

## **CPSI Biotech Scientists Discover that Cells Exposed to Ultra-Low Temperatures May Undergo Early On Apoptosis**

July 17, 2013

OWEGO, NY -- CPSI Biotech announced today that based on the work critical to the continual improvement of cryoablation efficacy, we have found that cells exposed to ultra-low temperatures may undergo early on-set apoptosis. The finding of our work titled **“Temperature-dependent activation of differential apoptotic pathways during cryoablation in a human prostate cancer model”** was recently published in Prostate Cancer Prostatic Disease and was promoted by Global Medical Discovery (<http://globalmedicaldiscovery.com>).

The study demonstrates the impact of apoptotic continuum, whereby the more severe cryogenic stress activated the extrinsic, membrane-regulated pathway, whereas less severe freezing activated the intrinsic, mitochondrial-mediated path. The rapid induction and progression of apoptosis at ultra-low temperatures provides an explanation as to why such results have not previously been identified following freezing. Ultimately, an understanding of the events and signaling pathways involved in triggering apoptosis following freezing may provide a path for selective induction of the rapid-onset and delayed programmed cell death pathways in an effort to improve the overall cryoablation efficacy.

Dr. Baust commented “this study demonstrates for the first time the time dependent activation of two unique apoptotic induction pathways following a freezing insult (cryoablation) in cancer cells. This information, obtained from our life science discovery program, is now providing a path for us to develop more tailored treatment approaches which leverage and promote cell death cascade initiation at both the cell membrane and the mitochondria.” Baust further stated that this is “great exposure for our research scientists and engineers who are dedicated to unraveling the molecular response of cancer to thermal ablation in order to develop improved cancer treatment strategies and devices, as well as serves as yet another validation of our contributions to research and medicine.”

This latest publications follows the issuance of US Patent 8,409,184 which covers the use of combinatorial application of freezing and drug agents which make cancer cells more sensitive to freezing injury (sensitizers) thereby resulting in enhanced cell death at warmer temperatures, among other items. When asked how the latest study complements the previous work, Baust stated “Right now temperatures of -20°C or lower are needed to achieve complete cancer lethality. The overall goal of our sensitizer R&D program is to increase the lethality of ice to nominally 0°C. The findings of the current study fit directly into and advance that mission and provide new areas for us to target to obtain this goal.”

**About CPSI Biotech** - CPSI Biotech is a research and technology development company specializing in the area of low temperature medicine and medical devices. In support of the innovative development strategy, CPSI runs parallel research programs focusing in the life (cell & molecular biology) and engineering sciences. Through this integrated multi-disciplinary approach, CPSI scientists and engineers are currently pursuing the development of several

different technologies focused in the use of low temperatures to eradicate tumor tissue. In addition to corporate R&D activities, CPSI maintains a strong linkage to Binghamton University and hosts undergraduate laboratory sessions and internships where students can work directly in the laboratory as well as interact with the company officers and scientists to learn more about careers in biotechnology.

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