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Lawrence Livermore National Lab

October 17, 2011



Cancer Center Retreat Squaw Valley

September, 2009

Ralph de Vere White, MD

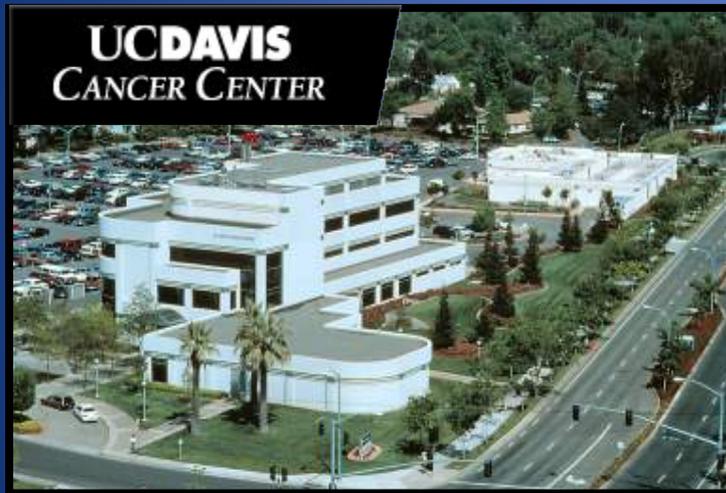
Director, UC Davis Cancer Center

Associate Dean for Cancer Programs

Professor, Department of Urology

Codman-Radke Chair in Cancer Research

The UC Davis Cancer Center Partnership with Lawrence Livermore National Laboratory



What we have accomplished
How we can accomplish more



Overview

UC Davis Cancer Center

Integrated Cancer Program

Ralph de Vere White, M.D.
Principal Investigator

Director, UC Davis Cancer Center
Associate Dean for Cancer Programs, UC Davis School of Medicine
Professor, Department of Urology
Codman-Radke Chair in Cancer Research

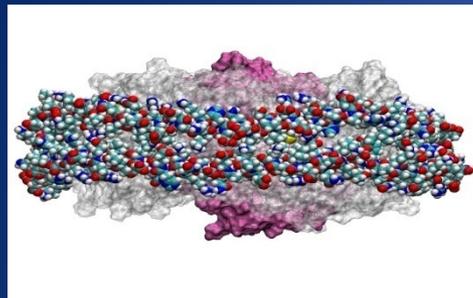


Integrated Cancer Program

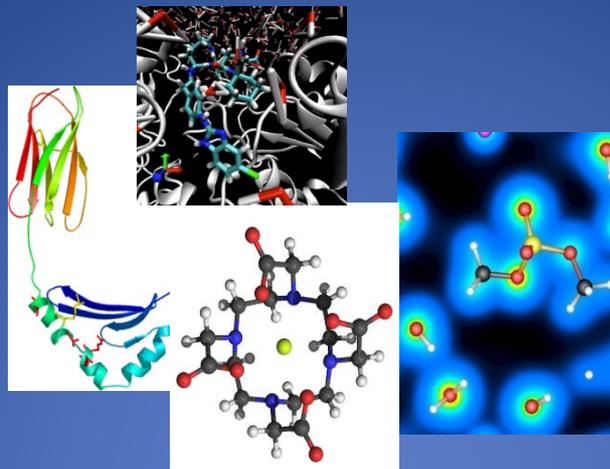


- To promote collaboration between **physical scientists, engineers,** life scientists and clinicians
- To create advanced methods and instrumentation for cancer **detection, diagnosis, therapy** and **research**

LLNL Translational Technology Collaboration with the UC Davis Cancer Center



Nanolipoproteins (NLPs) for probe and drug delivery



Computational Biology for Rational Drug Design



Cell phone microscopy/spectrometry



Optical Biopsy Endoscopy



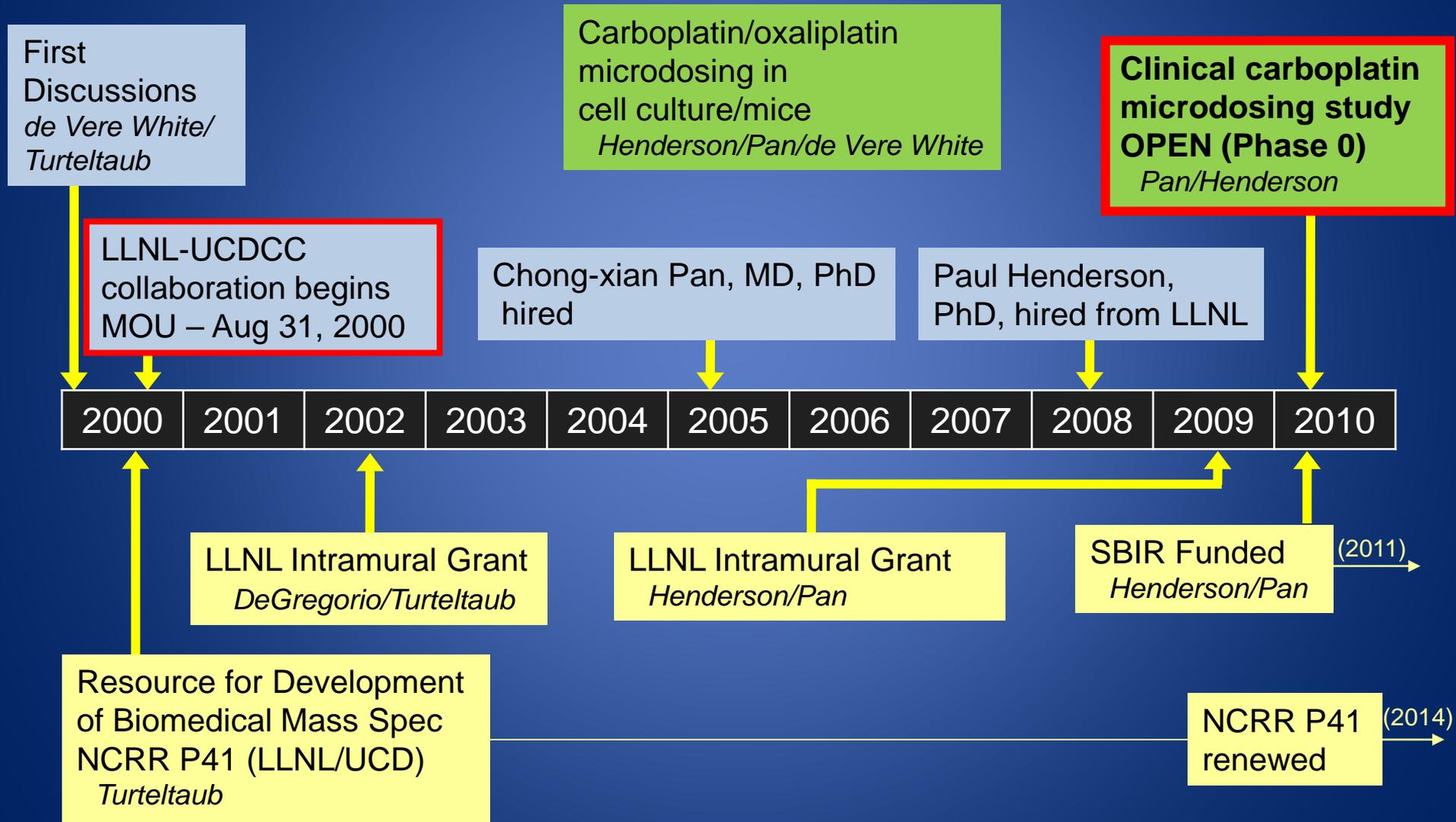
Proton radiotherapy



Accelerator Mass Spectrometer

UCDCC and LLNL: A decade of collaboration

Example: Subtherapeutic dosing to predict an individual's response to chemotherapy



The Publications



Available online at www.sciencedirect.com

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Bioorganic & Medicinal Chemistry Letters 15 (2005) 3627–3631

Bioorganic &
Medicinal
Chemistry
Letters

Hydantoin derivative formation from oxidation of 7,8-dihydro-8-oxo-2'-deoxyguanosine (8-oxodG) and incorporation of ¹⁴C-labeled 8-oxodG into the DNA of human breast cancer cells

Sang Soo Hah, Hyung M. Kim, Rhoda A. Sumbad and Paul T. Henderson*

Cancer Chemother Pharmacol (2006) 57: 335–342
DOI 10.1007/s00280-005-0060-1

ORIGINAL ARTICLE

M. W. DeGregorio · K. H. Dingley · G. T. Wurz
E. Ubick · K. W. Turteltaub

Accelerator mass spectrometry allows for cellular quantification of doxorubicin at femtomolar concentrations

Measurement of 7,8-dihydro-8-oxo-2'-deoxyguanosine metabolism in MCF-7 cells at low concentrations using accelerator mass spectrometry

Sang Soo Hah, Janna M. Mundt, Hyung M. Kim, Rhoda A. Sumbad, Kenneth W. Turteltaub, and Paul T. Henderson*

Chem. Res. Toxicol. 2006, 19, 622–626

Kinetics of Carboplatin–DNA Binding in Genomic DNA and Bladder Cancer Cells As Determined by Accelerator Mass Spectrometry

Sang Soo Hah,*[†] Kristen M. Stivers,[†] Ralph W. de Vere White,[§] and Paul T. Henderson*[†]

Biosciences Directorate and Center for Accelerator Mass Spectrometry, Lawrence Livermore National Laboratory, 7000 East Avenue, L-441, Livermore, California 94551, and Department of Urology, School of Medicine, University of California Davis, Sacramento, California 95817

Received March 14, 2006

Chem. Res. Toxicol. 2007, 20, 1745–1751

1745

Characterization of Oxaliplatin–DNA Adduct Formation in DNA and Differentiation of Cancer Cell Drug Sensitivity at Microdose Concentrations

Sang Soo Hah,*[†] Rhoda A. Sumbad,[†] Ralph W. de Vere White,[§] Kenneth W. Turteltaub,[†] and Paul T. Henderson*[†]

Review

Open Access

Recent advances in biomedical applications of accelerator mass spectrometry

Sang Soo Hah

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This article is available for free at <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1911111/>

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Review

TRENDS in Pharmacological Sciences Vol.25 No.8 August 2004

Full text provided by www.sciencedirect.com

Techniques: The application of accelerator mass spectrometry to pharmacology and toxicology

Ian N.H. White¹ and Karen Brown²

Chem. Res. Toxicol. XXXX, xxx, 000

Gemcitabine Causes Minimal Modulation of Carboplatin–DNA Monoadduct Formation and Repair in Bladder Cancer Cells

Sisi Wang,^{†,‡} Hongyong Zhang,[†] Michael Malfatti,[§] Ralph de Vere White,^{||} Primo N. Lara, Jr.,^{†,||,⊥} Kenneth Turteltaub,[§] Paul Henderson,*[†] and Chong-xian Pan*^{†,||,⊥}

In press: Towards biomarker-dependent individualized chemotherapy: Exploring cell-specific differences in oxaliplatin–DNA adducts distribution using accelerator mass spectrometry

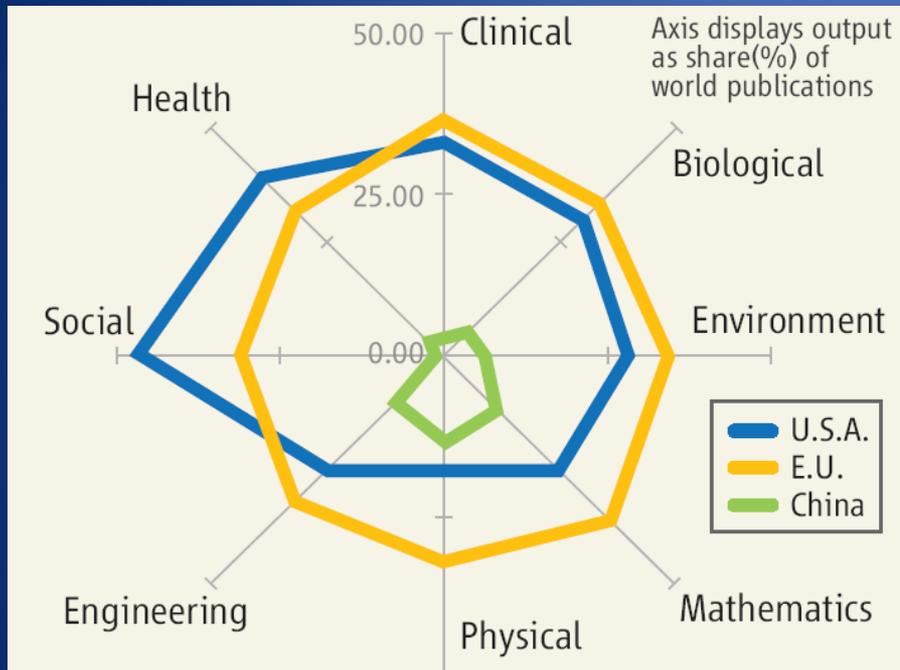
In press: Microdosing for prediction of patient response.

Integrated Cancer Program

Continuing Impact

JAN 1, 2011

LLNL establishes the Fitzgerald Post-doctoral Cancer Fellowship Program with a gift of \$800,000



Research Footprint -- Axis displays output as share (%) of world publications
Science, Nov 2010; 330(6007): 1032



Joint UCD-LLNL meetings