



Zentralinstitut
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Gesundheit

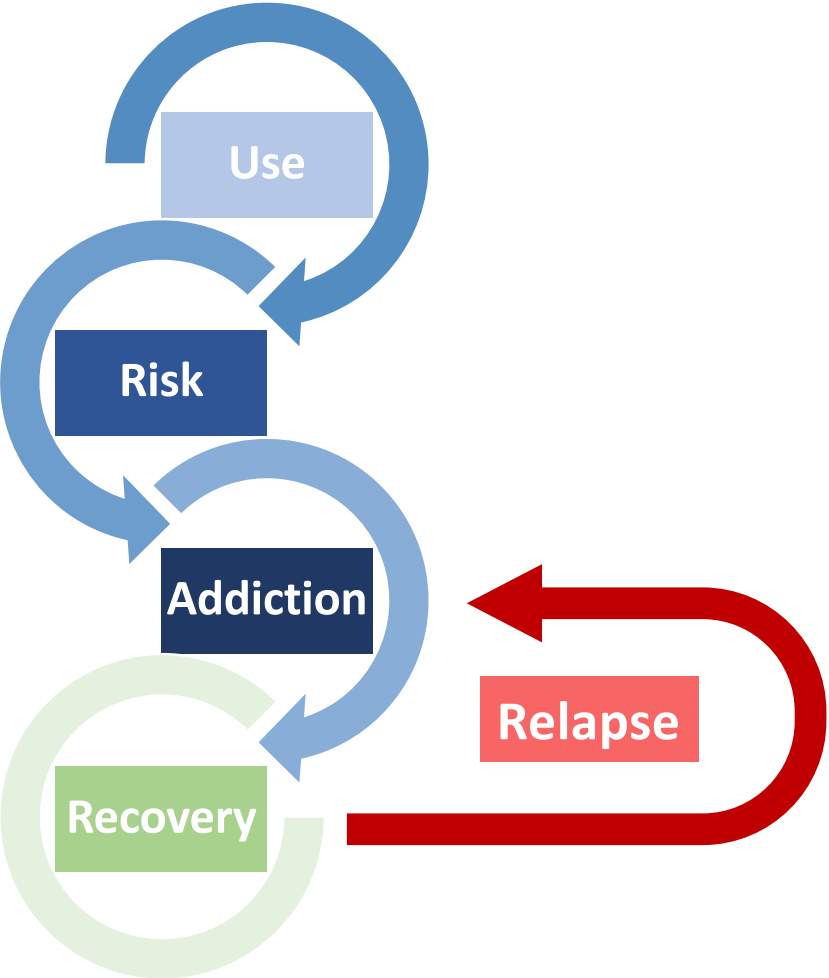
Novel neuroscience-informed approaches to pharmacological treatment of alcohol use disorder

Paris, 05.06.2024

Prof. Dr. Dr. Patrick Bach | Central Institute of Mental Health - Mannheim

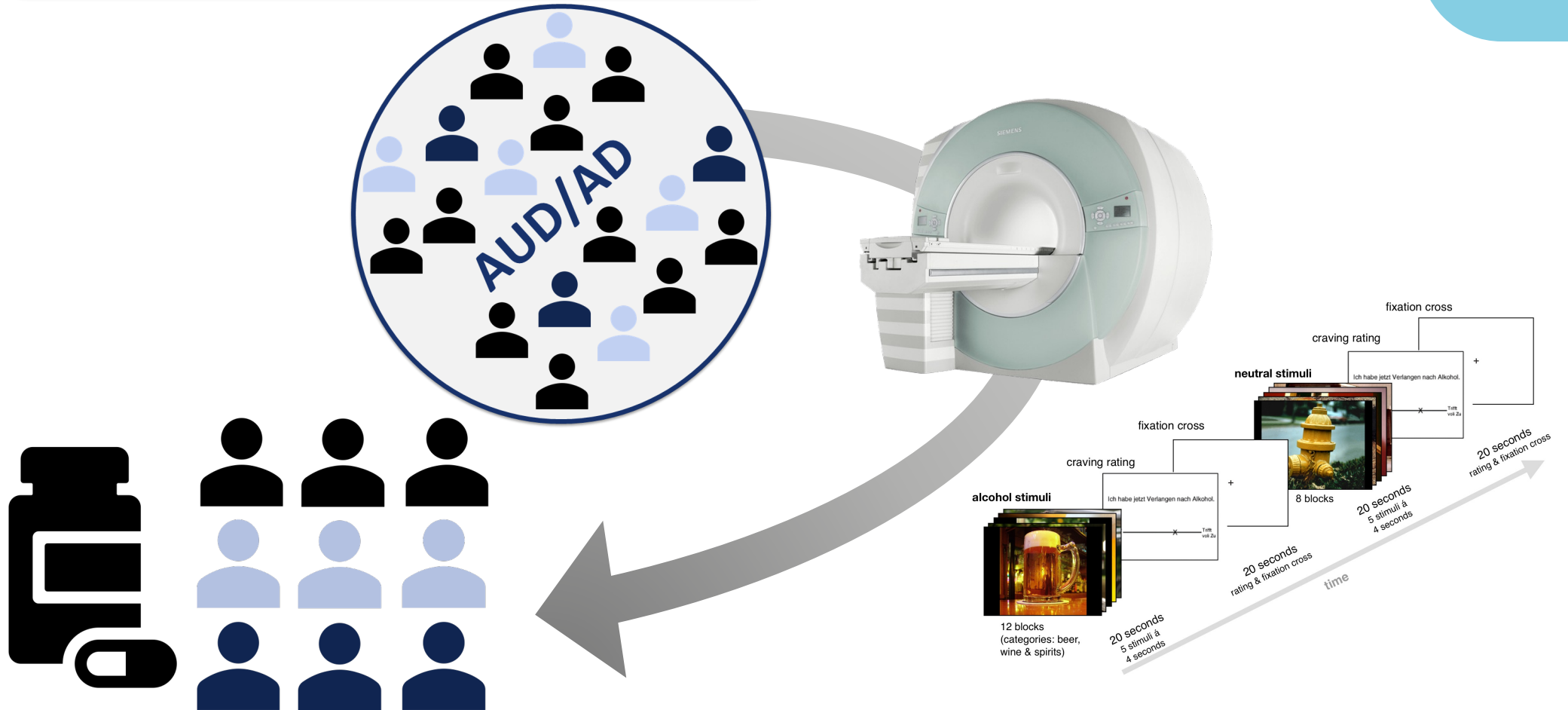


CHALLENGES



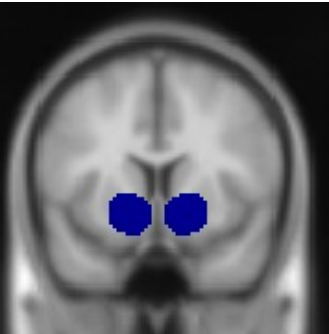
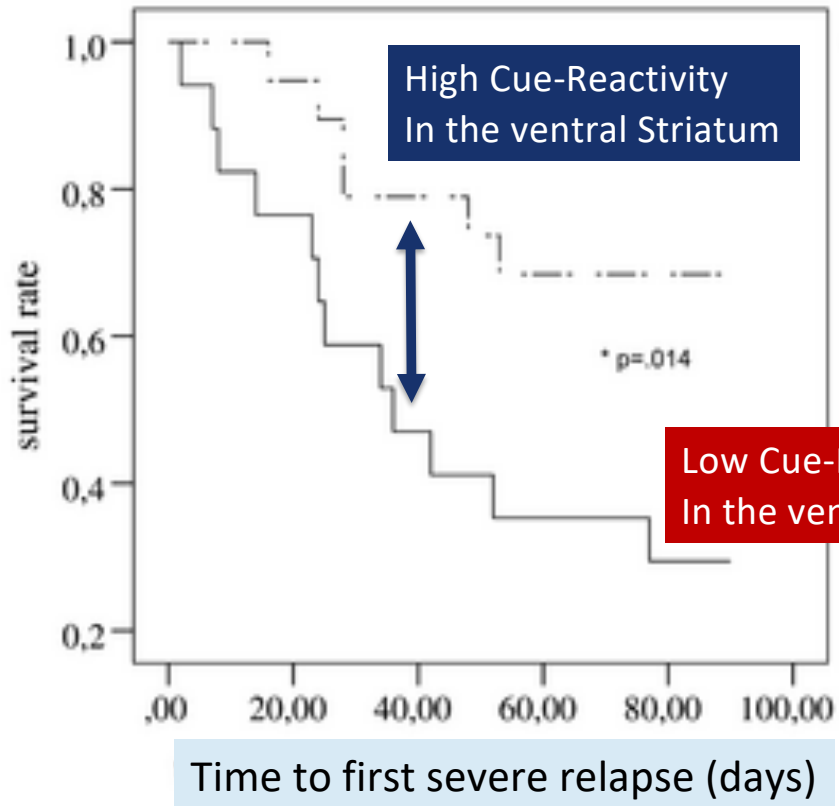
- 1 Precision Medicine Approaches
- 2 Novel Treatments

Precision Medicine Approaches



Prediction of treatment outcome

Treatment with Naltrexone

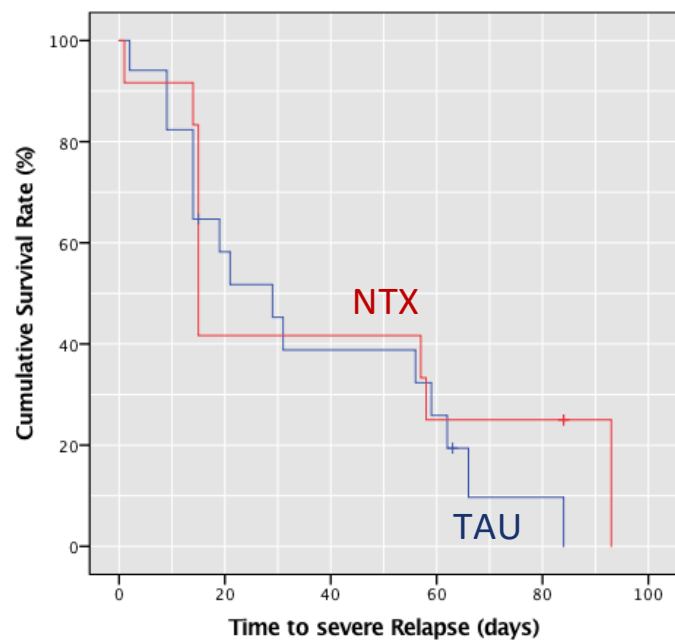


Mann et al. (2014) **Addiction Biology**

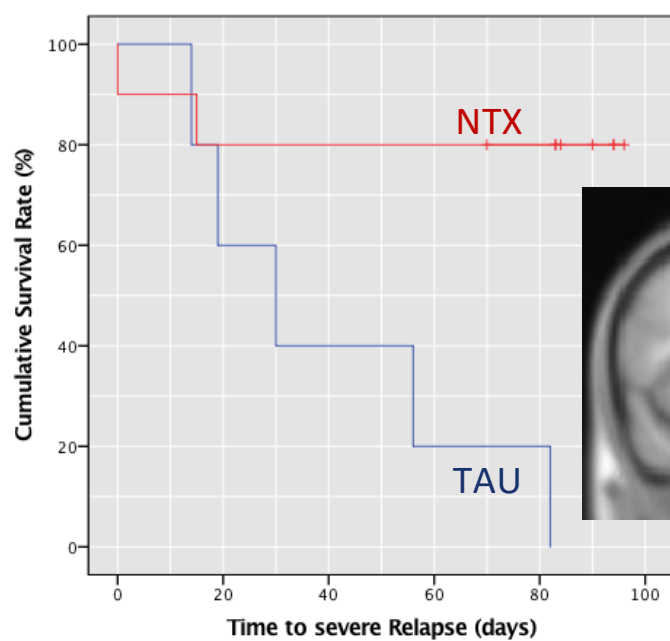
Prediction of treatment outcome



Low CR in the VS

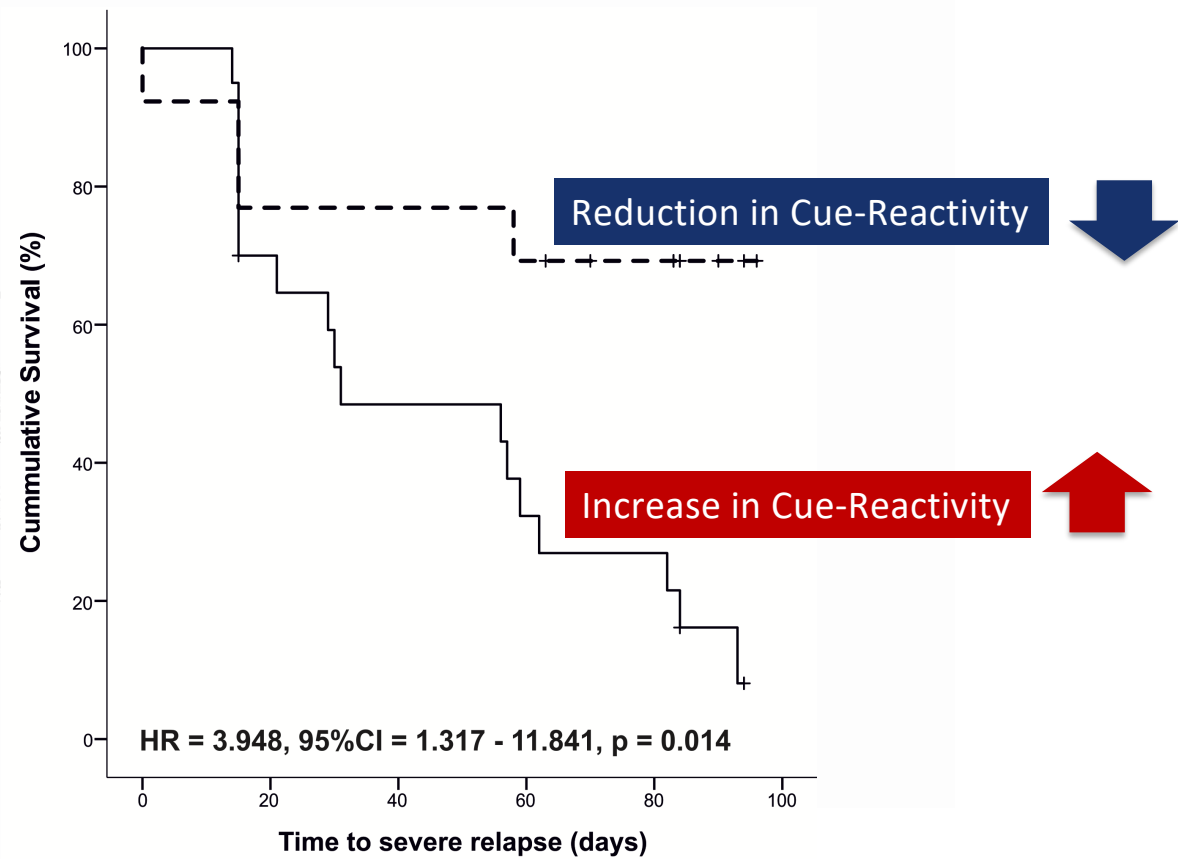
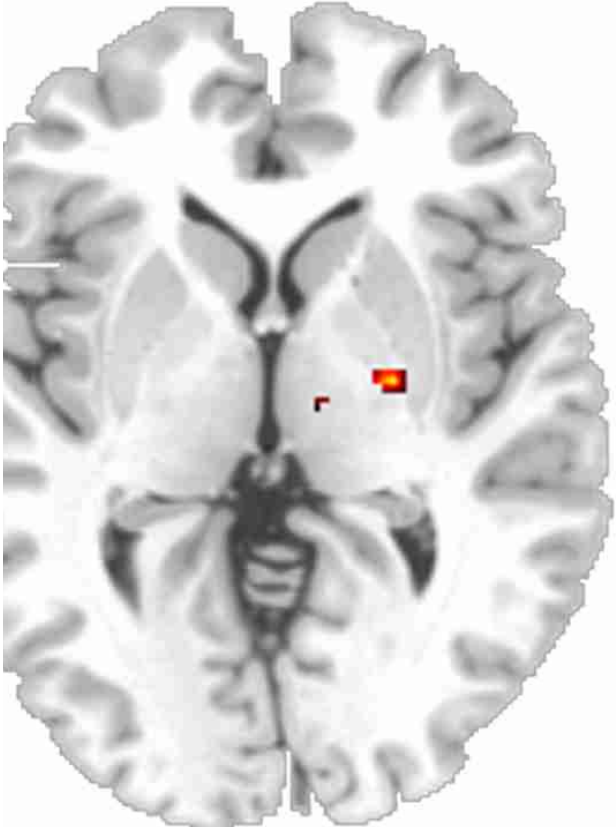


High CR in the VS



Bach et al. (2021) EAPC

Prediction of treatment outcome



Bach et al. (2019) *Addiction Biology*



Prediction of treatment outcome

Low CR in the VS

↑ 12.1

NNT heavy relapse

High CR in the VS

↓ 1.8

Review

February 7, 2024

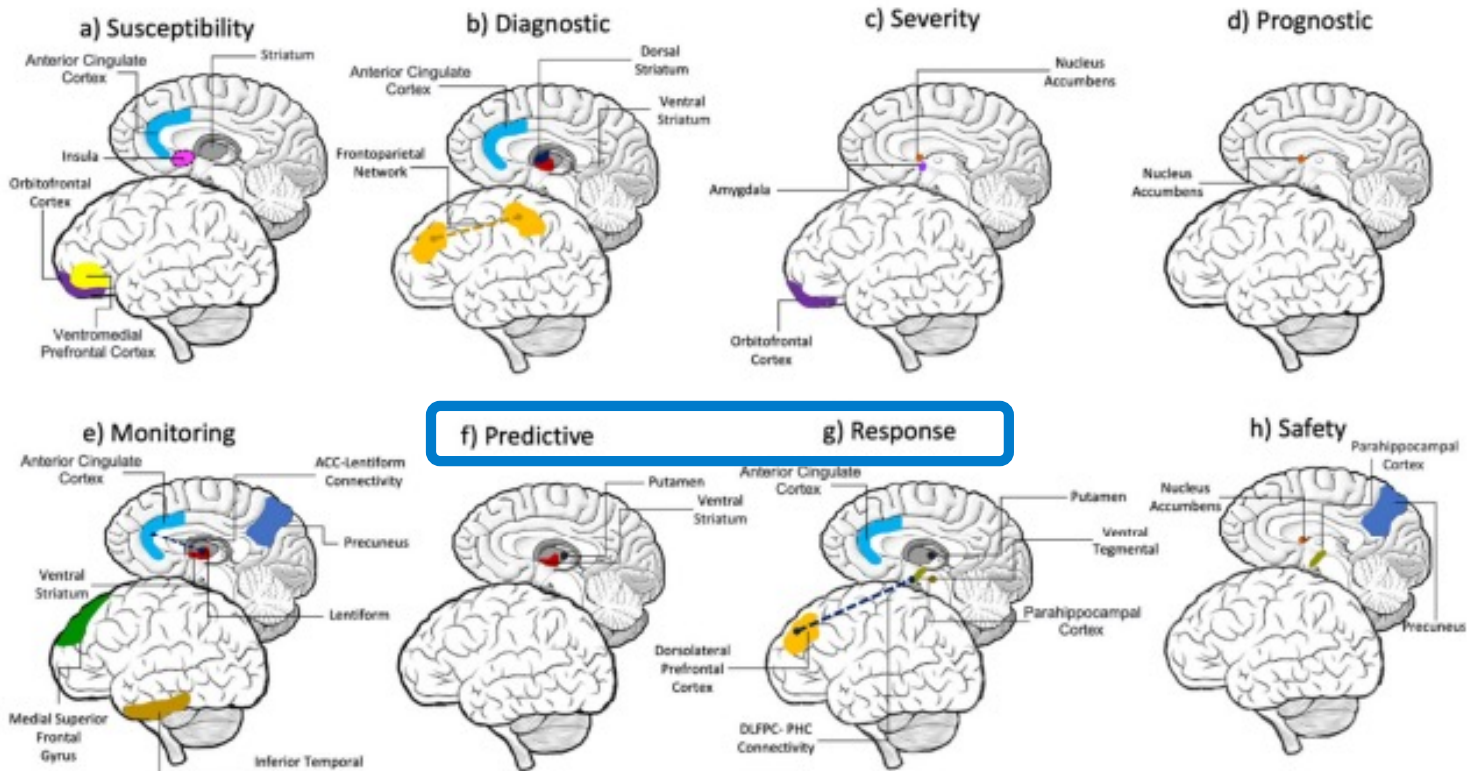
Parameter Space and Potential for Biomarker Development in 25 Years of fMRI Drug Cue Reactivity A Systematic Review

Addiction Cue-Reactivity Initiative (ACRI) Network

Article Information

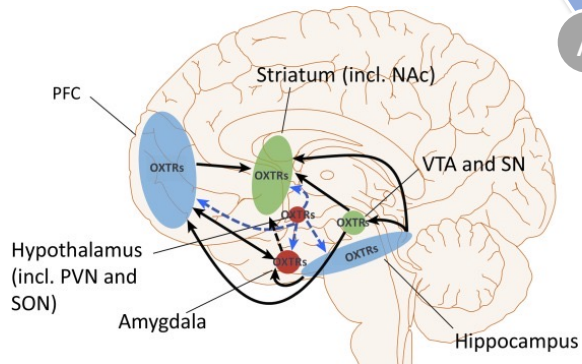
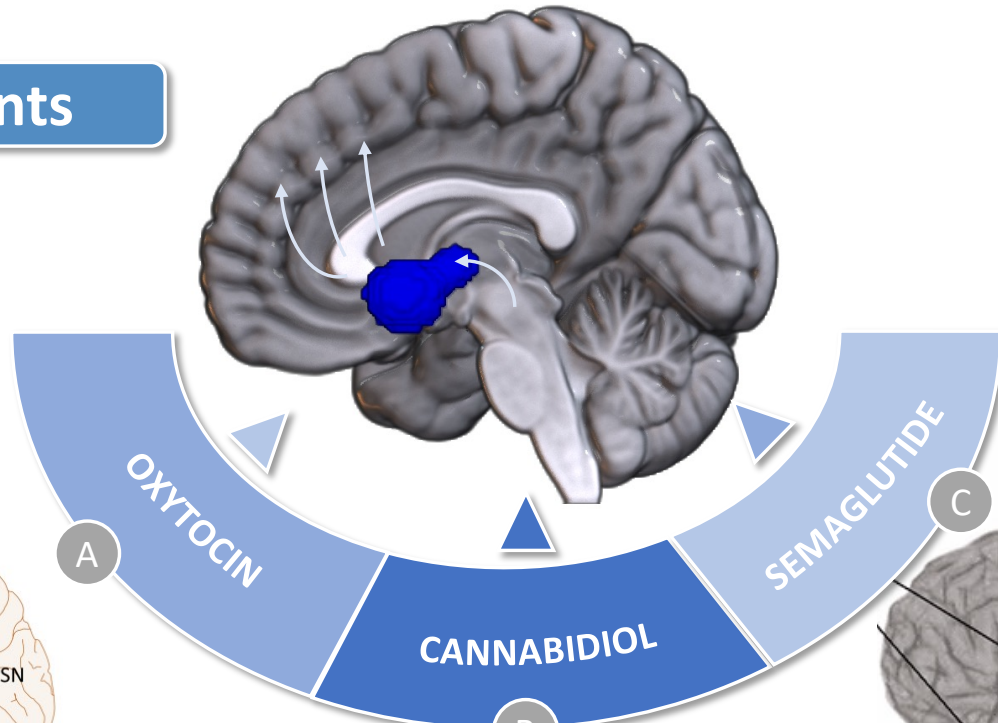
JAMA Psychiatry. 2024;81(4):414-425. doi:10.1001/jamapsychiatry.2023.5483

Precision Medicine Approaches

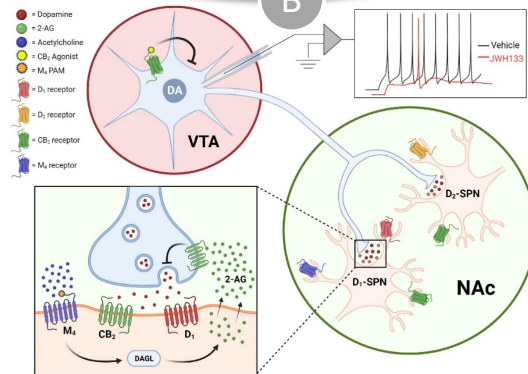


Addiction Cue-Reactivity Initiative (ACRI) Network, Sangchooli, A., Zare-Bidoky, M., Fathi Jouzdani, A., Schacht, J., Bjork, J. M., Claus, E. D., Prisciandaro, J. J., Wilson, S. J., Wüstenberg, T., Potvin, S., Ahmadi, P., Bach, P., ... Ekhtiari, H. (2024). **Parameter Space and Potential for Biomarker Development in 25 Years of fMRI Drug Cue Reactivity: A Systematic Review.** *JAMA psychiatry*, 81(4), 414–425. <https://doi.org/10.1001/jamapsychiatry.2023.5483>

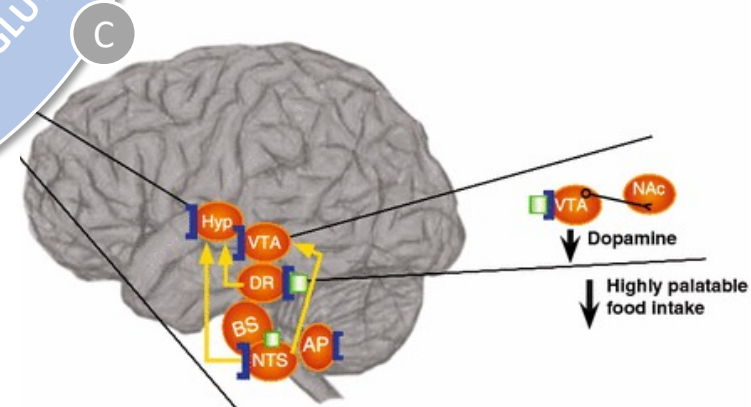
Novel Treatments



Bowen et al. (2017) Trends in Neuroscience



Ferranti et al. (2022) Frontiers in Neuroscience



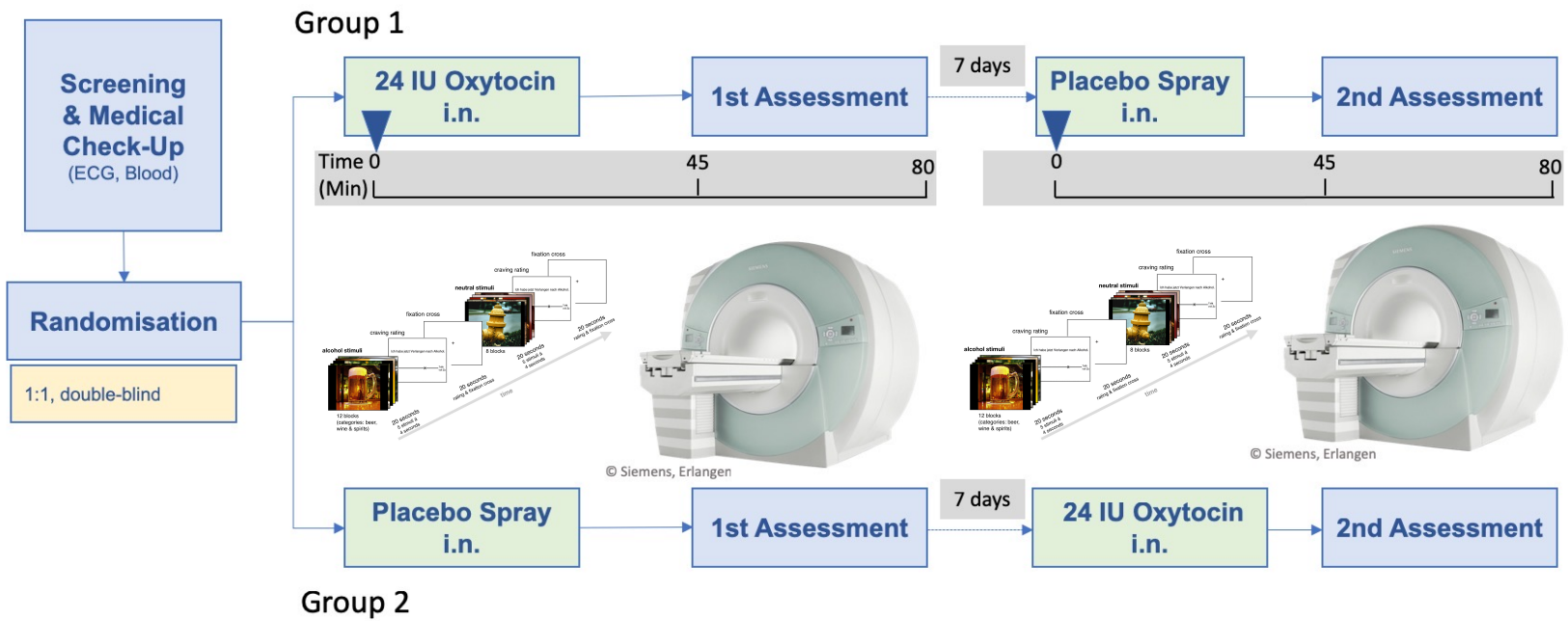
Geloneze et al. (2017) Drugs

Oxytocin

	Dose of OXY	Endpoints	Results	Study
AUD	24 I.E., Day, 3 Days	Withdrawal symptoms Craving Anxiety	↓: Withdrawal symptoms ↓: Craving ↓: Anxiety	Pedersen et al., 2013
AUD	40 I.E.	Anxiety Craving (cue-induced)	0: Anxiety 0: Craving (cue-induced)	Mitchell et al., 2016
AUD	40 I.E.	Stress (Cortisol) Craving	NR: Stress 0: Stress, Craving (task-related)	Flanagan et al., 2019
AUD	20 I.E., 40 I.E.	Craving HR (cue-induced craving)	0: Craving 0: HR (cue-induced craving)	Stauffer et al., 2019
AUD	24 I.E.	Withdrawal symptoms Anxiety/Depression	0: Anxiety/Depression 0: Withdrawal symptoms	Melby et al., 2019
AUD	8 I.E., bis 3x/ Day , 25 Days	Anxiety/Depression Craving, Alcohol Use	0: Anxiety/Depression 0: Craving, Alcohol use	Melby et al. 2020

Oxytocin

TargetOXY & Pilot Study

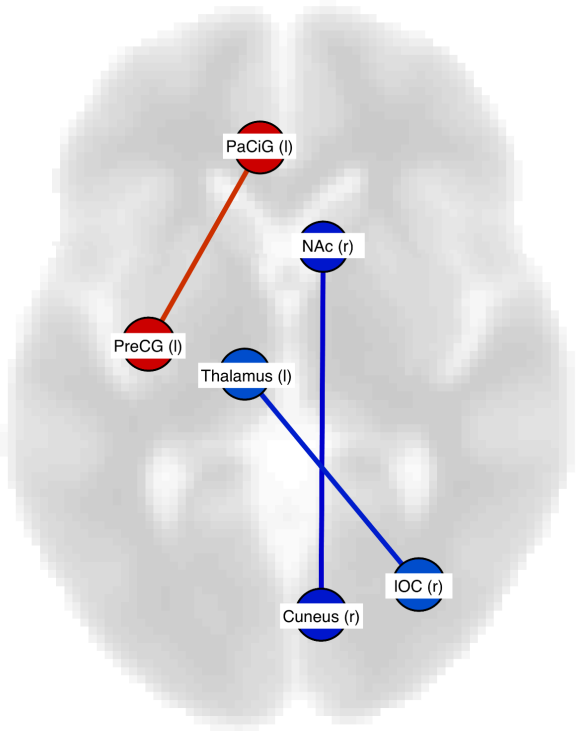


Oxytocin

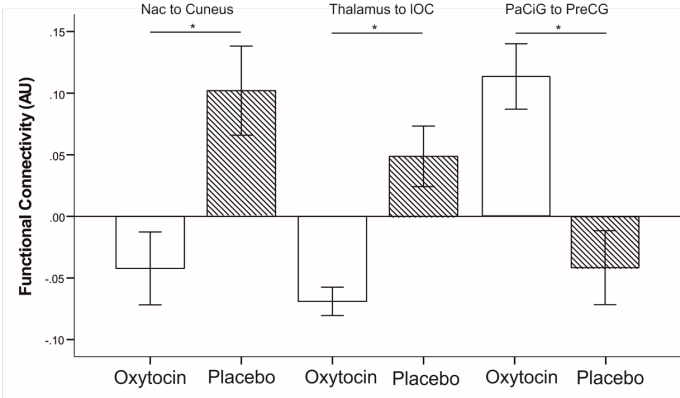
Pilot Study

1 Cue-induced NAc connectivity

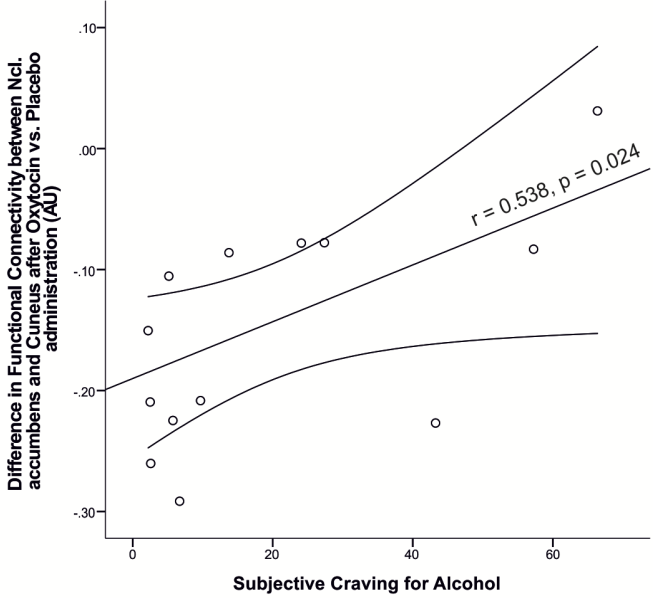
ROI-to-ROI effects: -5.76 5.76



2 Effects of Oxytocin



3 Association with craving



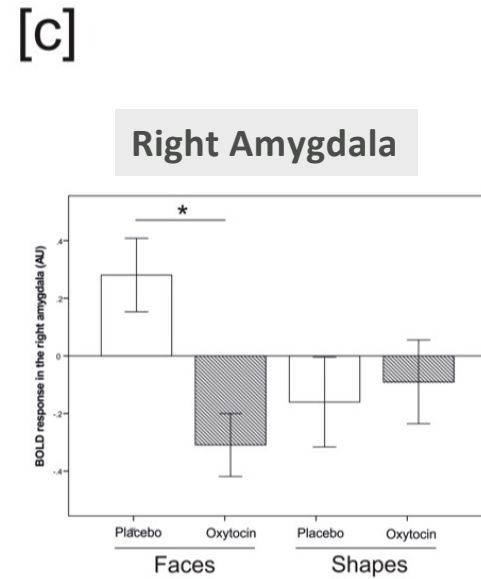
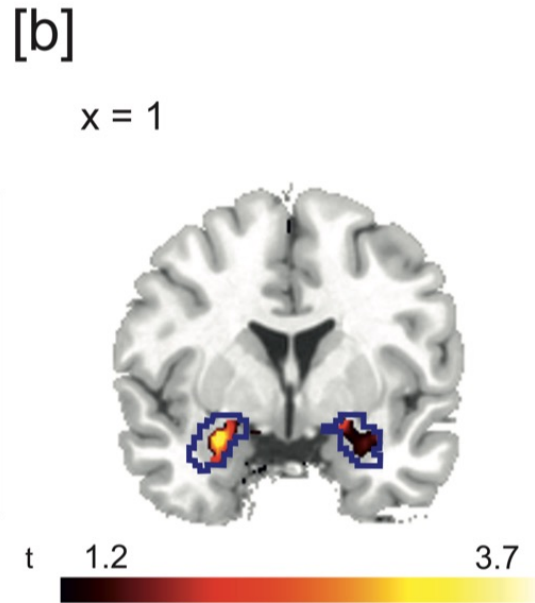
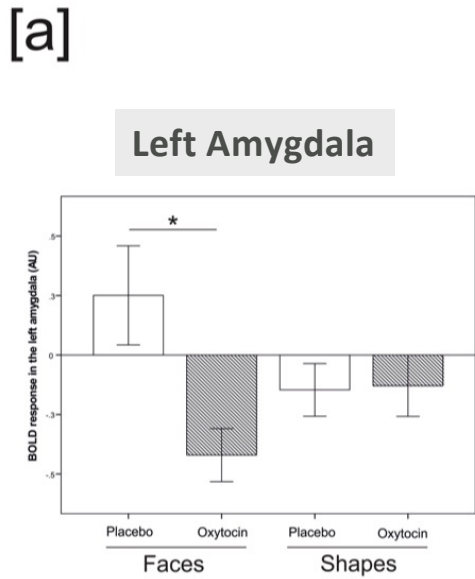
Bach et al. (2019) PNEC

Oxytocin

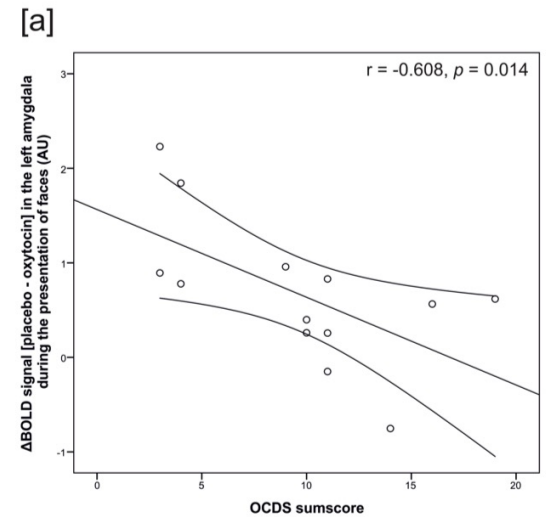
Pilot Study



1 Emotion processing



2 Association with craving



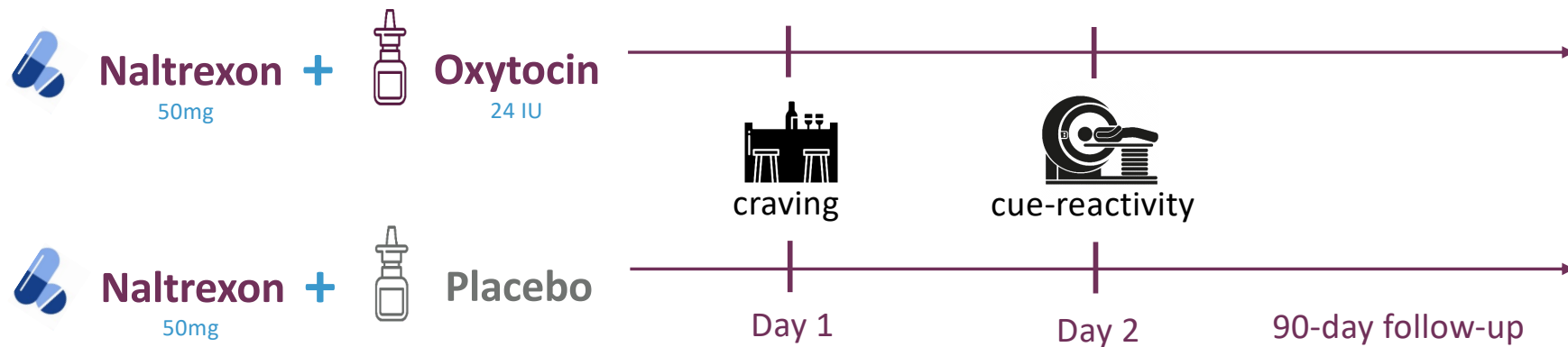
Bach et al. (2020) EAPC

Oxytocin

ONICE



Investigation of the combined effects of oxytocin and naltrexone on stress-induced and alcohol cue-induced craving in alcohol use disorder



Cannabidiol



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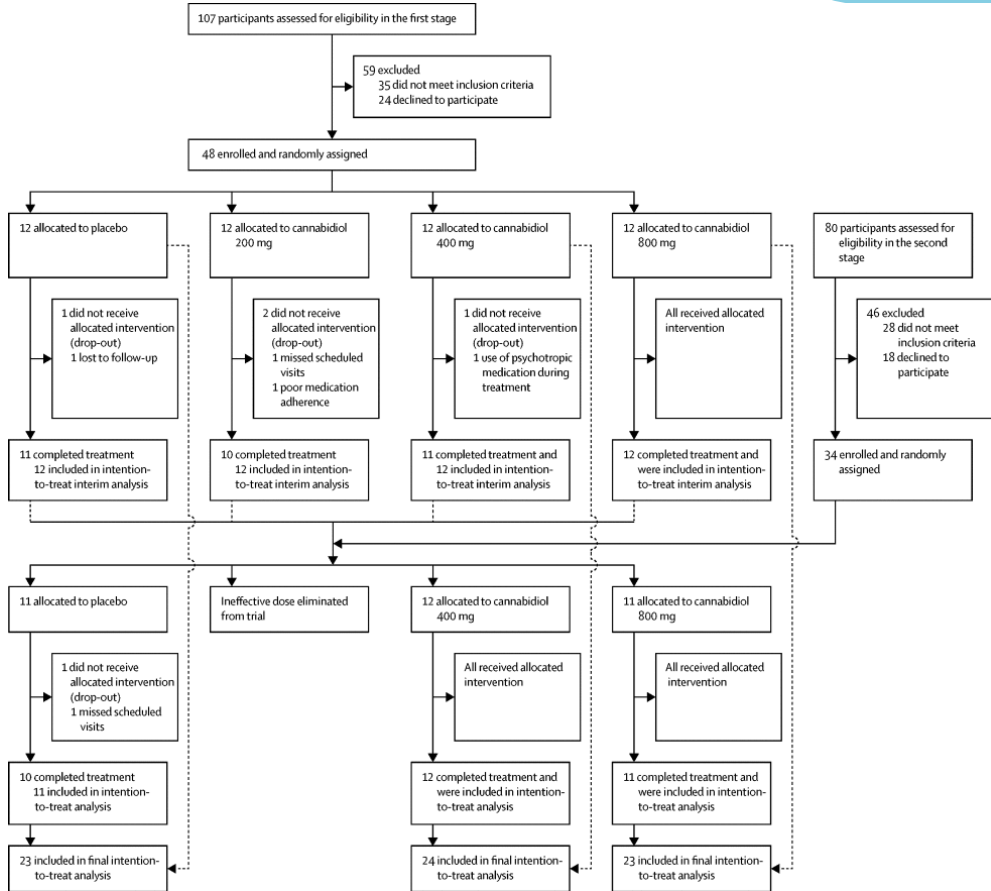
ARTICLES | VOLUME 7, ISSUE 10, P865-874, OCTOBER 2020

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Cannabidiol for the treatment of cannabis use disorder: a phase 2a, double-blind, placebo-controlled, randomised, adaptive Bayesian trial

Tom P Freeman, PhD • Chandni Hindocha, PhD • Prof Gianluca Baio, PhD • Natacha D C Shaban, BSc • Emily M Thomas, MSc • Danica Astbury, BSc • et al. Show all authors

Published: July 28, 2020 • DOI: [https://doi.org/10.1016/S2215-0366\(20\)30290-X](https://doi.org/10.1016/S2215-0366(20)30290-X) • Check for updates



Cannabidiol

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Psychology of Addictive Behaviors

2021, Vol. 35, No. 6, 749–759
<https://doi.org/10.1037/ad0000706>

THC and CBD Effects on Alcohol Use Among Alcohol and Cannabis Co-Users

H. C. Karoly^{1, 2}, R. L. Mueller³, C. C. Andrade³, and K. E. Hutchison^{2, 3, 4}

¹Department of Psychology, Colorado State University

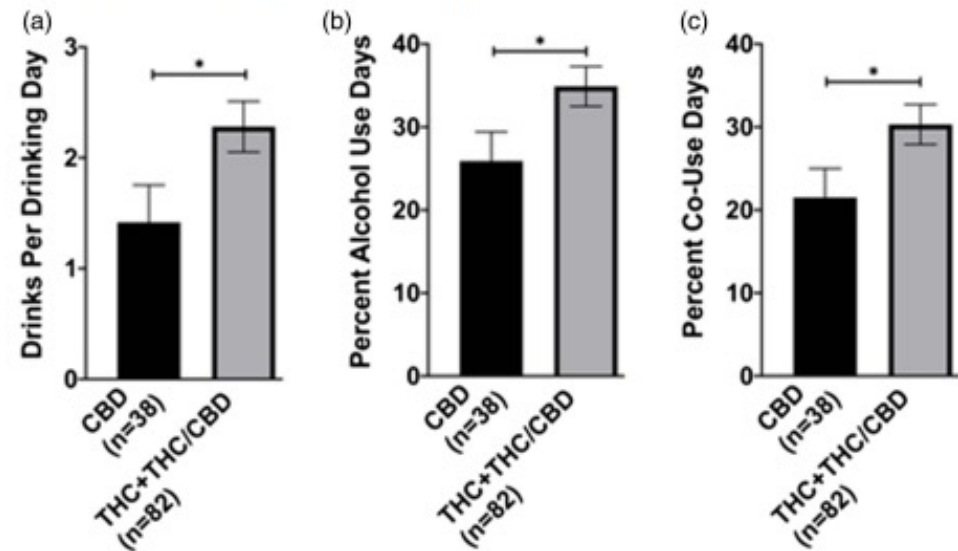
²Institute of Cognitive Science, University of Colorado Boulder

³Department of Psychology and Neuroscience, University of Colorado Boulder

⁴Department of Psychiatry, University of Colorado Anschutz Medical Campus

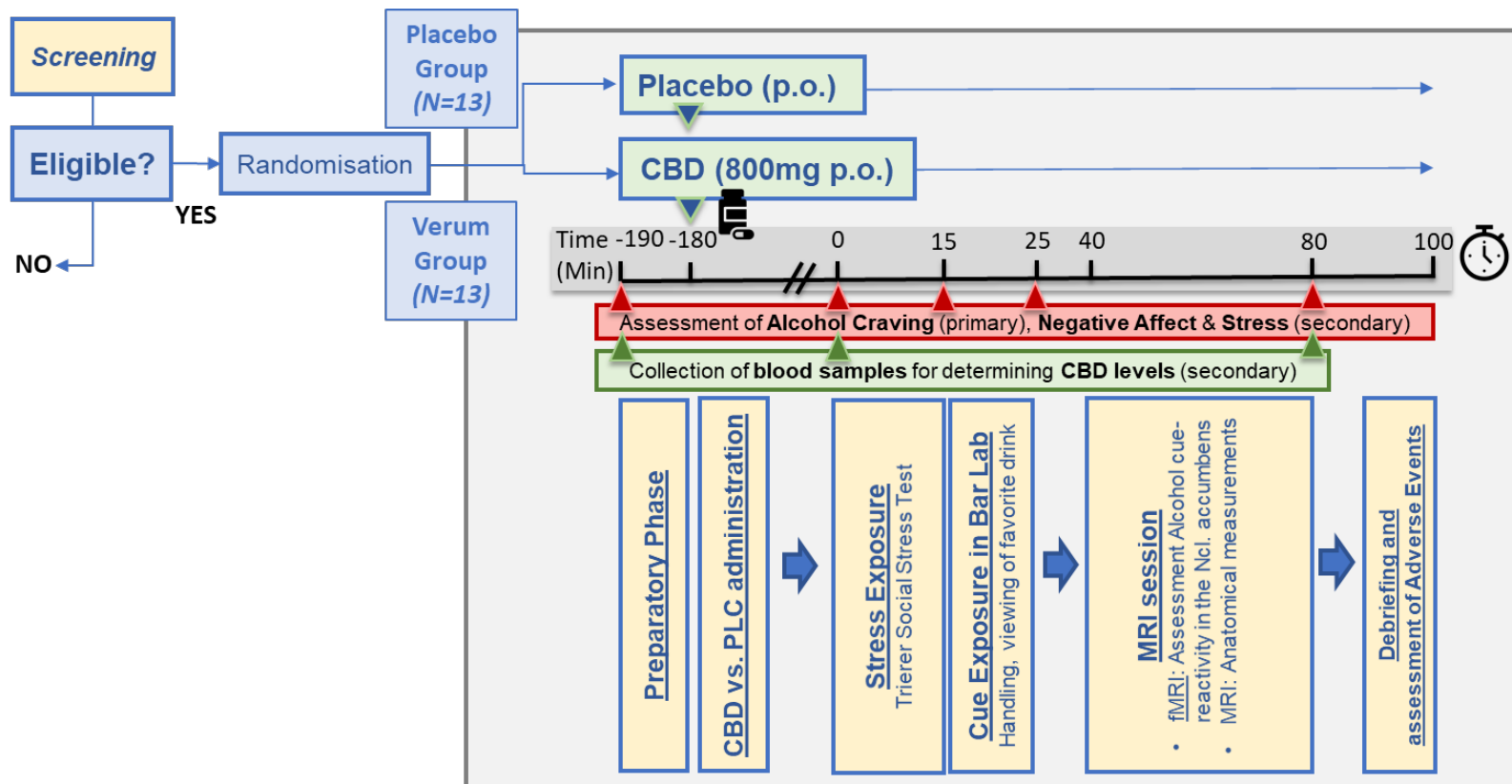
Figure 2

Group Differences in Estimated Marginal Means of Drinking Outcomes at Follow-Up (FU), Covarying Baseline (BL), for the CBD Group, and the Combined THC and CBD + THC Groups



Cannabidiol

ICONIC

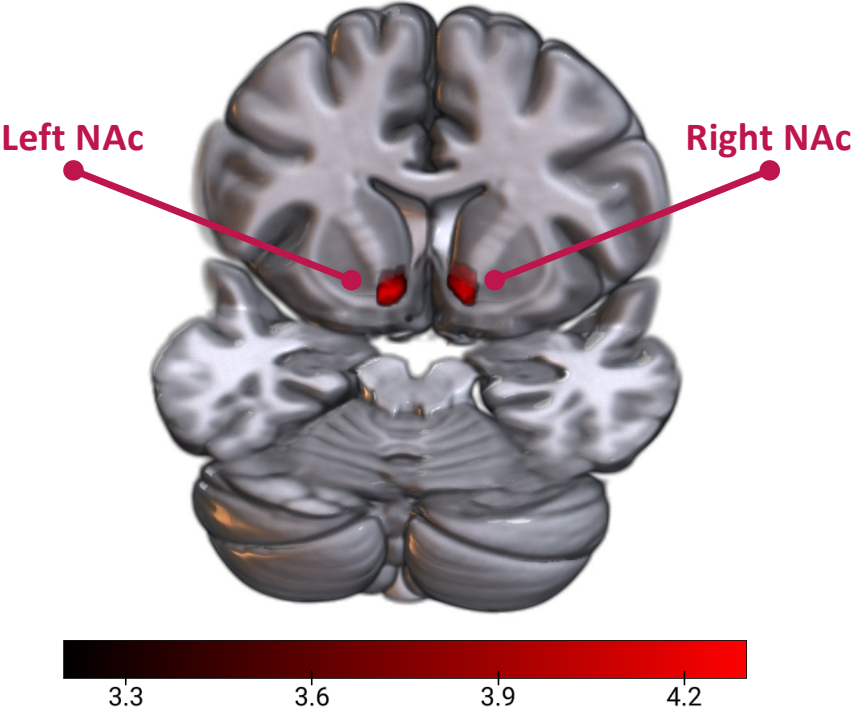


Cannabidiol

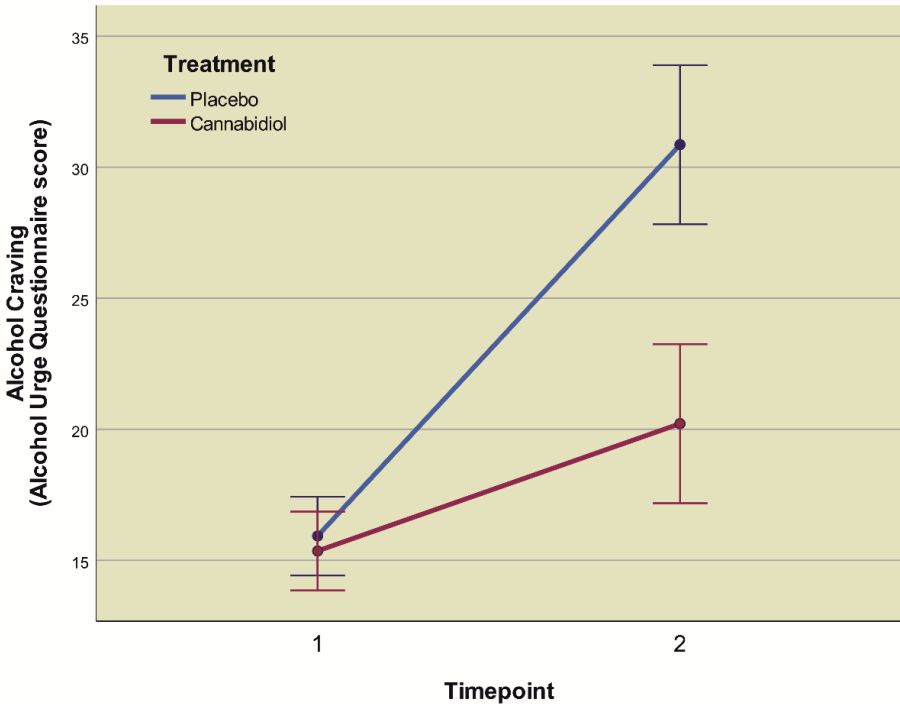
ICONIC



1 NAc cue-reactivity



2 Cue-induced craving

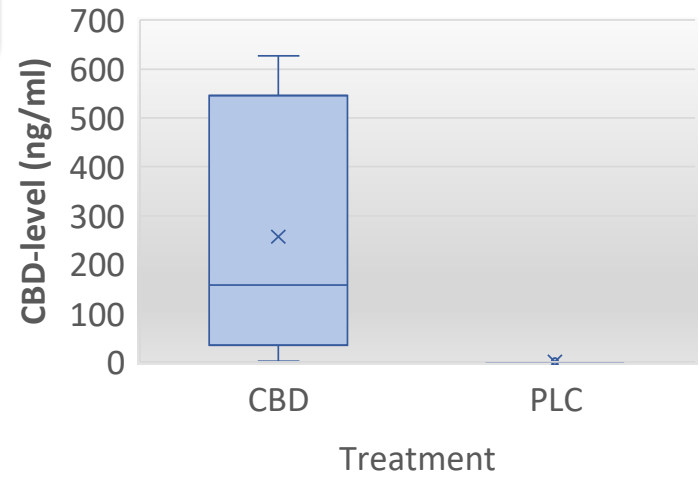




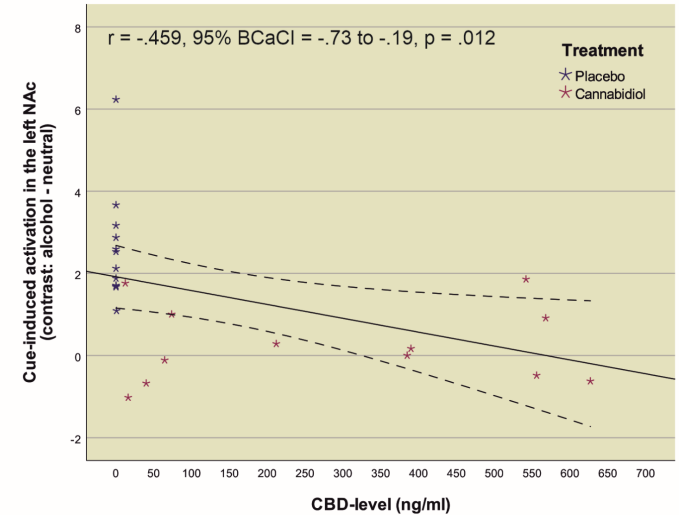
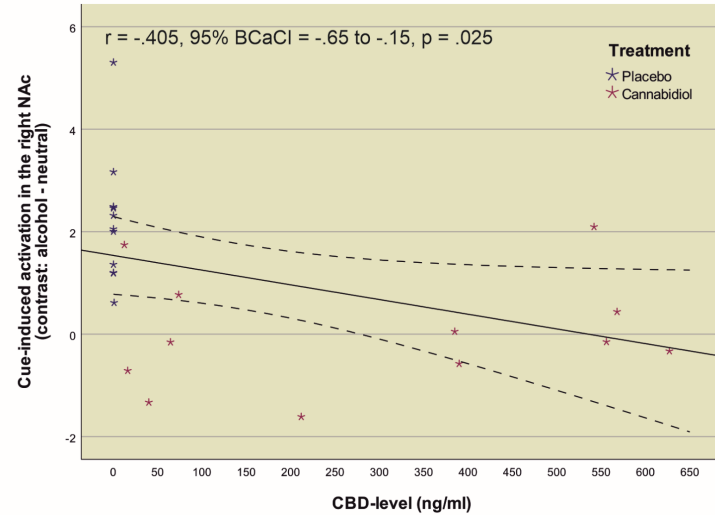
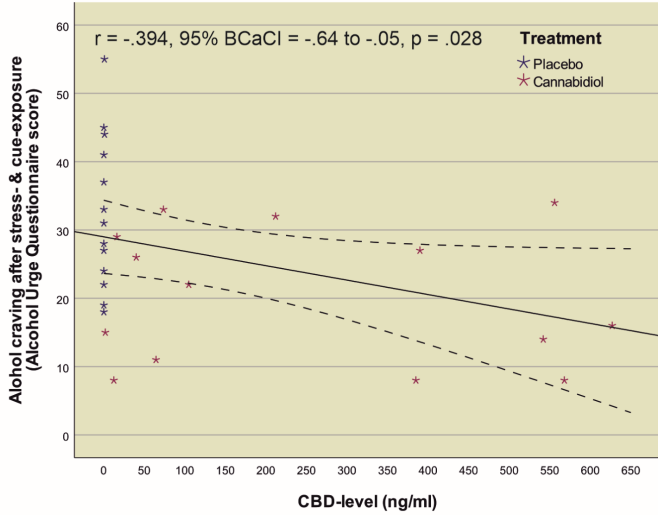
Cannabidiol

ICOMIC

3 CBD plasma levels

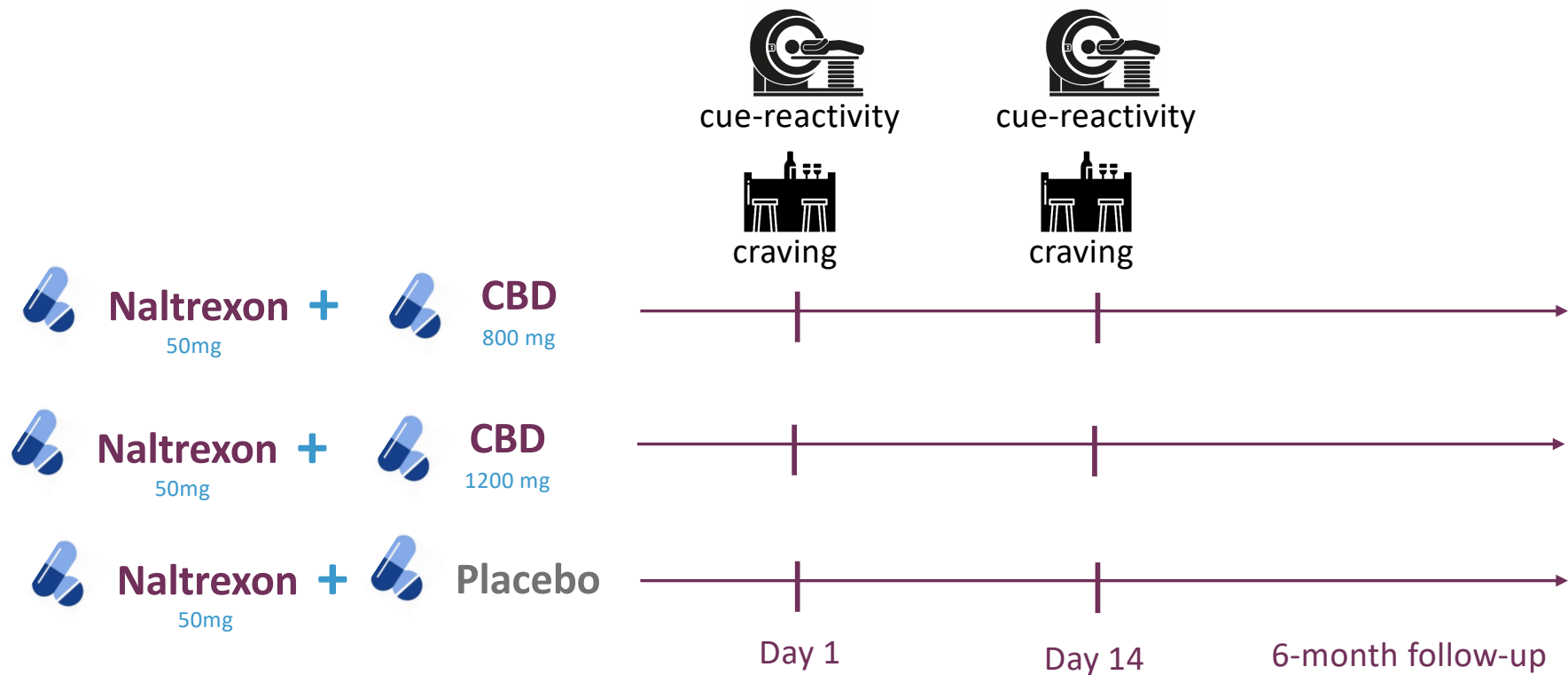


4 Dose-Response associations



Cannabidiol

IC ONIC+



Semaglutide

zi

HEALTH

Did Scientists Accidentally Invent an Anti-addiction Drug?

People taking Ozempic for weight loss say they have also stopped drinking, smoking, shopping, and even nail biting.

By Sarah Zhang



Semaglutide

Articles

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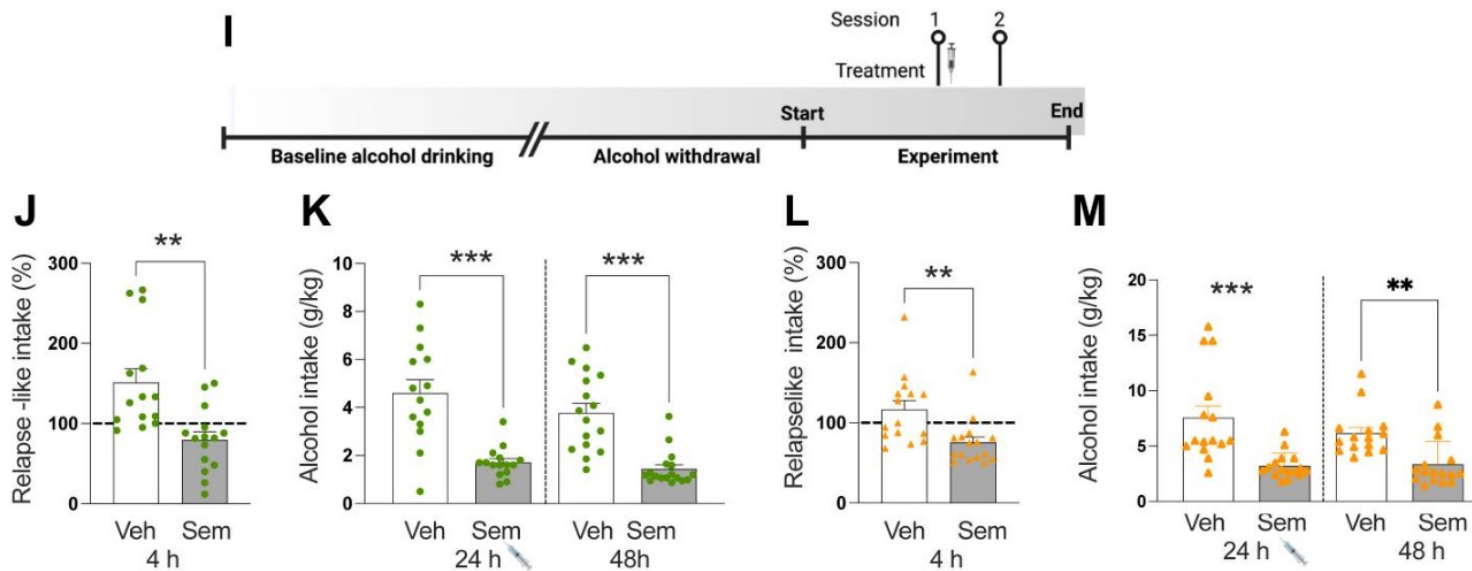
Semaglutide reduces alcohol intake and relapse-like drinking in male and female rats



Cajsa Aranäs, Christian E. Edvardsson, Olesya T. Shevchouk, Qian Zhang, Sarah Witley, Sebastian Blid Sköldheden, Lindsay Zentveld, Daniel Vallöf, Maximilian Tufvesson-Alm, and Elisabet Jerlhag*



Department of Pharmacology, Institute of Neuroscience and Physiology, The Sahlgrenska Academy at the University of Gothenburg, Gothenburg, Sweden



Semaglutide

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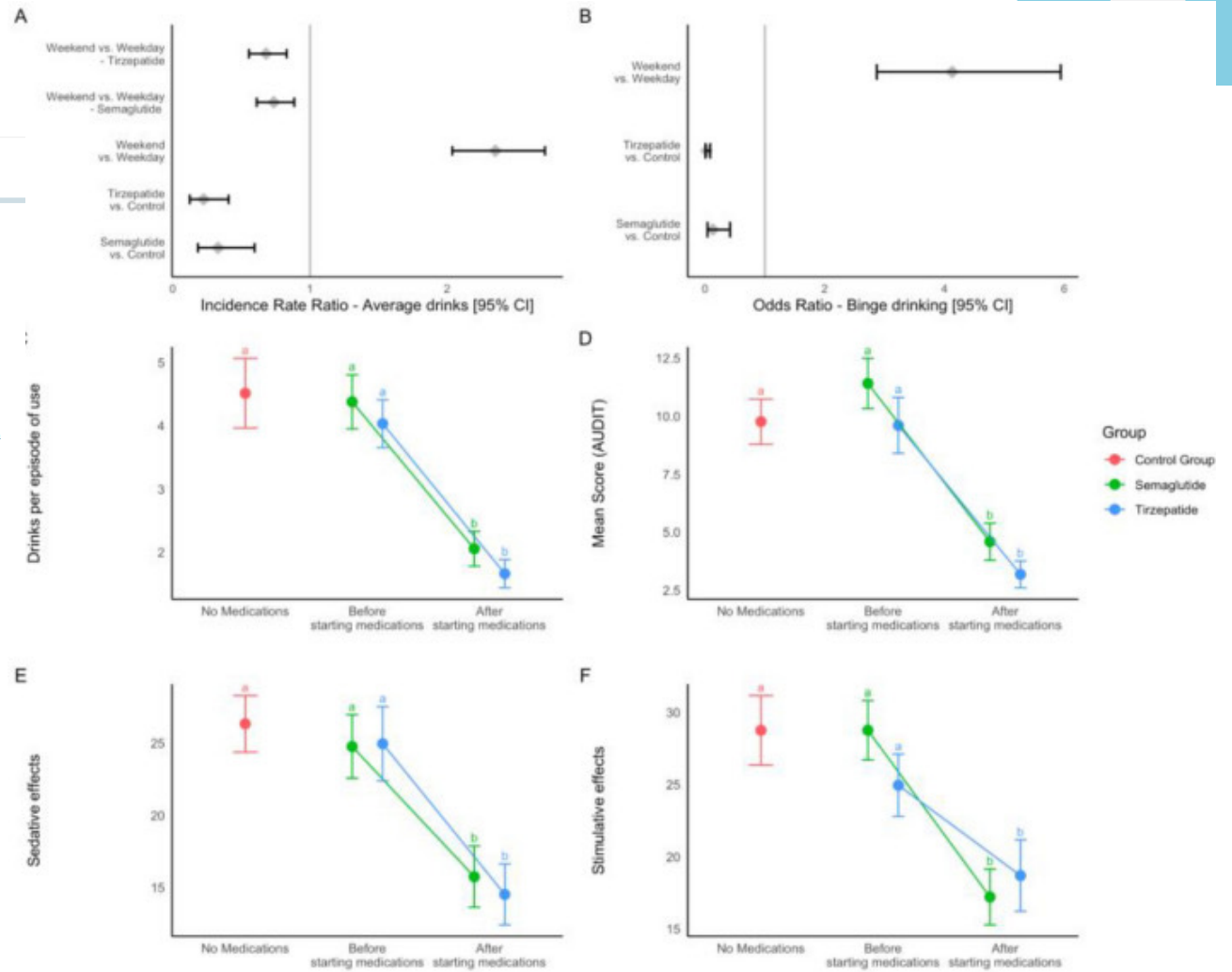
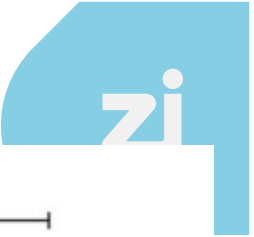
Article | [Open access](#) | [Published: 28 November 2023](#)

Semaglutide and Tirzepatide reduce alcohol consumption in individuals with obesity

[Fatima Quddos](#), [Zachary Hubshman](#), [Allison Tegge](#), [Daniel Sane](#), [Erin Marti](#), [Anita S. Kablinger](#), [Kirstin M. Gatchalian](#), [Amber L. Kelly](#), [Alexandra G. DiFelicceantonio](#) & [Warren K. Bickel](#) 

[Scientific Reports](#) **13**, Article number: 20998 (2023) | [Cite this article](#)

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Article

<https://doi.org/10.1038/s41467-024-48780-6>

Associations of semaglutide with incidence and recurrence of alcohol use disorder in real-world population

Received: 8 November 2023

William Wang¹, Nora D. Volkow²✉, Nathan A. Berger¹, Pamela B. Davis³, David C. Kaelber⁴ & Rong Xu⁵✉

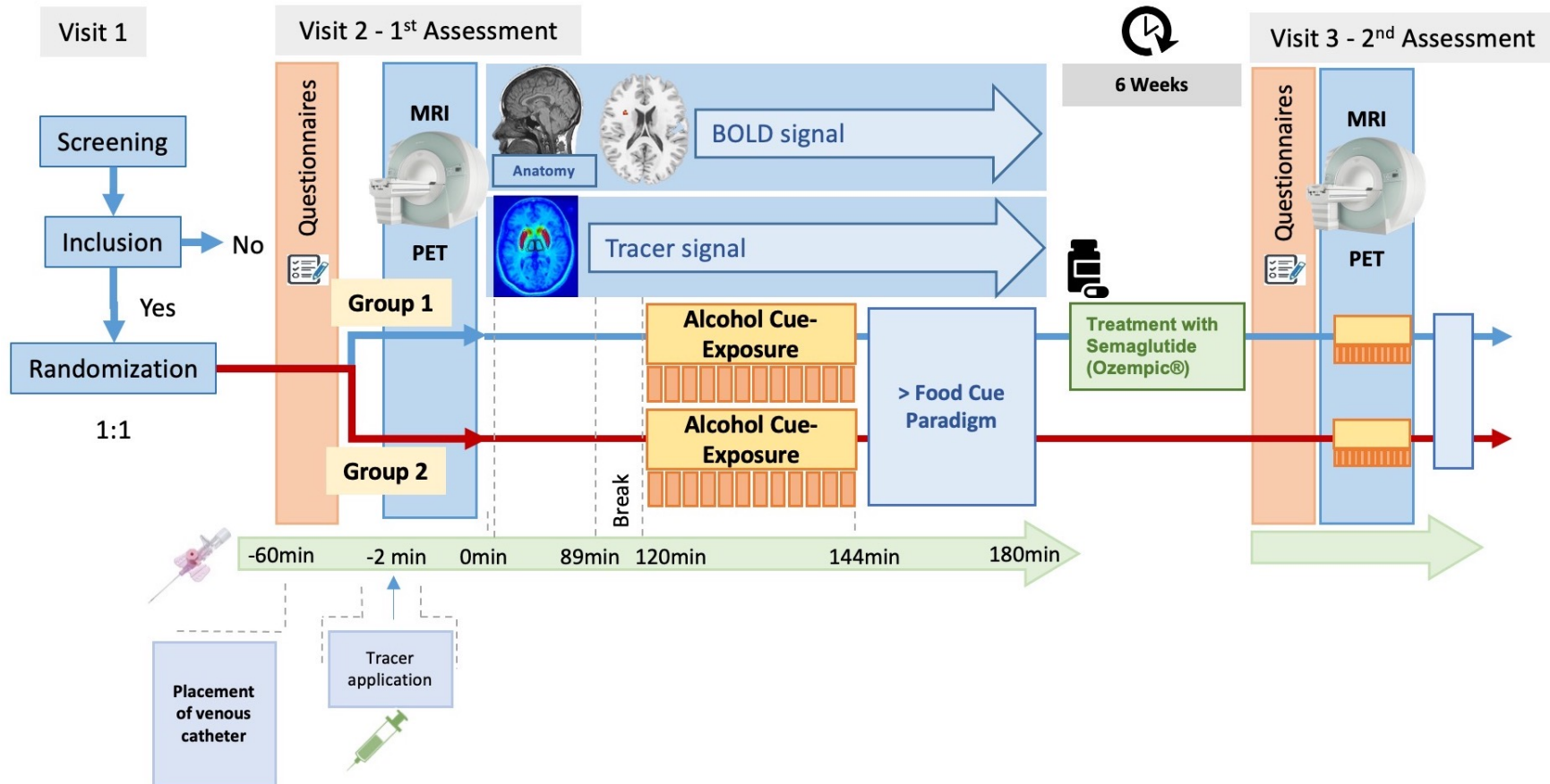
Accepted: 8 May 2024

Recurrent AUD diagnosis in patients with obesity and a prior history of AUD during 12-month follow-up time period (comparison between propensity-score matched cohorts)

Population	semaglutide cohort	non-GLP-1RA anti-obesity medications cohort	HR (95% CI)
Overall (n = 1,051/cohort)	22.6% (238)	43.0% (452)	0.44 (0.38–0.52)
Women (n = 420/cohort)	19.0% (80)	32.9% (138)	0.51 (0.39–0.67)
Men (n = 553/cohort)	23.9% (132)	46.5% (257)	0.42 (0.34–0.51)
age ≤ 55 years (n = 586/cohort)	22.9% (134)	43.9% (257)	0.44 (0.35–0.54)
age > 55 years (n = 440/cohort)	23.2% (102)	36.8% (162)	0.55 (0.43–0.70)
Black (n = 140/cohort)	20.7% (29)	37.1% (52)	0.49 (0.31–0.78)
White (n = 699/cohort)	22.7% (159)	41.5% (290)	0.46 (0.38–0.56)
No T2D (n = 540/cohort)	20.6% (111)	41.5% (224)	0.42 (0.33–0.52)
T2D (n = 453/cohort)	24.3% (110)	40.4% (183)	0.50 (0.39–0.63)

Semaglutide

SCENIC



The background features a dark blue area on the left and a light blue area on the right, separated by a diagonal line. A large, semi-transparent dark blue circle overlaps the boundary between the two colors. The text is positioned on the dark blue side of the diagonal.

Thanks for your
kind attention!