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Lecture by Prof. Bogdan C. Maglich: February 9, 10:15-11:45 AM.

EMERGENCE OF "FEMTOMEDICINE"- NEW FRONTIER OF BIOMED SCIENCES - REPORTED AT FIRST GLOBAL CONGRESS ON NANO MEDICINE

Bombarding DNA nucleotides and mammalian meat with 'femto-neutrons' has opened up the path to *femtomedicine,* an entirely new cancer diagnostics, it was reported today at *First Global Congress on NanoEngineering for Medicine and Biology* in Houston TX. Femto-neutrons or 'femtons' are fast neutrons of femto-meter wave-length, a million times shorter than the current nanotechnology medical diagnostic probes that operate on nanometer scale. In the first experiment of the kind, a collaboration of California Science & Engineering Corp. (CALSEC) and University of California, Irvine (UCI) College of Medicine, was able to detect oxygen differences as tiny as 1 atom of oxygen per molecule, one foot away, it is claimed. Since 'hypoxic' cancerous tumors contain 50% to 90% less oxygen than healthy tissue, if you find an oxygen difference between a tumor and the adjacent healthy tissue – you have diagnosed cancer! The principle is named 'Differential Femto Oximetry' or DFO, and the patented diagnostic probe 'Oncosensor'. "We are ready to test DFO *in vivo*using double blind animal trials at our center", said co-author Orhan Nalcioglu, Professor and Director of the Center for Functional Onco Imaging of the UCI College of Medicine, which specializes in evaluation of diagnostic devices.
"Oncosensor's mission is to provide needleless biopsy with negligible ' false negatives' that is a quantum leap over the current technologies. It should facilitate an early warning, walk-in, painless, instant cancer diagnosis from outside the body, without intravenous fluid" - says Dr. Bogdan Maglich, CALSEC's Chief Technology Officer and the developer of the core technology that was originally used for defense, one of "50 Champions of Innovation" elected by Fast Company Magazine. The Oncosensor is not an imager. It will be used in tandem with any one of the imaging systems that have achieved very high sensitivity, almost 98%, in detecting tumors; but have a low 'specificity', about 70%, in differentiating healthy from malignant ones, thus missing an unacceptably large number of malignancies. CALSEC scientists predict Oncosensor's specificity will reach 98%, which is equal to or better than the surgical biopsy. This will be accomplished by making patients inhale 'carbogen', an oxygen enriched gas, the authors claim. Dr. Nisar Syed, Chancellor of American College of Radiation Oncology emphasized:"Oncosensor has the potential to significantly improve the eradication of malignant tumors by hyperthermia, the heat treatment by pointing to the least oxygenated tissue."
"The method has also the potential for the forewarning of stroke, Alzheimer's and cardiovascular diseases which, too, are marked by oxygen change," says co-author Dr. Anna Radovic, a molecular biologist.

***CNN has aired BIOATOM's 5 min clip in Washington State, Utah and Arizona 15 times about CALSEC-UCI-Long Beach Cancer Institute Oncosensor collaboration under Leading Developments in Diagnostic Technologies* as part of the shows' "*Medical Minute* series".**

TECHNOLOGY TRANSFER FROM DEFENSE-TO-MEDICINE

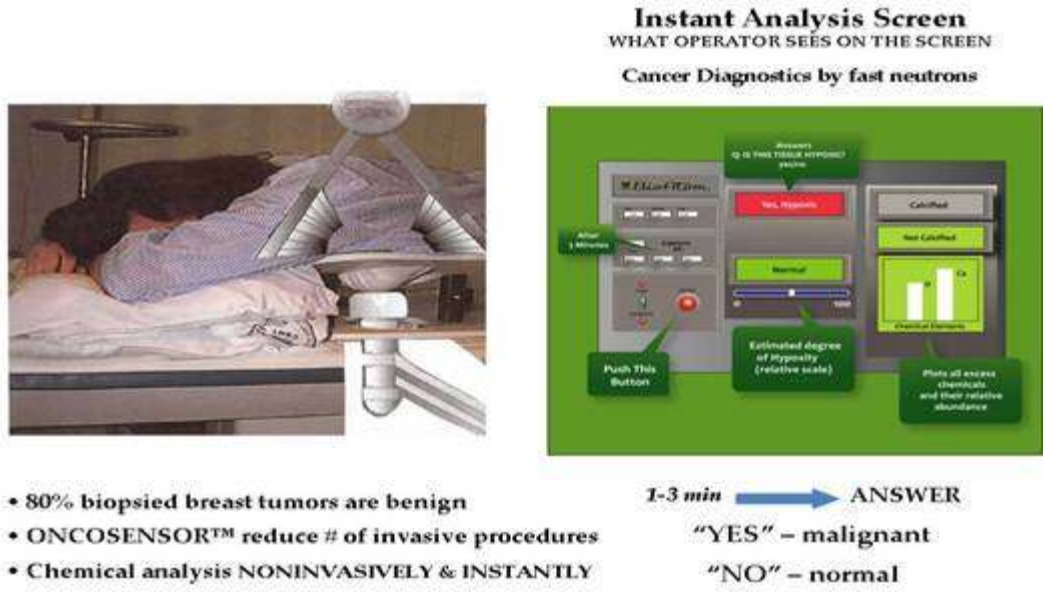
BioAtom, Inc. of Costa Mesa, California is developing

O N C O S E N S O R™

World's First Neutron Breast Cancer Detector designed to provide:

- Walk-in 3 minute Non-invasive diagnostics ● Direct chemical identification of malignancy
- No Intravenous fluid ● Portable and inexpensive ● Commercial use in animal clinics without the need for FDA permit would result in "Fast Track" FDA 510K for human use.

N E E D L E - L E S S B I O P S Y O F B R E A S T T U M O R



Following a mammography test, O N C O S E N S O R™ would illuminate the breast of a patient with fast neutrons from below (*white inset*). A Patient inhales harmless oxygen or oxygen-rich carbogen. Gamma rays from the breast tumor are analyzed by detectors (*inverted V*). Operator pushes red button: "IS TUMOR MALIGNANT?" 30 seconds to 3 minutes later, YES OR NO OR MARGINAL, CHECK MORE would appear on the screen, as well as degree of malignancy on scale 1 - 100. On average, 80% of 'suspicious' tumors are benign, but often calcified. O N C O S E N S O R™ is also designed to perform a test for Calcium levels in a tumor and display "Calcified"/"Non-Calcified" on screen.

Sensitivity of noninvasive molecu lar imaging probes - Mammograms, Ultrasound, MRI and Molecular Imaging – has reached 98%. But Specificity, the ability to distinguish between cancerous and benign tumors, is only 50% to 70% at best, thus it misses 30% to 50% cancers, which is un acceptable. Only surgical biopsy has an acceptable specificity of 95%. So, every suspected breast tumor must be punctured, even though only 20% end up being malignant. We project ONCOSENSOR™'s specificity will be at least 95%. ONCOSENSOR™ is not animager. It works in tandem with an imaging system, except in cases of palpable tumors.