miRNAs differentially expressed in epilepsywith or without granule cell pathology

S. Zucchini PhD[1,2,3 *], G. Marucci MD, PhD[4 *], B. Paradiso MD, PhD[1,2,5],P. Cifelli MD, PhD[1,6], M. Ferracin, PhD[3,7],M. Giulioni MD[8], R. Michelucci MD[9], G. Rubboli MD[9,10 *], M. Simonato MD[1,2,3 *]

[1] Dept. of Medical Sciences, Section of Pharmacology and Neuroscience Center, University of Ferrara, Italy;
[2] National Institute of Neuroscience, Italy;
[3] Laboratory for Technologies of Advanced Therapies (LTTA), University of Ferrara, Italy;
[4] Dept. of Biomedical and NeuroMotor Sciences (DiBiNeM), Section of Pathology, Bellaria Hospital, Bologna, Italy;
[5] Dept. of Morphology, Surgery and Experimental Medicine, Section of Pathology, University of Ferrara, Italy;
[6] Ri.MED Foundation, Palermo, Italy;
[7] Dept. of Morphology, Surgery and Experimental Medicine, Section of Microbiology, University of Ferrara, Italy;
[8] IRCCS Institute of Neurological Sciences, Section of Neurosurgery, Bellaria Hospital, Bologna, Italy;
[9] IRCCS Institute of Neurological Sciences, Section of Neurology, Bellaria Hospital, Bologna, Italy;
[10] Danish Epilepsy Center, Epilepsihospital, Dianalund, Denmark.

The expression of more than 1000 miRNAs was examined in laser-microdissected dentate granule cells from 10 patients who underwent surgery for intractable temporal lobe epilepsy. All patients had mesial temporal sclerosis associated with no granule cell pathology (5 cases) and with type-2 granule cell pathology (5 cases). Twelve miRNAs were differentially expressed in the two groups. One of these, miR487a, was confirmed to be expressed at highly different levels in an extended cohort of patients, using RT-qPCR. Thus, miR-487a may represent the first member of a miRNA signature of granule cell pathology, potentially useful for a prognostic evaluation.