'Psychic cells': Scientists discover cells can communicate through physical barriers

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(Phys.org)—Scientists at UCLA and Charles R. Drew University of Medicine and Science have discovered a possible method by which cancer cells and dying cells communicate with nearby normal nerve cells without being physically connected to them.

Dr. Keith Norris, senior author of the research and assistant dean for clinical and translational science at the David Geffen School of Medicine at UCLA, said the study contributes to the understanding of cell communication, which until now was known to take place only through direct contact or direct stimulation of receptors in the cells of molecules known as ligands or in hormones, signaling factors, nerves and other pathways.

It now appears, the researchers say, that cells may be able to effectively communicate through physical barriers. Their study appears in the January 2013 issue of the peer-reviewed *American Journal of Translational Research*.

For the study, Norris and his colleagues reported on how normal nerve cells isolated in an enclosed chamber behave during a function known calcium signal processing. The team found that when these isolated nerve cells were surrounded by other normal nerve cells outside the barrier, they had the same calcium signaling properties.

However, when the normal isolated nerve cells were surrounded by cancer cells or dying cells, they processed the calcium signals

differently, suggesting there was communication from the surrounding cells. The physical barrier between the cells prevented hormonal, ligand-receptor and other traditional forms of cell-to-cell communication.

Co-authors Dr. Christopher Reid and Victor Chaban of the Life Sciences Institute at Drew University noted that this novel finding may represent a potentially higher form of cell communication. Discovering that cancer cells and dying cells may have a previously undiscovered communication method with other cells may lead to new treatments for cancer, aging and other diseases, they said. Further studies are needed to uncover how the non-physical communication occurs.

"Understanding the many ways in which cells communicate is an important step toward developing new approaches to treat disease," said Dr. Steven M. Dubinett, executive director of the UCLA Clinical and Translational Science Institute (UCLA CTSI).

Provided by University of California, Los Angeles

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