

## “brainprot” – generating the proteome of the brain

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### *Editorial*

Genomic projects have provided a myriad of information at the nucleic acid level. This wonderful piece of work now has to be complemented at the protein level as it is the proteins that carry out function. “brainprot” is the project started to systematically map the human and mouse brain and this is the basis for neurosciences: defining, characterising, analysing protein building blocks of the brain, identifying the players, the actors representing brain structure and function. A series of individual brain areas as well as subcellular and chemical fractions have to be examined respecting periods of development and ageing. Apart from the vast diversity of splicing forms, physiologically occurring posttranslational modifications including phosphorylation, glycosylation, nitrosylation, oxidation, lipoylation etc. etc. have to be considered.

Current technology using all available proteomics methods and informations have to be used to cope with this project predicted to take (at least) a decade.

The major goals and aims are:

- characterising the protein building blocks of the normal human and mouse/rodent brain and cell lineages
- generating the chemical neuroanatomy in the individual brain areas
- mapping brain proteins in different developmental stages from the fetus to aging
- identifying the individual expression forms of gene products i.e. most proteins are expressed as many “isoforms”
- defining posttranslational modifications of proteins as major determinants of protein structure and function
- in parallel well-defined brain pathologies will be studied at the protein level in order to investigate expressional differences that in turn would point to mechanisms and identify markers and pharmacological targets.

Facing this challenge we are aware of the fact that partners are needed for “brainprot” and that a large series of technical problems have to be solved. The seedlings of “brainprot” have been sprouting (Bajo et al., 2002; Bernert et al., 2002; Engidawork and Lubec, 2001; Fountoulakis, 2001; Fountoulakis et al., 1999, 2001a, b, 2002; Gulesserian et al., 2002; Karlsson et al., 1999; Kim et al., 2002; Krapfenbauer et al., 2001, 2002, 2003; Langen et al., 1999; Lubec et al., 2003; Peyril et al., 2002; Seidl et al., 2001; Weitzdoerfer et al., 2002; Yoo et al., 2001a, b) and also the bulk of unpublished information is encouraging. This editorial is a call for cooperating to the scientific communities of universities and industry and at the same time identifying “Amino Acids” as the forum for amino acid and protein research.

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