main

August 23, 2021

1 Heatmap of sharing

[1]:
```
import numpy as np
import pandas as pd
import seaborn as sns
import matplotlib.pyplot as plt
from rpy2.robjects import r, pandas2ri
```

[2]:
```
pandas2ri.activate()
```

1.1 Sign match only

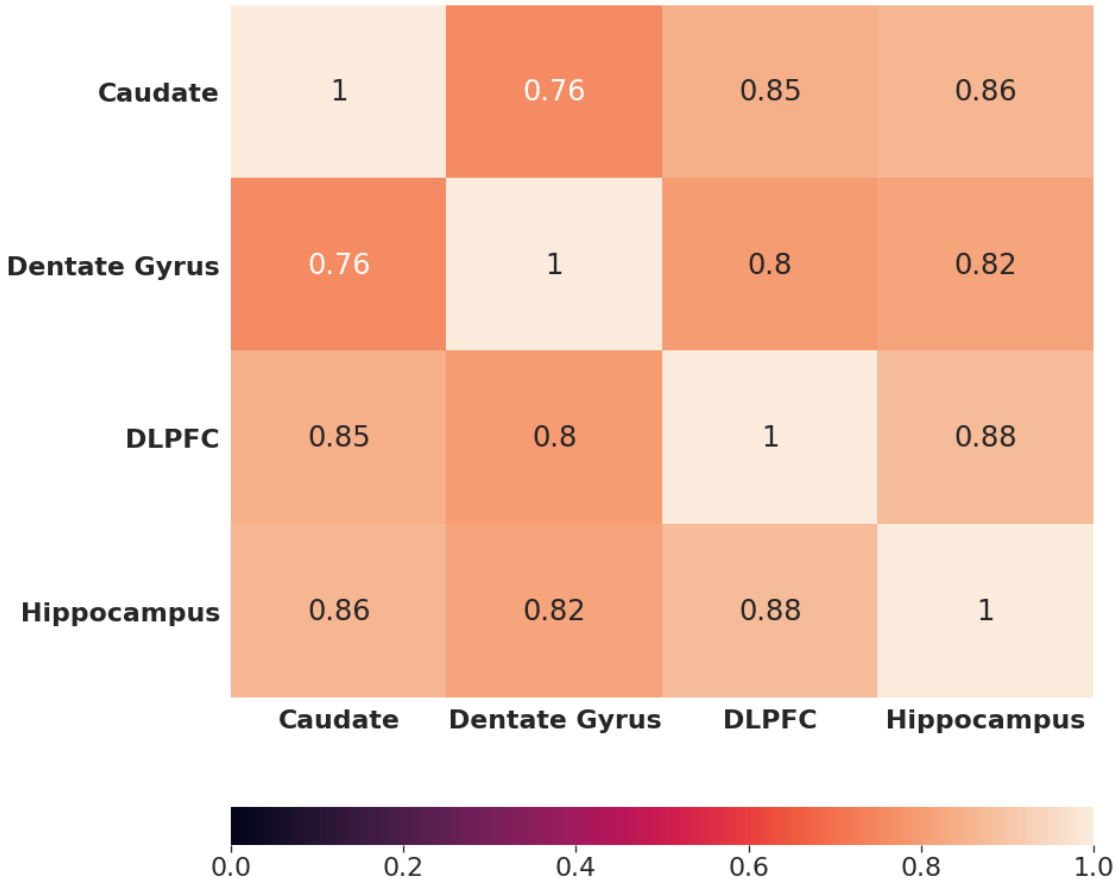
1.1.1 Genes

[3]:
```
mat = r('''load("../../_m/genes/mashr_meta_results.RData"); mashr::
 ↪get_pairwise_sharing(m, factor=0)''')
df = pd.DataFrame(np.array(mat), index=["Caudate", "Dentate Gyrus", "DLPFC",␣
 ↪"Hippocampus"],
                  columns=["Caudate", "Dentate Gyrus", "DLPFC", "Hippocampus"])
df
```

[3]:

	Caudate	Dentate Gyrus	DLPFC	Hippocampus
Caudate	1.000000	0.759919	0.845499	0.860123
Dentate Gyrus	0.759919	1.000000	0.799030	0.819728
DLPFC	0.845499	0.799030	1.000000	0.876860
Hippocampus	0.860123	0.819728	0.876860	1.000000

[4]:
```
sns.set(font_scale=2)
grid_kws = {"height_ratios": (.9, .05), "hspace": .3}
f, (ax, cbar_ax) = plt.subplots(2, gridspec_kw=grid_kws, figsize=(13,13))
chart = sns.heatmap(df, ax=ax, vmin=0, vmax=1,
                    annot=True, cbar_ax=cbar_ax,
                    cbar_kws={"orientation": "horizontal"})
chart.set_yticklabels(chart.get_yticklabels(), fontweight="bold")
chart.set_xticklabels(chart.get_xticklabels(), fontweight="bold")
sns_plot = chart.get_figure()
sns_plot.savefig("DE_sharing_heatmap_signOnly_gene.pdf")
sns_plot.savefig("DE_sharing_heatmap_signOnly_gene.png")
```



1.1.2 Transcripts

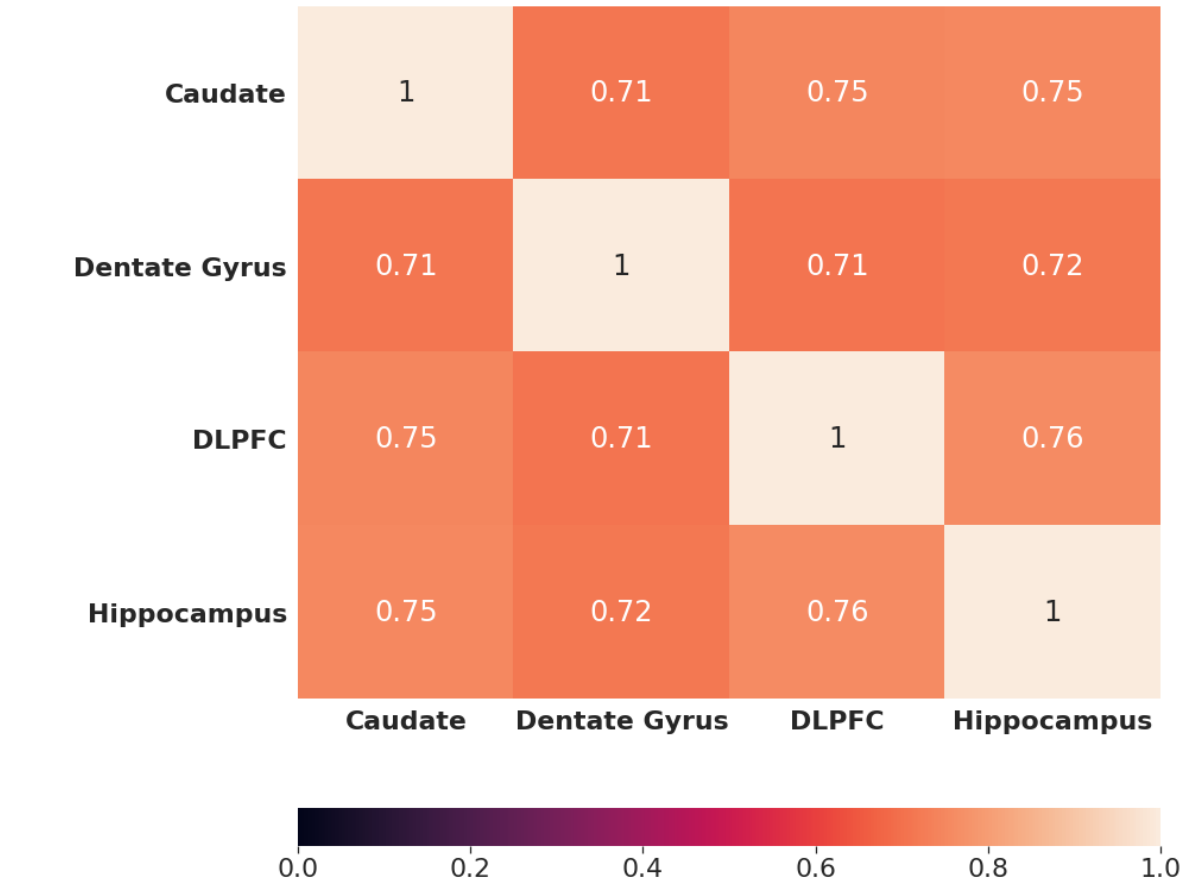
[5]:
```
mat = r('''load("../../_m/transcripts/mashr_meta_results.RData"); mashr::
 ↪get_pairwise_sharing(m, factor=0)''')
df = pd.DataFrame(np.array(mat), index=["Caudate", "Dentate Gyrus", "DLPFC",␣
 ↪"Hippocampus"],
                  columns=["Caudate", "Dentate Gyrus", "DLPFC", "Hippocampus"])
df
```

[5]:

	Caudate	Dentate Gyrus	DLPFC	Hippocampus
Caudate	1.000000	0.712954	0.746158	0.751232
Dentate Gyrus	0.712954	1.000000	0.708318	0.716425
DLPFC	0.746158	0.708318	1.000000	0.760757
Hippocampus	0.751232	0.716425	0.760757	1.000000

[6]:
```
sns.set(font_scale=2)
grid_kws = {"height_ratios": (.9, .05), "hspace": .3}
f, (ax, cbar_ax) = plt.subplots(2, gridspec_kw=grid_kws, figsize=(13,13))
chart = sns.heatmap(df, ax=ax, vmin=0, vmax=1,
```

```
                    annot=True, cbar_ax=cbar_ax,
                    cbar_kws={"orientation": "horizontal"})
chart.set_yticklabels(chart.get_yticklabels(), fontweight="bold")
chart.set_xticklabels(chart.get_xticklabels(), fontweight="bold")
sns_plot = chart.get_figure()
sns_plot.savefig("DE_sharing_heatmap_signOnly_tx.pdf")
sns_plot.savefig("DE_sharing_heatmap_signOnly_tx.png")
```



1.1.3 Exons

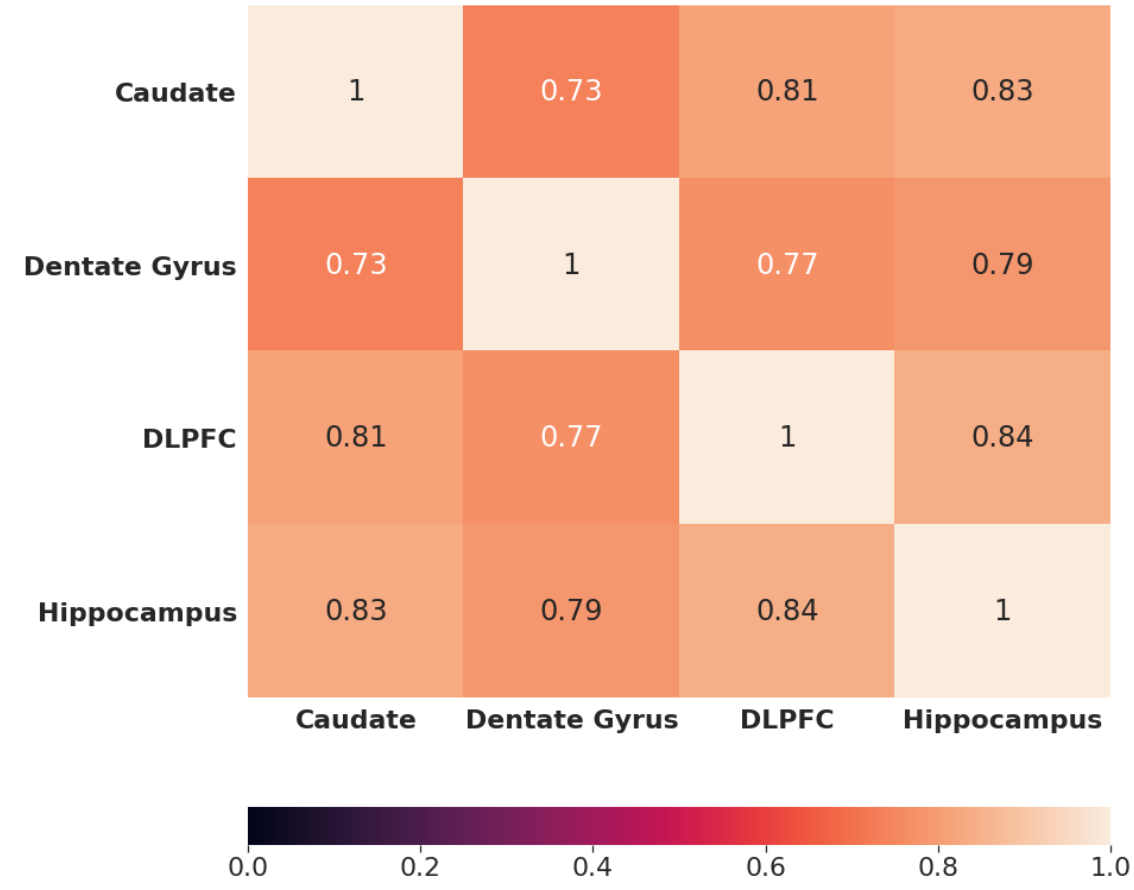
[7]:
```
mat = r('''load("../../_m/exons/mashr_meta_results.RData"); mashr::
 ↪get_pairwise_sharing(m, factor=0)''')
df = pd.DataFrame(np.array(mat), index=["Caudate", "Dentate Gyrus", "DLPFC",␣
 ↪"Hippocampus"],
                  columns=["Caudate", "Dentate Gyrus", "DLPFC", "Hippocampus"])
df
```

[7]:

	Caudate	Dentate Gyrus	DLPFC	Hippocampus
Caudate	1.000000	0.734978	0.814517	0.834144

```
Dentate Gyrus  0.734978       1.000000  0.768565     0.786683
DLPFC          0.814517       0.768565  1.000000     0.843413
Hippocampus    0.834144       0.786683  0.843413     1.000000
```

[8]:
```
sns.set(font_scale=2)
grid_kws = {"height_ratios": (.9, .05), "hspace": .3}
f, (ax, cbar_ax) = plt.subplots(2, gridspec_kw=grid_kws, figsize=(13,13))
chart = sns.heatmap(df, ax=ax, vmin=0, vmax=1,
                    annot=True, cbar_ax=cbar_ax,
                    cbar_kws={"orientation": "horizontal"})
chart.set_yticklabels(chart.get_yticklabels(), fontweight="bold")
chart.set_xticklabels(chart.get_xticklabels(), fontweight="bold")
sns_plot = chart.get_figure()
sns_plot.savefig("DE_sharing_heatmap_signOnly_exon.pdf")
sns_plot.savefig("DE_sharing_heatmap_signOnly_exon.png")
```



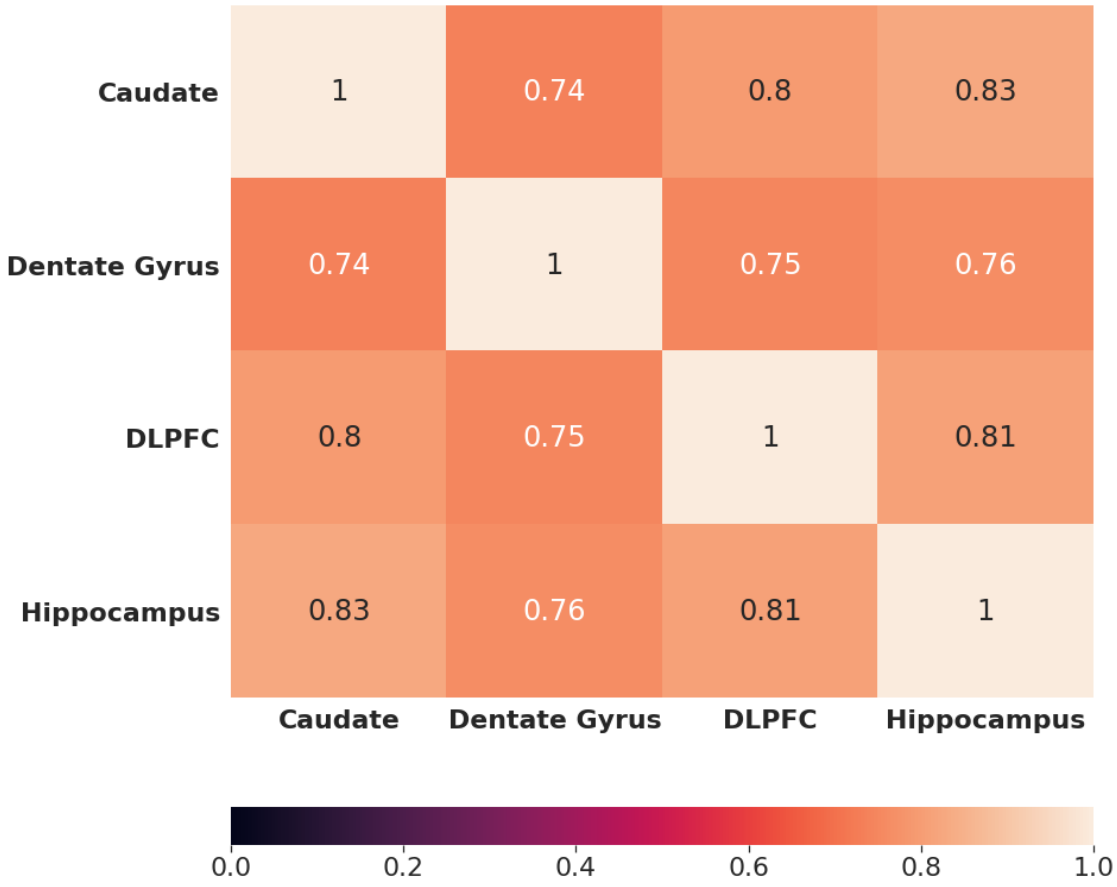
1.1.4 Junctions

[9]:
```
mat = r('''load("../../_m/junctions/mashr_meta_results.RData"); mashr::
 ↪get_pairwise_sharing(m, factor=0)''')
df = pd.DataFrame(np.array(mat), index=["Caudate", "Dentate Gyrus", "DLPFC",␣
 ↪"Hippocampus"],
                  columns=["Caudate", "Dentate Gyrus", "DLPFC", "Hippocampus"])
df
```

[9]:

	Caudate	Dentate Gyrus	DLPFC	Hippocampus
Caudate	1.000000	0.736341	0.795849	0.826015
Dentate Gyrus	0.736341	1.000000	0.746717	0.764035
DLPFC	0.795849	0.746717	1.000000	0.811063
Hippocampus	0.826015	0.764035	0.811063	1.000000

[10]:
```
sns.set(font_scale=2)
grid_kws = {"height_ratios": (.9, .05), "hspace": .3}
f, (ax, cbar_ax) = plt.subplots(2, gridspec_kw=grid_kws, figsize=(13,13))
chart = sns.heatmap(df, ax=ax, vmin=0, vmax=1,
                    annot=True, cbar_ax=cbar_ax,
                    cbar_kws={"orientation": "horizontal"})
chart.set_yticklabels(chart.get_yticklabels(), fontweight="bold")
chart.set_xticklabels(chart.get_xticklabels(), fontweight="bold")
sns_plot = chart.get_figure()
sns_plot.savefig("DE_sharing_heatmap_signOnly_jxn.pdf")
sns_plot.savefig("DE_sharing_heatmap_signOnly_jxn.png")
```



1.2 Factor 0.5

1.2.1 Genes

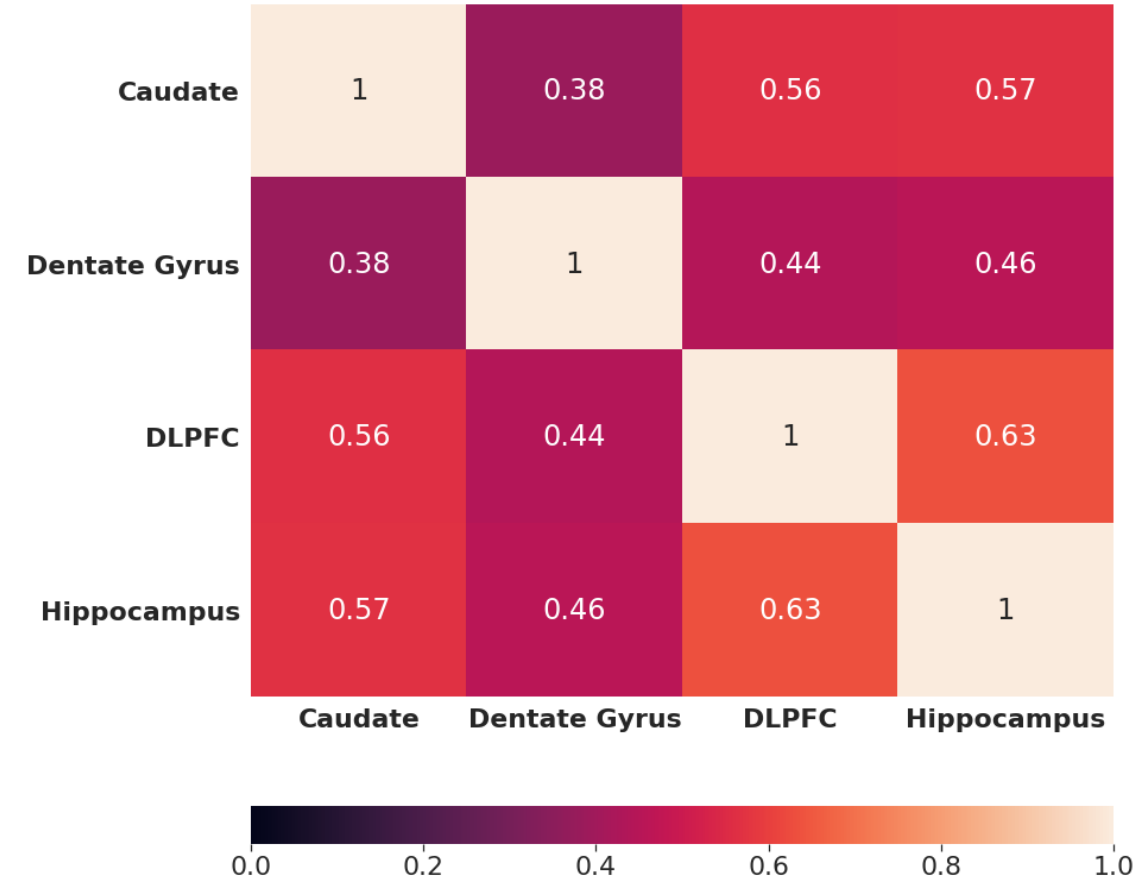
[11]:
```
mat = r('''load("../../_m/genes/mashr_meta_results.RData"); mashr::
 ↪get_pairwise_sharing(m)''')
df = pd.DataFrame(np.array(mat), index=["Caudate", "Dentate Gyrus", "DLPFC",␣
 ↪"Hippocampus"],
                  columns=["Caudate", "Dentate Gyrus", "DLPFC", "Hippocampus"])
df
```

[11]:

	Caudate	Dentate Gyrus	DLPFC	Hippocampus
Caudate	1.000000	0.383665	0.564484	0.570081
Dentate Gyrus	0.383665	1.000000	0.442370	0.459332
DLPFC	0.564484	0.442370	1.000000	0.633499
Hippocampus	0.570081	0.459332	0.633499	1.000000

[12]:
```
sns.set(font_scale=2)
grid_kws = {"height_ratios": (.9, .05), "hspace": .3}
f, (ax, cbar_ax) = plt.subplots(2, gridspec_kw=grid_kws, figsize=(13,13))
```

```
chart = sns.heatmap(df, ax=ax, vmin=0, vmax=1,
                    annot=True, cbar_ax=cbar_ax,
                    cbar_kws={"orientation": "horizontal"})
chart.set_yticklabels(chart.get_yticklabels(), fontweight="bold")
chart.set_xticklabels(chart.get_xticklabels(), fontweight="bold")
sns_plot = chart.get_figure()
sns_plot.savefig("DE_sharing_heatmap_gene.pdf")
sns_plot.savefig("DE_sharing_heatmap_gene.png")
```



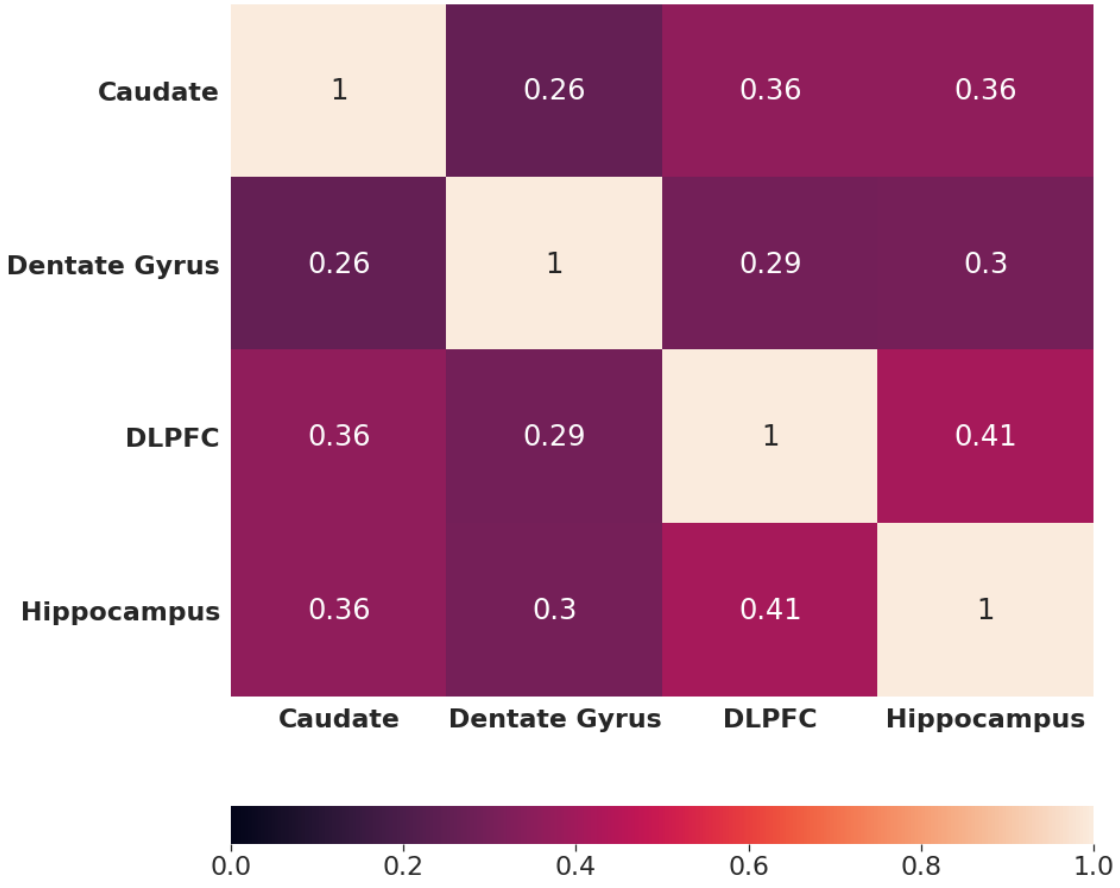
1.2.2 Transcripts

[13]:
```
mat = r('''load("../../_m/transcripts/mashr_meta_results.RData"); mashr::
 ↪get_pairwise_sharing(m)''')
df = pd.DataFrame(np.array(mat), index=["Caudate", "Dentate Gyrus", "DLPFC",␣
 ↪"Hippocampus"],
                  columns=["Caudate", "Dentate Gyrus", "DLPFC", "Hippocampus"])
df
```

[13]:

	Caudate	Dentate Gyrus	DLPFC	Hippocampus
Caudate	1.000000	0.258564	0.359598	0.359842
Dentate Gyrus	0.258564	1.000000	0.294010	0.299743
DLPFC	0.359598	0.294010	1.000000	0.413060
Hippocampus	0.359842	0.299743	0.413060	1.000000

[14]:
```
sns.set(font_scale=2)
grid_kws = {"height_ratios": (.9, .05), "hspace": .3}
f, (ax, cbar_ax) = plt.subplots(2, gridspec_kw=grid_kws, figsize=(13,13))
chart = sns.heatmap(df, ax=ax, vmin=0, vmax=1,
                    annot=True, cbar_ax=cbar_ax,
                    cbar_kws={"orientation": "horizontal"})
chart.set_yticklabels(chart.get_yticklabels(), fontweight="bold")
chart.set_xticklabels(chart.get_xticklabels(), fontweight="bold")
sns_plot = chart.get_figure()
sns_plot.savefig("DE_sharing_heatmap_tx.pdf")
sns_plot.savefig("DE_sharing_heatmap_tx.png")
```



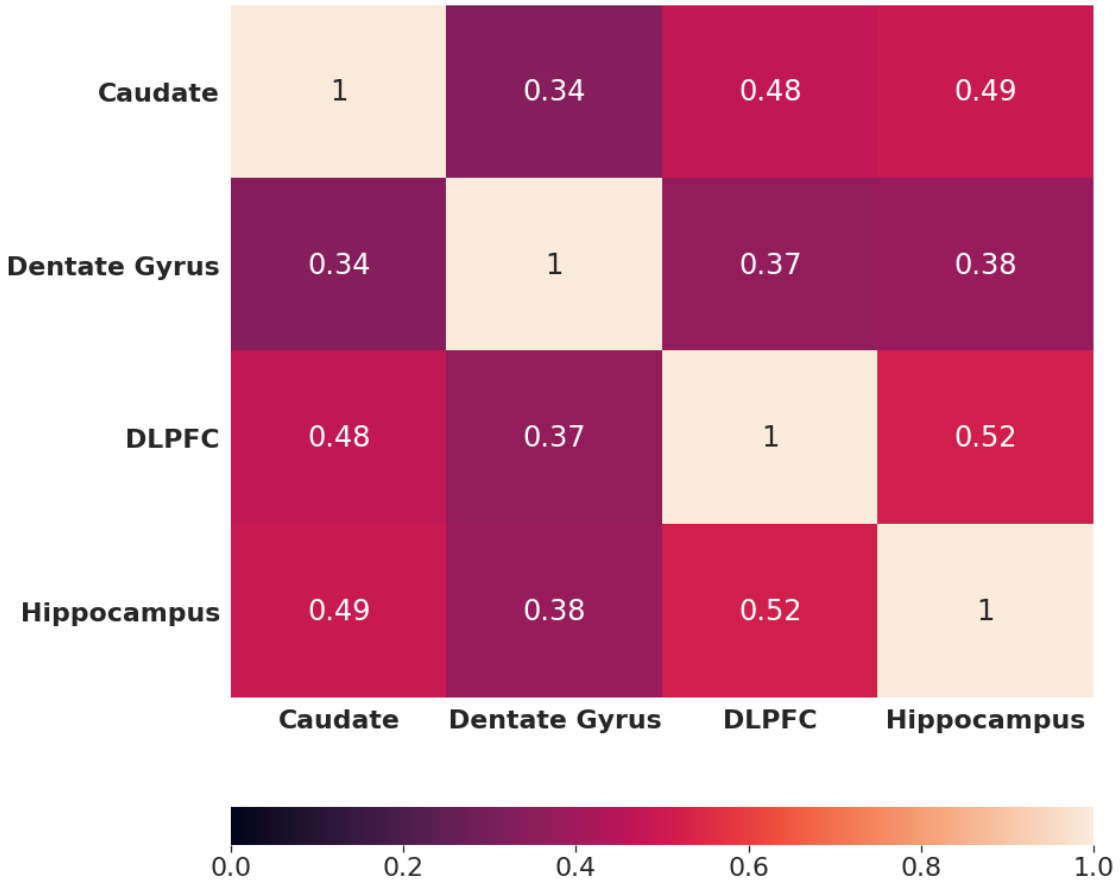
1.2.3 Exons

[15]:
```
mat = r('''load("../../_m/exons/mashr_meta_results.RData"); mashr::
 ↪get_pairwise_sharing(m)''')
df = pd.DataFrame(np.array(mat), index=["Caudate", "Dentate Gyrus", "DLPFC",␣
 ↪"Hippocampus"],
                  columns=["Caudate", "Dentate Gyrus", "DLPFC", "Hippocampus"])
df
```

[15]:

	Caudate	Dentate Gyrus	DLPFC	Hippocampus
Caudate	1.000000	0.337969	0.475082	0.493061
Dentate Gyrus	0.337969	1.000000	0.367305	0.382069
DLPFC	0.475082	0.367305	1.000000	0.517549
Hippocampus	0.493061	0.382069	0.517549	1.000000

[16]:
```
sns.set(font_scale=2)
grid_kws = {"height_ratios": (.9, .05), "hspace": .3}
f, (ax, cbar_ax) = plt.subplots(2, gridspec_kw=grid_kws, figsize=(13,13))
chart = sns.heatmap(df, ax=ax, vmin=0, vmax=1,
                    annot=True, cbar_ax=cbar_ax,
                    cbar_kws={"orientation": "horizontal"})
chart.set_yticklabels(chart.get_yticklabels(), fontweight="bold")
chart.set_xticklabels(chart.get_xticklabels(), fontweight="bold")
sns_plot = chart.get_figure()
sns_plot.savefig("DE_sharing_heatmap_exon.pdf")
sns_plot.savefig("DE_sharing_heatmap_exon.png")
```



1.2.4 Junctions

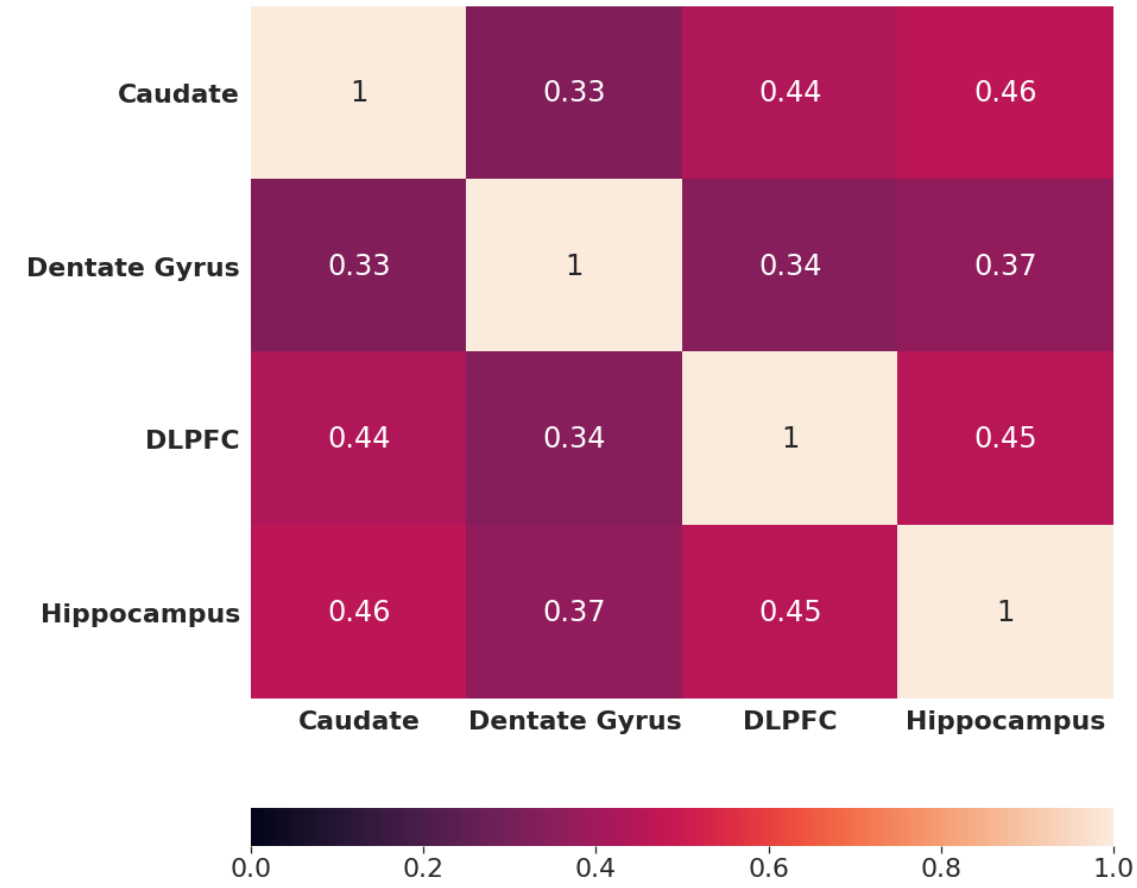
[17]:
```
mat = r('''load("../../_m/junctions/mashr_meta_results.RData"); mashr::
 ↪get_pairwise_sharing(m)''')
df = pd.DataFrame(np.array(mat), index=["Caudate", "Dentate Gyrus", "DLPFC",␣
 ↪"Hippocampus"],
                  columns=["Caudate", "Dentate Gyrus", "DLPFC", "Hippocampus"])
df
```

[17]:

	Caudate	Dentate Gyrus	DLPFC	Hippocampus
Caudate	1.000000	0.327307	0.435906	0.464132
Dentate Gyrus	0.327307	1.000000	0.337547	0.367018
DLPFC	0.435906	0.337547	1.000000	0.453813
Hippocampus	0.464132	0.367018	0.453813	1.000000

[18]:
```
sns.set(font_scale=2)
grid_kws = {"height_ratios": (.9, .05), "hspace": .3}
f, (ax, cbar_ax) = plt.subplots(2, gridspec_kw=grid_kws, figsize=(13,13))
chart = sns.heatmap(df, ax=ax, vmin=0, vmax=1,
```

```
                    annot=True, cbar_ax=cbar_ax,
                    cbar_kws={"orientation": "horizontal"})
chart.set_yticklabels(chart.get_yticklabels(), fontweight="bold")
chart.set_xticklabels(chart.get_xticklabels(), fontweight="bold")
sns_plot = chart.get_figure()
sns_plot.savefig("DE_sharing_heatmap_jxn.pdf")
sns_plot.savefig("DE_sharing_heatmap_jxn.png")
```



[ ]: