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6. AUTHORS Raymond P. Kesner				
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13. ABSTRACT (Maximum 200 words) <p>The twenty-second annual Neurobiology of Learning and Memory conference was held in Park City, January 10-13, 1998. The conference was organized by Sheri Mizumori, Bryan Kolb, Raymond Kesner, Jim McGaugh, Aryeh Routtenberg and Larry Squire. The conference was well attended with 80 scientists from all parts of the United States as well as 20 graduate and/or postdoctoral students.</p> <p>The topics that were covered included 1) a "data blitz" which was lead by Sheri Mizumori and Bryan Kolb. 2) "Molecular genetics and biochemistry of learning and memory consolidation" which was led by Jim McGaugh and Aryeh Routtenberg. 3) "Behavioral and Neural Plasticity in Old Age" which was lead by Michela Gallagher. 4) "Drug-induced Sensitization: A Model for Studying Experience-Dependent Neuroplasticity" which was lead by Terry Robinson. 5) "Representational Reorganization as an Adaptive Mechanism of Behavior" which was lead by Sheri Mizumori. 6) "Memory Consolidation Revisited with Animal Models" which was lead by Lyn Nadel. 7) "Interactions of attention with learning and memory" which was lead by Rebecca Burwell.</p> <p>All of the sessions of the conference were well attended and resulted in extensive discussion with each session as well as discussion throughout the conference period. It is hoped that many new ideas were generated as a result of the many excellent presentations and the ensuing discussions.</p>				
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The twenty-second annual Neurobiology of Learning and Memory conference was held in Park City, January 10-13, 1998. The conference was organized by Sheri Mizumori, Bryan Kolb, Raymond Kesner, Jim McGaugh, Aryeh Routtenberg and Larry Squire. The conference was well attended with 80 scientists from all parts of the United States as well as 20 graduate and/or postdoctoral students.

The topics that were covered included 1) a "data blitz" which was lead by Sheri Mizumori and Bryan Kolb. The data blitz was designed to provide people the opportunity to tell the group what is most exciting, so that the information can be used as a basis for further discussion throughout the days of the conference. Each of the thirty people presented their latest exciting results for a 5 minute period. 2) "Molecular genetics and biochemistry of learning and memory consolidation" which was led by Jim McGaugh and Aryeh Routtenberg. It has been known for half a century that memory storage processes are time-dependent. Recent research has begun to reveal how learning activates genes critical for initiating biochemical processes underlying the consolidation of memory for recent experiences. These presentations summarized findings based on experiments using several different approaches to the study of gene expression, biochemistry and memory. 3) "Behavioral and Neural Plasticity in Old Age" which was lead by Michela Gallagher. It has been argued for some time that normal aging results in selective effects on brain function: The brain does not deteriorate indiscriminately. However, it wasn't until more recent years that we have begun to understand precisely which specific neurobiological events are compromised in old age, and which ones remain intact. The bottom line of this work is that surprisingly few structural changes can account for the clear age-related learning and memory impairments that exist. This session explored the possibility that the neurobiology of age changes in learning may be better explained by studying age changes in characteristics of plasticity in the system rather than the more discrete structural changes that are often characteristic of degenerative diseases. 4) "Drug-induced Sensitization: A Model for Studying Experience-Dependent Neuroplasticity" which was lead by Terry Robinson. In behavioral pharmacology sensitization refers to a progressive and persistent increase in a drug effect with repeated drug administration. The purpose of this session was to introduce the topic of drug-induced sensitization and to explore the many parallels between behavioral sensitization and other forms of experience-dependent plasticity. 5) "Representational Reorganization as an Adaptive Mechanism of Behavior" which was lead by Sheri Mizumori. There is growing evidence that learning involves the progressive tuning of receptive fields and information codes (e.g. sensory receptive fields, place fields, conditioned neural activity). This change with learning typically manifests itself in terms of specificity and reliability of the information being coded. This session explored the possibility that the neural plastic mechanism underlying representational reorganization as studied in sensory and motor cortex following injury may also be responsible for the normal learning-induced changes in representational organization. 6) "Memory Consolidation Revisited with Animal Models" which was lead by Lyn Nadel. The notion of "memory consolidation" suggests that events occurring after learning contribute to the final form of memory. Initially this notion was applied to relatively short-term events by which a transient trace becomes stabilized. More recently it has been used to refer to postulated mechanisms by which information is initially stored in one brain system (e.g. hippocampus), but after some extended period of time becomes independent of the system and depends instead on another (e.g.

neocortex). Recent data call this notion into question, however, at least for some kinds of learning. This session explored the results of studies with animal models of memory consolidation, with special interest in the role of the hippocampus in consolidation. 7) "Interactions of attention with learning and memory" which was lead by Rebecca Burwell. "Attention", broadly defined, refers to psychological processes that control the selection of sensory information for subsequent processing. Considerable effort has been devoted to understanding the neural systems involved in the control of attention. Less emphasis has been placed on how stored representations, or memories, might contribute to the selection of information for processing. Many neural systems implicated in the control of attention (for example, the prefrontal cortex and basal forebrain) are also implicated in learning and memory. Our goal is to consider converging evidence from different experimental paradigms (lesion studies, neurophysiology, and neuroimaging) and species about the neural mechanisms of attentional processing, and the relationship of attention to learning and memory.

All of the sessions of the conference were well attended and resulted in extensive discussion with each session as well as discussion throughout the conference period. It is hoped that many new ideas were generated as a result of the many excellent presentations and the ensuing discussions.