

GLP-1 receptor agonists and alcohol

No conflict of interest

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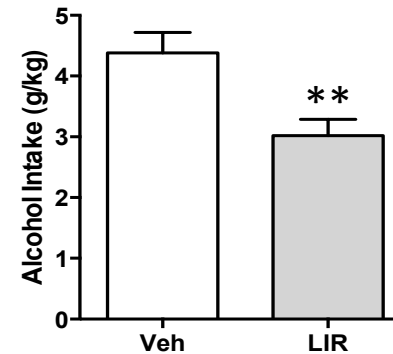
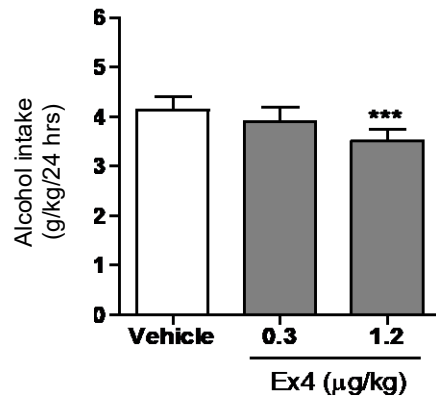


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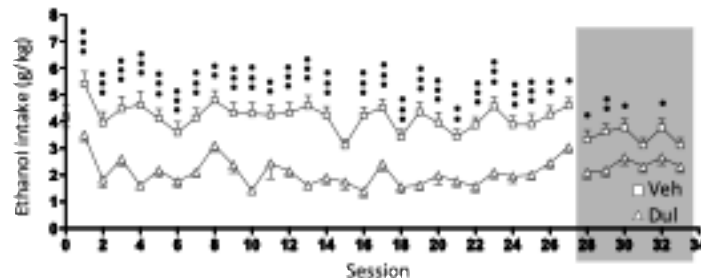
GLP-1 receptor agonists reduces alcohol intake in rodents



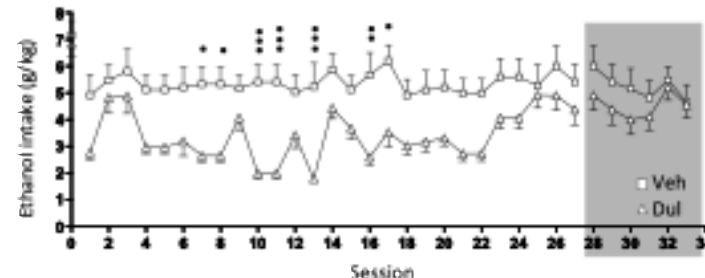
Exendin-4
(exenatide)
♂



Liraglutide ♂



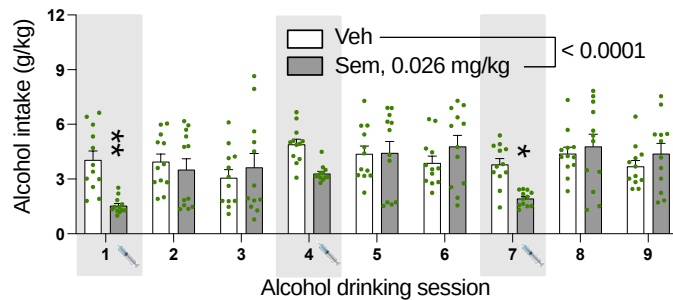
Dulaglutide ♂



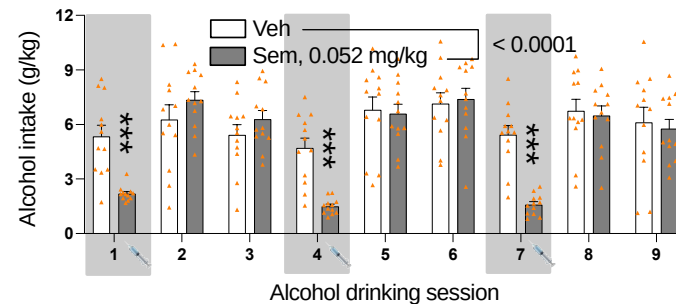
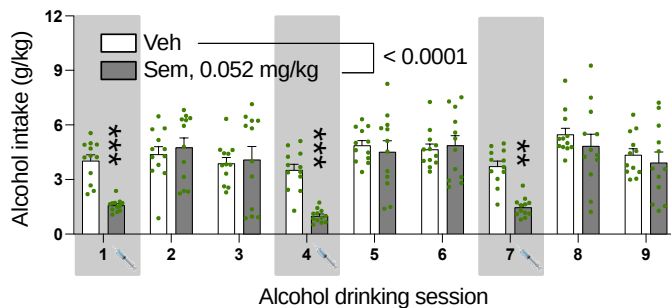
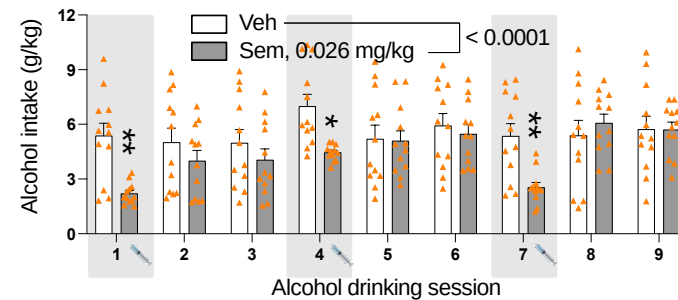
Dulaglutide ♀

Semaglutide dose-dependently reduces alcohol intake in male and female rats

♂



♀



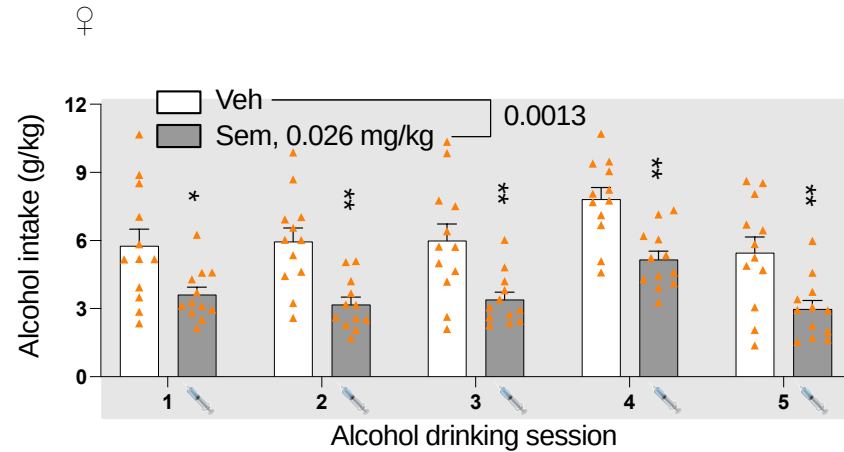
Semaglutide ♂

Aranäs et al 2023, eBiomedicine

Semaglutide ♀

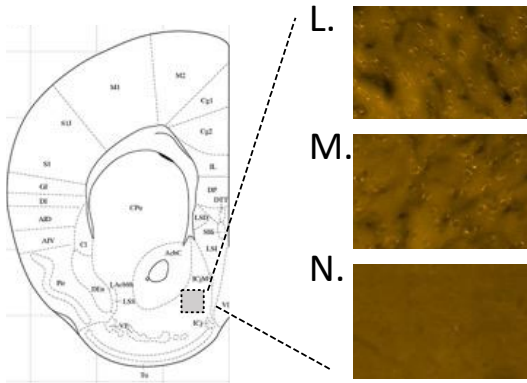


Semaglutide dose-dependently reduces alcohol intake in male and female rats



Semaglutide ♂

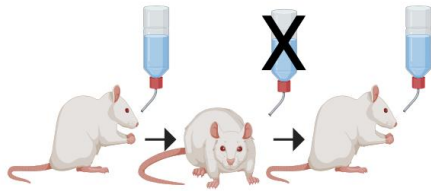
Semaglutide ♀



Aranäs et al 2023, eBiomedicine



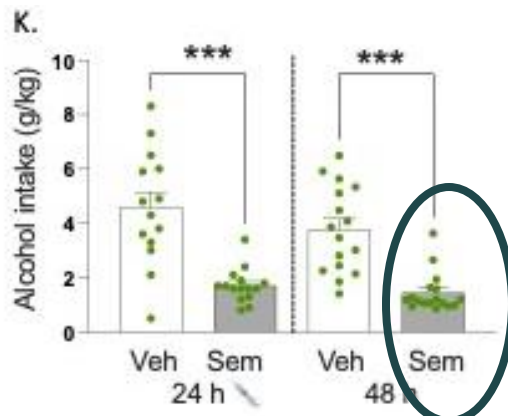
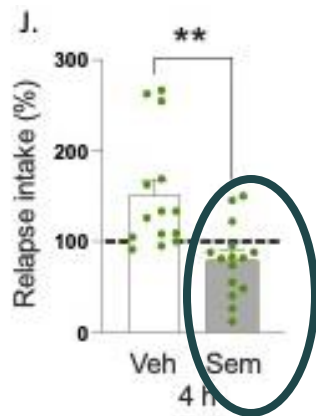
GLP-1R agonist prevents relapse drinking



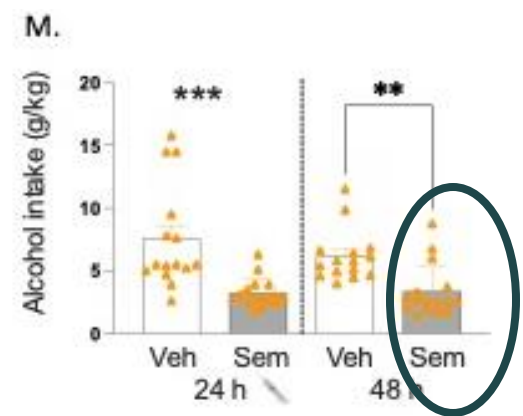
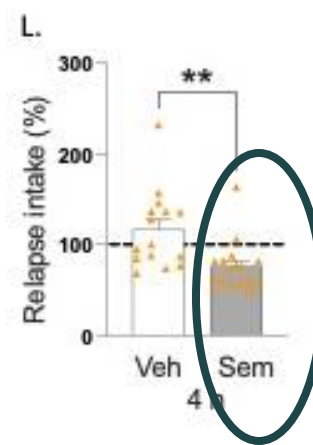
Relapse drinking after withdrawal

♂

♀

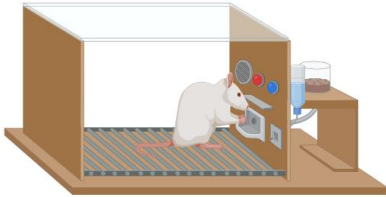


Semaglutide ♂



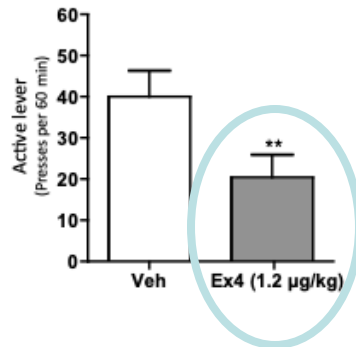
Semaglutide ♀

GLP-1R agonist suppresses the motivation to consume alcohol

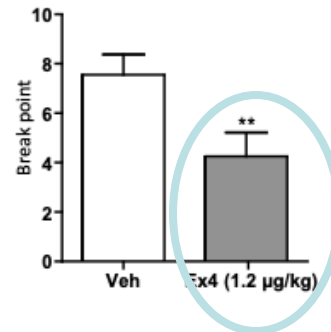


Alcohol-self administration and alcohol seeking

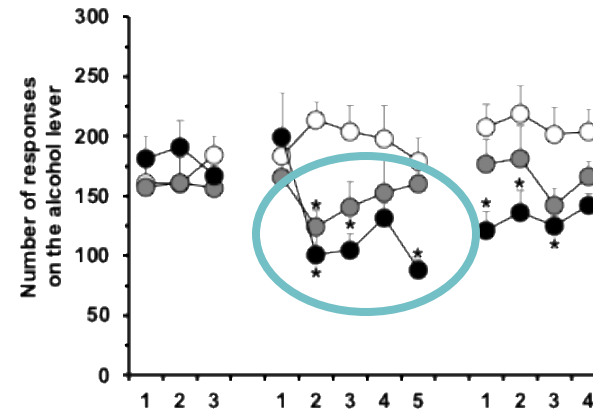
A. Active lever presses



B. Break point



↑
Exendin-4
(exenatide)



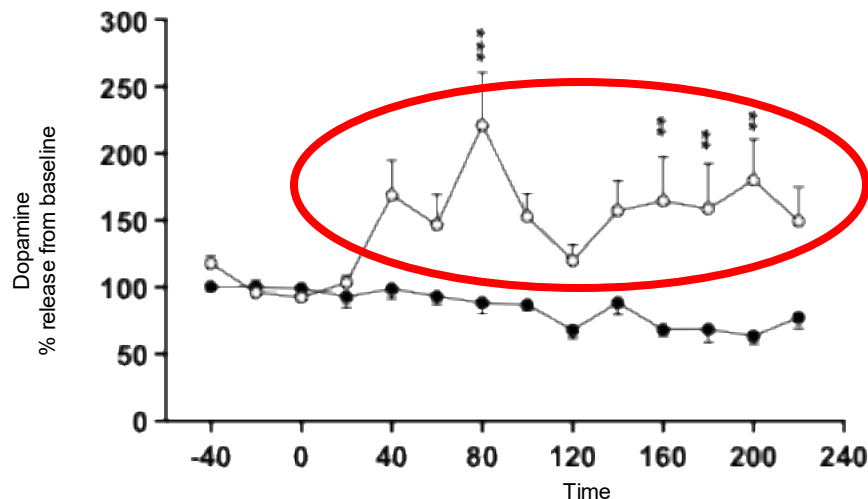
↑
Liraglutide

Egecioglu et al 2012; Vallöf et al 2016



Alcohol's rewarding properties

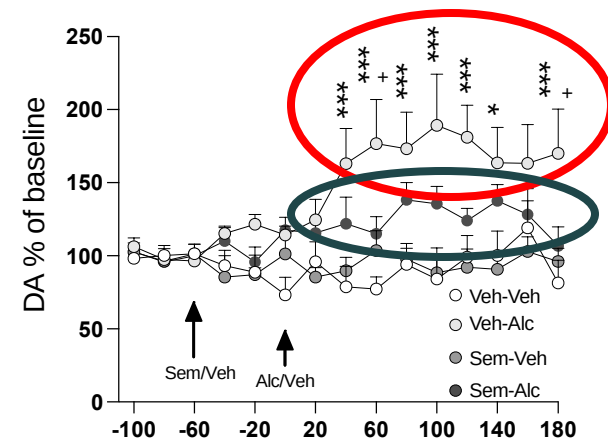
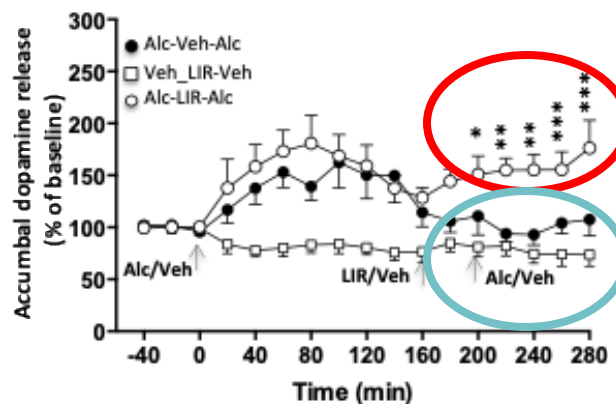
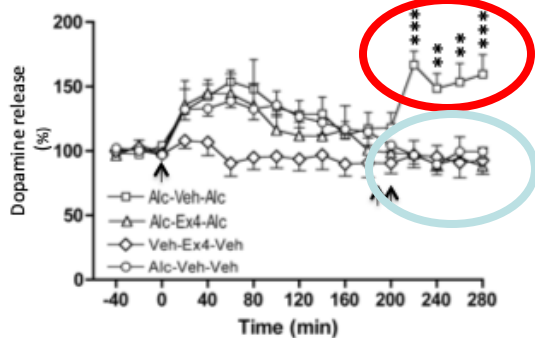
- Alcohol drinking is driven by alcohol's rewarding properties
- Sensitivity to alcohol's rewarding properties is regarded as a risk factor for an AUD diagnosis later in life
- In humans, the rewarding experience of alcohol correlates to an increase in dopamine in the ventral striatum
- This dopamine elevation is also evident in rodents

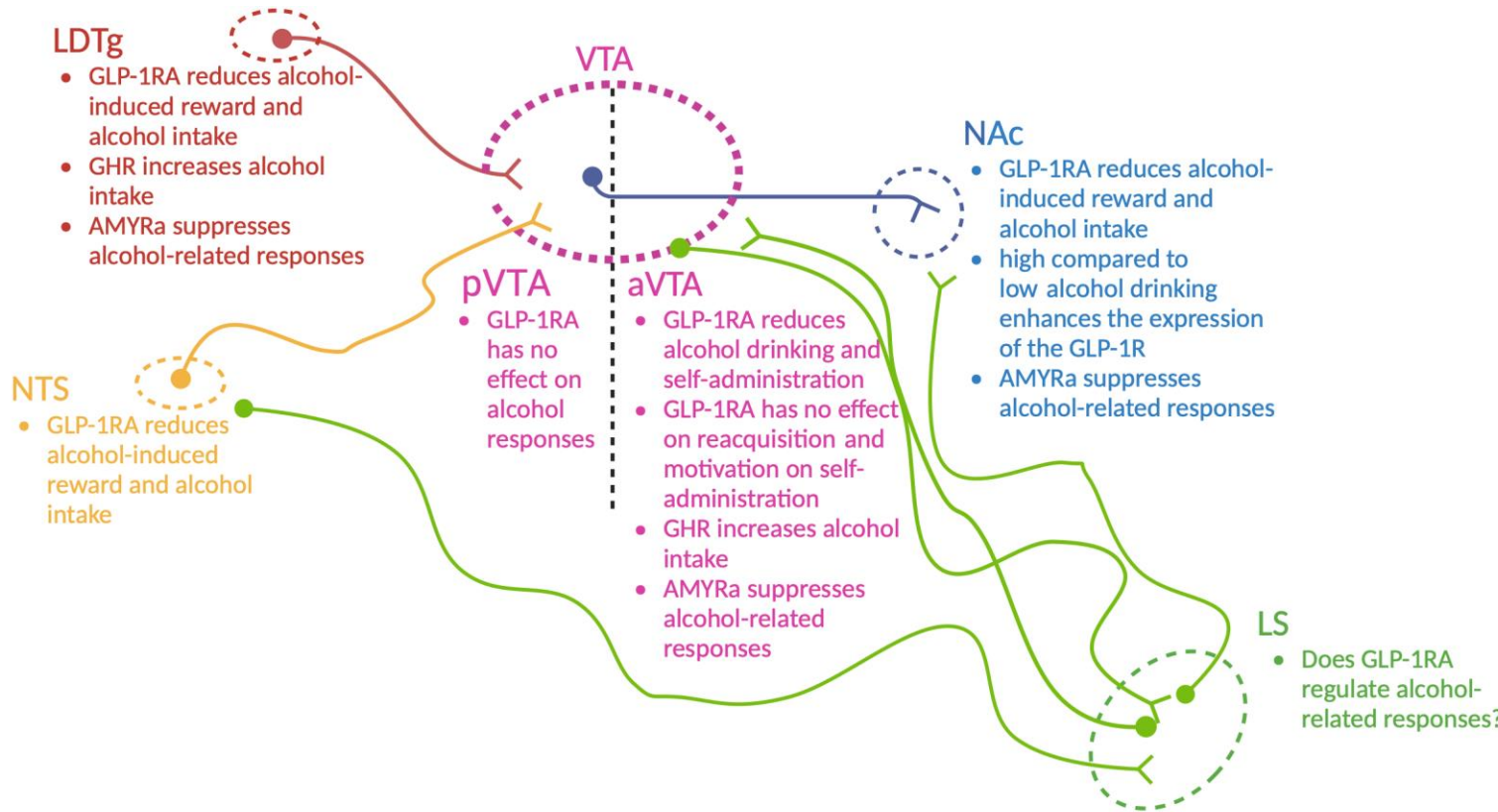
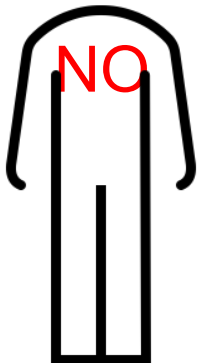
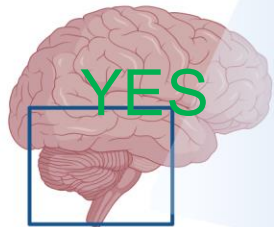


Jayaram-Lindström et al 2016; Boileau et al 2003; Engel et al 1988; Imperato & DiChiara, 1986; Di Michele et al 1998; King et al 2021

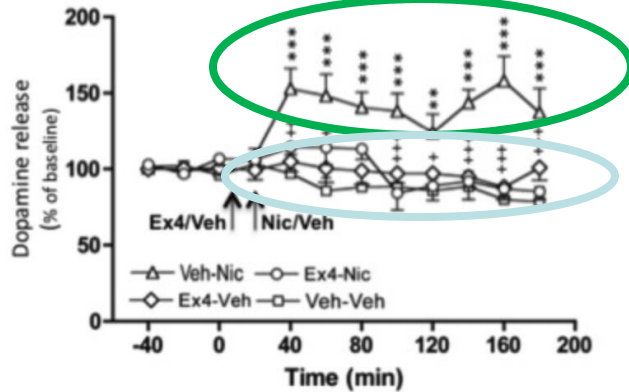


GLP-1R agonists attenuate alcohol's rewarding properties

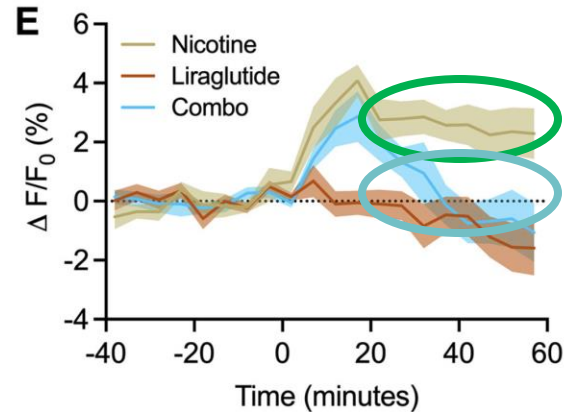
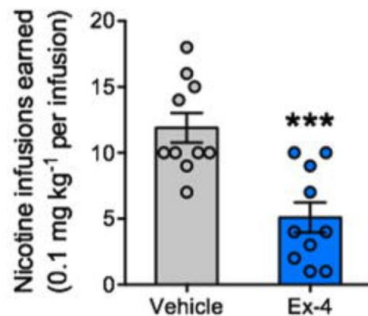




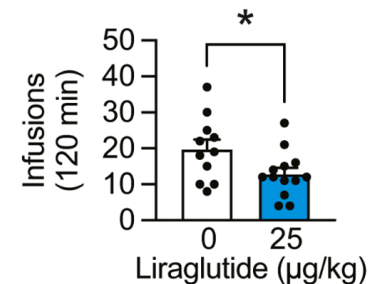
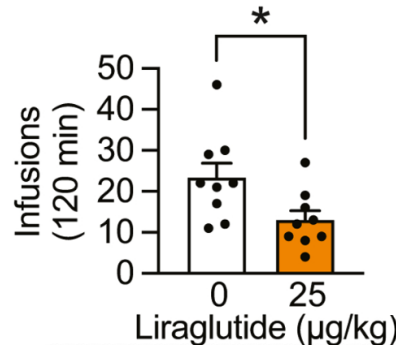
GLP-1 receptor agonists and nicotine



Exendin-4
(exenatide)



Liraglutide



Future directions

- The efficacy of the various GLP-1R agonists varies, why?
- Mechanisms of actions?
- Reasons for the sex-differences

Significance

- GLP-1R agonists reduce alcohol intake in male and female rats
- GLP-1R agonists suppress alcohol-induced reward
- GLP-1R within reward-related areas control alcohol-related behaviors



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