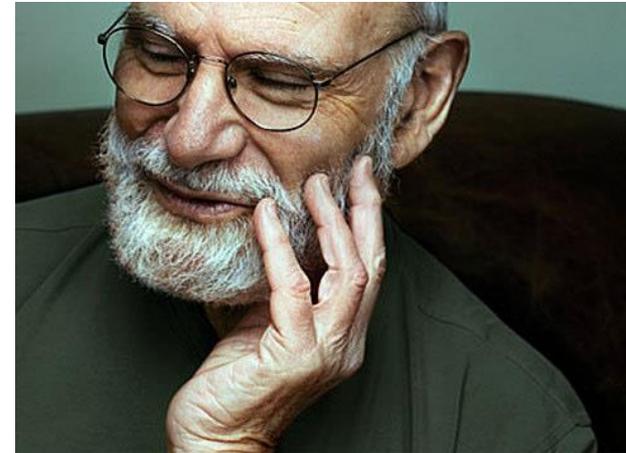




Unpredictable side effects

- Dr. Sacks: “Yo-yo reactions began occurring in a majority of my patients; and along with these, there increasingly occurred an extreme and ever increasing sensitivity to L-dopa...”
- Symptoms included nausea, anxiety, irritability, hyperactivity, clumsiness, hallucinations, and uncontrollable movement
- Patients who had “awakened” in response to the drug, were taken off it, and returned to their original state.







ROBERT DE NIRO ROBIN WILLIAMS

There is no such thing as a simple miracle.

AWAKENINGS

Based on a true story



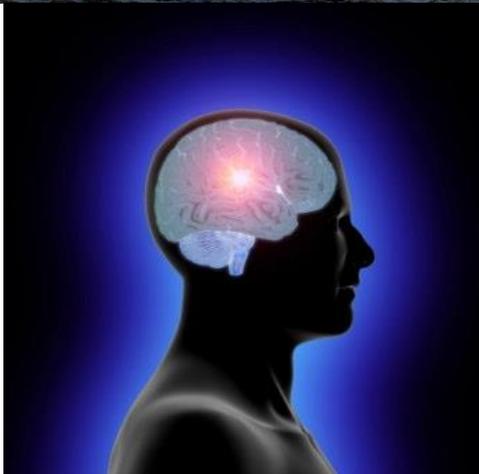
COLUMBIA PICTURES PRESENTS A LASKER/PARKES PRODUCTION A PENNY MARSHALL FILM
ROBERT DE NIRO ROBIN WILLIAMS "AWAKENINGS" JOHN HEARD JULIE KAVNER PENELOPE ANN MILLER AND MAX VON SYDOW
MUSIC BY RANDY NEWMAN EDITOR PENNY MARSHALL COSTUME DESIGNER ARNE SCHMIDT AND ELLIOT ABBOTT EXECUTIVE PRODUCER OLIVER SACKS, M.D.
DIRECTOR OF PHOTOGRAPHY STEVEN ZAILLIAN PRODUCED BY WALTER F. PARKES AND LAWRENCE LASKER WRITTEN BY PENNY MARSHALL
SEE IT SOON AT A THEATRE NEAR YOU

Currently, there is no cure for Parkinson's disease.

The goals of treatment are:

- 1) to minimize disability
- 2) reduce the possible side effects of drug therapy
- 3) help the patient maintain the highest possible quality of life.

•Sacks' case study showed that it may be possible to correct a brain disorder by replenishing the supply of a missing neurotransmitter.



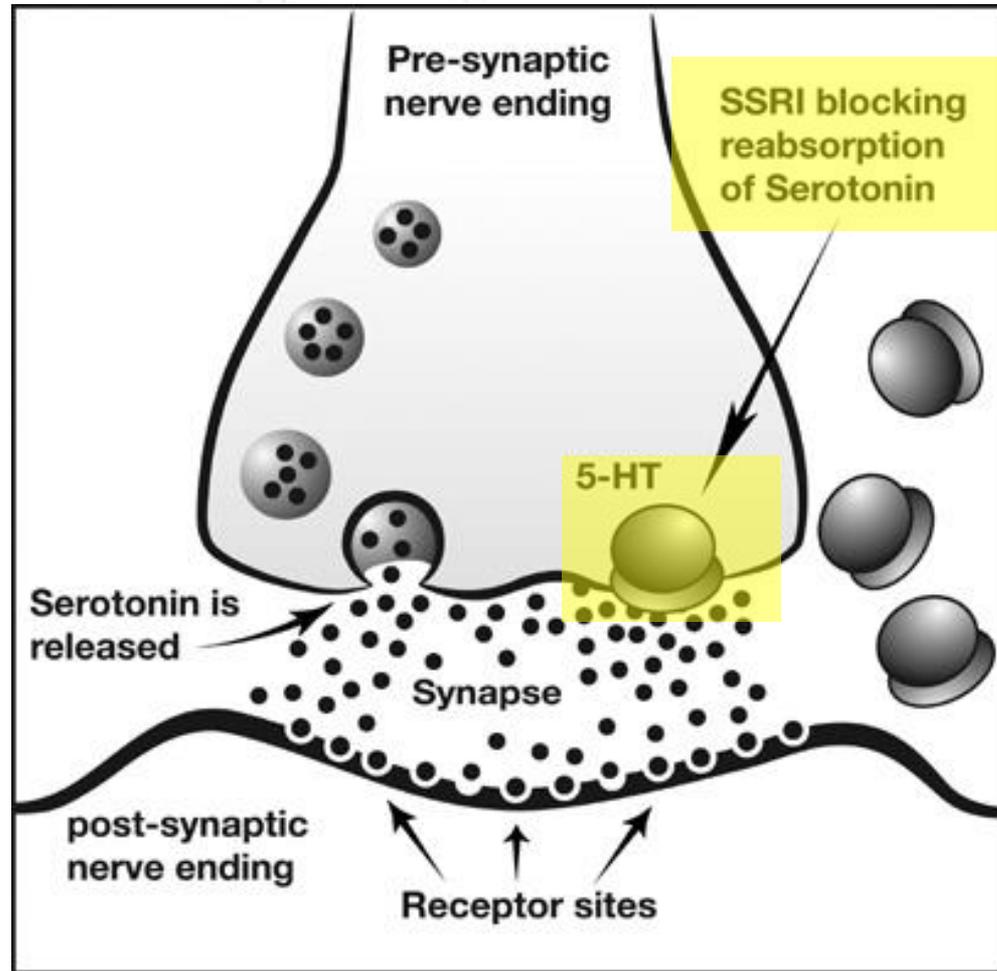
Review: How Neurons

Communicate

- Synaptic cleft/gap: space between neurons, discovered by Sir Charles Sherrington
 - Neurotransmitters:
 - Unlock channels at the receiving site allowing ions into the receiving neuron.
 - Excitatory role: positive ions allowed in causes firing
 - Inhibitory role: negative ions allowed in prevents firing
 - ACh (acetylcholine): excitor
 - GABA: inhibitor – keeps brain calmed down and not firing out of control
-

Reuptake

Neurotransmitters in the synapse are reabsorbed into the sending neurons through the process of **reuptake**. This process applies the brakes on neurotransmitter action.

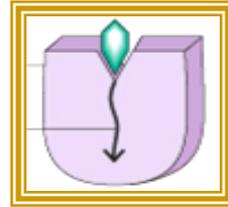


DRUGS

- ❖ Every drug that affects motor behavior works at the synapse.
 - ❖ Works at the post-synaptic neuron:
 - **Agonist:** helps NT do its job by increasing release of the neurotransmitter
 - **Antagonist:** blocks NT from doing its job by blocking the receptors of a neurotransmitter
 - ❖ Works at the pre-synaptic neuron:
 - **Reuptake inhibitor:** A SSRI is a drug that blocks the reuptake of NT on the pre-synaptic neuron
-

Neural Bases of Psychology: Receptor Sites

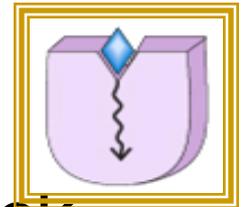
- **normal** message



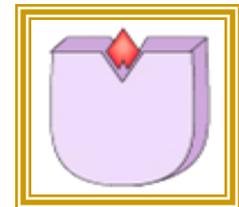
- **blocked** message (wrong shape)

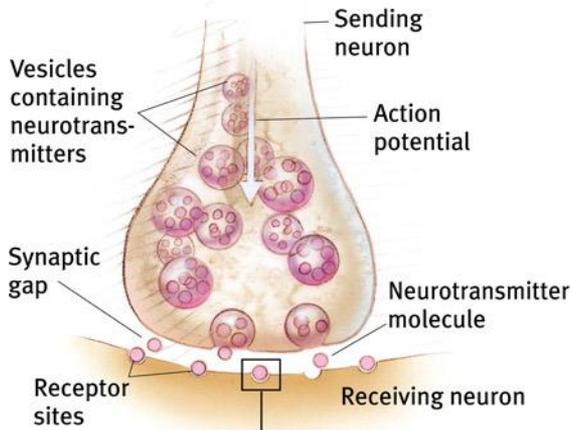


- **agonistic drugs** mimic shape and enhance neurotransmitter



- **antagonistic drugs** fill the site and block neurotransmitter



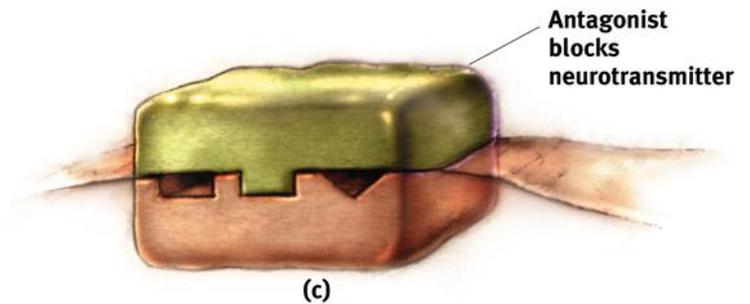
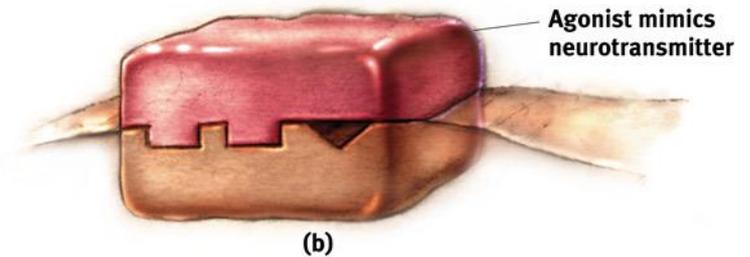
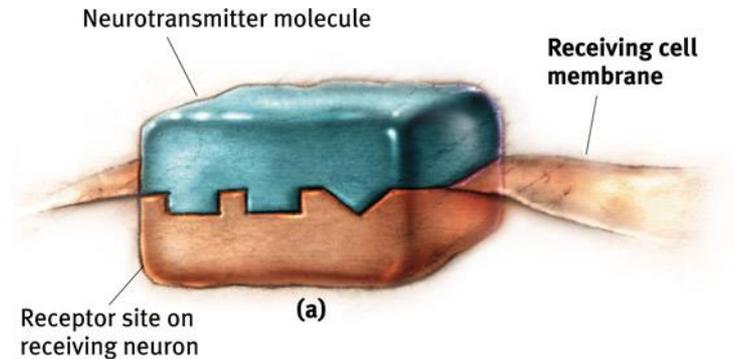


Neurotransmitters carry a message from a sending neuron across a synapse to receptor sites on a receiving neuron.

This neurotransmitter molecule fits the receptor site on the receiving neuron, much as a key fits a lock.

This agonist molecule excites. It is similar enough in structure to the neurotransmitter to mimic its effects on the receiving neuron. Morphine, for instance, mimics the action of endorphins.

This antagonist molecule inhibits. It has a structure similar enough to the neurotransmitter to occupy its receptor site and block its action, but not similar enough to stimulate the receptor. Curare poisoning paralyzes its victims by blocking ACh receptors involved in muscle movement.



Examples

- **Curare (used by natives on poison darts):**
 - Stops ACh from fitting into receptor sites
 - **Black Widow venom:**
 - Is similar to Ach having an agonistic effect and accelerates movement (seizures and convulsions)
-