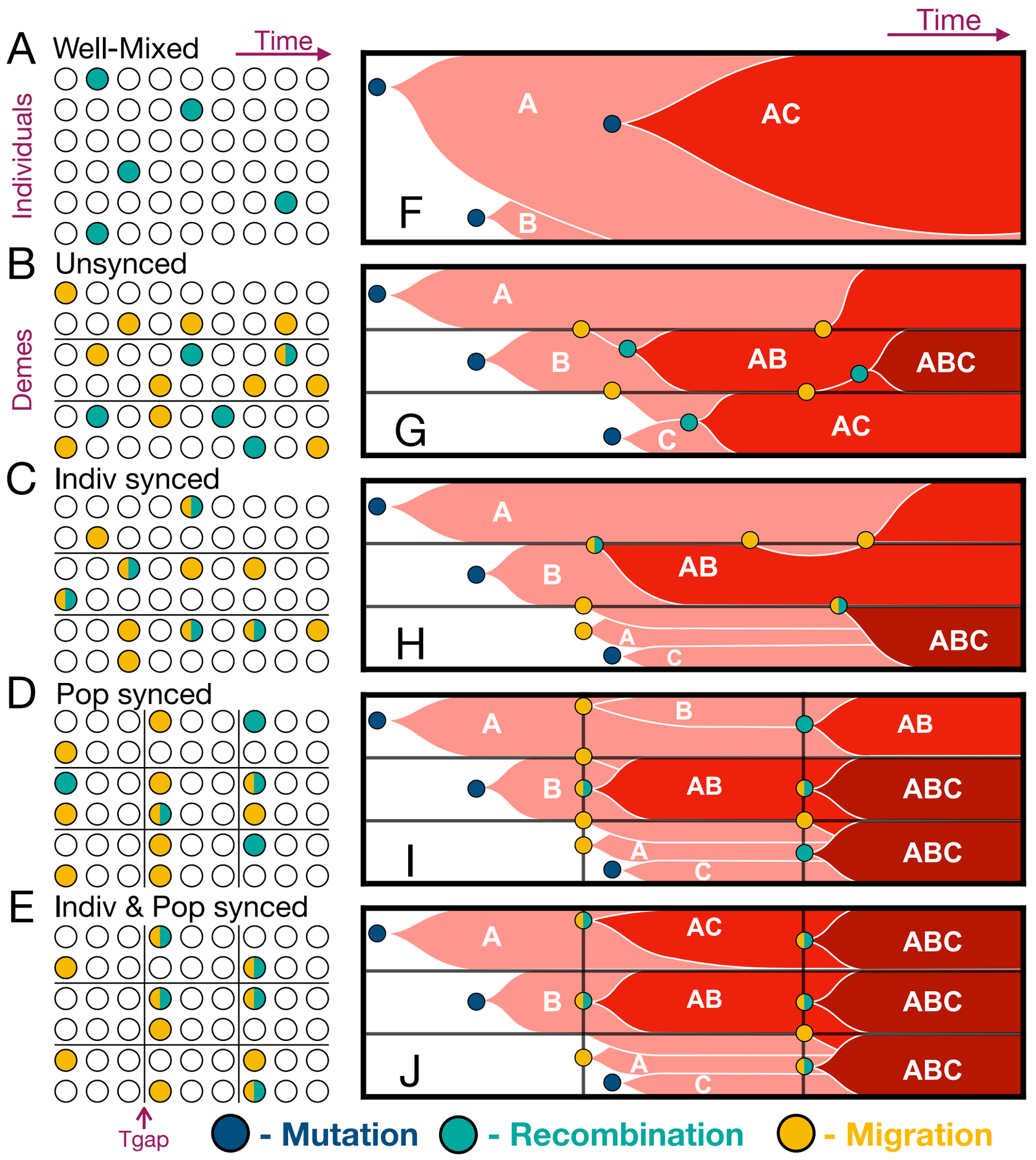
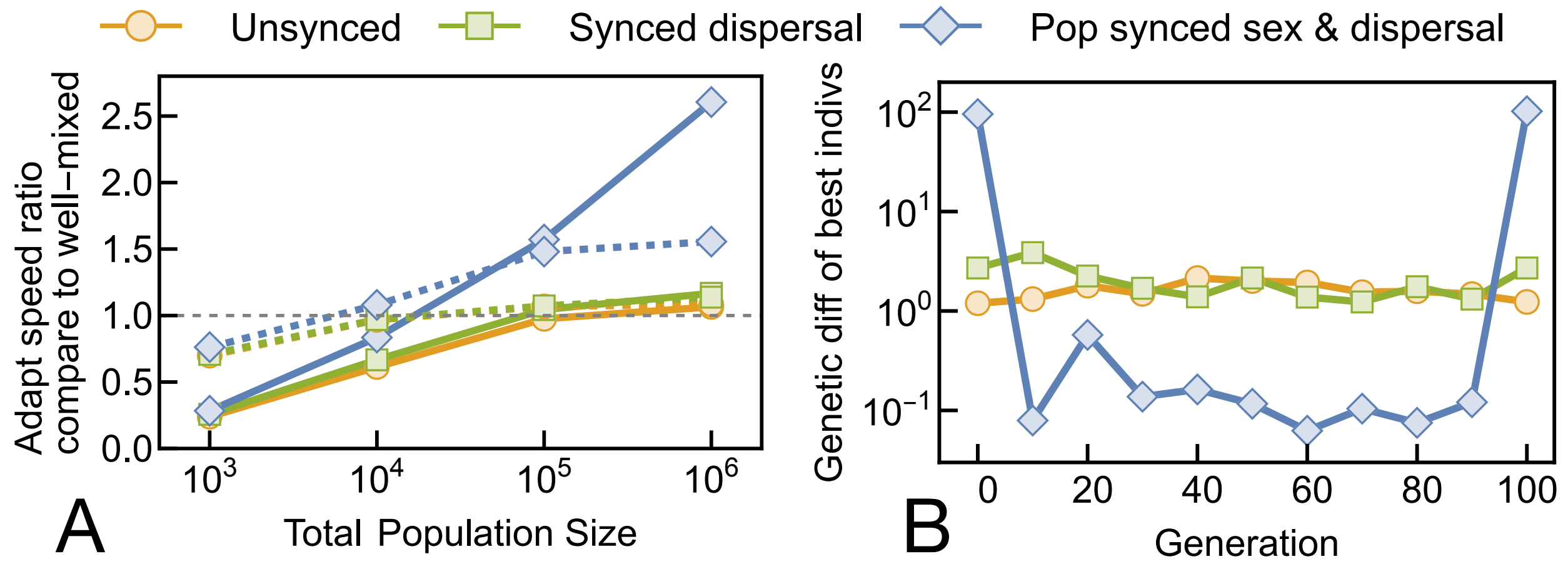

A
Well-Mixed
Time
Individuals
B
Unsynced
Demes
C
Indiv synced
D
Pop synced
E
Indiv & Pop synced
Tgap
Time
A
AC
F
B
A
B
AB
ABC
G
C
AC
A
AB
B
H
ABC
A
C
A
B
AB
B
AB
ABC
I
A
C
ABC
A
AC
ABC
B
AB
AB
ABC
J
A
C
ABC
- Mutation
- Recombination
- Migration


Unsynced
Synced dispersal
Pop synced sex & dispersal
Adapt speed ratio
compare to well−mixed
2.5
2.0
1.5
1.0
0.5
0.0
10^3
10^4
10^5
10^6
Total Population Size
A
Genetic diff of best indivs
10^2
10^1
10^0
10^{-1}
0
20
40
60
80
100
Generation
B

A

Genetic diversity

Global
Local
Well−Mixed

B

Gain of max log fitness

Global
Local
Well−Mixed

C

Genetic diversity

Global
Local
Well−Mixed

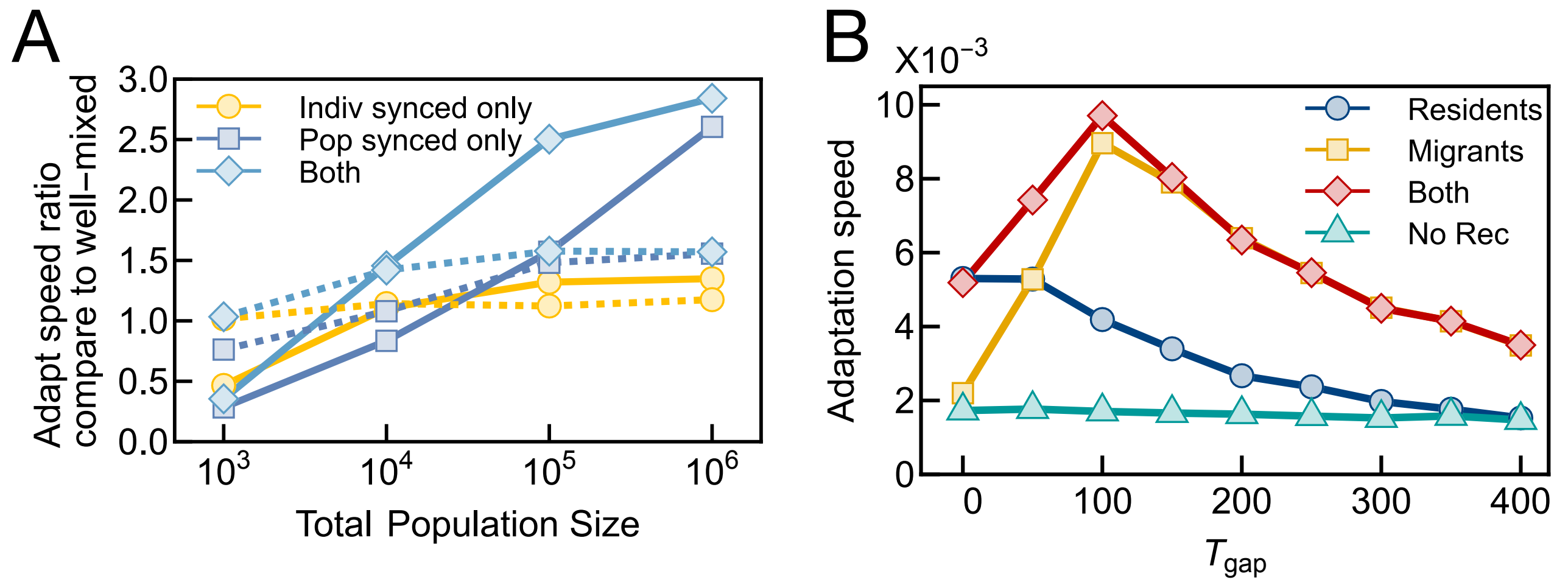
Generation

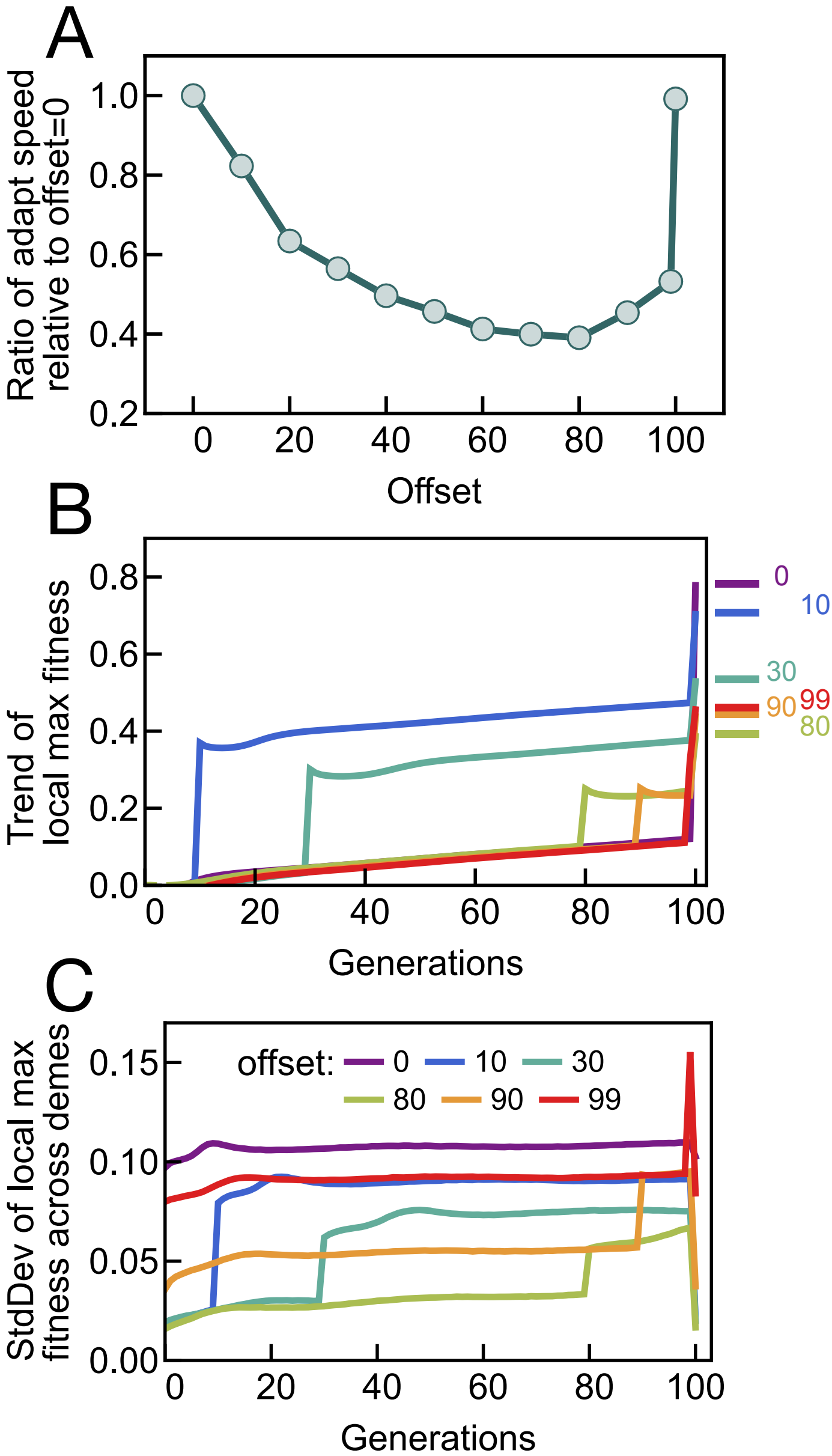
D

Gain of max log fitness

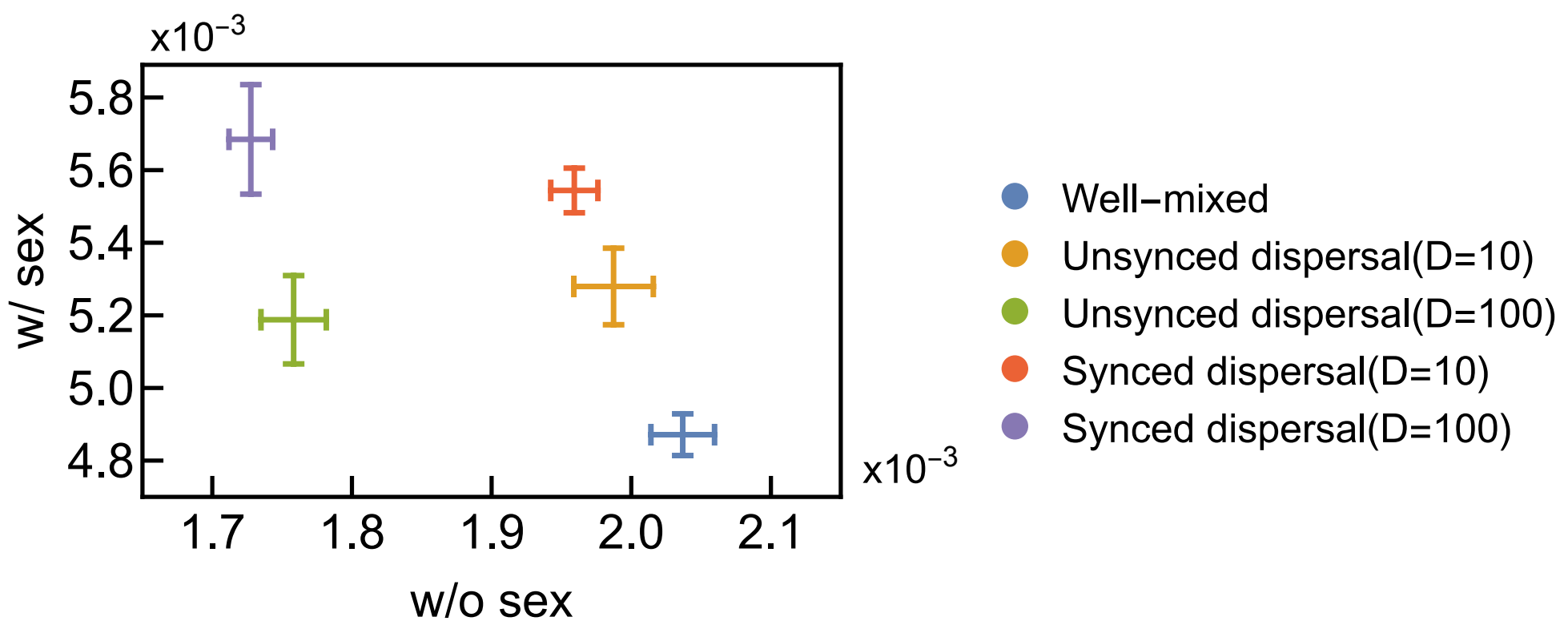
Global
Local
Well−Mixed

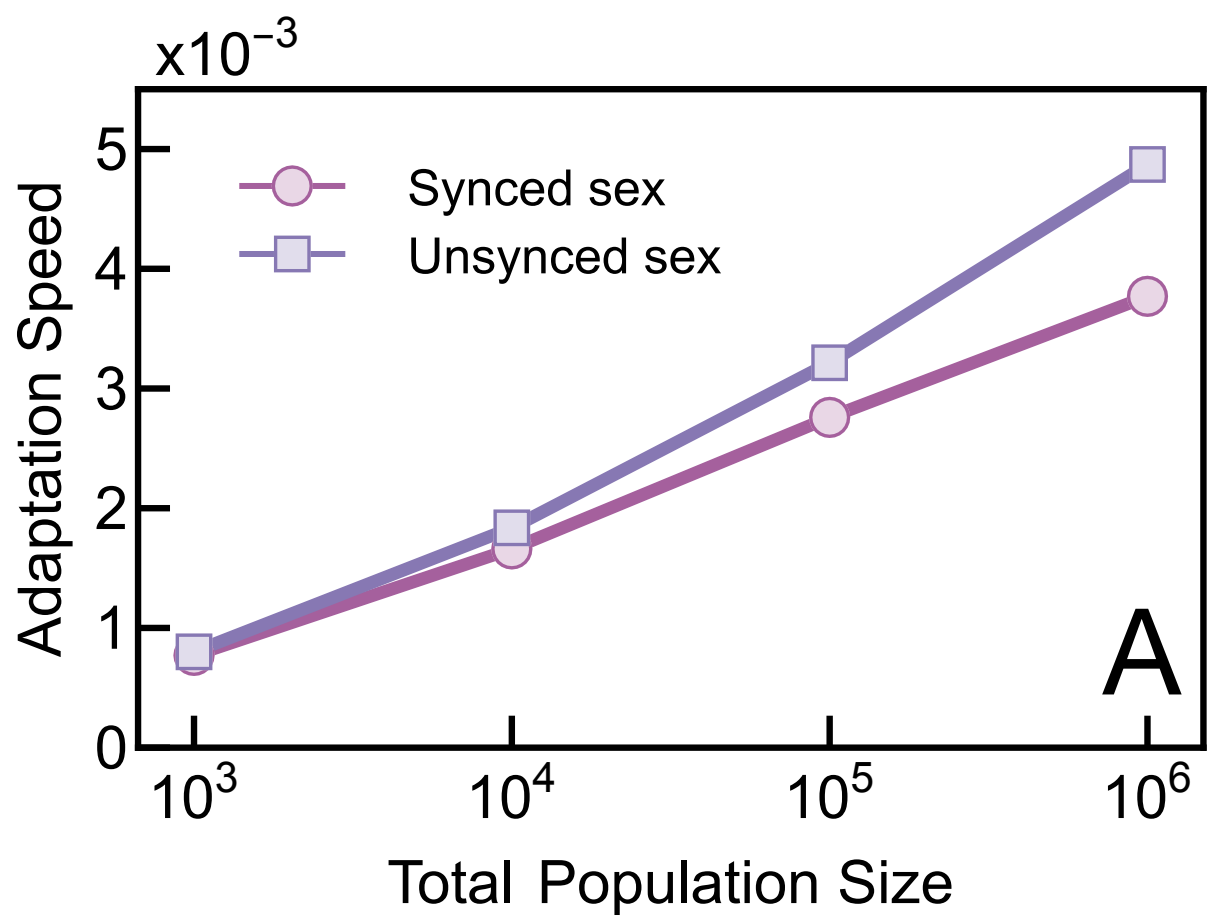
Generation

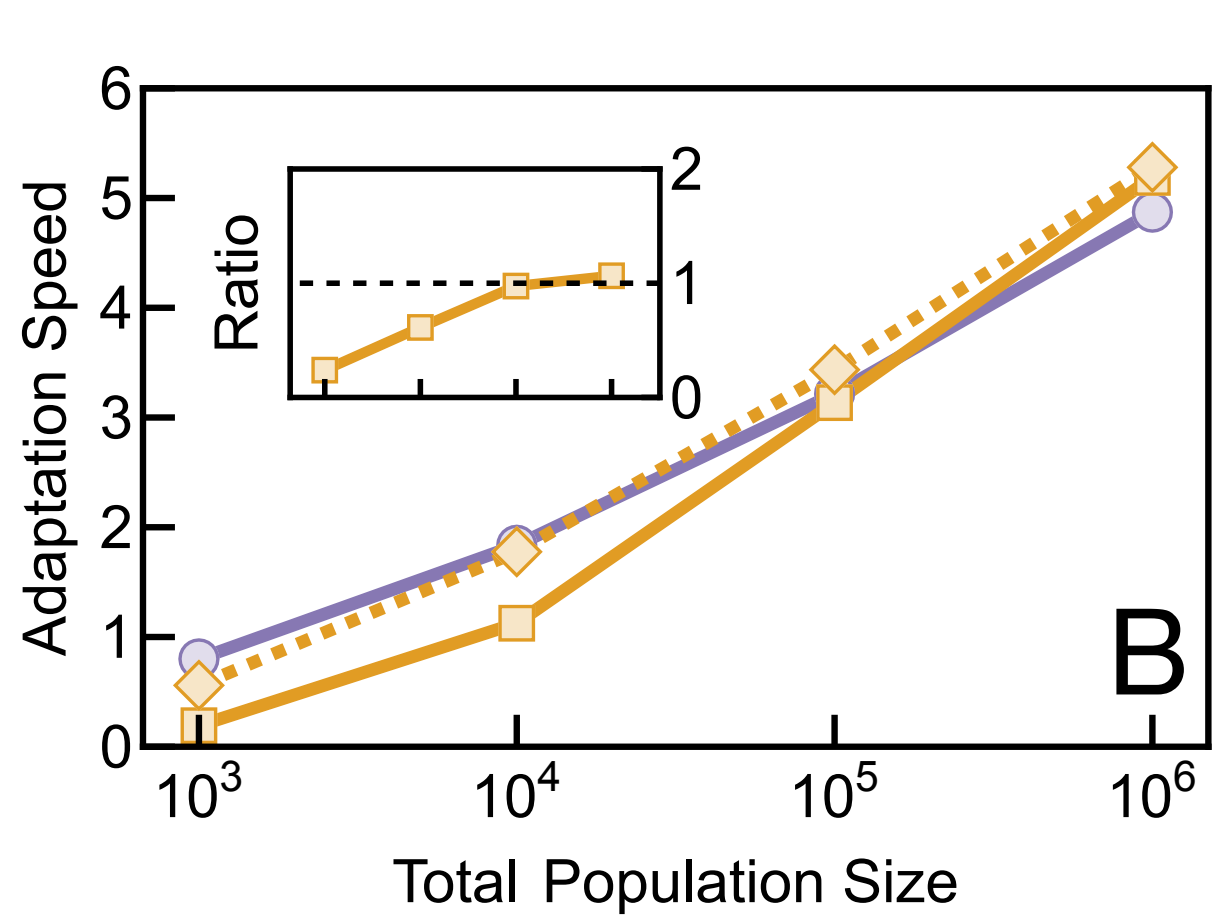

A
Adapt speed ratio
compare to well−mixed
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Indiv synced only
Pop synced only
Both
10^3
10^4
10^5
10^6
Total Population Size
B
X10^{-3}
Adaptation speed
10
8
6
4
2
0
Residents
Migrants
Both
No Rec
0
100
200
300
400
T_{gap}

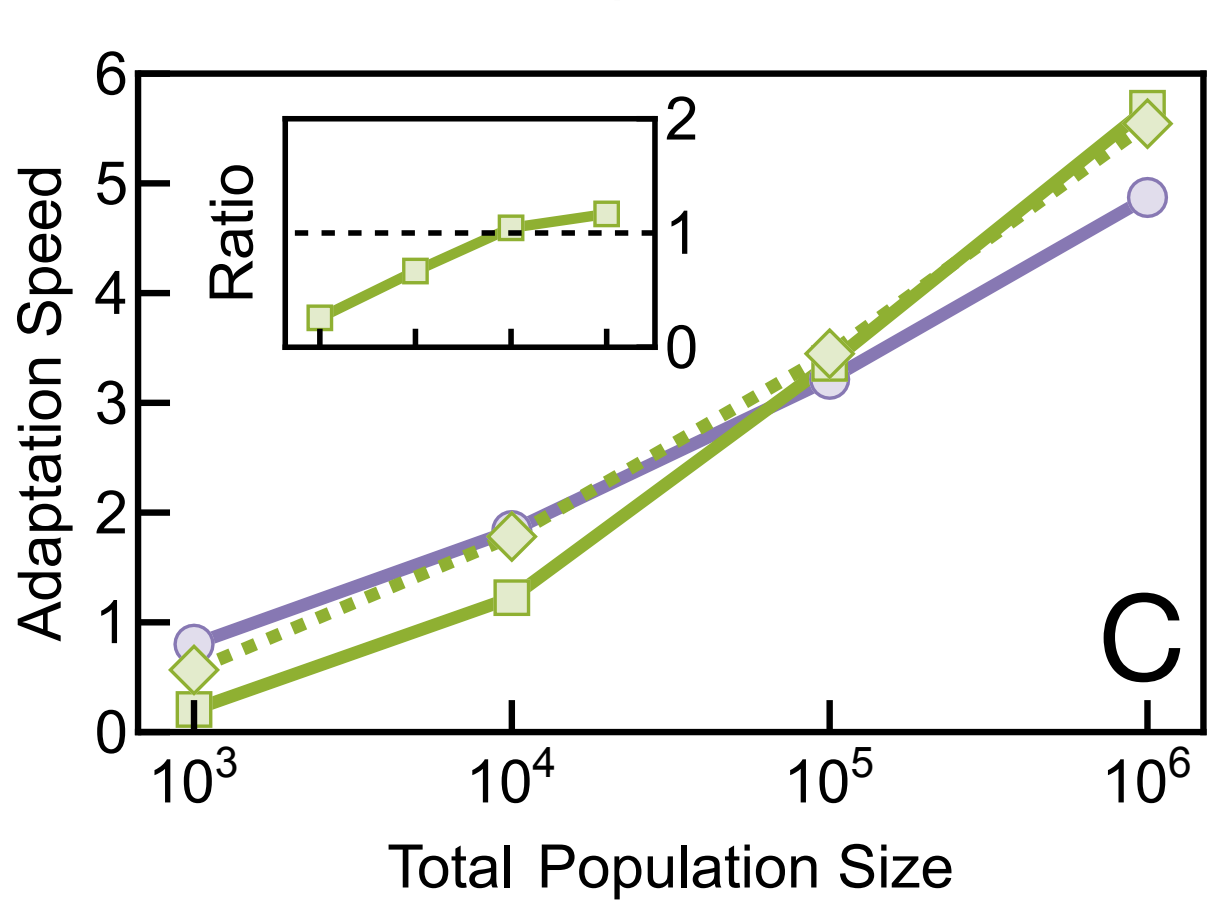

A
Ratio of adapt speed relative to offset=0
1.0
0.8
0.6
0.4
0.2
0
20
40
60
80
100
Offset
B
Trend of local max fitness
0.8
0.6
0.4
0.2
0.0
0
20
40
60
80
100
Generations
0
10
30
90
99
80
C
StdDev of local max fitness across demes
offset:
0
10
30
80
90
99
0.15
0.10
0.05
0.00
0
20
40
60
80
100
Generations

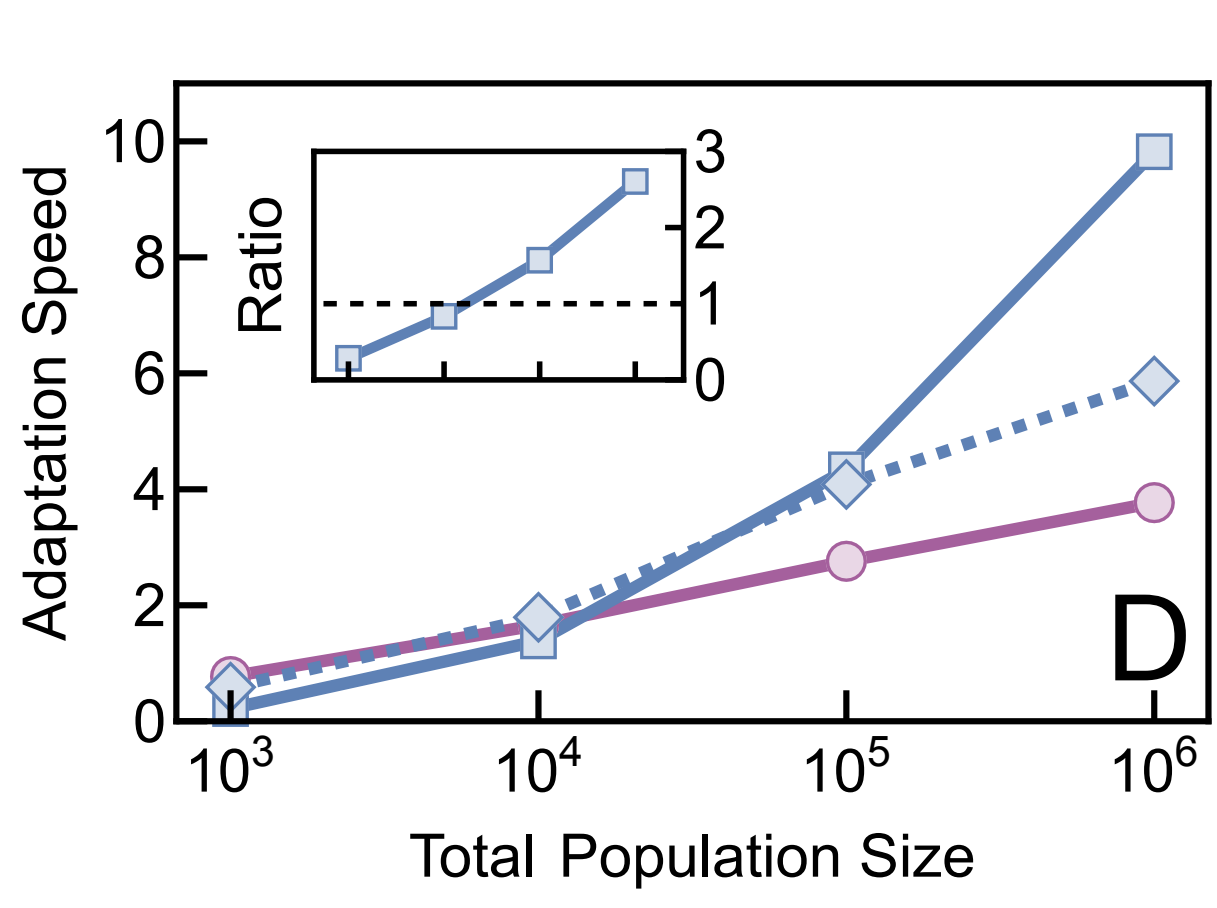
Supplementary

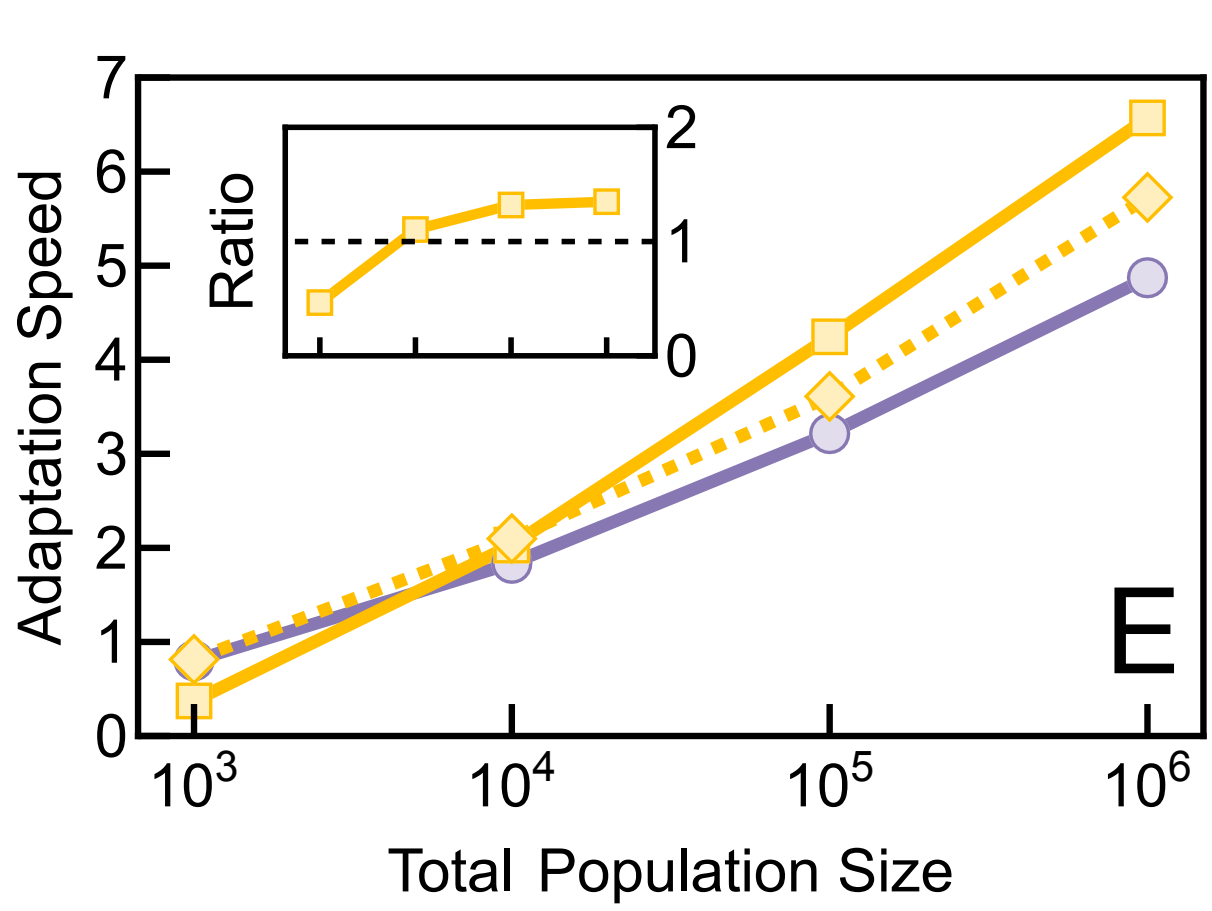

x10−3
5.8
5.6
5.4
5.2
5.0
4.8
w/ sex
1.7
1.8
1.9
2.0
2.1
x10−3
w/o sex
Well−mixed
Unsynced dispersal(D=10)
Unsynced dispersal(D=100)
Synced dispersal(D=10)
Synced dispersal(D=100)

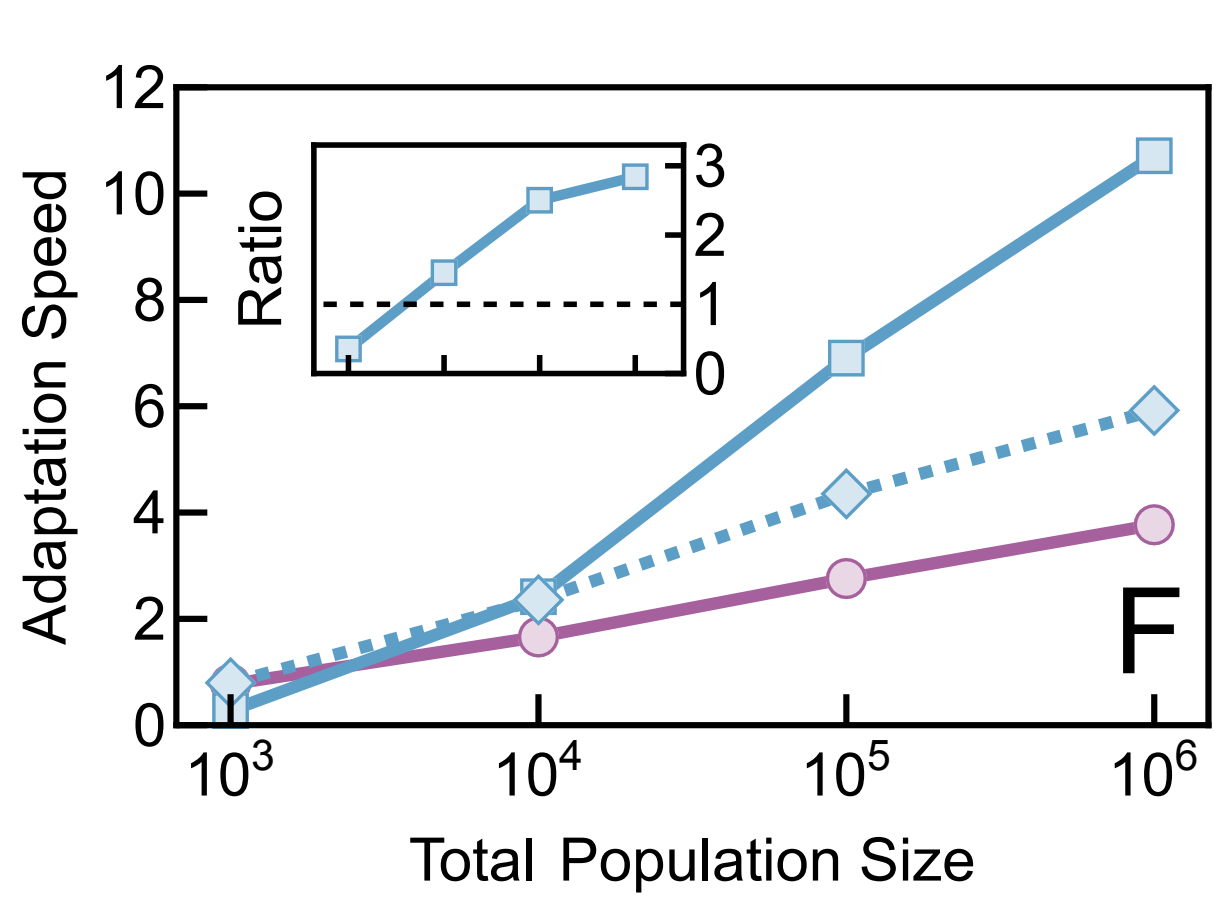

x10^-3
Adaptation Speed
Synced sex
Unsynced sex
A
Total Population Size

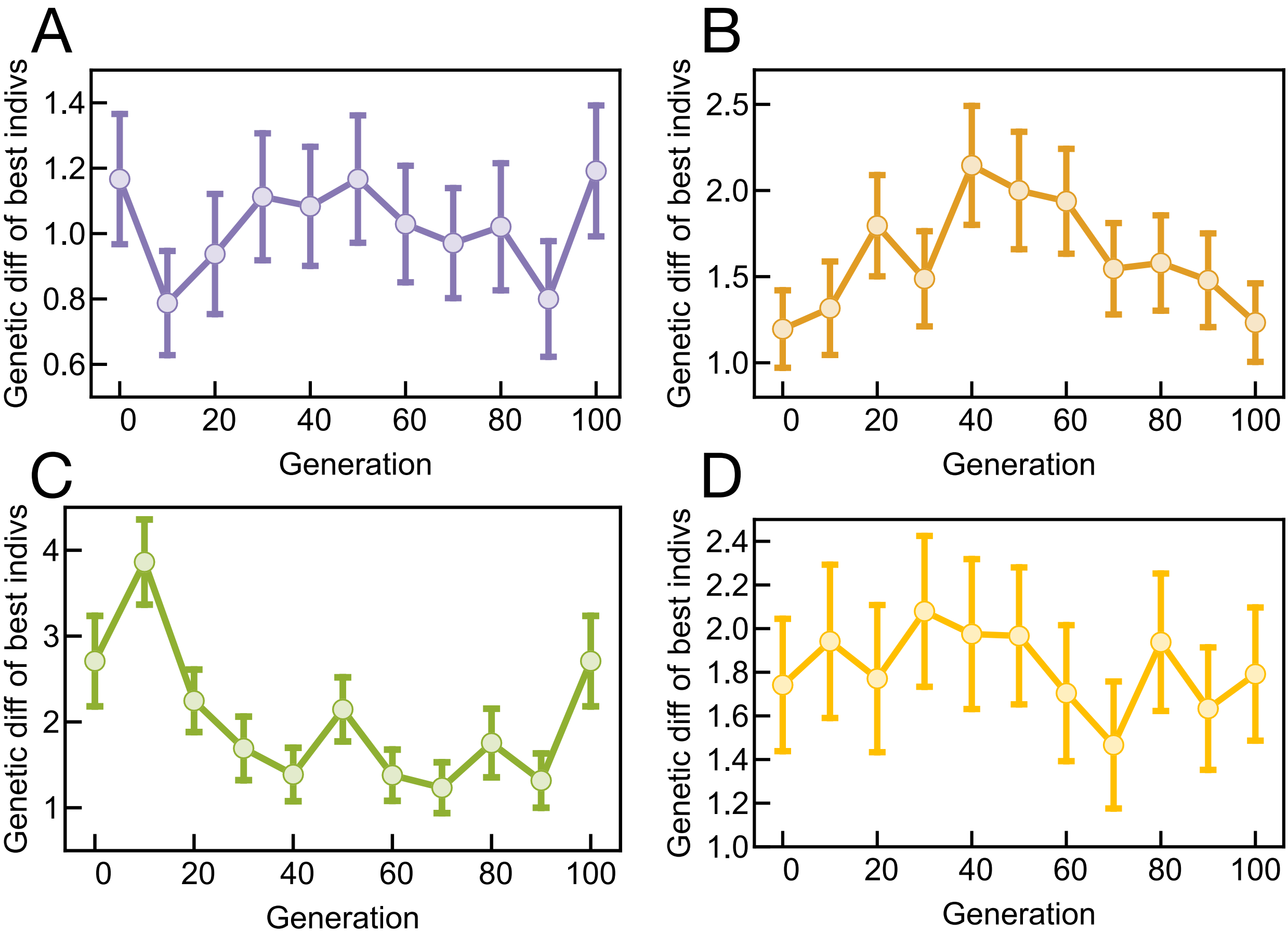

Adaptation Speed
Ratio
B
Total Population Size

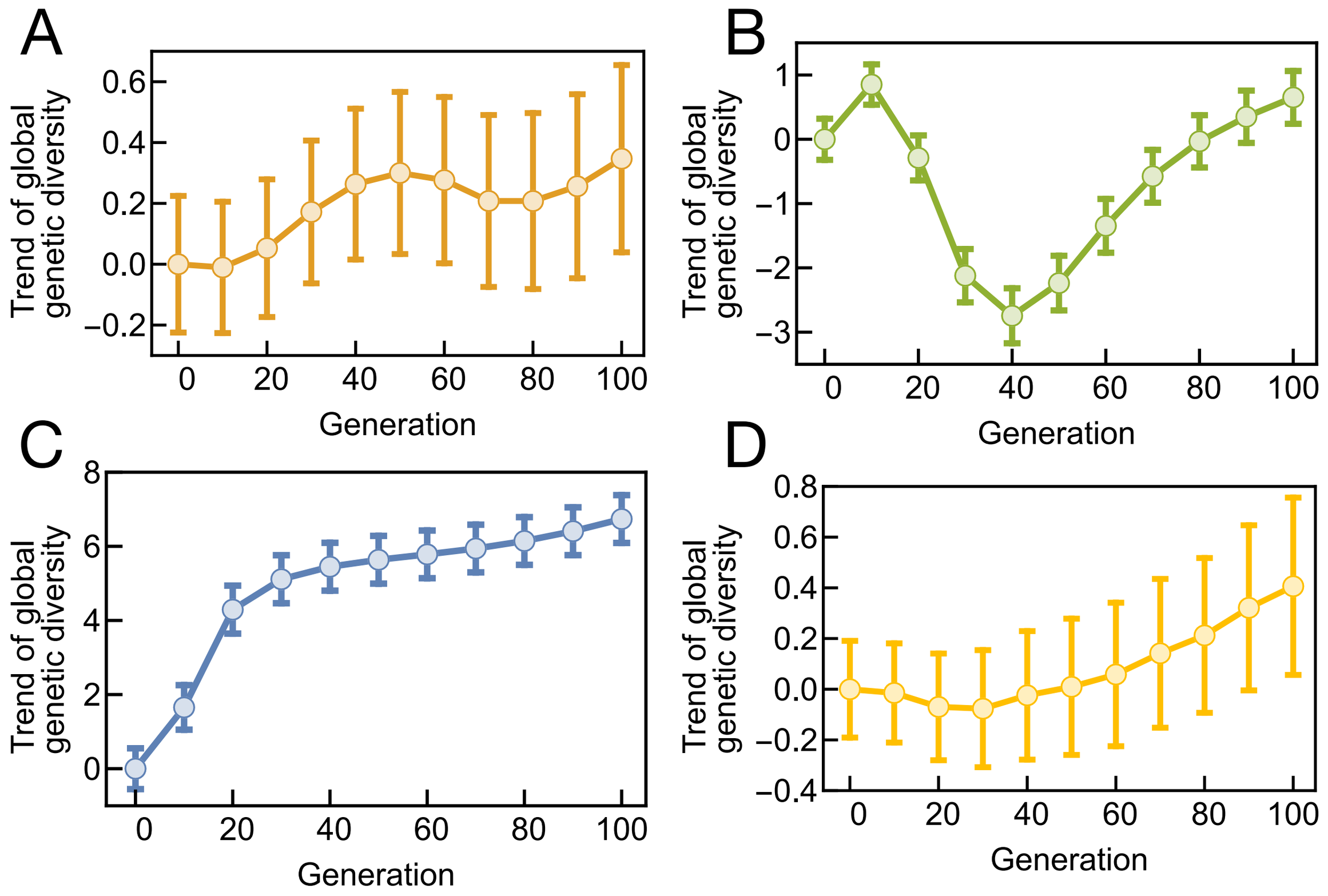

Adaptation Speed
Ratio
C
Total Population Size


Adaptation Speed
Ratio
D
Total Population Size

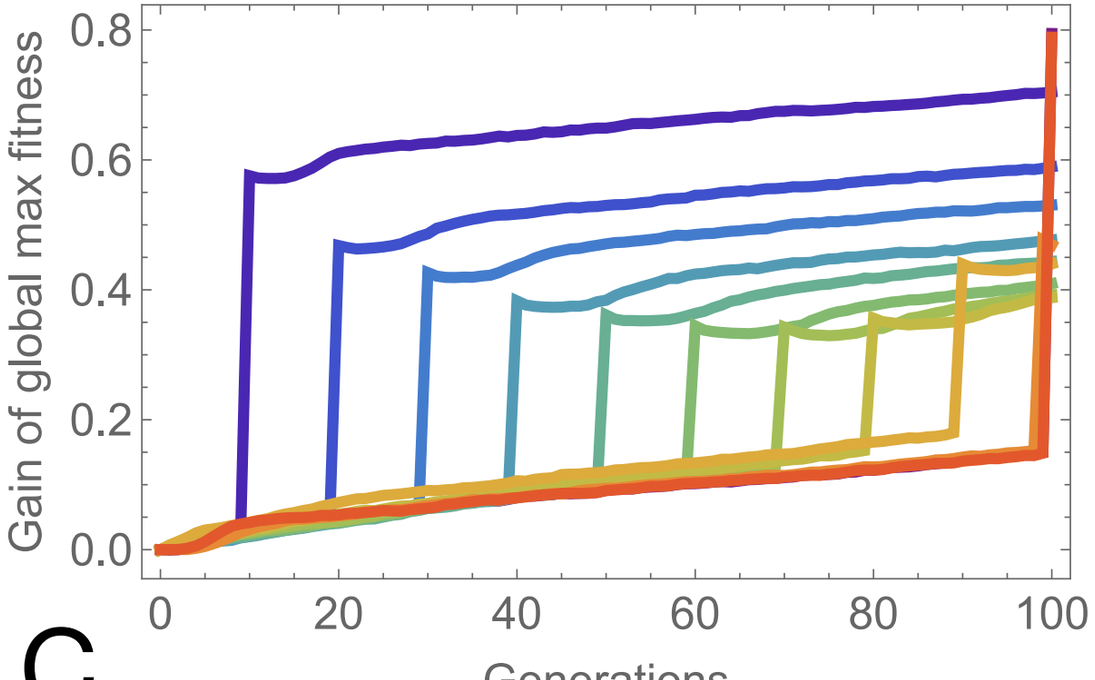

Adaptation Speed
Ratio
E
Total Population Size


Adaptation Speed
Ratio
F
Total Population Size

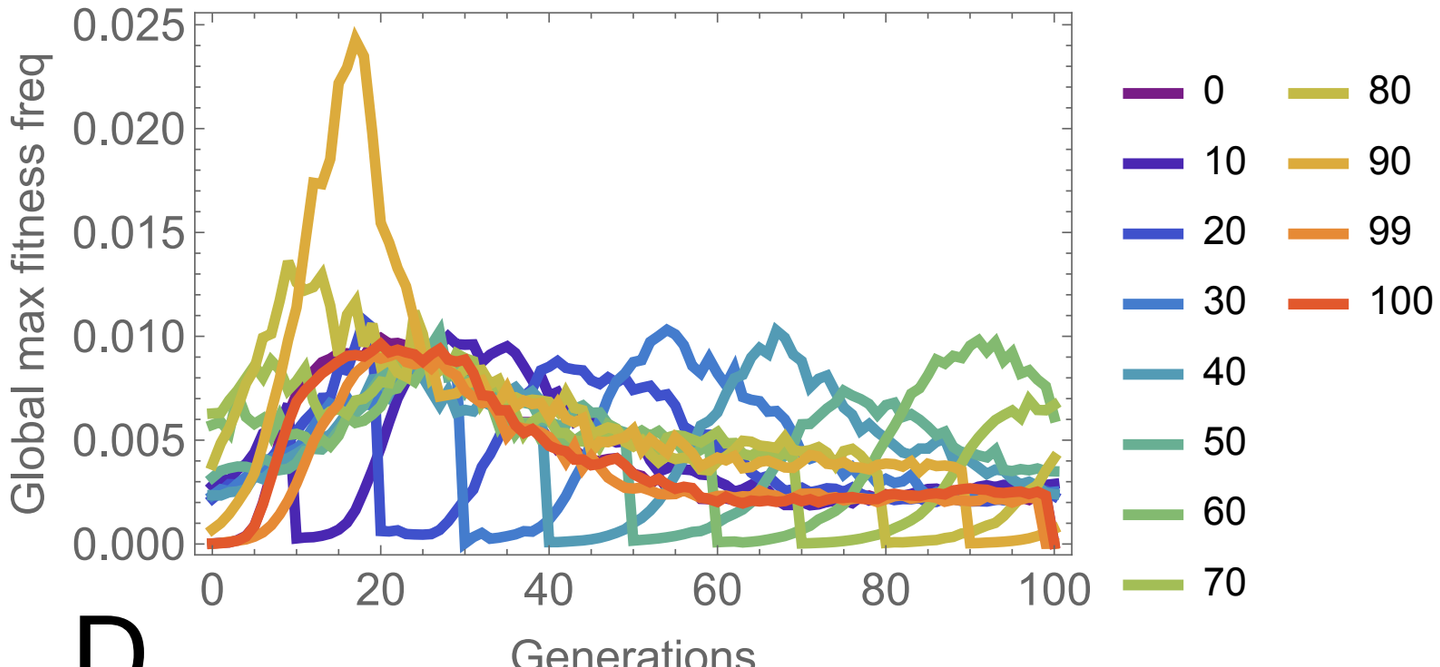

A
B
C
D
Genetic diff of best indivs
Generation
0
20
40
60
80
100
0.6
0.8
1.0
1.2
1.4
1.0
1.5
2.0
2.5
1
2
3
4
1.0
1.2
1.4
1.6
1.8
2.0
2.2
2.4


A
Trend of global genetic diversity
0.6
0.4
0.2
0.0
−0.2
0
20
40
60
80
100
Generation
B
Trend of global genetic diversity
1
0
−1
−2
−3
0
20
40
60
80
100
Generation
C
Trend of global genetic diversity
8
6
4
2
0
0
20
40
60
80
100
Generation
D
Trend of global genetic diversity
0.8
0.6
0.4
0.2
0.0
−0.2
−0.4
0
20
40
60
80
100
Generation

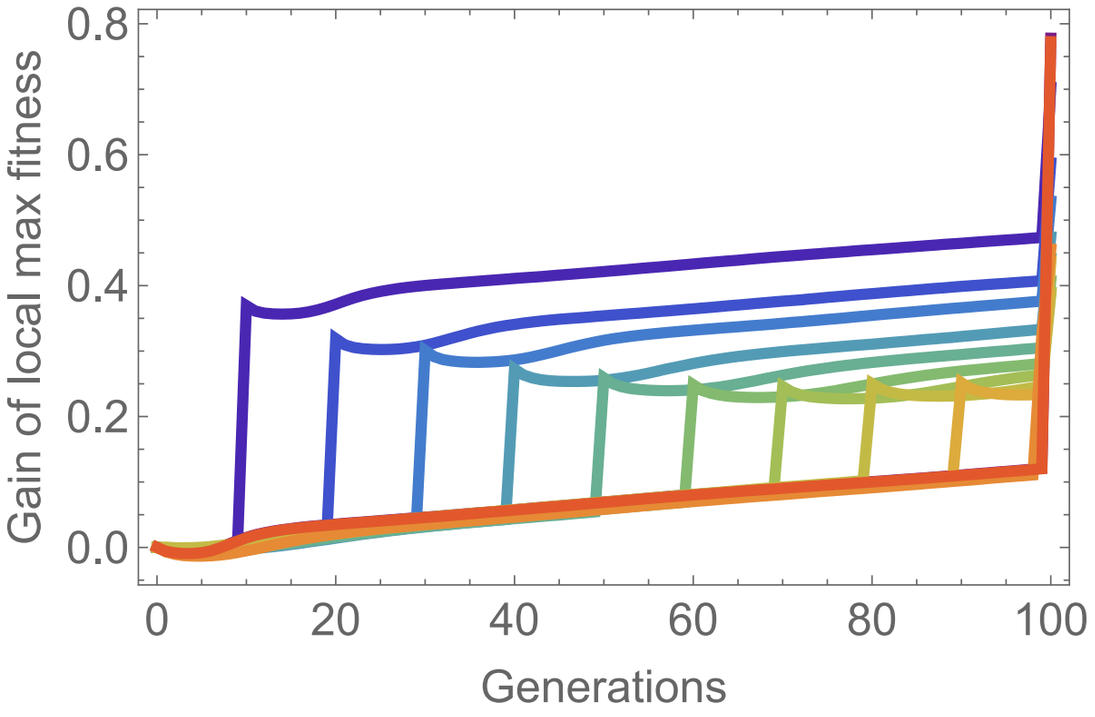
A


Gain of global max fitness
0.0
0.2
0.4
0.6
0.8
0
20
40
60
80
100
Generations

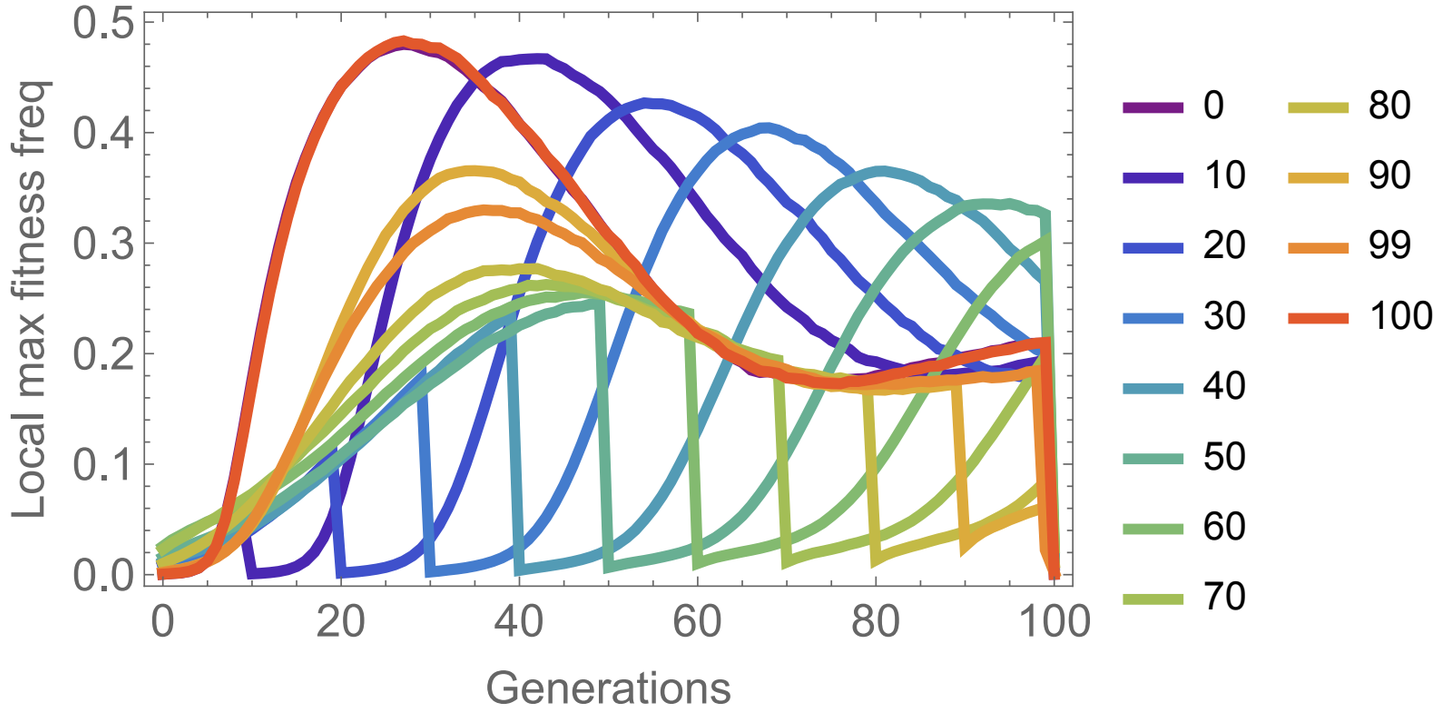
B


Global max fitness freq
0.000
0.005
0.010
0.015
0.020
0.025
0
20
40
60
80
100
Generations
0
10
20
30
40
50
60
70
80
90
99
100

C


Gain of local max fitness
0.0
0.2
0.4
0.6
0.8
0
20
40
60
80
100
Generations

D


Local max fitness freq
0.0
0.1
0.2
0.3
0.4
0.5
0
20
40
60
80
100
Generations
0
10
20
30
40
50
60
70
80
90
99
100