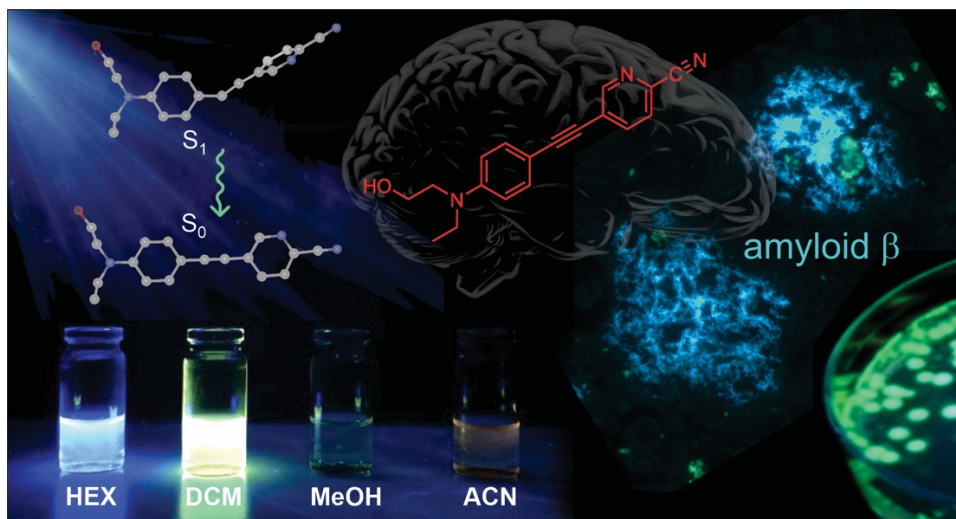# Fluorescent Probes for Alzheimer's Disease: Advancing Detection of Amyloid β Plaques

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Fluorescent probes are essential tools for visualizing molecular processes in living systems and have become particularly important in the study of neurodegenerative diseases. Alzheimer's disease (AD), characterized by the accumulation of amyloid β (Aβ) plaques, urgently requires sensitive and selective diagnostic methods [1]. Recent research by Prof. Dr. Košmrlj and colleagues presents the synthesis and detailed characterization of 21 novel fluorescent probes targeting Aβ aggregates. Among them, one probe demonstrated large Stokes shifts, high quantum yields, and low micromolar binding affinity to Aβ fibrils. The probe showed a remarkable fluorescence increase upon binding to Aβ fibrils, with its selectivity confirmed in cell-based assays and on *postmortem* AD brain tissue. Computational studies further explained the probe's photophysical behaviour. These findings suggest potential for next-generation fluorescent probes in the early detection and monitoring of AD [2].

[1] Dunyan Su, Wei Diao, Jie Li, Lili Pan, Xiaoyang Zhang, Xiaoai Wu, Wuyu Mao. Strategic Design of Amyloid-β Species Fluorescent Probes for Alzheimer's Disease. *ACS Chem. Neurosci.* **2022**, 13, 540-551.

[2] Luka Rejc, Damijan Knez, Gabriela Molina-Aguirre, Alba Espargaró, Jerneja Kladnik, Anže Meden, Lana Blinc, Matic Lozinšek, Ross D. Jansen-van Vuuren, Matic Rogan, Bruno Aleksander Martek, Jernej Mlakar, Ana Dremelj, Andrej Petrič, Stanislav Gobec, Raimon Sabaté, Mara Bresjanac, Balazs Pinter, Janez Košmrlj. Probing Alzheimer's pathology: Exploring the next generation of FDDNP analogues for amyloid β detection. *Biomed. Pharmacother* **2024**, 175, 116616.