

Supplementary Table 1a

Demographic data and tissue characteristics of subjects included in Sample 1

Subject #	Sex	Age (Years)	Warm time (Hours)	Cold time (Hours)	Total time (Hours)	Brain pH	Cause of death	Manner of death	RQI**	pgACC	dl-PFC	CD	Pt
1	M	53	8.58	43.42	52.00	6.57	Intox alc+drugs*	U	7.40	pgACC	dl-PFC		
2	M	73	5.25	29.25	34.50	6.82	AMI	N	7.15	pgACC	dl-PFC		Pt
3	M	58	3.75	47.50	51.25	6.51	Cervical spine fracture	A			dl-PFC		
4	M	75	6.25	31.75	38.00	6.74	AMI	N	6.70	pgACC	dl-PFC		
5	M	67	6.25	40.00	46.25	6.70	AMI	N	6.95	pgACC	dl-PFC		
6	M	39	9.17	33.33	42.50	6.65	Hanging	S	7.60	pgACC			
7	M	23	1.75	39.92	41.67	6.96	Multiple injuries	S	6.70	pgACC	dl-PFC		
8	M	62	5.75	35.92	41.67	6.74	Hanging	S	6.50	pgACC	dl-PFC	CD	Pt
9	M	23	2.80	36.17	38.97	6.83	Heart failure	N	6.55	pgACC	dl-PFC		Pt
10	M	69	2.52	23.98	26.50	6.69	Hanging	S	7.10	pgACC	dl-PFC		Pt
11	M	25	10.12	25.38	35.50	6.72	Hanging	S	6.40	pgACC	dl-PFC		Pt
12	M	58	9.67	31.33	41.00	6.67	AMI	N	6.10	pgACC	dl-PFC	CD	Pt
13	M	36	5.27	35.48	40.75	6.28	SAB	N	6.45	pgACC	dl-PFC	CD	Pt
14	M	41	8.25	37.75	46.00	6.58	Causa ignota	N	6.75	pgACC	dl-PFC	CD	Pt
15	M	26	11.20	25.80	37.00	6.08	Intox venlafaxine	U	5.55	pgACC	dl-PFC	CD	Pt
16	F	59	2.63	44.67	47.30	6.27	Duodenal ulcer	N	6.35	pgACC	dl-PFC	CD	Pt
17	F	53	4.17	34.50	38.67	6.75	Multiple injuries	A	7.55	pgACC	dl-PFC	CD	Pt
18	F	58	10.92	39.08	50.00	7.00	SAB	N	6.75	pgACC	dl-PFC	CD	Pt
19	F	51	7.50	31.50	39.00	6.39	AMI	N	6.30	pgACC	dl-PFC	CD	Pt
20	F	20	8.72	39.25	47.97	6.40	Multiple injuries	S	7.35	pgACC	dl-PFC		Pt
21	F	61	9.83	18.17	28.00	6.52	Intox propoxyphene	U	5.85	pgACC		CD	Pt
Mean		49.05	6.68	34.48	41.17	6.61			6.70				
± SD		± 17.75	± 2.60	± 7.29	± 6.86	± 0.23			± 0.55	N = 20	N = 19	N = 10	N = 15

M, male; F, female; RQI, RNA quality indicator; intox, Intoxication; alc, Alcohol; AMI, acute myocardial infarction; SAB, subarachnoid hemorrhage; CD, caudate; Pt, putamen; pgACC, pregenual anterior cingulate cortex; dl-PFC, dorsolateral prefrontal cortex; * several pharmaceutical drugs in high concentration in postmortem femoral blood; ** Average value of RQI for left and right hemisphere; A, accidental death; N, natural death; S, suicide; U, undetermined manner of death.

Note: pgACC, caudate and putamen samples were not collected from all subjects due to technical reasons.

Supplementary Table 1b

Demographic data and tissue characteristics of subjects included in the sample 2 for pgACC (Replication sample)

Subject #	Sex	Age (years)	Warm time (Hours)	Cold time (Hours)	Total time (Hours)	Brain pH	Cause of death	Manner of death	RQI***
1	M	45	9.25	47.75	57.00	6.16	Opiate intox	A	3.25
2	M	33	14.42	31.58	46.00	6.90	Intox drugs*	A	6.75
3	M	19	24.67	33.33	58.00	6.60	Suffocation**	S	7.50
4	M	45	5.17	46.00	51.17	6.34	AMI	N	3.35
5	M	54	3.50	59.75	63.25	5.86	AMI	N	4.10
6	M	54	5.00	56.00	61.00	6.28	intox alc.	A	-
7	M	63	25.58	32.92	58.50	6.69	AMI	N	5.95
8	M	67	14.35	32.57	46.92	6.40	Cardiomyopathy	N	6.00
9	M	31	2.45	59.22	61.67	6.40	Abdominal injuries	A	6.65
10	F	61	5.75	39.25	45.00	6.53	Hypothermia, SDH	A	4.35
11	F	44	10.58	79.42	90.00	6.78	Hanging	S	6.55
12	F	64	32.17	18.33	50.50	6.21	SDH	A	2.80
Mean		48.33	12.74	44.67	57.41	6.42			5.20
± SD		± 14.98	± 9.83	± 16.77	± 12.09	± 0.29			± 1.66

M, male; F, female; RQI, RNA quality indicator; intox, Intoxication; alc, Alcohol; AMI, acute myocardial infarction; SAB, subarachnoid hemorrhage; SDH, subdural hematoma; * cocaine and several pharmaceutical drugs in high concentration; **alcohol and several pharmaceutical drugs in high concentration in postmortem femoral blood; A, accidental death; N, natural death; S, suicide; ***Average RQI value of left and right hemisphere.

Supplementary Table 2

Primer sequences used for SYBR green RT-PCR

Gene symbol	Forward primer 5'→3'	Reverse primer 5'→3'	Reference	Amplicon size (bp)
<i>Oprd1</i>	GCT GGG CAA CGT GCT TGT	CCA GGT TGA AGA TGT AGA TGT TGG T	Shen et al. 2005	83
<i>Oprk1</i>	CAT CTG TTG GCA TCT CTG CAA	TGC AAG GAG CAC TCA ATG ACA	Shen et al. 2005	79
<i>Oprm1</i>	CTT CCT GGT CAT GTA TGT GAT TGT C	GCC AGA GCA AGG TTG AAA ATG	Gris et al. 2010	81
<i>Penk</i>	TCC TGG CTT GCG TAA TGG A	CTC CTT GCA GGT TTC CCA AA	Tondreau et al. 2008	68
<i>Pdyn</i>	CAC CAC AGC GGA CTG CCT GT	AGC AGG GCA GCC TGG CAT TG	*	111
<i>Pomc</i>	CTA CGG CGG TTT CAT GAC CT	CCC TCA CTC GCC CTT CTT G	Slominski et al. 2005	100

* The primers were designed using Vector NTI advance 10.3.1 software (Invitrogen).

Supplementary Table 3

Covariate analysis of differences between brain areas of partial Spearman correlations of Dyn B with LER. The Dyn B and LER correlations found to be significantly different between the pgACC and dl-PFC, and between putamen and dl-PFC (see Table 2) in the combined male and female sample were adjusted for sex, age, brain pH and total PMI. Differences between correlations were significantly different in the left but not right hemisphere

Brain areas with different correlation	Spearman's rank coefficient, ρ	Covariate	Corrected p
pgACC	0.88***	Sex	< 0.0016
dl-PFC	0.03		
Putamen	0.83***	Age	< 0.029
dl-PFC	0.03		
pgACC	0.85***	Age	< 0.010
dl-PFC	0.10		
Putamen	0.80***	Brain pH	< 0.095
dl-PFC	0.10		
pgACC	0.87***	Brain pH	< 0.0017
dl-PFC	-0.01		
Putamen	0.80***	Total PMI	< 0.042
dl-PFC	-0.01		
pgACC	0.88***	Total PMI	< 0.00066
dl-PFC	-0.04		
Putamen	0.83***	Total PMI	< 0.017
dl-PFC	-0.04		

*** $p < 0.001$.

Supplementary Table 4

Spearman's rank coefficient ρ for correlations of opioid peptides with tissue characteristics in the pgACC in the combined sample of males and females

Peptide	Hemisphere	Total PMI	Brain pH	RQI
Dyn A	Left	-0.21	0.04	-0.36
	Right	0.20	0.11	0.06
Dyn B	Left	-0.22	-0.12	-0.50
	Right	0.05	0.41	0.15
LER	Left	-0.12	-0.11	-0.48
	Right	0.15	-0.33	-0.04
MEAP	Left	0.08	-0.61**	-0.49
	Right	-0.04	-0.17	-0.19

PMI = postmortem interval; RQI = RNA quality indicator. ** $p < 0.01$.

Supplementary references

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