

REPROGRAM - REFINE - REGENERATE

Translating stem cell biology
and genome engineering
into novel therapies and
industrial biotechnology solutions



*Institute for
Stem Cell &
Applied Regenerative Medicine
Research*

***ISAR Bioscience - Translating stem cell biology
into novel therapies and industrial biotechnology
solutions***

Dr. Ulrich C. Gerth CEO



Sponsored by
**Bavarian Ministry of Economic Affairs,
Regional Development and Energy**



Dr. Ulrich Gerth
CEO



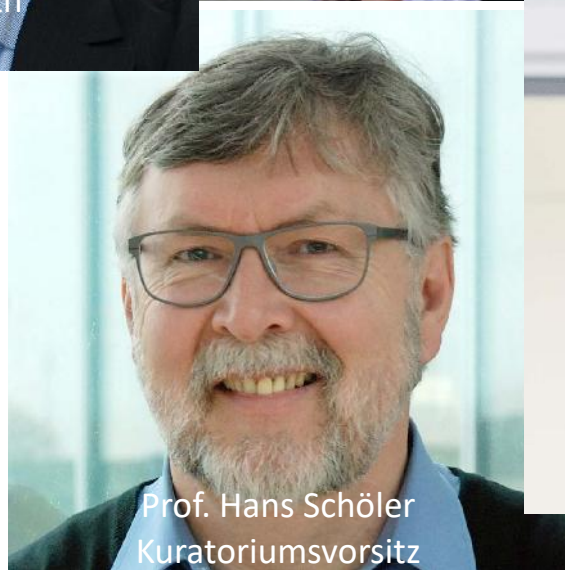
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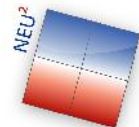
The 'Asset Aggregator' Concept

“Asset Aggregators **supply 'right sized' financing to well-validated projects** and thereby **accumulate ripening assets portfolios** that the public capital markets are willing to finance.

At the front end of the value chain, technology transfer will not be a profit center for academic institutions, which will focus on carrying out academe's proper role in enabling pure science for the public good. By the same token, **investors will not** be expected to **carry the burden of bringing interesting science to commercial readiness**.

This will **be paid for by taxpayers, disease- and healthcare-focused philanthropic capital, and private sector players investing in pre-competitive knowledge** (...) (or by) **public-private consortia** focused on building core tools and knowledge in the pre-competitive space.”

Asset Aggregators in Deutschland:



Neue Wirkstoffe
gegen neurologische Erkrankungen



Define 'regenerative medicine'

Cell based **and** ***drug based***

therapeutic approaches

**aiming to protect, replace or restore damaged cells,
tissues and organs by**

biological replacement

or

activation of endogenous stem cells

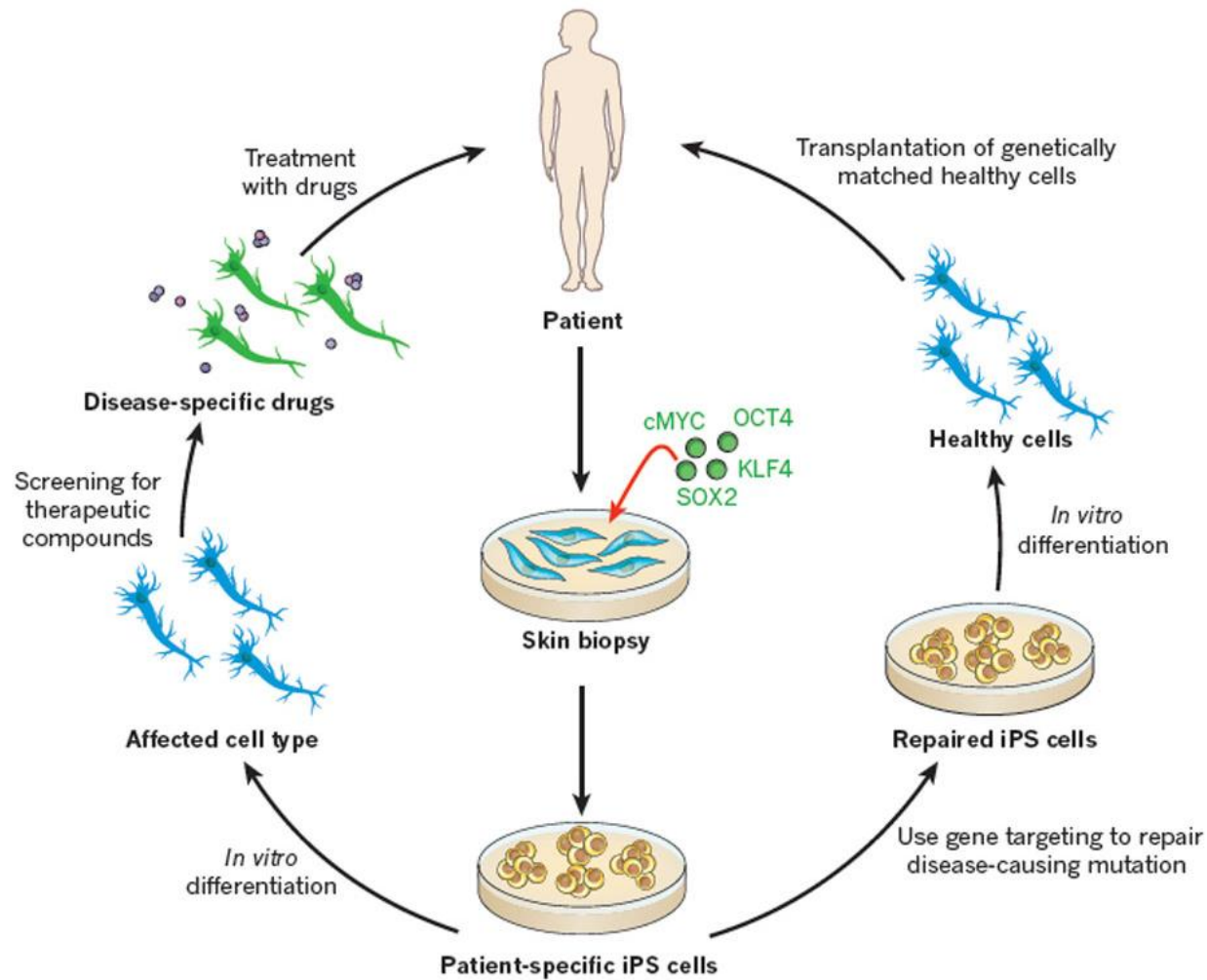
- Individualized/personalized (cell-)therapy
- Precision Medicine

- blockbuster potential

in vivo reprogramming

- blockbuster potential

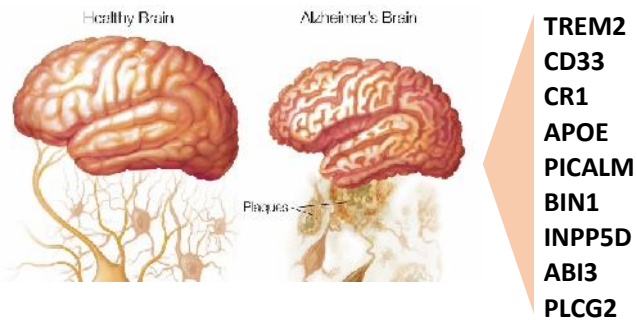
Induced pluripotent stem cells (iPSC)



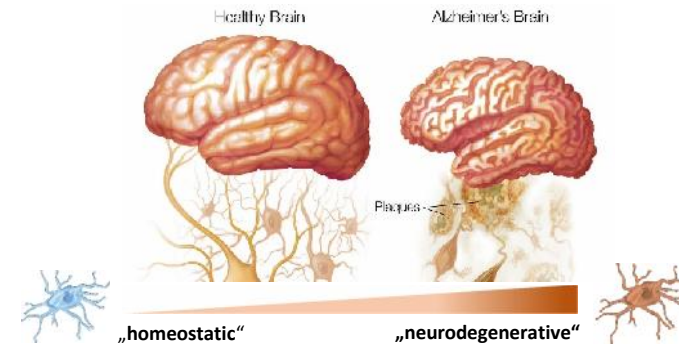
Genome Engineering
CRISPR-cas

„Microglia“ in Neurodegeneration/Neuropsychiatry

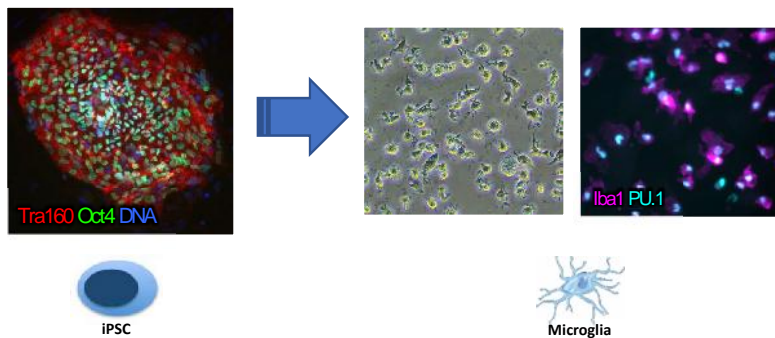
A Genetic studies link microglia dysfunction to neurodegenerative disease.



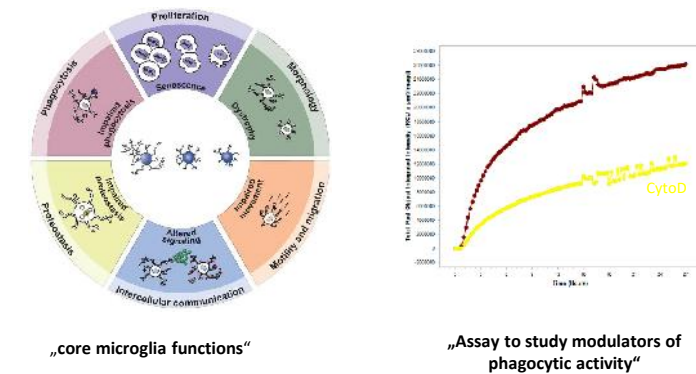
B Microglia turn into a hyperreactive state during aging or neurodegenerative diseases.



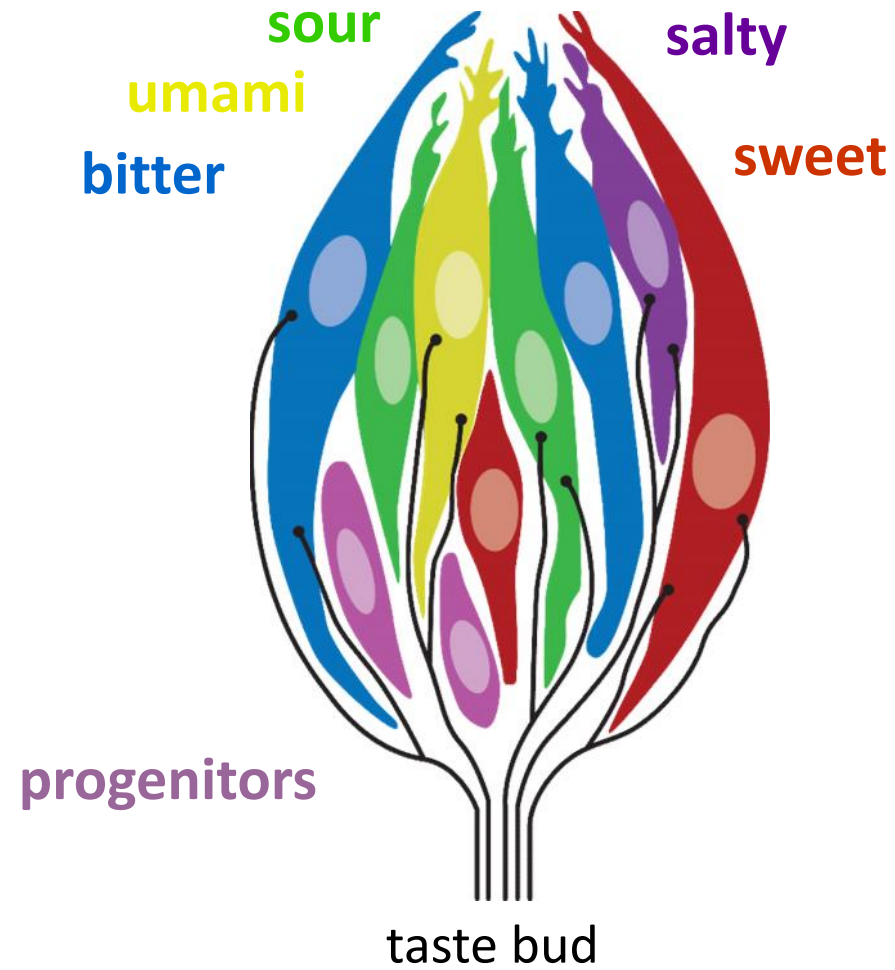
C Human iPSC-derived microglia to establish physiological meaningful model.



D Development of assays to study therapeutic approaches to model microglial function.



Human Taste Cells as “Chemosensory Model System”



Priority program "Taste Modulation"

16.8 Bill. €

Healthcare cost treatment of malnutrition in Germany
Sugar (8,6 Bill. €), Salt (5,3 Bill. €), Fat (2,9 Bill. €)

13.3 Bill. USD

US market sugar substitutes

(corresp. to approx. 22% total market
sweetener)

70g

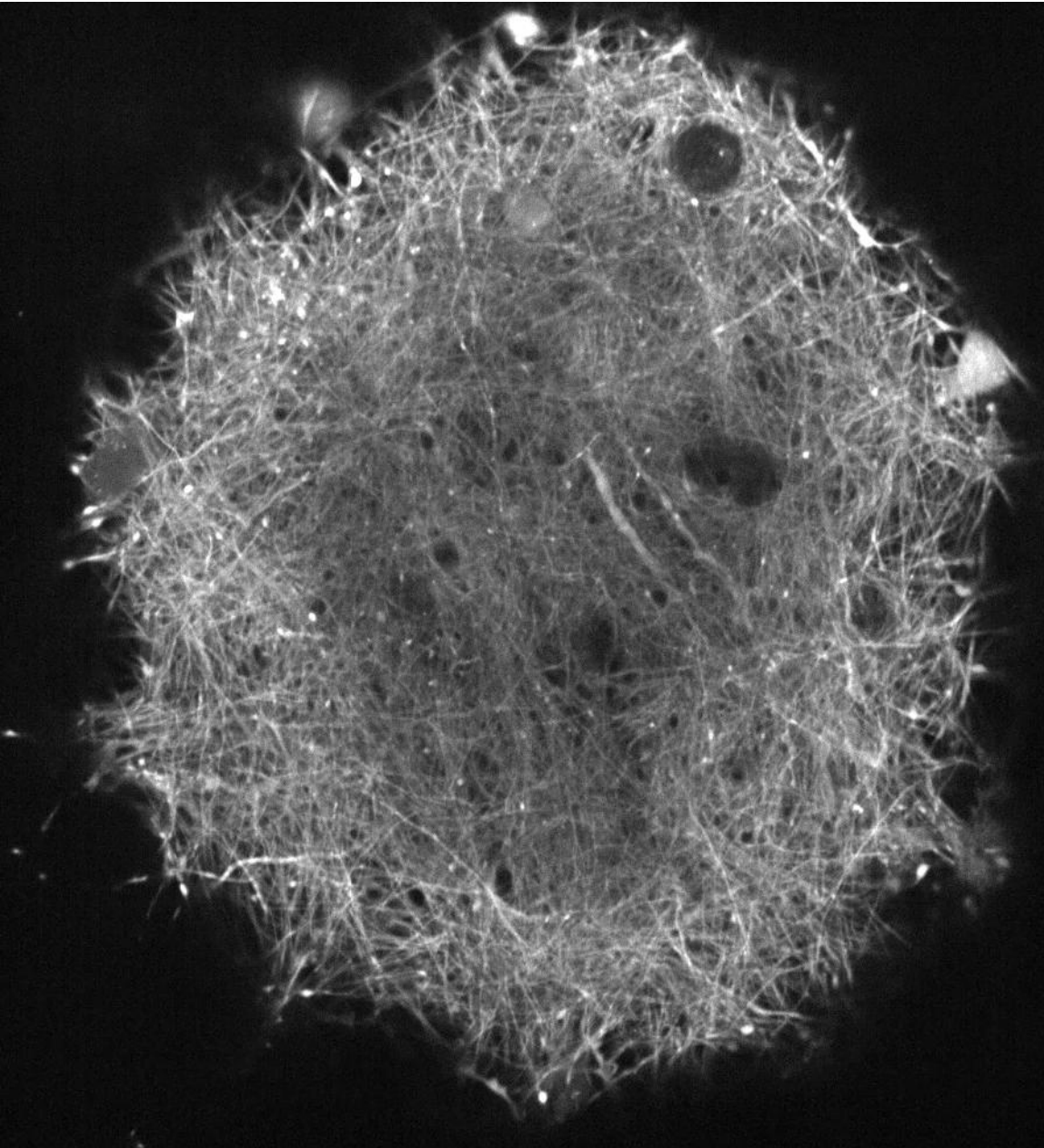
Sugar consumption per person
and day

Pressing need in pharma and
food & beverage industries:
Chemosensory/disease models to
identify modulators of taste and
metabolism

8.6 Bill. €

Healthcare cost caused by excessive sugar consumption
in Germany

Diabetes & Obesity
'DIABESITY'



„Spheroids“

3D cell technology is the next step forward in biomimetic biology, bridging the gap between in vitro and in vivo

1. Spheroid generation is automated
2. Homogenous in size, allowing automated handling
3. Preliminary assay development & characterization with quantifiable results

Jan M. Bruder, PhD
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Reprogram

build “The Next Generation of Cell Models” based on reprogramming of somatic cells to disease-relevant cell types, tissues and organoids

Refine

enhance discovery and development of effective medicines as well as bioactive molecules for industrial biotechnology applications

Regenerate

enable and support personalized and regenerative medicine solutions



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