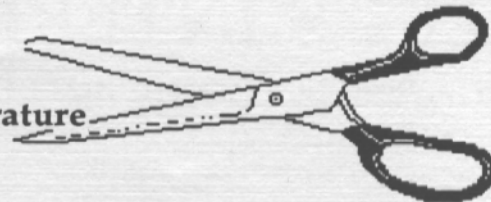


At the Cutting Edge

Current Topics in the Literature



NEURONAL DAMAGE IN A SEA SLUG

Sea slugs of the genus *Aplysia* are classic models in the study of simple learning. A new report indicates that the changes in cell function seen during learning are similar to those occurring after injury of the axons. Whether mechanosensory neurons were stimulated or crushed, they showed decreases in action potential threshold and afterhyperpolarization and increases in action potential duration and synaptic transmission. These similarities suggest that some learning mechanisms evolved from mechanisms of injury repair and compensation. (Walters, E. T. et al. 1991. Similar neuronal alterations induced by axonal injury and learning in *Aplysia*. *Science* 253:797-799.)



MOLECULAR BIOLOGY OF THE NMDA RECEPTOR

The NMDA (N-methyl-D-aspartate) receptor appears to play a central role in learning and memory, and it is "the granddaddy of its class of receptors. It's the receptor that everyone's been trying to isolate. This glutamate receptor combines the functions of two normal classes of receptors, by admitting ions directly into the cell through a channel in the receptor itself and also by initiating an intracellular cascade that results in a second messenger metabolic effect. Recently, researchers in Kyoto, Japan and Lawrence, Kansas announced that they had cloned the gene for the NMDA receptor. There was just one problem; they cloned completely different genes. When we find out which (if either) gene is the right one, we will learn much more about the mechanisms by which stimuli are translated into the permanent or semi-permanent synaptic changes associated with memory. (Hoffman, M. 1991. NMDA receptor cloned—twice! *Science* 254:801-802.)

NO QUICK FIXES

A new report from the National Research Council burst the bubble of self-help in improving learning and memory performance. Among other things, the report notes:

- meditation is no better than quiet resting
- there is no foundation or evidence to validate subliminal self-help tapes, and
- the Meyers-Briggs Type Indicator gauges the test-taker's mood, but is no predictor of personality, despite its popularity

The report notes that some techniques that appear to improve performance during training may actually lower later performance in the real world. (National Research Council. 1991. *In the Mind's Eye*. National Academy Press, Washington, D. C.)

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THE CAROL OF THE RESPIRATORY SYSTEM (tune: Do You Hear What I Hear?)

Said the trachea to the little lung,
"Do you see what I see?
In this body warm, little lung,
Do you see what I see?
Some blood, some blood running
through a vein,
Wanting oxygen to gain, wanting
oxygen to gain."

Said the little lung to the bronchioles,
"Do you hear what I hear?
Coming from the heart, bronchioles,
Do you hear what I hear?
The AV valves closing happily,
It's time for systole, it is time for
systole."

Said the bronchioles to the alveoli,
"Do you know what I know?
In your tiny sacs, alveoli,
Do you know what I know?
RBC's are bringing CO₂.
They wish to exchange gas with you,
They wish to exchange gas with you."

Said the alveoli to the molecules,
"Listen to what I say.
Little oxygen molecules,
Listen to what I say.
Squeeze through my simple squamous
skin,
Then grab on to a hemoglobin,
Then grab on to a hemoglobin."

MEMORIZE BONES (tune: Santa Claus Is Coming To Town)

Oh, memorize bones, memorize curves,
Memorize veins and especially nerves;
Finals time is coming around.

Oh, learn about blood, learn about cells,
Learn about tissues especially well;
Van De Graaff is coming to town.

He'll test you on your xiphoid,
The atria right and left.
He'll test you on the thyroid
And the oligodendrocyte.

So, study your books, bribe the TA,
Get a good grade however you may;
Finals time is coming around.

YOU BETTER NOT (tune: Santa Claus Is Coming To Town)

You better not drink.
You better not smoke.
You better not do it,
I'm telling you folks.
Your brain cells are numbered for life.

You've got what you've had,
Since the day you were born.
Well, probably less,
But not a bit more.
Your brain cells are numbered for life.

They might regenerate in part,
But they won't multiply.
And if you kill too many,
Well, buddy then you die.

So don't do dumb things,
Like sniffing up glue,
Or holding your breath,
Till your face turns blue.
Your brain cells are numbered for life.

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