

Favorite music sets the brain's opioids in motion

Listening to favorite music affects the function of the brain's opioid system.

TURKU, FINLAND, April 16, 2025 /EINPresswire.com/ -- A new imaging study by the Turku PET Centre in Finland showed that listening to favorite music affects the function of the brain's opioid system.

Music can evoke intense pleasure, sometimes experienced physically as pleasant "chills." While the effect of music on pleasure is clear, the brain mechanisms behind musical enjoyment are not yet fully understood. The brain's opioid system is known to be involved in pleasurable experiences related to survival-critical behaviors, such as eating and sex. This new study from the Turku PET Centre in Finland demonstrates for the first time that listening to favorite music also activates the brain's opioid receptors.

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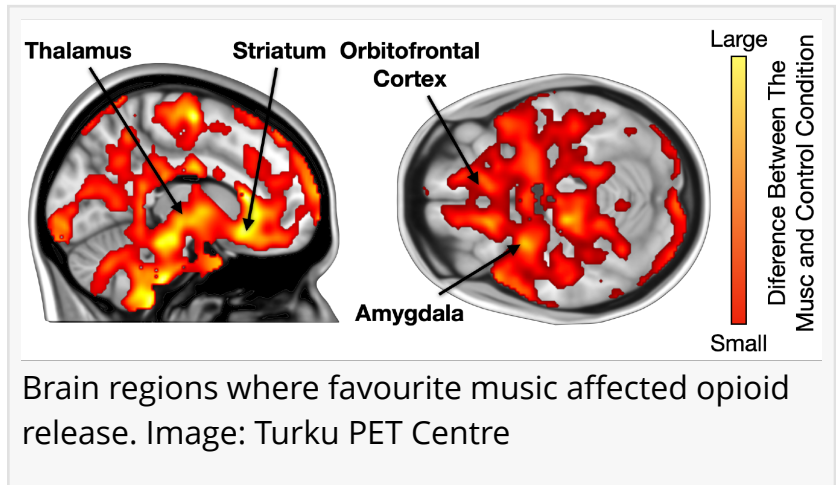
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*Academy Research Fellow
Vesa Putkinen*

The study measured the release of opioids in the brain using positron emission tomography (PET) while participants listened to their favorite music. Additionally, functional magnetic resonance imaging (fMRI) was used to examine how the density of opioid receptors affects brain activation when listening to music.

The results show that favorite music influenced opioid release in several brain areas associated with the experience of pleasure. The release of opioids was also linked to how often participants reported experiencing pleasurable chills while listening to music. Furthermore, individual differences in the number of opioid receptors correlated with brain activation during music listening: the more opioid receptors participants had, the more strongly their brains reacted in MRI scans.

“These results show for the first time directly that listening to music activates the brain's opioid



system. The release of opioids explains why music can produce such strong feelings of pleasure, even though it is not a primary reward necessary for survival or reproduction, like food or sexual pleasure," says Academy Research Fellow Vesa Putkinen from [the University of Turku](#).

Professor Lauri Nummenmaa adds: "The brain's opioid system is also involved in pain relief. Based on our findings, the previously observed pain-relieving effects of music may be due to music-induced opioid responses in the brain."

The study provides significant new insight into how the brain's chemical systems regulate the pleasure derived from music. The results may also help develop new music-based interventions, for example, in pain management and the treatment of mental health disorders.

The research article "[Pleasurable music activates cerebral \$\mu\$ -opioid receptors](#): a combined PET-fMRI study" was published in the European Journal of Nuclear Medicine on 4 April 2025.

Academy Research Fellow Vesa Putkinen
University of Turku
vesa.putkinen@utu.fi

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