



Counting regions for tissueocyte

⚙ Status	Done
🎯 Project	🎯 <u>1_Recent To Do</u>
➤ Parent-task	🎯 <u>U01 -Gopi group</u>
🏷 Tags	

Description

▼ newer discussion on 240827, use B0039, 240826_Gui_registration_second_test result as an example.

- we need to figure out how counting code output files can be converted to 300 summary regions output
- First question:
 - what does region number refer to for cell_counts.csv file? Is it referring to parcellation_index or id in the **1_adult_mouse_brain_graph_mapping_all_reigons** file?
 - for example for region = 1080 in cell_counts.csv file, I found 1080 exist as both parcellation_index and id which refers to different brain regions.

	A	B	C
1	region	count	
2	926	1	
3	1053	1	
4	641	1	
5	1080	4	
6	958	2	
7	710	4	

- I have figured out based on CA1. I believe region number refers to parcellation_index. And the current **cell_region_count.csv** is correct.
- So the **cell_count.csv** = this file store all detected signals and their location (parcellation_index).
- Then based on **1_adult_mouse_brain_graph_mapping_all_reigons** file, it can know the all detected signal which brain regions they belong to. This create the **cell-region_count.csv**. But this file only have counts for all finest regions. It does not sum fine regions to higher level. For example: all yellow and orange are the finest regions (eg: CA1,CA2,CA3, parasubiculum etc.), but green is the higher level region (hippocampal formation = 2). (This means annotation file has hippocampal parcellation index and 2 cells falls in this index.)

69	245	5 Dorsal auditory area, layer 5	root	Basic cell	Cerebrum	Cerebral c	Cortical pl	Isocortex
70	25	1 Entorhinal area, lateral part, layer 6a	root	Basic cell	Cerebrum	Cerebral c	Cortical pl	Hippocampal for
71	959	807 Orbital area, ventrolateral part, layer	root	Basic cell	Cerebrum	Cerebral c	Cortical pl	Isocortex
72	474	385 Orbital area, medial part, layer 1	root	Basic cell	Cerebrum	Cerebral c	Cortical pl	Isocortex
73	1226	1 Rostrolateral area, layer 6a	root	Basic cell	Cerebrum	Cerebral c	Cortical pl	Isocortex
74	646	2 Secondary motor area, layer 1	root	Basic cell	Cerebrum	Cerebral c	Cortical pl	Isocortex
75	563	1 Lateral visual area, layer 4	root	Basic cell	Cerebrum	Cerebral c	Cortical pl	Isocortex
76	1026	13 Postsubiculum	root	Basic cell	Cerebrum	Cerebral c	Cortical pl	Hippocampal for
77	279	1 Temporal association areas, layer 5	root	Basic cell	Cerebrum	Cerebral c	Cortical pl	Isocortex
78	18	3 Entorhinal area, lateral part, layer 2	root	Basic cell	Cerebrum	Cerebral c	Cortical pl	Hippocampal for
79	1109	2 Entorhinal area, lateral part, layer 1	root	Basic cell	Cerebrum	Cerebral c	Cortical pl	Hippocampal for
80	1204	1 Primary somatosensory area, unassi	root	Basic cell	Cerebrum	Cerebral c	Cortical pl	Isocortex
81	1205	1 Primary somatosensory area, unassi	root	Basic cell	Cerebrum	Cerebral c	Cortical pl	Isocortex
82	1270	41 Prosubiculum	root	Basic cell	Cerebrum	Cerebral c	Cortical pl	Hippocampal for
83	492	21 Subiculum	root	Basic cell	Cerebrum	Cerebral c	Cortical pl	Hippocampal for
84	804	46 Dorsal peduncular area	root	Basic cell	Cerebrum	Cerebral c	Cortical pl	Olfactory areas
85	1279	1 Area prostriata	root	Basic cell	Cerebrum	Cerebral c	Cortical pl	Hippocampal for
86	17	15 Induseum griseum	root	Basic cell	Cerebrum	Cerebral c	Cortical pl	Hippocampal for
87	833	4 Parasubiculum	root	Basic cell	Cerebrum	Cerebral c	Cortical pl	Hippocampal for
88	453	476 Field CA3	root	Basic cell	Cerebrum	Cerebral c	Cortical pl	Hippocampal for
89	1078	2 Hippocampal formation	root	Basic cell	Cerebrum	Cerebral c	Cortical pl	Hippocampal for
90	717	2 Entorhinal area, medial part, dorsal :	root	Basic cell	Cerebrum	Cerebral c	Cortical pl	Hippocampal for
91	622	15 Dentate gyrus, granule cell layer	root	Basic cell	Cerebrum	Cerebral c	Cortical pl	Hippocampal for
92	134	2 Entorhinal area, lateral part, layer 5	root	Basic cell	Cerebrum	Cerebral c	Cortical pl	Hippocampal for
93	413	225 Field CA2	root	Basic cell	Cerebrum	Cerebral c	Cortical pl	Hippocampal for
94	533	10 Entorhinal area, medial part, dorsal :	root	Basic cell	Cerebrum	Cerebral c	Cortical pl	Hippocampal for
95	654	5 Entorhinal area, medial part, dorsal :	root	Basic cell	Cerebrum	Cerebral c	Cortical pl	Hippocampal for
96	1160	3 Dentate gyrus, polymorph layer	root	Basic cell	Cerebrum	Cerebral c	Cortical pl	Hippocampal for
97	1159	77 Dentate gyrus, molecular layer	root	Basic cell	Cerebrum	Cerebral c	Cortical pl	Hippocampal for
98	516	5 Entorhinal area, medial part, dorsal :	root	Basic cell	Cerebrum	Cerebral c	Cortical pl	Hippocampal for
99	1012	4 Ventral auditory area, layer 5	root	Basic cell	Cerebrum	Cerebral c	Cortical pl	Isocortex

- **region_count.csv** is the spatially organized version of **cell_region_count.csv**. At the same time, it added lower level regions counts to higher order. For eg: Green = yellow + orange +2 (the 2 cell detected just in hippocampal formation) = 2732+2 = 2734.

15	Cerebellar Vermal re	Nodulus (X)	958	2 Nodulus (X)			
16	Cerebral c Cortical pl	Hippocampal formation	1078	2734 Hippocampal formation			2732
17	Cerebral c Cortical pl	Hippocampal forma	372	1810 Field CA1			
18	Cerebral c Cortical pl	Hippocampal forma	413	225 Field CA2			
19	Cerebral c Cortical pl	Hippocampal forma	453	476 Field CA3			
20	Cerebral c Cortical pl	Hippocampal forma	622	15 Dentate gyrus, granule cell layer			
21	Cerebral c Cortical pl	Hippocampal forma	1159	77 Dentate gyrus, molecular layer			
22	Cerebral c Cortical pl	Hippocampal forma	1160	3 Dentate gyrus, polymorph layer			
23	Cerebral c Cortical pl	Hippocampal forma	17	15 Induseum griseum			
24	Cerebral c Cortical pl	Hippocampal forma	1279	1 Area prostriata			
25	Cerebral c Cortical pl	Hippocampal forma	1109	2 Entorhinal area, lateral part, layer 1			
26	Cerebral c Cortical pl	Hippocampal forma	18	3 Entorhinal area, lateral part, layer 2			
27	Cerebral c Cortical pl	Hippocampal forma	134	2 Entorhinal area, lateral part, layer 5			
28	Cerebral c Cortical pl	Hippocampal forma	25	1 Entorhinal area, lateral part, layer 6a			
29	Cerebral c Cortical pl	Hippocampal forma	516	5 Entorhinal area, medial part, dorsal zone, layer 1			
30	Cerebral c Cortical pl	Hippocampal forma	533	10 Entorhinal area, medial part, dorsal zone, layer 2			
31	Cerebral c Cortical pl	Hippocampal forma	654	5 Entorhinal area, medial part, dorsal zone, layer 3			
32	Cerebral c Cortical pl	Hippocampal forma	717	2 Entorhinal area, medial part, dorsal zone, layer 5			
33	Cerebral c Cortical pl	Hippocampal forma	833	4 Parasubiculum			
34	Cerebral c Cortical pl	Hippocampal forma	1026	13 Postsubiculum			
35	Cerebral c Cortical pl	Hippocampal forma	1073	1 Presubiculum			
36	Cerebral c Cortical pl	Hippocampal forma	1270	41 Prosubiculum			
37	Cerebral c Cortical pl	Hippocampal forma	492	21 Subiculum			
38	Cerebral c Cortical pl	Isocortex	986	12 Agranular insular area, dorsal part, layer 1			

- Now we want convert **region_count.csv** to 300 summary regions file.

- for all the regions in **region_count.csv**, based on their region number/parcellation_index, find their id number from **1_adult_mouse_brain_graph_mapping_all_reigons** file.
- eg: red numbers are the ids that i found manually

	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
	level_3	level_4	level_5	level_6	level_7	level_8	level_9	level_10	region	count	id	region name			
8	Interbrain Hypothala	Hypothalamic media	Mammilla	Medial m	Medial mammillary nucleus, median part				722	1		Medial mammillary nucleus, median part			
9	Interbrain Thalamus	Thalamus, polymodi	Midline gr	Paraventricular nucleus of the thalamus					144	1		Paraventricular nucleus of the thalamus			
10	Cerebellar Hemisphe	Ansiform lobule	Crus 2						1053	1		Crus 2			
11	Cerebellar Hemisphe	Paraflocculus							1030	1		Paraflocculus			
12	Cerebellar Vermal re	Central lobule		Lobule III					974	3		Lobule III			
13	Cerebellar Vermal re	Culmen		Lobules IV-V					1080	4		Lobules IV-V			
14	Cerebellar Vermal re	Declive (VI)							926	1		Declive (VI)			
15	Cerebellar Vermal re	Nodulus (X)							958	2		Nodulus (X)			
16	Cerebral c Cortical pl Hippocampal formation									1078	2734	Hippocampal formation			
17	Cerebral c Cortical pl Hippocampal forma	Hippocam	Ammon's	Field CA1					372	1810	382	Field CA1			
18	Cerebral c Cortical pl Hippocampal forma	Hippocam	Ammon's	Field CA2					413	225		Field CA2			
19	Cerebral c Cortical pl Hippocampal forma	Hippocam	Ammon's	Field CA3					453	476		Field CA3			
20	Cerebral c Cortical pl Hippocampal forma	Hippocam	Dentate gy	Dentate gyrus, granule cell layer					622	15	632	Dentate gyrus, granule cell layer			
21	Cerebral c Cortical pl Hippocampal forma	Hippocam	Dentate gy	Dentate gyrus, molecular layer					1159	77	10703	Dentate gyrus, molecular layer			
22	Cerebral c Cortical pl Hippocampal forma	Hippocam	Dentate gy	Dentate gyrus, polymorph layer					1160	3		Dentate gyrus, polymorph layer			
23	Cerebral c Cortical pl Hippocampal forma	Hippocam	Induseum griseum						17	15		Induseum griseum			
24	Cerebral c Cortical pl Hippocampal forma	Retrohipp	Area prostriata						1279	1		Area prostriata			
25	Cerebral c Cortical pl Hippocampal forma	Retrohipp	Entorhina	Entorhinal area, lateral part, layer 1					1109	2	1121	Entorhinal area, lateral part, layer 1			
26	Cerebral c Cortical pl Hippocampal forma	Retrohipp	Entorhina	Entorhinal area, lateral part, layer 2					18	3	20	Entorhinal area, lateral part, layer 2			
27	Cerebral c Cortical pl Hippocampal forma	Retrohipp	Entorhina	Entorhinal area, lateral part, layer 5					134	2	139	Entorhinal area, lateral part, layer 5			
28	Cerebral c Cortical pl Hippocampal forma	Retrohipp	Entorhina	Entorhinal area, lateral part, layer 6a					25	1		Entorhinal area, lateral part, layer 6a			
29	Cerebral c Cortical pl Hippocampal forma	Retrohipp	Entorhina	Entorhinal area, medial part, dorsal z					516	5		Entorhinal area, medial part, dorsal zone,			
30	Cerebral c Cortical pl Hippocampal forma	Retrohipp	Entorhina	Entorhinal area, medial part, dorsal z					533	10		Entorhinal area, medial part, dorsal zone,			
31	Cerebral c Cortical pl Hippocampal forma	Retrohipp	Entorhina	Entorhinal area, medial part, dorsal z					654	5		Entorhinal area, medial part, dorsal zone,			
32	Cerebral c Cortical pl Hippocampal forma	Retrohipp	Entorhina	Entorhinal area, medial part, dorsal z					717	2		Entorhinal area, medial part, dorsal zone,			
33	Cerebral c Cortical pl Hippocampal forma	Retrohipp	Parasubiculum						833	4	843	Parasubiculum			
34	Cerebral c Cortical pl Hippocampal forma	Retrohipp	Postsubiculum						1026	13		Postsubiculum			
35	Cerebral c Cortical pl Hippocampal forma	Retrohipp	Presubiculum						1073	1		Presubiculum			
36	Cerebral c Cortical pl Hippocampal forma	Retrohipp	Prosobulum						1270	41		Prosobulum			
37	Cerebral c Cortical pl Hippocampal forma	Retrohipp	Subiculum						492	21	502	Subiculum			
38	Cerebral c Cortical pl Isocortex	Agranular	Agranular	Agranular insular area, dorsal part, layer 1					986	12		Agranular insular area, dorsal part, layer 1			

- for some regions, like CA1, id =382, it can also be found in 300 **summary_structures.csv**. Put the count number (1810) for id (382) in 300 summary_structures.csv.

summary_structures										
File Edit View Insert Format Data Tools Extensions Help										
Q Menu										
J56										
1	A	B	C	D	E	F	G	H	I	J
	acronym	name	color_hex_triplet	graph_order	identifier	red	green	blue	parent_identifier	Count
55	TR	Postpiriform transition area	#ABECD3	449	MBA:595		168	236	211 MBA:698	
56	CA1	Field CA1	#7ED04B	457	MBA:382		126	208	75 MBA:375	1810
57	CA2	Field CA2	#7ED04B	462	MBA:423		126	208	75 MBA:375	
58	CA3	Field CA3	#7ED04B	467	MBA:483		126	208	75 MBA:375	
59	DG	Dentate gyrus	#7ED04B	473	MBA:726		126	208	75 MBA:1080	
60	FC	Fasciola cinerea	#7ED04B	490	MBA:982		126	208	75 MBA:1080	
61	IG	Induseum griseum	#7ED04B	491	MBA:19		126	208	75 MBA:1080	

- for some other regions, like dentate gyrus, granule cell layer, region number/parcellation_index =622, id=632. It can not be found in 300 **summary_structures.csv**, because this region level is smaller than the 300 regions we want. We need to figure out for this region (dentate gyrus, granule cell layer, region number/parcellation_index =622, id=632) is the lower level region of which regions inside **300**

summary_structures.csv. Or in another way, we need to know for the 300 summary_structures, what are the subregions they have. Once we know that info, we can know id=632 belongs to which 300 summary regions.

- we need to first go over each row inside 300 **summary regions.csv**, based on the id number, check the column **structure_id_path** in **1_adult_mouse_brain_graph_mapping_all_reigons.csv**.
- as long as the **structure_id_path** has the id number, it means those rows belong to that id.
- for eg, see pics below: row 59 in summary_structures.csv, id =726. The column **structure_id_path** in **1_adult_mouse_brain_graph_mapping_all_reigons.csv** that has 726 contains row 475-491. All ids (row 475-491.) covered by these rows belongs to the DG/dentate gyrus/id=726. Therefore, all the counts for these ids (row 475-491) should be counted towards DG/dentate gyrus/id=726.
- if we use B0039 as an example: the 300 summary_structures.csv output file for B0039, DG should have counts = $(632/15 + 10703/77 + 10704/3) = 95$ cells. [the numbers has a format of id/counts]

	A	B	C	D	E	F	G	H	I	
1	acronym	name	color_hex	triplet	graph_order	identifier	red	green	blue	parent_identifier
59	DG	dentate gyrus	#7ED04B	473	MBA:726		126	208	75	MBA:1080
60	PC	Fasciola citreus	#7ED04B	490	MBA:982		126	208	75	MBA:1080

1_adult_mouse_brain_graph_mapping_all_regions									
File Edit View Insert Format Data Tools Extensions Help									
Q Menu									
G475:G49									
1	A	B	C	D	E	F	G		
	id	acronym	color_hex_triplet	name	graph_order	parent_structure_id	structure_id_path		pa
472	486	CA3so	7ED04B	Field CA3, stratum onens	470	463	/997/8/567/688/695/1089/1080/375/463/486/		
473	485	CA3sp	66A83D	Field CA3, pyramidal layer	471	463	/997/8/567/688/695/1089/1080/375/463/485/		
474	504	CA3sr	7ED04B	Field CA3, stratum radiatum	472	463	/997/8/567/688/695/1089/1080/375/463/504/		
475	726	DG	7ED04B	Dentate gyrus	473	1080	/997/8/567/688/695/1089/1080/726/		
476	10703	DG-mo	7ED04B	Dentate gyrus, molecular layer	474	726	/997/8/567/688/695/1089/1080/726/10703/		
477	10704	DG-po	7ED04B	Dentate gyrus, polymorph layer	475	726	/997/8/567/688/695/1089/1080/726/10704/		
478	632	DG-sg	66A83D	Dentate gyrus, granule cell layer	476	726	/997/8/567/688/695/1089/1080/726/632/		
479	10702	DG-egz	7ED04B	Dentate gyrus, subgranular zone	477	726	/997/8/567/688/695/1089/1080/726/10702/		
480	734	DGcr	7ED04B	Dentate gyrus crest	478	726	/997/8/567/688/695/1089/1080/726/734/		
481	742	DGcr-mo	7ED04B	Dentate gyrus crest, molecular layer	479	734	/997/8/567/688/695/1089/1080/726/734/742/		
482	751	DGcr-po	7ED04B	Dentate gyrus crest, polymorph layer	480	734	/997/8/567/688/695/1089/1080/726/734/751/		
483	758	DGcr-sg	7ED04B	Dentate gyrus crest, granule cell layer	481	734	/997/8/567/688/695/1089/1080/726/734/758/		
484	766	DGlb	7ED04B	Dentate gyrus lateral blade	482	726	/997/8/567/688/695/1089/1080/726/766/		
485	775	DGlb-mo	7ED04B	Dentate gyrus lateral blade, molecular layer	483	766	/997/8/567/688/695/1089/1080/726/766/775/		
486	782	DGlb-po	7ED04B	Dentate gyrus lateral blade, polymorph layer	484	766	/997/8/567/688/695/1089/1080/726/766/782/		
487	790	DGlb-sg	7ED04B	Dentate gyrus lateral blade, granule cell layer	485	766	/997/8/567/688/695/1089/1080/726/766/790/		
488	799	DGmb	7ED04B	Dentate gyrus medial blade	486	726	/997/8/567/688/695/1089/1080/726/799/		
489	807	DGmb-mo	7ED04B	Dentate gyrus medial blade, molecular layer	487	799	/997/8/567/688/695/1089/1080/726/799/807/		
490	815	DGmb-po	7ED04B	Dentate gyrus medial blade, polymorph layer	488	799	/997/8/567/688/695/1089/1080/726/799/815/		
491	823	DGmb-sg	7ED04B	Dentate gyrus medial blade, granule cell layer	489	799	/997/8/567/688/695/1089/1080/726/799/823/		
492	982	FC	7ED04B	Fasciola cinerea	490	1080	/997/8/567/688/695/1089/1080/982/		

	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1	level_3	level_4	level_5	level_6	level_7	level_8	level_9	level_10	region	count	id	region name			
14	Cerebellar Vermal re	Declive (VI)							926	1		Declive (VI)			
15	Cerebellar Vermal re	Nodulus (X)							958	2		Nodulus (X)			
16	Cerebral c Cortical pl	Hippocampal formation							1078	2734		Hippocampal formation			
17	Cerebral c Cortical pl	Hippocampal forma	Hippocam Ammon's	Field CA1					372	1810	382	Field CA1			
18	Cerebral c Cortical pl	Hippocampal forma	Hippocam Ammon's	Field CA2					413	225		Field CA2			
19	Cerebral c Cortical pl	Hippocampal forma	Hippocam Ammon's	Field CA3					453	476		Field CA3			
20	Cerebral c Cortical pl	Hippocampal forma	Hippocam Dentate gy	Dentate gyrus, granule cell layer					622	15	632	Dentate gyrus, granule cell layer			
21	Cerebral c Cortical pl	Hippocampal forma	Hippocam Dentate gy	Dentate gyrus, molecular layer					1159	77	10703	Dentate gyrus, molecular layer			
22	Cerebral c Cortical pl	Hippocampal forma	Hippocam Dentate gy	Dentate gyrus, polymorph layer					1160	3	10704	Dentate gyrus, polymorph layer			

More example:

if we use B0039 as an example: the 300 summary_structures.csv output file for B0039, ENTI = Entorhinal area = id 918, lateral part should have counts = $(1121/2 + 20/3 + 139/2 + 28/1)$ id/counts format = 8 cells.

summary_structures									
File Edit View Insert Format Data Tools Extensions Help									
Q Menu									
62:62									
1	A	B	C	D	E	F	G	H	
	acronym	name	color_hex_triplet	graph_order	identifier	red	green	blue	parent_identifier
59	DG	Dentate gyrus	#7ED04B	473	MBA:726		126	208	75 MBA:1080
60	FC	Fasciola cinerea	#7ED04B	490	MBA:982		126	208	75 MBA:1080
61	IG	Induseum griseum	#7ED04B	491	MBA:19		126	208	75 MBA:1080
62	ENTI	Entorhinal area, lateral part	#32B825	494	MBA:918		50	184	37 MBA:909
63	ENTm	Entorhinal area, medial part, dorsal	#32B825	507	MBA:936		50	184	37 MBA:909

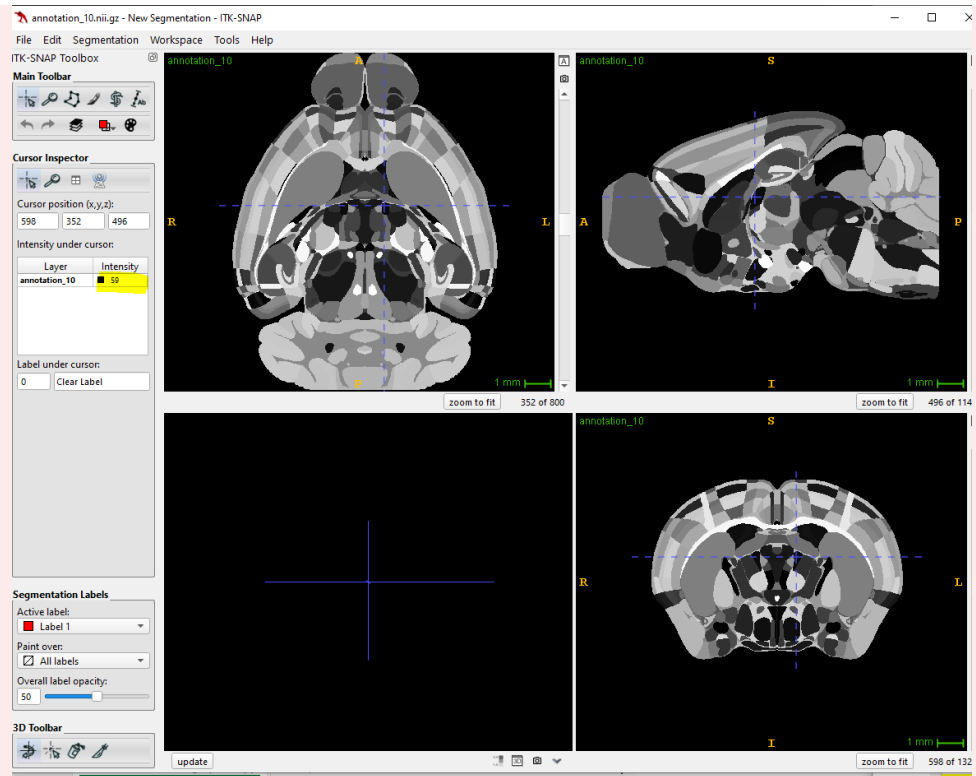
1_adult_mouse_brain_graph_mapping_all_regions									
File Edit View Insert Format Data Tools Extensions Help									
Q Menu									
E491									
1	A	B	C	D	E	F	G		
	id	acronym	color_hex_triplet	name	graph_order	parent_structure_id	structure_id_path		parcellat
493	19	IG	7ED04B	Induseum griseum	491	1080	/997/8/567/688/695/1089/1080/19/		
494	822	RHP	32B825	Retrohippocampal region	492	1089	/997/8/567/688/695/1089/822/		
495	909	ENT	32B825	Entorhinal area	493	822	/997/8/567/688/695/1089/822/909/		
496	1121	ENT1	32B825	Entorhinal area, lateral part	494	909	/997/8/567/688/695/1089/822/909/918/1121/		
497	20	ENT12	32B825	Entorhinal area, lateral part, layer 1	495	918	/997/8/567/688/695/1089/822/909/918/1121/		
498	21	ENT13	32B825	Entorhinal area, lateral part, layer 2	496	918	/997/8/567/688/695/1089/822/909/918/201/		
499	999	ENT12/3	32B825	Entorhinal area, lateral part, layer 2/3	497	918	/997/8/567/688/695/1089/822/909/918/999/		
500	715	ENT12a	32B825	Entorhinal area, lateral part, layer 2a	498	918	/997/8/567/688/695/1089/822/909/918/715/		
501	764	ENT12b	32B825	Entorhinal area, lateral part, layer 2b	499	918	/997/8/567/688/695/1089/822/909/918/764/		
502	62	ENT13	32B825	Entorhinal area, lateral part, layer 3	500	918	/997/8/567/688/695/1089/822/909/918/62/		
503	62	ENT14	32B825	Entorhinal area, lateral part, layer 4	501	918	/997/8/567/688/695/1089/822/909/918/62/		
504	312	ENT14/5	32B825	Entorhinal area, lateral part, layer 4/5	502	918	/997/8/567/688/695/1089/822/909/918/312/		
505	139	ENT15	32B825	Entorhinal area, lateral part, layer 5	503	918	/997/8/567/688/695/1089/822/909/918/139/		
506	387	ENT16	32B825	Entorhinal area, lateral part, layer 5b	504	918	/997/8/567/688/695/1089/822/909/918/387/		
507	28	ENT16a	32B825	Entorhinal area, lateral part, layer 5a	505	918	/997/8/567/688/695/1089/822/909/918/28/		
508	60	ENT16b	32B825	Entorhinal area, lateral part, layer 5b	506	918	/997/8/567/688/695/1089/822/909/918/60/		
509	60	ENT16c	32B825	Entorhinal area, lateral part, layer 5c	507	918	/997/8/567/688/695/1089/822/909/918/60/		

	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
	level_3	level_4	level_5	level_6	level_7	level_8	level_9	level_10	region	count	id	region name			
14	Cerebellar Vermal region Declive (VI)								926	1		Declive (VI)			
15	Cerebellar Vermal region Nodulus (X)								958	2		Nodulus (X)			
16	Cerebral c Cortical pl Hippocampal formation								1078	2734		Hippocampal formation			
17	Cerebral c Cortical pl Hippocampal formation Hippocampus Ammon's Field CA1								372	1810	382	Field CA1			
18	Cerebral c Cortical pl Hippocampal formation Hippocampus Ammon's Field CA2								413	225		Field CA2			
19	Cerebral c Cortical pl Hippocampal formation Hippocampus Ammon's Field CA3								453	476		Field CA3			
20	Cerebral c Cortical pl Hippocampal formation Hippocampus Dentate gyrus, granule cell layer								622	15	632	Dentate gyrus, granule cell layer			
21	Cerebral c Cortical pl Hippocampal formation Hippocampus Dentate gyrus, molecular layer								1159	77	10703	Dentate gyrus, molecular layer			
22	Cerebral c Cortical pl Hippocampal formation Hippocampus Dentate gyrus, polymorph layer								1160	3	10704	Dentate gyrus, polymorph layer			
23	Cerebral c Cortical pl Hippocampal formation Hippocampus Induseum griseum								17	15		Induseum griseum			
24	Cerebral c Cortical pl Hippocampal formation Retrohippocampus Area prostriata								1279	1		Area prostriata			
25	Cerebral c Cortical pl Hippocampal formation Retrohippocampus Entorhinal area, lateral part, layer 1								1109	2	1121	Entorhinal area, lateral part, layer 1			
26	Cerebral c Cortical pl Hippocampal formation Retrohippocampus Entorhinal area, lateral part, layer 2								18	3	20	Entorhinal area, lateral part, layer 2			
27	Cerebral c Cortical pl Hippocampal formation Retrohippocampus Entorhinal area, lateral part, layer 5								134	2	139	Entorhinal area, lateral part, layer 5			
28	Cerebral c Cortical pl Hippocampal formation Retrohippocampus Entorhinal area, lateral part, layer 6a								25	1	28	Entorhinal area, lateral part, layer 6a			
29	Cerebral c Cortical pl Hippocampal formation Retrohippocampus Entorhinal area, medial part, dorsal zone								516	5		Entorhinal area, medial part, dorsal zone			

▼ The steps to find counting number for summarized regions

file location G:\Brain_Stitch\Brain regions and summary regions

1. First create a new column at the end of **all regions file and summary structure files** and call it **counting number** column.
2. Use **all regions file** to find the detected cell number for all regions by using parcellation index number. Put the detected cell number to the **counting number column** for **All regions file**. Do that for all regions in side All regions file.



	D	E	F	G	H	I
1	name	graph_order	parent_structure_id	structure_id_path	parcellation_index	
668	Thalamus, polymodal association cortex related	666		549 /997/8/343/1129/549/856/	846	
669	Lateral group of the dorsal thalamus	667		856 /997/8/343/1129/549/856/138/	133	
670	Lateral posterior nucleus of the thalamus	668		138 /997/8/343/1129/549/856/138/218/	211	
671	Posterior complex of the thalamus	669		138 /997/8/343/1129/549/856/138/1020/	1009	
672	Posterior limiting nucleus of the thalamus	670		138 /997/8/343/1129/549/856/138/1029/	1018	
673	Suprageniculat nucleus	671		138 /997/8/343/1129/549/856/138/325/	315	
674	Ethmoid nucleus of the thalamus	672		138 /997/8/343/1129/549/856/138/56058155	1300	
675	Retroethmoid nucleus	673		138 /997/8/343/1129/549/856/138/56058155	1301	
676	Anterior group of the dorsal thalamus	674		856 /997/8/343/1129/549/856/239/	232	
677	Anterovenral nucleus of thalamus	675		239 /997/8/343/1129/549/856/239/255/	248	
678	Anteromedial nucleus	676		239 /997/8/343/1129/549/856/239/127/	122	
679	Anteromedial nucleus, dorsal part	677		127 /997/8/343/1129/549/856/239/127/1096/	1085	
680	Anteromedial nucleus, ventral part	678		127 /997/8/343/1129/549/856/239/127/1104/	1093	
681	Anterodorsal nucleus	679		239 /997/8/343/1129/549/856/239/64/	59	
682	Interanteromedial nucleus of the thalamus	680		239 /997/8/343/1129/549/856/239/1120/	1108	
683	Interanterodorsal nucleus of the thalamus	681		239 /997/8/343/1129/549/856/239/1113/	1102	
684	Lateral dorsal nucleus of thalamus	682		239 /997/8/343/1129/549/856/239/155/	150	
685	Medial group of the dorsal thalamus	683		856 /997/8/343/1129/549/856/1881/	1881	

- use the parcellation_index and the id and parent_structure_id and structure_id_path to place correct cell numbers for all regions/all rows.
3. Then look at **summary structure files**, go to first row and identify the **identifier number/ id** (MBA:xxx) for that row. Then use the id to find the correct rows in **All regions file** by checking the **id** column.
- (For example for row 119 in **summary structure files**, Anterovenral nucleus of thalamus, the identifier number =255. Go to **All regions file** and the **id** column with 255, which will locate you to row 677. Take the counting

number for that row and place and paste it in summary structure files, counting number column)

4. Repeat this step for all rows in summary structure files.
5. Output the both the summary structure files and all regions file.

1_adult_mouse_brain_graph_mapping.csv

summary_structures.csv

The screenshot shows a Google Sheets spreadsheet titled "summary_structures" with the following data:

	A	B	C	D	E	F	G	H	I	J
1	acronym	name	color_hex_triplet	graph_order	identifier	red	green	blue	parent_identifier	Count
55	TR	Postpiriform transition area	#A8ECD3	449	MBA:566	168	236	211	MBA:698	
56	CA1	Field CA1	#7ED04B	457	MBA:382	126	208	75	MBA:375	1810
57	CA2	Field CA2	#7ED04B	462	MBA:423	126	208	75	MBA:375	
58	CA3	Field CA3	#7ED04B	467	MBA:463	126	208	75	MBA:375	
59	DG	Dentate gyrus	#7ED04B	473	MBA:726	126	208	75	MBA:1080	
60	FC	Fasciola cinerea	#7ED04B	490	MBA:982	126	208	75	MBA:1080	
61	IG	Induseum griseum	#7ED04B	491	MBA:19	126	208	75	MBA:1080	