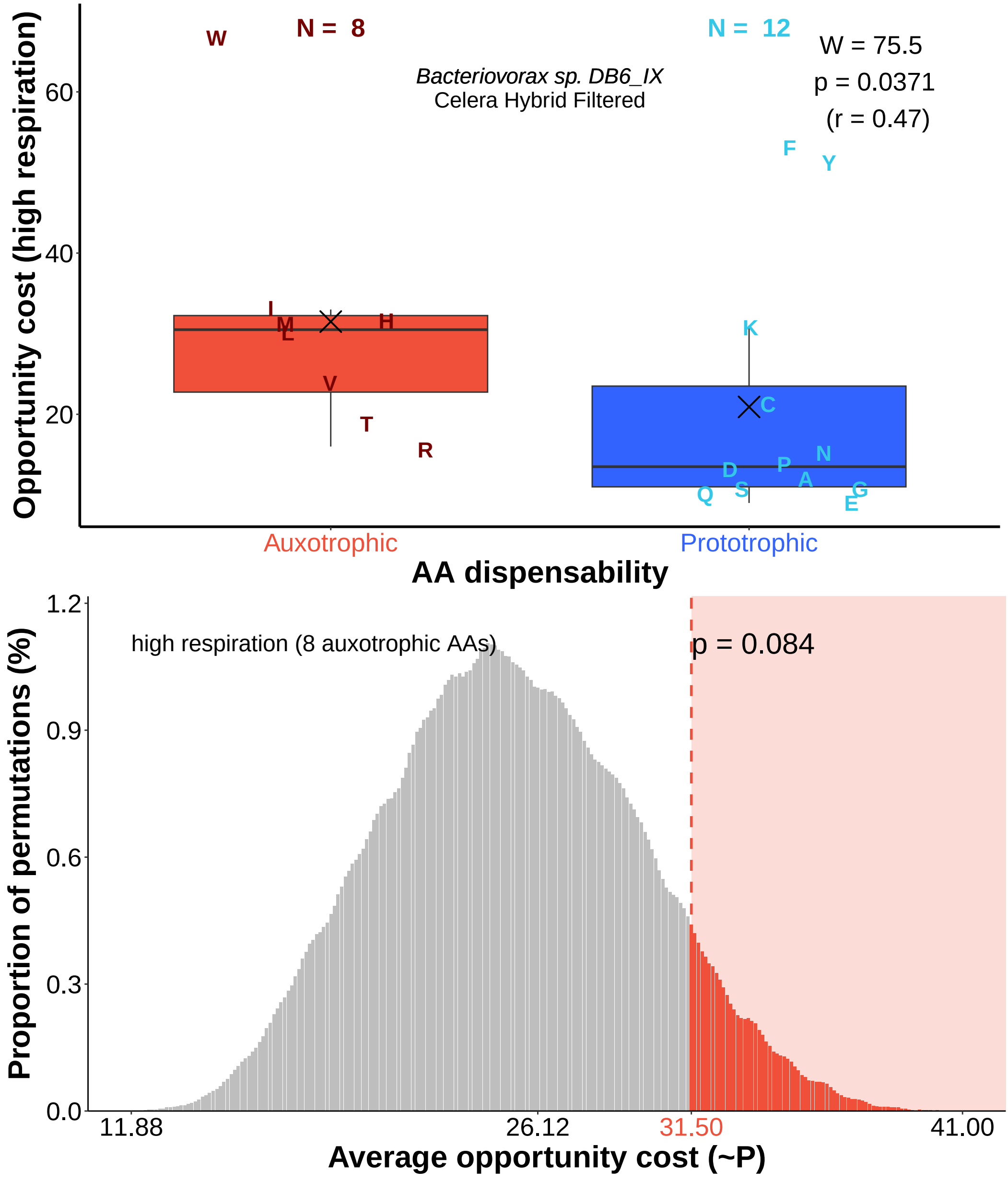
11.88

26.12

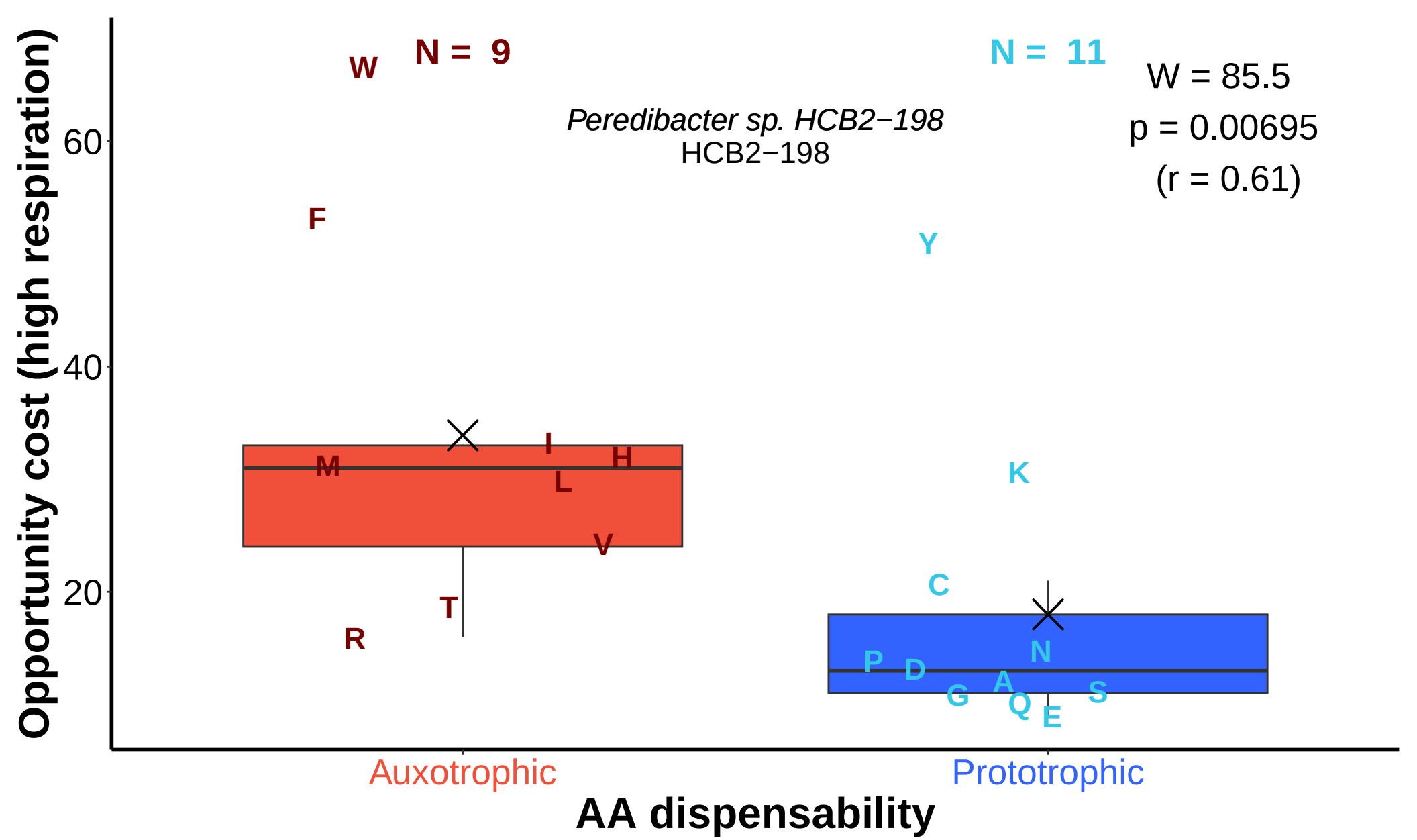
31.50

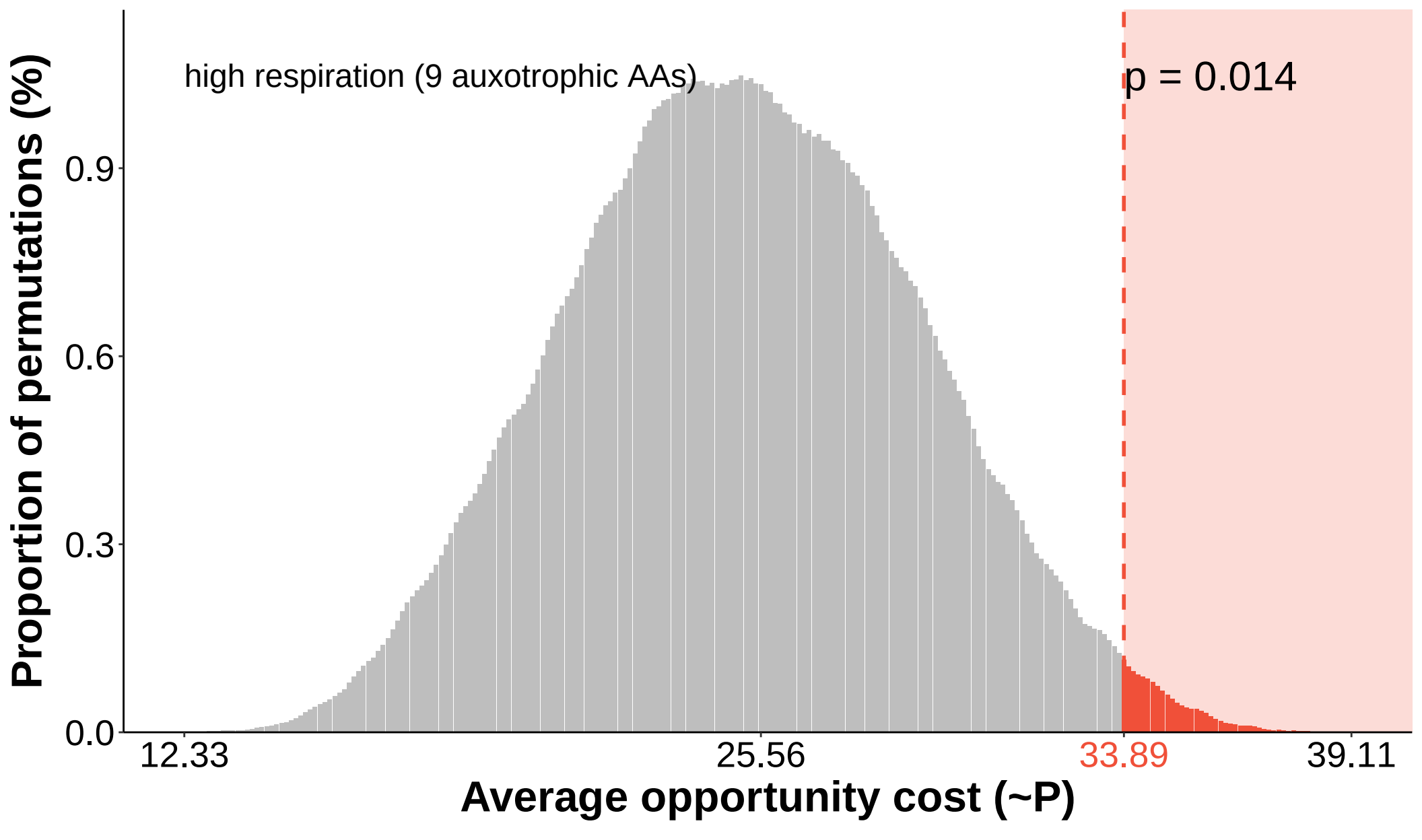
41.00

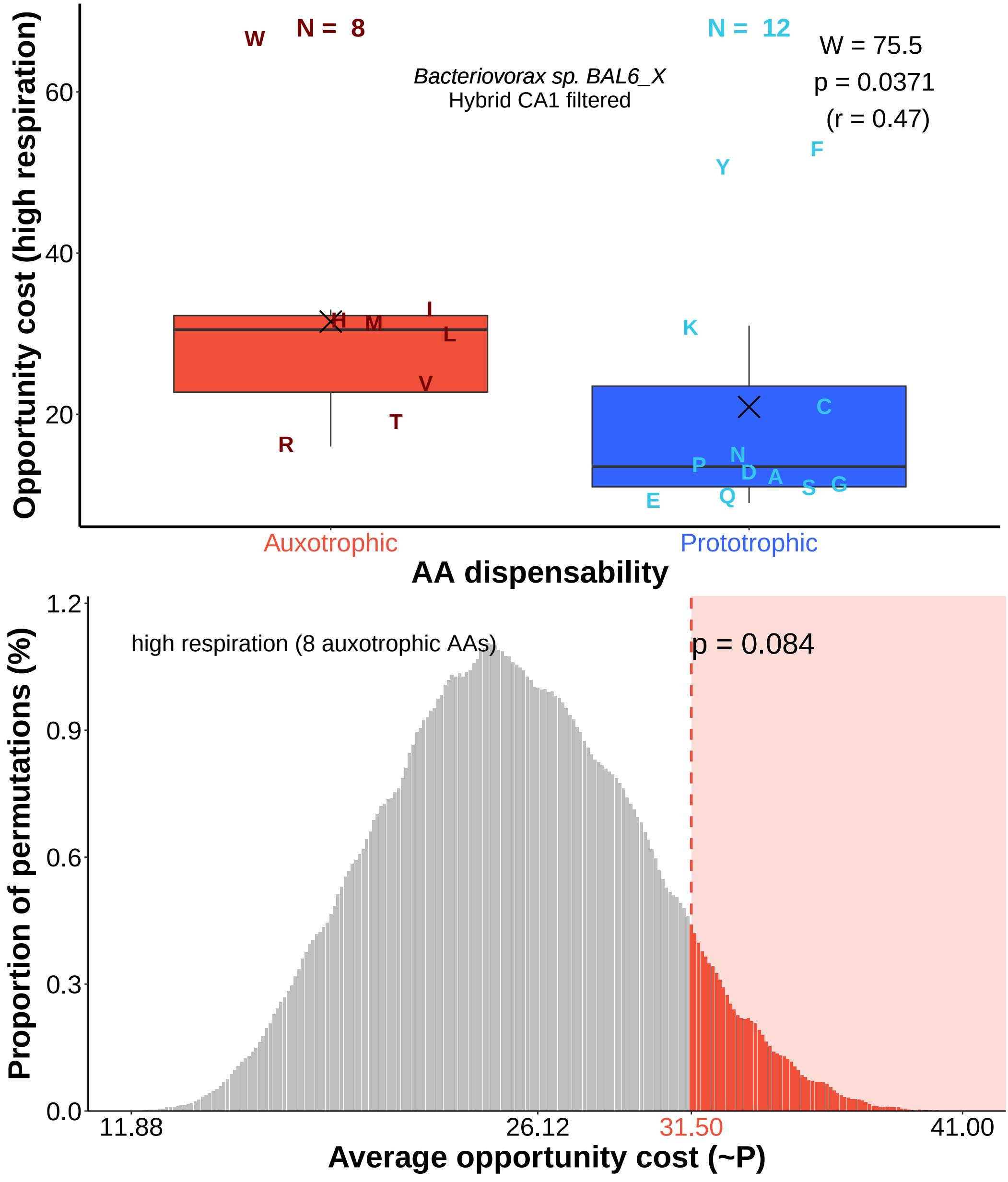
Average opportunity cost (~P)



Opportunity cost (high respiration)
60
40
20
W
N = 8
N = 12
W = 75.5
p = 0.0371
(r = 0.47)
Bacteriovorax sp. DB6_IX
Celera Hybrid Filtered
F
Y
I
M
L
H
V
T
R
K
C
N
D
P
A
Q
S
G
E
Auxotrophic
Prototrophic
AA dispensability
Proportion of permutations (%)
1.2
0.9
0.6
0.3
0.0
high respiration (8 auxotrophic AAs)
p = 0.084
11.88
26.12
31.50
41.00
Average opportunity cost (~P)


N = 9
N = 11
W = 85.5
p = 0.00695
(r = 0.61)
Peredibacter sp. HCB2−198
HCB2−198
Opportunity cost (high respiration)
60
40
20
W
F
Y
K
C
M
I
H
L
V
T
R
P
D
N
A
G
Q
S
E
Auxotrophic
Prototrophic
AA dispensability


high respiration (9 auxotrophic AAs)
p = 0.014
Proportion of permutations (%)
0.9
0.6
0.3
0.0
12.33
25.56
33.89
39.11
Average opportunity cost (~P)


N = 8
N = 12
W = 75.5
p = 0.0371
(r = 0.47)
Bacteriovorax sp. BAL6_X
Hybrid CA1 filtered
W
F
Y
K
I
H
M
L
V
T
R
C
N
P
D
A
S
G
E
Q
Opportunity cost (high respiration)
60
40
20
Auxotrophic
Prototrophic
AA dispensability
high respiration (8 auxotrophic AAs)
p = 0.084
Proportion of permutations (%)
1.2
0.9
0.6
0.3
0.0
11.88
26.12
31.50
41.00
Average opportunity cost (~P)

N = 8 W

N = 12

Bacteriovorax sp. BSW11_IV
Hybrid Newbler filtered

W = 75.5
p = 0.0371
(r = 0.47)

Opportunity cost (high respiration)

60
40
20

F
Y

H
I
M
L
V
T
R

K
C
P
N
D
S
G
A
Q
E

Auxotrophic
Prototrophic

AA dispensability

high respiration (8 auxotrophic AAs)

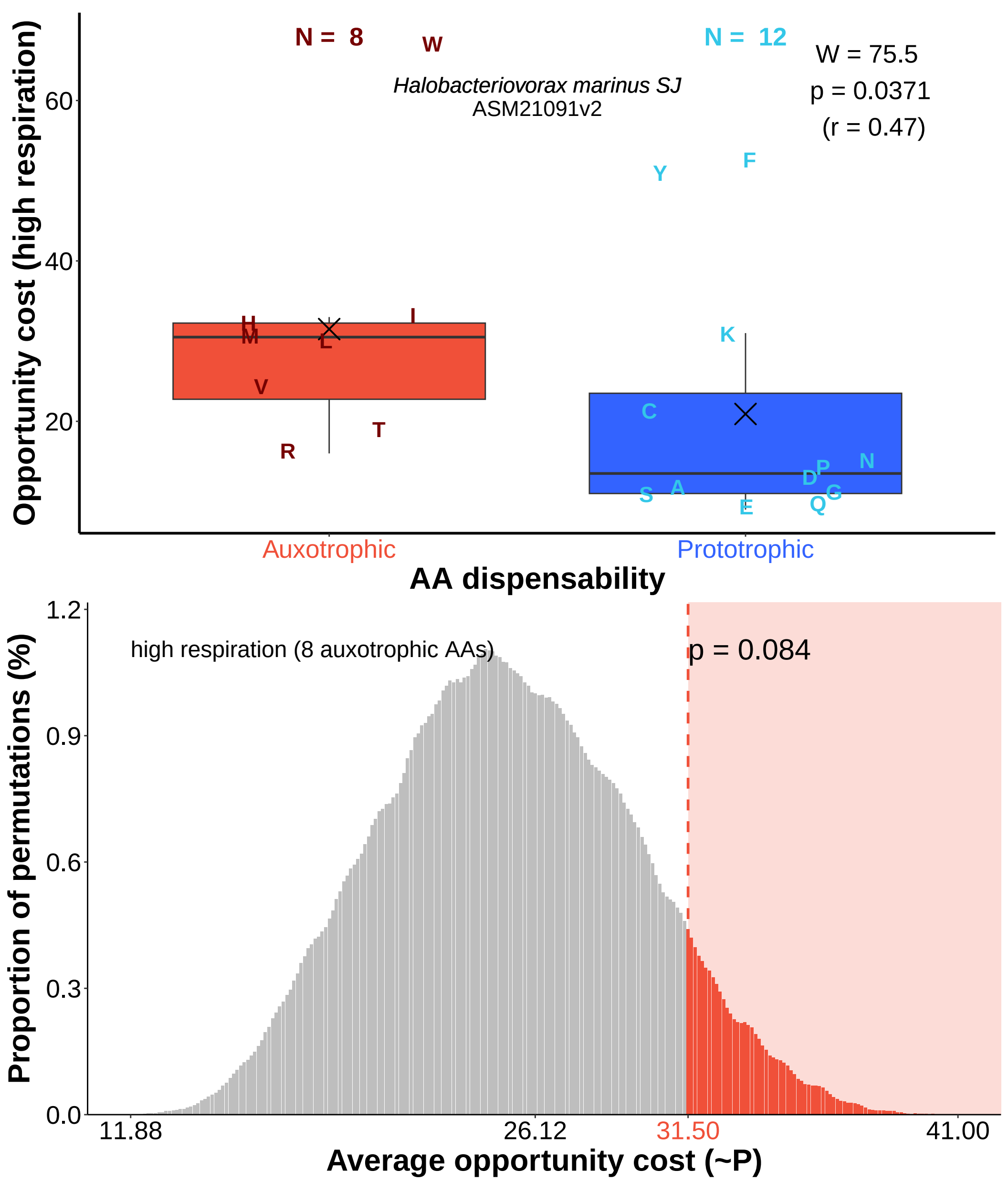
p = 0.084

Proportion of permutations (%)

1.2
0.9
0.6
0.3
0.0

11.88
26.12
31.50
41.00

Average opportunity cost (~P)



N = 8
W
N = 12
W = 75.5
p = 0.0371
(r = 0.47)
Halobacteriovorax marinus SJ
ASM21091v2
Y
F
H
M
L
I
V
R
T
K
C
N
P
D
S
A
G
E
Q
Opportunity cost (high respiration)
60
40
20
Auxotrophic
Prototrophic
AA dispensability
high respiration (8 auxotrophic AAs)
p = 0.084
Proportion of permutations (%)
1.2
0.9
0.6
0.3
0.0
11.88
26.12
31.50
41.00
Average opportunity cost (~P)

N = 8

N = 12

W = 75.5

p = 0.0371

(r = 0.47)

Halobacteriovorax marinus
ASM244287v1

Opportunity cost (high respiration)

60

40

20

I

L

M

H

V

T

R

F

Y

K

C

N

D

A

G

P

Q

E

S

Auxotrophic

Prototrophic

AA dispensability

high respiration (8 auxotrophic AAs)

p = 0.084

Proportion of permutations (%)

1.2

0.9

0.6

0.3

0.0

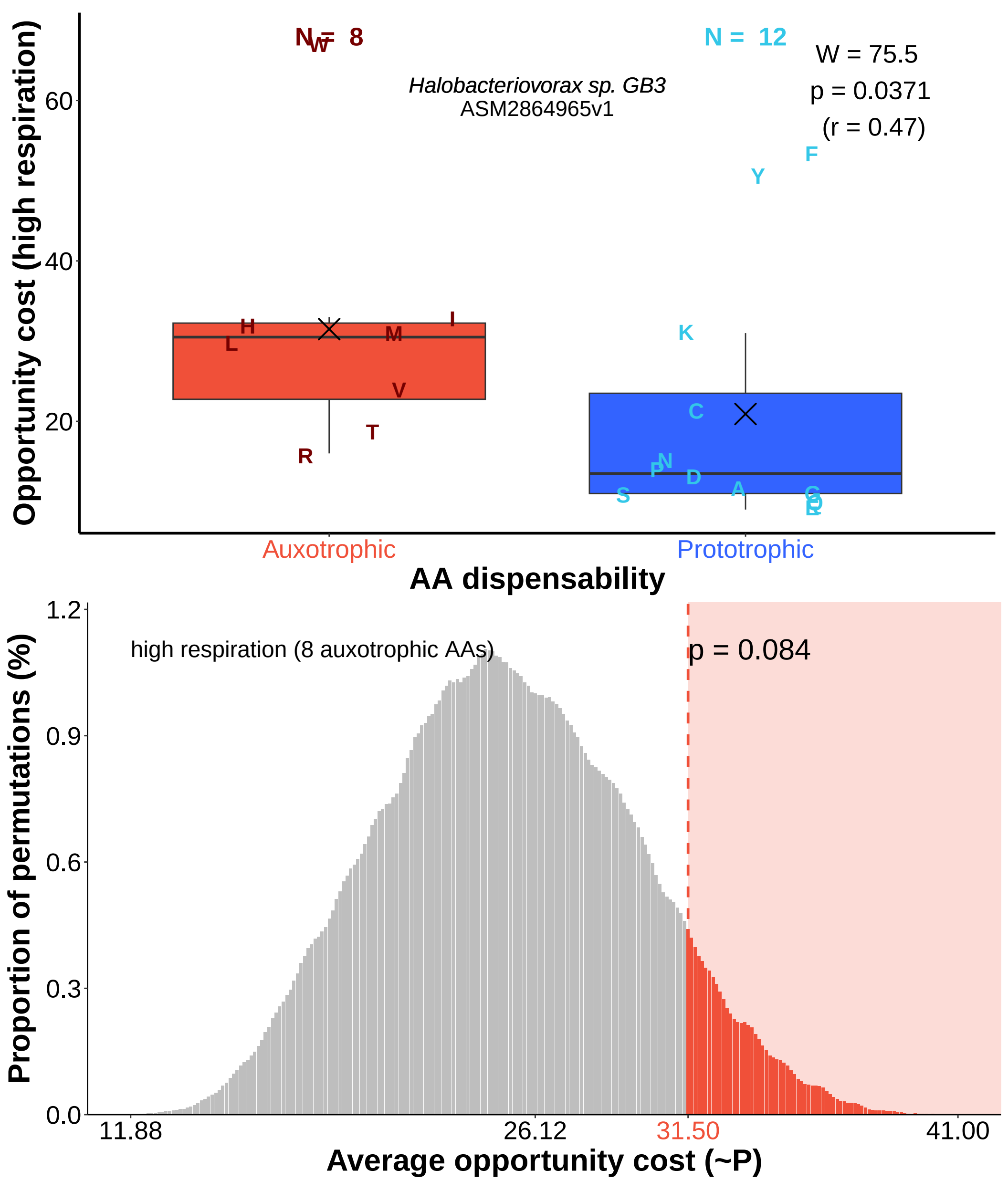
11.88

26.12

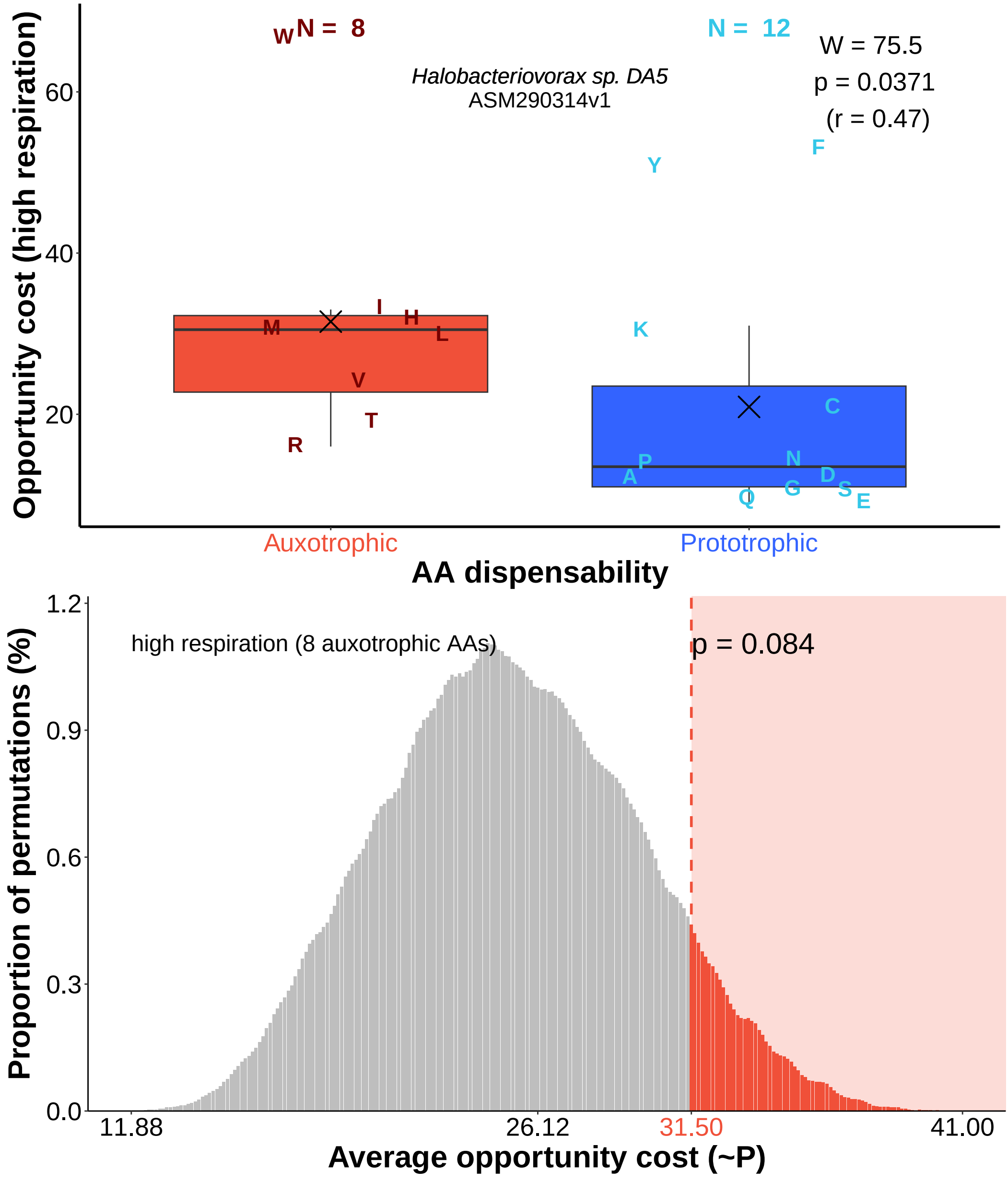
31.50

41.00

Average opportunity cost (~P)



N = 8
N = 12
W = 75.5
p = 0.0371
(r = 0.47)
Halobacteriovorax sp. GB3
ASM2864965v1
Opportunity cost (high respiration)
60
40
20
H
L
M
I
V
T
R
K
C
N
P
D
S
A
F
Y
Auxotrophic
Prototrophic
AA dispensability
high respiration (8 auxotrophic AAs)
p = 0.084
Proportion of permutations (%)
1.2
0.9
0.6
0.3
0.0
11.88
26.12
31.50
41.00
Average opportunity cost (~P)


wN = 8
N = 12
Halobacteriovorax sp. DA5
ASM290314v1
W = 75.5
p = 0.0371
(r = 0.47)
Opportunity cost (high respiration)
60
40
20
F
Y
K
I
H
M
L
V
T
R
C
P
N
A
D
G
S
Q
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (8 auxotrophic AAs)
p = 0.084
Proportion of permutations (%)
1.2
0.9
0.6
0.3
0.0
11.88
26.12
31.50
41.00
Average opportunity cost (~P)

N = 8

N = 12

W = 75.5

p = 0.0371

(r = 0.47)

Halobacteriovorax vibrionivorans
ASM334686v1

Opportunity cost (high respiration)

60

40

20

H L M I V R T

F Y K C P N D A Q E S G

Auxotrophic

Prototrophic

AA dispensability

high respiration (8 auxotrophic AAs)

p = 0.084

Proportion of permutations (%)

1.2

0.9

0.6

0.3

0.0

11.88

26.12

31.50

41.00

Average opportunity cost (~P)

N = 8

N = 12

W

W = 75.5

p = 0.0371

(r = 0.47)

Halobacteriovorax sp. BALOs_7
ASM361289v1

Y

F

Opportunity cost (high respiration)

60

40

20

I

L

M

H

V

T

R

K

C

P

D

N

A

S

G

Q

E

Auxotrophic

Prototrophic

AA dispensability

1.2

0.9

0.6

0.3

0.0

high respiration (8 auxotrophic AAs)

p = 0.084

Proportion of permutations (%)

11.88

26.12

31.50

41.00

Average opportunity cost (~P)

N = 8

W

N = 12

W = 75.5

p = 0.0371

(r = 0.47)

Halobacteriovorax sp. DPLXC−1
ASM3690312v1

F

Y

Opportunity cost (high respiration)

60

40

20

H M L

I

V

T

R

K

C

N

D A

G

S

Q E

Auxotrophic

Prototrophic

AA dispensability

high respiration (8 auxotrophic AAs)

p = 0.084

Proportion of permutations (%)

1.2

0.9

0.6

0.3

0.0

11.88

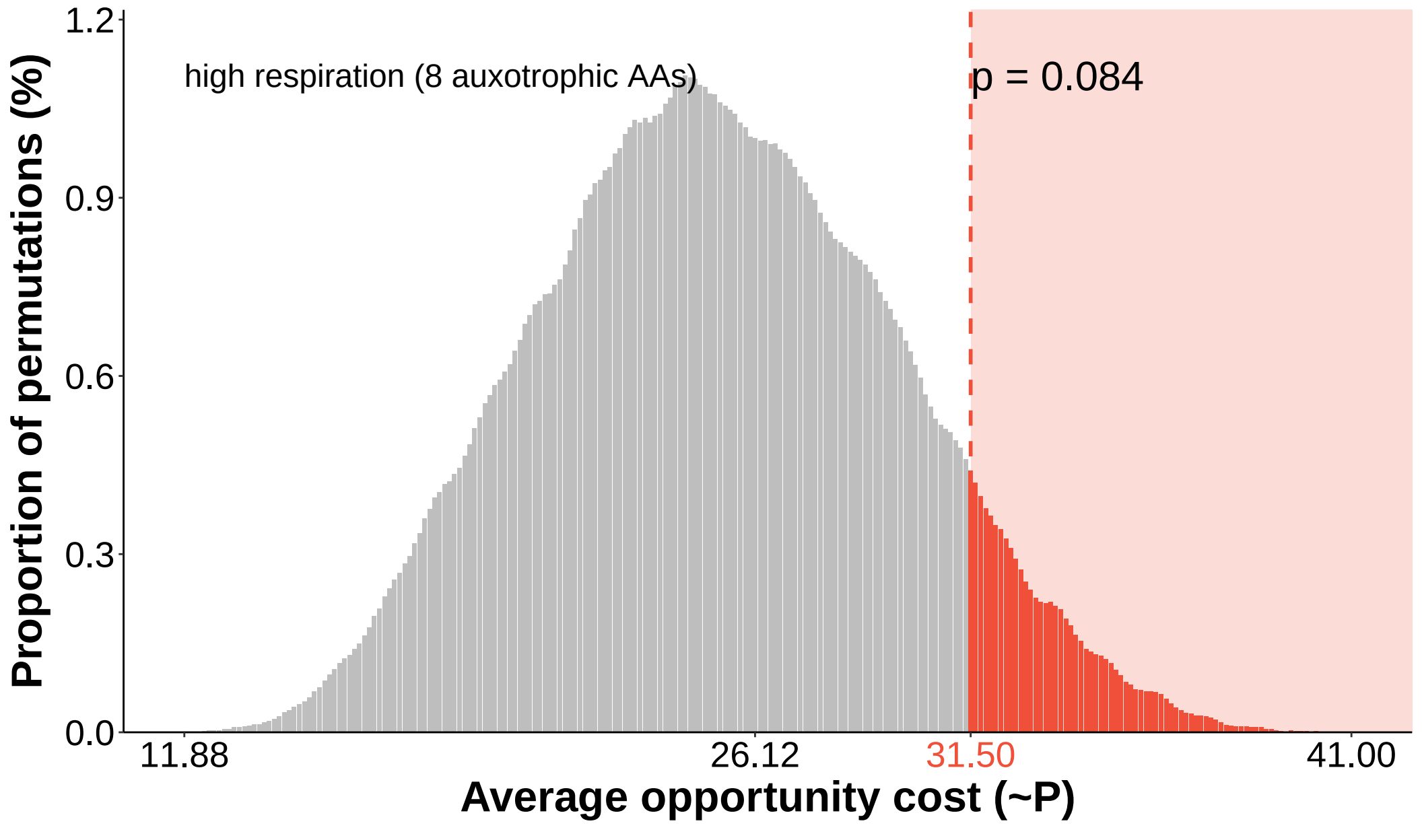
26.12

31.50

41.00

Average opportunity cost (~P)

N = 8
N = 12
W = 75.5
p = 0.0371
(r = 0.47)
Halobacteriovorax sp. ZH5_bin.2
ASM4319637v1
Opportunity cost (high respiration)
60
40
20
I
H
M
L
V
T
R
F
Y
K
C
N
P
D
S
G
Q
A
E
Auxotrophic
Prototrophic
AA dispensability


high respiration (8 auxotrophic AAs)
p = 0.084
Proportion of permutations (%)
1.2
0.9
0.6
0.3
0.0
11.88
26.12
31.50
41.00
Average opportunity cost (~P)

N = 8

N = 12

W = 75.5

p = 0.0371

(r = 0.47)

Halobacteriovorax sp. ZH3_bin.1
ASM4319643v1

Opportunity cost (high respiration)

60

40

20

W

F

Y

H

I

L

M

V

T

R

K

C

N

P

D

A

S

E

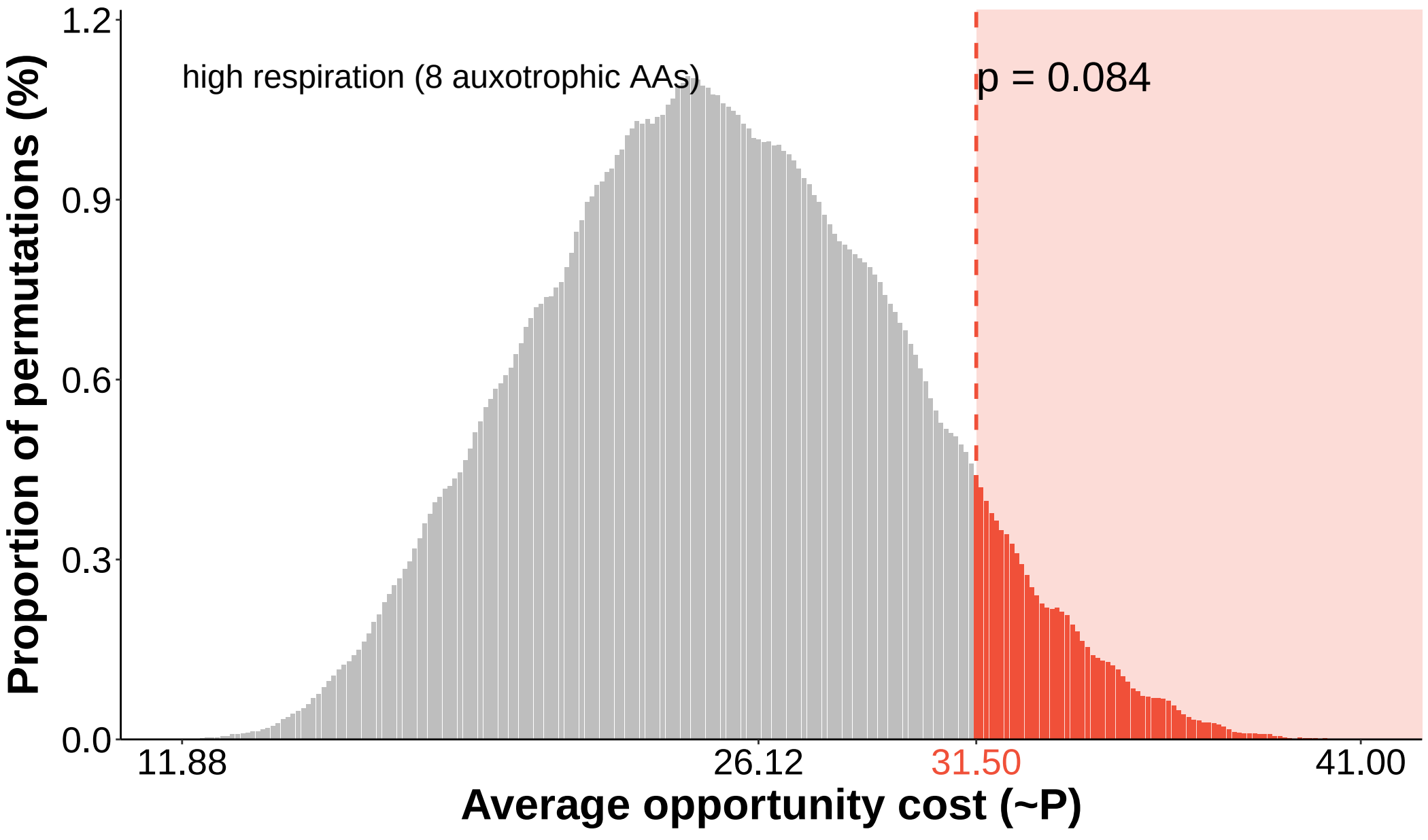
Q

G

Auxotrophic

Prototrophic

AA dispensability



N = 8

N = 12

Halobacteriovorax sp. ZH1_bin.1
ASM4319645v1

W = 75.5
p = 0.0371
(r = 0.47)

Opportunity cost (high respiration)

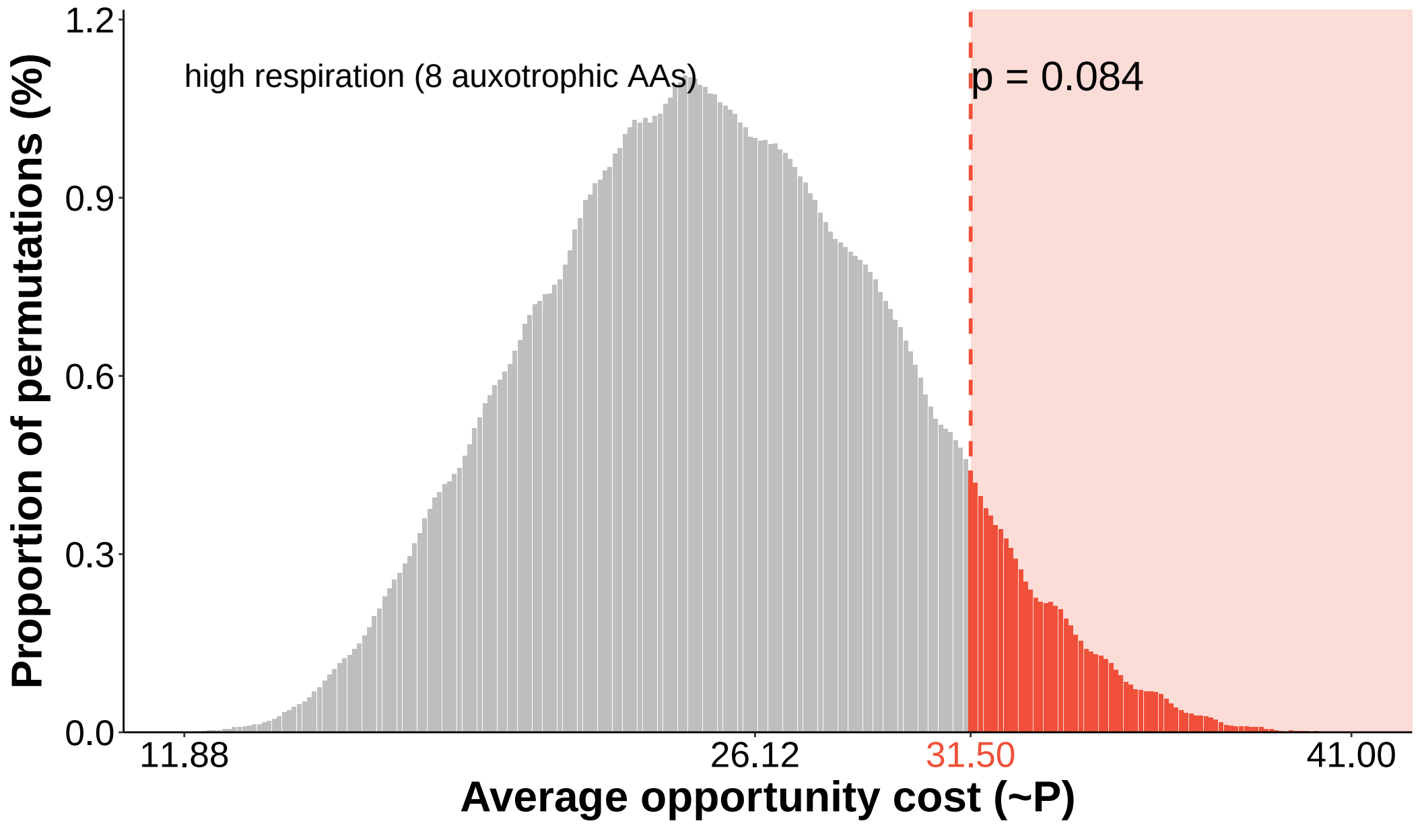
60
40
20

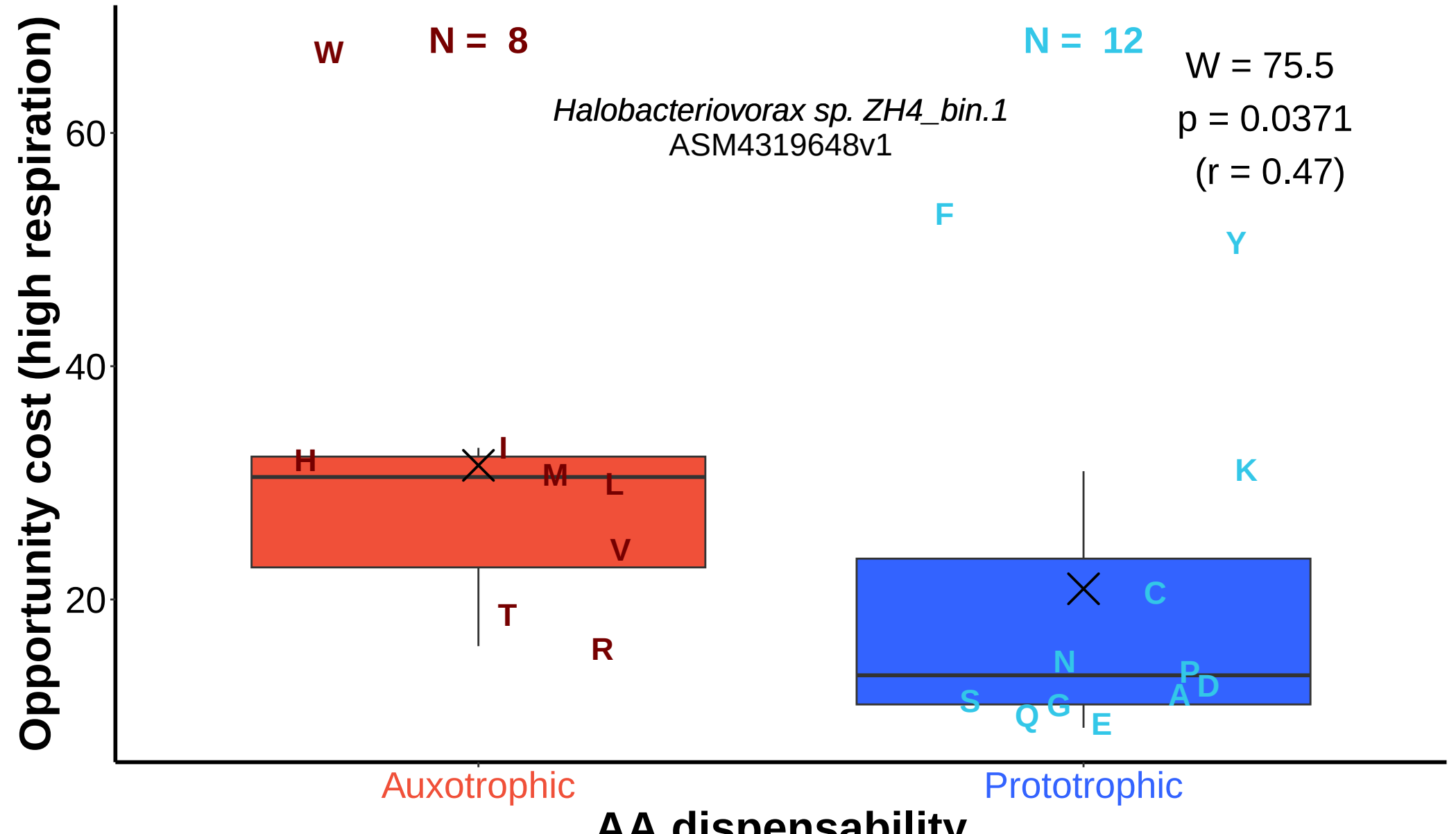
I
M
L
H
V
T
R

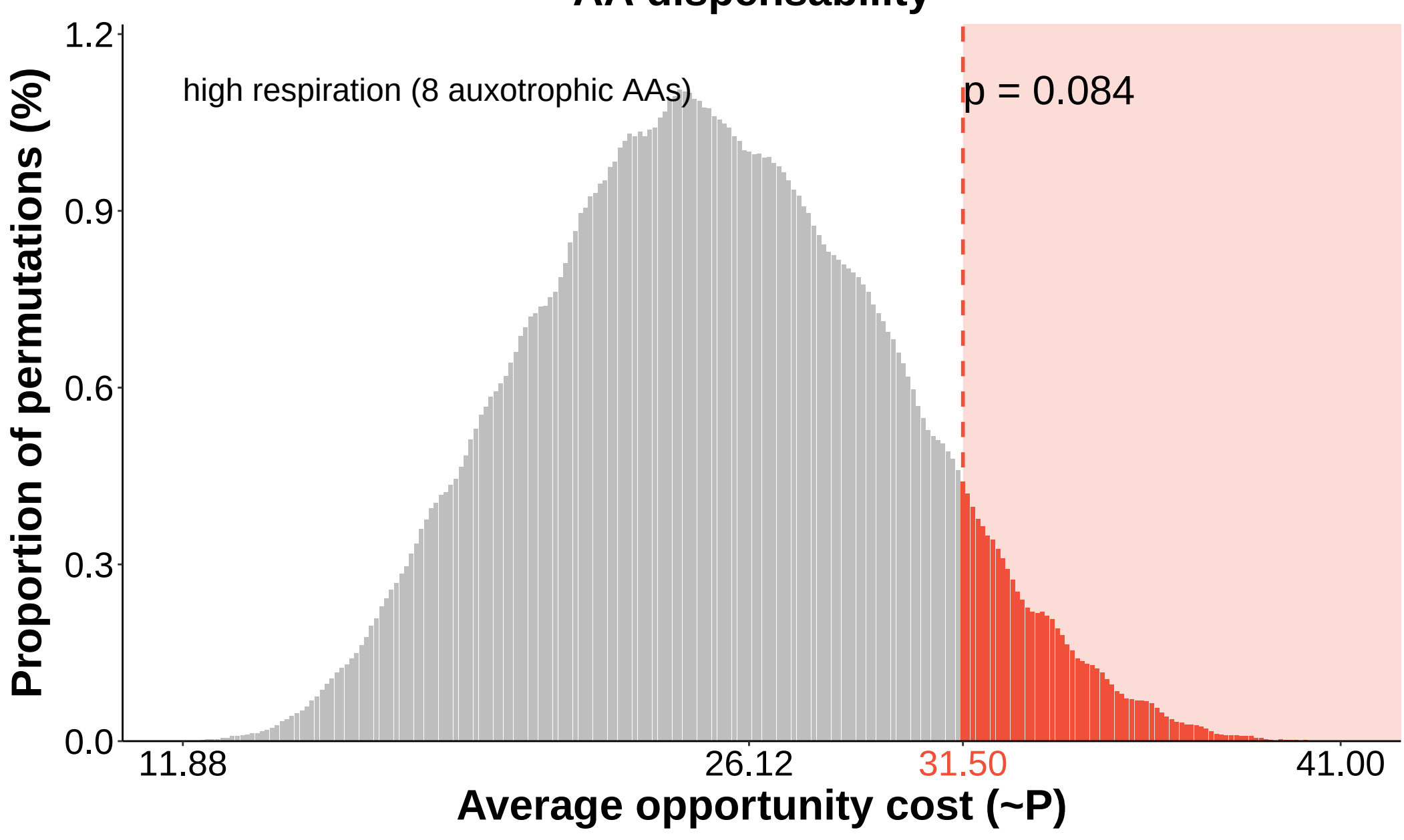
K
C
N
P
D
A
G
Q
S
E
F
Y

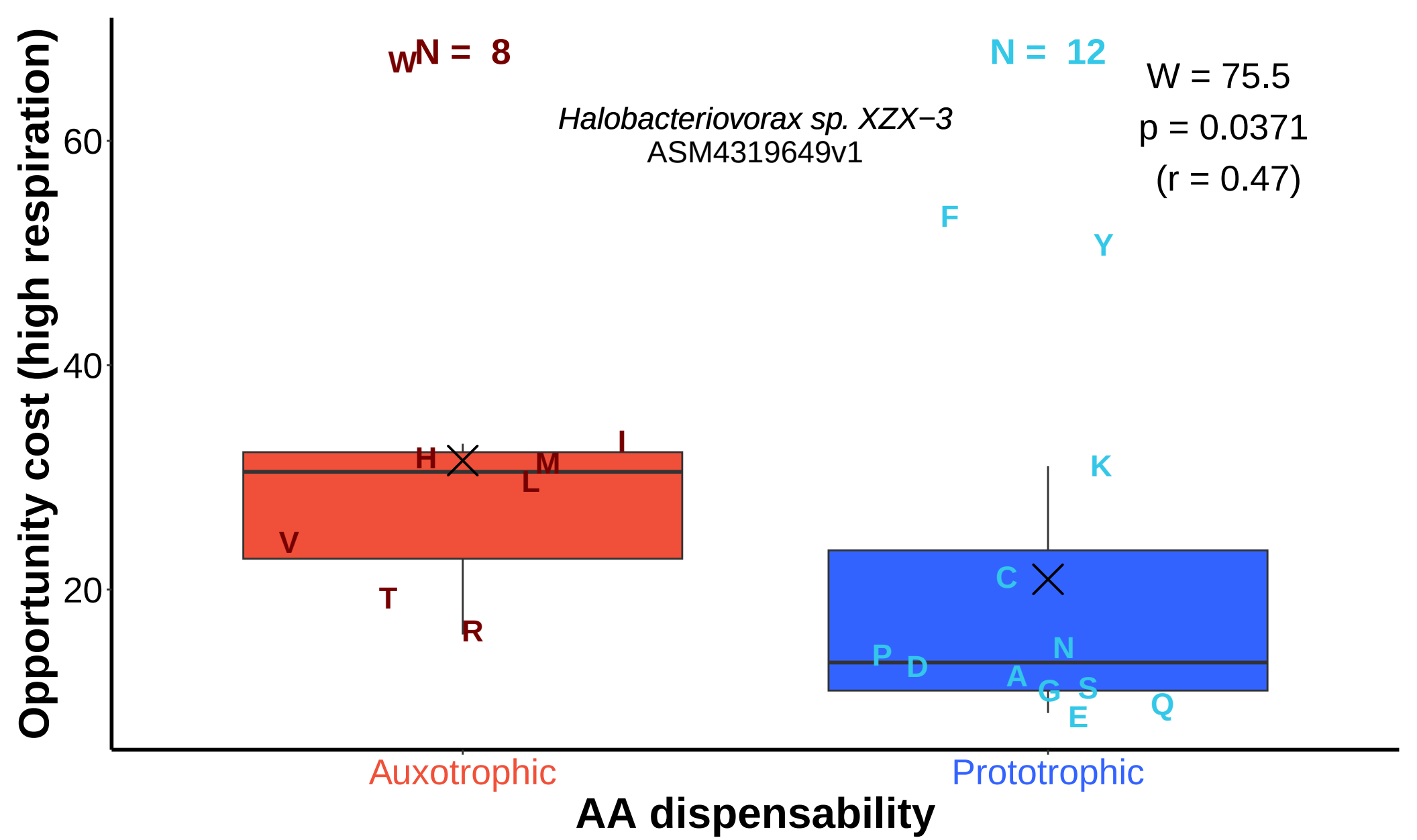
Auxotrophic
Prototrophic

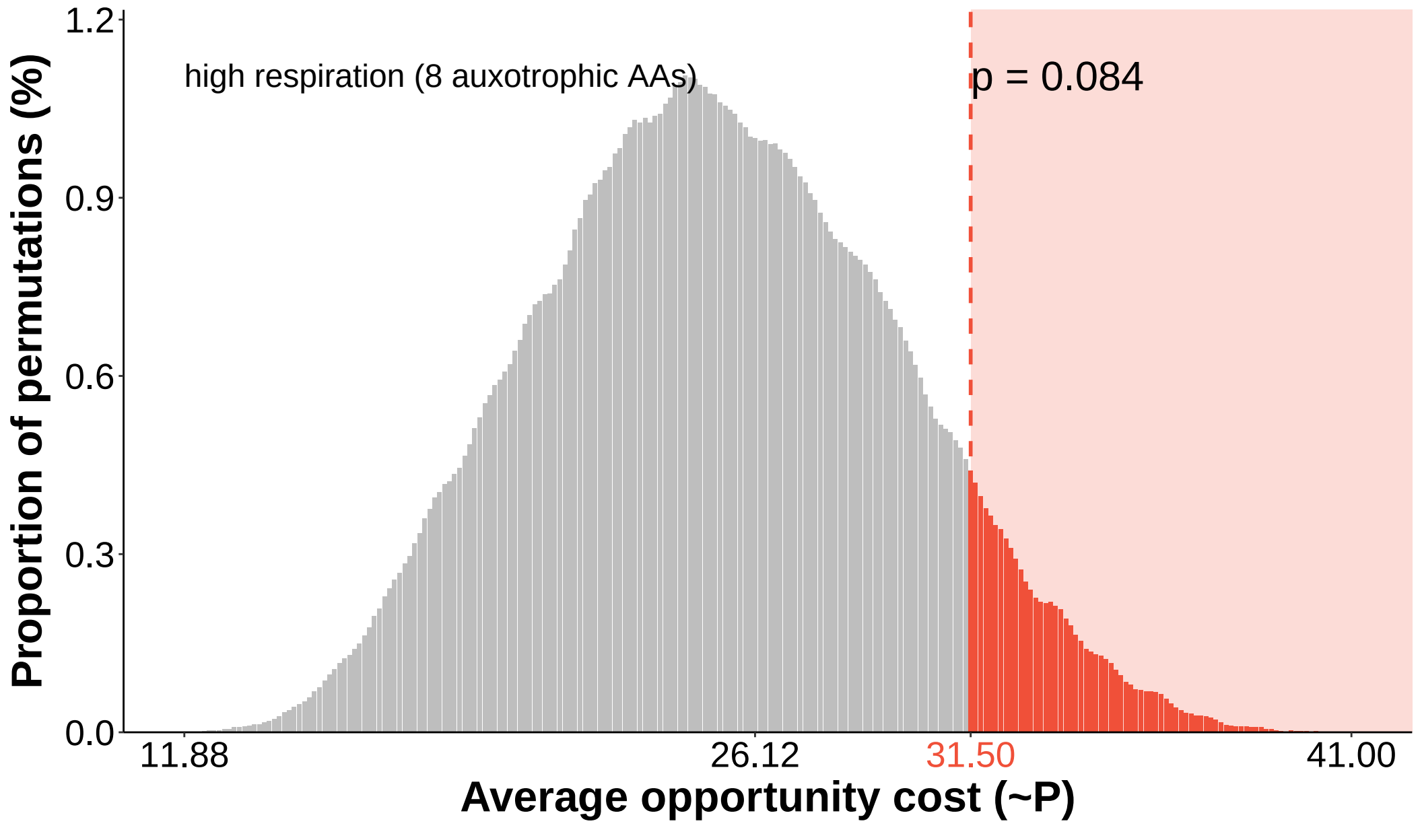
AA dispensability

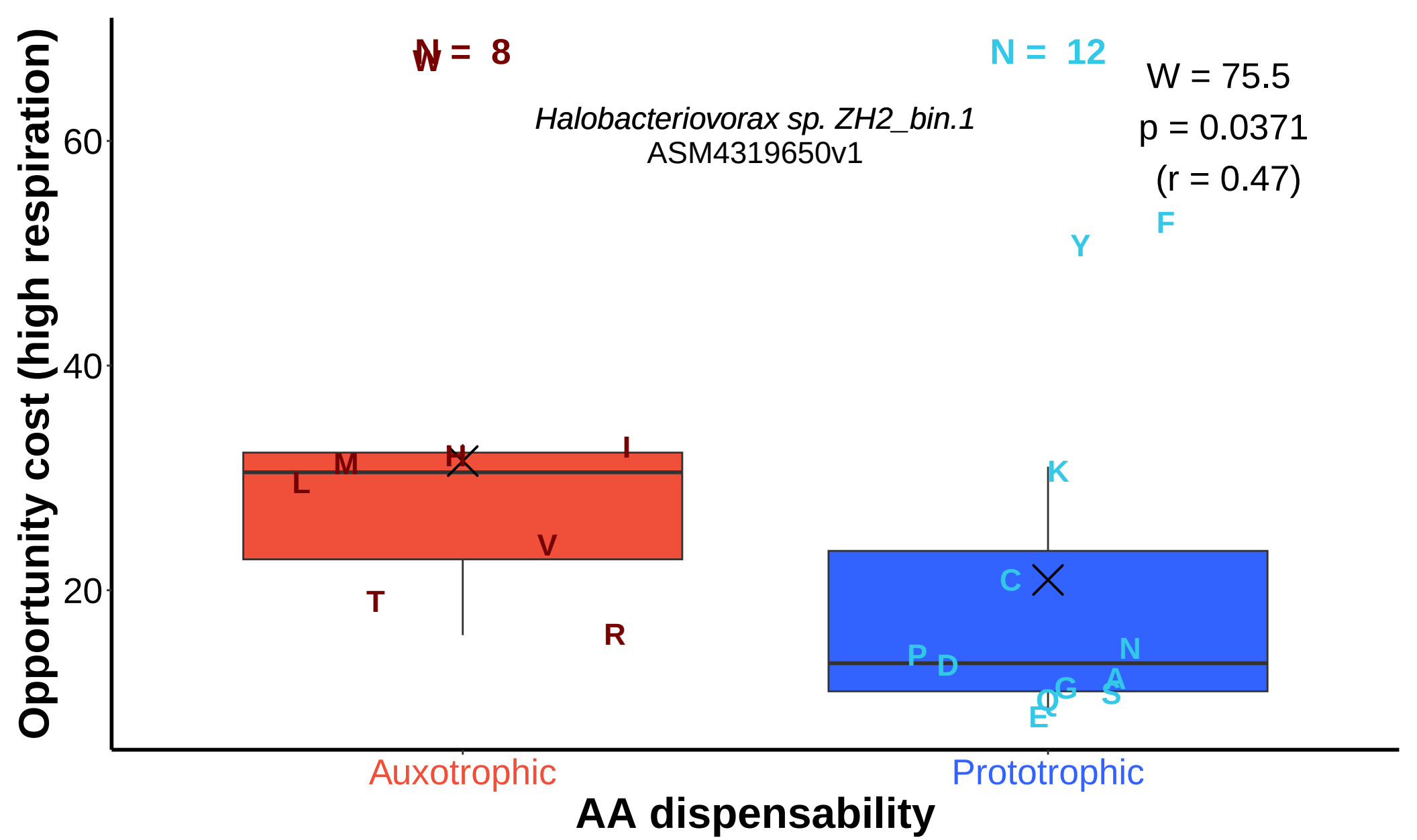



W
N = 8
N = 12
W = 75.5
p = 0.0371
(r = 0.47)
Halobacteriovorax sp. ZH4_bin.1
ASM4319648v1
F
Y
K
H
I
M
L
V
T
R
C
N
P
D
A
S
Q
G
E
60
40
20
Opportunity cost (high respiration)
Auxotrophic
Prototrophic
AA dispensability

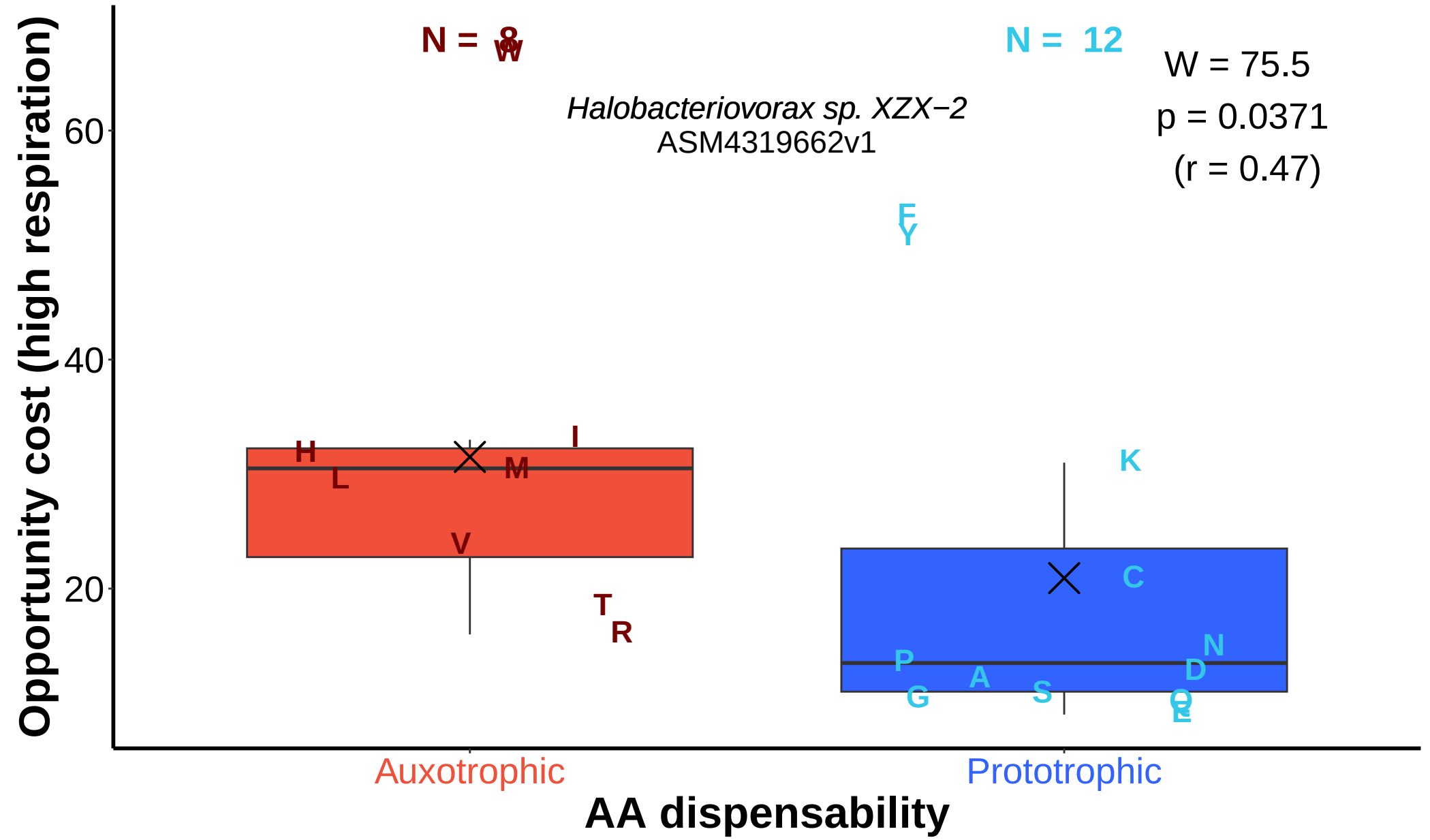

high respiration (8 auxotrophic AAs)
p = 0.084
1.2
0.9
0.6
0.3
0.0
Proportion of permutations (%)
11.88
26.12
31.50
41.00
Average opportunity cost (~P)

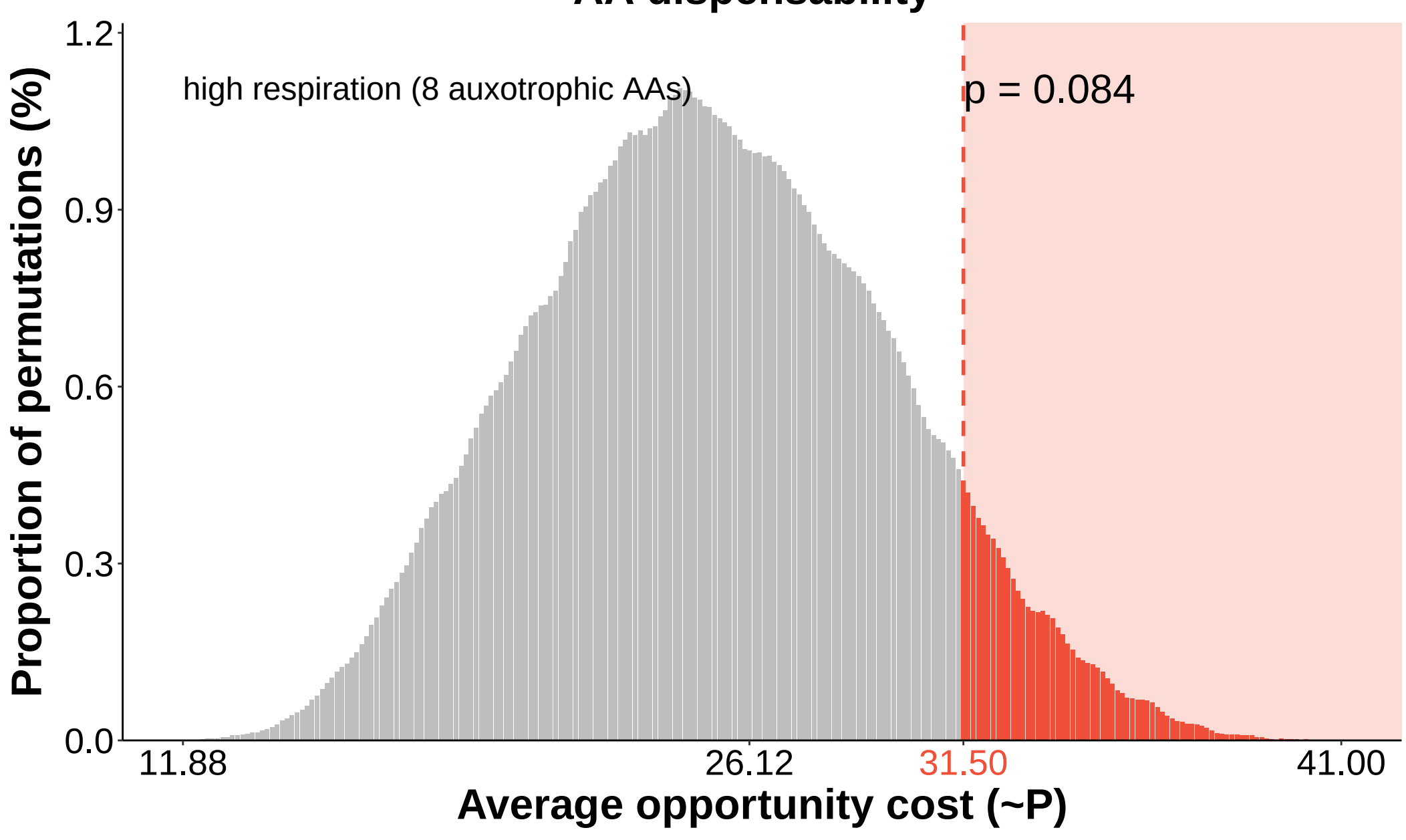

N = 8
N = 12
W = 75.5
p = 0.0371
(r = 0.47)
Halobacteriovorax sp. XZX−3
ASM4319649v1
Opportunity cost (high respiration)
60
40
20
H
M
L
I
V
T
R
F
Y
K
C
P
D
N
A
G
S
E
Q
Auxotrophic
Prototrophic
AA dispensability

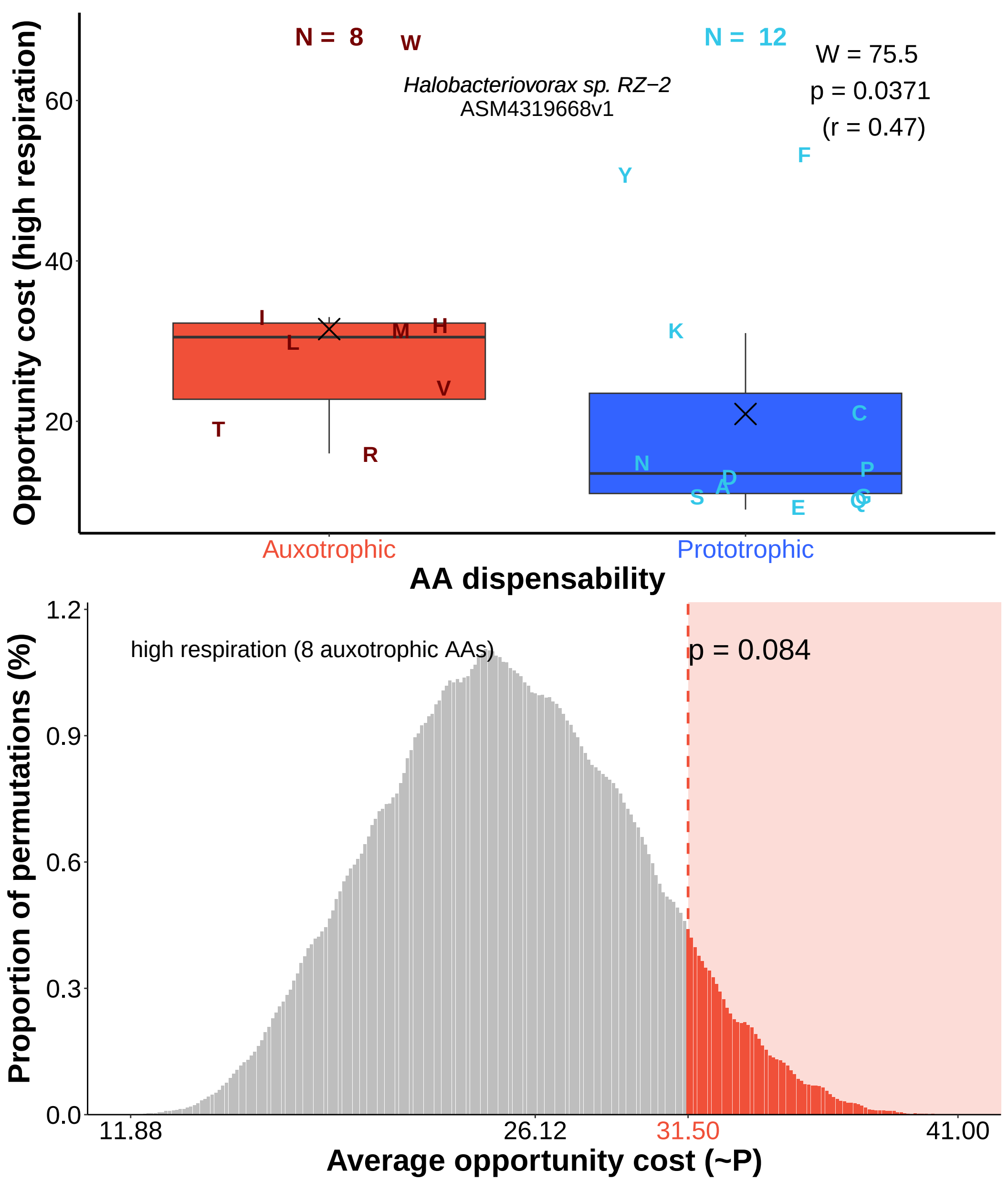

high respiration (8 auxotrophic AAs)
p = 0.084
Proportion of permutations (%)
1.2
0.9
0.6
0.3
0.0
11.88
26.12
31.50
41.00
Average opportunity cost (~P)


N = 8
N = 12
W = 75.5
p = 0.0371
(r = 0.47)
Halobacteriovorax sp. ZH2_bin.1
ASM4319650v1
Opportunity cost (high respiration)
60
40
20
M
L
V
T
R
I
K
C
P
D
N
A
S
G
Q
E
F
Y
Auxotrophic
Prototrophic
AA dispensability

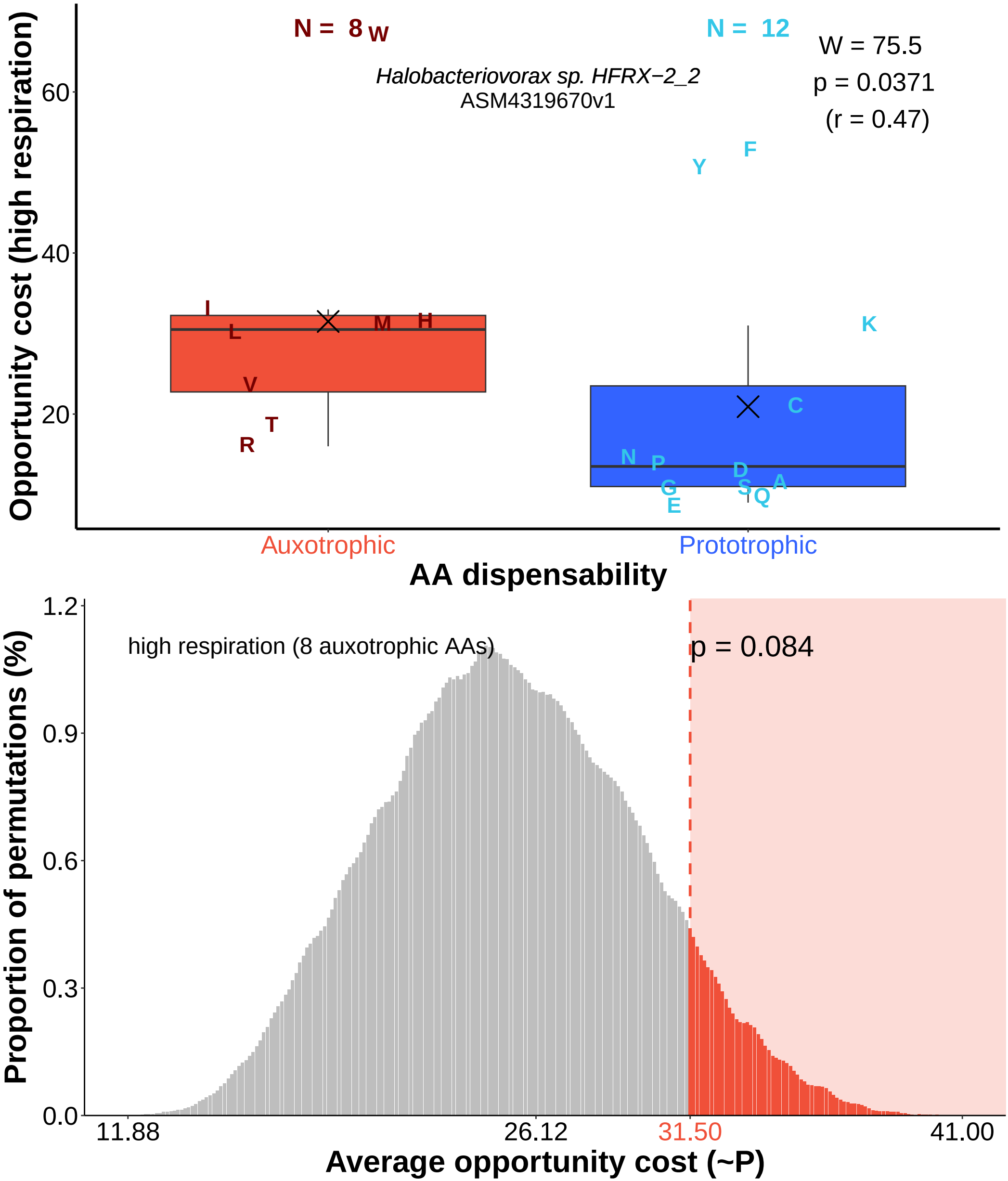
high respiration (8 auxotrophic AAs)
p = 0.084
Proportion of permutations (%)
1.2
0.9
0.6
0.3
0.0
11.88
26.12
31.50
41.00
Average opportunity cost (~P)


N = 8
N = 12
W = 75.5
p = 0.0371
(r = 0.47)
Halobacteriovorax sp. XZX−2
ASM4319662v1
Opportunity cost (high respiration)
60
40
20
H
L
M
I
V
T
R
K
C
P
A
G
S
N
D
Q
E
F
Y
Auxotrophic
Prototrophic
AA dispensability


high respiration (8 auxotrophic AAs)
p = 0.084
Proportion of permutations (%)
1.2
0.9
0.6
0.3
0.0
11.88
26.12
31.50
41.00
Average opportunity cost (~P)



N = 8
W
N = 12
W = 75.5
p = 0.0371
(r = 0.47)
Halobacteriovorax sp. RZ−2
ASM4319668v1
Opportunity cost (high respiration)
60
40
20
I
L
M
H
V
T
R
K
Y
F
C
N
D
A
P
S
E
G
Q
Auxotrophic
Prototrophic
AA dispensability
1.2
0.9
0.6
0.3
0.0
Proportion of permutations (%)
high respiration (8 auxotrophic AAs)
p = 0.084
11.88
26.12
31.50
41.00
Average opportunity cost (~P)



N = 8
W
N = 12
W = 75.5
p = 0.0371
(r = 0.47)
Halobacteriovorax sp. HFRX−2_2
ASM4319670v1
Opportunity cost (high respiration)
60
40
20
I
L
M
H
V
T
R
Y
F
K
C
N
P
D
G
S
A
Q
E
Auxotrophic
Prototrophic
AA dispensability
Proportion of permutations (%)
1.2
0.9
0.6
0.3
0.0
high respiration (8 auxotrophic AAs)
p = 0.084
11.88
26.12
31.50
41.00
Average opportunity cost (~P)

W N = 8

N = 12

Halobacteriovorax sp. RZ−3
ASM4319671v1

W = 75.5
p = 0.0371
(r = 0.47)

Opportunity cost (high respiration)

60
40
20

I H L M V T R

F Y K C N P D S A G Q E

Auxotrophic
Prototrophic

AA dispensability

high respiration (8 auxotrophic AAs)

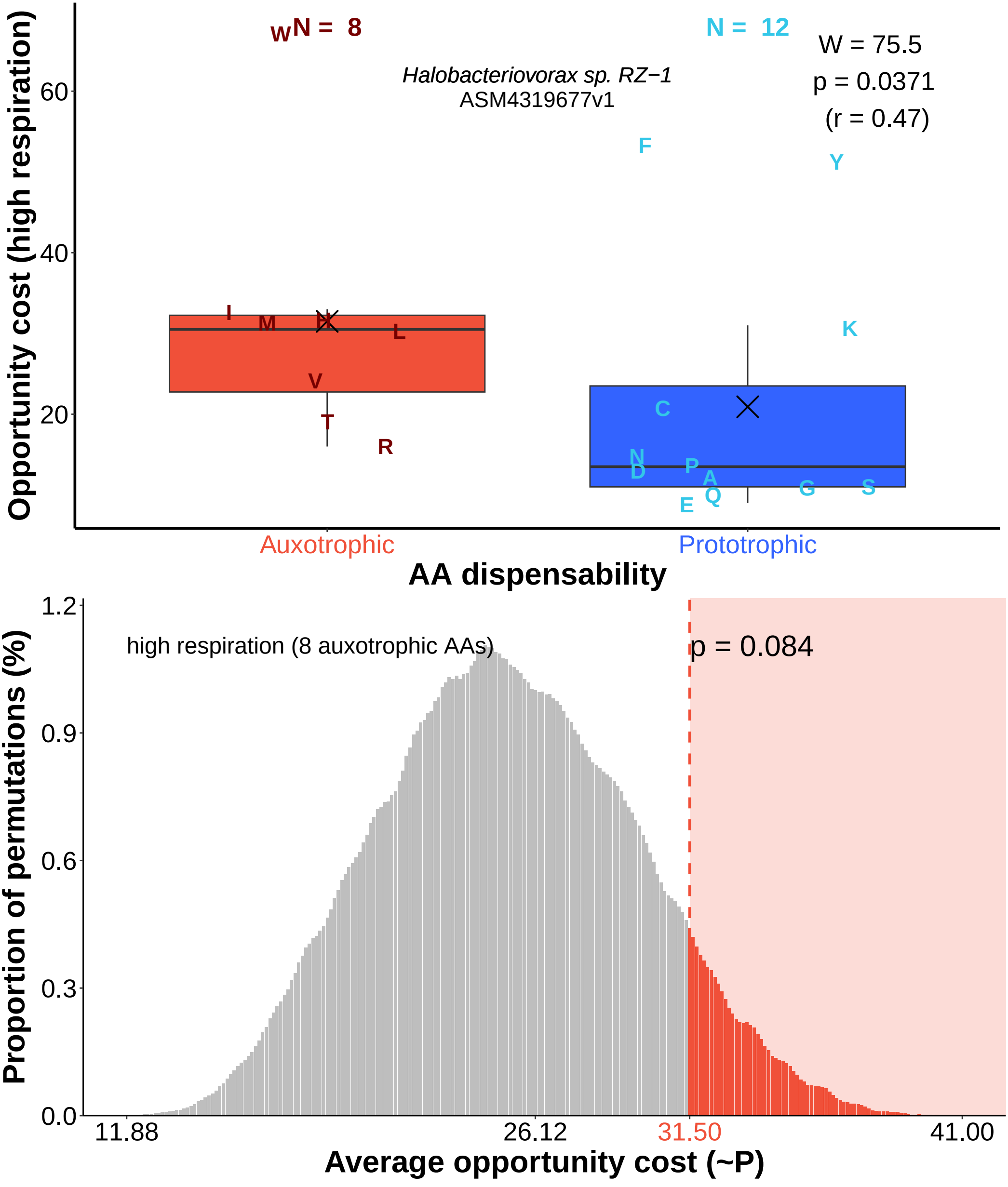
p = 0.084

Proportion of permutations (%)

1.2
0.9
0.6
0.3
0.0

11.88
26.12
31.50
41.00

Average opportunity cost (~P)


wN = 8
N = 12
W = 75.5
p = 0.0371
(r = 0.47)
Halobacteriovorax sp. RZ−1
ASM4319677v1
Opportunity cost (high respiration)
60
40
20
I
M
H
L
V
T
R
F
Y
K
C
N
D
P
A
Q
E
G
S
Auxotrophic
Prototrophic
AA dispensability
high respiration (8 auxotrophic AAs)
p = 0.084
Proportion of permutations (%)
1.2
0.9
0.6
0.3
0.0
11.88
26.12
31.50
41.00
Average opportunity cost (~P)

N = 8

N = 12

W

W = 75.5

p = 0.0371

(r = 0.47)

Halobacteriovorax sp. HFRX−1_3
ASM4319690v1

Opportunity cost (high respiration)

60

40

20

I

M

H

L

V

T

R

F

Y

K

C

N

P

D

A

S

G

Q

E

Auxotrophic

Prototrophic

AA dispensability

high respiration (8 auxotrophic AAs)

p = 0.084

Proportion of permutations (%)

1.2

0.9

0.6

0.3

0.0

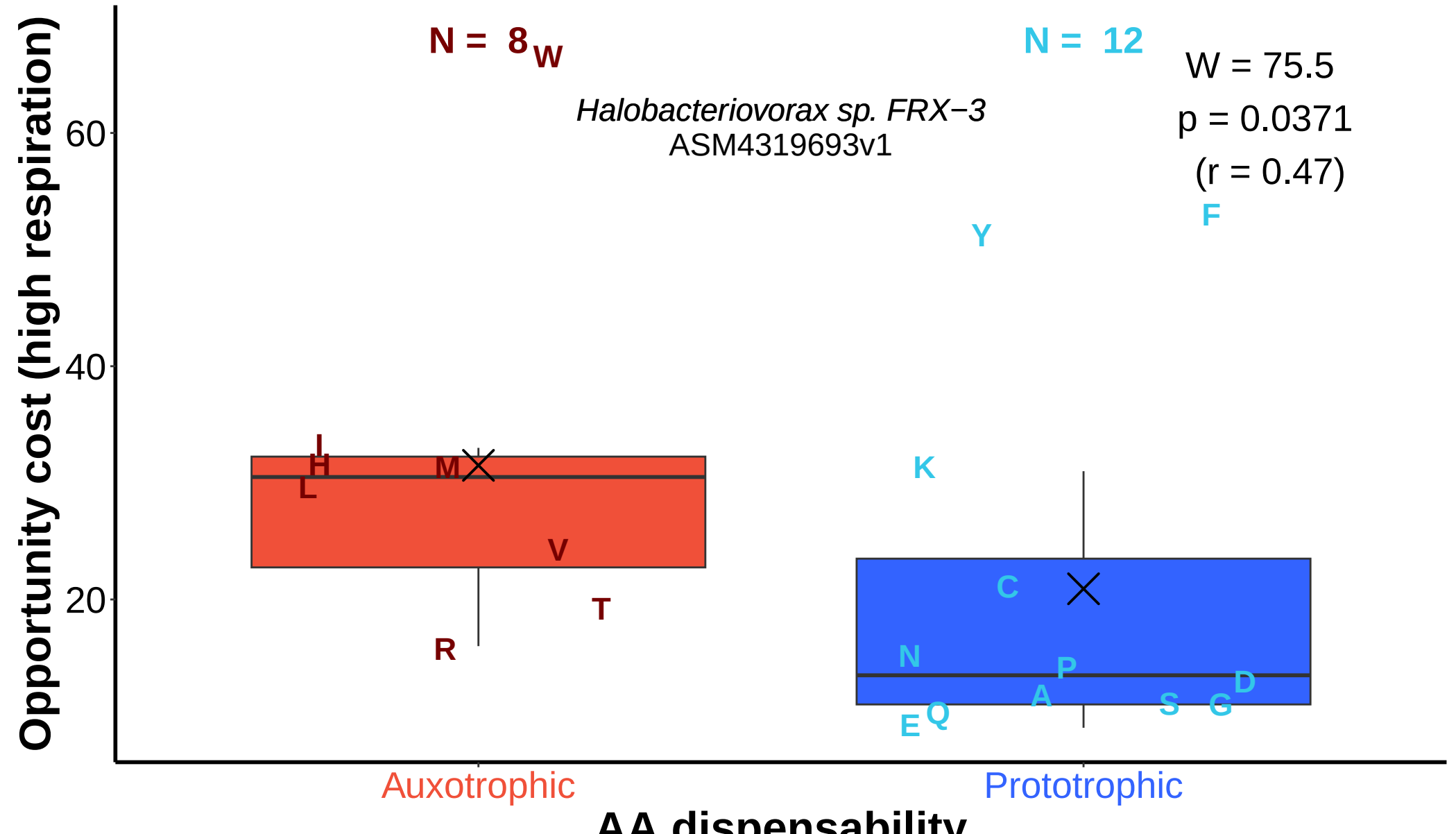
11.88

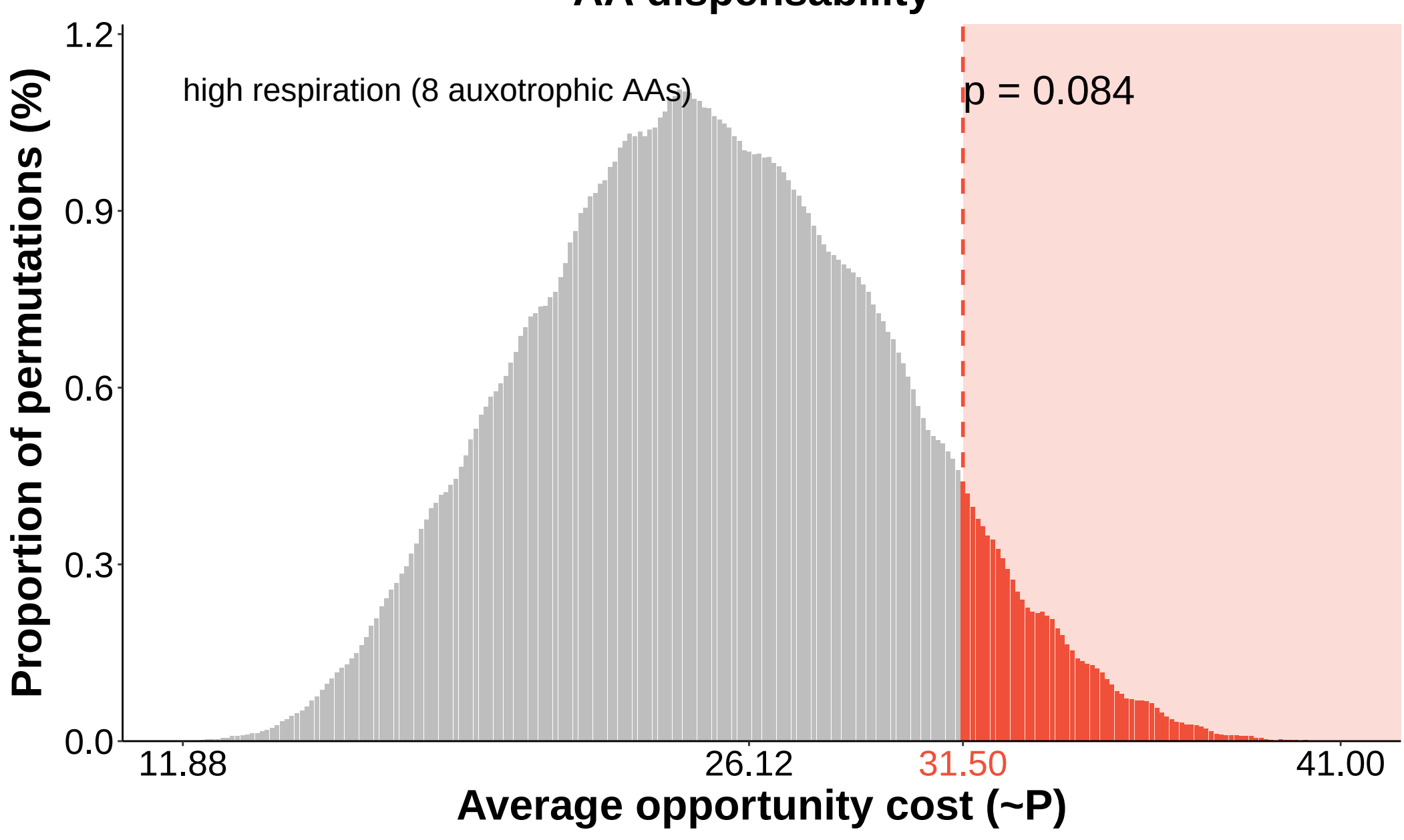
26.12

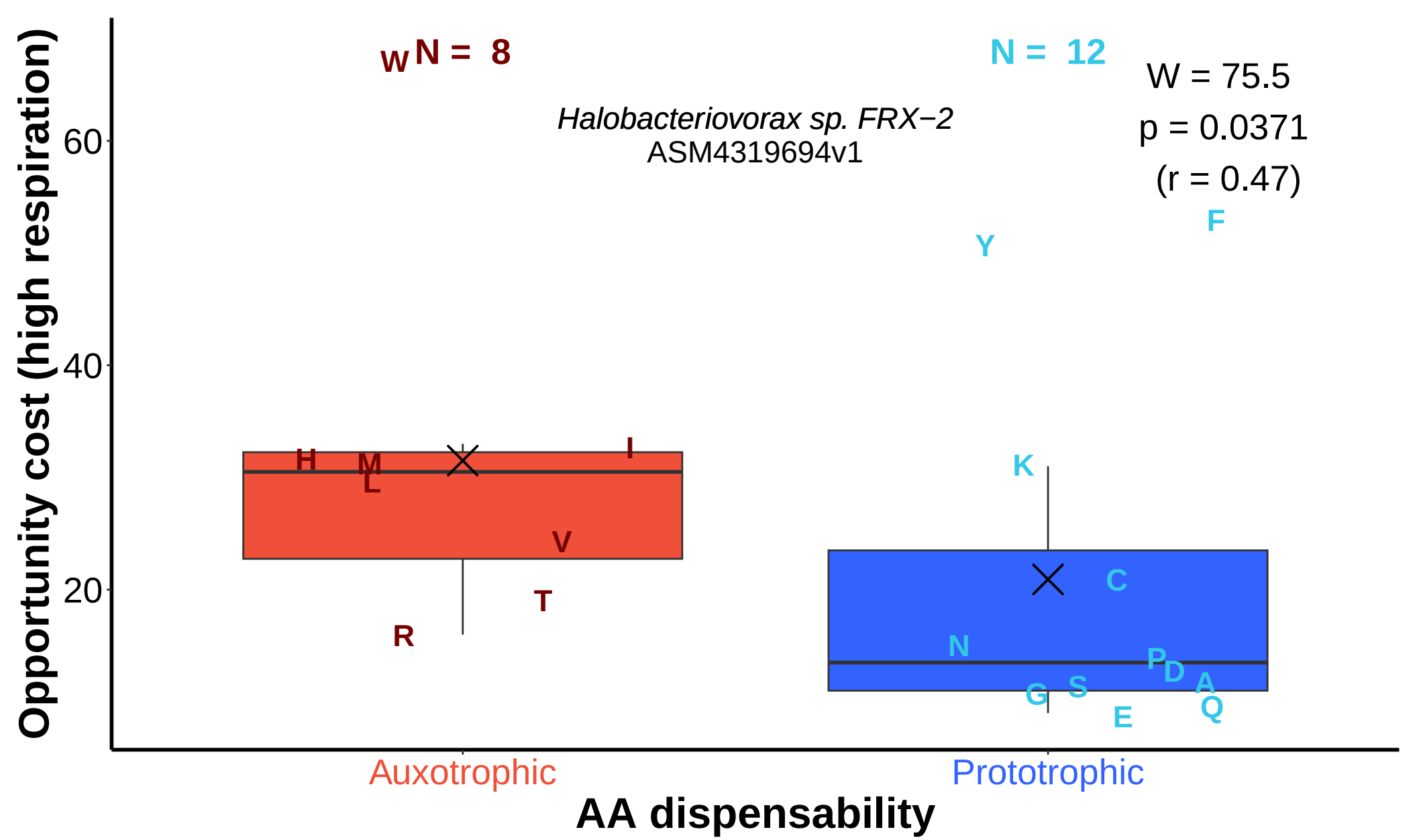
31.50

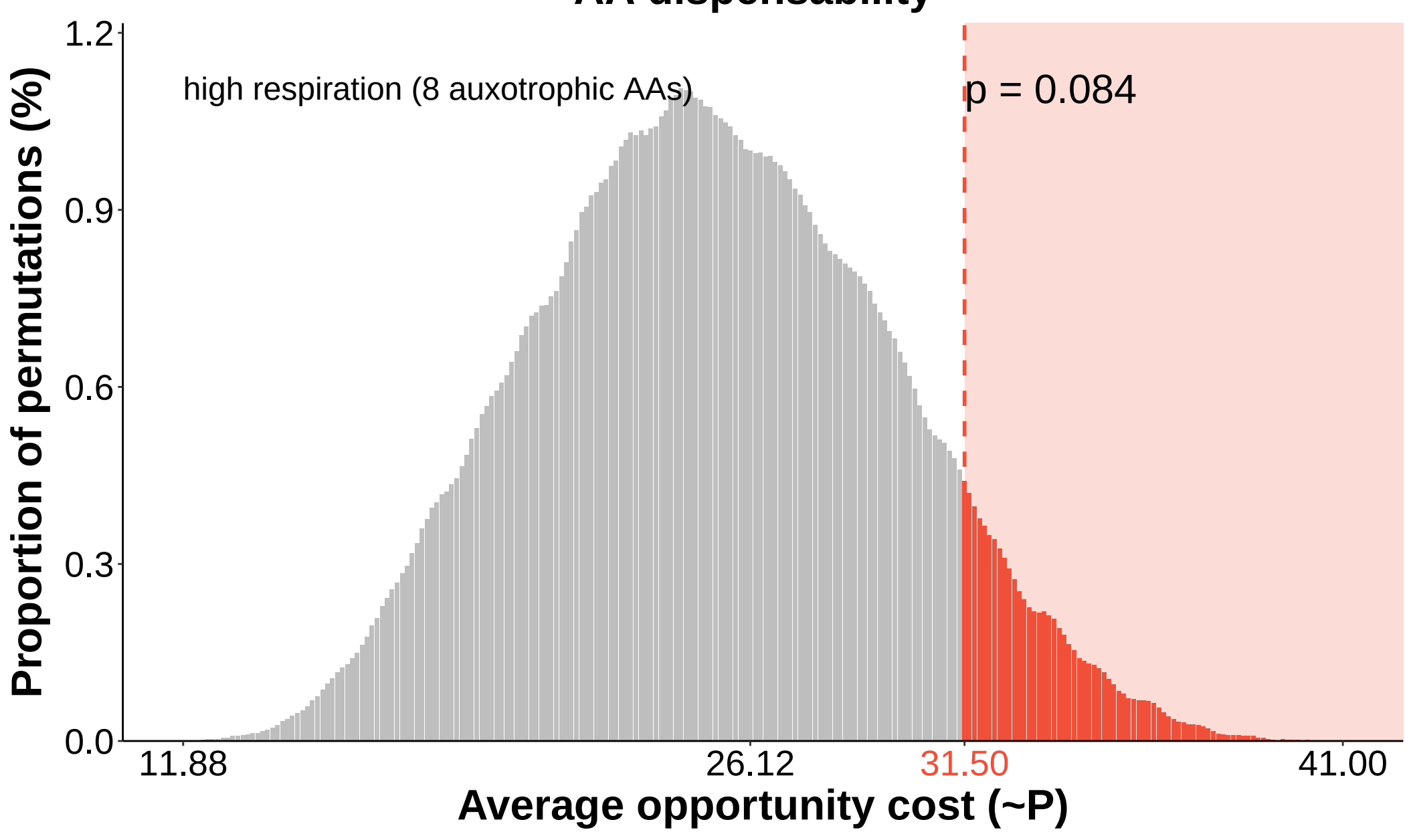
41.00

Average opportunity cost (~P)


N = 8
W
N = 12
W = 75.5
p = 0.0371
(r = 0.47)
Halobacteriovorax sp. FRX−3
ASM4319693v1
Opportunity cost (high respiration)
60
40
20
I
H
L
M
V
T
R
Y
F
K
C
N
P
A
S
G
D
E
Q
Auxotrophic
Prototrophic
AA dispensability


high respiration (8 auxotrophic AAs)
p = 0.084
Proportion of permutations (%)
1.2
0.9
0.6
0.3
0.0
11.88
26.12
31.50
41.00
Average opportunity cost (~P)


W N = 8
N = 12
W = 75.5
p = 0.0371
(r = 0.47)
Halobacteriovorax sp. FRX−2
ASM4319694v1
Opportunity cost (high respiration)
60
40
20
H
M
L
I
V
T
R
K
C
N
P
D
A
Q
S
G
E
F
Y
Auxotrophic
Prototrophic
AA dispensability


high respiration (8 auxotrophic AAs)
p = 0.084
Proportion of permutations (%)
1.2
0.9
0.6
0.3
0.0
11.88
26.12
31.50
41.00
Average opportunity cost (~P)

N = 8

N = 12

W = 75.5
p = 0.0371
(r = 0.47)

Halobacteriovorax sp. CON−3
ASM4319699v1

Opportunity cost (high respiration)

60
40
20

W
F
Y
K
I
H
M
L
V
T
R
C
N
P
D
A
S
E
G
Q

Auxotrophic
Prototrophic

AA dispensability

high respiration (8 auxotrophic AAs)

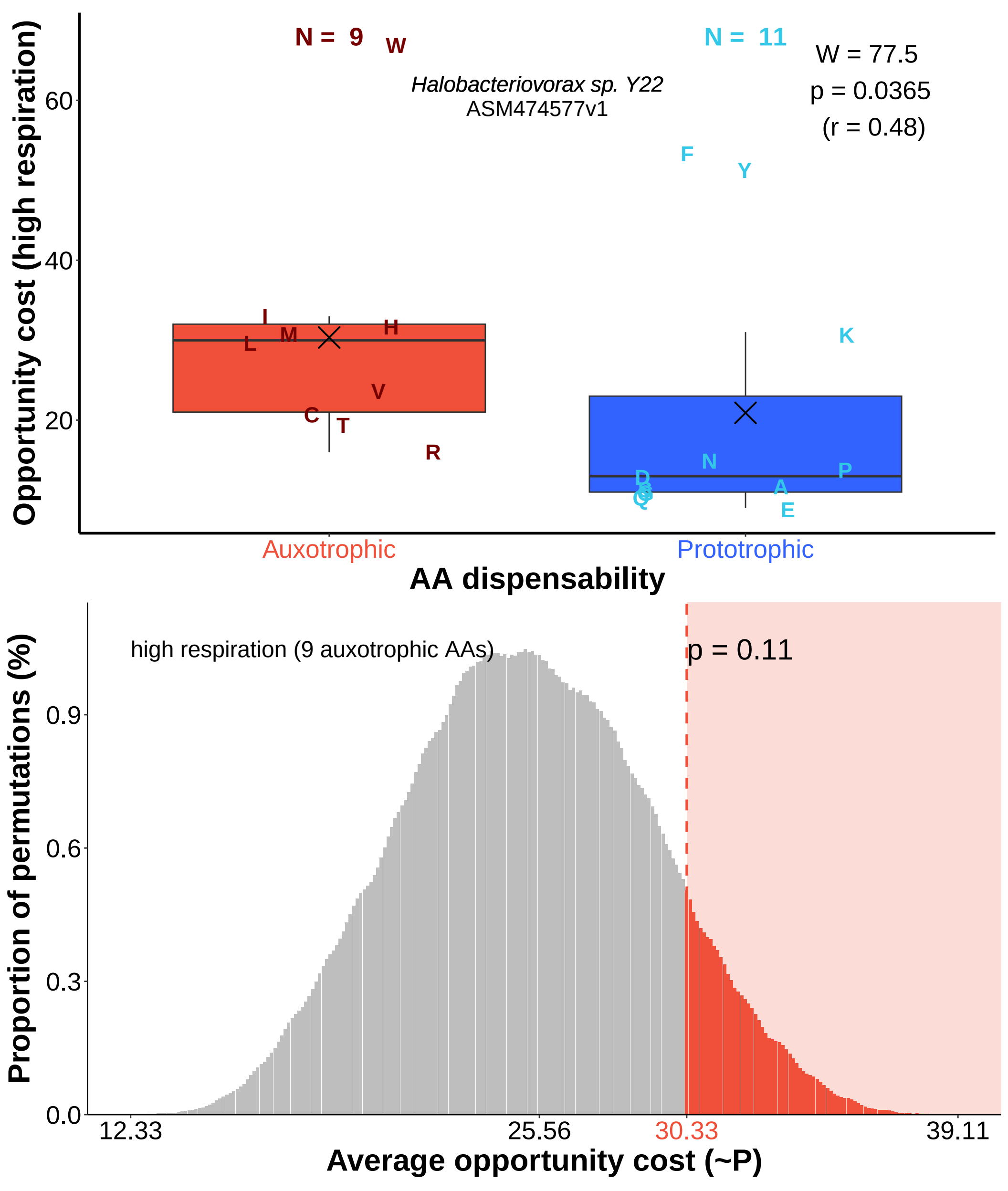
p = 0.084

Proportion of permutations (%)

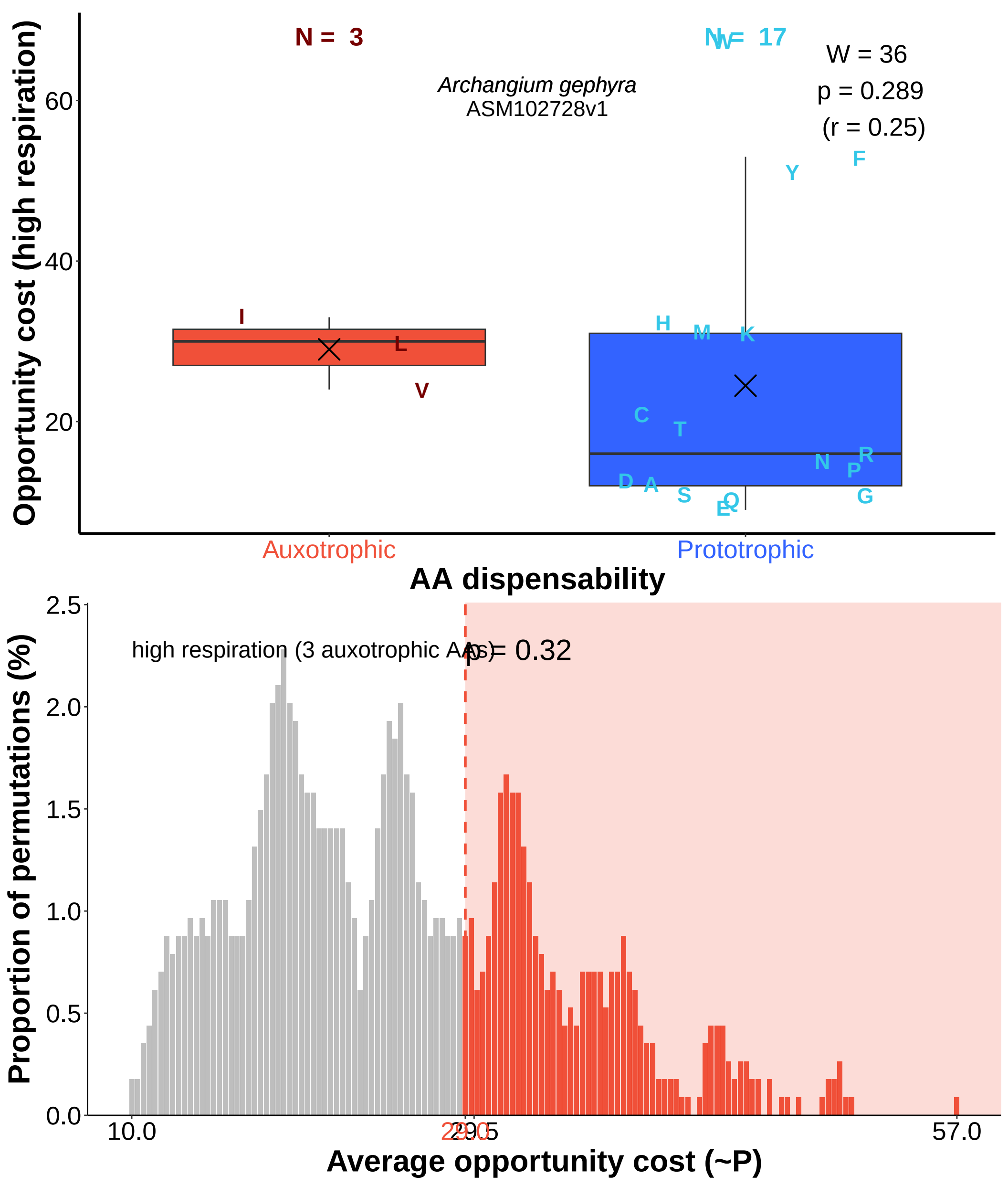
1.2
0.9
0.6
0.3
0.0

11.88
26.12
31.50
41.00

Average opportunity cost (~P)



N = 9
W
N = 11
W = 77.5
p = 0.0365
(r = 0.48)
Halobacteriovorax sp. Y22
ASM474577v1
F
Y
I
M
H
L
V
C
T
R
K
N
P
D
A
E
Opportunity cost (high respiration)
60
40
20
Auxotrophic
Prototrophic
AA dispensability
high respiration (9 auxotrophic AAs)
p = 0.11
Proportion of permutations (%)
0.9
0.6
0.3
0.0
12.33
25.56
30.33
39.11
Average opportunity cost (~P)


N = 3
N = 17
W = 36
p = 0.289
(r = 0.25)
Archangium gephyra
ASM102728v1
Opportunity cost (high respiration)
60
40
20
I
L
V
H
M
K
C
T
N
R
P
D
A
S
E
Q
G
F
Y
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.0
29.5
57.0
Average opportunity cost (~P)

N = 5

N = 15

W = 65.5

p = 0.0163

(r = 0.55)

Pseudenhygromyxa sp. WMMC2535
ASM1108302v2

Opportunity cost (high respiration)

60

40

20

F

Y

I

M

V

H

K

L

C

T

R

N

P

D

G

A

Q

S

E

Auxotrophic

Prototrophic

AA dispensability

high respiration (5 auxotrophic AAs)

p = 0.026

Proportion of permutations (%)

1.0

0.5

0.0

10.6

28.6

38.4

47.2

Average opportunity cost (~P)

$N_{\bar{W}}$ 4

N = 16

W = 55
p = 0.0334
(r = 0.48)

Chondromyces crocatus
ASM118929v1

Opportunity cost (high respiration)

60
40
20

H
I
V

F
Y
K
M
L
C
T
R
N
D
A
G
S
Q
E

Auxotrophic
Prototrophic

AA dispensability

high respiration (4 auxotrophic AAs)

p = 0.042

Proportion of permutations (%)

1.5
1.0
0.5
0.0

10.25
29.25
39.00
51.00

Average opportunity cost (~P)

N = 8 W

N = 12

Vulgatibacter incomptus
ASM126317v1

W = 79.5
p = 0.0167
(r = 0.54)

Opportunity cost (high respiration)

60
40
20

F
H
M
I
V
T
P

Y
K
L
C
N
D
R
Q
SG
A
E

Auxotrophic
Prototrophic

AA dispensability

high respiration (8 auxotrophic AAs)

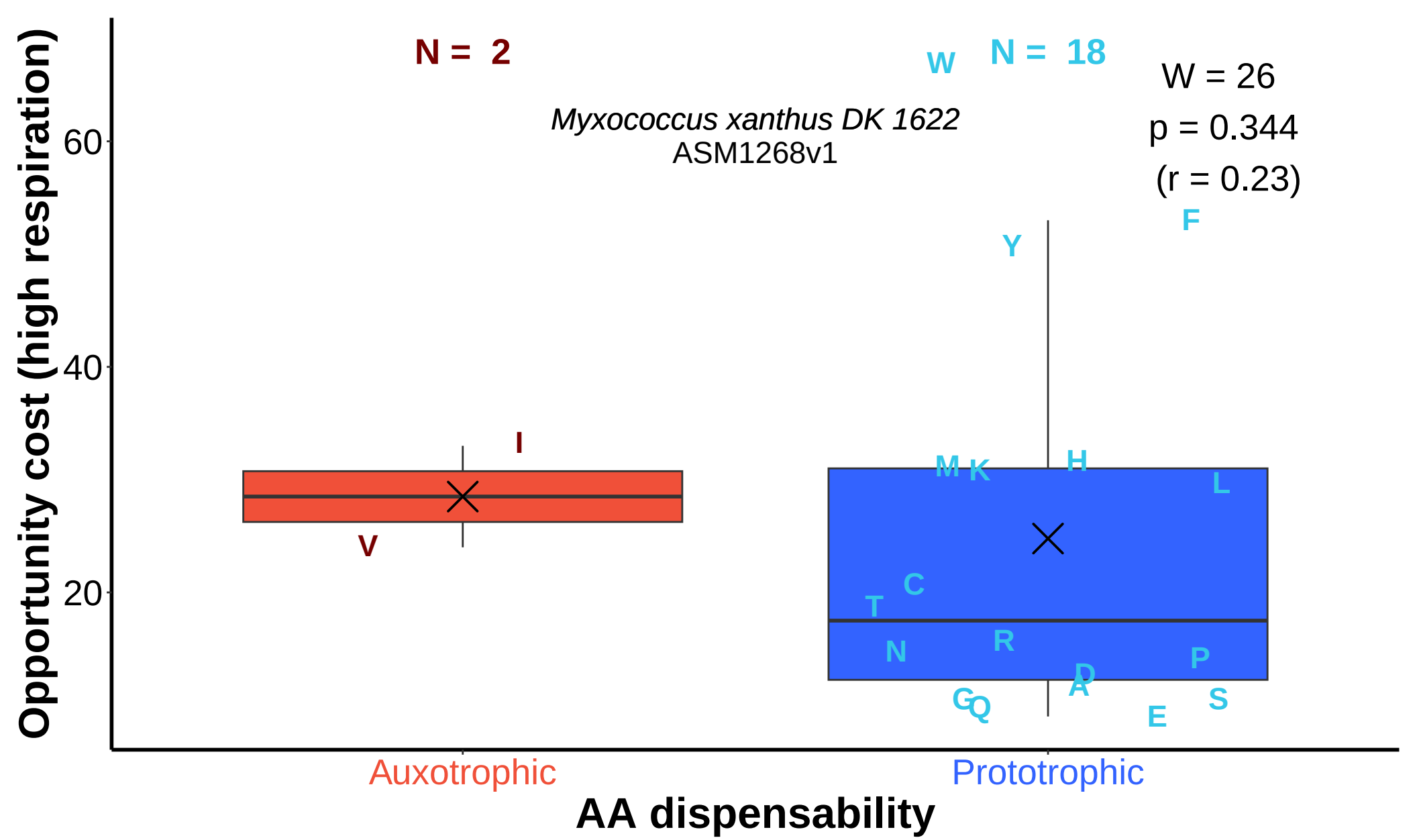
p = 0.024

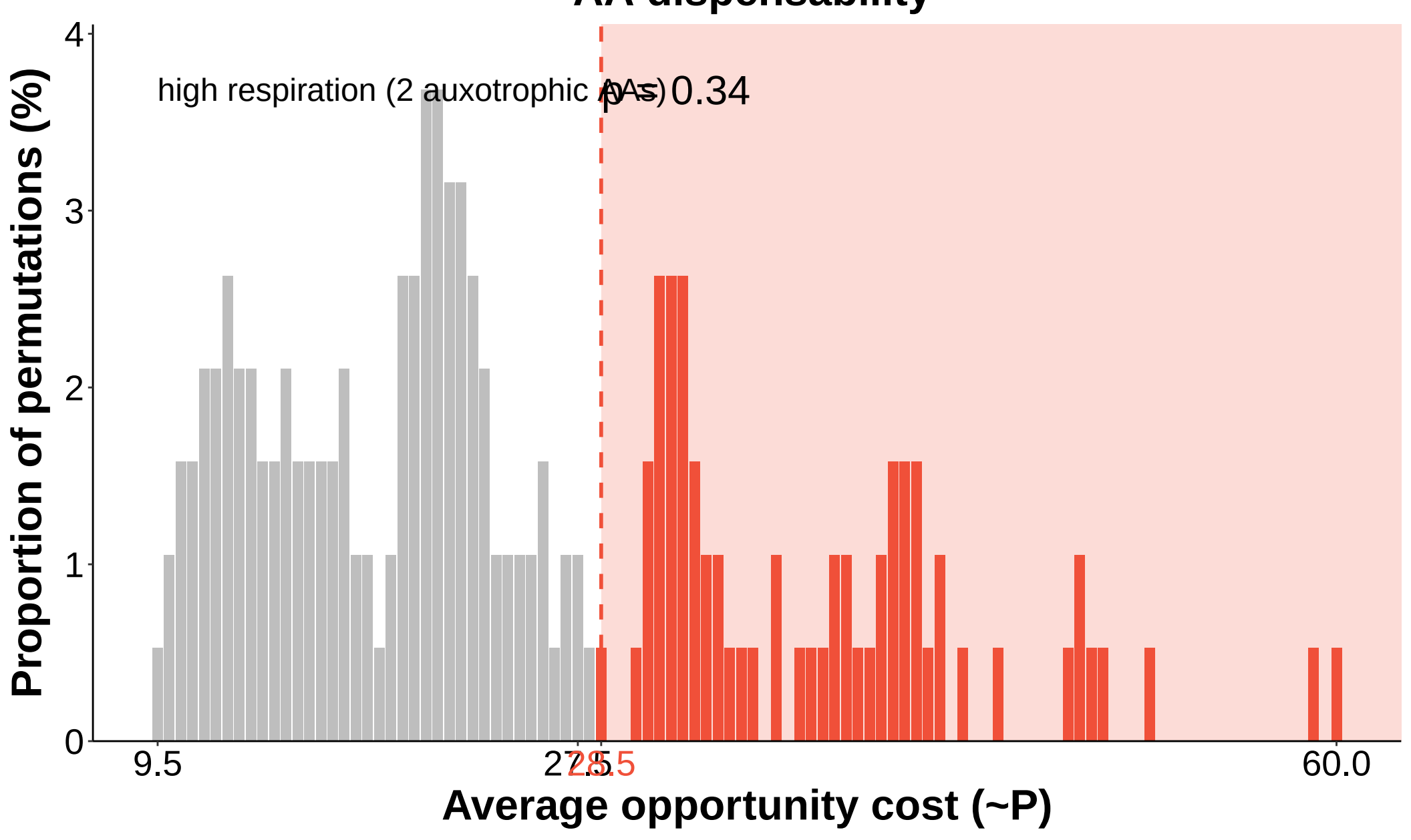
Proportion of permutations (%)

1.2
0.9
0.6
0.3
0.0

11.88
26.12
34.12
41.00

Average opportunity cost (~P)


N = 2
W
N = 18
W = 26
p = 0.344
(r = 0.23)
Myxococcus xanthus DK 1622
ASM1268v1
Opportunity cost (high respiration)
60
40
20
I
V
F
Y
M
K
H
L
C
T
N
R
P
D
A
G
Q
E
S
Auxotrophic
Prototrophic
AA dispensability


high respiration (2 auxotrophic AAs)
p = 0.34
Proportion of permutations (%)
4
3
2
1
0
9.5
27.5
28.5
60.0
Average opportunity cost (~P)

N = 3

N = 17

W

W = 36

p = 0.289

(r = 0.25)

Pyxidicoccus fallax
ASM1293365v1

Opportunity cost (high respiration)

60

40

20

I

L

V

Y

F

M

H

K

C

T

R

D

P

N

A

GS

E

Q

Auxotrophic

Prototrophic

AA dispensability

high respiration (3 auxotrophic AAs)

p = 0.32

Proportion of permutations (%)

2.5

2.0

1.5

1.0

0.5

0.0

10.0

29.5

57.0

Average opportunity cost (~P)

N = 3

N = 17

W = 36
p = 0.289
(r = 0.25)

Corallococcus exiguus
ASM1298522v1

Opportunity cost (high respiration)

60
40
20

I
L
V

W
F
Y
H
K
M
C
T
R
N
P
D
A
G
S
Q
E

Auxotrophic
Prototrophic

AA dispensability

high respiration (3 auxotrophic AAs)

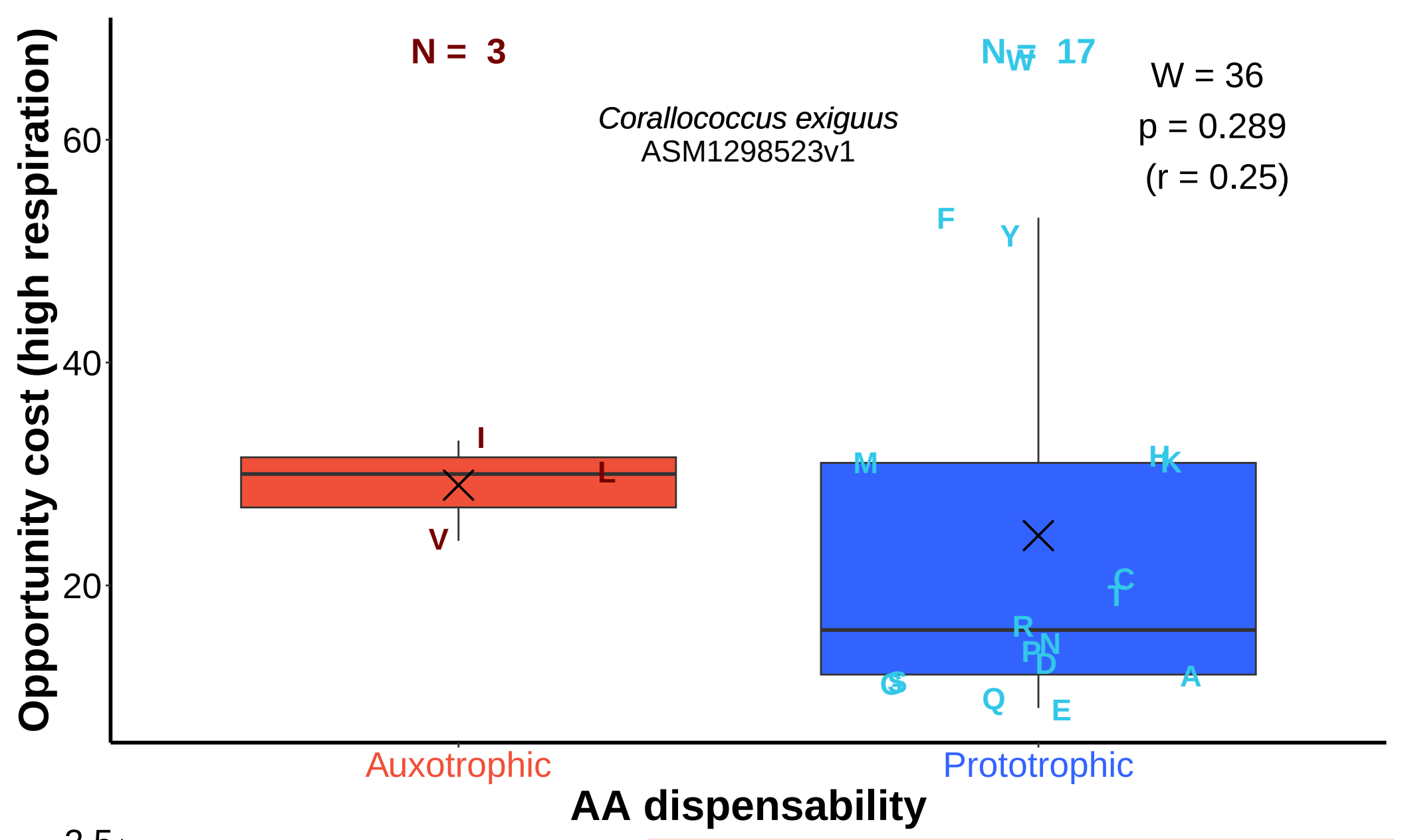
p = 0.32

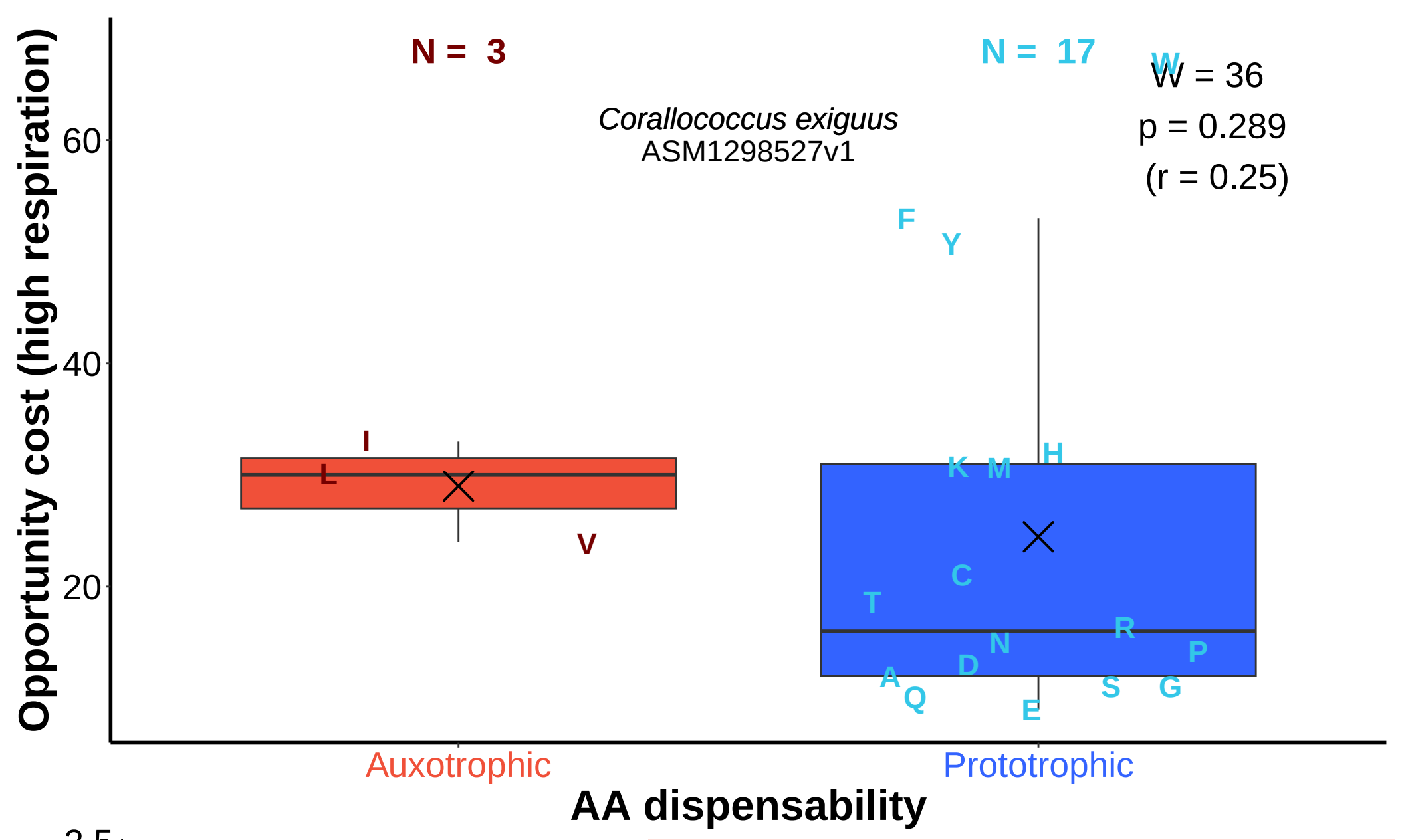
Proportion of permutations (%)

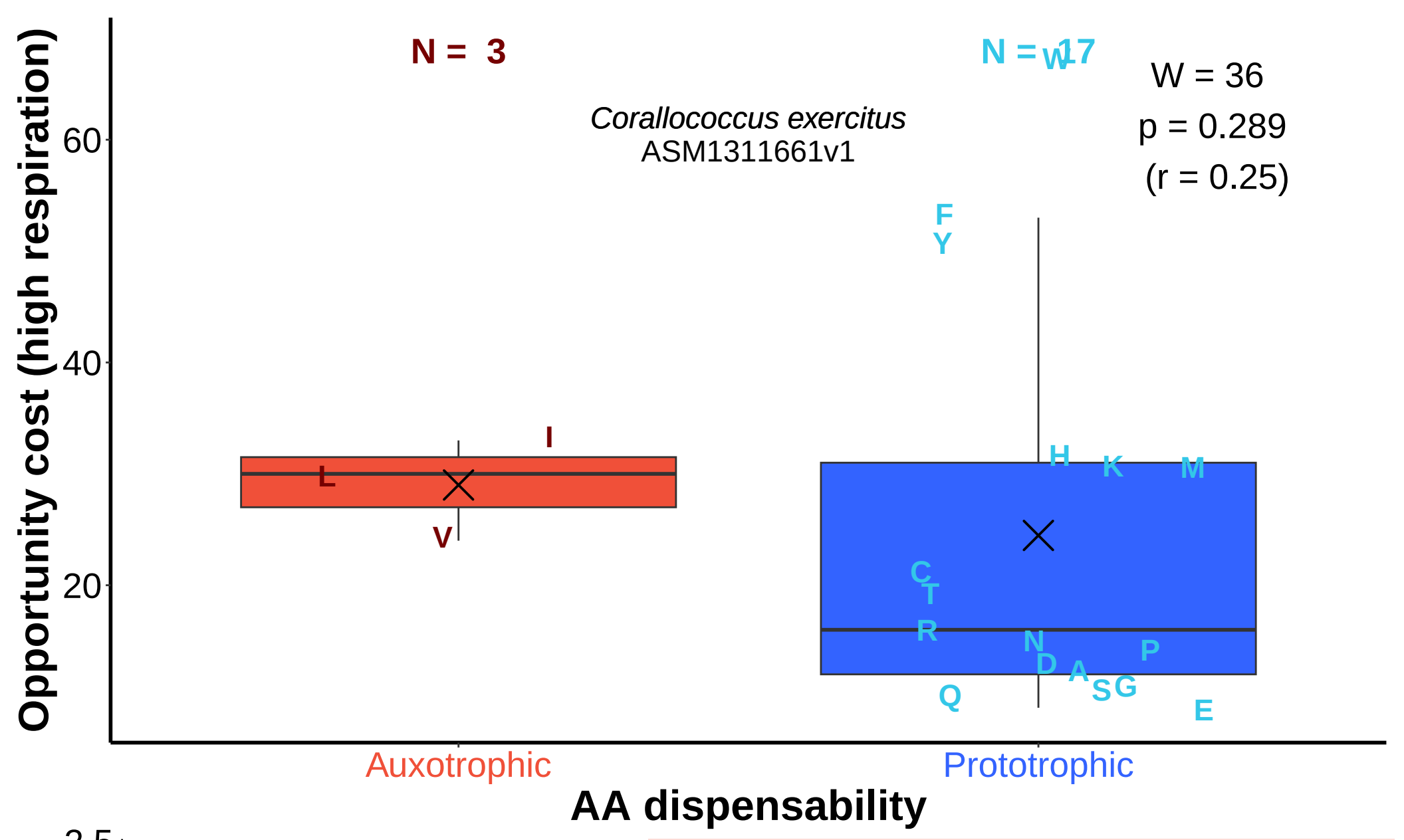
2.5
2.0
1.5
1.0
0.5
0.0

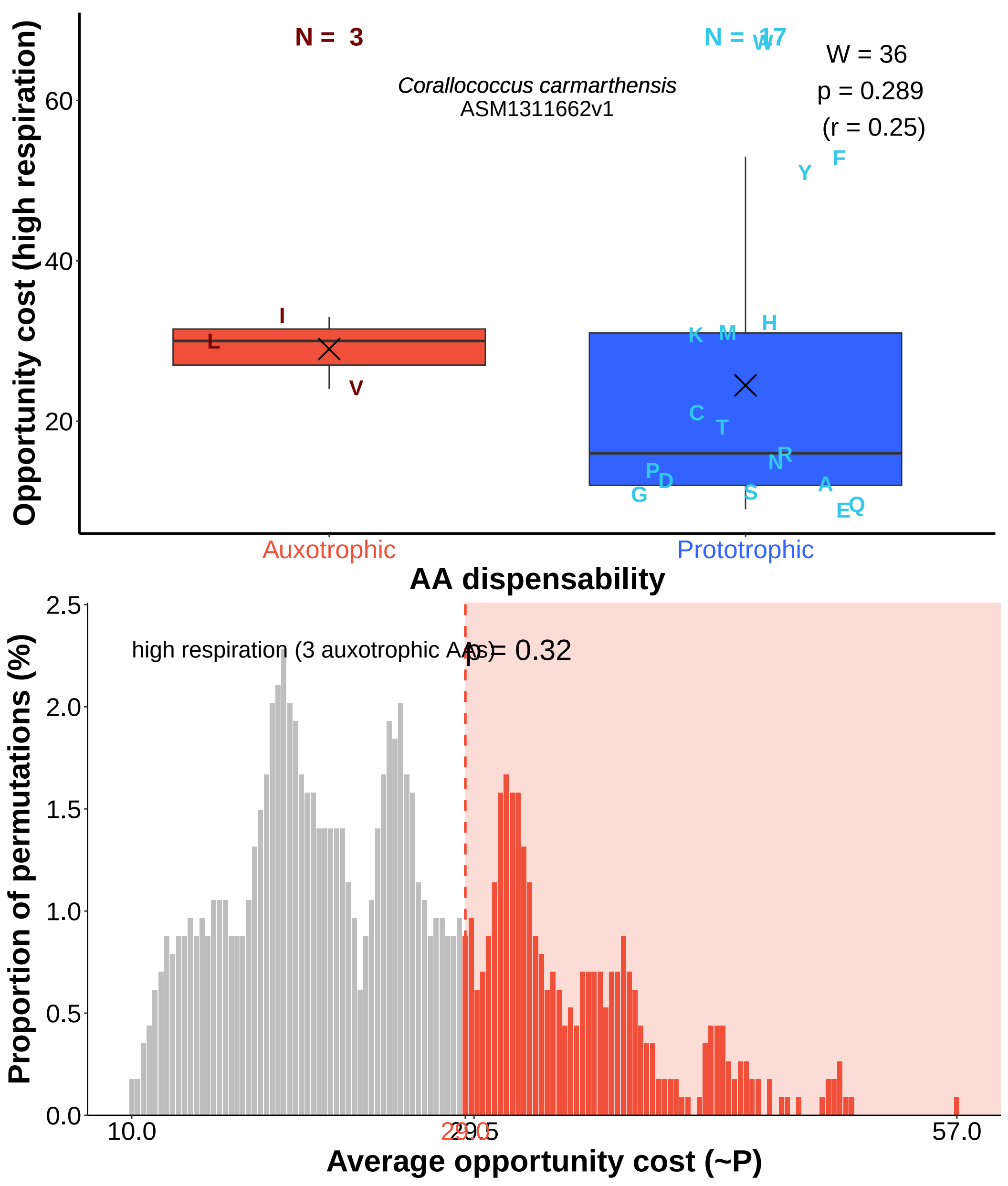
10.0
29.0
29.5
57.0

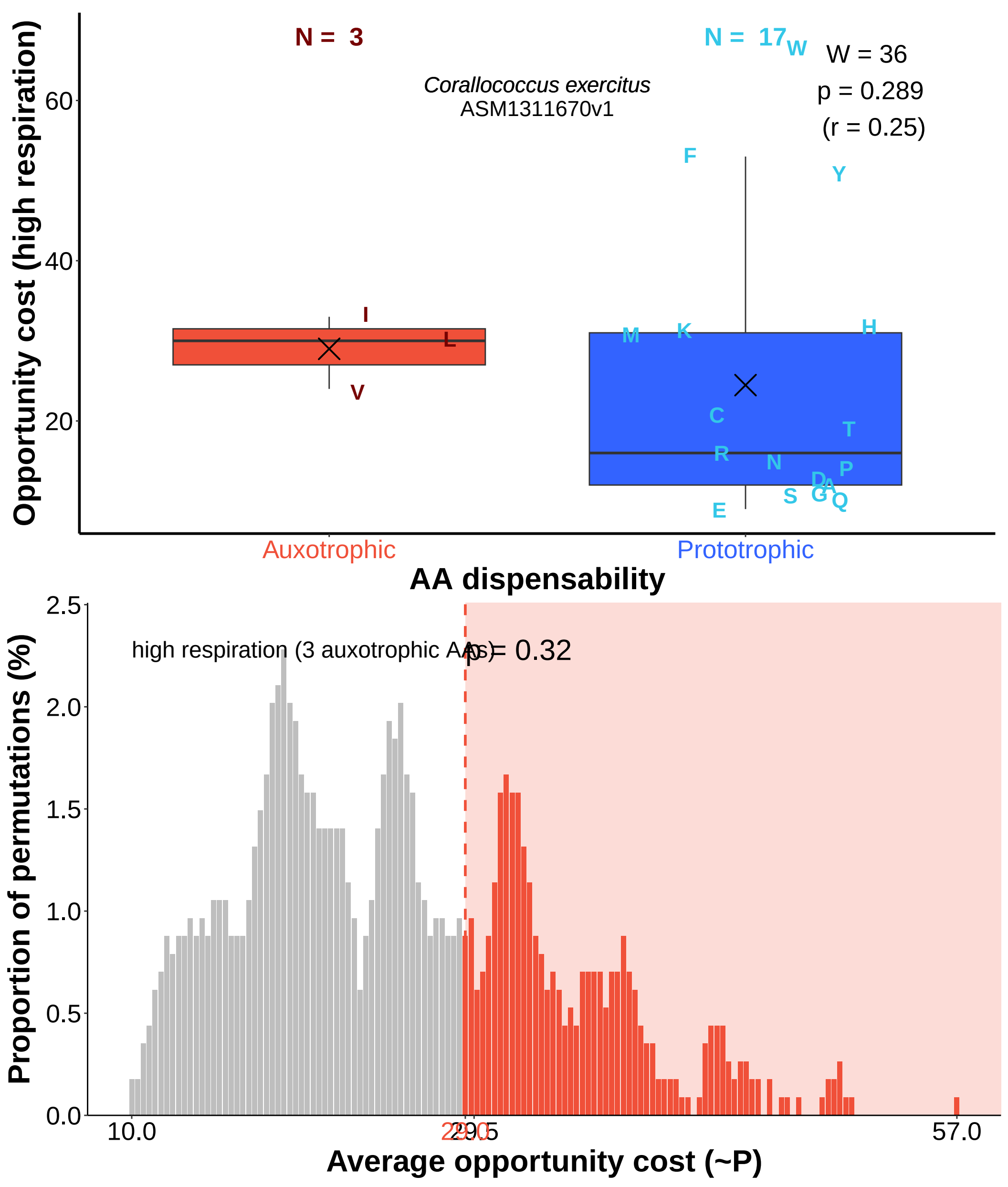
Average opportunity cost (~P)

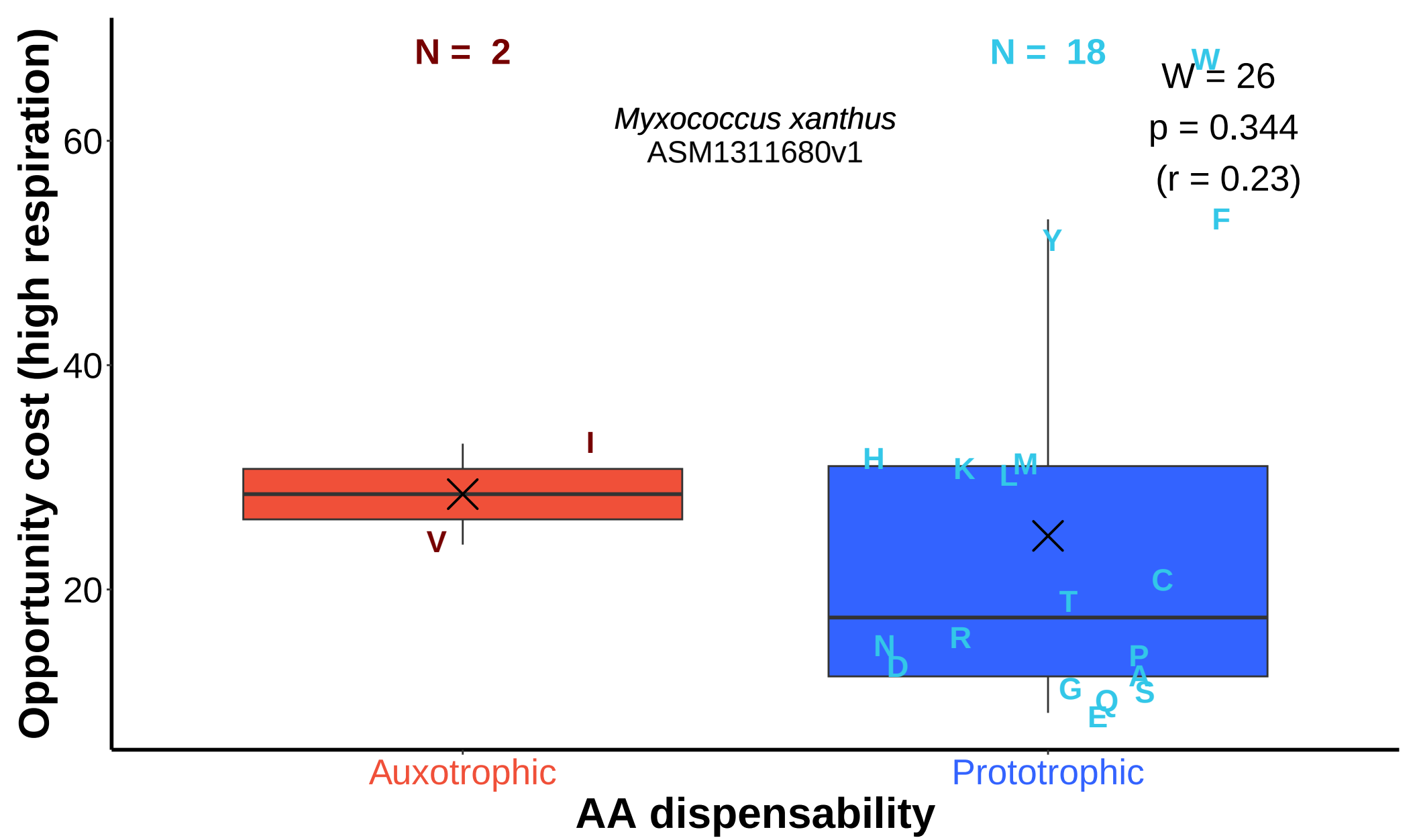

N = 3
N = 17
W = 36
p = 0.289
(r = 0.25)
Corallococcus exiguus
ASM1298523v1
Opportunity cost (high respiration)
60
40
20
I
L
V
F
Y
M
H
K
C
R
P
N
D
S
Q
A
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.5
57.0
Average opportunity cost (~P)

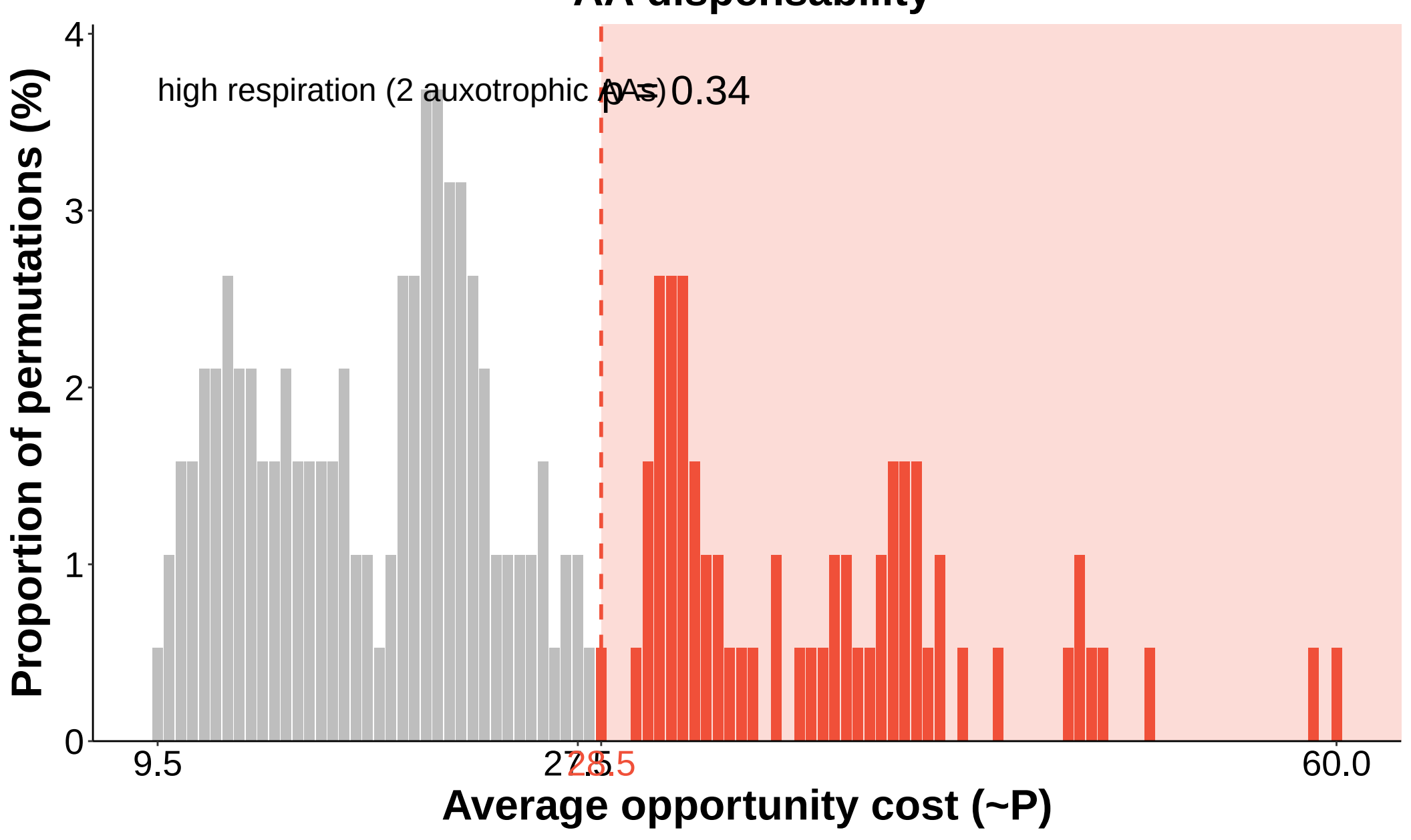

N = 3
N = 17
W = 36
p = 0.289
(r = 0.25)
Corallococcus exiguus
ASM1298527v1
Opportunity cost (high respiration)
60
40
20
I
L
V
F
Y
K
M
H
C
T
R
N
P
D
A
Q
S
G
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.0
29.5
57.0
Average opportunity cost (~P)


N = 3
N = 17
W = 36
p = 0.289
(r = 0.25)
Corallococcus exercitus
ASM1311661v1
Opportunity cost (high respiration)
60
40
20
I
L
V
F
Y
H
K
M
C
T
R
N
D
A
S
G
P
Q
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.0
29.5
57.0
Average opportunity cost (~P)


N = 3
N = 17
W = 36
p = 0.289
(r = 0.25)
Corallococcus carmarthensis
ASM1311662v1
Opportunity cost (high respiration)
60
40
20
I
L
V
F
Y
K
M
H
C
T
N
R
P
D
G
S
A
E
Q
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.0
57.0
Average opportunity cost (~P)


N = 3
N = 17
W
W = 36
p = 0.289
(r = 0.25)
Corallococcus exercitus
ASM1311670v1
Opportunity cost (high respiration)
60
40
20
I
L
V
F
Y
M
K
H
C
T
R
N
P
D
A
S
G
Q
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.0
29.5
57.0
Average opportunity cost (~P)


N = 2
N = 18
W = 26
p = 0.344
(r = 0.23)
Myxococcus xanthus
ASM1311680v1
Opportunity cost (high respiration)
60
40
20
I
V
W
F
Y
H
K
L
M
C
T
R
N
D
P
A
S
G
Q
E
Auxotrophic
Prototrophic
AA dispensability


high respiration (2 auxotrophic AAs)
p = 0.34
Proportion of permutations (%)
4
3
2
1
0
9.5
27.5
28.5
60.0
Average opportunity cost (~P)

N = 3

N = 17

Myxococcus xanthus
ASM1311682v1

W = 36
p = 0.289
(r = 0.25)

Opportunity cost (high respiration)

60
40
20

I
L
V

W
F
Y
K
H
M
C
T
R
P
D
N
A
G
S
E
Q

Auxotrophic

Prototrophic

AA dispensability

high respiration (3 auxotrophic AAs)

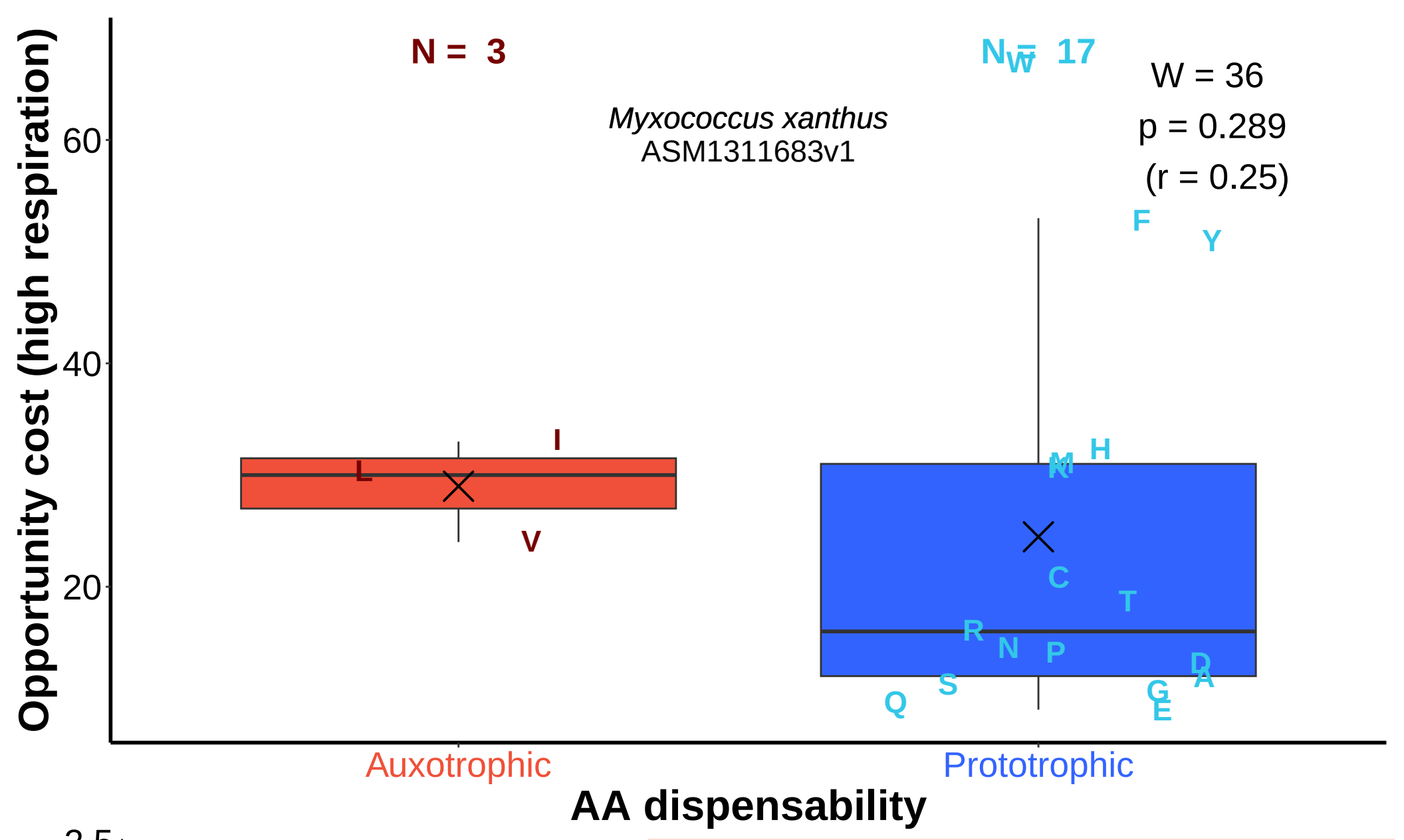
p = 0.32

Proportion of permutations (%)

2.5
2.0
1.5
1.0
0.5
0.0

10.0
29.0
29.5
57.0

Average opportunity cost (~P)


N = 3
N = 17
W = 36
p = 0.289
(r = 0.25)
Myxococcus xanthus
ASM1311683v1
Opportunity cost (high respiration)
60
40
20
I
L
V
F
Y
H
M
K
C
T
R
N
P
D
A
S
Q
G
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.0
29.5
57.0
Average opportunity cost (~P)

N = 3

N = 17

W

W = 36

p = 0.289

(r = 0.25)

Myxococcus xanthus
ASM1311686v1

Opportunity cost (high respiration)

60

40

20

I

L

V

F

Y

K

H

M

C

T

R

N

D

P

G

S

E

A

Q

Auxotrophic

Prototrophic

AA dispensability

high respiration (3 auxotrophic AAs)

p = 0.32

Proportion of permutations (%)

2.5

2.0

1.5

1.0

0.5

0.0

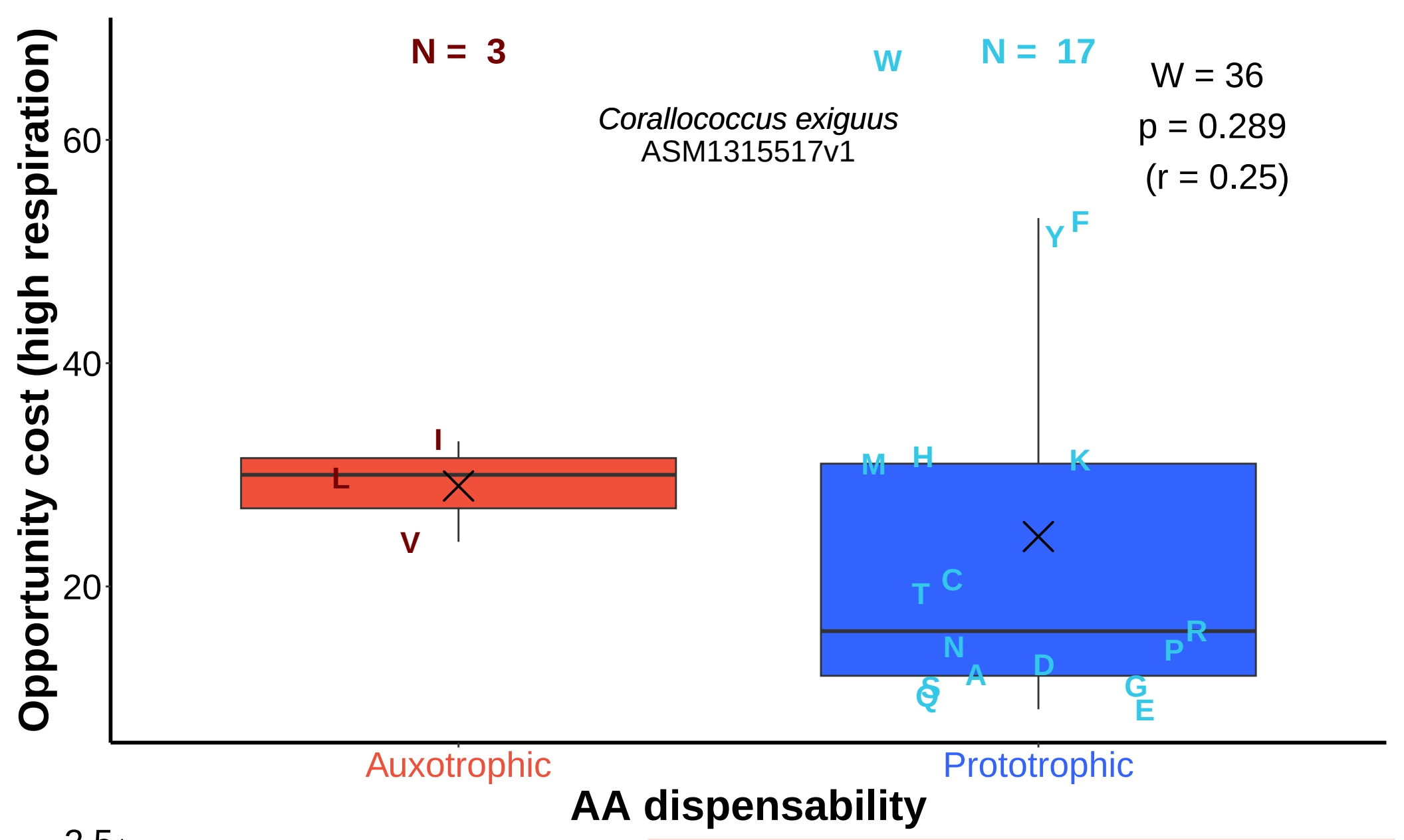
10.0

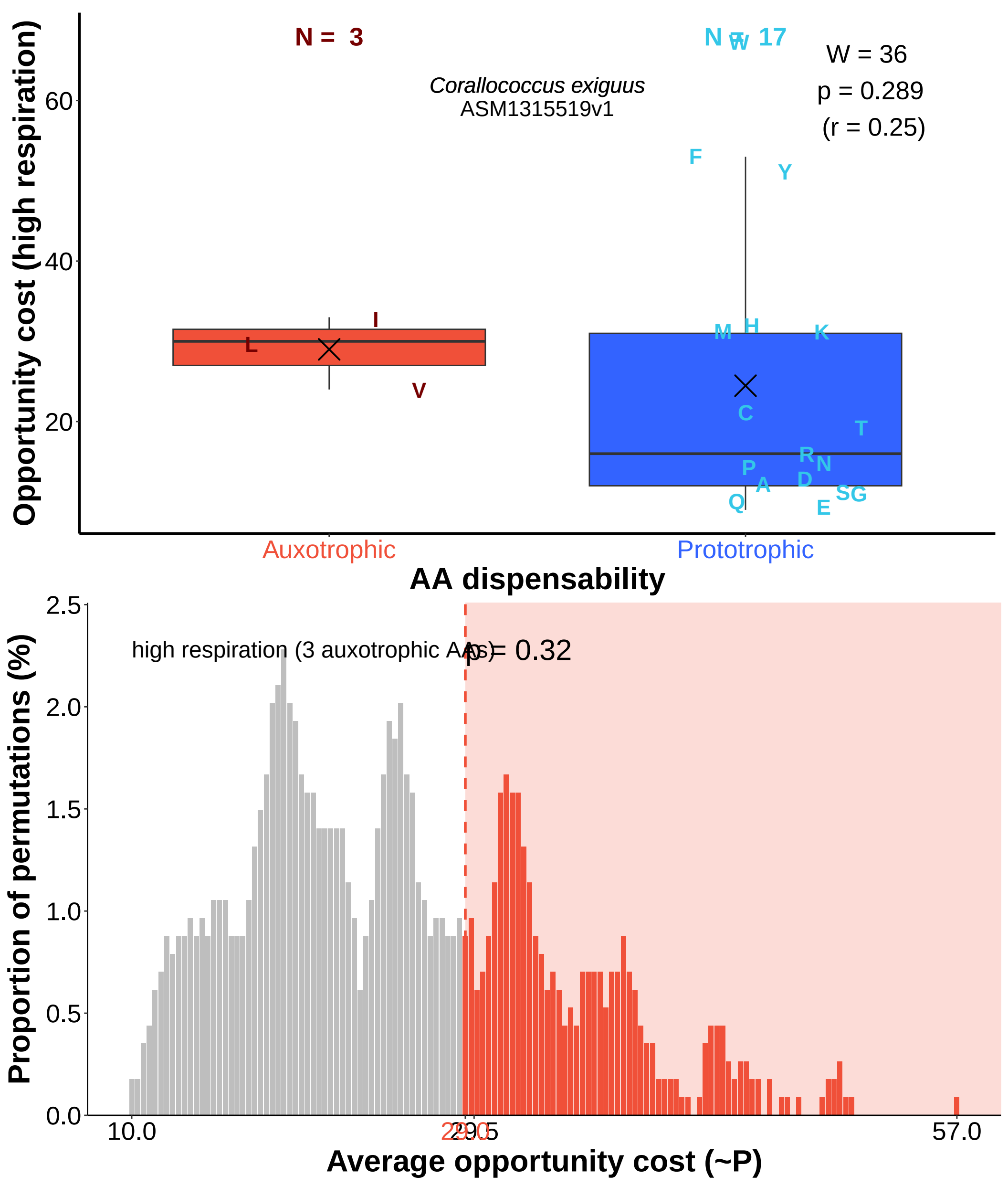
29.0

29.5

57.0

Average opportunity cost (~P)


N = 3
W
N = 17
W = 36
p = 0.289
(r = 0.25)
Corallococcus exiguus
ASM1315517v1
Opportunity cost (high respiration)
60
40
20
I
L
V
Y
F
M
H
K
T
C
N
A
D
S
Q
G
E
P
R
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.0
29.5
57.0
Average opportunity cost (~P)


N = 3
N = 17
W = 36
p = 0.289
(r = 0.25)
Corallococcus exiguus
ASM1315519v1
Opportunity cost (high respiration)
60
40
20
I
L
V
F
Y
M
H
K
C
T
R
N
P
D
A
SG
Q
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.5
57.0
Average opportunity cost (~P)

N = 3

N = 17

Pyxidicoccus fallax
ASM1315555v1

W = 36
p = 0.289
(r = 0.25)

Opportunity cost (high respiration)

60
40
20

I
L
V

F
Y
M
H
K
C
T
R
N
P
D
A
S
Q
E
G

Auxotrophic
Prototrophic

AA dispensability

high respiration (3 auxotrophic AAs)

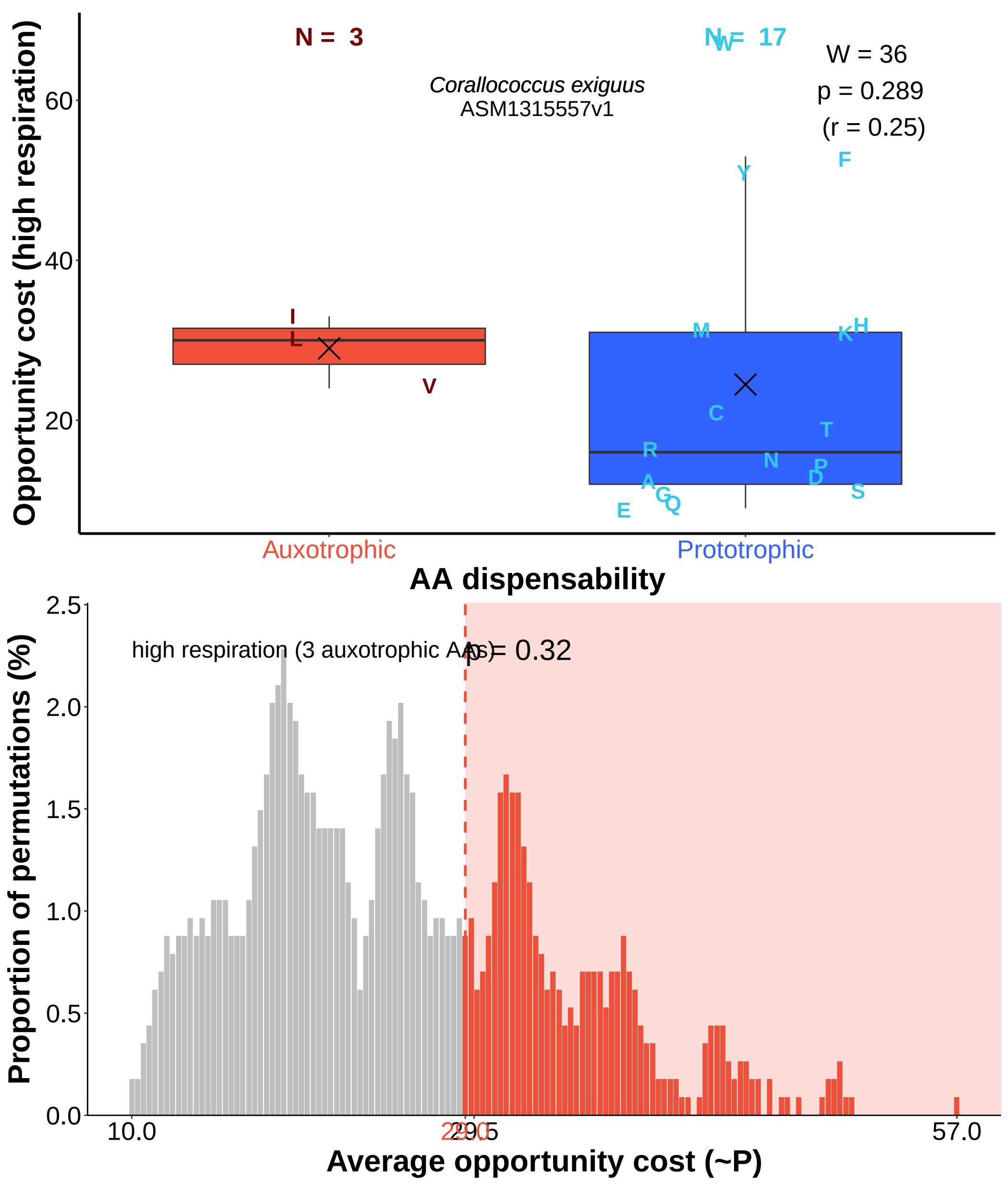
p = 0.32

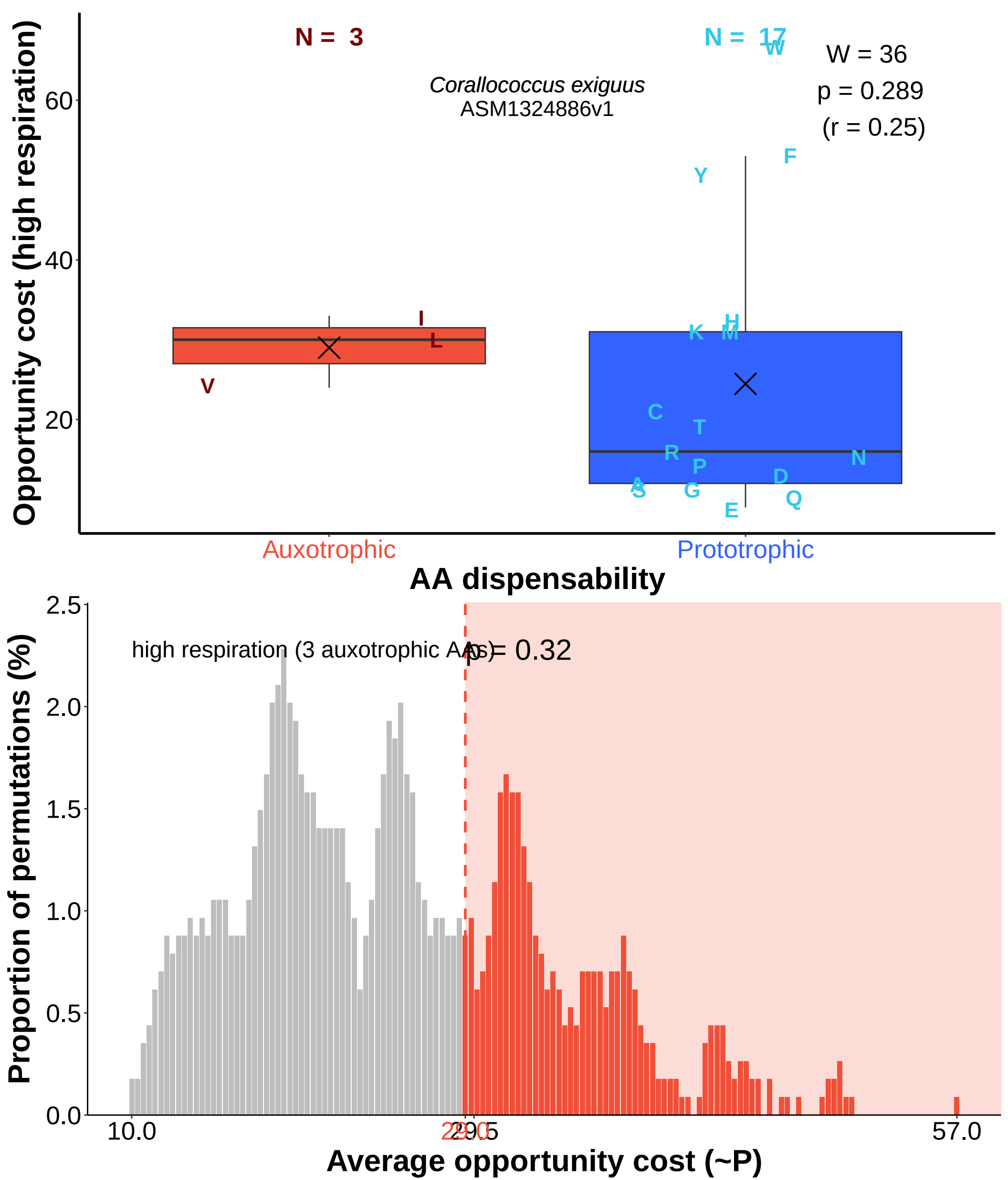
Proportion of permutations (%)

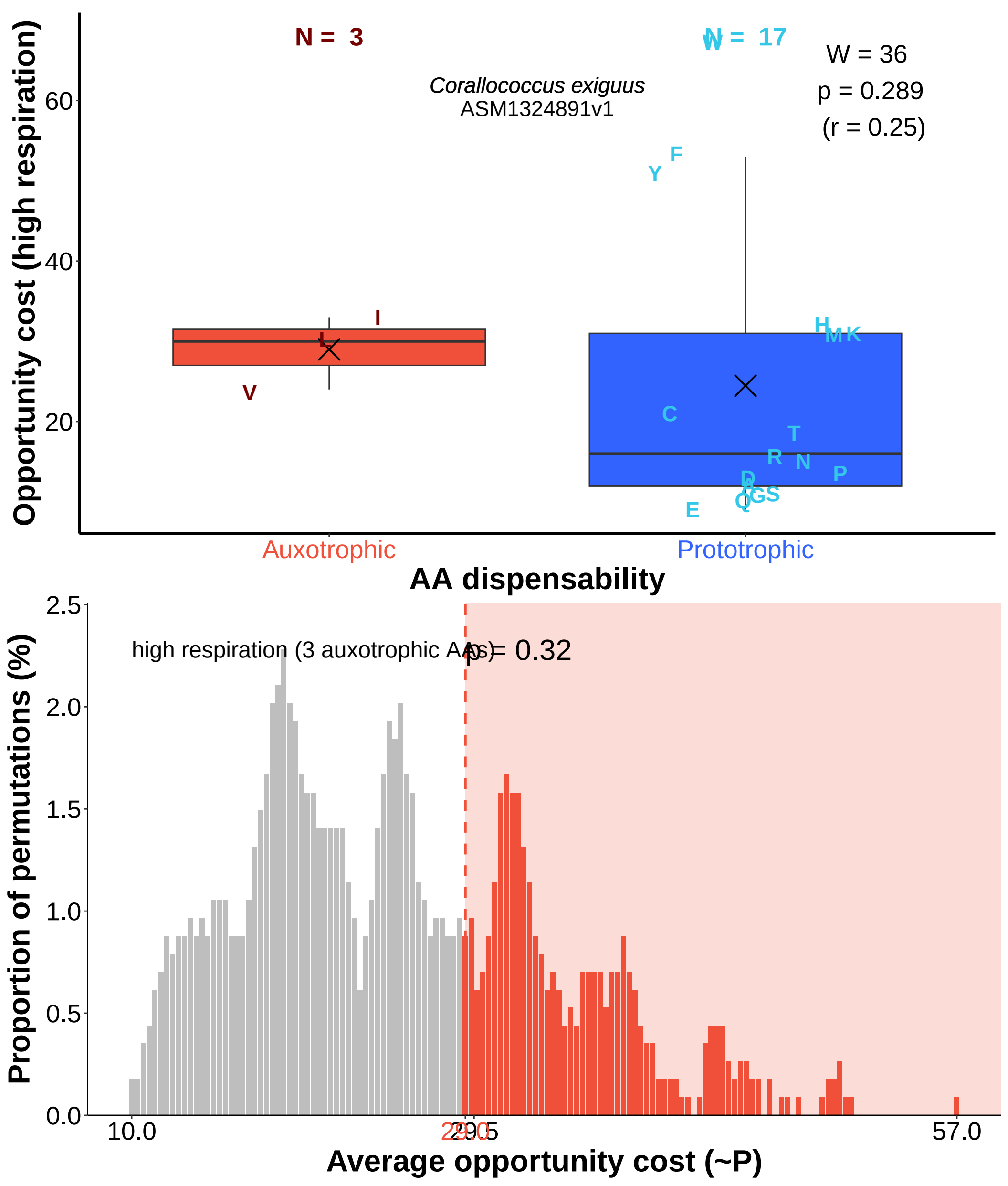
2.5
2.0
1.5
1.0
0.5
0.0

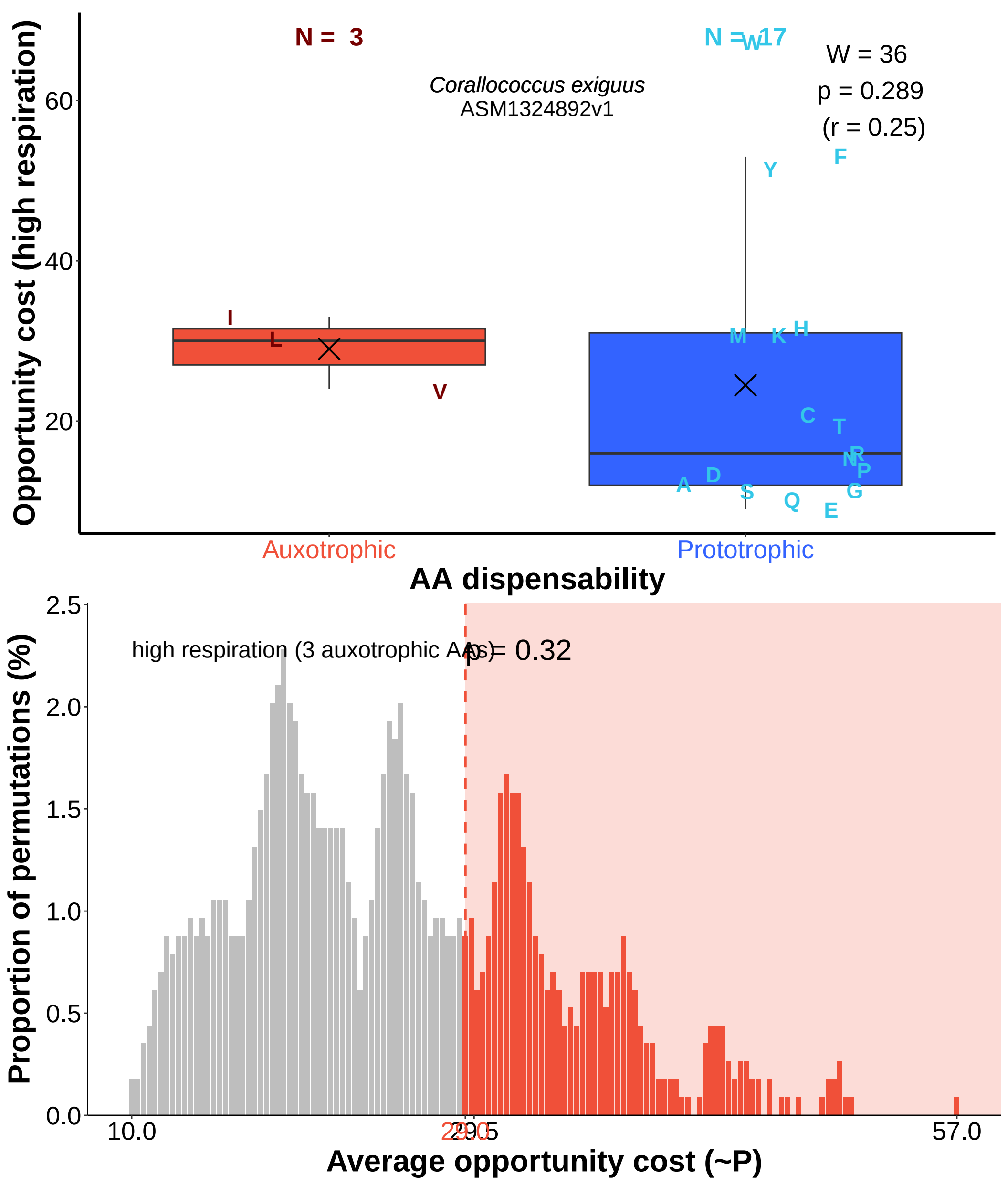
10.0
29.0
29.5
57.0

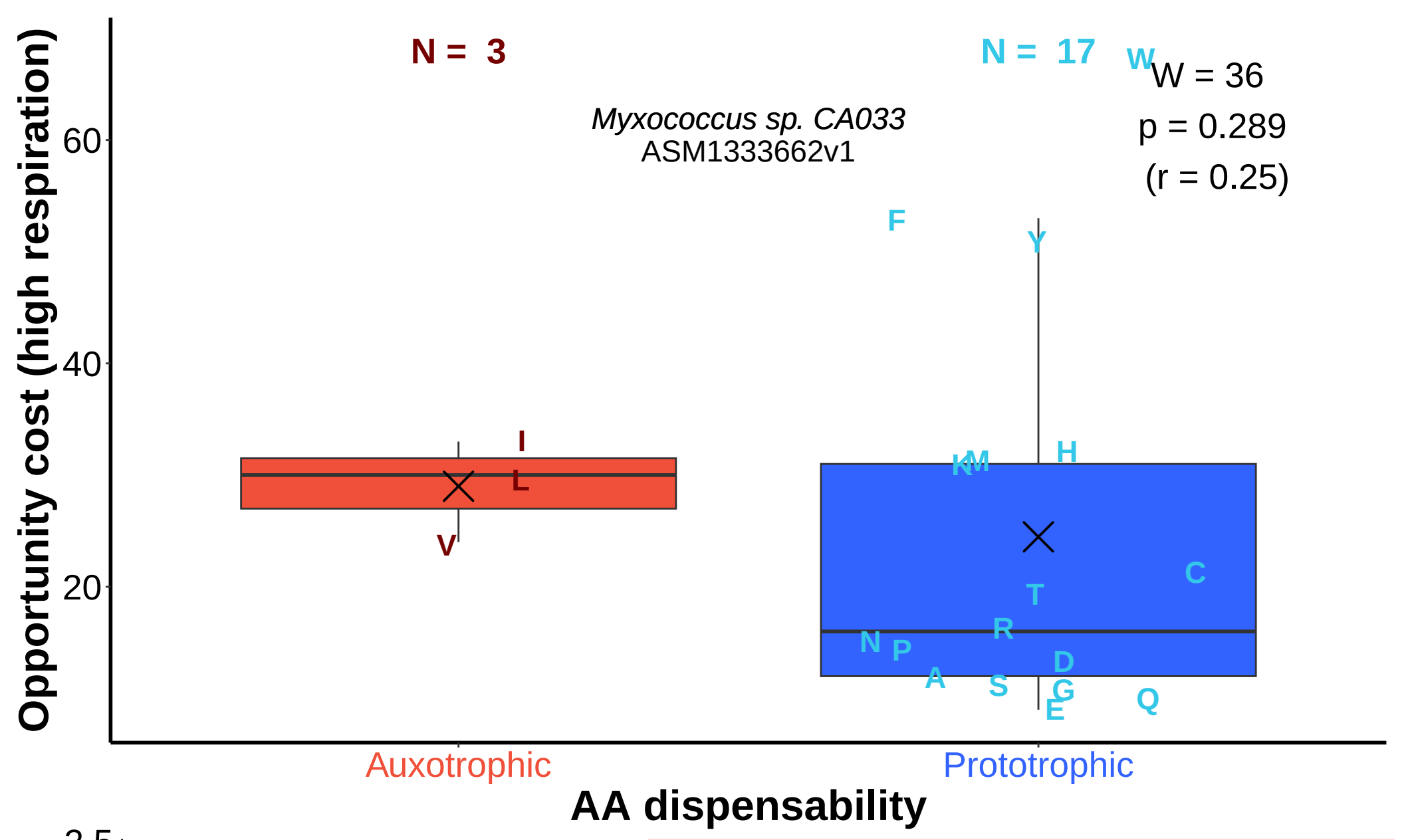
Average opportunity cost (~P)

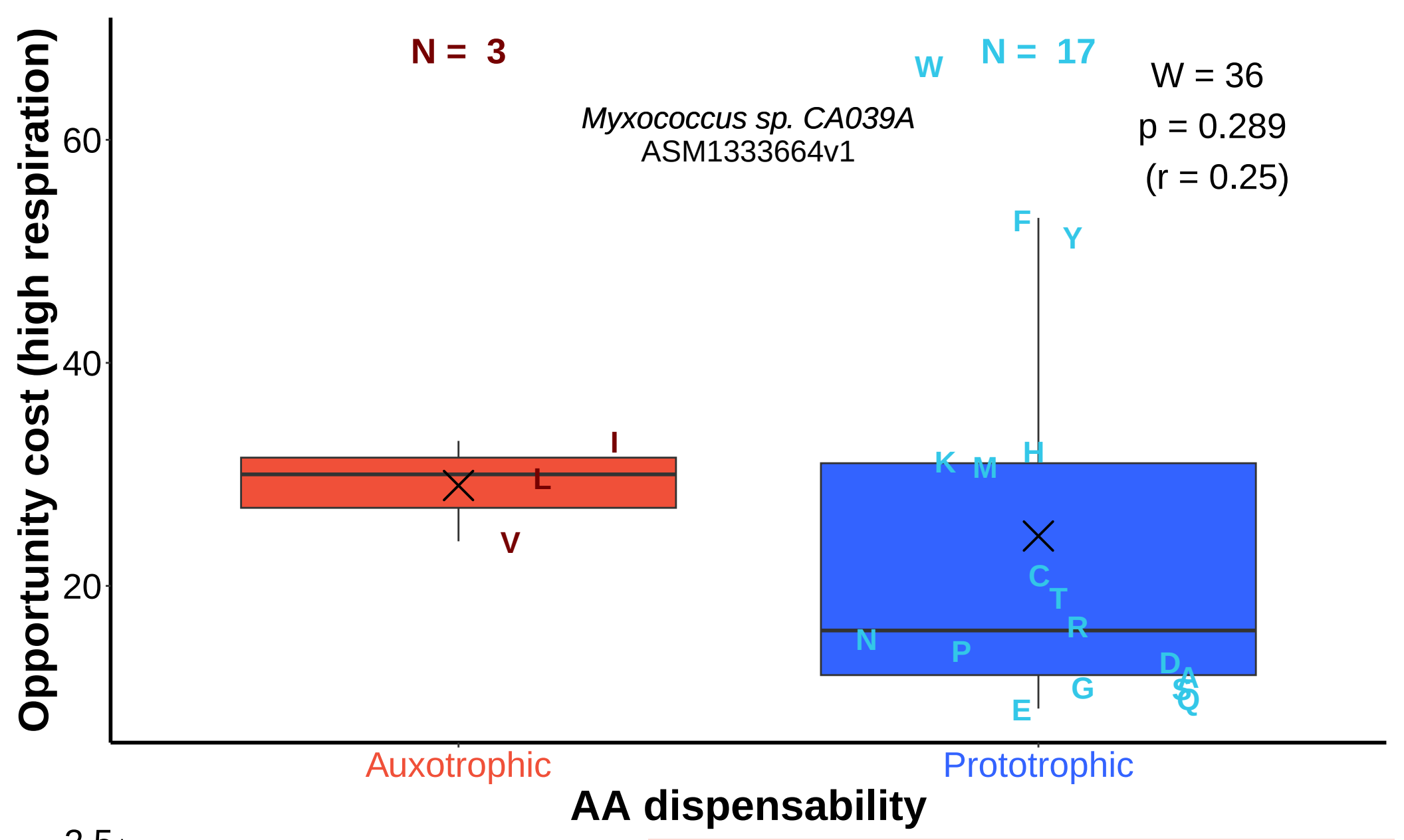

N = 3
N = 17
W = 36
p = 0.289
(r = 0.25)
Corallococcus exiguus
ASM1315557v1
Opportunity cost (high respiration)
60
40
20
I
L
V
F
Y
M
K
H
C
T
R
N
P
D
A
G
Q
S
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.0
57.0
Average opportunity cost (~P)


N = 3
N = 17
W = 36
p = 0.289
(r = 0.25)
Corallococcus exiguus
ASM1324886v1
Opportunity cost (high respiration)
60
40
20
V
I
L
F
Y
H
K
M
C
T
R
P
N
D
A
S
G
Q
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.5
57.0
Average opportunity cost (~P)


N = 3
N = 17
W = 36
p = 0.289
(r = 0.25)
Corallococcus exiguus
ASM1324891v1
Opportunity cost (high respiration)
60
40
20
I
L
V
F
Y
H
M
K
C
T
R
N
P
D
Q
G
S
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.0
57.0
Average opportunity cost (~P)


N = 3
N = 17
W = 36
p = 0.289
(r = 0.25)
Corallococcus exiguus
ASM1324892v1
Opportunity cost (high respiration)
60
40
20
I
L
V
F
Y
M
K
H
C
T
R
N
P
D
A
S
Q
G
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.0
57.0
Average opportunity cost (~P)


N = 3
N = 17
W
W = 36
p = 0.289
(r = 0.25)
Myxococcus sp. CA033
ASM1333662v1
Opportunity cost (high respiration)
60
40
20
I
L
V
F
Y
K
M
H
C
T
R
N
P
D
A
S
G
E
Q
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.0
29.5
57.0
Average opportunity cost (~P)


N = 3
N = 17
W
W = 36
p = 0.289
(r = 0.25)
Myxococcus sp. CA039A
ASM1333664v1
Opportunity cost (high respiration)
60
40
20
I
L
V
F
Y
K
M
H
C
T
R
N
P
D
A
S
Q
G
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.0
29.5
57.0
Average opportunity cost (~P)

N = 3

N = 17

W = 36

p = 0.289

(r = 0.25)

Myxococcus sp. CA051A
ASM1333670v1

Opportunity cost (high respiration)

60

40

20

I

L

V

F

Y

H

K

M

C

T

N

R

P

D

A

S

G

E

Q

Auxotrophic

Prototrophic

AA dispensability

high respiration (3 auxotrophic AAs)

p = 0.32

Proportion of permutations (%)

2.5

2.0

1.5

1.0

0.5

0.0

10.0

29.5

57.0

Average opportunity cost (~P)

N = 3

N = 17

W = 36

p = 0.289

(r = 0.25)

Myxococcus sp. CA056
ASM1333671v1

Opportunity cost (high respiration)

60

40

20

I

L

V

F

Y

M

H

K

C

T

R

N

P

D

G

A

Q

S

E

Auxotrophic

Prototrophic

AA dispensability

high respiration (3 auxotrophic AAs)

p = 0.32

Proportion of permutations (%)

2.5

2.0

1.5

1.0

0.5

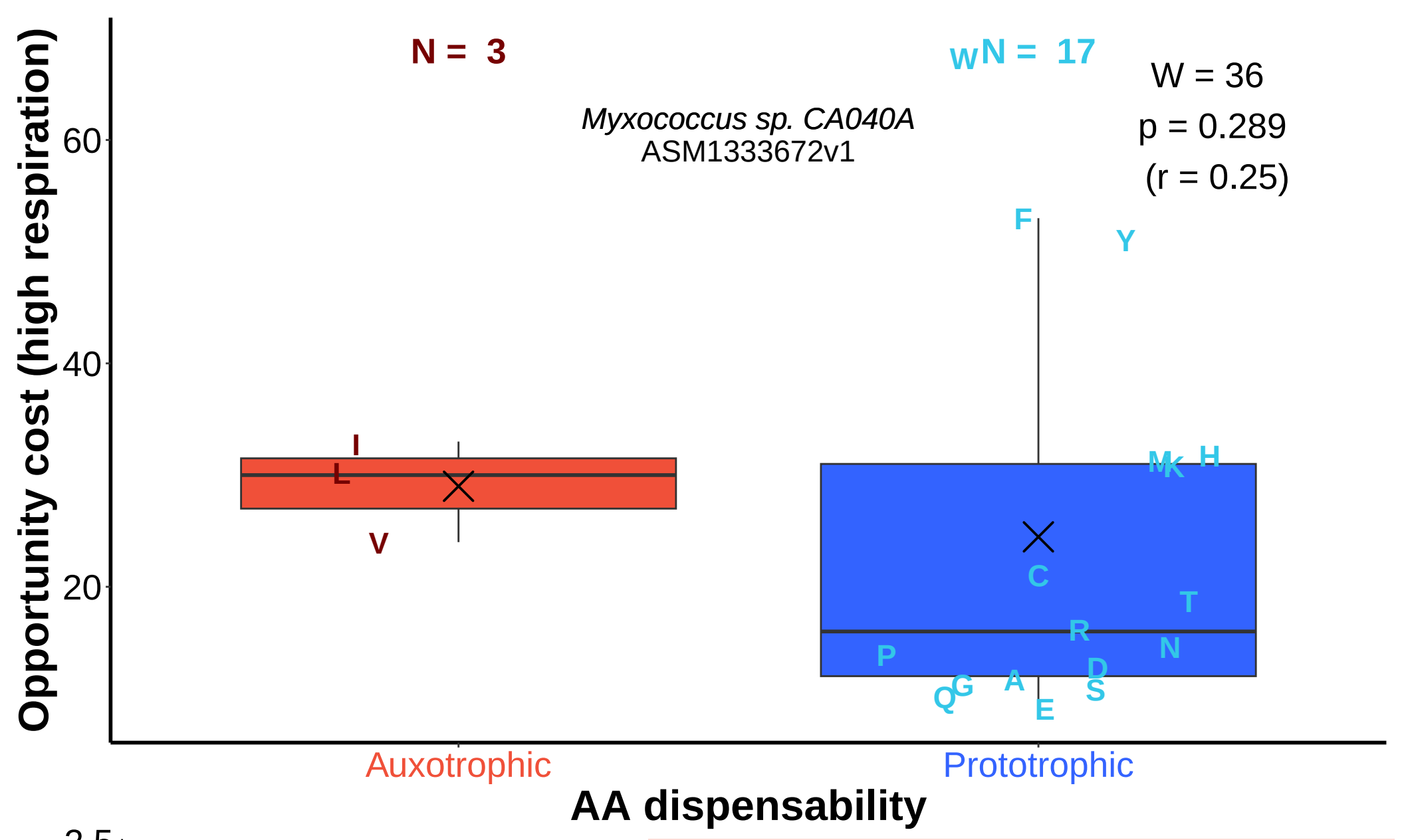
0.0

10.0

29.5

57.0

Average opportunity cost (~P)


N = 3
wN = 17
W = 36
p = 0.289
(r = 0.25)
Myxococcus sp. CA040A
ASM1333672v1
Opportunity cost (high respiration)
60
40
20
I
L
V
F
Y
Mk
H
C
T
R
N
P
D
S
A
G
Q
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.0
29.5
57.0
Average opportunity cost (~P)

N = 3

N = 17

W = 36

p = 0.289

(r = 0.25)

Myxococcus sp. AM010
ASM1337258v1

Opportunity cost (high respiration)

60

40

20

I

L

V

H

K

M

C

T

R

N

P

D

A

S

G

Q

E

Y

F

Auxotrophic

Prototrophic

AA dispensability

high respiration (3 auxotrophic AAs)

p = 0.32

Proportion of permutations (%)

2.5

2.0

1.5

1.0

0.5

0.0

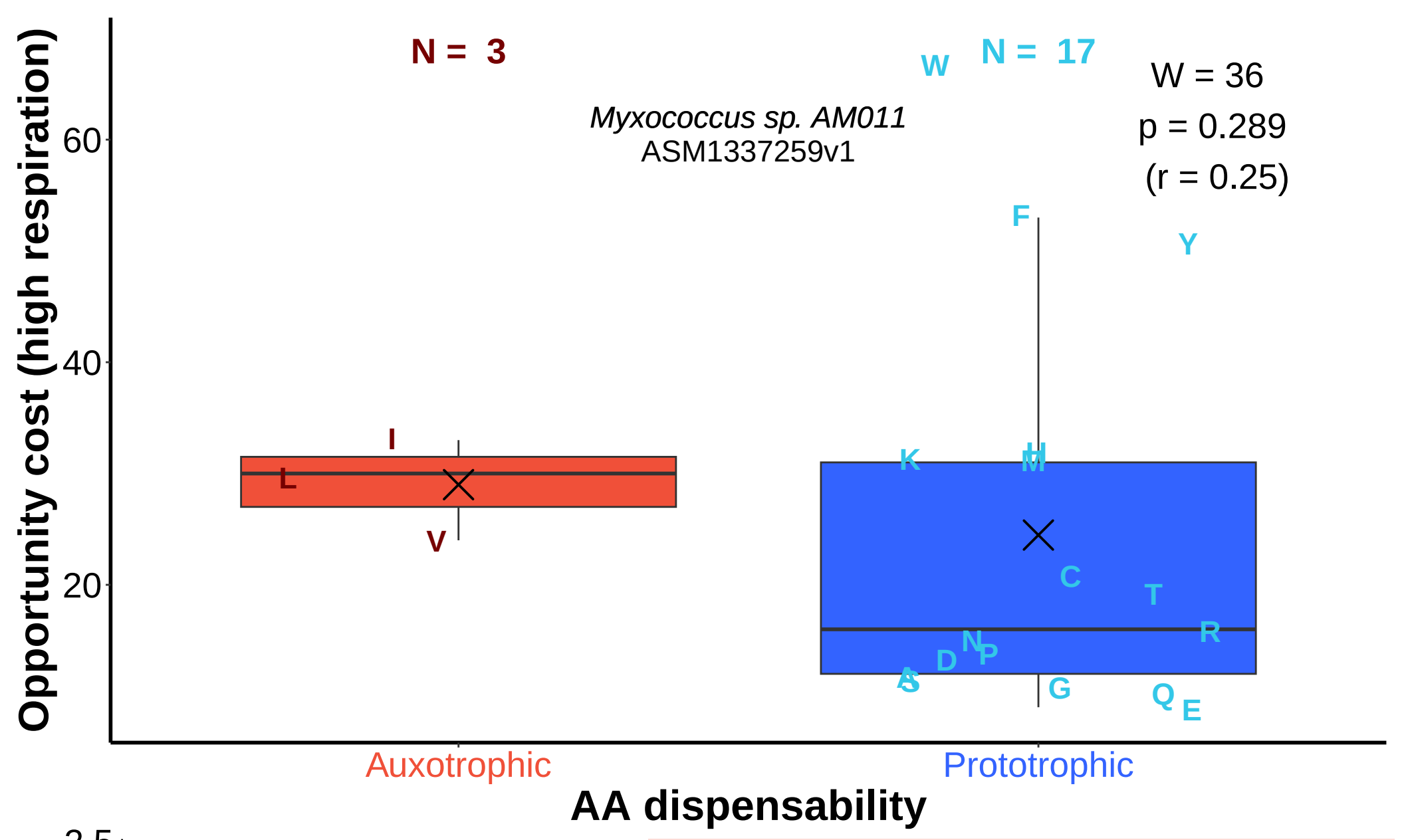
10.0

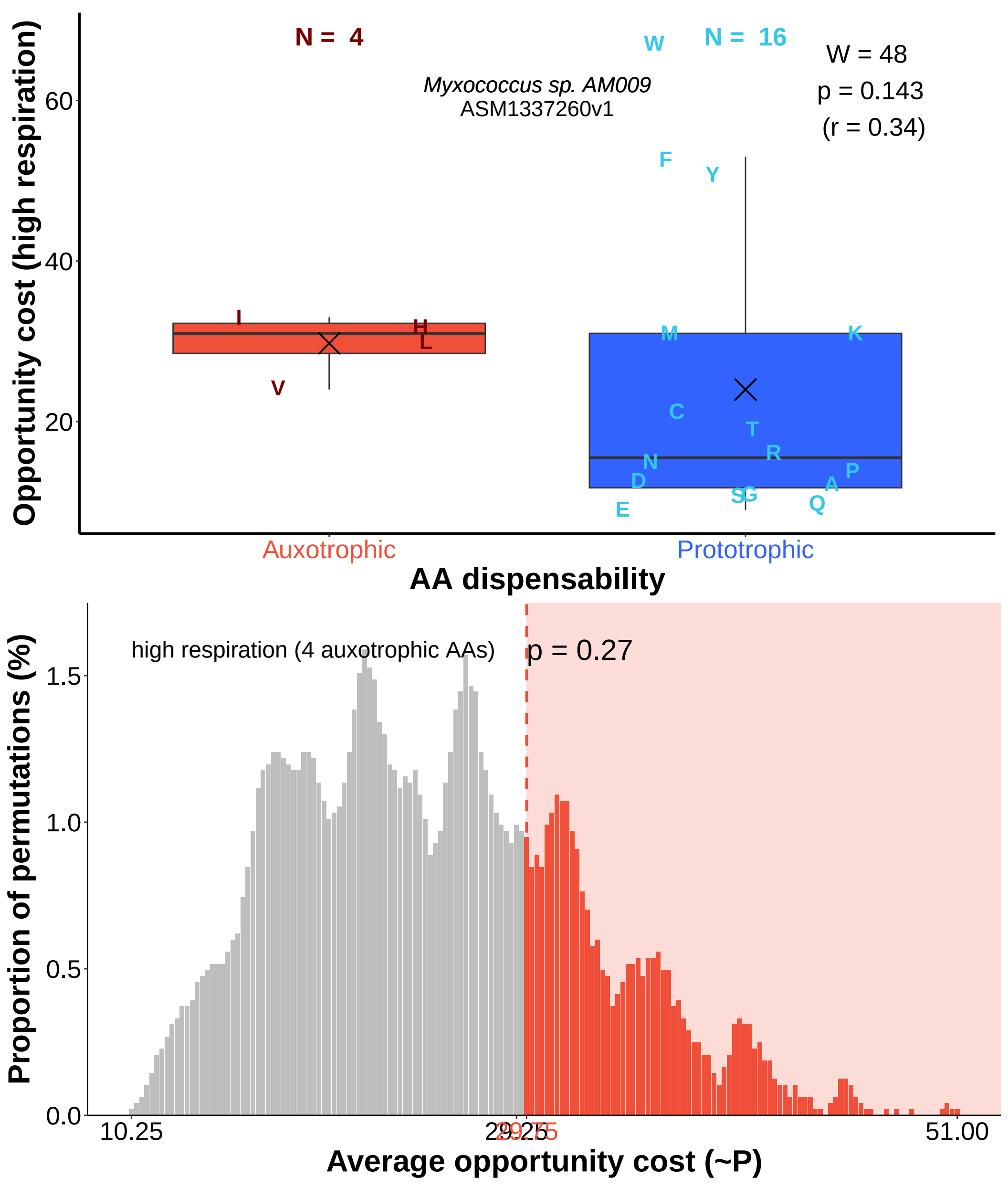
29.0

29.5

57.0

Average opportunity cost (~P)


N = 3
N = 17
W
W = 36
p = 0.289
(r = 0.25)
Myxococcus sp. AM011
ASM1337259v1
Opportunity cost (high respiration)
60
40
20
I
L
V
F
Y
K
M
H
C
T
R
N
P
D
A
S
G
Q
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.0
29.5
57.0
Average opportunity cost (~P)


N = 4
N = 16
W
W = 48
p = 0.143
(r = 0.34)
Myxococcus sp. AM009
ASM1337260v1
Opportunity cost (high respiration)
60
40
20
I
H
L
V
F
Y
M
K
C
T
R
N
P
D
A
S
G
Q
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (4 auxotrophic AAs)
p = 0.27
Proportion of permutations (%)
1.5
1.0
0.5
0.0
10.25
29.25
51.00
Average opportunity cost (~P)

N = 1

N = 19

W

W = 15

p = 0.386

(r = 0.21)

Anaeromyxobacter dehalogenans 2CP−C
ASM1338v1

Opportunity cost (high respiration)

60

40

20

H

Y

F

I

K

L

M

V

C

T

R

N

D

P

G

A

Q

E

S

Auxotrophic

Prototrophic

AA dispensability

high respiration (1 auxotrophic AAs)

p = 0.25

Proportion of permutations (%)

10.0

7.5

5.0

2.5

0.0

9

20

32

67

Average opportunity cost (~P)

N = 3

N = 17

W = 36

p = 0.289

(r = 0.25)

Corallococcus soli
ASM1493045v1

Opportunity cost (high respiration)

60

40

20

I

L

V

W

Y

F

K

H

M

C

T

R

P

D

N

A

S

Q

G

E

Auxotrophic

Prototrophic

AA dispensability

high respiration (3 auxotrophic AAs)

p = 0.32

Proportion of permutations (%)

2.5

2.0

1.5

1.0

0.5

0.0

10.0

29.5

57.0

Average opportunity cost (~P)

N = 4

N = 16

W = 51

p = 0.0802

(r = 0.4)

Simulacricoccus sp. 17bor−14
ASM1535426v1

Opportunity cost (high respiration)

60

40

20

F

I

L

V

Y

H

M K

C

T

R N

D P

Q

E

G S

A

Auxotrophic

Prototrophic

AA dispensability

high respiration (4 auxotrophic AAs)

p = 0.11

Proportion of permutations (%)

1.5

1.0

0.5

0.0

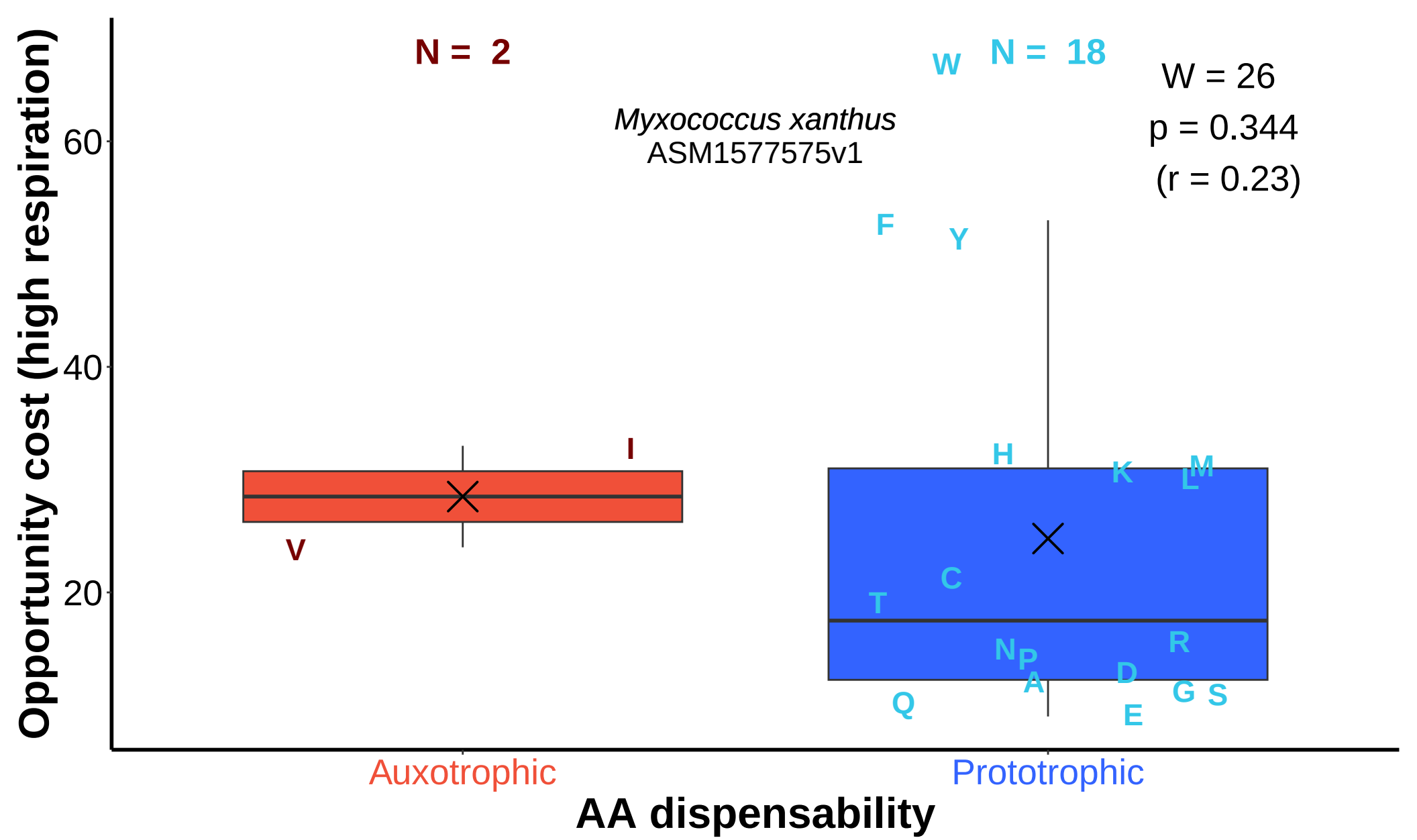
10.25

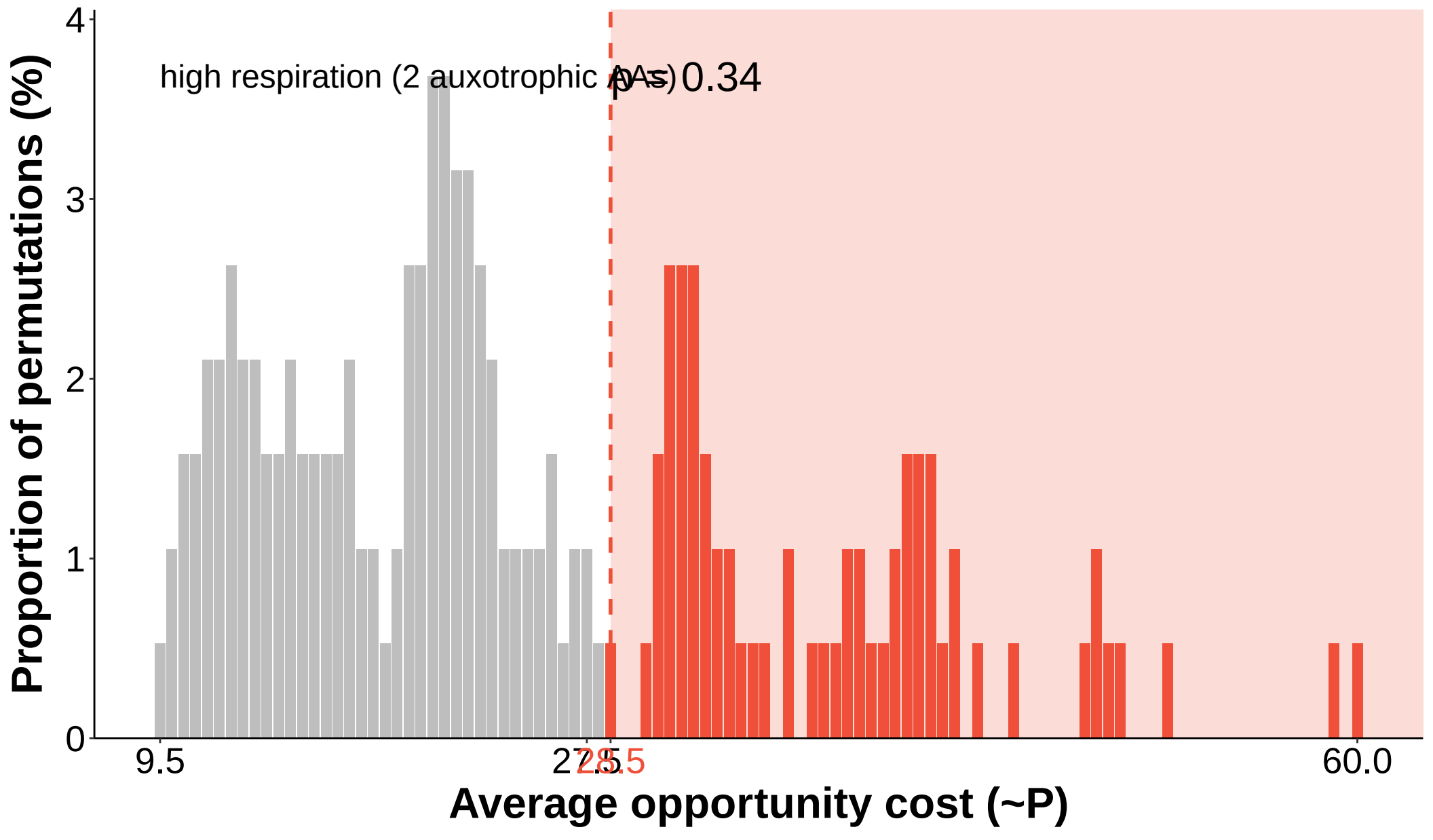
29.25

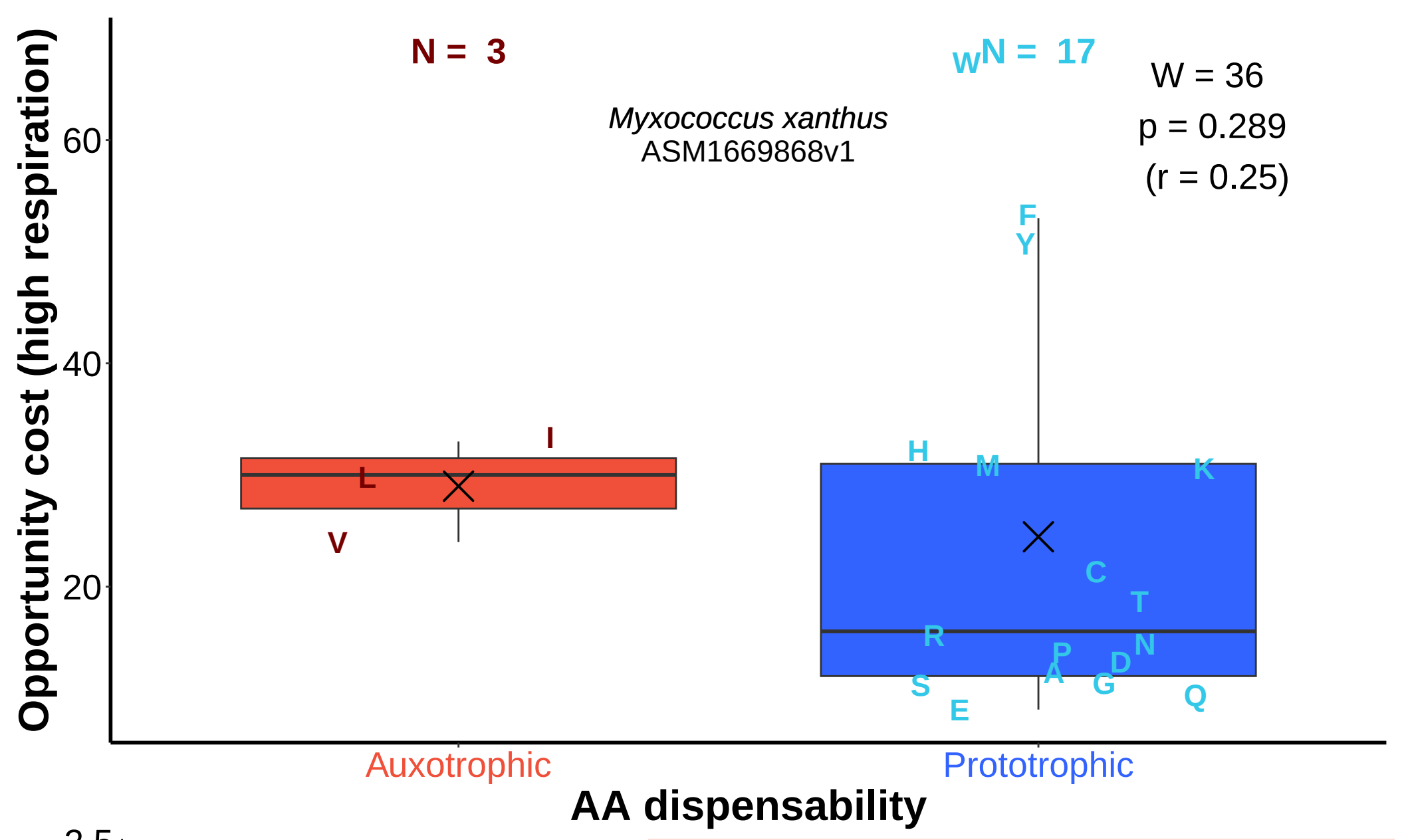
35.00

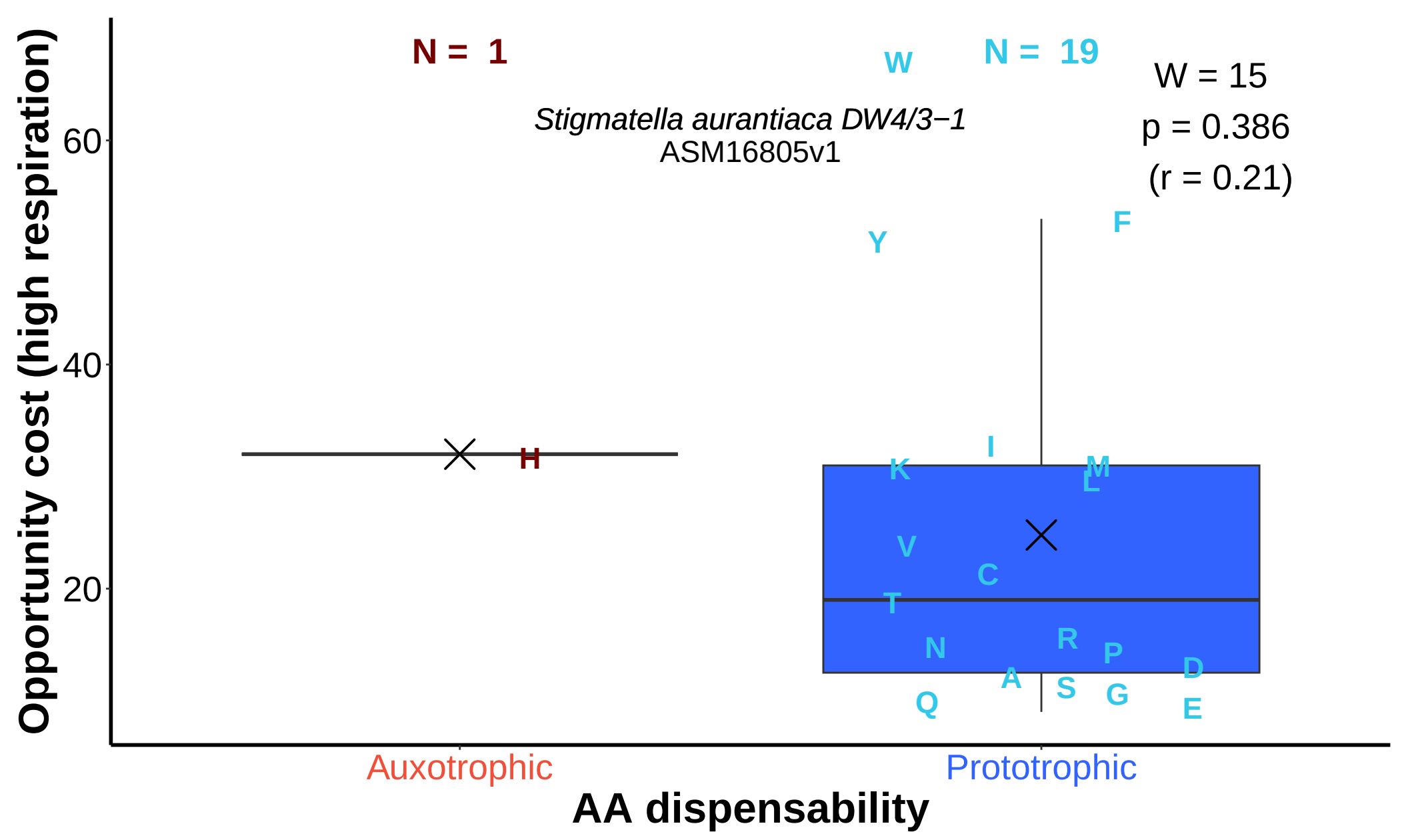
51.00

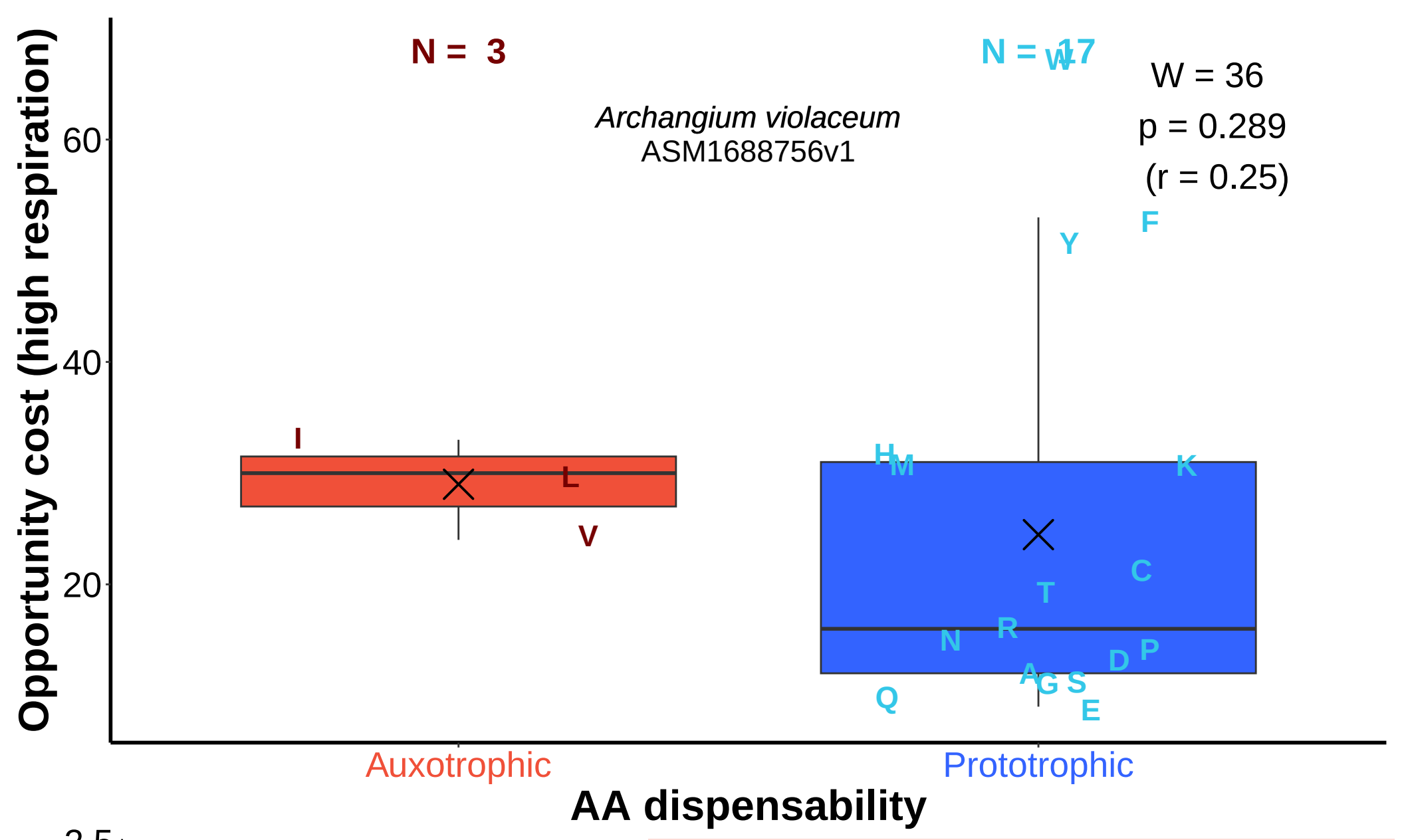
Average opportunity cost (~P)

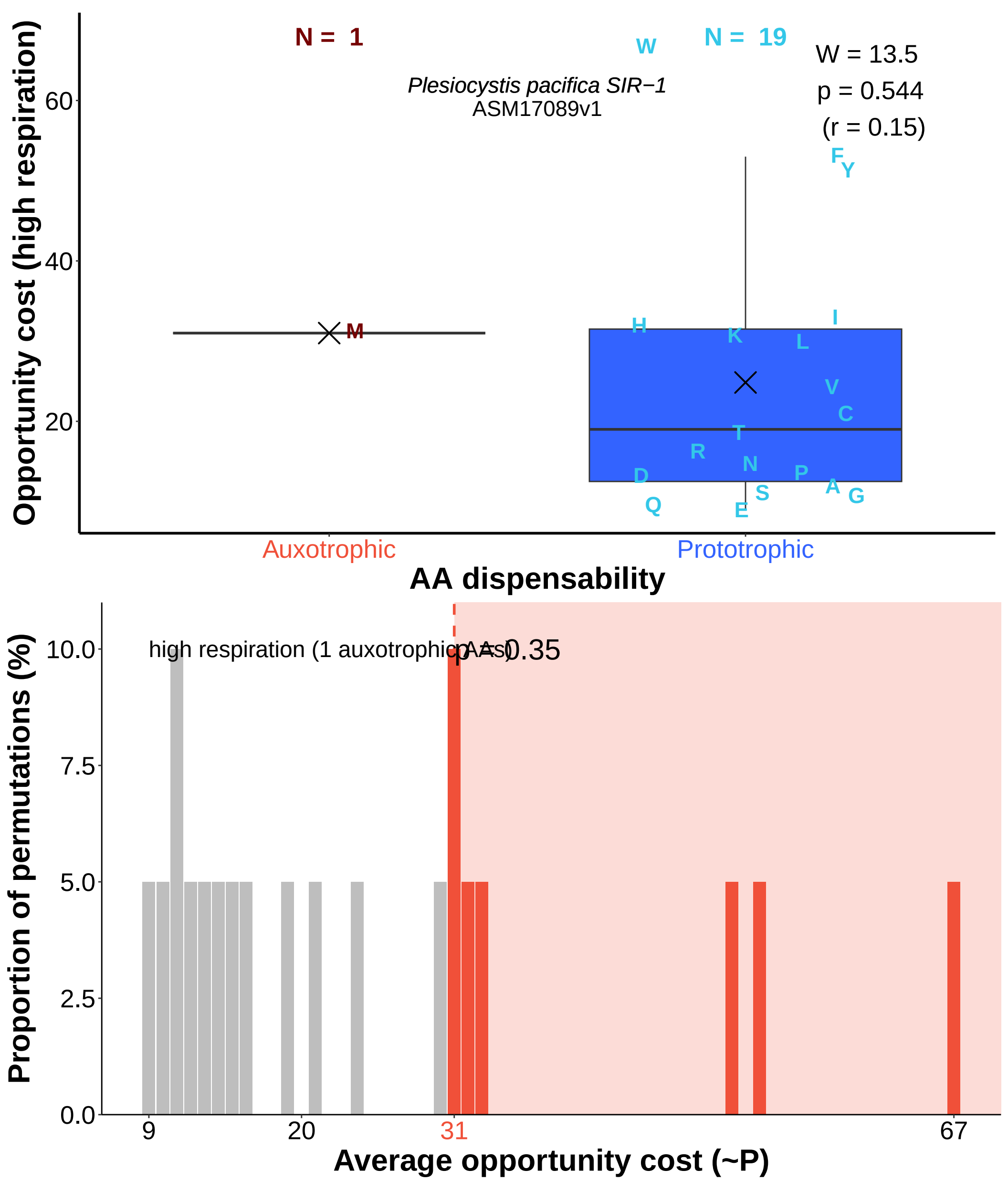

N = 2
N = 18
W
W = 26
p = 0.344
(r = 0.23)
Myxococcus xanthus
ASM1577575v1
Opportunity cost (high respiration)
60
40
20
F
Y
I
V
H
K
L
M
C
T
N
P
A
R
D
G
S
Q
E
Auxotrophic
Prototrophic
AA dispensability


high respiration (2 auxotrophic AAs)
p = 0.34
Proportion of permutations (%)
4
3
2
1
0
9.5
27.5
28.5
60.0
Average opportunity cost (~P)

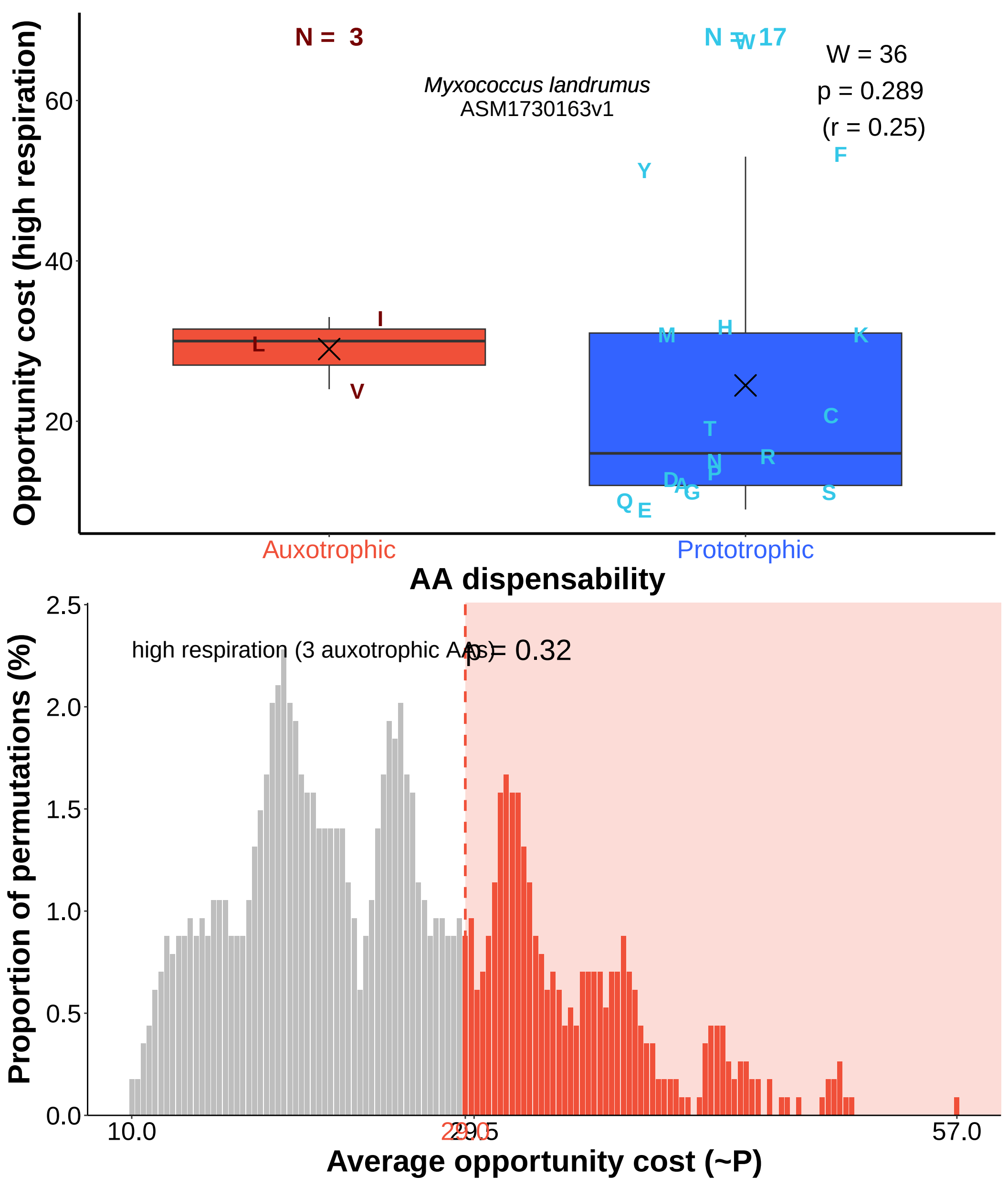

N = 3
N = 17
W = 36
p = 0.289
(r = 0.25)
Myxococcus xanthus
ASM1669868v1
Opportunity cost (high respiration)
60
40
20
I
L
V
F
Y
H
M
K
C
T
R
P
N
D
A
G
S
E
Q
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.0
29.5
57.0
Average opportunity cost (~P)

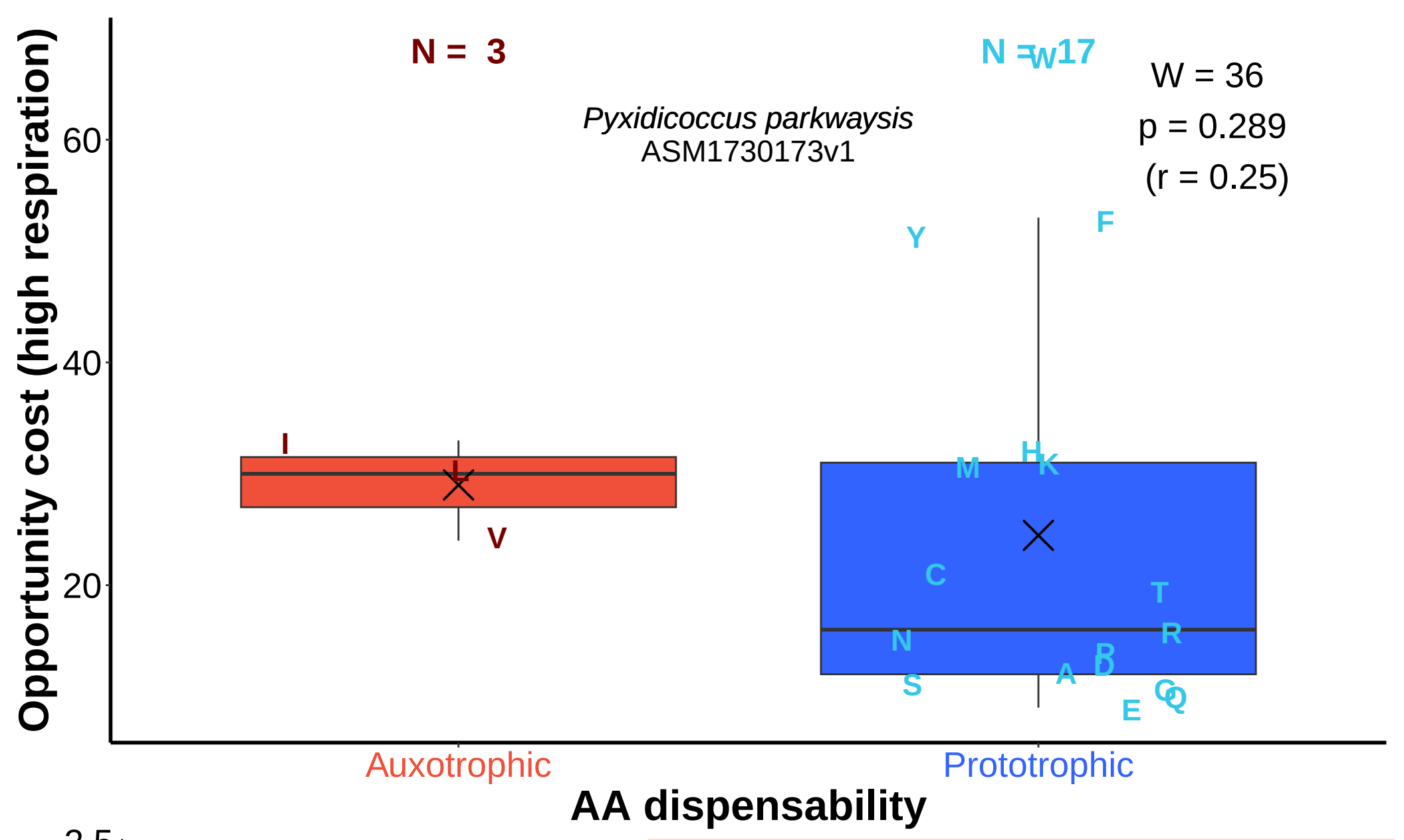

N = 1
N = 19
W
W = 15
p = 0.386
(r = 0.21)
Stigmatella aurantiaca DW4/3−1
ASM16805v1
Opportunity cost (high respiration)
60
40
20
H
Y
F
I
K
M
L
V
C
T
N
R
P
D
A
S
G
Q
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (1 auxotrophic AAs)
p = 0.25
Proportion of permutations (%)
10.0
7.5
5.0
2.5
0.0
9
20
32
67
Average opportunity cost (~P)


N = 3
N = 17
W = 36
p = 0.289
(r = 0.25)
Archangium violaceum
ASM1688756v1
Opportunity cost (high respiration)
60
40
20
I
L
V
F
Y
H
M
K
C
T
R
N
D
P
A
G
S
Q
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.0
57.0
Average opportunity cost (~P)



N = 1
W
N = 19
W = 13.5
p = 0.544
(r = 0.15)
Plesiocystis pacifica SIR−1
ASM17089v1
Opportunity cost (high respiration)
60
40
20
M
H
K
L
I
V
C
T
R
N
P
D
S
A
G
Q
E
F
Y
Auxotrophic
Prototrophic
AA dispensability
high respiration (1 auxotrophic AAs)
p = 0.35
Proportion of permutations (%)
10.0
7.5
5.0
2.5
0.0
9
20
31
67
Average opportunity cost (~P)


N = 3
N = 17
W = 36
p = 0.289
(r = 0.25)
Myxococcus landrumus
ASM1730163v1
Opportunity cost (high respiration)
60
40
20
I
L
V
Y
F
M
H
K
C
T
R
N
P
D
A
G
Q
E
S
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.0
57.0
Average opportunity cost (~P)


N = 3
N = 17
W = 36
p = 0.289
(r = 0.25)
Pyxidicoccus parkwaysis
ASM1730173v1
Opportunity cost (high respiration)
60
40
20
I
L
V
Y
F
H
K
M
C
T
R
N
B
A
S
G
Q
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.0
29.5
57.0
Average opportunity cost (~P)

N = 3

N = 17

Corallococcus exiguus
ASM1730297v1

W = 36
p = 0.289
(r = 0.25)

Opportunity cost (high respiration)

60
40
20

I
L
V

F
Y
H
M
K
C
T
R
N
P
D
A
G
S
Q
E

Auxotrophic
Prototrophic

AA dispensability

high respiration (3 auxotrophic AAs)

p = 0.32

Proportion of permutations (%)

2.5
2.0
1.5
1.0
0.5
0.0

10.0
29.0
57.0

Average opportunity cost (~P)

N = 3

N = 17

Corallococcus macrosporus
ASM1730298v1

W = 36
p = 0.289
(r = 0.25)

Opportunity cost (high respiration)

60
40
20

I
L
V

F
Y
W
K
M
H
C
T
R
P
N
D
S
A
G
Q
E

Auxotrophic
Prototrophic

AA dispensability

high respiration (3 auxotrophic AAs)

p = 0.32

Proportion of permutations (%)

2.5
2.0
1.5
1.0
0.5
0.0

10.0
29.0
29.5
57.0

Average opportunity cost (~P)

N = 3

N = 17

W = 36

p = 0.289

(r = 0.25)

Corallococcus sp. NCSPR001
ASM1730913v1

Opportunity cost (high respiration)

60

40

20

I

L

V

F

Y

H

K M

C

T

R

N

P

D

S

A

Q

E

G

Auxotrophic

Prototrophic

AA dispensability

high respiration (3 auxotrophic AAs)

p = 0.32

Proportion of permutations (%)

2.5

2.0

1.5

1.0

0.5

0.0

10.0

29.0

29.5

57.0

Average opportunity cost (~P)

N = 1

N = 19

W = 15
p = 0.386
(r = 0.21)

Anaeromyxobacter sp. Fw109−5
ASM1750v1

Opportunity cost (high respiration)

60
40
20

H

F
Y
I
L
K
M
V
C
T
R
N
P
D
A
S
G
Q
E

Auxotrophic
Prototrophic

AA dispensability

high respiration (1 auxotrophic AAs)

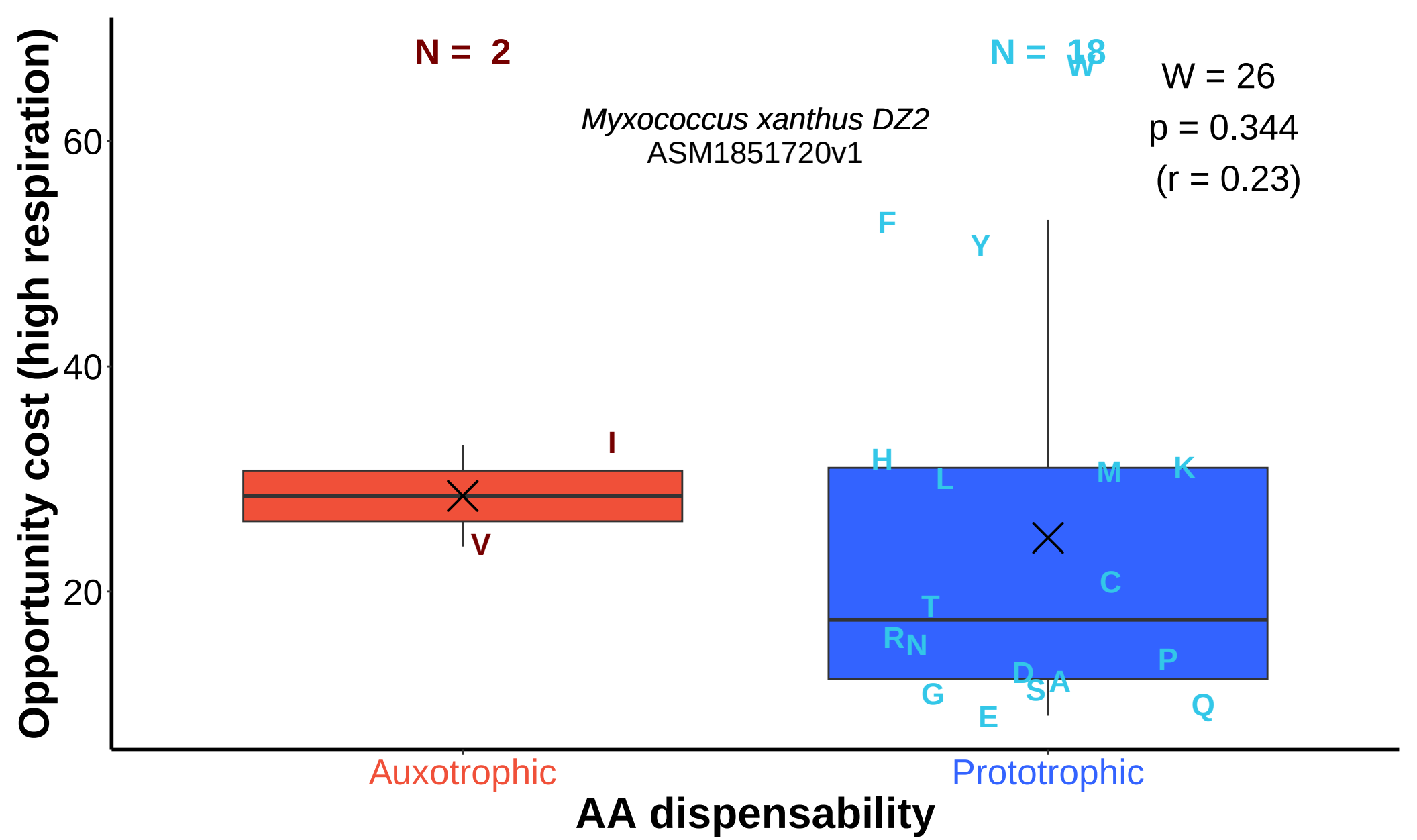
p = 0.25

Proportion of permutations (%)

10.0
7.5
5.0
2.5
0.0

9
20
32
67

Average opportunity cost (~P)


N = 2
N = 18
W = 26
p = 0.344
(r = 0.23)
Myxococcus xanthus DZ2
ASM1851720v1
Opportunity cost (high respiration)
60
40
20
I
V
F
Y
H
L
M
K
C
T
R
N
P
D
S
A
G
E
Q
Auxotrophic
Prototrophic
AA dispensability
high respiration (2 auxotrophic AAs)
p = 0.34
Proportion of permutations (%)
4
3
2
1
0
9.5
27.5
28.5
60.0
Average opportunity cost (~P)

N = 3

N = 17

W = 36
p = 0.289
(r = 0.25)

Archangium sp. Cb G35
ASM189614v1

Opportunity cost (high respiration)

60
40
20

I
L
V

W
Y
F
H
M
K
C
T
N
R
P
D
A
S
G
E
Q

Auxotrophic
Prototrophic

AA dispensability

high respiration (3 auxotrophic AAs)

p = 0.32

Proportion of permutations (%)

2.5
2.0
1.5
1.0
0.5
0.0

10.0
29.0
29.5
57.0

Average opportunity cost (~P)

Citreicoccus inhibens
ASM1903903v1

N = 3

N = 17

W = 36
p = 0.289
(r = 0.25)

Opportunity cost (high respiration)

60
40
20

I
L
V

F
Y
M
K
H
C
T
R
N
P
D
A
S
E
G
Q

Auxotrophic
Prototrophic

AA dispensability

high respiration (3 auxotrophic AAs)

p = 0.32

Proportion of permutations (%)

2.5
2.0
1.5
1.0
0.5
0.0

10.0
29.0
29.5
57.0

Average opportunity cost (~P)

N = 13

N = 7

W = 79

p = 0.00887

(r = 0.59)

Pajaroellobacter abortibovis
ASM193150v1

Opportunity cost (high respiration)

60

40

20

F Y H I L M V C T R S P

K N D A E Q G

Auxotrophic

Prototrophic

AA dispensability

high respiration (13 auxotrophic AAs)

p = 0.005

Proportion of permutations (%)

1.2

0.9

0.6

0.3

0.0

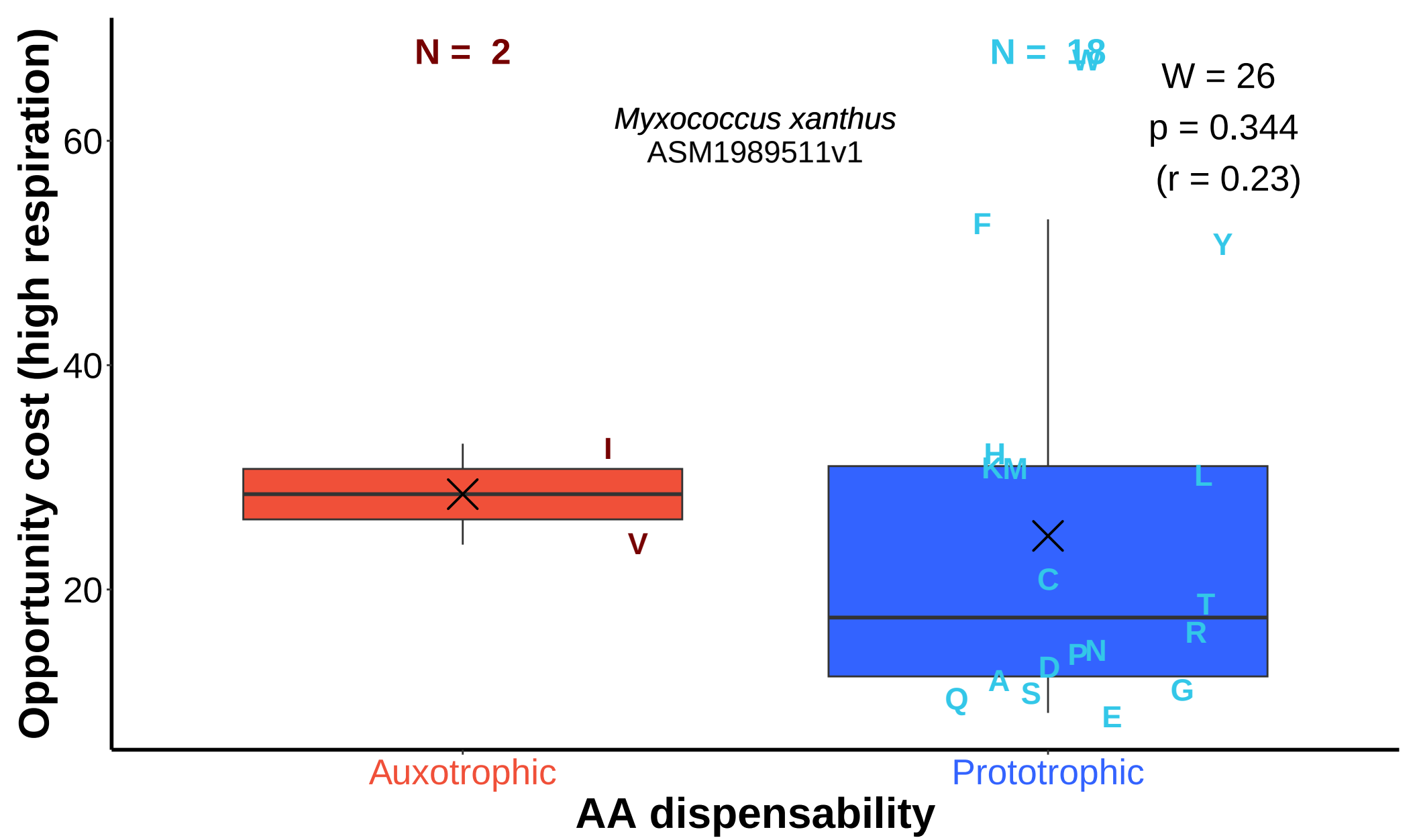
15.77

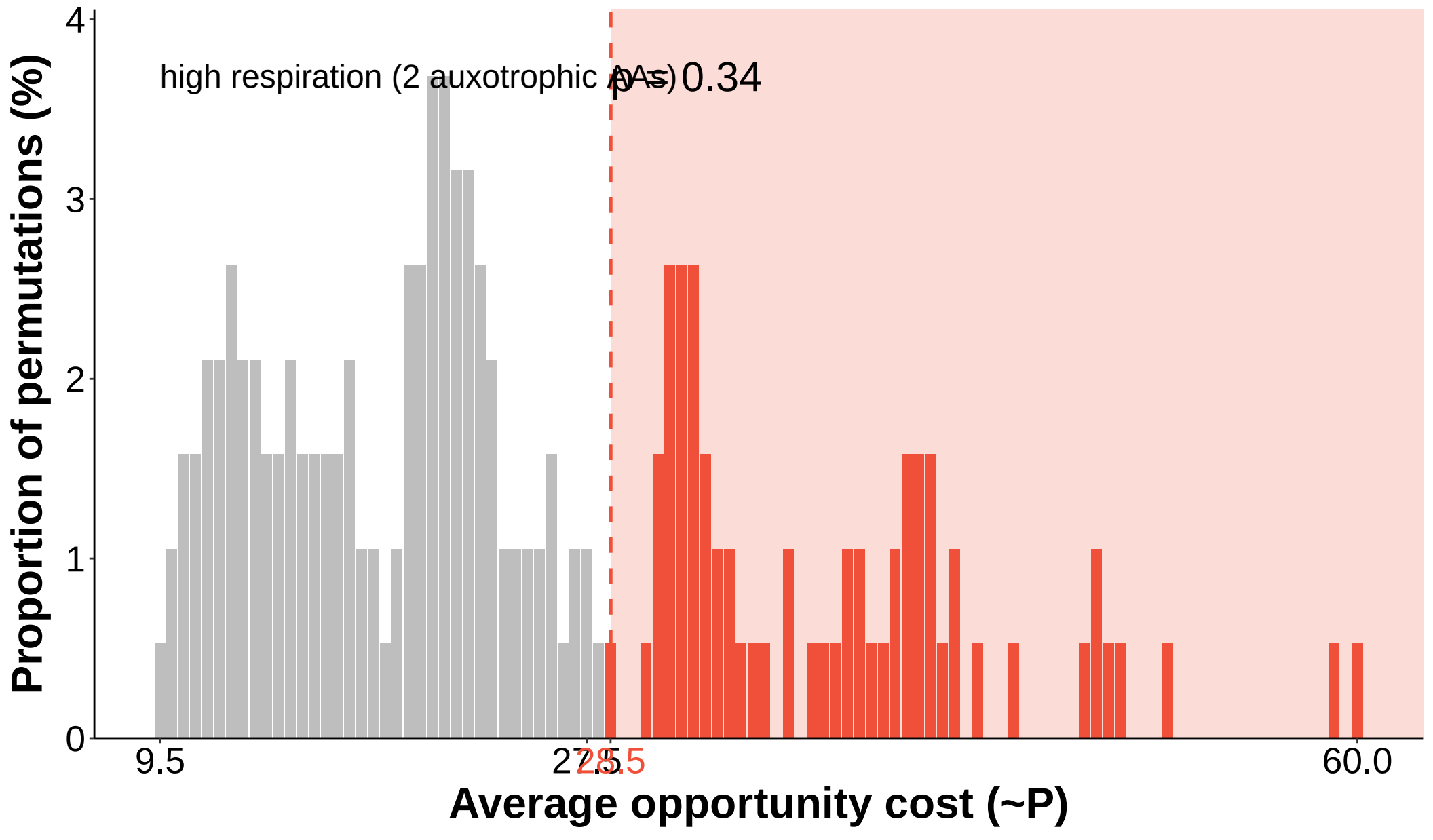
24.27

30.92

32.54

Average opportunity cost (~P)


N = 2
N = 18
W = 26
p = 0.344
(r = 0.23)
Myxococcus xanthus
ASM1989511v1
Opportunity cost (high respiration)
60
40
20
I
V
F
Y
H
K
M
L
C
T
R
P
N
D
A
S
Q
G
E
Auxotrophic
Prototrophic
AA dispensability


high respiration (2 auxotrophic AAs)
p = 0.34
Proportion of permutations (%)
4
3
2
1
0
9.5
27.5
28.5
60.0
Average opportunity cost (~P)

N = 3

N = 17

W

W = 36

p = 0.289

(r = 0.25)

Corallococcus sp. AS−1−12
ASM2003699v1

Opportunity cost (high respiration)

60

40

20

I

L

V

Y F

H

K M

C

T

R

N

D

P

A

G

Q

S

E

Auxotrophic

Prototrophic

AA dispensability

high respiration (3 auxotrophic AAs)

p = 0.32

Proportion of permutations (%)

2.5

2.0

1.5

1.0

0.5

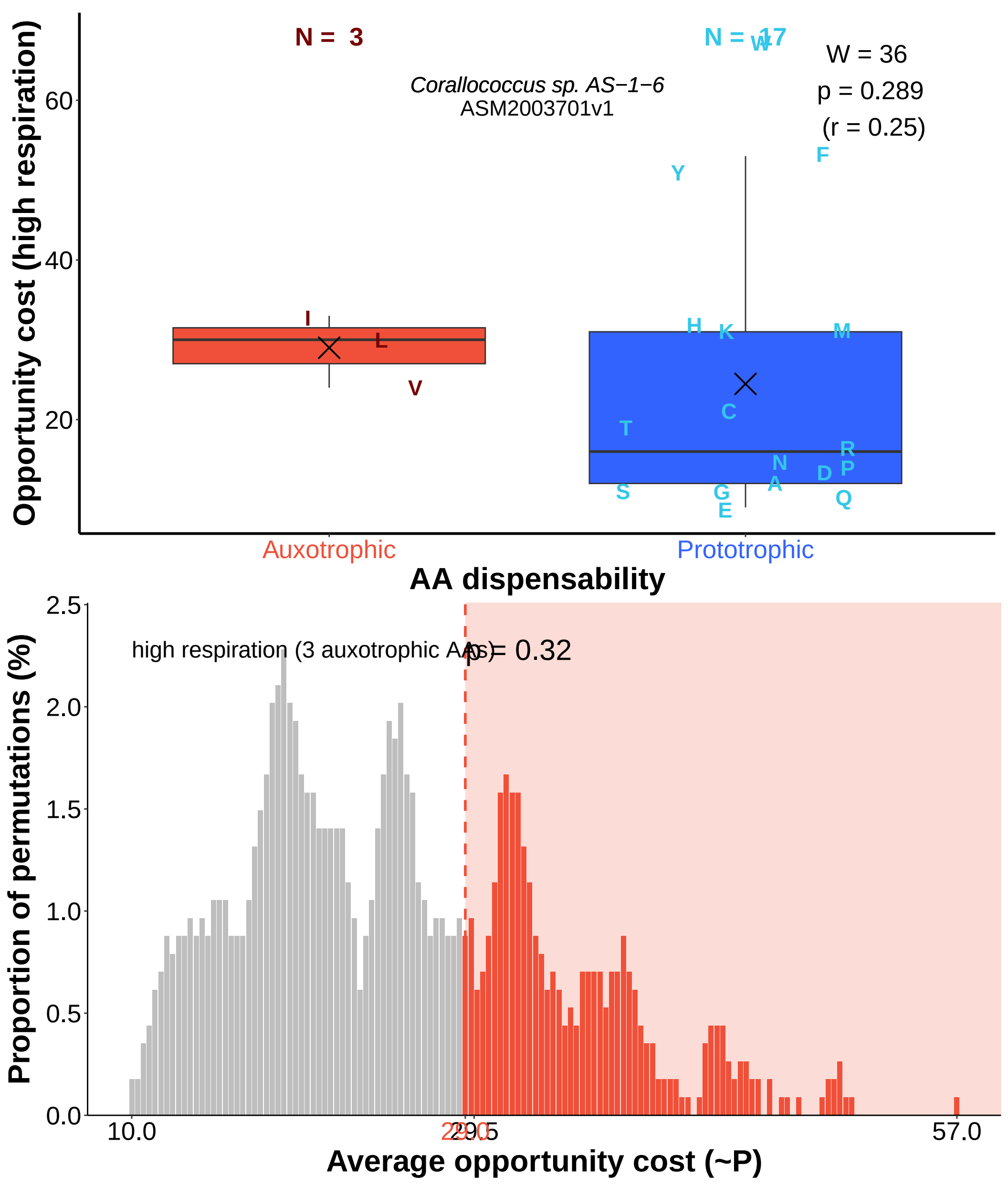
0.0

10.0

29.5

57.0

Average opportunity cost (~P)


N = 3
N = 17
W = 36
p = 0.289
(r = 0.25)
Corallococcus sp. AS−1−6
ASM2003701v1
Opportunity cost (high respiration)
60
40
20
I
L
V
Y
F
H
K
M
C
T
R
N
D
P
A
S
G
E
Q
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.0
57.0
Average opportunity cost (~P)

N = 3

N = 17

W

W = 36

p = 0.289

(r = 0.25)

Myxococcus sp. AS−1−15
ASM2003705v1

F

Y

I

L

V

M

H

K

C

T

R

N

P

D

S

A

G

Q

E

60

40

20

Opportunity cost (high respiration)

Auxotrophic

Prototrophic

AA dispensability

high respiration (3 auxotrophic AAs)

p = 0.32

2.5

2.0

1.5

1.0

0.5

0.0

Proportion of permutations (%)

10.0

29.5

57.0

Average opportunity cost (~P)

N = 3

N = 17

Myxococcus sp. XM−1−1−1
ASM2003709v1

W = 36
p = 0.289
(r = 0.25)

Opportunity cost (high respiration)

60
40
20

I
L
V

F
Y
W
M
K
H
C
T
R
N
P
D
A
S
G
E
Q

Auxotrophic
Prototrophic

AA dispensability

high respiration (3 auxotrophic AAs)

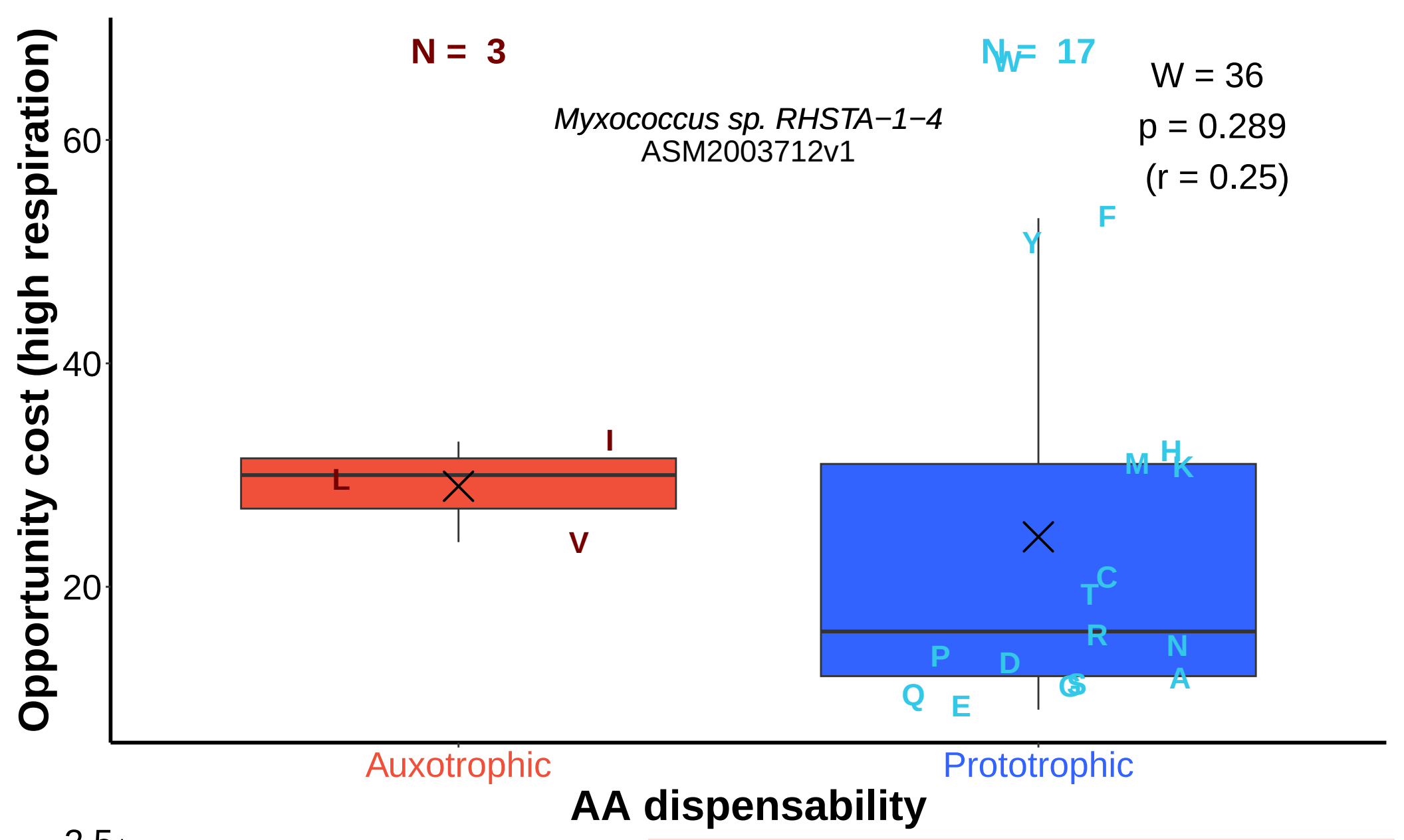
p = 0.32

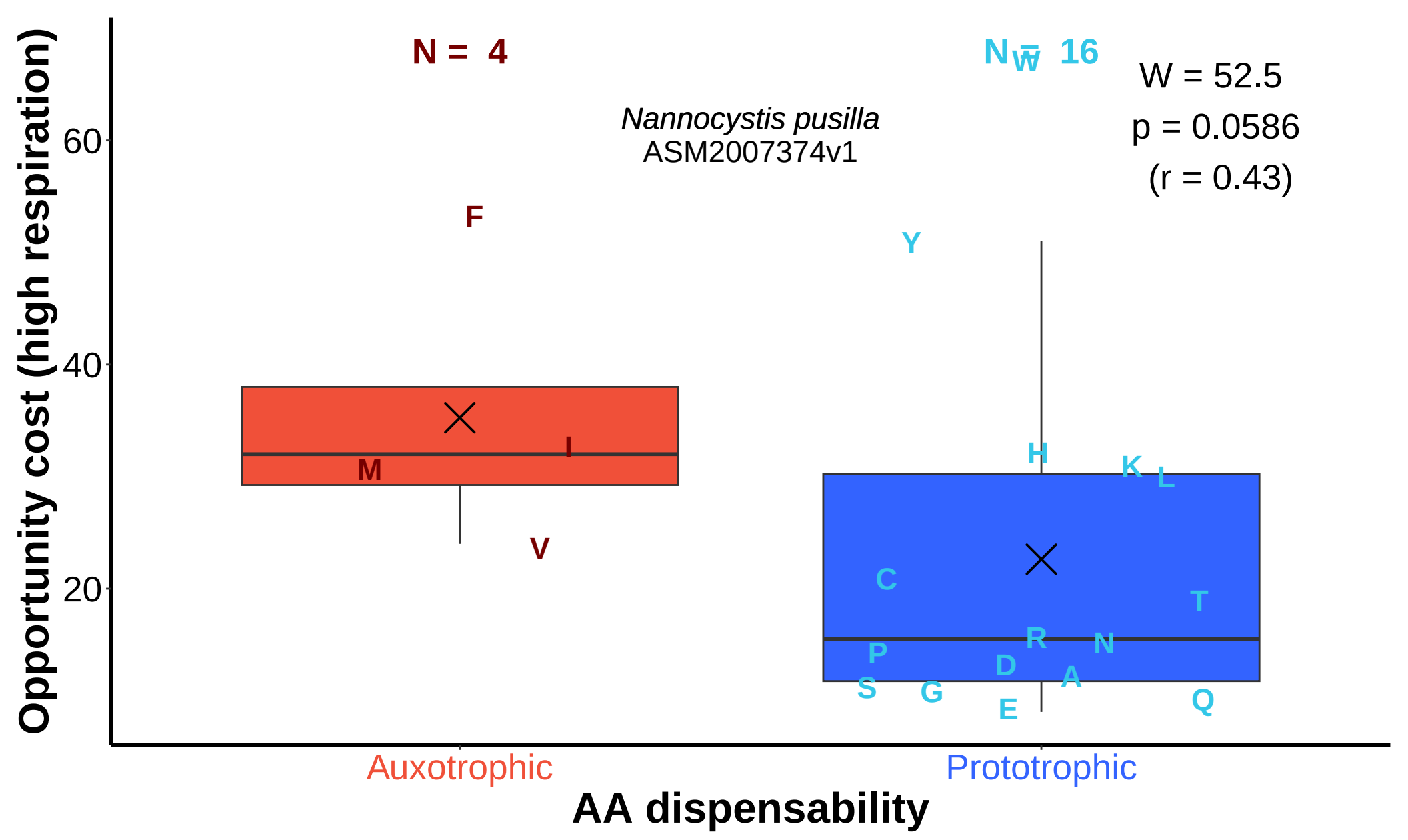
Proportion of permutations (%)

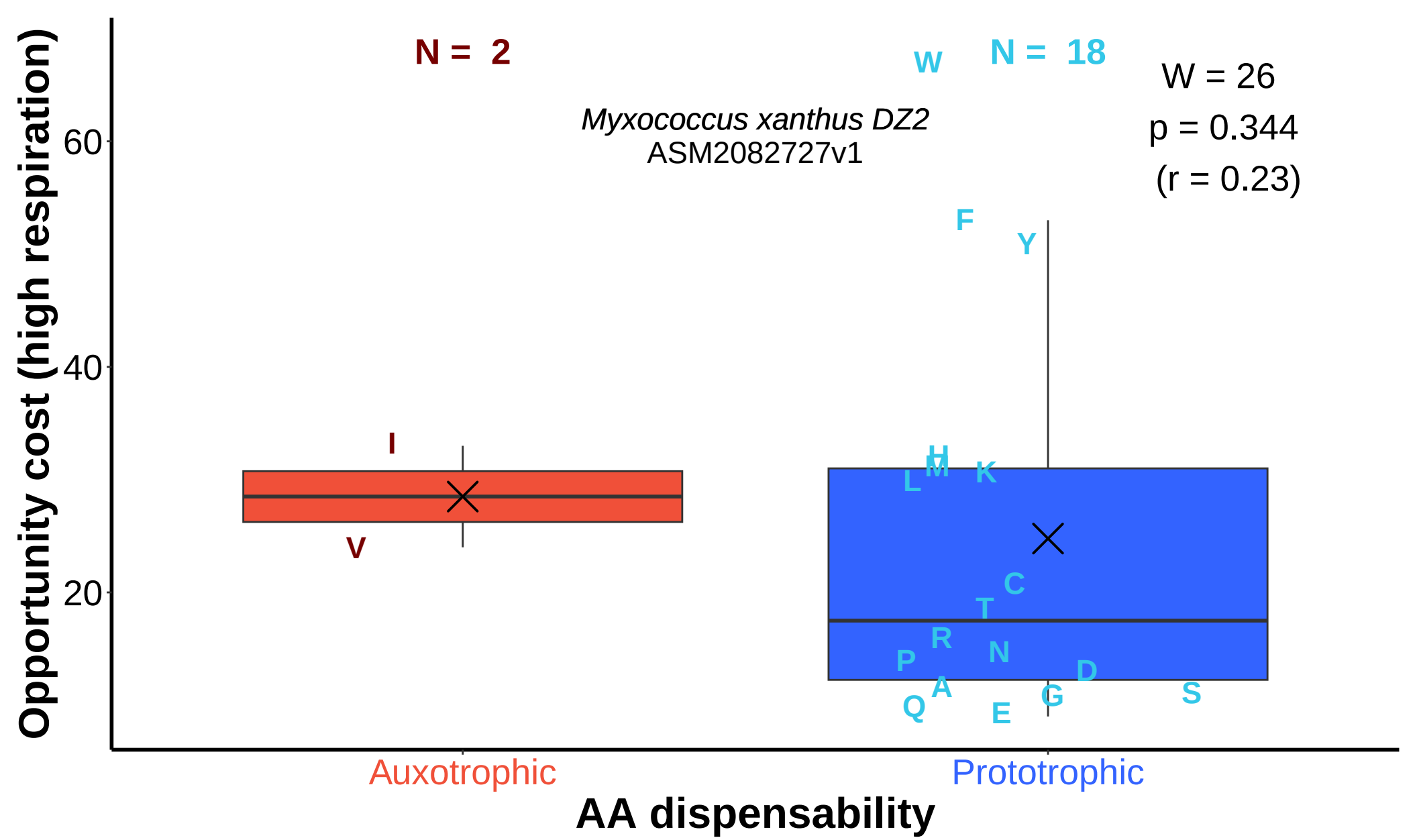
2.5
2.0
1.5
1.0
0.5
0.0

10.0
29.0
29.5
57.0

Average opportunity cost (~P)


N = 3
N = 17
W = 36
p = 0.289
(r = 0.25)
Myxococcus sp. RHSTA−1−4
ASM2003712v1
Opportunity cost (high respiration)
60
40
20
I
L
V
F
Y
M
H
K
C
T
R
N
P
D
Q
E
A
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.0
57.0
Average opportunity cost (~P)


N = 4
N = 16
W = 52.5
p = 0.0586
(r = 0.43)
Nannocystis pusilla
ASM2007374v1
Opportunity cost (high respiration)
60
40
20
F
M
I
V
Y
H
K
L
C
T
R
N
P
D
A
S
G
E
Q
Auxotrophic
Prototrophic
AA dispensability
high respiration (4 auxotrophic AAs)
p = 0.1
Proportion of permutations (%)
1.5
1.0
0.5
0.0
10.25
29.25
35.25
51.00
Average opportunity cost (~P)


N = 2
N = 18
W
W = 26
p = 0.344
(r = 0.23)
Myxococcus xanthus DZ2
ASM2082727v1
Opportunity cost (high respiration)
60
40
20
I
V
F
Y
H
M
L
K
C
T
R
N
P
D
A
Q
E
G
S
Auxotrophic
Prototrophic
AA dispensability
Proportion of permutations (%)
4
3
2
1
0
high respiration (2 auxotrophic AAs)
p = 0.34
9.5
27.5
28.5
60.0
Average opportunity cost (~P)

N = 3

N = 17

W = 36
p = 0.289
(r = 0.25)

Myxococcus stipitatus
ASM2141262v1

Opportunity cost (high respiration)

60
40
20

I
L
V

Y F H K M C T R N D A P S E Q G

Auxotrophic

Prototrophic

AA dispensability

high respiration (3 auxotrophic AAs)

p = 0.32

Proportion of permutations (%)

2.5
2.0
1.5
1.0
0.5
0.0

10.0
29.0
29.5
57.0

Average opportunity cost (~P)

N = 2

N = 18

W

W = 21.5

p = 0.705

(r = 0.099)

Sandaracinus amylolyticus
ASM2163198v1

Y

F

M

T

H

I

K

L

V

C

R

N

D

A

G

E

Q

S

60

40

20

Opportunity cost (high respiration)

Auxotrophic

Prototrophic

AA dispensability

high respiration (2 auxotrophic AAs)

p = 0.41

4

3

2

1

0

Proportion of permutations (%)

9.5

25.0

27.5

60.0

Average opportunity cost (~P)

N = 4

N = 16

W = 48

p = 0.143

(r = 0.34)

Corallococcus macrosporus
ASM21910v1

Opportunity cost (high respiration)

60

40

20

I

H

L

V

F

Y

K

M

C

T

R

N

D

A

S

Q

E

G

Auxotrophic

Prototrophic

AA dispensability

high respiration (4 auxotrophic AAs)

p = 0.27

Proportion of permutations (%)

1.5

1.0

0.5

0.0

10.25

29.25

51.00

Average opportunity cost (~P)

N = 1

N = 19

Anaeromyxobacter dehalogenans 2CP−1
ASM2214v1

W = 15
p = 0.386
(r = 0.21)

Opportunity cost (high respiration)

60
40
20

H

W F Y I K M L V C T R P N D A Q S G E

Auxotrophic

Prototrophic

AA dispensability

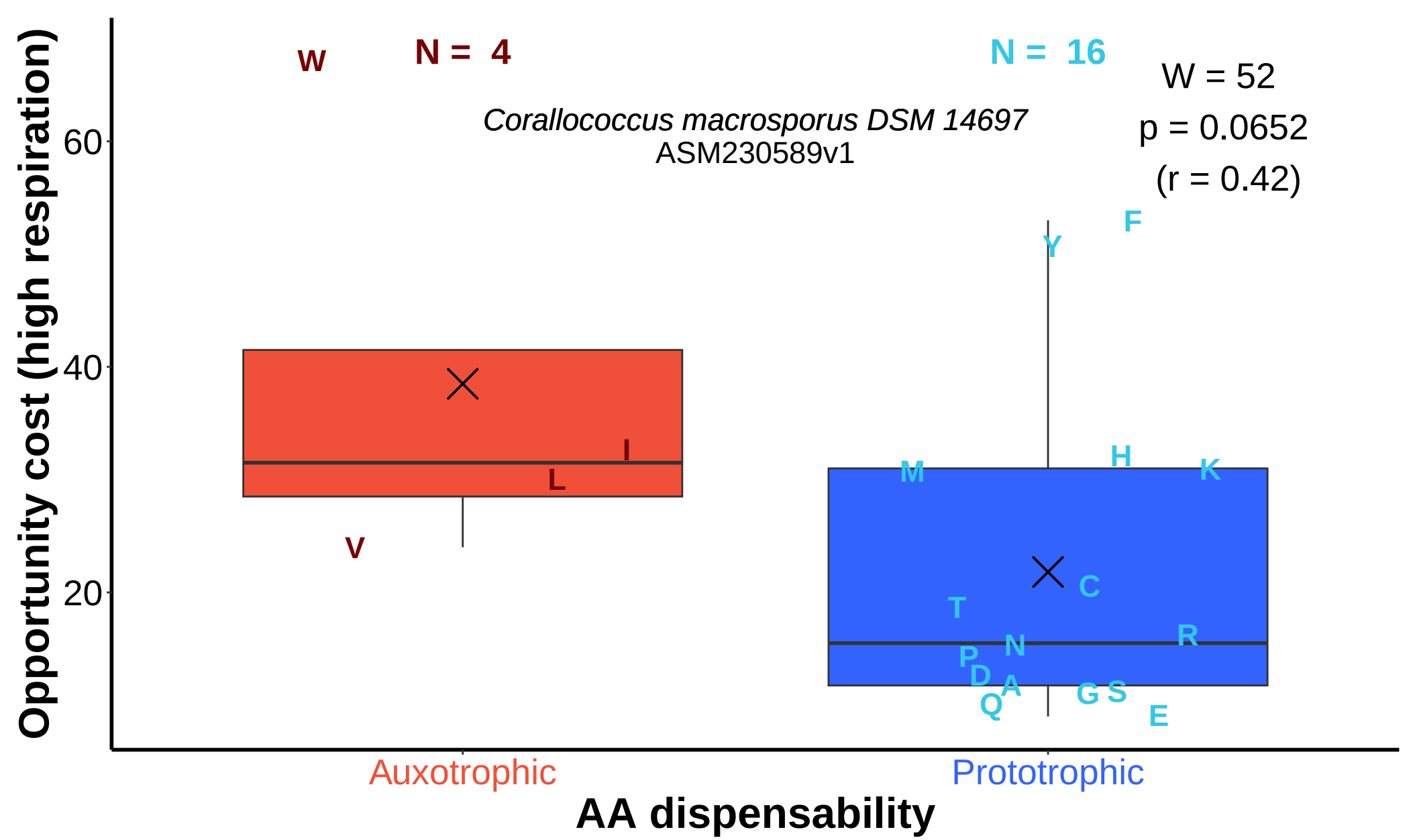
high respiration (1 auxotrophic AA) p = 0.25

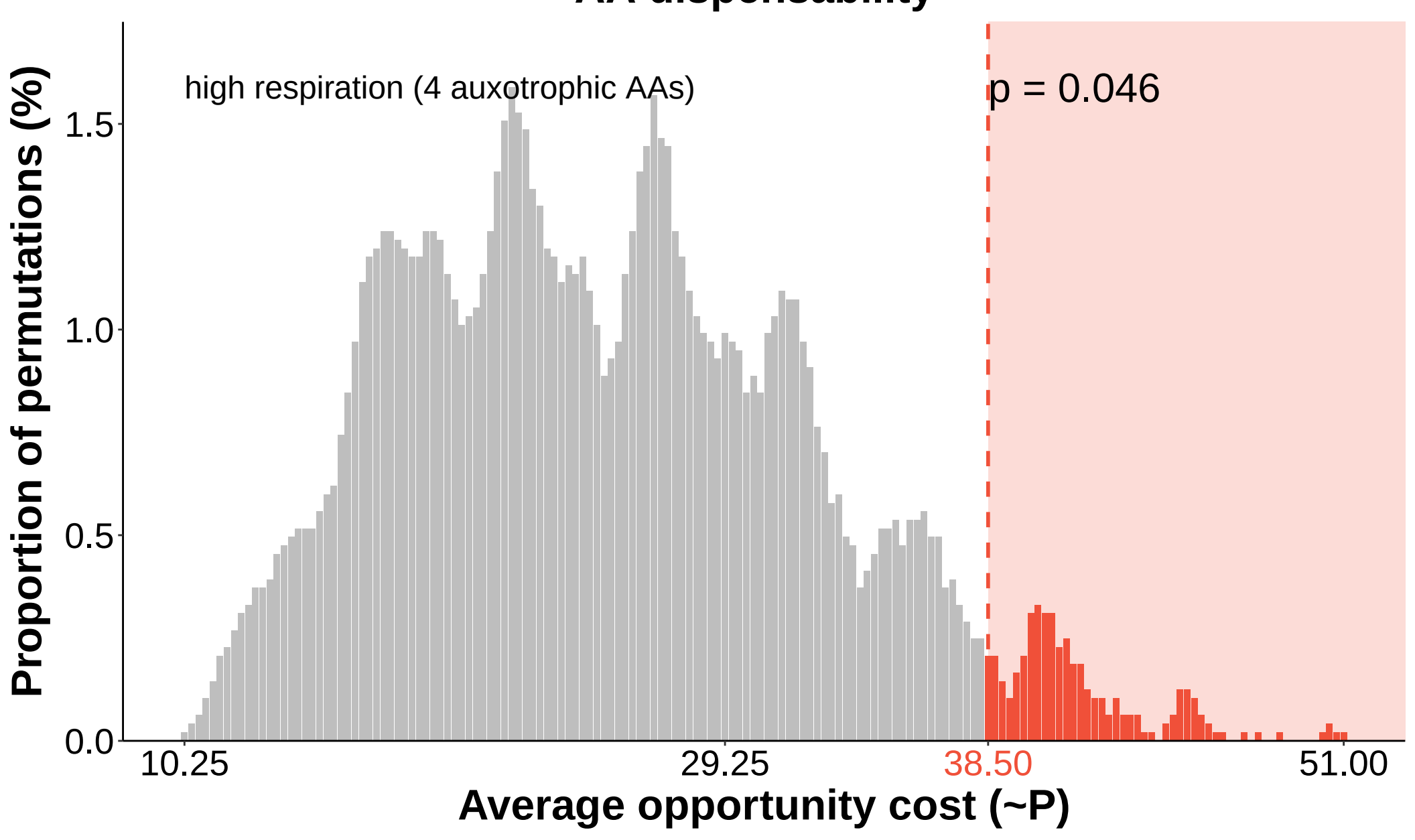
Proportion of permutations (%)

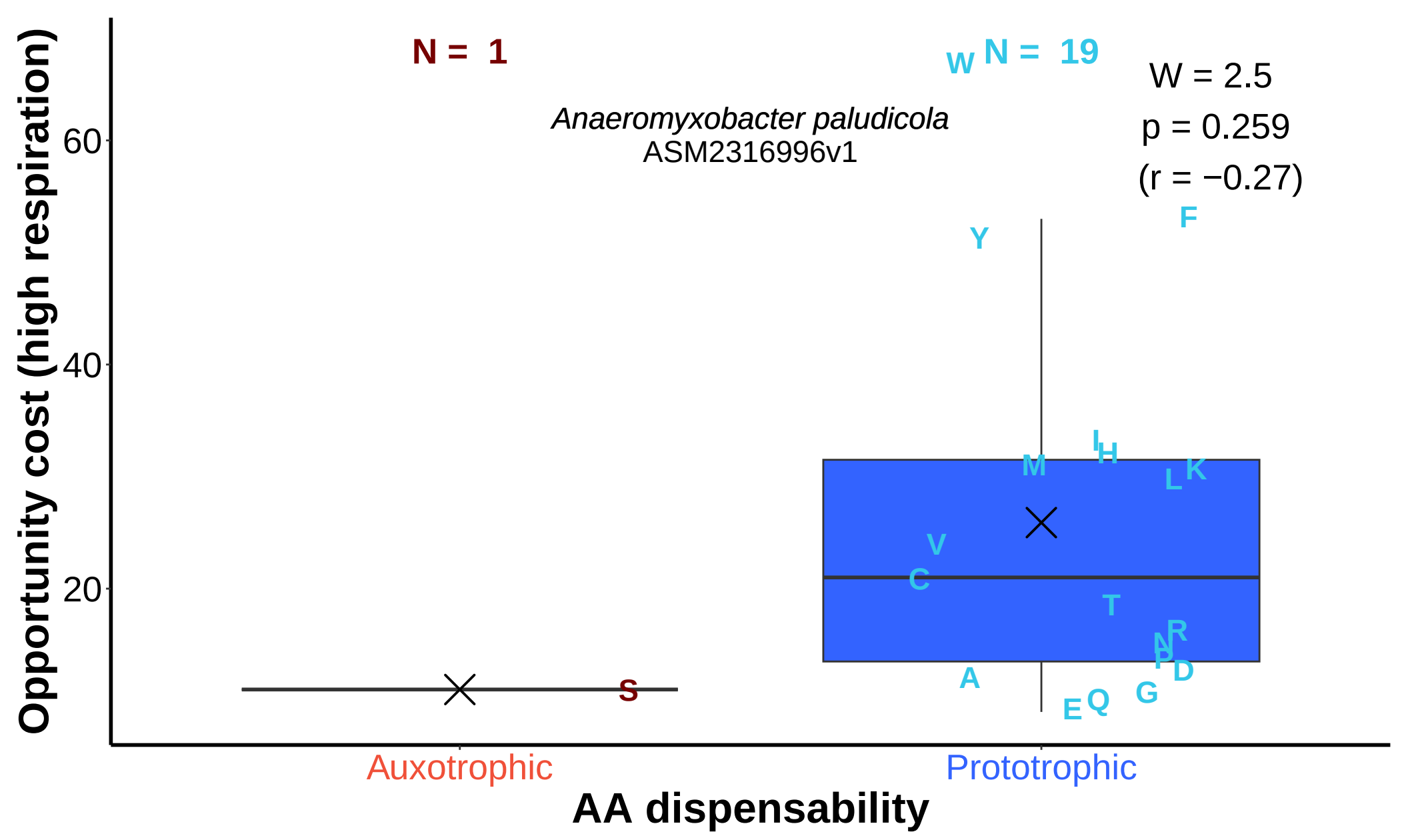
10.0
7.5
5.0
2.5
0.0

9
20
32
67

Average opportunity cost (~P)


W
N = 4
N = 16
W = 52
p = 0.0652
(r = 0.42)
Corallococcus macrosporus DSM 14697
ASM230589v1
Opportunity cost (high respiration)
60
40
20
V
I
L
F
Y
M
H
K
C
T
R
N
P
D
A
Q
G
S
E
Auxotrophic
Prototrophic
AA dispensability


high respiration (4 auxotrophic AAs)
p = 0.046
Proportion of permutations (%)
1.5
1.0
0.5
0.0
10.25
29.25
38.50
51.00
Average opportunity cost (~P)


N = 1
W N = 19
W = 2.5
p = 0.259
(r = −0.27)
Anaeromyxobacter paludicola
ASM2316996v1
Opportunity cost (high respiration)
60
40
20
S
Y
F
I
H
M
L
K
V
C
T
R
N
P
D
A
E
Q
G
Auxotrophic
Prototrophic
AA dispensability
p = 0.9
high respiration (1 auxotrophic AAs)
Proportion of permutations (%)
10.0
7.5
5.0
2.5
0.0
9
11
20
67
Average opportunity cost (~P)

N = 3

N = 17

W

W = 36

p = 0.289

(r = 0.25)

Myxococcus fulvus
ASM2319597v1

F

Y

I

L

V

H K M

C

T

R

N

P

D

A G

S

E

Q

60

40

20

Opportunity cost (high respiration)

Auxotrophic

Prototrophic

AA dispensability

high respiration (3 auxotrophic AAs)

p = 0.32

2.5

2.0

1.5

1.0

0.5

0.0

Proportion of permutations (%)

10.0

29.5

57.0

Average opportunity cost (~P)

N = 5

N = 15

W = 63.5

p = 0.0259

(r = 0.51)

Nannocystis exedens
ASM234391v1

F

Y

I

H

M

V

K

L

C

T

R

N

P

D

A

S

G

Q

E

60

40

20

Opportunity cost (high respiration)

Auxotrophic

Prototrophic

AA dispensability

high respiration (5 auxotrophic AAs)

p = 0.084

1.0

0.5

0.0

Proportion of permutations (%)

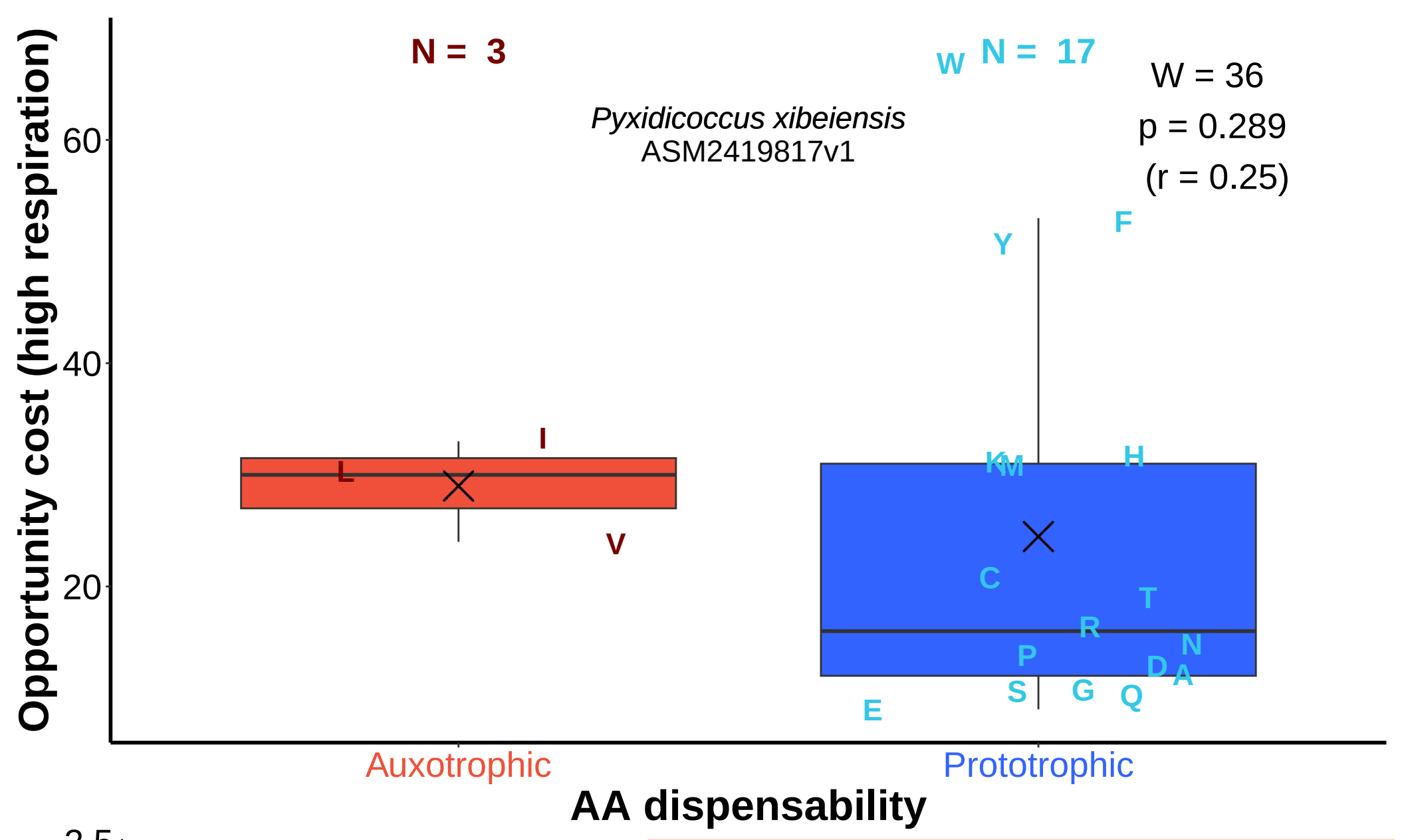
10.6

28.6

34.6

47.2

Average opportunity cost (~P)


N = 3
W N = 17
W = 36
p = 0.289
(r = 0.25)
Pyxidicoccus xibeiensis
ASM2419817v1
Opportunity cost (high respiration)
60
40
20
I
L
V
F
Y
K
M
H
C
T
R
N
P
D
A
S
G
Q
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.0
29.5
57.0
Average opportunity cost (~P)

N = 3

N = 17

W = 36

p = 0.289

(r = 0.25)

Myxococcus qinghaiensis
ASM2419821v1

Opportunity cost (high respiration)

60

40

20

I

L

V

Y

F

M

H

K

C

T

R

N

B

D

A

G

S

Q

E

Auxotrophic

Prototrophic

AA dispensability

high respiration (3 auxotrophic AAs)

p = 0.32

Proportion of permutations (%)

2.5

2.0

1.5

1.0

0.5

0.0

10.0

29.5

57.0

Average opportunity cost (~P)

N = 3

N = 17

Myxococcus dinghuensis
ASM2419823v1

W = 36
p = 0.289
(r = 0.25)

Opportunity cost (high respiration)

60
40
20

I
L
V

F
Y
K M
H
C
T
R
N
P
D
G A
E Q
S

Auxotrophic
Prototrophic

AA dispensability

high respiration (3 auxotrophic AAs)

p = 0.32

Proportion of permutations (%)

2.5
2.0
1.5
1.0
0.5
0.0

10.0
29.0
29.5
57.0

Average opportunity cost (~P)

N = 3

N = 17

W = 36
p = 0.289
(r = 0.25)

Myxococcus guangdongensis
ASM2419825v1

Opportunity cost (high respiration)

60
40
20

I
L
V

W
F
Y
H
M
K
C
T
R
N
P
D
A
S
Q
G
E

Auxotrophic
Prototrophic

AA dispensability

high respiration (3 auxotrophic AAs)

p = 0.32

Proportion of permutations (%)

2.5
2.0
1.5
1.0
0.5
0.0

10.0
29.0
29.5
57.0

Average opportunity cost (~P)

N = 3

N = 17

W

W = 37.5

p = 0.223

(r = 0.28)

Haliangium ochraceum DSM 14365
ASM2480v1

Opportunity cost (high respiration)

60

40

20

I

M

V

F

Y

H

K

L

C

T

R

N

P

D

A

G

S

Q

E

Auxotrophic

Prototrophic

AA dispensability

high respiration (3 auxotrophic AAs)

p = 0.32

Proportion of permutations (%)

2.5

2.0

1.5

1.0

0.5

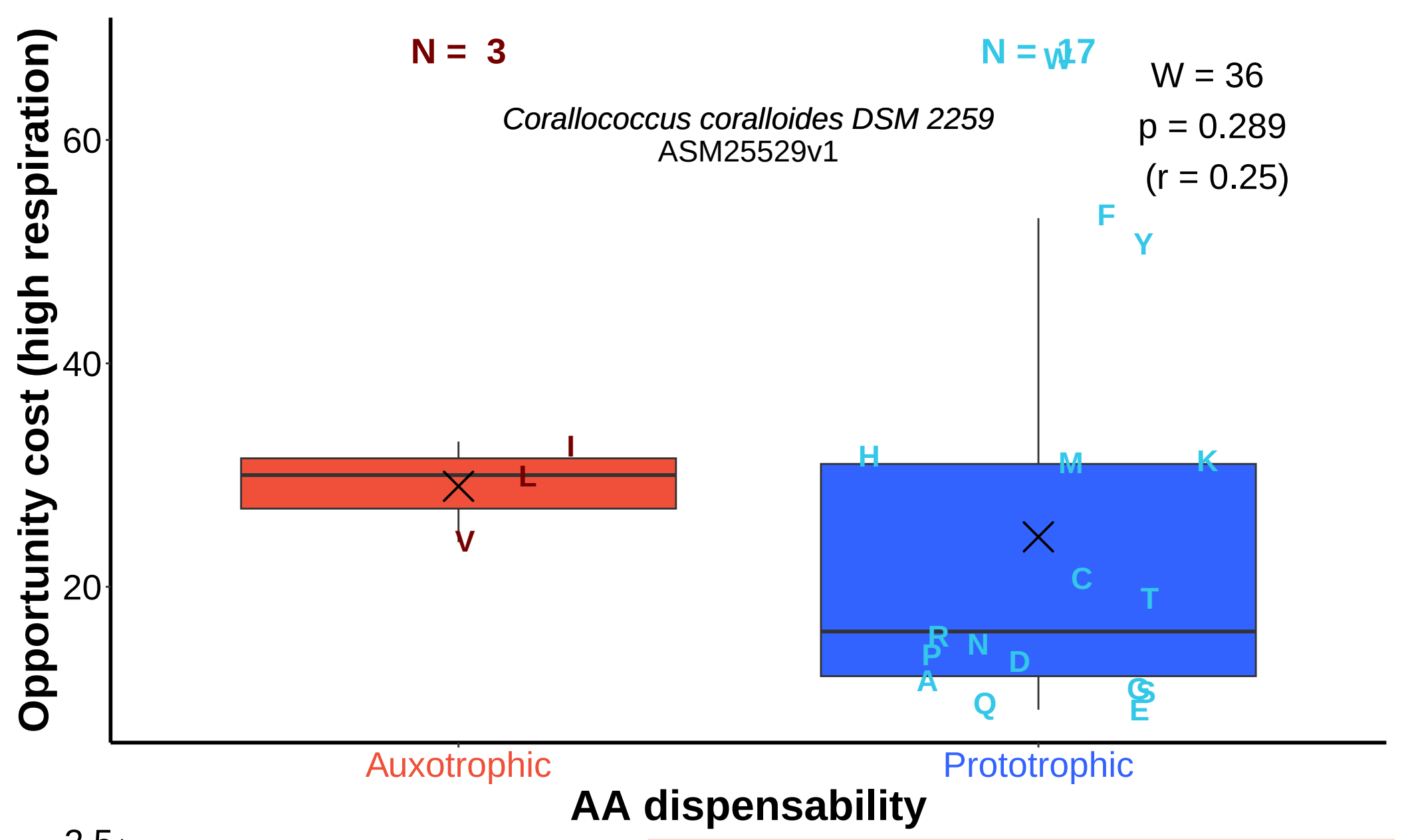
0.0

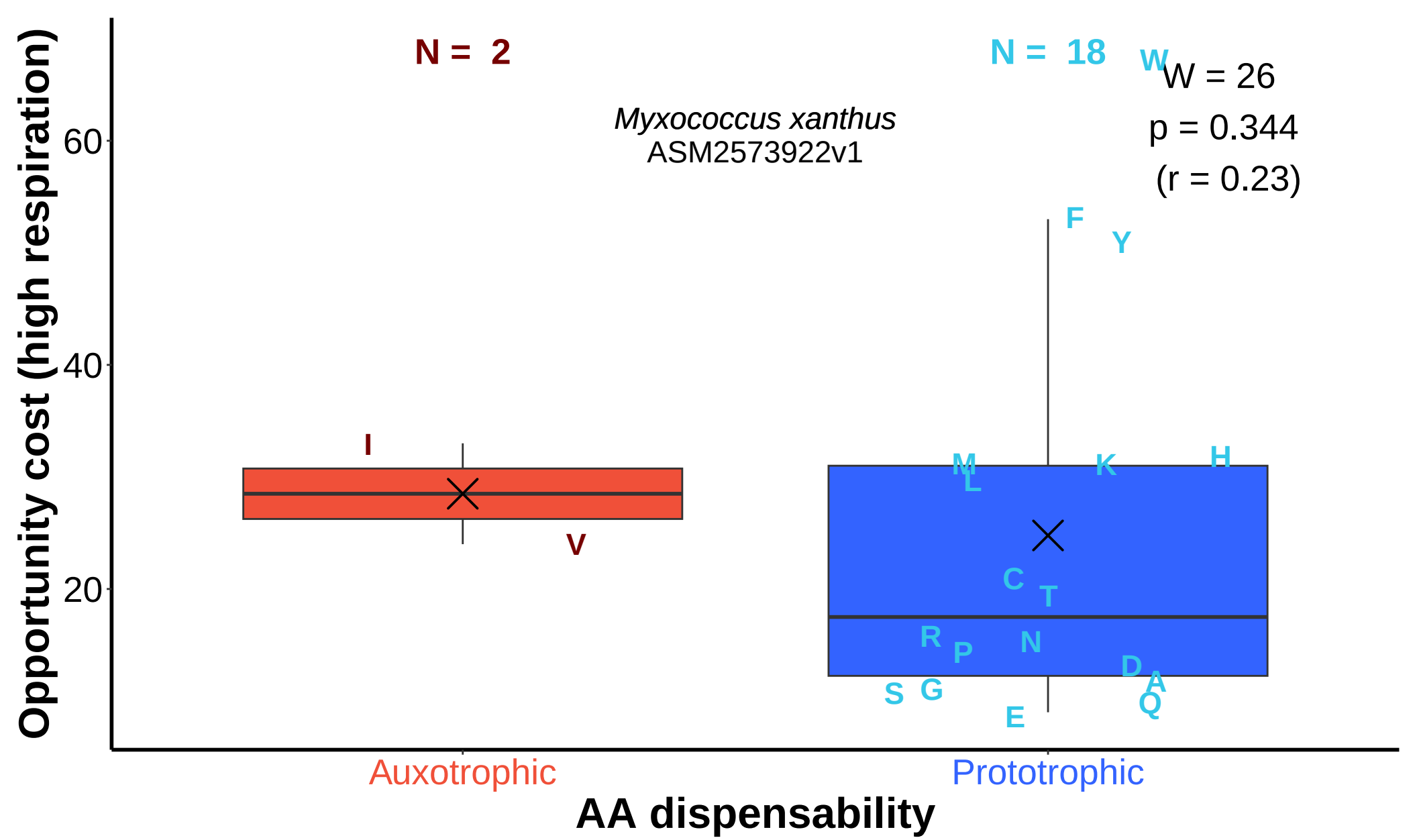
10.00

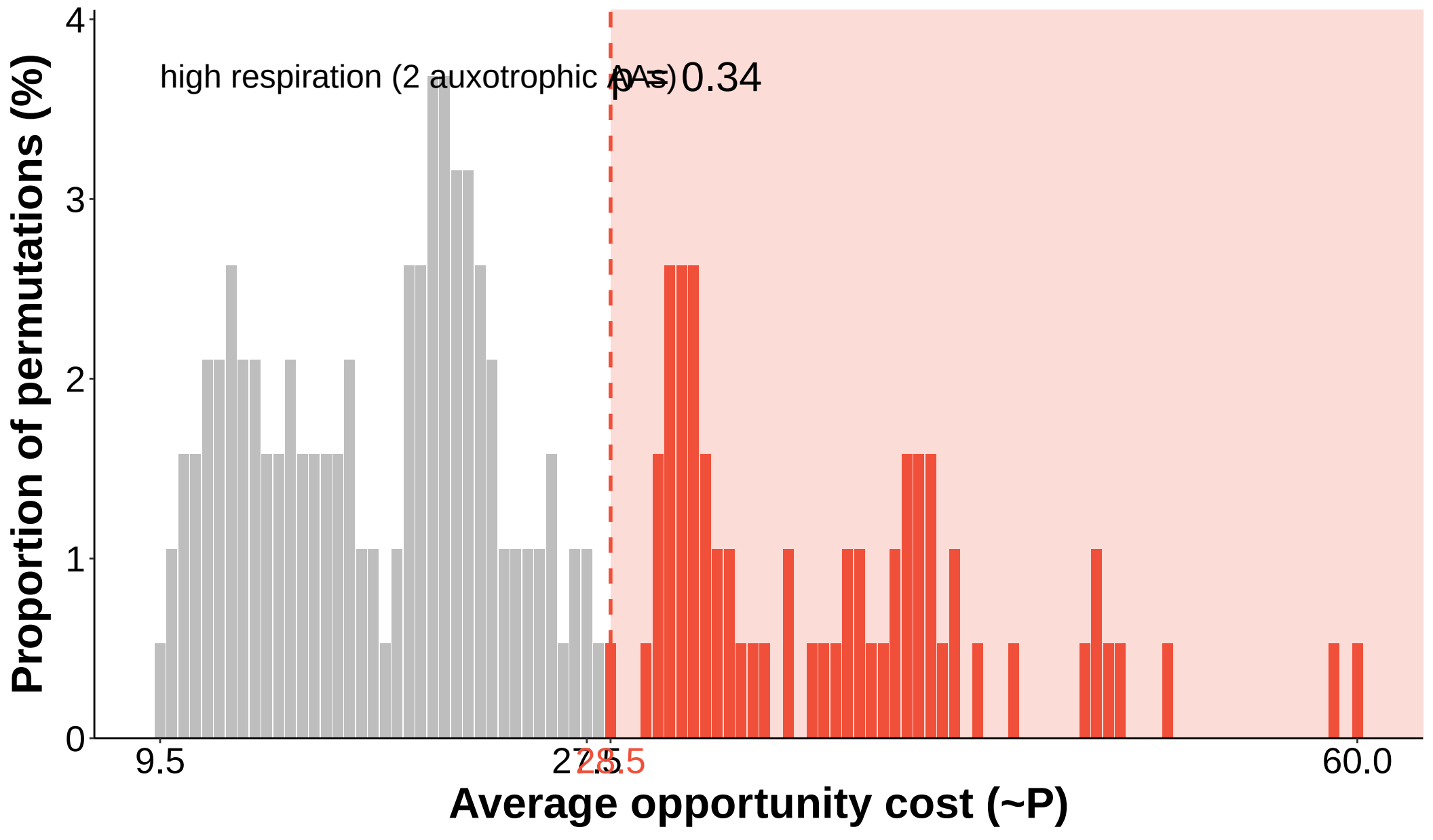
29.50

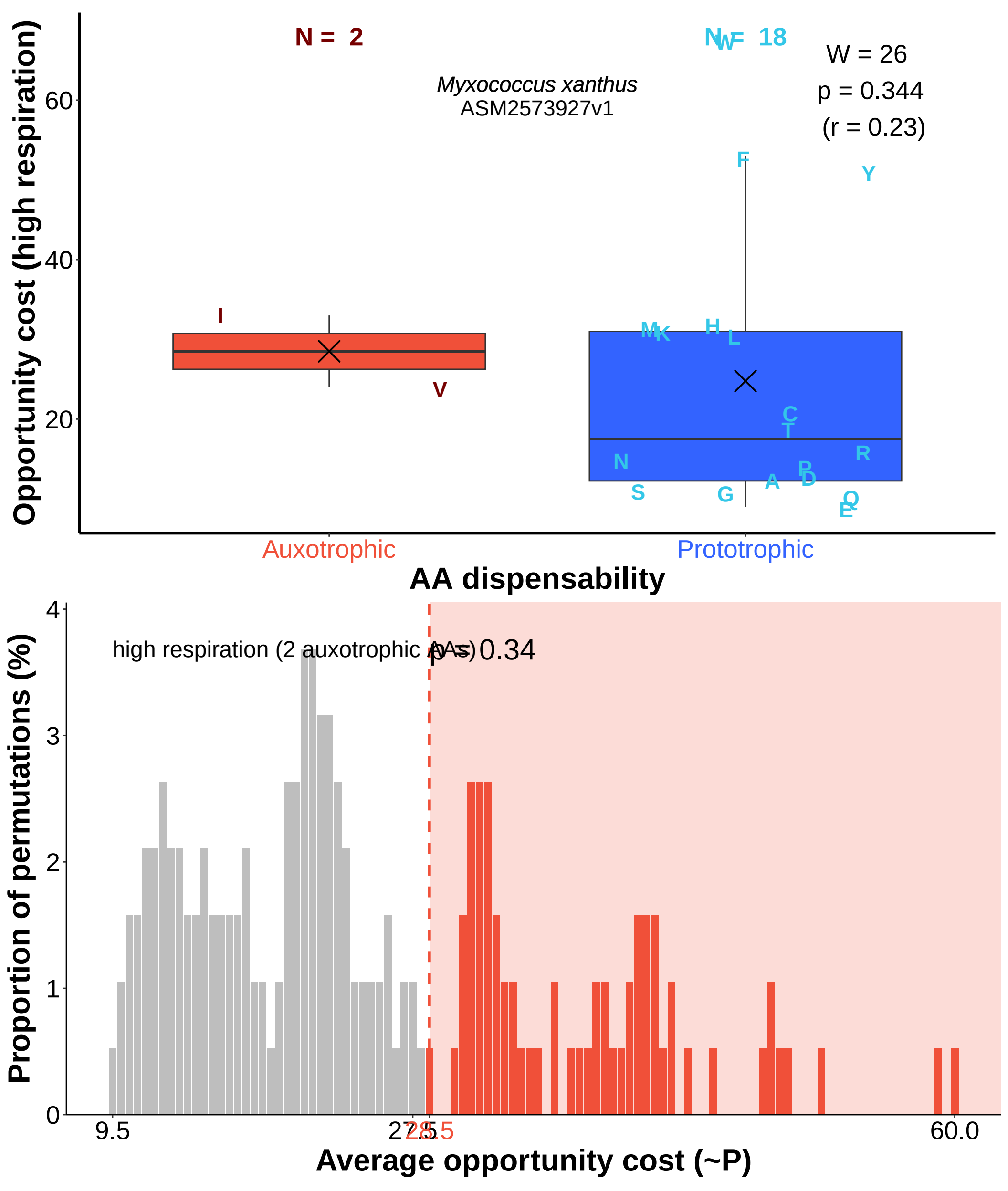
57.00

Average opportunity cost (~P)


N = 3
N = 17
W = 36
p = 0.289
(r = 0.25)
Corallococcus coralloides DSM 2259
ASM25529v1
Opportunity cost (high respiration)
60
40
20
I
L
V
F
Y
H
M
K
C
T
R
N
P
D
A
Q
G
S
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.0
57.0
Average opportunity cost (~P)


N = 2
N = 18
W
W = 26
p = 0.344
(r = 0.23)
Myxococcus xanthus
ASM2573922v1
Opportunity cost (high respiration)
60
40
20
I
V
F
Y
M
L
K
H
C
T
R
P
N
D
A
S
G
E
Q
Auxotrophic
Prototrophic
AA dispensability


high respiration (2 auxotrophic AAs)
p = 0.34
Proportion of permutations (%)
4
3
2
1
0
9.5
27.5
28.5
60.0
Average opportunity cost (~P)



N = 2
N = 18
W = 26
p = 0.344
(r = 0.23)
Myxococcus xanthus
ASM2573927v1
Opportunity cost (high respiration)
60
40
20
I
V
F
Y
M
K
H
L
C
T
R
N
P
D
A
S
G
Q
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (2 auxotrophic AAs)
p = 0.34
Proportion of permutations (%)
4
3
2
1
0
9.5
27.5
28.5
60.0
Average opportunity cost (~P)

N = 5

N = 15

W = 65.5

p = 0.0163

(r = 0.55)

Paraliomyxa miuraensis
ASM2633784v1

Opportunity cost (high respiration)

60

40

20

F

Y

I

M

V

H

K

L

C

T

R

N

P

A

D

G

Q

S

E

Auxotrophic

Prototrophic

AA dispensability

high respiration (5 auxotrophic AAs)

p = 0.026

Proportion of permutations (%)

1.0

0.5

0.0

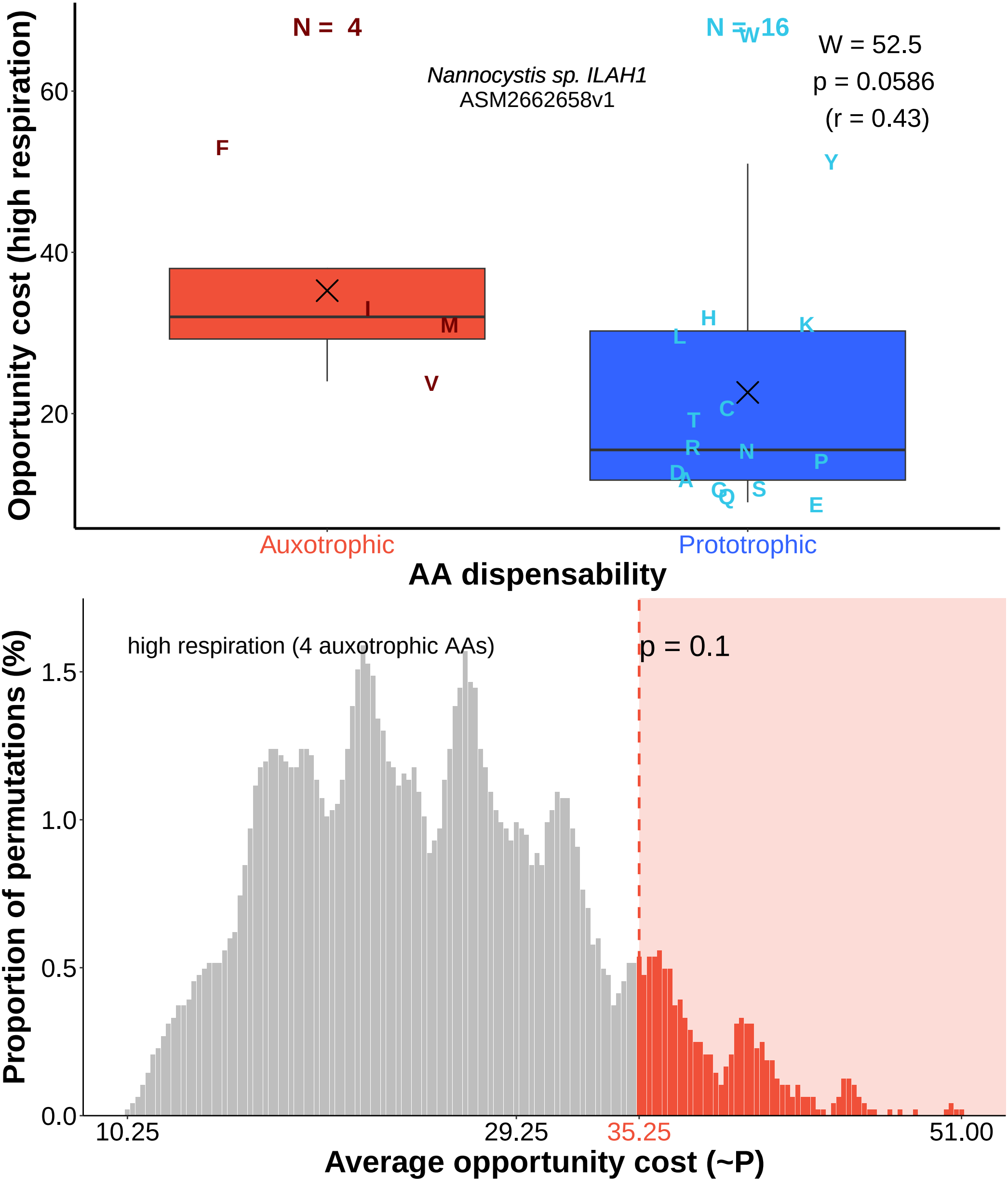
10.6

28.6

38.4

47.2

Average opportunity cost (~P)


N = 4
N = 16
W = 52.5
p = 0.0586
(r = 0.43)
Nannocystis sp. ILAH1
ASM2662658v1
Opportunity cost (high respiration)
60
40
20
F
I
M
V
Y
H
K
L
C
T
R
N
P
D
A
G
Q
S
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (4 auxotrophic AAs)
p = 0.1
Proportion of permutations (%)
1.5
1.0
0.5
0.0
10.25
29.25
35.25
51.00
Average opportunity cost (~P)

N = 3

N = 17

W = 36

p = 0.289

(r = 0.25)

Myxococcus sp. MISCRS1
ASM2662660v1

Opportunity cost (high respiration)

60

40

20

I

L

V

F

Y

K M H

C

T

R

N

P

D

A

Q G

S

E

Auxotrophic

Prototrophic

AA dispensability

high respiration (3 auxotrophic AAs)

p = 0.32

Proportion of permutations (%)

2.5

2.0

1.5

1.0

0.5

0.0

10.0

29.5

57.0

Average opportunity cost (~P)

N = 3

W N = 17

W = 36
p = 0.289
(r = 0.25)

Corallococcus sp. BB11−1
ASM2662662v1

Opportunity cost (high respiration)

60
40
20

I
L
V

F
Y
H
K
M
C
T
R
N
P
A
D
S
Q
G
E

Auxotrophic
Prototrophic

AA dispensability

high respiration (3 auxotrophic AAs)

p = 0.32

Proportion of permutations (%)

2.5
2.0
1.5
1.0
0.5
0.0

10.0
29.0
29.5
57.0

Average opportunity cost (~P)

N = 3

N = 17

W

W = 36

p = 0.289

(r = 0.25)

Archangium lansinium
ASM2662663v1

Opportunity cost (high respiration)

60

40

20

I

L

V

F

Y

M K

H

C

T

R

P

N

A S

D

G

Q

E

Auxotrophic

Prototrophic

AA dispensability

high respiration (3 auxotrophic AAs)

p = 0.32

Proportion of permutations (%)

2.5

2.0

1.5

1.0

0.5

0.0

10.0

29.0

29.5

57.0

Average opportunity cost (~P)

N = 5

W

N = 15

W = 65.5

p = 0.0163

(r = 0.55)

Nannocystis pusilla
ASM2662666v1

Opportunity cost (high respiration)

60

40

20

F

Y

I

M

V

H

L

K

C

T

R

N

P

D

S

G

E

Q

A

Auxotrophic

Prototrophic

AA dispensability

high respiration (5 auxotrophic AAs)

p = 0.026

Proportion of permutations (%)

1.0

0.5

0.0

10.6

28.6

38.4

47.2

Average opportunity cost (~P)

N = 4

N = 16

W = 52.5
p = 0.0586
(r = 0.43)

Nannocystis sp. SCPEA4
ASM2662668v1

F I M V

W Y H L K C T N P R D A G Q S E

Opportunity cost (high respiration)

60
40
20

Auxotrophic

Prototrophic

AA dispensability

high respiration (4 auxotrophic AAs)

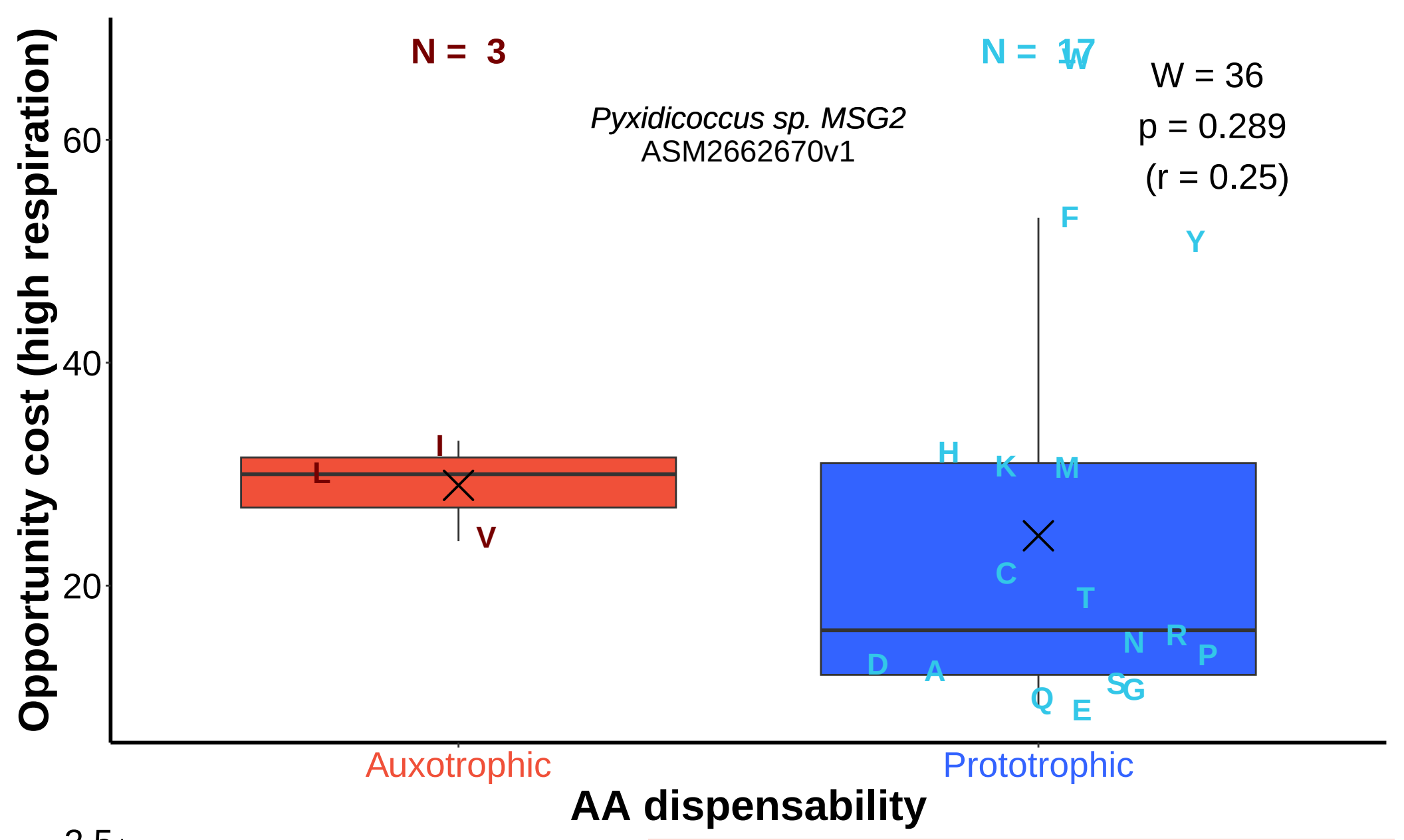
p = 0.1

Proportion of permutations (%)

1.5
1.0
0.5
0.0

10.25
29.25
35.25
51.00

Average opportunity cost (~P)


N = 3
N = 17
W = 36
p = 0.289
(r = 0.25)
Pyxidicoccus sp. MSG2
ASM2662670v1
Opportunity cost (high respiration)
60
40
20
I
L
V
F
Y
H
K
M
C
T
N
R
P
D
A
S
G
Q
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.0
57.0
Average opportunity cost (~P)

N = 4

N = 16

W = 52.5

p = 0.0586

(r = 0.43)

Nannocystis sp. RBIL2
ASM2662674v1

Opportunity cost (high respiration)

60

40

20

F

M

I

V

W

Y

H

K

L

C

T

R

N

P

D

A

S

E

G

Q

Auxotrophic

Prototrophic

AA dispensability

high respiration (4 auxotrophic AAs)

p = 0.1

Proportion of permutations (%)

1.5

1.0

0.5

0.0

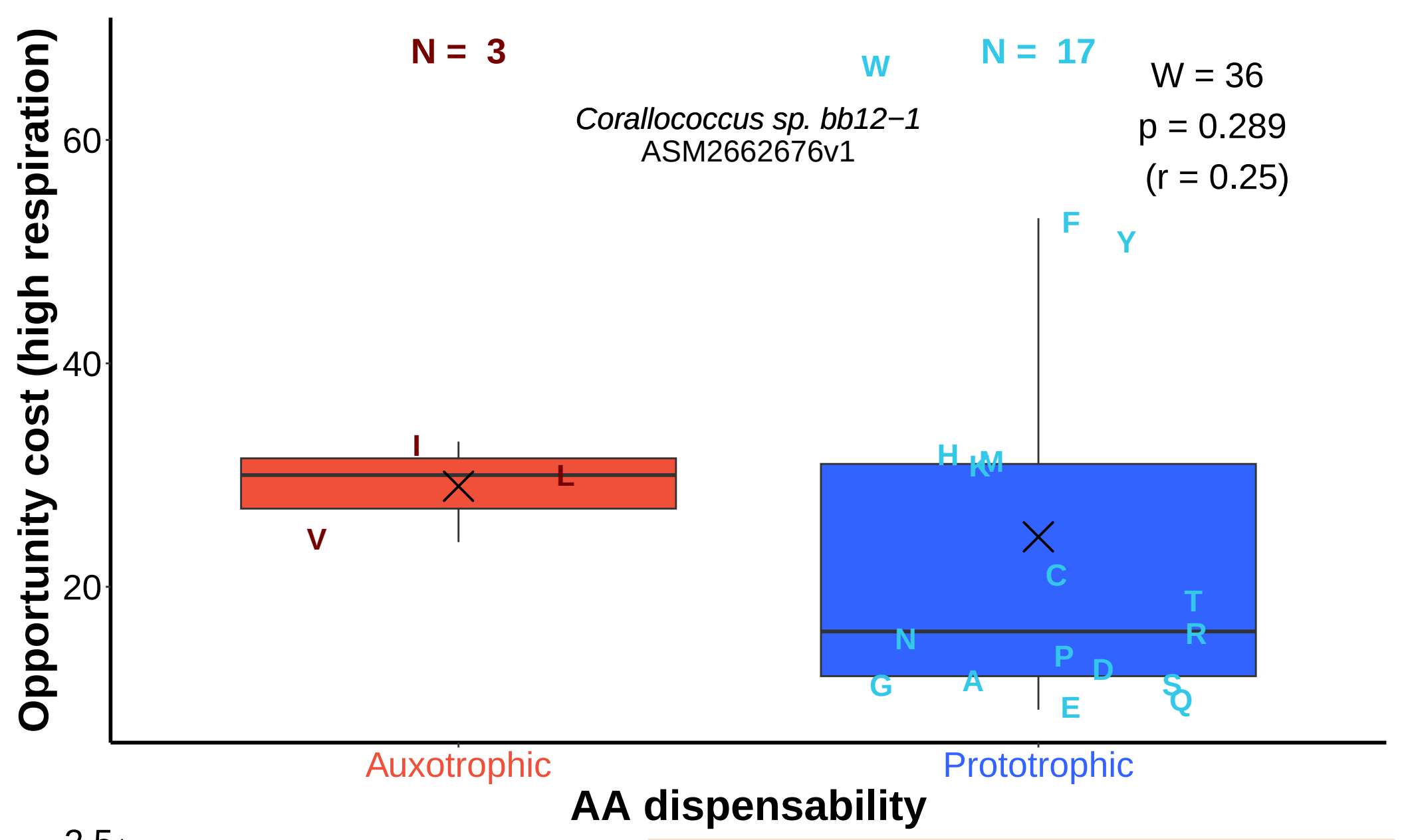
10.25

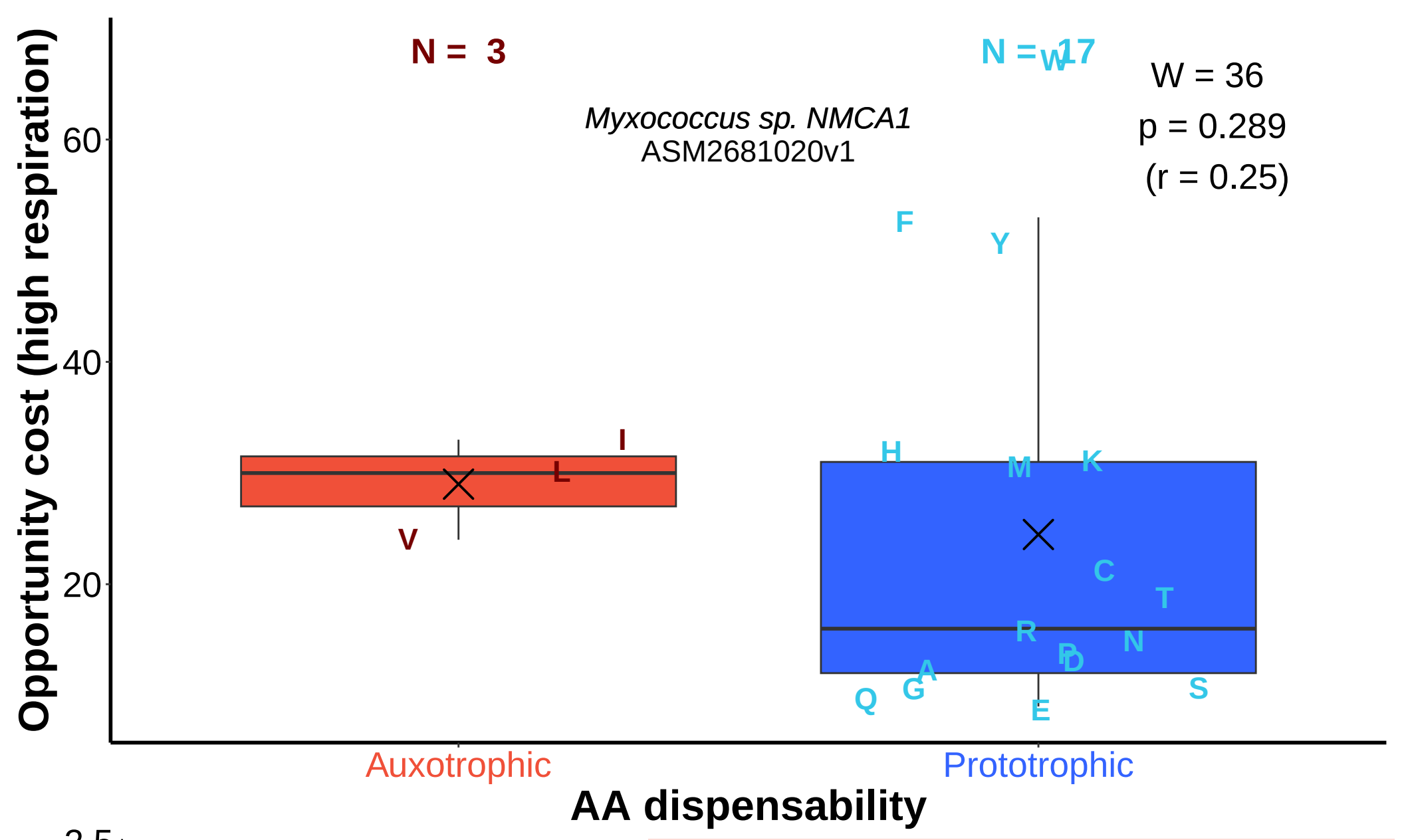
29.25

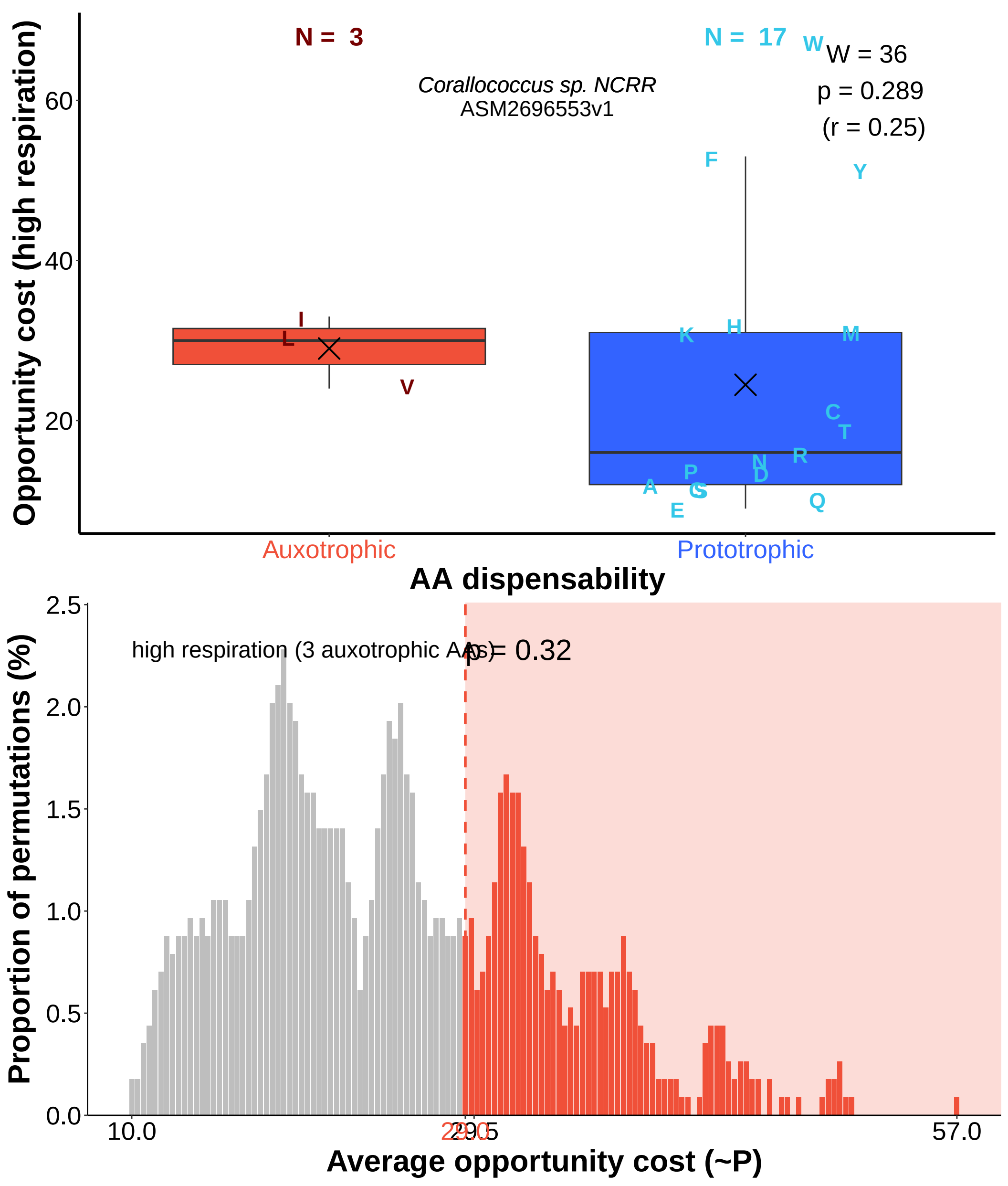
35.25

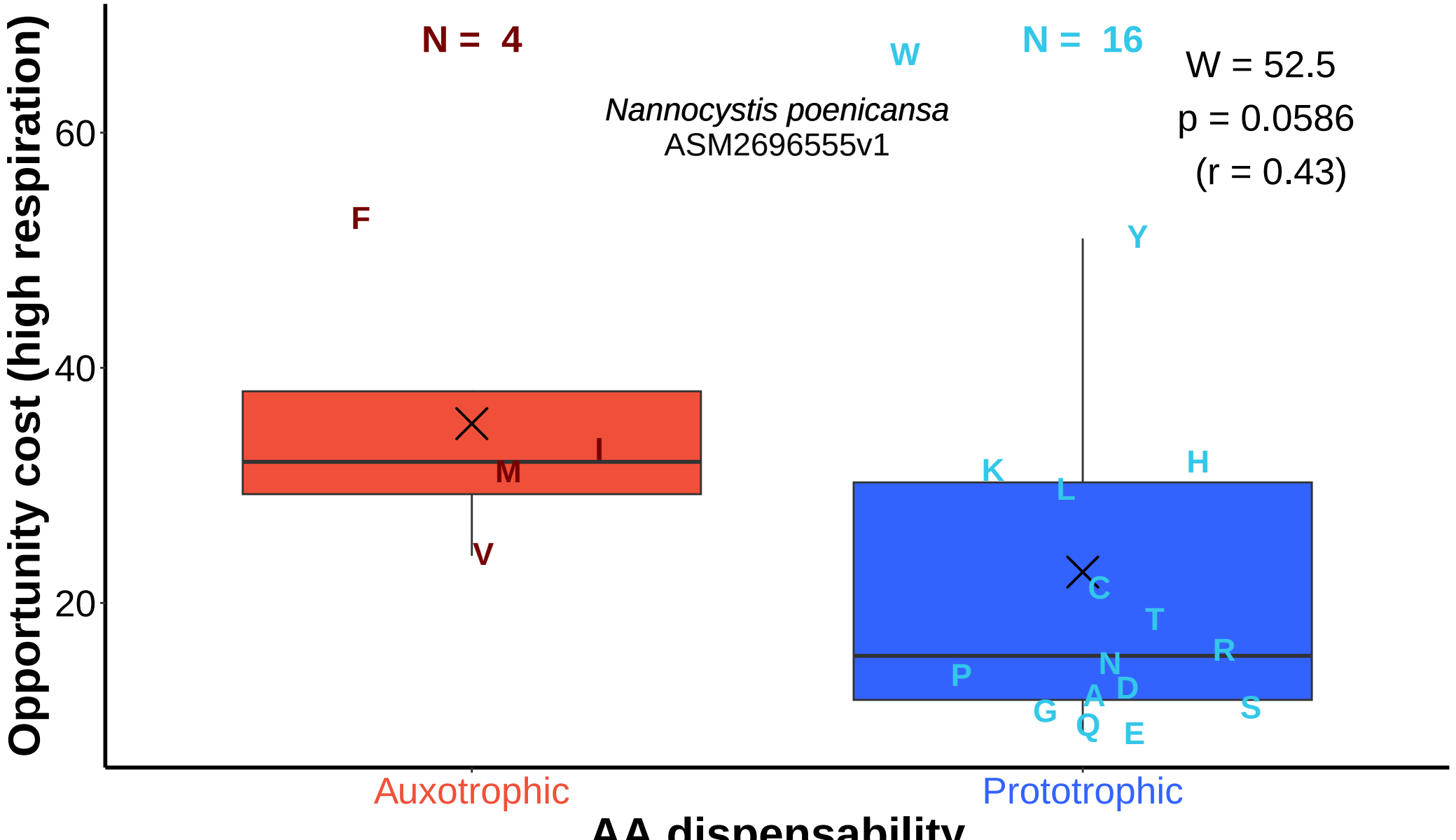
51.00

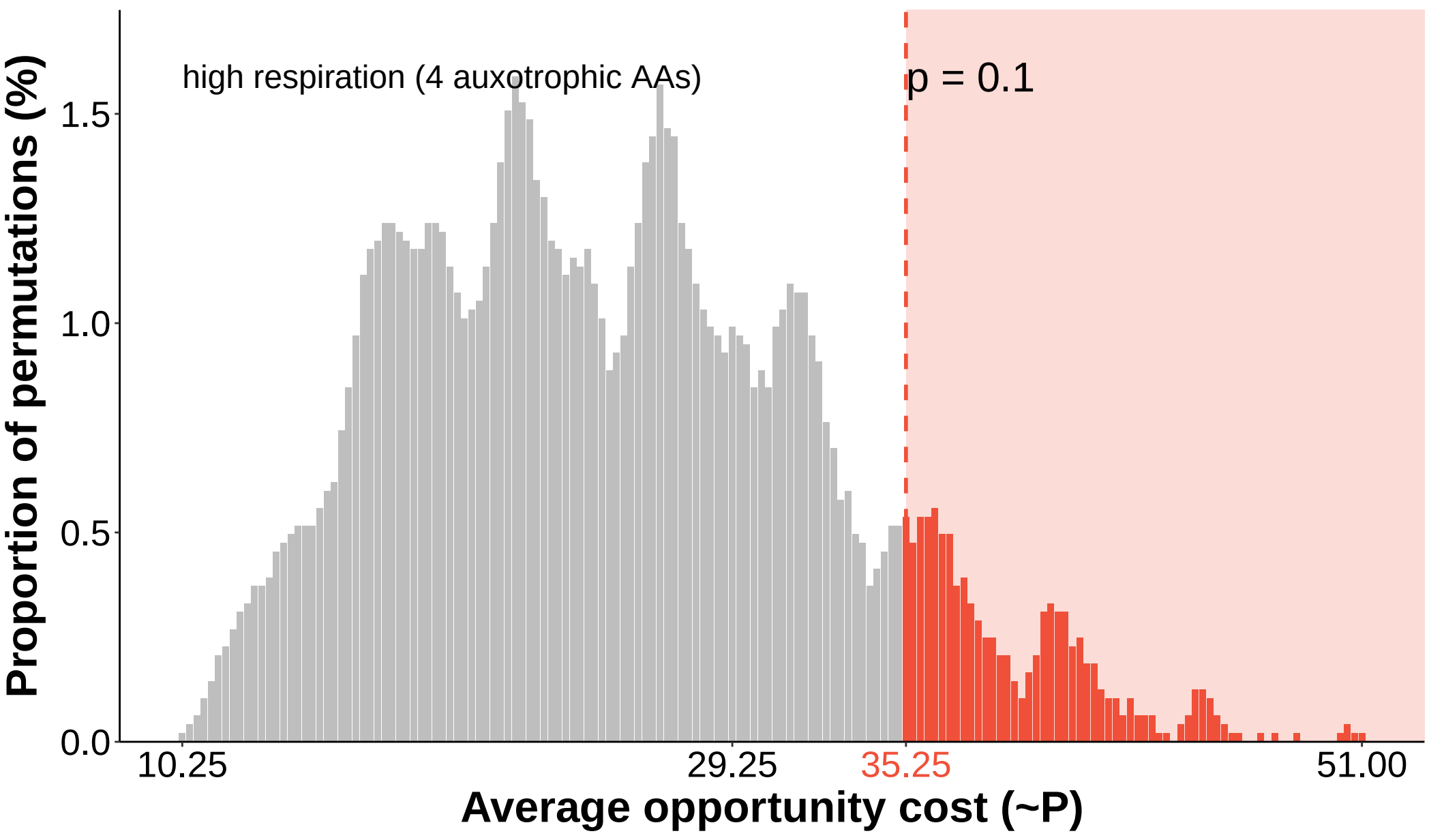
Average opportunity cost (~P)

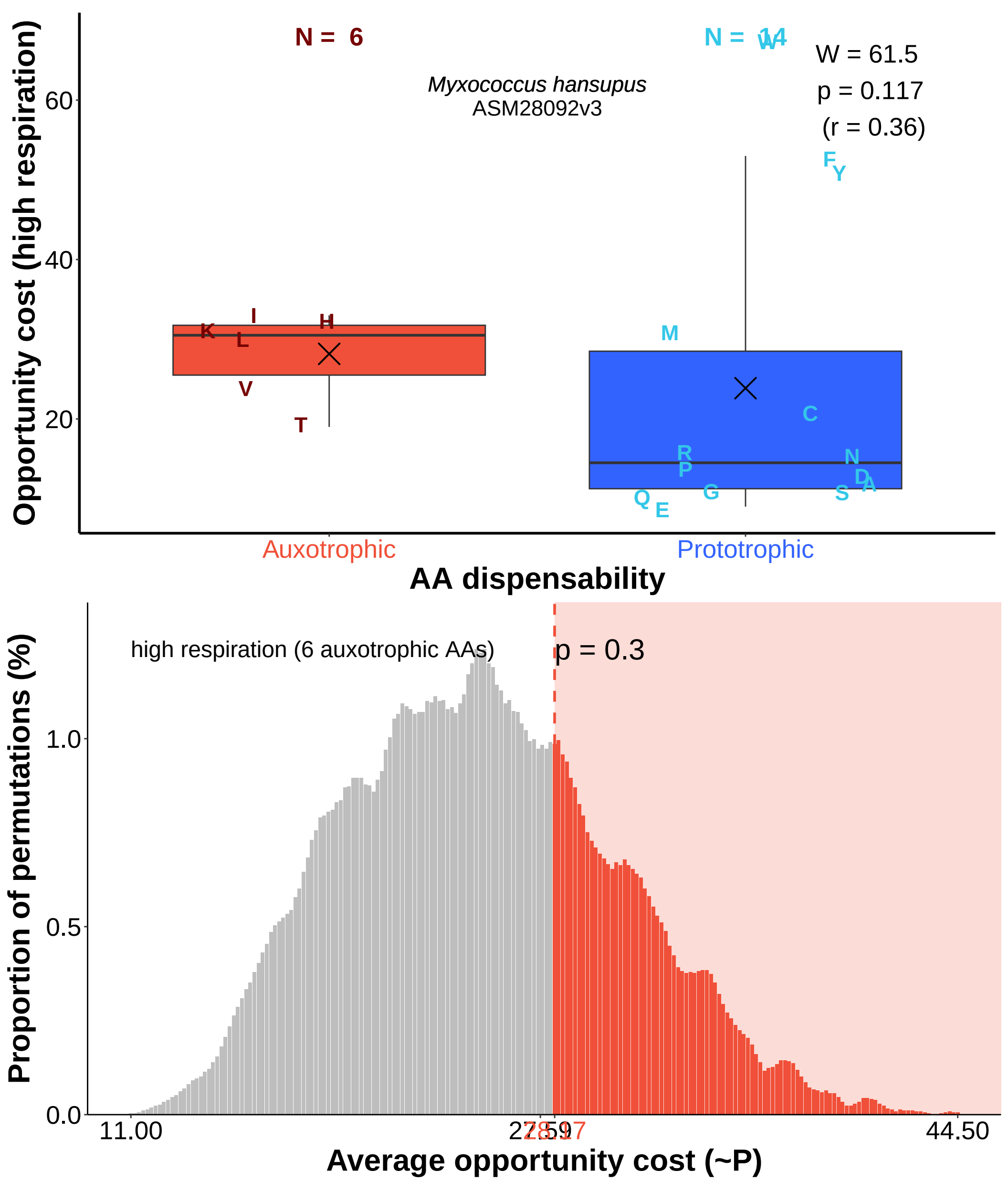

N = 3
N = 17
W
W = 36
p = 0.289
(r = 0.25)
Corallococcus sp. bb12−1
ASM2662676v1
Opportunity cost (high respiration)
60
40
20
I
L
V
F
Y
H
K
M
C
T
R
N
P
D
G
A
S
Q
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.0
29.5
57.0
Average opportunity cost (~P)


N = 3
N = 17
W = 36
p = 0.289
(r = 0.25)
Myxococcus sp. NMCA1
ASM2681020v1
Opportunity cost (high respiration)
60
40
20
I
L
V
F
Y
H
M
K
C
T
R
N
P
D
A
G
Q
E
S
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.0
29.5
57.0
Average opportunity cost (~P)

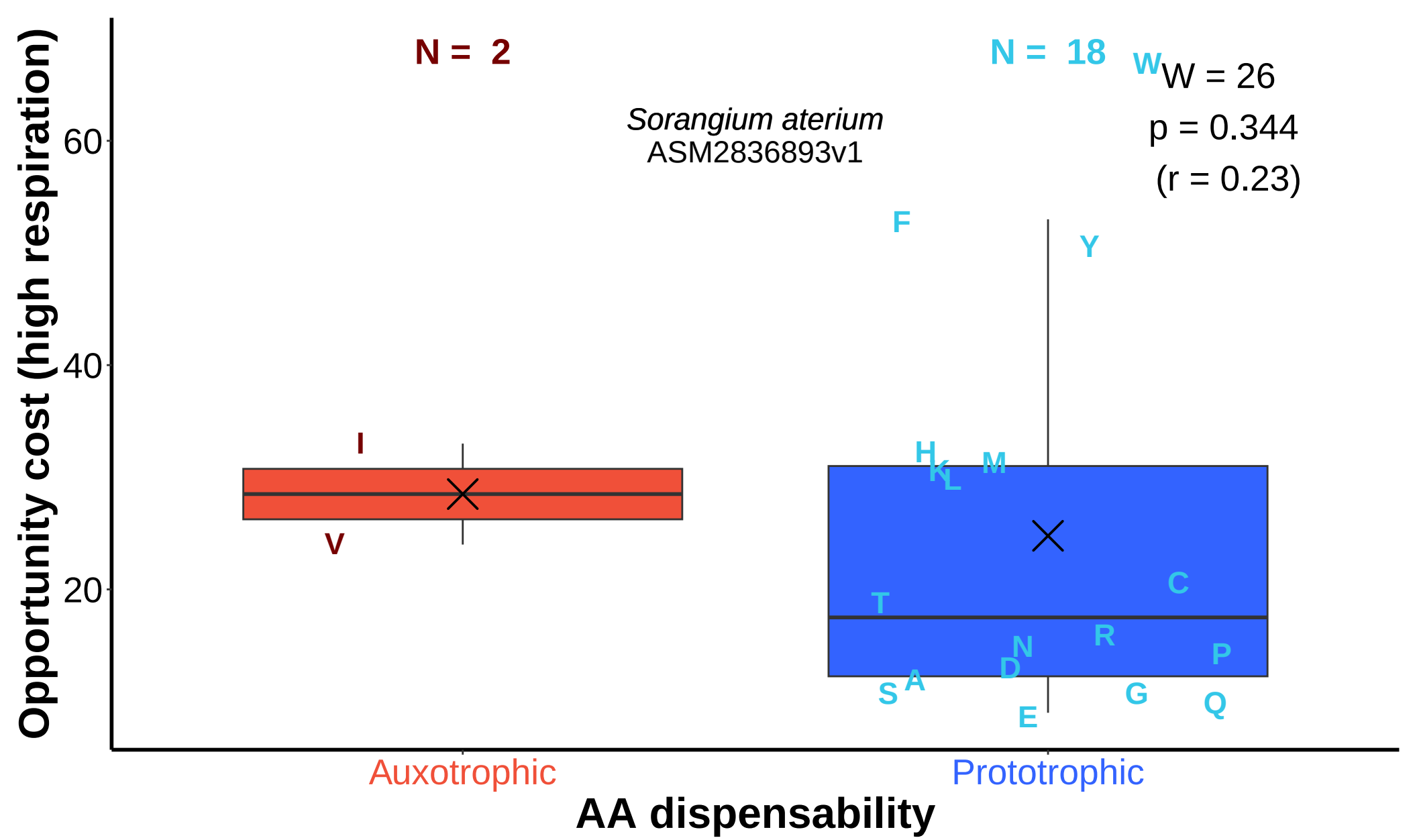

N = 3
N = 17
W
W = 36
p = 0.289
(r = 0.25)
Corallococcus sp. NCRR
ASM2696553v1
Opportunity cost (high respiration)
60
40
20
I
L
V
F
Y
K
H
M
C
T
R
N
D
P
A
S
E
Q
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.0
29.5
57.0
Average opportunity cost (~P)

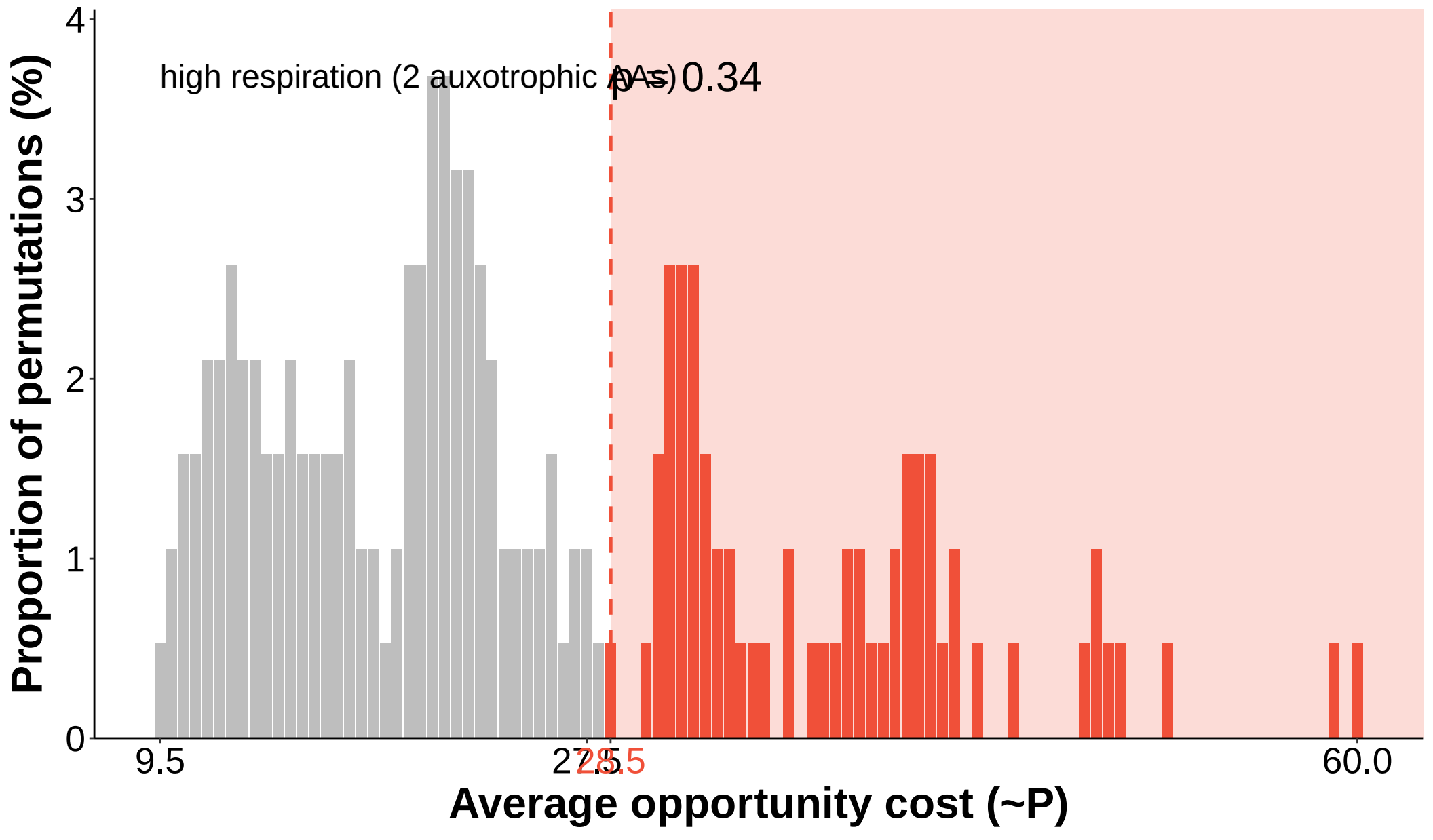

N = 4
N = 16
W
W = 52.5
p = 0.0586
(r = 0.43)
Nannocystis poenicansa
ASM2696555v1
Opportunity cost (high respiration)
60
40
20
F
I
M
V
Y
K
L
H
C
T
R
N
P
D
A
G
Q
E
S
Auxotrophic
Prototrophic
AA dispensability


high respiration (4 auxotrophic AAs)
p = 0.1
Proportion of permutations (%)
1.5
1.0
0.5
0.0
10.25
29.25
35.25
51.00
Average opportunity cost (~P)



N = 6
N = 14
W = 61.5
p = 0.117
(r = 0.36)
Myxococcus hansupus
ASM28092v3
Opportunity cost (high respiration)
60
40
20
K
I
H
L
V
T
M
F
Y
C
R
P
N
D
A
S
G
Q
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (6 auxotrophic AAs)
p = 0.3
Proportion of permutations (%)
1.0
0.5
0.0
11.00
27.59
28.97
44.50
Average opportunity cost (~P)


N = 2
N = 18
W
W = 26
p = 0.344
(r = 0.23)
Sorangium aterium
ASM2836893v1
Opportunity cost (high respiration)
60
40
20
I
V
F
Y
H
K
L
M
C
T
R
N
D
P
S
A
G
Q
E
Auxotrophic
Prototrophic
AA dispensability


high respiration (2 auxotrophic AAs)
p = 0.34
Proportion of permutations (%)
4
3
2
1
0
9.5
27.5
28.5
60.0
Average opportunity cost (~P)

N = 5

W N = 15

W = 65.5
p = 0.0163
(r = 0.55)

Nannocystis bainbridge
ASM2836899v1

Opportunity cost (high respiration)

60
40
20

F
Y
I
M
V

L
K
H
C
T
R
N
P
D
G
S
A
Q
E

Auxotrophic
Prototrophic

AA dispensability

high respiration (5 auxotrophic AAs)

p = 0.026

Proportion of permutations (%)

1.0
0.5
0.0

10.6
28.6
38.4
47.2

Average opportunity cost (~P)

N = 4

N = 16

W

W = 52.5

p = 0.0586

(r = 0.43)

Nannocystis radixulma
ASM2836909v1

Opportunity cost (high respiration)

60

40

20

F

I

M

V

Y

H

L

K

C

T

R

N

D

A

S

G

P

E

Q

Auxotrophic

Prototrophic

AA dispensability

high respiration (4 auxotrophic AAs)

p = 0.1

Proportion of permutations (%)

1.5

1.0

0.5

0.0

10.25

29.25

35.25

51.00

Average opportunity cost (~P)

N = 2

N = 18

W

W = 26

p = 0.344

(r = 0.23)

Polyangium mundeleinium
ASM2836910v1

Opportunity cost (high respiration)

60

40

20

I

V

F

Y

H

K

M

L

C

T

R

N

P

D

A

S

G

E

Q

Auxotrophic

Prototrophic

AA dispensability

high respiration (2 auxotrophic AAs)

p = 0.34

Proportion of permutations (%)

4

3

2

1

0

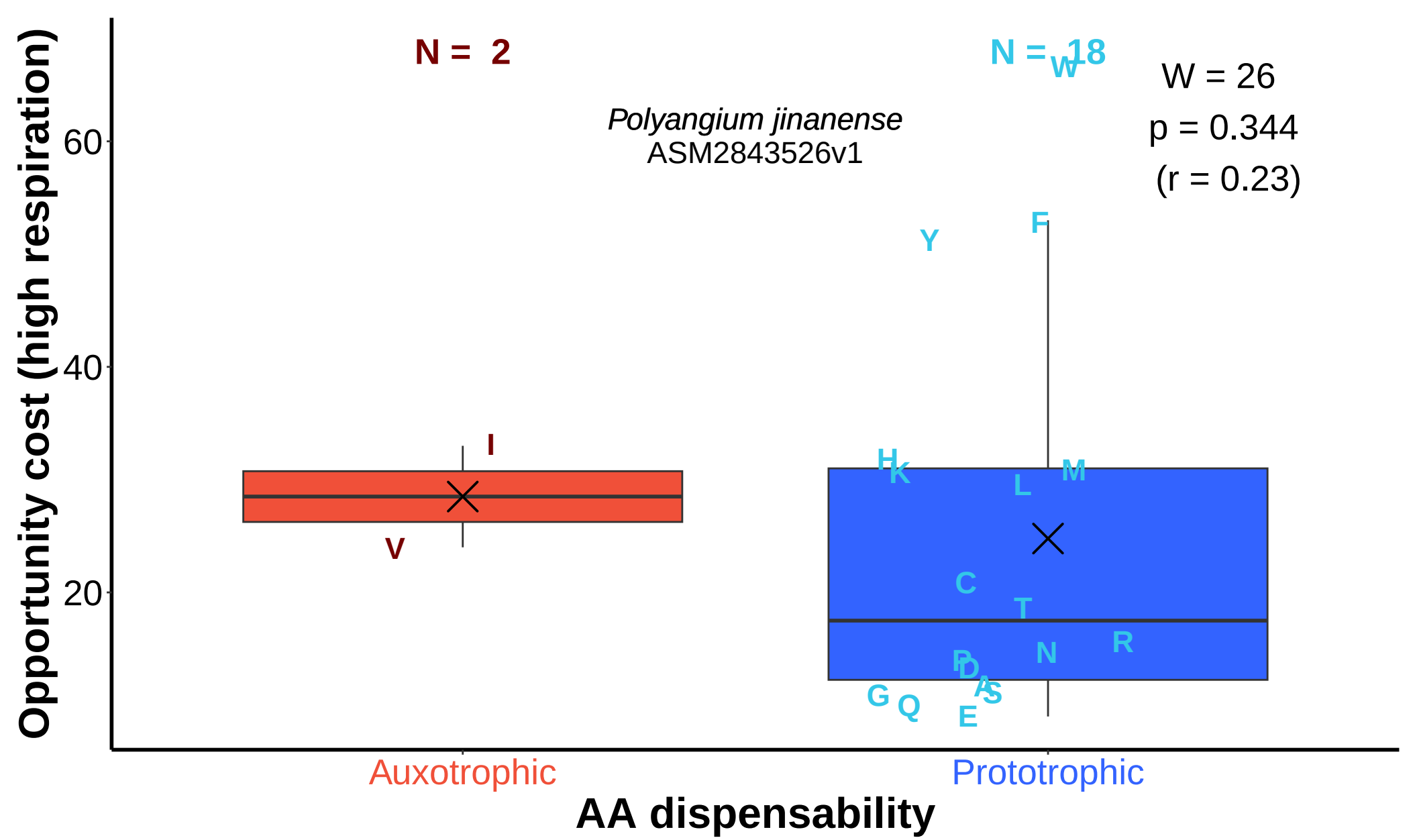
9.5

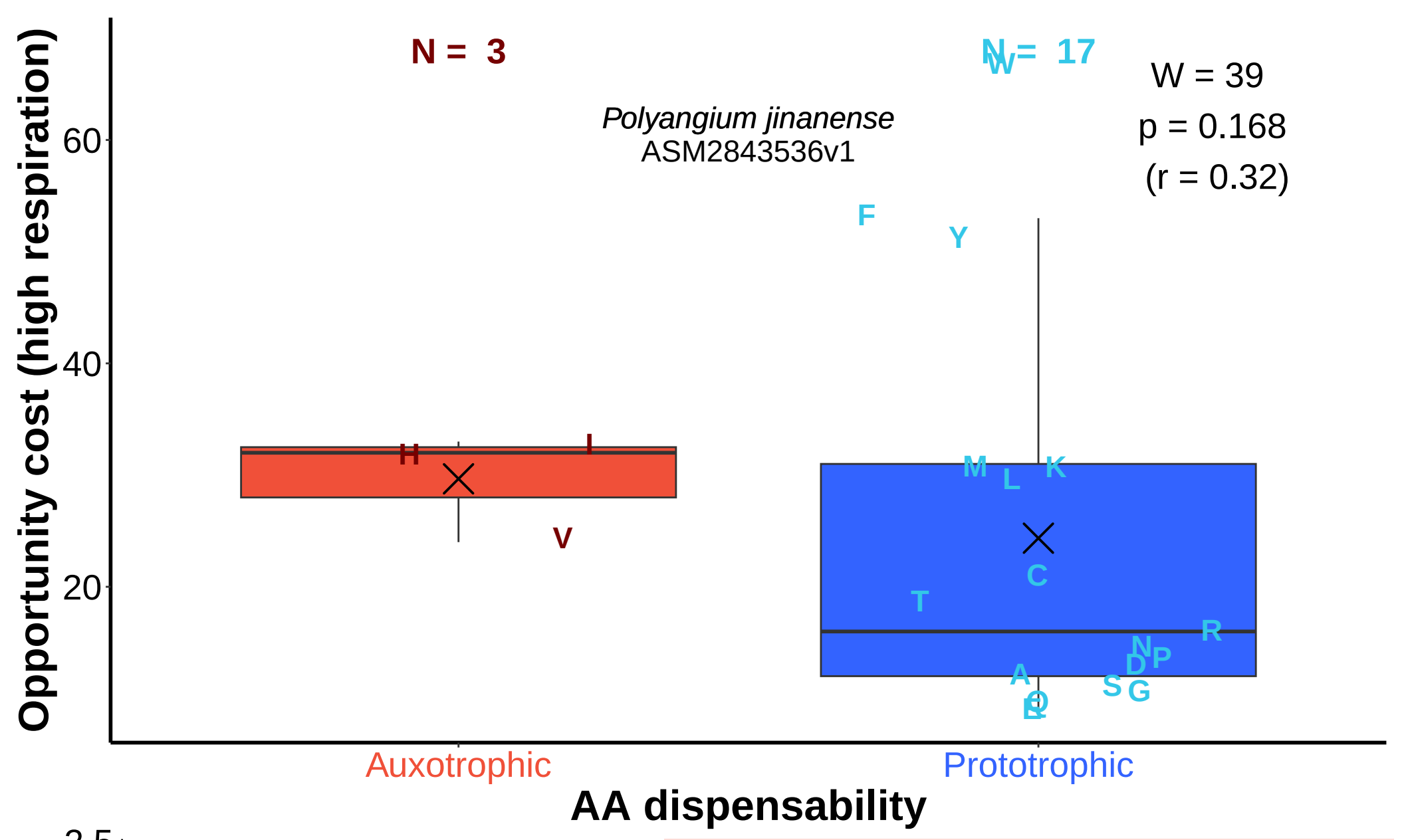
27.5

28.5

60.0

Average opportunity cost (~P)


N = 2
N = 18
W = 26
p = 0.344
(r = 0.23)
Polyangium jinanense
ASM2843526v1
Opportunity cost (high respiration)
60
40
20
I
V
Y
F
H
K
L
M
C
T
R
N
D
A
S
G
Q
E
Auxotrophic
Prototrophic
AA dispensability
Proportion of permutations (%)
4
3
2
1
0
high respiration (2 auxotrophic AAs)
p = 0.34
9.5
27.5
28.5
60.0
Average opportunity cost (~P)


N = 3
N = 17
W = 39
p = 0.168
(r = 0.32)
Polyangium jinanense
ASM2843536v1
Opportunity cost (high respiration)
60
40
20
H
I
V
F
Y
M
L
K
C
T
R
N
P
D
A
S
G
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.31
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.00
29.50
57.00
Average opportunity cost (~P)

N = 6

N = 14

W = 74

p = 0.00932

(r = 0.59)

Enhygromyxa salina
ASM299461v1

Opportunity cost (high respiration)

60

40

20

F

Y

K

M

I

V

H

L

C

T

N

R

D

A

G

Q

S

E

Auxotrophic

Prototrophic

AA dispensability

high respiration (6 auxotrophic AAs)

p = 0.02

Proportion of permutations (%)

1.0

0.5

0.0

11.00

27.59

37.17

44.50

Average opportunity cost (~P)

N = 5

N = 15

W = 65.5

p = 0.0163

(r = 0.55)

Enhygromyxa salina
ASM299463v1

Opportunity cost (high respiration)

60

40

20

F Y I M V

K L H C T R N P A G D S Q E

Auxotrophic

Prototrophic

AA dispensability

high respiration (5 auxotrophic AAs)

p = 0.026

Proportion of permutations (%)

1.0

0.5

0.0

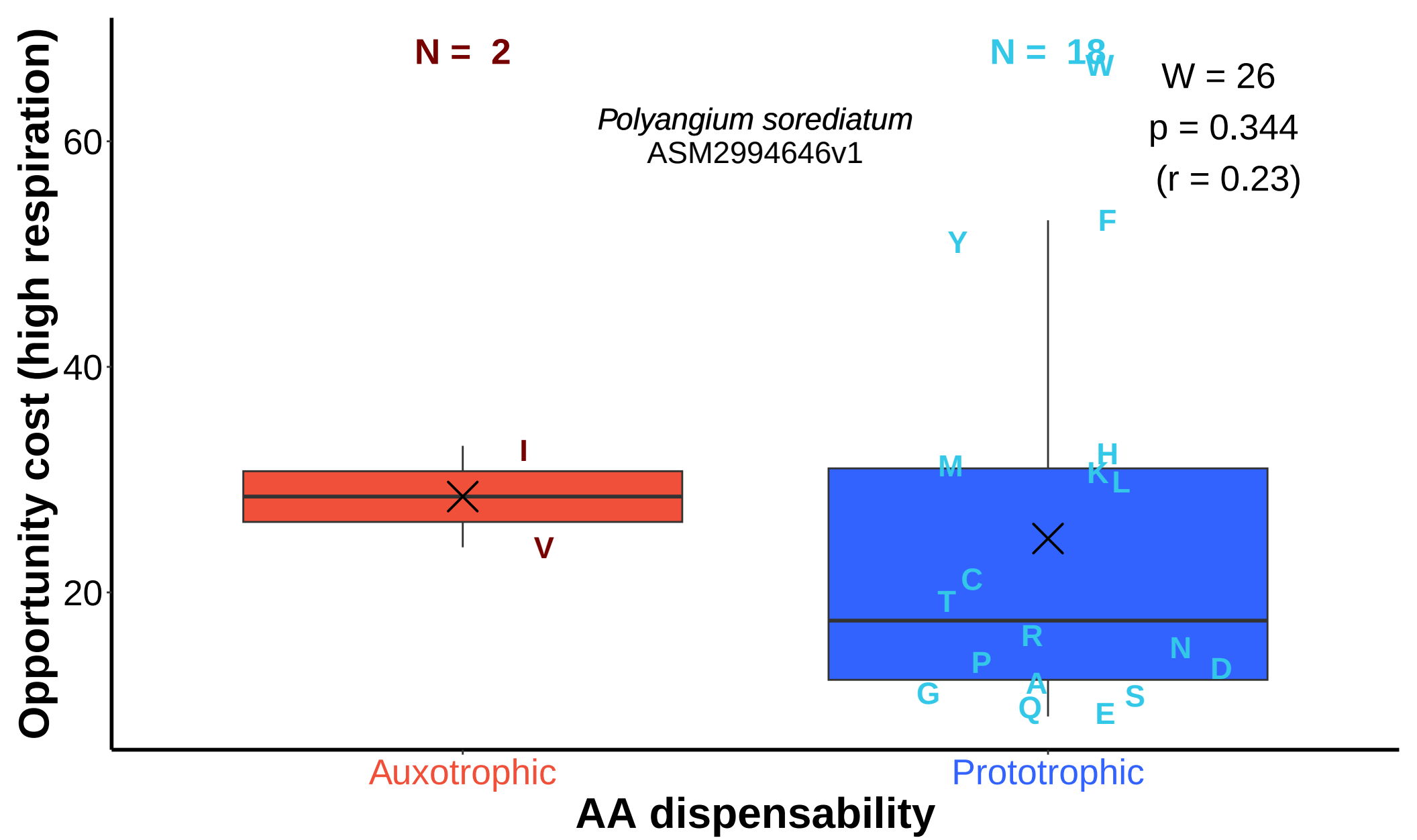
10.6

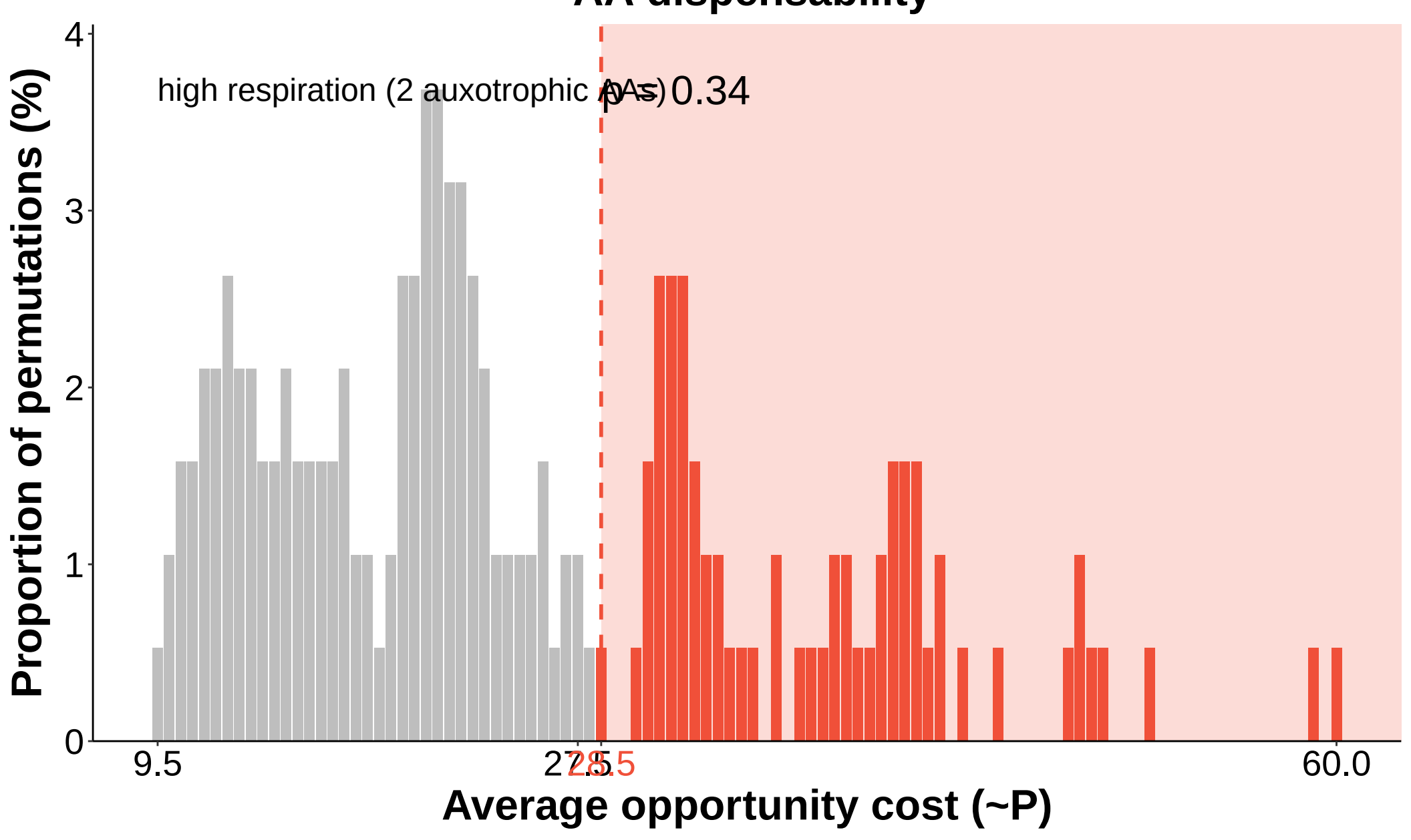
28.6

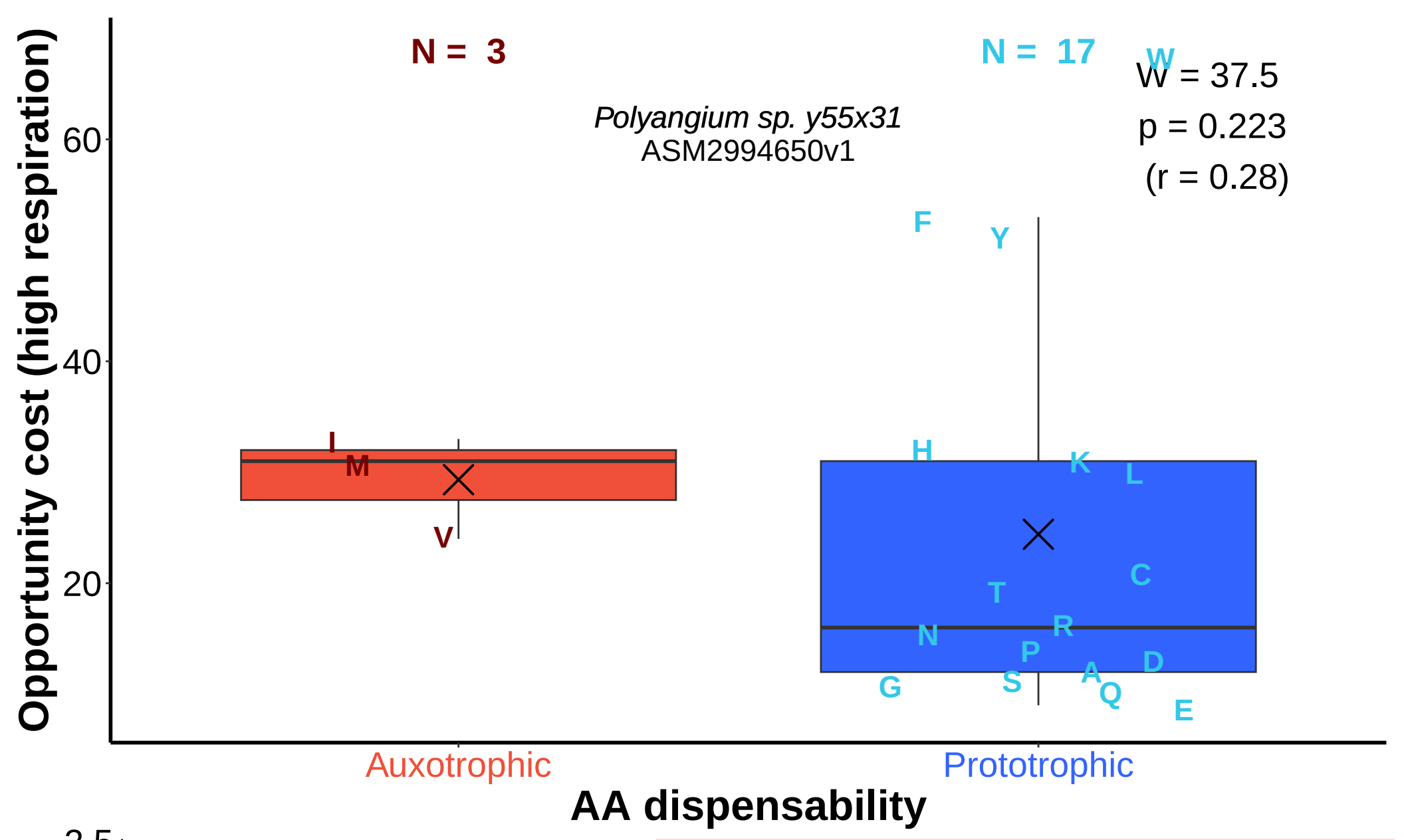
38.4

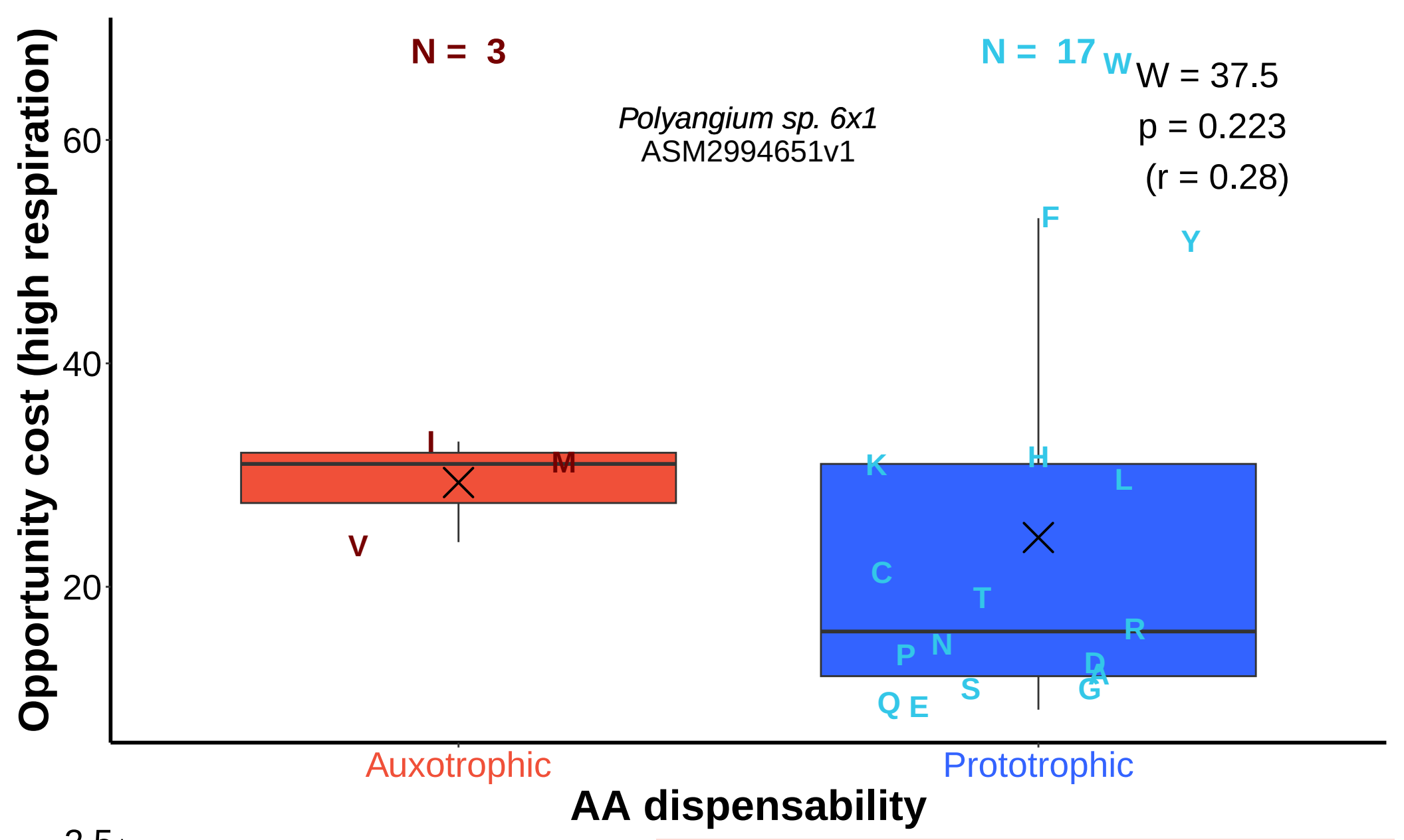
47.2

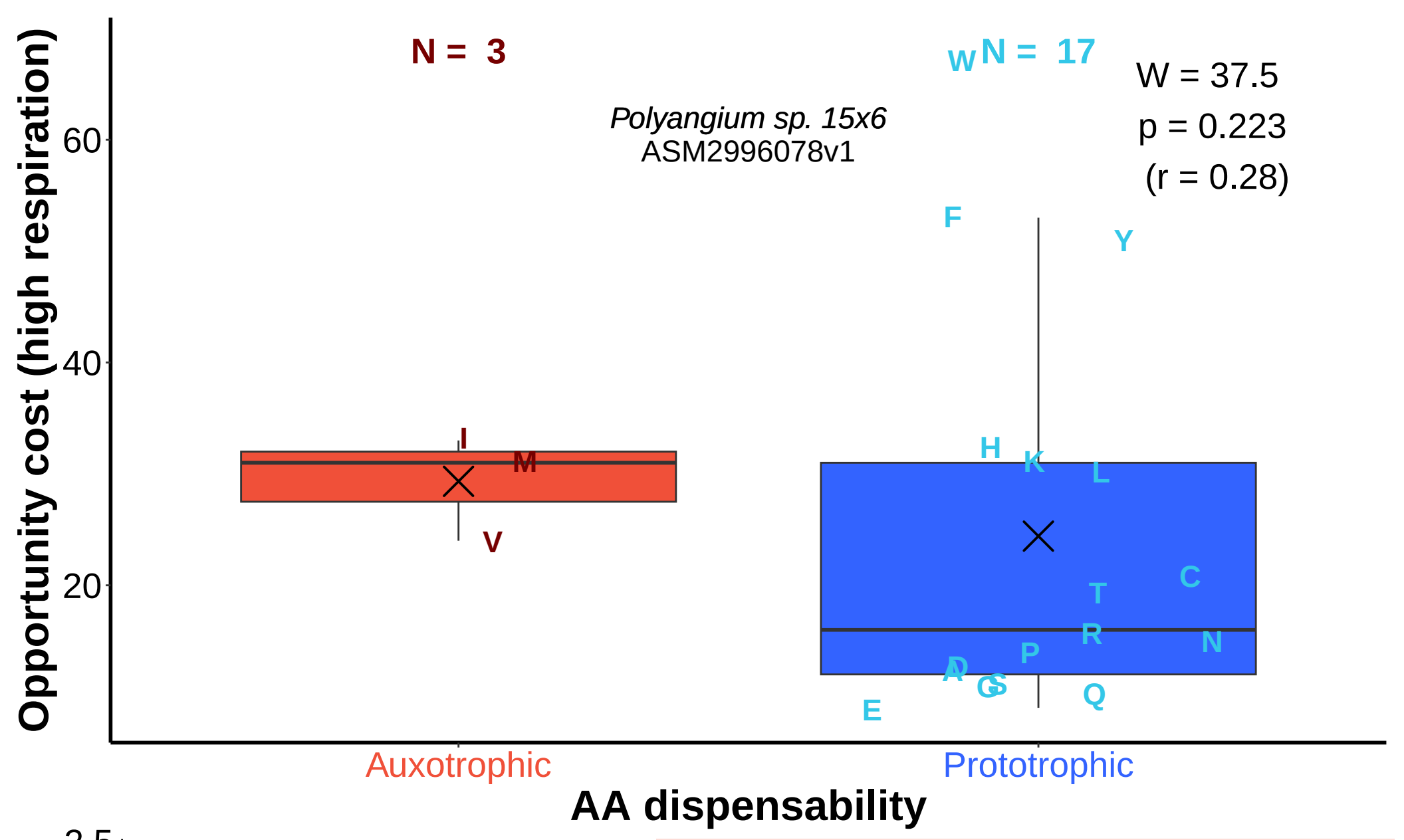
Average opportunity cost (~P)

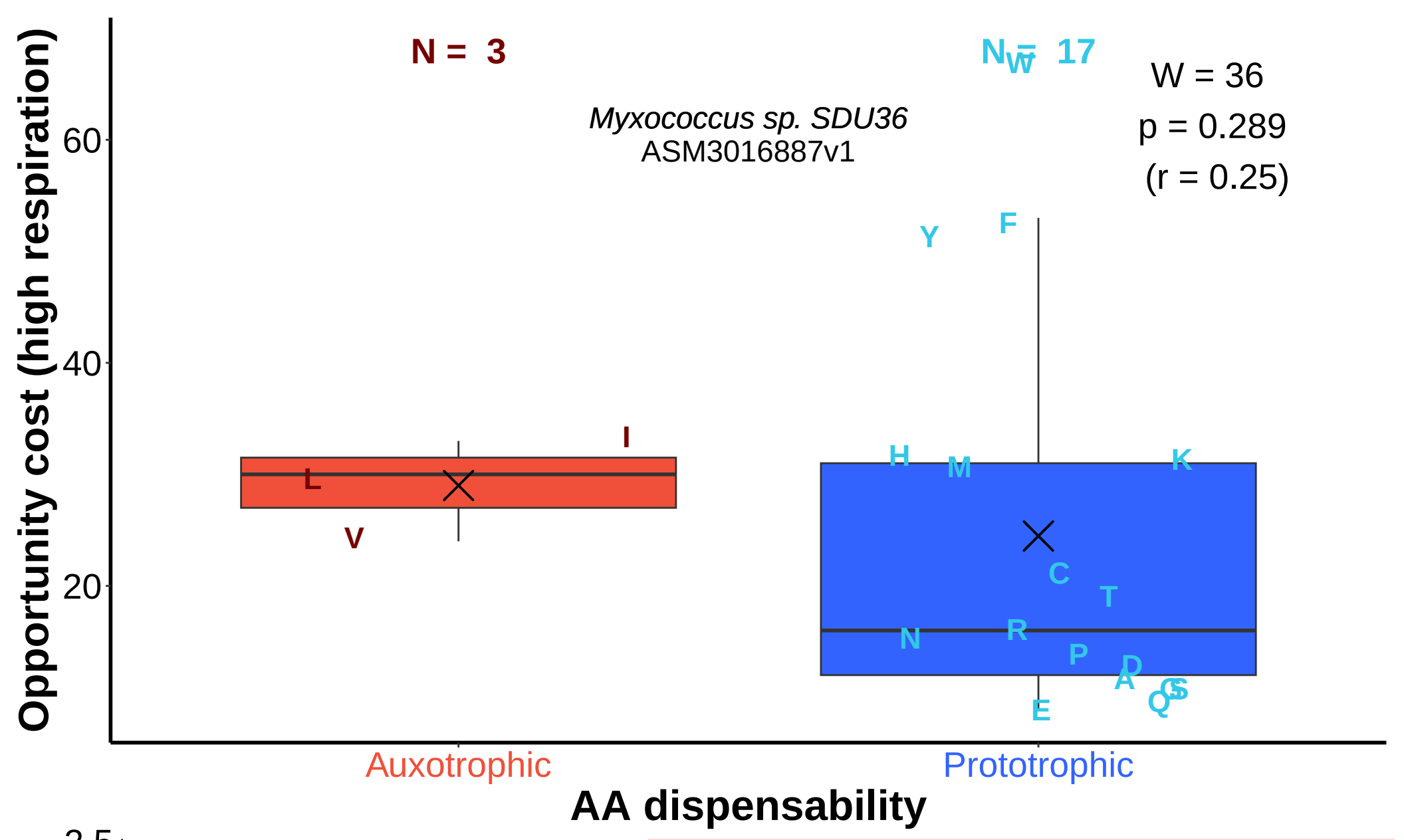

N = 2
N = 18
W
W = 26
p = 0.344
(r = 0.23)
Polyangium sorediatum
ASM2994646v1
Opportunity cost (high respiration)
60
40
20
I
V
Y
F
M
H
K
L
C
T
R
P
N
D
G
A
Q
E
S
Auxotrophic
Prototrophic
AA dispensability

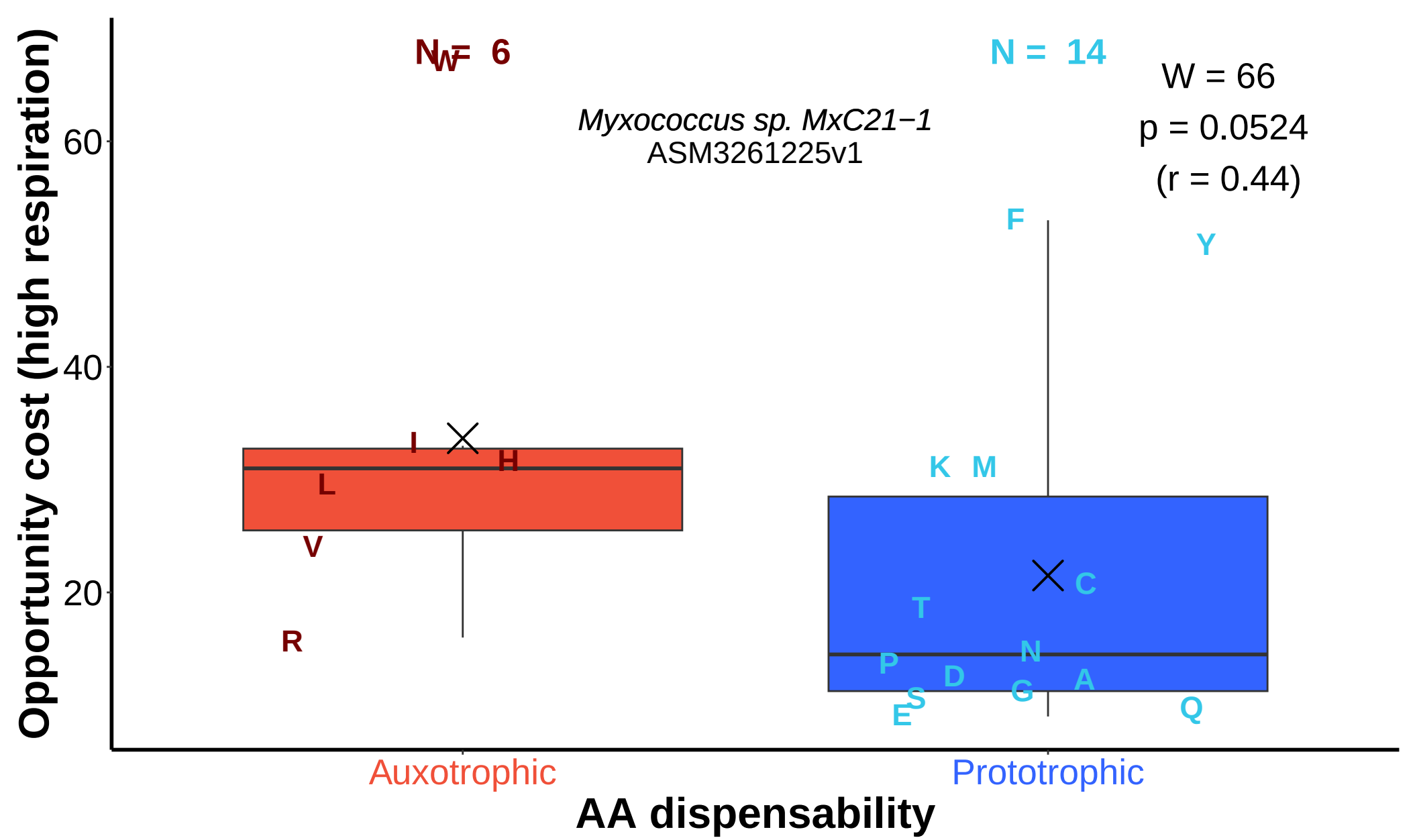

high respiration (2 auxotrophic AAs)
p = 0.34
Proportion of permutations (%)
4
3
2
1
0
9.5
27.5
28.5
60.0
Average opportunity cost (~P)

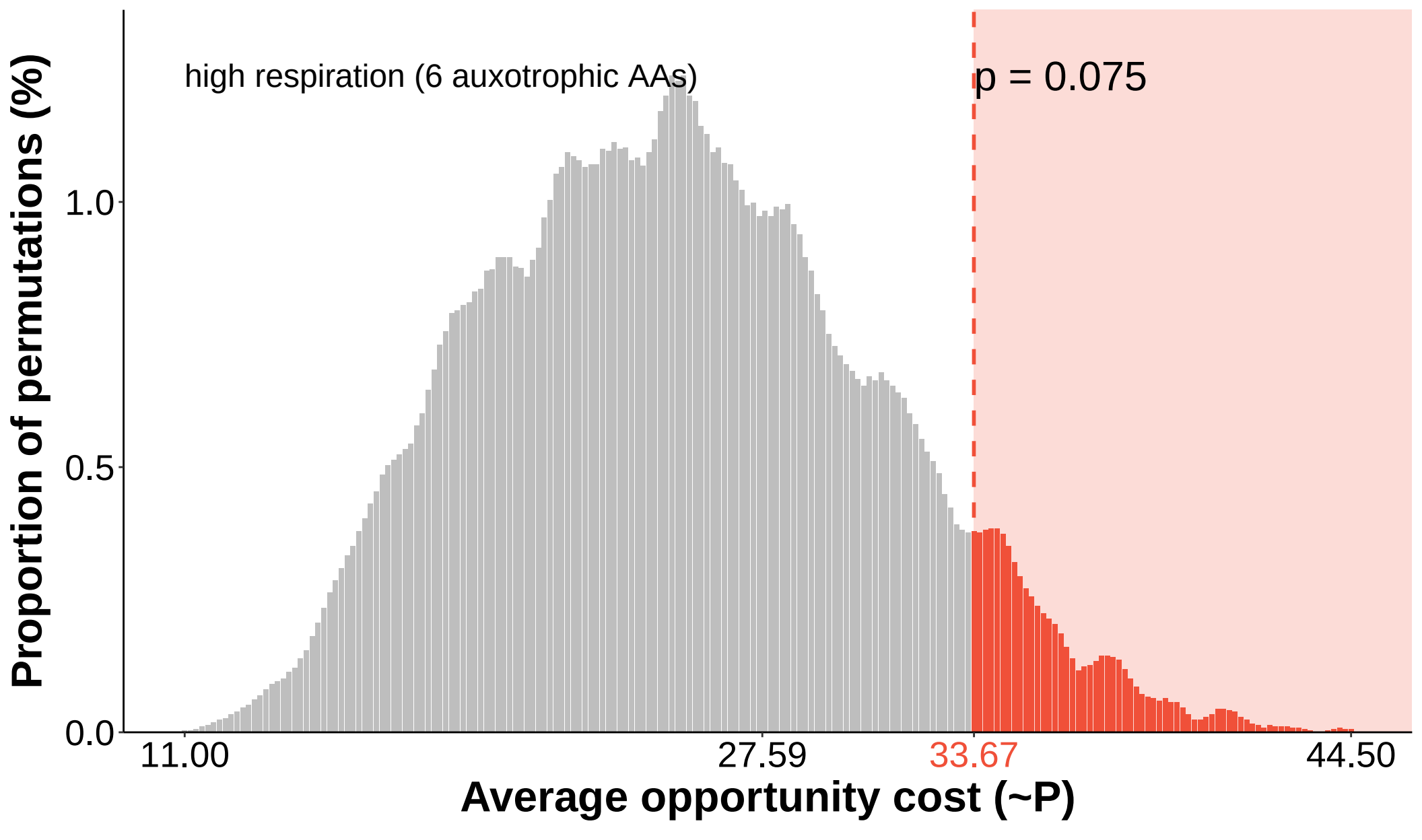

N = 3
N = 17
W
W = 37.5
p = 0.223
(r = 0.28)
Polyangium sp. y55x31
ASM2994650v1
Opportunity cost (high respiration)
60
40
20
I
M
V
F
Y
H
K
L
C
T
N
R
P
D
A
Q
S
G
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.00
29.50
57.00
Average opportunity cost (~P)


N = 3
N = 17
W
W = 37.5
p = 0.223
(r = 0.28)
Polyangium sp. 6x1
ASM2994651v1
Opportunity cost (high respiration)
60
40
20
I
M
V
F
Y
K
H
L
C
T
R
P
N
D
A
S
G
Q
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.00
29.50
57.00
Average opportunity cost (~P)


N = 3
N = 17
W = 37.5
p = 0.223
(r = 0.28)
Polyangium sp. 15x6
ASM2996078v1
Opportunity cost (high respiration)
60
40
20
I
M
V
F
Y
H
K
L
C
T
R
N
P
A
G
S
Q
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.00
29.50
57.00
Average opportunity cost (~P)


N = 3
N = 17
W = 36
p = 0.289
(r = 0.25)
Myxococcus sp. SDU36
ASM3016887v1
Opportunity cost (high respiration)
60
40
20
I
L
V
Y
F
H
M
K
C
T
N
R
P
D
A
Q
S
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.0
29.5
57.0
Average opportunity cost (~P)


N = 6
N = 14
W = 66
p = 0.0524
(r = 0.44)
Myxococcus sp. MxC21−1
ASM3261225v1
Opportunity cost (high respiration)
60
40
20
I
H
L
V
R
F
Y
K
M
C
T
N
P
D
G
A
S
E
Q
Auxotrophic
Prototrophic
AA dispensability


high respiration (6 auxotrophic AAs)
p = 0.075
Proportion of permutations (%)
1.0
0.5
0.0
11.00
27.59
33.67
44.50
Average opportunity cost (~P)

N = 3

W N = 17

W = 36
p = 0.289
(r = 0.25)

Myxococcus stipitatus DSM 14675
ASM33173v1

Opportunity cost (high respiration)

60
40
20

I
L
V

F
Y
K
M
H
C
T
R
N
P
D
A
S
Q
G
E

Auxotrophic
Prototrophic

AA dispensability

high respiration (3 auxotrophic AAs)

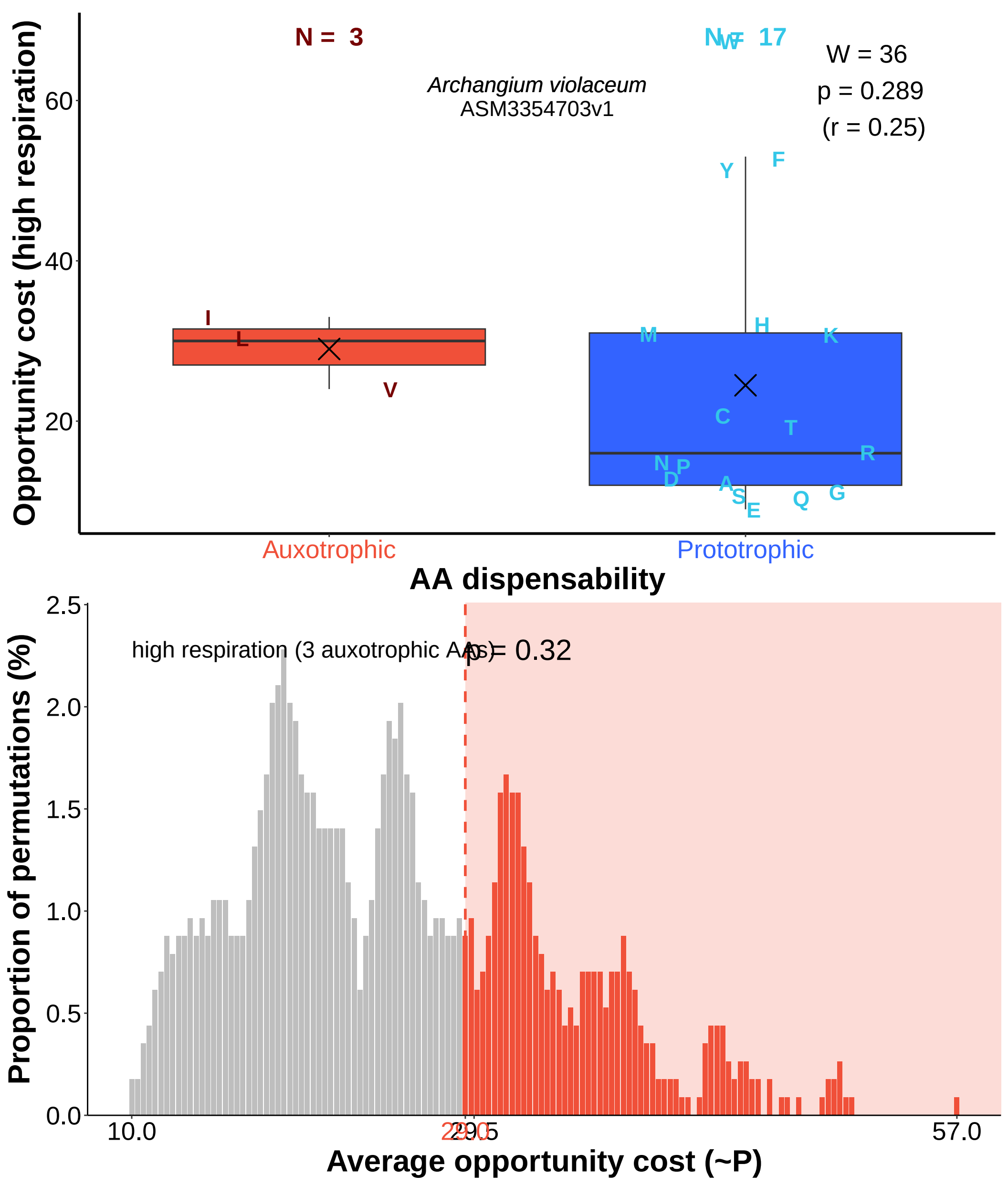
p = 0.32

Proportion of permutations (%)

2.5
2.0
1.5
1.0
0.5
0.0

10.0
29.0
29.5
57.0

Average opportunity cost (~P)


N = 3
N = 17
W = 36
p = 0.289
(r = 0.25)
Archangium violaceum
ASM3354703v1
Opportunity cost (high respiration)
60
40
20
I
L
V
Y
F
M
H
K
C
T
R
N
P
D
A
S
E
Q
G
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.0
29.5
57.0
Average opportunity cost (~P)

N = 3

N = 17

W = 36
p = 0.289
(r = 0.25)

Archangium gephyra
ASM338709v1

Opportunity cost (high respiration)

60
40
20

I
L
V

W
F
Y
M
H
K
C
T
R
N
D
P
S
G
A
Q
E

Auxotrophic

Prototrophic

AA dispensability

high respiration (3 auxotrophic AAs)

p = 0.32

Proportion of permutations (%)

2.5
2.0
1.5
1.0
0.5
0.0

10.0

29.0

57.0

Average opportunity cost (~P)

N = 3

N = 17

W

W = 36

p = 0.289

(r = 0.25)

Hyalangium rubrum
ASM3425932v1

Opportunity cost (high respiration)

60

40

20

I

L

V

Y

F

H

K

M

C

T

R

N

P

S

D

A

G

Q

E

Auxotrophic

Prototrophic

AA dispensability

high respiration (3 auxotrophic AAs)

p = 0.32

Proportion of permutations (%)

2.5

2.0

1.5

1.0

0.5

0.0

10.0

29.0

29.5

57.0

Average opportunity cost (~P)

N = 3

N = 17

W = 36

p = 0.289

(r = 0.25)

Corallococcus exercitus
ASM361158v1

Opportunity cost (high respiration)

60

40

20

I

L

V

F

Y

H

K

M

C

T

N

R

P

D

A

G

S

Q

E

Auxotrophic

Prototrophic

AA dispensability

high respiration (3 auxotrophic AAs)

p = 0.32

Proportion of permutations (%)

2.5

2.0

1.5

1.0

0.5

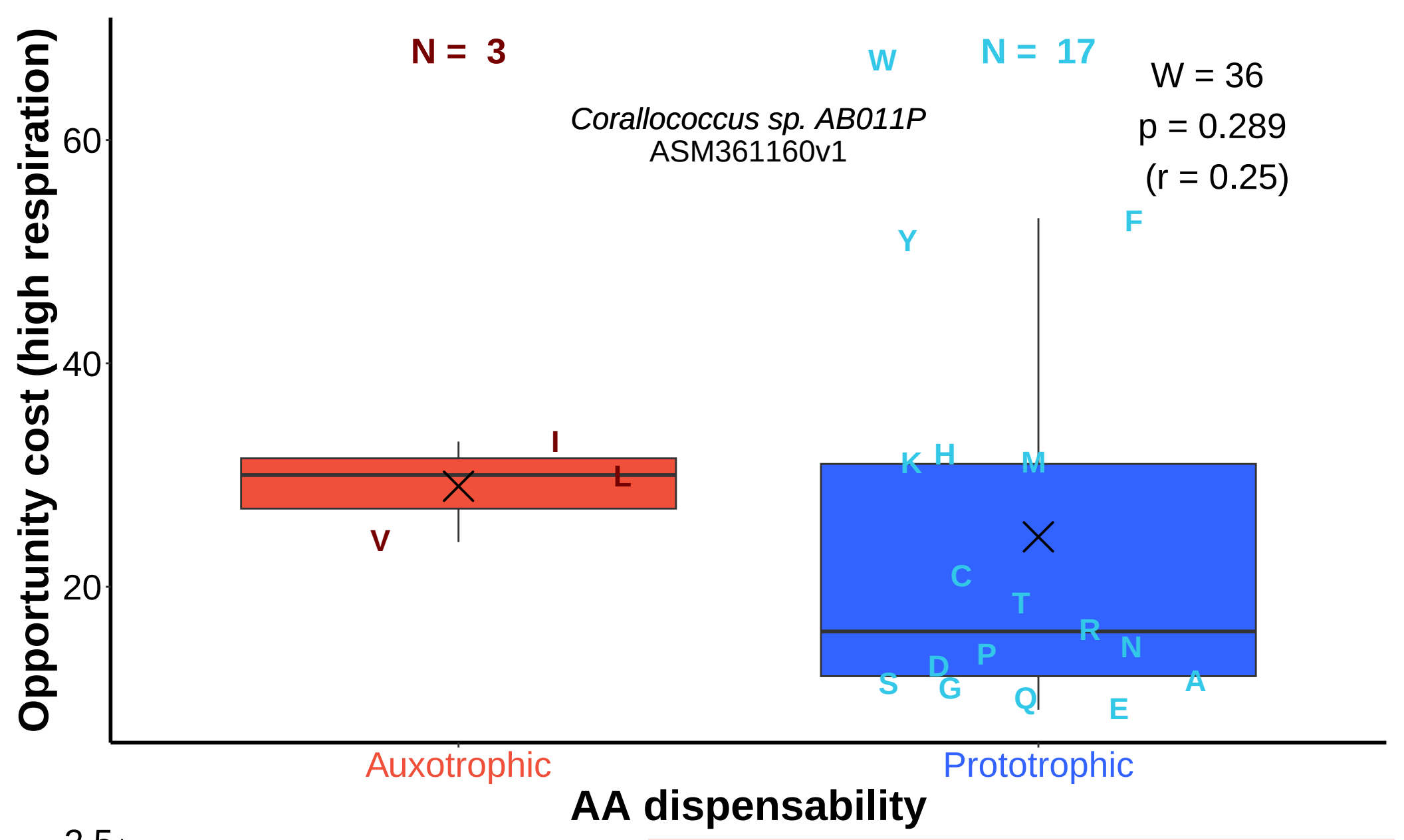
0.0

10.0

29.5

57.0

Average opportunity cost (~P)


N = 3
N = 17
W
W = 36
p = 0.289
(r = 0.25)
Corallococcus sp. AB011P
ASM361160v1
Opportunity cost (high respiration)
60
40
20
I
L
V
Y
F
K
H
M
C
T
R
N
P
D
S
G
Q
E
A
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.0
29.5
57.0
Average opportunity cost (~P)

N = 3

N = 17

W = 36
p = 0.289
(r = 0.25)

Corallococcus sp. CA054B
ASM361162v1

Opportunity cost (high respiration)

60
40
20

I
L
V

Y
F
M
H
K
C
T
R
N
P
D
A
S
G
Q
E

Auxotrophic
Prototrophic

AA dispensability

high respiration (3 auxotrophic AAs)

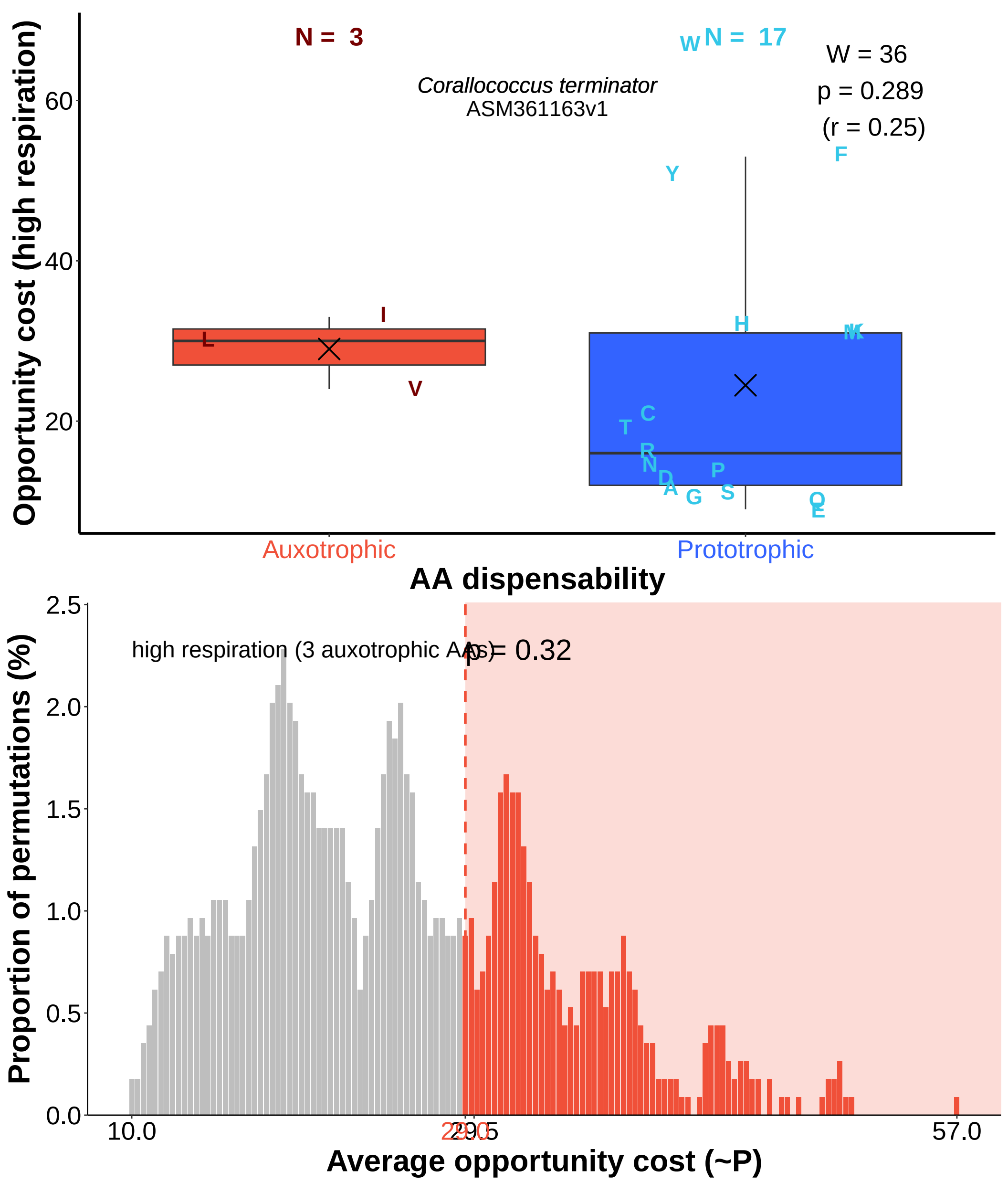
p = 0.32

Proportion of permutations (%)

2.5
2.0
1.5
1.0
0.5
0.0

10.0
29.0
29.5
57.0

Average opportunity cost (~P)



N = 3
N = 17
W = 36
p = 0.289
(r = 0.25)
Corallococcus terminator
ASM361163v1
Opportunity cost (high respiration)
60
40
20
L
I
V
W
Y
F
H
M
K
C
T
R
N
D
A
G
P
S
Q
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.0
29.5
57.0
Average opportunity cost (~P)

N = 3

N = 17

W = 36

p = 0.289

(r = 0.25)

Corallococcus sp. CA053C
ASM361167v1

Opportunity cost (high respiration)

60

40

20

I

L

V

F

Y

H

M

K

C

T

R

N

P

D

A

S

Q

G

E

Auxotrophic

Prototrophic

AA dispensability

high respiration (3 auxotrophic AAs)

p = 0.32

Proportion of permutations (%)

2.5

2.0

1.5

1.0

0.5

0.0

10.0

29.0

57.0

Average opportunity cost (~P)

N = 3

W

N = 17

W = 36

p = 0.289

(r = 0.25)

Corallococcus sp. CA049B
ASM361168v1

Opportunity cost (high respiration)

60

40

20

I

L

V

F

Y

K

M

H

C

T

R

N

P

D

A

S

E

Q

G

Auxotrophic

Prototrophic

AA dispensability

high respiration (3 auxotrophic AAs)

p = 0.32

Proportion of permutations (%)

2.5

2.0

1.5

1.0

0.5

0.0

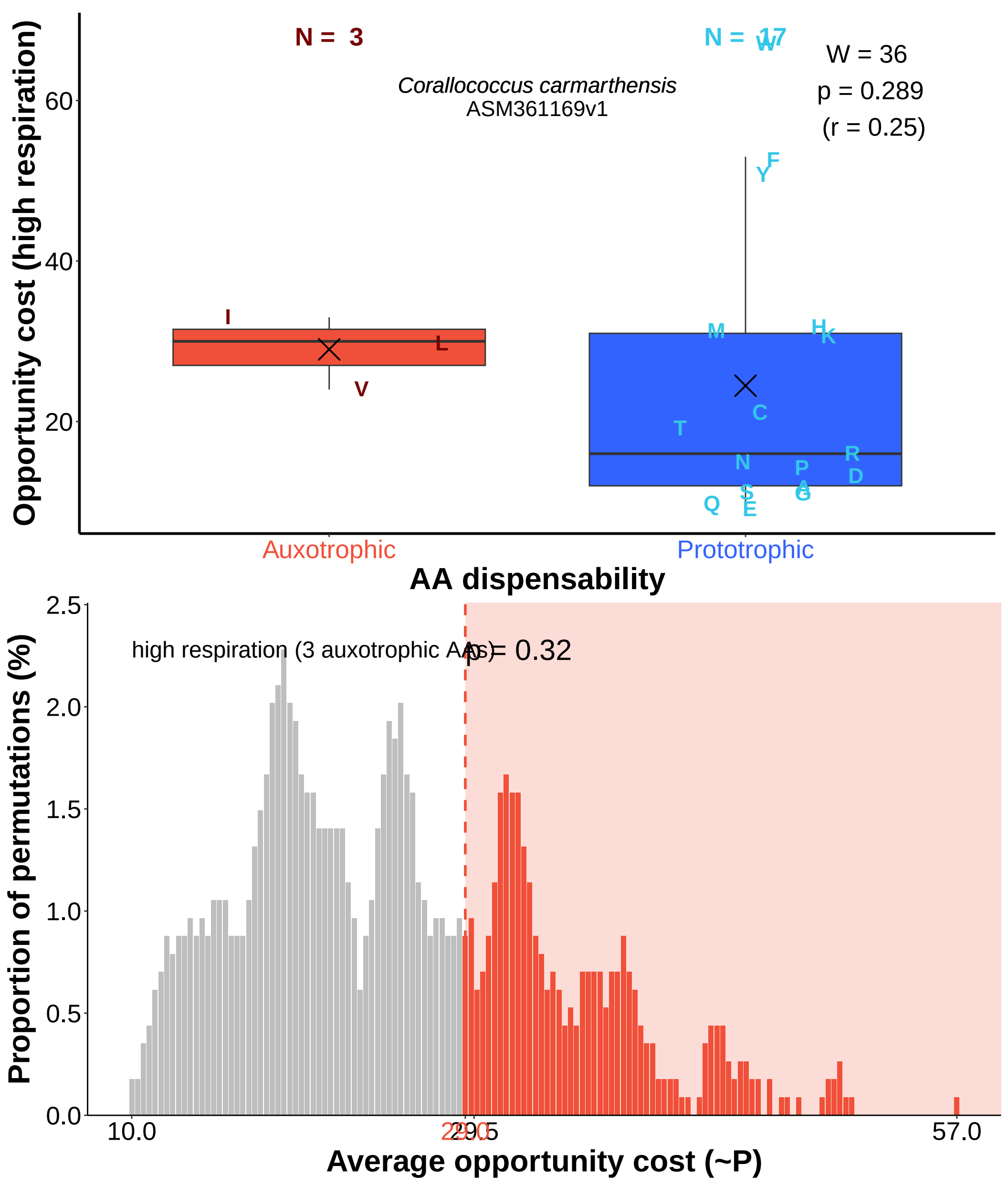
10.0

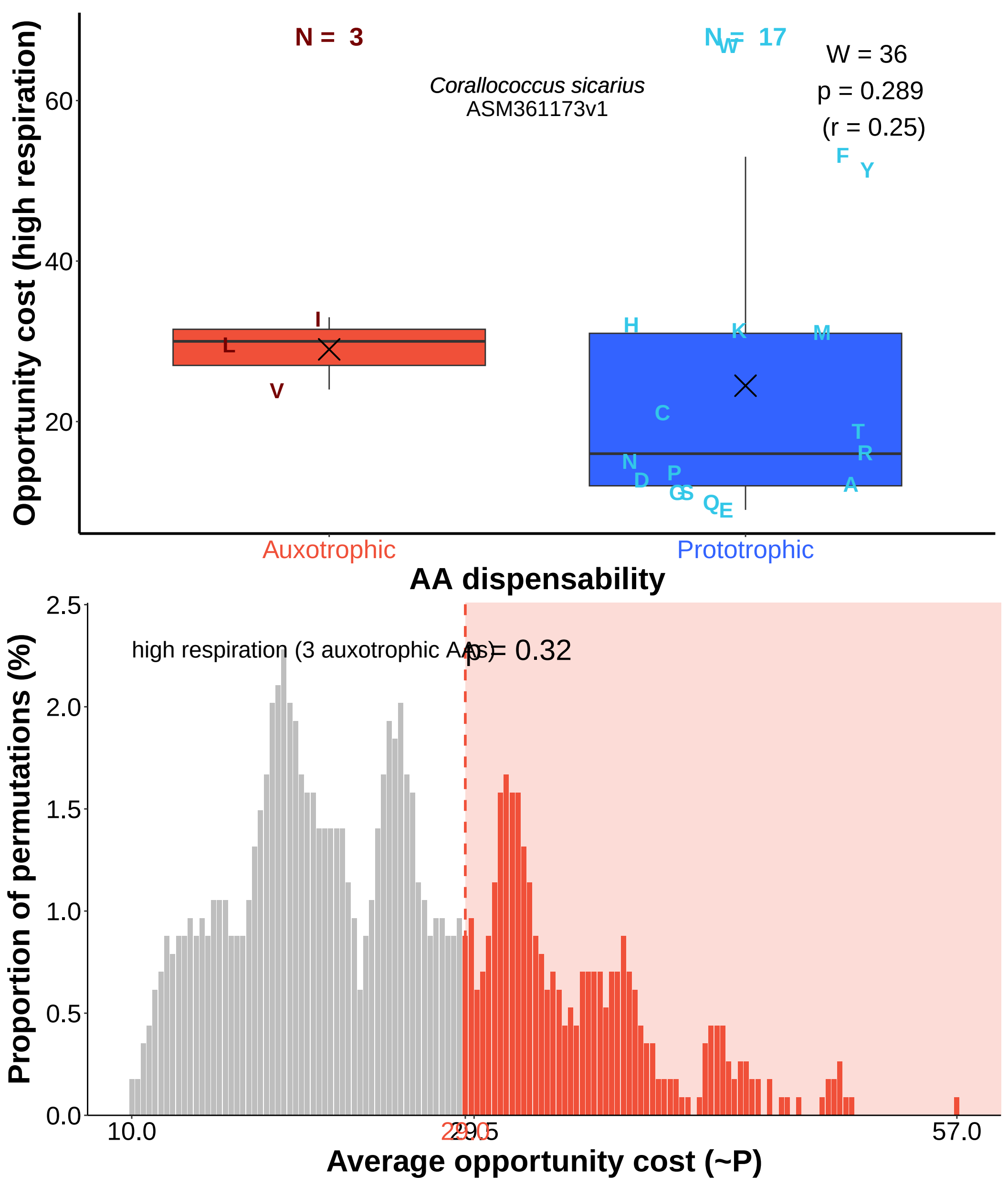
29.0

29.5

57.0

Average opportunity cost (~P)


N = 3
N = 17
W = 36
p = 0.289
(r = 0.25)
Corallococcus carmarthensis
ASM361169v1
Opportunity cost (high respiration)
60
40
20
I
L
V
F
Y
M
H
K
C
T
R
N
P
D
S
A
G
Q
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.0
29.5
57.0
Average opportunity cost (~P)


N = 3
N = 17
W = 36
p = 0.289
(r = 0.25)
Corallococcus sicarius
ASM361173v1
Opportunity cost (high respiration)
60
40
20
I
L
V
H
K
M
C
T
R
N
D
P
G
S
Q
E
A
F
Y
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.0
29.5
57.0
Average opportunity cost (~P)

N = 3

N = 17

W

W = 36

p = 0.289

(r = 0.25)

Corallococcus llansteffanensis
ASM361205v1

Opportunity cost (high respiration)

60

40

20

I

L

V

Y

F

K

M

H

C

T

R

N

D

P

S

A

G

E

Q

Auxotrophic

Prototrophic

AA dispensability

high respiration (3 auxotrophic AAs)

p = 0.32

Proportion of permutations (%)

2.5

2.0

1.5

1.0

0.5

0.0

10.0

29.0

29.5

57.0

Average opportunity cost (~P)

N = 3

N = 17

Corallococcus sp. CA047B
ASM361206v1

W = 36
p = 0.289
(r = 0.25)

Opportunity cost (high respiration)

60
40
20

I
L
V

W
F
Y
M
H
K
C
T
R
N
B
D
A
S
Q
G
E

Auxotrophic

Prototrophic

AA dispensability

high respiration (3 auxotrophic AAs)

p = 0.32

Proportion of permutations (%)

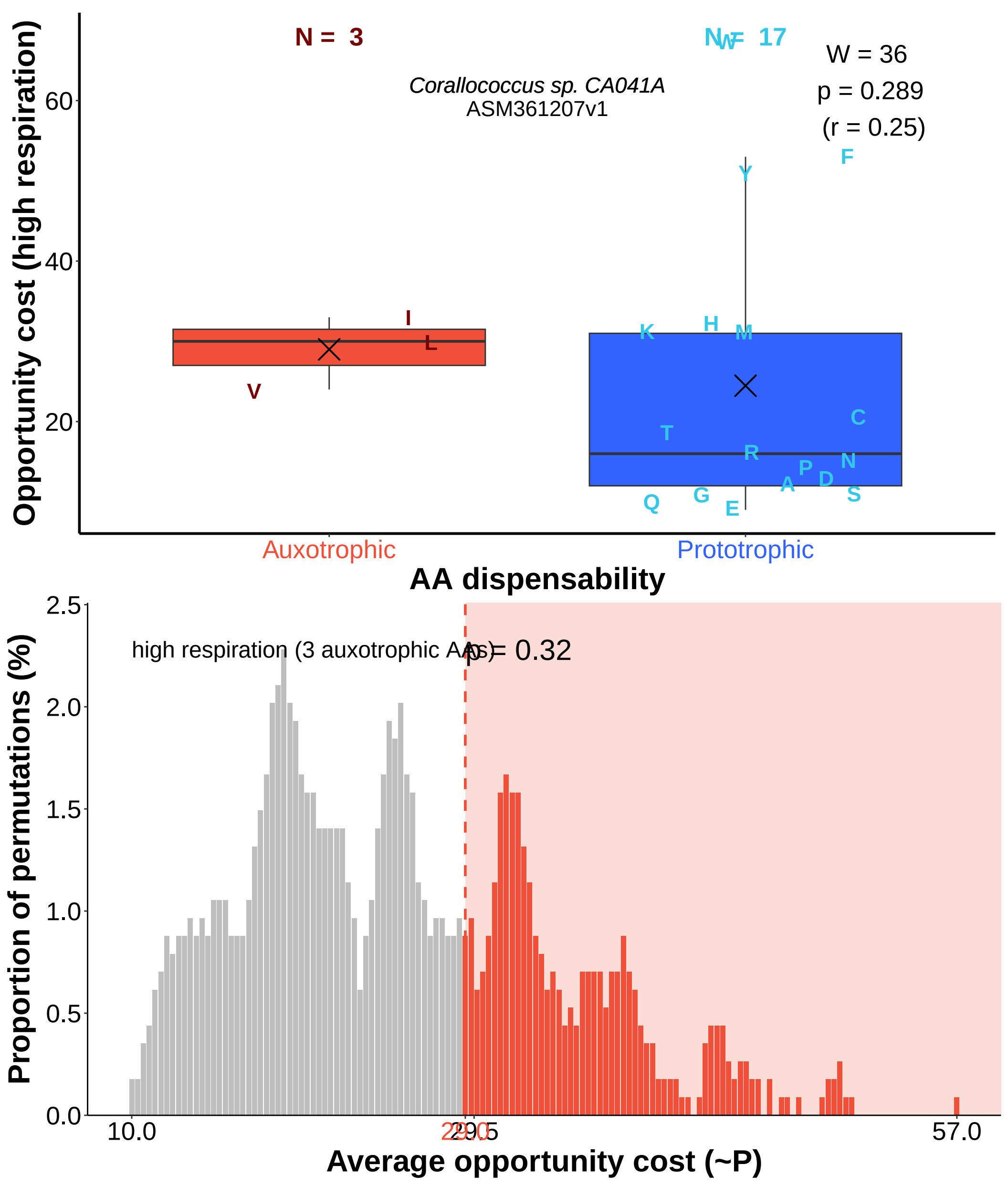
2.5
2.0
1.5
1.0
0.5
0.0

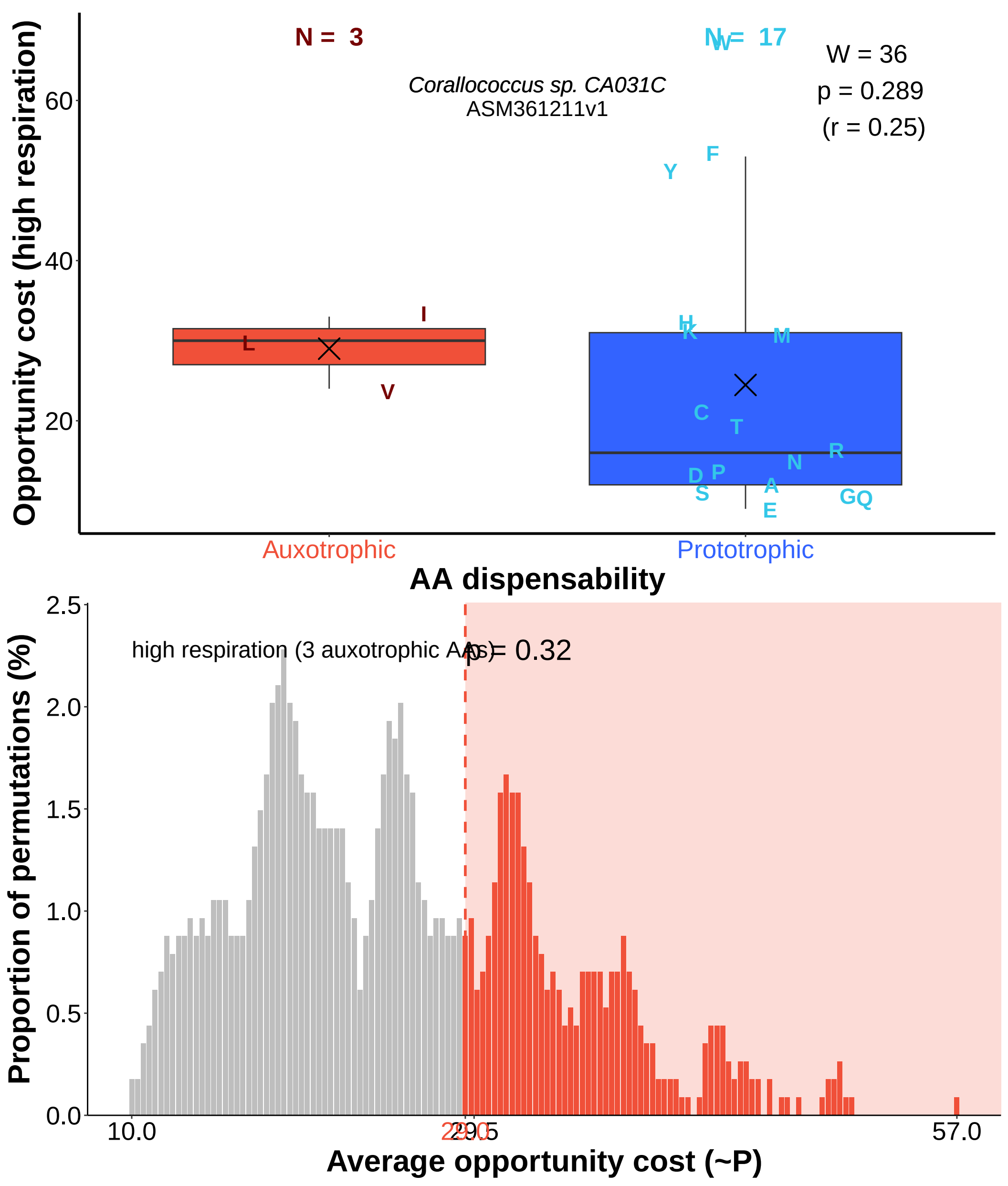
10.0

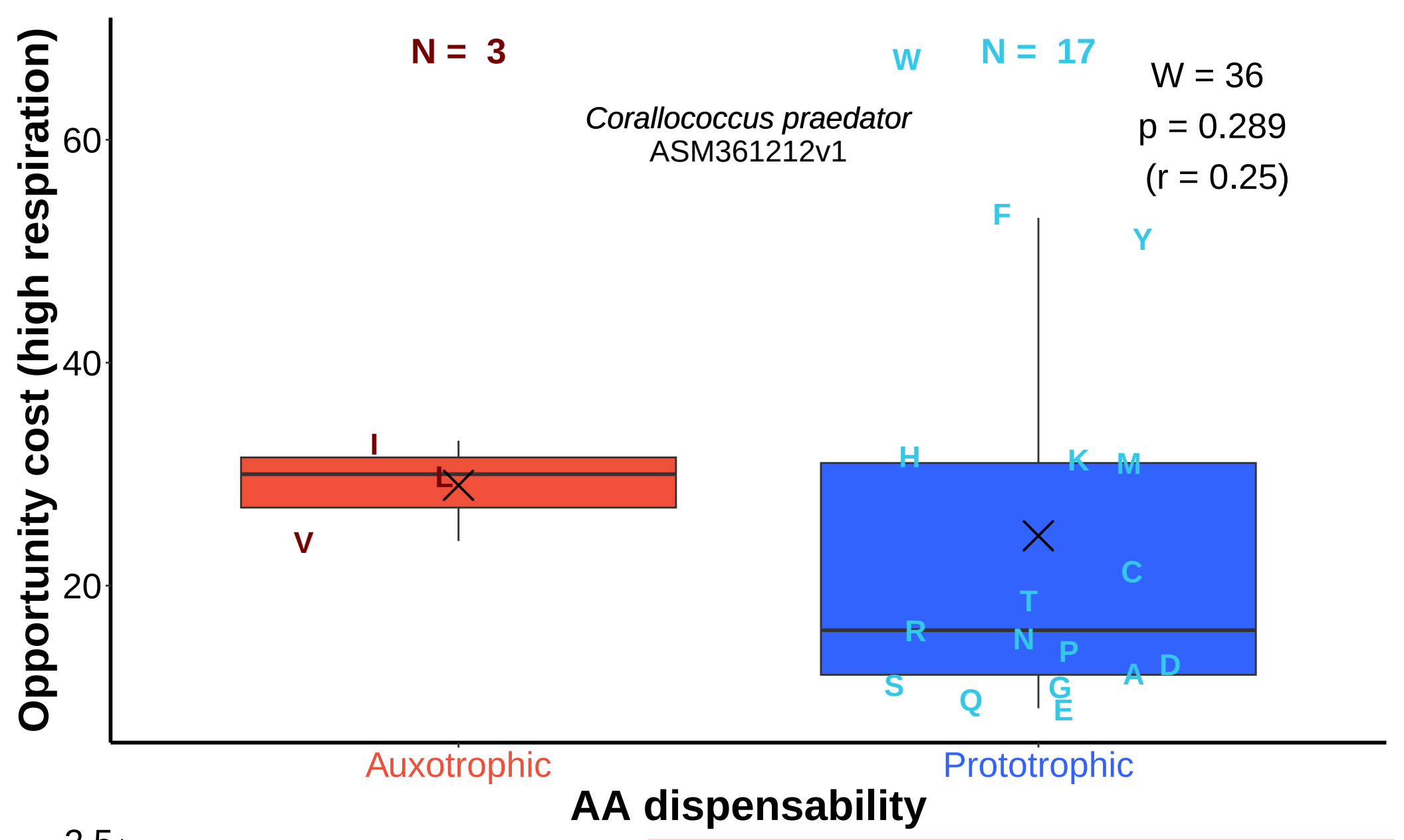
29.5

57.0

Average opportunity cost (~P)


N = 3
N = 17
W = 36
p = 0.289
(r = 0.25)
Corallococcus sp. CA041A
ASM361207v1
Opportunity cost (high respiration)
60
40
20
I
L
V
F
Y
K
H
M
C
T
R
N
P
A
D
Q
G
E
S
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.0
29.5
57.0
Average opportunity cost (~P)


N = 3
N = 17
W = 36
p = 0.289
(r = 0.25)
Corallococcus sp. CA031C
ASM361211v1
Opportunity cost (high respiration)
60
40
20
I
L
V
F
Y
H
K
M
C
T
R
N
D
P
S
A
E
GQ
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.0
57.0
Average opportunity cost (~P)


N = 3
N = 17
W
W = 36
p = 0.289
(r = 0.25)
Corallococcus praedator
ASM361212v1
Opportunity cost (high respiration)
60
40
20
I
L
V
F
Y
H
K
M
C
T
R
N
P
A
D
S
Q
G
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.0
29.5
57.0
Average opportunity cost (~P)

N = 3

N = 17

W = 36

p = 0.289

(r = 0.25)

Corallococcus aberystwythensis
ASM361216v1

Opportunity cost (high respiration)

60

40

20

I

L

V

F

Y

H

M

K

C

T

N

P

R

D

G

Q

A

E

S

Auxotrophic

Prototrophic

AA dispensability

high respiration (3 auxotrophic AAs)

p = 0.32

Proportion of permutations (%)

2.5

2.0

1.5

1.0

0.5

0.0

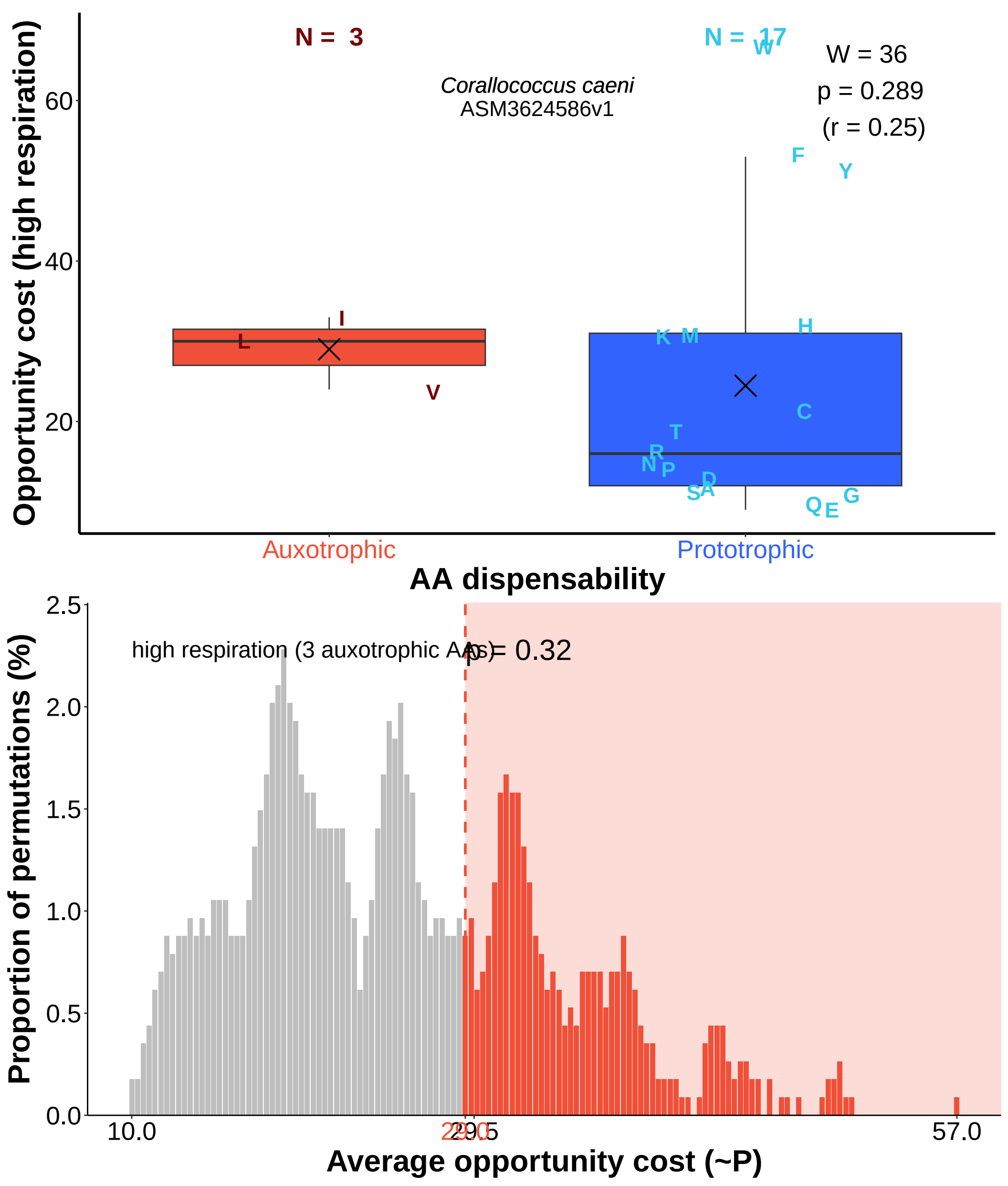
10.0

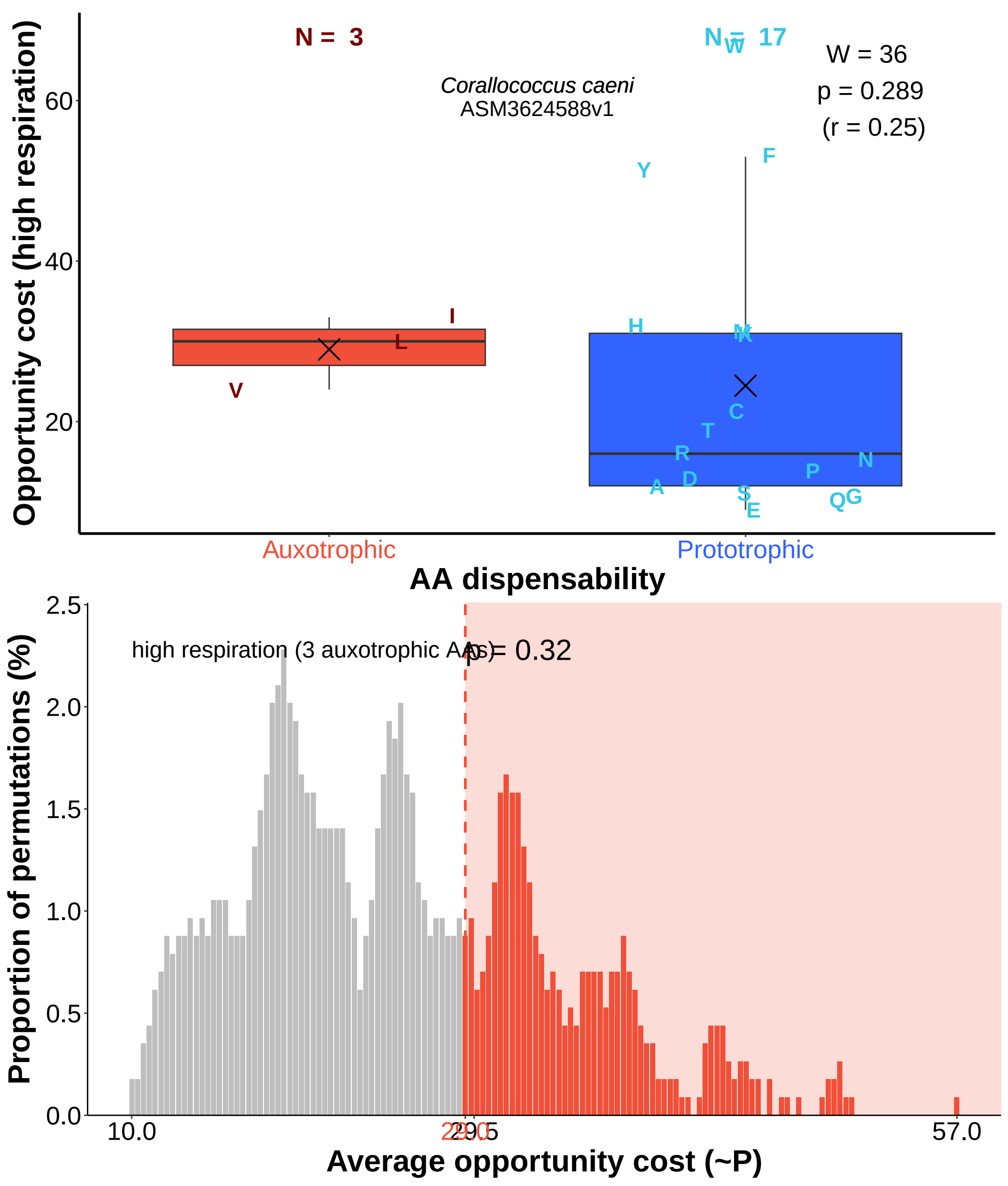
29.0

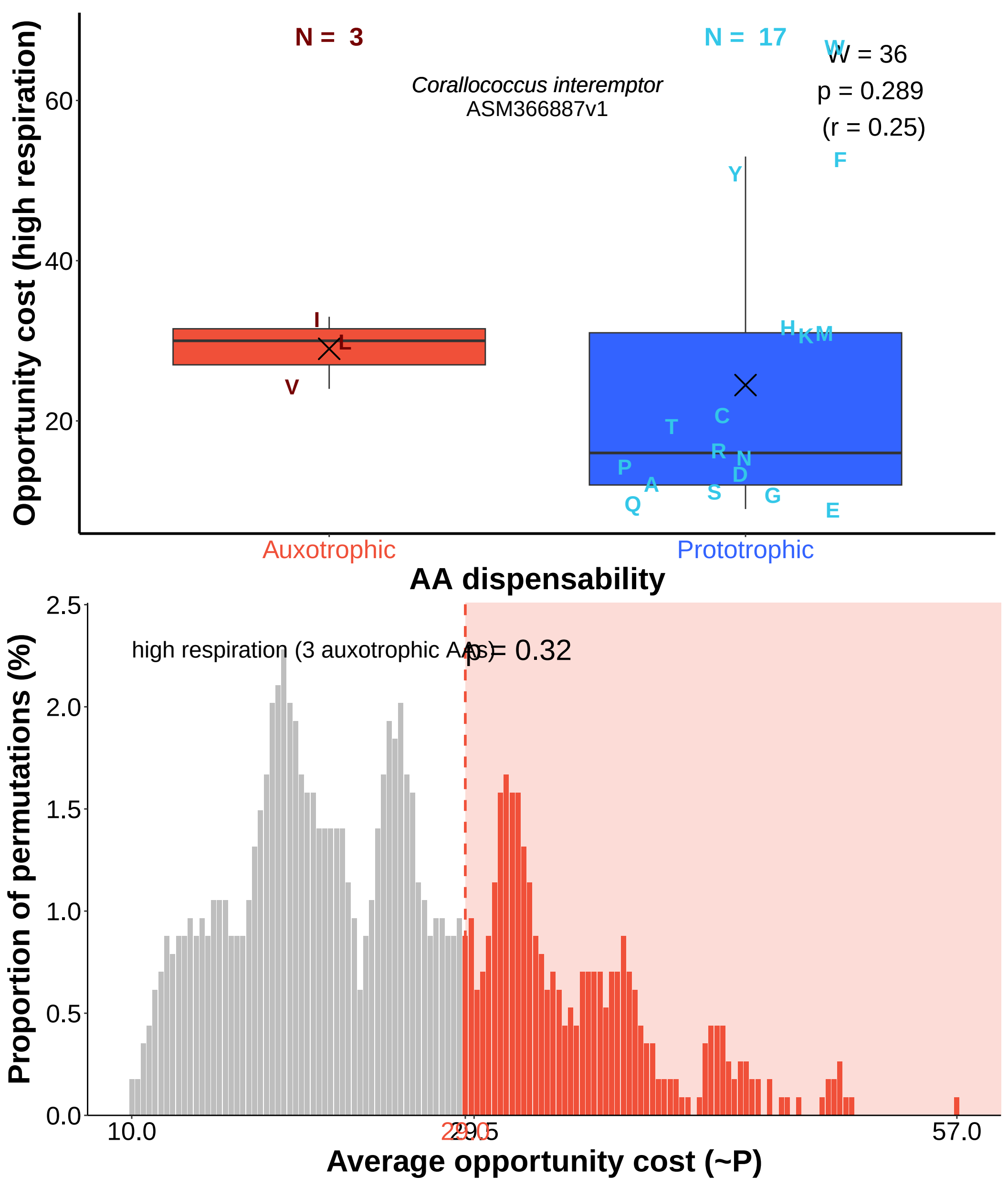
29.5

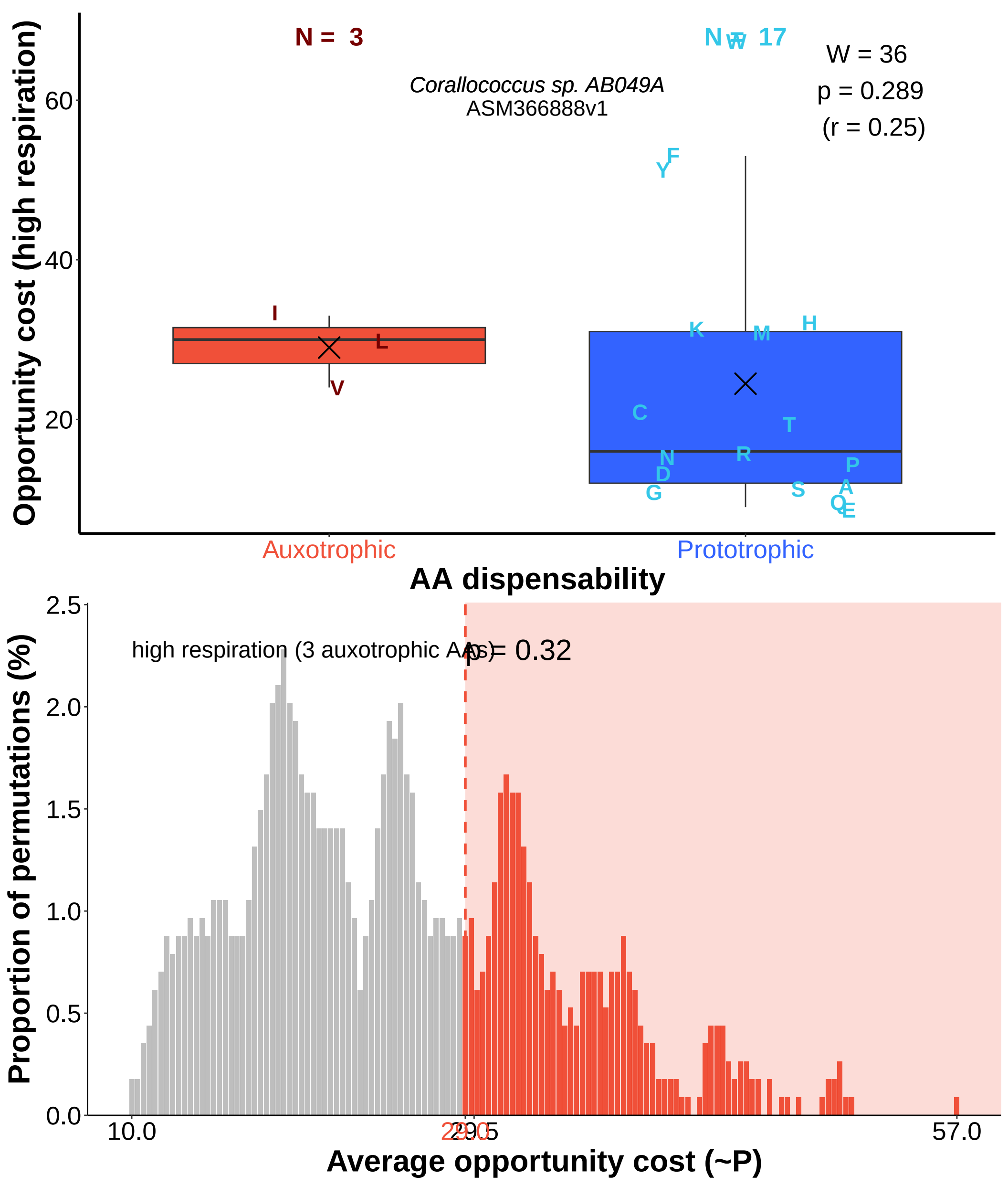
57.0

Average opportunity cost (~P)


N = 3
N = 17
Corallococcus caeni
ASM3624586v1
W = 36
p = 0.289
(r = 0.25)
Opportunity cost (high respiration)
60
40
20
I
L
V
F
Y
K
M
H
C
T
R
N
P
D
S
A
Q
E
G
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.0
57.0
Average opportunity cost (~P)


N = 3
N = 17
W = 36
p = 0.289
(r = 0.25)
Corallococcus caeni
ASM3624588v1
Opportunity cost (high respiration)
60
40
20
I
L
V
Y
F
H
M
K
C
T
R
N
P
D
A
S
E
Q
G
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.0
29.5
57.0
Average opportunity cost (~P)


N = 3
N = 17
W = 36
p = 0.289
(r = 0.25)
Corallococcus interemptor
ASM366887v1
Opportunity cost (high respiration)
60
40
20
I
L
V
Y
F
H
K
M
C
T
R
N
P
D
A
S
G
Q
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.0
57.0
Average opportunity cost (~P)


N = 3
N = 17
W = 36
p = 0.289
(r = 0.25)
Corallococcus sp. AB049A
ASM366888v1
Opportunity cost (high respiration)
60
40
20
I
L
V
F
Y
K
M
H
C
T
N
R
D
P
G
S
A
Q
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.0
29.5
57.0
Average opportunity cost (~P)

N = 3

N = 17

W

W = 36

p = 0.289

(r = 0.25)

Corallococcus sp. AB045
ASM366889v1

Opportunity cost (high respiration)

60

40

20

I

L

V

H

K

M

Y

F

C

T

R

N

P

D

S

A

G

Q

E

Auxotrophic

Prototrophic

AA dispensability

high respiration (3 auxotrophic AAs)

p = 0.32

Proportion of permutations (%)

2.5

2.0

1.5

1.0

0.5

0.0

10.0

29.0

29.5

57.0

Average opportunity cost (~P)

N = 3

N = 17

W = 36
p = 0.289
(r = 0.25)

Corallococcus sp. AB032C
ASM366893v1

Opportunity cost (high respiration)

60
40
20

I
L
V

F
Y
H
M
K
C
T
R
N
P
D
S
G
A
E
Q

Auxotrophic
Prototrophic

AA dispensability

high respiration (3 auxotrophic AAs)

p = 0.32

Proportion of permutations (%)

2.5
2.0
1.5
1.0
0.5
0.0

10.0
29.0
29.5
57.0

Average opportunity cost (~P)

N = 3

N = 17

W

W = 36

p = 0.289

(r = 0.25)

Corallococcus sp. AB038B
ASM366895v1

Opportunity cost (high respiration)

60

40

20

I

L

V

Y F

H M K

C T

R

P N

D S Q G A

E

Auxotrophic

Prototrophic

AA dispensability

high respiration (3 auxotrophic AAs)

p = 0.32

Proportion of permutations (%)

2.5

2.0

1.5

1.0

0.5

0.0

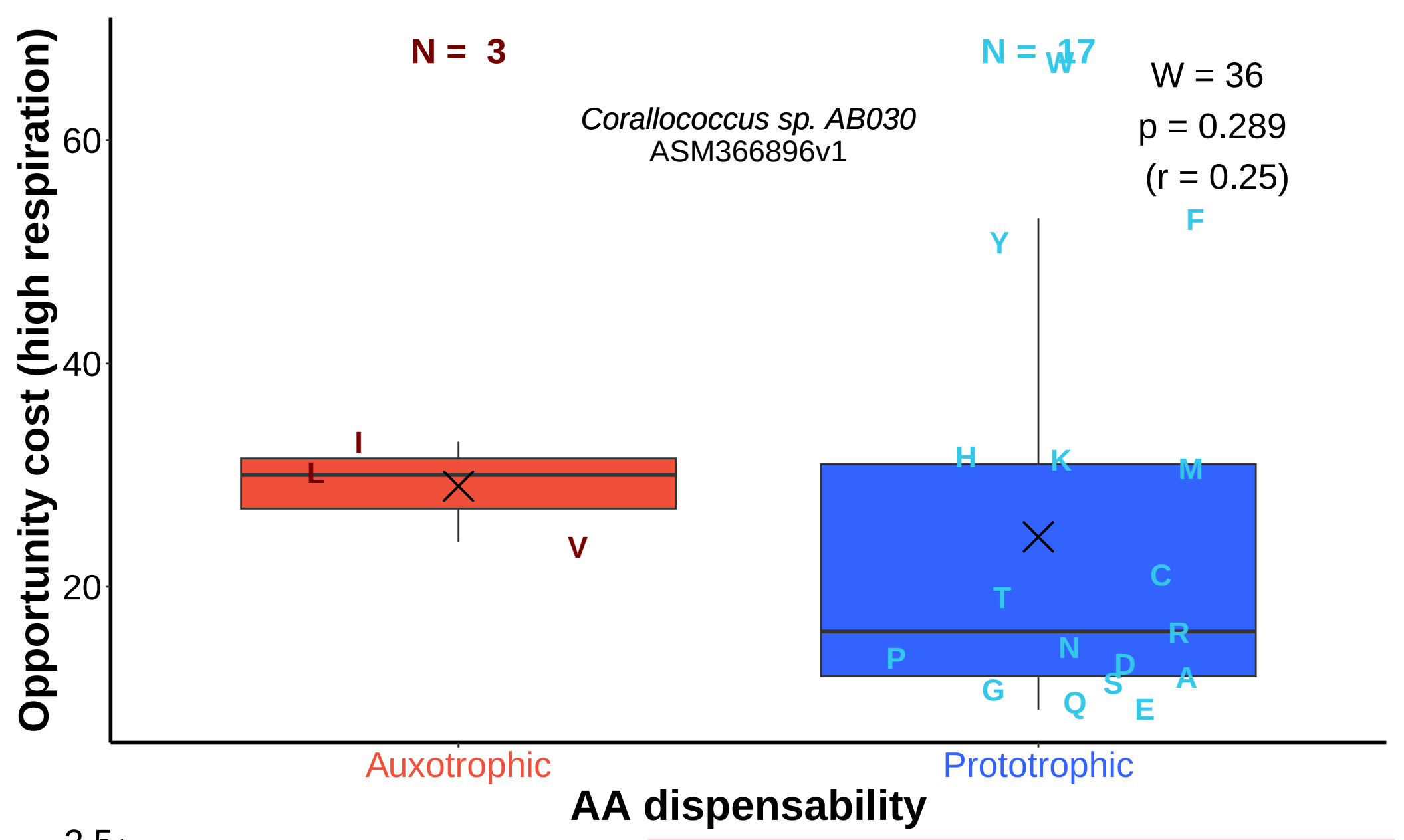
10.0

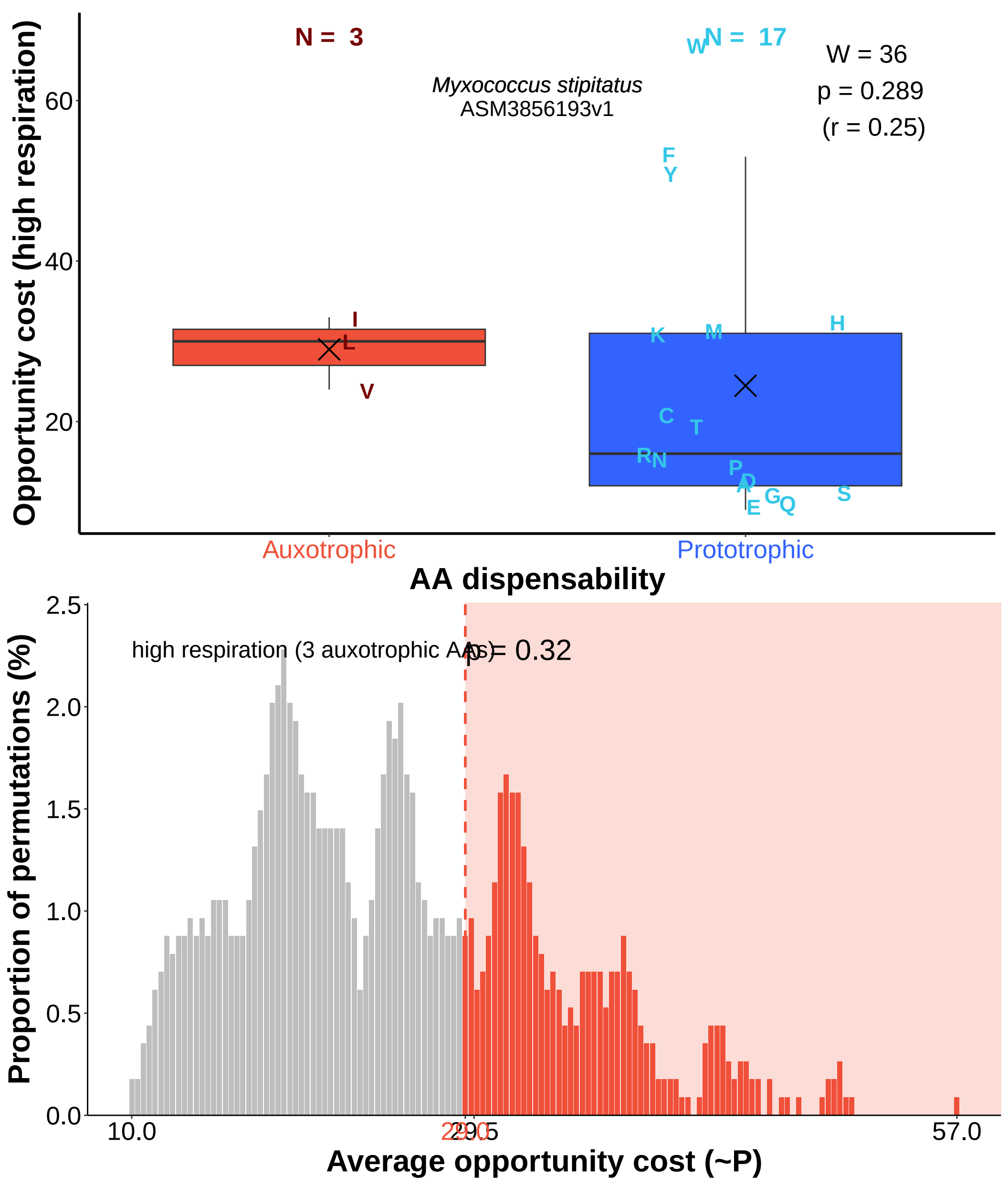
29.0

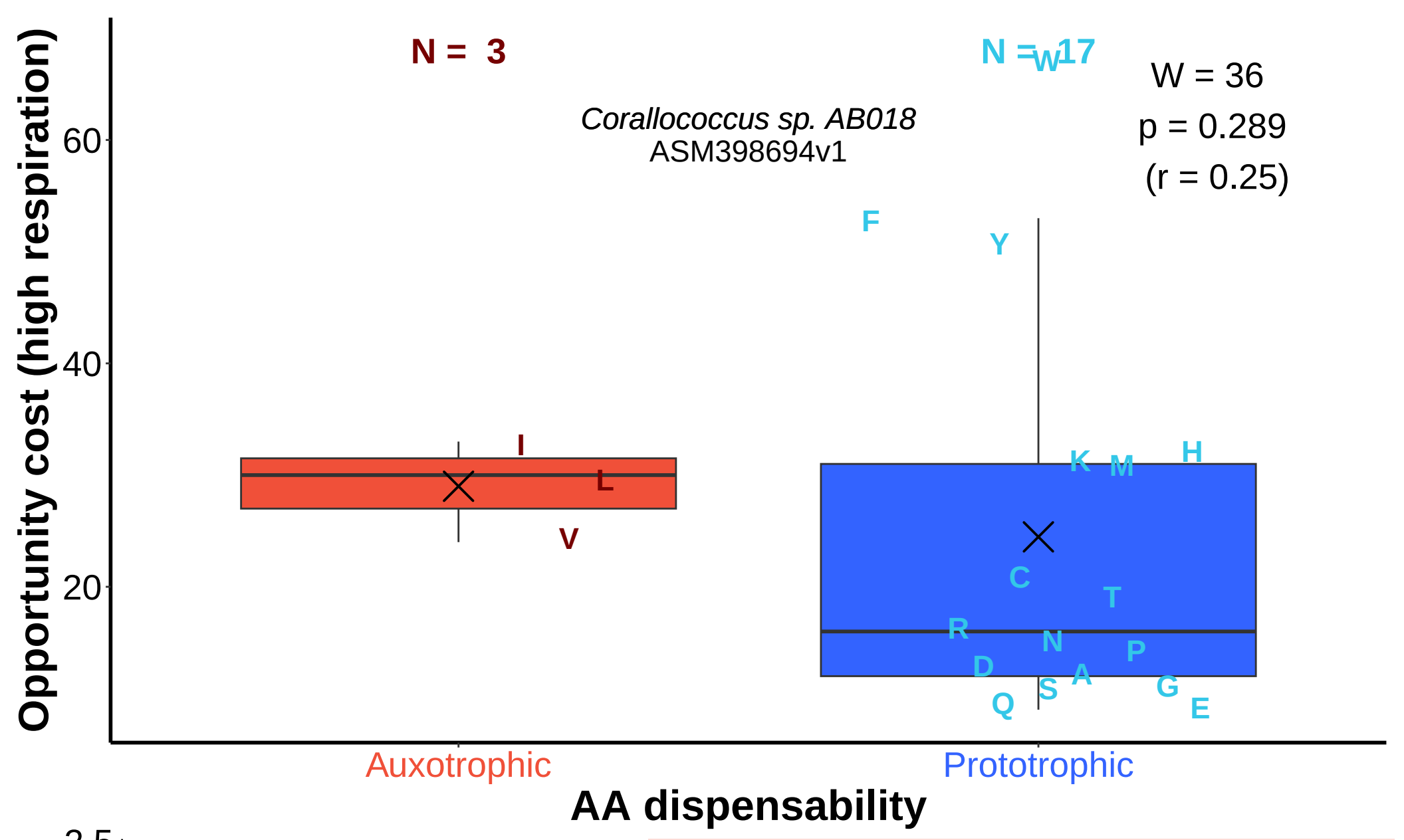
29.5

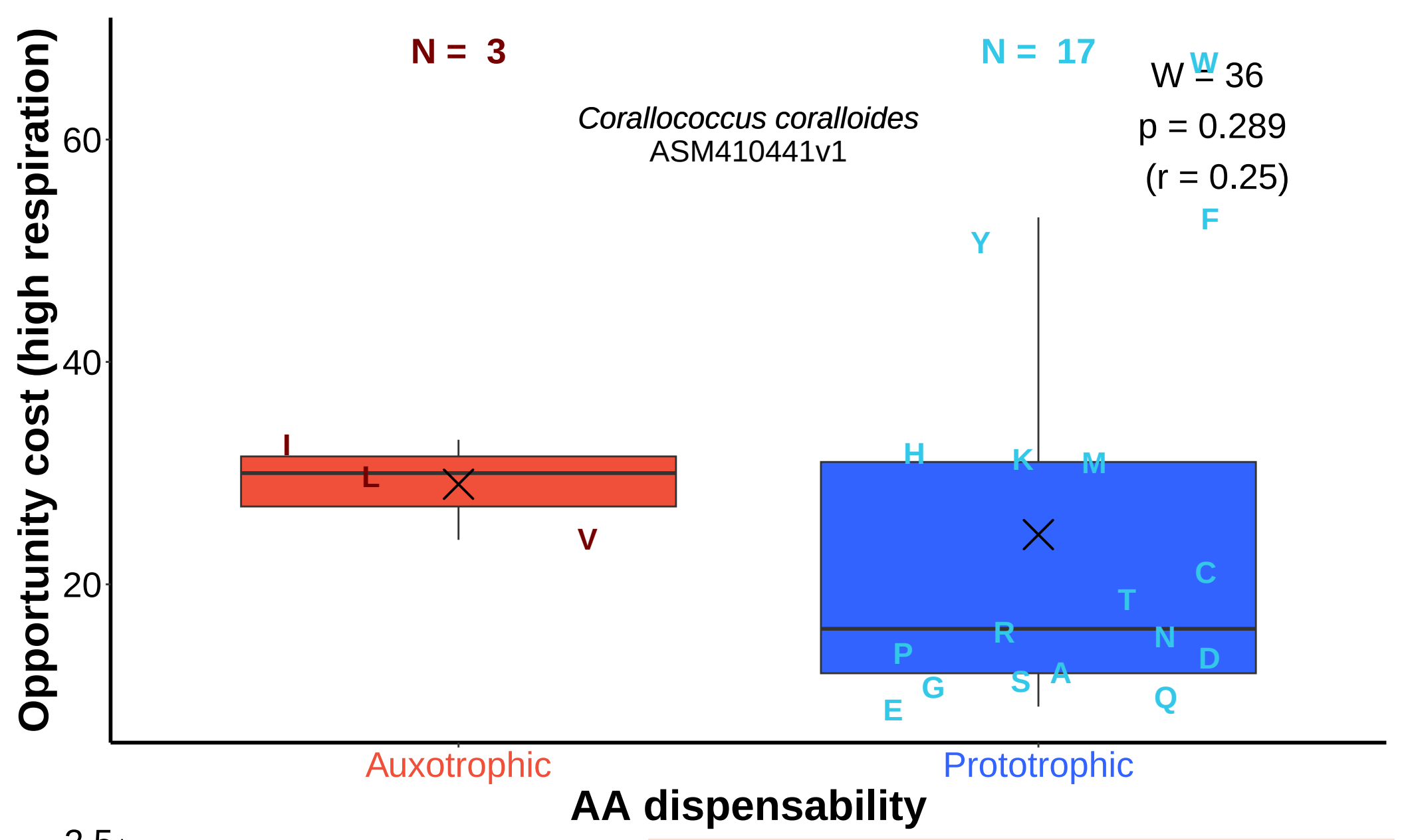
57.0

Average opportunity cost (~P)


N = 3
N = 17
W = 36
p = 0.289
(r = 0.25)
Corallococcus sp. AB030
ASM366896v1
Opportunity cost (high respiration)
60
40
20
I
L
V
Y
F
H
K
M
C
T
R
N
P
D
S
A
G
Q
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.5
57.0
Average opportunity cost (~P)


N = 3
N = 17
W
W = 36
p = 0.289
(r = 0.25)
Myxococcus stipitatus
ASM3856193v1
Opportunity cost (high respiration)
60
40
20
I
L
V
F
Y
K
M
H
C
T
R
N
P
A
D
E
G
Q
S
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.0
29.5
57.0
Average opportunity cost (~P)


N = 3
N = 17
W = 36
p = 0.289
(r = 0.25)
Corallococcus sp. AB018
ASM398694v1
Opportunity cost (high respiration)
60
40
20
I
L
V
F
Y
K
M
H
C
T
R
N
P
D
A
S
G
Q
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.0
29.5
57.0
Average opportunity cost (~P)


N = 3
N = 17
W = 36
p = 0.289
(r = 0.25)
Corallococcus coralloides
ASM410441v1
Opportunity cost (high respiration)
60
40
20
I
L
V
Y
F
H
K
M
C
T
R
N
P
D
S
A
G
E
Q
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.0
29.5
57.0
Average opportunity cost (~P)

N = 1

N = 19

W = 13.5
p = 0.544
(r = 0.15)

Sorangium cellulosum
ASM413573v1

Opportunity cost (high respiration)

60
40
20

M

F Y I K L H V C T R N P D A Q S G E

Auxotrophic

Prototrophic

AA dispensability

high respiration (1 auxotrophic AAs)

p = 0.35

Proportion of permutations (%)

10.0
7.5
5.0
2.5
0.0

9
20
31
67

Average opportunity cost (~P)

N = 4

N = 16

W = 48

p = 0.143

(r = 0.34)

Corallococcus sp. RDP092CA
ASM4190367v1

Opportunity cost (high respiration)

60

40

20

W

Y

F

I

H

L

V

K

M

C

T

R

N

P

D

G

A

Q

E

Auxotrophic

Prototrophic

AA dispensability

high respiration (4 auxotrophic AAs)

p = 0.27

Proportion of permutations (%)

1.5

1.0

0.5

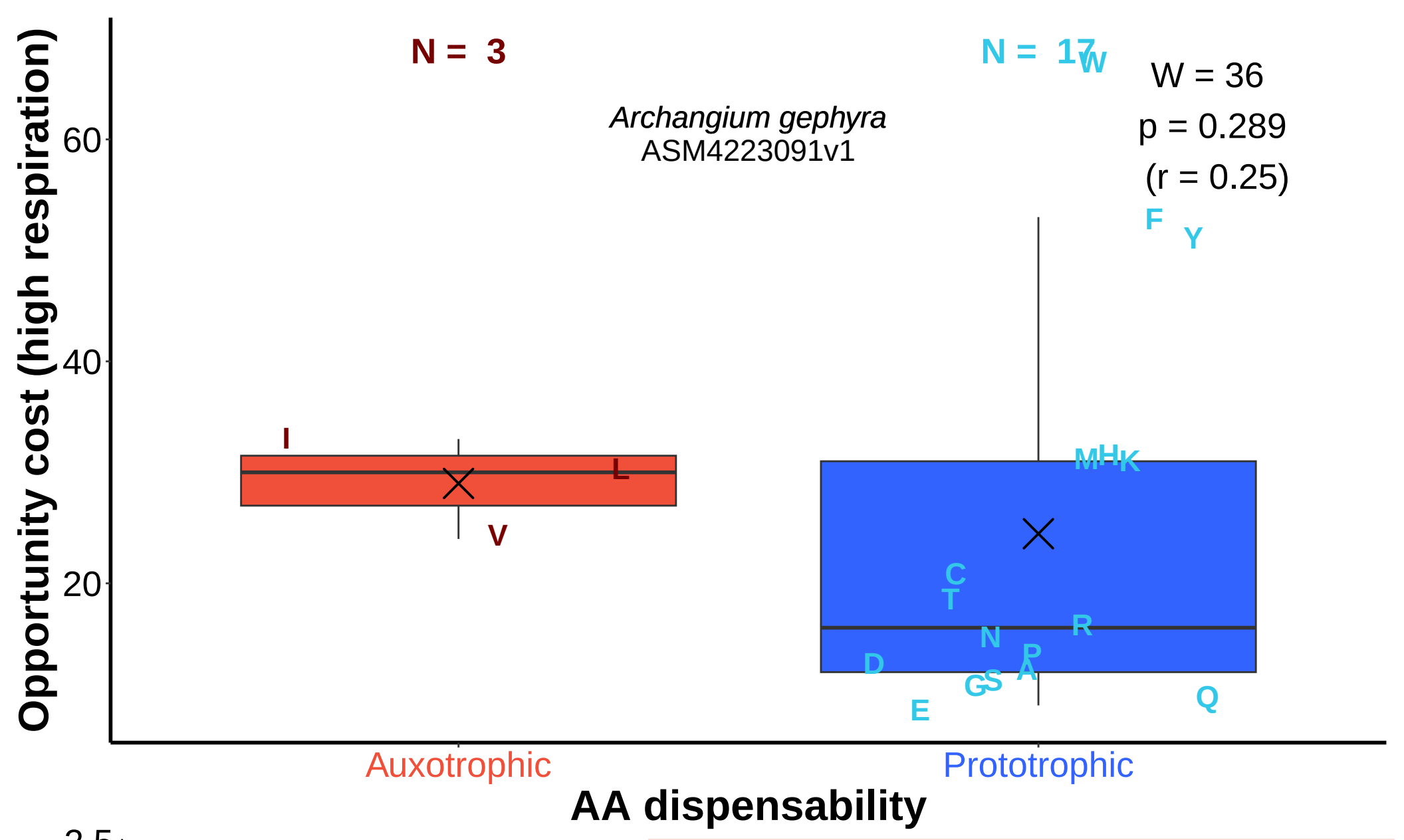
0.0

10.25

29.75

51.00

Average opportunity cost (~P)


N = 3
N = 17
W
W = 36
p = 0.289
(r = 0.25)
F
Y
Archangium gephyra
ASM4223091v1
Opportunity cost (high respiration)
60
40
20
I
L
V
M
H
K
C
T
R
N
P
D
G
S
A
E
Q
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.0
29.5
57.0
Average opportunity cost (~P)

N = 3

N = 17

W = 36

p = 0.289

(r = 0.25)

Corallococcus interemptor
ASM4223108v1

Opportunity cost (high respiration)

60

40

20

I

L

V

F

Y

H

K

M

C

T

R

N

P

D

A

G

S

E

Q

Auxotrophic

Prototrophic

AA dispensability

high respiration (3 auxotrophic AAs)

p = 0.32

Proportion of permutations (%)

2.5

2.0

1.5

1.0

0.5

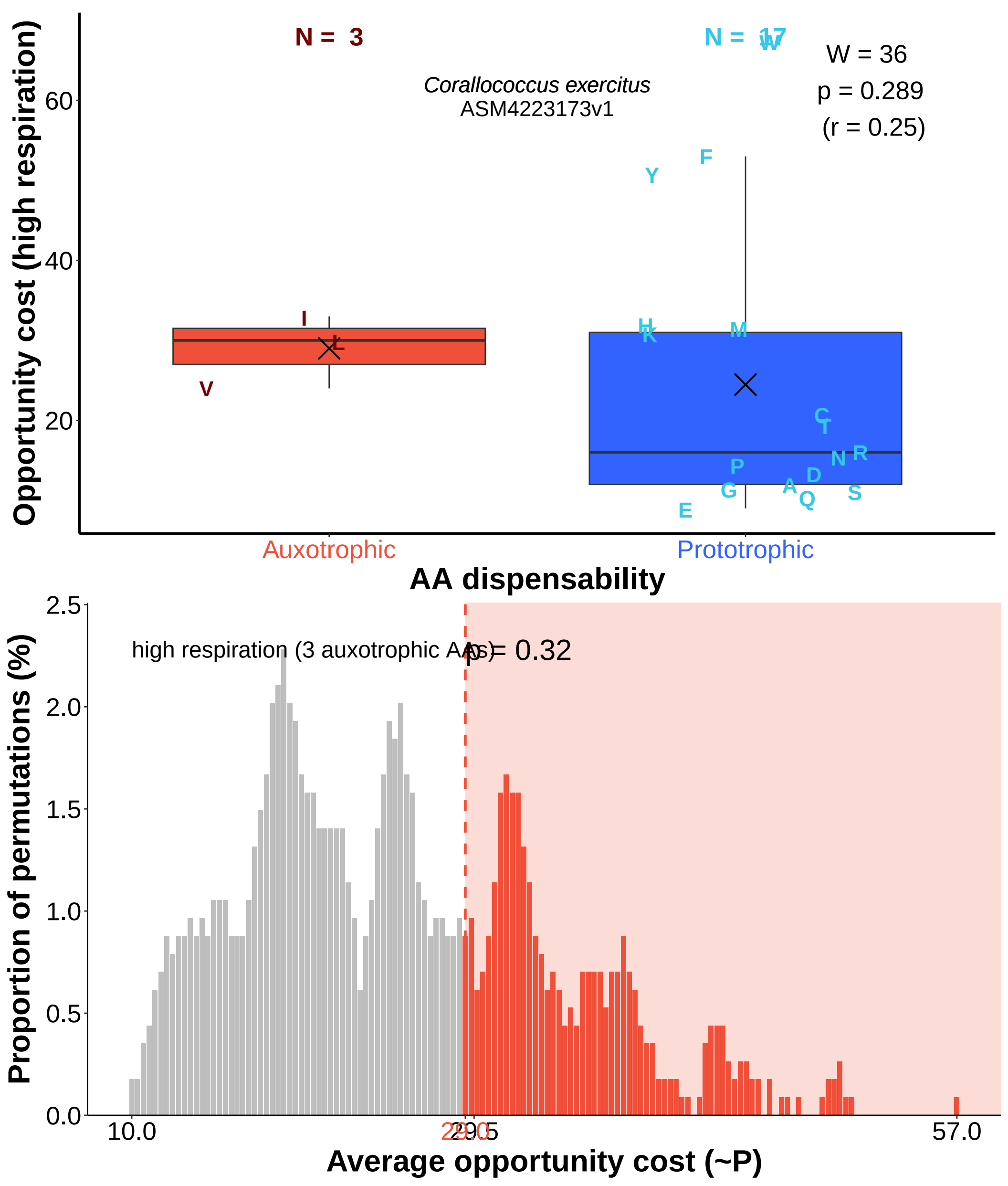
0.0

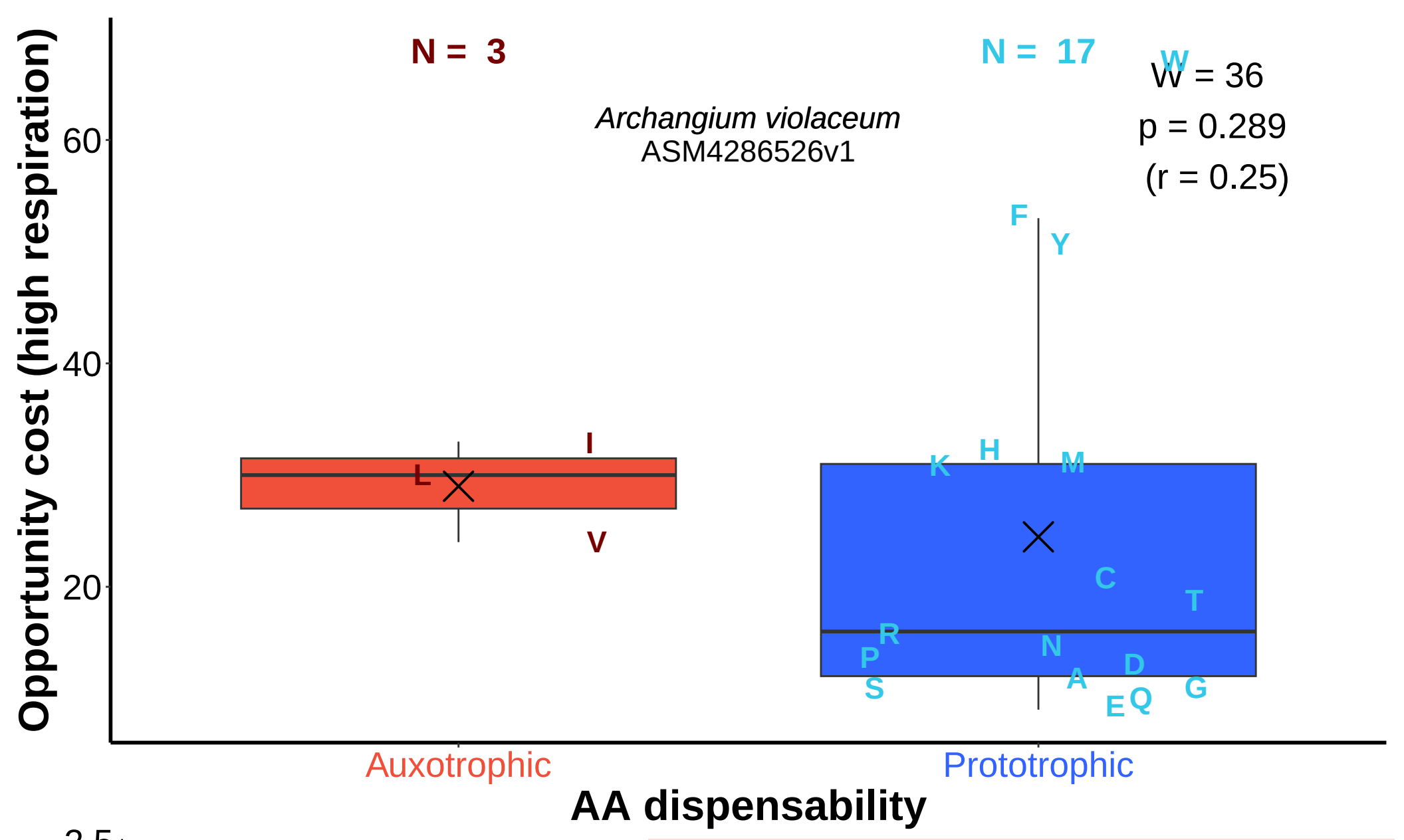
10.0

29.0

57.0

Average opportunity cost (~P)


N = 3
N = 17
W = 36
p = 0.289
(r = 0.25)
Corallococcus exercitus
ASM4223173v1
Opportunity cost (high respiration)
60
40
20
I
L
V
F
Y
H
K
M
C
T
N
R
P
D
G
A
Q
S
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.0
57.0
Average opportunity cost (~P)


N = 3
N = 17
W
W = 36
p = 0.289
(r = 0.25)
Archangium violaceum
ASM4286526v1
Opportunity cost (high respiration)
60
40
20
I
L
V
F
Y
K
H
M
C
T
R
P
S
N
A
D
E
Q
G
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.0
29.5
57.0
Average opportunity cost (~P)

N = 3

N = 17

W

W = 36

p = 0.289

(r = 0.25)

Corallococcus coralloides
ASM4479217v1

Opportunity cost (high respiration)

60

40

20

I

L

V

H

Y

F

K

M

C

T

R

N

P

A

D

Q

E

Auxotrophic

Prototrophic

AA dispensability

high respiration (3 auxotrophic AAs)

p = 0.32

Proportion of permutations (%)

2.5

2.0

1.5

1.0

0.5

0.0

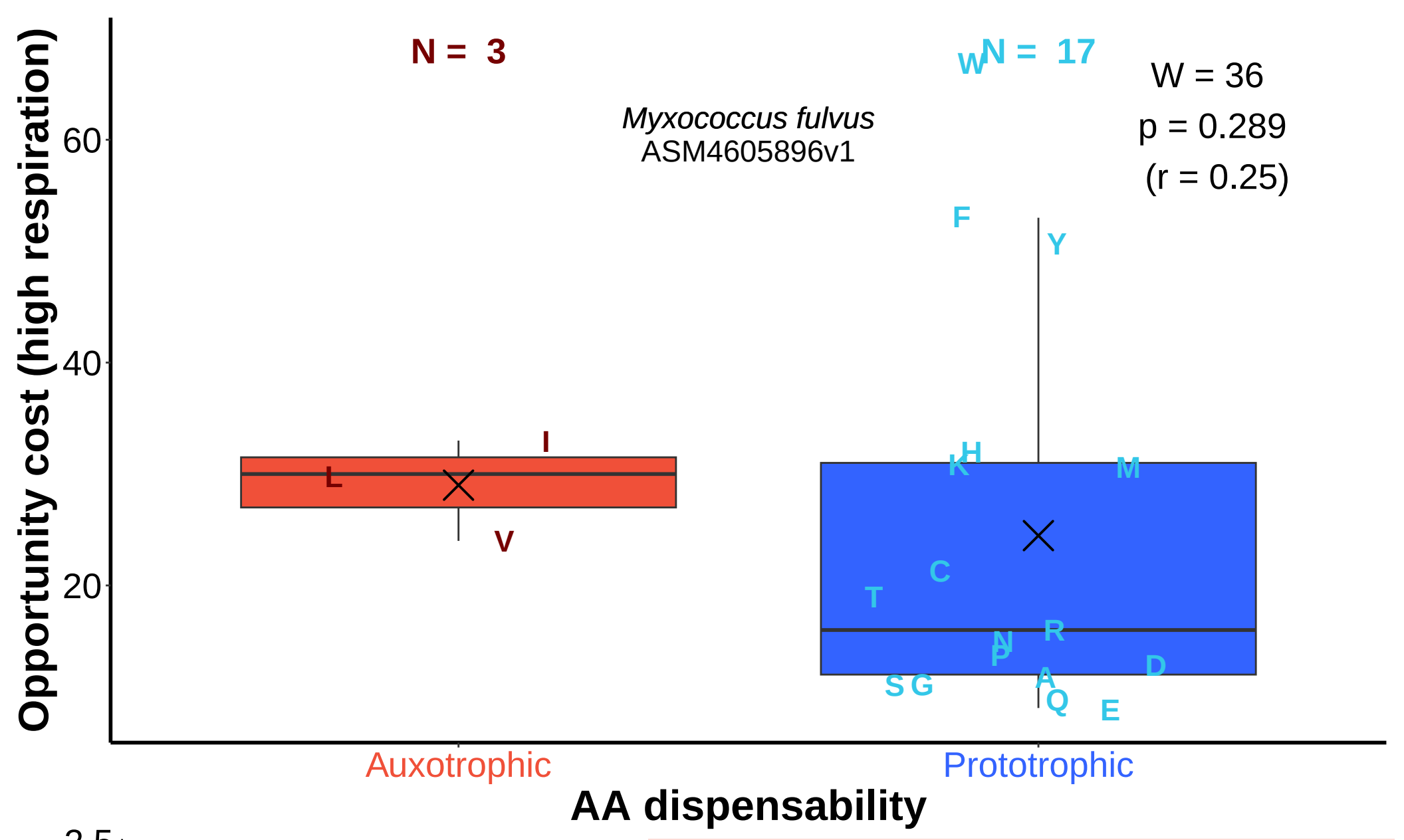
10.0

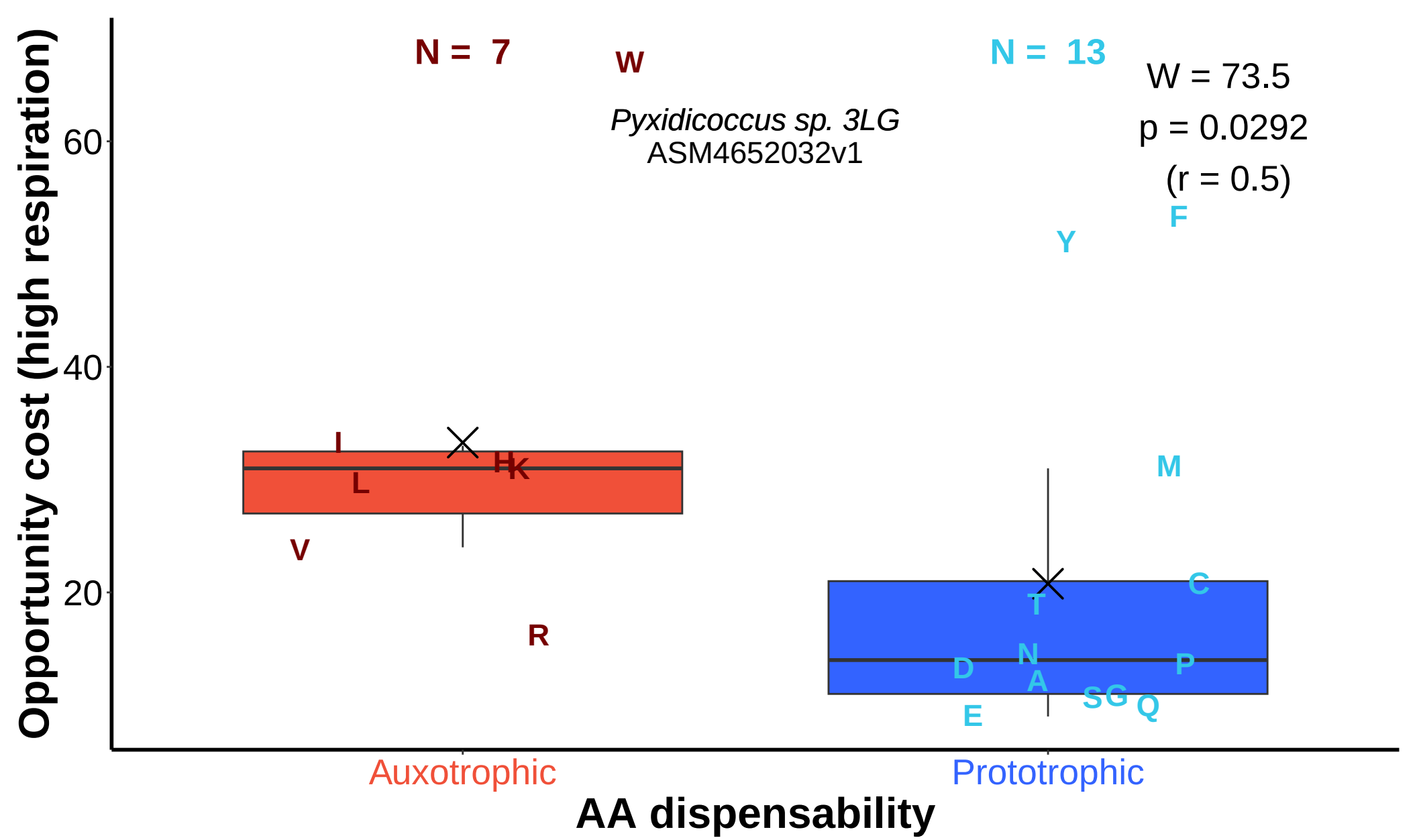
29.0

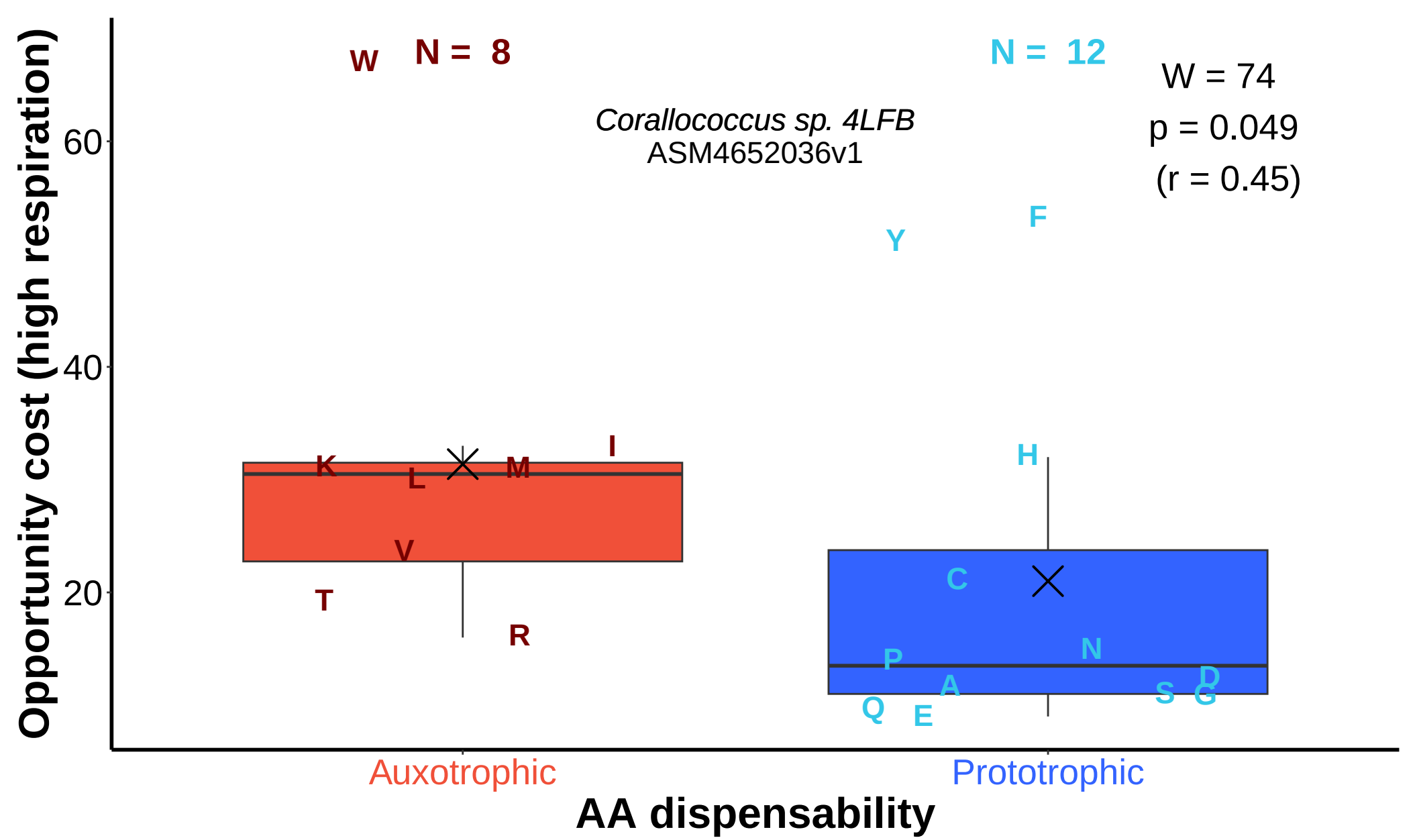
29.5

57.0

Average opportunity cost (~P)

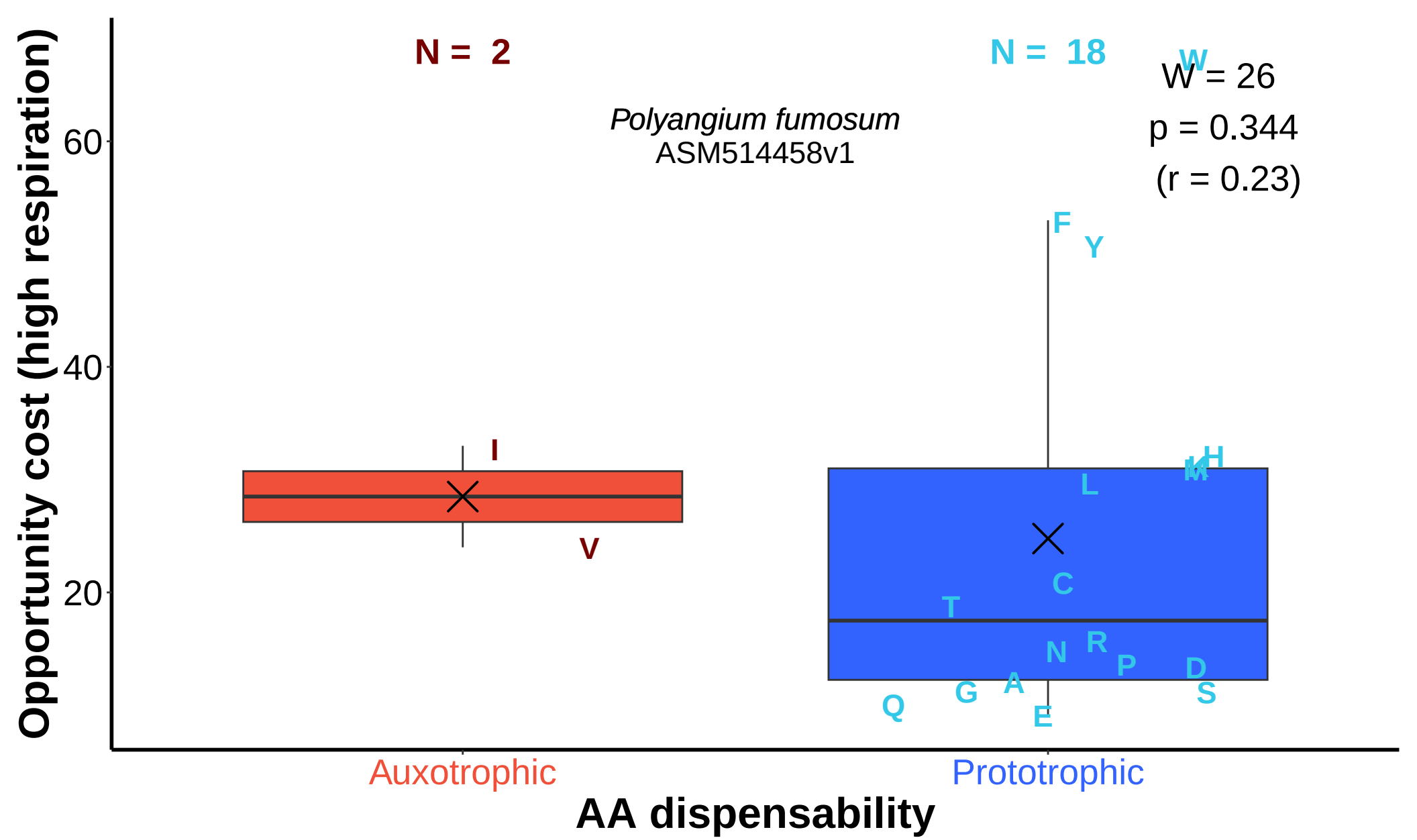

N = 3
N = 17
W = 36
p = 0.289
(r = 0.25)
Myxococcus fulvus
ASM4605896v1
Opportunity cost (high respiration)
60
40
20
I
L
V
F
Y
H
K
M
C
T
R
N
P
D
S
G
A
Q
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.0
29.5
57.0
Average opportunity cost (~P)

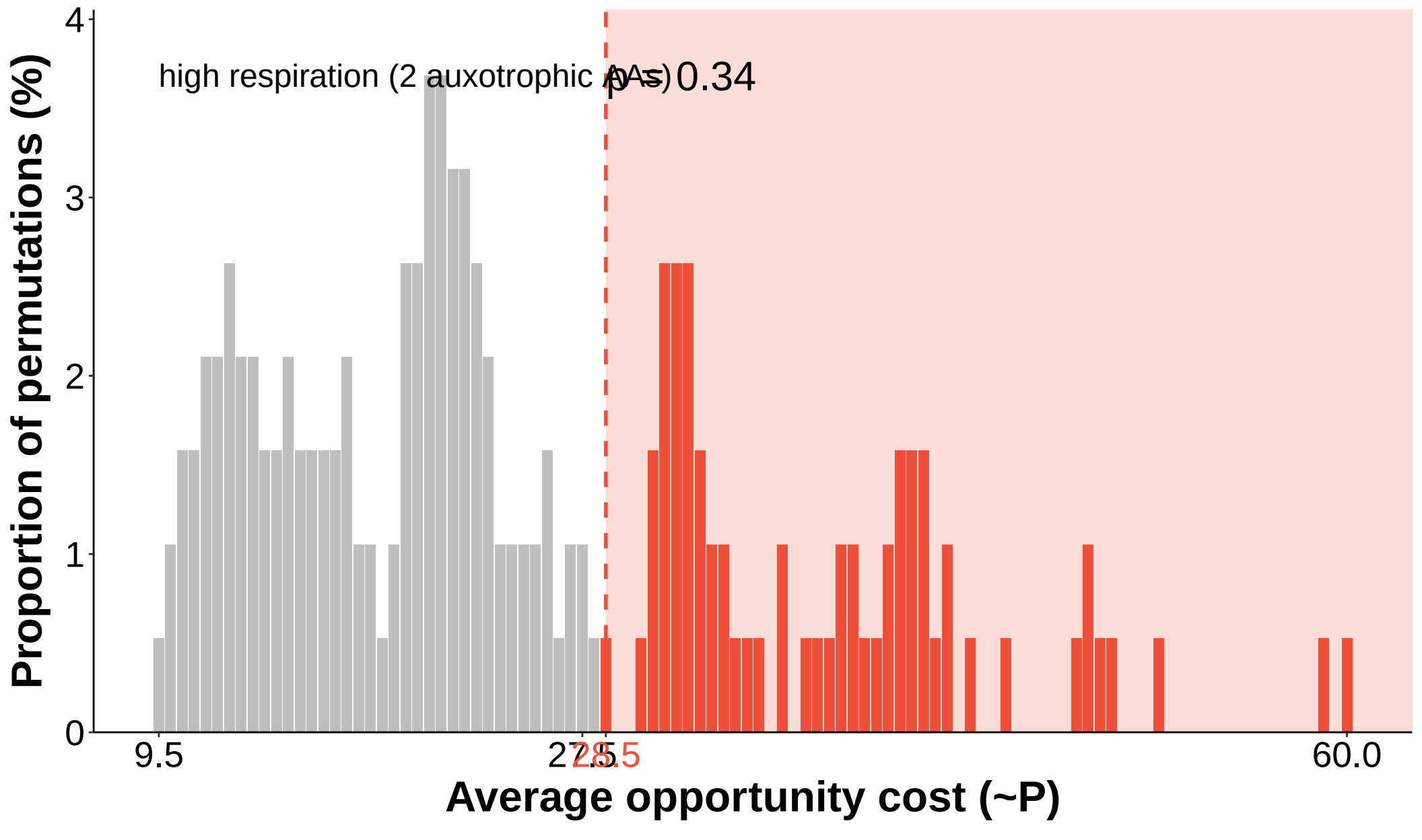

N = 7
W
N = 13
W = 73.5
p = 0.0292
(r = 0.5)
Pyxidicoccus sp. 3LG
ASM4652032v1
F
Y
M
C
I
L
H
K
V
R
T
N
D
A
P
S
G
Q
E
Opportunity cost (high respiration)
60
40
20
Auxotrophic
Prototrophic
AA dispensability
high respiration (7 auxotrophic AAs)
p = 0.057
Proportion of permutations (%)
1.2
0.9
0.6
0.3
0.0
11.43
26.78
33.29
42.57
Average opportunity cost (~P)

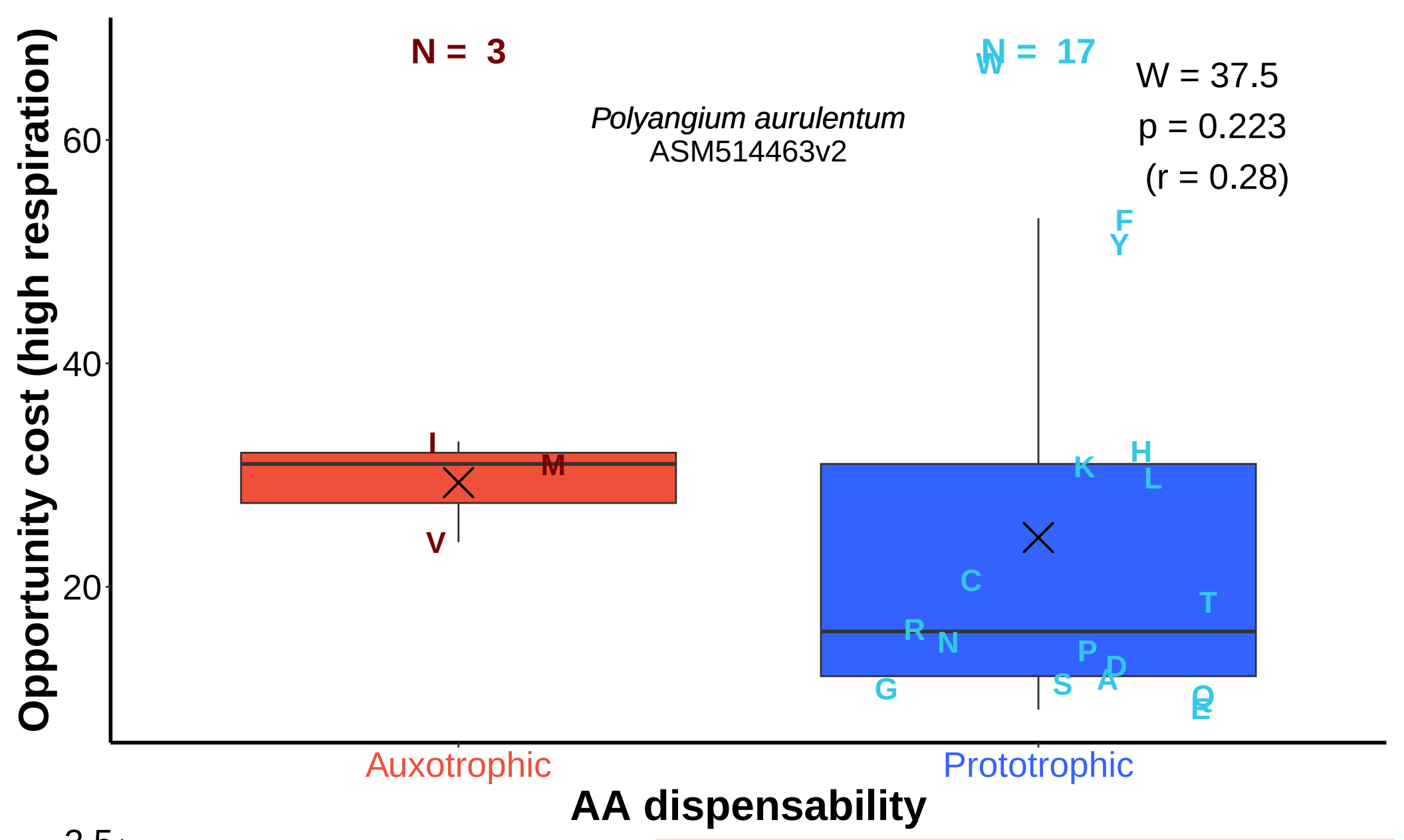

W
N = 8
N = 12
W = 74
p = 0.049
(r = 0.45)
Corallococcus sp. 4LFB
ASM4652036v1
F
Y
Opportunity cost (high respiration)
60
40
20
K
L
M
I
V
T
R
H
C
P
N
A
D
S
G
Q
E
Auxotrophic
Prototrophic
AA dispensability

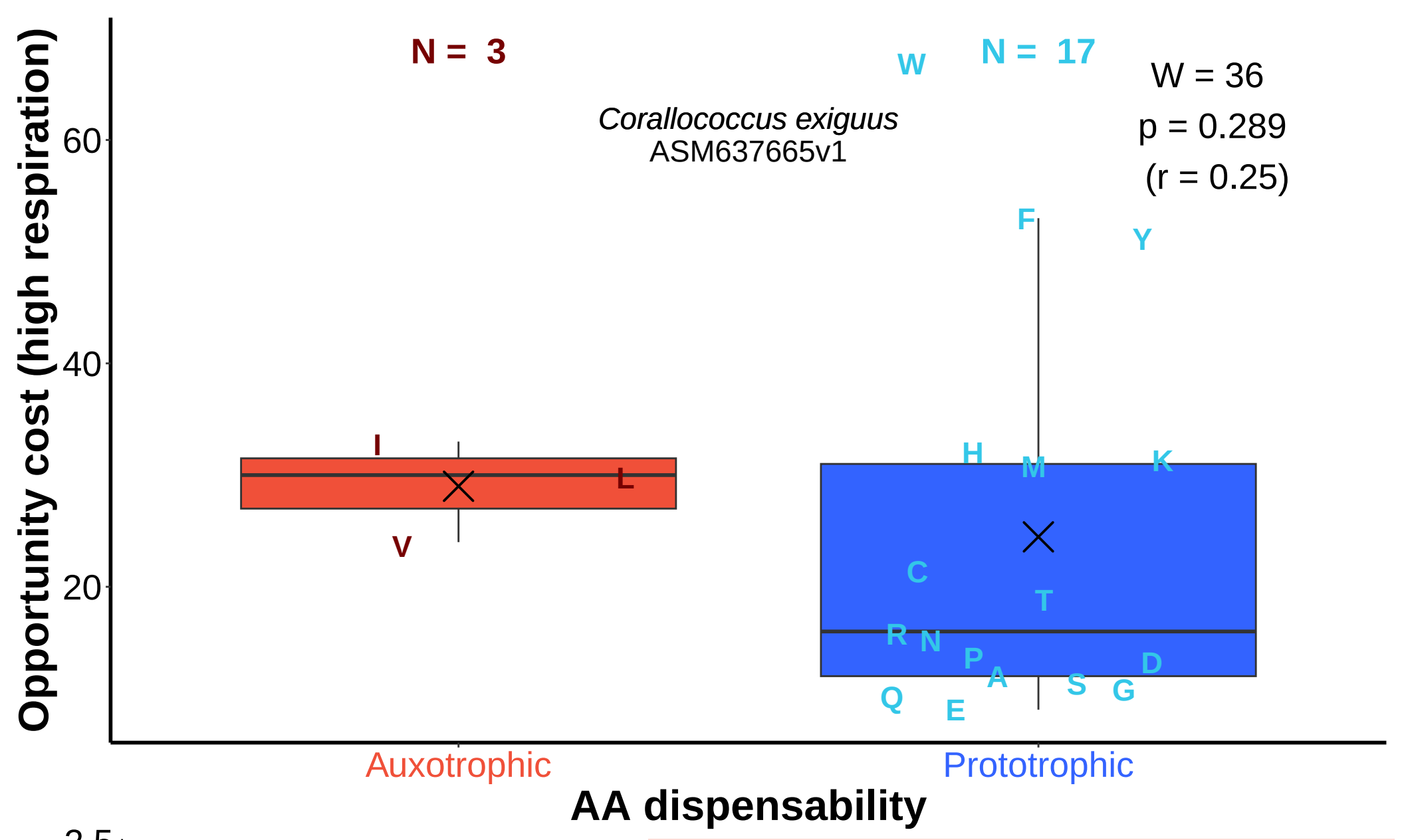
high respiration (8 auxotrophic AAs)
p = 0.089
Proportion of permutations (%)
1.2
0.9
0.6
0.3
0.0
11.88
26.12
31.38
41.00
Average opportunity cost (~P)

N = 4
N = 16
W = 52
p = 0.0652
(r = 0.42)
Pyxidicoccus sp. 3LFB2
ASM4652037v1
Opportunity cost (high respiration)
60
40
20
I
L
V
Y
F
K
H
M
C
T
R
N
P
D
G
S
A
E
Q
Auxotrophic
Prototrophic
AA dispensability
high respiration (4 auxotrophic AAs)
p = 0.046
Proportion of permutations (%)
1.5
1.0
0.5
0.0
10.25
29.25
38.50
51.00
Average opportunity cost (~P)


N = 2
N = 18
W = 26
p = 0.344
(r = 0.23)
Polyangium fumosum
ASM514458v1
Opportunity cost (high respiration)
60
40
20
I
V
F
Y
W
M
H
L
C
T
N
R
P
D
A
G
Q
E
S
Auxotrophic
Prototrophic
AA dispensability


high respiration (2 auxotrophic AAs)
p = 0.34
Proportion of permutations (%)
4
3
2
1
0
9.5
27.5
28.5
60.0
Average opportunity cost (~P)


N = 3
N = 17
W = 37.5
p = 0.223
(r = 0.28)
Polyangium aurulentum
ASM514463v2
Opportunity cost (high respiration)
60
40
20
I
M
V
F
Y
K
H
L
C
T
R
N
P
D
A
G
S
Q
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.00
29.50
57.00
Average opportunity cost (~P)


N = 3
N = 17
W
W = 36
p = 0.289
(r = 0.25)
Corallococcus exiguus
ASM637665v1
Opportunity cost (high respiration)
60
40
20
I
L
V
F
Y
H
M
K
C
T
R
N
P
A
S
G
D
Q
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.0
29.5
57.0
Average opportunity cost (~P)

N = 3

N = 17

W

W = 36

p = 0.289

(r = 0.25)

Myxococcus xanthus
ASM640095v1

Opportunity cost (high respiration)

60

40

20

I

L

V

F

Y

M

K

H

C

T

R

P

N

A

D

S

G

Q

E

Auxotrophic

Prototrophic

AA dispensability

high respiration (3 auxotrophic AAs)

p = 0.32

Proportion of permutations (%)

2.5

2.0

1.5

1.0

0.5

0.0

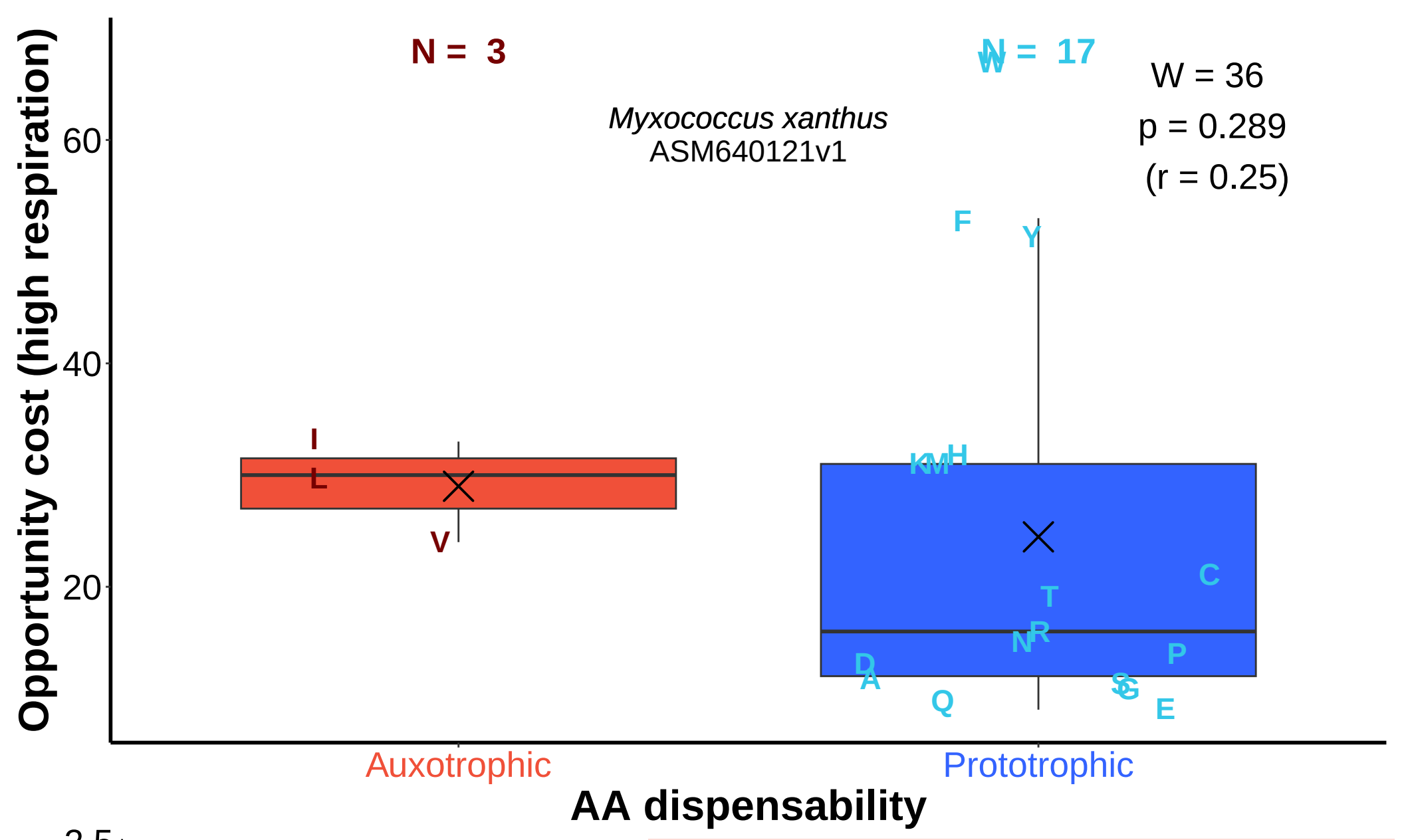
10.0

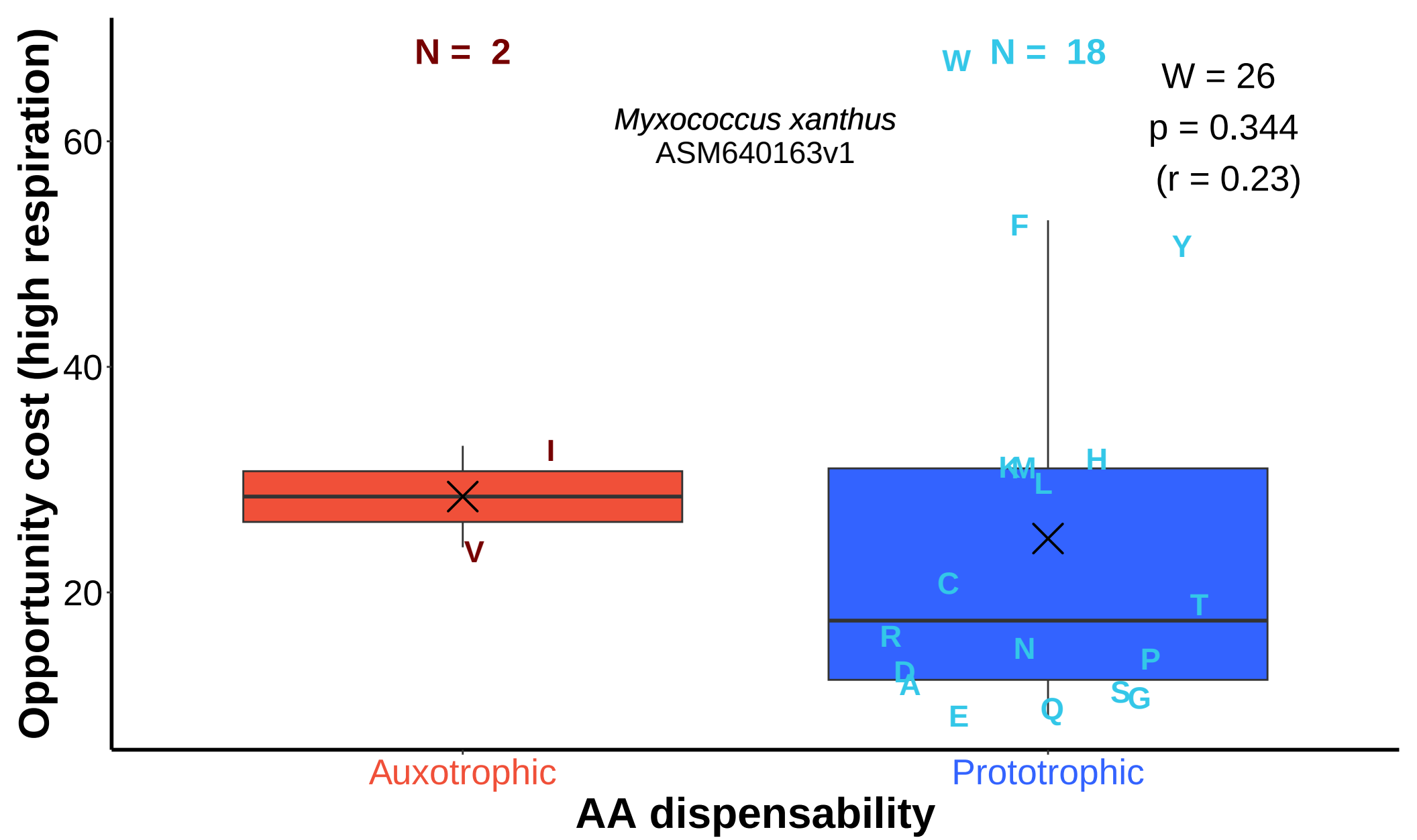
29.0

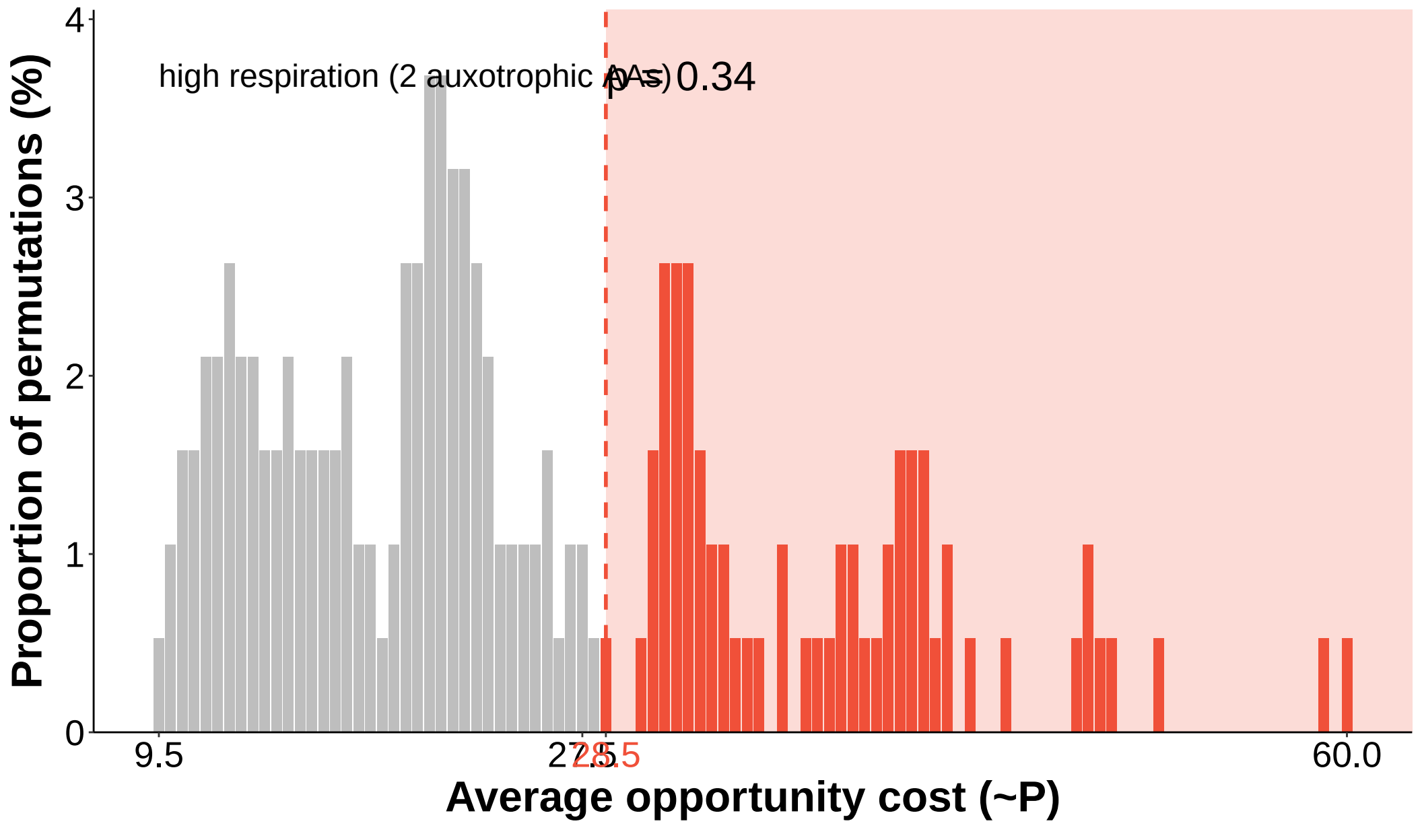
29.5

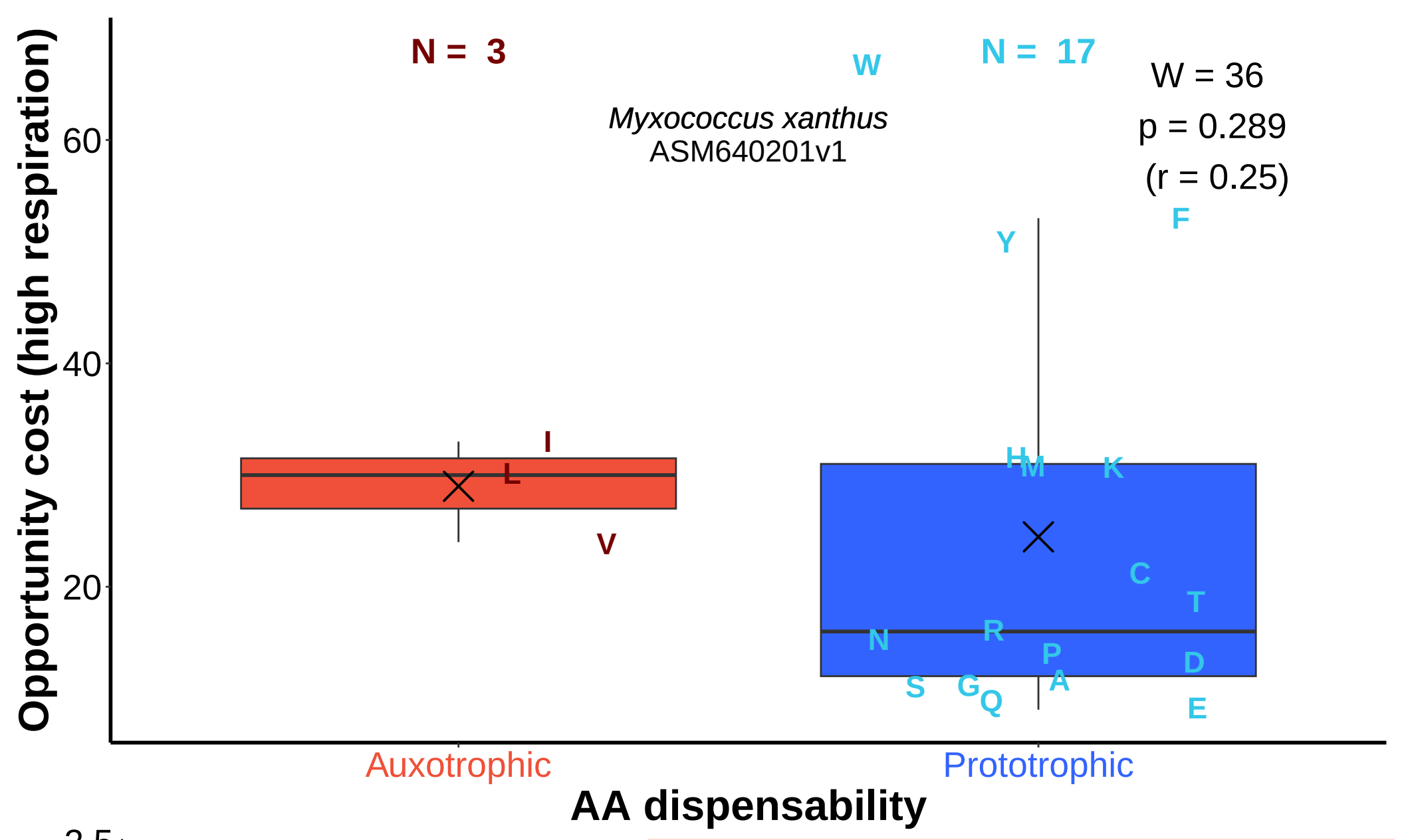
57.0

Average opportunity cost (~P)


N = 3
N = 17
W = 36
p = 0.289
(r = 0.25)
Myxococcus xanthus
ASM640121v1
Opportunity cost (high respiration)
60
40
20
I
L
V
F
Y
K
M
H
C
T
N
R
P
D
A
Q
S
G
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.0
57.0
Average opportunity cost (~P)


N = 2
W N = 18
W = 26
p = 0.344
(r = 0.23)
Myxococcus xanthus
ASM640163v1
Opportunity cost (high respiration)
60
40
20
I
V
F
Y
K
M
L
H
C
T
R
N
P
D
A
S
G
E
Q
Auxotrophic
Prototrophic
AA dispensability


Proportion of permutations (%)
4
3
2
1
0
high respiration (2 auxotrophic AAs)
p = 0.34
9.5
27.5
28.5
60.0
Average opportunity cost (~P)


N = 3
N = 17
W
W = 36
p = 0.289
(r = 0.25)
Myxococcus xanthus
ASM640201v1
F
Y
I
L
V
H
M
K
C
T
N
R
P
D
S
G
Q
A
E
60
40
20
Opportunity cost (high respiration)
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
2.5
2.0
1.5
1.0
0.5
0.0
Proportion of permutations (%)
10.0
29.0
29.5
57.0
Average opportunity cost (~P)

N = 3

N = 17

W = 36
p = 0.289
(r = 0.25)

Myxococcus xanthus
ASM640241v1

Opportunity cost (high respiration)

60
40
20

I
L
V

F
Y
M
K
H
C
T
R
N
D
P
G
A
S
Q
E

Auxotrophic

Prototrophic

AA dispensability

high respiration (3 auxotrophic AAs)

p = 0.32

Proportion of permutations (%)

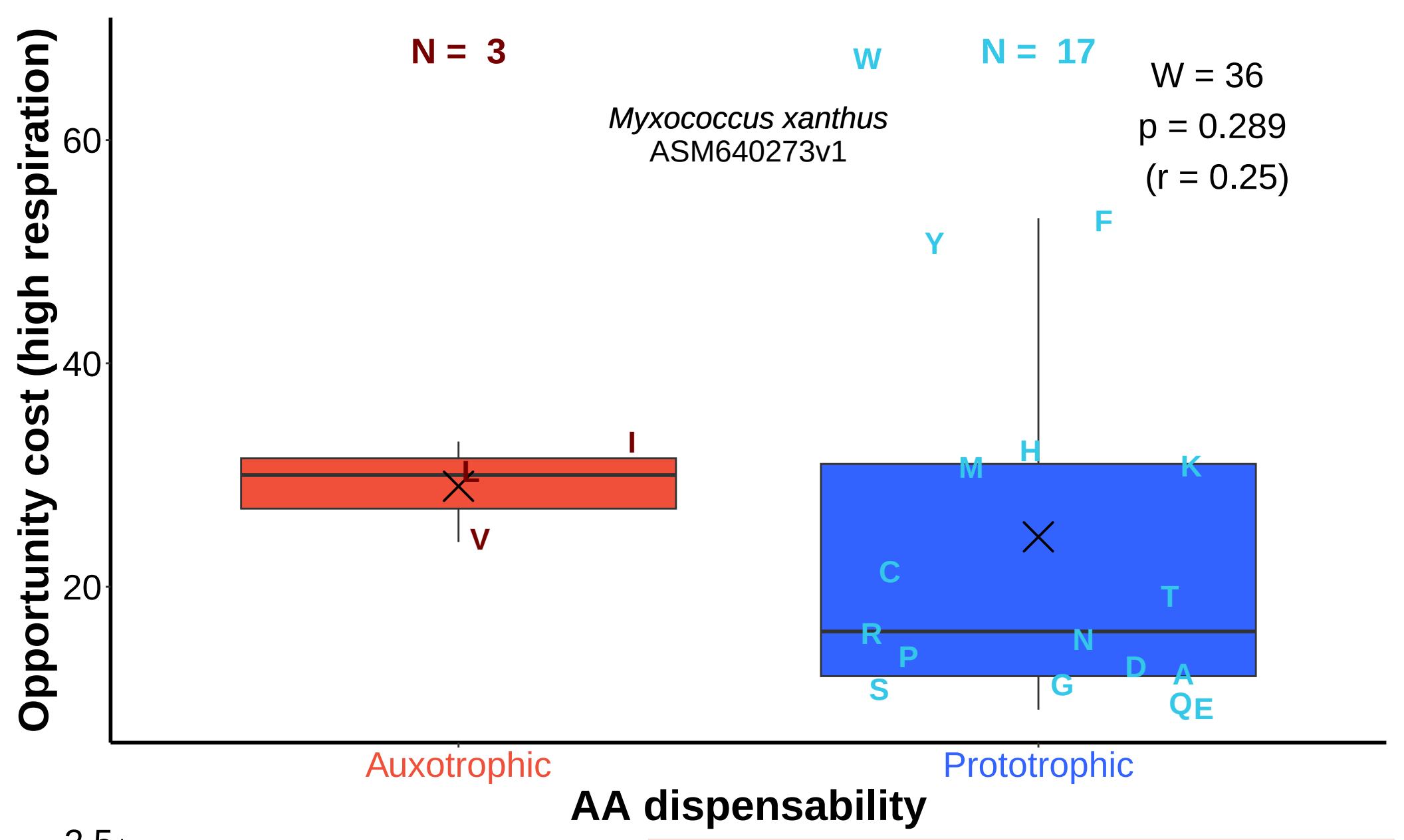
2.5
2.0
1.5
1.0
0.5
0.0

10.0

29.5

57.0

Average opportunity cost (~P)


N = 3
N = 17
W
W = 36
p = 0.289
(r = 0.25)
Myxococcus xanthus
ASM640273v1
Opportunity cost (high respiration)
60
40
20
I
L
V
Y
F
M
H
K
C
T
R
N
P
D
A
S
G
Q
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.0
29.5
57.0
Average opportunity cost (~P)

N = 3

N = 17

W = 36

Myxococcus llanfairpwllgwyngyllgogerychwyrndrobwllllantysiliogogogochensis
ASM663621v1

p = 0.289

(r = 0.25)

Opportunity cost (high respiration)

60

40

20

I

L

V

Y

F

M

H

K

C

T

R

N

P

D

A

G

Q

E

S

Auxotrophic

Prototrophic

AA dispensability

high respiration (3 auxotrophic AAs)

p = 0.32

Proportion of permutations (%)

2.5

2.0

1.5

1.0

0.5

0.0

10.0

29.5

57.0

Average opportunity cost (~P)

N = 1

N = 19

W = 13.5

p = 0.544

(r = 0.15)

Sorangium cellulosum So ce56
ASM6716v1

Opportunity cost (high respiration)

60

40

20

M

W F Y H I K L V C T R N P D A G Q S E

Auxotrophic

Prototrophic

AA dispensability

high respiration (1 auxotrophic AAs)

p = 0.35

Proportion of permutations (%)

10.0

7.5

5.0

2.5

0.0

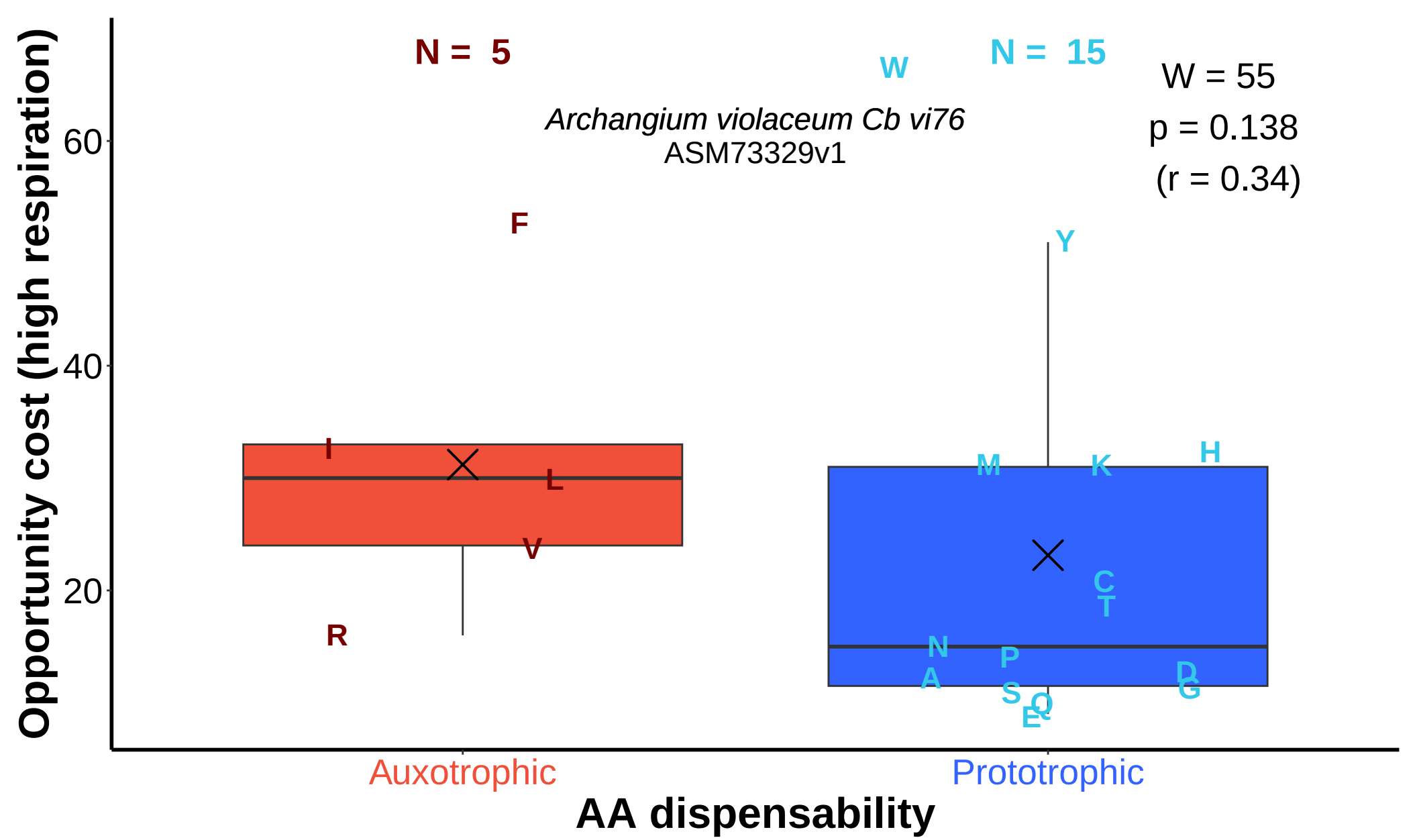
9

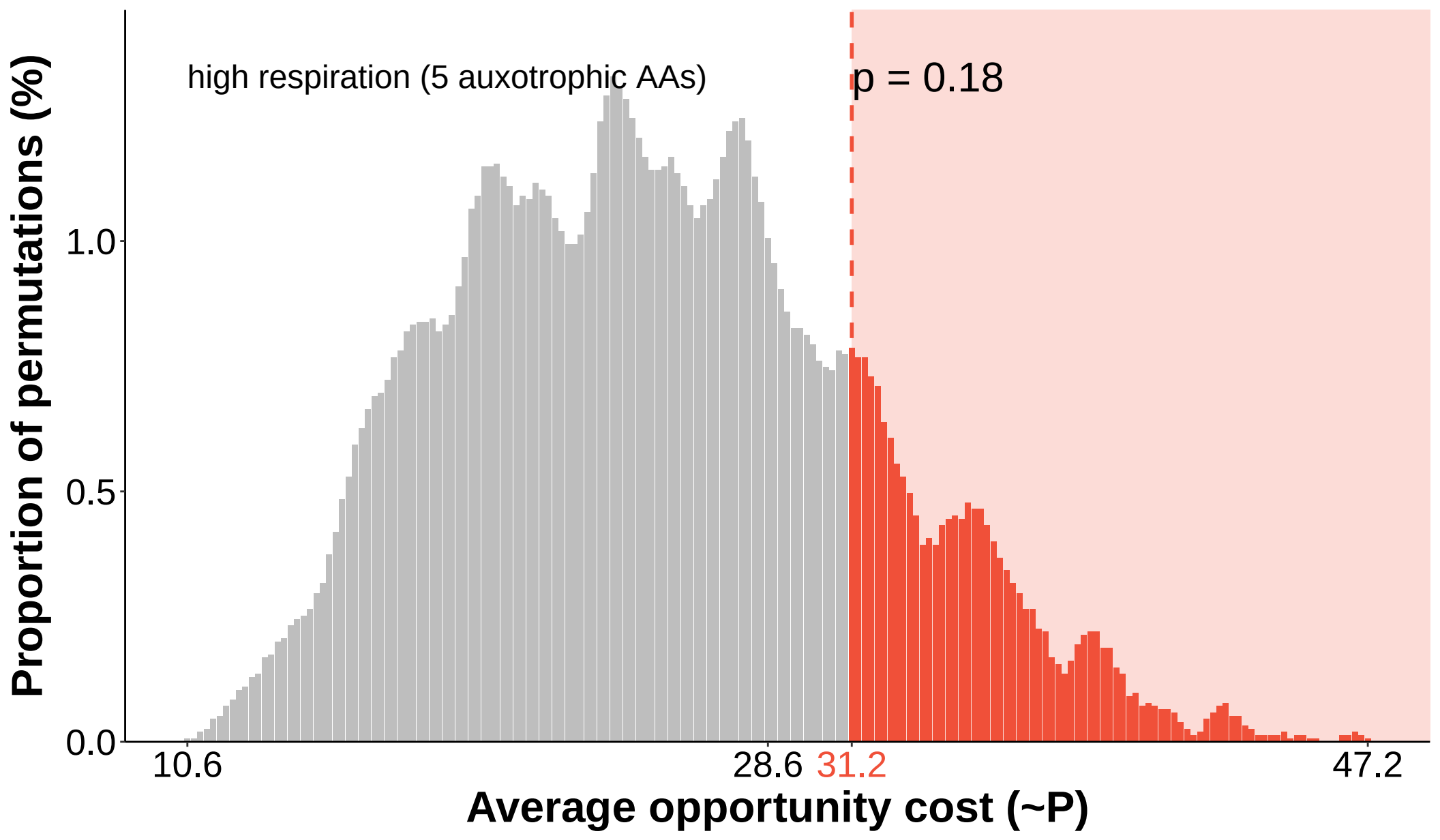
20

31

67

Average opportunity cost (~P)


N = 5
W
N = 15
W = 55
p = 0.138
(r = 0.34)
Archangium violaceum Cb vi76
ASM73329v1
Opportunity cost (high respiration)
60
40
20
F
I
L
V
R
Y
M
K
H
C
T
N
A
P
S
Q
E
D
G
Auxotrophic
Prototrophic
AA dispensability


high respiration (5 auxotrophic AAs)
p = 0.18
Proportion of permutations (%)
1.0
0.5
0.0
10.6
28.6
31.2
47.2
Average opportunity cost (~P)

N = 3

W N = 17

W = 36
p = 0.289
(r = 0.25)

Corallococcus sp. Z5C101001
ASM735263v1

Opportunity cost (high respiration)

60
40
20

I
L
V

Y
F
M
K
H
C
T
R
N
P
D
A
S
Q
E
G

Auxotrophic
Prototrophic

AA dispensability

high respiration (3 auxotrophic AAs)

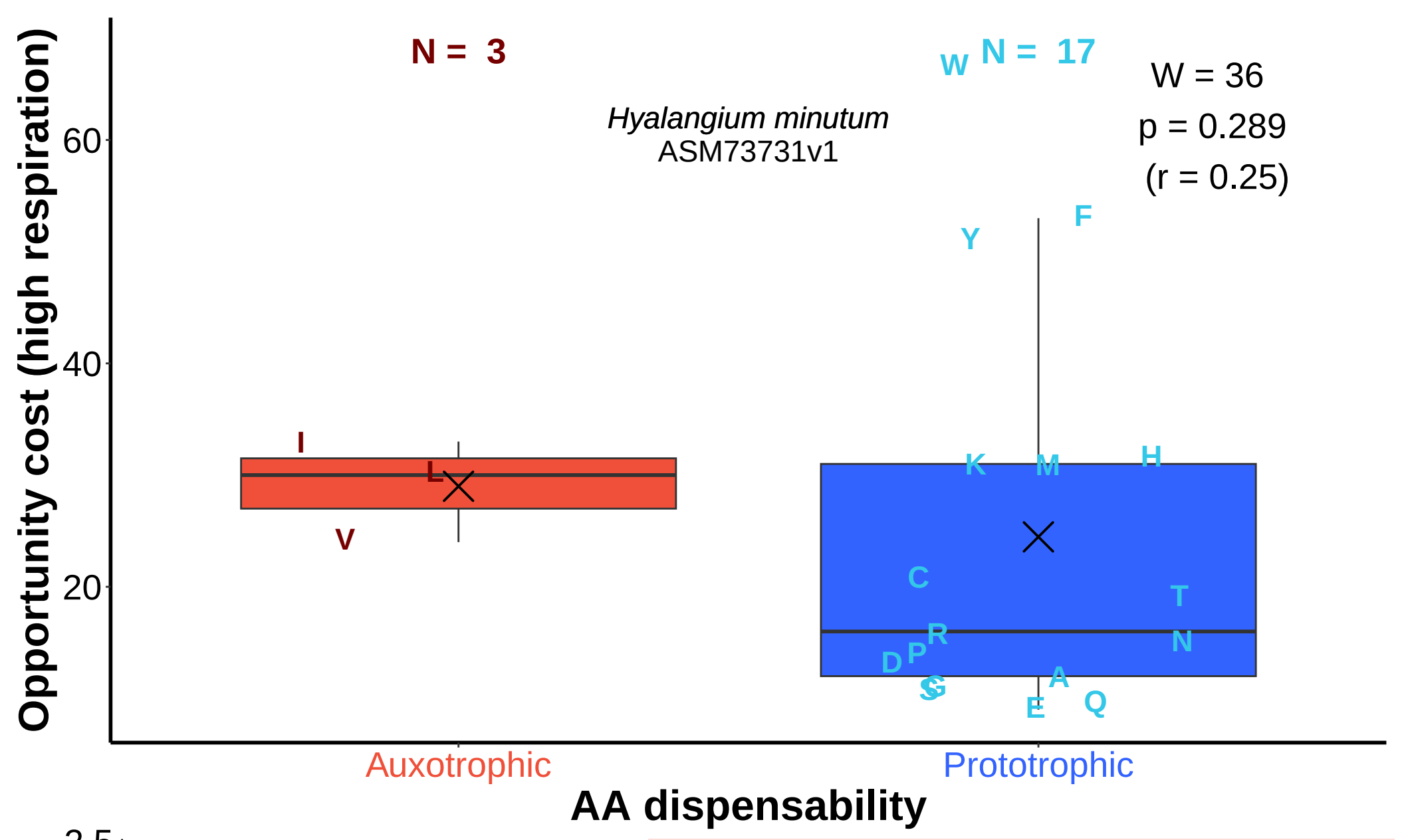
p = 0.32

Proportion of permutations (%)

2.5
2.0
1.5
1.0
0.5
0.0

10.0
29.0
29.5
57.0

Average opportunity cost (~P)


N = 3
W N = 17
W = 36
p = 0.289
(r = 0.25)
Hyalangium minutum
ASM73731v1
Opportunity cost (high respiration)
60
40
20
I
L
V
Y
F
K
M
H
C
T
R
N
D
P
S
G
A
E
Q
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.0
29.5
57.0
Average opportunity cost (~P)

N = 2

N = 18

W = 21.5

p = 0.705

(r = 0.099)

Sandaracinus amylolyticus
ASM73732v2

Opportunity cost (high respiration)

60

40

20

M

T

F

Y

I

K

H

L

V

C

N

R

P

D

A

S

G

E

Q

Auxotrophic

Prototrophic

AA dispensability

high respiration (2 auxotrophic AAs)

p = 0.41

Proportion of permutations (%)

4

3

2

1

0

9.5

25.0

27.5

60.0

Average opportunity cost (~P)

N = 5

N = 15

W

W = 65.5

p = 0.0163

(r = 0.55)

Enhygromyxa salina
ASM73733v3

Opportunity cost (high respiration)

60

40

20

F

Y

I

M

V

H

K

L

C

T

R

N

P

A

D

S

G

Q

E

Auxotrophic

Prototrophic

AA dispensability

high respiration (5 auxotrophic AAs)

p = 0.026

Proportion of permutations (%)

1.0

0.5

0.0

10.6

28.6

38.4

47.2

Average opportunity cost (~P)

N = 3

N = 17

W

W = 36

p = 0.289

(r = 0.25)

Myxococcus virescens
ASM798940v1

F Y H K M C T R N P D A G S E Q I L V

Opportunity cost (high respiration)

60

40

20

Auxotrophic

Prototrophic

AA dispensability

high respiration (3 auxotrophic AAs)

p = 0.32

Proportion of permutations (%)

2.5

2.0

1.5

1.0

0.5

0.0

10.0

29.5

57.0

Average opportunity cost (~P)

N = 3

N = 17

W

W = 36

p = 0.289

(r = 0.25)

Myxococcus fulvus
ASM799109v1

Opportunity cost (high respiration)

60

40

20

I

L

V

F

Y

M

H

K

C

T

R

P

N

D

A

G

Q

S

E

Auxotrophic

Prototrophic

AA dispensability

high respiration (3 auxotrophic AAs)

p = 0.32

Proportion of permutations (%)

2.5

2.0

1.5

1.0

0.5

0.0

10.0

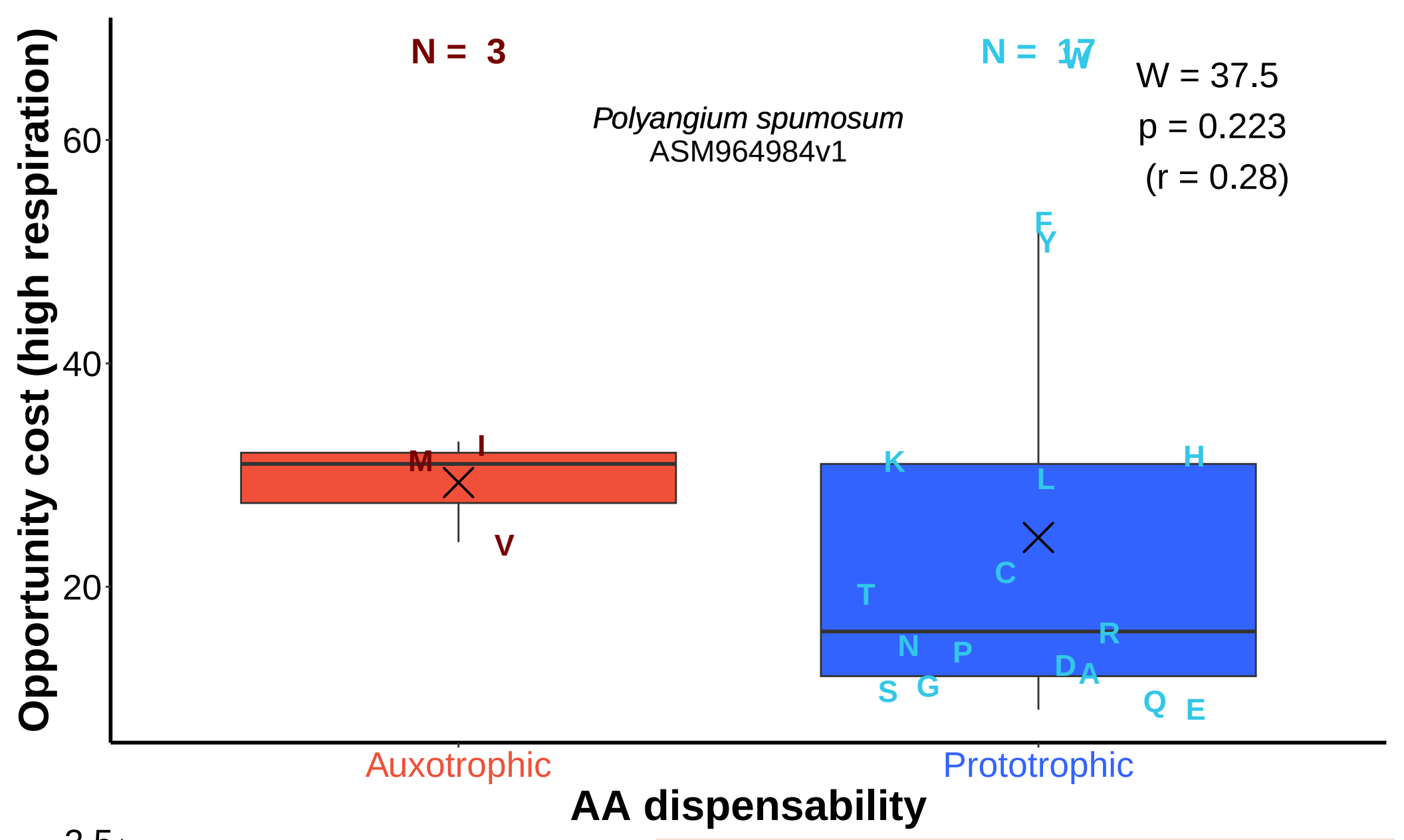
29.0

29.5

57.0

Average opportunity cost (~P)

N = 2
N = 18
W = 22
p = 0.659
(r = 0.11)
Anaeromyxobacter sp. PSR−1
ASM96452v1
Opportunity cost (high respiration)
60
40
20
H
R
I
M K
L
V
C
T
N
P
D
A
S
G
Q
E
Y
F
Auxotrophic
Prototrophic
AA dispensability
Proportion of permutations (%)
4
3
2
1
0
high respiration (2 auxotrophs)
p = 0.43
9.5
24.0
27.5
60.0
Average opportunity cost (~P)


N = 3
N = 17
W = 37.5
p = 0.223
(r = 0.28)
Polyangium spumosum
ASM964984v1
Opportunity cost (high respiration)
60
40
20
M
I
V
F
Y
K
L
H
C
T
R
N
P
D
A
S
G
Q
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.00
29.50
57.00
Average opportunity cost (~P)

N = 4

N = 16

W

W = 51

p = 0.0802

(r = 0.4)

Aggregicoccus sp. 17bor−14
ASM965953v1

F

I

L

V

Y

M

K

H

C

T

R

P

D

N

G

S

A

E

Q

60

40

20

Opportunity cost (high respiration)

Auxotrophic

Prototrophic

AA dispensability

high respiration (4 auxotrophic AAs)

p = 0.11

1.5

1.0

0.5

0.0

Proportion of permutations (%)

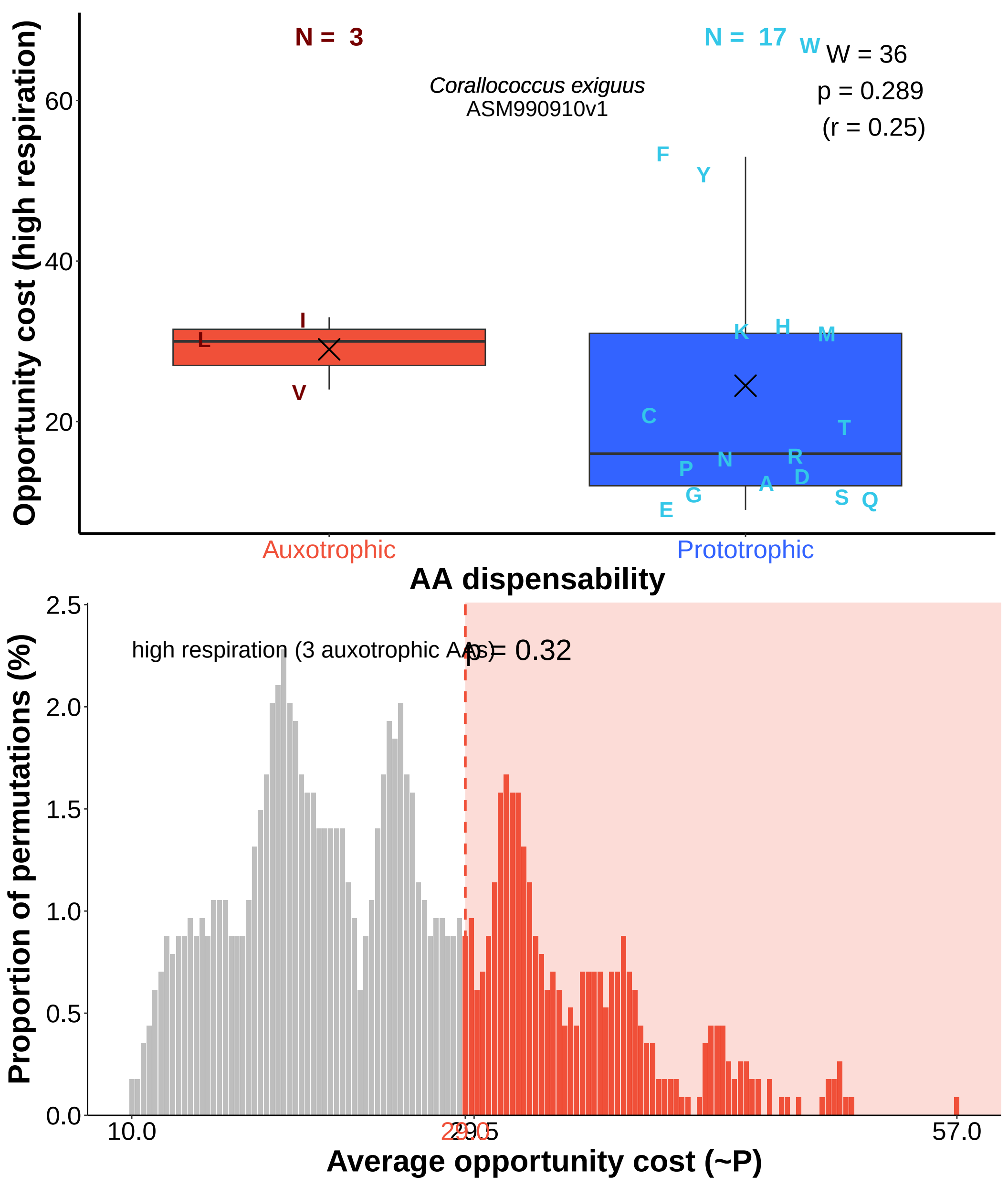
10.25

29.25

35.00

51.00

Average opportunity cost (~P)


N = 3
N = 17
W
W = 36
p = 0.289
(r = 0.25)
Corallococcus exiguus
ASM990910v1
Opportunity cost (high respiration)
60
40
20
I
L
V
F
Y
K
H
M
C
T
N
R
P
D
A
G
S
Q
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.0
29.5
57.0
Average opportunity cost (~P)

N = 3

wN = 17

W = 36
p = 0.289
(r = 0.25)

Corallococcus silvisoli
ASM990914v1

Opportunity cost (high respiration)

60
40
20

I
L
V

F
Y
K
H
M
C
T
R
N
P
D
A
G
Q
E
S

Auxotrophic
Prototrophic

AA dispensability

high respiration (3 auxotrophic AAs)

p = 0.32

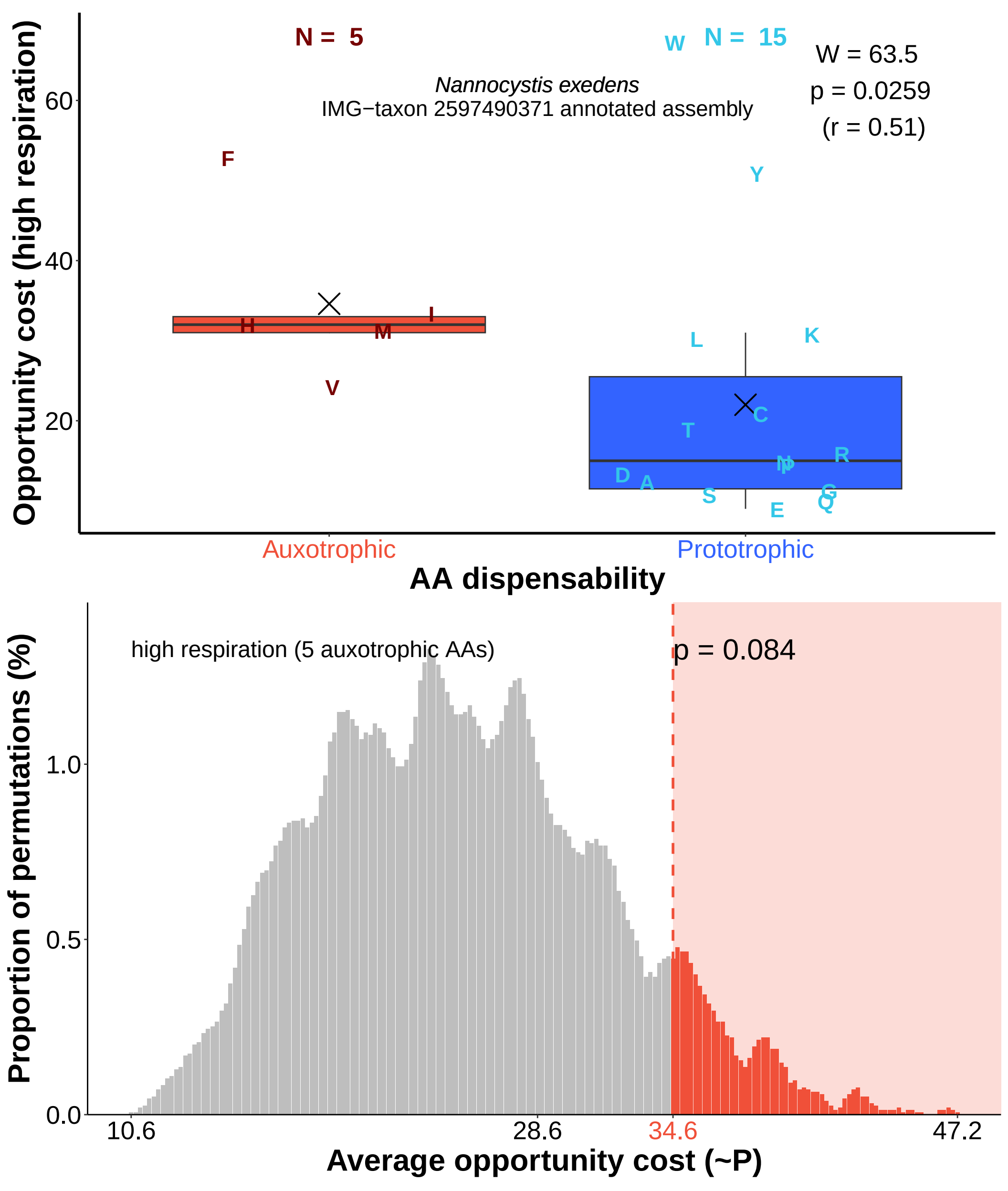
Proportion of permutations (%)

2.5
2.0
1.5
1.0
0.5
0.0

10.0
29.0
29.5
57.0

Average opportunity cost (~P)

W
N = 4
N = 16
W = 55
p = 0.0334
(r = 0.48)
Chondromyces apiculatus DSM 436
Chondromyces apiculatus DSM 436 genome assembly
Opportunity cost (high respiration)
60
40
20
H
V
Y
F
K
L
M
T
C
R
N
D
A
G
S
Q
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (4 auxotrophic AAs)
p = 0.042
Proportion of permutations (%)
1.5
1.0
0.5
0.0
10.25
29.25
39.00
51.00
Average opportunity cost (~P)



N = 5
W
N = 15
W = 63.5
p = 0.0259
(r = 0.51)
Nannocystis exedens
IMG−taxon 2597490371 annotated assembly
Opportunity cost (high respiration)
60
40
20
F
Y
H
M
I
V
L
K
C
T
R
N
P
D
A
S
G
Q
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (5 auxotrophic AAs)
p = 0.084
Proportion of permutations (%)
1.0
0.5
0.0
10.6
28.6
34.6
47.2
Average opportunity cost (~P)

N = 3

N = 17

W

W = 36

p = 0.289

(r = 0.25)

Myxococcus virescens

IMG−taxon 2619619029 annotated assembly

Opportunity cost (high respiration)

60

40

20

I

L

V

F

Y

H

M

K

C

T

R

P

D

N

A

S

Q

E

G

Auxotrophic

Prototrophic

AA dispensability

high respiration (3 auxotrophic AAs)

p = 0.32

Proportion of permutations (%)

2.5

2.0

1.5

1.0

0.5

0.0

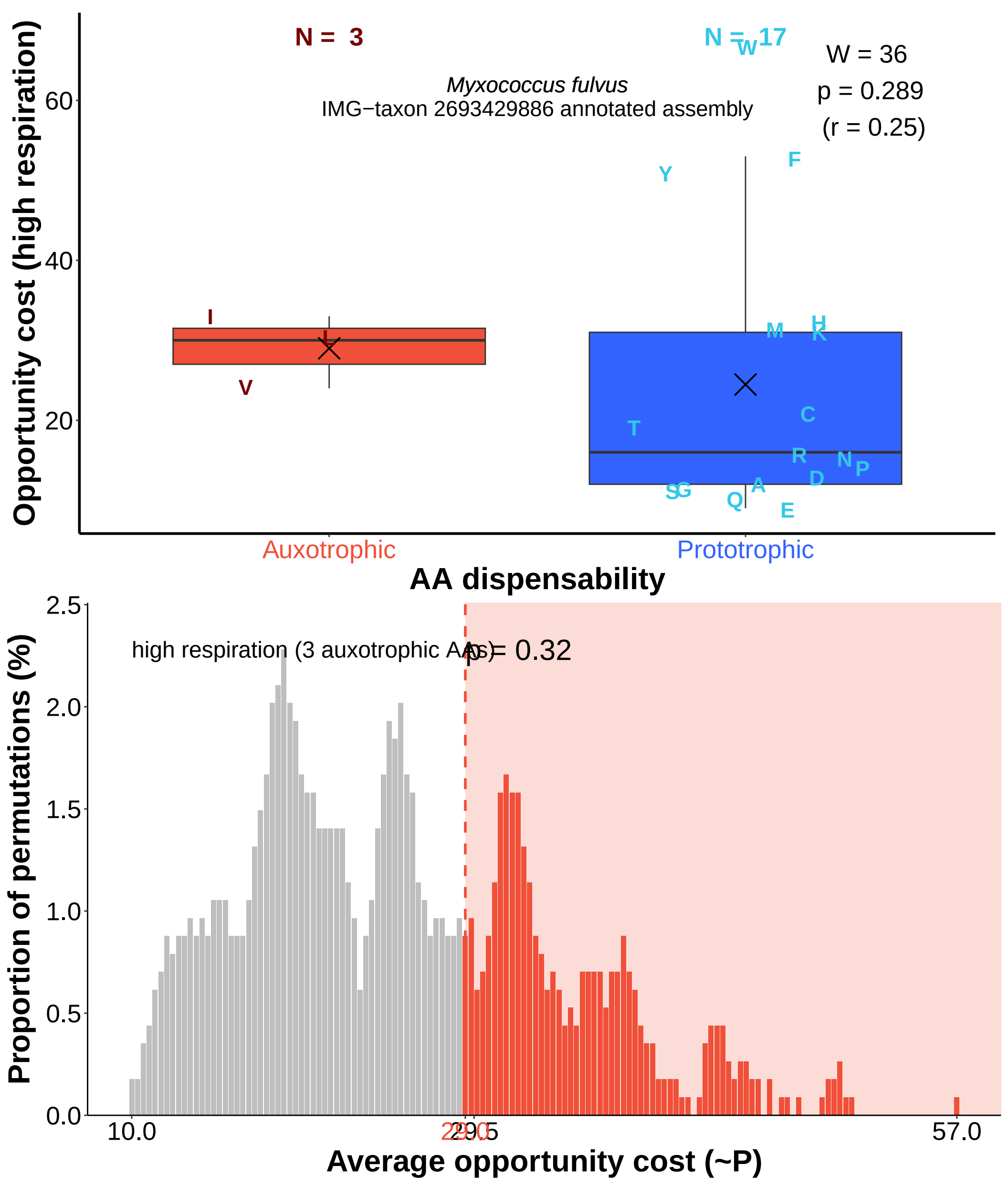
10.0

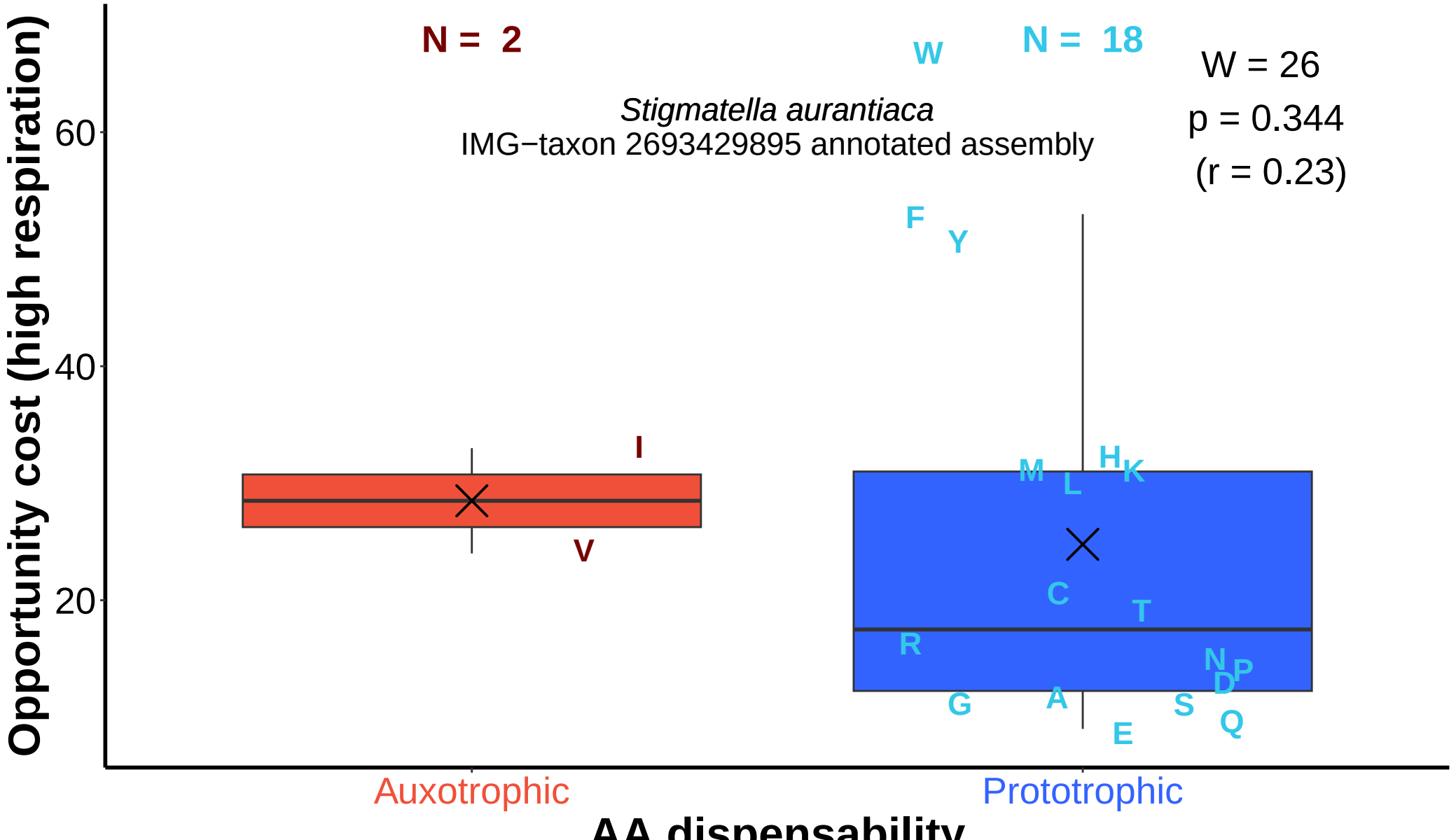
29.0

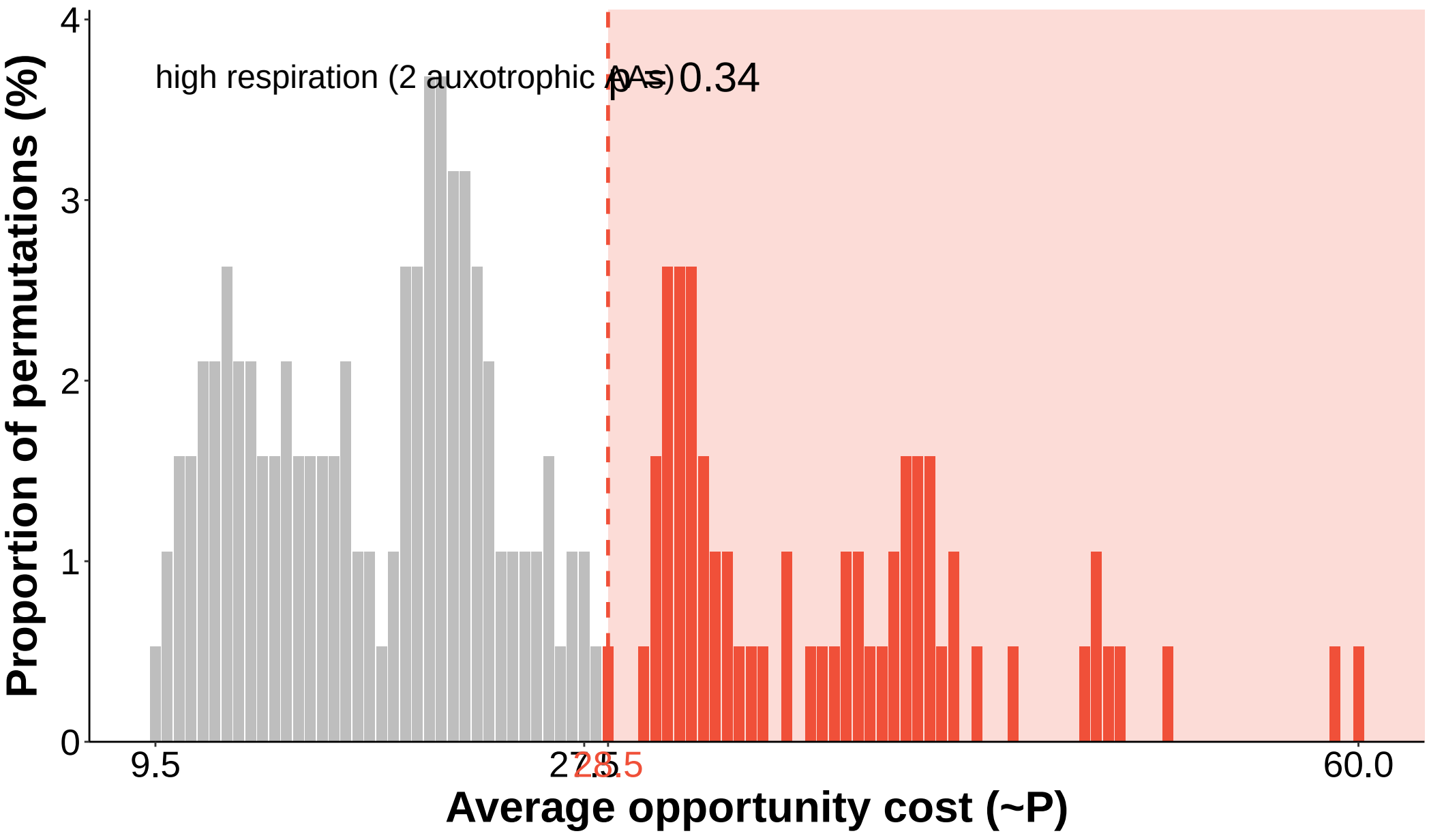
29.5

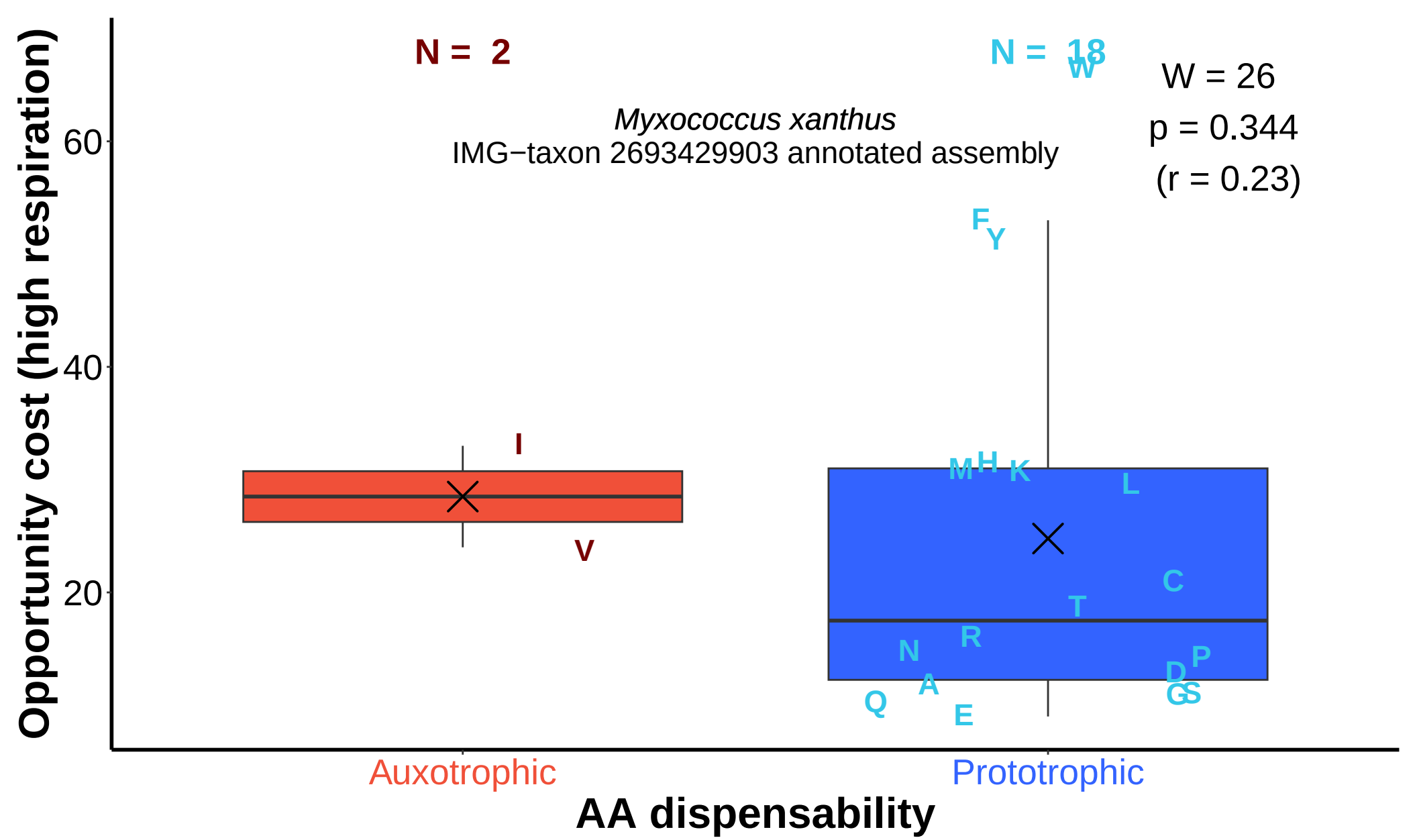
57.0

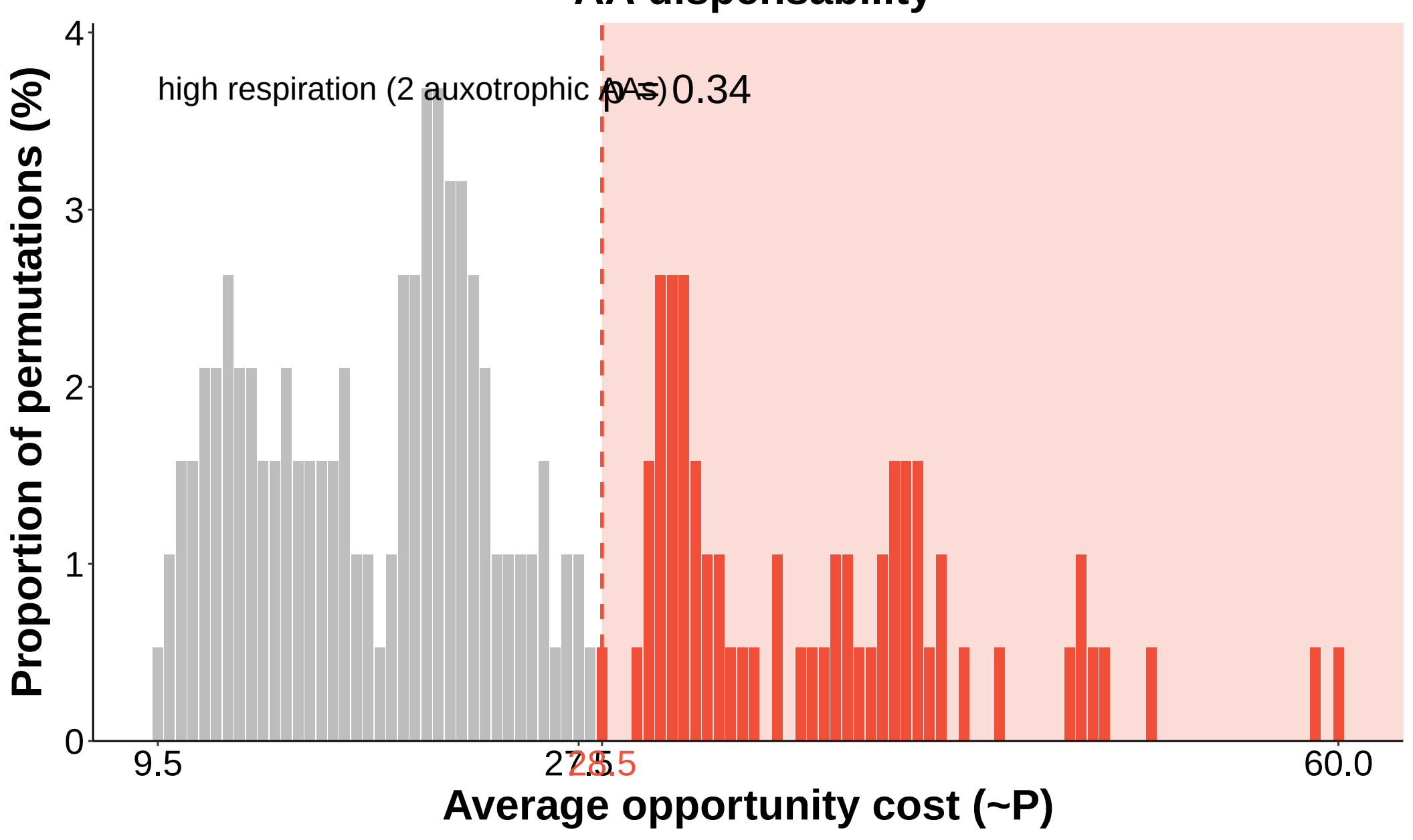
Average opportunity cost (~P)


N = 3
N = 17
W = 36
p = 0.289
(r = 0.25)
Myxococcus fulvus
IMG−taxon 2693429886 annotated assembly
Opportunity cost (high respiration)
60
40
20
I
L
V
Y
F
M
H
K
C
T
R
N
P
D
S
G
A
Q
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.0
29.5
57.0
Average opportunity cost (~P)


N = 2
N = 18
W
W = 26
p = 0.344
(r = 0.23)
Stigmatella aurantiaca
IMG−taxon 2693429895 annotated assembly
Opportunity cost (high respiration)
60
40
20
I
V
F
Y
M
L
H
K
C
T
R
N
D
P
G
A
S
Q
E
Auxotrophic
Prototrophic
AA dispensability


high respiration (2 auxotrophic AAs)
p = 0.34
Proportion of permutations (%)
4
3
2
1
0
9.5
27.5
28.5
60.0
Average opportunity cost (~P)


N = 2
N = 18
W = 26
p = 0.344
(r = 0.23)
Myxococcus xanthus
IMG−taxon 2693429903 annotated assembly
Opportunity cost (high respiration)
60
40
20
I
V
F
Y
M
H
K
L
C
T
R
N
A
Q
E
P
D
G
S
Auxotrophic
Prototrophic
AA dispensability


high respiration (2 auxotrophic AAs)
p = 0.34
Proportion of permutations (%)
4
3
2
1
0
9.5
27.5
28.5
60.0
Average opportunity cost (~P)

N = 3

N = 17

W

W = 36

p = 0.289

(r = 0.25)

Myxococcus stipitatus
KYC2006

Opportunity cost (high respiration)

60

40

20

I

L

V

F

Y

M

H

K

C

T

N

R

P

D

A

Q

S

G

E

Auxotrophic

Prototrophic

AA dispensability

high respiration (3 auxotrophic AAs)

p = 0.32

Proportion of permutations (%)

2.5

2.0

1.5

1.0

0.5

0.0

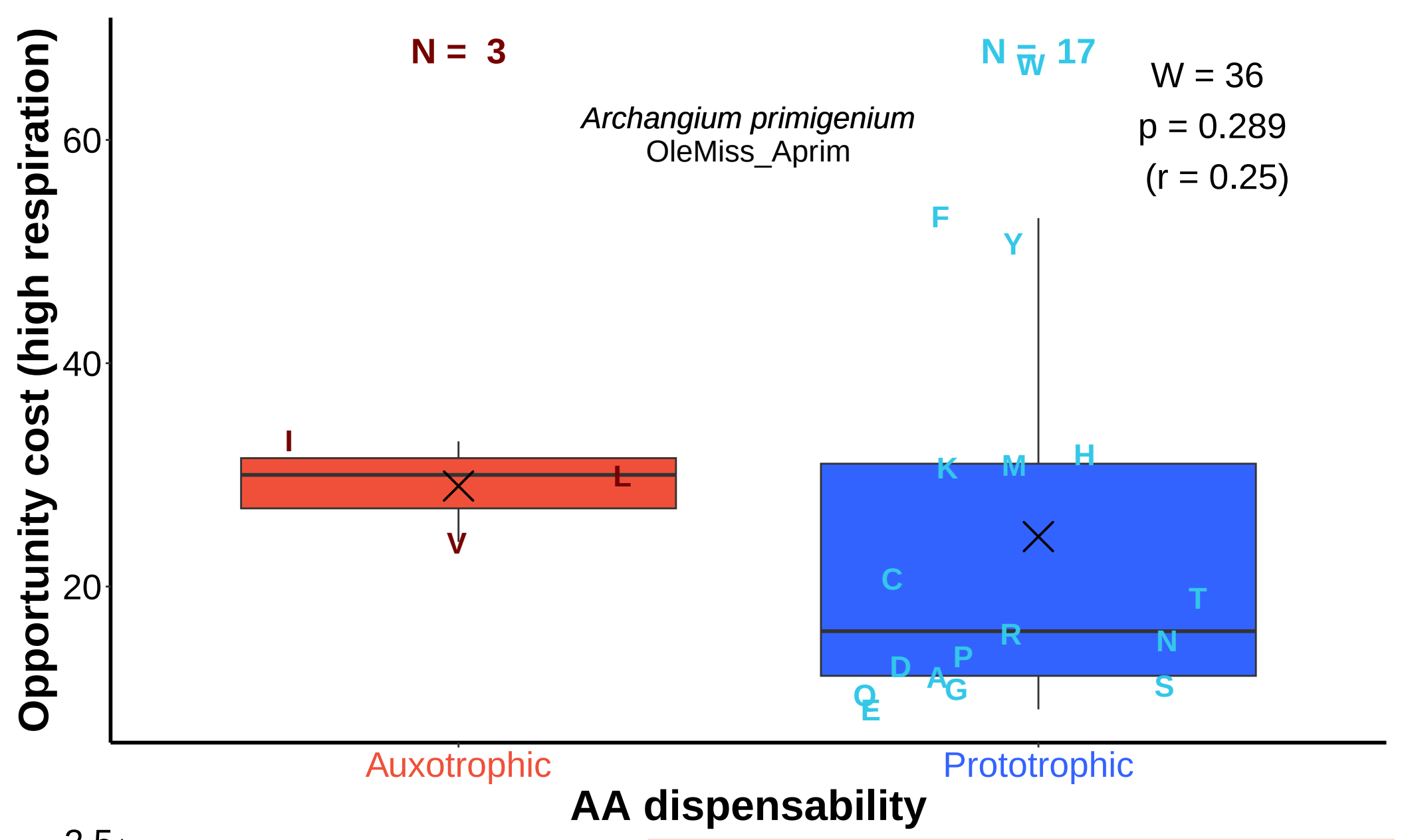
10.0

29.0

29.5

57.0

Average opportunity cost (~P)


N = 3
N = 17
W = 36
p = 0.289
(r = 0.25)
Archangium primigenium
OleMiss_Aprim
Opportunity cost (high respiration)
60
40
20
I
L
V
F
Y
K
M
H
C
T
R
N
P
D
A
G
Q
E
S
Auxotrophic
Prototrophic
AA dispensability
high respiration (3 auxotrophic AAs)
p = 0.32
Proportion of permutations (%)
2.5
2.0
1.5
1.0
0.5
0.0
10.0
29.0
29.5
57.0
Average opportunity cost (~P)

N = 6

W

N = 14

W = 63

p = 0.0906

(r = 0.39)

Sorangium cellulosum
Sce1.0

Opportunity cost (high respiration)

60

40

20

K M H R T

F Y I L V C N P D A Q S G E

Auxotrophic

Prototrophic

AA dispensability

high respiration (6 auxotrophic AAs)

p = 0.1

Proportion of permutations (%)

1.0

0.5

0.0

11.00 27.59 32.67 44.50

Average opportunity cost (~P)

N = 3

N = 17

W

W = 46.5

p = 0.0299

(r = 0.5)

Sorangium cellulosum
sce1107.1

Y

K

F

H

I

M

L

V

C

T

R

N

P

D

A

S

Q

G

E

60

40

20

Opportunity cost (high respiration)

Auxotrophic

Prototrophic

AA dispensability

high respiration (3 auxotrophic AAs)

p = 0.0088

2.5

2.0

1.5

1.0

0.5

0.0

Proportion of permutations (%)

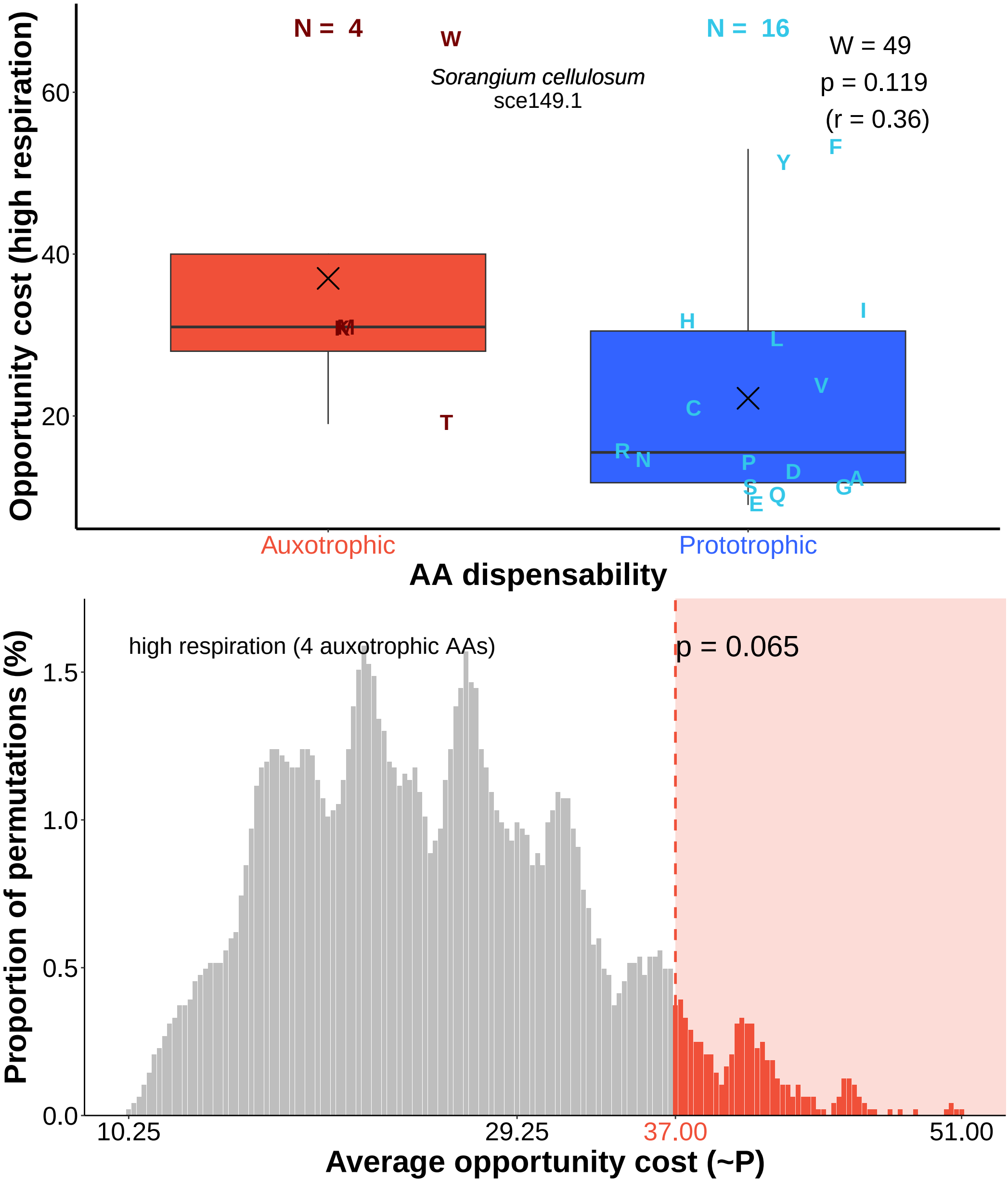
10.00

29.50

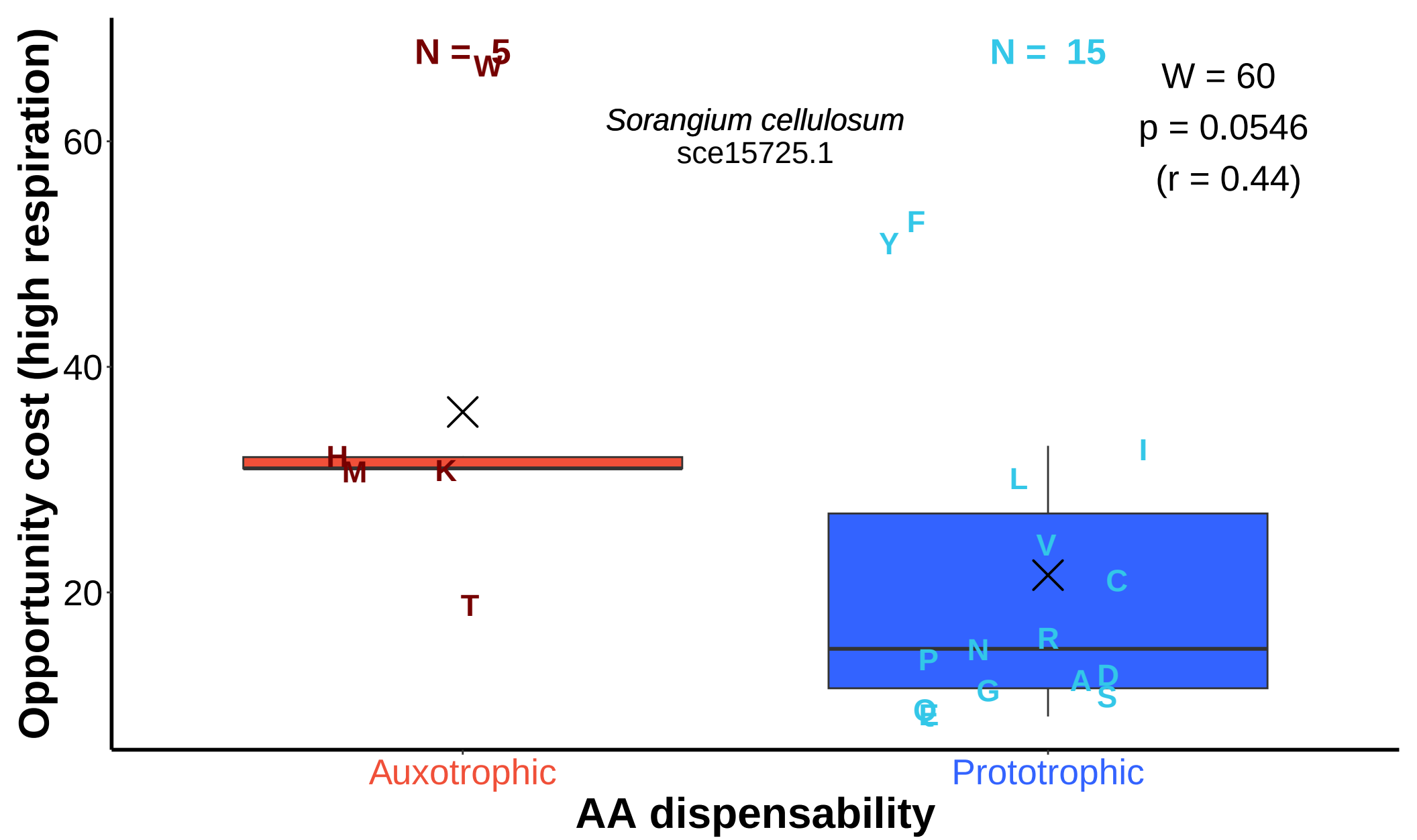
49.67

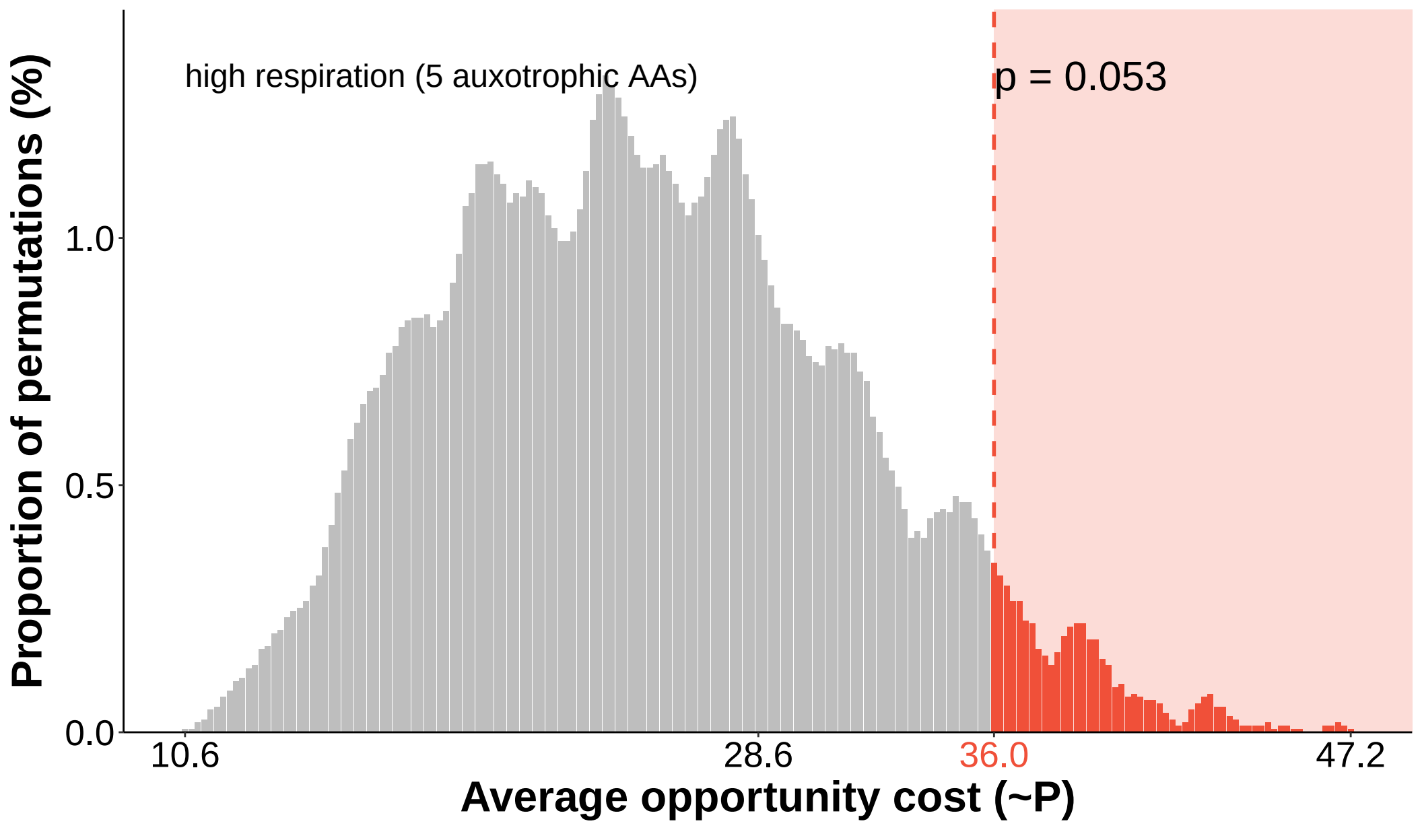
57.00

Average opportunity cost (~P)



N = 4
W
N = 16
W = 49
p = 0.119
(r = 0.36)
Sorangium cellulosum
sce149.1
Opportunity cost (high respiration)
60
40
20
F
Y
H
I
L
V
C
T
R
N
P
D
S
Q
E
G
A
Auxotrophic
Prototrophic
AA dispensability
high respiration (4 auxotrophic AAs)
p = 0.065
Proportion of permutations (%)
1.5
1.0
0.5
0.0
10.25
29.25
37.00
51.00
Average opportunity cost (~P)


N = 5
N = 15
W = 60
p = 0.0546
(r = 0.44)
Sorangium cellulosum
sce15725.1
Opportunity cost (high respiration)
60
40
20
H
M
K
T
Y
F
I
L
V
C
R
N
P
G
A
D
S
Auxotrophic
Prototrophic
AA dispensability


high respiration (5 auxotrophic AAs)
p = 0.053
Proportion of permutations (%)
1.0
0.5
0.0
10.6
28.6
36.0
47.2
Average opportunity cost (~P)

N = 1

N = 19

W

W = 13.5

p = 0.544

(r = 0.15)

Sorangium cellulosum
sce8312.1

Opportunity cost (high respiration)

60

40

20

F

Y

M

K

H

I

L

V

C

T

R

N

P

D

A

S

G

Q

E

Auxotrophic

Prototrophic

AA dispensability

high respiration (1 auxotrophic AAs)

p = 0.35

Proportion of permutations (%)

10.0

7.5

5.0

2.5

0.0

9

20

31

67

Average opportunity cost (~P)

N = 5

N = 15

W = 59

p = 0.0666

(r = 0.42)

Silvanigrella aquatica
ASM190797v2

Opportunity cost (high respiration)

60

40

20

I H V R

F Y K L M C T N P D A G S Q E

Auxotrophic

Prototrophic

AA dispensability

high respiration (5 auxotrophic AAs)

p = 0.088

Proportion of permutations (%)

1.0

0.5

0.0

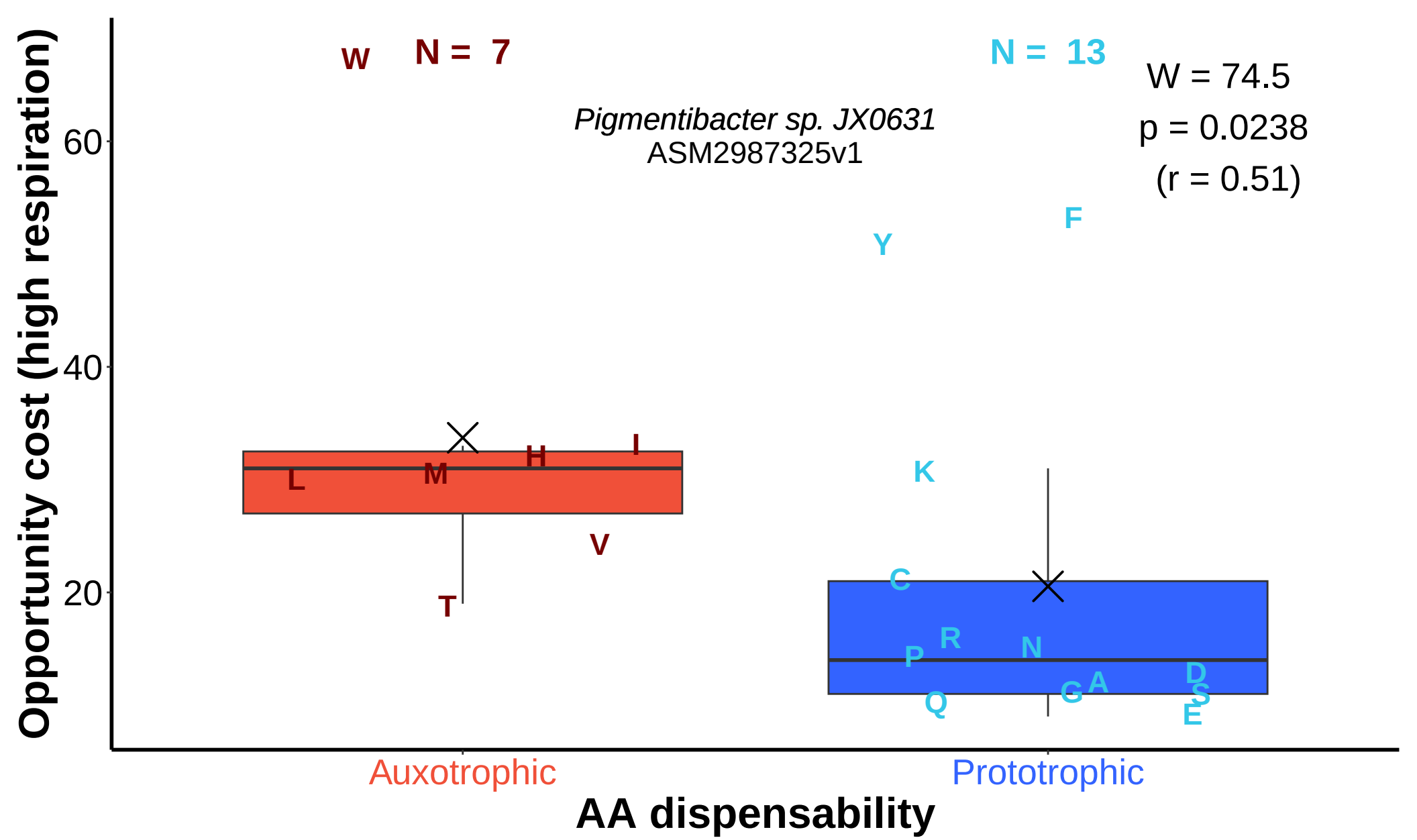
10.6

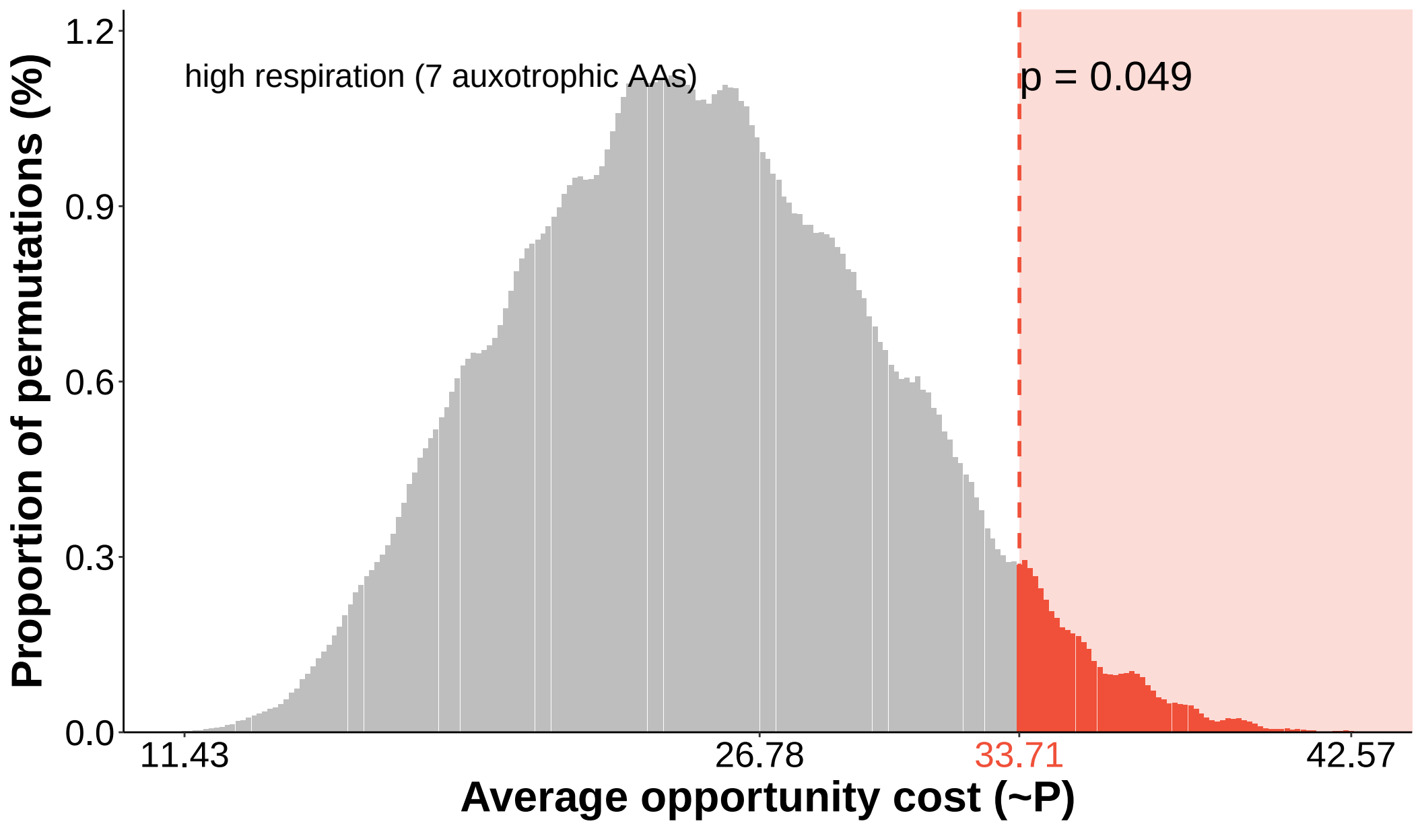
28.6

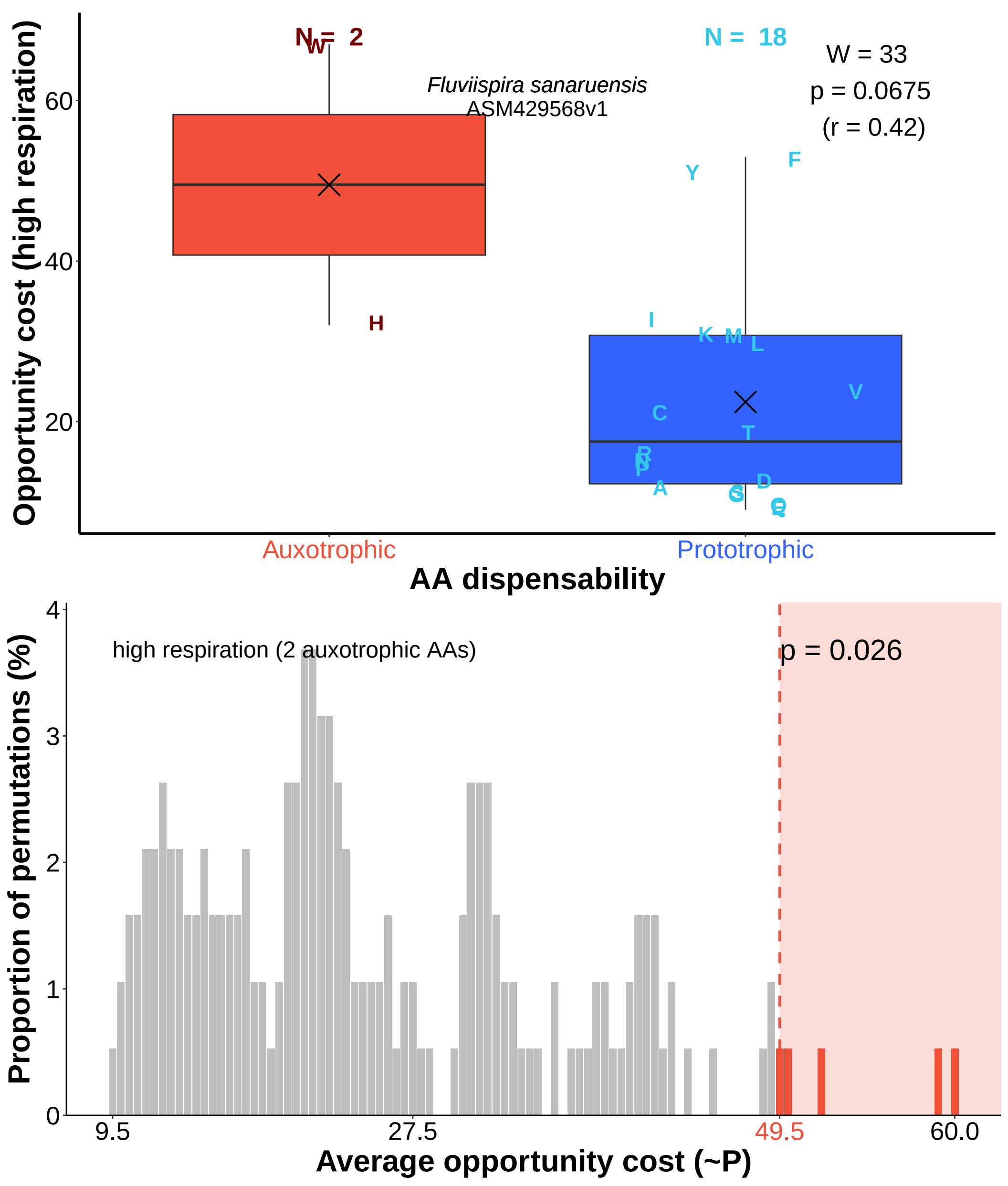
34.4

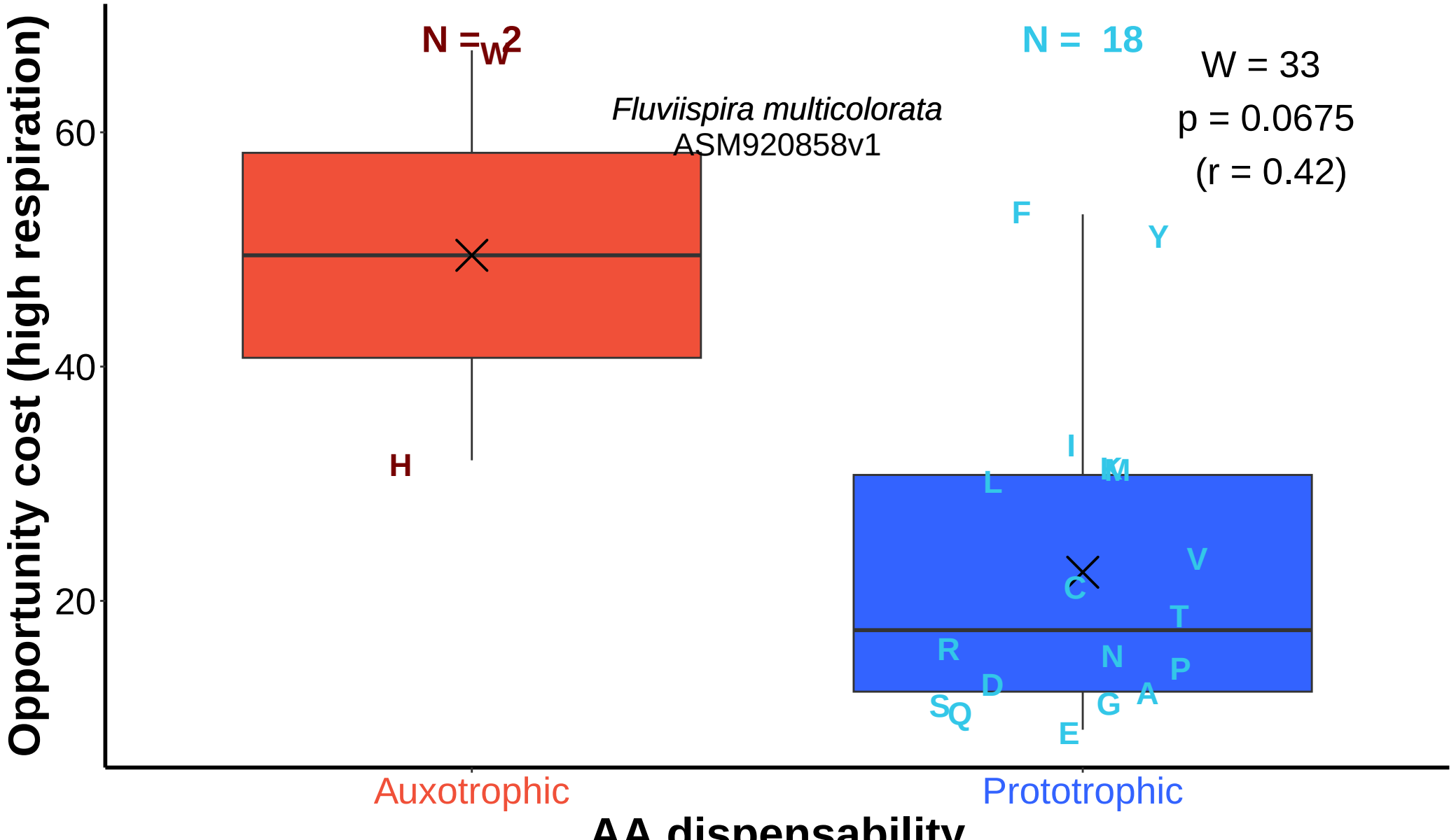
47.2

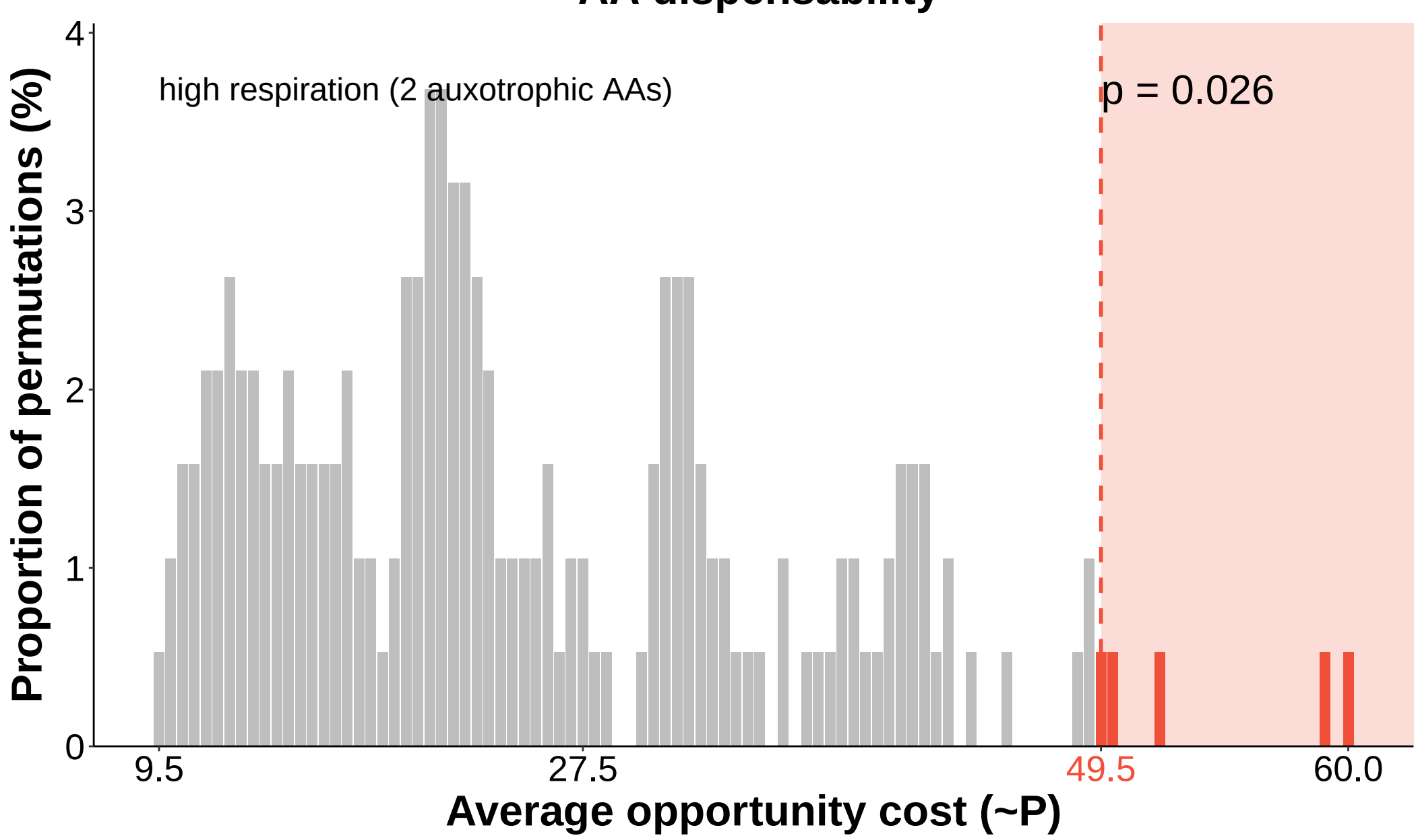
Average opportunity cost (~P)

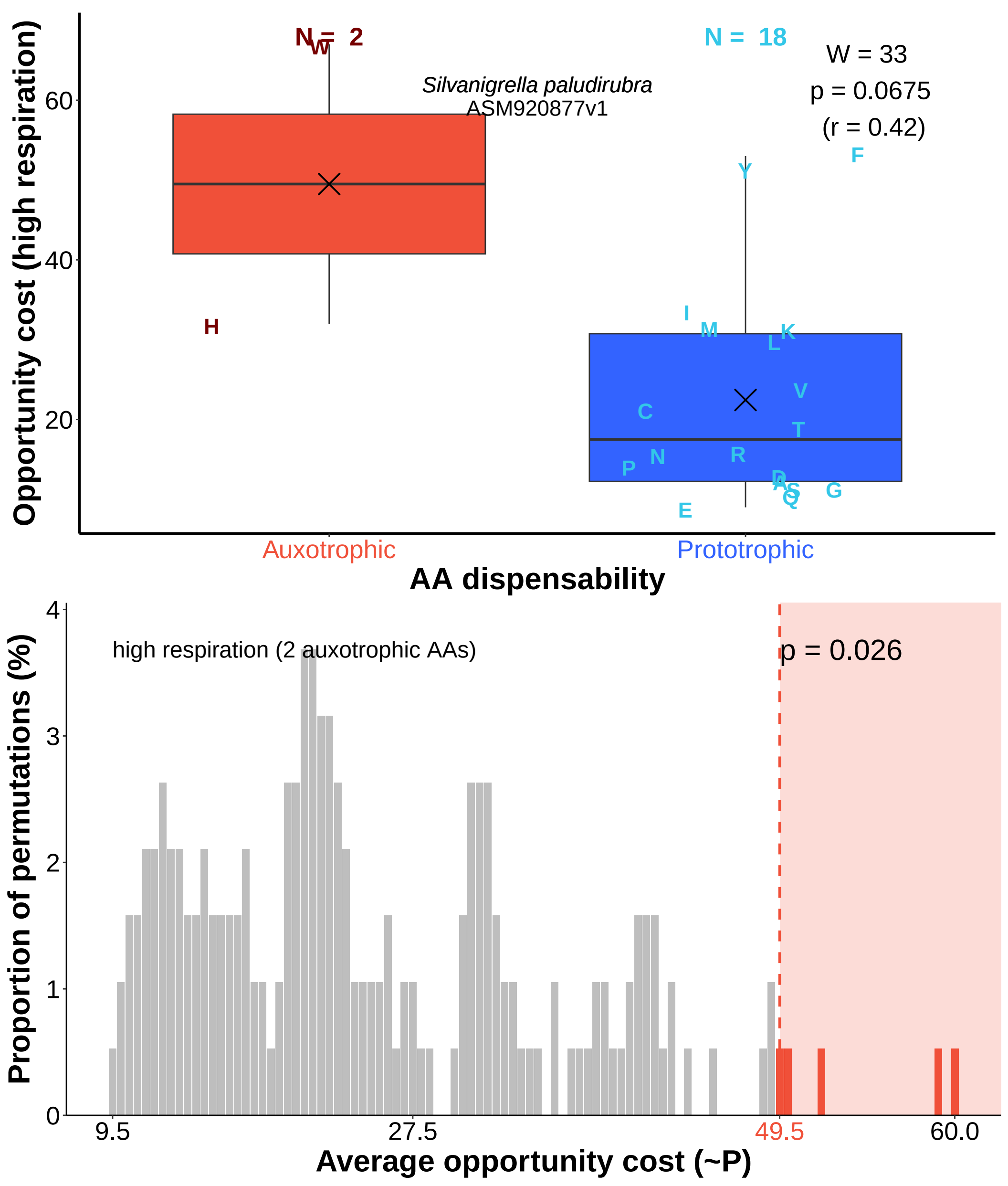

W
N = 7
N = 13
W = 74.5
p = 0.0238
(r = 0.51)
Pigmentibacter sp. JX0631
ASM2987325v1
F
Y
K
L
M
H
I
V
T
C
R
P
N
G
A
D
S
Q
E
60
40
20
Opportunity cost (high respiration)
Auxotrophic
Prototrophic
AA dispensability

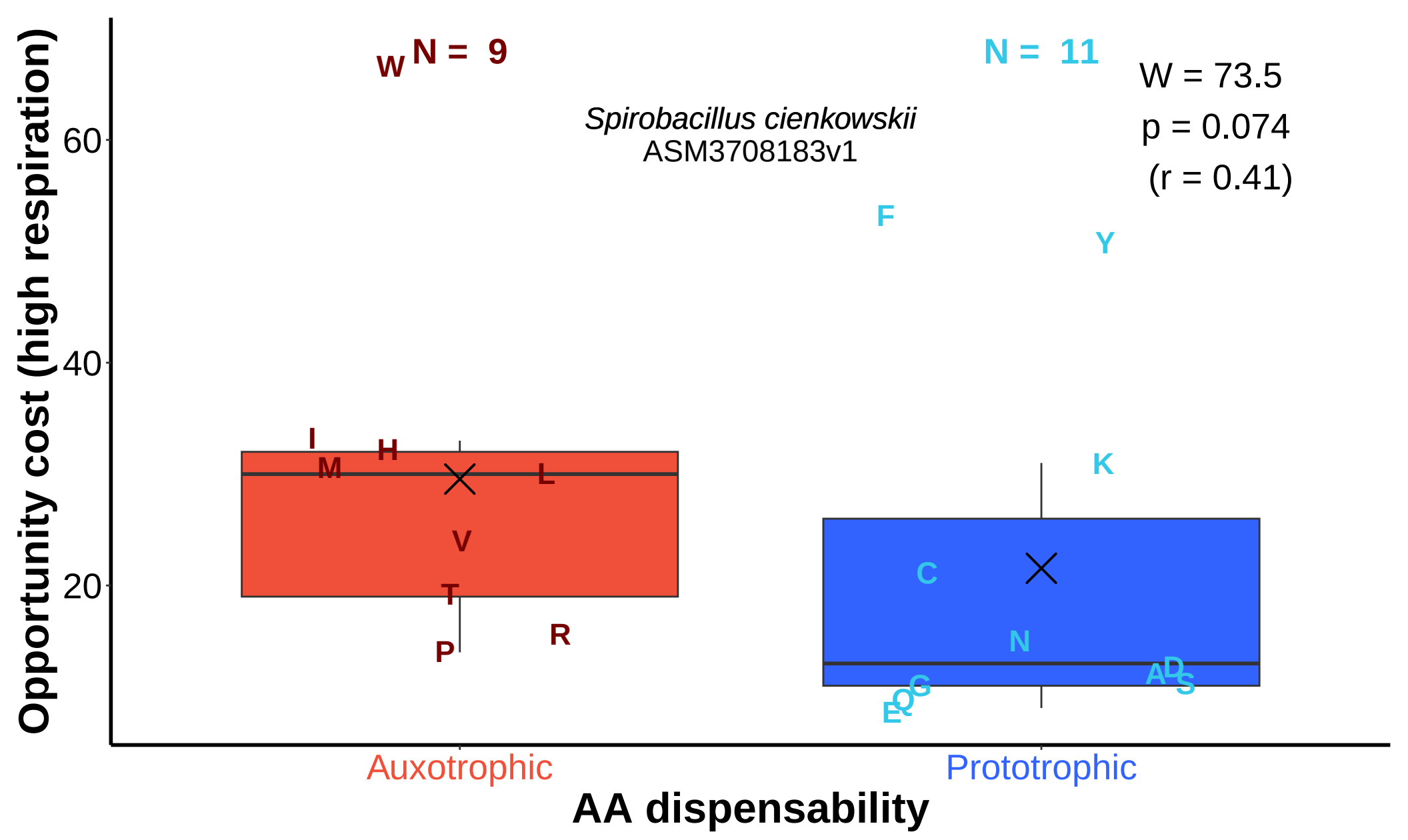

high respiration (7 auxotrophic AAs)
p = 0.049
1.2
0.9
0.6
0.3
0.0
Proportion of permutations (%)
11.43
26.78
33.71
42.57
Average opportunity cost (~P)

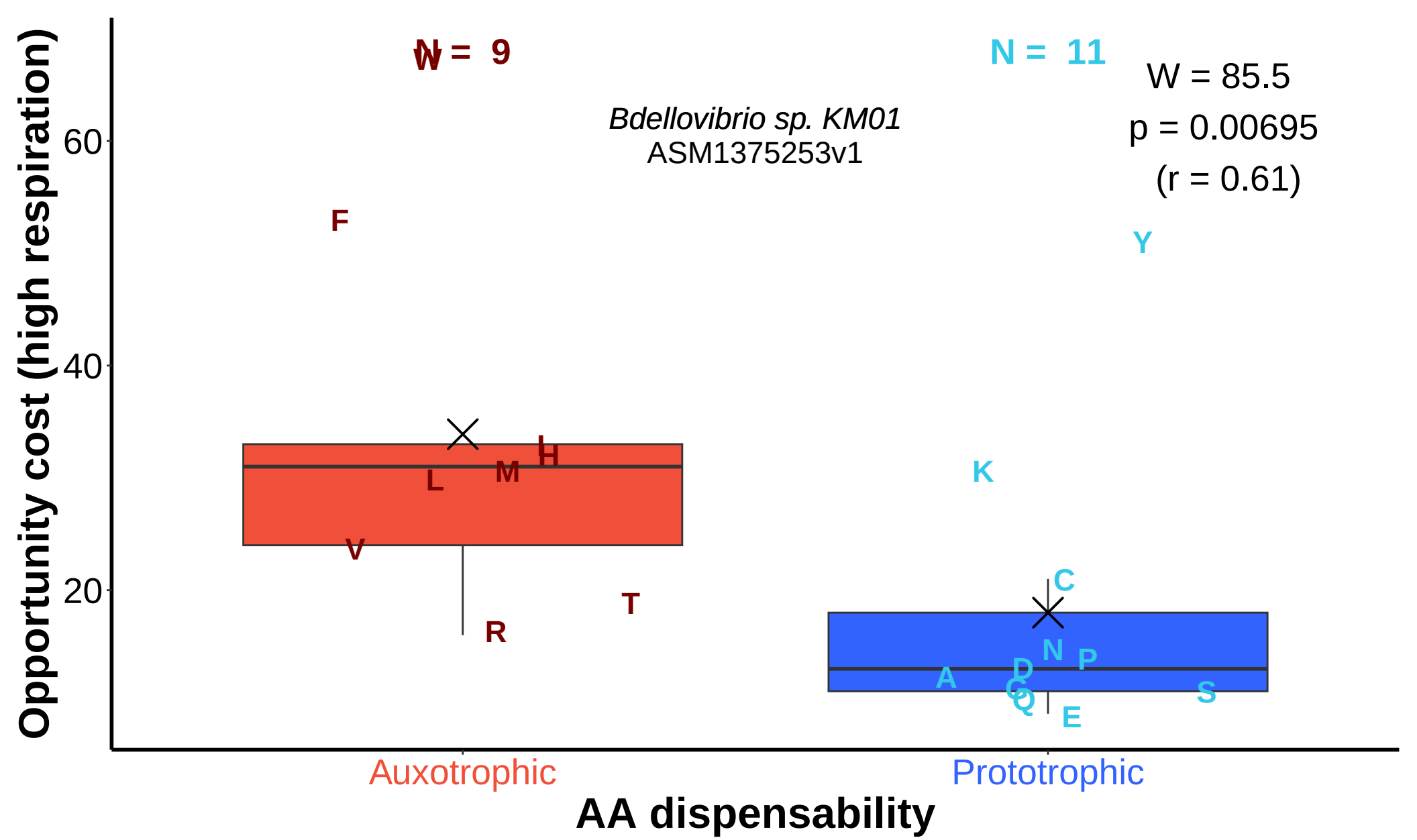

N = 2
N = 18
W = 33
p = 0.0675
(r = 0.42)
Fluviispira sanaruensis
ASM429568v1
Opportunity cost (high respiration)
60
40
20
H
I
K
M
L
F
Y
V
C
T
R
P
A
D
S
Q
Auxotrophic
Prototrophic
AA dispensability
high respiration (2 auxotrophic AAs)
p = 0.026
Proportion of permutations (%)
4
3
2
1
0
9.5
27.5
49.5
60.0
Average opportunity cost (~P)

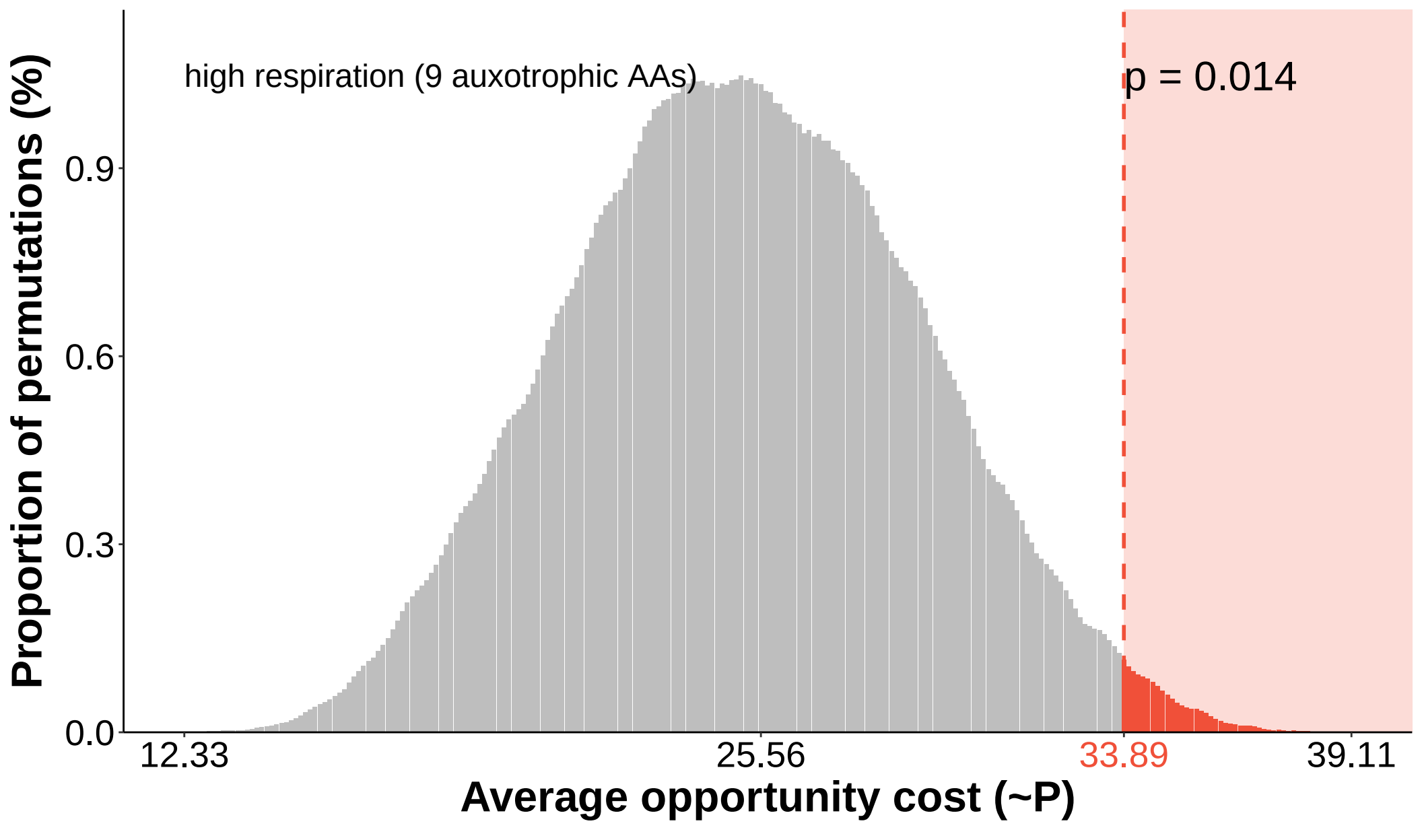

N = 2
N = 18
W = 33
p = 0.0675
(r = 0.42)
Fluviispira multicolorata
ASM920858v1
Opportunity cost (high respiration)
60
40
20
H
F
Y
I
K
M
L
V
C
T
R
N
P
D
A
S
Q
G
E
Auxotrophic
Prototrophic
AA dispensability

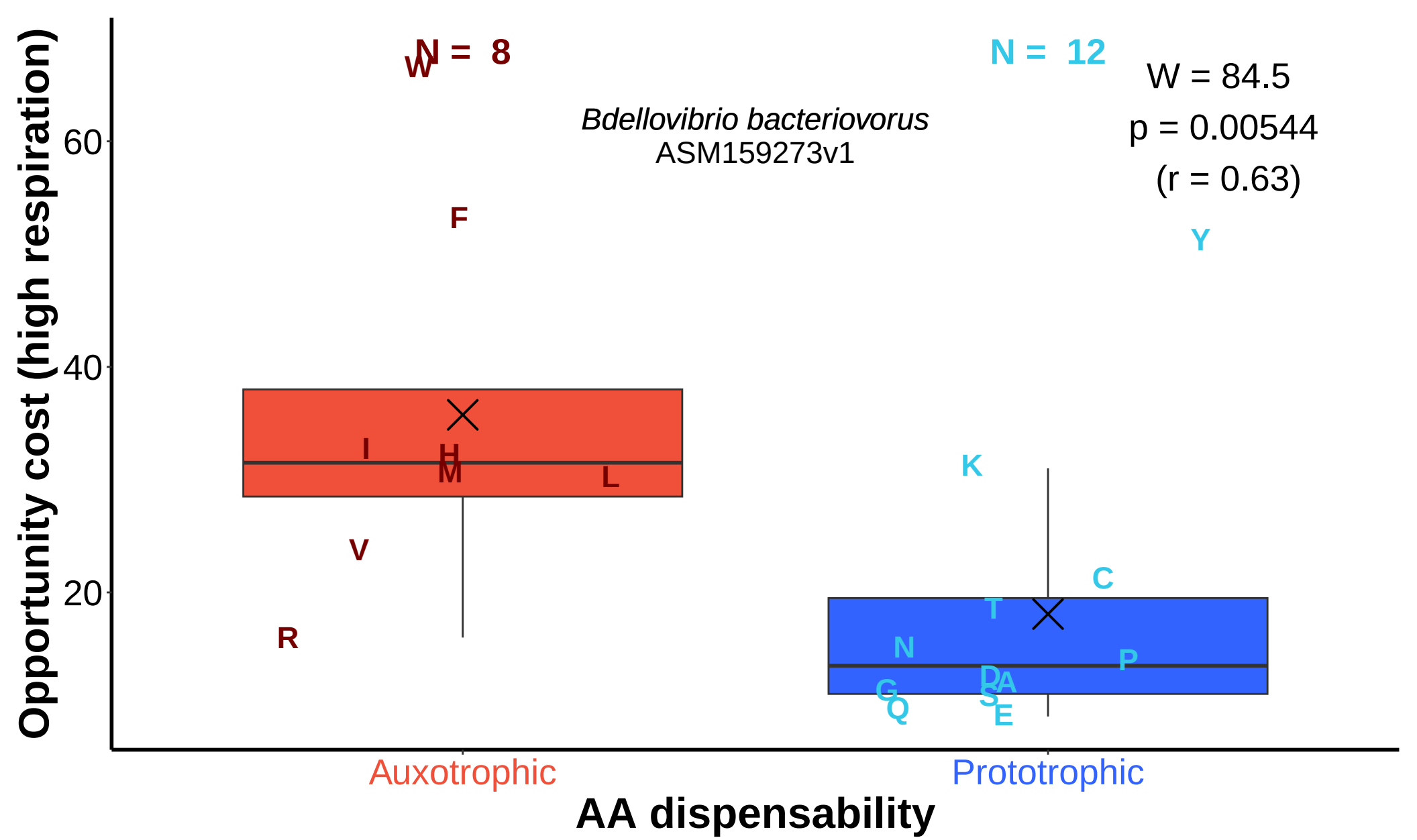

high respiration (2 auxotrophic AAs)
p = 0.026
Proportion of permutations (%)
4
3
2
1
0
9.5
27.5
49.5
60.0
Average opportunity cost (~P)

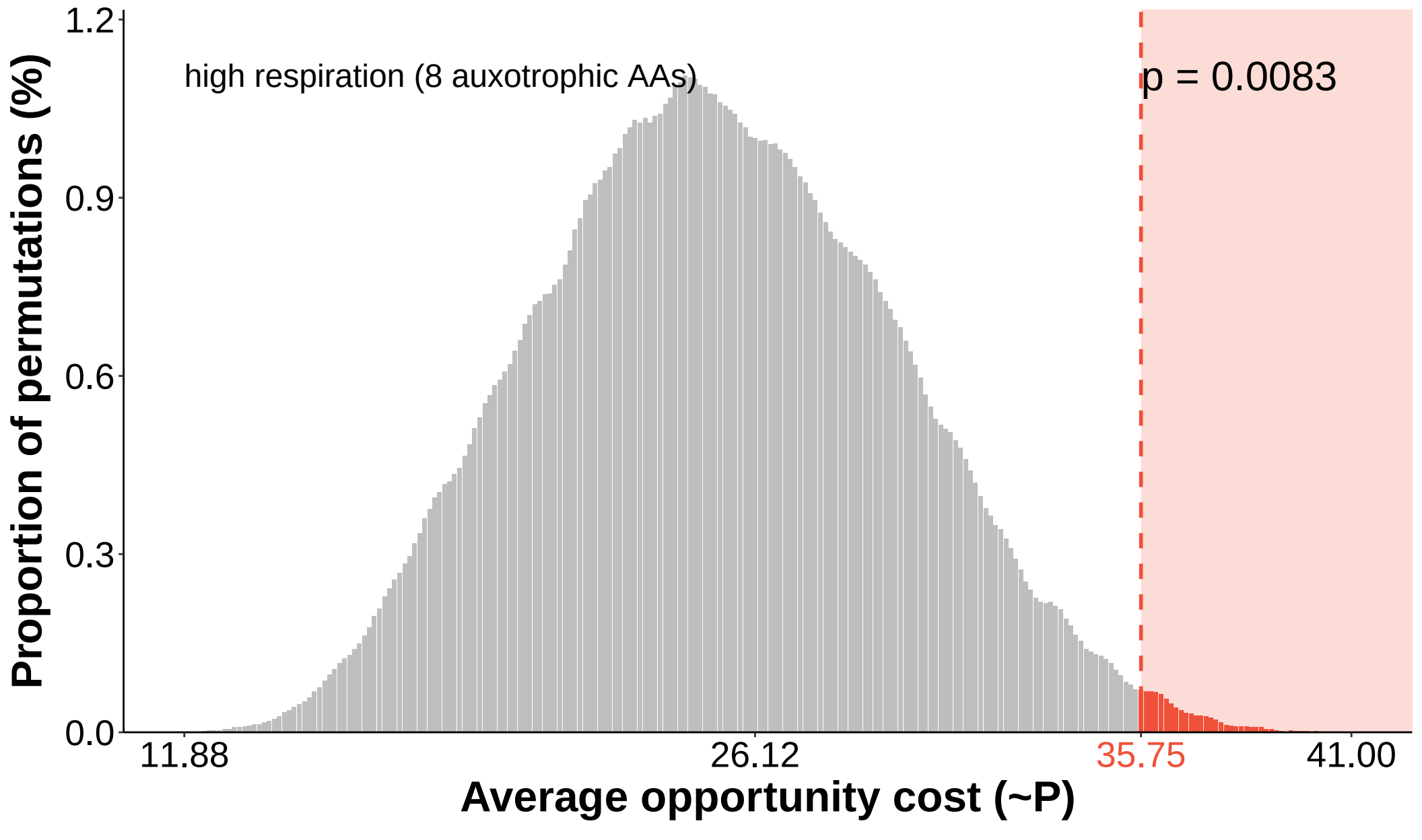

N = 2
N = 18
W = 33
p = 0.0675
(r = 0.42)
Silvanigrella paludirubra
ASM920877v1
Opportunity cost (high respiration)
60
40
20
H
F
Y
I
M
K
L
V
C
T
N
R
P
A
S
Q
G
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (2 auxotrophic AAs)
p = 0.026
Proportion of permutations (%)
4
3
2
1
0
9.5
27.5
49.5
60.0
Average opportunity cost (~P)


W N = 9
N = 11
W = 73.5
p = 0.074
(r = 0.41)
Spirobacillus cienkowskii
ASM3708183v1
Opportunity cost (high respiration)
60
40
20
I
M
H
L
V
T
P
R
F
Y
K
C
N
A
D
S
G
Q
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (9 auxotrophic AAs)
p = 0.15
Proportion of permutations (%)
0.9
0.6
0.3
0.0
12.33
25.56
29.56
39.11
Average opportunity cost (~P)


N = 9
N = 11
W = 85.5
p = 0.00695
(r = 0.61)
Bdellovibrio sp. KM01
ASM1375253v1
Opportunity cost (high respiration)
60
40
20
F
Y
K
L
M
H
V
R
T
C
N
P
A
D
G
Q
E
S
Auxotrophic
Prototrophic
AA dispensability


high respiration (9 auxotrophic AAs)
p = 0.014
Proportion of permutations (%)
0.9
0.6
0.3
0.0
12.33
25.56
33.89
39.11
Average opportunity cost (~P)


N = 8
N = 12
W = 84.5
p = 0.00544
(r = 0.63)
Bdellovibrio bacteriovorus
ASM159273v1
Opportunity cost (high respiration)
60
40
20
W
F
I
H
M
L
V
R
Y
K
C
T
N
P
D
A
G
Q
S
E
Auxotrophic
Prototrophic
AA dispensability


high respiration (8 auxotrophic AAs)
p = 0.0083
Proportion of permutations (%)
1.2
0.9
0.6
0.3
0.0
11.88
26.12
35.75
41.00
Average opportunity cost (~P)

N = 9

N = 11

W = 85.5
p = 0.00695
(r = 0.61)

Bdellovibrio bacteriovorus
ASM159274v1

Opportunity cost (high respiration)

60
40
20

W
F
Y
K
H
I
L
M
V
T
R
C
P
N
D
A
S
G
E
Q

Auxotrophic
Prototrophic

AA dispensability

high respiration (9 auxotrophic AAs)

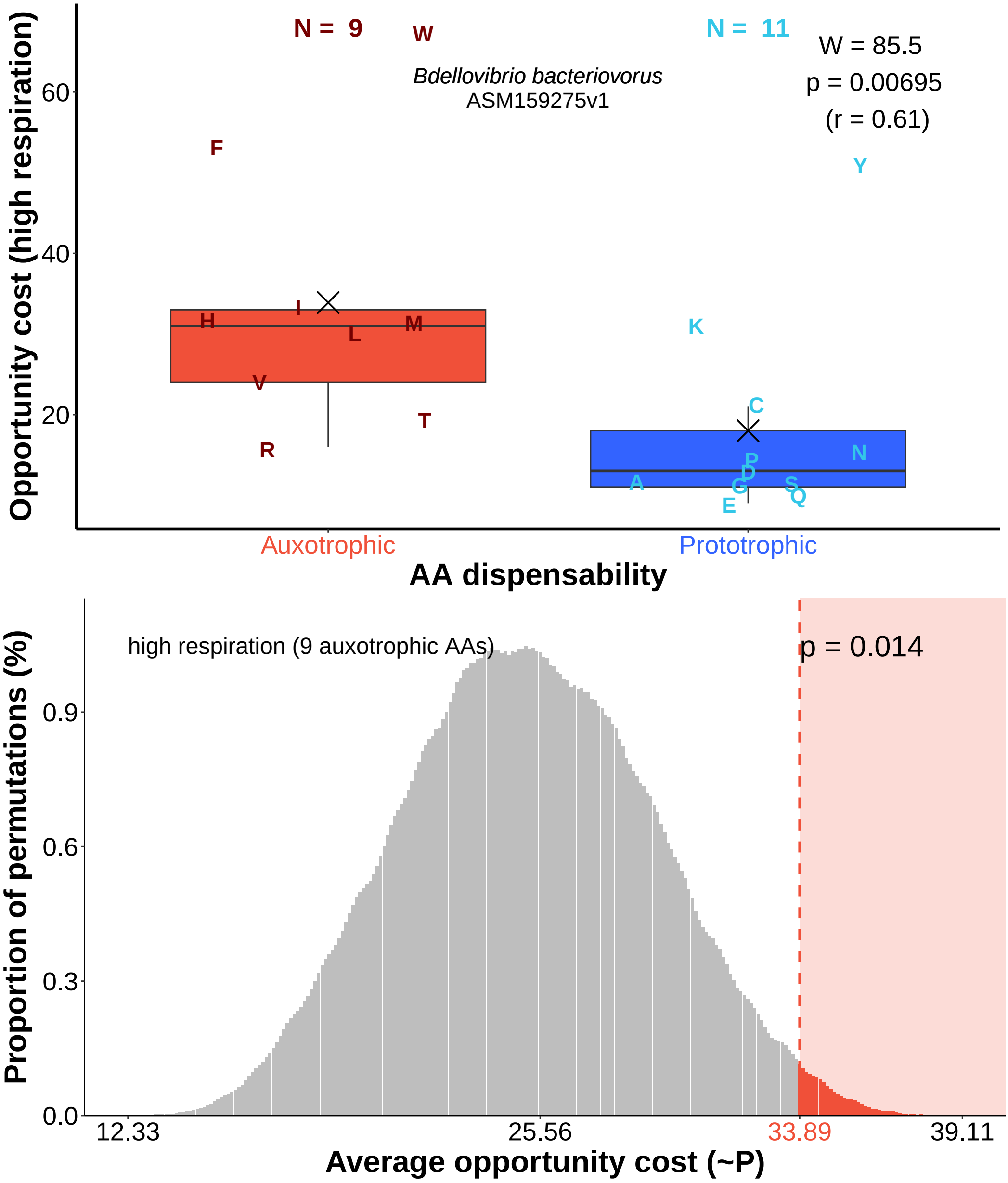
p = 0.014

Proportion of permutations (%)

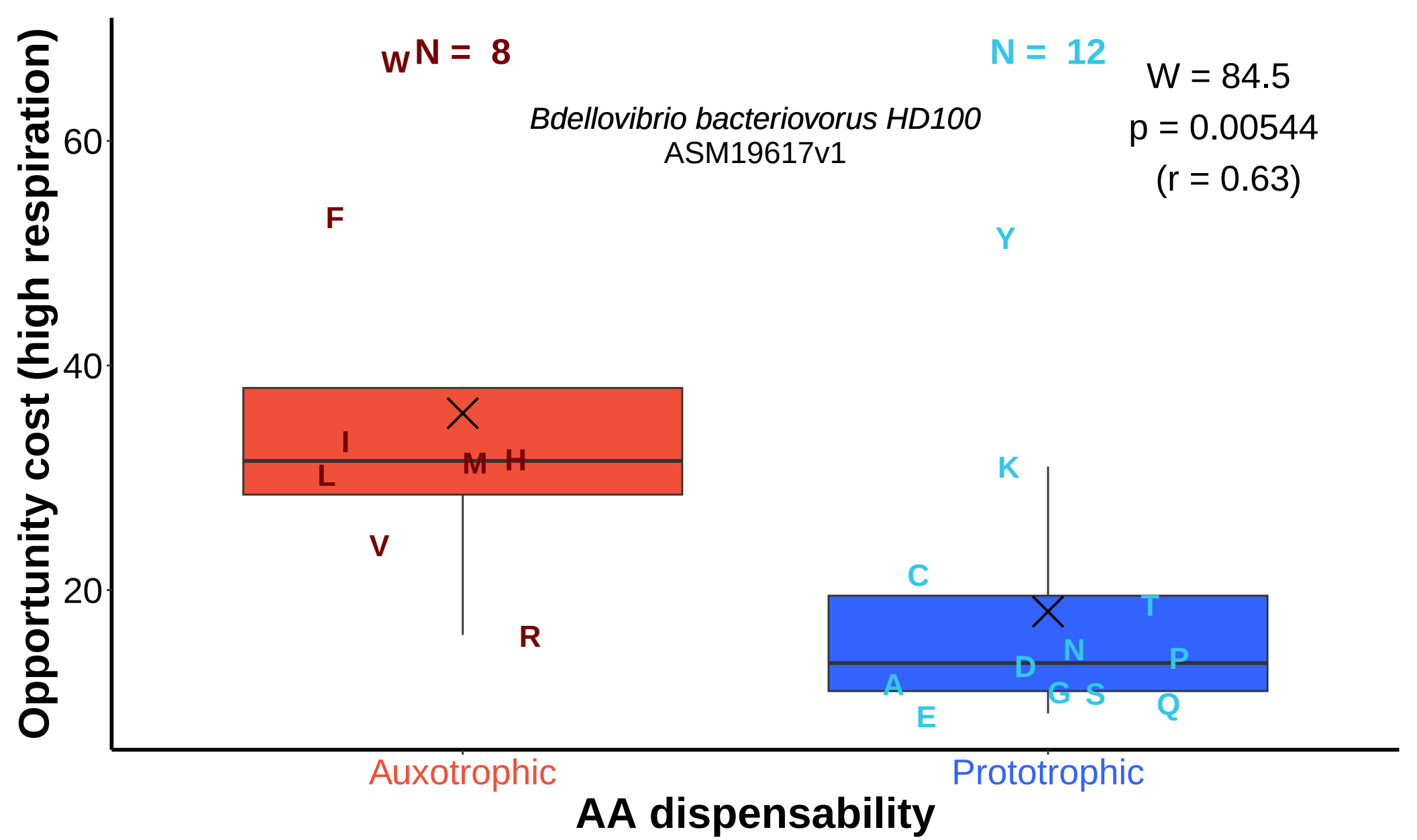
0.9
0.6
0.3
0.0

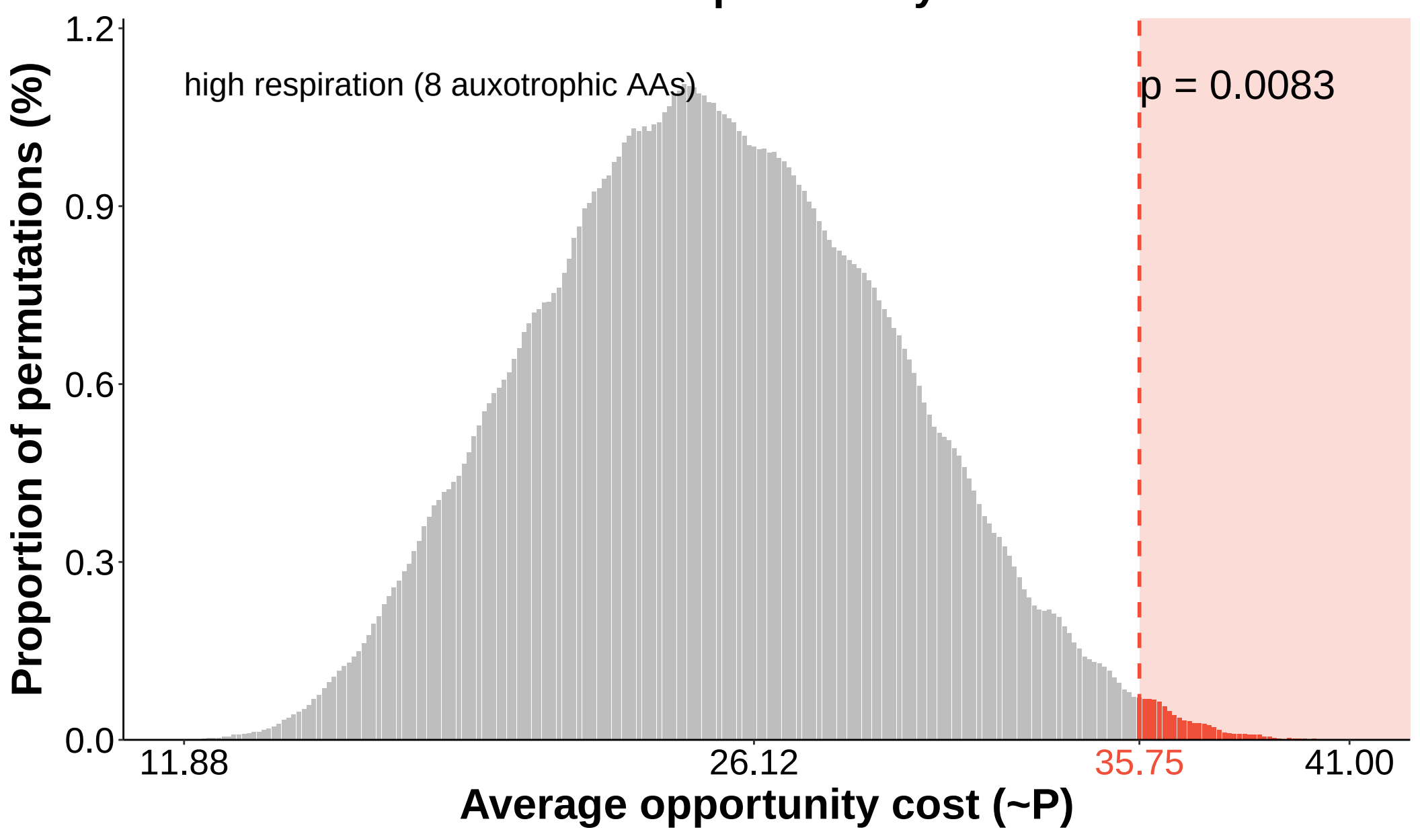
12.33
25.56
33.89
39.11

Average opportunity cost (~P)



N = 9
W
N = 11
W = 85.5
p = 0.00695
(r = 0.61)
Bdellovibrio bacteriovorus
ASM159275v1
Opportunity cost (high respiration)
60
40
20
F
Y
I
H
M
L
K
V
C
T
R
N
P
D
A
G
S
Q
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (9 auxotrophic AAs)
p = 0.014
Proportion of permutations (%)
0.9
0.6
0.3
0.0
12.33
25.56
33.89
39.11
Average opportunity cost (~P)


N = 8
N = 12
W = 84.5
p = 0.00544
(r = 0.63)
Bdellovibrio bacteriovorus HD100
ASM19617v1
Opportunity cost (high respiration)
60
40
20
F
Y
I
L
M
H
K
V
C
T
N
D
P
A
G
S
Q
E
R
Auxotrophic
Prototrophic
AA dispensability


high respiration (8 auxotrophic AAs)
p = 0.0083
Proportion of permutations (%)
1.2
0.9
0.6
0.3
0.0
11.88
26.12
35.75
41.00
Average opportunity cost (~P)

N = 8

N = 12

W = 84.5
p = 0.00544
(r = 0.63)

Bdellovibrio bacteriovorus
ASM220811v1

Opportunity cost (high respiration)

60
40
20

F W I H L M V R Y K C T N P S G D A E Q

Auxotrophic

Prototrophic

AA dispensability

high respiration (8 auxotrophic AAs)

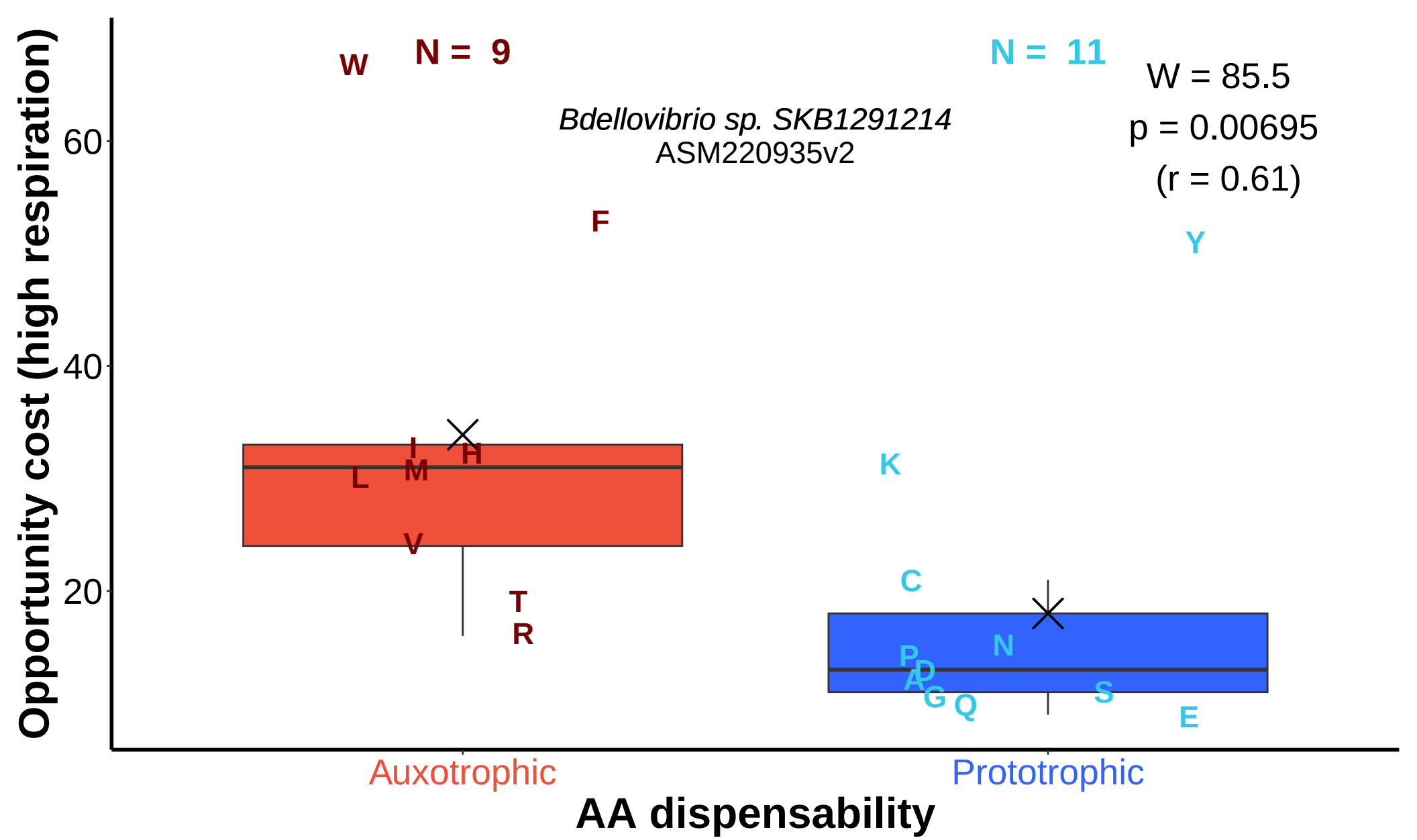
p = 0.0083

Proportion of permutations (%)

1.2
0.9
0.6
0.3
0.0

11.88
26.12
35.75
41.00

Average opportunity cost (~P)


N = 9
N = 11
W = 85.5
p = 0.00695
(r = 0.61)
Bdellovibrio sp. SKB1291214
ASM220935v2
W
F
Y
K
C
I
H
M
L
V
T
R
N
P
D
A
G
Q
S
E
60
40
20
Opportunity cost (high respiration)
Auxotrophic
Prototrophic
AA dispensability
high respiration (9 auxotrophic AAs)
p = 0.014
0.9
0.6
0.3
0.0
Proportion of permutations (%)
12.33
25.56
33.89
39.11
Average opportunity cost (~P)

Micavibrio aeruginosavorus ARL−13
ASM22631v1

N = 6

N = 14

W = 67.5
p = 0.0391
(r = 0.47)

Opportunity cost (high respiration)

60
40
20

W
H
I
M
V
R
F
Y
L
K
C
T
N
P
D
A
S
G
Q
E

Auxotrophic

Prototrophic

AA dispensability

high respiration (6 auxotrophic AAs)

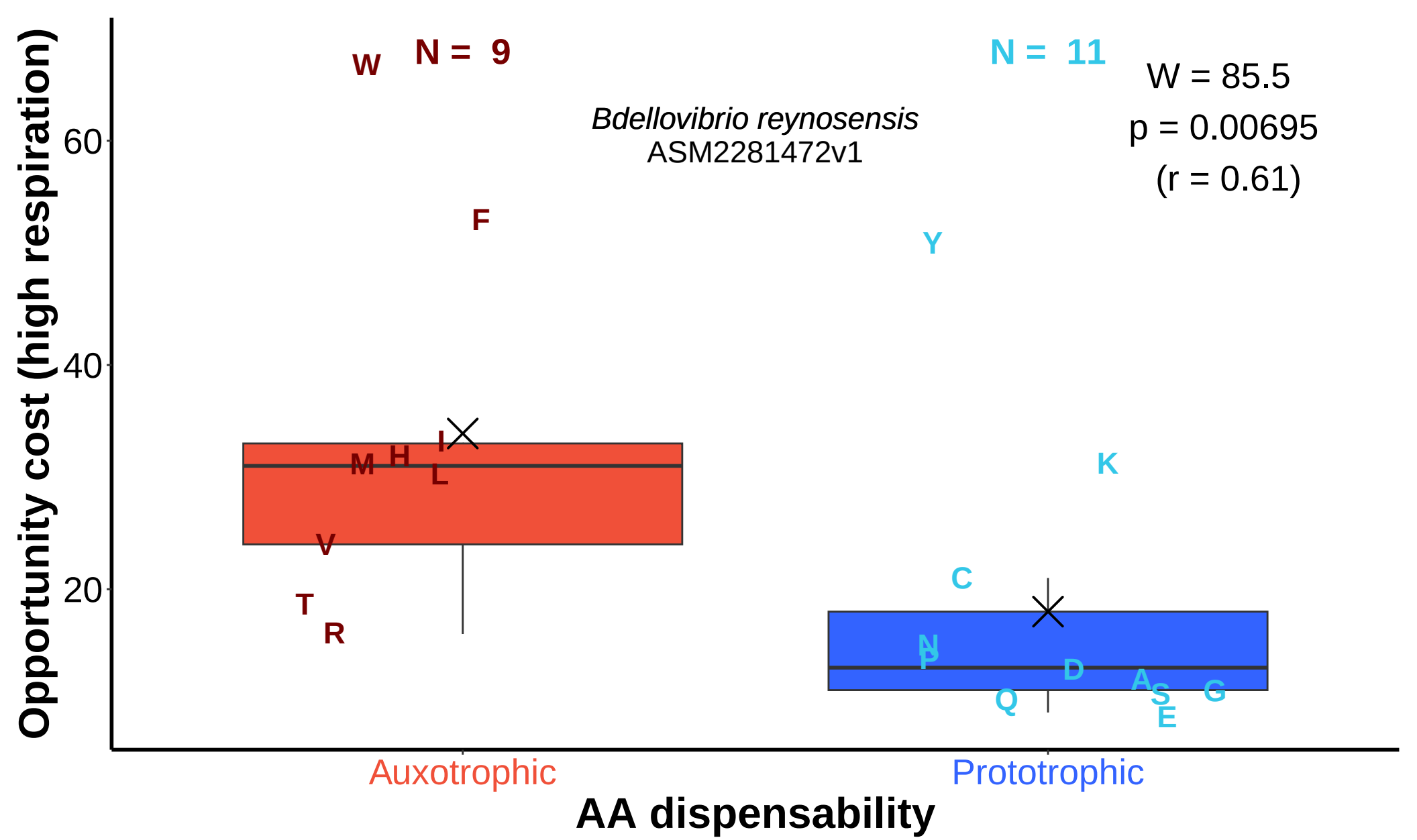
p = 0.071

Proportion of permutations (%)

1.0
0.5
0.0

11.00
27.59
33.83
44.50

Average opportunity cost (~P)


N = 9
N = 11
W = 85.5
p = 0.00695
(r = 0.61)
Bdellovibrio reynosensis
ASM2281472v1
W
F
Y
K
I
M
H
L
V
T
R
C
N
P
D
A
S
Q
G
E
60
40
20
Opportunity cost (high respiration)
Auxotrophic
Prototrophic
AA dispensability
high respiration (9 auxotrophic AAs)
p = 0.014
0.9
0.6
0.3
0.0
Proportion of permutations (%)
12.33
25.56
33.89
39.11
Average opportunity cost (~P)

N = 8

N = 12

W = 84.5
p = 0.00544
(r = 0.63)

Bdellovibrio bacteriovorus
ASM2555848v1

Opportunity cost (high respiration)

60
40
20

W
F
I
H
L
M
V
R

Y
K
C
T
N
B
A
G
S
Q
E

Auxotrophic
Prototrophic

AA dispensability

high respiration (8 auxotrophic AAs)

p = 0.0083

Proportion of permutations (%)

1.2
0.9
0.6
0.3
0.0

11.88
26.12
35.75
41.00

Average opportunity cost (~P)

N = 9

N = 11

W = 85.5

p = 0.00695

(r = 0.61)

Bdellovibrio svalbardensis
ASM2953165v1

Opportunity cost (high respiration)

60

40

20

F

Y

H I

M

L

K

V

C

T

R

N

D

P

G

S

E

Q

Auxotrophic

Prototrophic

AA dispensability

high respiration (9 auxotrophic AAs)

p = 0.014

Proportion of permutations (%)

0.9

0.6

0.3

0.0

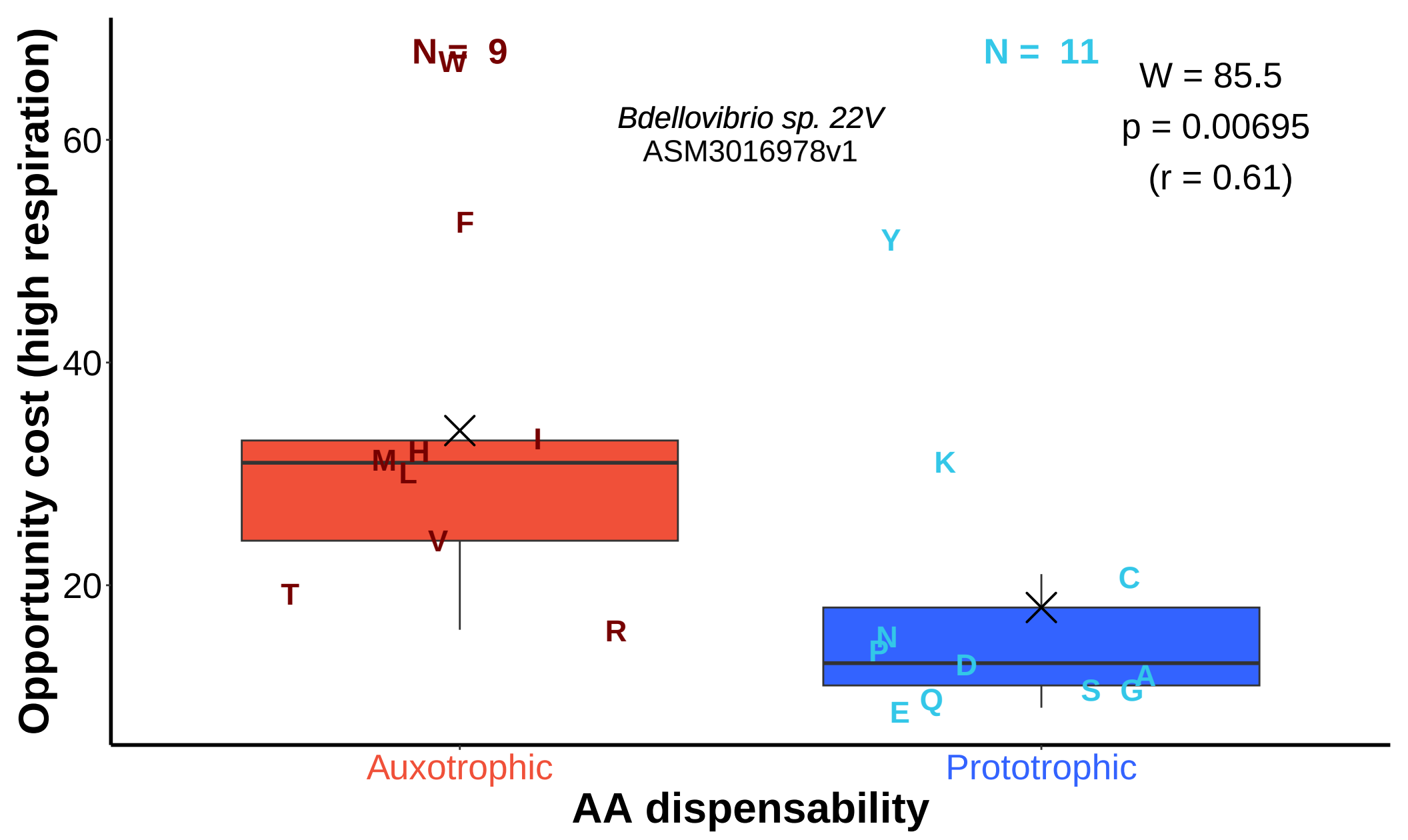
12.33

25.56

33.89

39.11

Average opportunity cost (~P)


N = 9
N = 11
W = 85.5
p = 0.00695
(r = 0.61)
Bdellovibrio sp. 22V
ASM3016978v1
Opportunity cost (high respiration)
60
40
20
F
Y
M
H
L
I
K
V
T
R
C
N
P
D
S
G
A
E
Q
Auxotrophic
Prototrophic
AA dispensability
high respiration (9 auxotrophic AAs)
p = 0.014
Proportion of permutations (%)
0.9
0.6
0.3
0.0
12.33
25.56
33.89
39.11
Average opportunity cost (~P)

N = 8

N = 12

W = 84.5
p = 0.00544
(r = 0.63)

Bdellovibrio bacteriovorus str. Tiberius
ASM31789v1

Opportunity cost (high respiration)

60
40
20

W
F
Y
K
M
H
I
L
V
R
C
T
N
P
D
G
S
A
Q
E

Auxotrophic
Prototrophic

AA dispensability

high respiration (8 auxotrophic AAs)

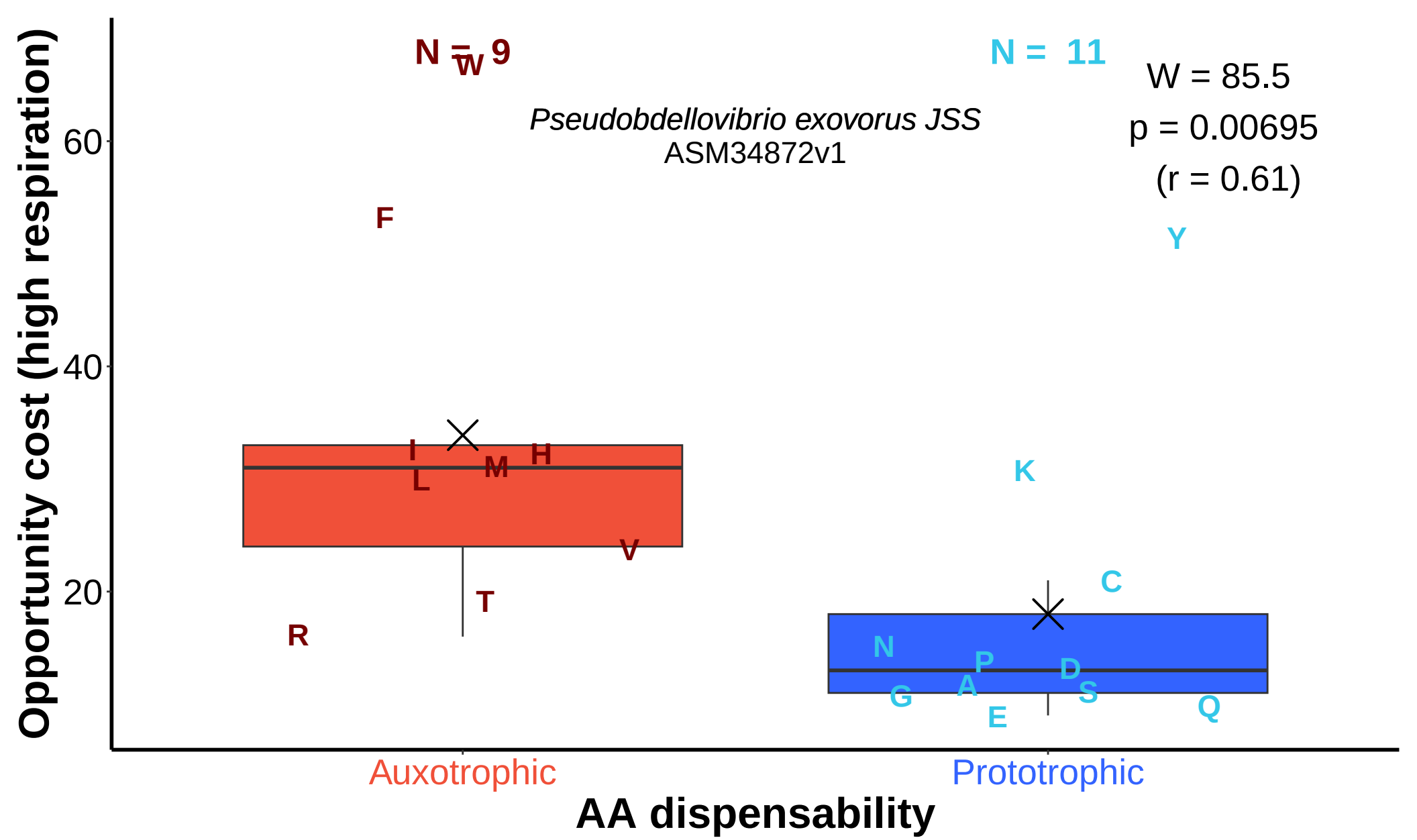
p = 0.0083

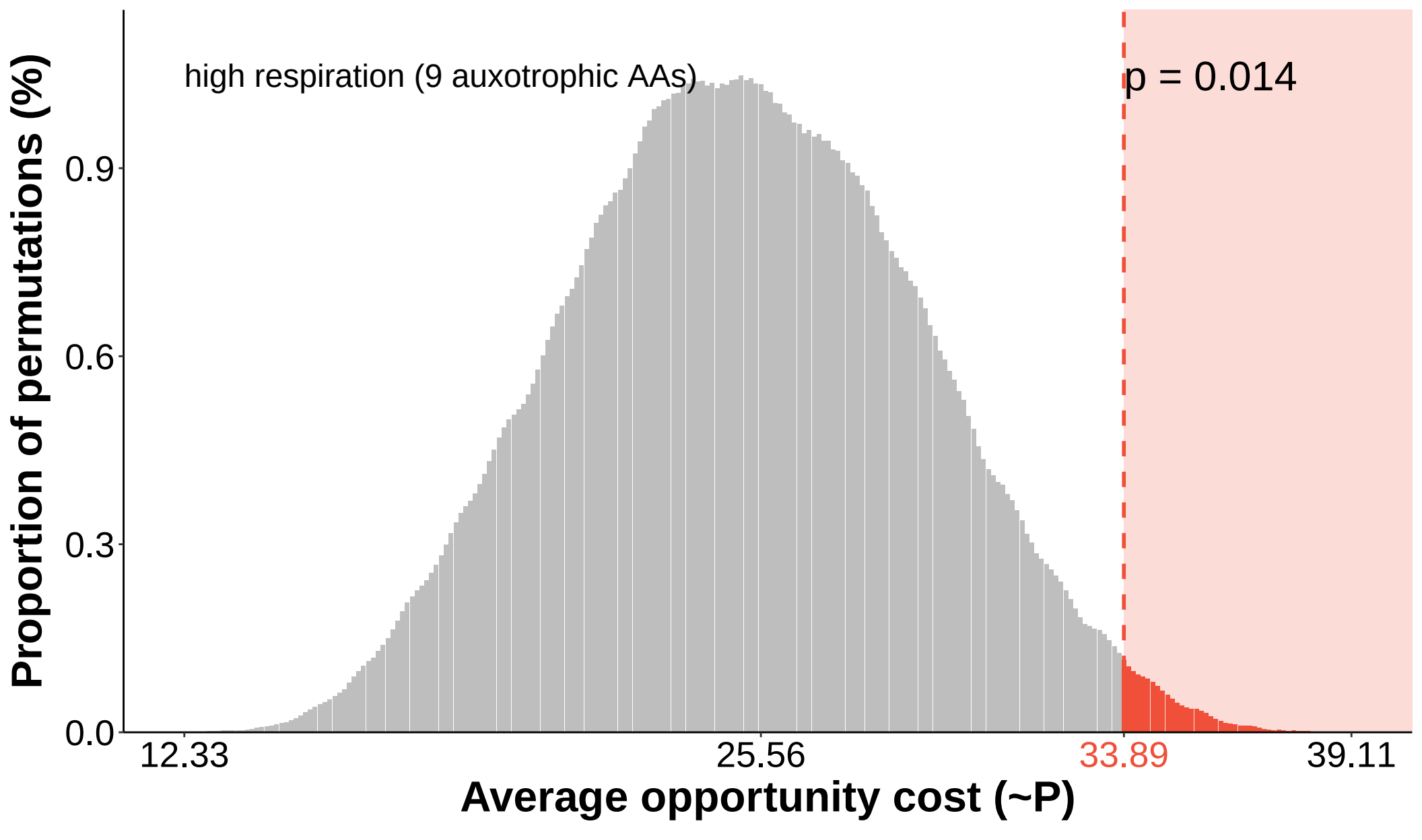
Proportion of permutations (%)

1.2
0.9
0.6
0.3
0.0

11.88
26.12
35.75
41.00

Average opportunity cost (~P)


N = 9
N = 11
W = 85.5
p = 0.00695
(r = 0.61)
Pseudobdellovibrio exovorus JSS
ASM34872v1
Opportunity cost (high respiration)
60
40
20
F
Y
I
L
M
H
V
T
R
K
C
N
P
D
G
A
S
E
Q
Auxotrophic
Prototrophic
AA dispensability


high respiration (9 auxotrophic AAs)
p = 0.014
Proportion of permutations (%)
0.9
0.6
0.3
0.0
12.33
25.56
33.89
39.11
Average opportunity cost (~P)

N = 6

W

N = 14

Micavibrio aeruginosavorus EPB
ASM34874v1

W = 67.5
p = 0.0391
(r = 0.47)

Opportunity cost (high respiration)

60
40
20

I
H
M
V
R

F
Y
L
K
C
T
N
P
D
A
S
G
Q
E

Auxotrophic
Prototrophic

AA dispensability

high respiration (6 auxotrophic AAs)

p = 0.071

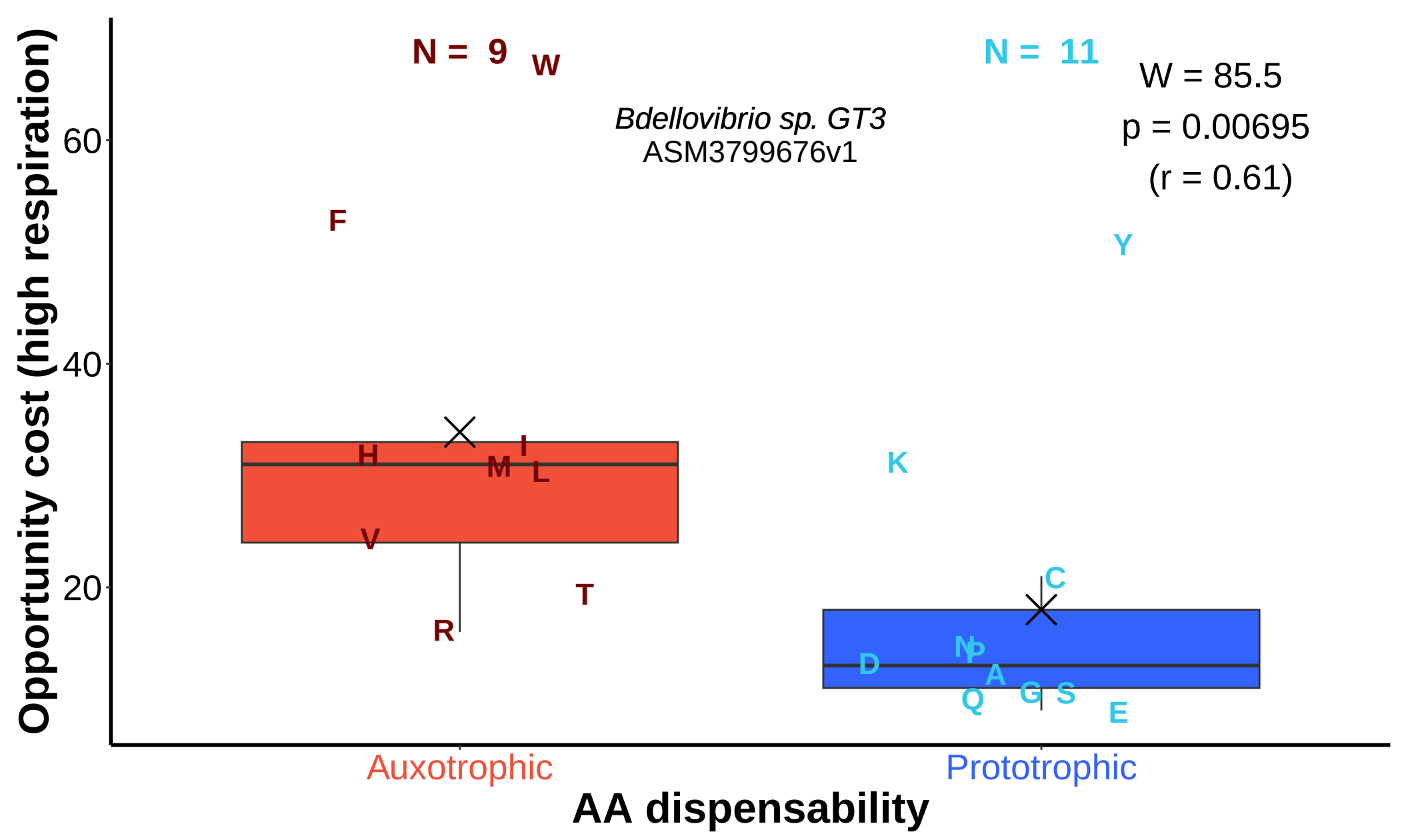
Proportion of permutations (%)

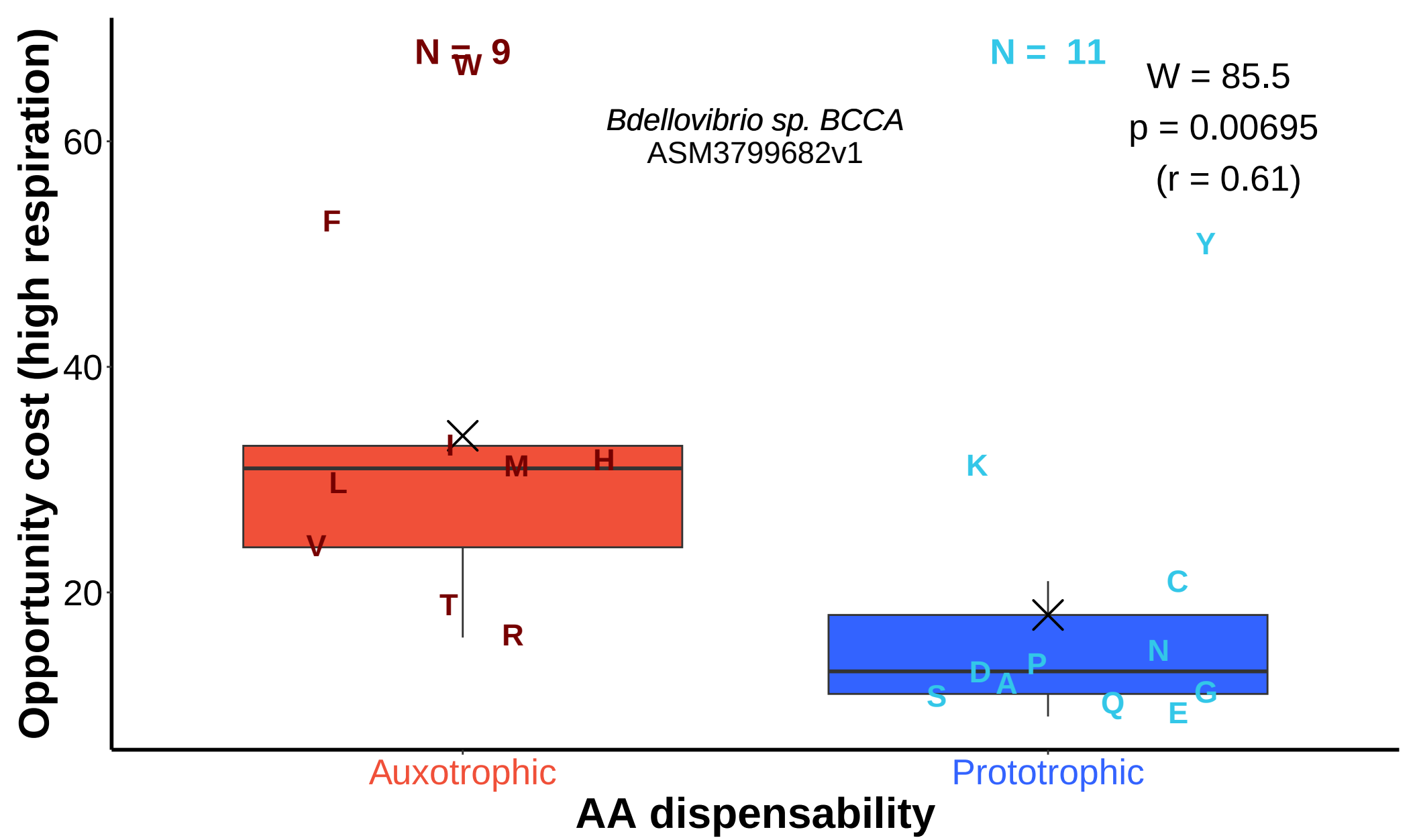
1.0
0.5
0.0

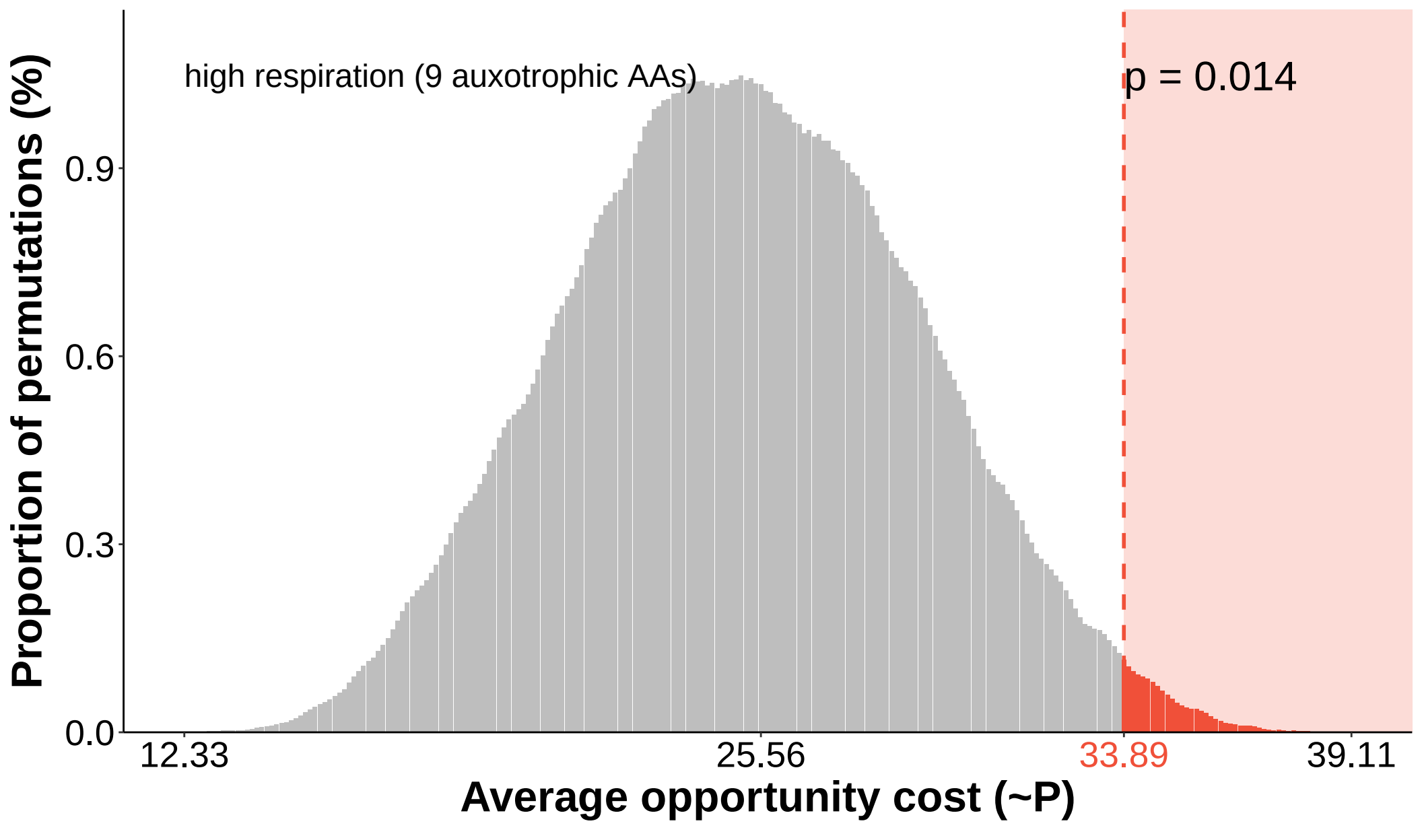
11.00
27.59
33.83
44.50

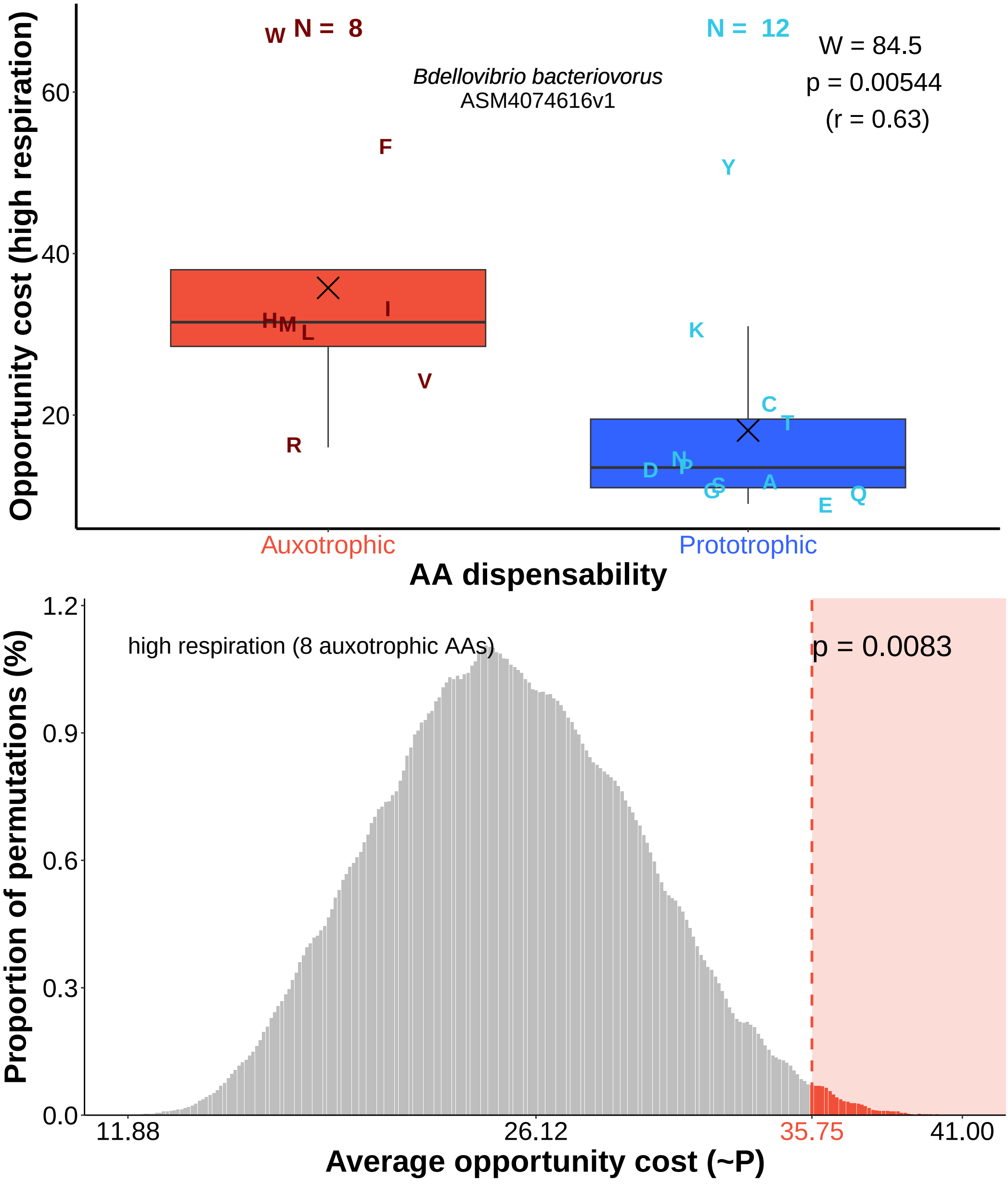
Average opportunity cost (~P)

N = 8
N = 12
W = 84.5
p = 0.00544
(r = 0.63)
Bdellovibrio bacteriovorus
ASM3707659v1
W
F
Y
K
H
I
M
L
V
R
C
T
N
D
P
G
A
S
E
Q
60
40
20
Opportunity cost (high respiration)
Auxotrophic
Prototrophic
AA dispensability
high respiration (8 auxotrophic AAs)
p = 0.0083
1.2
0.9
0.6
0.3
0.0
Proportion of permutations (%)
11.88
26.12
35.75
41.00
Average opportunity cost (~P)


N = 9
N = 11
W = 85.5
p = 0.00695
(r = 0.61)
Bdellovibrio sp. GT3
ASM3799676v1
Opportunity cost (high respiration)
60
40
20
W
F
Y
K
H
M
I
L
V
T
R
C
D
N
P
A
Q
G
S
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (9 auxotrophic AAs)
p = 0.014
Proportion of permutations (%)
0.9
0.6
0.3
0.0
12.33
25.56
33.89
39.11
Average opportunity cost (~P)


N = 9
N = 11
W = 85.5
p = 0.00695
(r = 0.61)
Bdellovibrio sp. BCCA
ASM3799682v1
Opportunity cost (high respiration)
60
40
20
F
I
M
H
L
V
T
R
Y
K
C
N
P
D
A
S
Q
E
G
Auxotrophic
Prototrophic
AA dispensability


high respiration (9 auxotrophic AAs)
p = 0.014
Proportion of permutations (%)
0.9
0.6
0.3
0.0
12.33
25.56
33.89
39.11
Average opportunity cost (~P)



Opportunity cost (high respiration)
60
40
20
W
N = 8
N = 12
W = 84.5
p = 0.00544
(r = 0.63)
Bdellovibrio bacteriovorus
ASM4074616v1
F
Y
I
H
M
L
K
V
C
T
R
N
P
D
S
G
A
E
Q
Auxotrophic
Prototrophic
AA dispensability
Proportion of permutations (%)
1.2
0.9
0.6
0.3
0.0
high respiration (8 auxotrophic AAs)
p = 0.0083
11.88
26.12
35.75
41.00
Average opportunity cost (~P)

N = 8

N = 12

W = 84.5

p = 0.00544

(r = 0.63)

Bdellovibrio bacteriovorus
ASM4074617v1

Opportunity cost (high respiration)

60

40

20

F

Y

K

C

T

I

H

M

L

V

R

N

P

D

A

G

Q

E

S

Auxotrophic

Prototrophic

AA dispensability

high respiration (8 auxotrophic AAs)

p = 0.0083

Proportion of permutations (%)

1.2

0.9

0.6

0.3

0.0

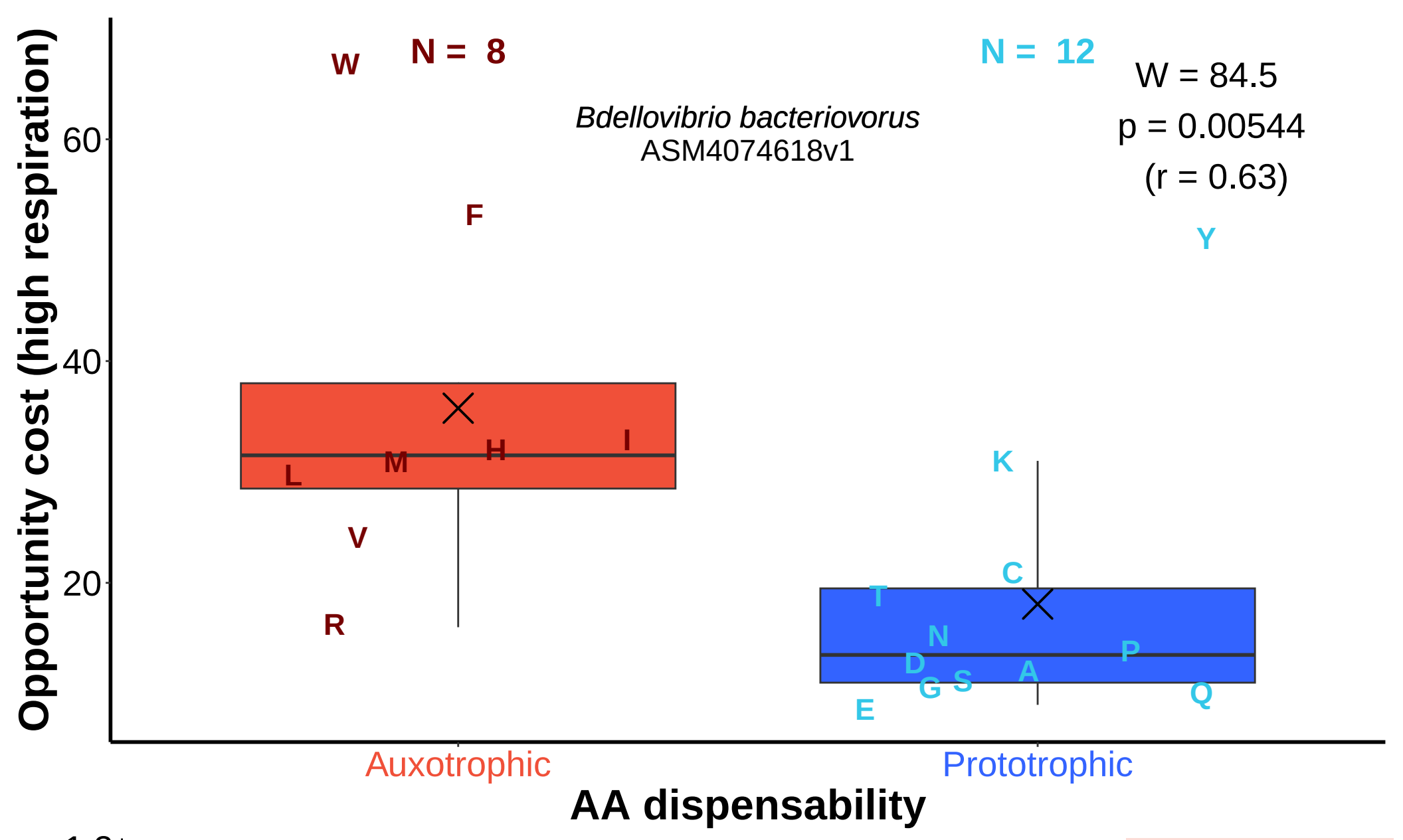
11.88

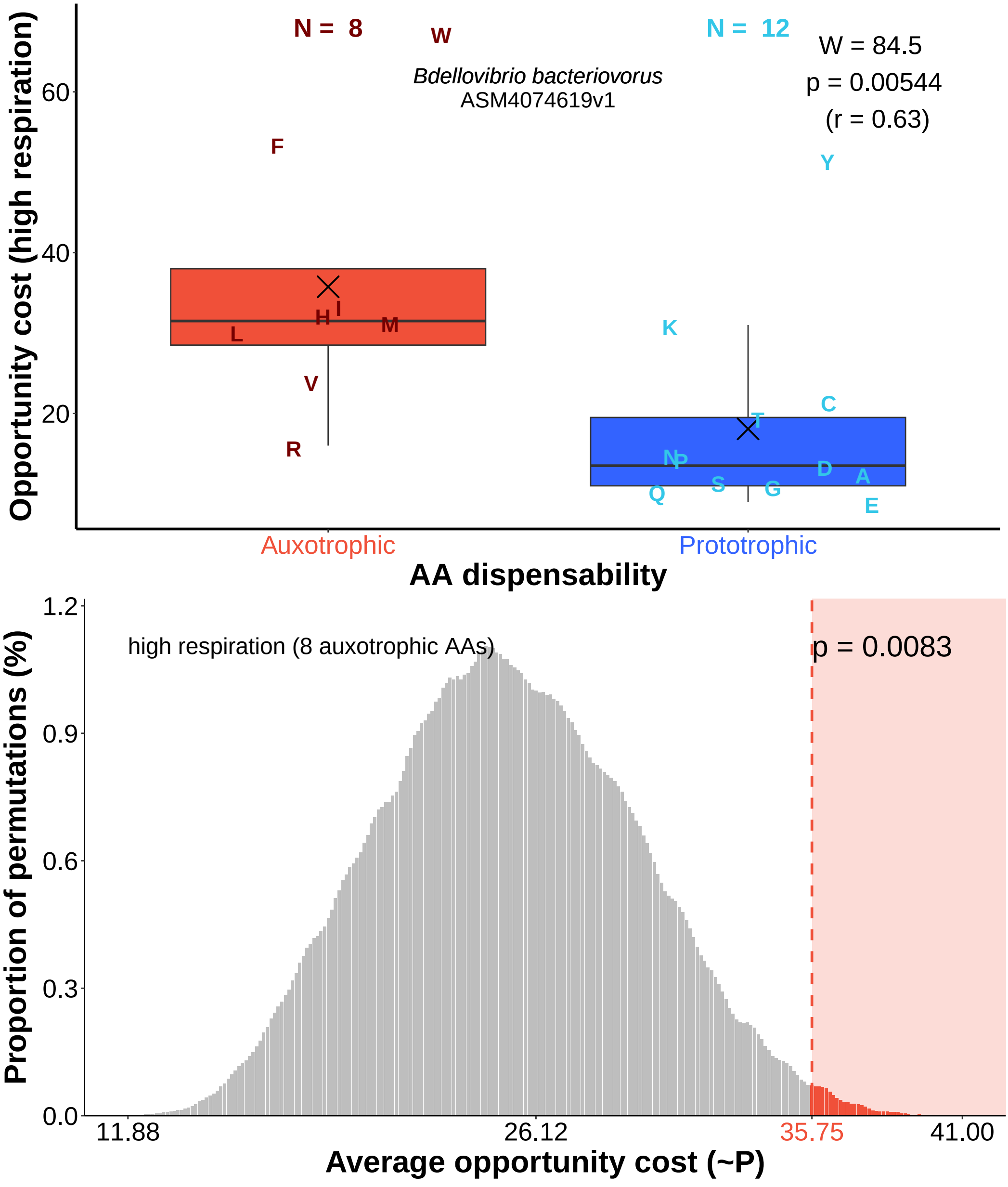
26.12

35.75

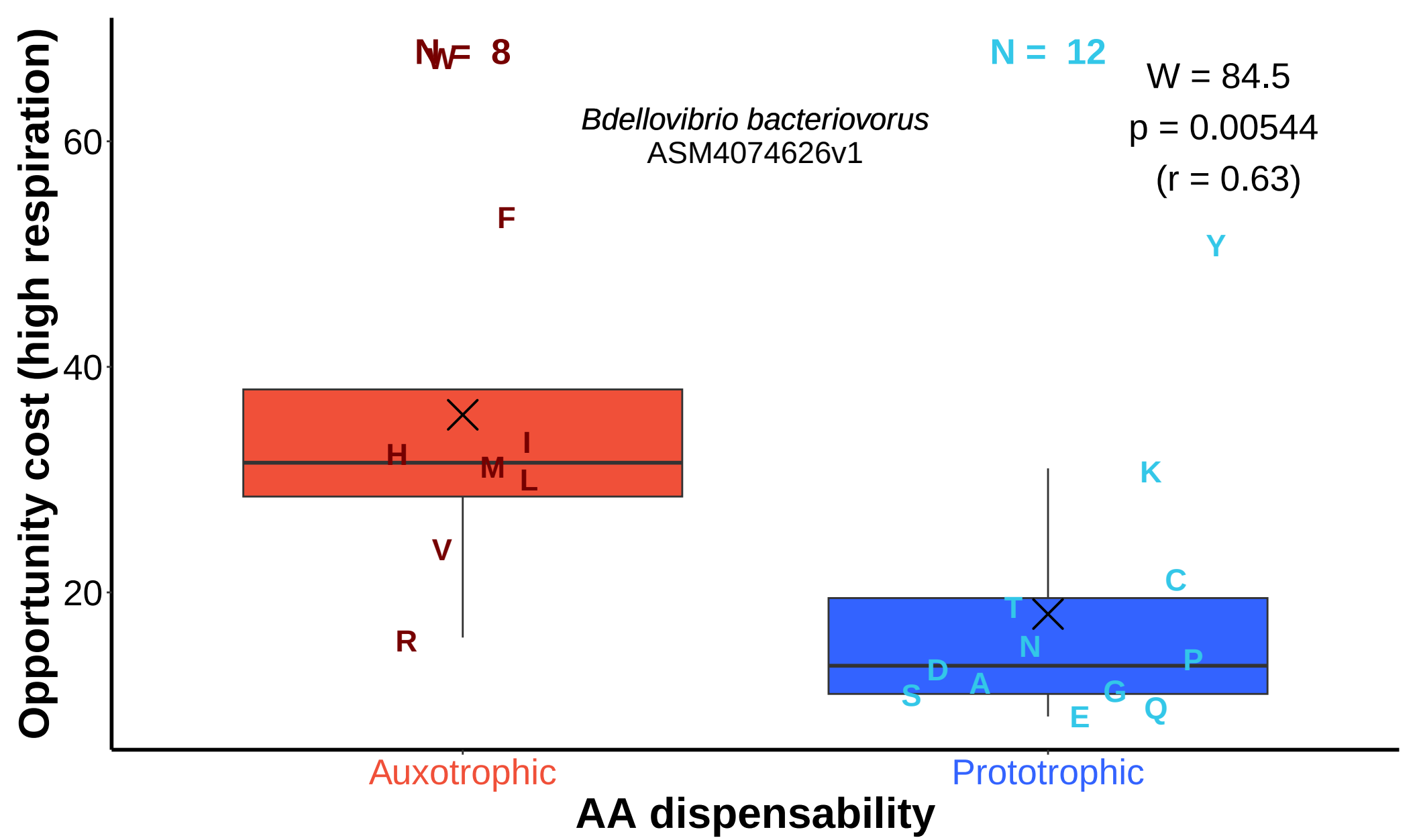
41.00

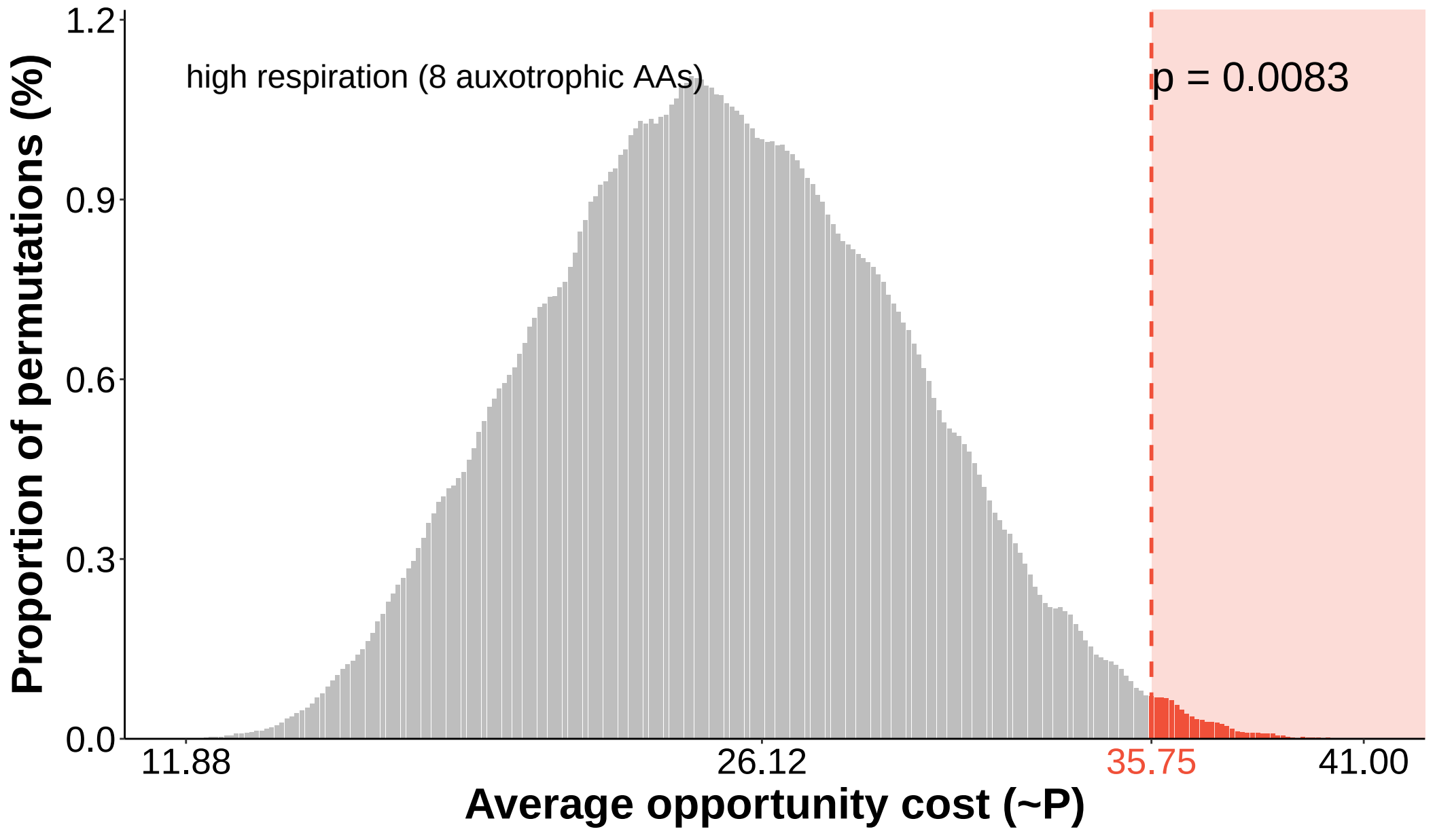
Average opportunity cost (~P)


N = 8
N = 12
W = 84.5
p = 0.00544
(r = 0.63)
Bdellovibrio bacteriovorus
ASM4074618v1
W
F
Y
K
C
T
N
P
D
G
S
A
Q
E
L
M
H
I
V
R
60
40
20
Opportunity cost (high respiration)
Auxotrophic
Prototrophic
AA dispensability
high respiration (8 auxotrophic AAs)
p = 0.0083
1.2
0.9
0.6
0.3
0.0
Proportion of permutations (%)
11.88
26.12
35.75
41.00
Average opportunity cost (~P)

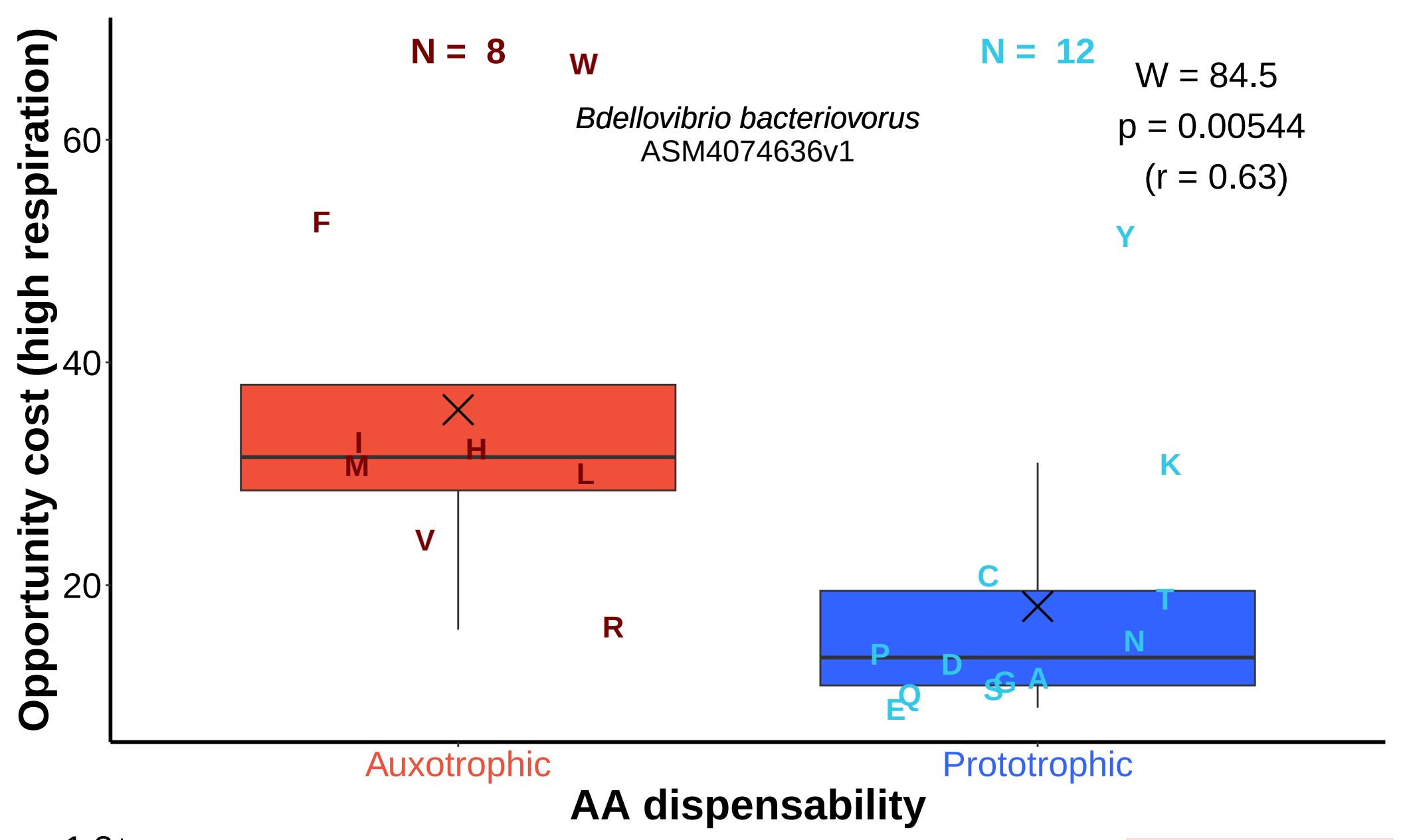


N = 8
W
N = 12
W = 84.5
p = 0.00544
(r = 0.63)
Bdellovibrio bacteriovorus
ASM4074619v1
F
Y
H
I
M
L
V
R
K
C
T
N
P
D
A
S
G
Q
E
Opportunity cost (high respiration)
60
40
20
Auxotrophic
Prototrophic
AA dispensability
high respiration (8 auxotrophic AAs)
p = 0.0083
Proportion of permutations (%)
1.2
0.9
0.6
0.3
0.0
11.88
26.12
35.75
41.00
Average opportunity cost (~P)

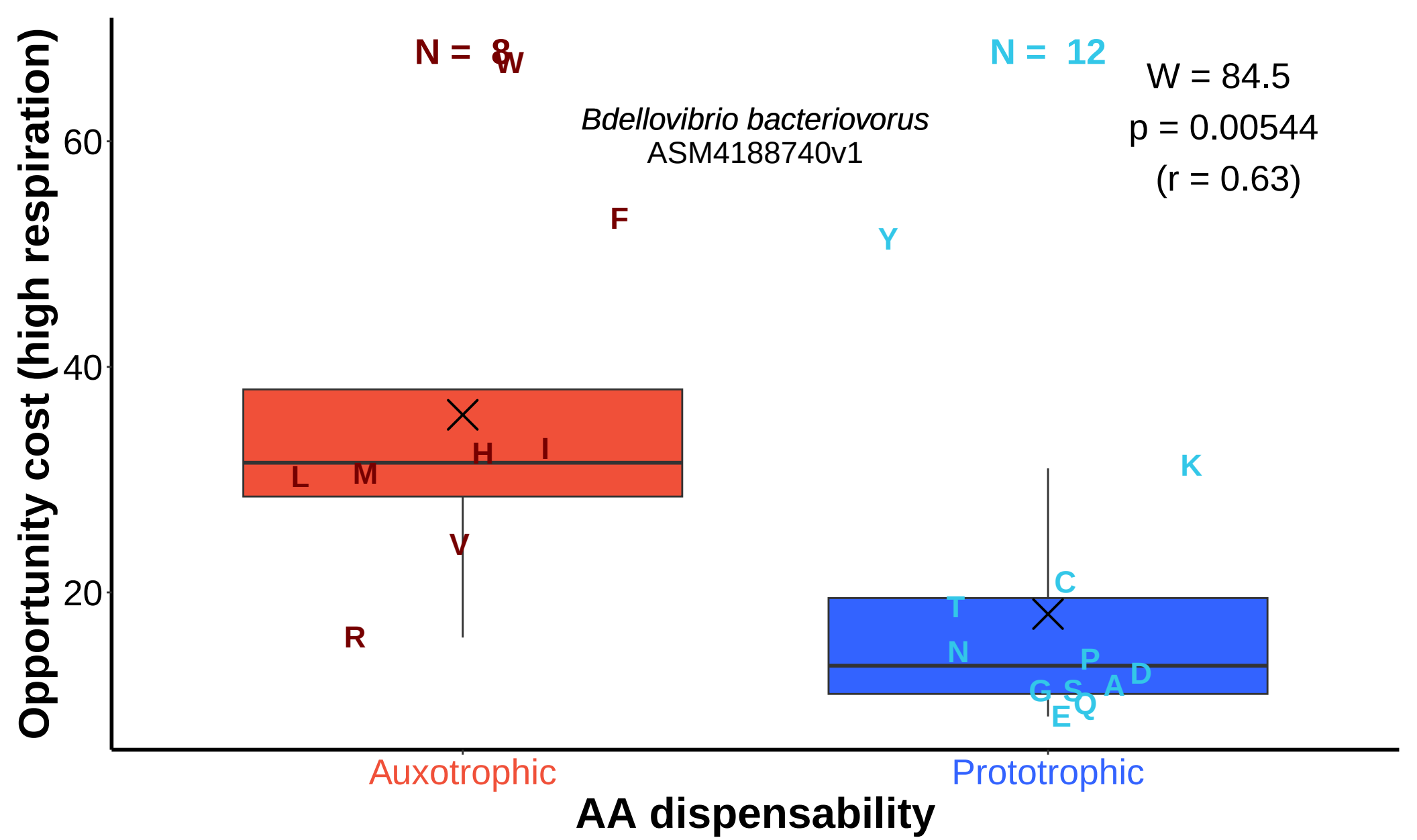

N = 8
N = 12
W = 84.5
p = 0.00544
(r = 0.63)
Bdellovibrio bacteriovorus
ASM4074626v1
Opportunity cost (high respiration)
60
40
20
F
Y
K
C
H
M
I
L
V
R
T
N
D
A
S
P
G
Q
E
Auxotrophic
Prototrophic
AA dispensability

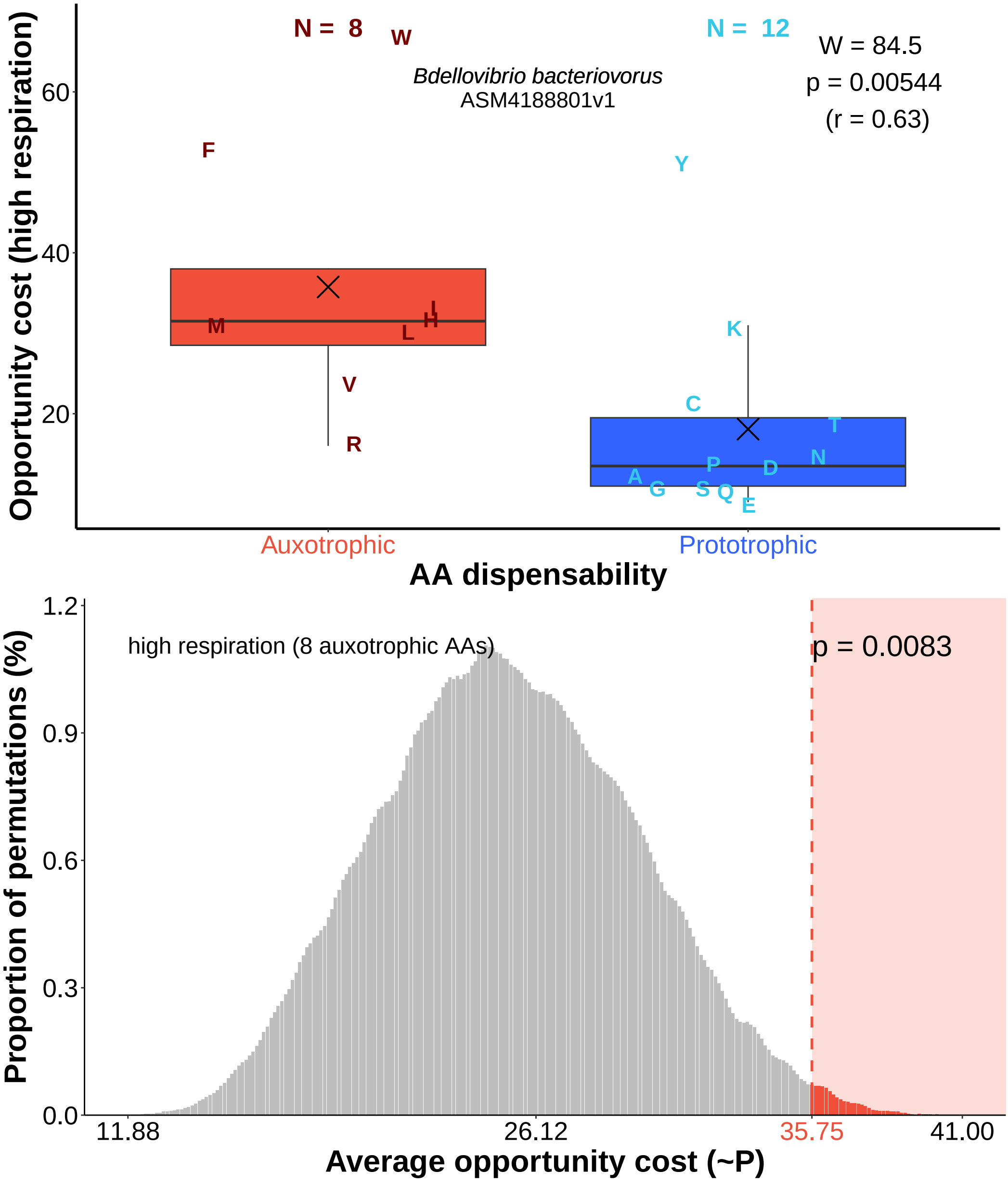

high respiration (8 auxotrophic AAs)
p = 0.0083
Proportion of permutations (%)
1.2
0.9
0.6
0.3
0.0
11.88
26.12
35.75
41.00
Average opportunity cost (~P)

N = 8
N = 12
W = 84.5
p = 0.00544
(r = 0.63)
Bdellovibrio bacteriovorus
ASM4074633v1
W
F
Y
K
C
I
H
L
M
V
R
T
N
P
D
G
S
A
E
Q
60
40
20
Opportunity cost (high respiration)
Auxotrophic
Prototrophic
AA dispensability
high respiration (8 auxotrophic AAs)
p = 0.0083
1.2
0.9
0.6
0.3
0.0
Proportion of permutations (%)
11.88
26.12
35.75
41.00
Average opportunity cost (~P)

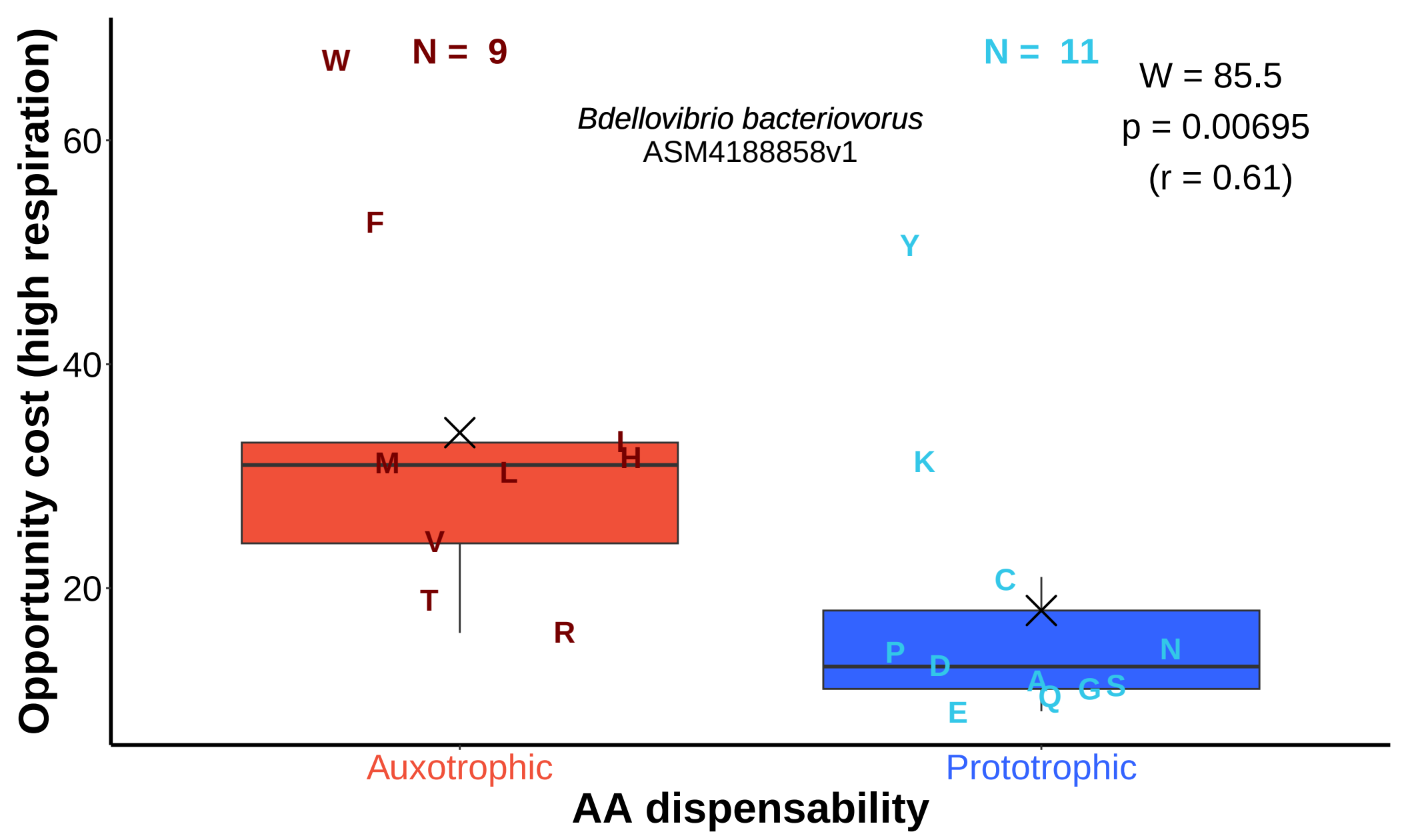

N = 8
N = 12
W = 84.5
p = 0.00544
(r = 0.63)
Bdellovibrio bacteriovorus
ASM4074636v1
Opportunity cost (high respiration)
60
40
20
F
W
Y
K
I
M
H
L
V
R
C
T
N
P
D
S
G
A
Q
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (8 auxotrophic AAs)
p = 0.0083
Proportion of permutations (%)
1.2
0.9
0.6
0.3
0.0
11.88
26.12
35.75
41.00
Average opportunity cost (~P)

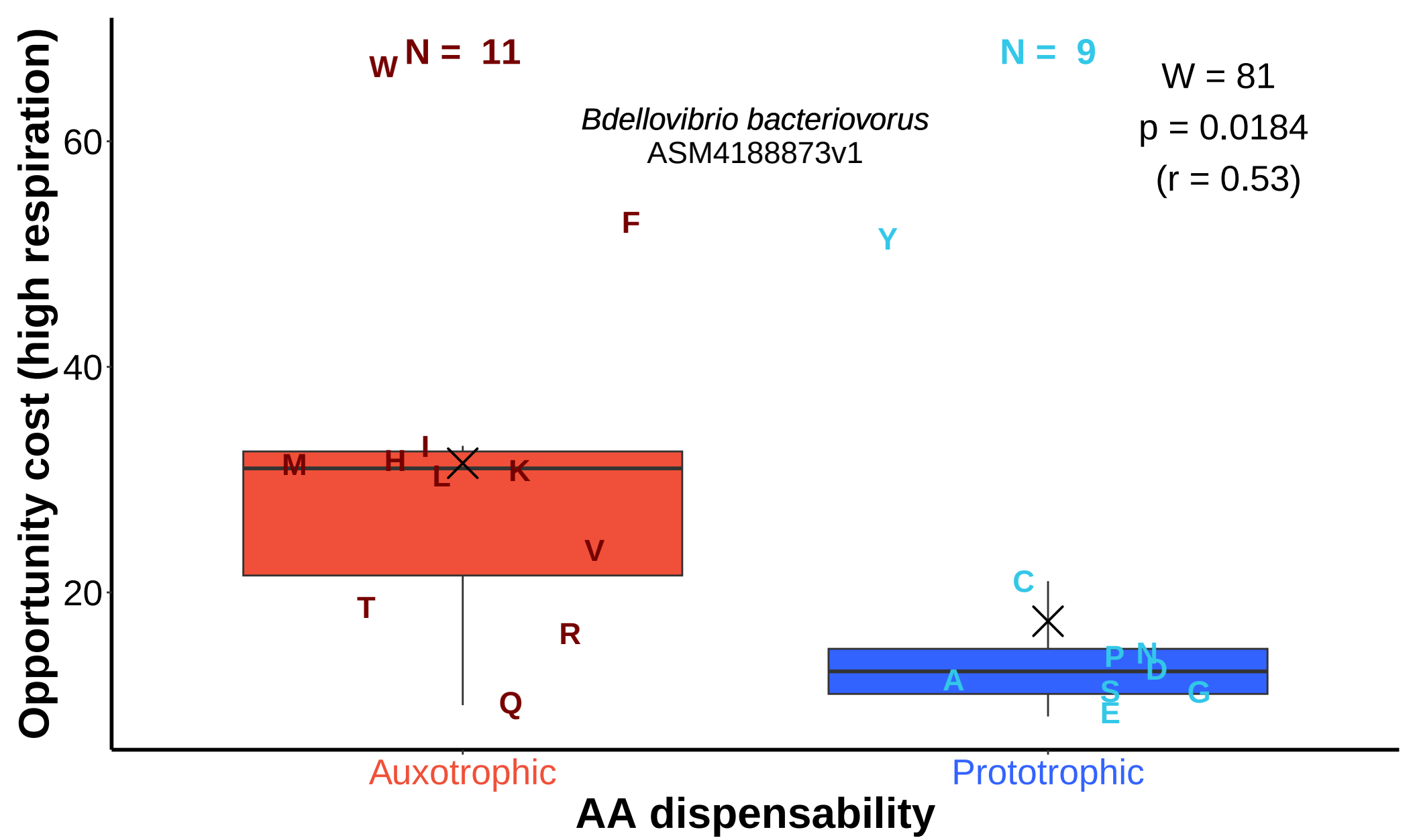
N = 9
N = 11
W = 85.5
p = 0.00695
(r = 0.61)
Bdellovibrio bacteriovorus
ASM4188681v1
Opportunity cost (high respiration)
60
40
20
F
H
M
I
L
V
T
R
Y
K
C
D
P
A
E
N
S
G
Q
Auxotrophic
Prototrophic
AA dispensability
high respiration (9 auxotrophic AAs)
p = 0.014
Proportion of permutations (%)
0.9
0.6
0.3
0.0
12.33
25.56
33.89
39.11
Average opportunity cost (~P)

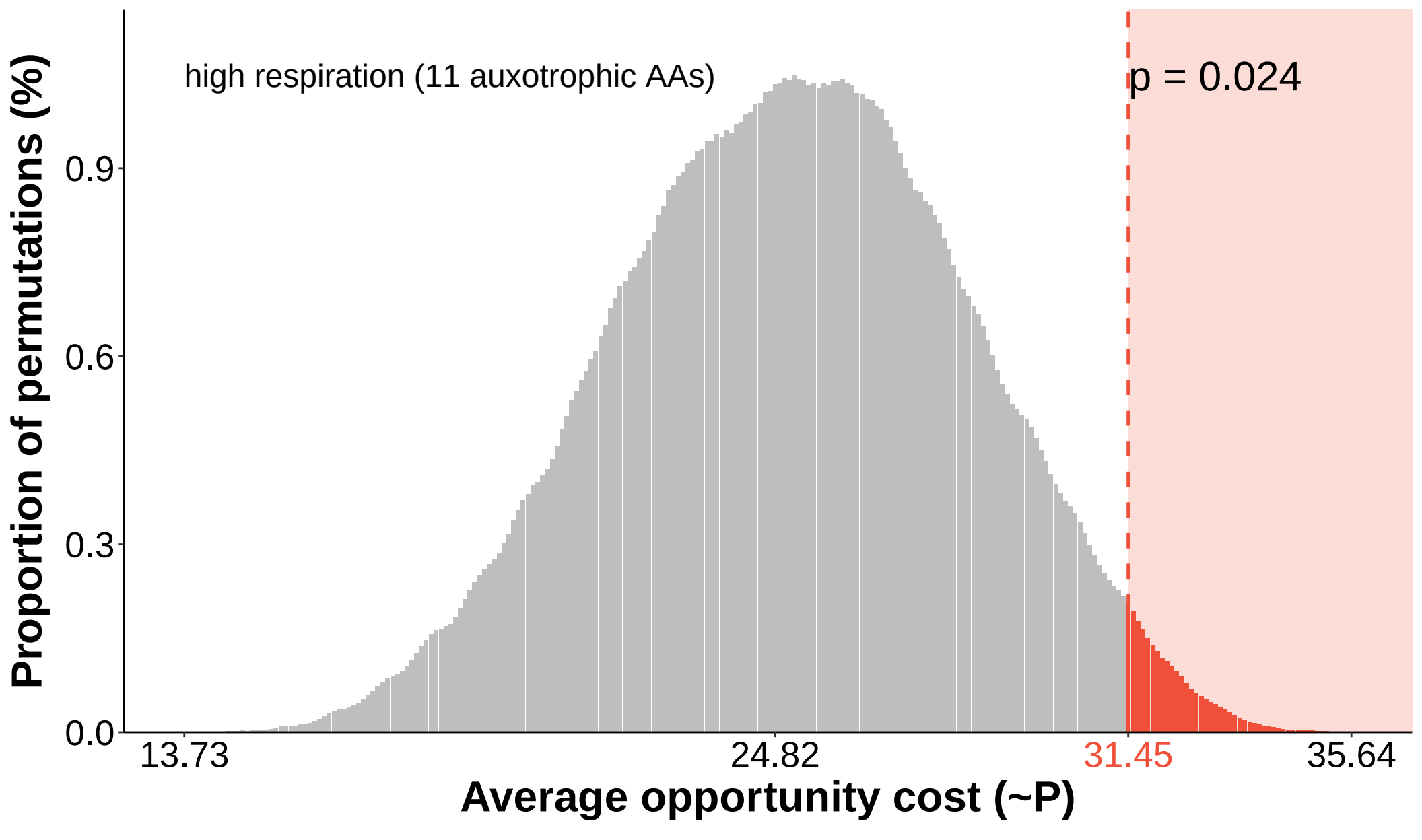

N = 8
W
N = 12
W = 84.5
p = 0.00544
(r = 0.63)
Bdellovibrio bacteriovorus
ASM4188740v1
F
Y
K
C
T
N
P
D
G
S
A
Q
E
H
I
L
M
V
R
60
40
20
Opportunity cost (high respiration)
Auxotrophic
Prototrophic
AA dispensability
high respiration (8 auxotrophic AAs)
p = 0.0083
1.2
0.9
0.6
0.3
0.0
Proportion of permutations (%)
11.88
26.12
35.75
41.00
Average opportunity cost (~P)

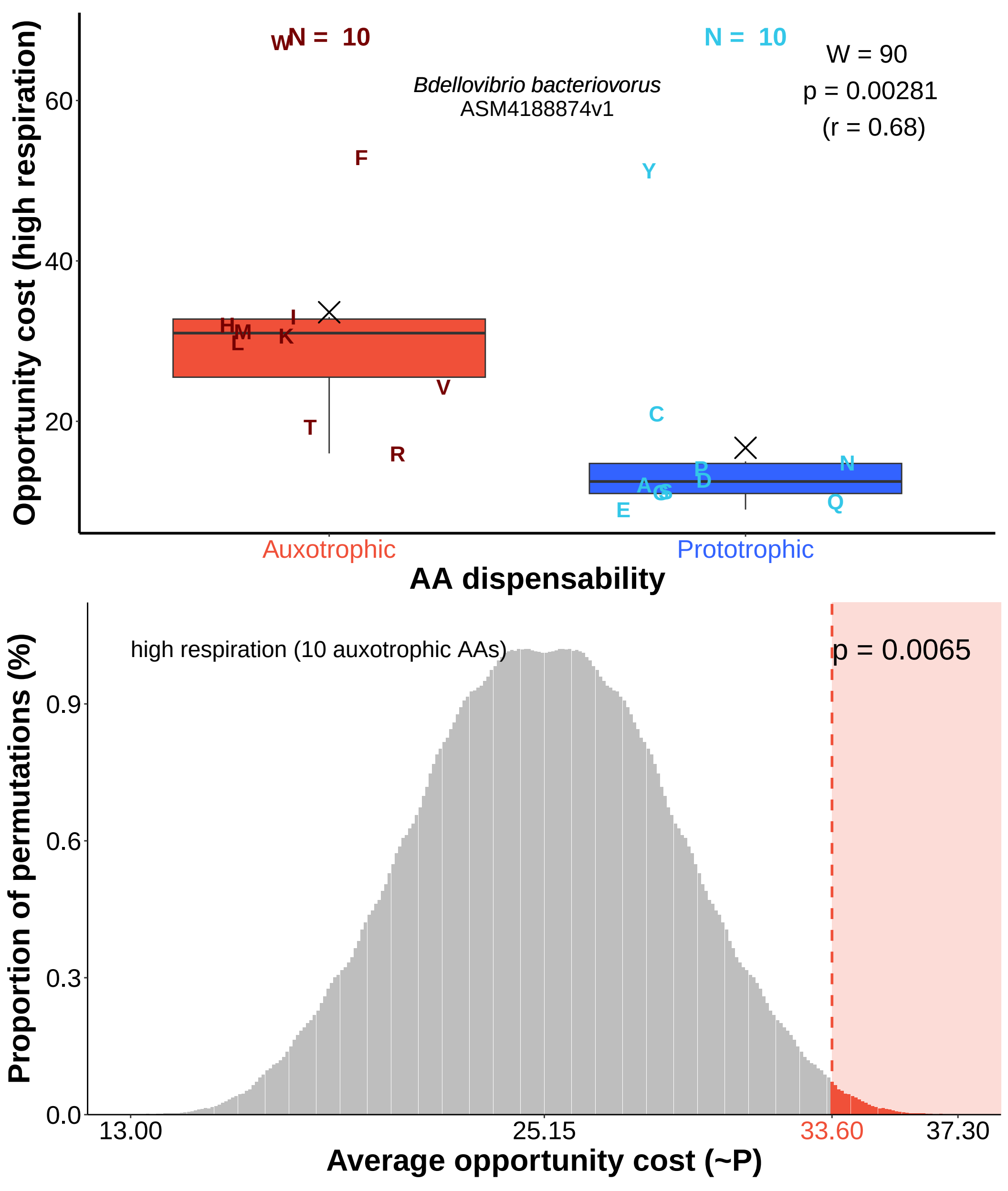


N = 8
W
N = 12
W = 84.5
p = 0.00544
(r = 0.63)
Bdellovibrio bacteriovorus
ASM4188801v1
Opportunity cost (high respiration)
60
40
20
F
Y
M
I
H
L
V
R
K
C
T
N
P
D
A
G
S
Q
E
Auxotrophic
Prototrophic
AA dispensability
Proportion of permutations (%)
1.2
0.9
0.6
0.3
0.0
high respiration (8 auxotrophic AAs)
p = 0.0083
11.88
26.12
35.75
41.00
Average opportunity cost (~P)


N = 9
N = 11
W = 85.5
p = 0.00695
(r = 0.61)
Bdellovibrio bacteriovorus
ASM4188858v1
W
F
Y
K
M
L
I
H
V
T
R
C
P
D
N
A
Q
G
S
E
60
40
20
Opportunity cost (high respiration)
Auxotrophic
Prototrophic
AA dispensability
high respiration (9 auxotrophic AAs)
p = 0.014
0.9
0.6
0.3
0.0
Proportion of permutations (%)
12.33
25.56
33.89
39.11
Average opportunity cost (~P)


W N = 11
N = 9
W = 81
p = 0.0184
(r = 0.53)
Bdellovibrio bacteriovorus
ASM4188873v1
Opportunity cost (high respiration)
60
40
20
M
H
I
L
K
V
T
R
Q
F
Y
C
P
N
D
A
S
G
E
Auxotrophic
Prototrophic
AA dispensability


high respiration (11 auxotrophic AAs)
p = 0.024
Proportion of permutations (%)
0.9
0.6
0.3
0.0
13.73
24.82
31.45
35.64
Average opportunity cost (~P)



Opportunity cost (high respiration)
60
40
20
W
N = 10
N = 10
W = 90
p = 0.00281
(r = 0.68)
Bdellovibrio bacteriovorus
ASM4188874v1
F
Y
H
M
L
I
K
V
T
R
C
B
D
A
G
S
E
N
Q
Auxotrophic
Prototrophic
AA dispensability
Proportion of permutations (%)
0.9
0.6
0.3
0.0
high respiration (10 auxotrophic AAs)
p = 0.0065
13.00
25.15
33.60
37.30
Average opportunity cost (~P)

N = 10

N = 10

W = 82.5
p = 0.0155
(r = 0.55)

Bdellovibrio bacteriovorus
ASM4188875v1

F

Y

Opportunity cost (high respiration)

60

40

20

H M I L V T R P

K C N S A G D E Q

Auxotrophic

Prototrophic

AA dispensability

high respiration (10 auxotrophic AAs)

p = 0.031

Proportion of permutations (%)

0.9

0.6

0.3

0.0

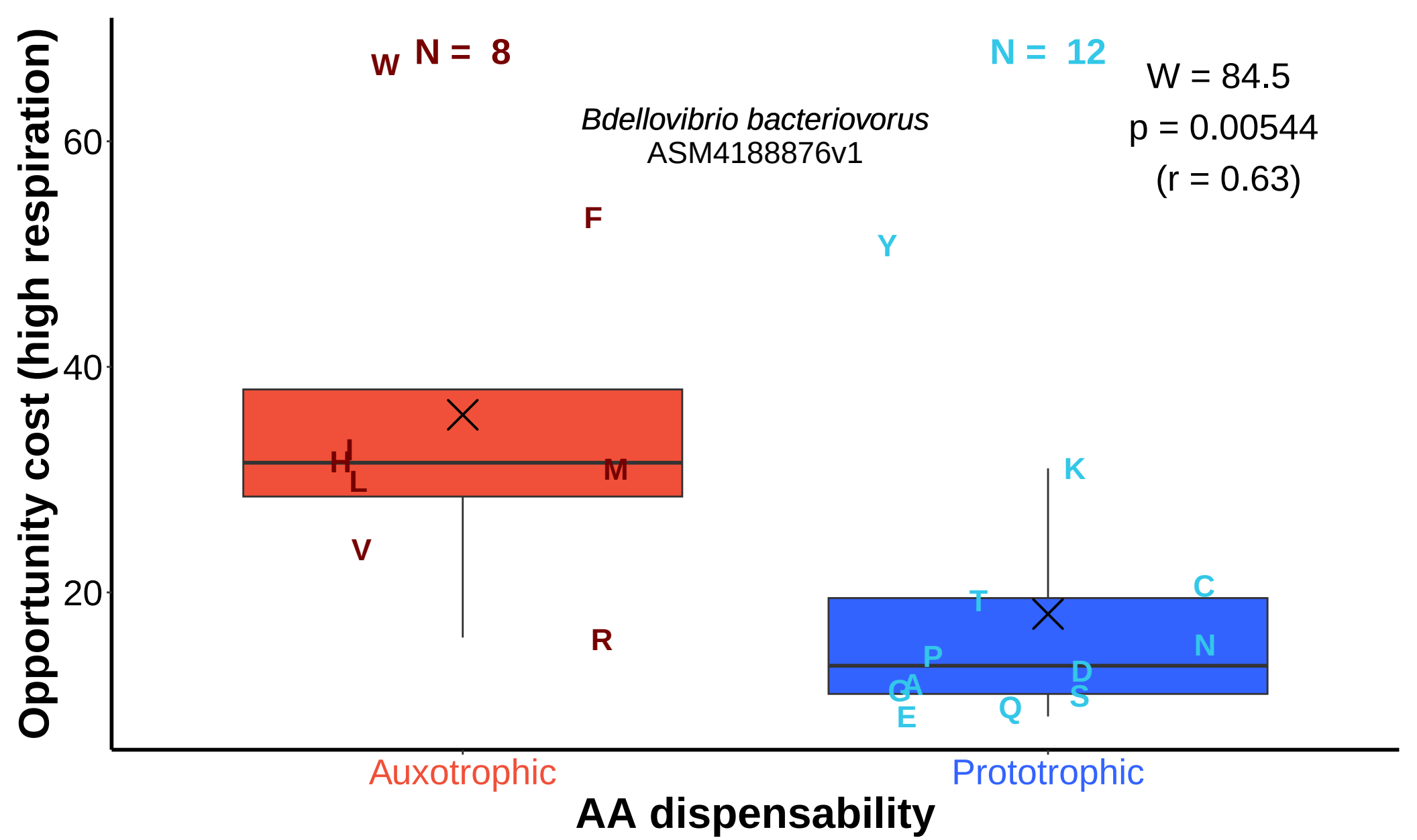
13.00

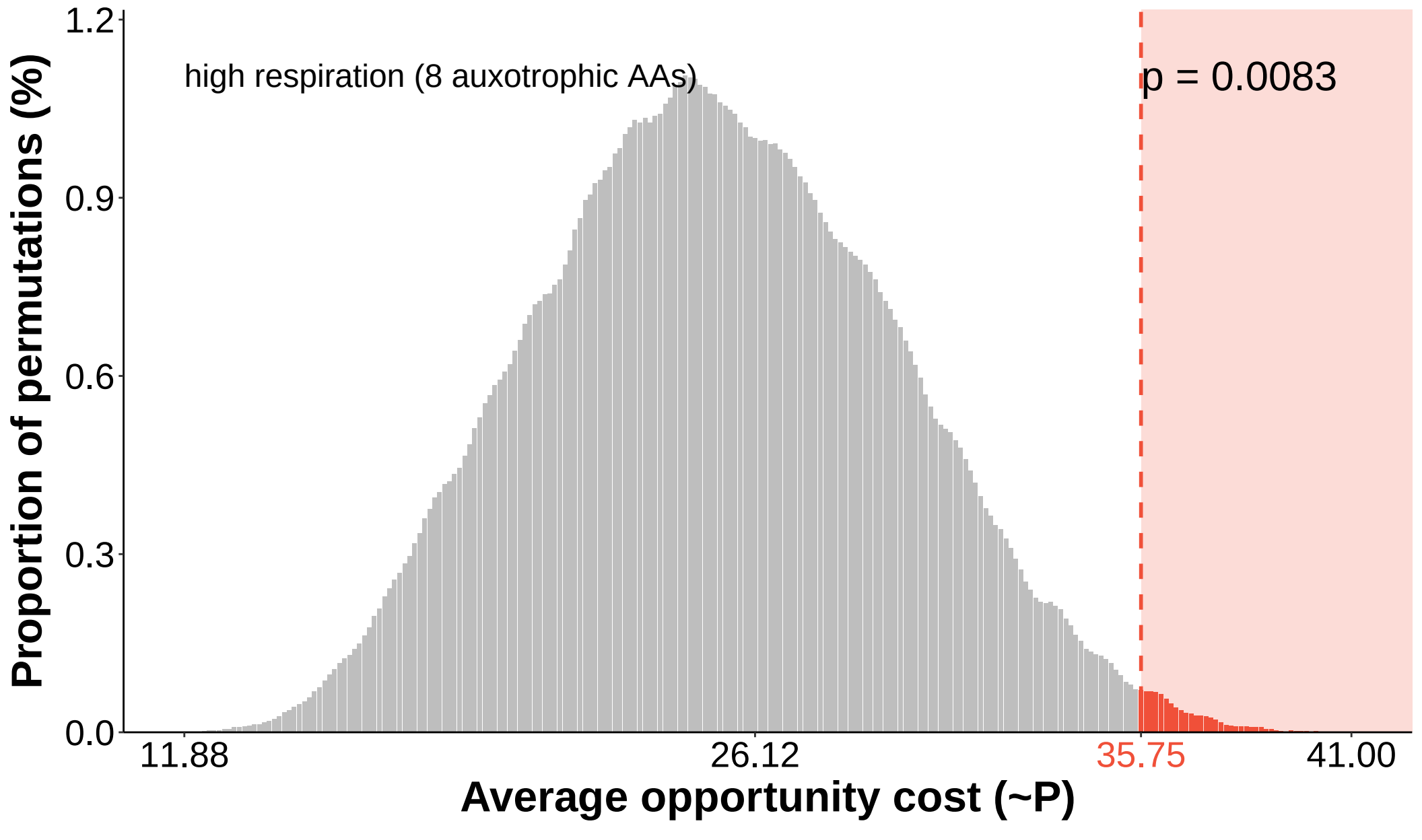
25.15

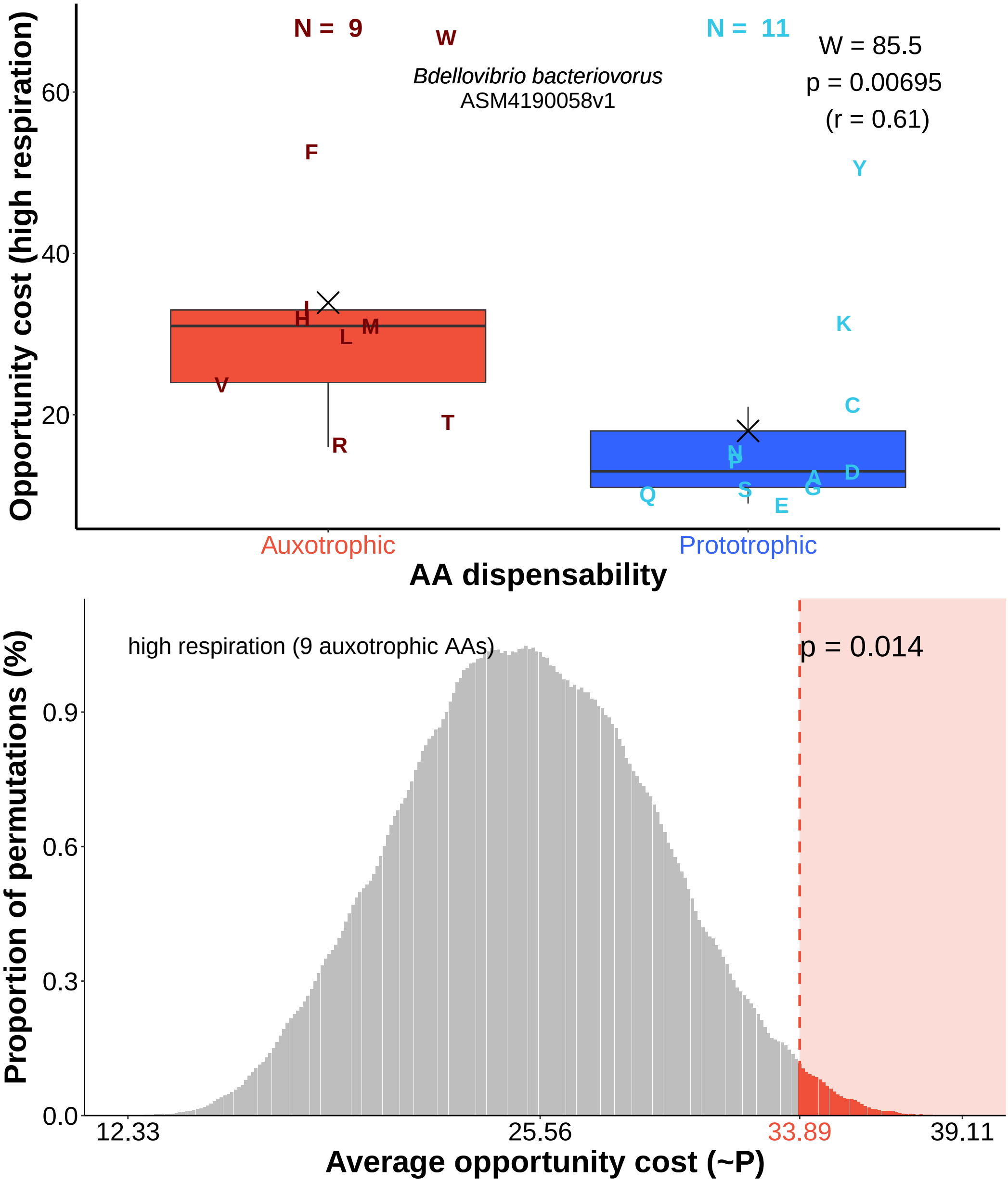
31.90

37.30

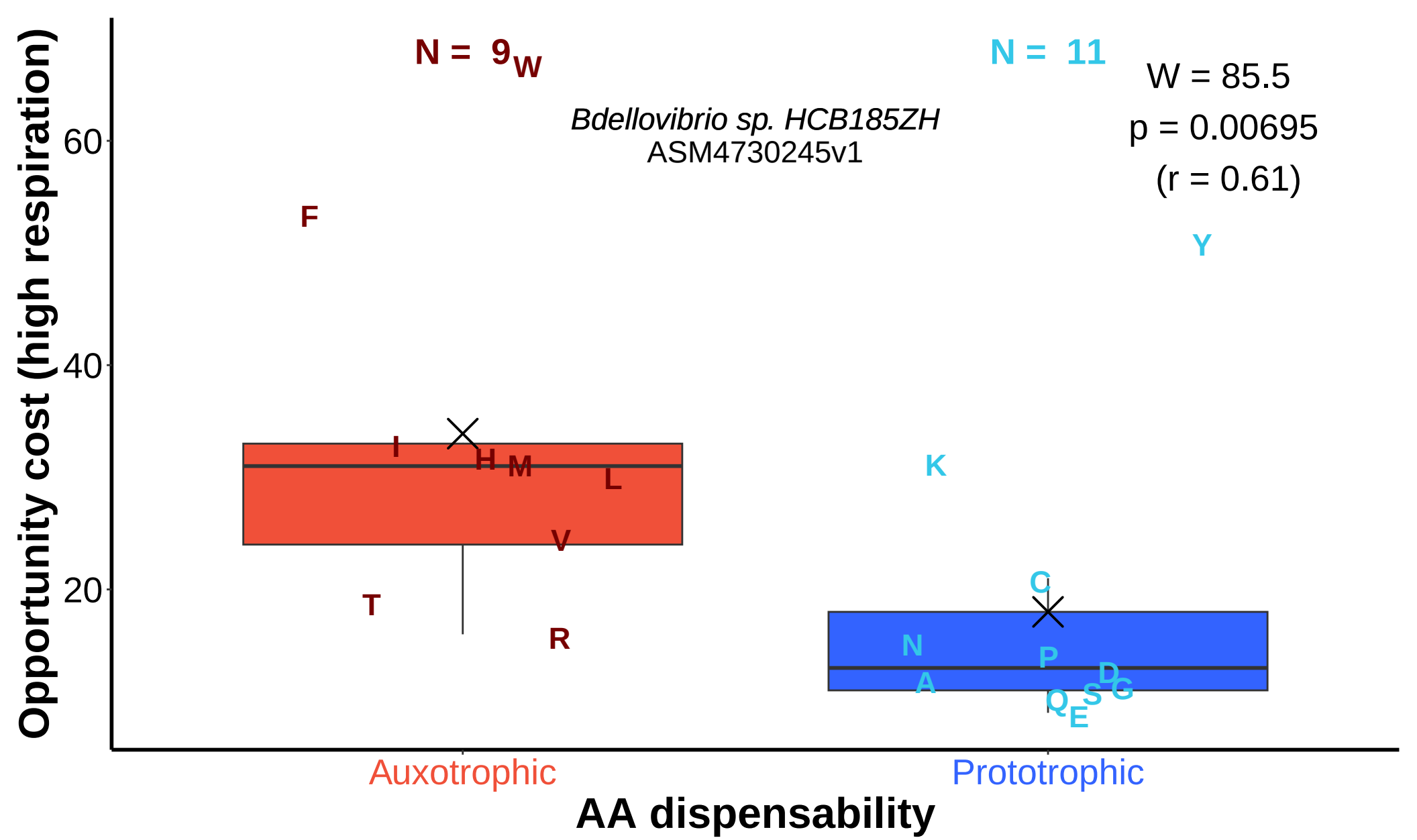
Average opportunity cost (~P)

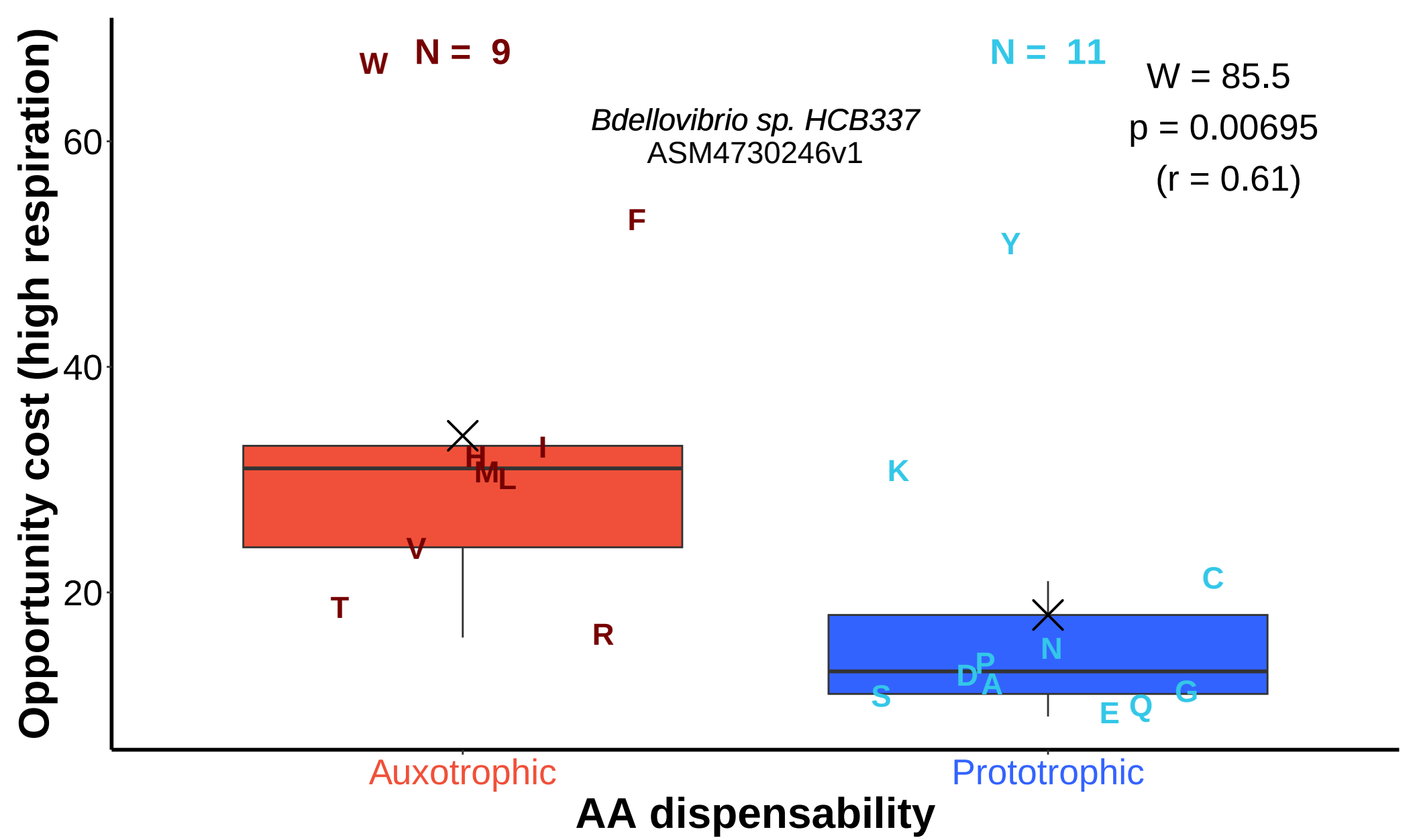

N = 8
N = 12
W = 84.5
p = 0.00544
(r = 0.63)
Bdellovibrio bacteriovorus
ASM4188876v1
Opportunity cost (high respiration)
60
40
20
W
F
Y
H
L
M
V
R
K
T
C
N
P
D
G
A
S
E
Q
Auxotrophic
Prototrophic
AA dispensability

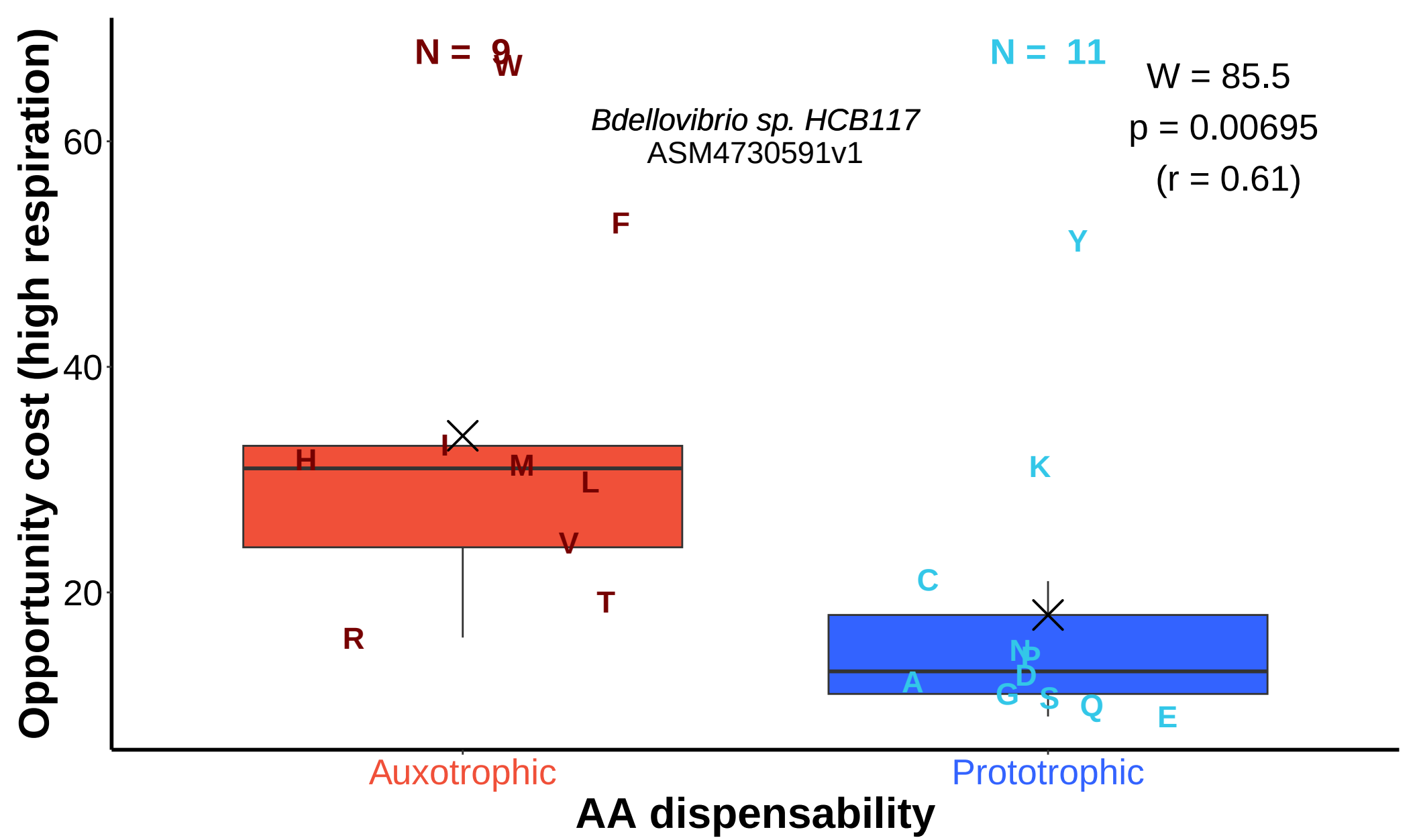

high respiration (8 auxotrophic AAs)
p = 0.0083
Proportion of permutations (%)
1.2
0.9
0.6
0.3
0.0
11.88
26.12
35.75
41.00
Average opportunity cost (~P)

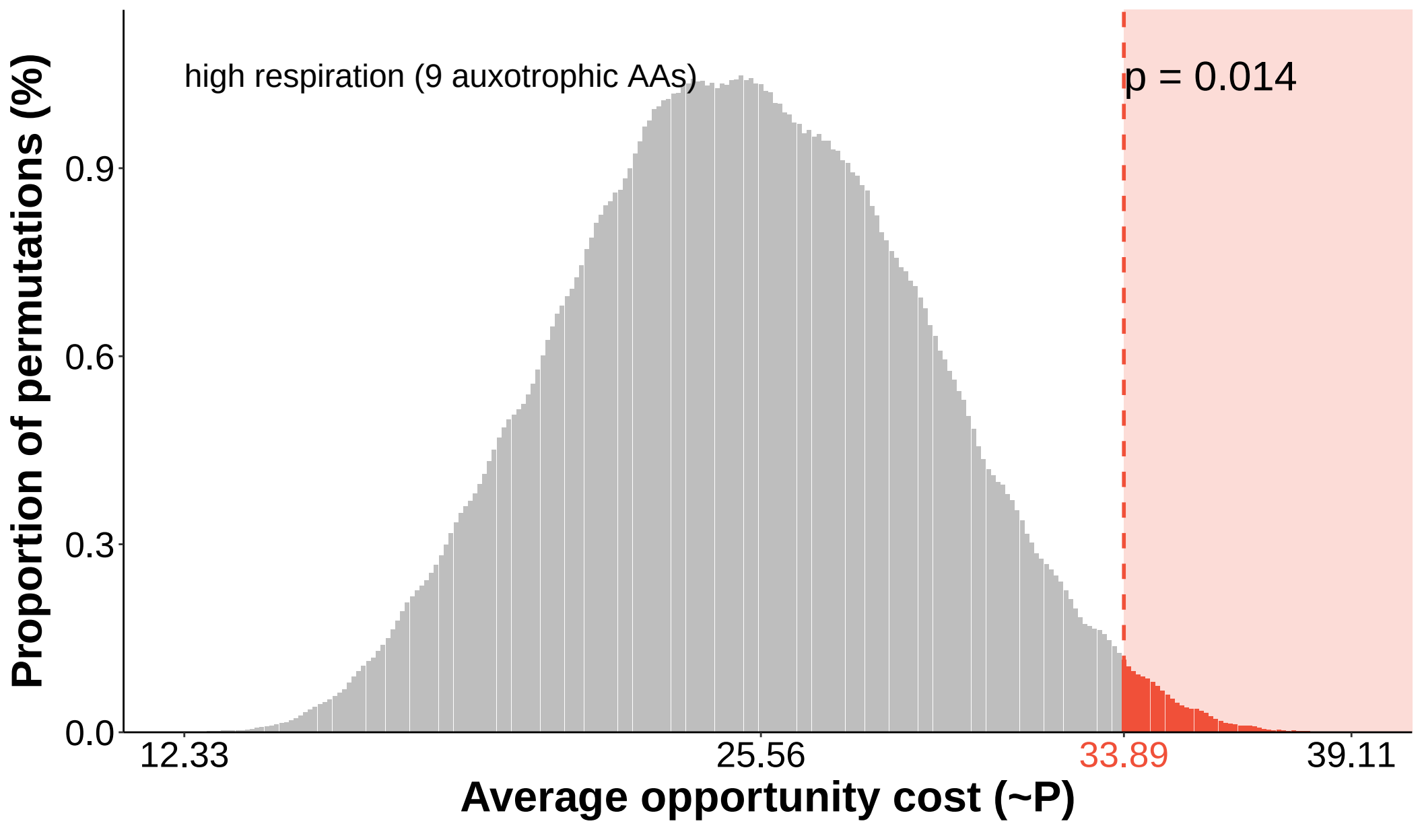


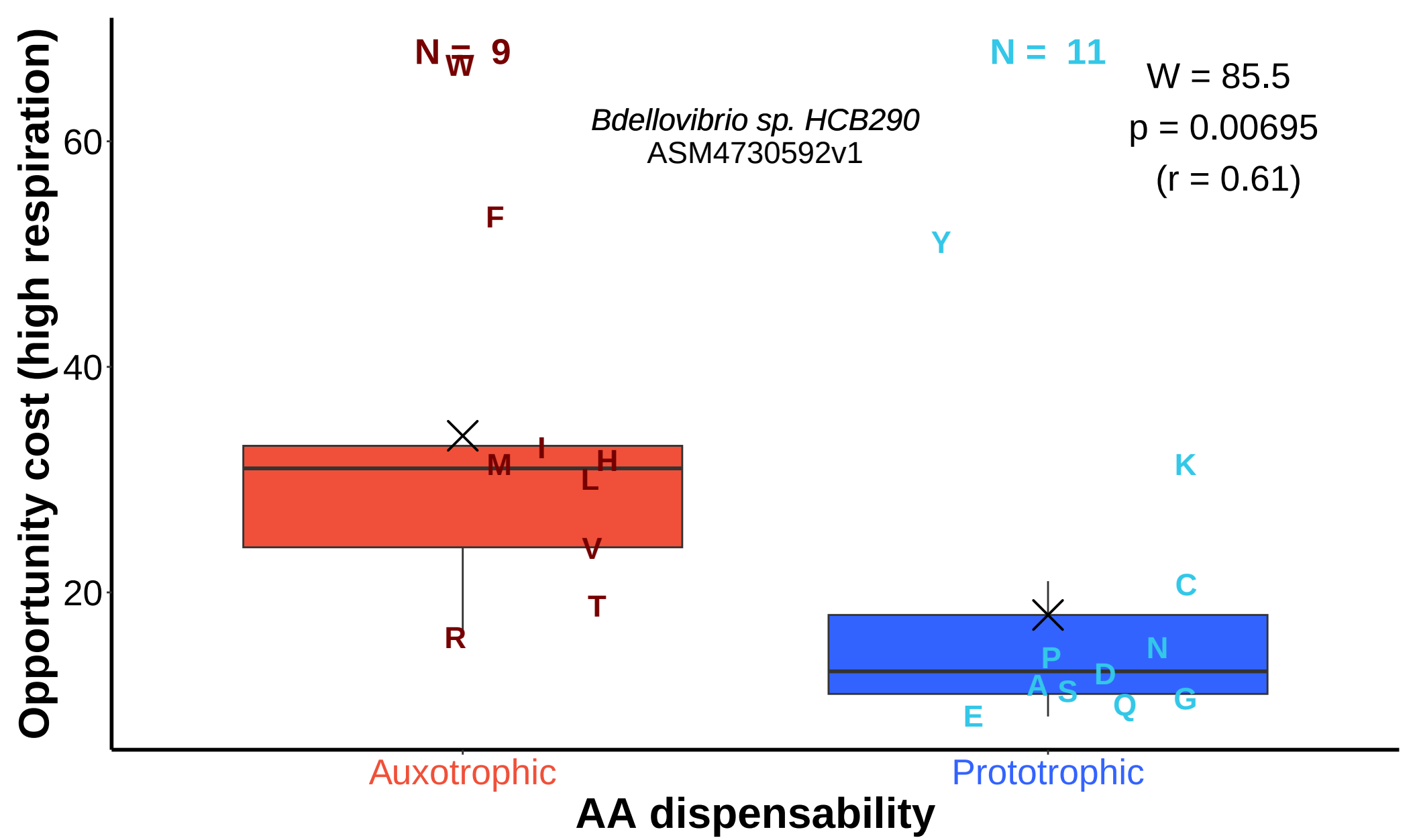
N = 9
W
N = 11
W = 85.5
p = 0.00695
(r = 0.61)
Bdellovibrio bacteriovorus
ASM4190058v1
Opportunity cost (high respiration)
60
40
20
F
Y
I
H
M
L
K
V
C
T
R
N
P
D
A
G
S
Q
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (9 auxotrophic AAs)
p = 0.014
Proportion of permutations (%)
0.9
0.6
0.3
0.0
12.33
25.56
33.89
39.11
Average opportunity cost (~P)

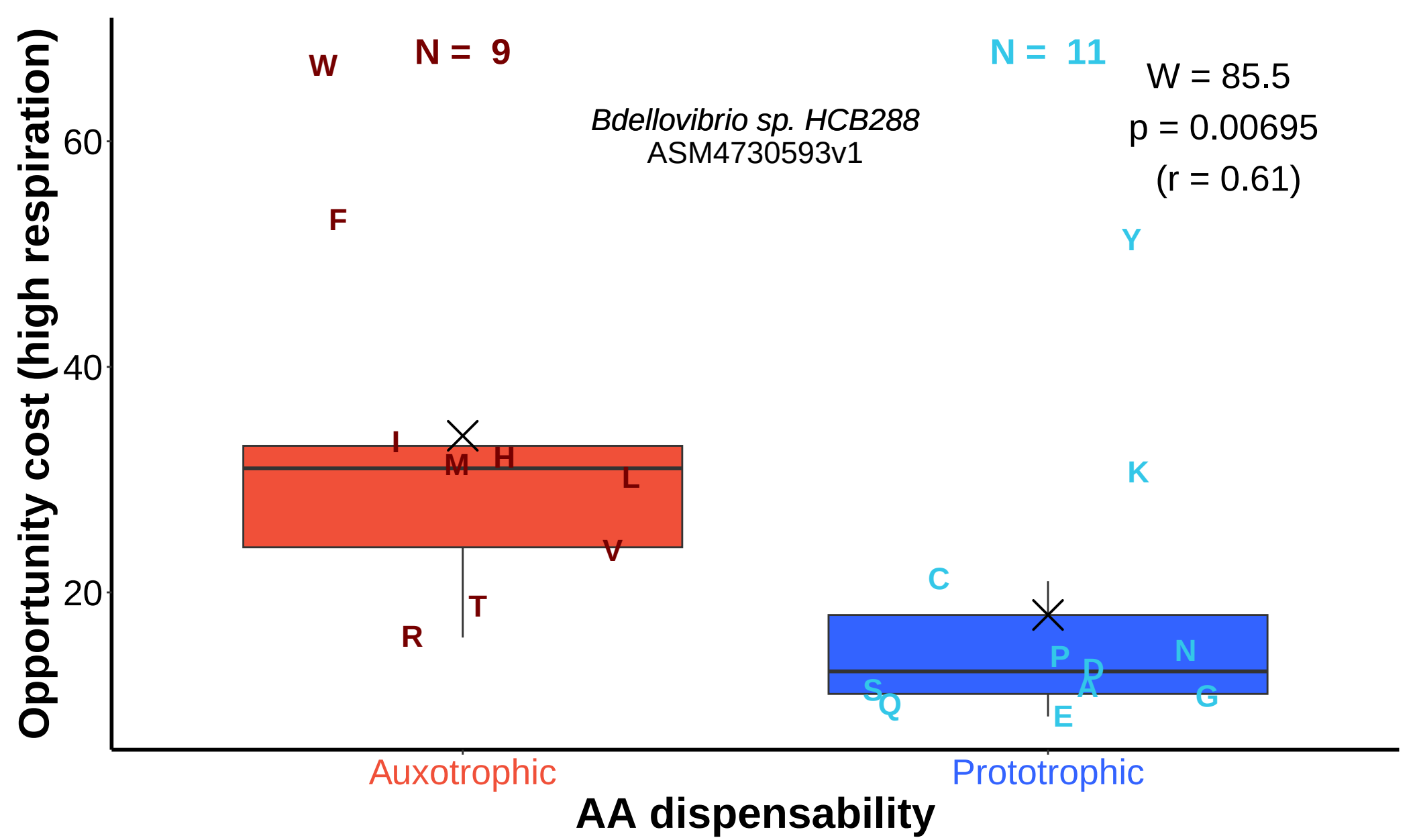

N = 9
W
N = 11
W = 85.5
p = 0.00695
(r = 0.61)
Bdellovibrio sp. HCB185ZH
ASM4730245v1
F
Y
K
I
H
M
L
V
T
R
C
N
P
A
D
G
Q
E
S
60
40
20
Opportunity cost (high respiration)
Auxotrophic
Prototrophic
AA dispensability
high respiration (9 auxotrophic AAs)
p = 0.014
0.9
0.6
0.3
0.0
Proportion of permutations (%)
12.33
25.56
33.89
39.11
Average opportunity cost (~P)

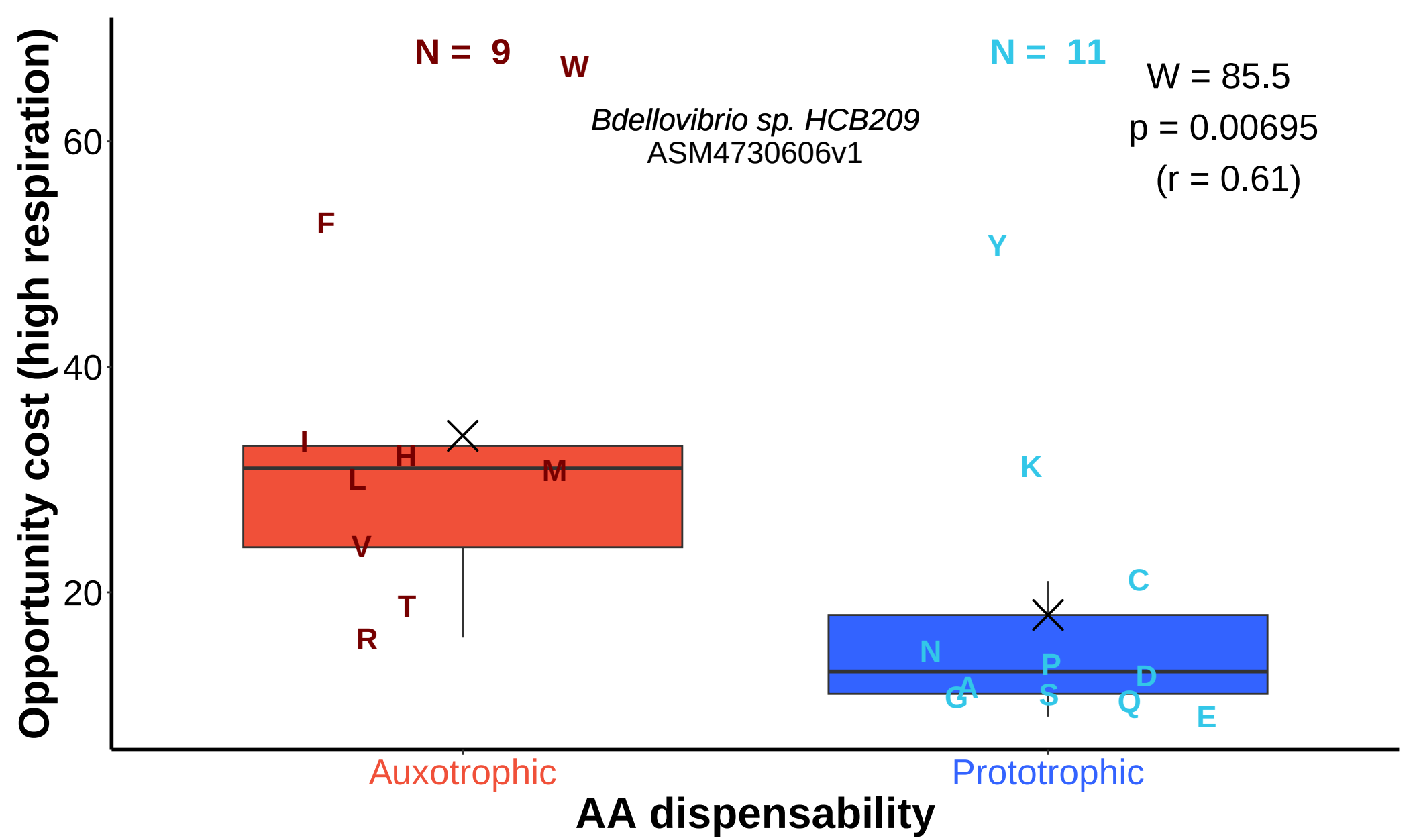

W N = 9
N = 11
W = 85.5
p = 0.00695
(r = 0.61)
Bdellovibrio sp. HCB337
ASM4730246v1
F
Y
K
H
M
L
I
V
T
R
C
N
P
D
A
S
E
Q
G
60
40
20
Opportunity cost (high respiration)
Auxotrophic
Prototrophic
AA dispensability
high respiration (9 auxotrophic AAs)
p = 0.014
0.9
0.6
0.3
0.0
Proportion of permutations (%)
12.33
25.56
33.89
39.11
Average opportunity cost (~P)

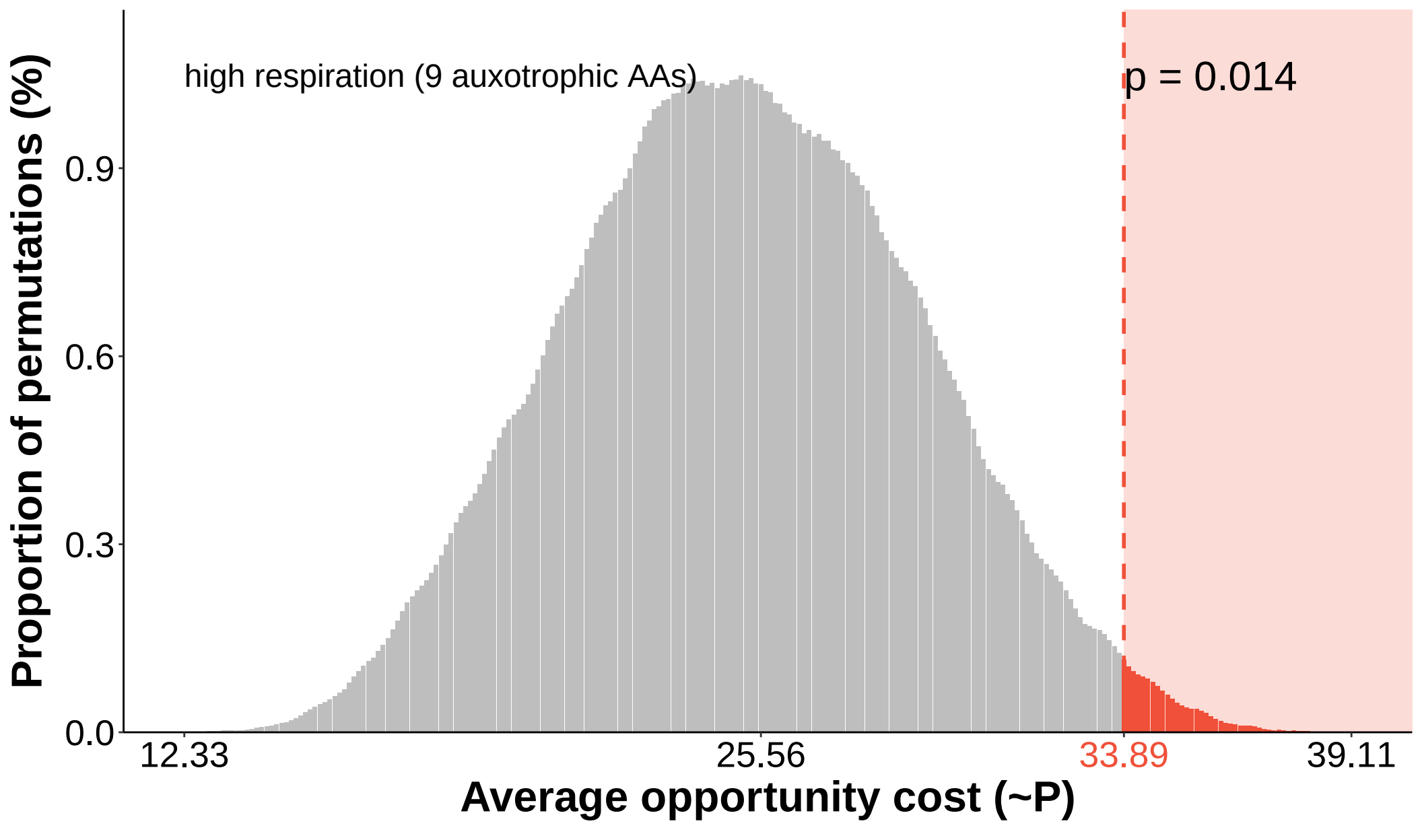

N = 9
N = 11
W = 85.5
p = 0.00695
(r = 0.61)
Bdellovibrio sp. HCB117
ASM4730591v1
Opportunity cost (high respiration)
60
40
20
W
F
Y
H
I
M
L
V
K
C
T
R
N
D
A
G
S
Q
E
Auxotrophic
Prototrophic
AA dispensability

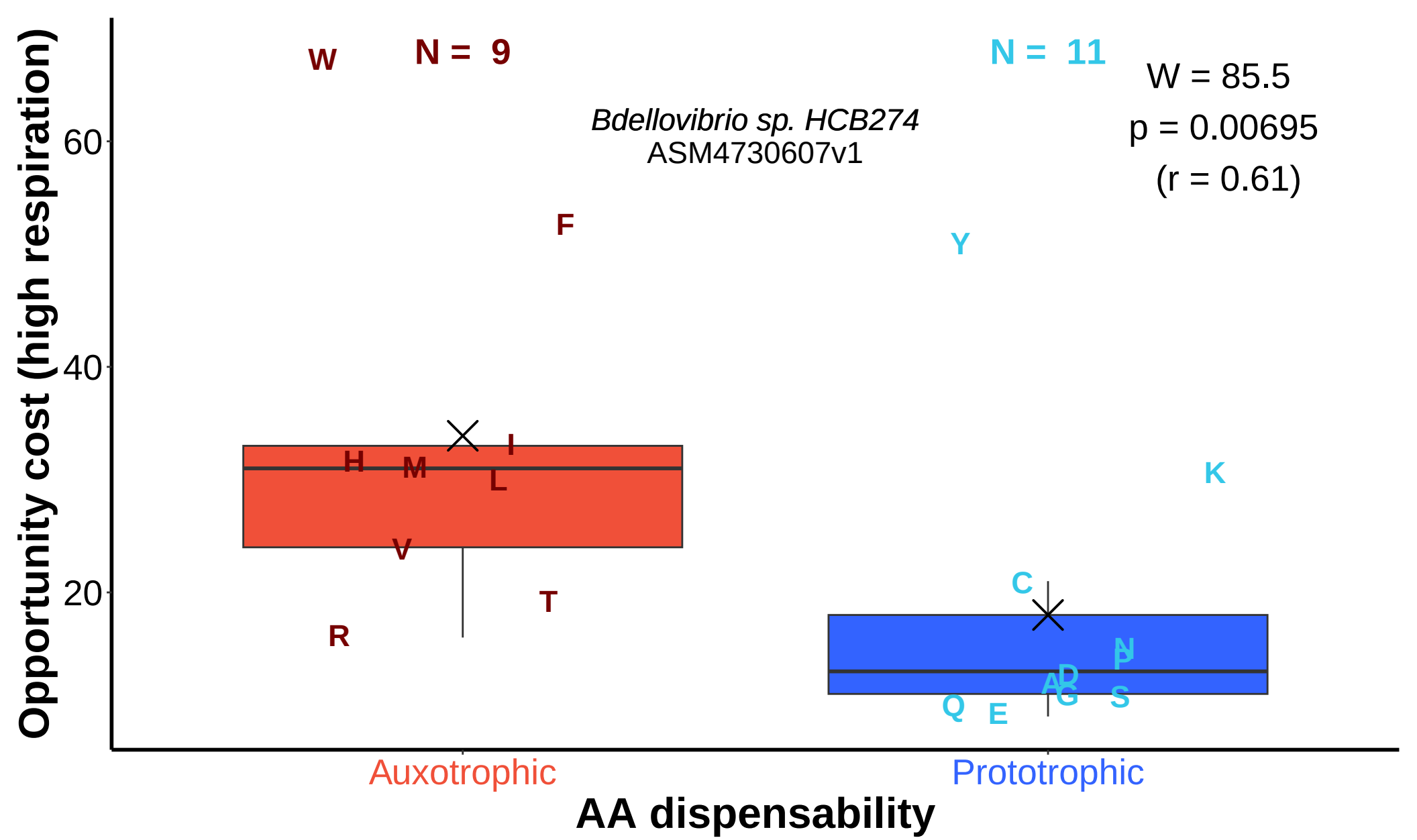

high respiration (9 auxotrophic AAs)
p = 0.014
Proportion of permutations (%)
0.9
0.6
0.3
0.0
12.33
25.56
33.89
39.11
Average opportunity cost (~P)

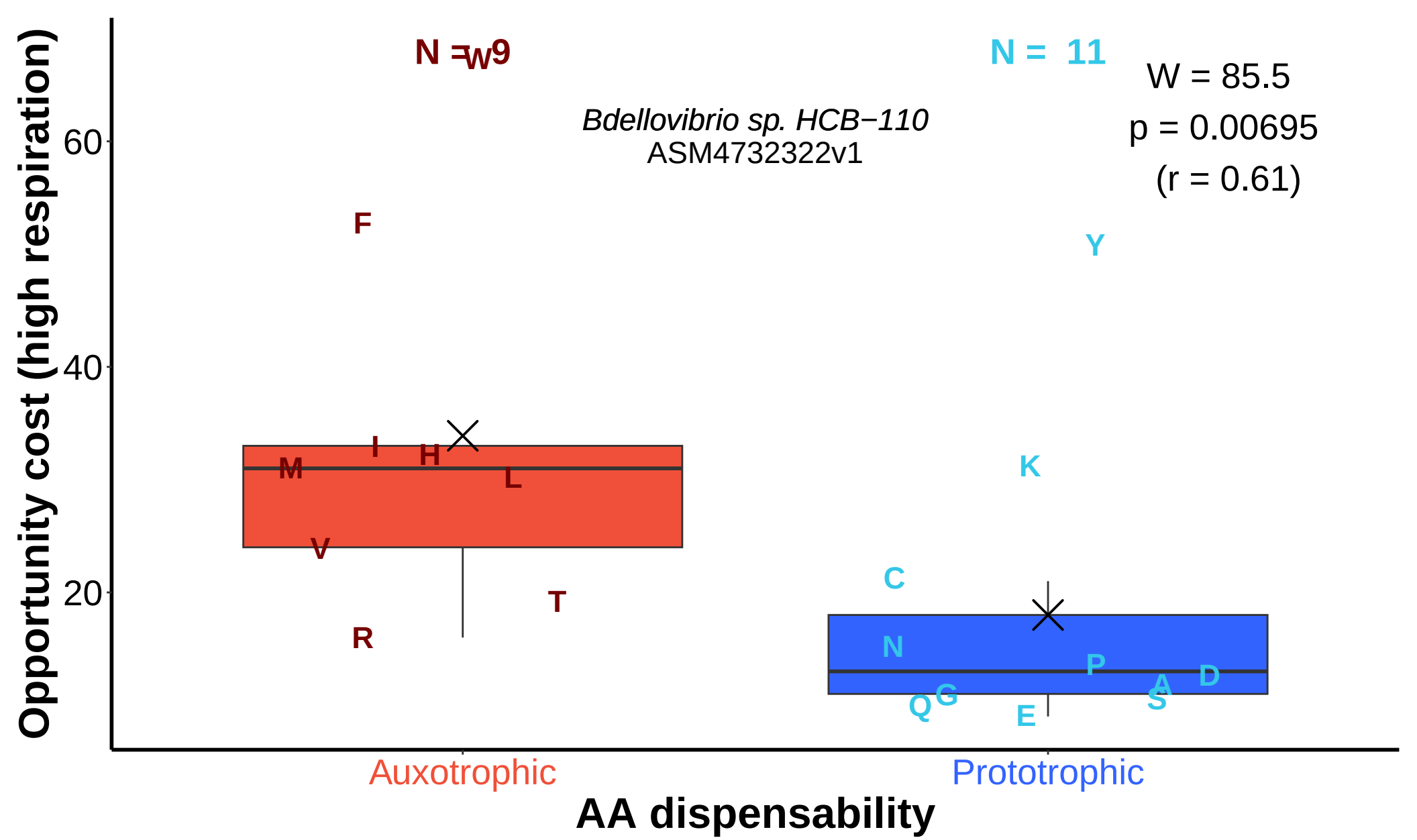

N = 9
N = 11
W = 85.5
p = 0.00695
(r = 0.61)
Bdellovibrio sp. HCB290
ASM4730592v1
Opportunity cost (high respiration)
60
40
20
F
Y
M
I
H
L
V
T
R
K
C
P
N
D
A
S
Q
G
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (9 auxotrophic AAs)
p = 0.014
Proportion of permutations (%)
0.9
0.6
0.3
0.0
12.33
25.56
33.89
39.11
Average opportunity cost (~P)

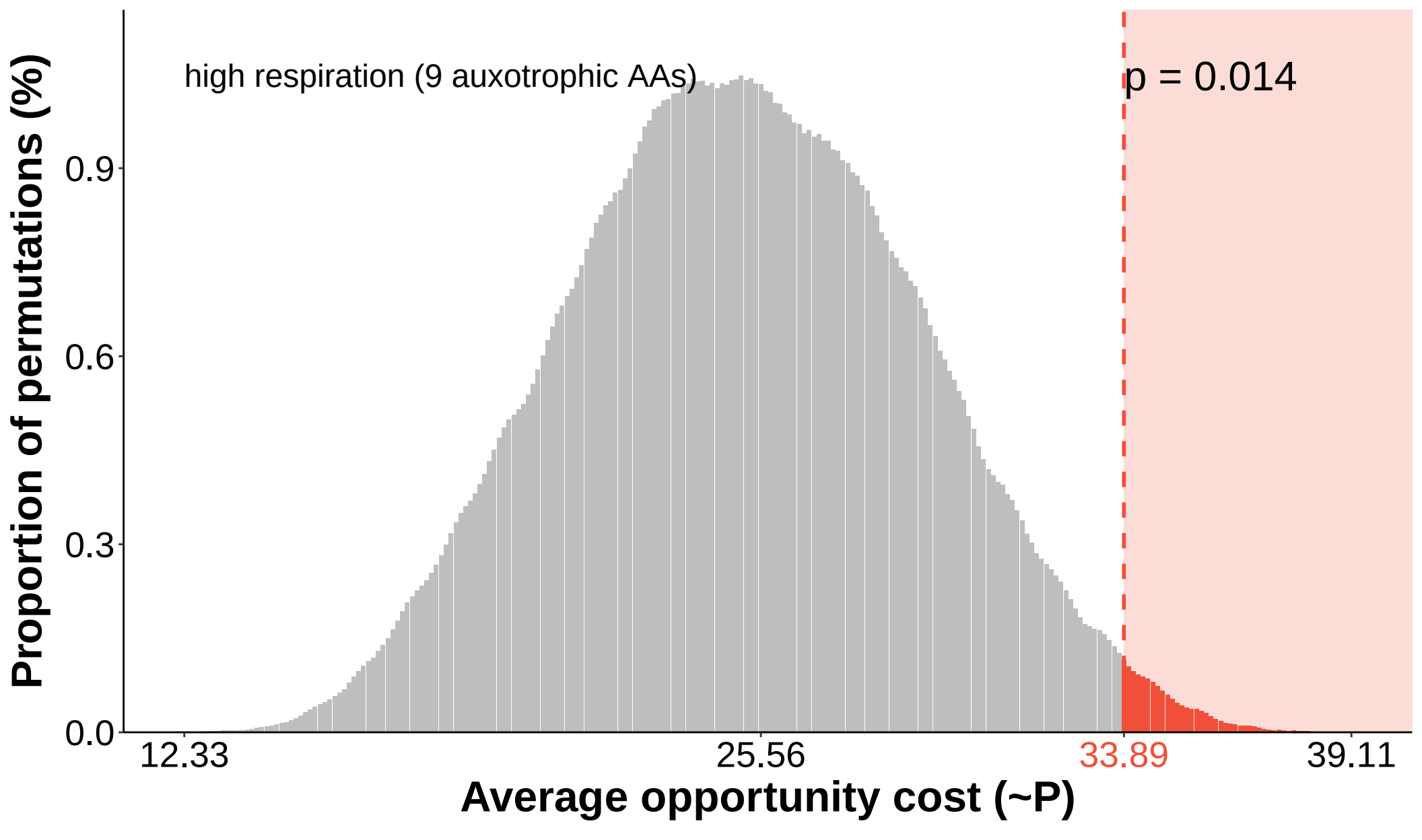

N = 9
N = 11
W = 85.5
p = 0.00695
(r = 0.61)
Bdellovibrio sp. HCB288
ASM4730593v1
W
F
Y
K
I
M
H
L
V
T
R
C
P
D
A
N
S
Q
E
G
60
40
20
Opportunity cost (high respiration)
Auxotrophic
Prototrophic
AA dispensability
high respiration (9 auxotrophic AAs)
p = 0.014
0.9
0.6
0.3
0.0
Proportion of permutations (%)
12.33
25.56
33.89
39.11
Average opportunity cost (~P)

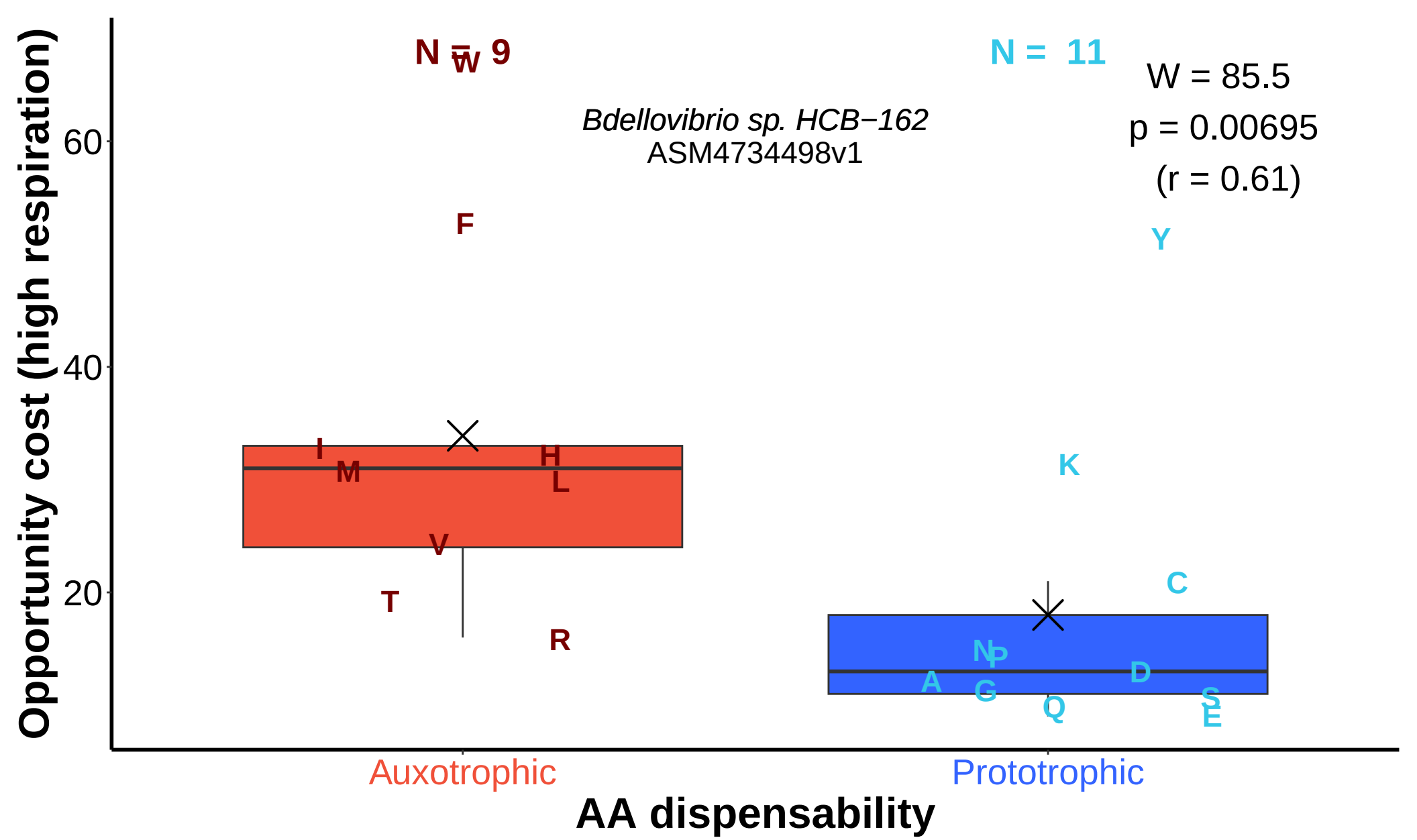

N = 9
N = 11
W = 85.5
p = 0.00695
(r = 0.61)
Bdellovibrio sp. HCB209
ASM4730606v1
Opportunity cost (high respiration)
60
40
20
W
F
Y
K
I
H
L
M
V
T
R
C
N
P
D
G
A
S
Q
E
Auxotrophic
Prototrophic
AA dispensability

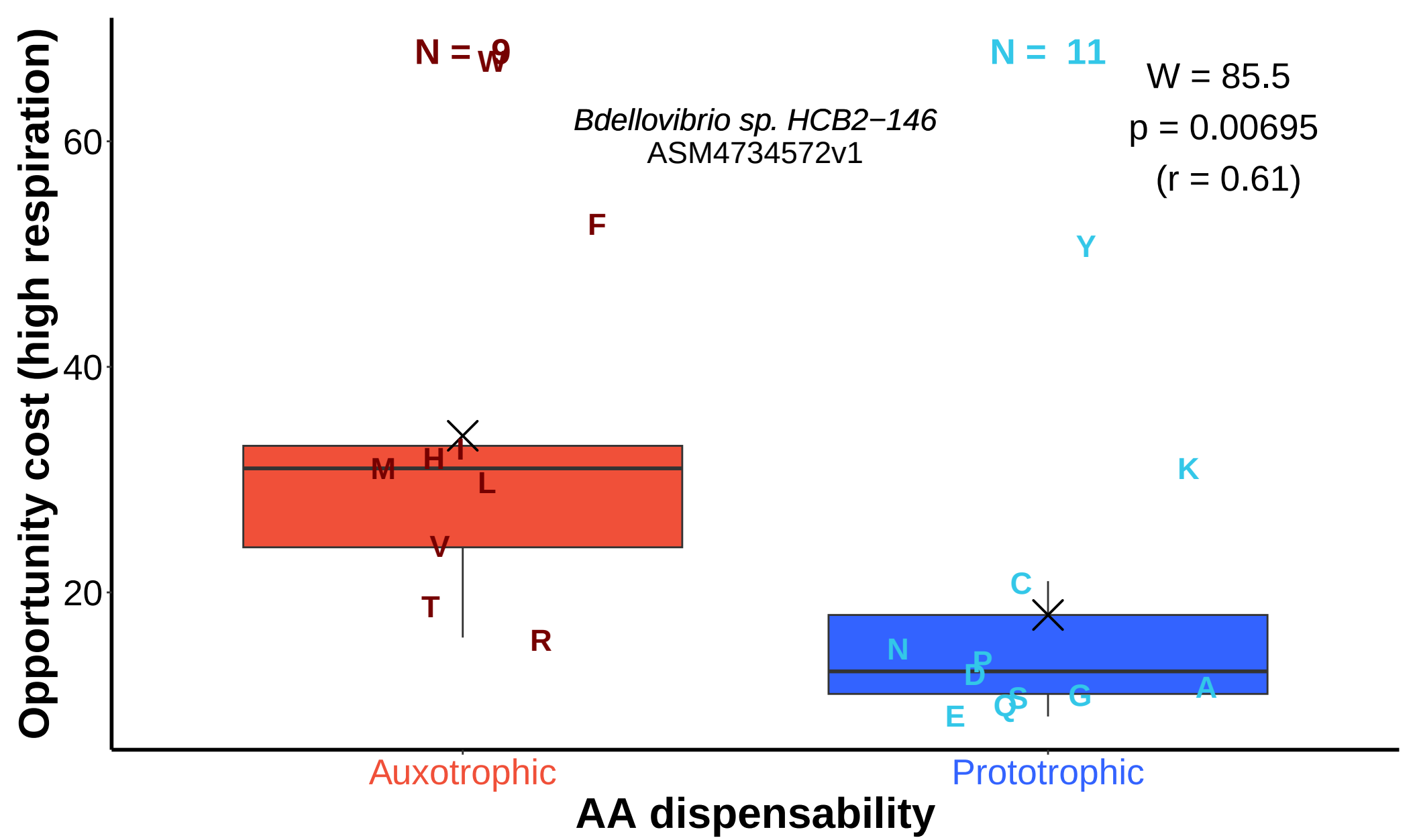

high respiration (9 auxotrophic AAs)
p = 0.014
Proportion of permutations (%)
0.9
0.6
0.3
0.0
12.33
25.56
33.89
39.11
Average opportunity cost (~P)

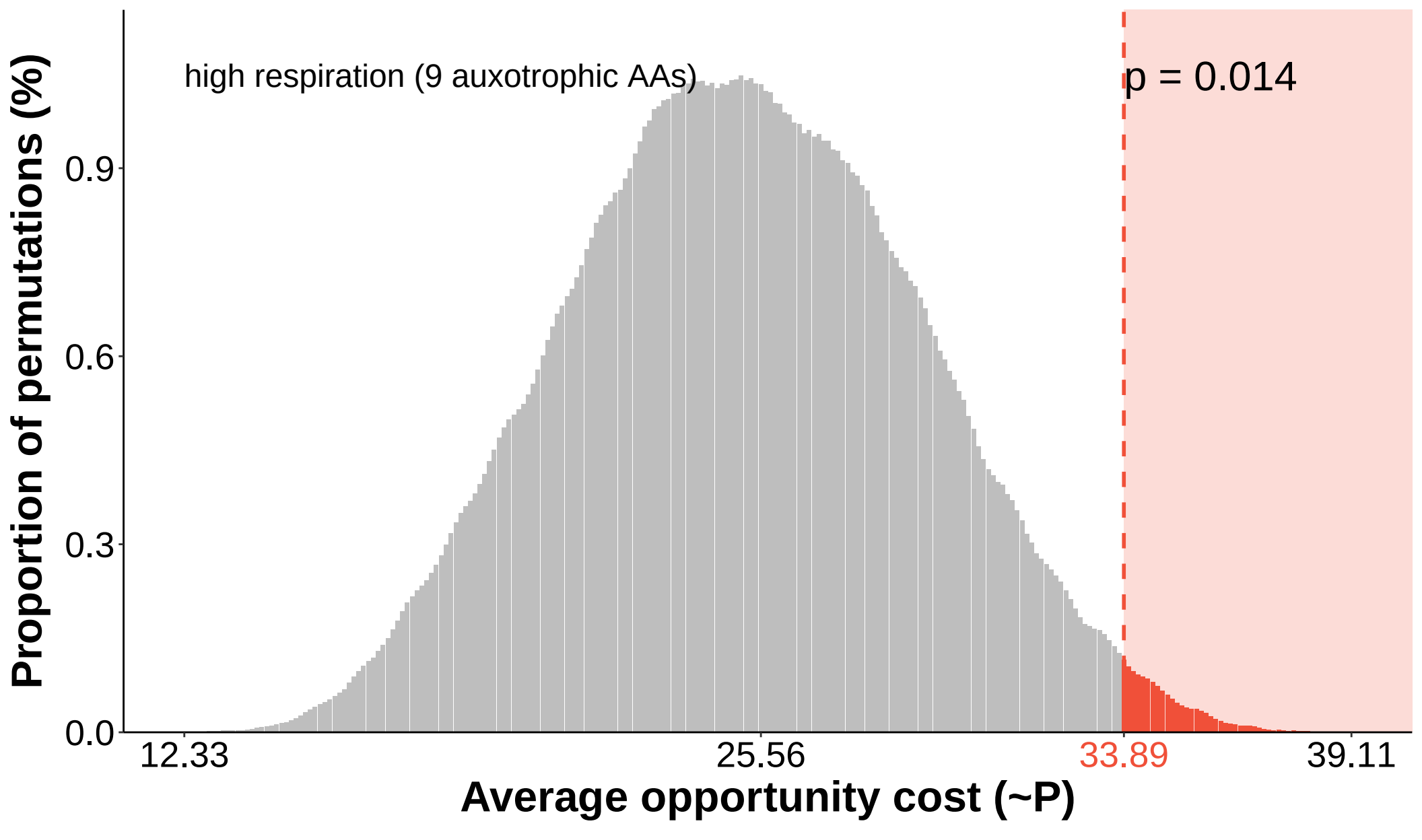

W
N = 9
N = 11
W = 85.5
p = 0.00695
(r = 0.61)
Bdellovibrio sp. HCB274
ASM4730607v1
F
Y
K
H
M
I
L
V
T
R
C
N
P
D
A
G
Q
E
S
Opportunity cost (high respiration)
60
40
20
Auxotrophic
Prototrophic
AA dispensability
high respiration (9 auxotrophic AAs)
p = 0.014
Proportion of permutations (%)
0.9
0.6
0.3
0.0
12.33
25.56
33.89
39.11
Average opportunity cost (~P)

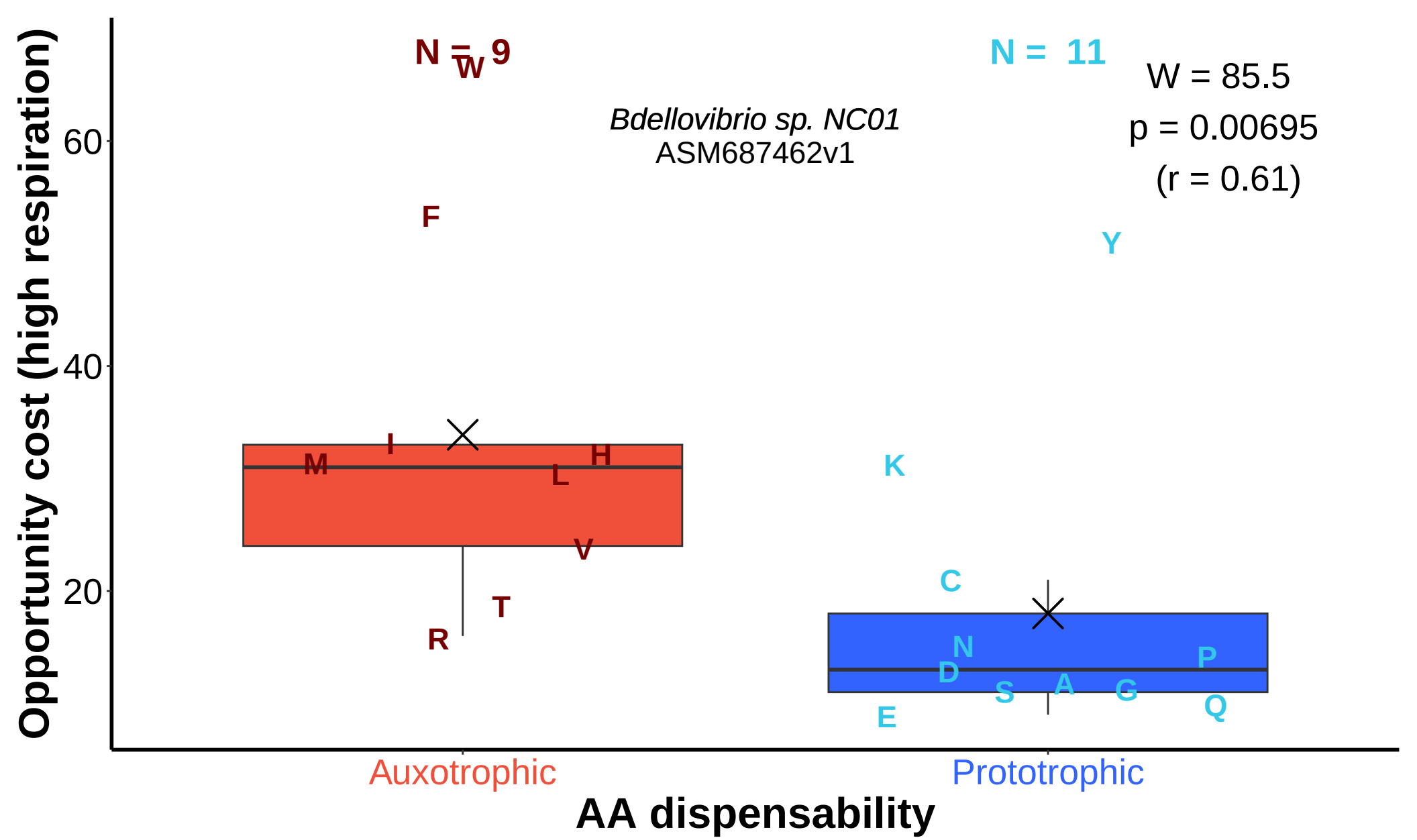

N = 9
N = 11
W = 85.5
p = 0.00695
(r = 0.61)
Bdellovibrio sp. HCB−110
ASM4732322v1
Opportunity cost (high respiration)
60
40
20
F
I
H
M
L
V
T
R
Y
K
C
N
P
A
D
Q
G
E
Auxotrophic
Prototrophic
AA dispensability

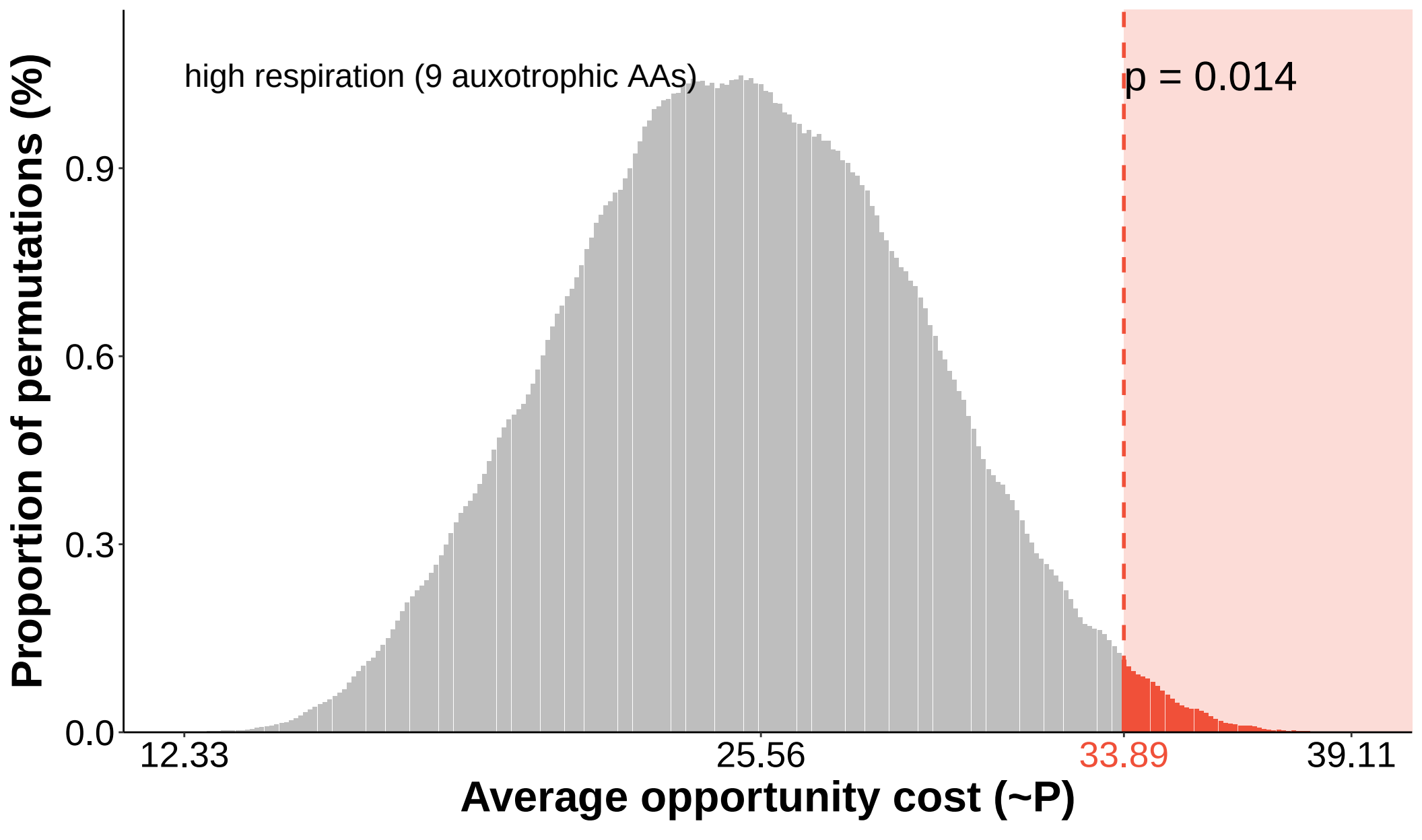

high respiration (9 auxotrophic AAs)
p = 0.014
Proportion of permutations (%)
0.9
0.6
0.3
0.0
12.33
25.56
33.89
39.11
Average opportunity cost (~P)


N = 9
N = 11
W = 85.5
p = 0.00695
(r = 0.61)
Bdellovibrio sp. HCB−162
ASM4734498v1
Opportunity cost (high respiration)
60
40
20
F
Y
I
M
H
L
V
T
R
K
C
N
P
A
G
D
S
Q
E
Auxotrophic
Prototrophic
AA dispensability
high respiration (9 auxotrophic AAs)
p = 0.014
Proportion of permutations (%)
0.9
0.6
0.3
0.0
12.33
25.56
33.89
39.11
Average opportunity cost (~P)


N = 9
N = 11
W = 85.5
p = 0.00695
(r = 0.61)
Bdellovibrio sp. HCB2−146
ASM4734572v1
Opportunity cost (high respiration)
60
40
20
F
Y
K
C
M
H
I
L
V
T
R
N
P
D
S
Q
E
G
A
Auxotrophic
Prototrophic
AA dispensability


high respiration (9 auxotrophic AAs)
p = 0.014
Proportion of permutations (%)
0.9
0.6
0.3
0.0
12.33
25.56
33.89
39.11
Average opportunity cost (~P)


N = 9
N = 11
W = 85.5
p = 0.00695
(r = 0.61)
Bdellovibrio sp. NC01
ASM687462v1
Opportunity cost (high respiration)
60
40
20
F
Y
K
I
M
H
L
V
T
R
C
N
D
P
S
A
G
Q
E
Auxotrophic
Prototrophic
AA dispensability


high respiration (9 auxotrophic AAs)
p = 0.014
Proportion of permutations (%)
0.9
0.6
0.3
0.0
12.33
25.56
33.89
39.11
Average opportunity cost (~P)

N = 9

N = 11

W = 85.5

p = 0.00695

(r = 0.61)

Bdellovibrio sp. ZAP7
ASM687464v1

F

Y

K

I

H

M

L

V

T

R

C

N

P

A

D

S

G

Q

E

60

40

20

Opportunity cost (high respiration)

Auxotrophic

Prototrophic

AA dispensability

high respiration (9 auxotrophic AAs)

p = 0.014

0.9

0.6

0.3

0.0

Proportion of permutations (%)

12.33

25.56

33.89

39.11

Average opportunity cost (~P)

N = 8

N = 12

W = 84.5

p = 0.00544

(r = 0.63)

Bdellovibrio bacteriovorus
ASM69160v1

Opportunity cost (high respiration)

60

40

20

F

R

M

L

I

H

V

Y

K

C

T

P

N

D

G

Q

E

S

A

Auxotrophic

Prototrophic

AA dispensability

high respiration (8 auxotrophic AAs)

p = 0.0083

Proportion of permutations (%)

1.2

0.9

0.6

0.3

0.0

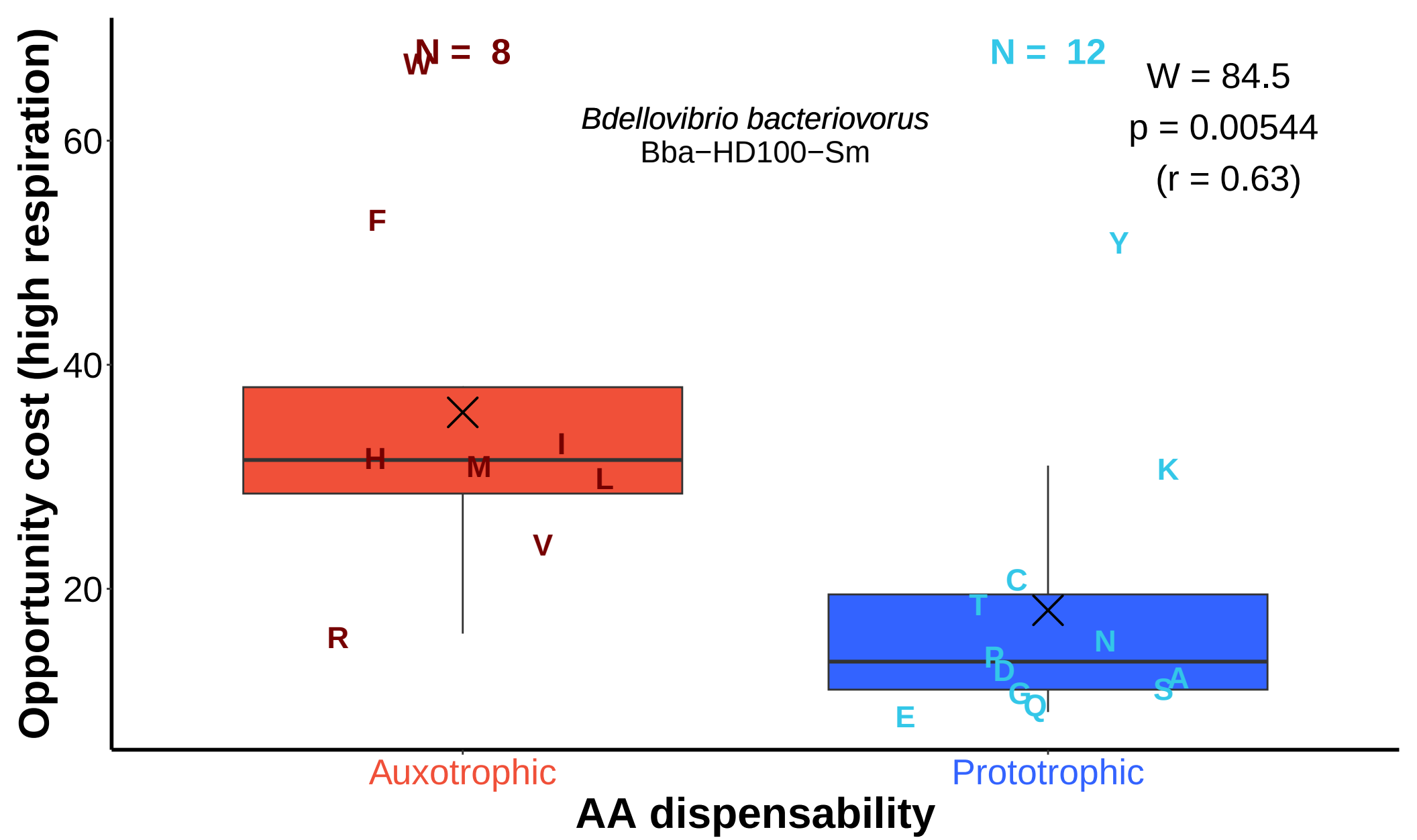
11.88

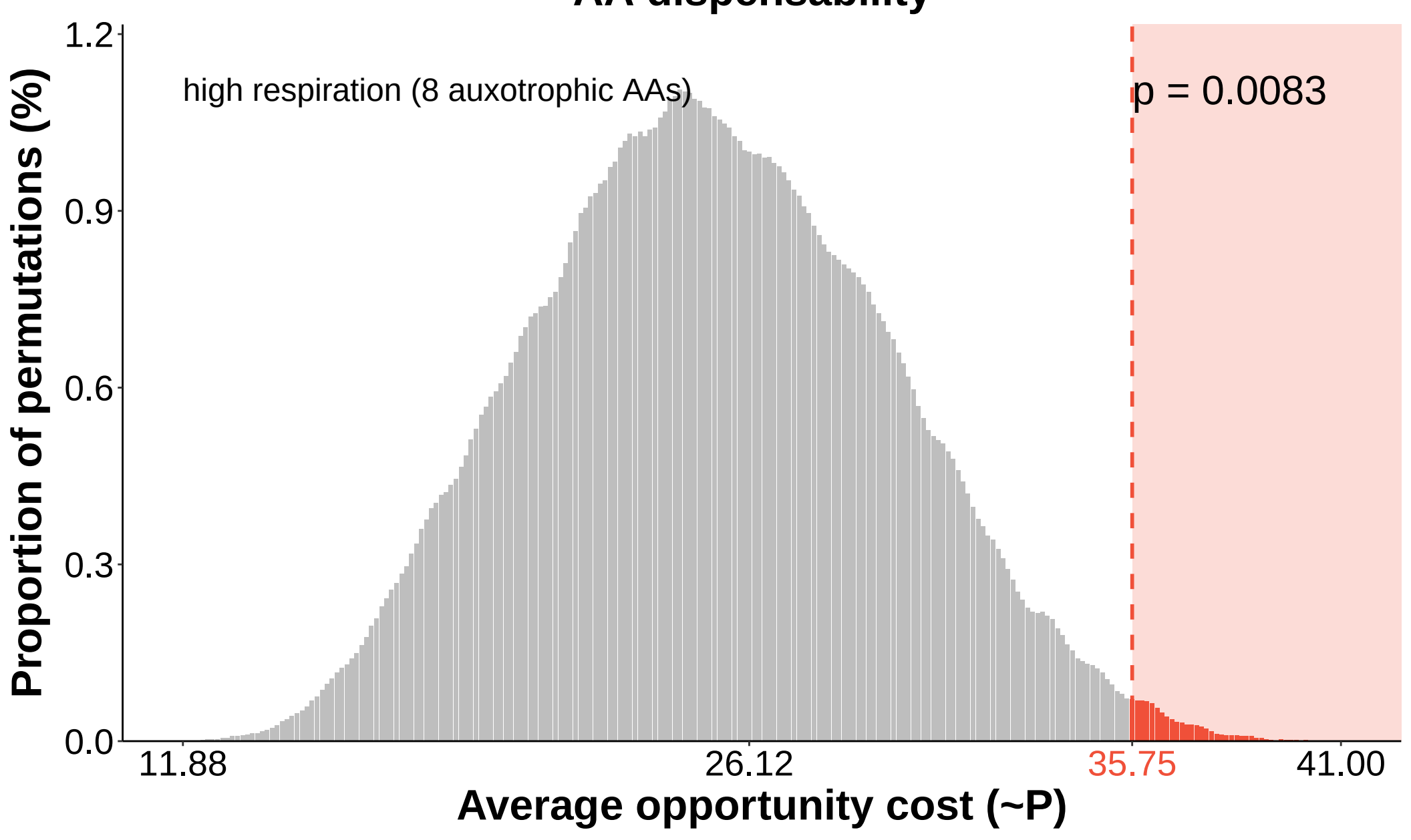
26.12

35.75

41.00

Average opportunity cost (~P)


N = 8
N = 12
W = 84.5
p = 0.00544
(r = 0.63)
Bdellovibrio bacteriovorus
Bba−HD100−Sm
Opportunity cost (high respiration)
60
40
20
W
F
H
M
I
L
V
R
Y
K
C
T
N
R
D
G
Q
S
A
E
Auxotrophic
Prototrophic
AA dispensability


high respiration (8 auxotrophic AAs)
p = 0.0083
Proportion of permutations (%)
1.2
0.9
0.6
0.3
0.0
11.88
26.12
35.75
41.00
Average opportunity cost (~P)