



ERIMETER LETTER 7.26.05

This month a review discussed substance abuse diagnoses, twin studies, and implicated genes, most notably the GABA receptor and alcohol catabolic enzymes (*Nat Rev Genet.* 2005 Jul;6:521-32). Another review detailed the effects of neurosteroids on the GABA_A receptor and speculated on clinical implications (*Nat Rev Neurosci.* 2005 Jul;6:565-75). The adenosine receptor antagonist caffeine was shown to increase wakefulness versus placebo in wild-type and adenosine A₁ receptor-knockout mice, but not in adenosine A_{2A} receptor-knockout mice (*Nat Neurosci.* 2005 Jul;8:858-9). In an examination of the cognitive effects of nicotine, mice lacking the β 2-subunit of the nicotinic acetylcholine receptor regained wild-type levels of nicotine-associated ventral tegmental dopamine release, self-administration of nicotine to the ventral tegmentum, and slow exploratory behavior (indicating improved cognition), after injection of a lentiviral vector containing the β 2-subunit into the ventral tegmentum (*Nature.* 2005 Jul 7;436:103-7). A theoretic prediction was given credence when computer modeling of chick ciliary ganglion cholinergic synapses showed that ectopic neurotransmitter release activated extrasynaptic α 7 nicotinic acetylcholine receptors (*Science.* 2005 Jul 15;309:446-51). At a finer level of detail, in the rat calyx of Held presynaptic terminal, cleaving SNAP-25 changed neurotransmitter release kinetics and cleaving synaptobrevin or syntaxin did not when calcium was increased independent of channels, but cleaving synaptobrevin changed release kinetics when calcium was increased by influx through channels (*Science.* 2005 Jul 15;309:491-4). Attempting to bridge the molecular and clinical, a review suggested that finding genetic and epigenetic differences between monozygotic twins discordant for bipolar disorder or schizophrenia would provide important breakthroughs (*Mol Psychiatry.* 2005 Jul;10:622-30). In a demonstration of acting on limited data, a review discussed how neurosurgeons implanting deep brain stimulators for OCD and depression must choose an anatomical target and a stimulator frequency, and consider the appropriateness of the intervention (*Nature.* 2005 Jul 7;436:18-9). An author wondered if deep brain stimulation, like antidepressants, would eventually be associated with increased suicidality (*Nature.* 2005 Jul 14;436:302).

In an examination of contextual memory, rat hippocampal neuron firing rates changed but firing location did not as the testing chamber was altered, while both firing rates and firing location changed when the location of the testing chamber was changed (*Science.* 2005 Jul 22;309:619-23). Operant conditioning with both visual and olfactory cues in *Drosophila* improved memory retrieval elicited by either a visual or olfactory cue (*Science.* 2005 Jul 8;309:307-10). Altering the course of a neurodegenerative tauopathy, mice transgenic for a human tau that could be inactivated exhibited improvement in memory and cessation of neuronal loss, despite increasing neurofibrillary tangles, after inactivation of the gene (*Science.* 2005 Jul 15;309:476-81). Stimulating the migration of endogenous subependymal neural progenitor cells, eg, with BDNF, may reverse the neurodegeneration of Huntington's or Alzheimer's without the complications of transplanting neural stem cells, according to a review (*Nat Biotechnol.* 2005 Jul;23:862-71). Examining endogenous neurotropism, in both patients with schizophrenia ($n=19$) and healthy volunteers ($n=25$), having one allele of BDNF with methionine at position 66 and the other allele with valine at 66 ($n=17$) compared with having both valine alleles ($n=27$) was associated with smaller hippocampal volumes (effect size $d=1.0$, 95%CI 0.3

to 1.6) (*Mol Psychiatry*. 2005 Jul;10:631-6). A committee decided that in order to avoid changing non-human primates' cognition enough to affect their moral status, researchers should avoid engrafting large numbers of human neural progenitor cells into the cerebrum of great apes early in their development (*Science*. 2005 Jul 15;309:385-6). Even if their moral status remains unperturbed, chimps in captivity can retire in style at Chimp Haven and other facilities (*NY Times Magazine*. 2005 Jul 24).

Illustrating the importance of subjective experience, a review outlined the neural and biochemical correlates of the placebo response, or expectancy, and suggested that clinical trials should include hidden interventions (*Nat Rev Neurosci*. 2005 Jul;6:545-52). Another review offered guidelines for pharmacogenetic research, with the goal of understanding disorders that involve multiple genetic and environmental factors (*Nat Genet*. 2005 Jul;37:671-81). Subjectivity was further elucidated in a study where patients with right-sided brain damage who had hemiplegia, spatial neglect, and anosognosia, compared with similar patients without anosognosia, had greater lesions in Brodmann's premotor areas 6 and 44, motor area 4, and somatosensory cortex (*Science*. 2005 Jul 15;309:488-91). Transcranial magnetic stimulation of the corticospinal tract of a hand muscle revealed decreased motor-evoked potentials when subjects viewed a needle penetrating the same muscle in someone else's hand, and the motor-evoked potentials decreased in proportion to subjects' rating of the other person's pain intensity (*Nat Neurosci*. 2005 Jul;8:955-60). A review delineated regions of the cingulate gyrus that link pain with fear avoidance, unpleasantness, and bodily orientation (*Nat Rev Neurosci*. 2005 Jul;6:533-44). Instinct was altered when inserting the yeast GAL4 gene into the *Drosophila* fruitless gene prevented the production of male-specific transcription factors and negated male courtship behavior, while preventing production of these transcription factors only in olfactory neurons decreased courtship behaviors associated with olfaction (*Nature*. 2005 Jul 21;436:395-400). In a naturally occurring aberration of perception, when dyslexic children were compared with non-dyslexic children, they exhibited impaired contrast discrimination of visual stimuli that were presented with visual noise, regardless of whether the stimuli were processed by the magnocellular or parvocellular pathway, but showed normal discrimination of stimuli in the absence of noise (*Nat Neurosci*. 2005 Jul;8:862-3). Testing subjective distortion of time, when subjects saw two immediately successive stimuli shortly before or after a saccadic eye movement, they underestimated the time interval between them; and when the stimuli were presented at a specific time before a saccade, subjects reported seeing them in reverse order (*Nat Neurosci*. 2005 Jul;8:950-4). An essay asserted that according to quantum mechanics subjective experience is everything (*Nature*. 2005 Jul 7;436:29).



UKE RESEARCH

SOCIAL

Can Shelter-Based Interventions Improve Treatment Engagement in Homeless Individuals With Psychiatric and/or

Substance Misuse Disorders?: A Randomized Controlled Trial.

Bradford DW, Gaynes BN, Kim MM, Kaufman JS, Weinberger M.

Med Care. 2005 Aug;43:763-768.

MED-PSYCH

Treatment of depression in the medically ill.

Krishnan KR.
J Clin Psychopharmacol. 2005 Aug;25:S14-8.

END OF LIFE

Beyond advance directives: importance of communication skills at the end of life.

Tulsky JA.
JAMA. 2005 Jul 20;294:359-65.

TOXICOLOGY

The alterations in CNS serotonergic mechanisms caused by neonatal chlorpyrifos exposure are permanent.

Slotkin TA, Seidler FJ.
Brain Res Dev Brain Res. 2005 Jul 14

FORENSICS

Expert evidence, the adversary system, and the jury.

Vidmar N.
Am J Public Health. 2005 Jul;95:S137-43.

PSYCHOLOGY

Taking an "intentional stance" on eye-gaze shifts: A functional neuroimaging study of social perception in children.

Mosconi MW, Mack PB, McCarthy G, Pelphrey KA.
Neuroimage. 2005 Aug 1;27:247-52.

Adult age differences in the implicit and explicit components of top-down attentional guidance during visual search.

Madden DJ, Whiting WL, Spaniol J, Bucur B.
Psychol Aging. 2005 Jun;20:317-29.

IMAGING

Noise removal in magnetic resonance diffusion tensor imaging.

Chen B, Hsu EW.
Magn Reson Med. 2005 Jul 19;54:393-401

COMPLEMENTARY

Music, imagery, touch, and prayer as adjuncts to interventional cardiac care: the Monitoring and Actualisation of Noetic Trainings (MANTRA) II randomised study.

Krucoff MW, Crater SW, Gallup D, Blankenship JC, Cuffe M, Guarneri M, Krieger RA, Kshetry VR, Morris K, Oz M, Pichard A, Sketch MH Jr, Koenig HG, Mark D, Lee KL.
Lancet. 2005 Jul 16-22;366:211-7.



FIGURE OF THE WEEK



NY Times Magazine. 2005 Jul 24