

Cellchat V2 Viz among NTC samples

This report serves as a preliminary validation for layer-layer communication analysis using cellchat v2. The purpose for these viz is to support the claim that layer-layer communication is legit as an extension of cell-cell communication. The *Objective* for this report is to validate that certain established communication between layers, e.g. layer to layer projects, can be detected in our dataset via `cellchat`.

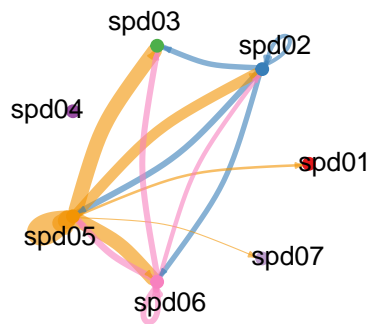
This report focus on the analysis among *NTC* samples.

Code

Results

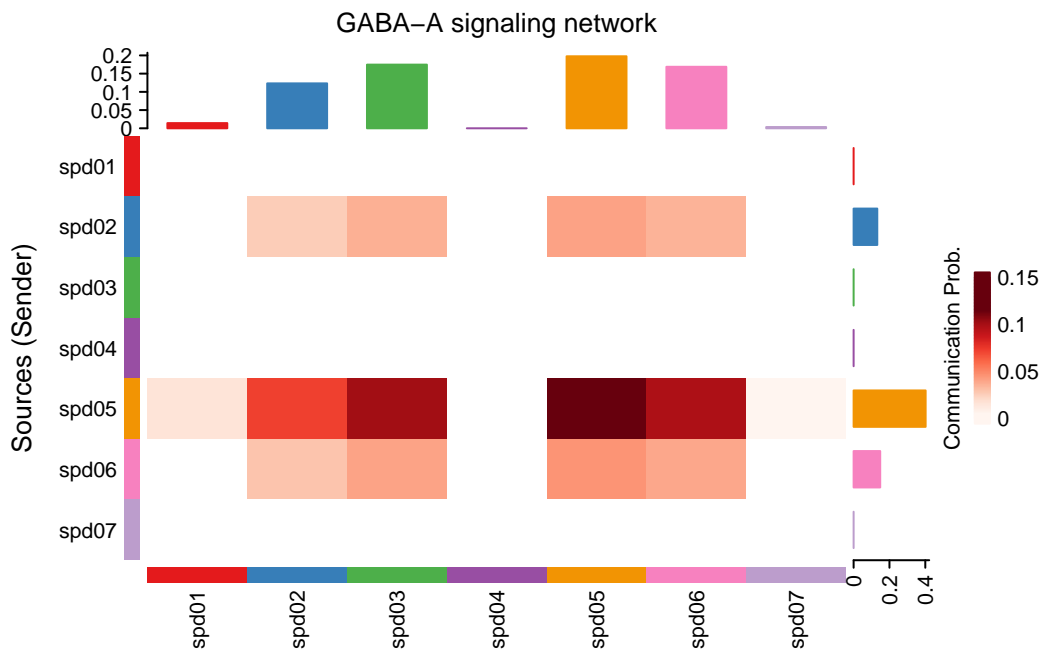
GABA pathways

```
netVisual_aggregate(cellchat, signaling = "GABA-A")
```



```
netVisual_heatmap(cellchat, signaling = "GABA-A", color.heatmap = "Reds")
```

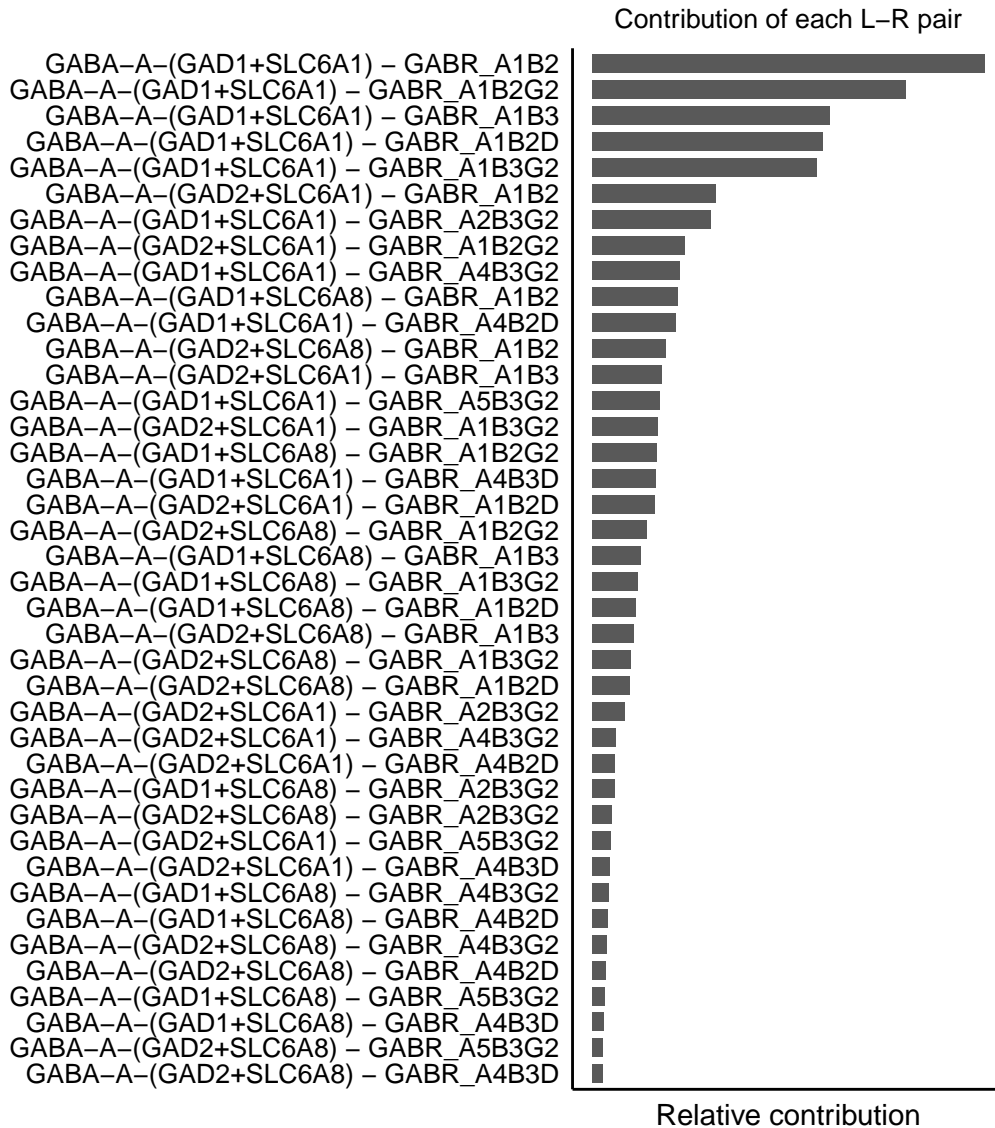
Do heatmap based on a single object



LR pairs in the GABA_A path

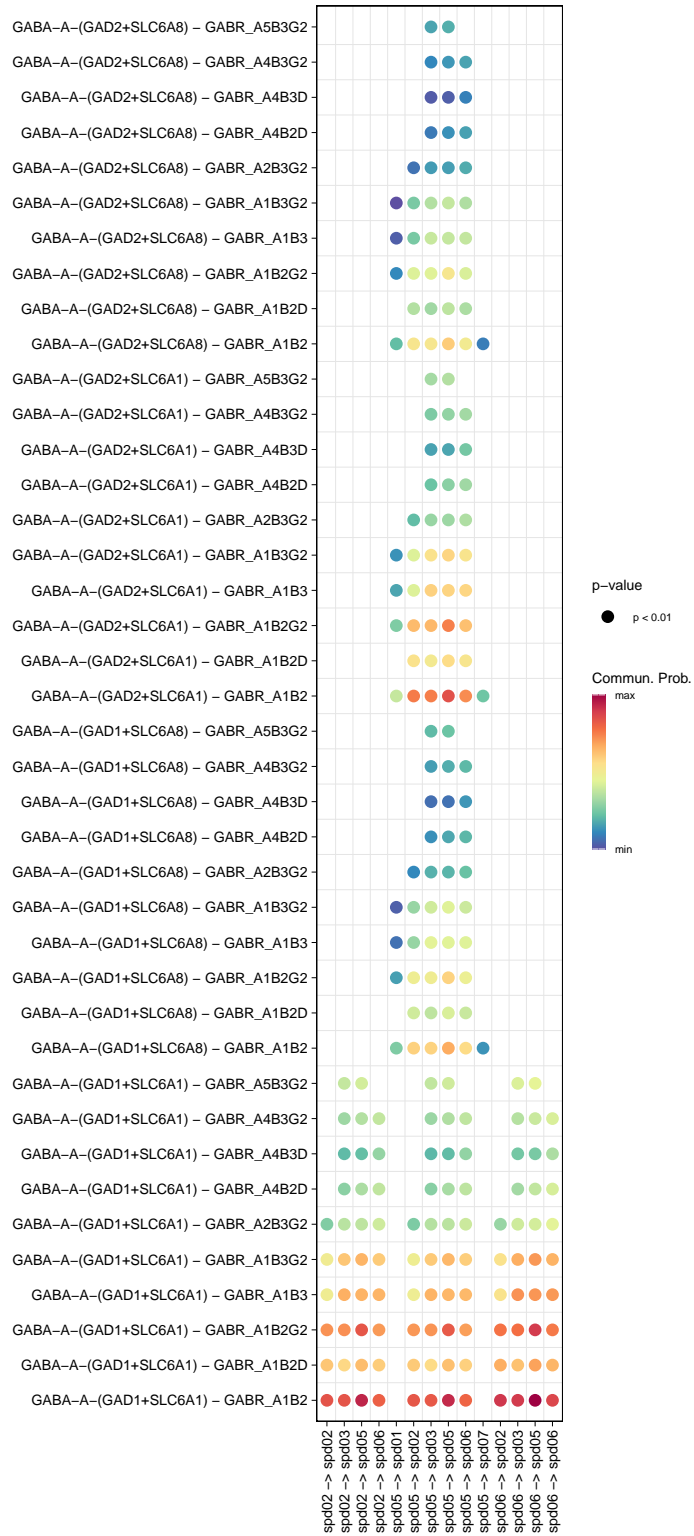
Here is a list of contributing LR pairs that are in the GABA_A pathway.

```
netAnalysis_contribution(cellchat, signaling = "GABA-A")
```



```
netVisual_bubble(cellchat, signaling = "GABA-A", remove.isolate = FALSE)
```

Comparing communications on a single object



(Supp Material) LR pairs GABA-A pathways in the cellphoneDB

Listing all the LR pairs in the GABA-A pathways in the data bases

```
# dplyr::glimpse(CellChatDB$interaction)
CellChatDB <- CellChatDB.human
rownames(CellChatDB$interaction) <- NULL
CellChatDB$interaction[
  grep("GABA-A", CellChatDB$interaction$pathway_name, ignore.case = T),
  c("pathway_name", "ligand", "receptor", "annotation")
]
```

	pathway_name	ligand	receptor		annotation
2057	GABA-A GABA-GAD1_SLC32A1	GABA-GAD1_SLC32A1	GABR_A1B3G2	Non-protein	Signaling
2058	GABA-A GABA-GAD1_SLC32A1	GABA-GAD1_SLC32A1	GABR_A1B2G2	Non-protein	Signaling
2059	GABA-A GABA-GAD1_SLC32A1	GABA-GAD1_SLC32A1	GABR_A1B2	Non-protein	Signaling
2060	GABA-A GABA-GAD1_SLC32A1	GABA-GAD1_SLC32A1	GABR_A1B3	Non-protein	Signaling
2061	GABA-A GABA-GAD1_SLC32A1	GABA-GAD1_SLC32A1	GABR_A1B2D	Non-protein	Signaling
2062	GABA-A GABA-GAD1_SLC32A1	GABA-GAD1_SLC32A1	GABR_A2B3G2	Non-protein	Signaling
2063	GABA-A GABA-GAD1_SLC32A1	GABA-GAD1_SLC32A1	GABR_A3B3G2	Non-protein	Signaling
2064	GABA-A GABA-GAD1_SLC32A1	GABA-GAD1_SLC32A1	GABR_A3B3Q	Non-protein	Signaling
2065	GABA-A GABA-GAD1_SLC32A1	GABA-GAD1_SLC32A1	GABR_A3B3E	Non-protein	Signaling
2066	GABA-A GABA-GAD1_SLC32A1	GABA-GAD1_SLC32A1	GABR_A4B3G2	Non-protein	Signaling
2067	GABA-A GABA-GAD1_SLC32A1	GABA-GAD1_SLC32A1	GABR_A4B3D	Non-protein	Signaling
2068	GABA-A GABA-GAD1_SLC32A1	GABA-GAD1_SLC32A1	GABR_A4B2D	Non-protein	Signaling
2069	GABA-A GABA-GAD1_SLC32A1	GABA-GAD1_SLC32A1	GABR_A5B3G2	Non-protein	Signaling
2070	GABA-A GABA-GAD1_SLC32A1	GABA-GAD1_SLC32A1	GABR_A6B3G2	Non-protein	Signaling
2071	GABA-A GABA-GAD1_SLC32A1	GABA-GAD1_SLC32A1	GABR_A6B3D	Non-protein	Signaling
2072	GABA-A GABA-GAD1_SLC6A1	GABA-GAD1_SLC6A1	GABR_A1B3G2	Non-protein	Signaling
2073	GABA-A GABA-GAD1_SLC6A1	GABA-GAD1_SLC6A1	GABR_A1B2G2	Non-protein	Signaling
2074	GABA-A GABA-GAD1_SLC6A1	GABA-GAD1_SLC6A1	GABR_A1B2	Non-protein	Signaling
2075	GABA-A GABA-GAD1_SLC6A1	GABA-GAD1_SLC6A1	GABR_A1B3	Non-protein	Signaling
2076	GABA-A GABA-GAD1_SLC6A1	GABA-GAD1_SLC6A1	GABR_A1B2D	Non-protein	Signaling
2077	GABA-A GABA-GAD1_SLC6A1	GABA-GAD1_SLC6A1	GABR_A2B3G2	Non-protein	Signaling
2078	GABA-A GABA-GAD1_SLC6A1	GABA-GAD1_SLC6A1	GABR_A3B3G2	Non-protein	Signaling
2079	GABA-A GABA-GAD1_SLC6A1	GABA-GAD1_SLC6A1	GABR_A3B3Q	Non-protein	Signaling
2080	GABA-A GABA-GAD1_SLC6A1	GABA-GAD1_SLC6A1	GABR_A3B3E	Non-protein	Signaling
2081	GABA-A GABA-GAD1_SLC6A1	GABA-GAD1_SLC6A1	GABR_A4B3G2	Non-protein	Signaling
2082	GABA-A GABA-GAD1_SLC6A1	GABA-GAD1_SLC6A1	GABR_A4B3D	Non-protein	Signaling
2083	GABA-A GABA-GAD1_SLC6A1	GABA-GAD1_SLC6A1	GABR_A4B2D	Non-protein	Signaling
2084	GABA-A GABA-GAD1_SLC6A1	GABA-GAD1_SLC6A1	GABR_A5B3G2	Non-protein	Signaling
2085	GABA-A GABA-GAD1_SLC6A1	GABA-GAD1_SLC6A1	GABR_A6B3G2	Non-protein	Signaling

2086	GABA-A	GABA-GAD1_SLC6A1	GABR_A6B3D	Non-protein	Signaling
2087	GABA-A	GABA-GAD1_SLC6A11	GABR_A1B3G2	Non-protein	Signaling
2088	GABA-A	GABA-GAD1_SLC6A11	GABR_A1B2G2	Non-protein	Signaling
2089	GABA-A	GABA-GAD1_SLC6A11	GABR_A1B2	Non-protein	Signaling
2090	GABA-A	GABA-GAD1_SLC6A11	GABR_A1B3	Non-protein	Signaling
2091	GABA-A	GABA-GAD1_SLC6A11	GABR_A1B2D	Non-protein	Signaling
2092	GABA-A	GABA-GAD1_SLC6A11	GABR_A2B3G2	Non-protein	Signaling
2093	GABA-A	GABA-GAD1_SLC6A11	GABR_A3B3G2	Non-protein	Signaling
2094	GABA-A	GABA-GAD1_SLC6A11	GABR_A3B3Q	Non-protein	Signaling
2095	GABA-A	GABA-GAD1_SLC6A11	GABR_A3B3E	Non-protein	Signaling
2096	GABA-A	GABA-GAD1_SLC6A11	GABR_A4B3G2	Non-protein	Signaling
2097	GABA-A	GABA-GAD1_SLC6A11	GABR_A4B3D	Non-protein	Signaling
2098	GABA-A	GABA-GAD1_SLC6A11	GABR_A4B2D	Non-protein	Signaling
2099	GABA-A	GABA-GAD1_SLC6A11	GABR_A5B3G2	Non-protein	Signaling
2100	GABA-A	GABA-GAD1_SLC6A11	GABR_A6B3G2	Non-protein	Signaling
2101	GABA-A	GABA-GAD1_SLC6A11	GABR_A6B3D	Non-protein	Signaling
2102	GABA-A	GABA-GAD1_SLC6A12	GABR_A1B3G2	Non-protein	Signaling
2103	GABA-A	GABA-GAD1_SLC6A12	GABR_A1B2G2	Non-protein	Signaling
2104	GABA-A	GABA-GAD1_SLC6A12	GABR_A1B2	Non-protein	Signaling
2105	GABA-A	GABA-GAD1_SLC6A12	GABR_A1B3	Non-protein	Signaling
2106	GABA-A	GABA-GAD1_SLC6A12	GABR_A1B2D	Non-protein	Signaling
2107	GABA-A	GABA-GAD1_SLC6A12	GABR_A2B3G2	Non-protein	Signaling
2108	GABA-A	GABA-GAD1_SLC6A12	GABR_A3B3G2	Non-protein	Signaling
2109	GABA-A	GABA-GAD1_SLC6A12	GABR_A3B3Q	Non-protein	Signaling
2110	GABA-A	GABA-GAD1_SLC6A12	GABR_A3B3E	Non-protein	Signaling
2111	GABA-A	GABA-GAD1_SLC6A12	GABR_A4B3G2	Non-protein	Signaling
2112	GABA-A	GABA-GAD1_SLC6A12	GABR_A4B3D	Non-protein	Signaling
2113	GABA-A	GABA-GAD1_SLC6A12	GABR_A4B2D	Non-protein	Signaling
2114	GABA-A	GABA-GAD1_SLC6A12	GABR_A5B3G2	Non-protein	Signaling
2115	GABA-A	GABA-GAD1_SLC6A12	GABR_A6B3G2	Non-protein	Signaling
2116	GABA-A	GABA-GAD1_SLC6A12	GABR_A6B3D	Non-protein	Signaling
2117	GABA-A	GABA-GAD1_SLC6A13	GABR_A1B3G2	Non-protein	Signaling
2118	GABA-A	GABA-GAD1_SLC6A13	GABR_A1B2G2	Non-protein	Signaling
2119	GABA-A	GABA-GAD1_SLC6A13	GABR_A1B2	Non-protein	Signaling
2120	GABA-A	GABA-GAD1_SLC6A13	GABR_A1B3	Non-protein	Signaling
2121	GABA-A	GABA-GAD1_SLC6A13	GABR_A1B2D	Non-protein	Signaling
2122	GABA-A	GABA-GAD1_SLC6A13	GABR_A2B3G2	Non-protein	Signaling
2123	GABA-A	GABA-GAD1_SLC6A13	GABR_A3B3G2	Non-protein	Signaling
2124	GABA-A	GABA-GAD1_SLC6A13	GABR_A3B3Q	Non-protein	Signaling
2125	GABA-A	GABA-GAD1_SLC6A13	GABR_A3B3E	Non-protein	Signaling
2126	GABA-A	GABA-GAD1_SLC6A13	GABR_A4B3G2	Non-protein	Signaling
2127	GABA-A	GABA-GAD1_SLC6A13	GABR_A4B3D	Non-protein	Signaling
2128	GABA-A	GABA-GAD1_SLC6A13	GABR_A4B2D	Non-protein	Signaling

2129	GABA-A	GABA-GAD1_SLC6A13	GABR_A5B3G2	Non-protein	Signaling
2130	GABA-A	GABA-GAD1_SLC6A13	GABR_A6B3G2	Non-protein	Signaling
2131	GABA-A	GABA-GAD1_SLC6A13	GABR_A6B3D	Non-protein	Signaling
2132	GABA-A	GABA-GAD1_SLC6A6	GABR_A1B3G2	Non-protein	Signaling
2133	GABA-A	GABA-GAD1_SLC6A6	GABR_A1B2G2	Non-protein	Signaling
2134	GABA-A	GABA-GAD1_SLC6A6	GABR_A1B2	Non-protein	Signaling
2135	GABA-A	GABA-GAD1_SLC6A6	GABR_A1B3	Non-protein	Signaling
2136	GABA-A	GABA-GAD1_SLC6A6	GABR_A1B2D	Non-protein	Signaling
2137	GABA-A	GABA-GAD1_SLC6A6	GABR_A2B3G2	Non-protein	Signaling
2138	GABA-A	GABA-GAD1_SLC6A6	GABR_A3B3G2	Non-protein	Signaling
2139	GABA-A	GABA-GAD1_SLC6A6	GABR_A3B3Q	Non-protein	Signaling
2140	GABA-A	GABA-GAD1_SLC6A6	GABR_A3B3E	Non-protein	Signaling
2141	GABA-A	GABA-GAD1_SLC6A6	GABR_A4B3G2	Non-protein	Signaling
2142	GABA-A	GABA-GAD1_SLC6A6	GABR_A4B3D	Non-protein	Signaling
2143	GABA-A	GABA-GAD1_SLC6A6	GABR_A4B2D	Non-protein	Signaling
2144	GABA-A	GABA-GAD1_SLC6A6	GABR_A5B3G2	Non-protein	Signaling
2145	GABA-A	GABA-GAD1_SLC6A6	GABR_A6B3G2	Non-protein	Signaling
2146	GABA-A	GABA-GAD1_SLC6A6	GABR_A6B3D	Non-protein	Signaling
2147	GABA-A	GABA-GAD1_SLC6A8	GABR_A1B3G2	Non-protein	Signaling
2148	GABA-A	GABA-GAD1_SLC6A8	GABR_A1B2G2	Non-protein	Signaling
2149	GABA-A	GABA-GAD1_SLC6A8	GABR_A1B2	Non-protein	Signaling
2150	GABA-A	GABA-GAD1_SLC6A8	GABR_A1B3	Non-protein	Signaling
2151	GABA-A	GABA-GAD1_SLC6A8	GABR_A1B2D	Non-protein	Signaling
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2153	GABA-A	GABA-GAD1_SLC6A8	GABR_A3B3G2	Non-protein	Signaling
2154	GABA-A	GABA-GAD1_SLC6A8	GABR_A3B3Q	Non-protein	Signaling
2155	GABA-A	GABA-GAD1_SLC6A8	GABR_A3B3E	Non-protein	Signaling
2156	GABA-A	GABA-GAD1_SLC6A8	GABR_A4B3G2	Non-protein	Signaling
2157	GABA-A	GABA-GAD1_SLC6A8	GABR_A4B3D	Non-protein	Signaling
2158	GABA-A	GABA-GAD1_SLC6A8	GABR_A4B2D	Non-protein	Signaling
2159	GABA-A	GABA-GAD1_SLC6A8	GABR_A5B3G2	Non-protein	Signaling
2160	GABA-A	GABA-GAD1_SLC6A8	GABR_A6B3G2	Non-protein	Signaling
2161	GABA-A	GABA-GAD1_SLC6A8	GABR_A6B3D	Non-protein	Signaling
2162	GABA-A	GABA-GAD2_SLC32A1	GABR_A1B3G2	Non-protein	Signaling
2163	GABA-A	GABA-GAD2_SLC32A1	GABR_A1B2G2	Non-protein	Signaling
2164	GABA-A	GABA-GAD2_SLC32A1	GABR_A1B2	Non-protein	Signaling
2165	GABA-A	GABA-GAD2_SLC32A1	GABR_A1B3	Non-protein	Signaling
2166	GABA-A	GABA-GAD2_SLC32A1	GABR_A1B2D	Non-protein	Signaling
2167	GABA-A	GABA-GAD2_SLC32A1	GABR_A2B3G2	Non-protein	Signaling
2168	GABA-A	GABA-GAD2_SLC32A1	GABR_A3B3G2	Non-protein	Signaling
2169	GABA-A	GABA-GAD2_SLC32A1	GABR_A3B3Q	Non-protein	Signaling
2170	GABA-A	GABA-GAD2_SLC32A1	GABR_A3B3E	Non-protein	Signaling
2171	GABA-A	GABA-GAD2_SLC32A1	GABR_A4B3G2	Non-protein	Signaling

2172	GABA-A	GABA-GAD2_SLC32A1	GABR_A4B3D	Non-protein	Signaling
2173	GABA-A	GABA-GAD2_SLC32A1	GABR_A4B2D	Non-protein	Signaling
2174	GABA-A	GABA-GAD2_SLC32A1	GABR_A5B3G2	Non-protein	Signaling
2175	GABA-A	GABA-GAD2_SLC32A1	GABR_A6B3G2	Non-protein	Signaling
2176	GABA-A	GABA-GAD2_SLC32A1	GABR_A6B3D	Non-protein	Signaling
2177	GABA-A	GABA-GAD2_SLC6A1	GABR_A1B3G2	Non-protein	Signaling
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2179	GABA-A	GABA-GAD2_SLC6A1	GABR_A1B2	Non-protein	Signaling
2180	GABA-A	GABA-GAD2_SLC6A1	GABR_A1B3	Non-protein	Signaling
2181	GABA-A	GABA-GAD2_SLC6A1	GABR_A1B2D	Non-protein	Signaling
2182	GABA-A	GABA-GAD2_SLC6A1	GABR_A2B3G2	Non-protein	Signaling
2183	GABA-A	GABA-GAD2_SLC6A1	GABR_A3B3G2	Non-protein	Signaling
2184	GABA-A	GABA-GAD2_SLC6A1	GABR_A3B3Q	Non-protein	Signaling
2185	GABA-A	GABA-GAD2_SLC6A1	GABR_A3B3E	Non-protein	Signaling
2186	GABA-A	GABA-GAD2_SLC6A1	GABR_A4B3G2	Non-protein	Signaling
2187	GABA-A	GABA-GAD2_SLC6A1	GABR_A4B3D	Non-protein	Signaling
2188	GABA-A	GABA-GAD2_SLC6A1	GABR_A4B2D	Non-protein	Signaling
2189	GABA-A	GABA-GAD2_SLC6A1	GABR_A5B3G2	Non-protein	Signaling
2190	GABA-A	GABA-GAD2_SLC6A1	GABR_A6B3G2	Non-protein	Signaling
2191	GABA-A	GABA-GAD2_SLC6A1	GABR_A6B3D	Non-protein	Signaling
2192	GABA-A	GABA-GAD2_SLC6A11	GABR_A1B3G2	Non-protein	Signaling
2193	GABA-A	GABA-GAD2_SLC6A11	GABR_A1B2G2	Non-protein	Signaling
2194	GABA-A	GABA-GAD2_SLC6A11	GABR_A1B2	Non-protein	Signaling
2195	GABA-A	GABA-GAD2_SLC6A11	GABR_A1B3	Non-protein	Signaling
2196	GABA-A	GABA-GAD2_SLC6A11	GABR_A1B2D	Non-protein	Signaling
2197	GABA-A	GABA-GAD2_SLC6A11	GABR_A2B3G2	Non-protein	Signaling
2198	GABA-A	GABA-GAD2_SLC6A11	GABR_A3B3G2	Non-protein	Signaling
2199	GABA-A	GABA-GAD2_SLC6A11	GABR_A3B3Q	Non-protein	Signaling
2200	GABA-A	GABA-GAD2_SLC6A11	GABR_A3B3E	Non-protein	Signaling
2201	GABA-A	GABA-GAD2_SLC6A11	GABR_A4B3G2	Non-protein	Signaling
2202	GABA-A	GABA-GAD2_SLC6A11	GABR_A4B3D	Non-protein	Signaling
2203	GABA-A	GABA-GAD2_SLC6A11	GABR_A4B2D	Non-protein	Signaling
2204	GABA-A	GABA-GAD2_SLC6A11	GABR_A5B3G2	Non-protein	Signaling
2205	GABA-A	GABA-GAD2_SLC6A11	GABR_A6B3G2	Non-protein	Signaling
2206	GABA-A	GABA-GAD2_SLC6A11	GABR_A6B3D	Non-protein	Signaling
2207	GABA-A	GABA-GAD2_SLC6A12	GABR_A1B3G2	Non-protein	Signaling
2208	GABA-A	GABA-GAD2_SLC6A12	GABR_A1B2G2	Non-protein	Signaling
2209	GABA-A	GABA-GAD2_SLC6A12	GABR_A1B2	Non-protein	Signaling
2210	GABA-A	GABA-GAD2_SLC6A12	GABR_A1B3	Non-protein	Signaling
2211	GABA-A	GABA-GAD2_SLC6A12	GABR_A1B2D	Non-protein	Signaling
2212	GABA-A	GABA-GAD2_SLC6A12	GABR_A2B3G2	Non-protein	Signaling
2213	GABA-A	GABA-GAD2_SLC6A12	GABR_A3B3G2	Non-protein	Signaling
2214	GABA-A	GABA-GAD2_SLC6A12	GABR_A3B3Q	Non-protein	Signaling

2215	GABA-A	GABA-GAD2_SLC6A12	GABR_A3B3E	Non-protein	Signaling
2216	GABA-A	GABA-GAD2_SLC6A12	GABR_A4B3G2	Non-protein	Signaling
2217	GABA-A	GABA-GAD2_SLC6A12	GABR_A4B3D	Non-protein	Signaling
2218	GABA-A	GABA-GAD2_SLC6A12	GABR_A4B2D	Non-protein	Signaling
2219	GABA-A	GABA-GAD2_SLC6A12	GABR_A5B3G2	Non-protein	Signaling
2220	GABA-A	GABA-GAD2_SLC6A12	GABR_A6B3G2	Non-protein	Signaling
2221	GABA-A	GABA-GAD2_SLC6A12	GABR_A6B3D	Non-protein	Signaling
2222	GABA-A	GABA-GAD2_SLC6A13	GABR_A1B3G2	Non-protein	Signaling
2223	GABA-A	GABA-GAD2_SLC6A13	GABR_A1B2G2	Non-protein	Signaling
2224	GABA-A	GABA-GAD2_SLC6A13	GABR_A1B2	Non-protein	Signaling
2225	GABA-A	GABA-GAD2_SLC6A13	GABR_A1B3	Non-protein	Signaling
2226	GABA-A	GABA-GAD2_SLC6A13	GABR_A1B2D	Non-protein	Signaling
2227	GABA-A	GABA-GAD2_SLC6A13	GABR_A2B3G2	Non-protein	Signaling
2228	GABA-A	GABA-GAD2_SLC6A13	GABR_A3B3G2	Non-protein	Signaling
2229	GABA-A	GABA-GAD2_SLC6A13	GABR_A3B3Q	Non-protein	Signaling
2230	GABA-A	GABA-GAD2_SLC6A13	GABR_A3B3E	Non-protein	Signaling
2231	GABA-A	GABA-GAD2_SLC6A13	GABR_A4B3G2	Non-protein	Signaling
2232	GABA-A	GABA-GAD2_SLC6A13	GABR_A4B3D	Non-protein	Signaling
2233	GABA-A	GABA-GAD2_SLC6A13	GABR_A4B2D	Non-protein	Signaling
2234	GABA-A	GABA-GAD2_SLC6A13	GABR_A5B3G2	Non-protein	Signaling
2235	GABA-A	GABA-GAD2_SLC6A13	GABR_A6B3G2	Non-protein	Signaling
2236	GABA-A	GABA-GAD2_SLC6A13	GABR_A6B3D	Non-protein	Signaling
2237	GABA-A	GABA-GAD2_SLC6A6	GABR_A1B3G2	Non-protein	Signaling
2238	GABA-A	GABA-GAD2_SLC6A6	GABR_A1B2G2	Non-protein	Signaling
2239	GABA-A	GABA-GAD2_SLC6A6	GABR_A1B2	Non-protein	Signaling
2240	GABA-A	GABA-GAD2_SLC6A6	GABR_A1B3	Non-protein	Signaling
2241	GABA-A	GABA-GAD2_SLC6A6	GABR_A1B2D	Non-protein	Signaling
2242	GABA-A	GABA-GAD2_SLC6A6	GABR_A2B3G2	Non-protein	Signaling
2243	GABA-A	GABA-GAD2_SLC6A6	GABR_A3B3G2	Non-protein	Signaling
2244	GABA-A	GABA-GAD2_SLC6A6	GABR_A3B3Q	Non-protein	Signaling
2245	GABA-A	GABA-GAD2_SLC6A6	GABR_A3B3E	Non-protein	Signaling
2246	GABA-A	GABA-GAD2_SLC6A6	GABR_A4B3G2	Non-protein	Signaling
2247	GABA-A	GABA-GAD2_SLC6A6	GABR_A4B3D	Non-protein	Signaling
2248	GABA-A	GABA-GAD2_SLC6A6	GABR_A4B2D	Non-protein	Signaling
2249	GABA-A	GABA-GAD2_SLC6A6	GABR_A5B3G2	Non-protein	Signaling
2250	GABA-A	GABA-GAD2_SLC6A6	GABR_A6B3G2	Non-protein	Signaling
2251	GABA-A	GABA-GAD2_SLC6A6	GABR_A6B3D	Non-protein	Signaling
2252	GABA-A	GABA-GAD2_SLC6A8	GABR_A1B3G2	Non-protein	Signaling
2253	GABA-A	GABA-GAD2_SLC6A8	GABR_A1B2G2	Non-protein	Signaling
2254	GABA-A	GABA-GAD2_SLC6A8	GABR_A1B2	Non-protein	Signaling
2255	GABA-A	GABA-GAD2_SLC6A8	GABR_A1B3	Non-protein	Signaling
2256	GABA-A	GABA-GAD2_SLC6A8	GABR_A1B2D	Non-protein	Signaling
2257	GABA-A	GABA-GAD2_SLC6A8	GABR_A2B3G2	Non-protein	Signaling

2258	GABA-A	GABA-GAD2_SLC6A8	GABR_A3B3G2	Non-protein	Signaling
2259	GABA-A	GABA-GAD2_SLC6A8	GABR_A3B3Q	Non-protein	Signaling
2260	GABA-A	GABA-GAD2_SLC6A8	GABR_A3B3E	Non-protein	Signaling
2261	GABA-A	GABA-GAD2_SLC6A8	GABR_A4B3G2	Non-protein	Signaling
2262	GABA-A	GABA-GAD2_SLC6A8	GABR_A4B3D	Non-protein	Signaling
2263	GABA-A	GABA-GAD2_SLC6A8	GABR_A4B2D	Non-protein	Signaling
2264	GABA-A	GABA-GAD2_SLC6A8	GABR_A5B3G2	Non-protein	Signaling
2265	GABA-A	GABA-GAD2_SLC6A8	GABR_A6B3G2	Non-protein	Signaling
2266	GABA-A	GABA-GAD2_SLC6A8	GABR_A6B3D	Non-protein	Signaling

SST pathways

There is no significant communication of SOMATOSTATIN signaling pathway

```
# netVisual_aggregate(cellchat, signaling = "SOMATOSTATIN")
```

confirm SST pathways are in the cellphoneDB

Confirm there's SST related LR pair in the database cell chat used to in the database.

```
# dplyr::glimpse(CellChatDB$interaction)
CellChatDB <- CellChatDB.human
CellChatDB$interaction[
  grep("SST", CellChatDB$interaction$ligand, ignore.case = T),
  c("interaction_name", "pathway_name")
]
```

	interaction_name	pathway_name
SST_SSTR1	SST_SSTR1	SOMATOSTATIN
SST_SSTR2	SST_SSTR2	SOMATOSTATIN
SST_SSTR3	SST_SSTR3	SOMATOSTATIN
SST_SSTR4	SST_SSTR4	SOMATOSTATIN
SST_SSTR5	SST_SSTR5	SOMATOSTATIN