

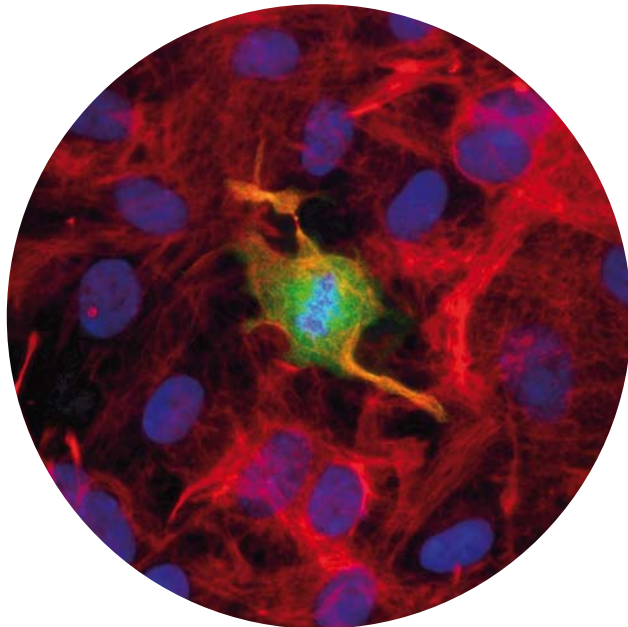
Bavarian research & innovation

ForNeuroCell



Bavarian Research Cooperation for Adult Neural Stem Cells

ADULT STEM CELLS FOR THE DISEASED NERVOUS SYSTEM



Human neural progenitor cells, as identified by cell nuclei (blue), the cytoskeletal protein nestin (red) and the cell surface protein A2B5 (green). The green labeled cell is a neuronal progenitor. 400x magnification

Hope for the Patients – Less Costs for the Public

Neurodegenerative diseases of the brain such as Parkinson's and Alzheimer's disease are among the greatest therapeutic and socio-economic challenges to modern industrialized societies. 1.9 billion € are spent every year on medication for the care of Parkinson patients in Germany. Around 10% of the population over the age of 80 develop Alzheimer-associated dementia, each patient causing costs of 50000 € to 120000 € every year. The

patients and the public health system that are bearing the burden of disease and carrying the costs will profit from a regenerative cell based therapy. Younger patients who are still actively working are often severely and permanently disabled by traumatic injuries of the nervous system, causing invalidity and social isolation with far-reaching individual and social consequences. For such patients as well, regenerative cell therapy spells hope.

There are currently only less effective therapies for prevalent disorders of the nervous system such as Parkinson's or Alzheimer's disease and traumatic injuries as paraplegia and head injury. Neuroscientists and neurologists hope to restore the functions of damaged cells of the nervous system using adult stem cells. The researchers of ForNeuroCell aim at developing a „regenerative cell therapy“: either by transplanting host stem cells or by mobilizing and targeted programming of endogenous stem cells and

increased protection of precursor cells. Neuroscientists of diverse backgrounds collaborate within this research network: development and molecular biologists, neurologists, neuropathologists, neuroradiologists and physicists. They see a great therapeutic potential in regenerative cell therapy for acute trauma (traumatic brain injury and paraplegia) as well as chronic neurodegenerative diseases (Parkinson's and Alzheimer's disease) of the central nervous system.

Spokespersons:

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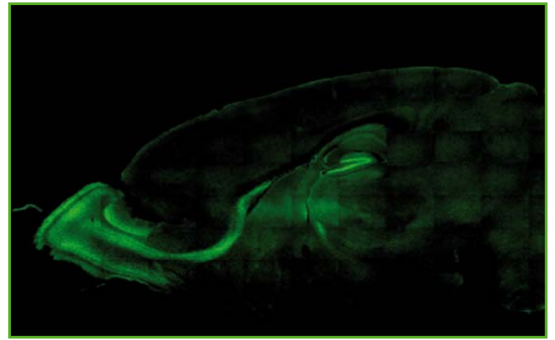
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RESEARCH TOPICS:

1. Characterization of adult neural stem cells in humans and rodents.
2. Study of signaling pathways and receptor structures that could serve as application points for medication to increase adult neurogenesis of endogenous stem cells and to affect neural stem cells *ex vivo*.
3. Mobilization of endogenous host stem cells.
4. Targeted programming or reprogramming of neural stem cells and neural cells.
5. Development of imaging systems for the detection of endogenous as well as transplanted stem cells in the living organism.
6. Pre-clinic testing in acute and chronic lesion models of the central nervous system.



Neural progenitor cells visualised by the expression of a green fluorescent protein in the brain of a transgenic mouse. (Fig. Prof. Dr. L. Aigner)

Economic Applications:

Pharmacotherapy and regenerative stem cell based therapy in acute and chronic degenerative disorders of the nervous system.

Academic partners:

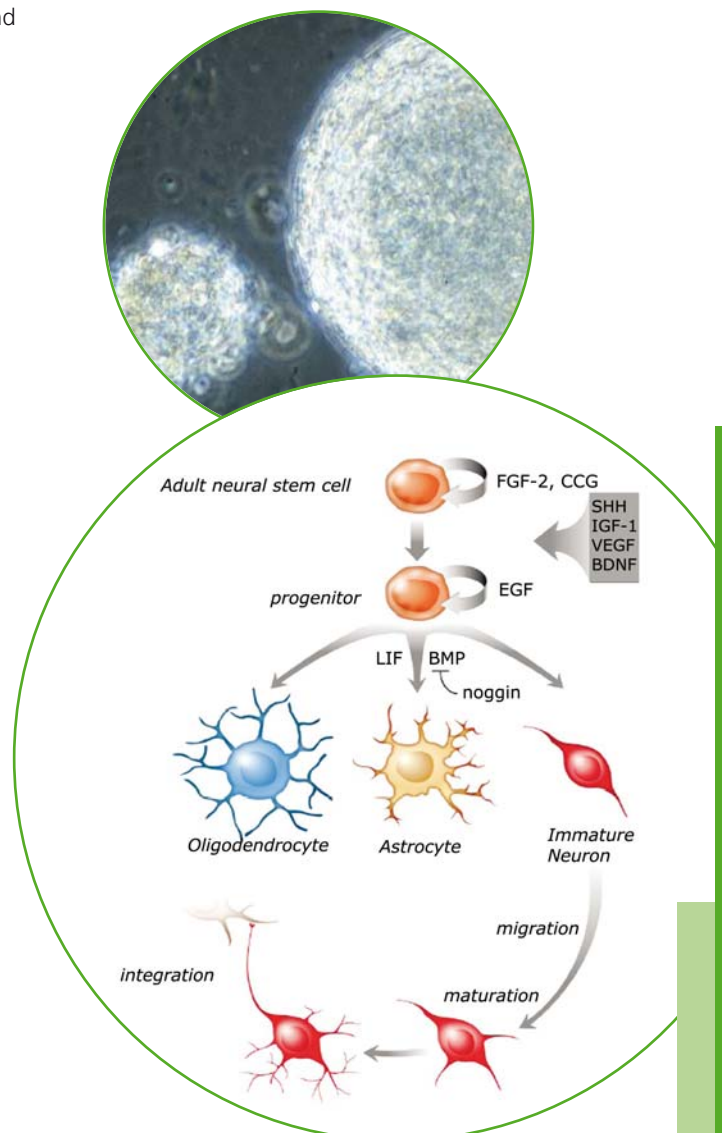
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Industrial Partners:

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Technology Park Würzburg-Rimpar



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