

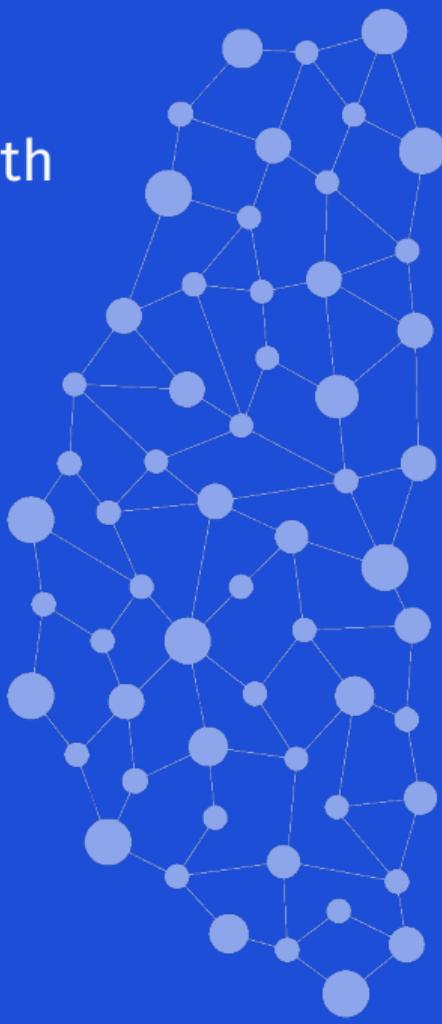
Supporting treatment decisions for patients with Alzheimer's disease using explainable artificial intelligence

Norway Life Science, 10th February 2026



Esten H. Leonardsen

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Postdoctoral research fellow,
Department of Psychology,
University of Oslo



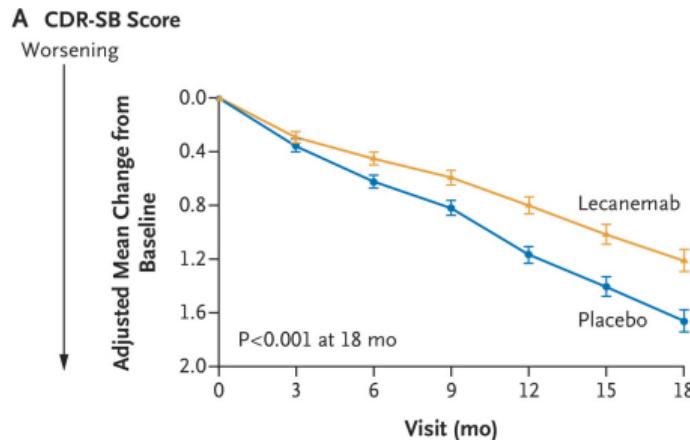
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New treatment options for Alzheimer's disease

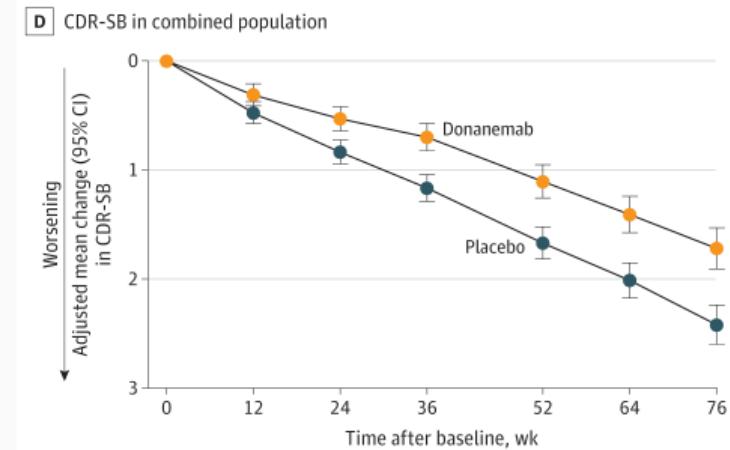


**European Medicines Agency reviews
and revises its opinion on Lecanemab**

New treatment options for Alzheimer's disease



Van Dyck, C. H., Swanson, C. J., Aisen, P., Bateman, R. J., Chen, C., Gee, M., ... & Iwatsubo, T. (2023). Lecanemab in early Alzheimer's disease. *New England Journal of Medicine*, 388(1), 9-21.

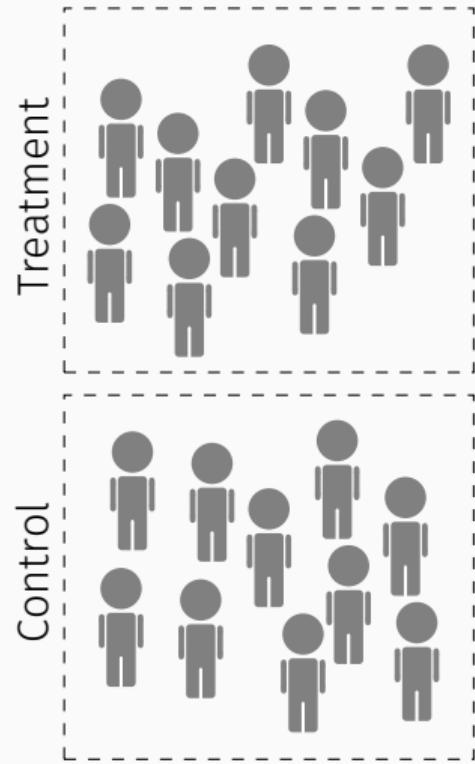


Sims, J. R., Zimmer, J. A., Evans, C. D., Lu, M., Ardayfio, P., Sparks, J., ... & Kaul, S. (2023). Donanemab in early symptomatic Alzheimer disease: the TRAILBLAZER-ALZ 2 randomized clinical trial. *JAMA*, 330(6), 512-527.

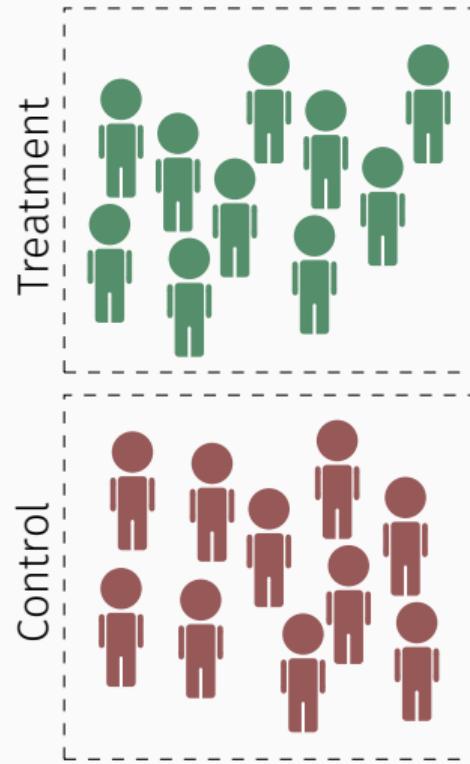
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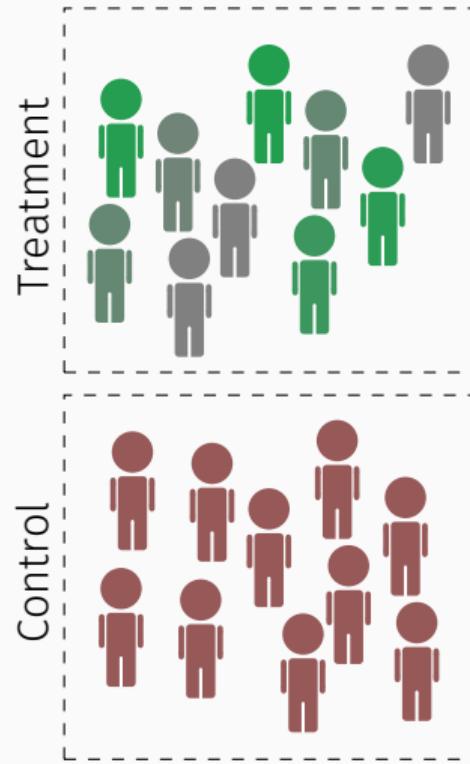
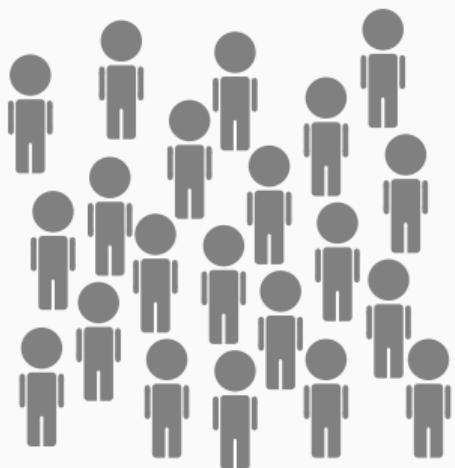
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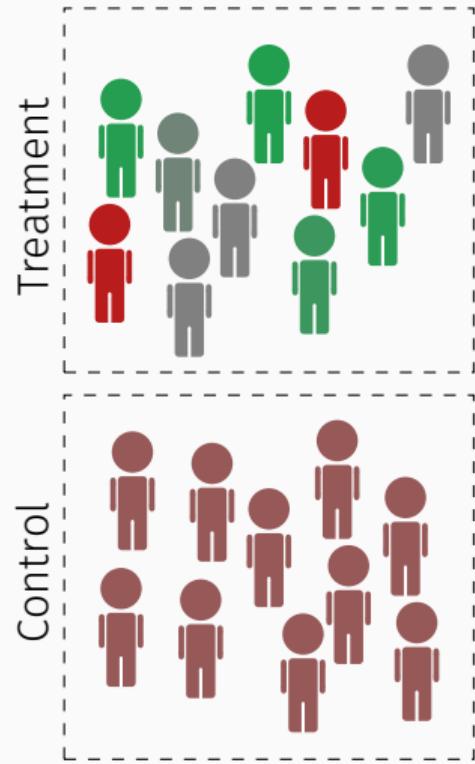
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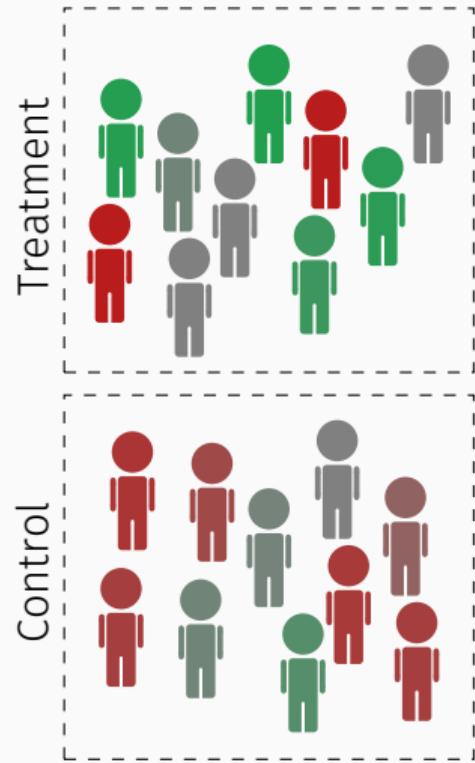
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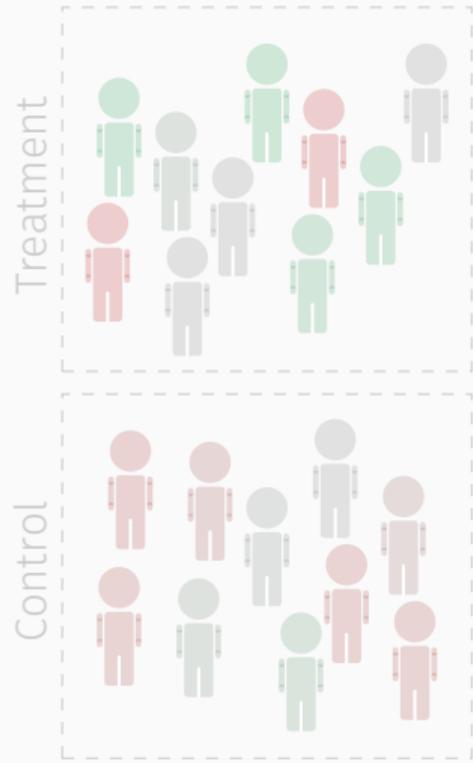
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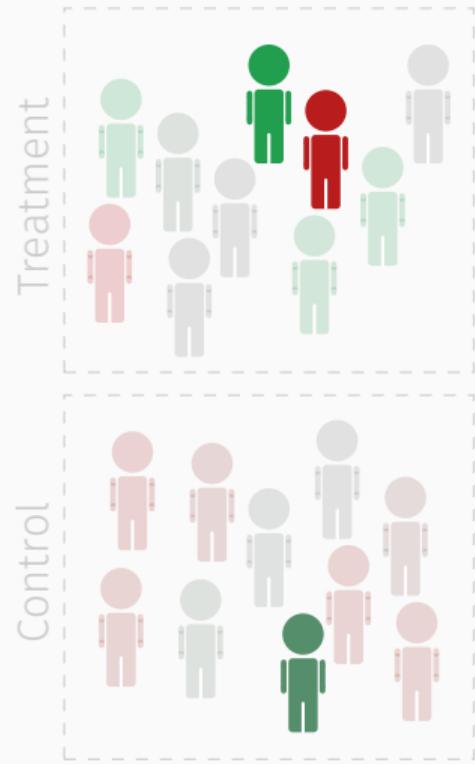
New treatment options for Alzheimer's disease



New treatment options for Alzheimer's disease



New treatment options for Alzheimer's disease



New treatment options for Alzheimer's disease

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Home Patients Reports Patient Astrid Holm Female / Age: 68 Timeline Baseline 2030-07-04

Findings

MRI
Modality T1
June 17, 2030

Cognitive Scores
MMSE 28
June 10, 2030

Digital biomarkers
Speech Value
June 17, 2030

Genetic Markers
APOE4 Negative
May 12, 2030

Marker
Value
May 12, 2030

Biological Tests
pTau217 Percentile
May 12, 2030 90th

Aβ42/40 May 12, 2030 12th

NfL May 12, 2030 86th

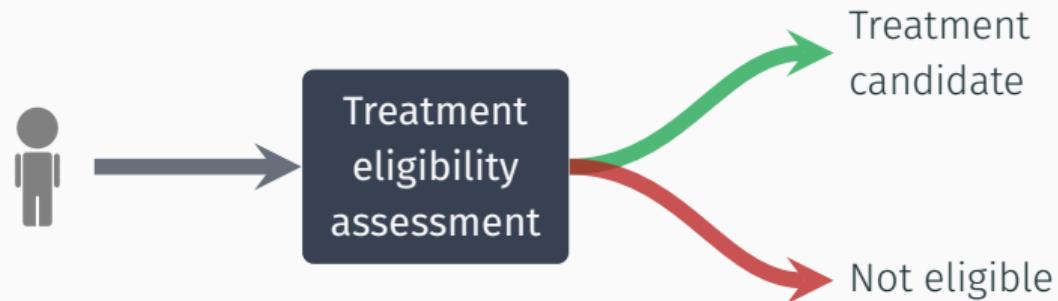
Lequembi
Patient View

Prognosis
AI-predicted treatment outcomes over 3 years.

Predicted treatment effect
5 months Delay in cognitive decline

Side effect risk
17% Moderate side effect risk

Treatment eligibility



MRI-based contraindications

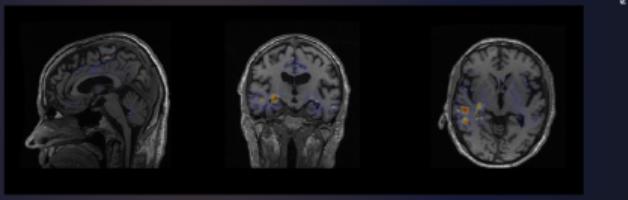
- A history of macrohemorrhages
- More than 4 microhemorrhages
- Evidence of superficial siderosis
- Evidence of brain vasogenic edema
- Significant white matter hyperintensities
- Multiple lacunar strokes
- Cerebral strokes involving a major vascular territory
- Central nervous system infection
- Evidence of cerebral contusion, encephalomalacia, brain aneurysms or other vascular malformations
- Brain tumors other than meningioma
- Arachnoid cysts
- Evidence of underlying cerebral amyloid angiopathy-related inflammation
- Evidence of A β -related angiitis

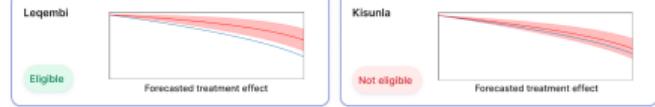
Treatment eligibility

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Home Patients Reports Patient Astrid Holms Female / Age: 68 Timeline Baseline 2026-01-01 Assessments MRI T1 January 1, 2026 T2 FLAIR January 1, 2026 T2* January 1, 2026 SWI January 1, 2026 Genetic Markers APOE January 2, 2026 c3 TREM2 January 2, 2026 R47H Biological Tests pTau217 January 2, 2026 90th Ab42/40 January 2, 2026 12th NFL January 2, 2026 86th Settings Support







Treatment eligibility

Leqembi Eligible Forecasted treatment effect

Kisunla Not eligible Forecasted treatment effect

Disease status

Differential Diagnosis 93% Alzheimer's disease

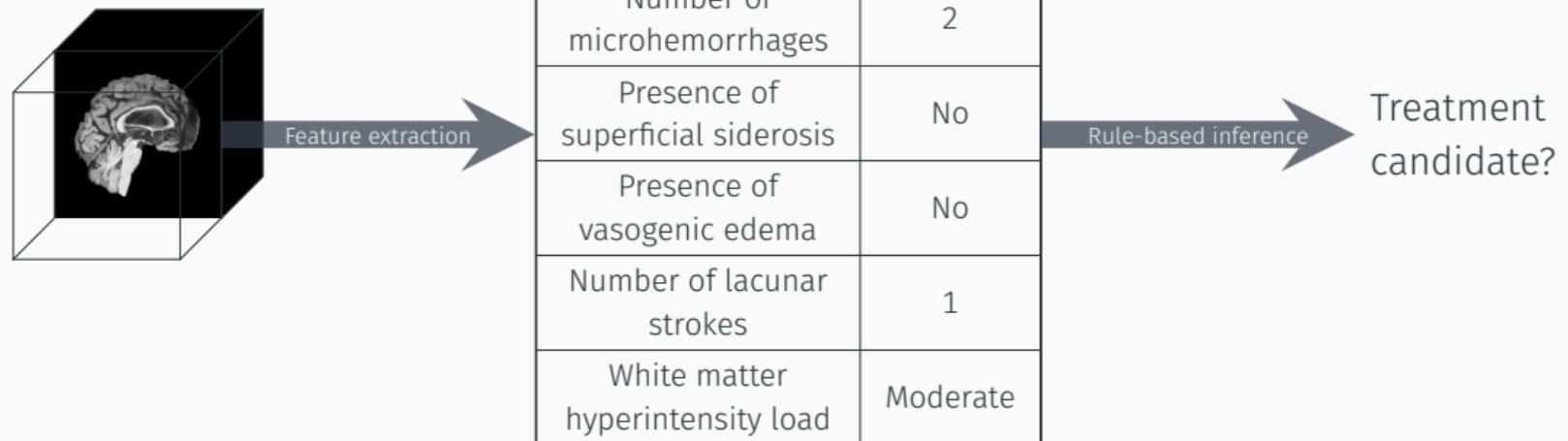
Disease stage Stage 1/4 Mild cognitive impairment

Predicted progression rate 85th Risk percentile

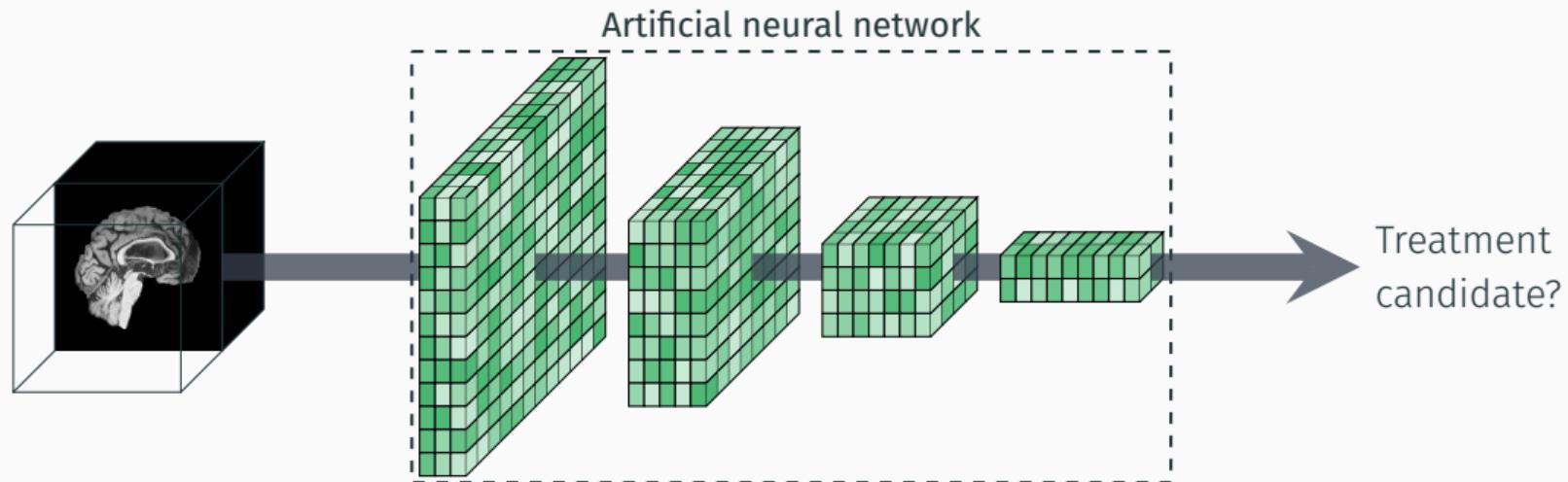
MRI contraindications

0 Macrohemorrhages	2 Microhemorrhages	Absent Superficial siderosis
Absent Vasogenic edema	1 Lacunar strokes	Moderate White matter hyperintensity load

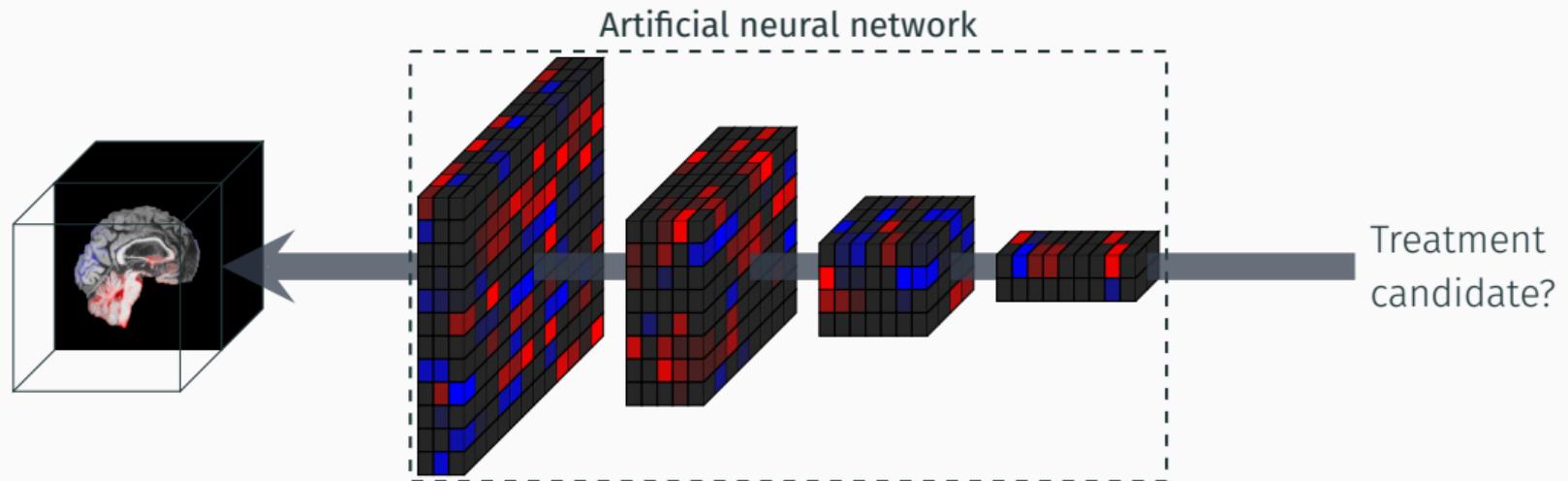
Explainable artificial intelligence



Explainable artificial intelligence

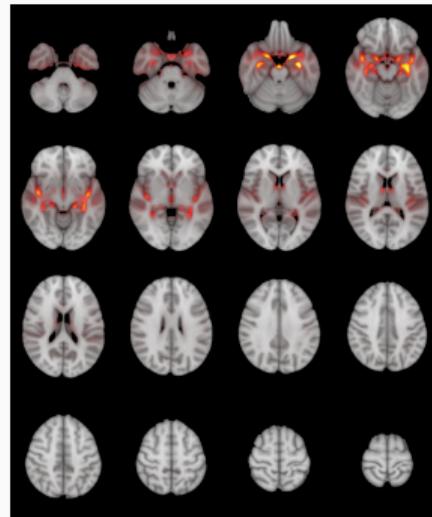


Explainable artificial intelligence



Explainable artificial intelligence

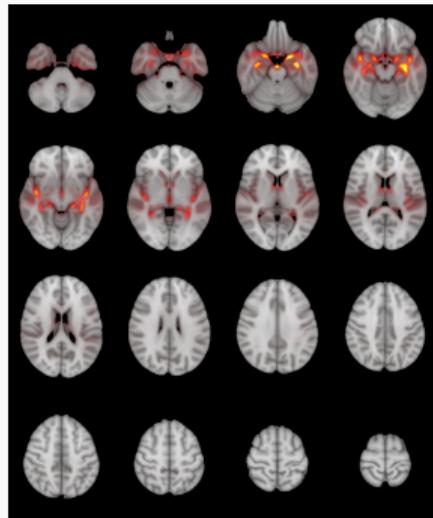
Explainable AI



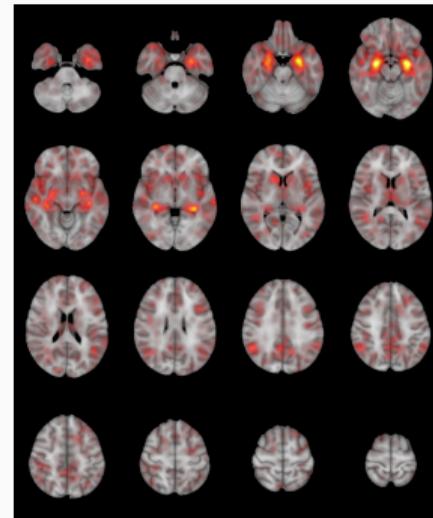
Leonardsen, E. H., Persson, K., Grødem, E., Dinsdale, N., Schellhorn, T., Roe, J. M., ... & Wang, Y. (2024). Constructing personalized characterizations of structural brain aberrations in patients with dementia using explainable artificial intelligence. *NPJ digital medicine*, 7(1), 110.

Explainable artificial intelligence

Explainable AI

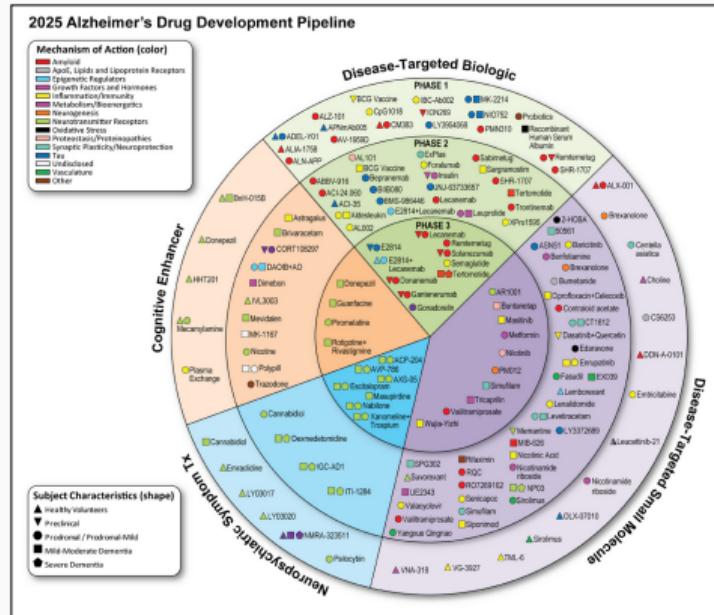


Human researchers



Leonardsen, E. H., Persson, K., Grødem, E., Dinsdale, N., Schellhorn, T., Roe, J. M., ... & Wang, Y. (2024). Constructing personalized characterizations of structural brain aberrations in patients with dementia using explainable artificial intelligence. *NPJ digital medicine*, 7(1), 110.

The future of Alzheimer's treatment



Cummings, J. L., Zhou, Y., Lee, G., Zhong, K., Fonseca, J., Leisgang-Osse, A. M., & Cheng, F. (2025). Alzheimer's disease drug development pipeline: 2025. *Alzheimer's & Dementia: Translational Research & Clinical Interventions*, 11(2), e70098.

The future of Alzheimer's treatment

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A β 42/40 May 12, 2030 12th

NfL May 12, 2030 86th

Treatment evaluation
AI-predicted treatment outcomes over 3 years.

Kisunila
= 5 months Delay in cognitive decline
10% Moderate side-effect risk

Legembi
= 7 months Delay in cognitive decline
3% Low side-effect risk

Treatment X
= 12 months Delay in cognitive decline
55% Severe side-effect risk

Treatment Y
Not eligible Patient does not meet early-stage criteria

No treatment
0 months Delay in cognitive decline
30% Risk of dementia progression

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Thank you for your attention!
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