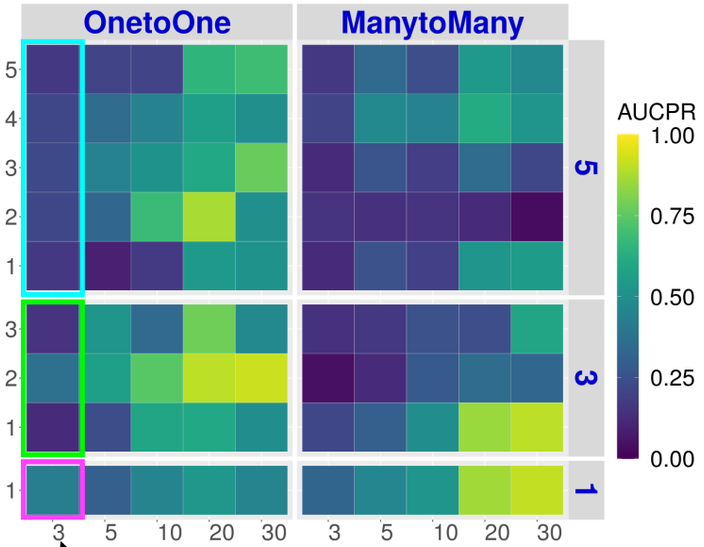
Simulated Datasets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0.25
0.00
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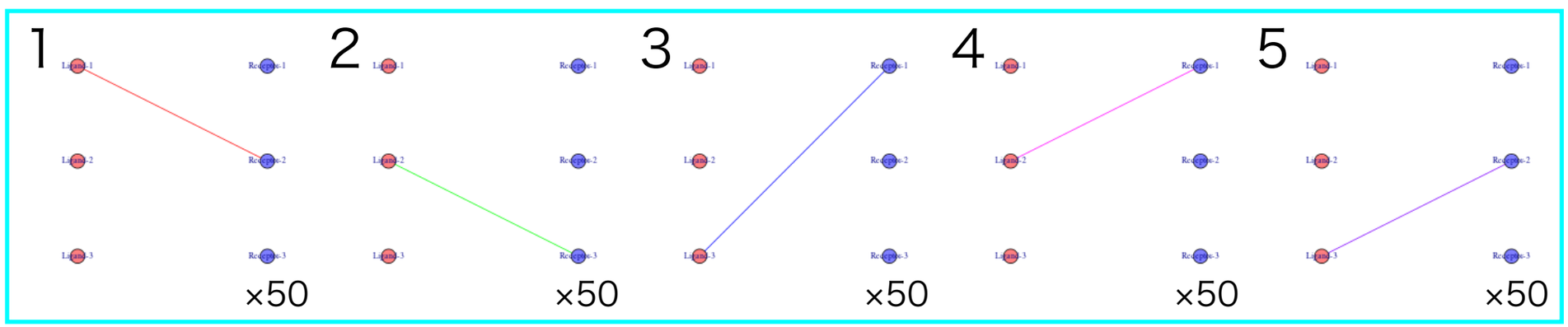
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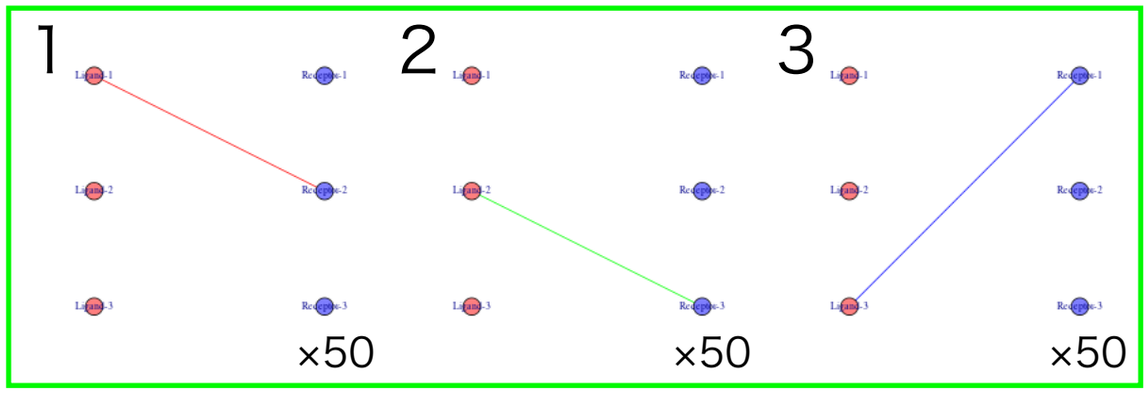
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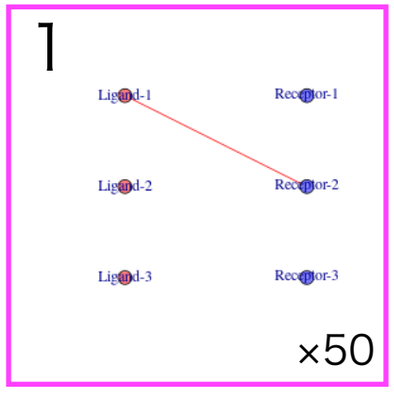
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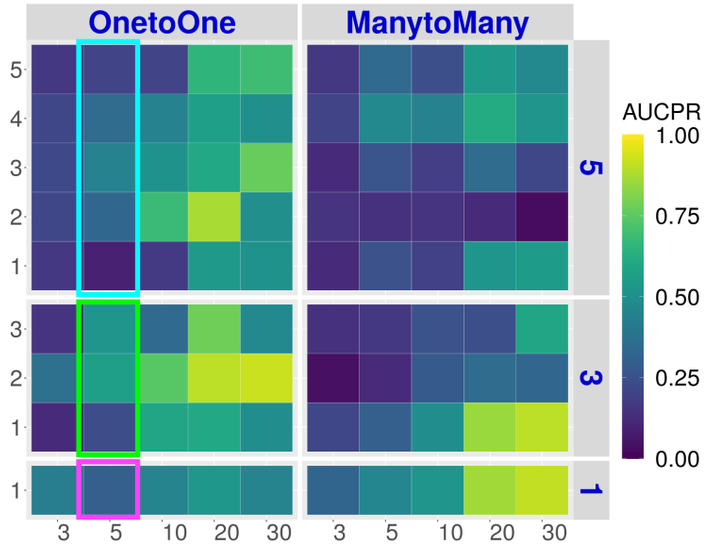
Ligand-1
Ligand-2
Ligand-3
Receptor-1
Receptor-2
Receptor-3
×50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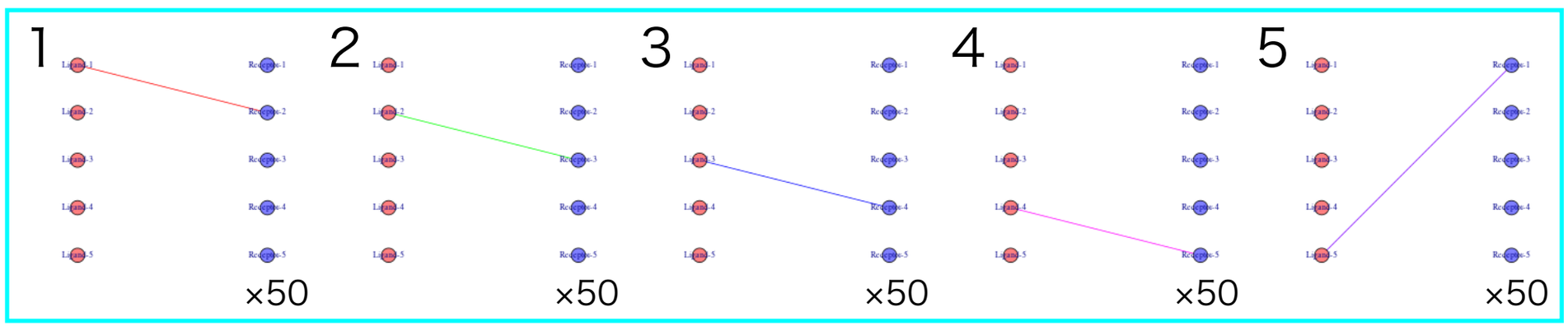
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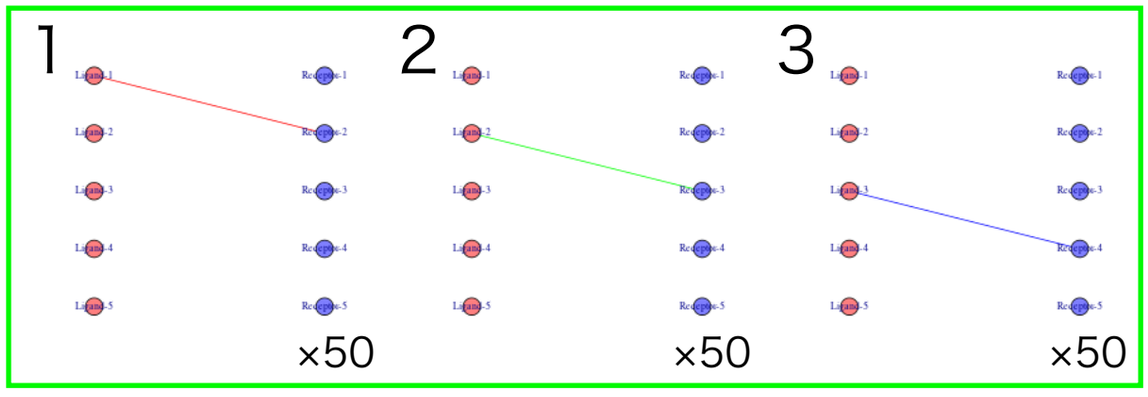
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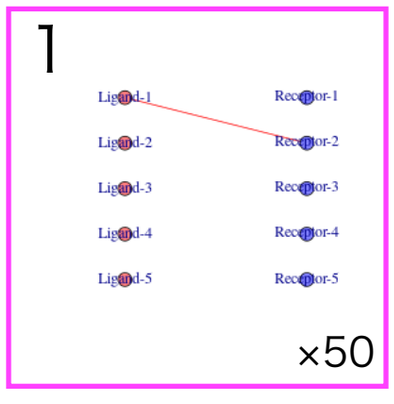
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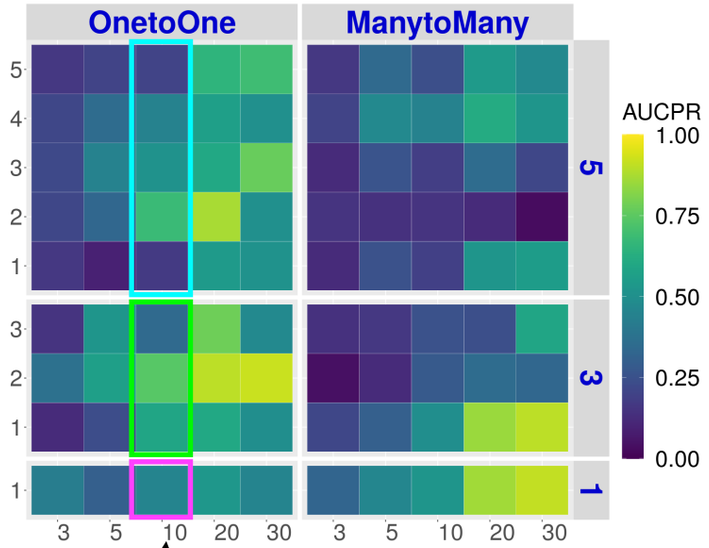
Ligand-2
Ligand-3
Ligand-4
Ligand-5
Receptor-1
Receptor-2
Receptor-3
Receptor-4
Receptor-5
×50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AUCPR
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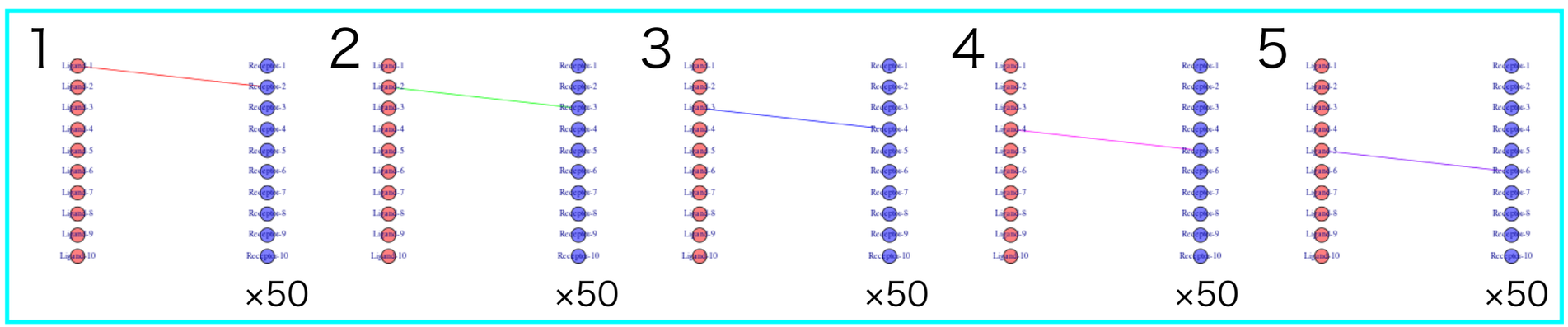
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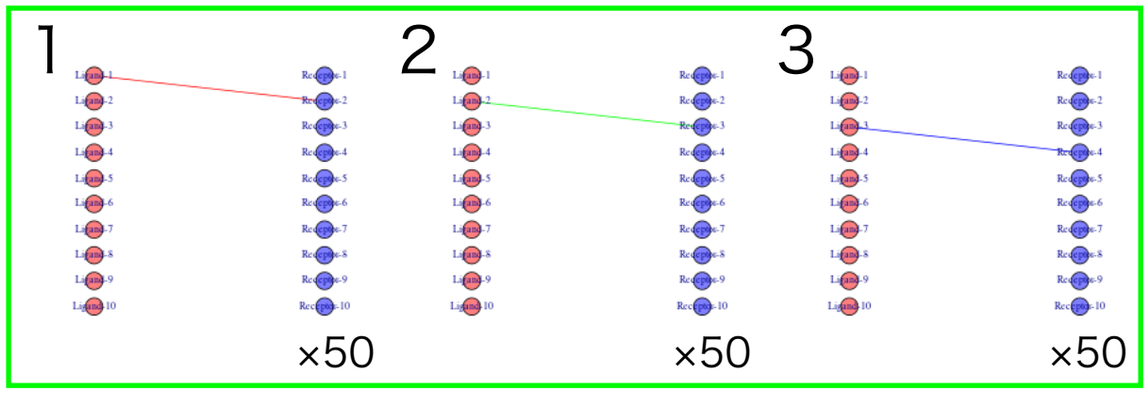
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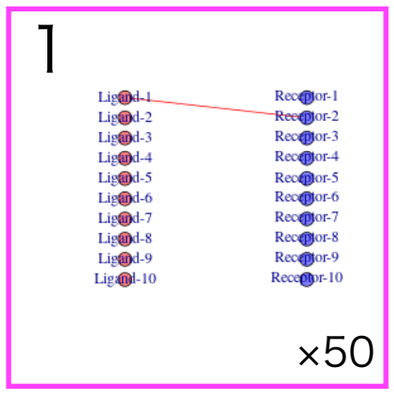
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Ligand-3
Ligand-4
Ligand-5
Ligand-6
Ligand-7
Ligand-8
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Ligand-10
Receptor-1
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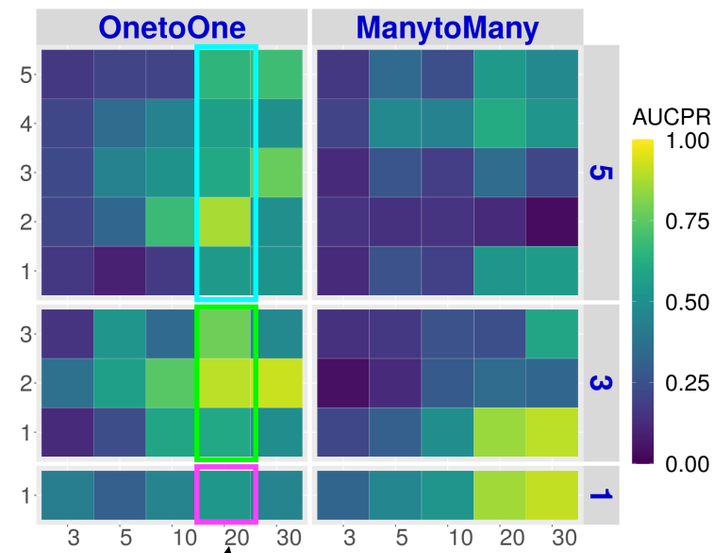
Receptor-10
×50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ManytoMany
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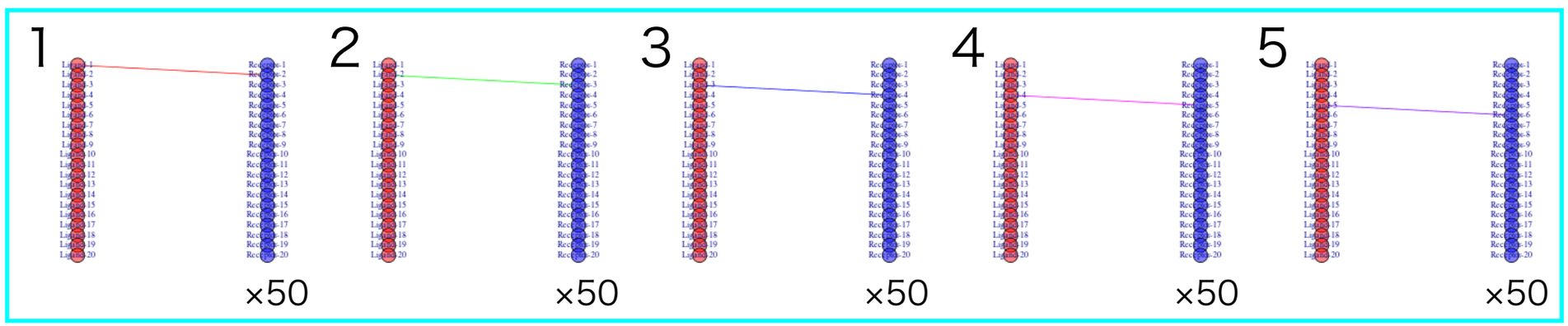
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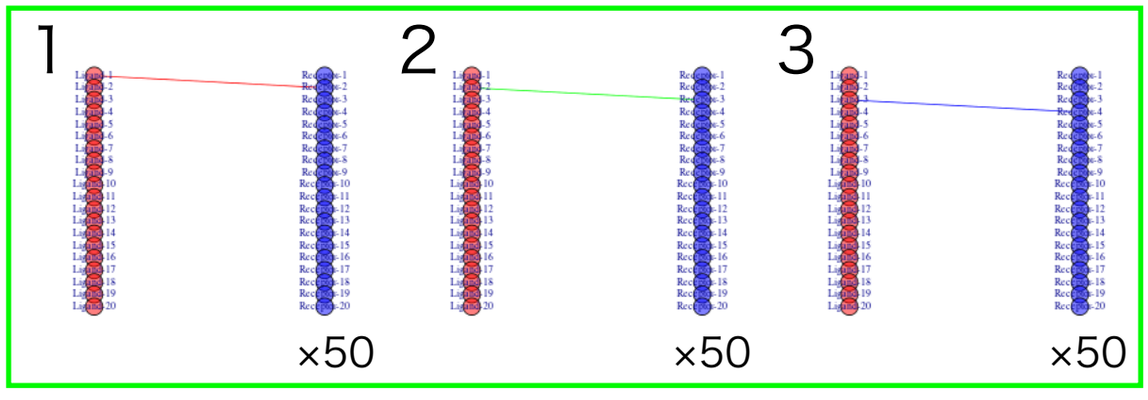
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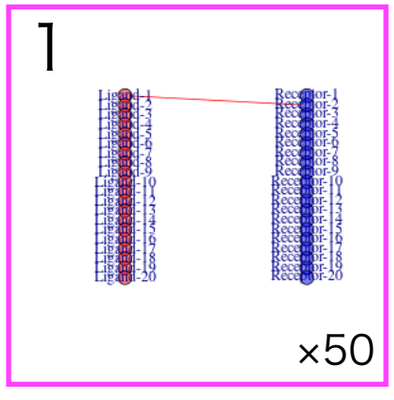
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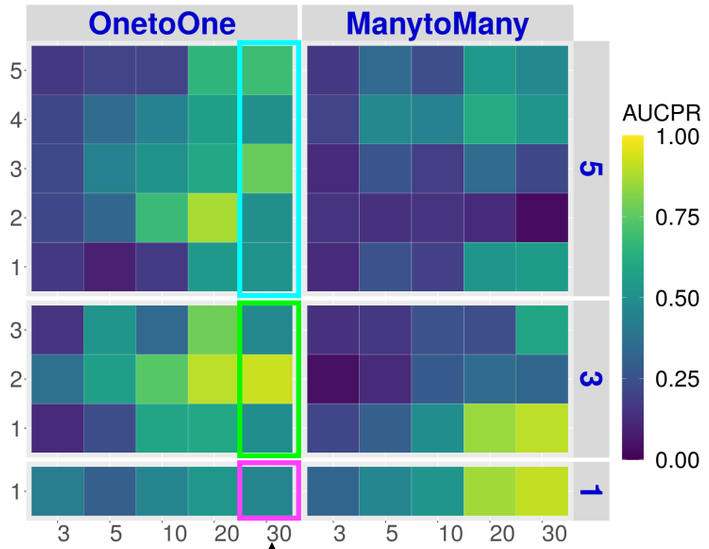
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ManytoMany
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AUCPR
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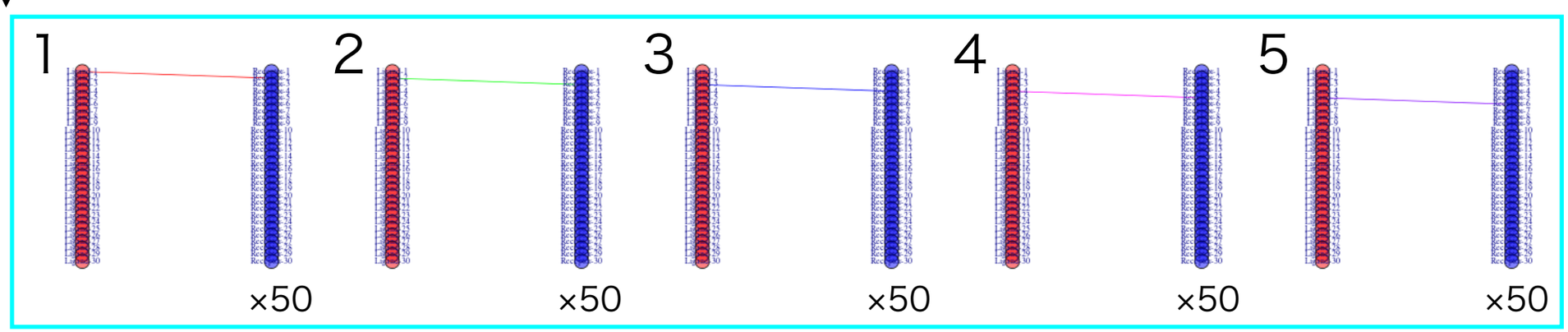
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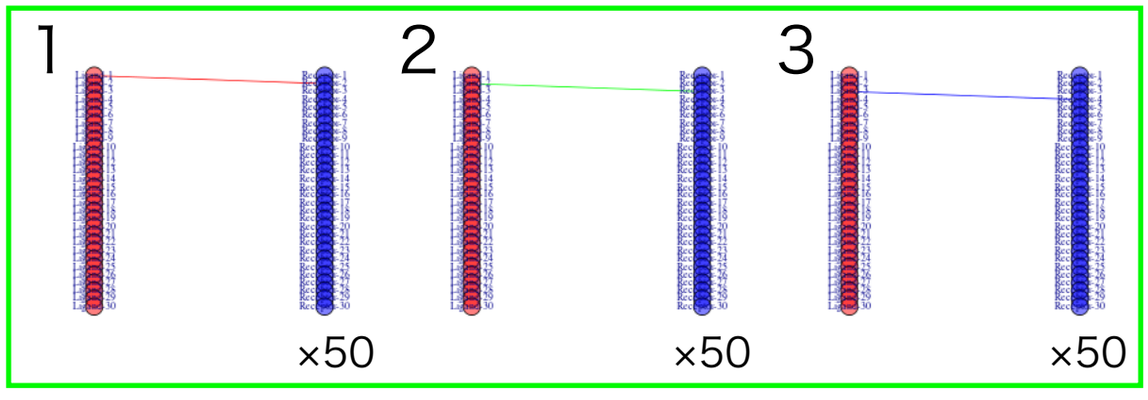
×50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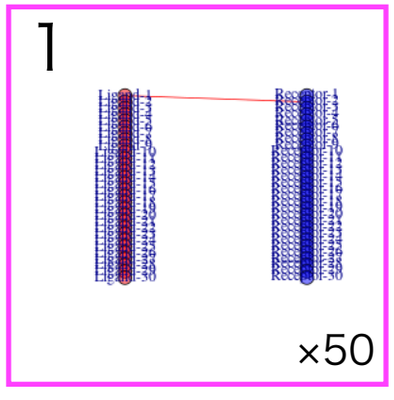
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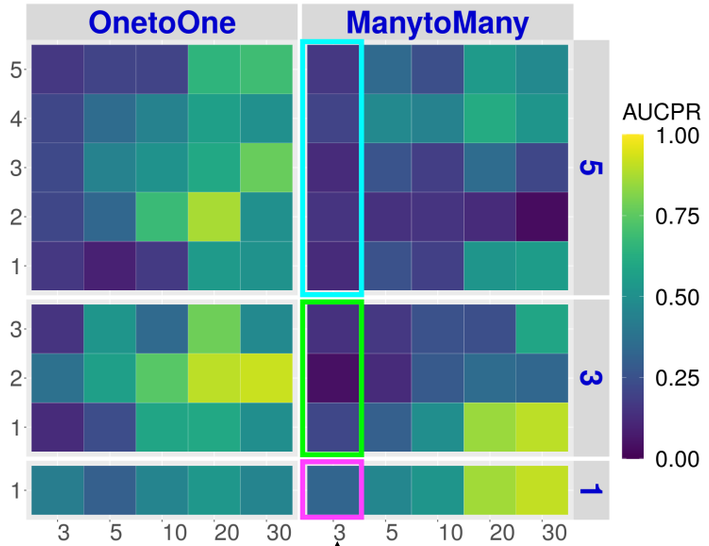
OnetoOne
ManytoMany
AUCPR
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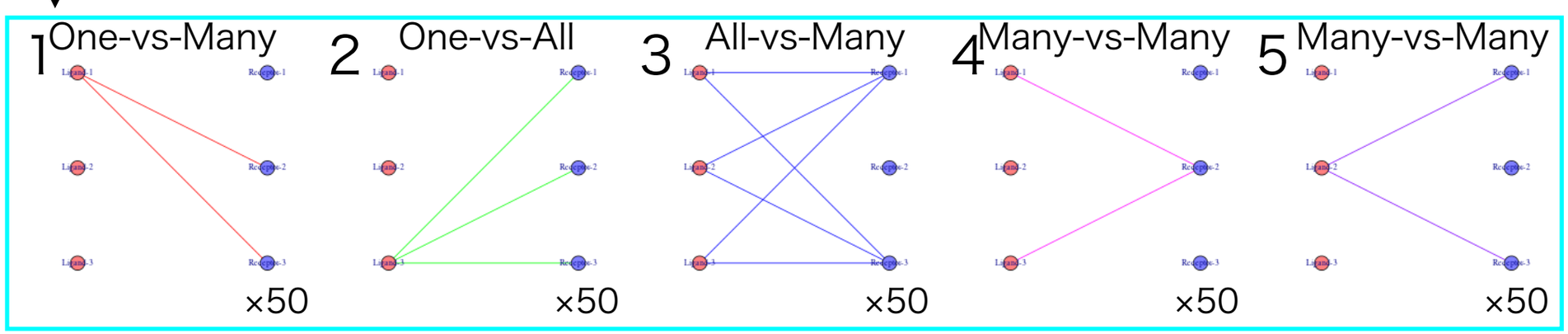
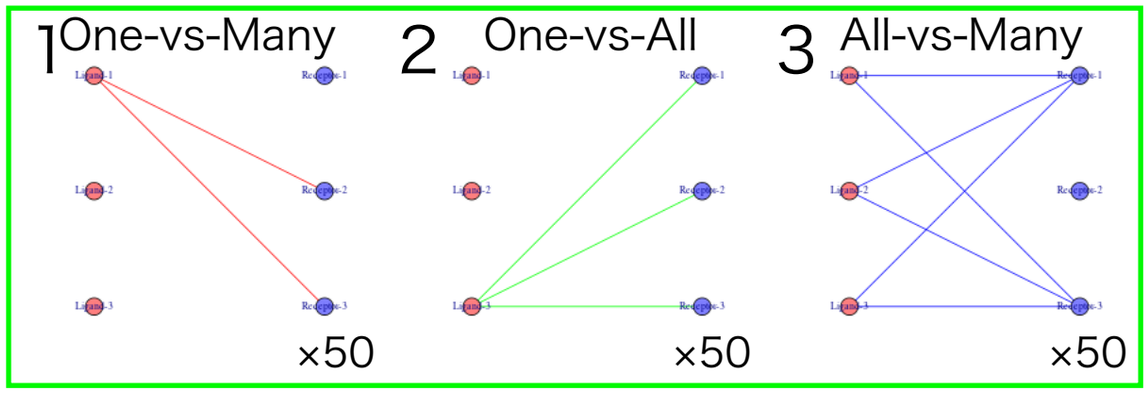
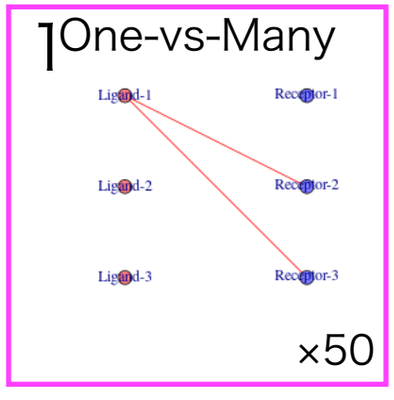

1 One-vs-Many
2 One-vs-All
3 All-vs-Many
4 Many-vs-Many
5 Many-vs-Many
×50
×50
×50
×50
×50


1 One-vs-Many
2 One-vs-All
3 All-vs-Many
×50
×50
×50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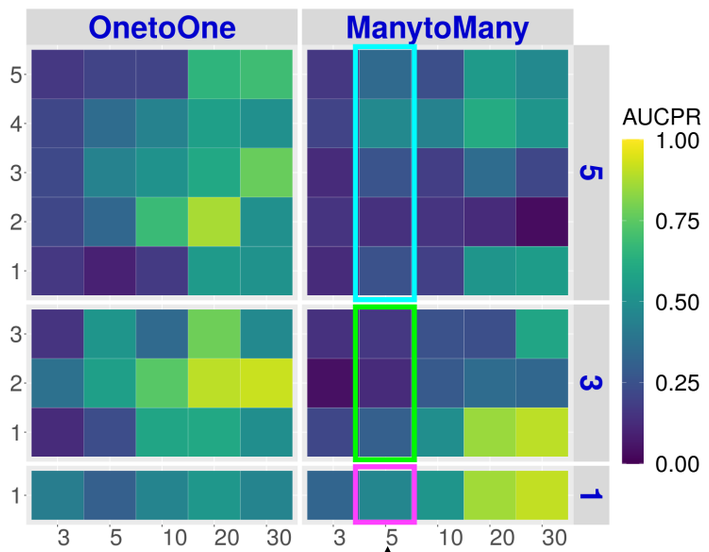
Ligand-1
Ligand-2
Ligand-3
Receptor-1
Receptor-2
Receptor-3
×50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ManytoMany
AUCPR
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0.75
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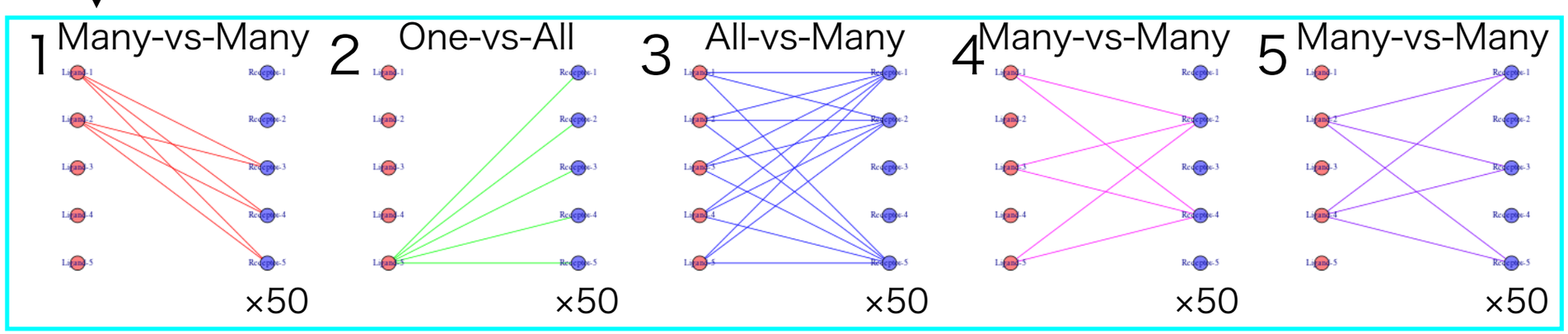
3 5 10 20 30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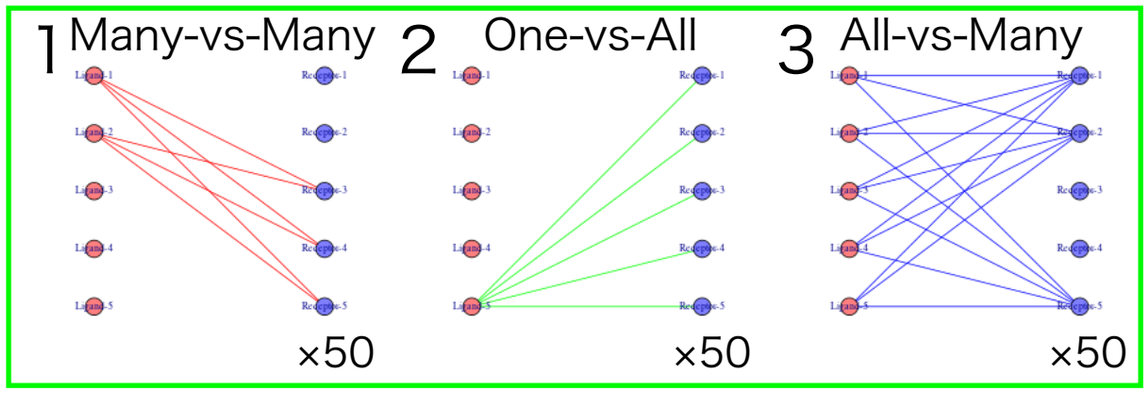
2 One-vs-All
3 All-vs-Many
4 Many-vs-Many
5 Many-vs-Many
×50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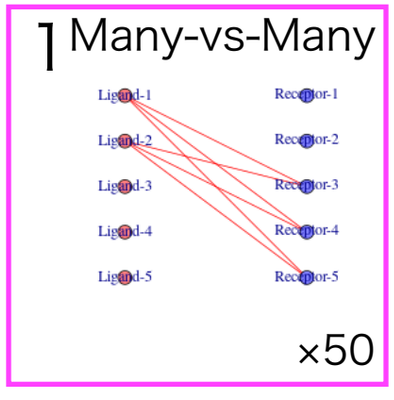
2 One-vs-All
3 All-vs-Many
×50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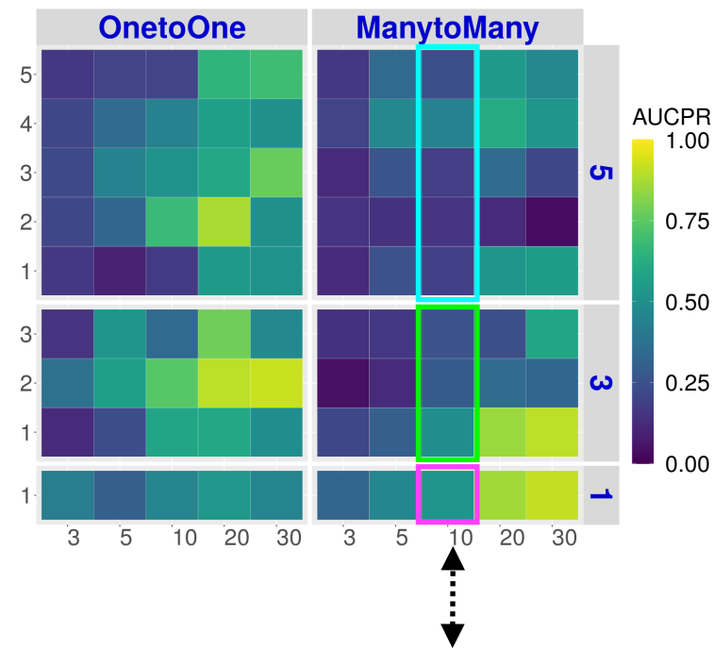
Ligand-1
Ligand-2
Ligand-3
Ligand-4
Ligand-5
Receptor-1
Receptor-2
Receptor-3
Receptor-4
Receptor-5
×50


OnetoOne
ManytoMany
AUCPR
1.00
0.75
0.50
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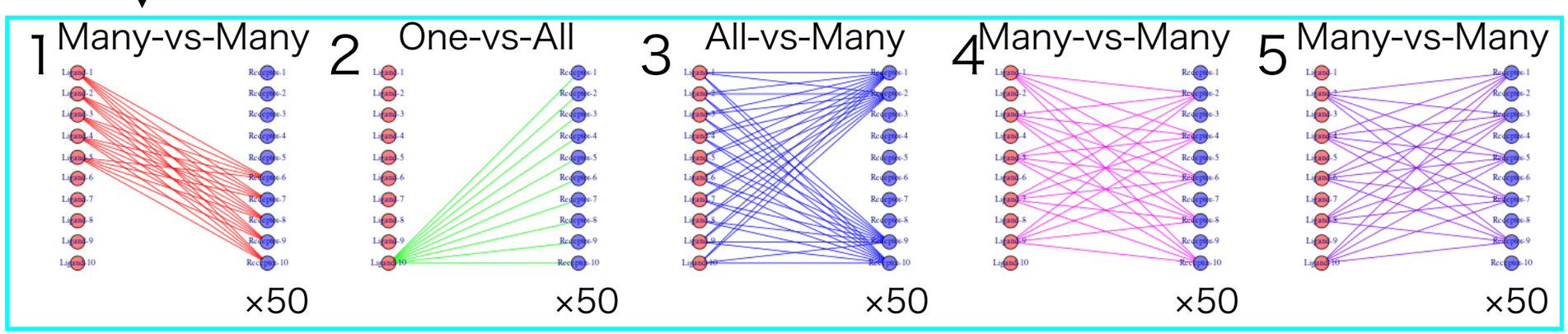
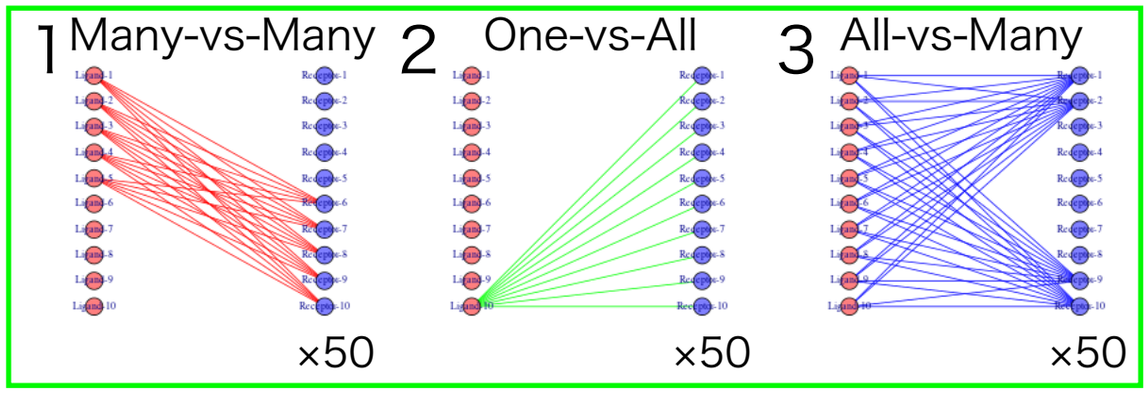
3 5 10 20 30


1 Many-vs-Many
2 One-vs-All
3 All-vs-Many
4 Many-vs-Many
5 Many-vs-Many
×50
×50
×50
×50
×50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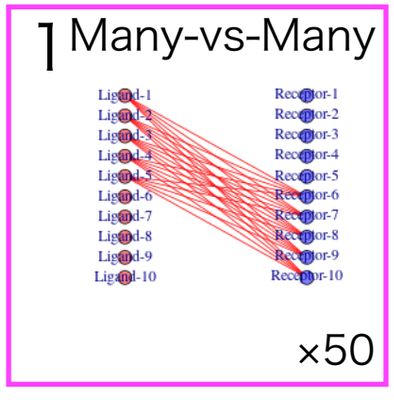
2 One-vs-All
3 All-vs-Many
×50
×50
×50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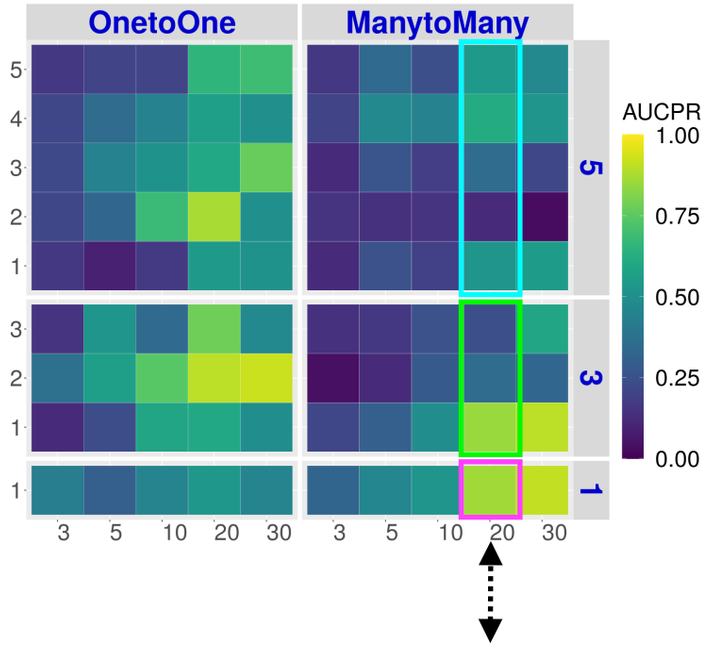
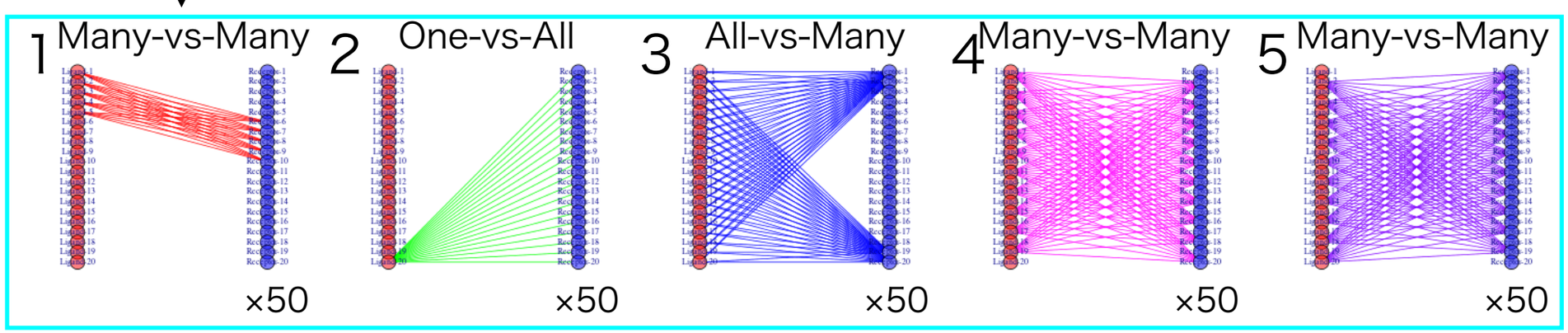
Ligand-1
Ligand-2
Ligand-3
Ligand-4
Ligand-5
Ligand-6
Ligand-7
Ligand-8
Ligand-9
Ligand-10
Receptor-1
Receptor-2
Receptor-3
Receptor-4
Receptor-5
Receptor-6
Receptor-7
Receptor-8
Receptor-9
Receptor-10
×50


OnetoOne
ManytoMany
AUCPR
1.00
0.75
0.50
0.25
0.00
5
3
1
3 5 10 20 30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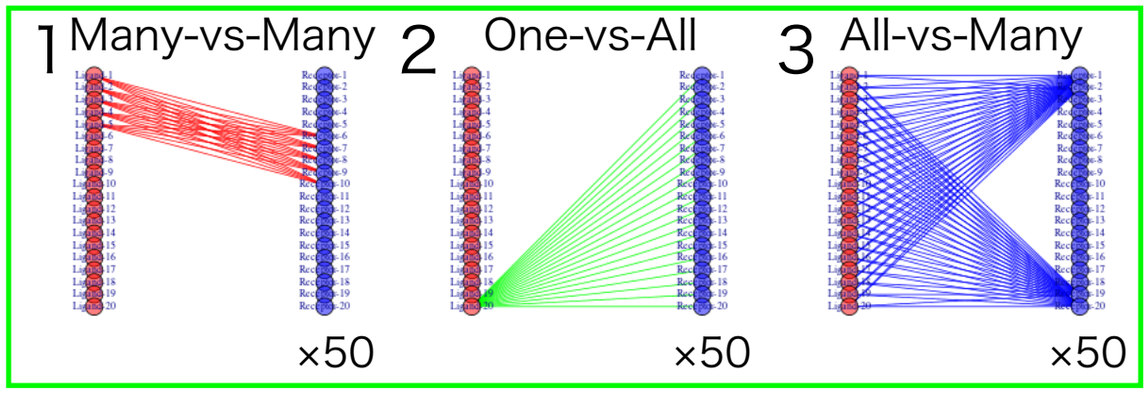
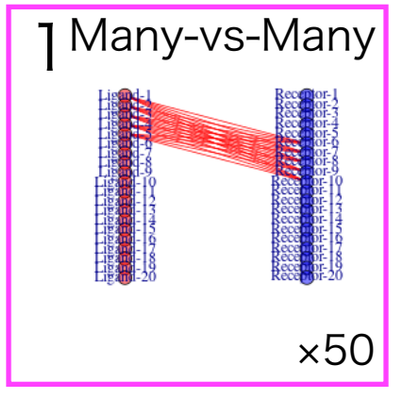
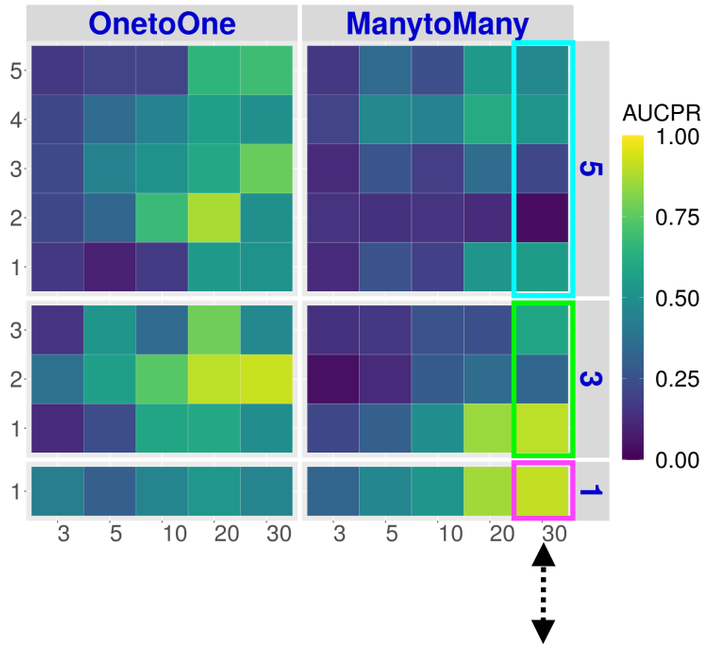
3 All-vs-Many
4 Many-vs-Many
5 Many-vs-Many
×50
×50
×50
×50
×50


1 Many-vs-Many
2 One-vs-All
3 All-vs-Many
×50
×50
×50


1 Many-vs-Many
×50


OnetoOne
ManytoMany
AUCPR
1.00
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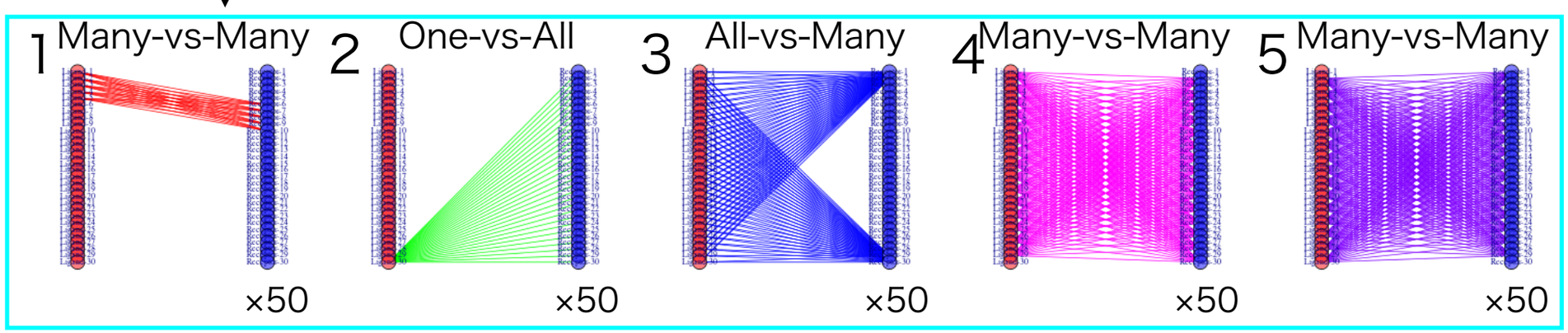
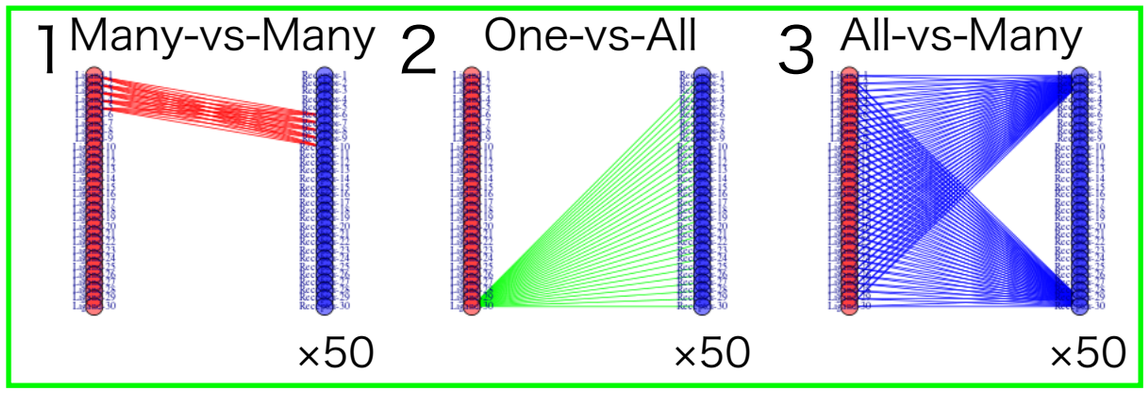
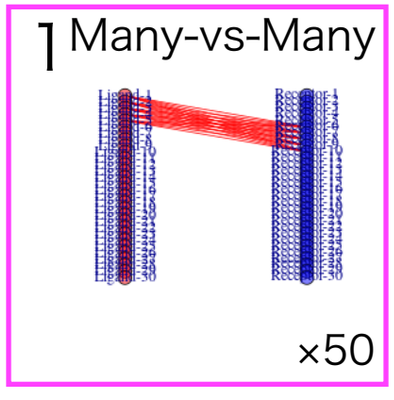
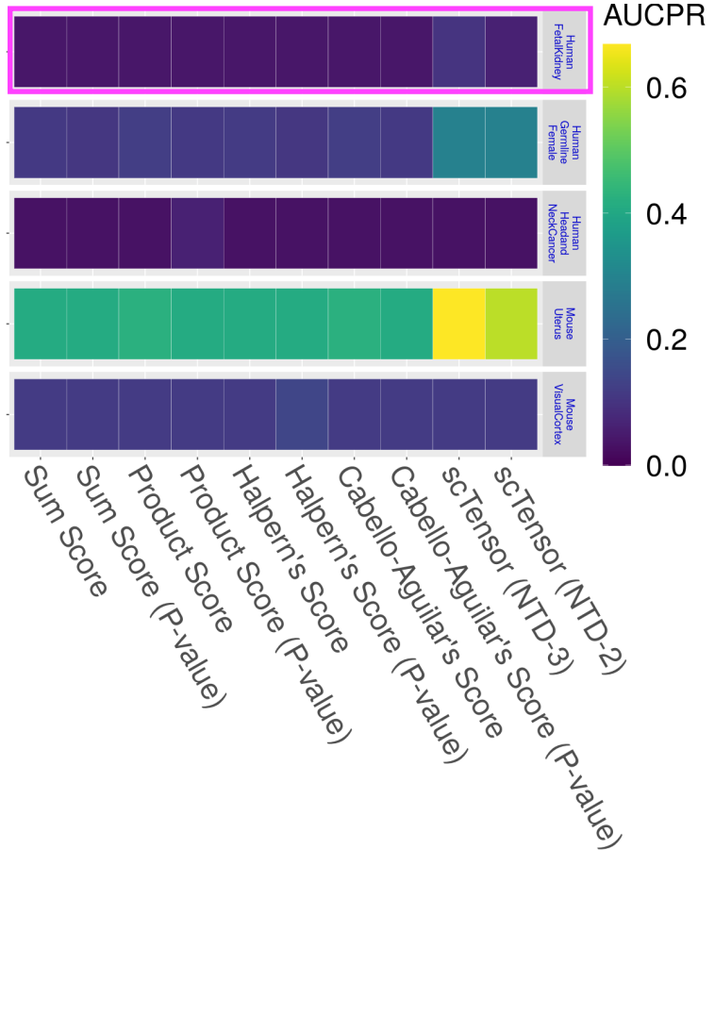
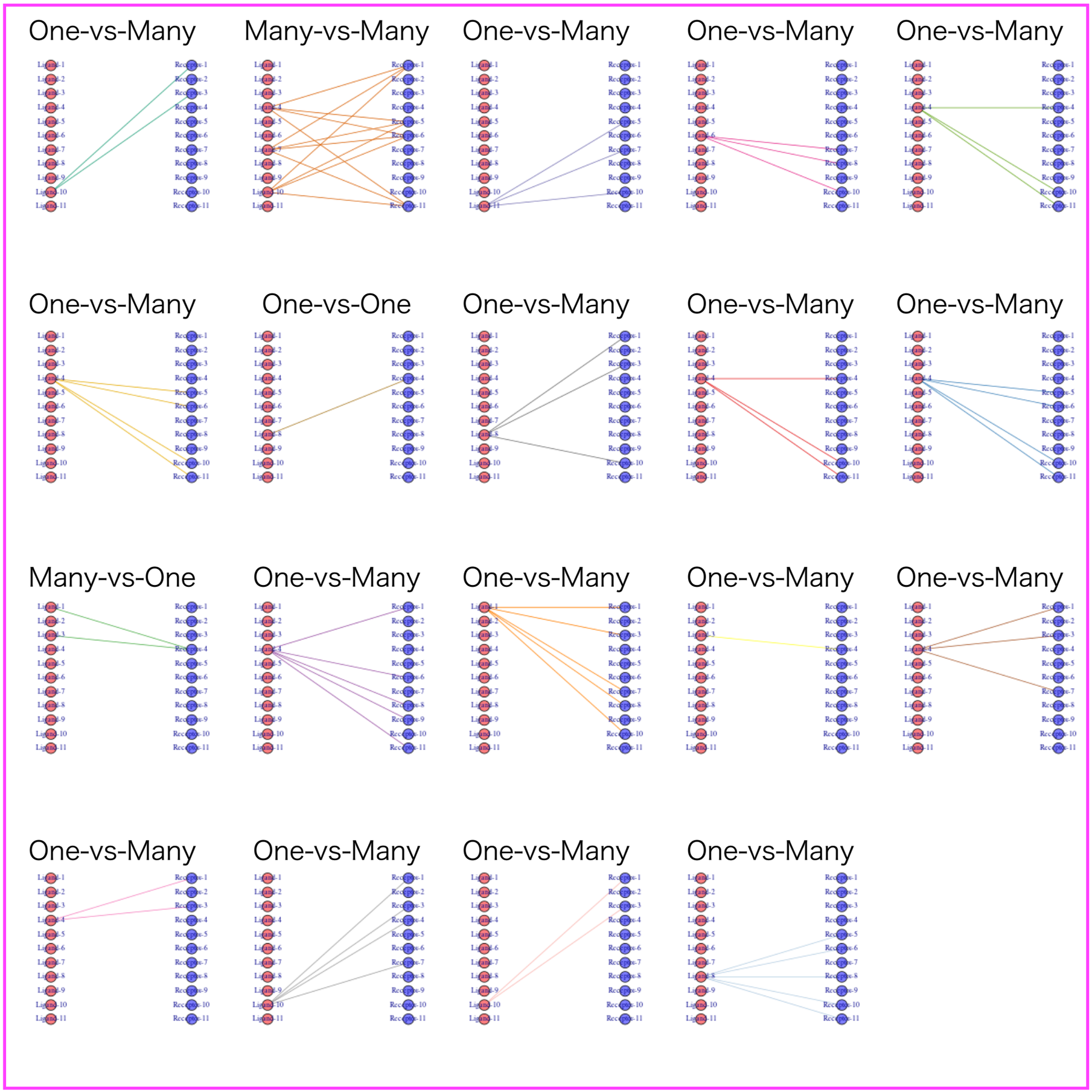

1 Many-vs-Many
×50
2 One-vs-All
×50
3 All-vs-Many
×50
4 Many-vs-Many
×50
5 Many-vs-Many
×50


1 Many-vs-Many
×50
2 One-vs-All
×50
3 All-vs-Many
×50


1 Many-vs-Many
×50

Real Datasets


AUCPR
0.6
0.4
0.2
0.0
Human FetalKidney
Human Germline Female
Human HeadandNeckCancer
Mouse Uterus
Mouse VisualCortex
Sum Score
Sum Score (P-value)
Product Score
Product Score (P-value)
Halpern's Score
Halpern's Score (P-value)
Cabello-Aguilar's Score
Cabello-Aguilar's Score (P-value)
scTensor (NTD-3)
scTensor (NTD-2)


One-vs-Many
Many-vs-Many
One-vs-Many
One-vs-Many
One-vs-Many
One-vs-Many
One-vs-One
One-vs-Many
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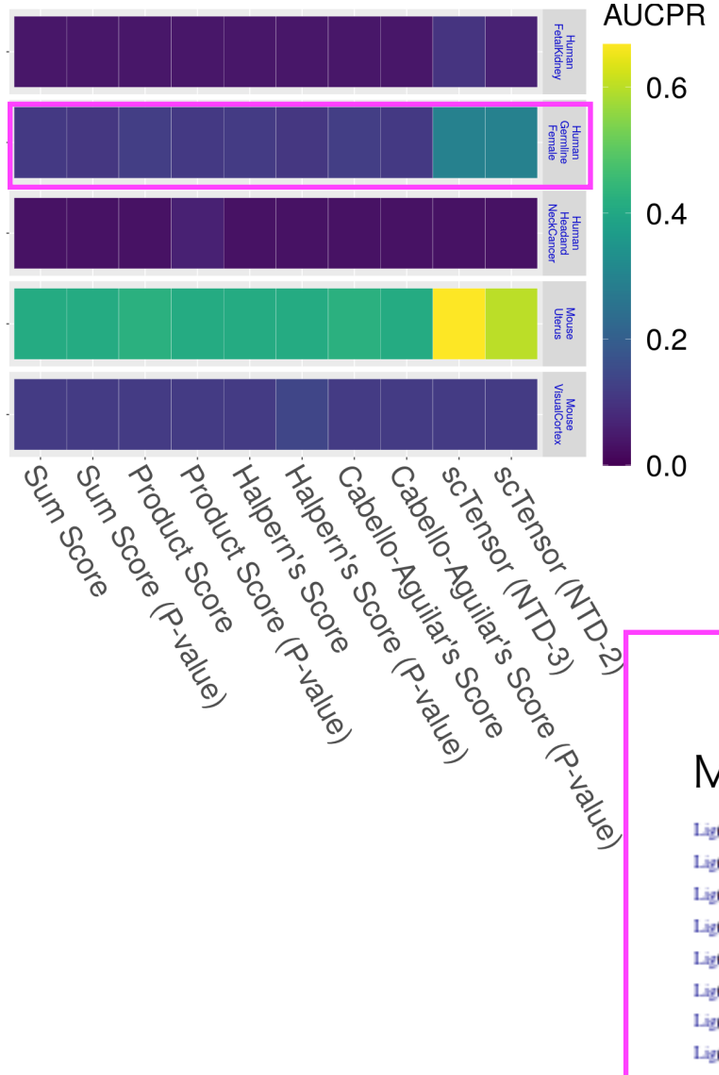
One-vs-Many
Many-vs-One
One-vs-Many
One-vs-Many
One-vs-Many
One-vs-Many
One-vs-Many
One-vs-Many
One-vs-Many


AUCPR
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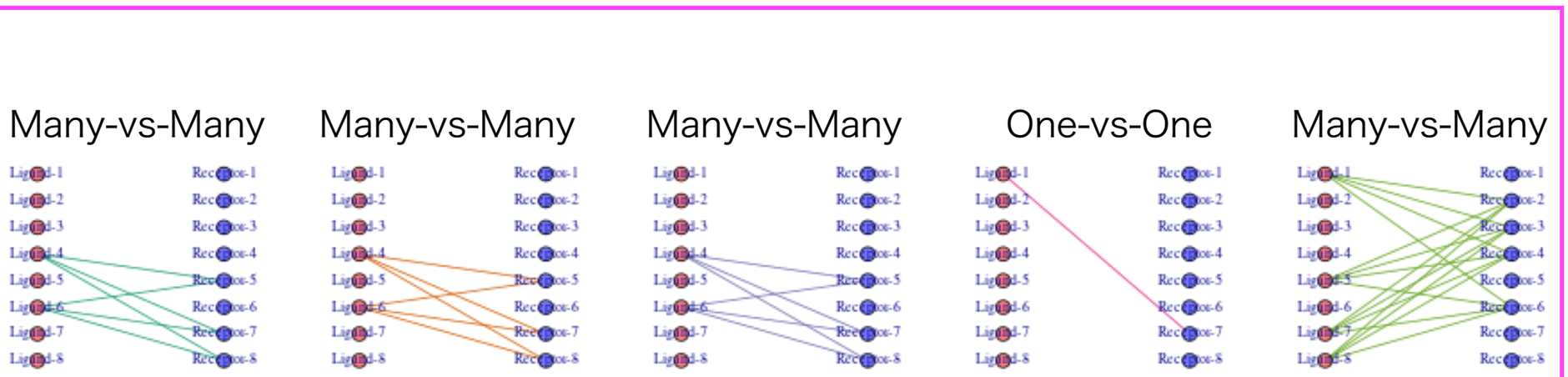
0.4
0.2
0.0
Human FetalKidney
Human Germline Female
Human Headand NeckCancer
Mouse Uterus
Mouse VisualCortex
Sum Score
Sum Score (P-value)
Product Score
Product Score (P-value)
Halpern's Score
Halpern's Score (P-value)
Cabello-Aguilar's Score
Cabello-Aguilar's Score (P-value)
scTensor (NTD-3)
scTensor (NTD-2)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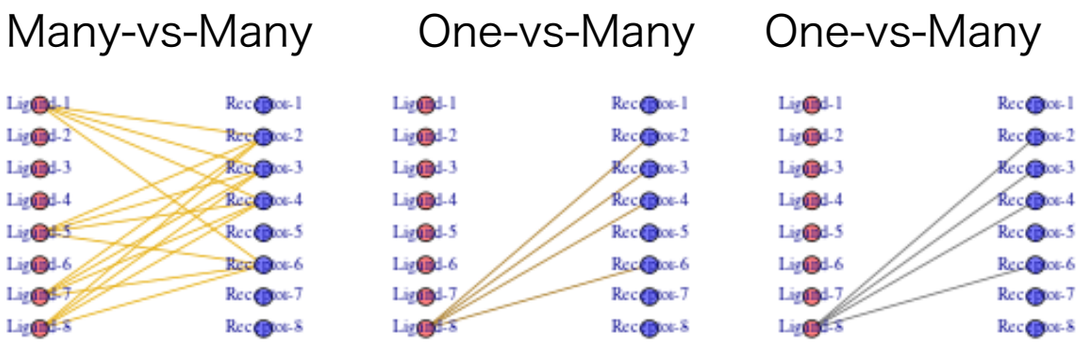
One-vs-One
Many-vs-Many


Many-vs-Many
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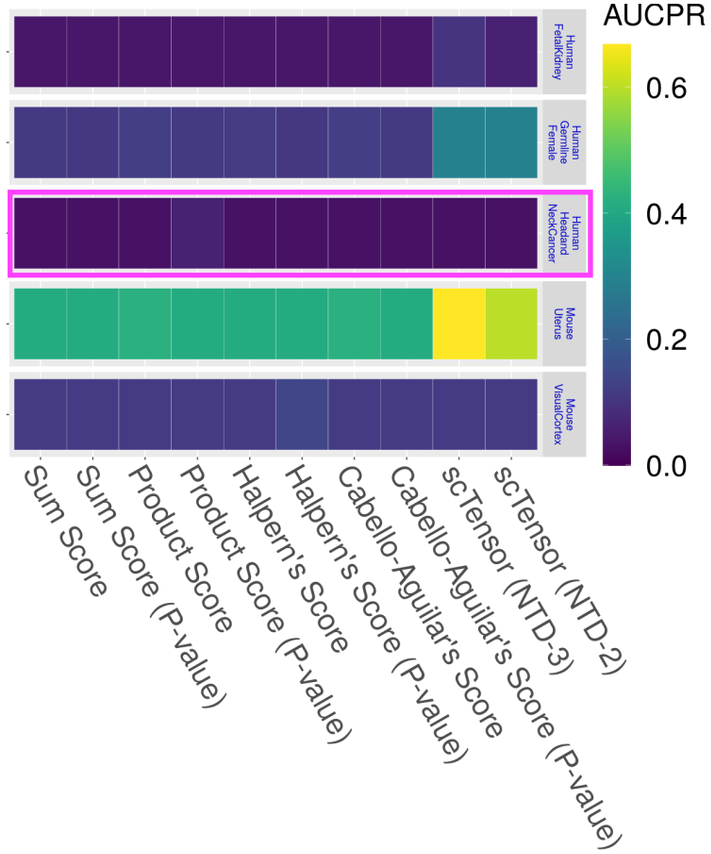
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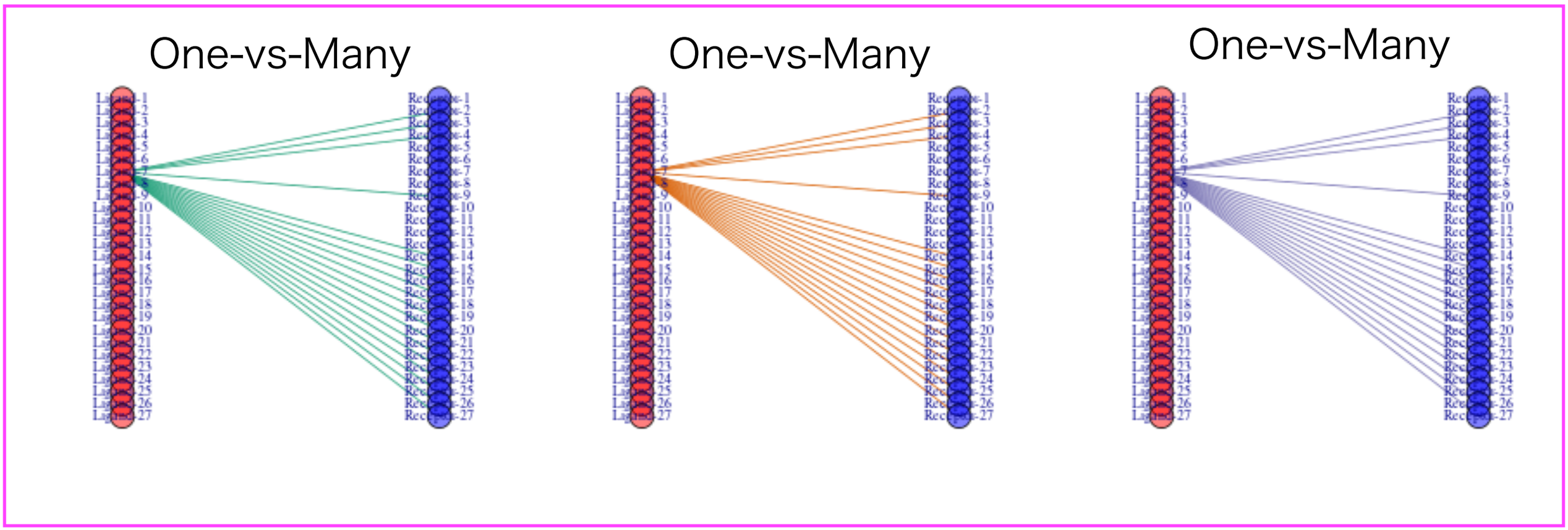
One-vs-Many
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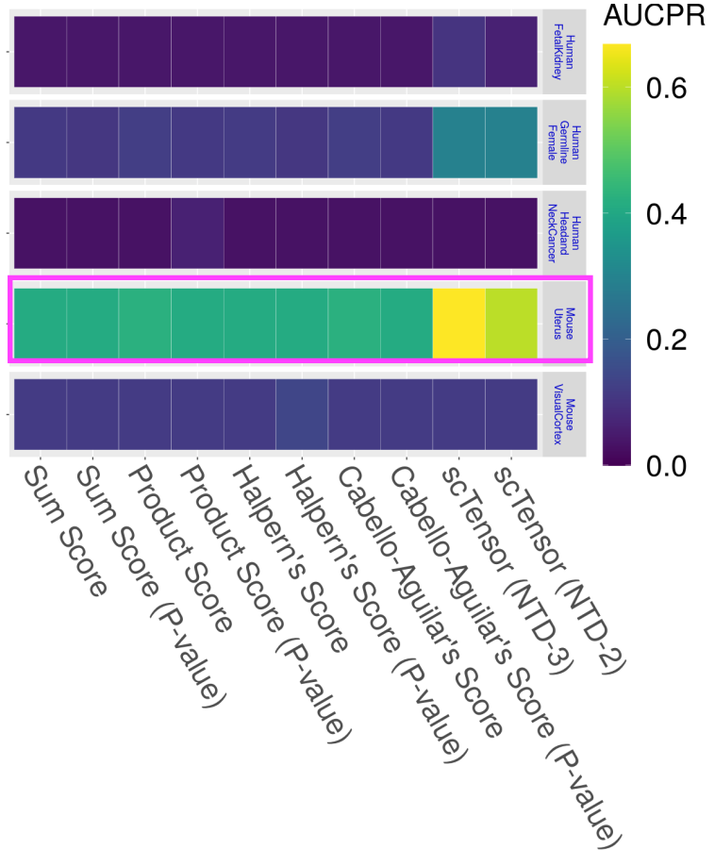
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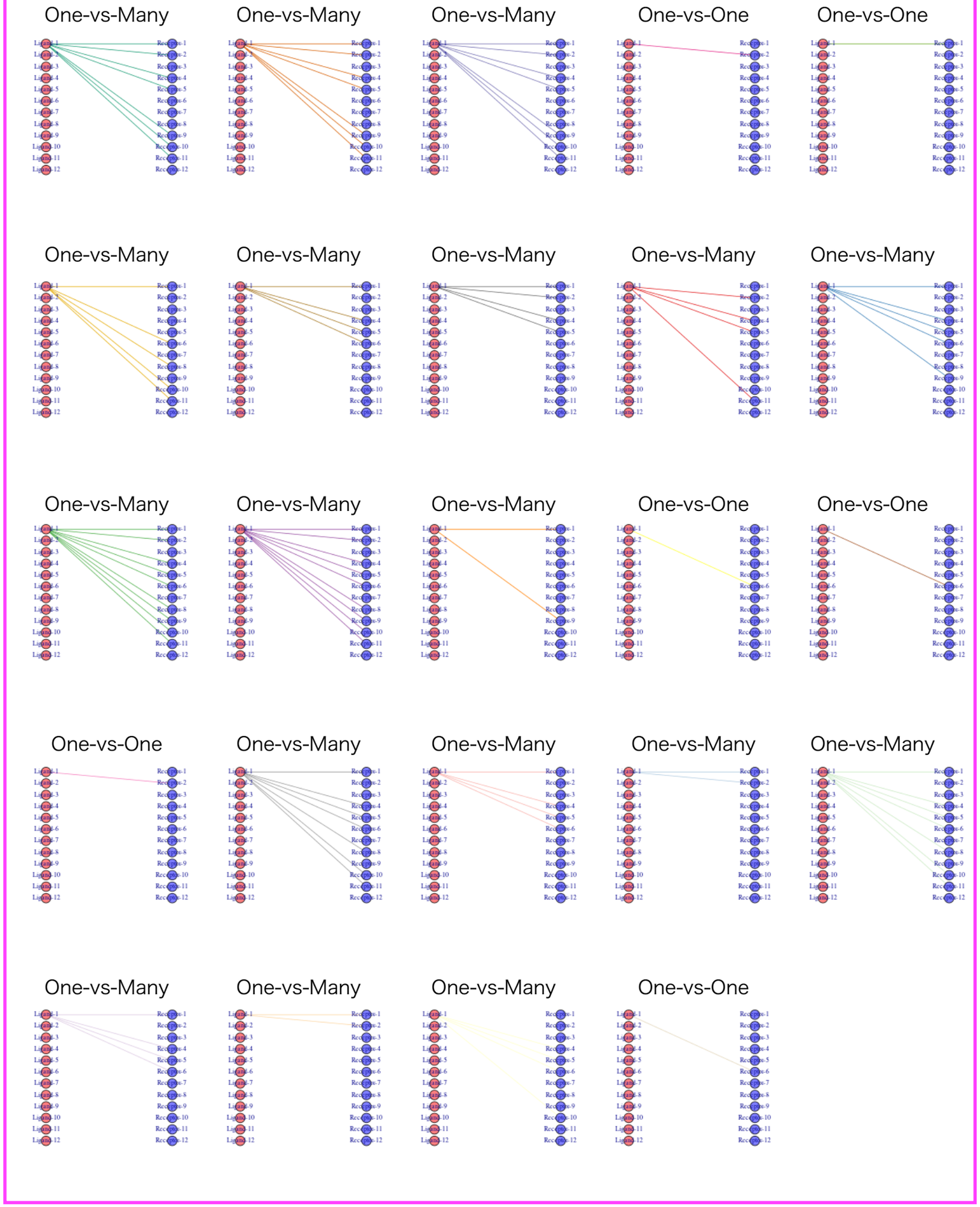
One-vs-Many
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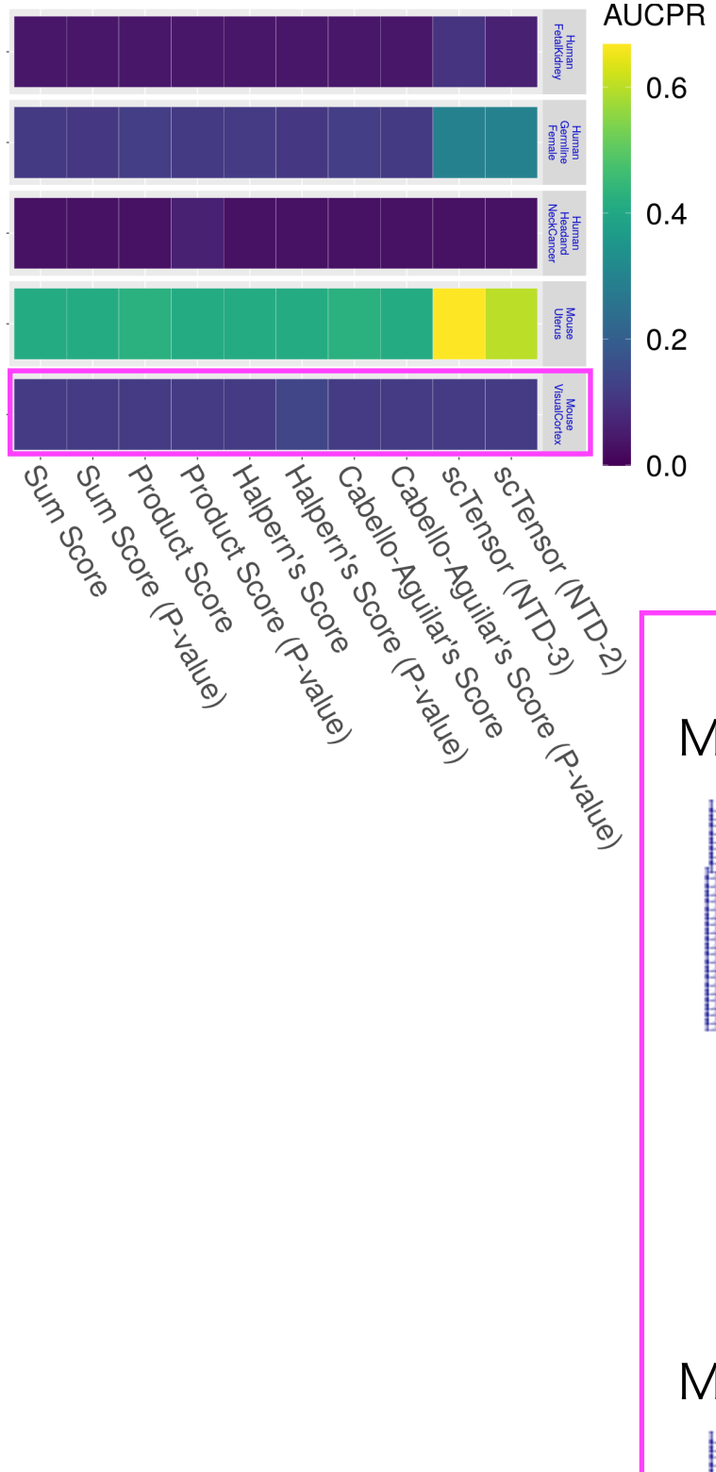
One-vs-One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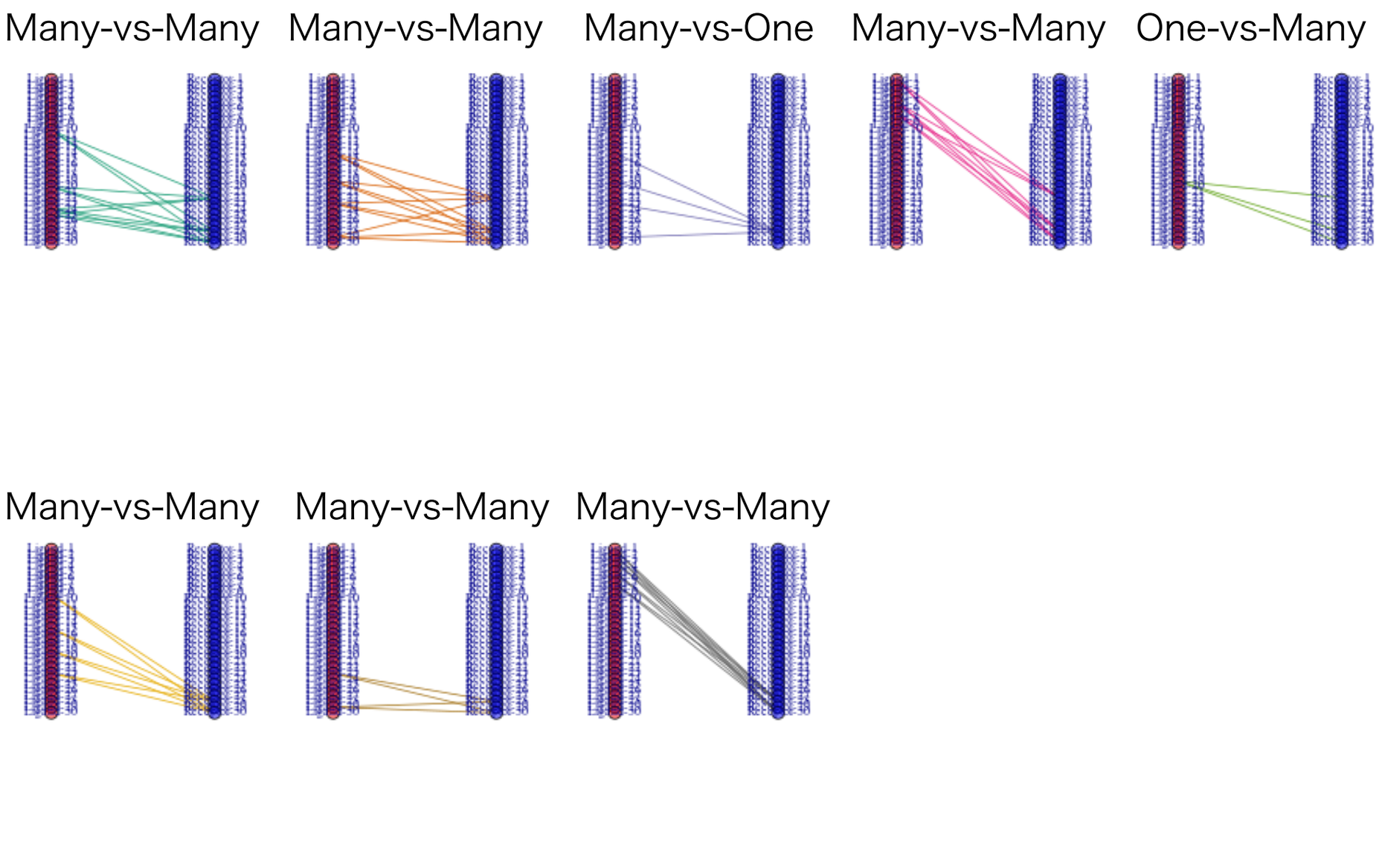
Many-vs-Many
Many-vs-Many
Many-vs-One
Many-vs-Many
One-vs-Many
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Many-vs-Many
Many-vs-Many