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Data Article

In depth analysis of the *Sox4* gene locus that consists of sense and natural antisense transcripts

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ABSTRACT

SRY (Sex Determining Region Y)-Box 4 or *Sox4* is an important regulator of the pan-neuronal gene expression during post-mitotic cell differentiation within the mammalian brain. *Sox4* gene locus has been previously characterized with multiple sense and overlapping natural antisense transcripts [1,2]. Here we provide accompanying data on various analyses performed and described

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in Ling et al. [2]. The data include a detail description of various features found at *Sox4* gene locus, additional experimental data derived from RNA-Fluorescence *in situ* Hybridization (RNA-FISH), Western blotting, strand-specific reverse-transcription quantitative polymerase chain reaction (RT-qPCR), gain-of-function and *in situ* hybridization (ISH) experiments. All the additional data provided here support the existence of an endogenous small interfering- or PIWI interacting-like small RNA known as *Sox4*_sir3, which origin was found within the overlapping region consisting of a sense and a natural antisense transcript known as *Sox4ot1*.

Specifications Table

Subject area	*Biology.*
More specific subject area	*RNA Biology or Neurogenetics.*
Type of data	*Genbank file, table, bar charts, micrographs, MOV files and statistical analysis*
How data was acquired	*C57BL/6 mice, Artemis visualization tool, LightCycler® 480 System, Zeiss Axioplan 2 Imaging upright microscope with Axiovision software, ImageJ software, GraphPad Prism®.*
Data format	*Filtered and analyzed.*
Experimental factors	*Real-time/Reverse-transcription quantitative polymerase chain reaction (RT-qPCR), Western and Southern blotting analyses, rapid amplification of cDNA Ends, RNA-Fluorescence in situ Hybridization on different brain cells, LNA-ISH of the developing embryo/adult brain and overexpression analysis.*
Experimental features	*Multi-approach molecular and cellular characterization of Sox4 gene locus in experimental house mouse model (Mus musculus).*
Data source location	*Universiti Putra Malaysia, Selangor, Malaysia and University of Adelaide, South Australia, Australia.*
Data accessibility	*The data is available with this article.*

Value of the data

- The data describes the derivation of an endogenous small RNA via double-stranded RNA template in the mouse. This is a rare event within the mammalian genome but is common in the plant.
- The data provides a modified method for brain cell fixation and immobilisation on glass slides for effective RNA-FISH analysis.
- Comparison of two different *Sox4* natural antisense transcripts, known as *Sox4ot1* and *Sox4ot2* in the production of *Sox4*_sir3 *in vitro*.
- Compilation of all the information within the *Sox4* gene locus allows clear, concise and easy visualisation of various features defined in the region by using Artemis software.