

## S47-2 **Functional analysis of ischemia-responsive gene, Ifrd1, in brain**

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We have identified interferon-related developmental regulator-1 (Ifrd1) as a gene highly expressed by hippocampal neural progenitor cells isolated from adult, rather than embryonic, mice. In this study, we have attempted the possible involvement of Ifrd1 in adult neurogenesis in ischemic brains. Adult male C57BL/6J mice were subjected to middle cerebral artery occlusion (MCAO) for 2 h, followed by recirculation of blood flow and subsequent quantification of mRNA on RT-PCR analysis. MCAO for 2 h led to a rapid but transient increase in Ifrd1 mRNA expression immediately after reperfusion, with delayed increases in mRNA levels of HO-1, xCT and nestin within 24 h after reperfusion. To analyze the functionality of Ifrd1, we used the mouse embryonic carcinoma P19 cells endowed to differentiate into neuronal and astroglial cells when cultured in the presence of ATRA. In P19 cells with transient overexpression of Ifrd1, a significant decrease was seen in MAP2 mRNA expression and numbers of cells immunoreactive for MAP2. These results suggest that Ifrd1 may be an upstream signal for the pathogenesis of ischemic brain damage at an early pathological stage as a determinant of spontaneous differentiation into particular progeny lineages in neural progenitor cells.