

## Biology of the Brain

*Almost every neurological disorder involves activity around the synaptic process. A knowledge of this process is vital to a better understanding of the parameters of dementia care, how certain neuropathologies, such as Alzheimer's, are generated, and how drugs targeting the synaptic process affect the symptoms of a dementia.*

**Compiled by Editorial Staff**

# Bridging the gap

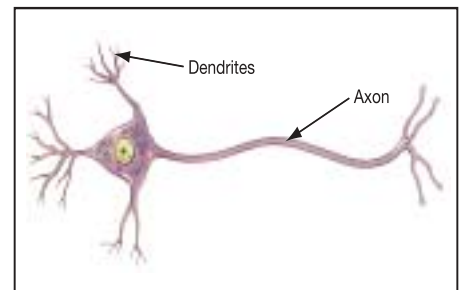
## A knowledge of the synaptic process vital to understanding neuropathologies

Almost every neurological disorder, and every drug dedicated to improving brain function or reducing symptoms of dementia, involve activity around the **synapse**. Achieving greater understanding of the **synaptic process** is of great importance to dementia research and the verification of the parameters that determine the management of dementia.

capture these electro-chemical impulses (also called micro-currents). Once these currents reach the synaptic gap, we can refer to them as neurotransmitters.

### Neuronal pathways

The receptors, having captured the information, in the form of neurotransmitters, deposit it in the receiving



neuron. In sequence, the next neuron in the chain is similarly activated, as are thousands of other neurons simultaneously receiving this information

### Neuro-chemicals

Neurons in the brain have extended arms or branches called **dendrites and axons**. The axon functions by providing the means to **transport** information, in the form of **electro-chemical impulses**, out of the sending or **mes-senger neuron** into the **synaptic gap**.

Dendrites, associated with the **receiving or target neuron**, contain **receptors and chemicals** that attract and

### Location and function of neuro-chemicals (neurotransmitters) in the brain

Name of chemical	Main locations	Main function in body
Acetylcholine	Neurons of central nervous system; cerebral cortex, hippocampus	Transmission of information (signals) between neurons, muscle contraction and movement, hormone secretion, heart beat; memory, language.
Norepinephrine	Brain stem region	Excites/inhibits receptors, stimulates nerve pathways to control or maintain heart beat, blood flow, response to stress; a feel good chemical.
Dopamine	Hypothalamus and brain stem	Mood, control of complex movements; also a feel-good chemical.
Serotonin	Hypothalamus, spinal cord and throughout the brain	Control states of consciousness: sleep, mood states; sensory perception; regulates temperature.
Glutamate	Hypothalamus, cerebellum	Learning, short-term memory.

(Adapted from Hart, S., 2001)