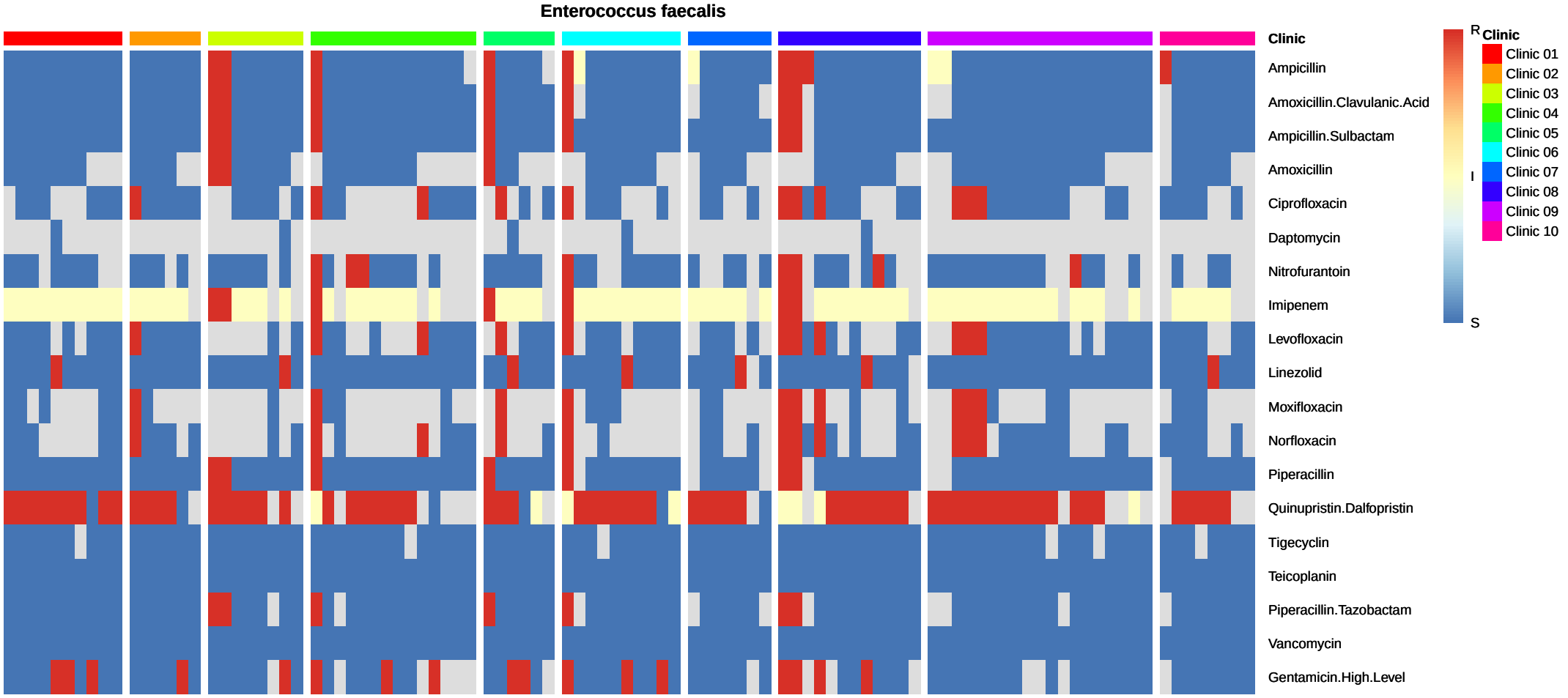
Resistance Cluster Analyses

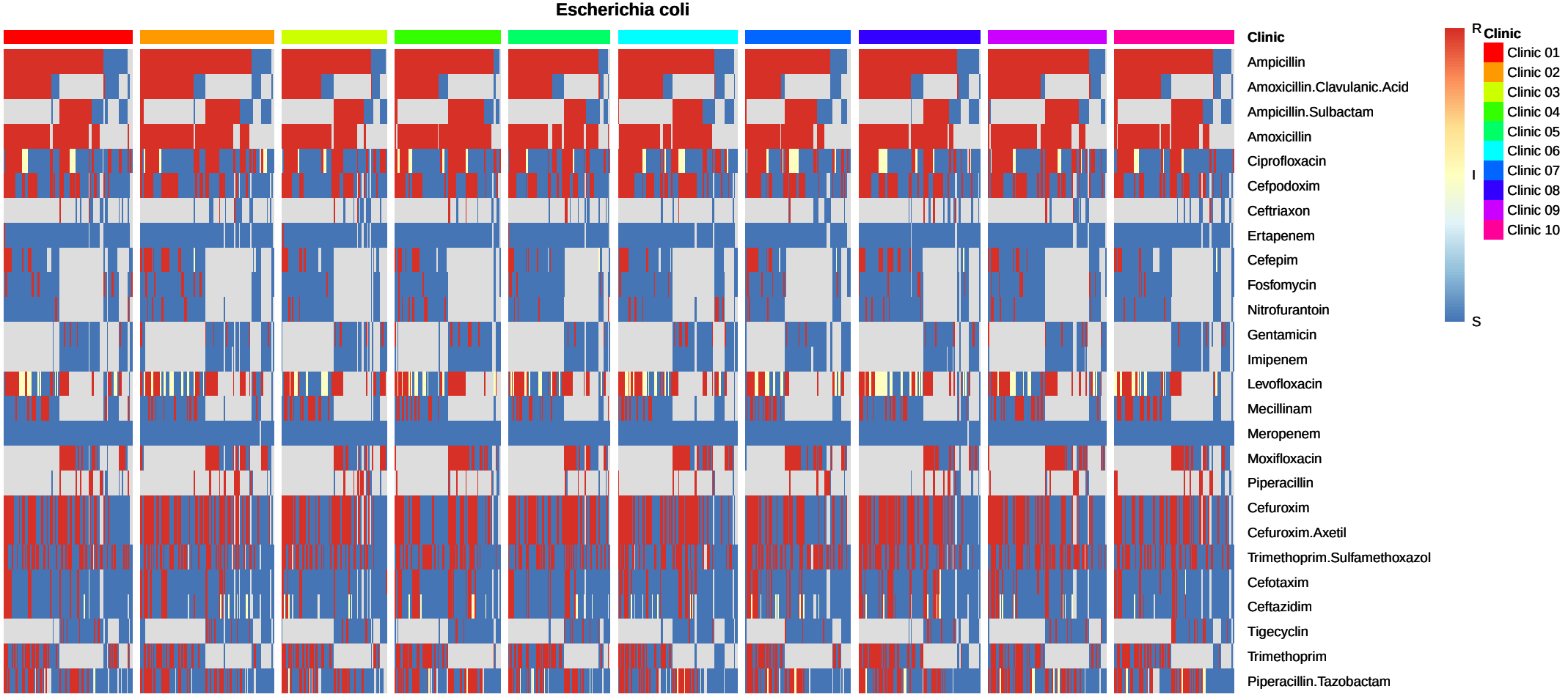
2022-11-09

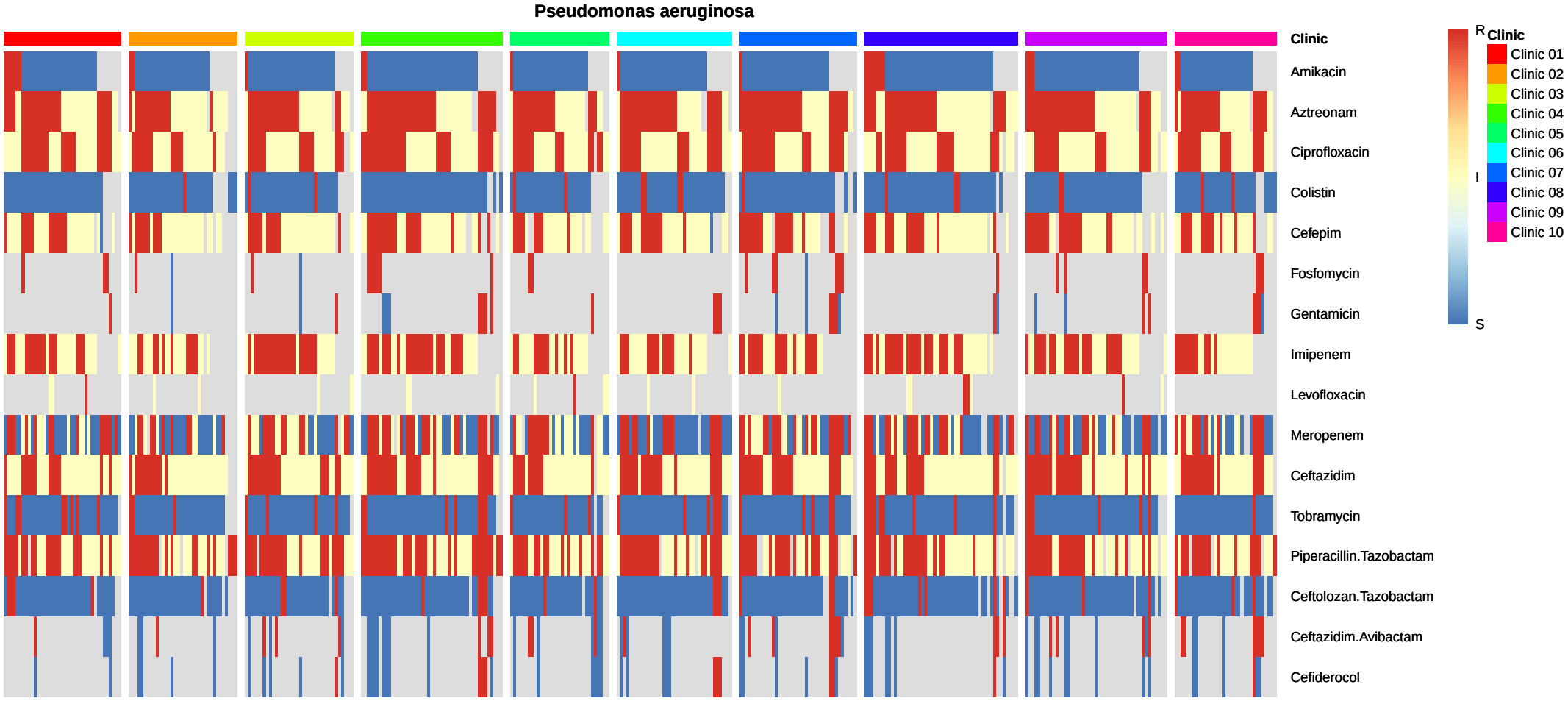
Independent analysis per species

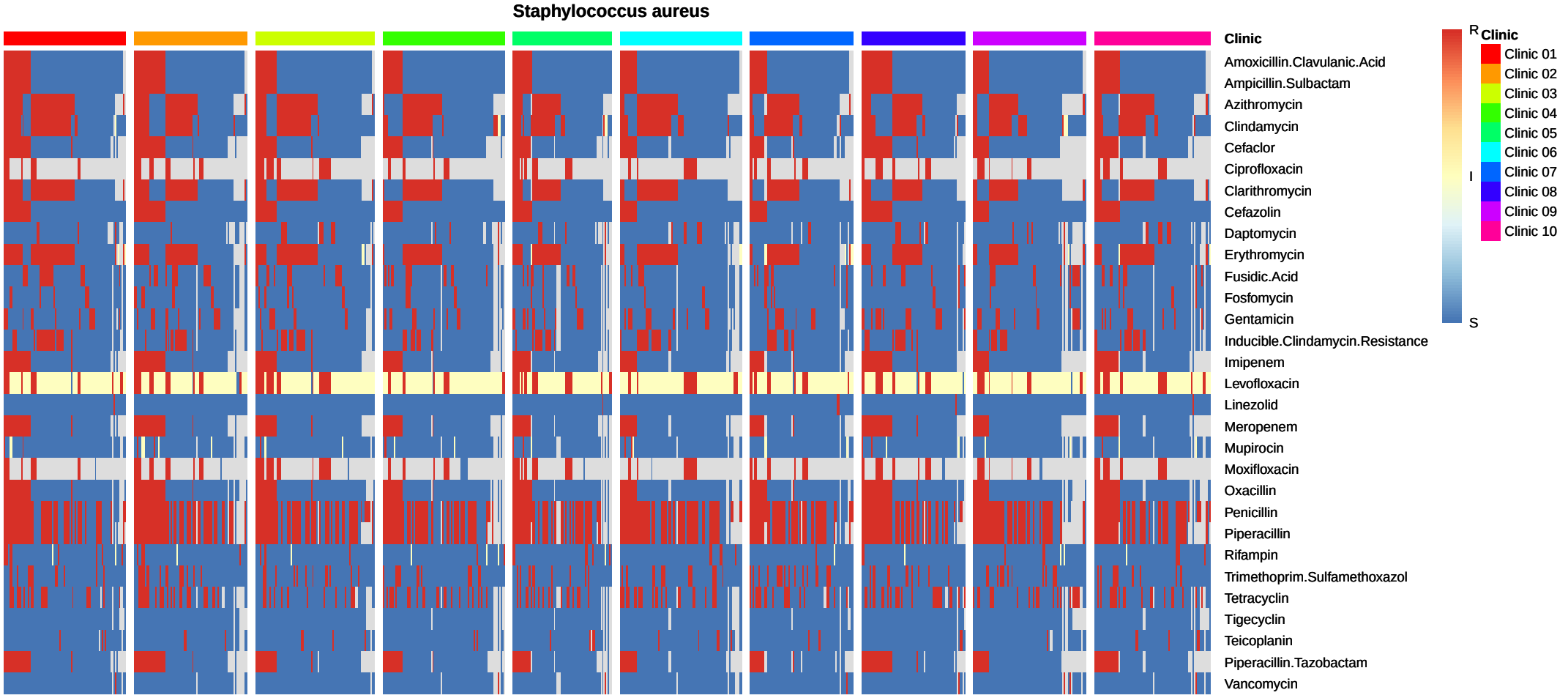
Heatmap

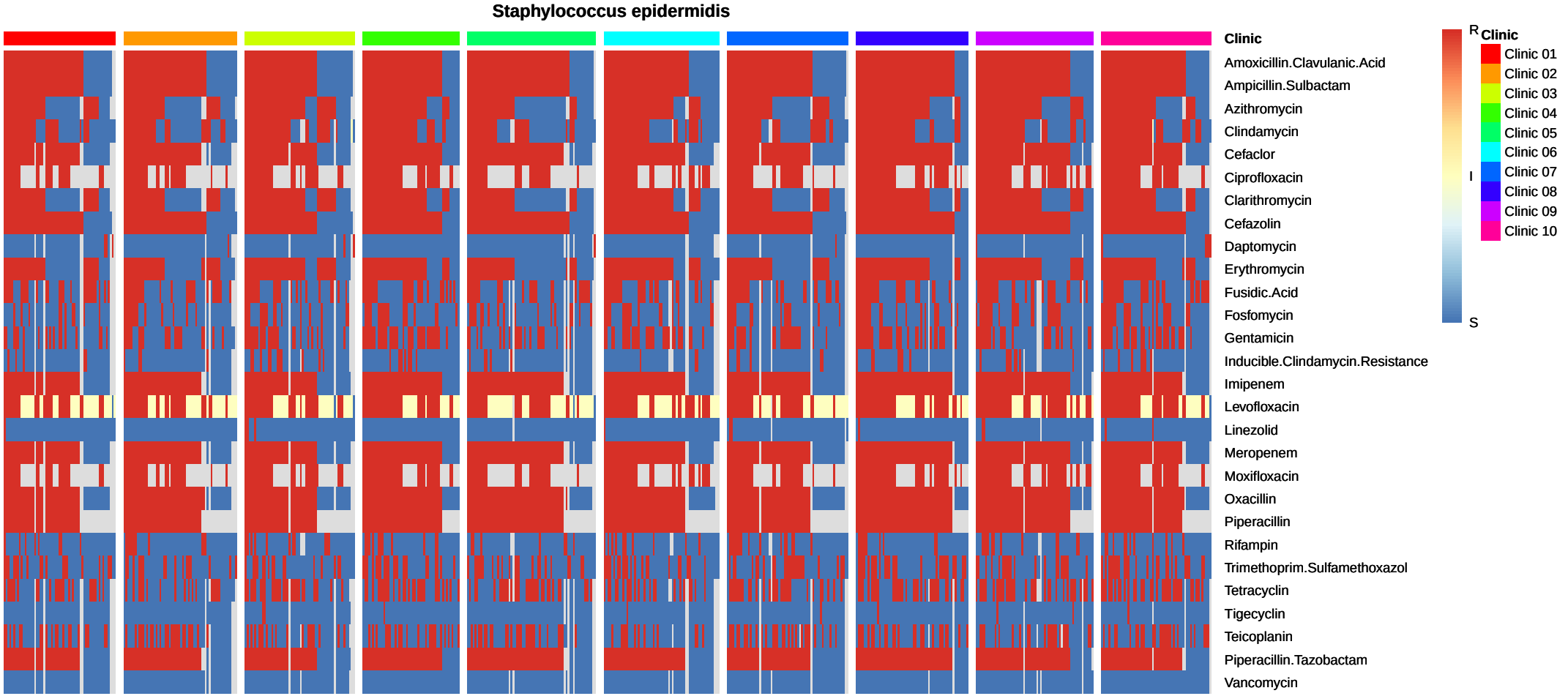
Data ordered 1) clinic, 2) resistance


Enterococcus faecalis
Clinic
Ampicillin
Amoxicillin.Clavulanic.Acid
Ampicillin.Sulbactam
Amoxicillin
Ciprofloxacin
Daptomycin
Nitrofurantoin
Imipenem
Levofloxacin
Linezolid
Moxifloxacin
Norfloxacin
Piperacillin
Quinupristin.Dalfopristin
Tigecyclin
Teicoplanin
Piperacillin.Tazobactam
Vancomycin
Gentamicin.High.Level
R
I
S
Clinic
Clinic 01
Clinic 02
Clinic 03
Clinic 04
Clinic 05
Clinic 06
Clinic 07
Clinic 08
Clinic 09
Clinic 10


Escherichia coli
Clinic
Ampicillin
Amoxicillin.Clavulanic.Acid
Ampicillin.Sulbactam
Amoxicillin
Ciprofloxacin
Cefpodoxim
Ceftriaxon
Ertapenem
Cefepim
Fosfomycin
Nitrofurantoin
Gentamicin
Imipenem
Levofloxacin
Mecillinam
Meropenem
Moxifloxacin
Piperacillin
Cefuroxim
Cefuroxim.Axetil
Trimethoprim.Sulfamethoxazol
Cefotaxim
Ceftazidim
Tigecyclin
Trimethoprim
Piperacillin.Tazobactam
R
I
S
Clinic
Clinic 01
Clinic 02
Clinic 03
Clinic 04
Clinic 05
Clinic 06
Clinic 07
Clinic 08
Clinic 09
Clinic 10

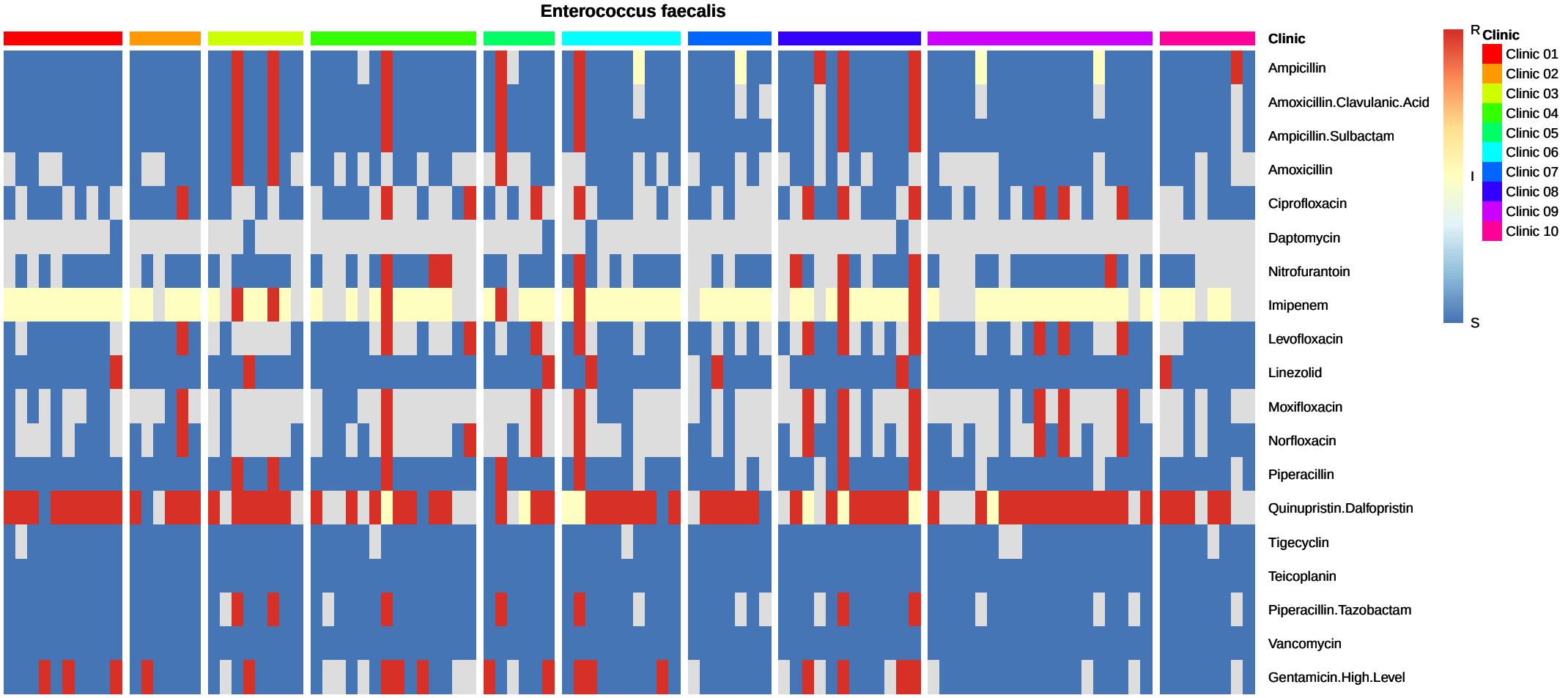

Pseudomonas aeruginosa
Clinic
Amikacin
Aztreonam
Ciprofloxacin
Colistin
Cefepim
Fosfomycin
Gentamicin
Imipenem
Levofloxacin
Meropenem
Ceftazidim
Tobramycin
Piperacillin.Tazobactam
Ceftolozan.Tazobactam
Ceftazidim.Avibactam
Cefiderocol
R
I
S
Clinic
Clinic 01
Clinic 02
Clinic 03
Clinic 04
Clinic 05
Clinic 06
Clinic 07
Clinic 08
Clinic 09
Clinic 10

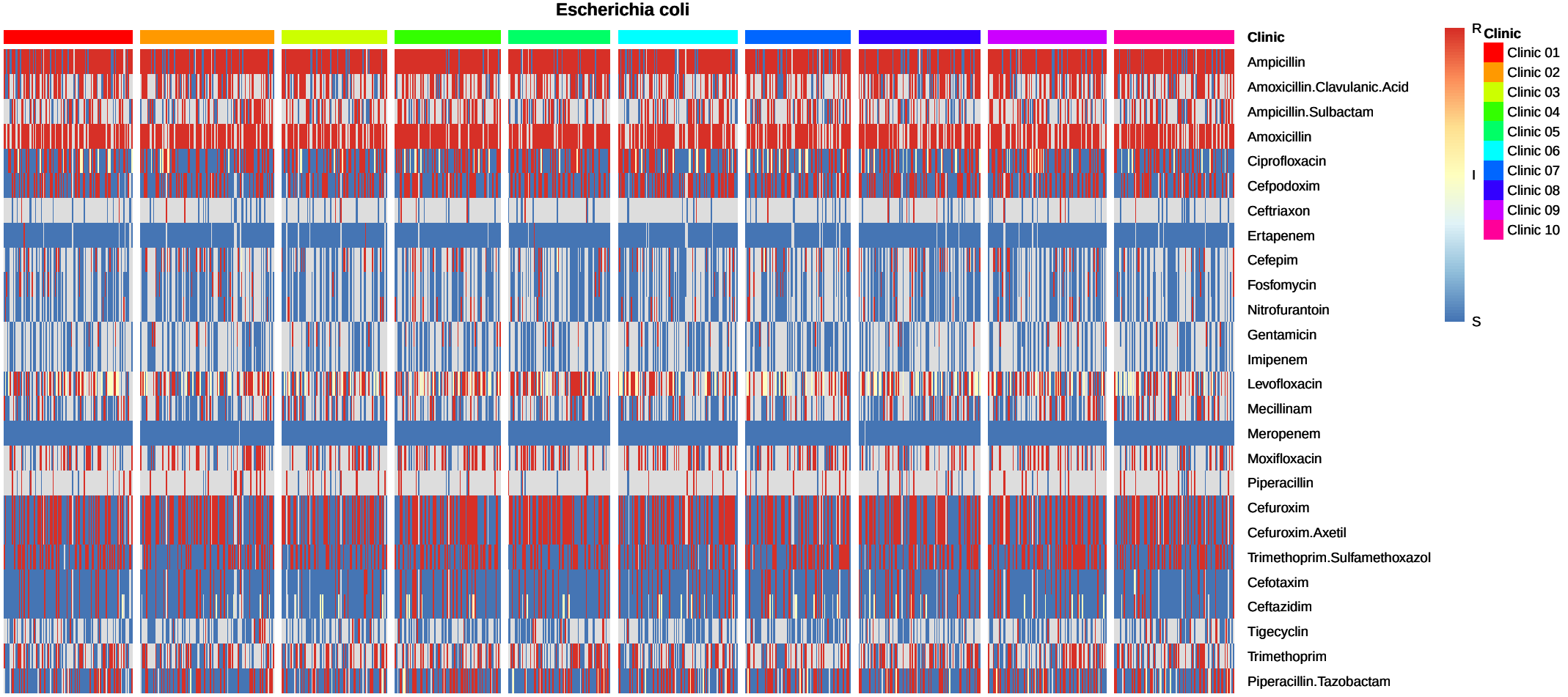

Staphylococcus aureus
Clinic
Amoxicillin.Clavulanic.Acid
Ampicillin.Sulbactam
Azithromycin
Clindamycin
Cefaclor
Ciprofloxacin
Clarithromycin
Cefazolin
Daptomycin
Erythromycin
Fusidic.Acid
Fosfomycin
Gentamicin
Inducible.Clindamycin.Resistance
Imipenem
Levofloxacin
Linezolid
Meropenem
Mupirocin
Moxifloxacin
Oxacillin
Penicillin
Piperacillin
Rifampin
Trimethoprim.Sulfamethoxazol
Tetracyclin
Tigecyclin
Teicoplanin
Piperacillin.Tazobactam
Vancomycin
R
I
S
Clinic
Clinic 01
Clinic 02
Clinic 03
Clinic 04
Clinic 05
Clinic 06
Clinic 07
Clinic 08
Clinic 09
Clinic 10


Staphylococcus epidermidis
Clinic
Amoxicillin.Clavulanic.Acid
Ampicillin.Sulbactam
Azithromycin
Clindamycin
Cefaclor
Ciprofloxacin
Clarithromycin
Cefazolin
Daptomycin
Erythromycin
Fusidic.Acid
Fosfomycin
Gentamicin
Inducible.Clindamycin.Resistance
Imipenem
Levofloxacin
Linezolid
Meropenem
Moxifloxacin
Oxacillin
Piperacillin
Rifampin
Trimethoprim.Sulfamethoxazol
Tetracyclin
Tigecyclin
Teicoplanin
Piperacillin.Tazobactam
Vancomycin
R
I
S
Clinic
Clinic 01
Clinic 02
Clinic 03
Clinic 04
Clinic 05
Clinic 06
Clinic 07
Clinic 08
Clinic 09
Clinic 10

Heatmap

Data ordered by 1) clinic, 2) date


Enterococcus faecalis
Clinic
Ampicillin
Amoxicillin.Clavulanic.Acid
Ampicillin.Sulbactam
Amoxicillin
Ciprofloxacin
Daptomycin
Nitrofurantoin
Imipenem
Levofloxacin
Linezolid
Moxifloxacin
Norfloxacin
Piperacillin
Quinupristin.Dalfopristin
Tigecyclin
Teicoplanin
Piperacillin.Tazobactam
Vancomycin
Gentamicin.High.Level
R
I
S
Clinic
Clinic 01
Clinic 02
Clinic 03
Clinic 04
Clinic 05
Clinic 06
Clinic 07
Clinic 08
Clinic 09
Clinic 10


Escherichia coli
Clinic
Ampicillin
Amoxicillin.Clavulanic.Acid
Ampicillin.Sulbactam
Amoxicillin
Ciprofloxacin
Cefpodoxim
Ceftriaxon
Ertapenem
Cefepim
Fosfomycin
Nitrofurantoin
Gentamicin
Imipenem
Levofloxacin
Mecillinam
Meropenem
Moxifloxacin
Piperacillin
Cefuroxim
Cefuroxim.Axetil
Trimethoprim.Sulfamethoxazol
Cefotaxim
Ceftazidim
Tigecyclin
Trimethoprim
Piperacillin.Tazobactam
R
I
S
Clinic
Clinic 01
Clinic 02
Clinic 03
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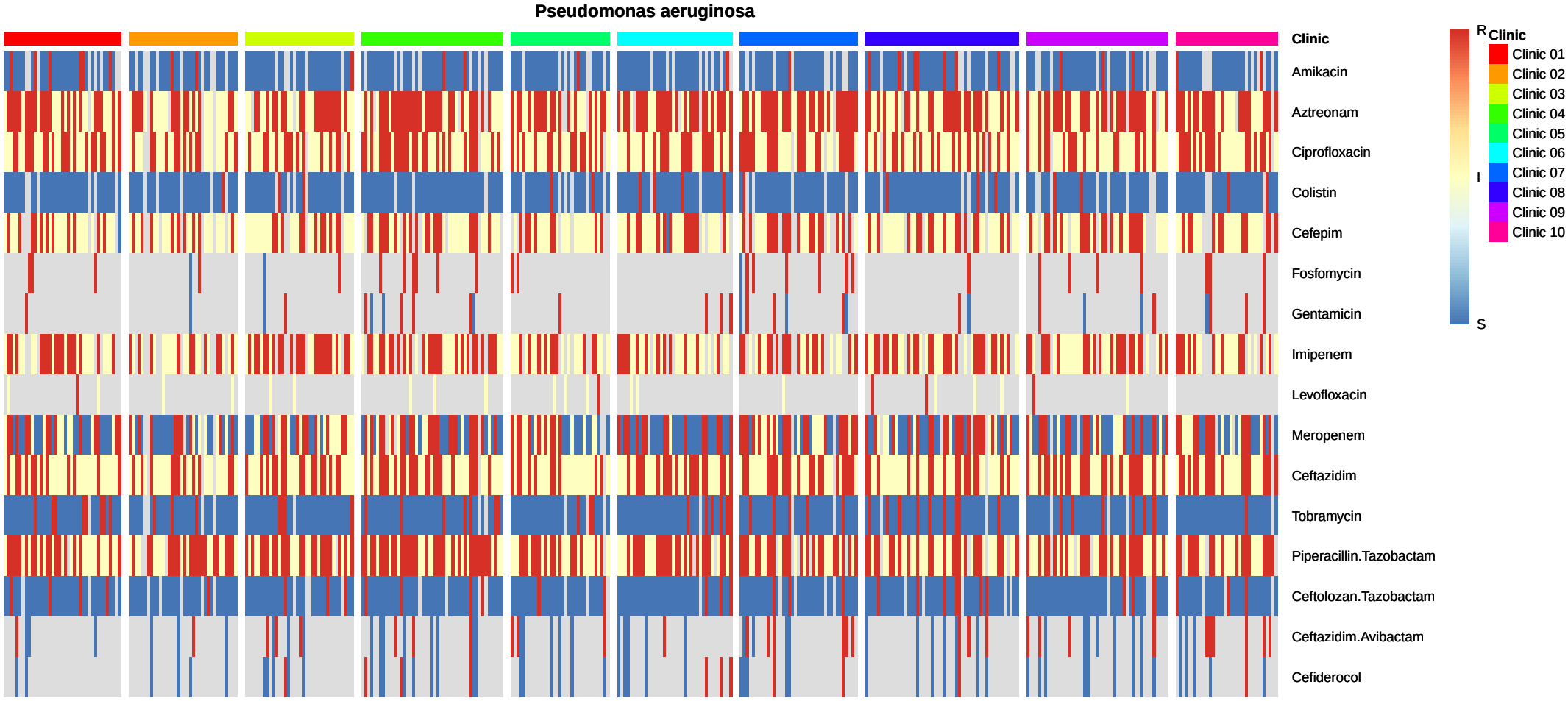
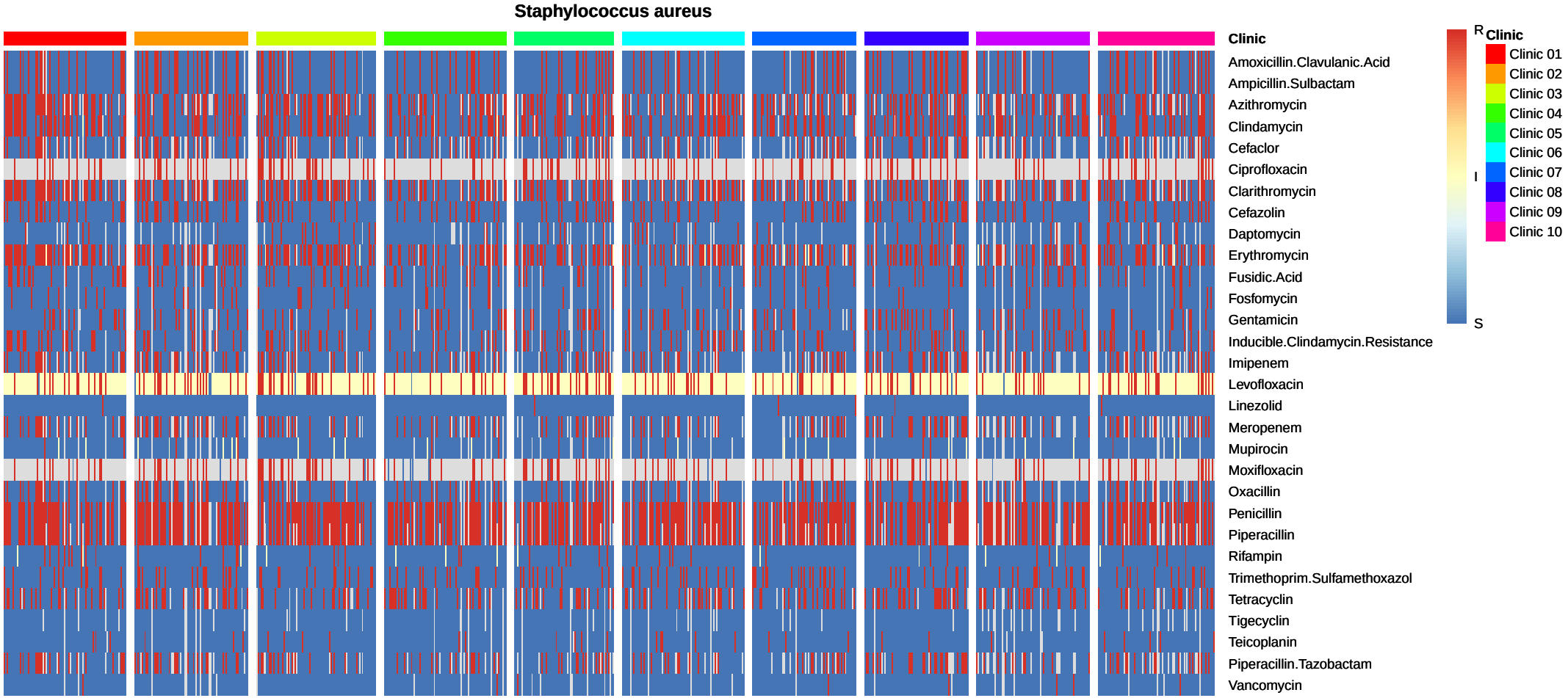
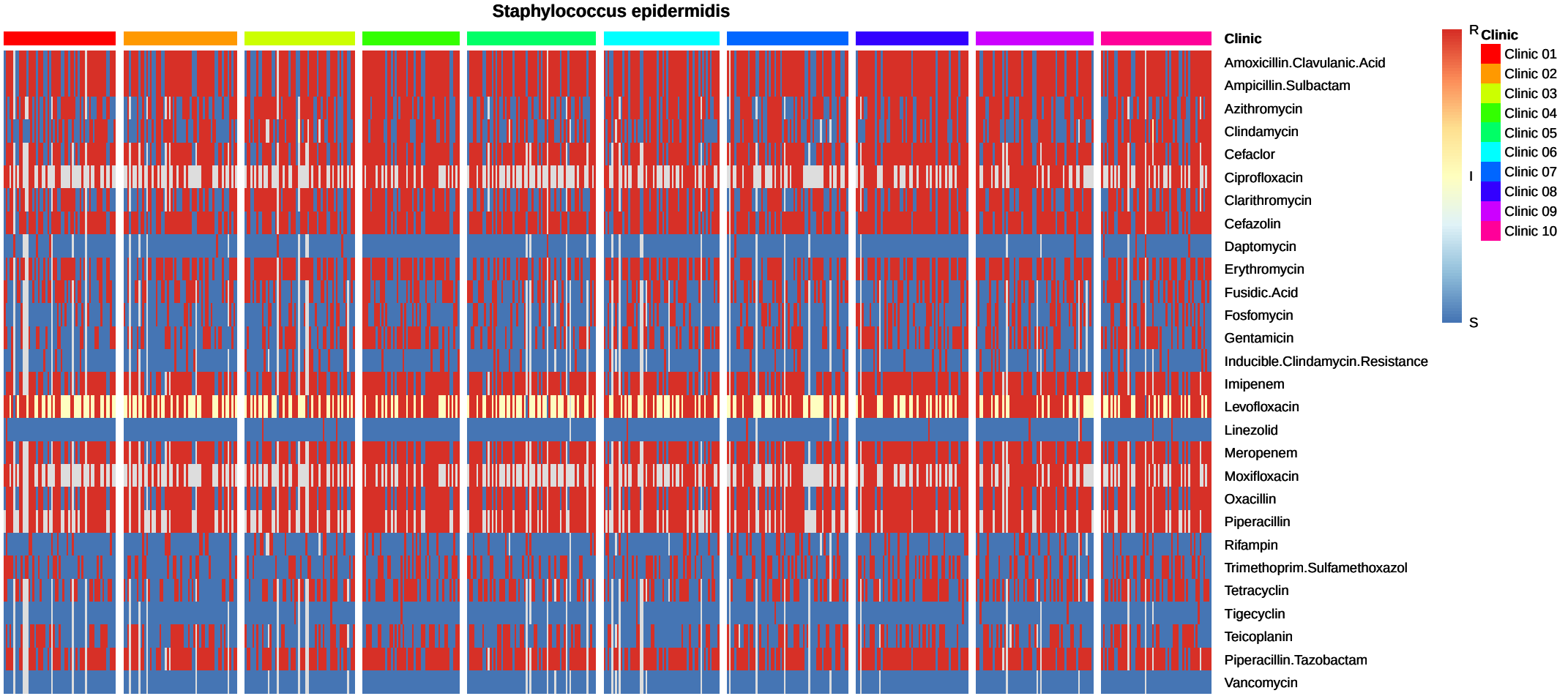
Clinic 05
Clinic 06
Clinic 07
Clinic 08
Clinic 09
Clinic 10


Pseudomonas aeruginosa
Clinic
Amikacin
Aztreonam
Ciprofloxacin
Colistin
Cefepim
Fosfomycin
Gentamicin
Imipenem
Levofloxacin
Meropenem
Ceftazidim
Tobramycin
Piperacillin.Tazobactam
Ceftolozan.Tazobactam
Ceftazidim.Avibactam
Cefiderocol
R
I
S
Clinic
Clinic 01
Clinic 02
Clinic 03
Clinic 04
Clinic 05
Clinic 06
Clinic 07
Clinic 08
Clinic 09
Clinic 10


Staphylococcus aureus
Clinic
Amoxicillin.Clavulanic.Acid
Ampicillin.Sulbactam
Azithromycin
Clindamycin
Cefaclor
Ciprofloxacin
Clarithromycin
Cefazolin
Daptomycin
Erythromycin
Fusidic.Acid
Fosfomycin
Gentamicin
Inducible.Clindamycin.Resistance
Imipenem
Levofloxacin
Linezolid
Meropenem
Mupirocin
Moxifloxacin
Oxacillin
Penicillin
Piperacillin
Rifampin
Trimethoprim.Sulfamethoxazol
Tetracyclin
Tigecyclin
Teicoplanin
Piperacillin.Tazobactam
Vancomycin
R
I
S
Clinic
Clinic 01
Clinic 02
Clinic 03
Clinic 04
Clinic 05
Clinic 06
Clinic 07
Clinic 08
Clinic 09
Clinic 10

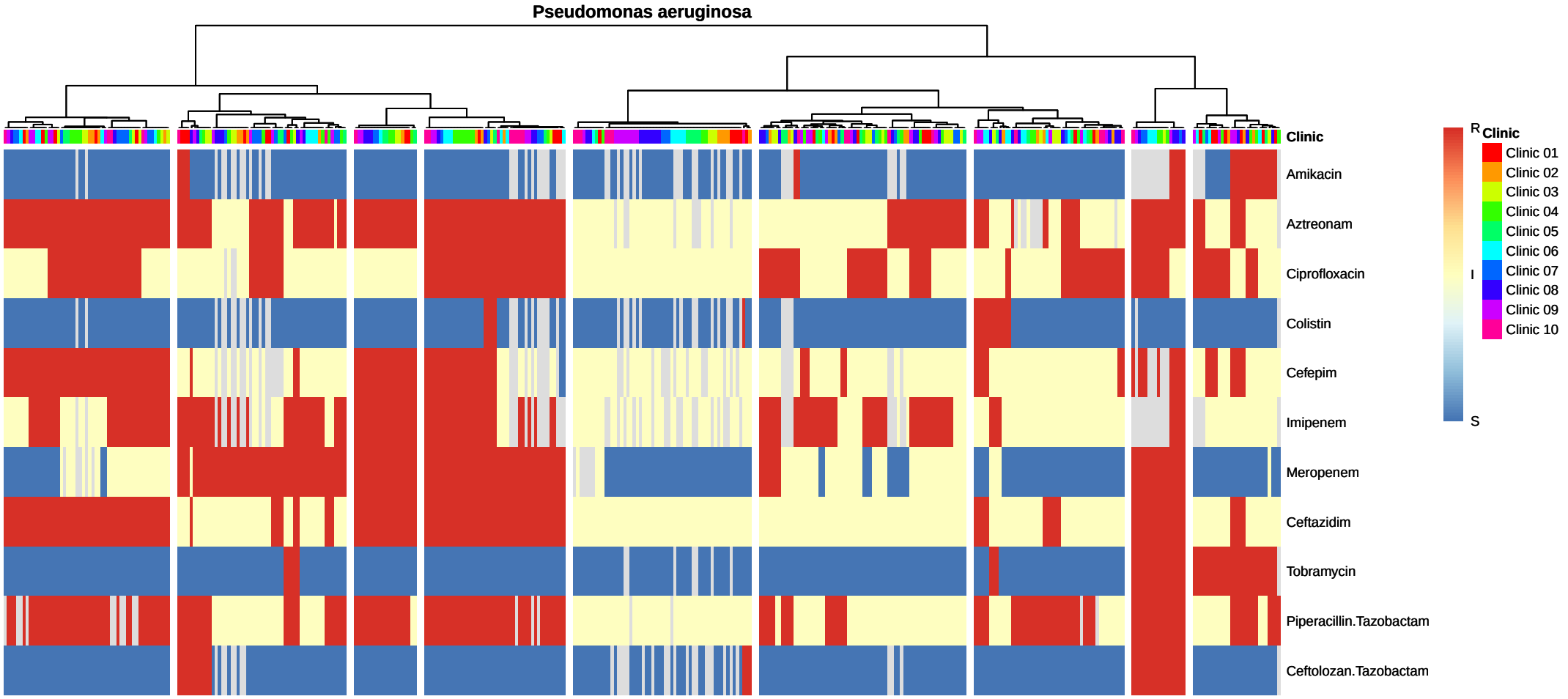

Staphylococcus epidermidis
Clinic
Amoxicillin.Clavulanic.Acid
Ampicillin.Sulbactam
Azithromycin
Clindamycin
Cefaclor
Ciprofloxacin
Clarithromycin
Cefazolin
Daptomycin
Erythromycin
Fusidic.Acid
Fosfomycin
Gentamicin
Inducible.Clindamycin.Resistance
Imipenem
Levofloxacin
Linezolid
Meropenem
Moxifloxacin
Oxacillin
Piperacillin
Rifampin
Trimethoprim.Sulfamethoxazol
Tetracyclin
Tigecyclin
Teicoplanin
Piperacillin.Tazobactam
Vancomycin
R
I
S
Clinic
Clinic 01
Clinic 02
Clinic 03
Clinic 04
Clinic 05
Clinic 06
Clinic 07
Clinic 08
Clinic 09
Clinic 10

Heatmap

Hierarchical clustering

Enterococcus faecalis − no clustering possible

Escherichia coli − no clustering possible

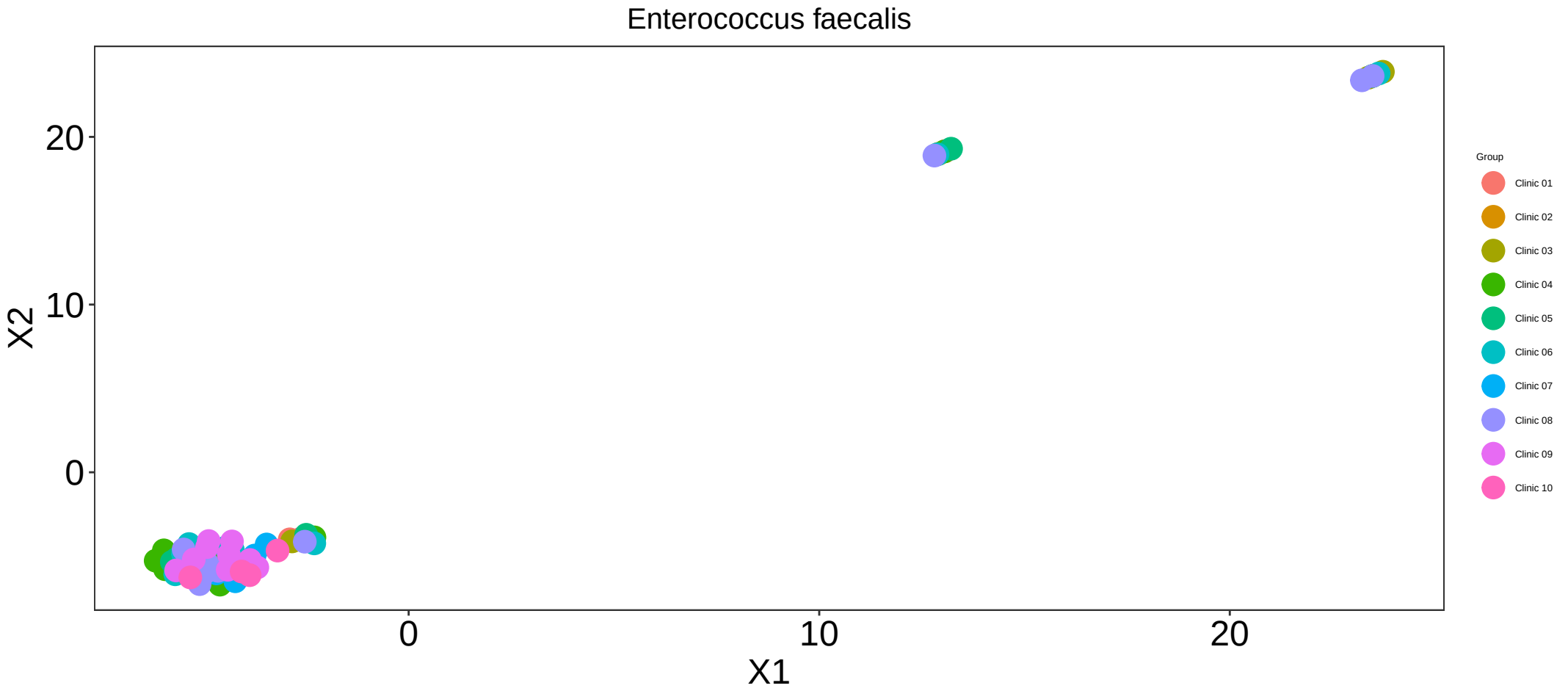

Pseudomonas aeruginosa
Clinic
Amikacin
Aztreonam
Ciprofloxacin
Colistin
Cefepim
Imipenem
Meropenem
Ceftazidim
Tobramycin
Piperacillin.Tazobactam
Ceftolozan.Tazobactam
R
I
S
Clinic
Clinic 01
Clinic 02
Clinic 03
Clinic 04
Clinic 05
Clinic 06
Clinic 07
Clinic 08
Clinic 09
Clinic 10

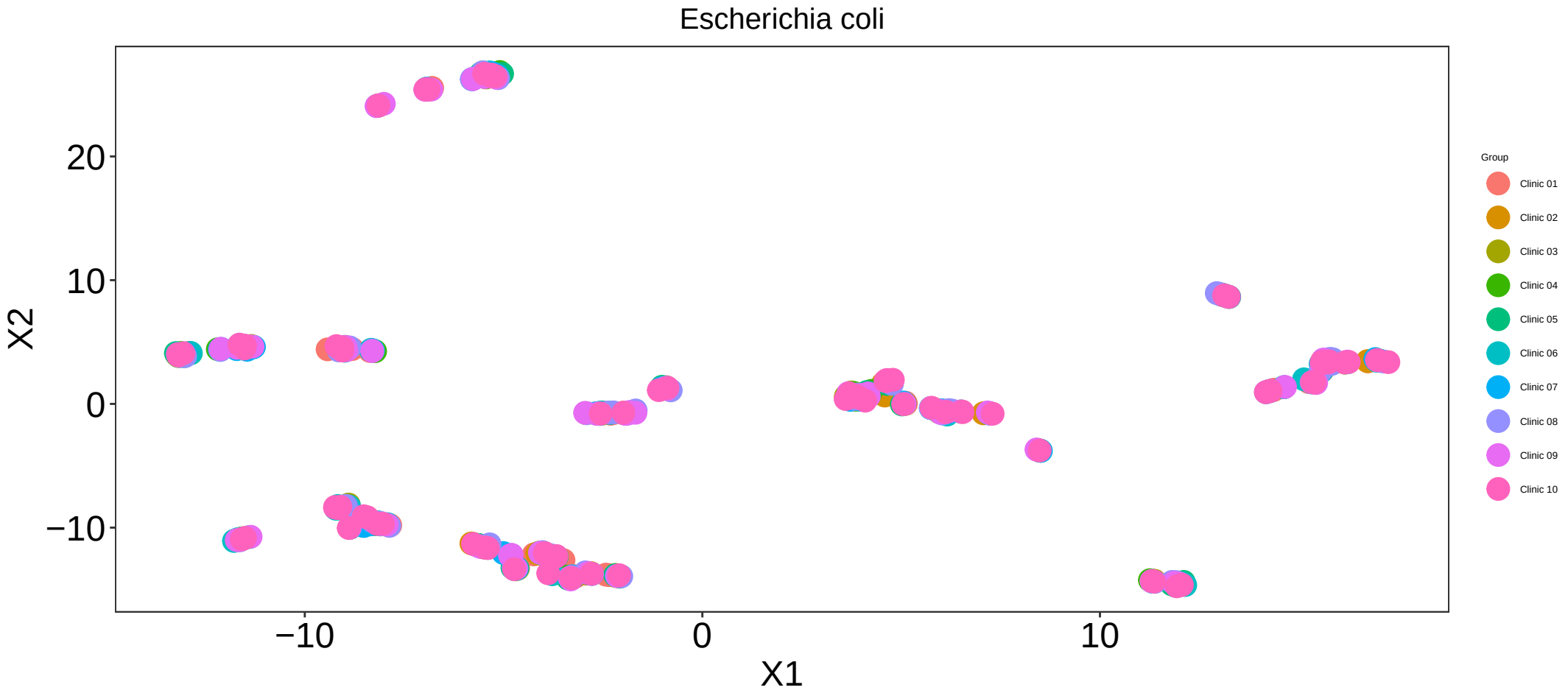
Staphylococcus aureus − no clustering possible

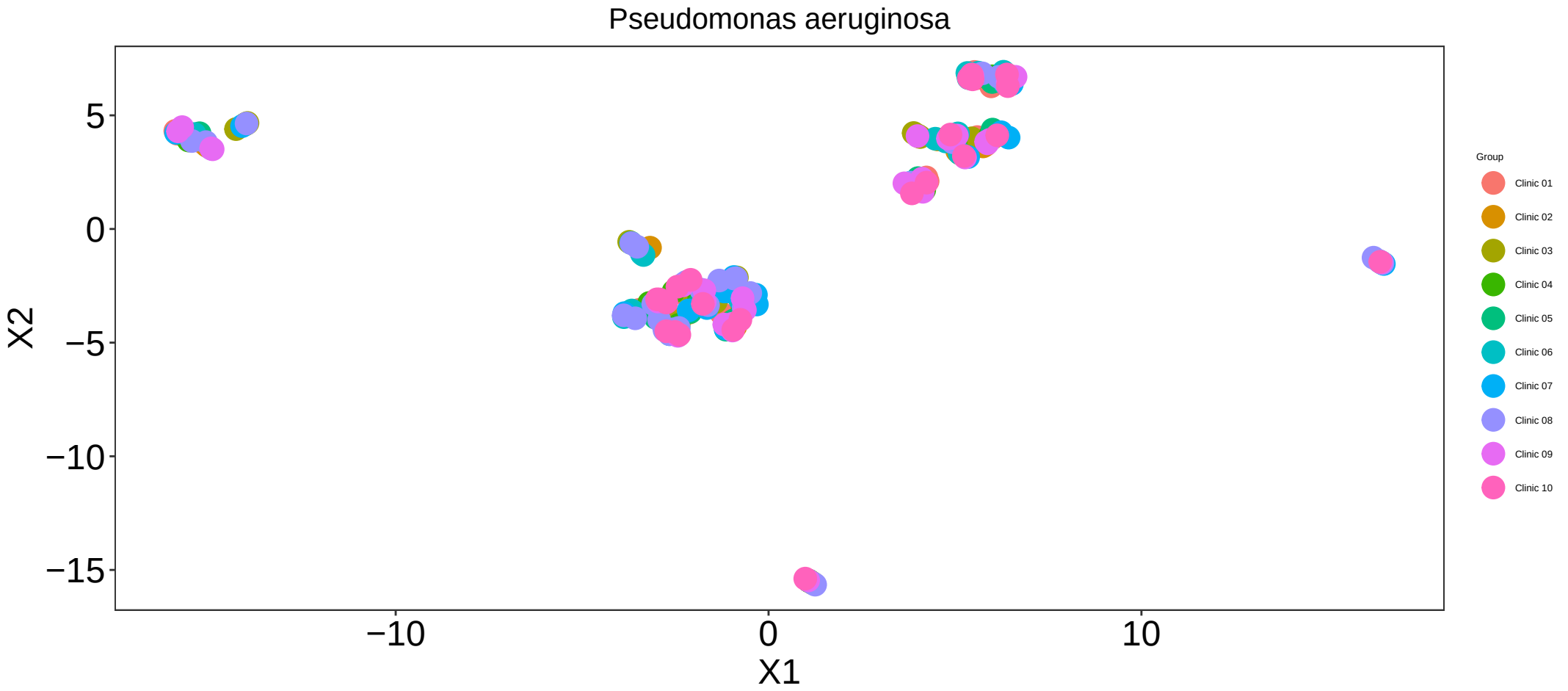
Staphylococcus epidermidis − no clustering possible

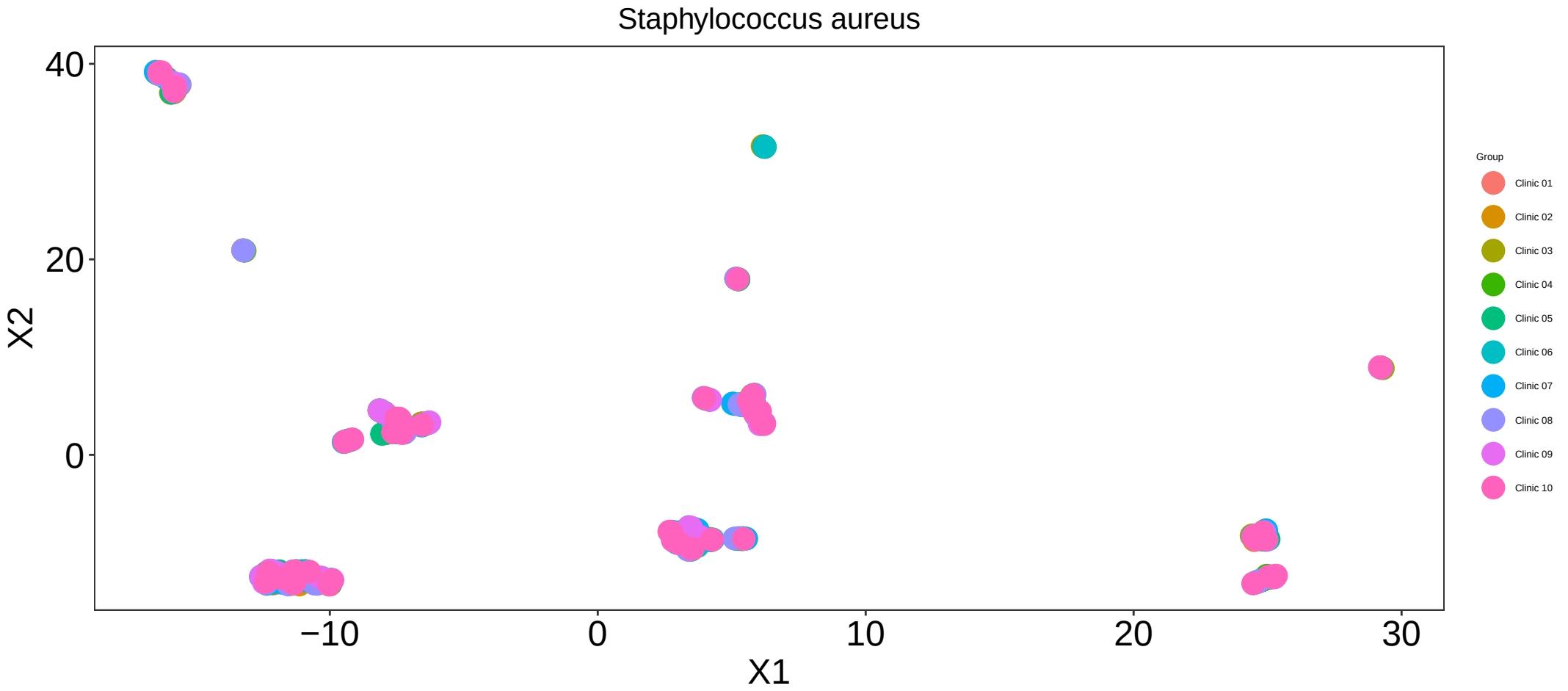
UMAP

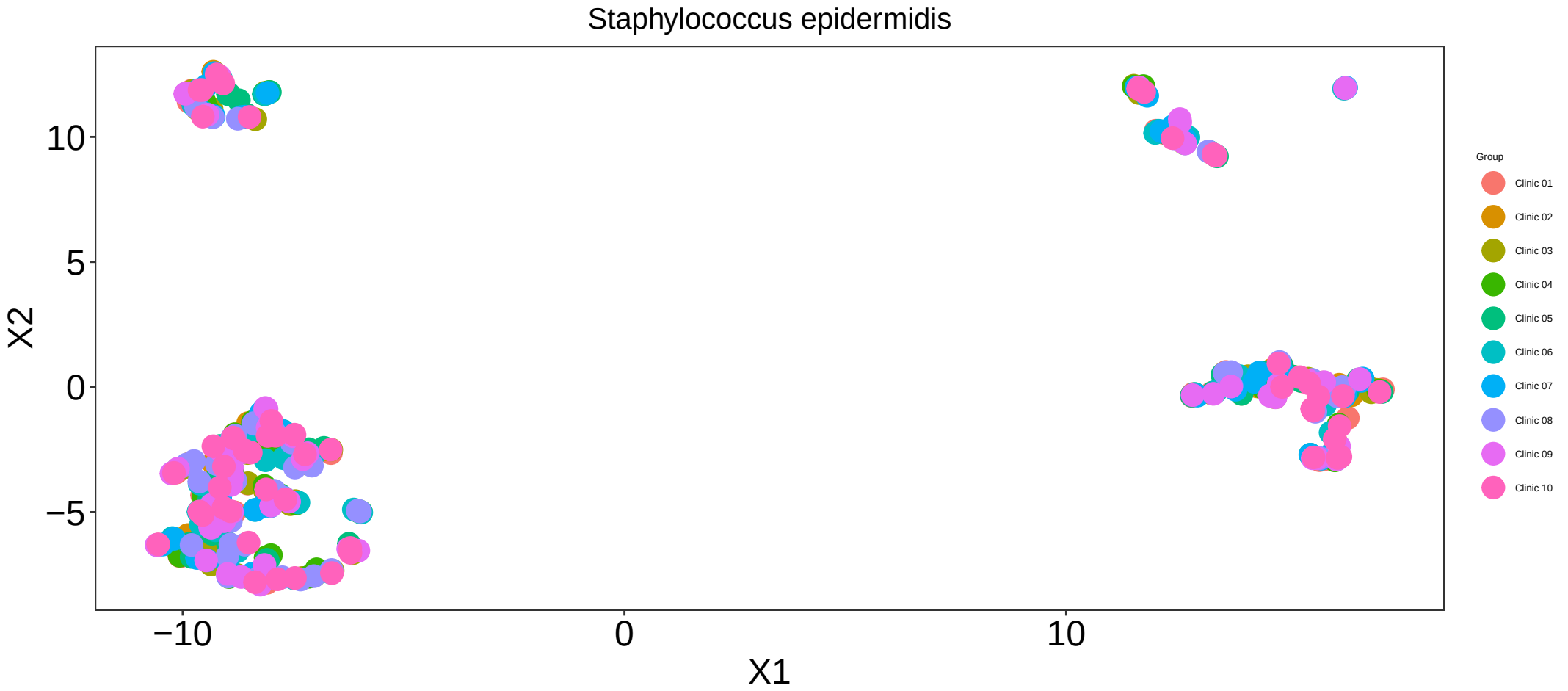
Plot with colored clinics


Enterococcus faecalis
X2
20
10
0
0
10
20
X1
Group
Clinic 01
Clinic 02
Clinic 03
Clinic 04
Clinic 05
Clinic 06
Clinic 07
Clinic 08
Clinic 09
Clinic 10


Escherichia coli
X2
X1
20
10
0
−10
−10
0
10
Group
Clinic 01
Clinic 02
Clinic 03
Clinic 04
Clinic 05
Clinic 06
Clinic 07
Clinic 08
Clinic 09
Clinic 10

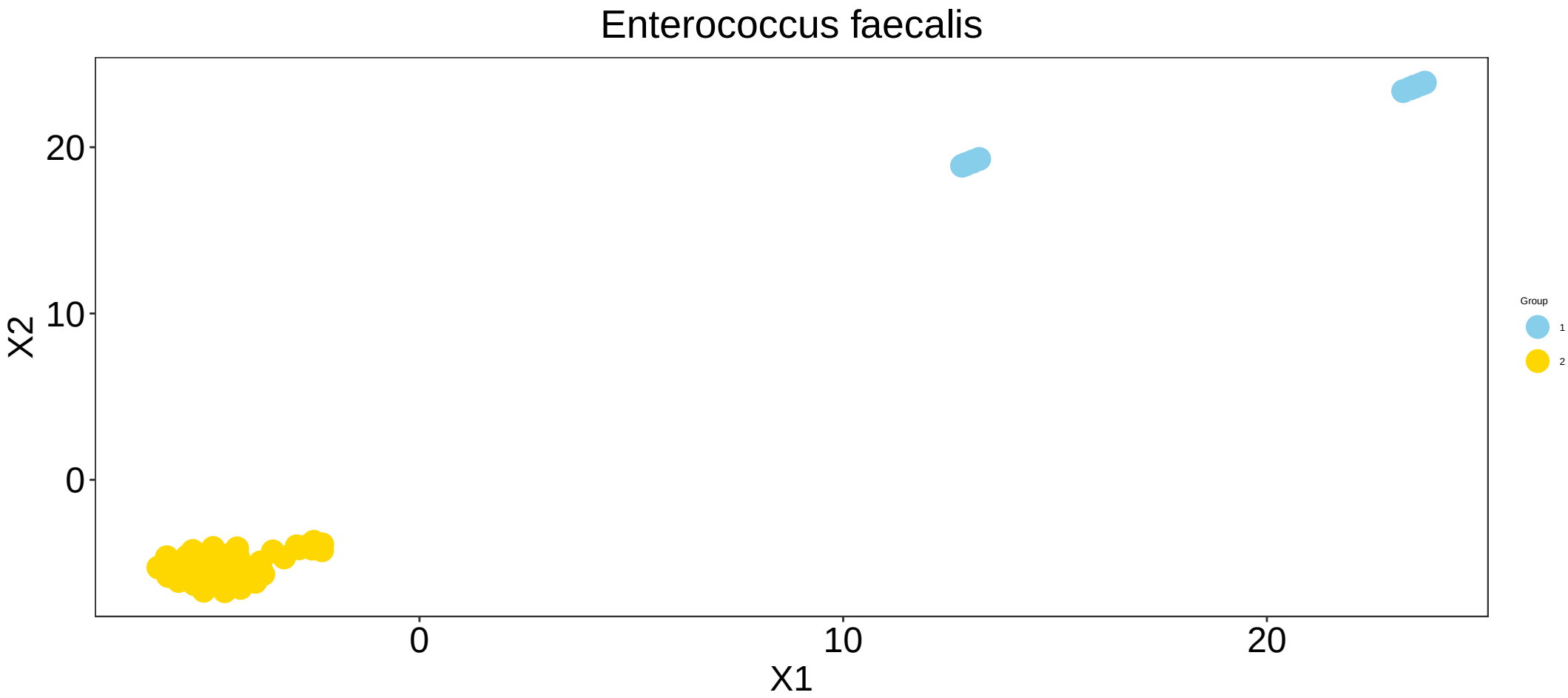

Pseudomonas aeruginosa
X2
X1
5
0
−5
−10
−15
−10
0
10
Group
Clinic 01
Clinic 02
Clinic 03
Clinic 04
Clinic 05
Clinic 06
Clinic 07
Clinic 08
Clinic 09
Clinic 10

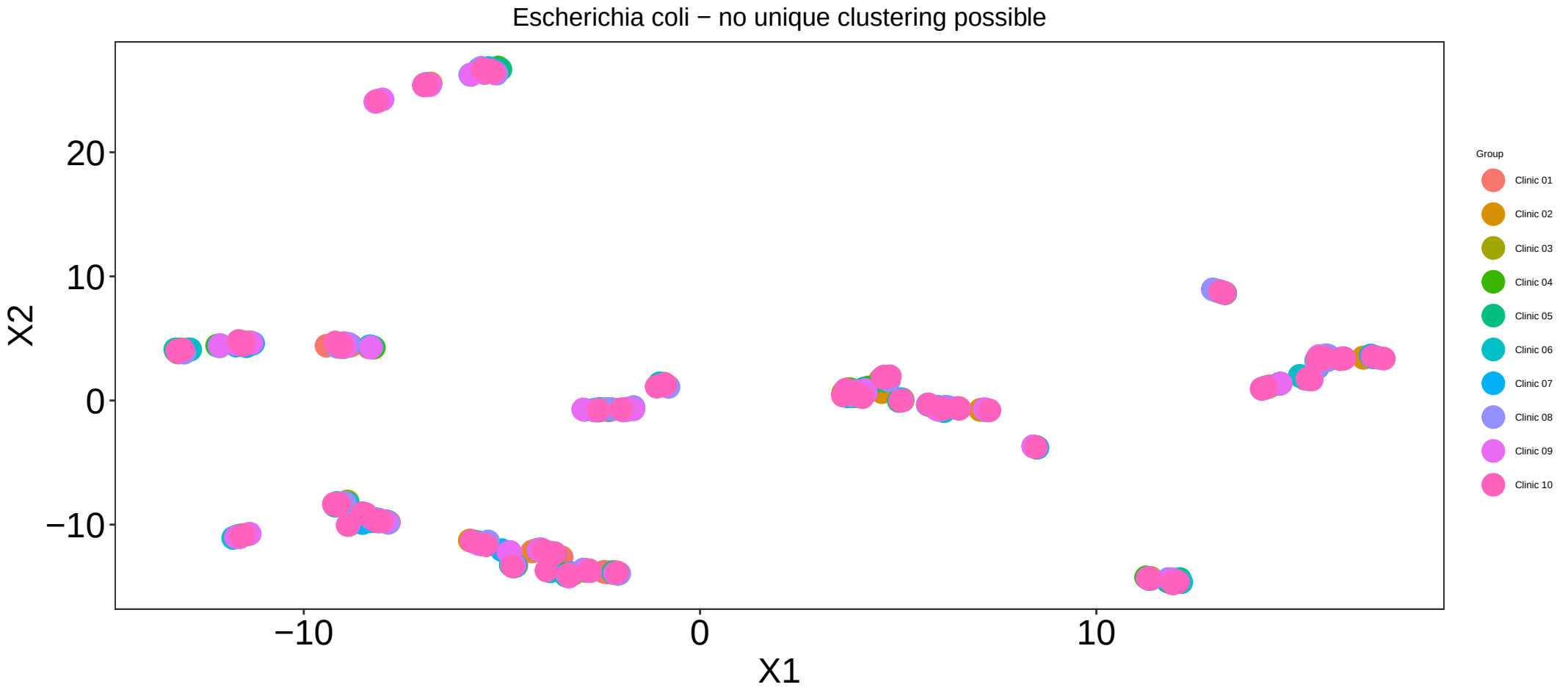

Staphylococcus aureus
40
20
0
X2
−10
0
10
20
30
X1
Group
Clinic 01
Clinic 02
Clinic 03
Clinic 04
Clinic 05
Clinic 06
Clinic 07
Clinic 08
Clinic 09
Clinic 10


Staphylococcus epidermidis
10
5
0
−5
X2
−10
0
10
X1
Group
Clinic 01
Clinic 02
Clinic 03
Clinic 04
Clinic 05
Clinic 06
Clinic 07
Clinic 08
Clinic 09
Clinic 10

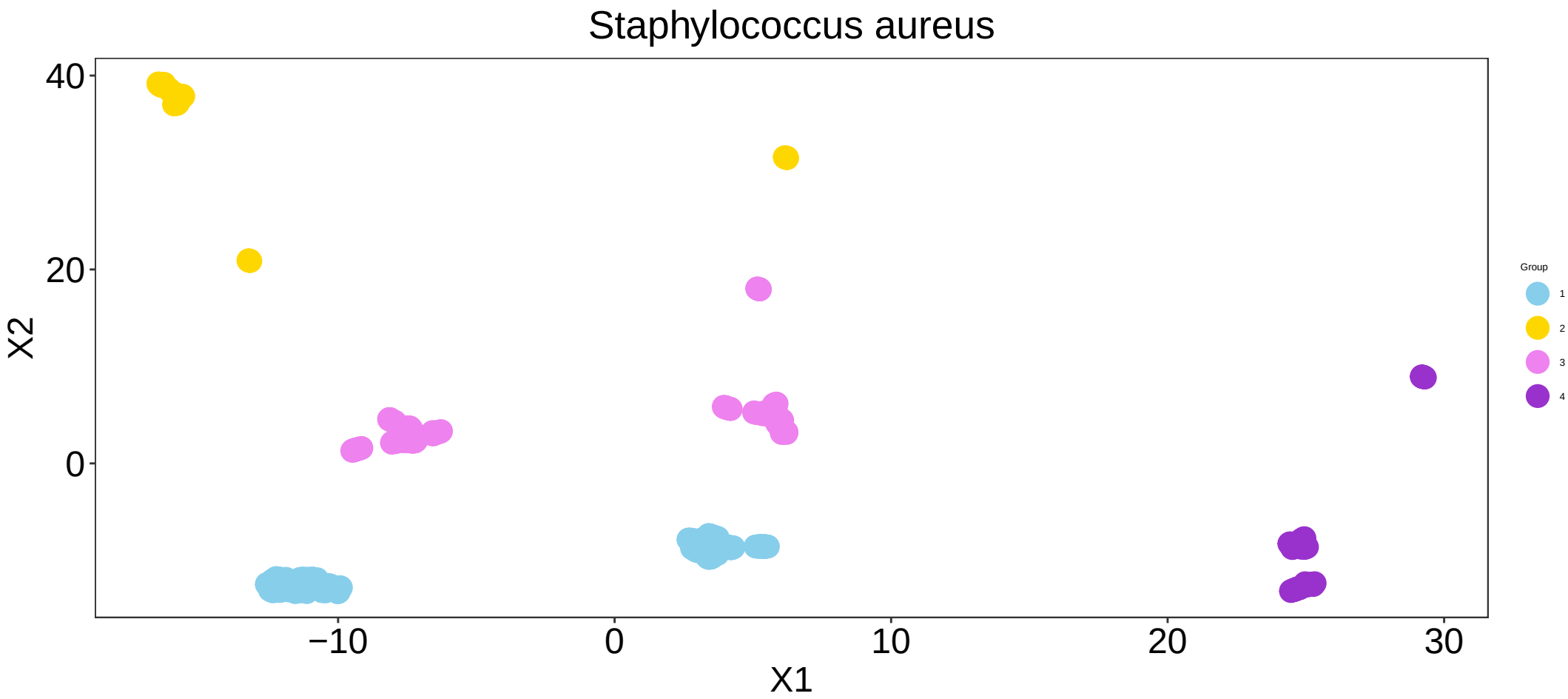
UMAP

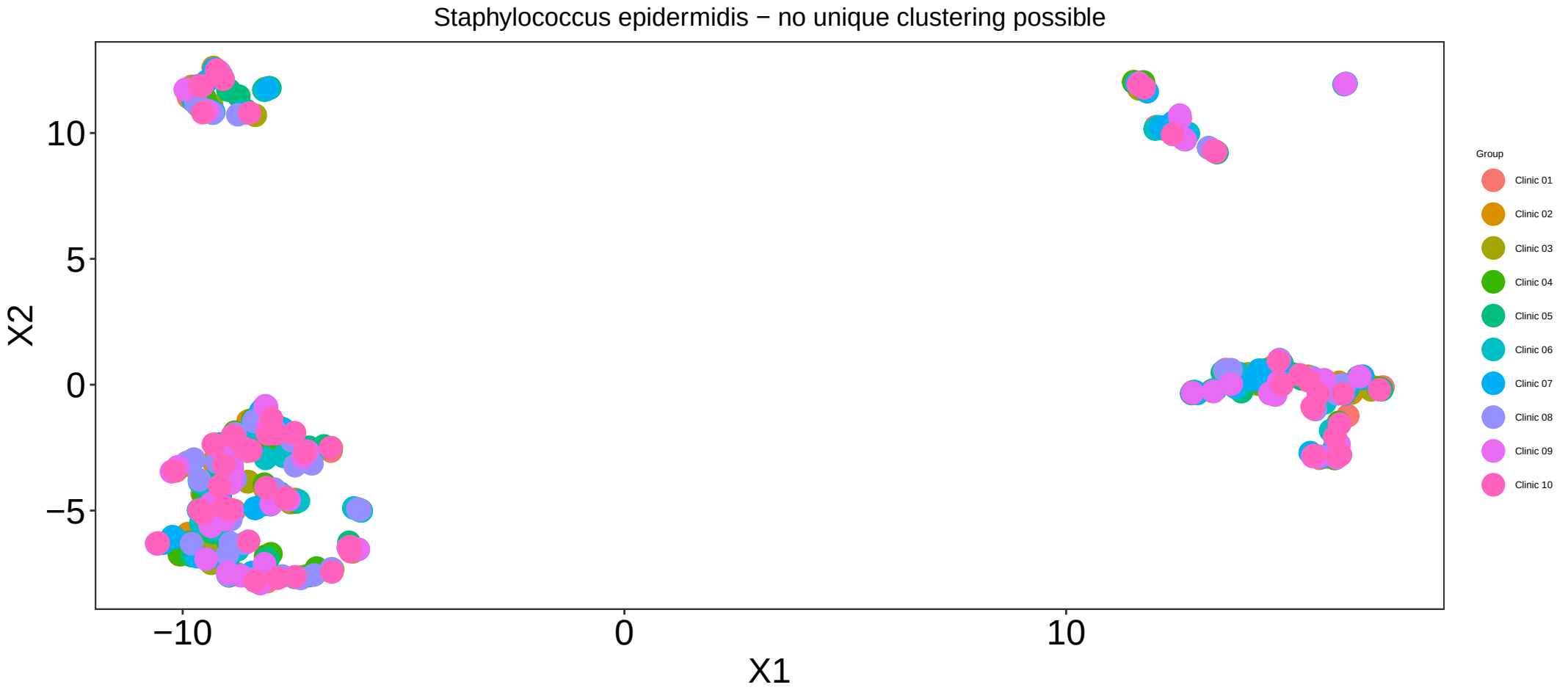
Plot with colored clusters


Enterococcus faecalis
20
10
0
X2
0
10
20
X1
Group
1
2


Escherichia coli − no unique clustering possible
X2
X1
20
10
0
−10
−10
0
10
Group
Clinic 01
Clinic 02
Clinic 03
Clinic 04
Clinic 05
Clinic 06
Clinic 07
Clinic 08
Clinic 09
Clinic 10

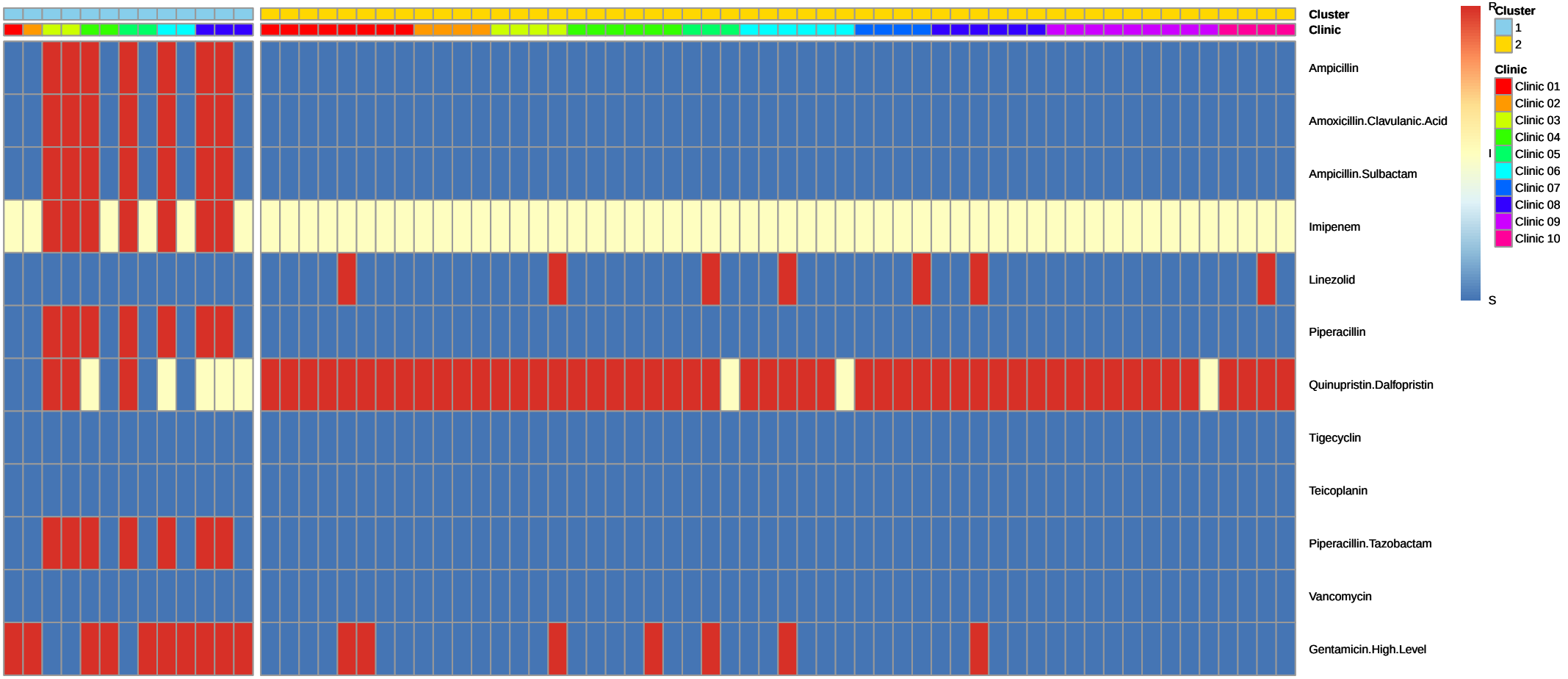
Pseudomonas aeruginosa − Insufficient data

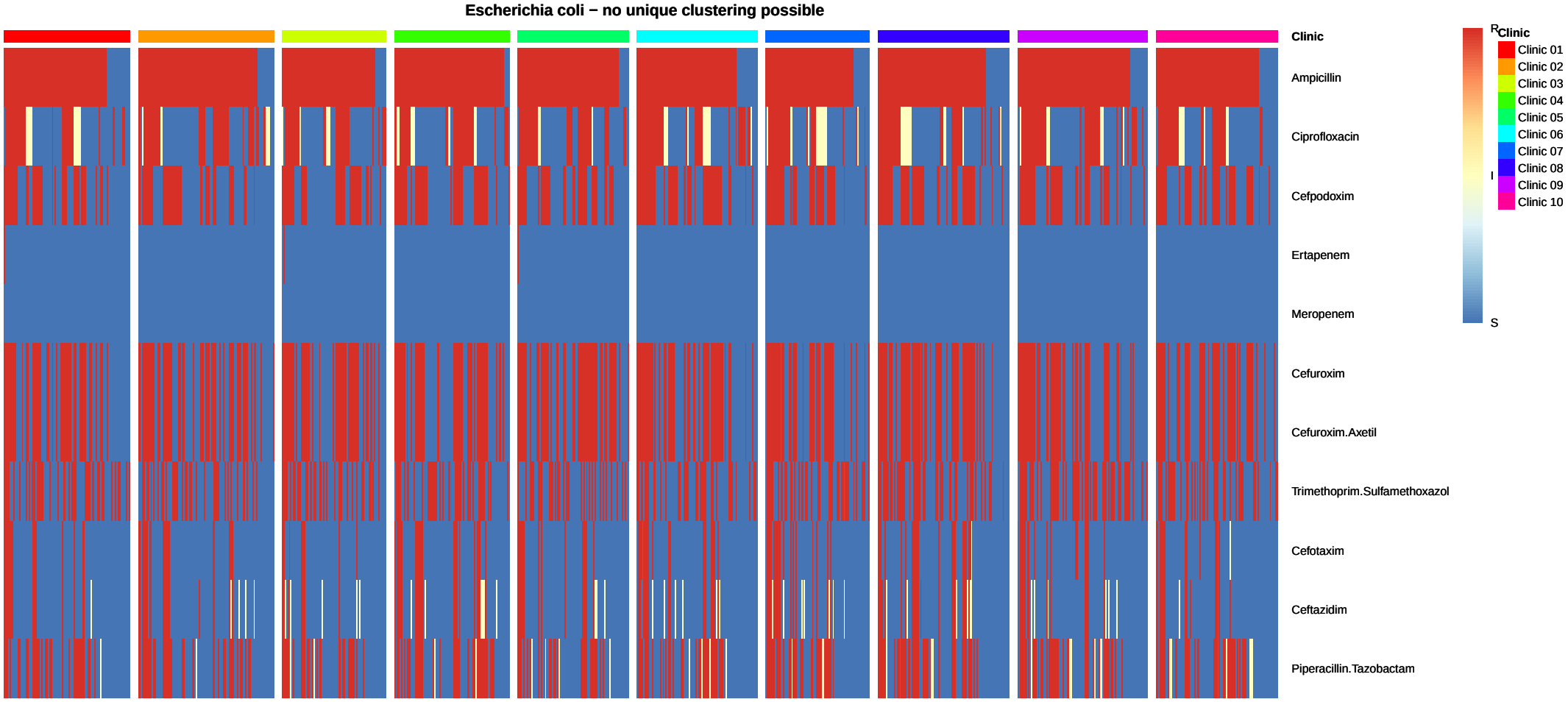

Staphylococcus aureus
40
20
0
X2
−10
0
10
20
30
X1
Group
1
2
3
4


Staphylococcus epidermidis − no unique clustering possible
10
5
0
−5
X2
−10
0
10
X1
Group
Clinic 01
Clinic 02
Clinic 03
Clinic 04
Clinic 05
Clinic 06
Clinic 07
Clinic 08
Clinic 09
Clinic 10

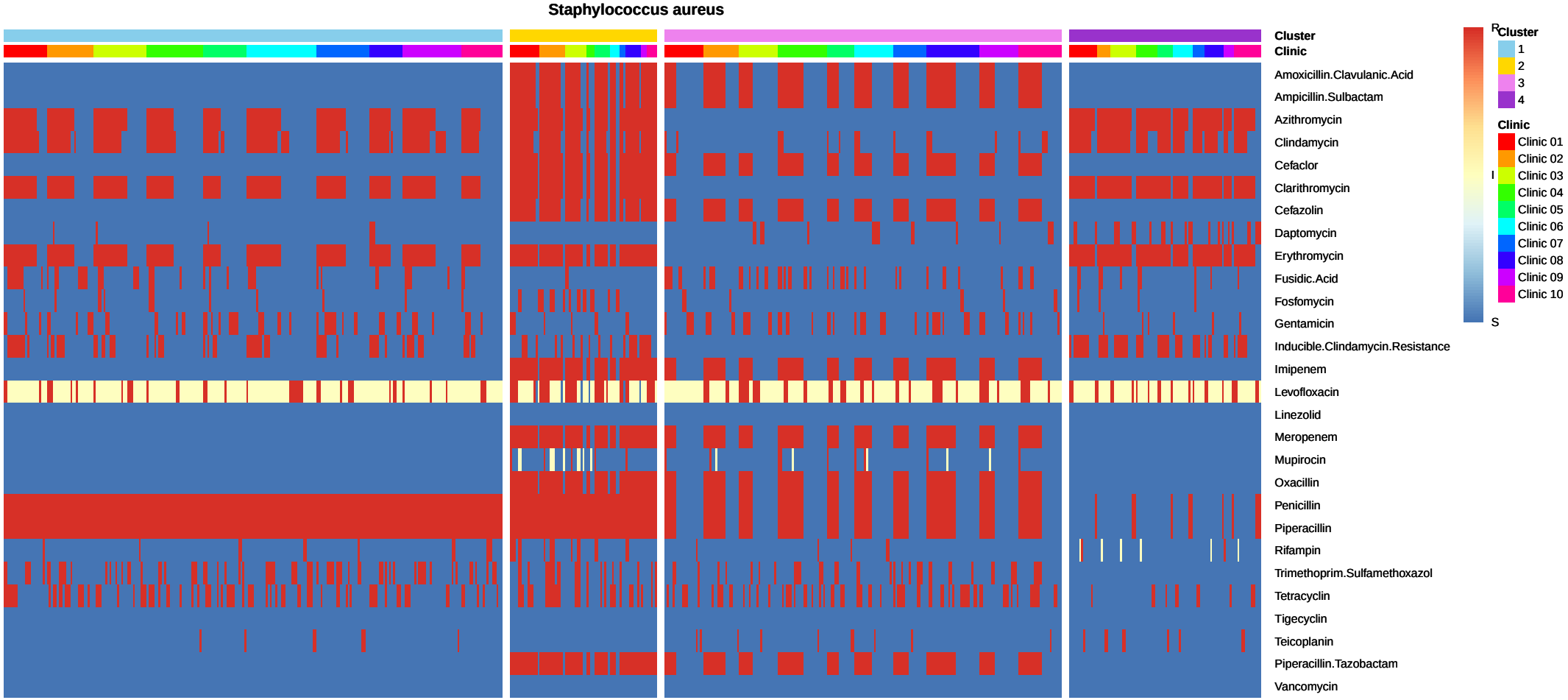
Heatmap

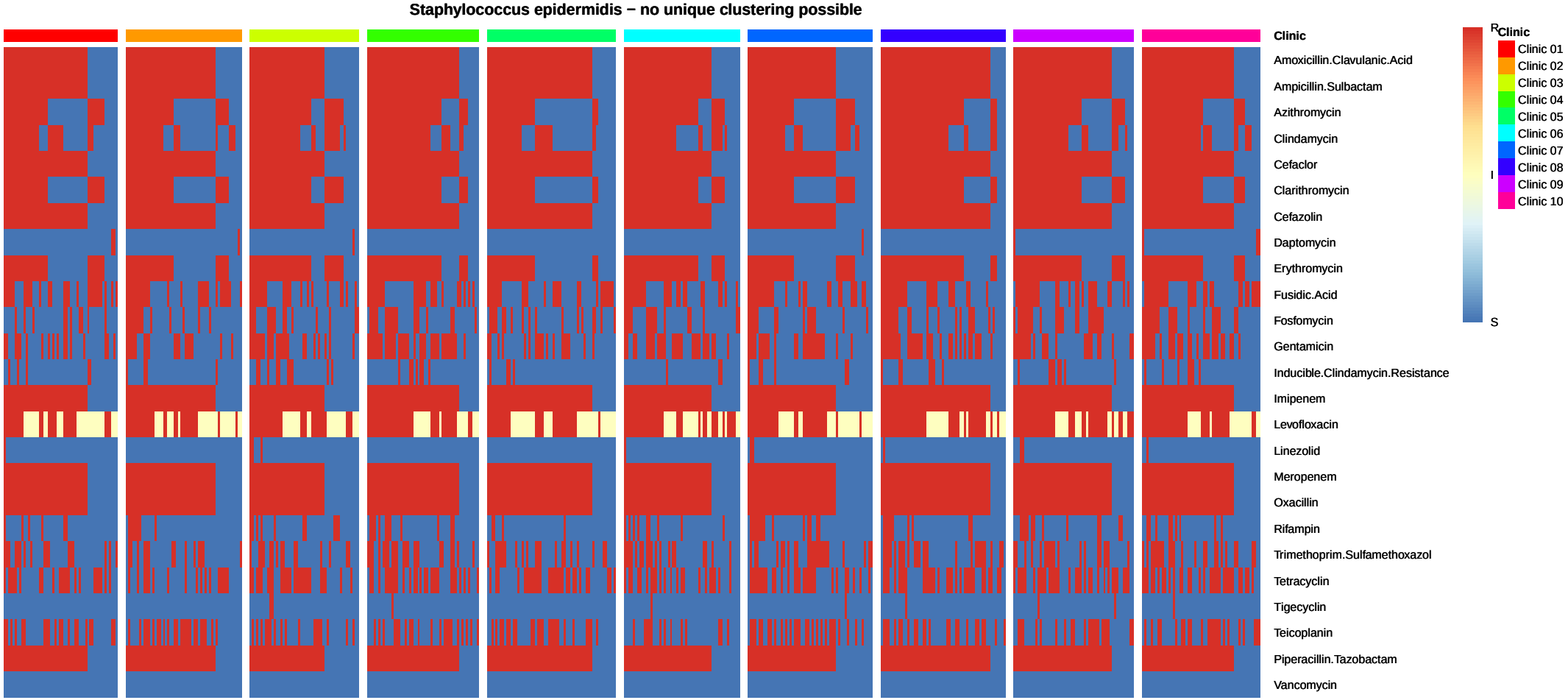
Data ordered by UMAP clusters


Enterococcus faecalis
Cluster
Clinic
Ampicillin
Amoxicillin.Clavulanic.Acid
Ampicillin.Sulbactam
Imipenem
Linezolid
Piperacillin
Quinupristin.Dalfopristin
Tigecyclin
Teicoplanin
Piperacillin.Tazobactam
Vancomycin
Gentamicin.High.Level
R
I
S
Cluster
1
2
Clinic
Clinic 01
Clinic 02
Clinic 03
Clinic 04
Clinic 05
Clinic 06
Clinic 07
Clinic 08
Clinic 09
Clinic 10


Escherichia coli – no unique clustering possible
Clinic
Ampicillin
Ciprofloxacin
Cefpodoxim
Ertapenem
Meropenem
Cefuroxim
Cefuroxim.Axetil
Trimethoprim.Sulfamethoxazol
Cefotaxim
Ceftazidim
Piperacillin.Tazobactam
R
I
S
Clinic
Clinic 01
Clinic 02
Clinic 03
Clinic 04
Clinic 05
Clinic 06
Clinic 07
Clinic 08
Clinic 09
Clinic 10

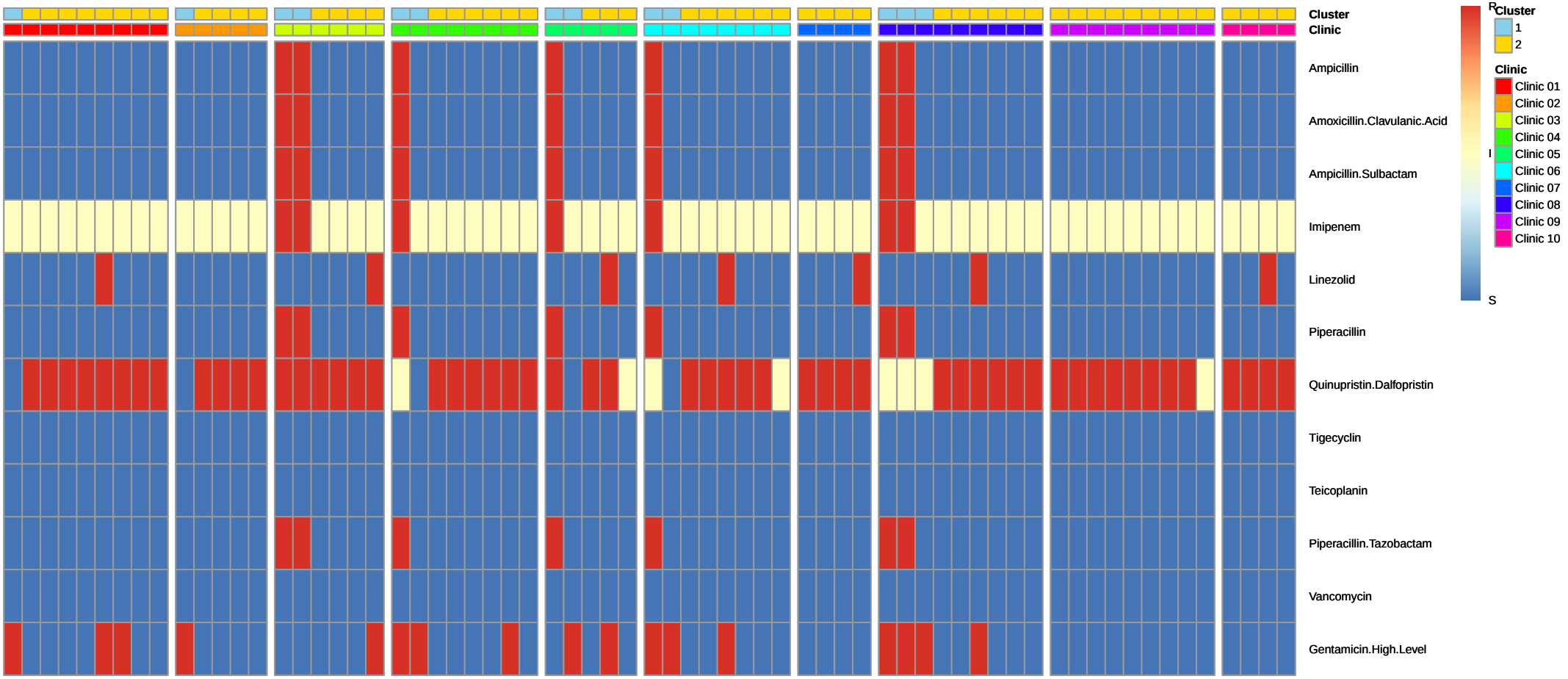
Pseudomonas aeruginosa − Insufficient data

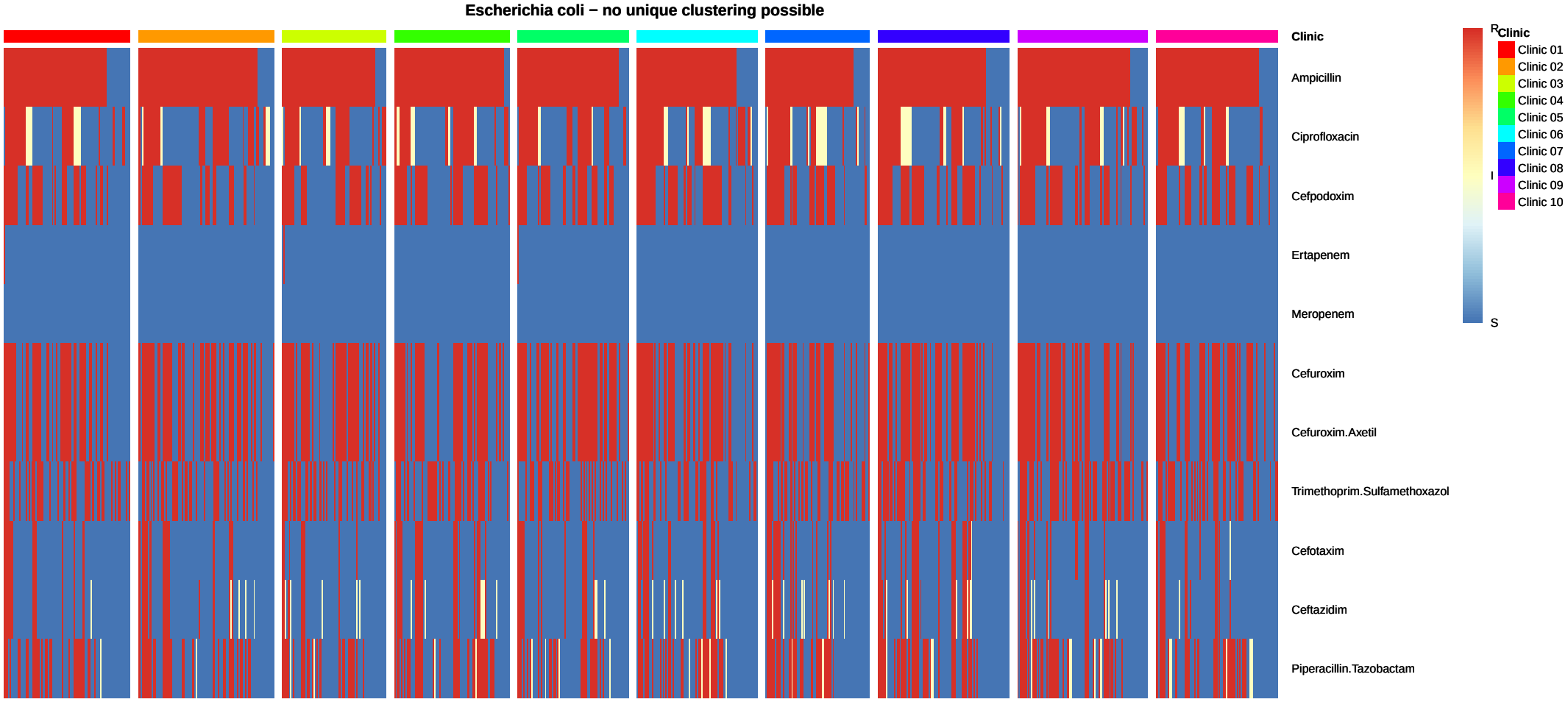

Staphylococcus aureus
Cluster
Clinic
Amoxicillin.Clavulanic.Acid
Ampicillin.Sulbactam
Azithromycin
Clindamycin
Cefaclor
Clarithromycin
Cefazolin
Daptomycin
Erythromycin
Fusidic.Acid
Fosfomycin
Gentamicin
Inducible.Clindamycin.Resistance
Imipenem
Levofloxacin
Linezolid
Meropenem
Mupirocin
Oxacillin
Penicillin
Piperacillin
Rifampin
Trimethoprim.Sulfamethoxazol
Tetracyclin
Tigecyclin
Teicoplanin
Piperacillin.Tazobactam
Vancomycin
R
I
S
Cluster
1
2
3
4
Clinic
Clinic 01
Clinic 02
Clinic 03
Clinic 04
Clinic 05
Clinic 06
Clinic 07
Clinic 08
Clinic 09
Clinic 10


Staphylococcus epidermidis − no unique clustering possible
Clinic
Amoxicillin.Clavulanic.Acid
Ampicillin.Sulbactam
Azithromycin
Clindamycin
Cefaclor
Clarithromycin
Cefazolin
Daptomycin
Erythromycin
Fusidic.Acid
Fosfomycin
Gentamicin
Inducible.Clindamycin.Resistance
Imipenem
Levofloxacin
Linezolid
Meropenem
Oxacillin
Rifampin
Trimethoprim.Sulfamethoxazol
Tetracyclin
Tigecyclin
Teicoplanin
Piperacillin.Tazobactam
Vancomycin
R
I
S
Clinic
Clinic 01
Clinic 02
Clinic 03
Clinic 04
Clinic 05
Clinic 06
Clinic 07
Clinic 08
Clinic 09
Clinic 10

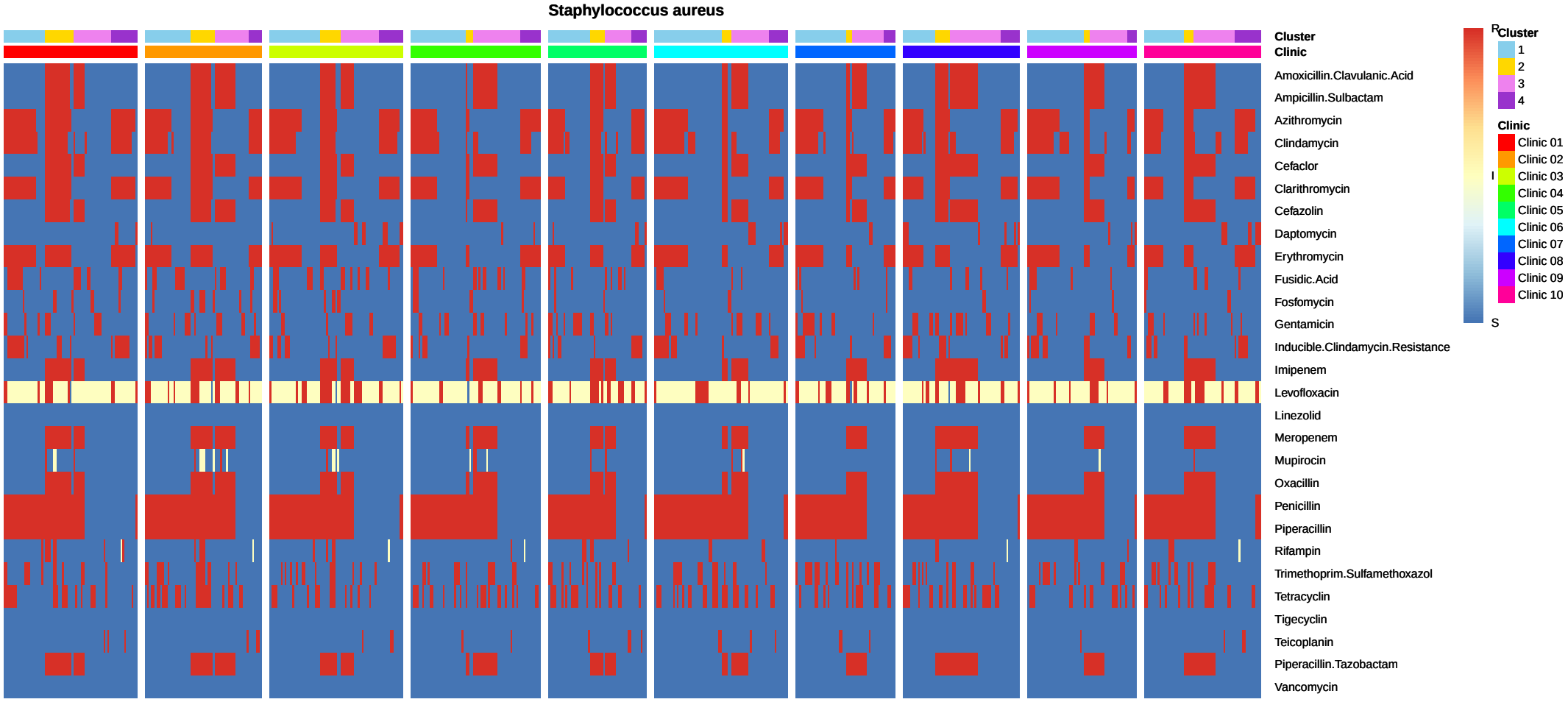
Heatmap

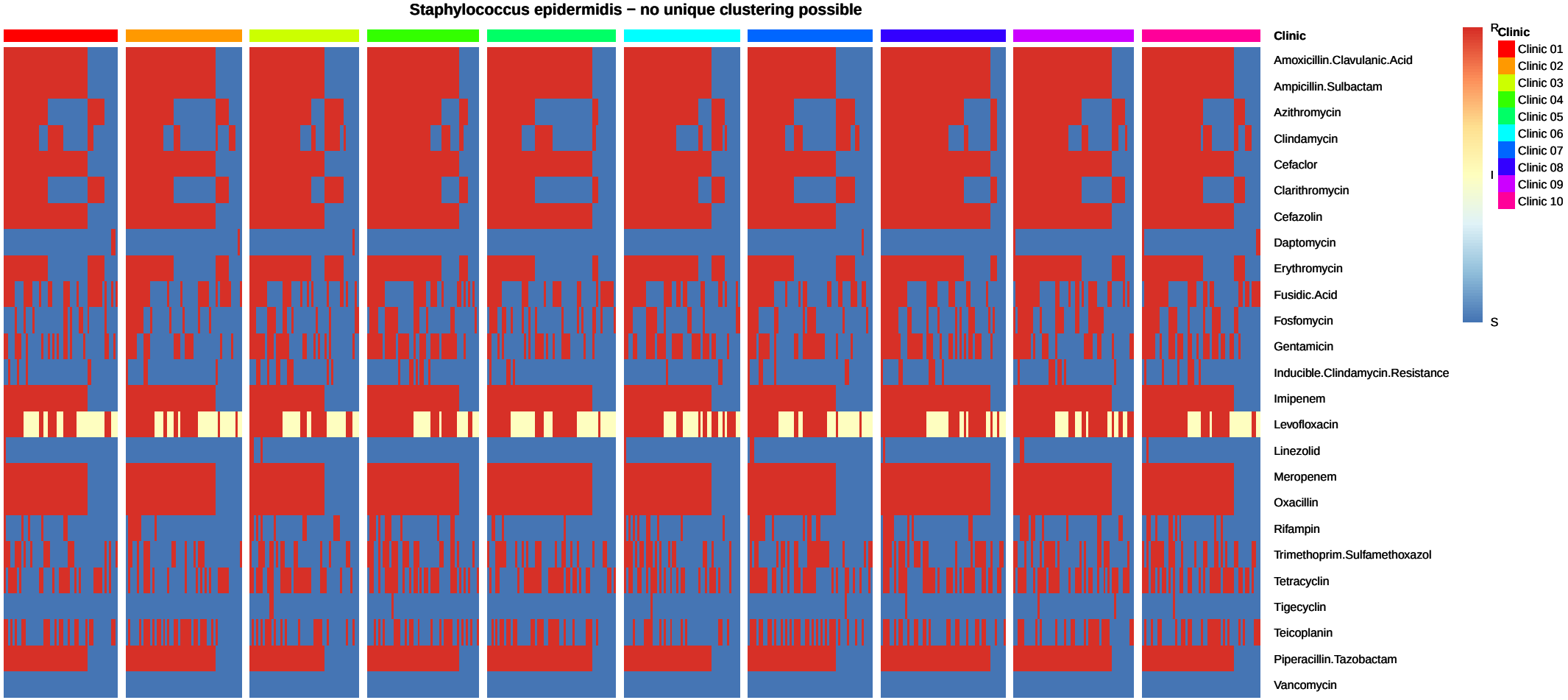
Data ordered by clinic


Enterococcus faecalis
Cluster
Clinic
Ampicillin
Amoxicillin.Clavulanic.Acid
Ampicillin.Sulbactam
Imipenem
Linezolid
Piperacillin
Quinupristin.Dalfopristin
Tigecyclin
Teicoplanin
Piperacillin.Tazobactam
Vancomycin
Gentamicin.High.Level
R
I
S
Cluster
1
2
Clinic
Clinic 01
Clinic 02
Clinic 03
Clinic 04
Clinic 05
Clinic 06
Clinic 07
Clinic 08
Clinic 09
Clinic 10


Escherichia coli – no unique clustering possible
Clinic
Ampicillin
Ciprofloxacin
Cefpodoxim
Ertapenem
Meropenem
Cefuroxim
Cefuroxim.Axetil
Trimethoprim.Sulfamethoxazol
Cefotaxim
Ceftazidim
Piperacillin.Tazobactam
R
I
S
Clinic
Clinic 01
Clinic 02
Clinic 03
Clinic 04
Clinic 05
Clinic 06
Clinic 07
Clinic 08
Clinic 09
Clinic 10

Pseudomonas aeruginosa − Insufficient data

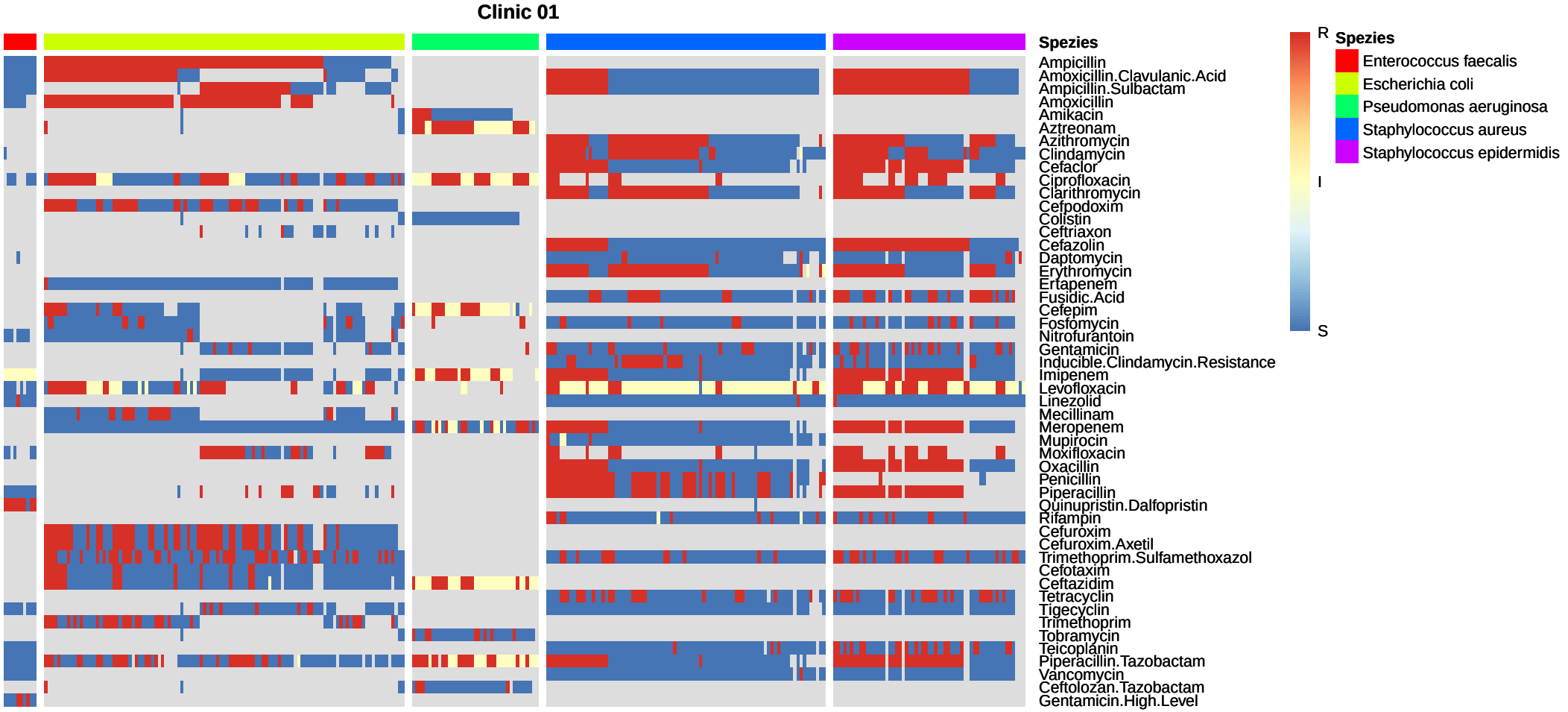

Staphylococcus aureus
Cluster
Clinic
Amoxicillin.Clavulanic.Acid
Ampicillin.Sulbactam
Azithromycin
Clindamycin
Cefaclor
Clarithromycin
Cefazolin
Daptomycin
Erythromycin
Fusidic.Acid
Fosfomycin
Gentamicin
Inducible.Clindamycin.Resistance
Imipenem
Levofloxacin
Linezolid
Meropenem
Mupirocin
Oxacillin
Penicillin
Piperacillin
Rifampin
Trimethoprim.Sulfamethoxazol
Tetracyclin
Tigecyclin
Teicoplanin
Piperacillin.Tazobactam
Vancomycin
R
I
S
Cluster
1
2
3
4
Clinic
Clinic 01
Clinic 02
Clinic 03
Clinic 04
Clinic 05
Clinic 06
Clinic 07
Clinic 08
Clinic 09
Clinic 10

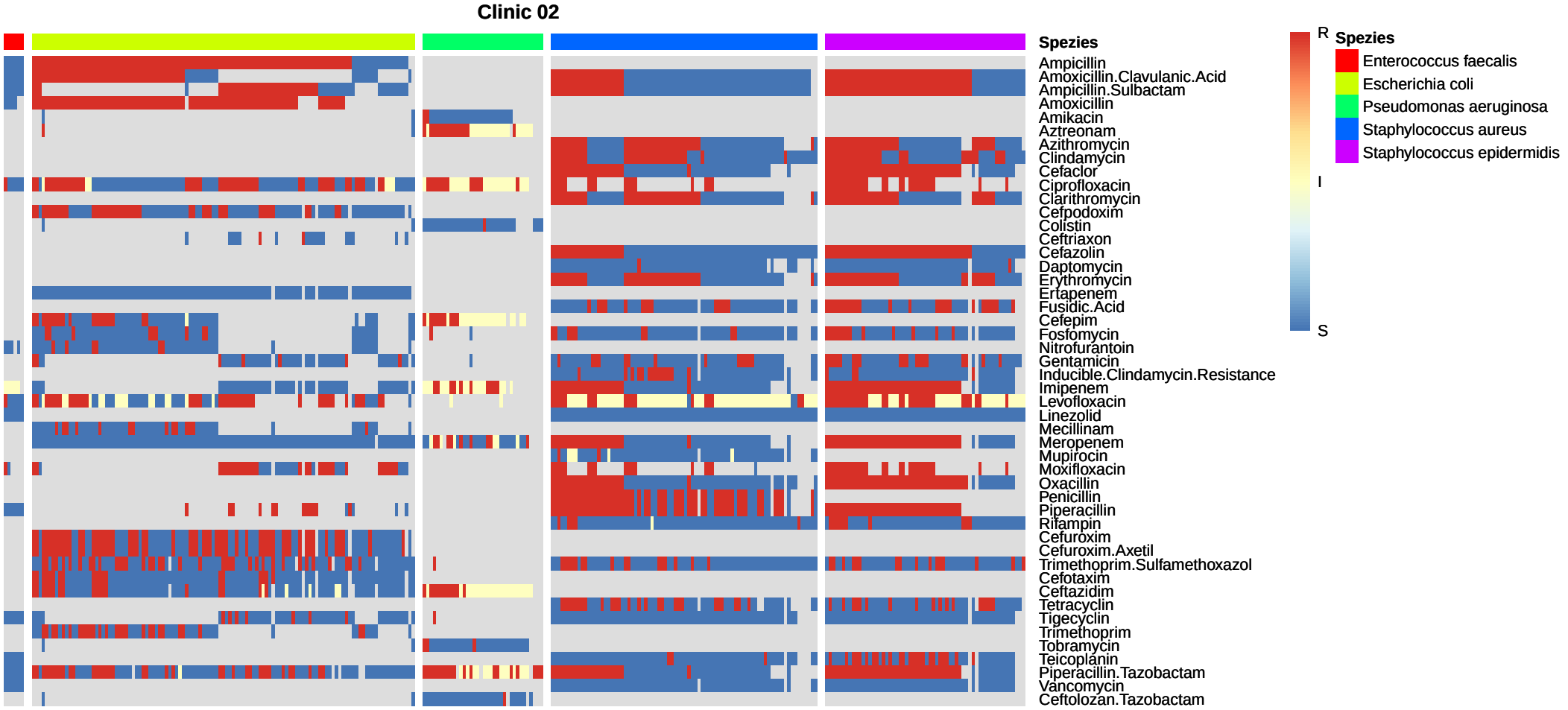

Staphylococcus epidermidis − no unique clustering possible
Clinic
Amoxicillin.Clavulanic.Acid
Ampicillin.Sulbactam
Azithromycin
Clindamycin
Cefaclor
Clarithromycin
Cefazolin
Daptomycin
Erythromycin
Fusidic.Acid
Fosfomycin
Gentamicin
Inducible.Clindamycin.Resistance
Imipenem
Levofloxacin
Linezolid
Meropenem
Oxacillin
Rifampin
Trimethoprim.Sulfamethoxazol
Tetracyclin
Tigecyclin
Teicoplanin
Piperacillin.Tazobactam
Vancomycin
R
I
S
Clinic
Clinic 01
Clinic 02
Clinic 03
Clinic 04
Clinic 05
Clinic 06
Clinic 07
Clinic 08
Clinic 09
Clinic 10

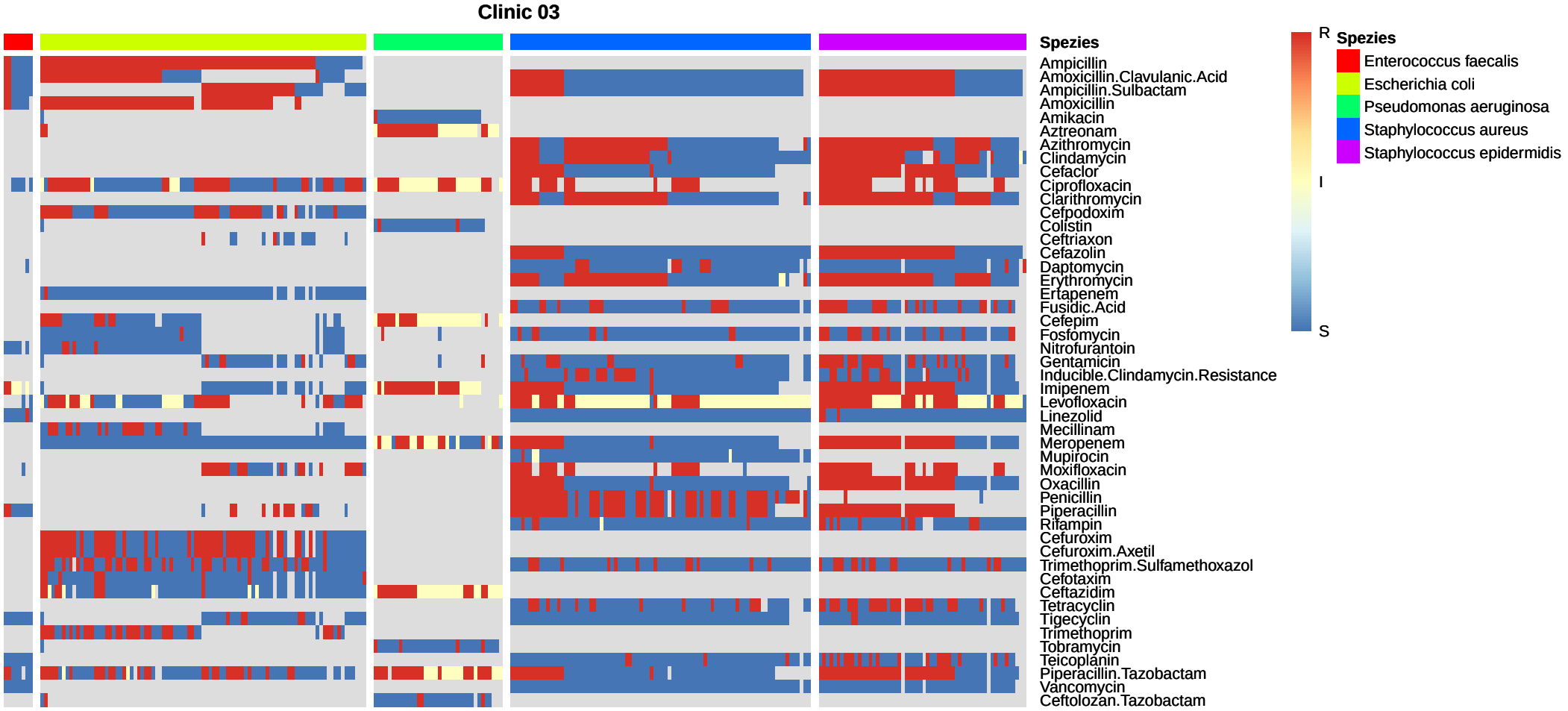
Independent analysis per clinic

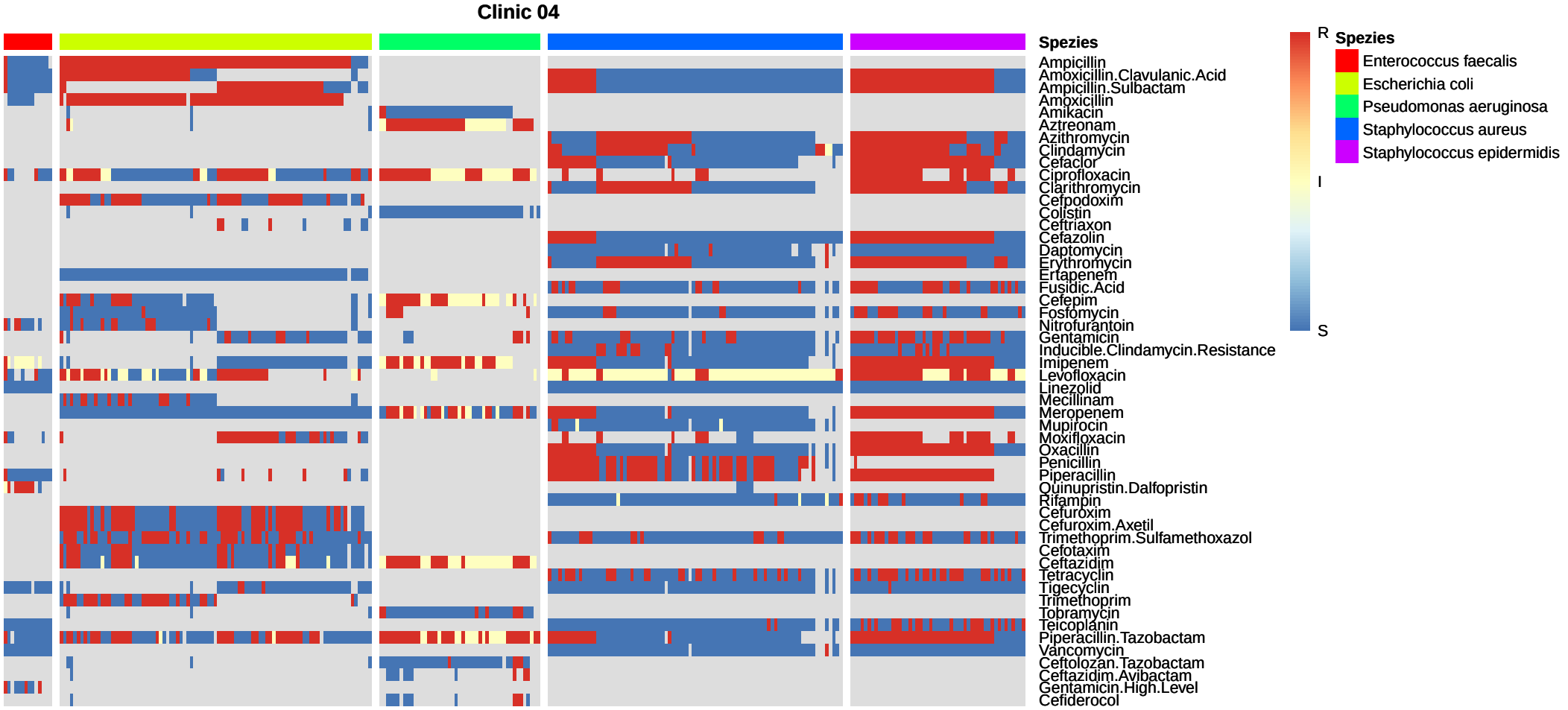
Heatmap

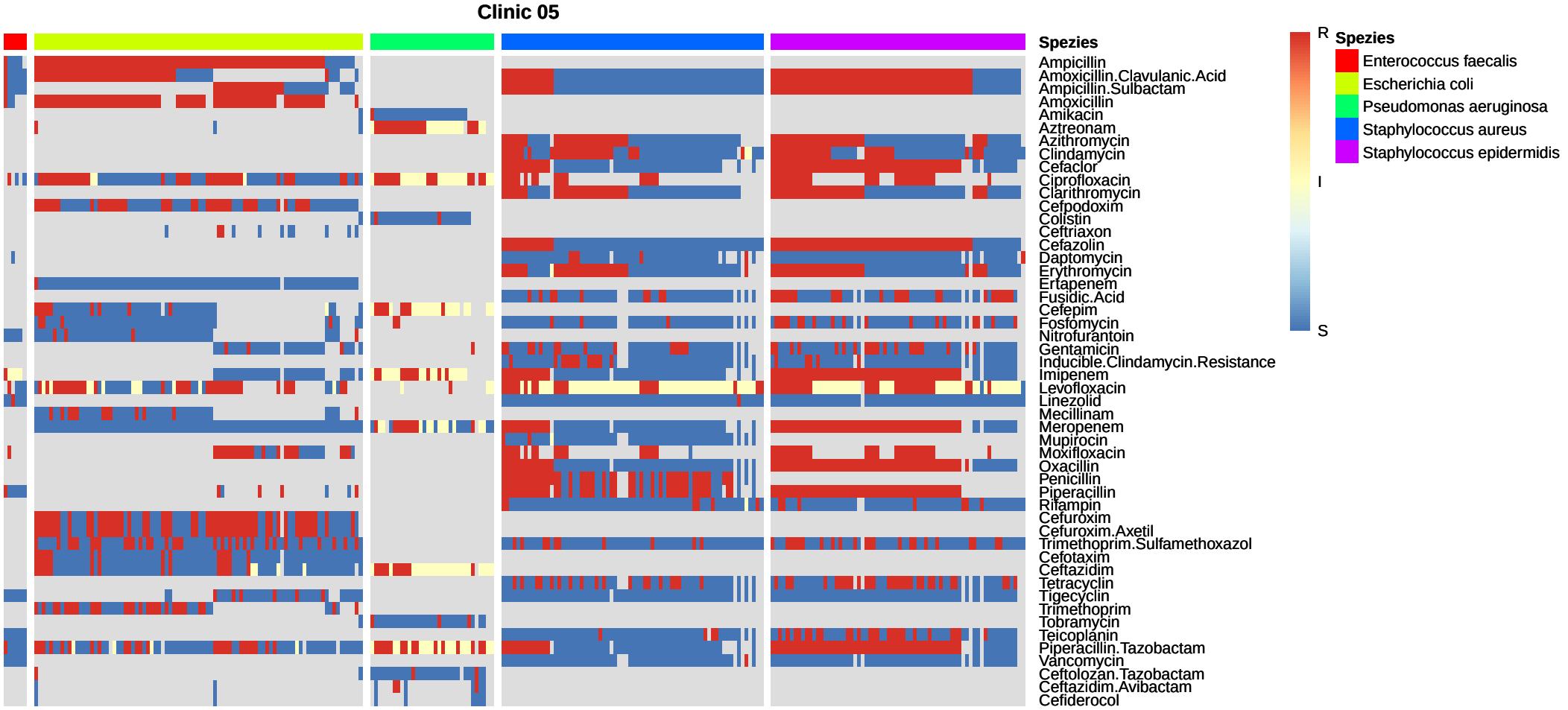
Data ordered by species

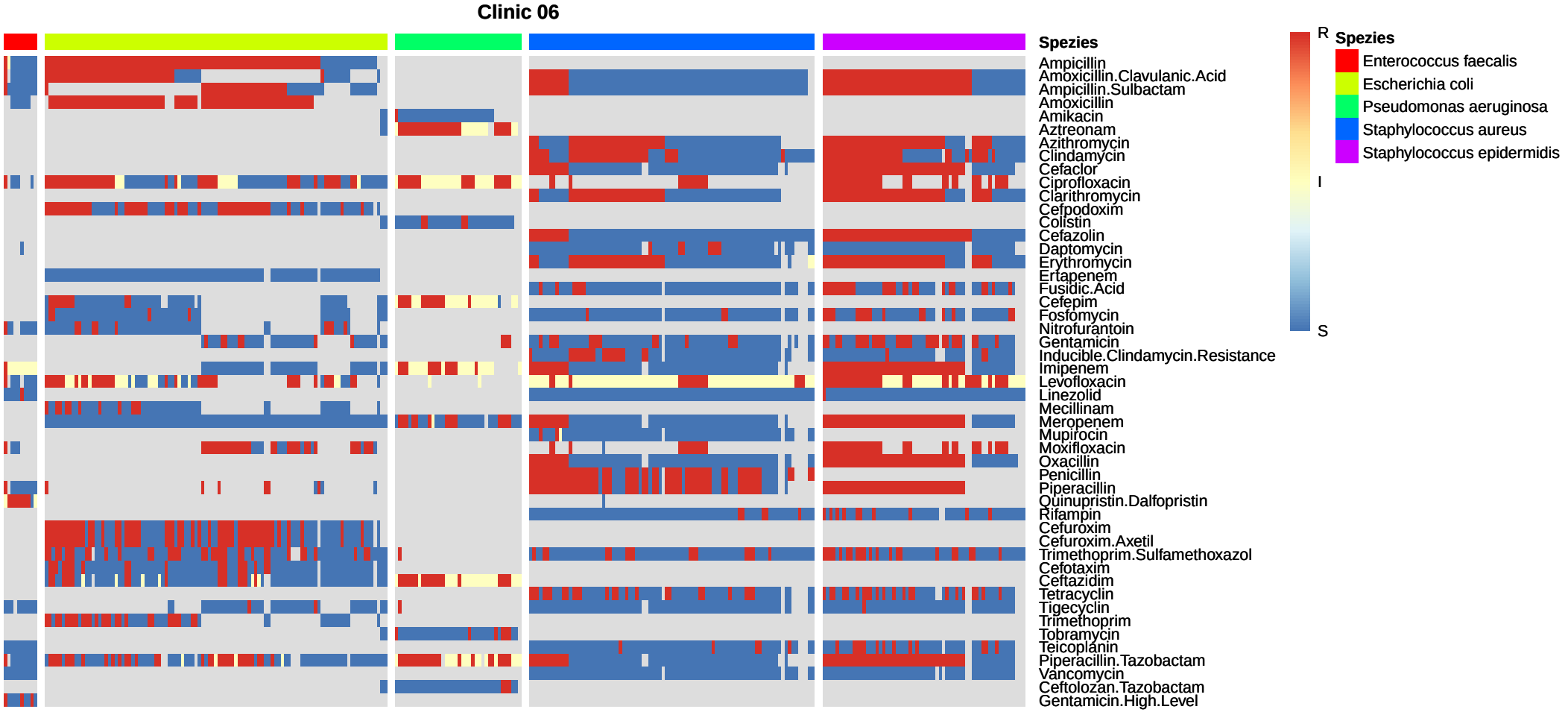

Clinic 01
Spezies
Ampicillin
Amoxicillin.Clavulanic.Acid
Ampicillin.Sulbactam
Amoxicillin
Amikacin
Aztreonam
Azithromycin
Clindamycin
Cefaclor
Ciprofloxacin
Clarithromycin
Cefpodoxim
Colistin
Ceftriaxon
Cefazolin
Daptomycin
Erythromycin
Ertapenem
Fusidic.Acid
Cefepim
Fosfomycin
Nitrofurantoin
Gentamicin
Inducible.Clindamycin.Resistance
Imipenem
Levofloxacin
Linezolid
Mecillinam
Meropenem
Mupirocin
Moxifloxacin
Oxacillin
Penicillin
Piperacillin
Quinupristin.Dalfopristin
Rifampin
Cefuroxim
Cefuroxim.Axetil
Trimethoprim.Sulfamethoxazol
Cefotaxim
Ceftazidim
Tetracyclin
Tigecyclin
Trimethoprim
Tobramycin
Teicoplanin
Piperacillin.Tazobactam
Vancomycin
Ceftolozan.Tazobactam
Gentamicin.High.Level
R
I
S
Spezies
Enterococcus faecalis
Escherichia coli
Pseudomonas aeruginosa
Staphylococcus aureus
Staphylococcus epidermidis

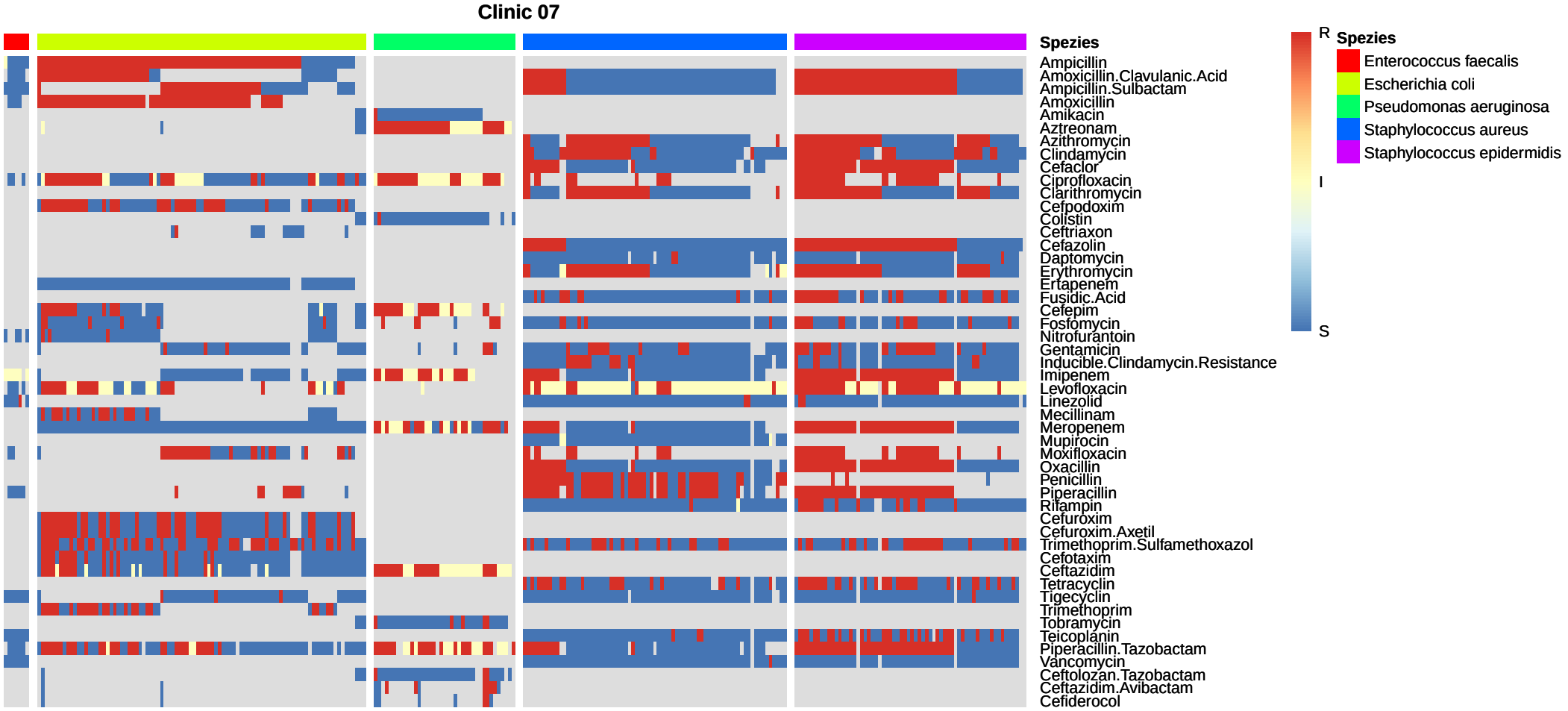

Clinic 02
Spezies
Ampicillin
Amoxicillin.Clavulanic.Acid
Ampicillin.Sulbactam
Amoxicillin
Amikacin
Aztreonam
Azithromycin
Clindamycin
Cefaclor
Ciprofloxacin
Clarithromycin
Cefpodoxim
Colistin
Ceftriaxon
Cefazolin
Daptomycin
Erythromycin
Ertapenem
Fusidic.Acid
Cefepim
Fosfomycin
Nitrofurantoin
Gentamicin
Inducible.Clindamycin.Resistance
Imipenem
Levofloxacin
Linezolid
Mecillinam
Meropenem
Mupirocin
Moxifloxacin
Oxacillin
Penicillin
Piperacillin
Rifampin
Cefuroxim
Cefuroxim.Axetil
Trimethoprim.Sulfamethoxazol
Cefotaxim
Ceftazidim
Tetracyclin
Tigecyclin
Trimethoprim
Tobramycin
Teicoplanin
Piperacillin.Tazobactam
Vancomycin
Ceftolozan.Tazobactam
R
I
S
Spezies
Enterococcus faecalis
Escherichia coli
Pseudomonas aeruginosa
Staphylococcus aureus
Staphylococcus epidermidis

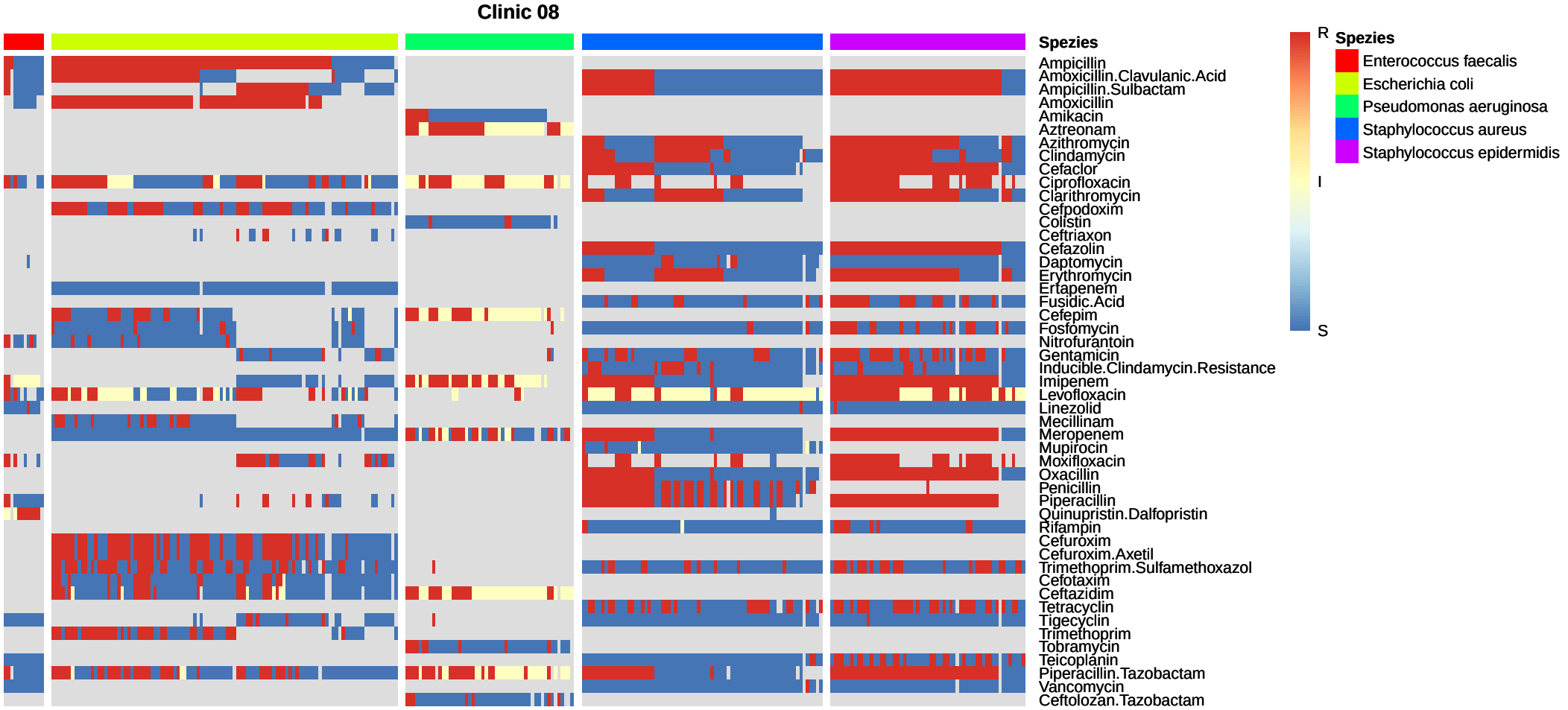

Clinic 03
Spezies
Ampicillin
Amoxicillin.Clavulanic.Acid
Ampicillin.Sulbactam
Amoxicillin
Amikacin
Aztreonam
Azithromycin
Clindamycin
Cefaclor
Ciprofloxacin
Clarithromycin
Cefpodoxim
Colistin
Ceftriaxon
Cefazolin
Daptomycin
Erythromycin
Ertapenem
Fusidic.Acid
Cefepim
Fosfomycin
Nitrofurantoin
Gentamicin
Inducible.Clindamycin.Resistance
Imipenem
Levofloxacin
Linezolid
Mecillinam
Meropenem
Mupirocin
Moxifloxacin
Oxacillin
Penicillin
Piperacillin
Rifampin
Cefuroxim
Cefuroxim.Axetil
Trimethoprim.Sulfamethoxazol
Cefotaxim
Ceftazidim
Tetracyclin
Tigecyclin
Trimethoprim
Tobramycin
Teicoplanin
Piperacillin.Tazobactam
Vancomycin
Ceftolozan.Tazobactam
R
I
S
Spezies
Enterococcus faecalis
Escherichia coli
Pseudomonas aeruginosa
Staphylococcus aureus
Staphylococcus epidermidis

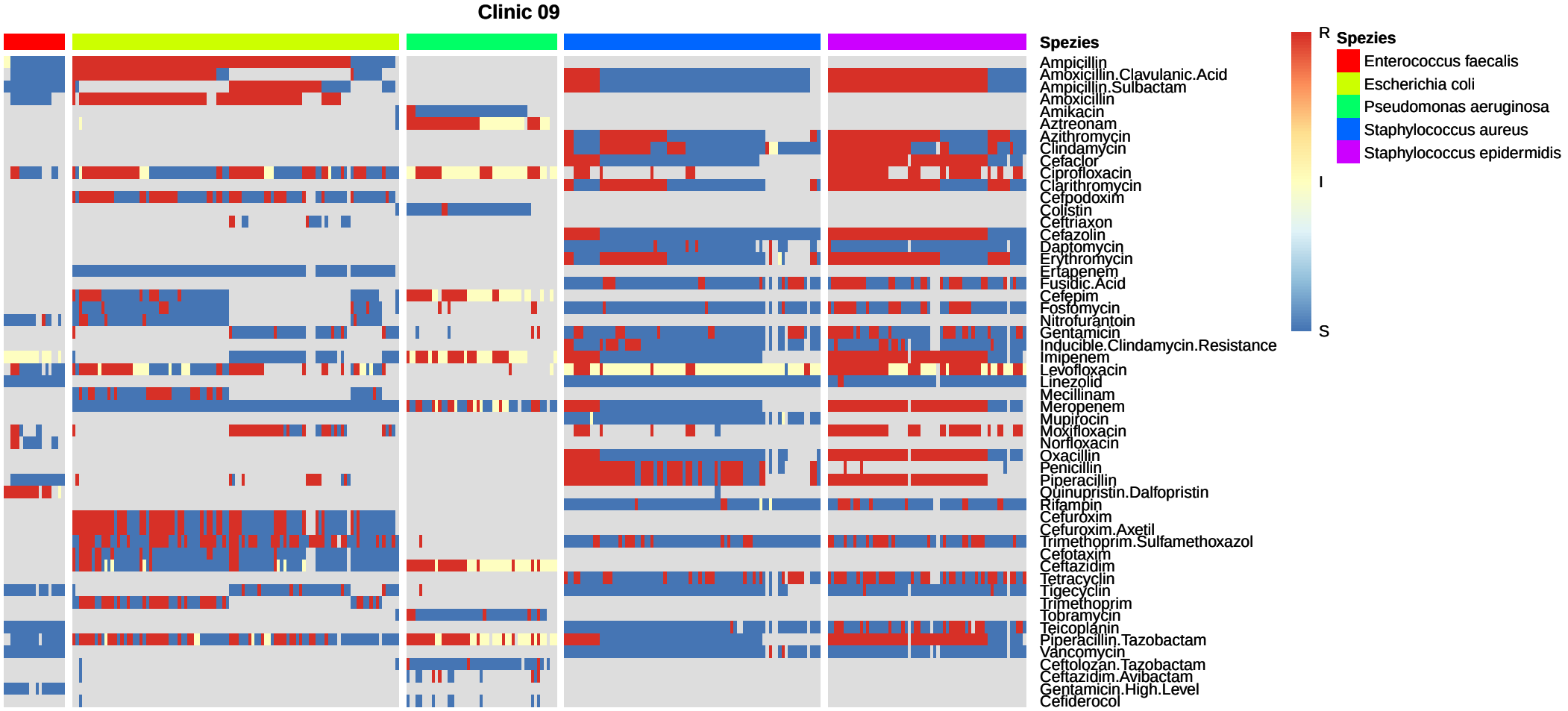

Clinic 04
Spezies
Ampicillin
Amoxicillin.Clavulanic.Acid
Ampicillin.Sulbactam
Amoxicillin
Amikacin
Aztreonam
Azithromycin
Clindamycin
Cefaclor
Ciprofloxacin
Clarithromycin
Cefpodoxim
Colistin
Ceftriaxon
Cefazolin
Daptomycin
Erythromycin
Ertapenem
Fusidic.Acid
Cefepim
Fosfomycin
Nitrofurantoin
Gentamicin
Inducible.Clindamycin.Resistance
Imipenem
Levofloxacin
Linezolid
Mecillinam
Meropenem
Mupirocin
Moxifloxacin
Oxacillin
Penicillin
Piperacillin
Quinupristin.Dalfopristin
Rifampin
Cefuroxim
Cefuroxim.Axetil
Trimethoprim.Sulfamethoxazol
Cefotaxim
Ceftazidim
Tetracyclin
Tigecyclin
Trimethoprim
Tobramycin
Teicoplanin
Piperacillin.Tazobactam
Vancomycin
Ceftolozan.Tazobactam
Ceftazidim.Avibactam
Gentamicin.High.Level
Cefiderocol
R
I
S
Spezies
Enterococcus faecalis
Escherichia coli
Pseudomonas aeruginosa
Staphylococcus aureus
Staphylococcus epidermidis

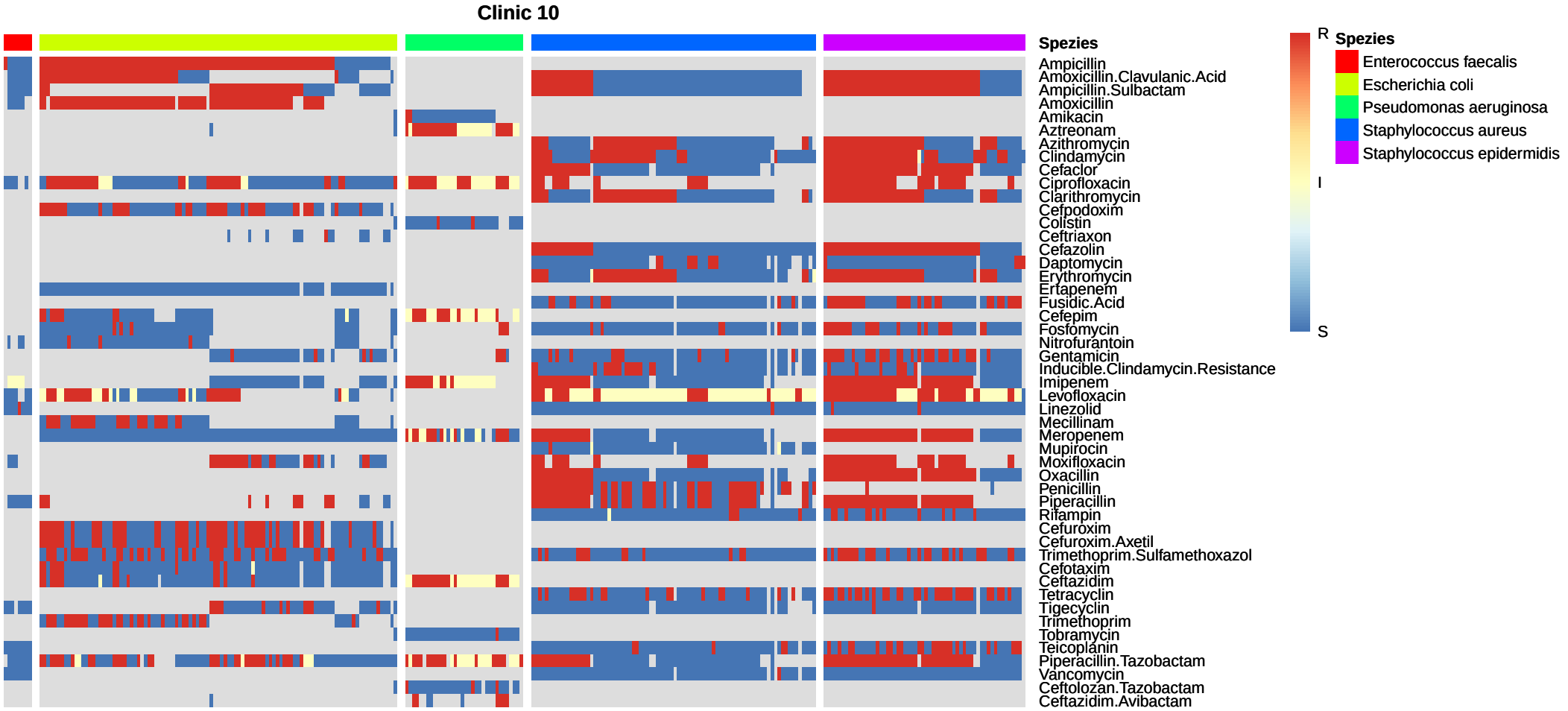

Clinic 05
Spezies
Ampicillin
Amoxicillin.Clavulanic.Acid
Ampicillin.Sulbactam
Amoxicillin
Amikacin
Aztreonam
Azithromycin
Clindamycin
Cefaclor
Ciprofloxacin
Clarithromycin
Cefpodoxim
Colistin
Ceftriaxon
Cefazolin
Daptomycin
Erythromycin
Ertapenem
Fusidic.Acid
Cefepim
Fosfomycin
Nitrofurantoin
Gentamicin
Inducible.Clindamycin.Resistance
Imipenem
Levofloxacin
Linezolid
Mecillinam
Meropenem
Mupirocin
Moxifloxacin
Oxacillin
Penicillin
Piperacillin
Rifampin
Cefuroxim
Cefuroxim.Axetil
Trimethoprim.Sulfamethoxazol
Cefotaxim
Ceftazidim
Tetracyclin
Tigecyclin
Trimethoprim
Tobramycin
Teicoplanin
Piperacillin.Tazobactam
Vancomycin
Ceftolozan.Tazobactam
Ceftazidim.Avibactam
Cefiderocol
R
I
S
Spezies
Enterococcus faecalis
Escherichia coli
Pseudomonas aeruginosa
Staphylococcus aureus
Staphylococcus epidermidis


Clinic 06
Spezies
Ampicillin
Amoxicillin.Clavulanic.Acid
Ampicillin.Sulbactam
Amoxicillin
Amikacin
Aztreonam
Azithromycin
Clindamycin
Cefaclor
Ciprofloxacin
Clarithromycin
Cefpodoxim
Colistin
Cefazolin
Daptomycin
Erythromycin
Ertapenem
Fusidic.Acid
Cefepim
Fosfomycin
Nitrofurantoin
Gentamicin
Inducible.Clindamycin.Resistance
Imipenem
Levofloxacin
Linezolid
Mecillinam
Meropenem
Mupirocin
Moxifloxacin
Oxacillin
Penicillin
Piperacillin
Quinupristin.Dalfopristin
Rifampin
Cefuroxim
Cefuroxim.Axetil
Trimethoprim.Sulfamethoxazol
Cefotaxim
Ceftazidim
Tetracyclin
Tigecyclin
Trimethoprim
Tobramycin
Teicoplanin
Piperacillin.Tazobactam
Vancomycin
Ceftolozan.Tazobactam
Gentamicin.High.Level
R
I
S
Spezies
Enterococcus faecalis
Escherichia coli
Pseudomonas aeruginosa
Staphylococcus aureus
Staphylococcus epidermidis


Clinic 07
Spezies
Ampicillin
Amoxicillin.Clavulanic.Acid
Ampicillin.Sulbactam
Amoxicillin
Amikacin
Aztreonam
Azithromycin
Clindamycin
Cefaclor
Ciprofloxacin
Clarithromycin
Cefpodoxim
Colistin
Ceftriaxon
Cefazolin
Daptomycin
Erythromycin
Ertapenem
Fusidic.Acid
Cefepim
Fosfomycin
Nitrofurantoin
Gentamicin
Inducible.Clindamycin.Resistance
Imipenem
Levofloxacin
Linezolid
Mecillinam
Meropenem
Mupirocin
Moxifloxacin
Oxacillin
Penicillin
Piperacillin
Rifampin
Cefuroxim
Cefuroxim.Axetil
Trimethoprim.Sulfamethoxazol
Cefotaxim
Ceftazidim
Tetracyclin
Tigecyclin
Trimethoprim
Tobramycin
Teicoplanin
Piperacillin.Tazobactam
Vancomycin
Ceftolozan.Tazobactam
Ceftazidim.Avibactam
Cefiderocol
R
I
S
Spezies
Enterococcus faecalis
Escherichia coli
Pseudomonas aeruginosa
Staphylococcus aureus
Staphylococcus epidermidis


Clinic 08
Spezies
Ampicillin
Amoxicillin.Clavulanic.Acid
Ampicillin.Sulbactam
Amoxicillin
Amikacin
Aztreonam
Azithromycin
Clindamycin
Cefaclor
Ciprofloxacin
Clarithromycin
Cefpodoxim
Colistin
Ceftriaxon
Cefazolin
Daptomycin
Erythromycin
Ertapenem
Fusidic.Acid
Cefepim
Fosfomycin
Nitrofurantoin
Gentamicin
Inducible.Clindamycin.Resistance
Imipenem
Levofloxacin
Linezolid
Mecillinam
Meropenem
Mupirocin
Moxifloxacin
Oxacillin
Penicillin
Piperacillin
Quinupristin.Dalfopristin
Rifampin
Cefuroxim
Cefuroxim.Axetil
Trimethoprim.Sulfamethoxazol
Cefotaxim
Ceftazidim
Tetracyclin
Tigecyclin
Trimethoprim
Tobramycin
Teicoplanin
Piperacillin.Tazobactam
Vancomycin
Ceftolozan.Tazobactam
R
I
S
Spezies
Enterococcus faecalis
Escherichia coli
Pseudomonas aeruginosa
Staphylococcus aureus
Staphylococcus epidermidis

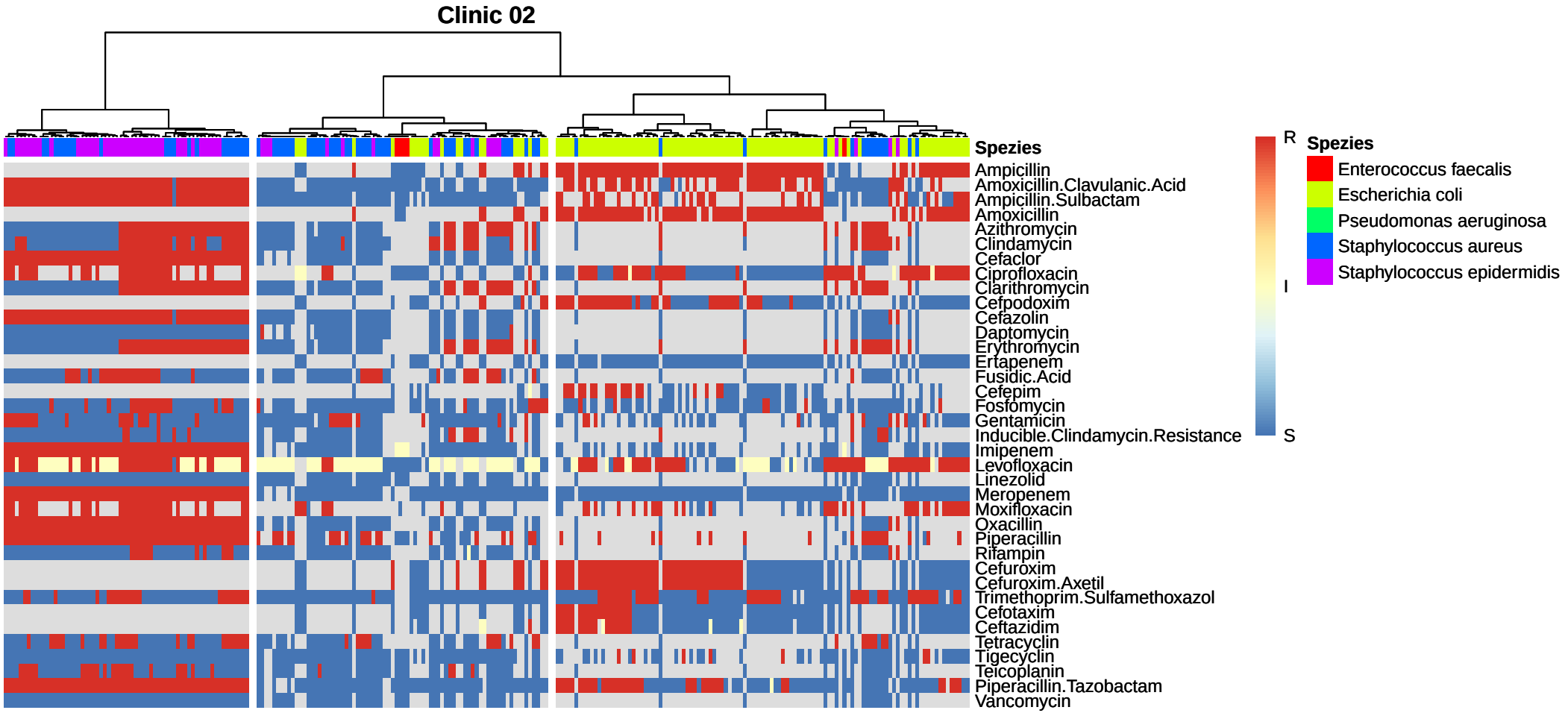

Clinic 09
Spezies
Ampicillin
Amoxicillin.Clavulanic.Acid
Ampicillin.Sulbactam
Amoxicillin
Amikacin
Aztreonam
Azithromycin
Clindamycin
Cefaclor
Ciprofloxacin
Clarithromycin
Cefpodoxim
Colistin
Ceftriaxon
Cefazolin
Daptomycin
Erythromycin
Ertapenem
Fusidic.Acid
Cefepim
Fosfomycin
Nitrofurantoin
Gentamicin
Inducible.Clindamycin.Resistance
Imipenem
Levofloxacin
Linezolid
Mecillinam
Meropenem
Mupirocin
Moxifloxacin
Norfloxacin
Oxacillin
Penicillin
Piperacillin
Quinupristin.Dalfopristin
Rifampin
Cefuroxim
Cefuroxim.Axetil
Trimethoprim.Sulfamethoxazol
Cefotaxim
Ceftazidim
Tetracyclin
Tigecyclin
Trimethoprim
Tobramycin
Teicoplanin
Piperacillin.Tazobactam
Vancomycin
Ceftolozan.Tazobactam
Ceftazidim.Avibactam
Gentamicin.High.Level
Cefiderocol
R
I
S
Spezies
Enterococcus faecalis
Escherichia coli
Pseudomonas aeruginosa
Staphylococcus aureus
Staphylococcus epidermidis


Clinic 10
Spezies
Ampicillin
Amoxicillin.Clavulanic.Acid
Ampicillin.Sulbactam
Amoxicillin
Amikacin
Aztreonam
Azithromycin
Clindamycin
Cefaclor
Ciprofloxacin
Clarithromycin
Cefpodoxim
Colistin
Ceftriaxon
Cefazolin
Daptomycin
Erythromycin
Ertapenem
Fusidic.Acid
Cefepim
Fosfomycin
Nitrofurantoin
Gentamicin
Inducible.Clindamycin.Resistance
Imipenem
Levofloxacin
Linezolid
Mecillinam
Meropenem
Mupirocin
Moxifloxacin
Oxacillin
Penicillin
Piperacillin
Rifampin
Cefuroxim
Cefuroxim.Axetil
Trimethoprim.Sulfamethoxazol
Cefotaxim
Ceftazidim
Tetracyclin
Tigecyclin
Trimethoprim
Tobramycin
Teicoplanin
Piperacillin.Tazobactam
Vancomycin
Ceftolozan.Tazobactam
Ceftazidim.Avibactam
R
I
S
Spezies
Enterococcus faecalis
Escherichia coli
Pseudomonas aeruginosa
Staphylococcus aureus
Staphylococcus epidermidis

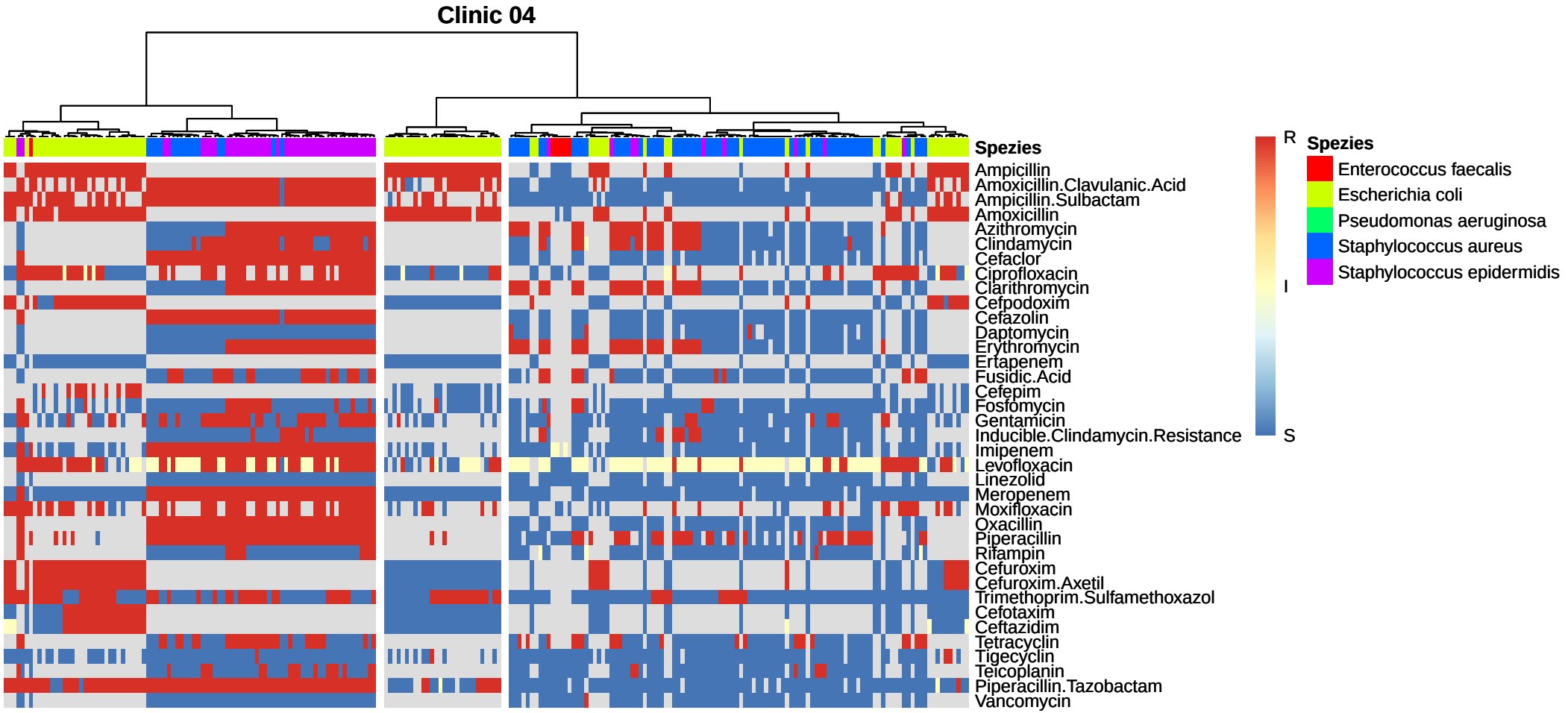
Heatmap

Hierarchical clustering

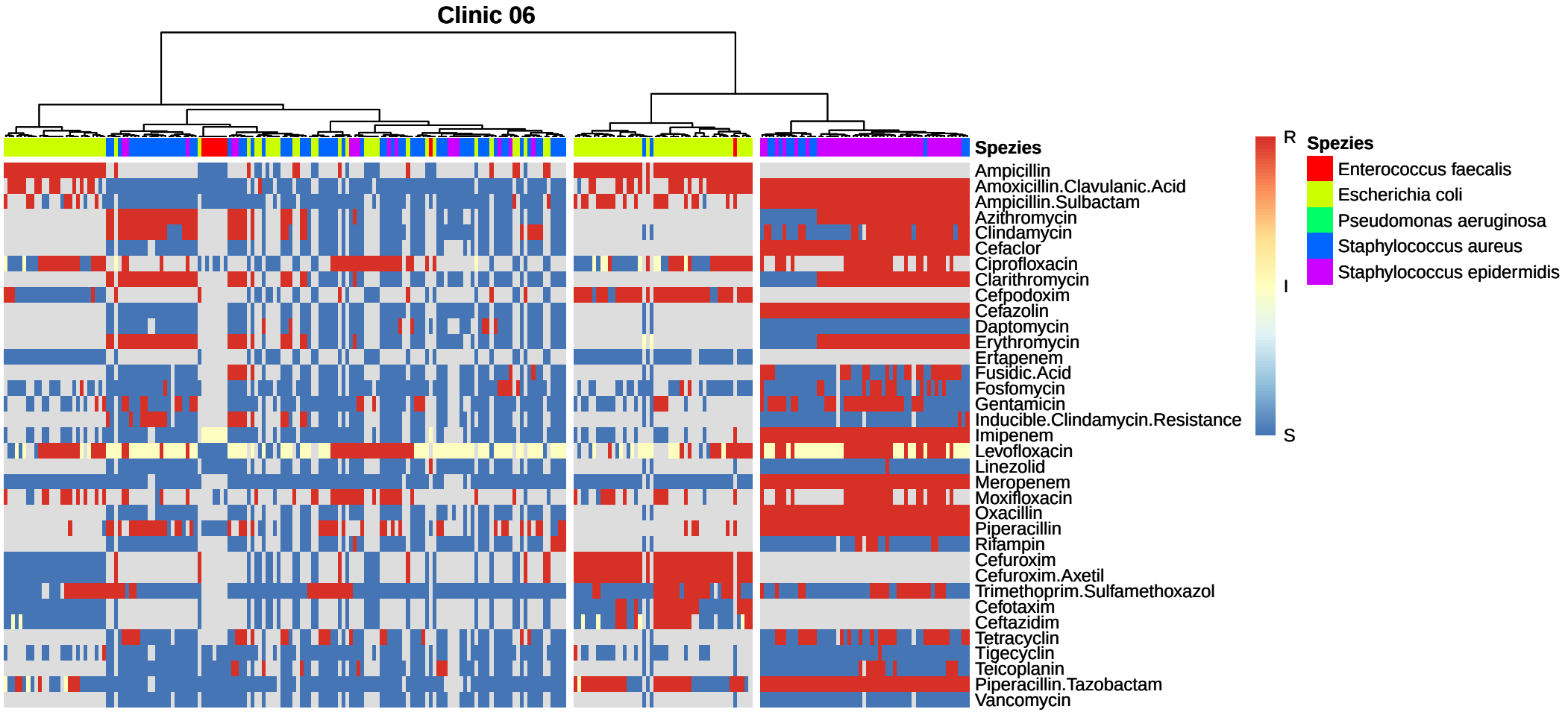
Clinic 01 − no clustering possible

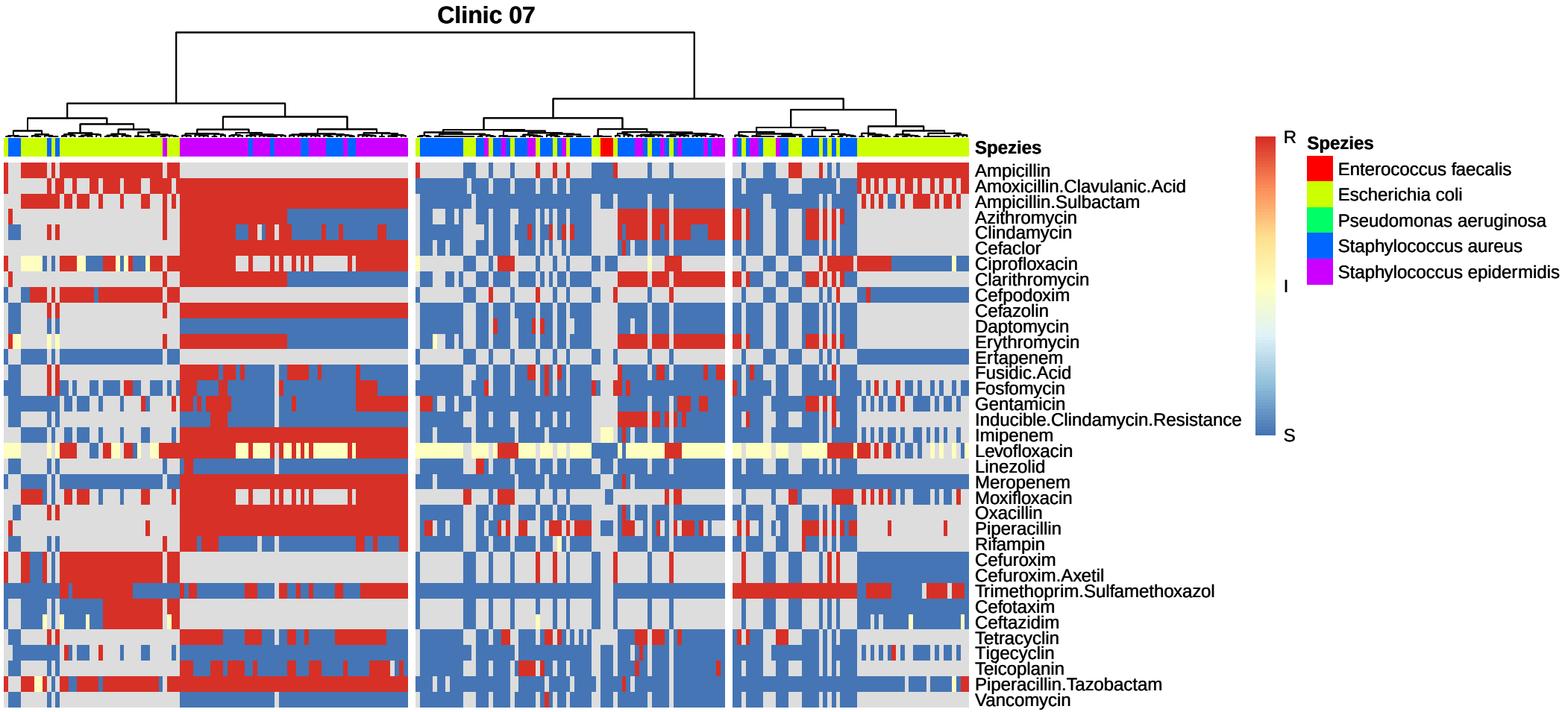

Clinic 02
Spezies
Ampicillin
Amoxicillin.Clavulanic.Acid
Ampicillin.Sulbactam
Amoxicillin
Azithromycin
Clindamycin
Cefaclor
Ciprofloxacin
Clarithromycin
Cefpodoxim
Cefazolin
Daptomycin
Erythromycin
Ertapenem
Fusidic.Acid
Cefepim
Fosfomycin
Gentamicin
Inducible.Clindamycin.Resistance
Imipenem
Levofloxacin
Linezolid
Meropenem
Moxifloxacin
Oxacillin
Piperacillin
Rifampin
Cefuroxim
Cefuroxim.Axetil
Trimethoprim.Sulfamethoxazol
Cefotaxim
Ceftazidim
Tetracyclin
Tigecyclin
Teicoplanin
Piperacillin.Tazobactam
Vancomycin
R
I
S
Spezies
Enterococcus faecalis
Escherichia coli
Pseudomonas aeruginosa
Staphylococcus aureus
Staphylococcus epidermidis

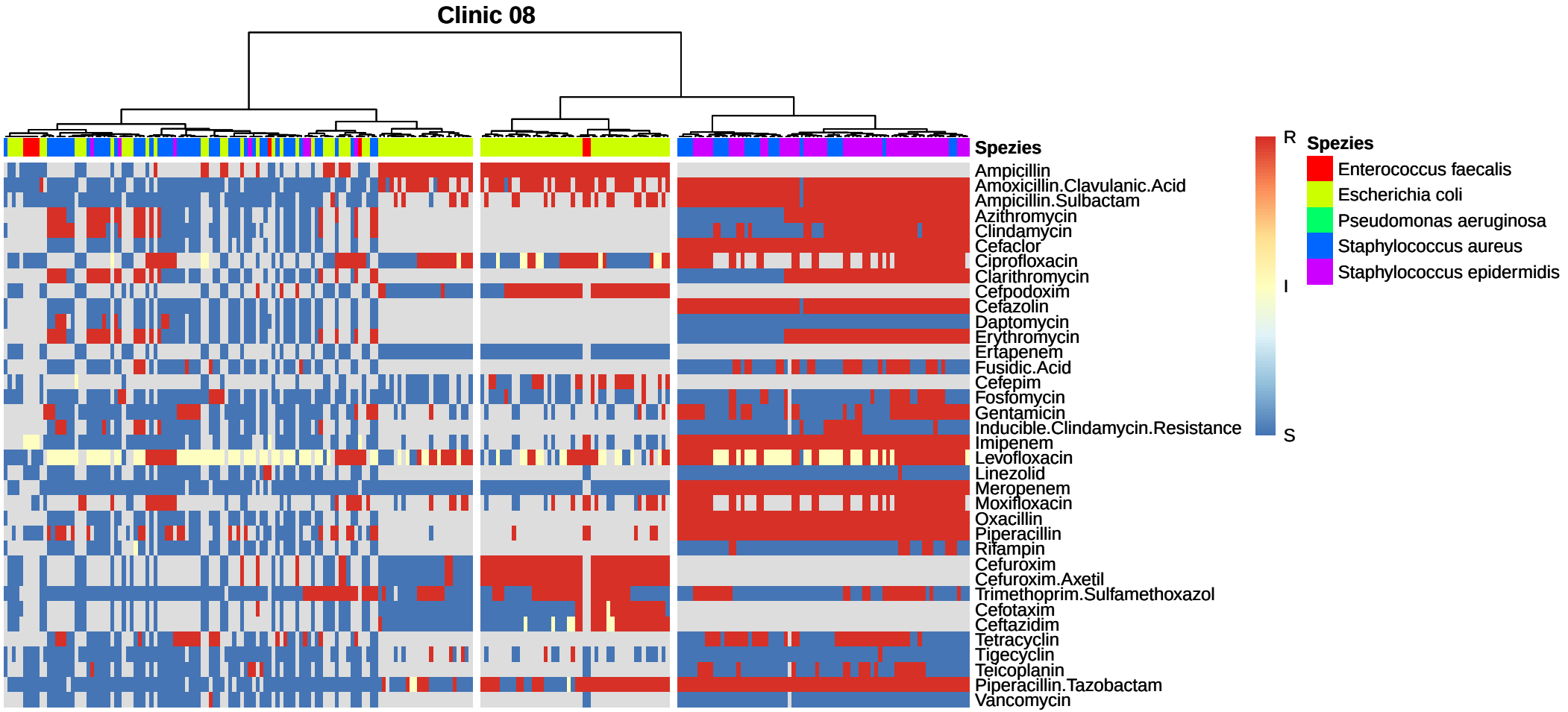
Clinic 03 − no clustering possible

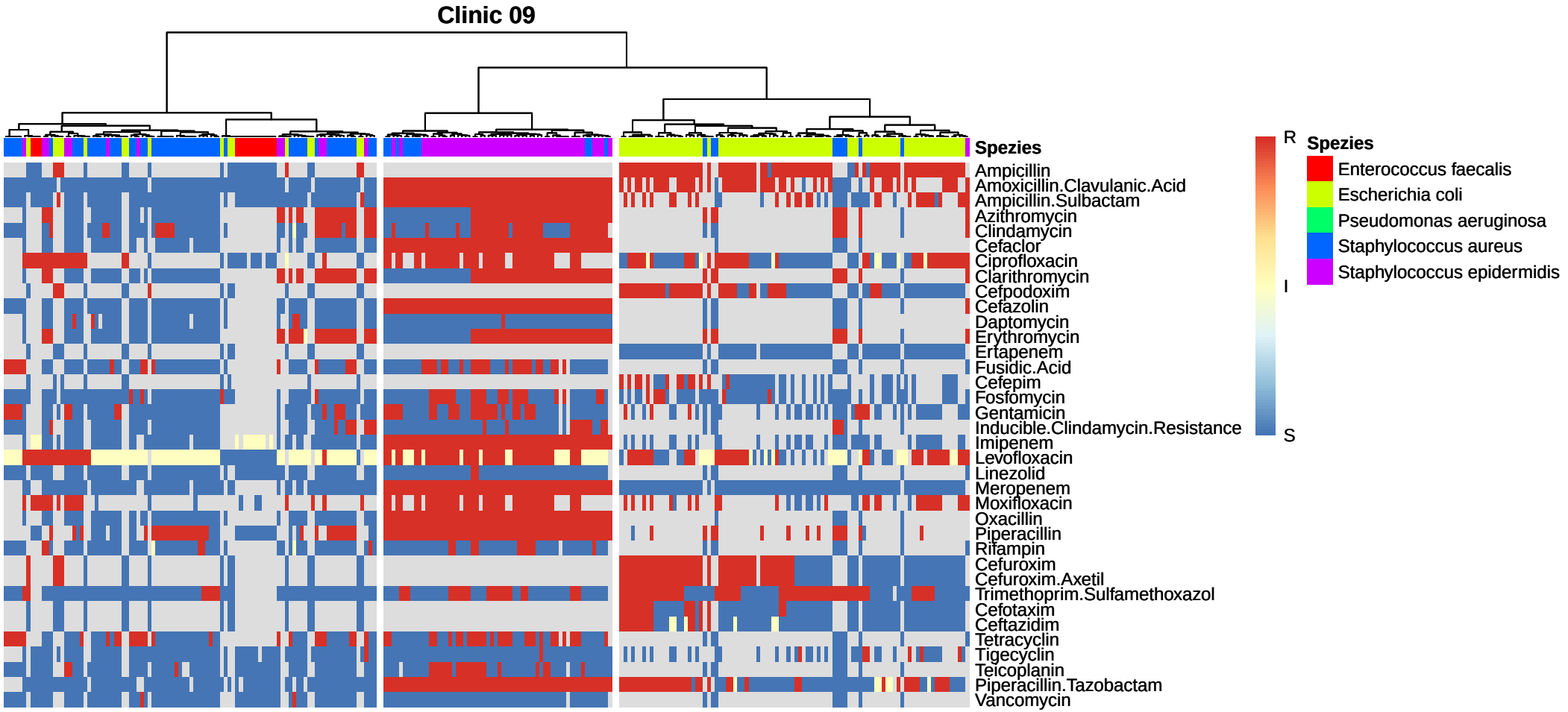

Clinic 04
Spezies
Ampicillin
Amoxicillin.Clavulanic.Acid
Ampicillin.Sulbactam
Amoxicillin
Azithromycin
Clindamycin
Cefaclor
Ciprofloxacin
Clarithromycin
Cefpodoxim
Cefazolin
Daptomycin
Erythromycin
Ertapenem
Fusidic.Acid
Cefepim
Fosfomycin
Gentamicin
Inducible.Clindamycin.Resistance
Imipenem
Levofloxacin
Linezolid
Meropenem
Moxifloxacin
Oxacillin
Piperacillin
Rifampin
Cefuroxim
Cefuroxim.Axetil
Trimethoprim.Sulfamethoxazol
Cefotaxim
Ceftazidim
Tetracyclin
Tigecyclin
Teicoplanin
Piperacillin.Tazobactam
Vancomycin
R
I
S
Spezies
Enterococcus faecalis
Escherichia coli
Pseudomonas aeruginosa
Staphylococcus aureus
Staphylococcus epidermidis

Clinic 05 − no clustering possible


Clinic 06
Spezies
Ampicillin
Amoxicillin.Clavulanic.Acid
Ampicillin.Sulbactam
Azithromycin
Clindamycin
Cefaclor
Ciprofloxacin
Clarithromycin
Cefpodoxim
Cefazolin
Daptomycin
Erythromycin
Ertapenem
Fusidic.Acid
Fosfomycin
Gentamicin
Inducible.Clindamycin.Resistance
Imipenem
Levofloxacin
Linezolid
Meropenem
Moxifloxacin
Oxacillin
Piperacillin
Rifampin
Cefuroxim
Cefuroxim.Axetil
Trimethoprim.Sulfamethoxazol
Cefotaxim
Ceftazidim
Tetracyclin
Tigecyclin
Teicoplanin
Piperacillin.Tazobactam
Vancomycin
R
I
S
Spezies
Enterococcus faecalis
Escherichia coli
Pseudomonas aeruginosa
Staphylococcus aureus
Staphylococcus epidermidis


Clinic 07
Spezies
Ampicillin
Amoxicillin.Clavulanic.Acid
Ampicillin.Sulbactam
Azithromycin
Clindamycin
Cefaclor
Ciprofloxacin
Clarithromycin
Cefpodoxim
Cefazolin
Daptomycin
Erythromycin
Ertapenem
Fusidic.Acid
Fosfomycin
Gentamicin
Inducible.Clindamycin.Resistance
Imipenem
Levofloxacin
Linezolid
Meropenem
Moxifloxacin
Oxacillin
Piperacillin
Rifampin
Cefuroxim
Cefuroxim.Axetil
Trimethoprim.Sulfamethoxazol
Cefotaxim
Ceftazidim
Tetracyclin
Tigecyclin
Teicoplanin
Piperacillin.Tazobactam
Vancomycin
R
I
S
Spezies
Enterococcus faecalis
Escherichia coli
Pseudomonas aeruginosa
Staphylococcus aureus
Staphylococcus epidermidis


Clinic 08
Spezies
Ampicillin
Amoxicillin.Clavulanic.Acid
Ampicillin.Sulbactam
Azithromycin
Clindamycin
Cefaclor
Ciprofloxacin
Clarithromycin
Cefpodoxim
Cefazolin
Daptomycin
Erythromycin
Ertapenem
Fusidic.Acid
Cefepim
Fosfomycin
Gentamicin
Inducible.Clindamycin.Resistance
Imipenem
Levofloxacin
Linezolid
Meropenem
Moxifloxacin
Oxacillin
Piperacillin
Rifampin
Cefuroxim
Cefuroxim.Axetil
Trimethoprim.Sulfamethoxazol
Cefotaxim
Ceftazidim
Tetracyclin
Tigecyclin
Teicoplanin
Piperacillin.Tazobactam
Vancomycin
R
I
S
Spezies
Enterococcus faecalis
Escherichia coli
Pseudomonas aeruginosa
Staphylococcus aureus
Staphylococcus epidermidis


Clinic 09
Spezies
Ampicillin
Amoxicillin.Clavulanic.Acid
Ampicillin.Sulbactam
Azithromycin
Clindamycin
Cefaclor
Ciprofloxacin
Clarithromycin
Cefpodoxim
Cefazolin
Daptomycin
Erythromycin
Ertapenem
Fusidic.Acid
Cefepim
Fosfomycin
Gentamicin
Inducible.Clindamycin.Resistance
Imipenem
Levofloxacin
Linezolid
Meropenem
Moxifloxacin
Oxacillin
Piperacillin
Rifampin
Cefuroxim
Cefuroxim.Axetil
Trimethoprim.Sulfamethoxazol
Cefotaxim
Ceftazidim
Tetracyclin
Tigecyclin
Teicoplanin
Piperacillin.Tazobactam
Vancomycin
R
I
S
Spezies
Enterococcus faecalis
Escherichia coli
Pseudomonas aeruginosa
Staphylococcus aureus
Staphylococcus epidermidis

Clinic 10 − no clustering possible