

## ABSTRACT

### **Neuron birthday and expression of calcium binding-proteins in two recently described brain nuclei**

The PV1-nucleus is a solitary compact cord of parvalbumin-immunoreactive cells located in the ventrolateral hypothalamus, while the CB1-nucleus is a cluster of calbindin D-28K immunopositive neurons located in the medulla oblongata ventrally to the fourth ventricle. Both nuclei have recently been discovered in rodents and the knowledge about their development and functions is limited.

The aim of this study is to describe the ontogenesis of these two specific nuclei. Both the time point of birth of the neurons as well as the specific moment in which they begin to express one of the two calcium-binding proteins is looked for.

To reveal the time point of neuronal birth, bromodeoxyuridine (BrdU) is applied at various days of pregnancy to mark neurons that are actively replicating their DNA. The expression of Parvalbumin, respectively Calbindin D-28k is monitored pre- and postnatally by immunofluorescence.

The BrdU labeling technique indicates that the neurons which set up the CB1-nucleus in the medulla oblongata are born at embryonic day 11 (E11).

The neurons of the PV1-nucleus start to express parvalbumin from postnatal day 4 (P4) in mice and postnatal day 5 (P5) in rats. The number of cells increases gradually and the PV1-nucleus grows in rostro-caudal direction.

From these preliminary results we conclude that the CB1-nucleus is established early in embryogenesis, whereas the PV1-nucleus is generated later. Its early development and localization in the brainstem - close to cardiovascular and respiratory centers - predestine the CB1-nucleus to influence important autonomic function.