PublisherInfo		
PublisherName	:	BioMed Central
PublisherLocation	:	London
PublisherImprintName	:	BioMed Central

Gene expression profiles of mouse brains

ArticleInfo		
ArticleID	:	3798
ArticleDOI	:	10.1186/gb-spotlight-20001013-04
ArticleCitationID	:	spotlight-20001013-04
ArticleSequenceNumber	:	235
ArticleCategory	:	Research news
ArticleFirstPage	:	1
ArticleLastPage	:	2
ArticleHistory	:	RegistrationDate : 2000–10–13 OnlineDate : 2000–10–13
ArticleCopyright	:	BioMed Central Ltd2000
ArticleGrants	:	
ArticleContext	:	130591111

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Inbred mouse strains have been shown to vary considerably in neurobehavioral testing. In the September 26 Proceedings of the National Academy of Science, Sandberg *et al*. describe the first use of DNA microarrays to determine the genetics events that might explain these phenotypic differences (*Proc Natl Acad Sci* USA 2000, **97:**11038-11043). They compared two common inbred mouse strains (C57BL/6 and 129SvEv) by examining the expression profiles of over 10,000 genes in six different brain regions. They identified 24 genes that were differentially expressed in all brain regions of C57BL/6 animals compared with 129Sv/Ev. Furthermore, 1% of genes were differentially expressed in at least one brain region between the two strains. When comparing pentylenetetrazol-induced seizures, the immediate-early responses were similar but the overall transcriptional response was blunted in the 129SvEv strain. Sandberg *et al*. also found several genes that were enriched in one brain region, with the greatest differences in the cerebellum. This approach can be used to begin to unravel the mysteries of behavioral phenotypes, drug sensitivities and different brain functions.

References

1. Behavioral phenotypes of inbred mouse strains: implications and recommendations for molecular studies.

2. *Proceedings of the National Academy of Sciences*, [http://www.pnas.org]

3. Expression profiles of over 10,000 genes in six different brain regions, [ftp://ftp.gnf.org/pub/papers/brainstrain]