Cover Stories:

Major Scientific Publications Featuring NRI-funded Research

Knowledge For Tomorrow's Solutions

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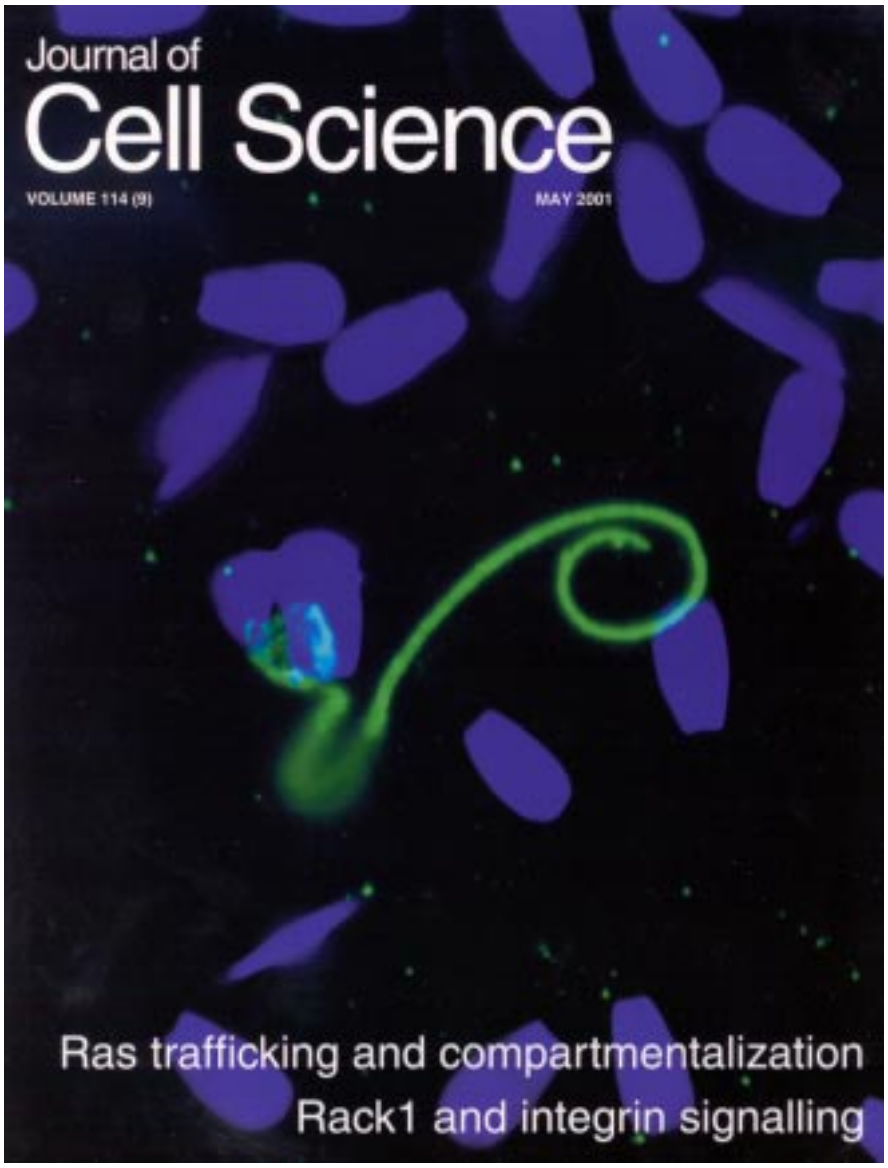

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Peter Sutovsky, Ricardo Moreno, Joao Ramalho-Santos, Tanja Dominko, Winston E. Thompson and Gerald Schatten. 2001. A Putative, Ubiquitin-Dependent Mechanism for the Recognition and Elimination of Defective Spermatozoa in the Mammalian Epididymis. ***Journal of Cell Science****. 114(9): 1665-1675.*

Ubiquitin is a small protein that binds to other proteins destined for degradation. Serving as a cellular house-keeper, ubiquitin helps to remove and recycle defective and outlived proteins and cellular organelles. With funding support from the NRI, Dr. Sutovsky and colleagues have shown that defective mammalian spermatozoa become ubiquitinated during their storage in the epididymis, and that this mechanism marks the abnormal spermatozoa for degradation. These researchers determined that ubiquitination of sperm is increased in the semen of infertile bulls, boars, stallions, mice and men. These results suggest that sperm ubiquitination may be a universal indicator of infertility in mammals. Because ubiquitin is present exclusively on the surface of the defective spermatozoa, it may be an ideal marker of sperm abnormalities in semen and could be used for routine semen screening of farm animals. Ubiquitin can be measured by various immunological methods and the evaluation can be further streamlined, resulting in a simple, rapid and highly-repeatable assay. This holds the promise for development of a simplified and practical field test. A ubiquitin-based fertility assay of sires may be superior than the methods currently available, because it would provide an objective quantitative measure of fertility.

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