

Douglas R J. The hippocampus and behavior. *Psychol. Bull.* 67:416-42, 1967.  
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The behavioral effects of hippocampal damage are reviewed, and it is concluded that they form a coherent pattern indicating the loss of a single underlying function. It is suggested that this function is akin to Pavlov's 'internal inhibition.' [The *Science Citation Index*® (SCI®) and the *Social Sciences Citation Index*® (SSCI®) indicate that this paper has been cited in over 540 publications since 1967.]

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"There are four reasons why this is a highly cited paper. First, it genuinely is an excellent paper. Second, it is a convenient reference to a whole era of research. Third, it appealed to a large group of prolific investigators. Finally, the time of publication was so 'ripe' that at least three other people were writing similar papers when mine appeared. Five of my other articles have been cited more than a hundred times each, but all lacked one or more of these factors and thus fell far short of the present paper in citations.<sup>1-5</sup> When I sat down to begin writing this paper, I knew that a 'classic' was about to be born, and the paper virtually 'wrote itself.' This was possible only because I happened to be at the right place at the right time when 'everything happened.' I worked simultaneously for both Bob Isaacson and 'Mac' McCleary.

"Although both labs were in Mason Hall at the University of Michigan, I was the only one who regularly com-

muted between Bob's top floor empire and Mac's basement dungeon. While the basic idea relating the hippocampus to inhibition was mine (I wrote it down in 1959), its elaboration owed much to Mac's brilliant analysis of avoidance behavior, Bob's insistence that Pavlov had the answer, and the data and ideas of students such as Dan Kimble, Dave Olton, Carol Van Hartsveldt, and many others. I could have written the paper in 1962, but I always assumed that Bob or Dan would review our work. Five years later, when I was in Pribram's lab at Stanford, I was overwhelmed by an urge to do the job myself.

"Although the paper revolves about theories, these were very rare because of the anti-theoretical climate of the times. As a result, I was forced to invent them just to spice up the discussion. One such space-filler, the 'working memory hypothesis,' has proved to be surprisingly viable. Of more significance, however, was the one idea I deliberately omitted. In my doctoral research, I had rediscovered 'spatial orientation' and realized that much, if not all, of the data could be explained in those terms. But at that time, the idea was considered to be 'crazy' and I was afraid to even mention it. Needless to say, O'Keefe and Nadel<sup>6</sup> and Olton<sup>7</sup> made the idea 'respectable,' and it has dominated the field in recent years.

"Finally, I am living proof that there is no causal relationship between citations and any other known measure of success. I have not received a single honor or award for this paper or any of the others that have elicited a total of over 1,750 citations. The latter are, however, an ample reward in and of themselves."

1. Douglas R J & Isaacson R L. Hippocampal lesions and activity. *Psychon. Sci.* 1:187-8, 1964. (Cited 130 times.)
2. Douglas R J. Cues for spontaneous alternation. *J. Comp. Physiol. Psychol.* 62:171-83, 1966. (Cited 130 times.)
3. Douglas R J & Pribram K H. Learning and limbic lesions. *Neuropsychologia* 4:197-220, 1966. (Cited 160 times.)
4. Douglas R J. Pavlovian conditioning and the brain. (Boakes R A & Halliday M S, eds.) *Inhibition and learning.* London: Academic Press, 1972. p. 529-53. (Cited 120 times.)
5. Isaacson R L, Douglas R J & Moore R Y. The effect of radical hippocampal ablation on acquisition of avoidance response. *J. Comp. Physiol. Psychol.* 54:625-8, 1961. (Cited 205 times.)
6. O'Keefe J & Nadel L. *The hippocampus as a cognitive map.* Oxford: Clarendon Press, 1978. 570 p.
7. Olton D. Spatial memory. *Sci. Amer.* 236:82-98, 1977.