



DOVE NASCONO LE DIPENDENZE? NEL CERVELLO (SOPRATTUTTO DEI GIOVANI)

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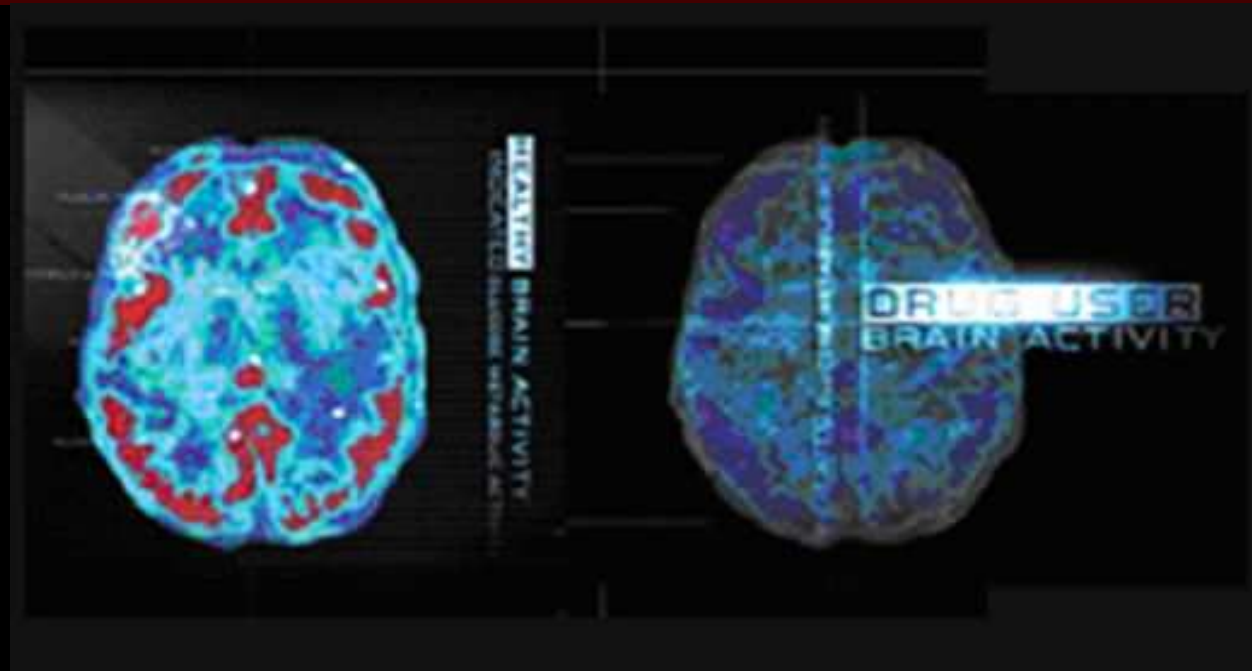
MOlecular MInd Lab
Scuola IMT Alti Studi Lucca

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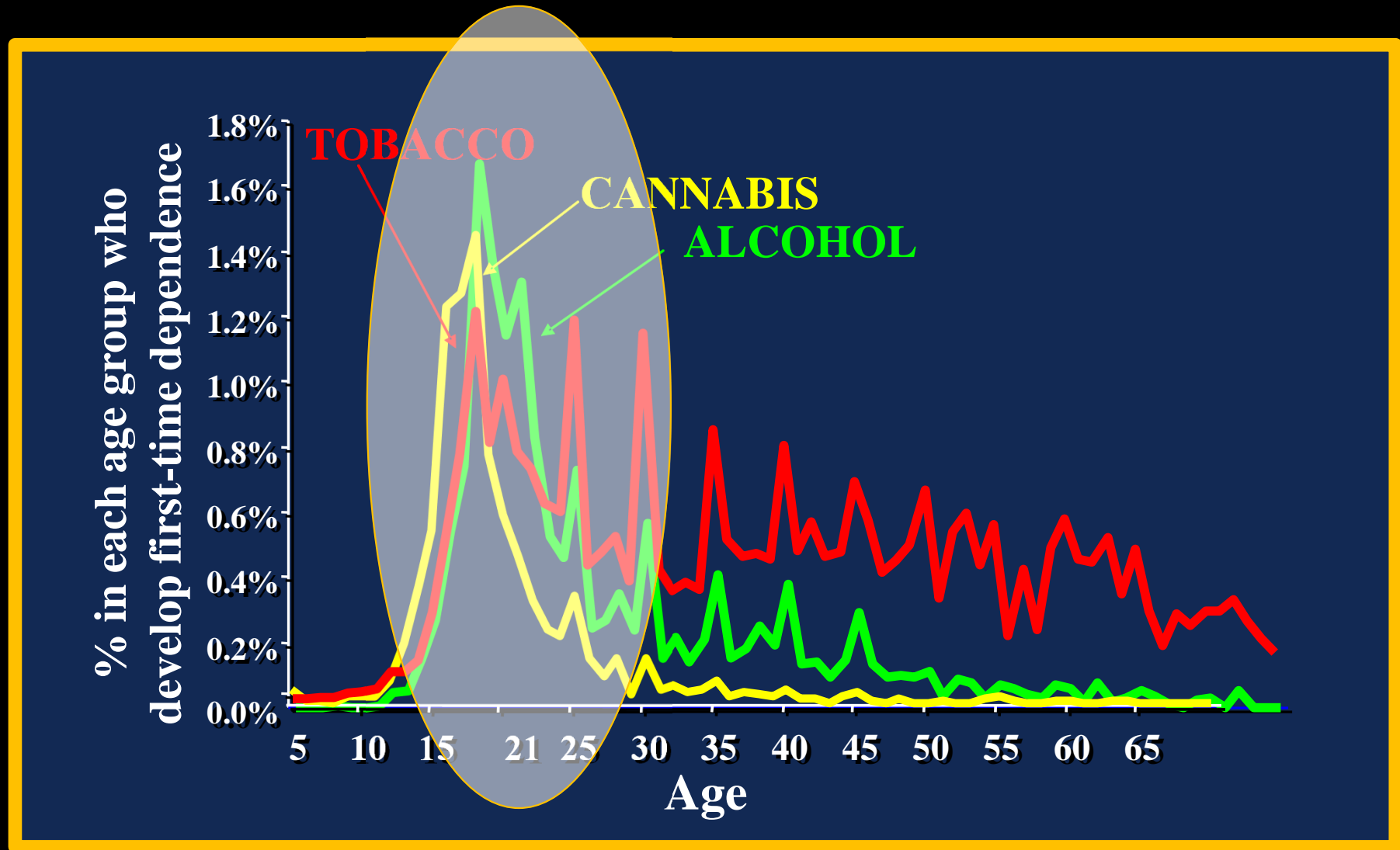
Che cos'è la 'dipendenza'?

È una malattia cerebrale



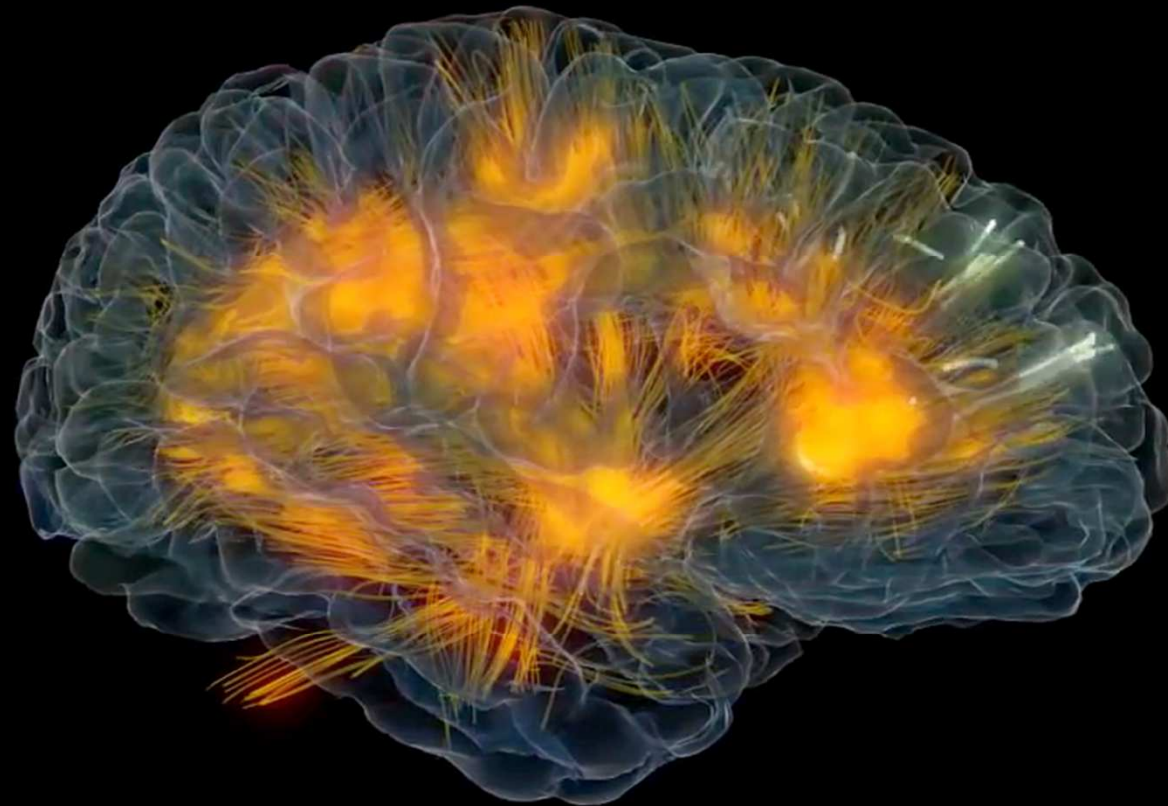
- Caratterizzata da:
 - Perdita del controllo dei comportamenti di assunzione e ricerca compulsiva
 - Abuso nonostante consapevolezza delle conseguenze negative
 - Alterazioni persistenti nella struttura e nel funzionamento del cervello

La dipendenza è una malattia che inizia nell'adolescenza

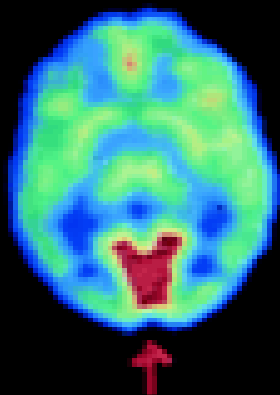


Le più recenti scoperte scientifiche hanno rivoluzionato la nostra visione sull'abuso di sostanze e sulle dipendenze in generale

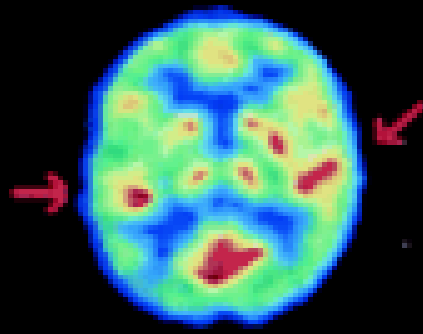
Esplorazione funzionale in vivo del cervello



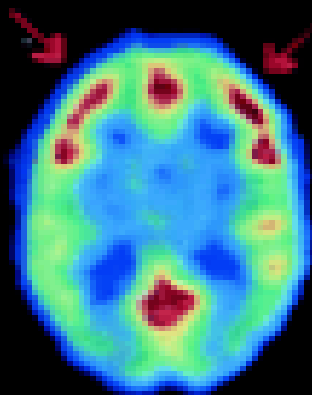
LOOKING



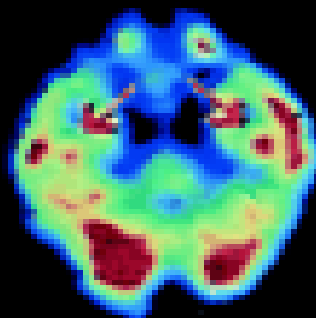
LISTENING



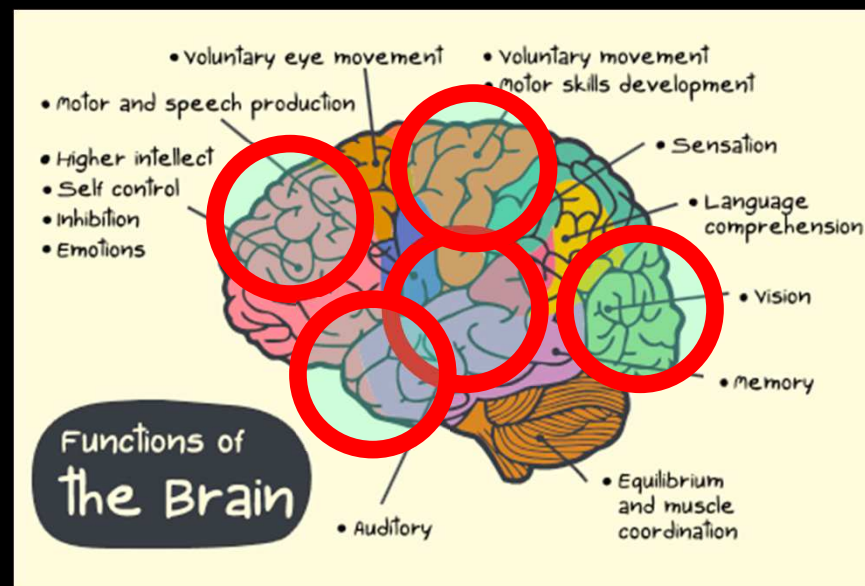
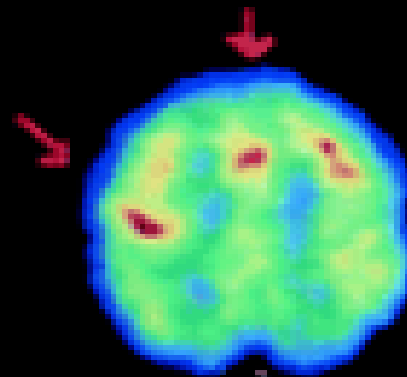
THINKING



REMEMBERING

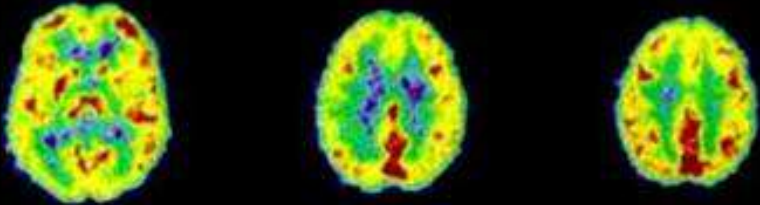


WORKING

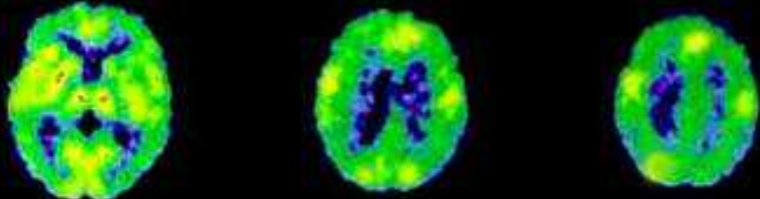


Demenza di Alzheimer

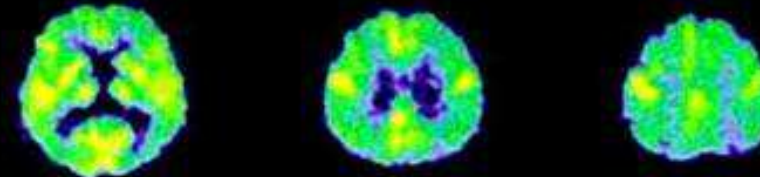
Anziano
Sano



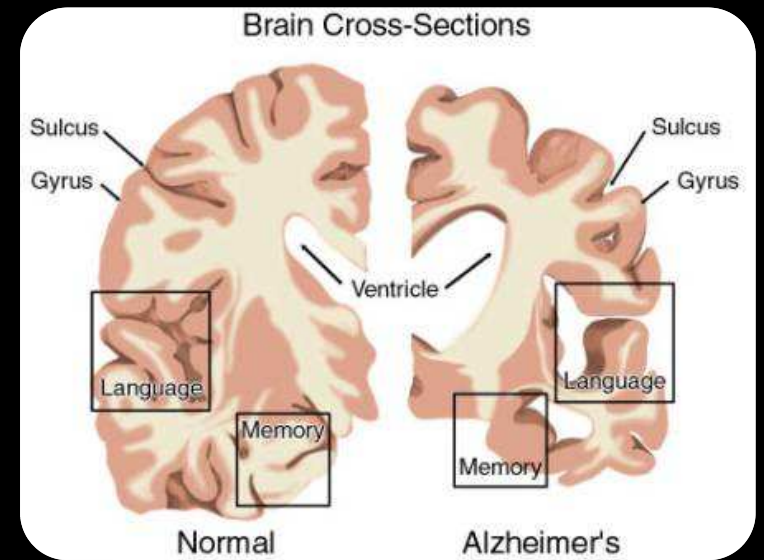
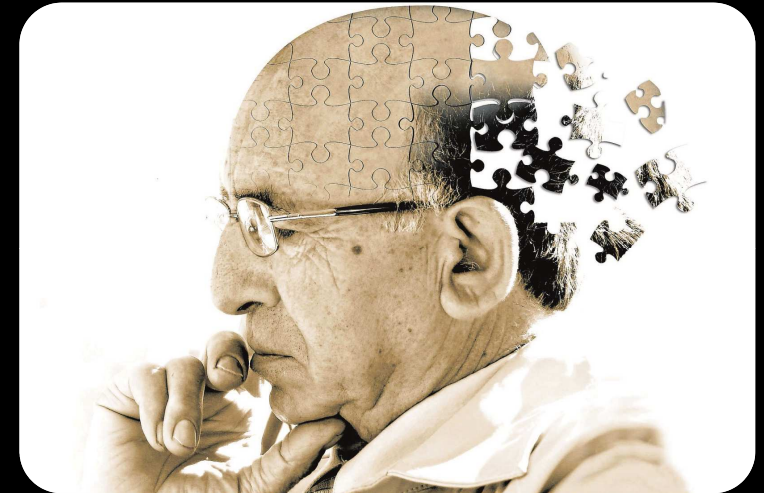
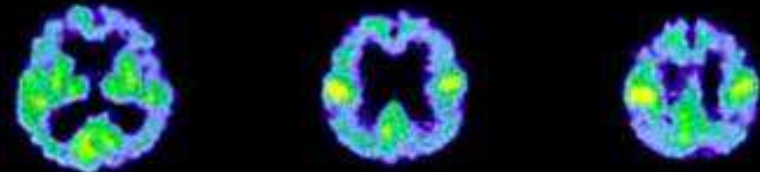
Demenza
Lieve



Demenza
Moderata

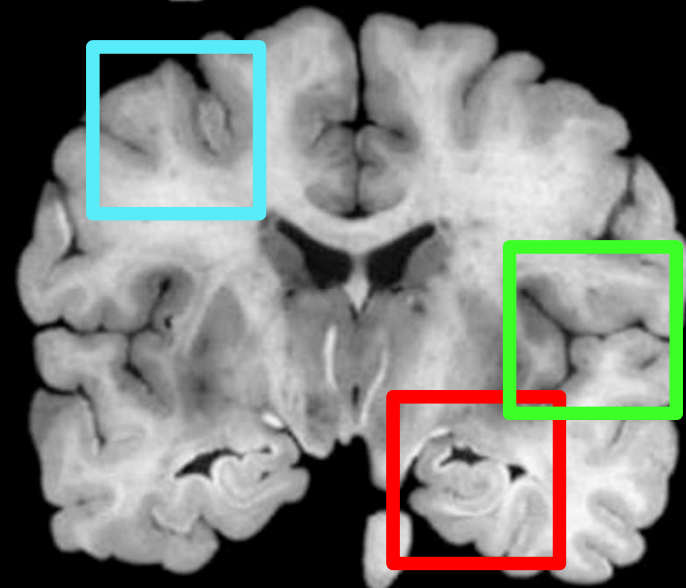


Demenza
Grave

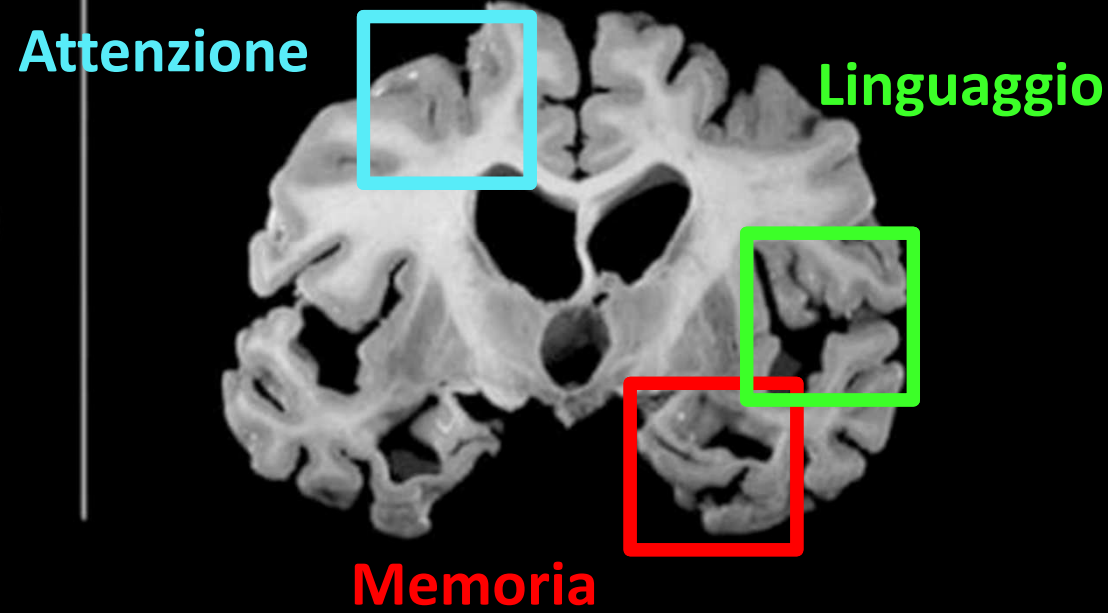


Demenza di Alzheimer

Normal

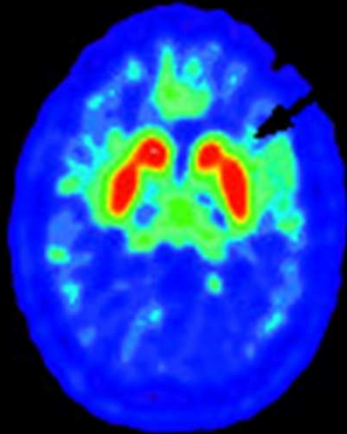


Alzheimer

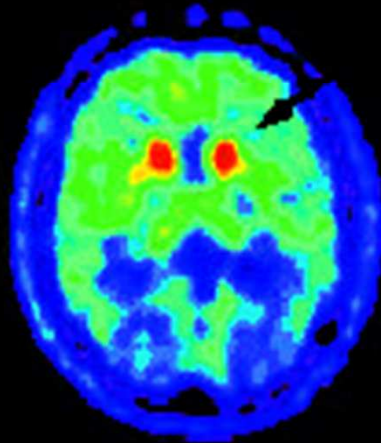


La malattia di Parkinson

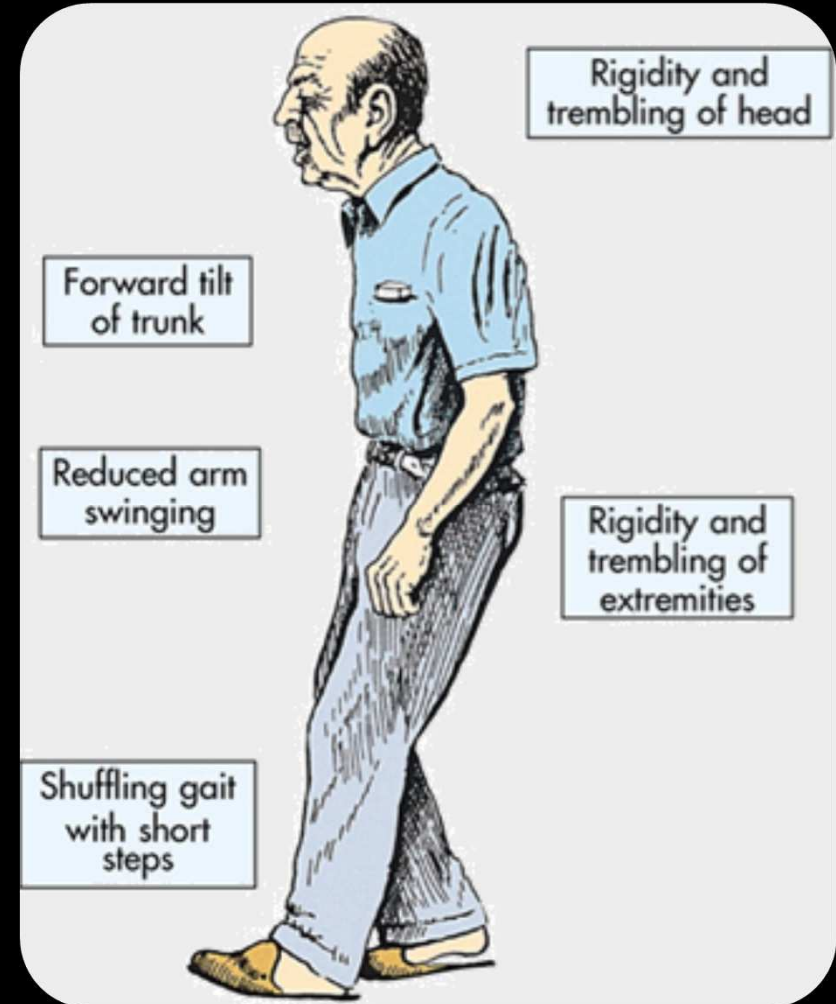
NORMAL



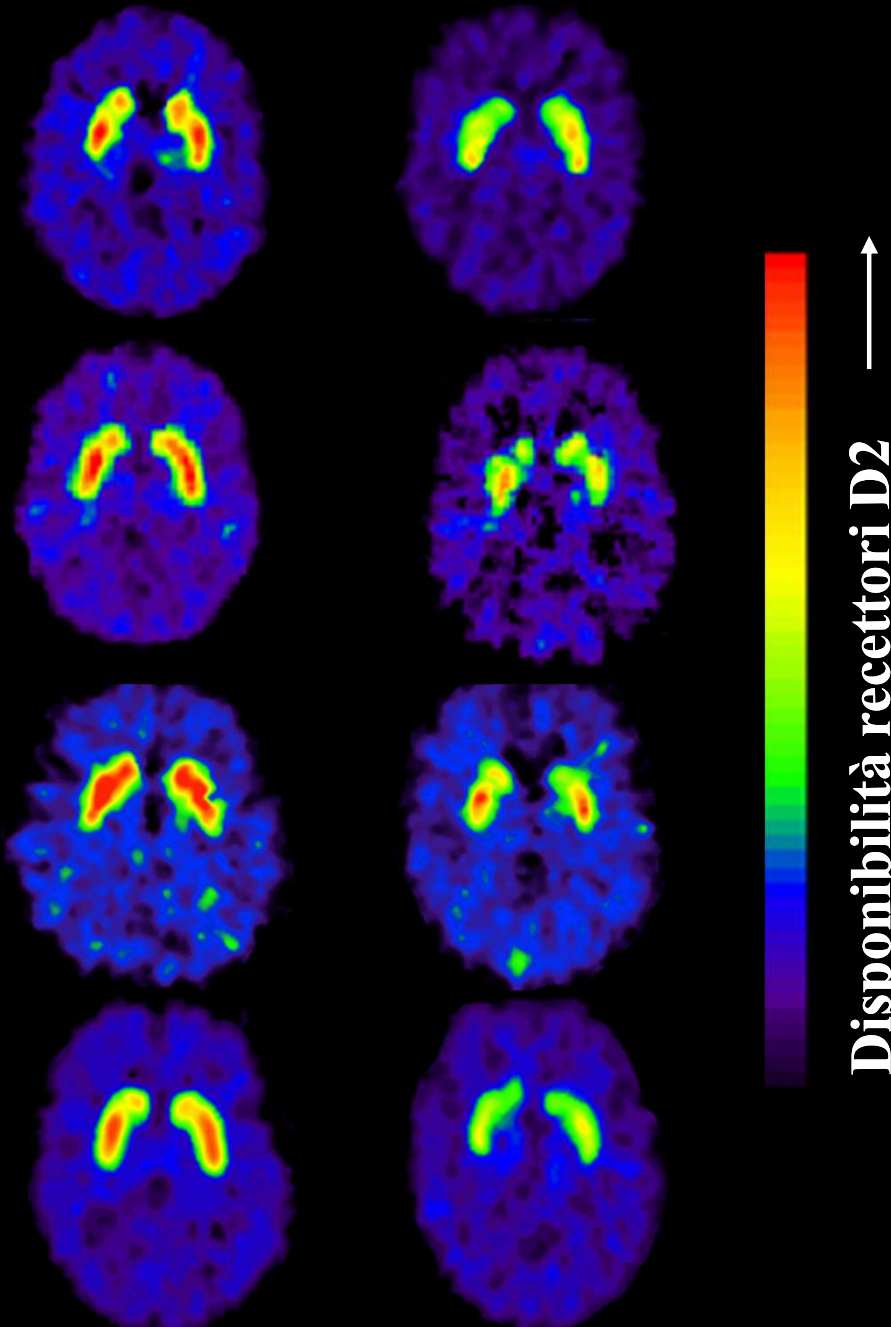
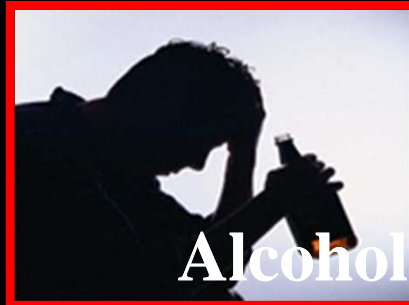
PARKINSON'S



Dopamina

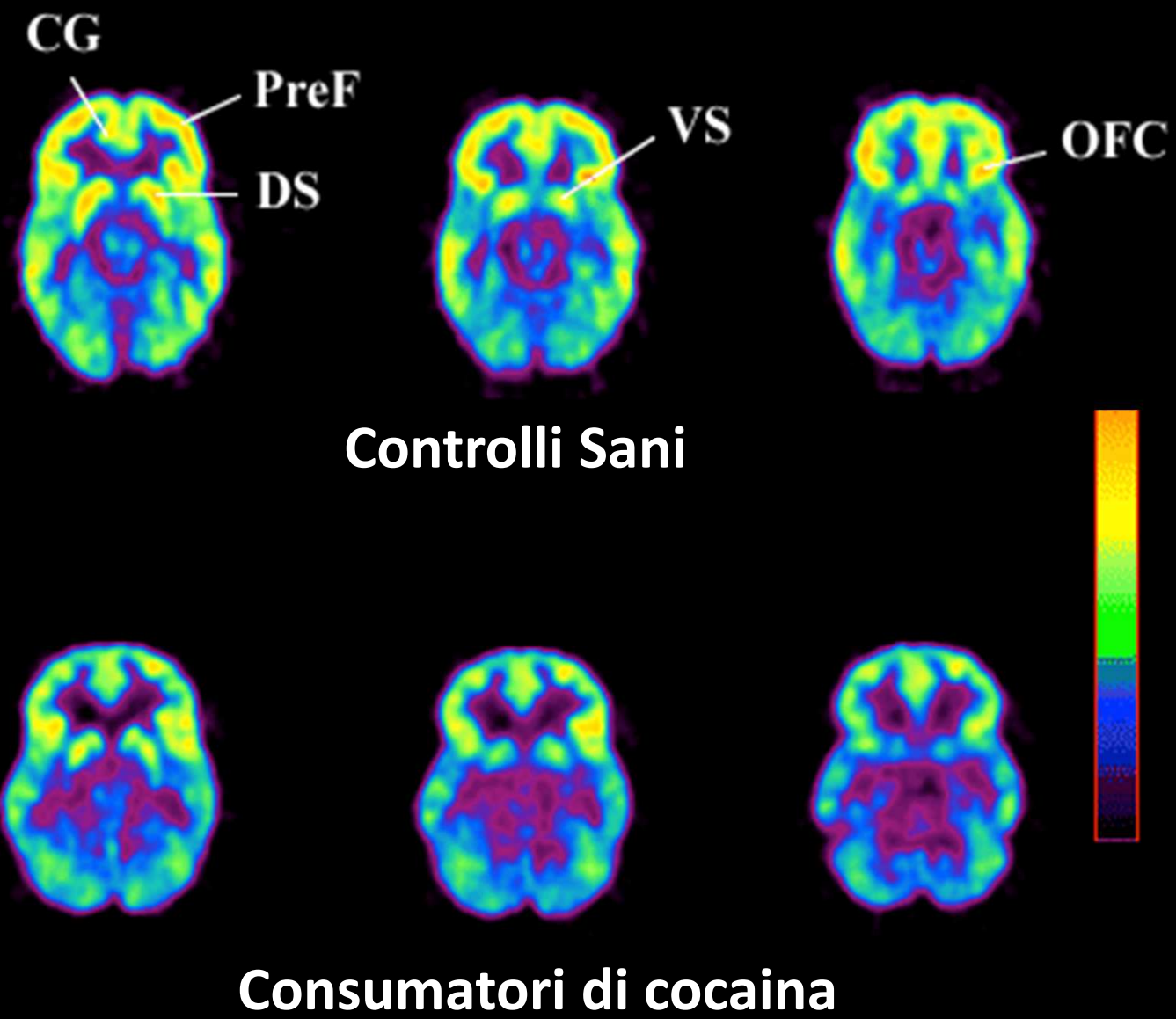


Le droghe distruggono l'equilibrio della dopamina¹⁰

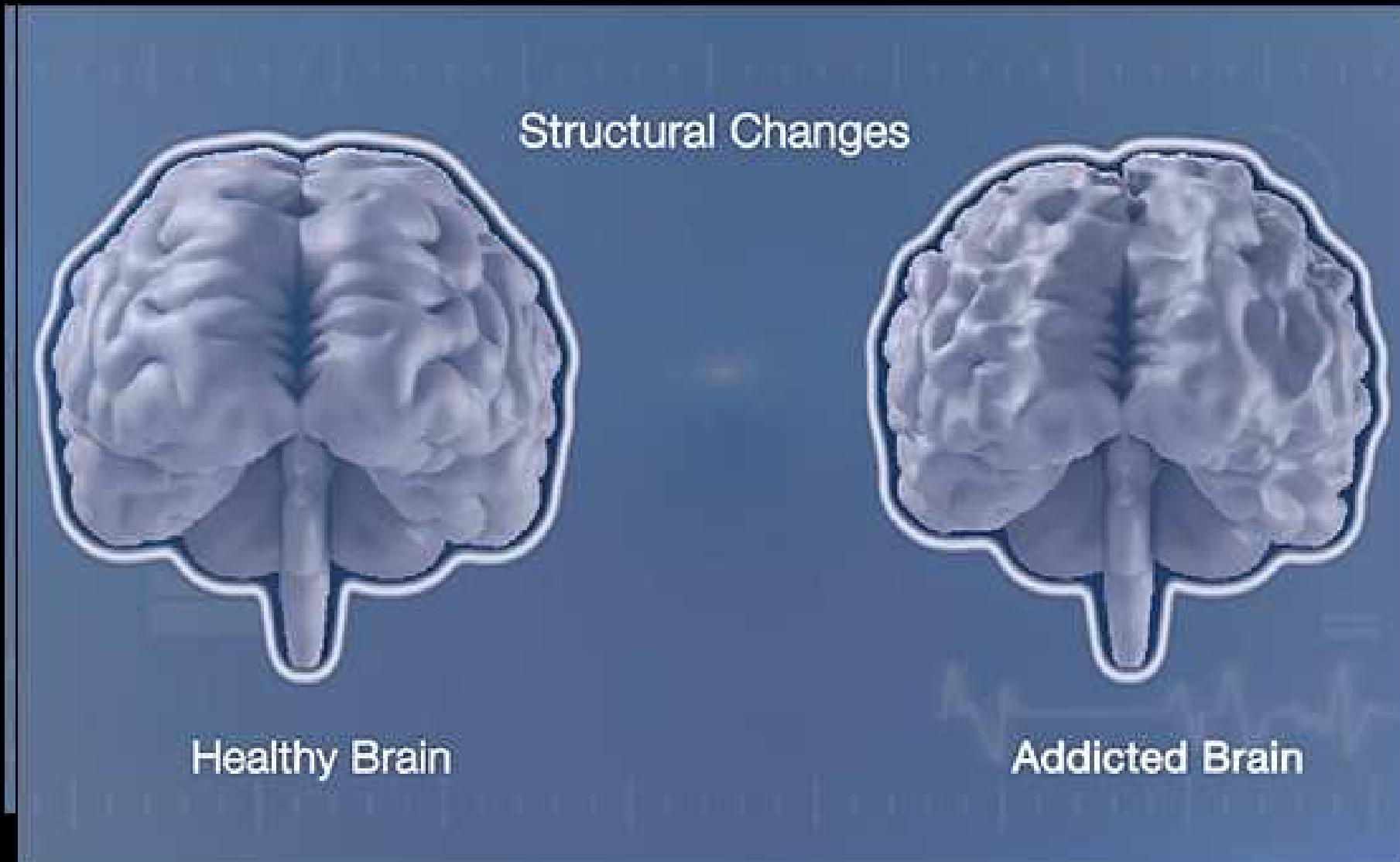


Controlli sani Dipendenti di droghe

Quali effetti cognitivi?



Solo 'decadimento' cognitivo o... anche nella struttura?





Che cosa ci dà piacere?

Le vie dopaminergiche nel cervello

Sistema dopaminergico

Lobo frontale

Striato

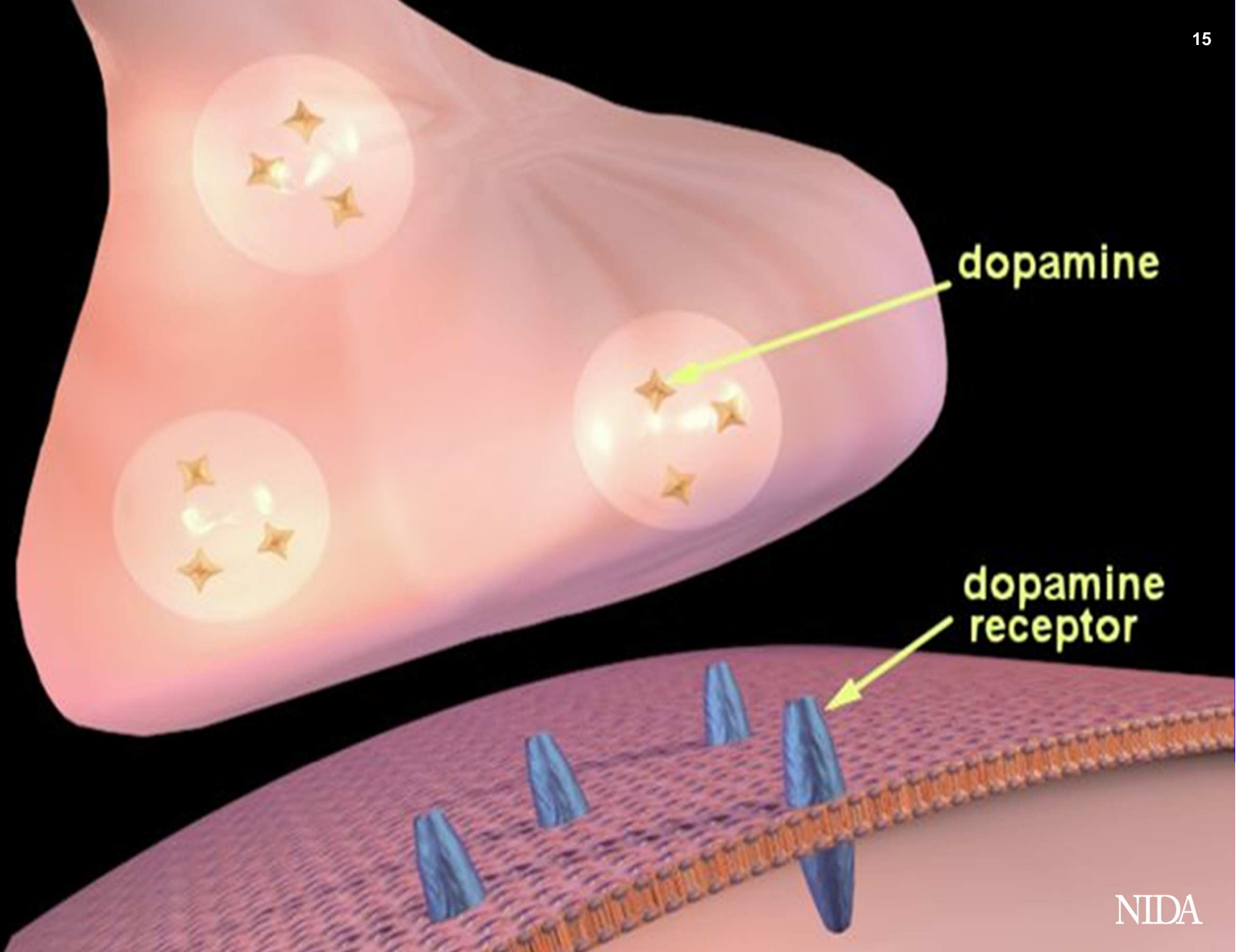
Sistema dopaminergico mesolimbico

Substantia nigra

Sistema dopaminergico nigrostriatale

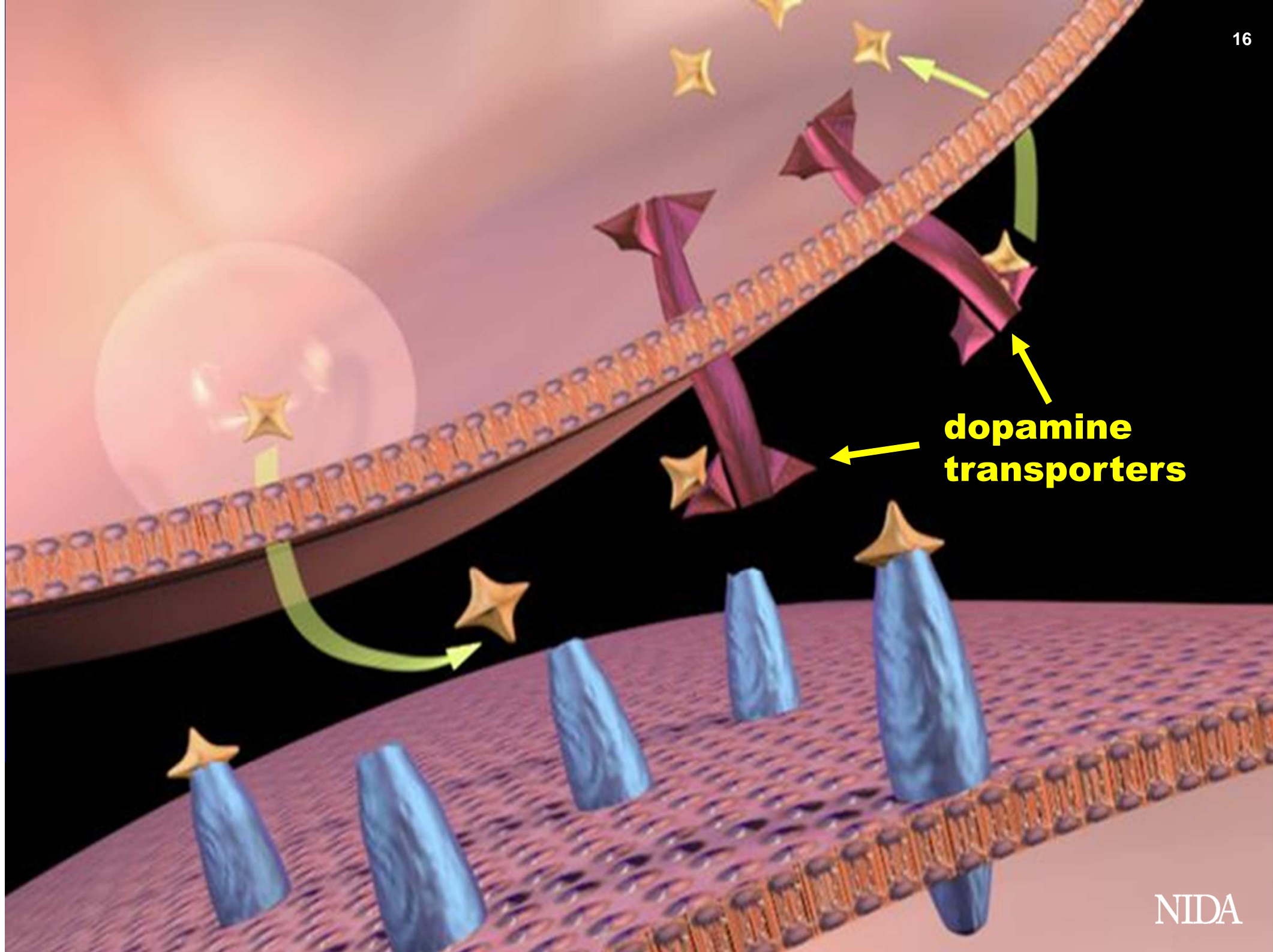
Area tegmentale ventrale





dopamine

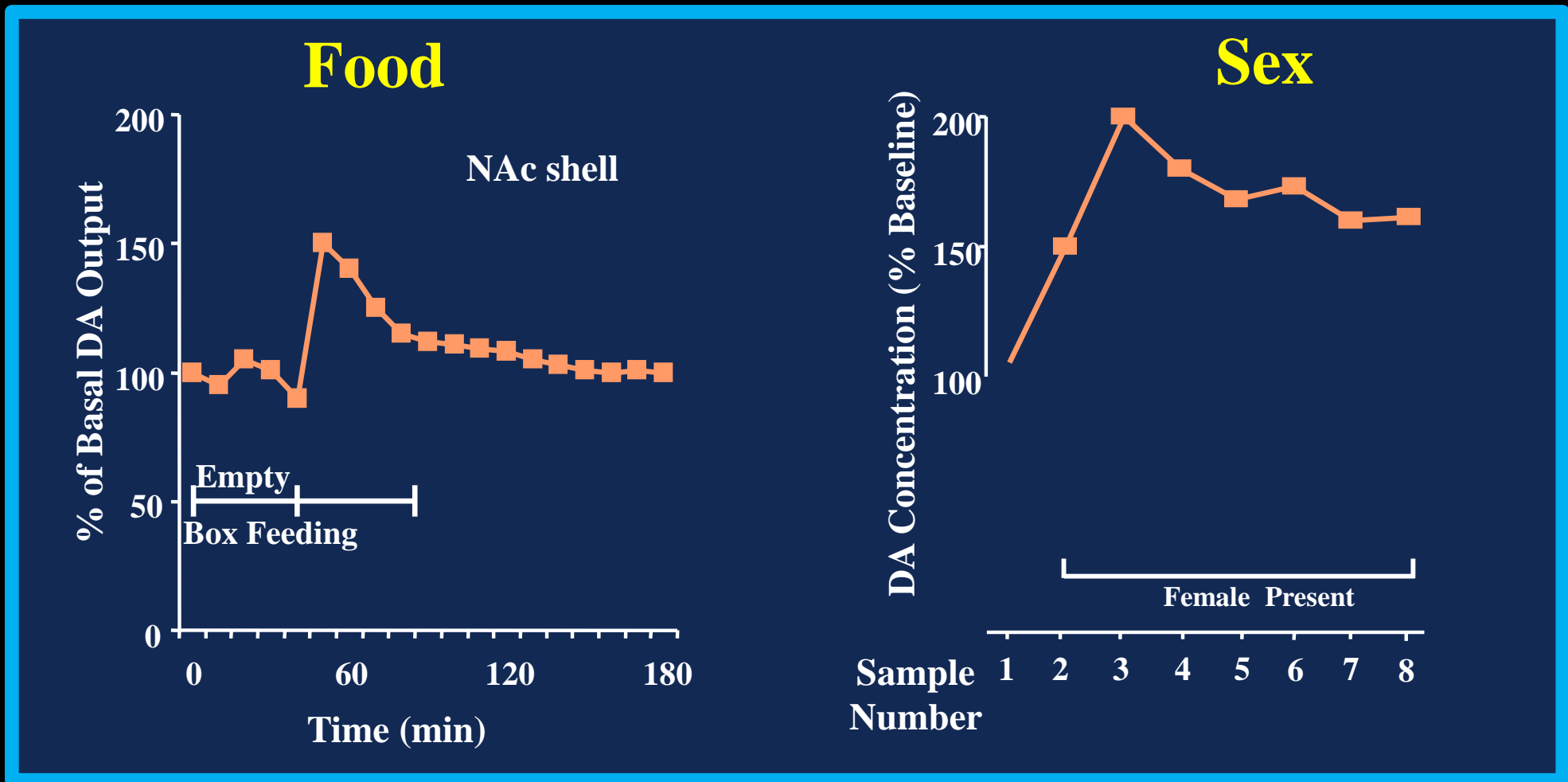
dopamine
receptor

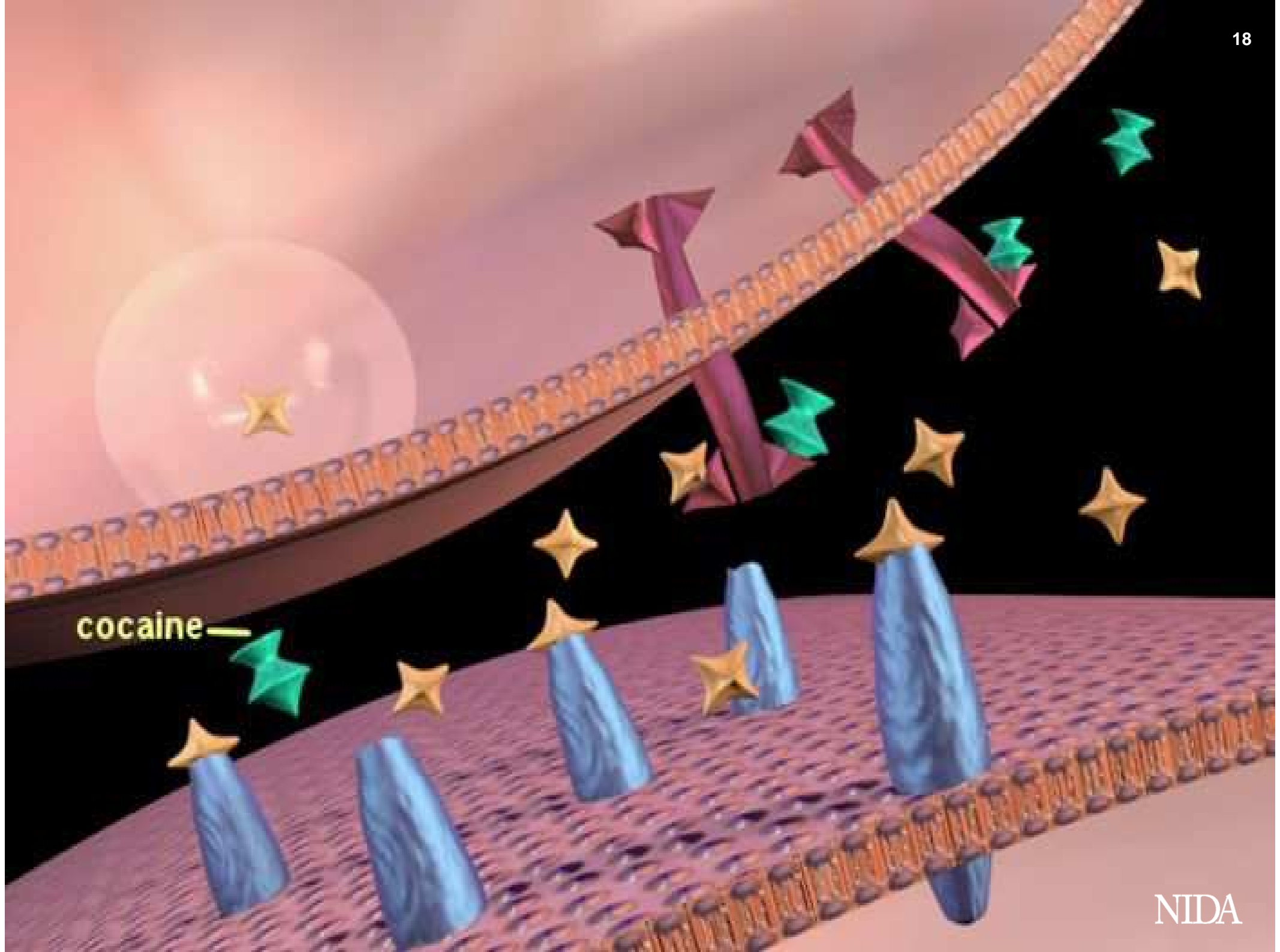


**dopamine
transporters**

Più mi piace, più dopamina viene rilasciata!

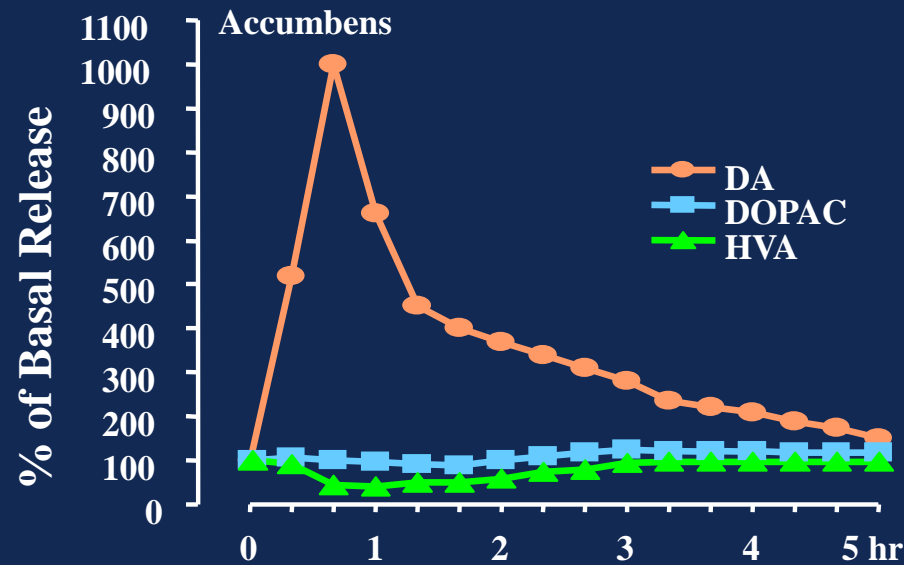
O viceversa?



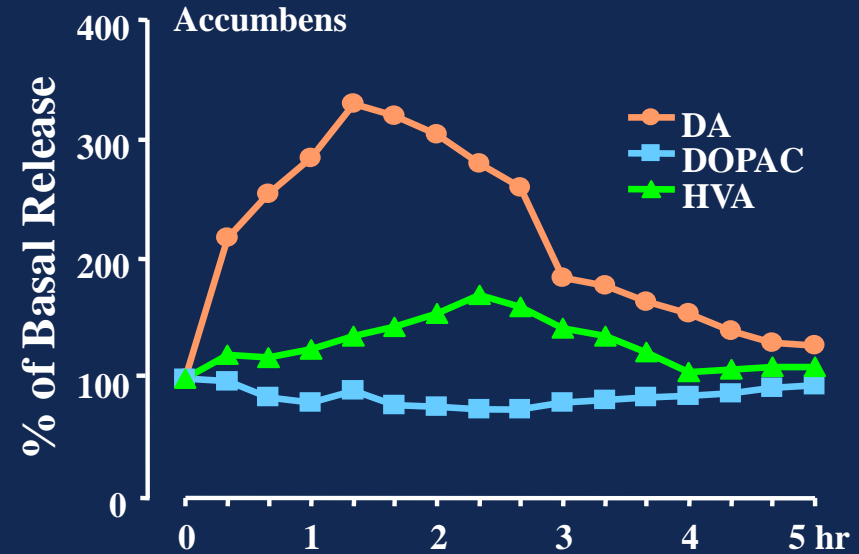


cocaine

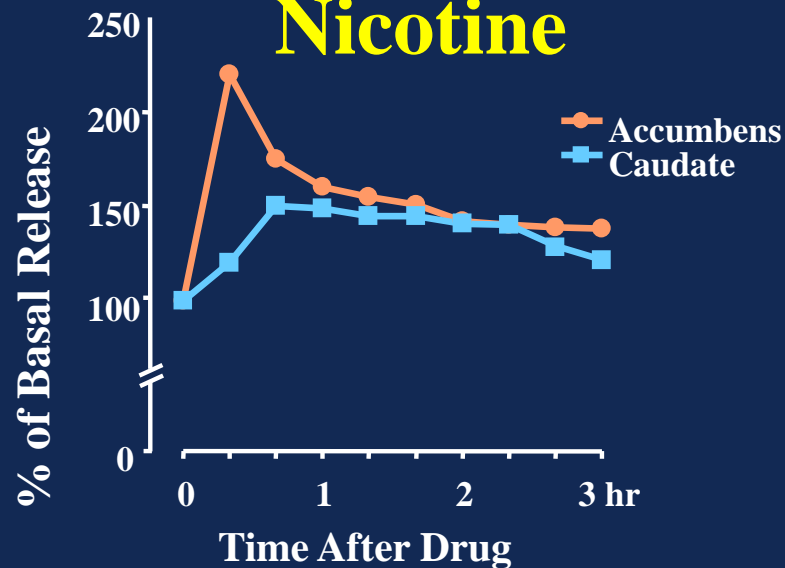
Amphetamine



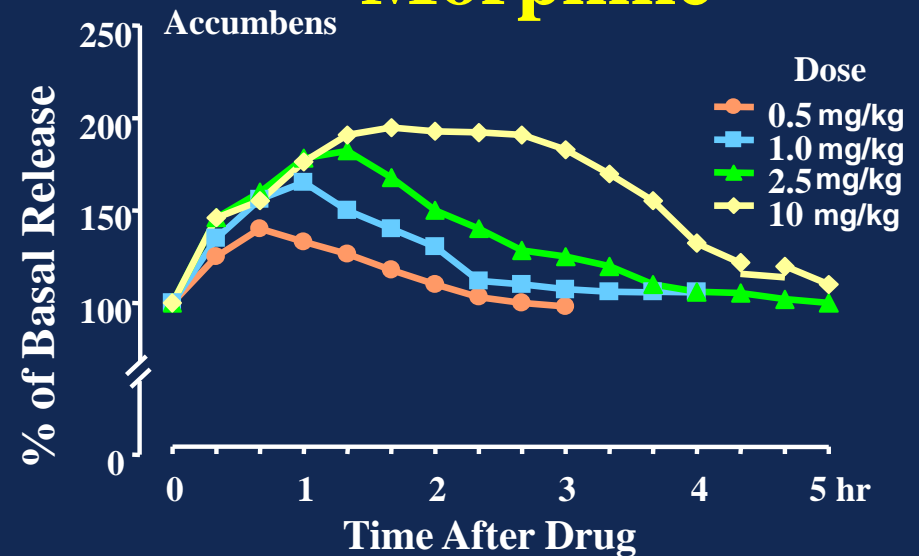
Cocaine



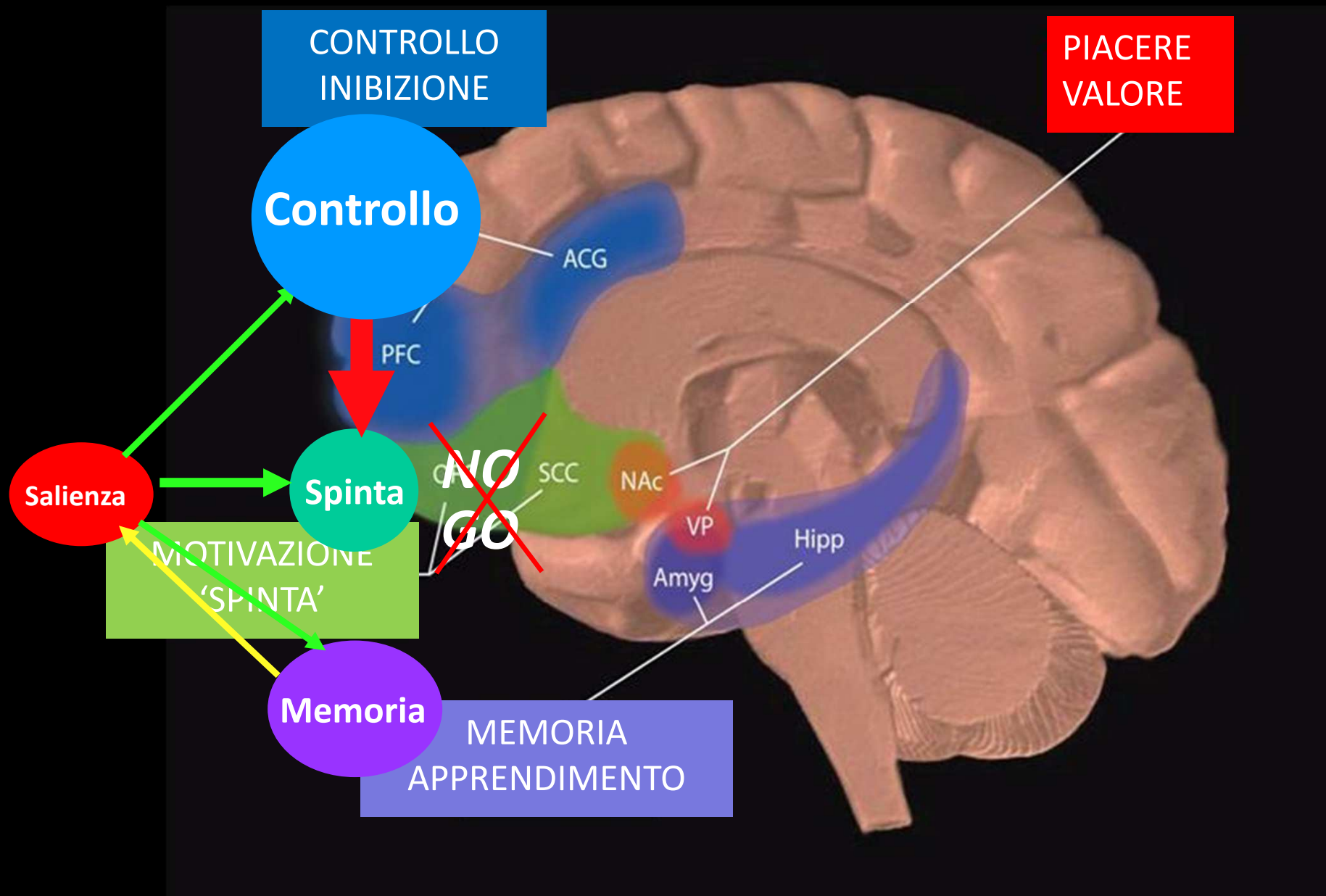
Nicotine



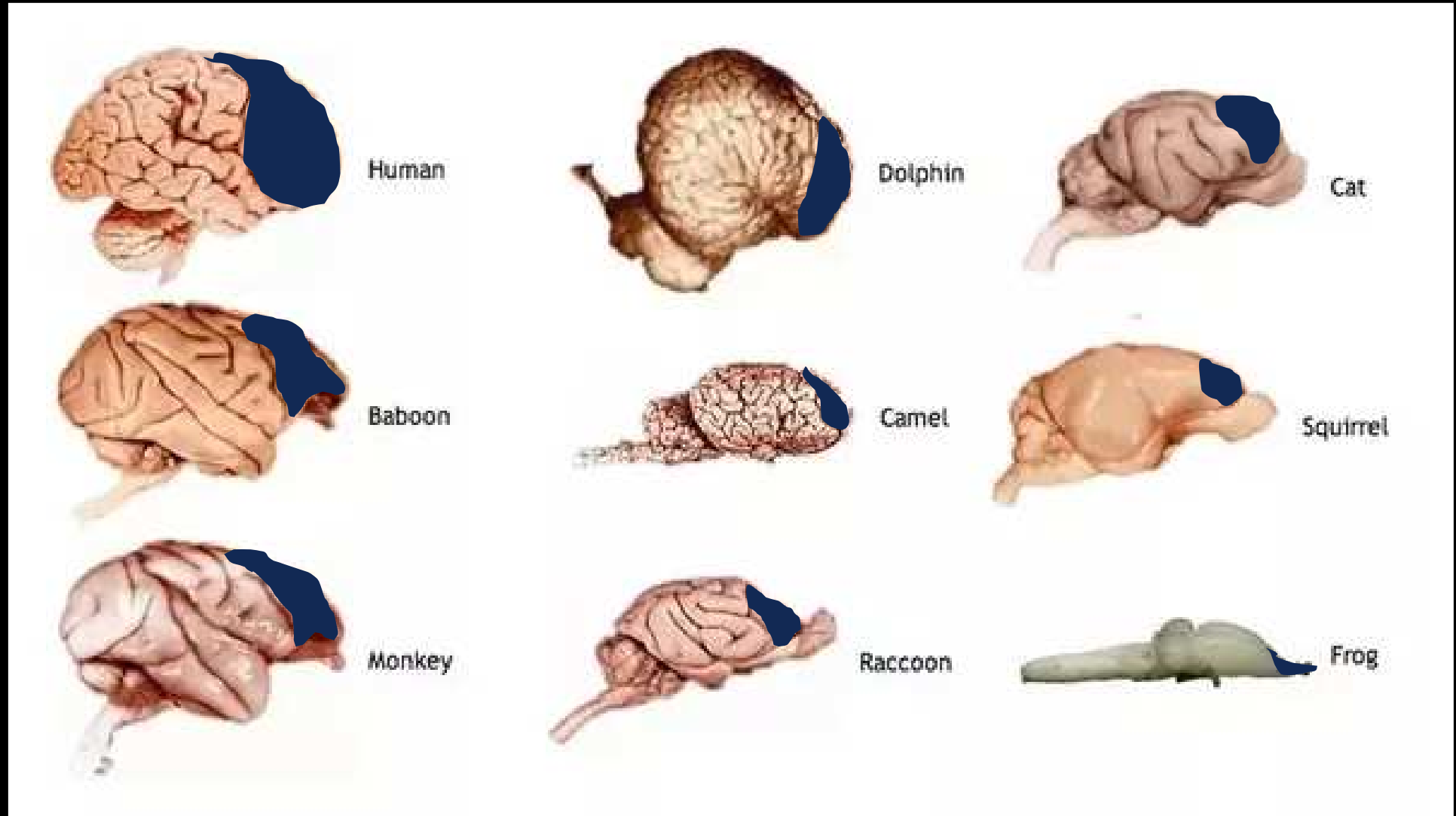
Morphine



Le regioni del cervello che ci danno dipendenza

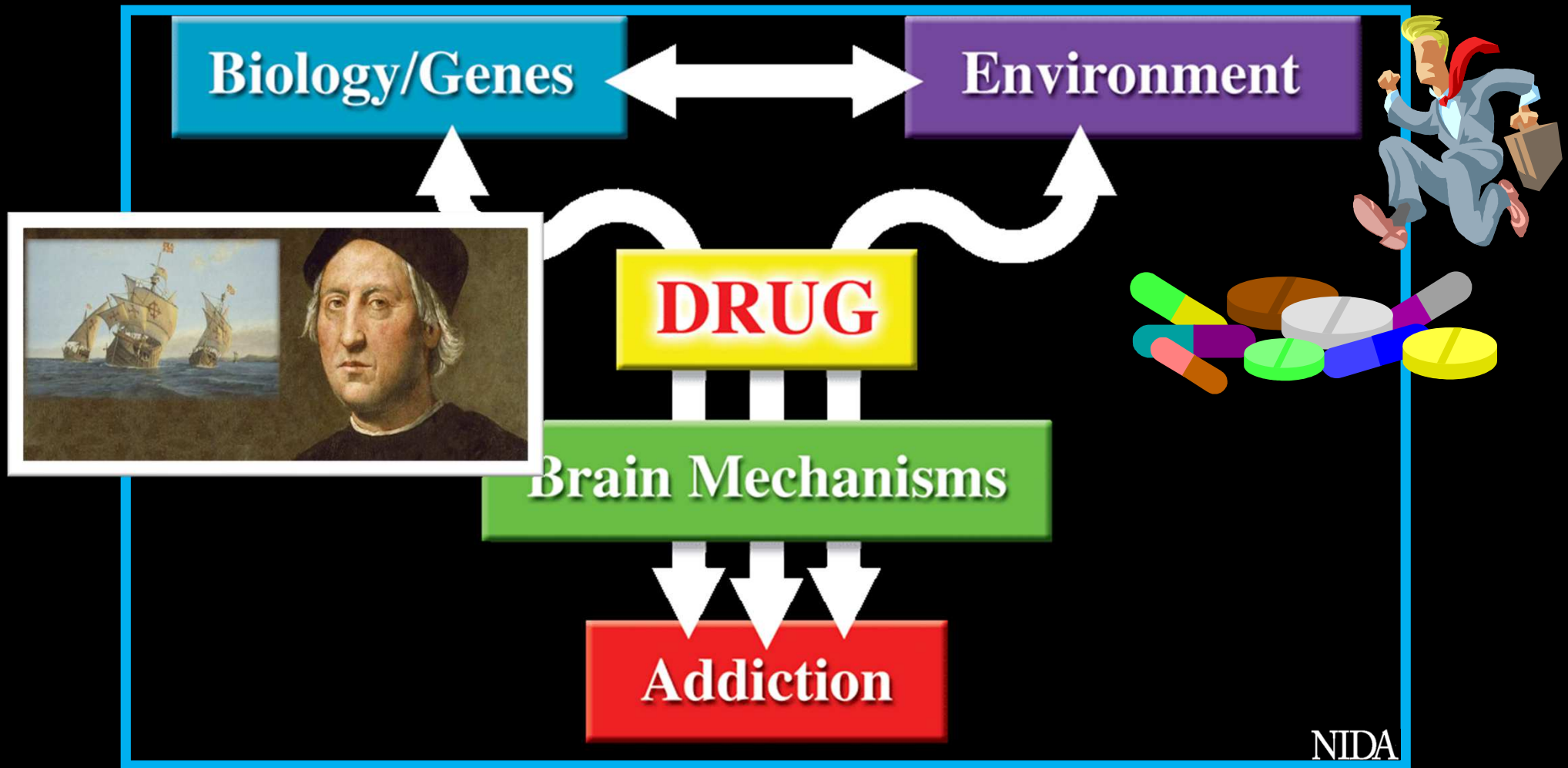


Le regioni del cervello che ci danno dipendenza



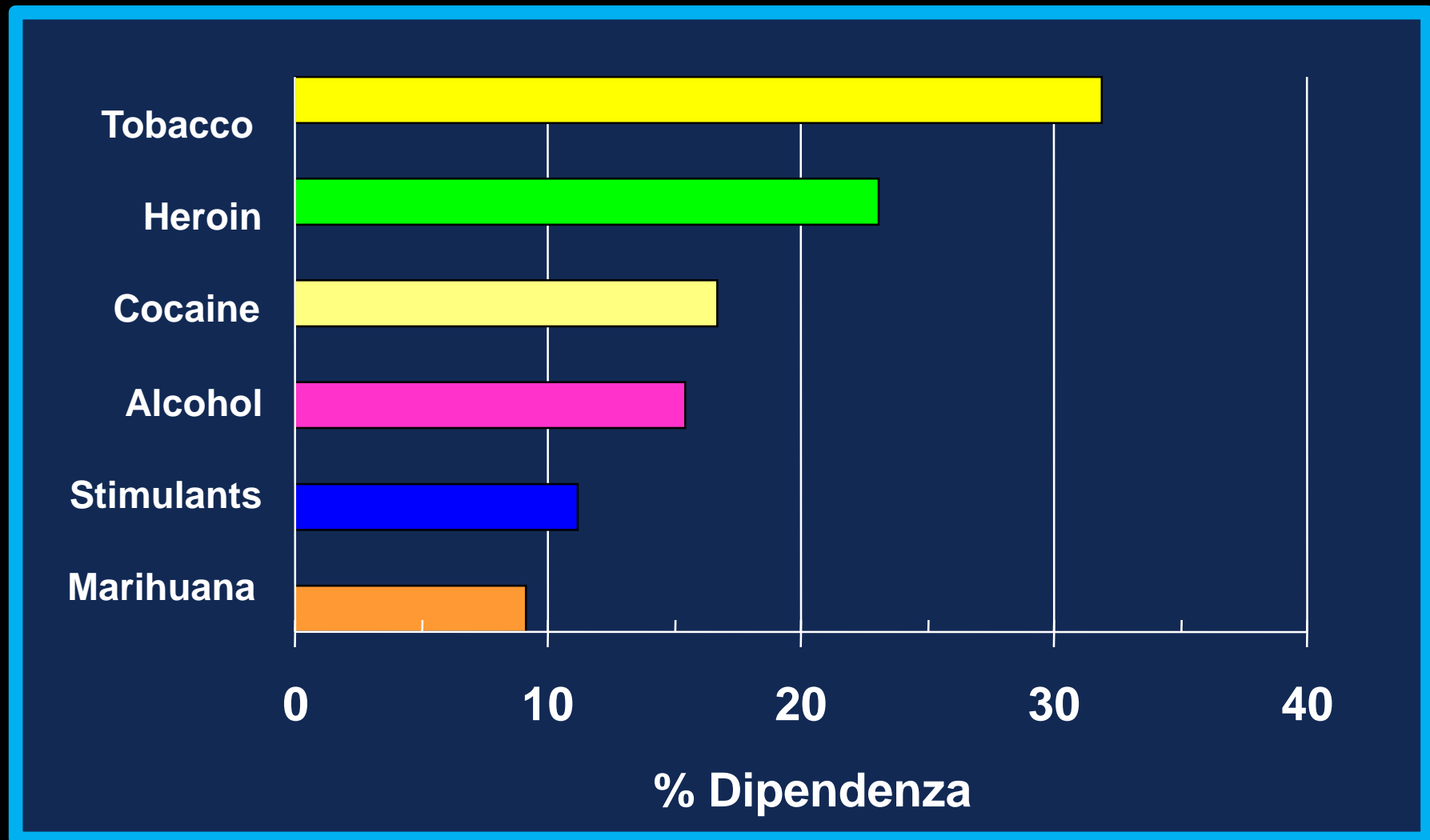
Quattro domande

Perché le persone iniziano a utilizzare droghe?



La dipendenza dipende da molti fattori

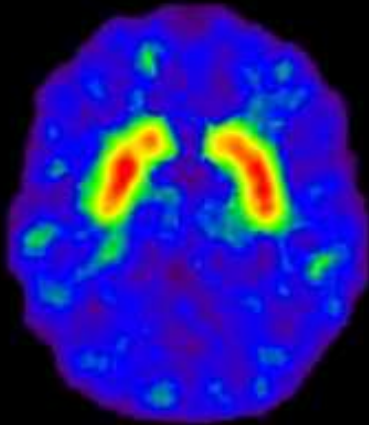
Perché alcune ne diventano dipendenti e altre no?



Percentuale di dipendenza nei consumatori occasionali

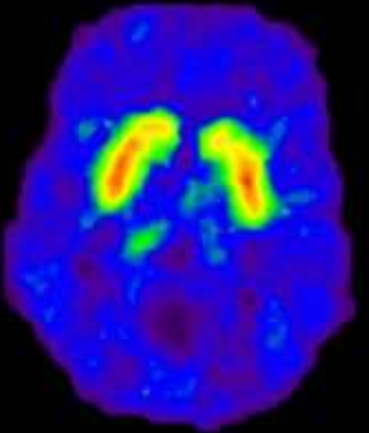
Perché alcune ne diventano dipendenti e altre no?

MOLTI
recettori per
la dopamina

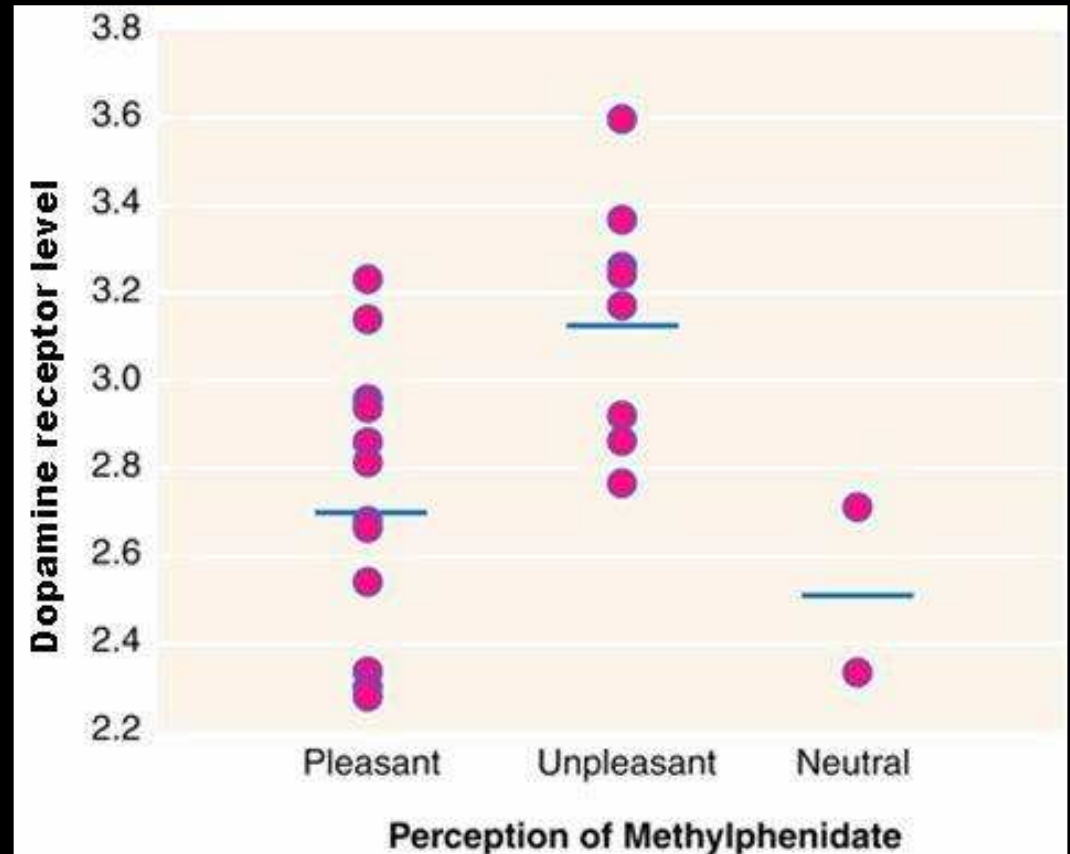


ALTI

POCHI
recettori per
la dopamina

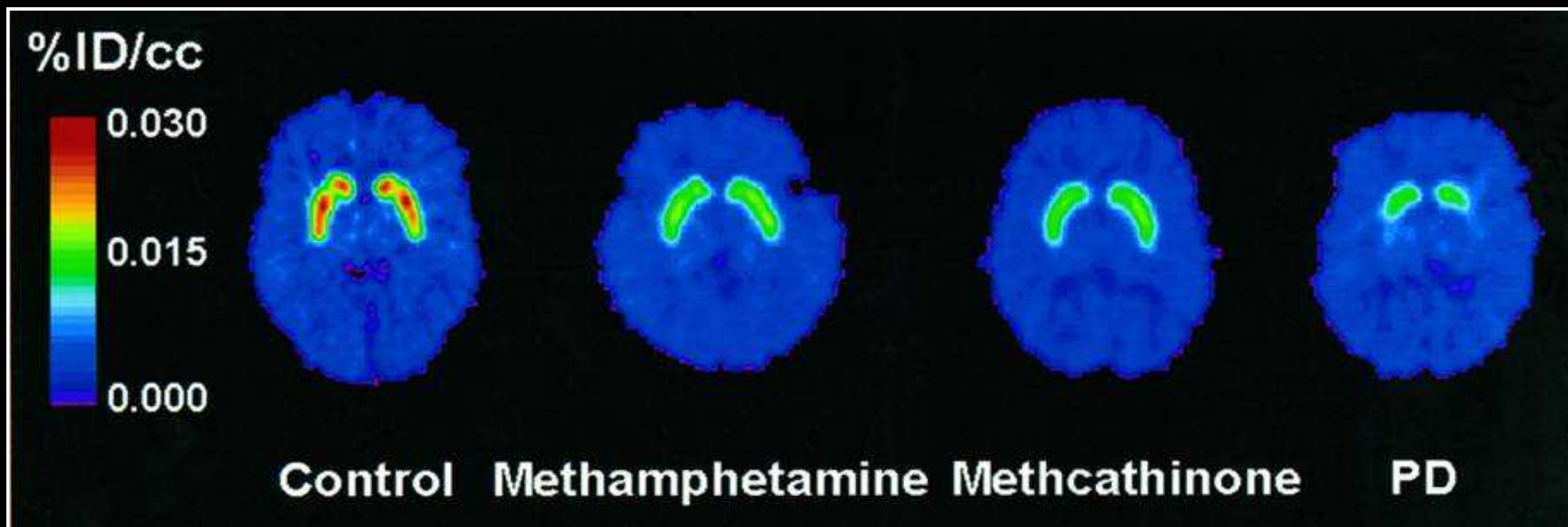


BASSI



***La concentrazione dei recettori per la dopamina,
ci dirà quale effetto avrà la droga***

Quanto dura il danno?



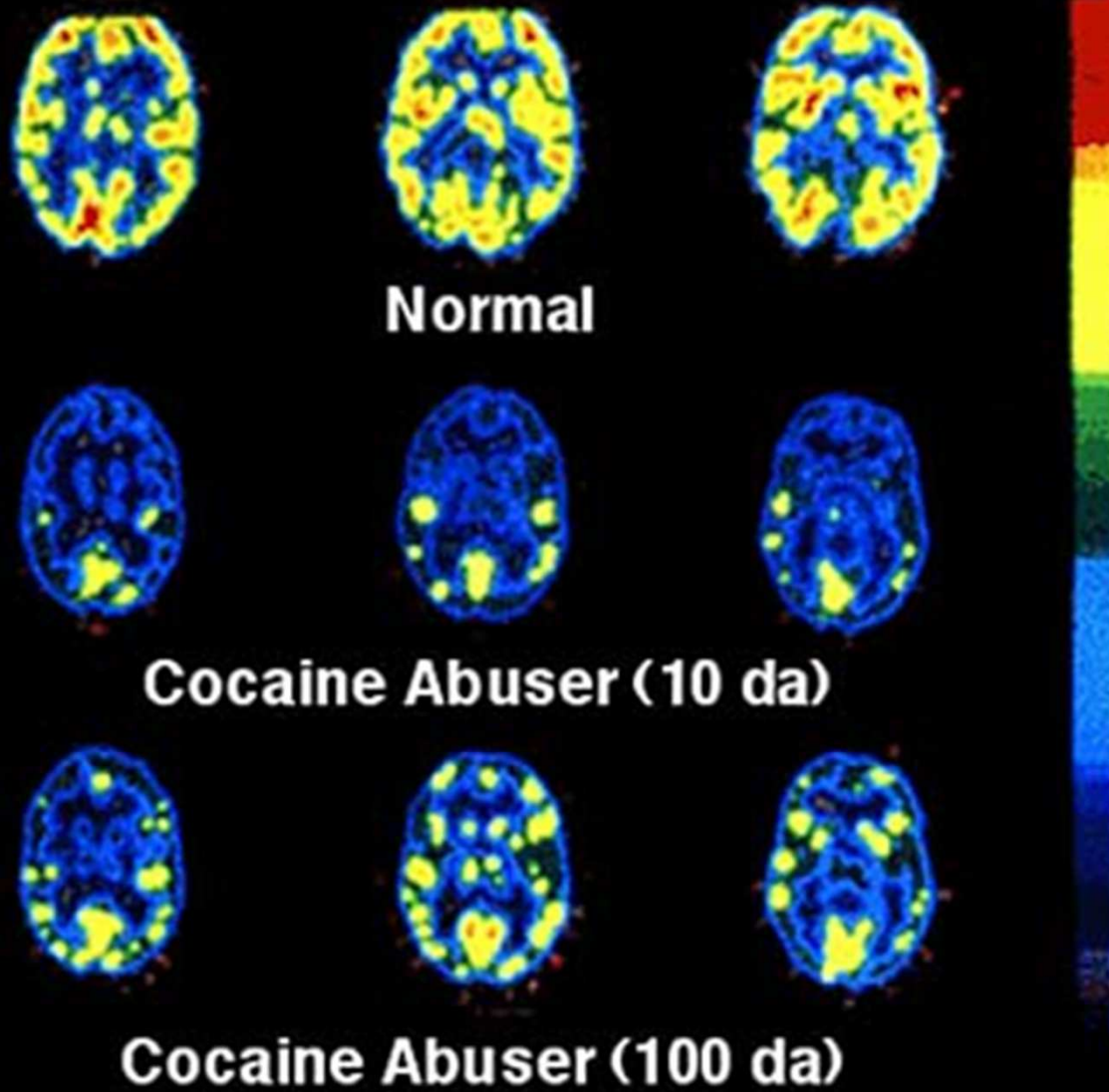
Astinenza da 6 mesi

Astinenza da 5 anni

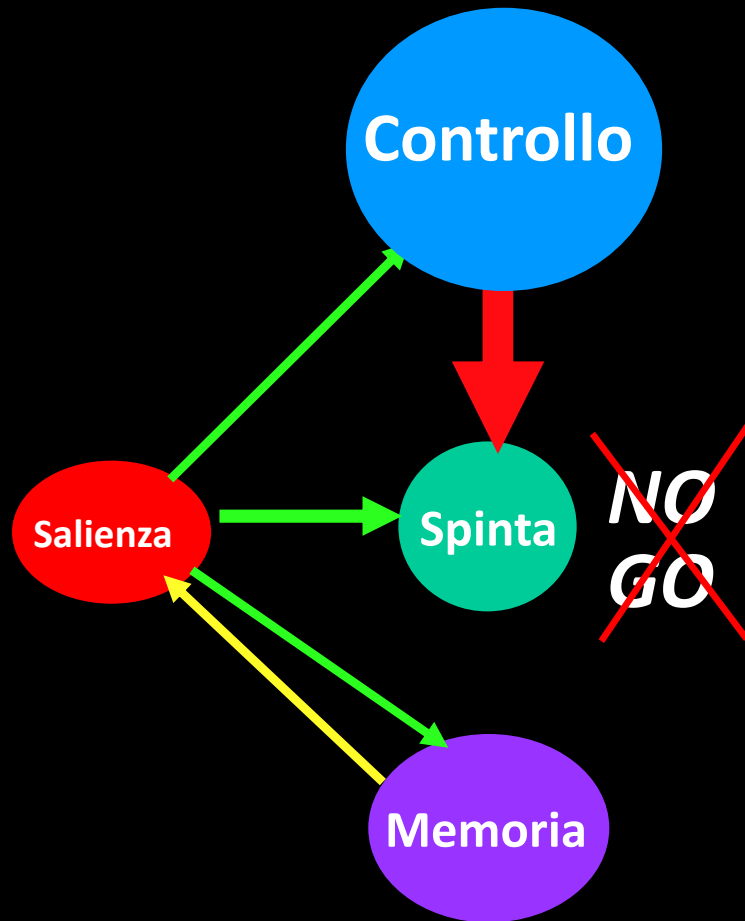
-25%

-60%

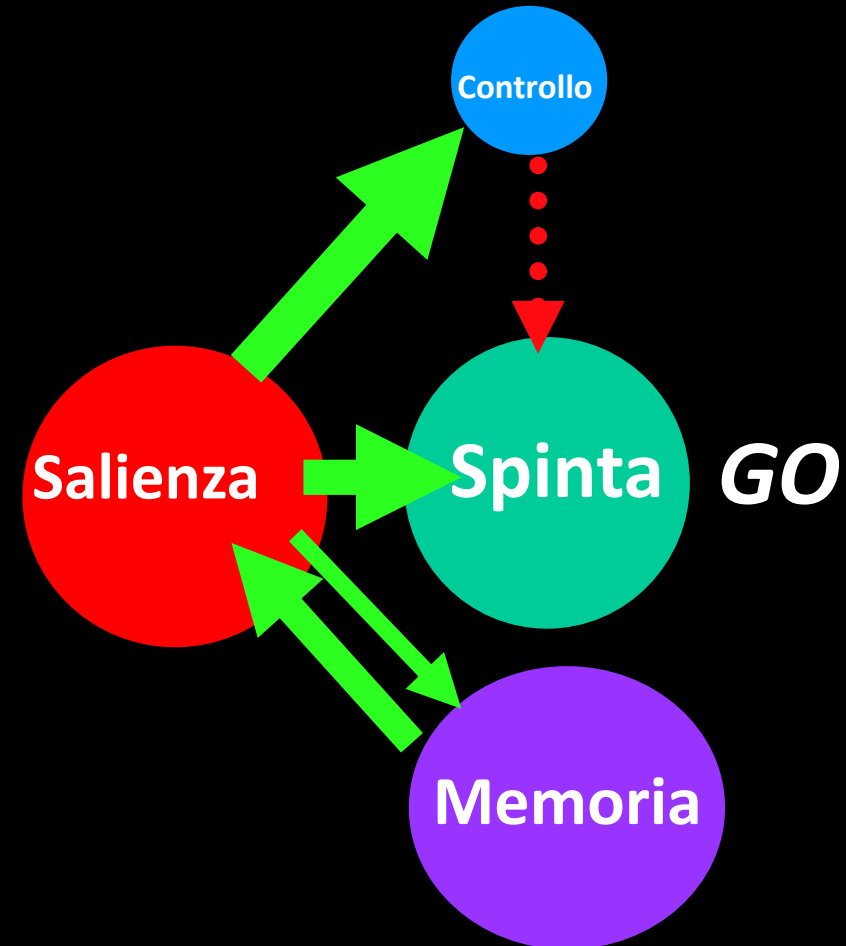
Quanto dura il danno?



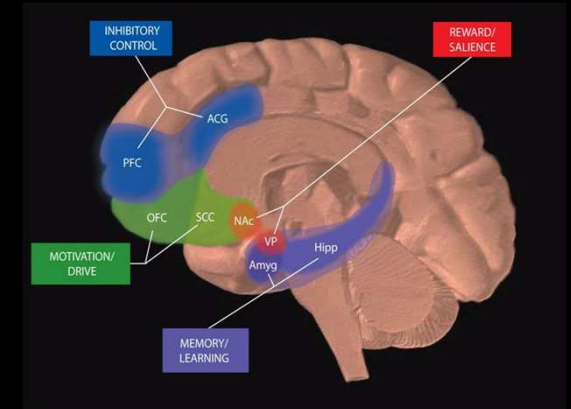
Cervello Non-dipendente



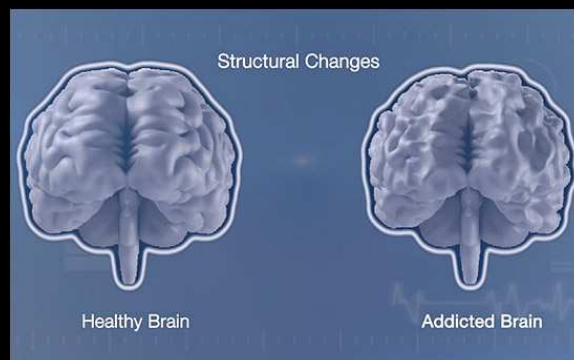
Cervello dipendente



Perché la dipendenza altera i circuiti cerebrali



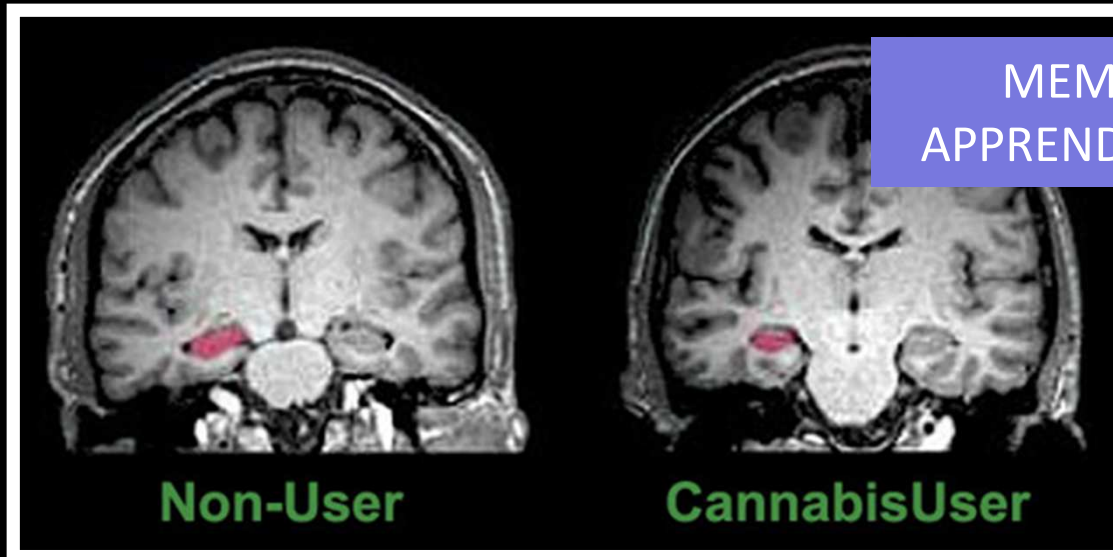
Le stesse alterazioni strutturali, chimiche e funzionali per tutte le dipendenze



Gli effetti del fumo... di marijuana/hashish



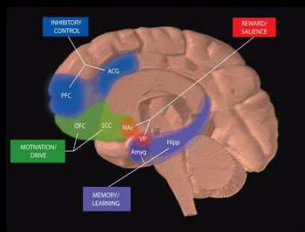
STRUTTURA



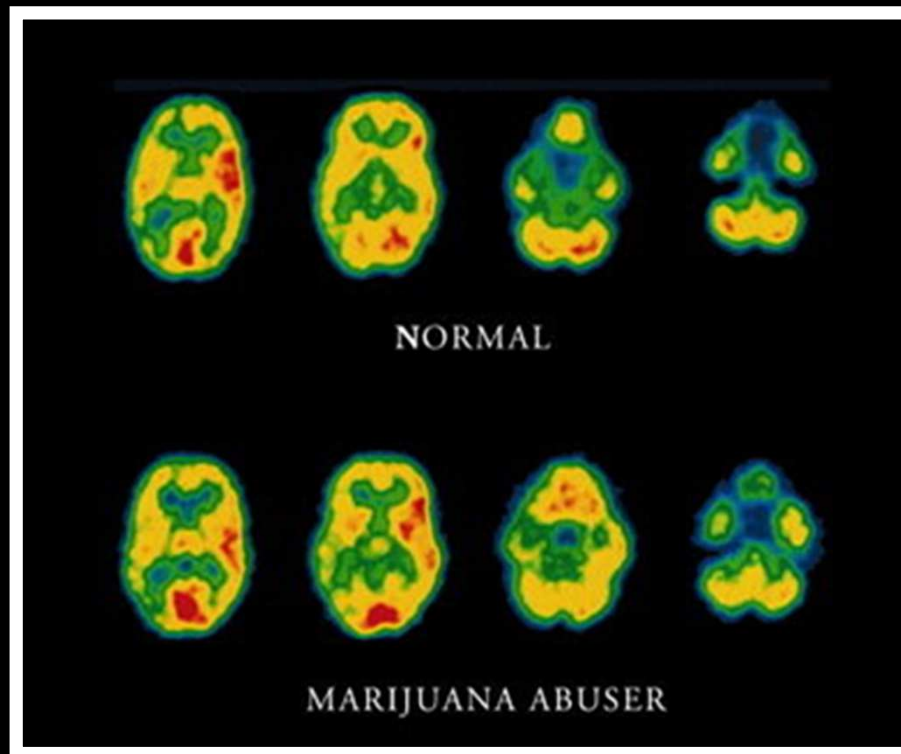
MEMORIA APPRENDIMENTO

Non-User

CannabisUser

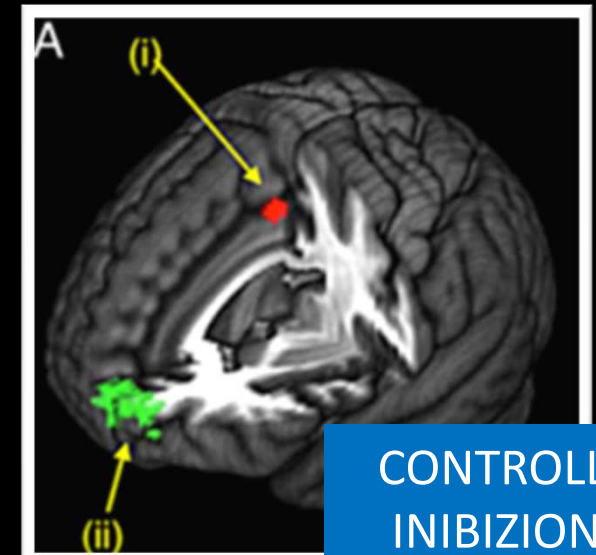


FUNZIONE



NORMAL

MARIJUANA ABUSER



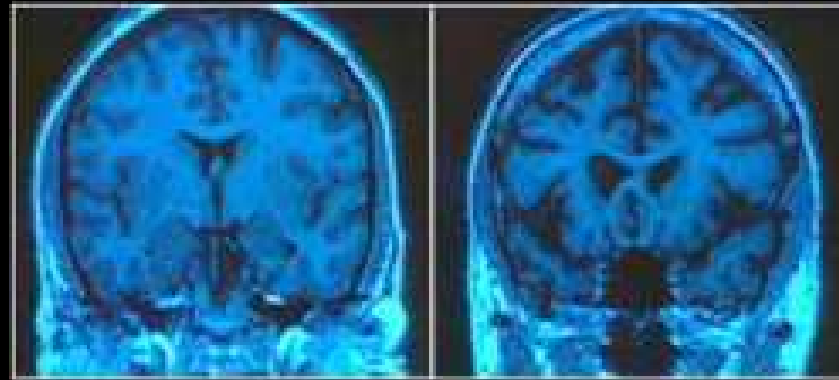
CONTROLLO INIBIZIONE

MOTIVAZIONE 'SPINTA'

L'effetto dell'alcol etilico

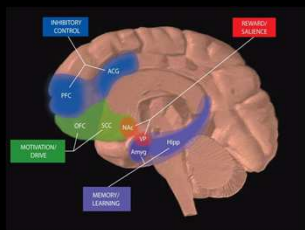


STRUTTURA



43enne
Normale

43enne
Alcol dipendente



FUNZIONE

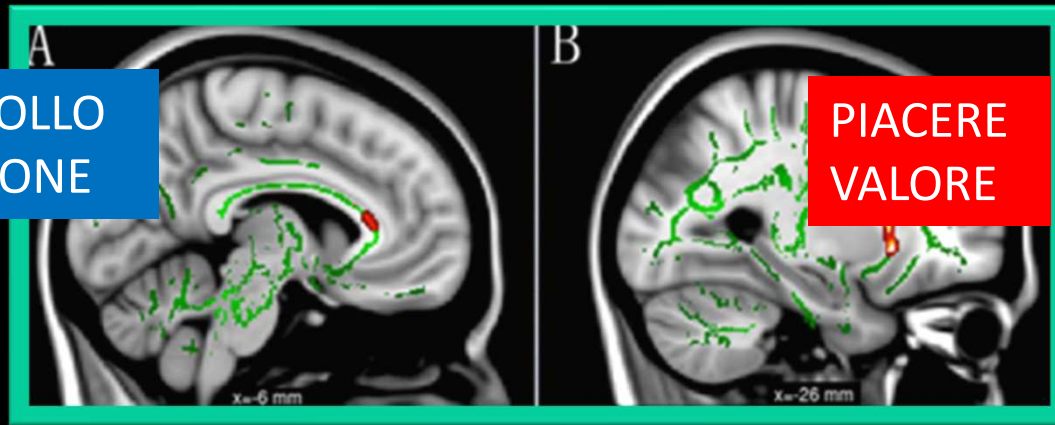


Dipendenza da Internet



STRUTTURA

CONTROLLO
INIBIZIONE

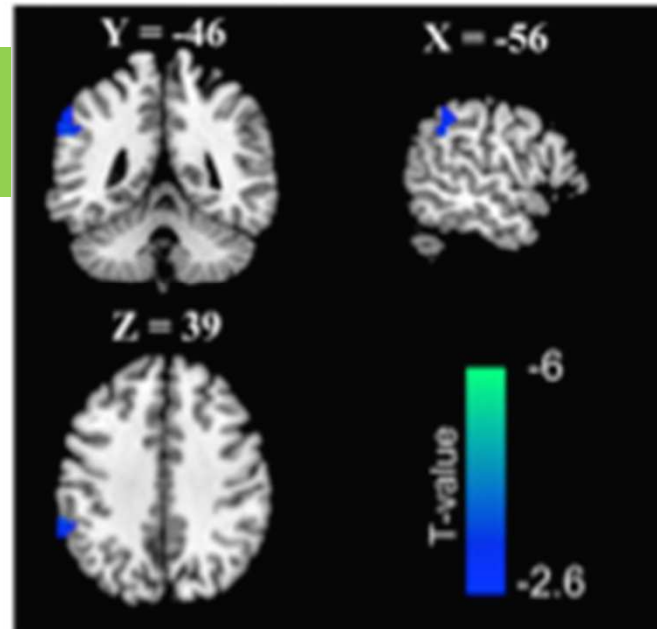


PIACERE
VALORE

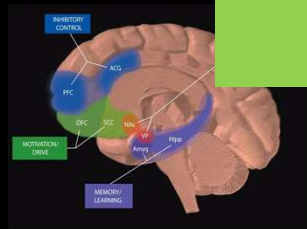
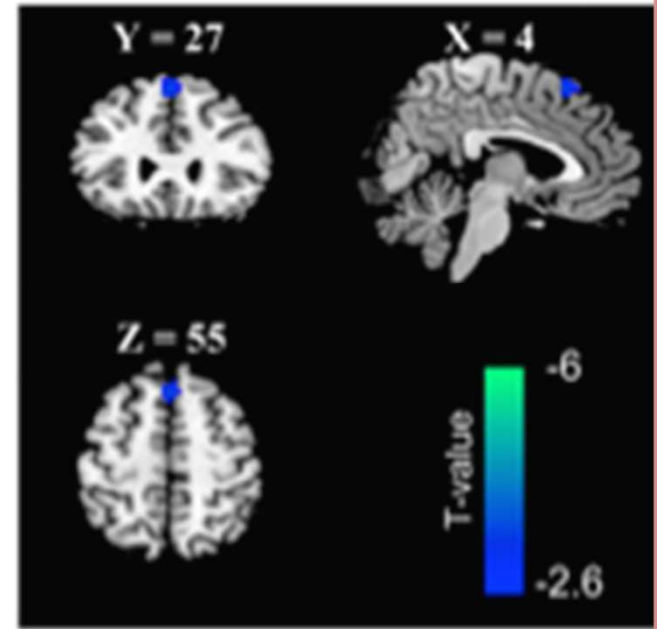
MEMORIA
APPRENDIMENTO

MOTIVAZIONE
'SPINTA'

Right FPN



Attentional DMN

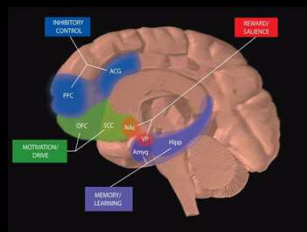
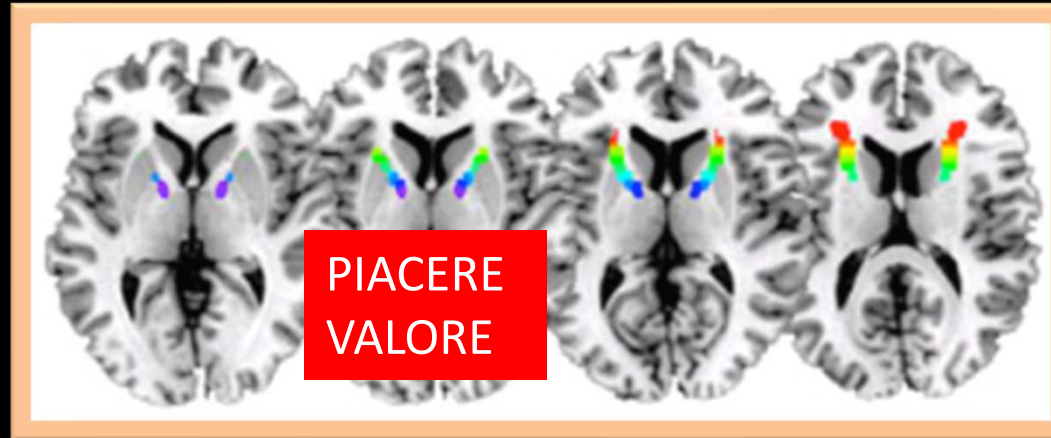


FUNZIONE

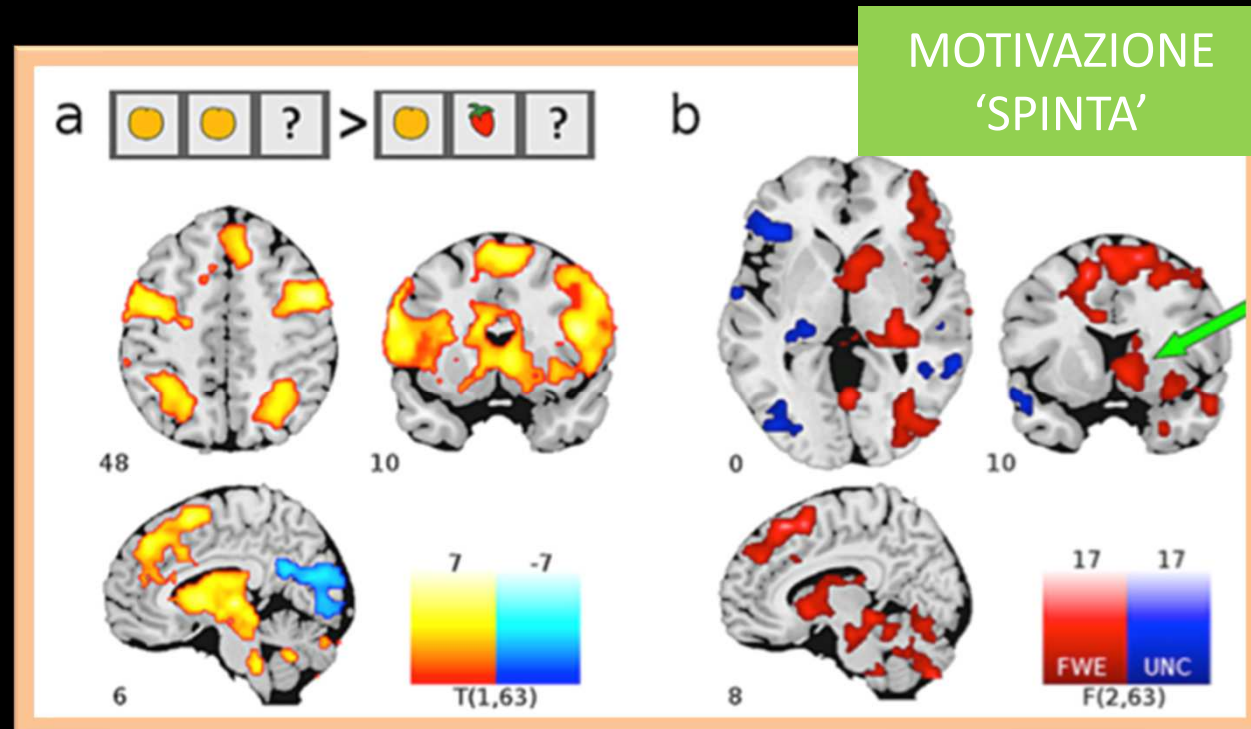
Dipendenza da Gioco d'Azzardo



STRUTTURA



FUNZIONE

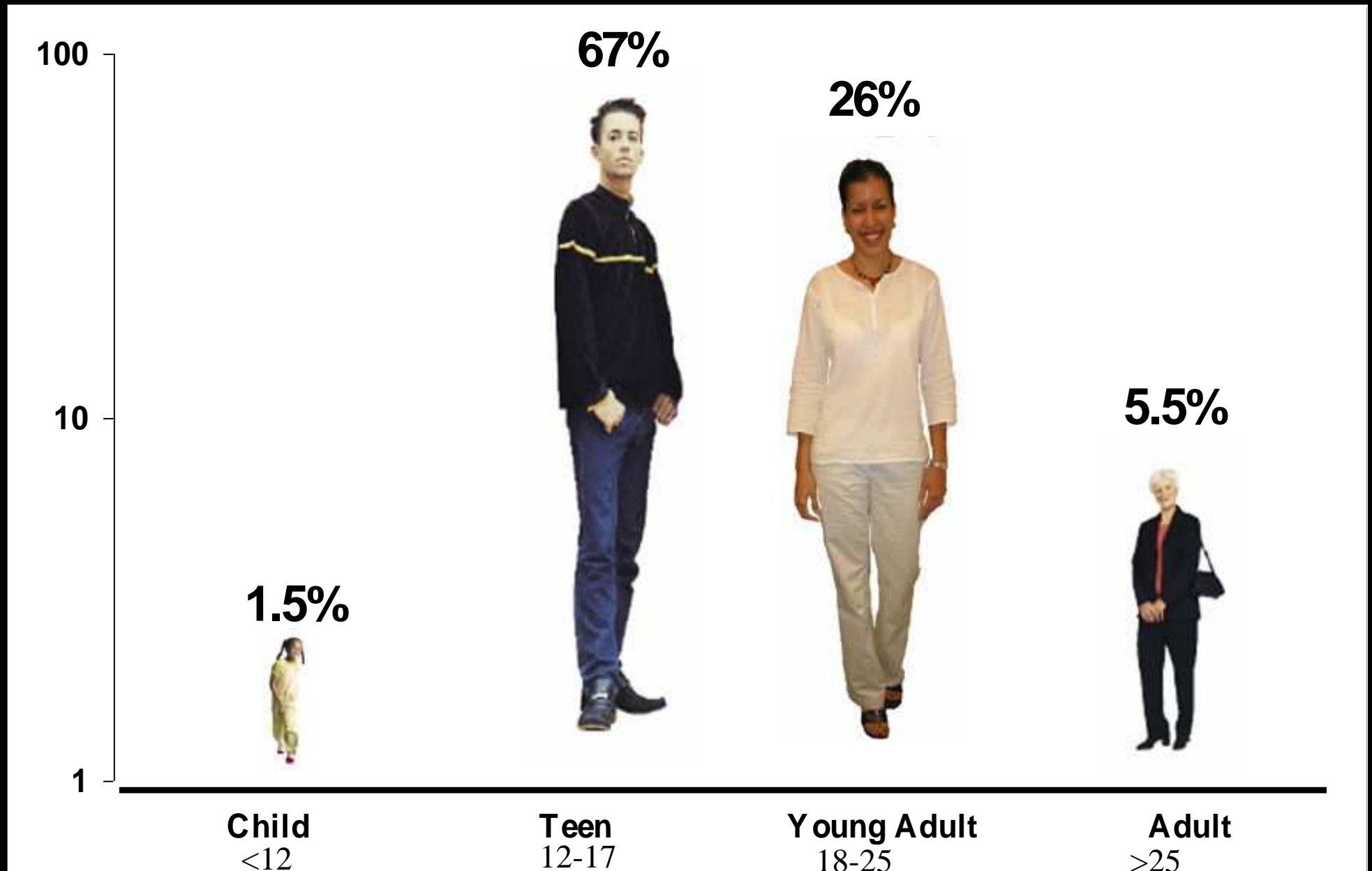


Quali effetti della ludopatia negli adolescenti?

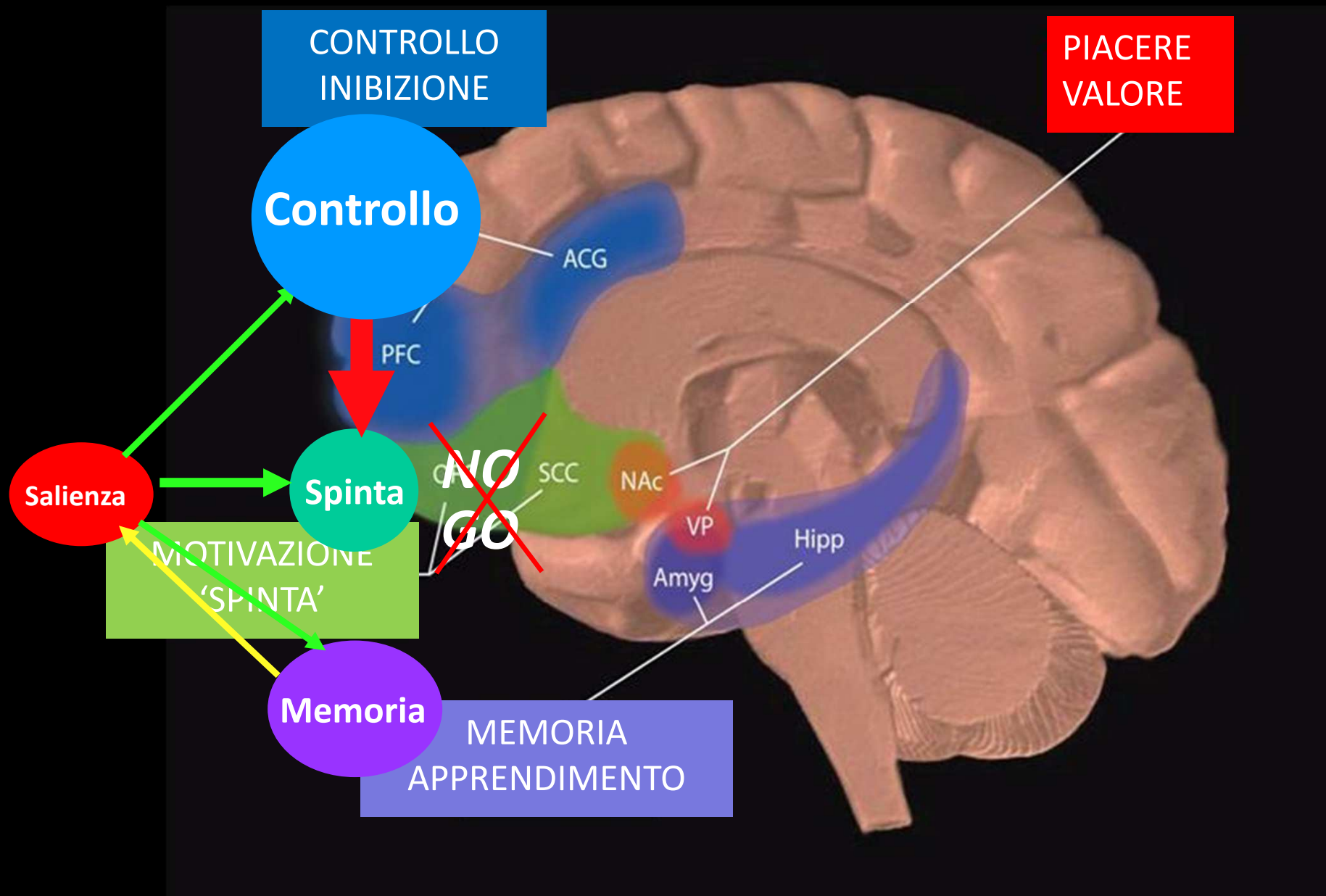
Maggior rischio di:

- consumo di alcol, tabacco e altre sostanze stupefacenti
- assenze a scuola
- disturbi psichiatrici e tentati suicidi
- comportamenti socialmente inadeguati

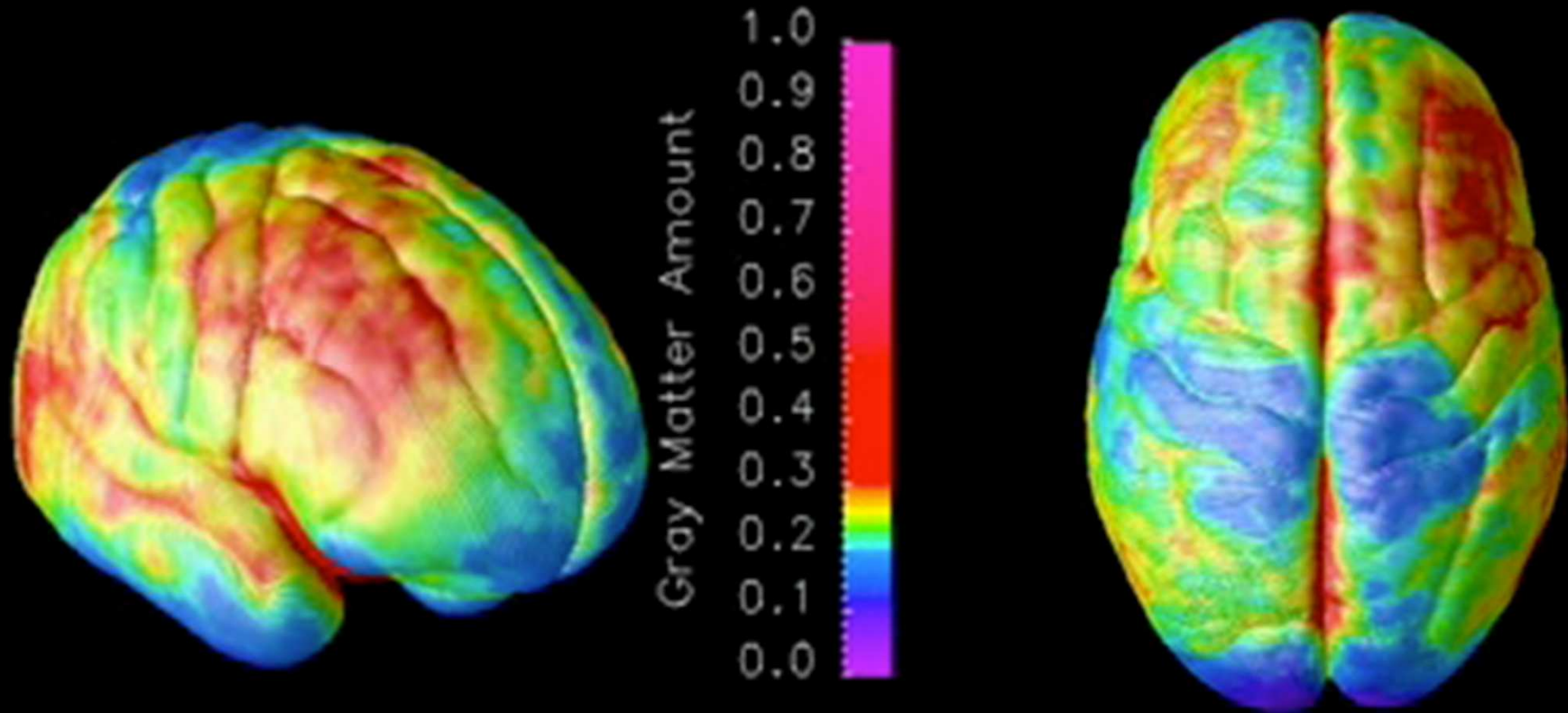
La dipendenza è una malattia che inizia nell'adolescenza



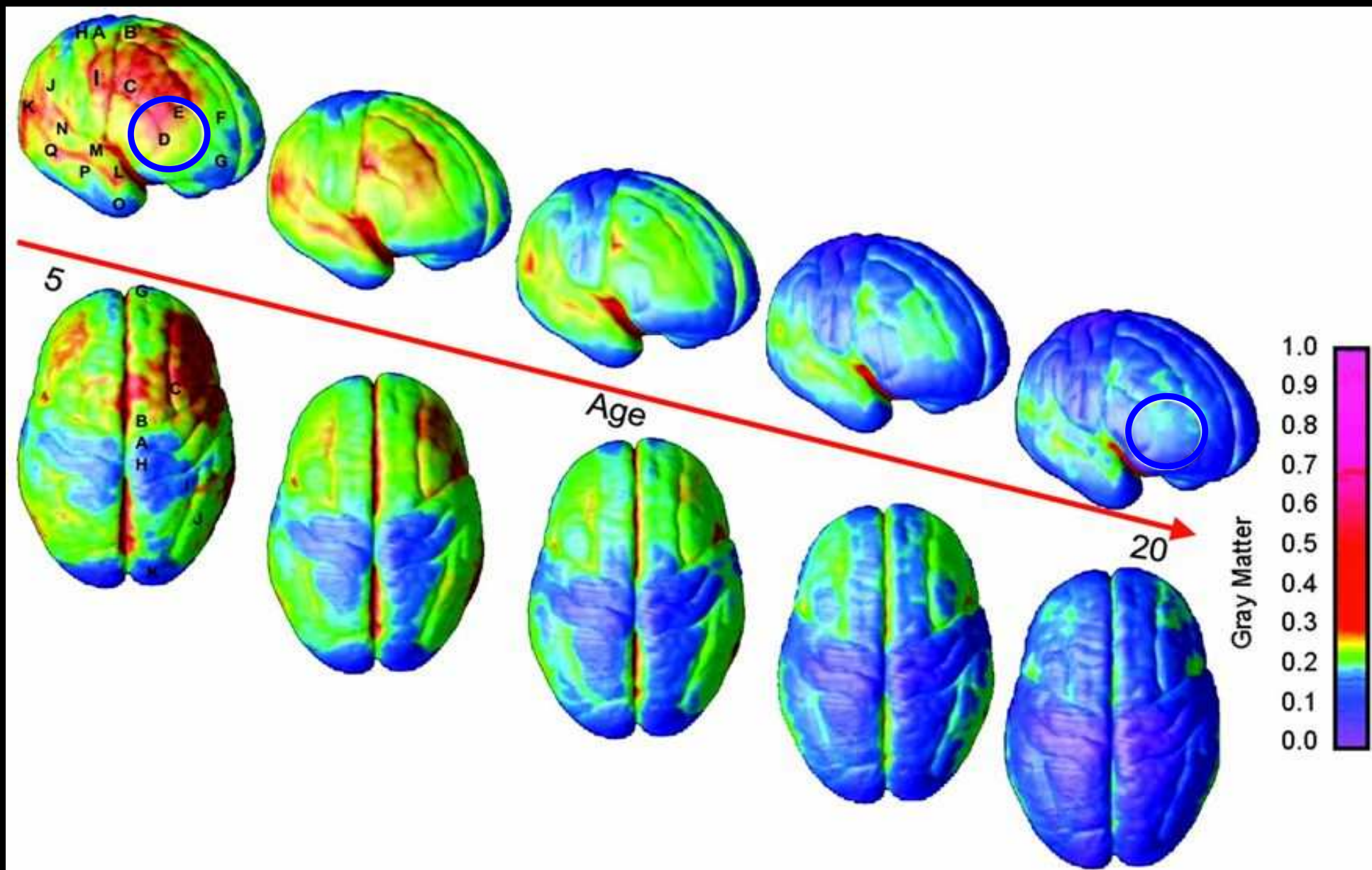
Le regioni del cervello che ci danno dipendenza



Il cervello 'immaturo' dell'adolescente



Il cervello 'immaturo' dell'adolescente

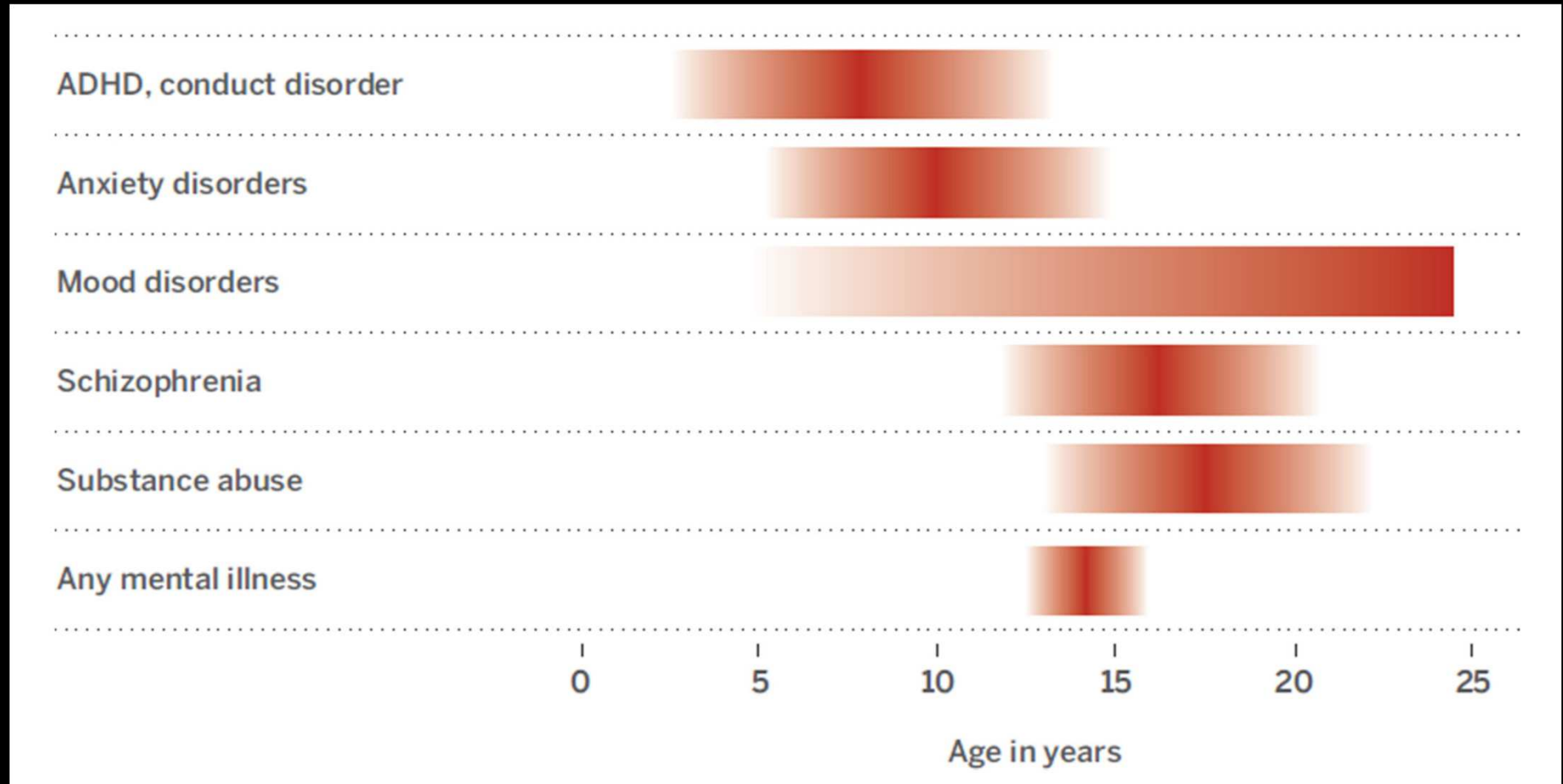


Abuso di sostanze

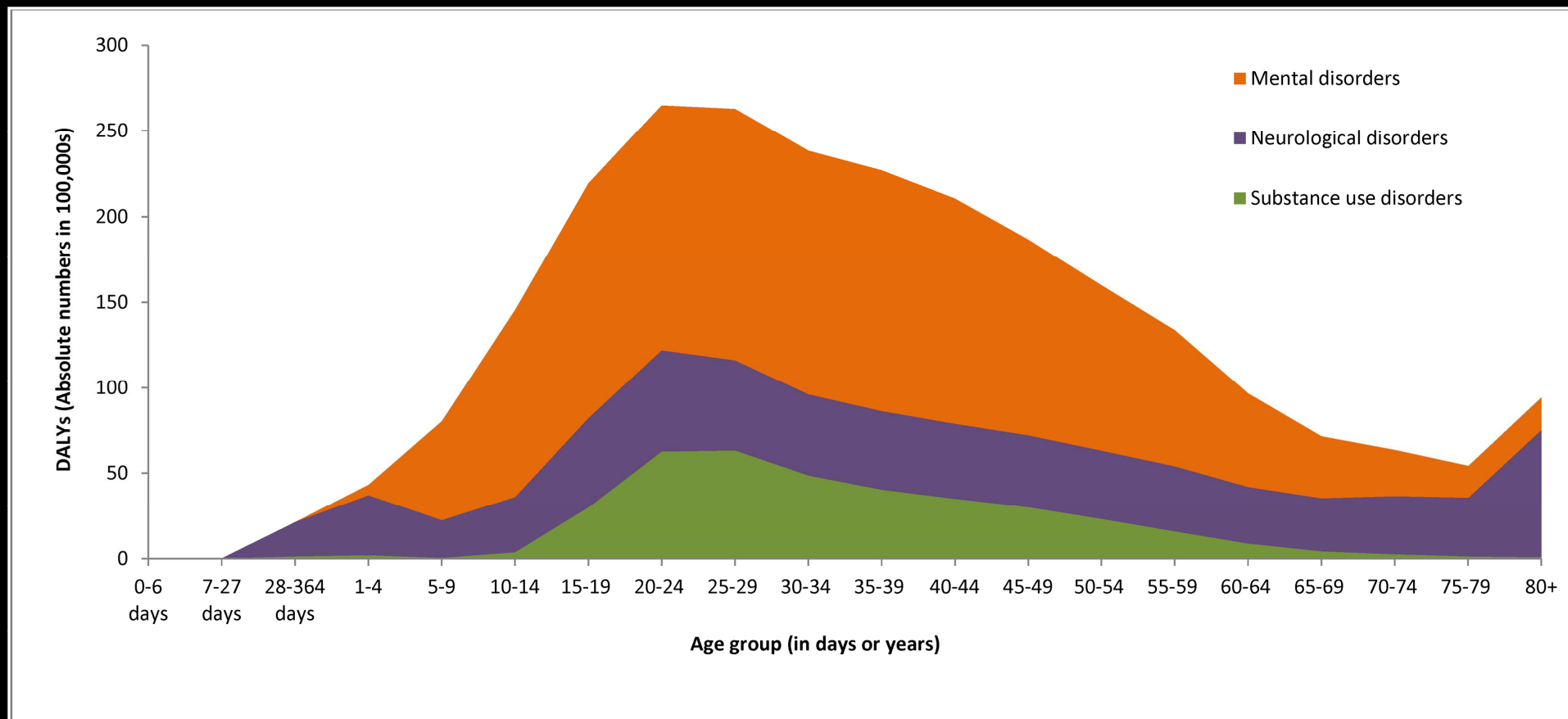
**L'abuso di sostanze
spesso *co-esiste* con
una malattia psichiatrica**

Malattia Psichiatrica

L'abuso di sostanze spesso co-esiste con una malattia psichiatrica



L'abuso di sostanze spesso co-esiste con una malattia psichiatrica



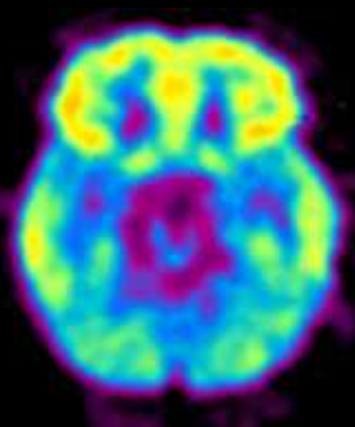
Note: DALYs = disability-adjusted life years.

Cosa ho imparato?

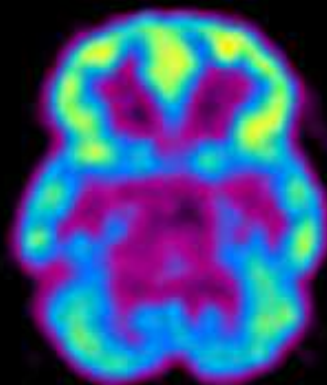


- è prevenibile
- è trattabile
- ci cambia a livello biologico
- se non trattata, dura a lungo

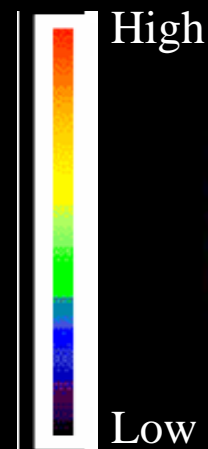
Alterato metabolismo
cerebrale nei *Dipendenti*



Cervello Sano



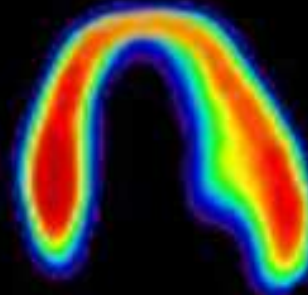
Cervello malato



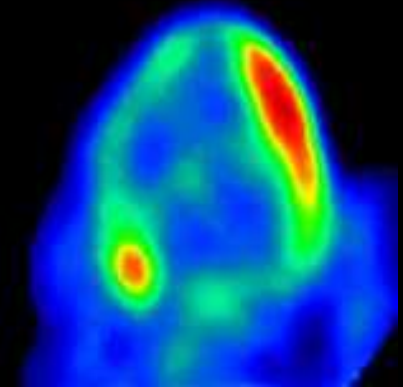
High

Low

Alterato metabolismo
cardiaco nei *Cardiopatici*



Cuore sano



Cuore malato