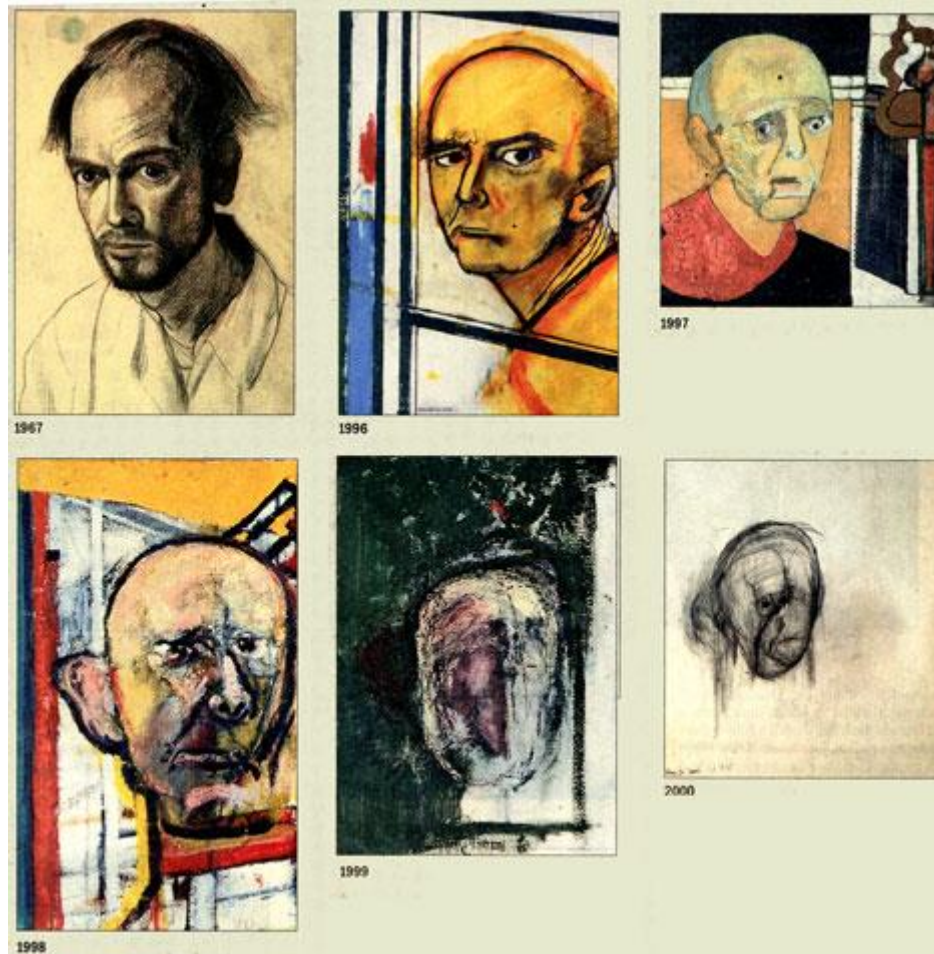


Anti-Neurodegenerative Effect of St. John's Wort (*Hypericum perforatum*)

Alzheimer's disease – Symptoms I



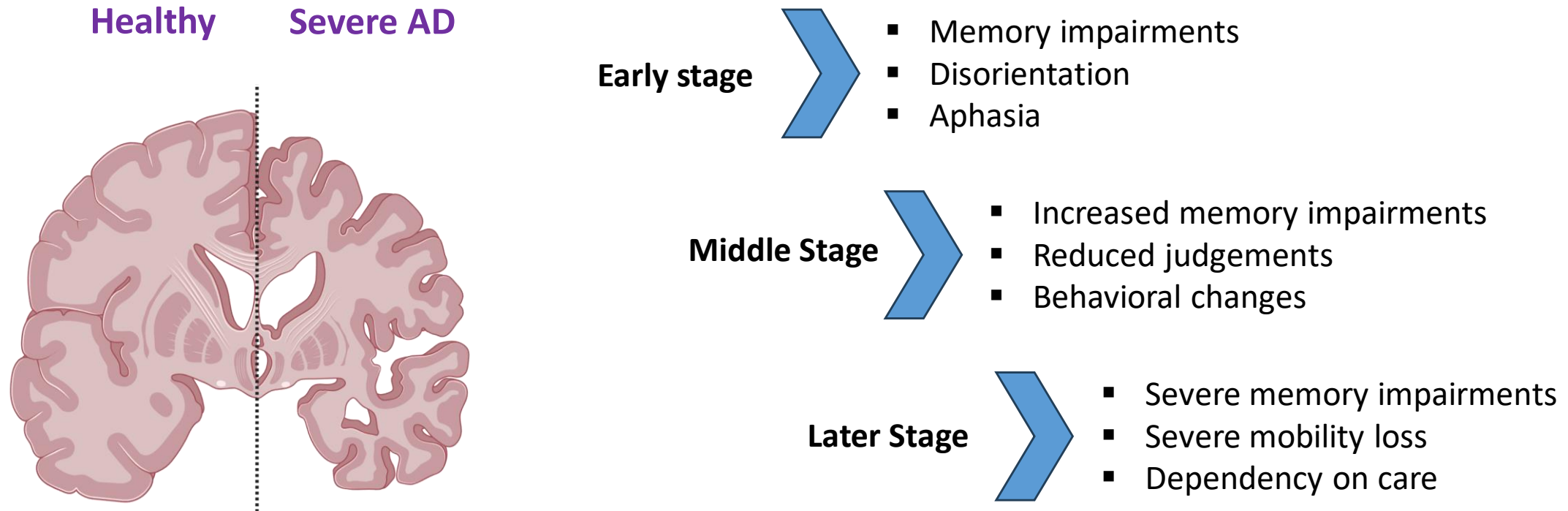
Self-portraits of the painter William Utermohlen:

- 1995 – Diagnosed with Alzheimer's Disease
- 2000 – last Portrait
- 2007†

Visible changes in painted portraits:

- Changes in style
- Simplification and abstraction
- Deterioration of skills

Alzheimer's disease – Symptoms II



Alzheimer's disease – Epidemiology



- 525.000 Dementia patients in Poland

Alzheimer's disease – Epidemiology



- 525.000 Dementia patients in Poland
- Approximately 3 out of 200 people in Poland are affected by dementia

Alzheimer's disease – Epidemiology

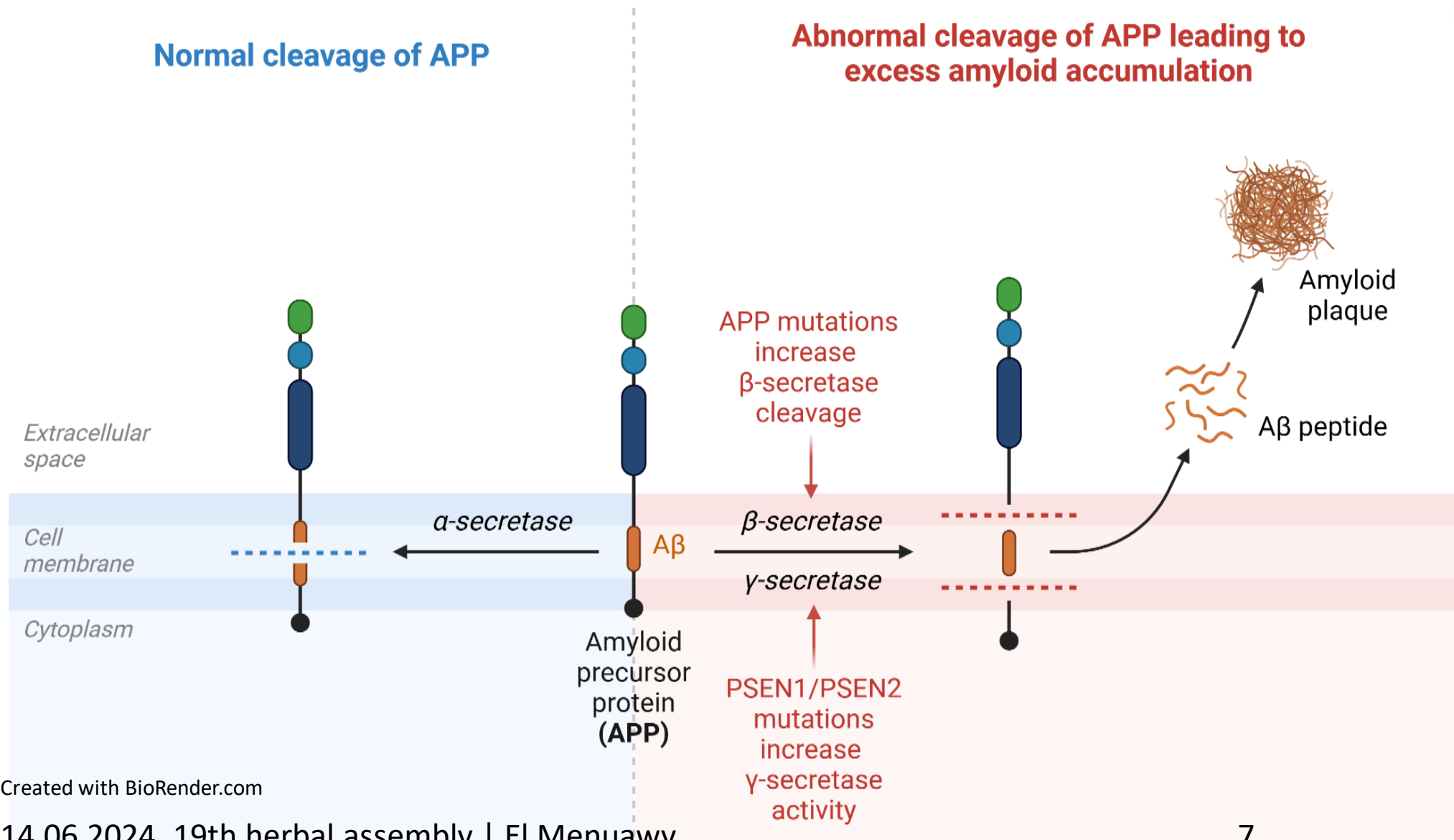


- 525.000 Dementia patients in Poland
- Approximately 3 out of 200 people in Poland are affected by dementia
- Approximately 250.000 Alzheimer's patients in Poland → 1.5 out of 200 people
- 50% of all Dementia patients have Alzheimer's Disease in Poland
- Posnan has statistically 3555 Alzheimer's patients
- Germany has twice the incidents!

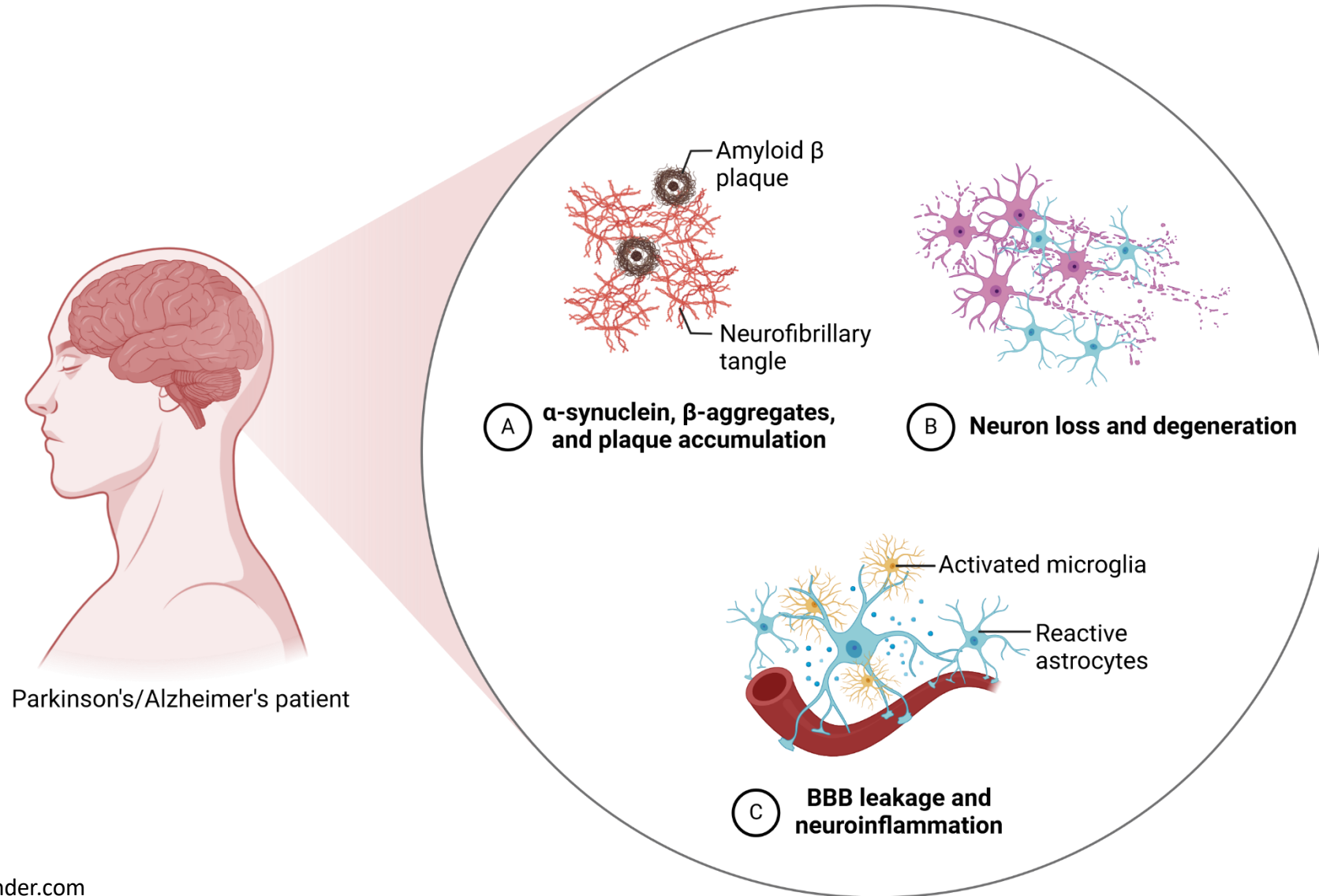


Very prevalent disease!

Amyloid Pathway – Pathophysiology I



Plaques Accumulation – Pathophysiology II



Therapy – AD

Symptomatic Treatment:

- Acetylcholinesterase-Inhibitors → Normalization of acetylcholine concentration
- NSAIDS → Anti-inflammatory
- NMDA receptor antagonist → Normalize signal transmission

Causal Treatment:

- Amyloid β -Antibody (z.B. Lecanemab)

> J Alzheimers Dis. 2023;92(3):799-801. doi: 10.3233/JAD-230040.

Playing Russian Roulette with Alzheimer's Disease Patients: Do the Cognitive Benefits of Lecanemab Outweigh the Risk of Edema, Stroke and Encephalitis?

Craig S Atwood¹, George Perry²

Affiliations + expand

PMID: 36847013 DOI: 10.3233/JAD-230040

FULL TEXT LINKS



ACTIONS

“ Cite

🔖 Collections

SHARE

nature

Explore content ▾

About the journal ▾

Publish with us ▾

Subscribe

[nature](#) > [news](#) > article

NEWS | 07 January 2023 | Correction [10 January 2023](#)

FDA approves Alzheimer's drug lecanemab amid safety concerns

Reports of deaths potentially linked to the treatment have cast a shadow on what many hail as a landmark approval.

Therapy – AD

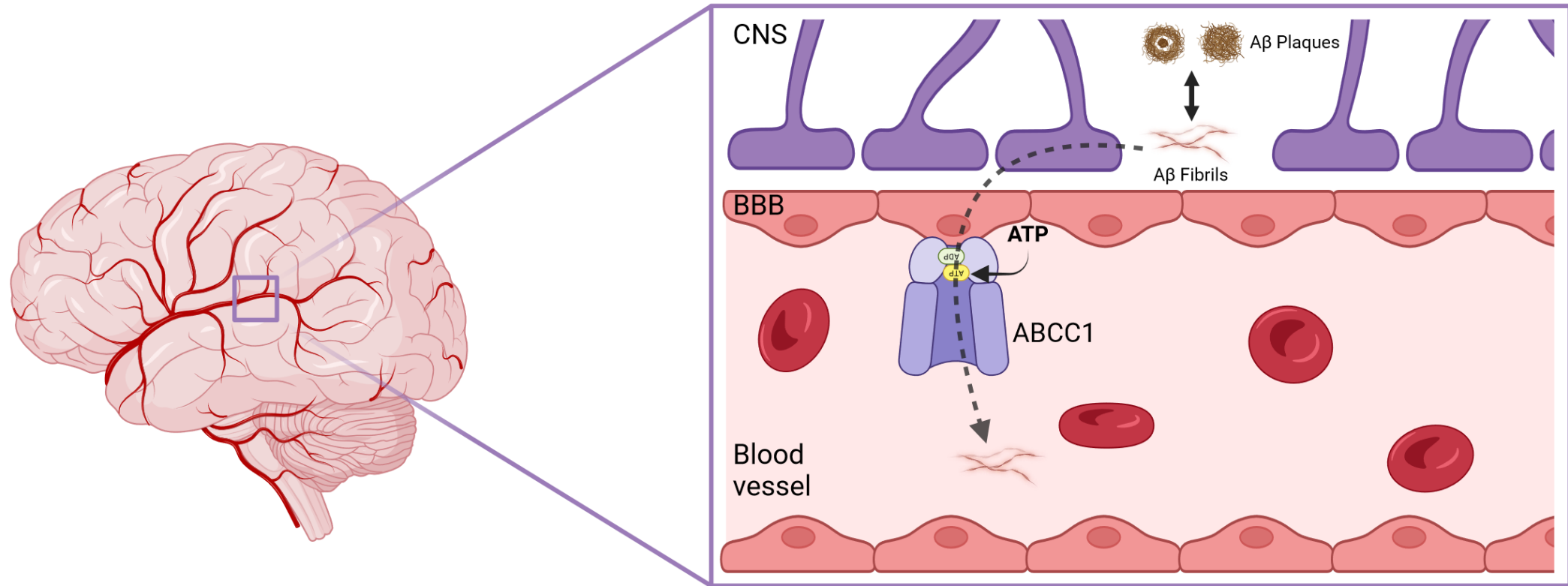
Symptomatic Treatment:

- Acetylcholinesterase-Inhibitors → Normalization of acetylcholine concentration
- NSAIDS → Anti-inflammatory
- NMDA receptor antagonist → Normalize signal transmission

Causal Treatment:

- Amyloid β -Antikörper (z.B. Lecanemab)
- **ABC-Transporter Activation**

Mechanism of Action – ABC-Transporter activation



Therapy – AD

Symptomatic Treatment:

- Acetylcholinesterase-Inhibitors → Normalization of acetylcholine concentration
- NSAIDS → Anti-inflammatory
- NMDA receptor antagonist → Normalize signal transmission

Causal Treatment:

- Amyloid β -Antibody (z.B. Lecanemab)
- **ABC-Transporter Activation**
 - *Hypericum perforatum?*



NIH Public Access

Author Manuscript

Curr Alzheimer Res. Author manuscript; available in PMC 2014 February 03.

Published in final edited form as:

Curr Alzheimer Res. 2013 December ; 10(10): 1057–1069.

Reduced Alzheimer's disease pathology by St. John's wort treatment is independent of hyperforin and facilitated by ABCC1 and microglia activation in mice

Jacqueline Hofrichter^{1,*}, Markus Krohn^{1,*}, Toni Schumacher¹, Cathleen Lange¹, Björn Feistel², Bernd Walbroel², Hans-Jochen Heinze^{1,3}, Sara Crockett⁴, Timothy F. Sharbel⁵, and Jens Pahnke^{1,3}

Hypericum perforatum – St. John's Wort



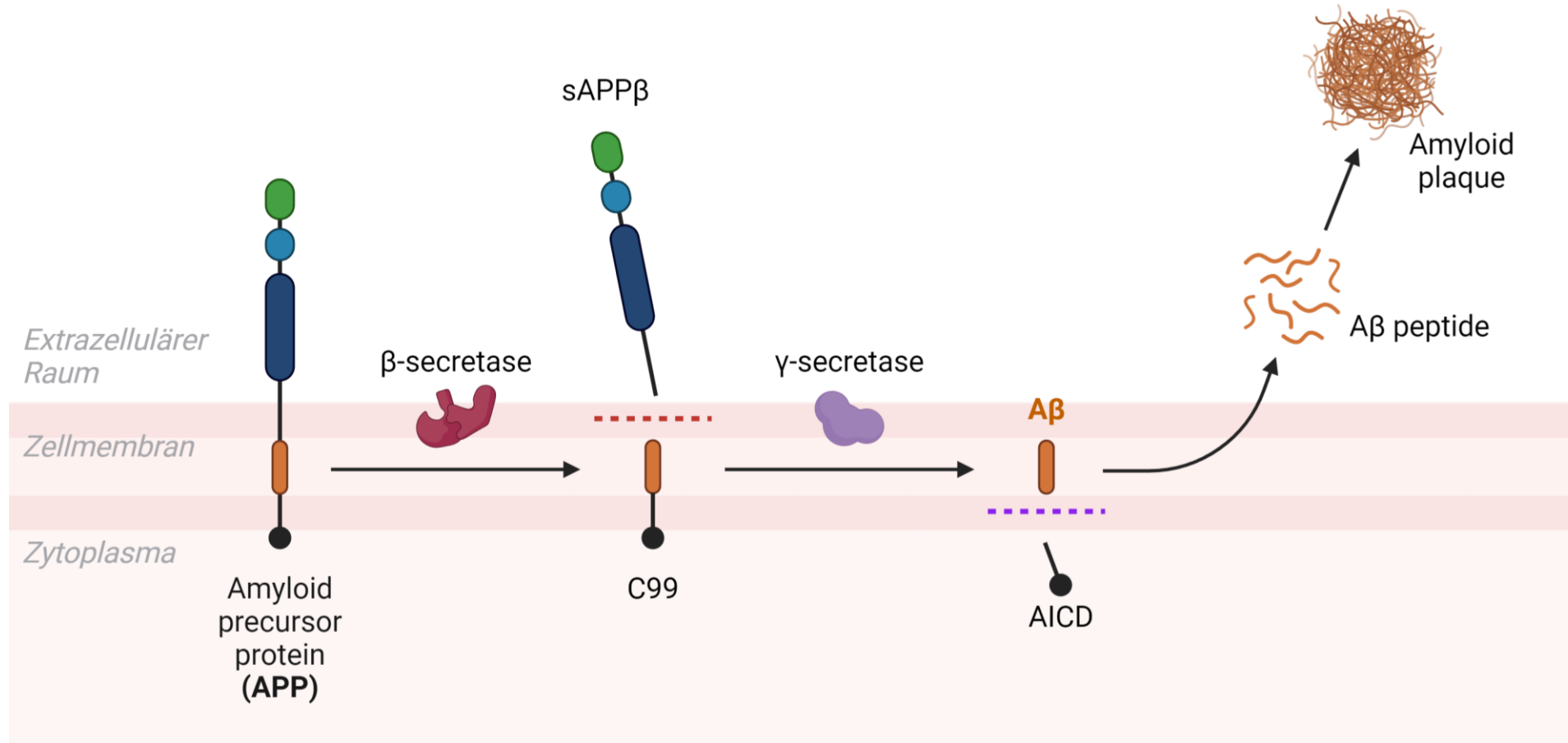
- Perennial herbaceous pioneer plant
- EuAB monograph - medicinal plant
- Traditionally used as an antidepressant, anti-infective, and anti-inflammatory
- Use of the herb – especially flowers and buds

Hypericum perforatum – St. John's Wort

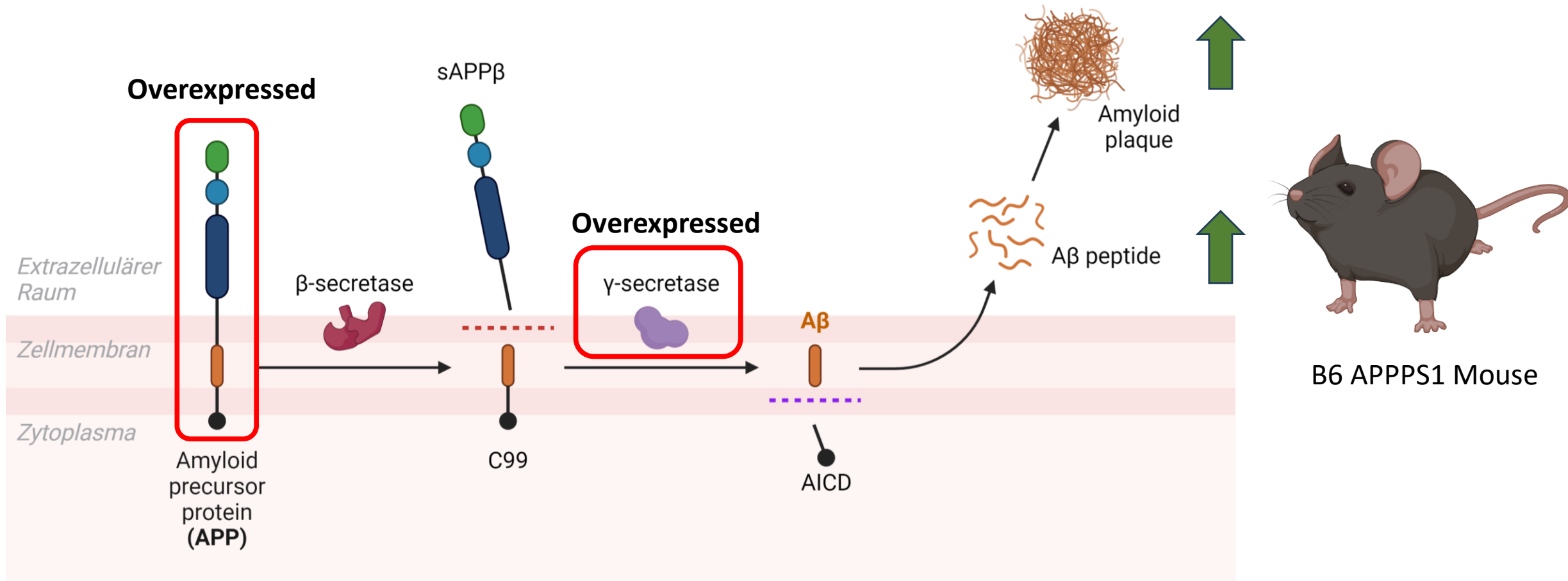


Core quest: Which active ingredients are potential ABC activators?

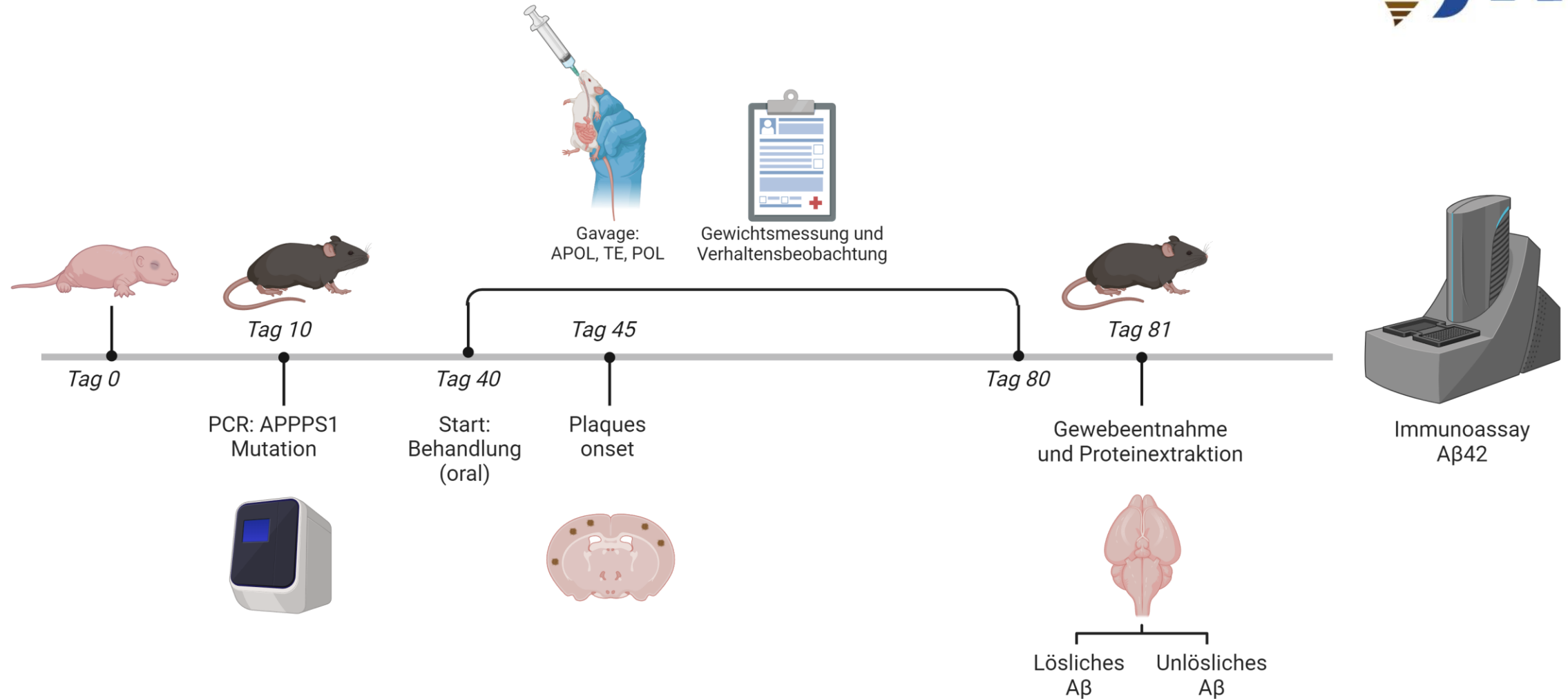
API Identification – In vivo Testmodell I



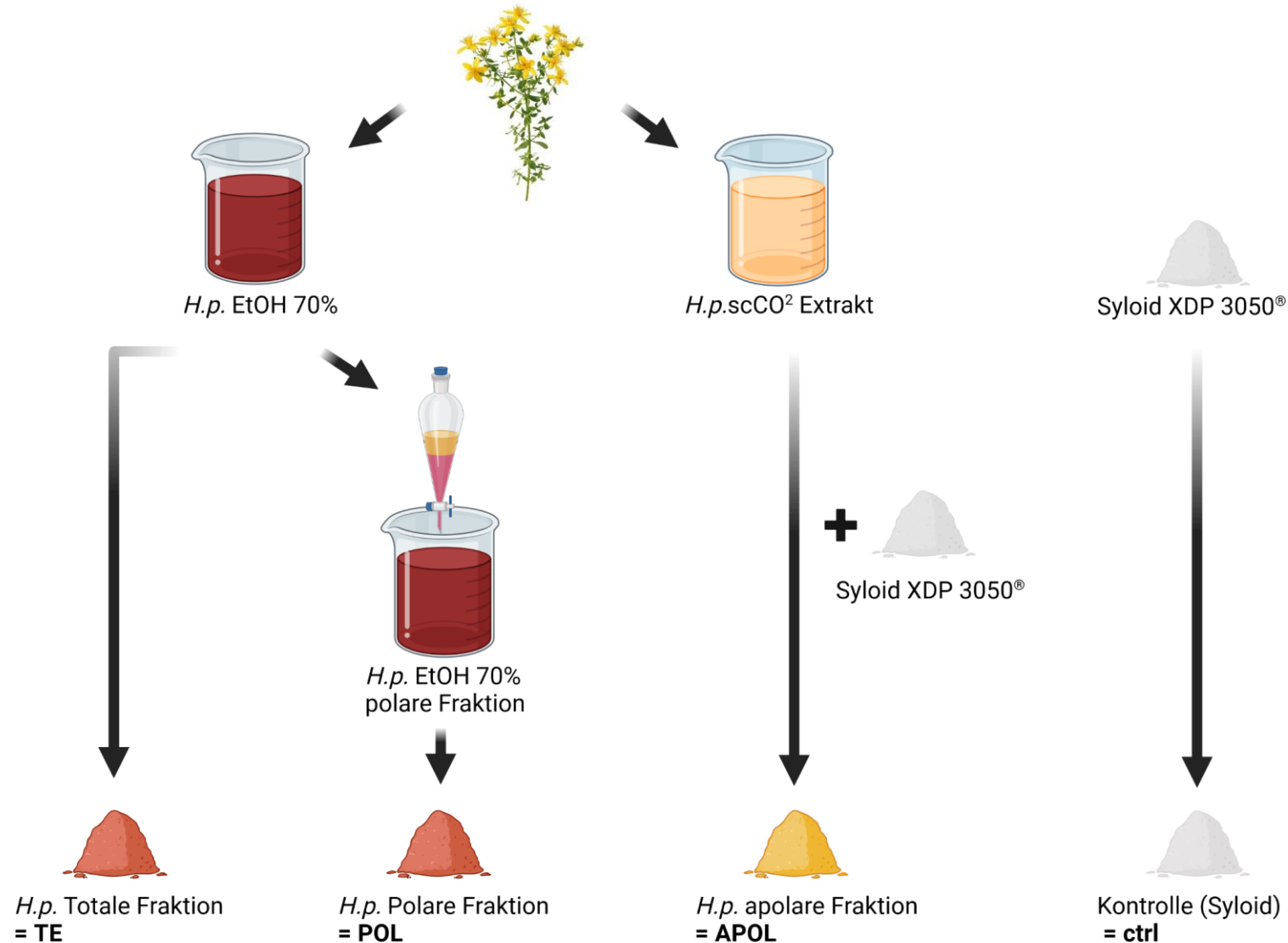
API Identification – In vivo Testmodell I



API Identification – In vivo Testmodell II

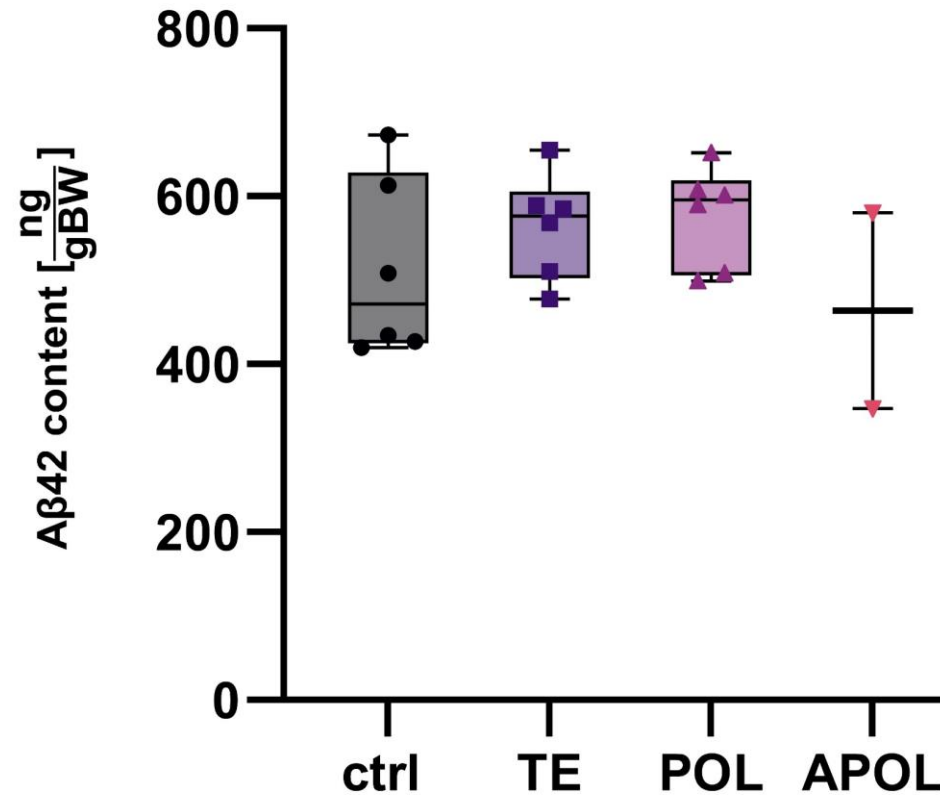
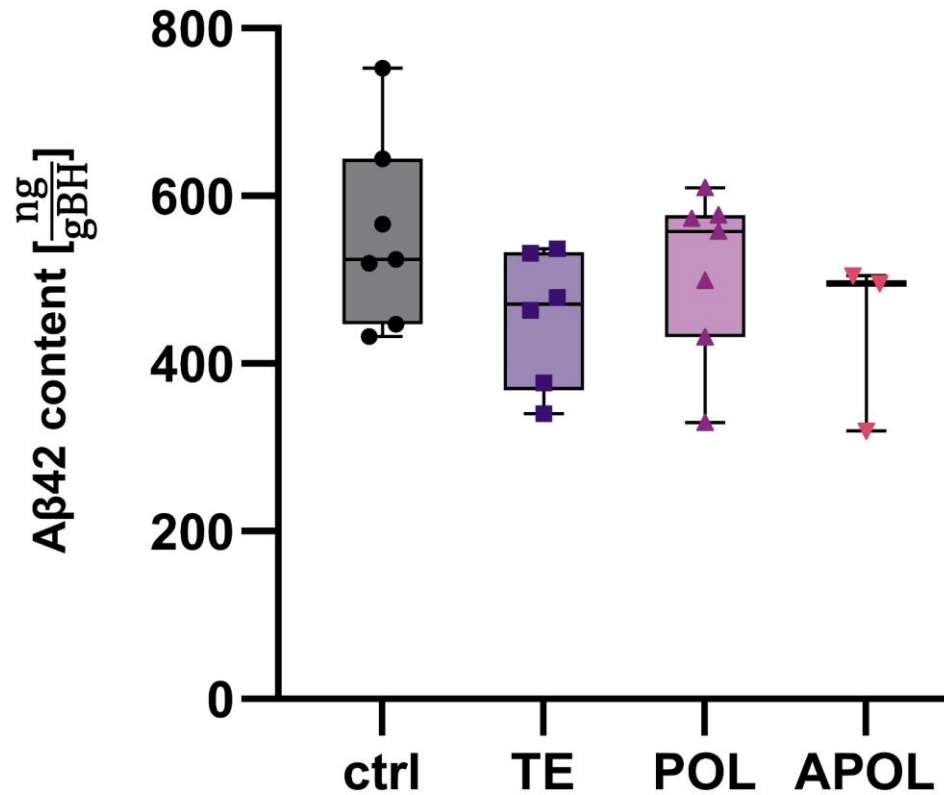


API Identifizierung – Extraktion u. Fraktionierung

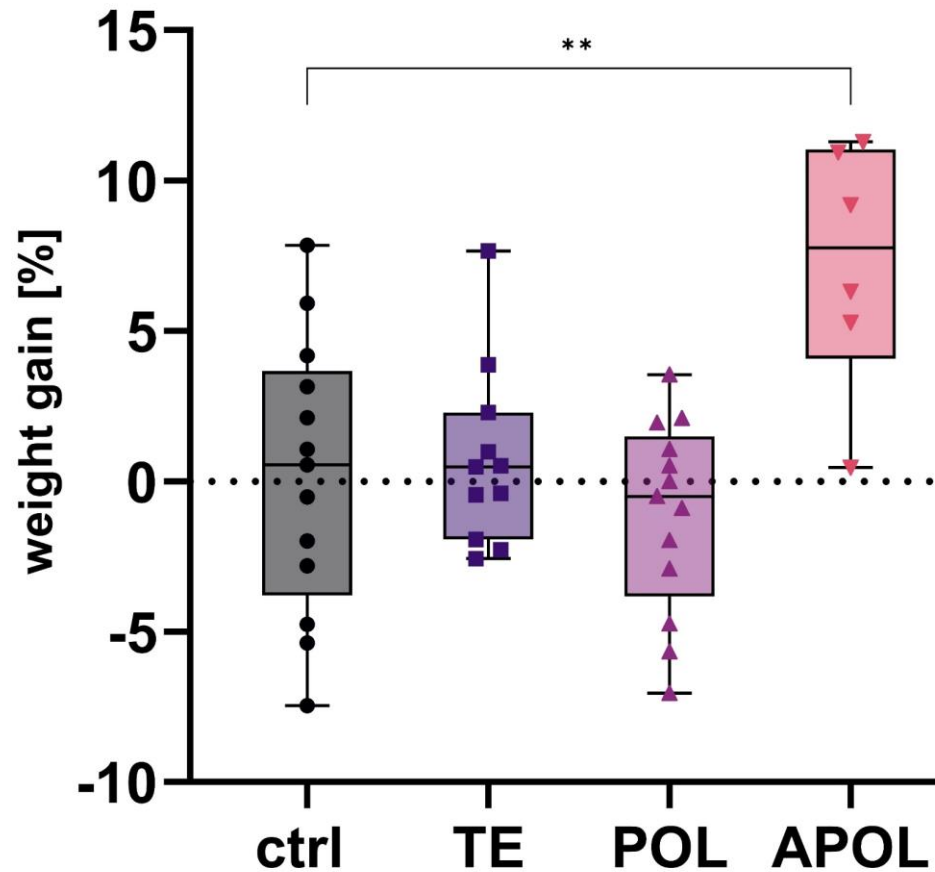


- 4 Preparations (TE, POL, APOL, ctrl)
- Orale gavage with Suspensions in 1,5% Methylcellulose_(aq)

API Identification – Fraction screening I

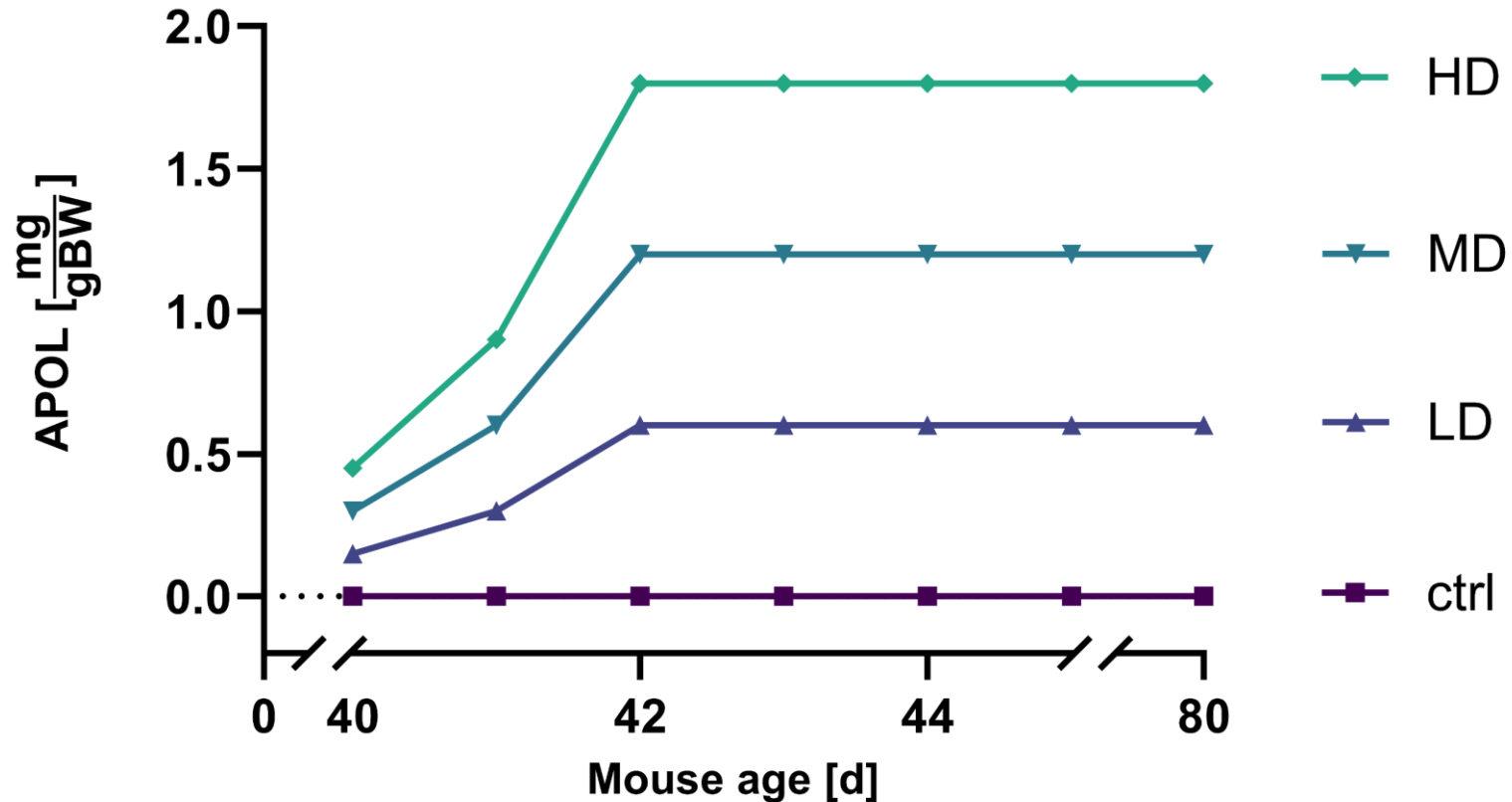


API Identification – Fraction screening II



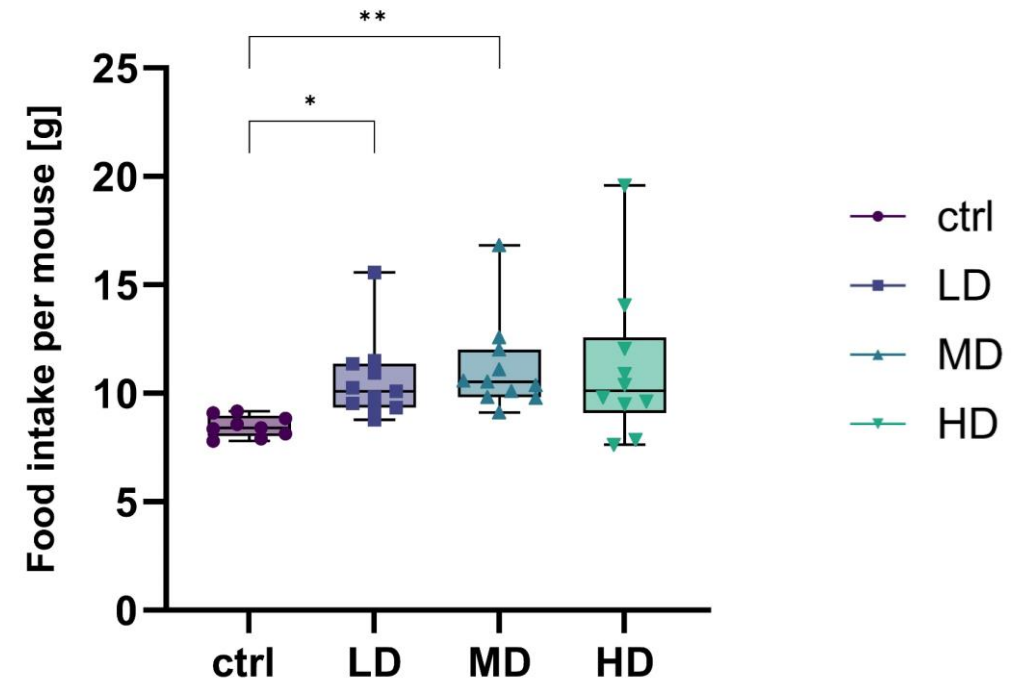
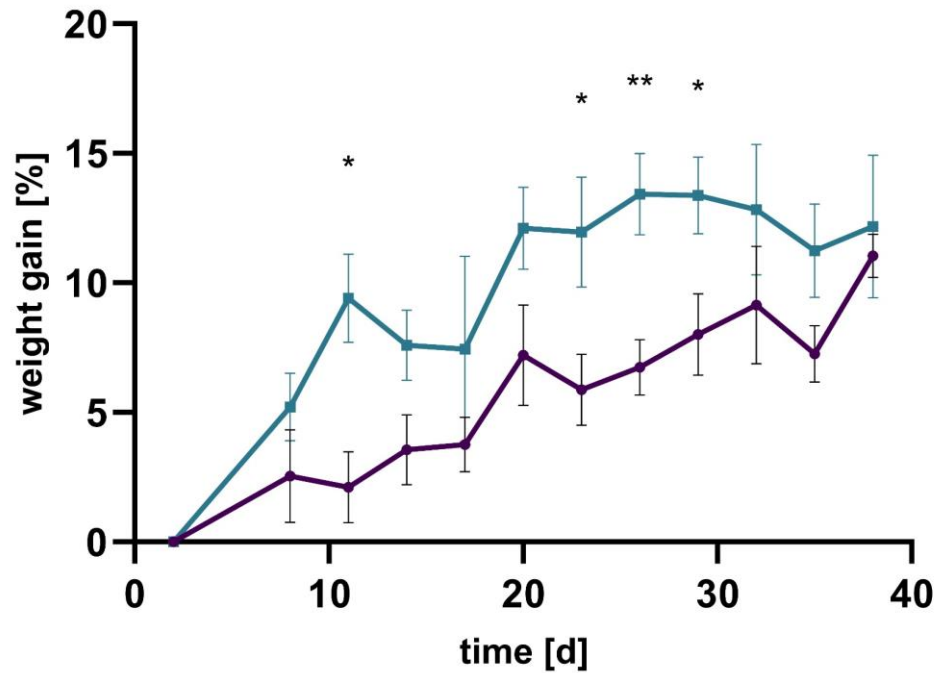
- APOL shows significant changes in bodyweight
- Altered behaviour → higher activity
- Hints of improved general condition → **further experiments needed**

API Identification – APOL Dosage Adjustment



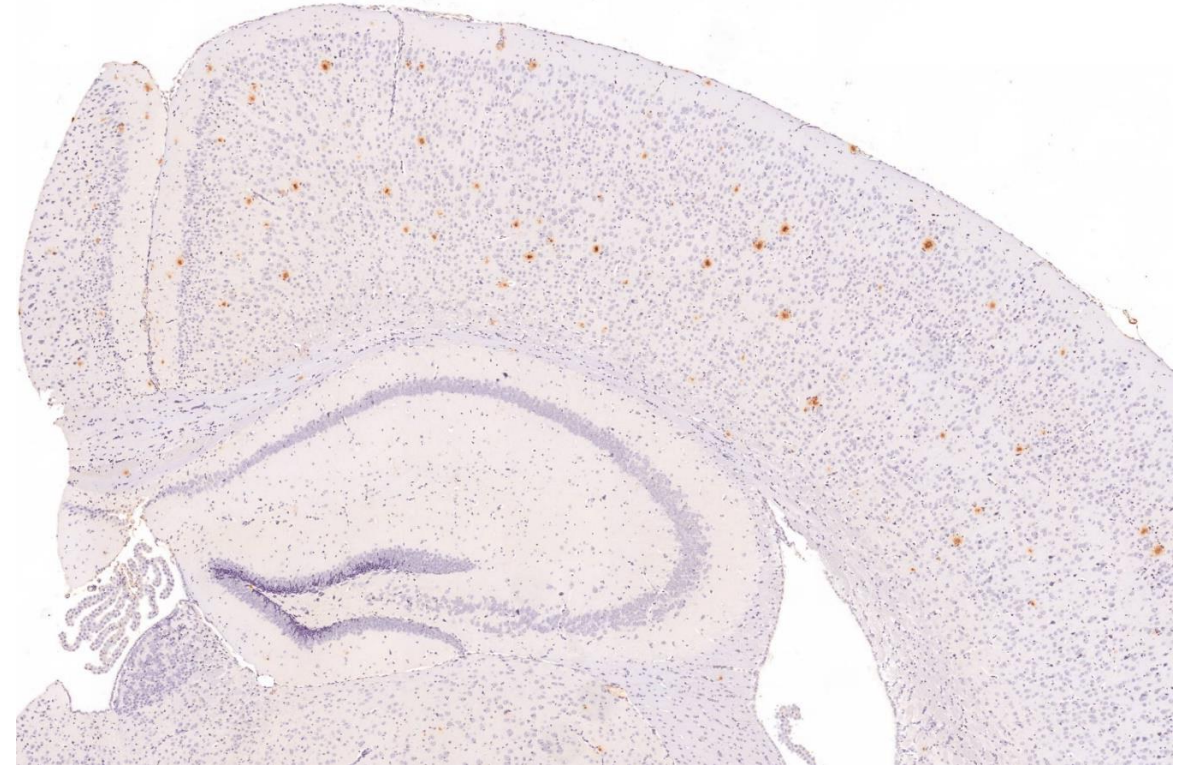
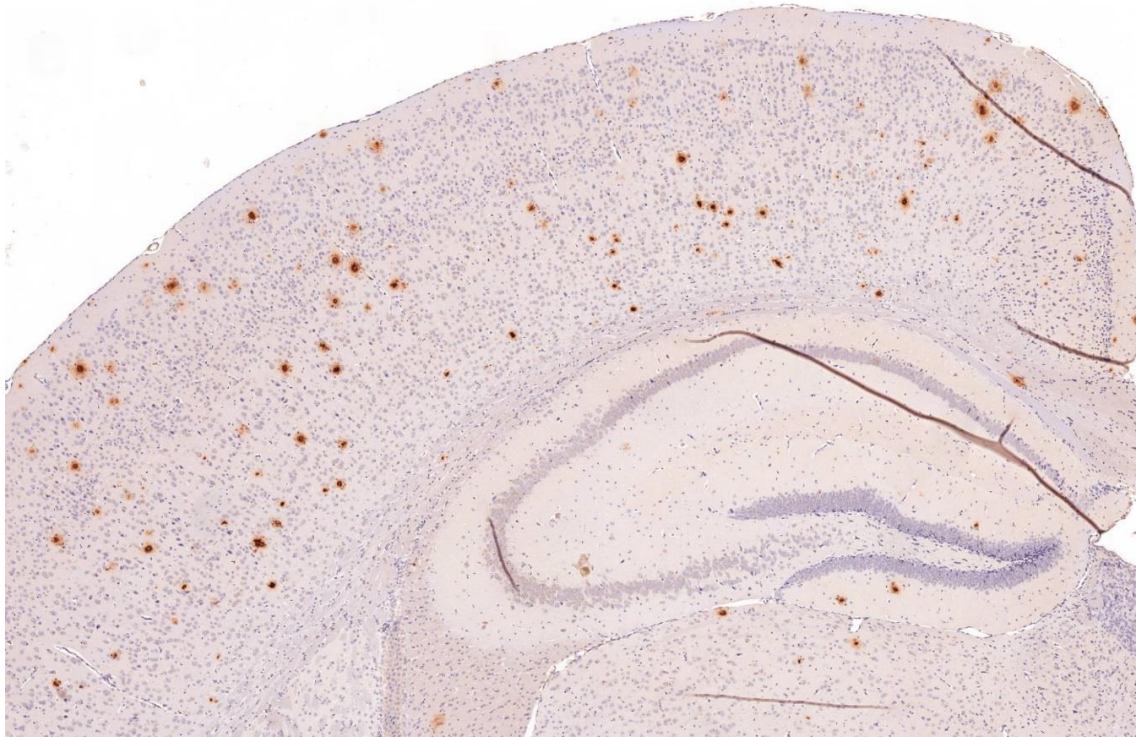
- Repeated experiment in 3 repetitions
- 3 different concentration (HD, MD, LD)

API Identification – APOL Results I

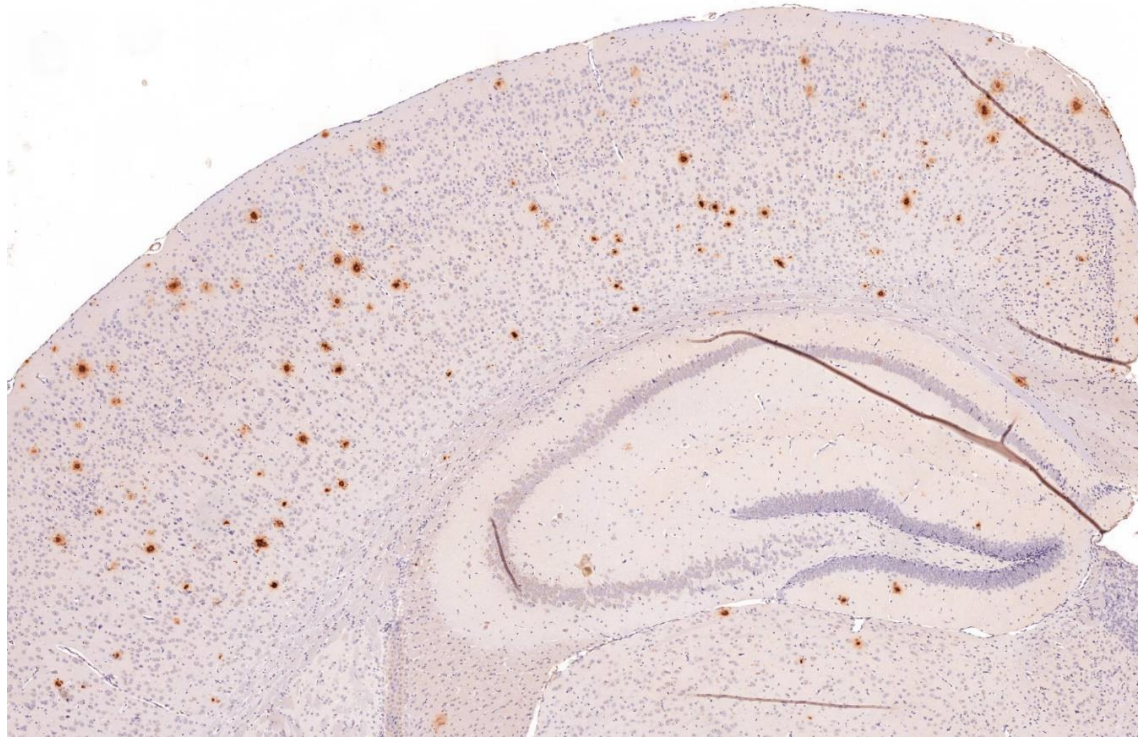


Higher Food intake and higher Bodyweight → Positive alteration of behaviour

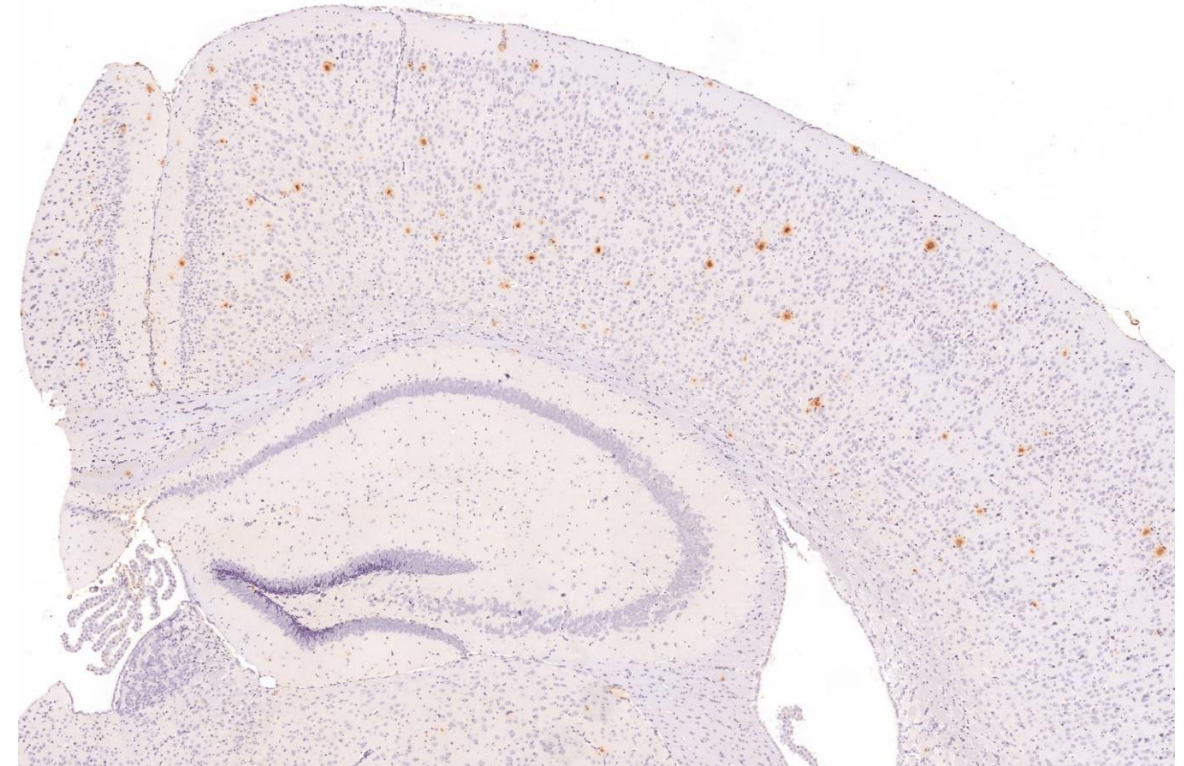
API Identification – APOL Results I



API Identification – APOL Results II

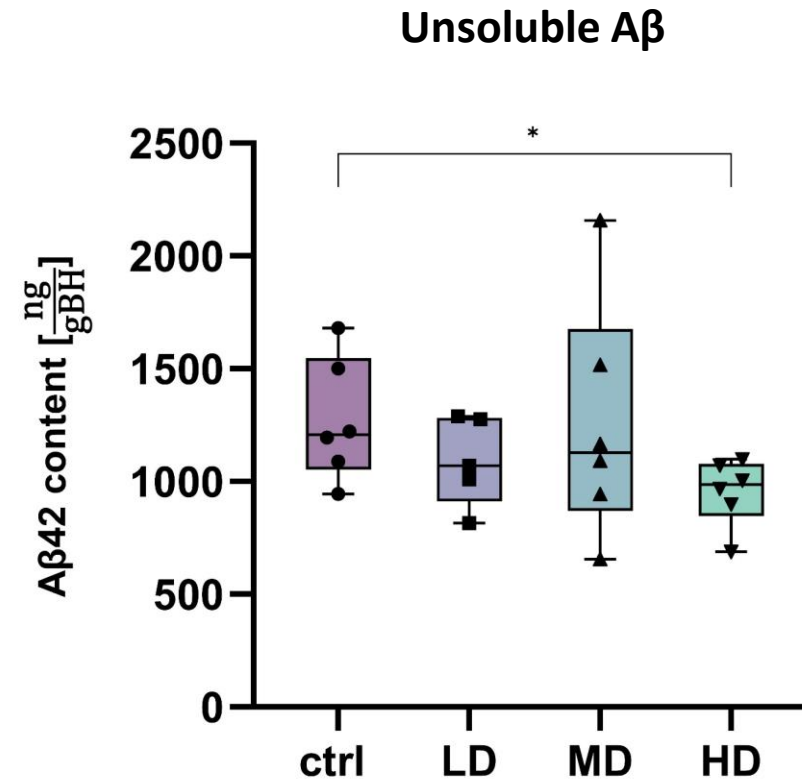
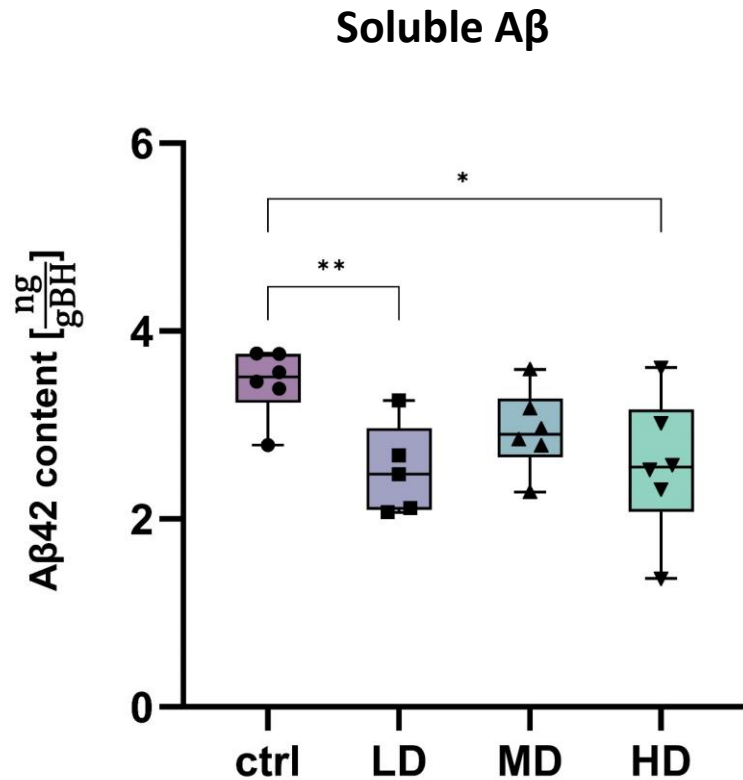


Cross-section: 4G8 stain of *B6/APPPS1* brain hemisphere (80 days) treated with 1.5% Methylcellulose



Cross-section: 4G8 stain of *B6/APPPS1* brain hemisphere (80 days) treated with 1,5% Methylcellulose + APOL

API Identification – APOL Results III



Soluble and insoluble A β 42 is significantly reduced by ~20% in brain samples



Article

Apolar Extracts of St. John's Wort Alleviate the Effects of β -Amyloid Toxicity in Early Alzheimer's Disease

Ahmed El Menuawy ^{1,2}, Thomas Brüning ¹ , Iván Eiriz ¹, Urs Hähnel ², Frank Marthe ² , Luisa Möhle ¹, Anna Maria Górska ¹, Irene Santos-García ¹, Helle Wangenstein ³ , Jingyun Wu ¹ and Jens Pahnke ^{1,4,5,6,*}

- ¹ Translational Neurodegeneration Research and Neuropathology Lab/Section of Neuropathology Re Department of Pathology, Medical Faculty/KlinMED, University of Oslo (UiO) and Oslo University Hospital (OUS), Sognsvannsveien 20, 0372 Oslo, Norway
- ² Institute for Breeding Research on Horticultural Crops, Julius Kühn Institute (JKI)—Federal Research for Cultivated Plants, Erwin-Baur Straße 27, 06484 Quedlinburg, Germany
- ³ Section for Pharmaceutical Chemistry, Department of Pharmacy, University of Oslo (UiO), Sem Sælan 0371 Oslo, Norway
- ⁴ Institute of Nutritional Medicine (INUM) and Lübeck Institute of Dermatology (LIED), University of Lübeck (UzL) and University Medical Center Schleswig-Holstein (UKSH), Ratzeburger Allee 160, 23538 Lübeck, Germany
- ⁵ Department of Pharmacology, Faculty of Medicine, University of Latvia, Jelgavas iela 3, 1004 Rīga, L.
- ⁶ Department of Neurobiology, School of Neuroscience, Biochemistry and Biophysics, The Georg S. W Faculty of Life Sciences, Tel Aviv University, Tel Aviv 6997801, Israel
- * Correspondence: jens.pahnke@gmail.com; Tel.: +47-23071466

Abstract: *Hypericum perforatum* (St. John's wort) has been described to be beneficial for the tre:



Take Home Message



- 1) St. John's Wort (*Hypericum perforatum*) shows causal effects in animal studies.
- 2) The active ingredients are found in the apolar extract.
- 3) Titration with highly concentrated Hypericum formulations increases safety and efficacy.

Thank you very much!

FNR e.V.

Prof. Dr. Frank Marthe

Prof Dr. Dr. Jens Pahnke

Konstantin Bradke

Dr. Sven Reichardt

Dr. Katrin Fitza

Dr. von Maydell

Beate Helmholz

Anne-Marie Stache

Katharina Mehle

Beate Kamm

Jenny Knibbiche

Kamal El Menuawy

...



Fachagentur Nachwachsende Rohstoffe e.V.

Gefördert durch:



Bundesministerium
für Ernährung
und Landwirtschaft

aufgrund eines Beschlusses
des Deutschen Bundestages

