CURRICULUM VITAE

NICHOLAS V. REO, Ph.D.

Title: Professor & Vice-Chair of Education
Department of Biochemistry & Molecular Biology
Director, Magnetic Resonance Laboratory
Affiliate Faculty,
Department of Physics
Department of Biomedical, Industrial & Human Factors Engineering

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EDUCATION

- Postdoctoral Research Associate - March 1983 - October 1985
  Department of Chemistry, Washington University, St. Louis, Missouri
  Mentor: Dr. Joseph J. H. Ackerman
- Postdoctoral Research Associate, - Sep-1982 –Mar-1983
  Department of Chemistry, Mount Holyoke College, South Hadley, MA
  Menntor: Dr. Kenneth L. Williamson
- Ph.D. - Physical Chemistry, 1983
  University of Massachusetts, Amherst, Massachusetts
  Mentor: Dr. Thomas R. Stengle
- M.S. - Chemistry, 1981
  University of Massachusetts, Amherst, Massachusetts
- B.A. - Chemistry, 1978
  Rutgers University, Newark, New Jersey

CAREER DEVELOPMENT

- October 16-24, 1989: Philips Spectroscopy Course, University of Trondheim, Center for Nuclear Magn. Reson. Trondheim, Norway. Classroom and hands-on training in the use of a Philips Gyroscan MRI/MRS whole-body imager/spectrometer.
- March 21, 2015: American Society of Biochemistry & Molecular Biology (ASBMB) RCN Workshop, "Connecting Core Concepts and Best Teaching Practices in BMB", College of Wooster, Wooster, OH. Objective: design tools for student learning in areas of structure-function, biological information, and energy & matter transformation; develop learning objective, assessment tools, and classroom strategies using *backwards design* and student-centered learning techniques.
- Sept. 2015 – May 2016: Faculty Leadership Academy. I was selected by Wright State U administrators to attend this program offered through the Boonshoft School of Medicine. The academy is a series of didactic and small group sessions designed to provide faculty with advanced leadership skills to fulfill a variety of roles in our institution and the community.

AWARDS/HONORS

- 2006 Award Recipient for *Excellence in Medical Education*, Boonshoft School of Medicine, Wright State University.
- 2004 Award Recipient for *Outstanding Achievement in Medical Education and Research*, Academy of Medicine, Wright State University School of Medicine.
- Al Steyermark Scholarship, Rutgers University, New Jersey, 1978
- Undergraduate Research Presentation, sponsored by the Northeastern Chapter of the American Chemical Society: Rutgers University representative, 1978

- ❖ Microanalytical Chemistry Award, Rutgers University, New Jersey, 1977
- ❖ Sigma Xi – Elected Associate Member, University of Massachusetts Chapter, May 1980

MEMBERSHIPS

- ❖ Society of Toxicology, Member: 2007 - 2013
- ❖ American Chemical Society; Member: 1975 – present
- ❖ International Society of Magnetic Resonance in Medicine; Member: 1995 – 2010
- ❖ Metabolomics Society, Member: 2006 – 2007
- ❖ International Society for the Study of Xenobiotics; Member: 1992 – 99
- ❖ American Association for the Advancement of Science; Member: 1993 – 99

PROFESSIONAL

- ➢ **Research Interests:** Biochemical/biomedical applications of NMR spectroscopy and imaging; Studies of cellular metabolism in mammalian tissues *in vivo:* carbohydrate, high-energy phosphate, and lipid metabolism; NMR-based metabolomics in toxicology.

Faculty Appointments at Wright State University, Dayton, Ohio

2015 – present **Vice-Chair for Education,** Department of Biochemistry and Molecular Biology, Boonshoft School of Medicine
2007 – present **Professor**, Department of Biochemistry and Molecular Biology
2006 – present **Associate Professor** (secondary appointment), Department of Biomedical, Industrial & Human Factors Engineering, College of Engineering & Computer Science
1994 – present **Associate Professor** (secondary appointment), Department of Physics, College of Science and Mathematics
2014 – 2015 **Vice-Chair for Research,** Department of Biochemistry and Molecular Biology
1993 – 2007 **Associate Professor**, Department of Biochemistry and Molecular Biology
1993 – 1996 **Associate Director**, Kettering-Scott/WSU Magnetic Resonance Laboratory
1985 – 1993 **Assistant Professor**, Department of Biochemistry and Molecular Biology, Facility Manager, Kettering-Scott Magnetic Resonance Laboratory, WSU School of Medicine and Kettering Medical Center, Dayton, OH

- Administrative and budgetary responsibilities for the WSU Magnetic Resonance Laboratory.
- Oversee the upkeep and normal maintenance/repair of NMR instrumentation and support equipment.
- Systems manager for support computers.
- Collaborate with research investigators; provide NMR user training and help with the design and implementation of experimental protocols involving NMR techniques.
- Mentor students in Ph.D. and M.S. programs in Biomedical Sciences, Biochemistry, Chemistry, Medical Physics, and Biomedical Engineering.

1988 – 1991 **Industrial Consultant**, Procter and Gamble Co., Miami Valley Lab, Cincinnati, OH. Served as consultant/collaborator in NMR-related projects. Provided expertise to help evaluate and develop the utility of magnetic resonance spectroscopy/imaging in various areas of corporate research.

1983 - 1985 **Postdoctoral Research Associate**, Department of Chemistry, Washington University, St. Louis, MO (Laboratory of Dr. Joseph J. H. Ackerman)

- Management of a NMR laboratory. Responsibilities included normal maintenance and repairs of a Bruker WH 360 wide bore spectrometer.
- Application of NMR to metabolic studies of mammalian tissue *in vivo*. Radio-frequency probe design and implementation of surface coil technology for the detection of P-31 and proton-decoupled C-13 NMR.

- Study of "high energy" phosphorus (i.e., Pi, ATP) and carbohydrate cellular metabolism in liver. Hormonal regulation of liver metabolism--the role of insulin and glucagon.

1982 - 1983 **Postdoctoral Research Associate**, Department of Chemistry, Mount Holyoke College, South Hadley, MA (Laboratory of Dr. Kenneth L. Williamson).

- Management of a JEOL FX-90 NMR spectrometer; scheduling and instruction for users.
- Measurement of ^{13}C spin-lattice relaxation times (T_1) in a homologous series of compounds. Test of an empirical formula for predicting ^{13}C T_1's.

1979 - 1983 **Graduate Student Research Associate,** University of Massachusetts, Amherst, MA.

- Study of the microdynamic behavior of liquid solutions: solute-solvent interactions, solvation structure, and molecular dynamics via NMR spectroscopy and extended X-ray absorption fine structure (EXAFS).
- Study of interaction of xenon with biological systems in relation to the mechanism of anesthesia via xenon NMR.

1977-1978 **Undergraduate Research Participant,** Rutgers University, Newark, NJ

- Ultrasonic relaxation kinetic studies of fast reactions.

PROFESSIONAL SERVICE ACTIVITIES

REVIEWER FOR GRANT AGENCIES

As Study Section Member

- Co-Chair, National Institutes of Health, Special Emphasis Panel/Scientific Review Group 2012/08 ZRG1 IMST-K (51) R, Development of Courses or Workshops in Metabolomics (R25), 2012.
- American Heart Association: Study Section Member, Scientific Peer Review Committee.
  - Great Rivers Affiliate, R1 Cell Transport Physiology & Metabolism (2008-09).
  - Southern and Ohio Valley Consortium, 4A (2007); 4B (2002 – 2006).

As *Ad Hoc* Reviewer

- American Heart Association, Feb-1997.
- Air Force Office of Scientific Research, Feb-1997; Feb-1993.
- National Institutes of Health, Visual Sciences A2 Study Section, Oct-1989.
- NASA Physical Sciences Res. Division, Office of Biological and Physical Sciences, Mar-2001.
- The Wellcome Trust, London NW1 2BE, UK, Feb-2004; Sep-2015.

REVIEWER FOR SCIENTIFIC JOURNALS

- Molecular BioSystems, Jun-07; Dec-08; Apr-10
- Journal of Pharmacy and Pharmacology, Nov-06
- The FASEB Journal, 2006
- The Analyst (published by the Royal Society of Chemistry, Cambridge, UK) Dec-2003 and Feb-2004
- Proceedings of the International Society for Magnetic Resonance in Medicine, Dec-2002 and Dec-2003 [reviewed scientific abstracts submitted for Annual Meeting]
- Nature Biotechnology, Nov-2002
- Chemico-Biological Interactions, Sep-1998, Nov-1998
- Chemical Research in Toxicology, May-1990; Oct-1990; Mar-1996; Aug-1996; Jun-1997; Oct-1997; Feb-2000
- Journal of Biochemical Toxicology, Feb-1995
- Magnetic Resonance in Medicine, May-1988; Jan-1989; Jun-1989

CONSULTANT

- Union Institute and University, External Reader for a PhD Dissertation, Nov-Dec-2007

COMMITTEE SERVICE — Major University Committees (Wright State University)

- Elected Member, Boonshoft School of Medicine Faculty Promotions & Advancement Committee, 2016-17; re-elected for 2nd term 2017-19.
- Appointed Member, Research Council, Boonshoft School of Medicine Representative, 2014-present.
- Elected Member, Research Committee, Boonshoft School of Medicine, 2013-15.
- Elected Member, Faculty Senate, 2013–15; Re-elected 2nd term 2015-17; 3rd term 2017-19.
- Appointed Member, Faculty Senate Executive Committee, 2014–15.
- Appointed Member, University Buildings & Grounds Committee, 2011 - 14.
- Appointed Member, Academic Policies Committee, Biomed. Science PhD Program, 2011 - 14.
- Appointed Member, Dean Search Committee for Boonshoft School of Medicine, 2011–12.
- Chair, Faculty Development Committee, Dept. Biochemistry & Molecular Biology, 2007-10.
- Chair, Curriculum Committee, Biomedical Science PhD Program, 2008-09.
- Chair, Admissions Committee, Biomedical Sciences PhD Program, 2007-08.
- Chair (2003-06), Vice-Chair (2000-03), Laboratory Animal Use and Care Committee, 2000-06.
- Chair, Faculty Search Committee for Dept. Biochemistry & Molecular Biology, 2008 and 2015.
- Elected Member, Admissions Committee, Biomedical Science Ph.D. Program, 2006-08.
- Elected Member, Chair Search Committee for Dept. Biochemistry & Molecular Biology, 2006-07.
- Elected Member, Nominating Committee, Biomedical Science Ph.D. Program, 2003-05.
- Elected Member, Curriculum Committee, Biomedical Science Ph.D. Program, 2000-03.

GRADUATE STUDENT RESEARCH COMMITTEES AT WSU (excludes my students listed below)

1991	Bradley Newcomer	M.S. Physic
1993	David Flora	M.S. Biochemistry & Molecular Biology
1994	Tasha Pravecek	M.S. Biochemistry & Molecular Biology
1997	Jay Nelson	Ph.D. Biomedical Sciences
1998	Bin Shen	M.S. Physics
2001	Nicholas DelRaso	Ph.D. Biomedical Sciences
2003	Eric Geiman	Ph.D. Biomedical Sciences
2006	Alfredo Garcia	Ph.D. Biomedical Sciences
2009	Joseph Bartoszek	Ph.D. Biomedical Sciences
2009	Benjamin J. Kelly	M.S. Computer Science & Engineering
2010	Paul Anderson	Ph.D. Computer Science & Engineering
2010	Teresa Cvetkov	Ph.D. Biomedical Science
2010	Satya Sahoo	Ph.D. Computer Science & Engineering
2010	Amanda Hanes	M.S. Computer Science & Engineering
2010	Satya Sahoo	Ph.D. Computer Science & Engineering
2010	Esley Heizer	Ph.D. Biomedical Sciences
dropped 2010	Sangeetha Alladi	Ph.D. Biomedical Sciences
2014	Eric Moyer	M.S. Computer Science & Engineering
dropped 2014	Benjamin J. Kelly	Ph.D. Computer Science & Engineering
2016	Scott Holdgreve	M.S. Microbiology & Immunology
2016	Ryan Yoakum	Ph.D. Biomedical Sciences
2016	Vijay Shankar	Ph.D. Biomedical Sciences
2016	Victoria L. Dersham	M.S. Biochemistry & Molecular Biology
2017	Shimpi Bedi	Ph.D. Biomedical Sciences
ongoing	Hima Yalamanchili	(candidate) Ph.D. Biomedical Sciences
ongoing	Marjorie Markopoulos	(candidate) Ph.D. Biomedical Sciences
ongoing	Denise Kramer	(candidate) Ph.D. Biomedical Sciences

TEACHING at Wright State University [* denotes NV Reo as Course Director]

BMB 7260 (Bioenergetic & Metabolism)
Summer 2013[Team-taught; I contributed one-half of all lectures and exams.] 2 Credit Hrs

* BCH/BMS 760 (Magnetic Resonance in Living Systems) 4 Credit Hrs
Fall Q 1986 and Spring Q 1988. [Team-taught; I contributed one-third of all lectures and exams.]

* BMB/BMS 762; PHY 760 (Fundamental Principles of FT-NMR) 4 Credit Hrs
Spring Q 1990, 91, 93, 95, 97, 99, and 2001. [Team-taught in 1990, 91 and 93; I contributed one-half of all lectures and exams. I was sole instructor all other years.]

* BMB/BMS/BME 763 (NMR Imaging and Spectroscopy) 4 Credit Hrs
Spring Q 1992, 94, 98, 2000, and -02; Fall Q -03; Spring Q -05, -06, -07; Winter 08, 10, 11, 12. [Sole instructor for all years except '92 and '94 for which I contributed one-half of all lectures and exams.]

* BMB 423 (Biochemistry II) 4 Credit Hrs
Winter Q 1999 – 2004. [Team-taught; I provide approx. 25-30 hrs of lecture on carbohydrate and amino acid metabolism, and integration of metabolism.]

* BMB 900 / 9000 (BMB Seminar) 1 Credit Hr
Fall-98, Winter-99, Spring-99, Fall-06, W07, S07, F14

* BMB/BMS 7520 (Molecular Biochemistry/Molecular Biology II)
Spring 2016, -17, -18 (Course Director); Winter Q 1987, 1991-93, 1996 – 2015. [Team-taught; I provided approx. 10-16 hrs of lecture on Energy Metabolism.] Note: Under the Quarter system (end 2012) this was 4 Cr.-hr. 3 Credit Hrs

SMD 511 (Molecular, Cellular, and Tissue Biology, Medical Biochemistry) 10 Credit Hrs
Fall Q 2000 [Team taught; I provided 3 hrs of lecture as a substitute teacher]

* SMD 571 (Molecular Basis of Medicine; Medical School Biochemistry) 10 Credit Hrs
Fall Q 2004 – 16. Served as Course Director 2009-10 [Team-taught; I contributed ~20 lecture hrs]

SMD 8570 (Origins 1) 10 Credit Hrs
Summer–Fall 2017. New medical school curriculum; active learning: Peer Instruction & Team-Based Learning (18 hr).

Teaching Associate, University of Massachusetts, Amherst, MA
1978 – 1980 Instructor for physical chemistry and general chemistry laboratories.

MENTORING IN LABORATORY RESEARCH

Current Laboratory Personnel

2015 – present	Angela Campo	Ph.D. Student, Biomedical Sciences
2001 – present	Andrew Neuforth	Research Assistant/Laboratory Technician
1999 – present	William Couch	Research Assistant/Laboratory Technician

Past Postdocs and Students

1995 – 1997 Yuying Hwang, Ph.D. Postdoctoral Research Associate
Current Position: Amgen Inc.

1994 – 1995 Carol M. Goecke-Flora, Ph.D. Postdoctoral Research Associate
Current Position: Adjunct Faculty, Dept Biology, Indiana University Purdue University Indianapolis

1988 – 1994 Carol M. Goecke-Flora Ph.D. Biomedical Sciences
Dissertation: "Hepatotoxicity of Perfluorocarboxylic Acids: A ^{19}F-, ^{13}C- and ^{31}P-NMR Investigation".
Current Position: Instructor, Dept. Biology, Indiana University & Purdue University, Indianapolis, IN.

1993 – 1998 Mehdi Adinehzadeh Ph.D. Biomedical Sciences
Dissertation: "Impact of Peroxisome Proliferators on Hepatic Phospholipid Metabolism, a Nuclear Magnetic Resonance Spectroscopy Investigation."

Current Position: Director of Core Laboratory, American College of Radiology, Philadelphia, PA.

2000 – 2004 Beth Hoffman-Kuczynski, Ph.D. Biomedical Sciences
Dissertation: "The Effects of Myo-Inositol and Ethanolamine Administration on Rat Brain Phosphatidylethanolamine Plasmalogen and its Role as an in vivo Antioxidant."
Current Position: Research Asst. Prof., Imaging of Dementia & Aging Laboratory, Dept. Neurology & Center for Neuroscience, University of California, Davis.

1994 - 1996 Renee Ingham M.S. Chemistry
Thesis: "Nuclear Magnetic Resonance Studies of Energy Transduction and Photophosphorylation of the Aerobic Photosynthetic Rhizobium, BTAi 1."
Current Position: unknown

2001- 2004 Sehul Shah, M.S. Biochemistry & Molecular Biology
Thesis: "Effects of PPAR Agonists on Liver Phospholipid Metabolism in Rats."
Current Position: Genentech-Roche, Inc; NMR research & Process Development.

2006 – 2010 Daniel Homer M.S. Biomedical Engineering
Thesis: "Population Fit Threshold: Fully Automated, Non Parametric Baseline Correction for NMR-based Metabolomics."
Current position: Asst. Engineer, SciTec, Inc. Dayton, OH (Defense Contractor)

2006 – 2008 Meghan Makley, M.S. Biochemistry & Molecular Biology
Thesis: "NMR Analyses Show TCDD Elicits Differences in Hepatic Metabolism in Female C57BL/6 Mice and Sprague Dawley Rats."
Current Position: Research Associate, Biological Modeling Group, Air Force Research Laboratory, Wright-Patterson AFB, Dayton, OH.

2004 – 2009 Jennifer Hollyfield M.S. Biochemistry & Molecular Biology
Thesis: "Dose-dependent Effects of Oxygen on Metabolism in Rat Cortico-Hippocampal Brain Tissue Slices".
Current Position: Research Assistant, Dept Internal Medicine, The Ohio State University

2005 – 2010 Michael Kent, Ph.D. Postdoctoral Research Associate
Current Position: Translational Scientist, Dermatopathology Laboratory of Central States, Dayton, OH.

2010 – 2011 Isaie Sibomana M.S Biochemistry & Molecular Biology
Thesis: 'Functional Metabolomics' Enhances Assessment of Tissue Dysfunction as Demonstrated in a Rat Model of Sub-Acute D-serine Exposure. [subsequent PhD;below).

2005 – 2012 Deirdre Mahle Ph.D. Biomedical Sciences
Dissertation: "'Omic' Evaluation of the Region Specific Changes Induced by Non-cholinergic Diisopropylfluorophosphate (DFP) Exposure in Fischer 344 Rat Brain".
Current Position: Research Biologist, 711th Human Performance Wing, Air Force Research Laboratory, Wright-Patterson AFB, OH.

2013 – 2015 Urszula Warncke M.S. Biochemistry & Molecular Biology
Thesis: "Profiling Fatty Acid Composition of Brown Adipose Tissue, White Adipose Tissue, and Bone Marrow Adipose Tissue of Healthy and Diet-Induced Obese Mice".
Current Position: PhD student at Virginia Commonwealth University, Clinical & Translational Sciences PhD Program.

2012 – 2016 Isaie Sibomana Ph.D. Biomedical Sciences
Dissertation: "Evidence that Myo-Inositol Plus Ethanolamine Elevates Plasmalogen Levels and Lends Protection Against Oxidative Stress in Neuro-2A Cells."
Current Position: Post-doctoral Fellow, Air Force Research Laboratory, WPAFB, OH.

2015 – 2017 Amnah Obidan M.S. Biochemistry & Molecular Biology
Thesis: "Urinary Metabolomics to Detect Polycystic Kidney Disease at an Early Stage".

Transient and Non-Degree Students

- *Minority Science Apprenticeship Program.* Faculty mentor for undergraduate students in summer research projects.
  1997 Heather Perymon
  1998 Kristin Gaffney
- *Undergraduates* from WSU and other institutions (summer research projects).
  1987, 88, 89, and 2002
- *Graduate Students*. Includes students who conducted non-thesis research, and students who did not complete the requirements for the degree program.

1989–92	Rashmi Goel	M.S. (incomplete), Biochemistry & Molecular Biology
1992	Majorie Artz	Ph.D. Biomedical Sciences (incomplete)
2004	Shruthi Chakrapani	M.S. Biomedical Engineering (non-thesis research)
2004	Niranjini Rajendran	M.S. Biomedical Engineering (non-thesis research)
2005	Yu-Ting Yen	M.S. Biomedical Engineering (non-thesis research)
2006	Sachin Dixin	M.S. Biomedical Engineering (non-thesis research)
2010-11	Daniel Homer	Ph.D. Biomedical Sciences (incomplete)

SUPERVISORY EXPERIENCE

Laboratory Personnel and Staff at WSU Magnetic Resonance Laboratory (MRL)

2001 – present	Andrew Neuforth	Research Assistant
1999 – present	William Couch	Laboratory Technician
1993 – 1999	Katrina (Kling) Leigh	Research Assistant
1999 – 2001	Joseph Blake	Student worker
1989 – 1998	Dawn Brayfield	Secretary
1986 – 1999	Charlton K. McKibben	MRL Chief Technician
1992 – 1993	Latha Naryanan	Research Assistant
1986 – 1991	Marise E. Alexander	Research Assistant
1988 (Jan-Aug)	Anita Rauch	Research Assistant

GRANT SUPPORT/RESEARCH PROPOSALS

Active Projects

- DoD, Air Force Research Laboratory (AFRL), The Henry M. Jackson Foundation for the Advancement of Military Medicine, Inc. "Metabolomics Analyses of Fecal Extracts in a 'Humanized' Microbiome Mouse Model of Toxicant Exposure". (PI: NV Reo @ 15%)
  01-May-17 to 30-Apr-18 (no cost extensions to 31-Oct-18) Total Cost: $158,776
- NIH, RO1, (PI: P.N. Boyaka, Ohio State U; Reo is CoI @ 2.5%). "Intestinal Epithelial Cell Regulation of Allergic Inflammation at Distant Sites".
  01-Jul-2015 to 30-Apr-20 Total Costs for Reo Lab only: $29,909

Previous Support — AS PRINCIPAL INVESTIGATOR:

- DoD, AFRL, Consortium Research Fellows Program. Stipend support for Isaie Sibomana (PhD student in my lab). AFRL Advisor: NJ DelRaso, PhD, 711 HPW/RHDJ; WSU Advisor: NV Reo.
  01-Oct-14 to 30-Sep-16 Total Cost: $20,000/yr; $40,000
- DoD, Air Force Research Laboratory (AFRL), The Henry M. Jackson Foundation for the Advancement of Military Medicine, Inc. "NMR-Based Urinary Metabolomics in Rats Exposed to Burn Pit Emissions and Respirable Sand". (PI: NV Reo @ 15%)
  01-Nov-15 to 30-Apr-17 Total Cost: $240,504

- DoD, Air Force Research Laboratory (AFRL), The Henry M. Jackson Foundation for the Advancement of Military Medicine, Inc. "Mechanistic Interpretations of Hypobaria and Hyperoxia Using Metabolomics and Proteomics". (PI: NV Reo @ 10%)
  01-Nov-15 to 31-Oct-16 Total Cost: $103,735

- DoD, Air Force Research Laboratory (AFRL), The Henry M. Jackson Foundation for the Advancement of Military Medicine, Inc.; "NMR-Based Metabolomics Analysis of Sera Samples in an Animal Model of Sleep Deprivation (Phase 2)". PI: NV Reo
  01-Dec-14 to 31-Mar-15 (8% Salary Offset for NVR) Total Cost: $19,639

- DoD, Air Force Research Laboratory (AFRL), The Henry M. Jackson Foundation for the Advancement of Military Medicine, Inc.; "NMR-Based Urinary Metabolomics for Detection and Assessment of Jet Fuel Exposure in a Rat Model". PI: NV Reo
  01-Dec-14 to 31-Mar-15; Extension: 7-28-15 (15% Salary Offset for NVR)Total Cost: $45,458

- DoD, Air Force Research Laboratory (AFRL), The Henry M. Jackson Foundation for the Advancement of Military Medicine, Inc.; "NMR-Based Metabolomics in Aerospace Physiology and Toxicology Research".
  01-Sep-12 to 31-Aug-13 (15% Salary Offset for NVR) Total Cost: $225,100
  Extension: 01-Sep-13 – 28-Feb-14 Total Cost: 14,921
  Extension: 01-Mar-14 – 15-Jul-14 Total Cost: 18,210

- National Institutes of Health, Center for Complementary and Alternative Medicine (NCCAM; R03); O Paliy (PI), NV Reo (co-I). "Quantitative measurements of intestinal metabolites in healthy and IBS children".
  01-Jul-10 to 30-Jun-13 Total Cost: $145,000

- Ohio Third Frontier Research Challenge Program. (PI: Reo). "Functional Metabolomics for Enhancement of Metabolite Profiling".
  01-Jun-10 to 31-Mar-11 Total Cost: $39,952

- DoD, Air Force Research Laboratory (AFRL), The Henry M. Jackson Foundation for the Advancement of Military Medicine, Inc. (PI: Reo). "NMR-Based Metabonomics in Toxicology Research".
  01-May-10 to 31-Dec-10 (15% salary offset for Reo) Total Cost: $81,088

- Service Agreement via Army Contract (PI: Dr. Nandan Padukone, Nuvera Systems, Inc., Boston MA., and Dr. R. Fielding, NEPS Lab and USDA Human Nutr. Res. Center on Aging, Tufts U, "Metabolic profiles of blood and urine associated with physical fitness".
  01-Apr-10 to 30-Jun-11 Budget for NVR: $23,210
  01-Apr-06 to 31-Dec-08 Budget for NVR: $13,900

- National Institutes of Health, NIEHS, (RO1-ES013927). "Metabolomics Assessment of Estrogenic Disruptors". PI: Dr. Timothy Zacharewski, Michigan State U., [PI for WSU subcontract: NV Reo]
  01-Oct-05 to 30-Sep-2010 [no cost ext. to May 2011] Budget for NVR: $894,682
  25% Salary offset for Reo Total Cost (entire project): $1,750,000

- DoD, Air Force Research Laboratory (AFRL), The Henry M. Jackson Foundation for the Advancement of Military Medicine, Inc. "NMR-Based Metabonomics in Toxicology Research".
  01-Oct-08 to 31-Mar-09 (20% salary offset for Reo) $49,960
  01-Oct-07 to 30-Sep-08 (20% salary offset for Reo) $91,830
  01-Jun-06 to 31-Aug-07 (20% salary offset for Reo) $79,434

- DoD, Air Force Research Laboratory (AFRL), Alion Science and Technology (SUB1174146RB): "NMR-Based Metabonomics in Toxicology Research".
  01-Jan-05 to 31-Dec-05 (20% salary offset for Reo) $124,651

- DoD, Air Force Research Laboratory (AFRL), Mantech Environmental Technology, Inc. and Wright Brothers Institute (ManTech/WBI002): "NMR-Based Metabonomics in Toxicology Research".
  01-Sep-03 to 31-Dec-04; Initial Cost + Extension: $60,464 + 16,106; Total Costs: $76,570
  Salary Offset contribution for NV Reo: 20%

- Department of Defense, US Army Medical Research & Materials Command, "Low Level Chemical Toxicity: Relevance to Chemical Agent Defense". A multi-module project (PI: Dr. M. Morris, Dept. Toxicol. & Pharmacol.). NV Reo is PI for Module #3 entitled: "NMR Spectroscopic Analyses of Brain and Muscle Metabolism—Effects of Chemical Agents and Stress, and Relationship to Gulf War Syndrome".
  01-Oct- 2000 to 30-Sep-2003 Total Costs for Module 3: $437,502
  No cost extension: 01-Oct-03 to 30-Sep-04 Total Budget all Modules: $7,241,319
  Salary Offset contribution for NV Reo: 20%

- Major Research Equipment Grants: "Upgrade in NMR Research Instrumentation for the Magnetic Resonance Laboratory". Funds to purchase a new 600 MHz NMR and a replacement console for an existing 360 MHz NMR. Three (3) components (PI: NV Reo)
  01-Mar-2002 to 28-Feb-2003
  DoD, AFOSR, Defense University Research Instrumentation Program $478,485
  Ohio Board of Regents, Action Fund $235,242
  Wright State University $235,243
  Total Costs: $948,970

- Air Force Research Laboratory, Wright-Patterson AFB, Ohio
  Major Research Equipment Grant: Robotics sample changer for a Varian 600 NMR system.
  June 2003 Total Cost: $65,000

- Wright State University, Research Challenge Early Start/Augmentation Award, "Development of Multinuclear NMR Methods for Metabolomics Research".
  04-Jan- 2004 to 31-Dec-2004 Total Cost: $14,000

- Wright State University School of Medicine Seed Grant, "NMR Studies of the Effects of Myo-Inositol on Brain Phospholipid Biosynthesis".
  01-Apr-2002 to 31-Mar-2003 Total Costs: $9,547

- Wright State University, Research Challenge Early Start/Augmentation Award, "NMR Studies of Phospholipid Metabolism"
  15-Jul- 2000 to 14-Jul-2001 Total Cost: $32,477

- Department of Defense, Air Force Office of Scientific Research, "Hepatic Toxicity of Perfluorinated Carboxylic Acids: A Nuclear Magnetic Resonance Investigation *in Vivo*." * Competitive renewal
  01-Mar-95 to 28-Feb-98; revised ending date 30-Sep-98 (no-cost extension)
  Total Costs: $585,554

- Kettering Medical Center, Magnetic Resonance Research Fund, Partial Salary Support for Laboratory Research Personnel.
  01-Jan-96 to 31-Dec-96 Total Costs: $12,217

- Department of Defense, Air Force Office of Scientific Research, *Augmentation Awards for Science and Engineering Research Training* (ASSERT program), "Hepatic Toxicity of Perfluorocarboxylic Acids." Provides support for graduate student.
  01-Jun-92 to 31-May-95; no-cost extension: 01-Jun-95 to 31-May-96 Total Costs: $93,116

- Department of Defense, Air Force Office of Scientific Research, "Hepatic Toxicity of Perfluorinated Carboxylic Acids and Polychlorotrifluoroethylene: A Nuclear Magnetic Resonance Investigation *in Vivo*."
  15-Dec-91 to 14-Dec-94 Total Costs: $323,077

- Department of Defense, Air Force Office of Scientific Research, "Hepatic Metabolism of

Perfluorinated Carboxylic Acids: A Nuclear Magnetic Resonance Investigation."
Feb-90 to Nov-90 Total Costs: $29,876
Funded extension: 1-Nov-90 to 30-Sep-91 Total Costs: $34,347

- American Diabetes Association, National, "Hormonal Regulation of Hepatic Metabolism *in vivo*: NMR Studies."
  01-Jul-87 to 30-Jun-88 Total Costs: $24,616
  01-Jul-88 to 30-Jun-89 Total Costs: $24,953

- The Procter and Gamble Company, "NMR Imaging and Spectroscopy in Small Laboratory Animals."
  Unrestricted Research Grant. 01-Jul-87 Total Costs: $15,000
  01-Apr-88 Total Costs: $20,000
  01-Jul-89 Total Costs: $30,000
  01-Jul-90 Total Costs: $5,000
- State of Ohio Research Challenge Program, "A Study of Hormonal Regulation of Hepatic Carbohydrate Metabolism *in vivo* by Carbon-13 NMR."
  01-Jul-86 to 30-Jun-87 Total Costs: $36,906

Previous Support -- AS CO-INVESTIGATOR:

- Wright State University, Teaching Innovation Grant, "The Redevelopment of BMB 4210 into a Student-Centered, Active Learning Majors Course", C Campbell & NV Reo (co-PI);
  01-Jun-16 to 31-Dec-17 Total Cost: $6,000
- National Institutes of Health, Center for Complementary and Alternative Medicine (NCCAM; R03); "Quantitative measurements of intestinal metabolites in healthy and IBS children". PI: Oleg Paliy (WSU); Reo is co-PI.
  01-Aug-10 to 31-Jul-12 Total Cost: $145,000
- WSU Research Challenge, Major Collaboration/Infrastructure Grant Program (PI: Amit Sheth, Comp Sci. Eng.; NVR: co-investigator) "Advanced Data Management Resource for Biomedical Research".
  01-Jul-7 to 30-Jun-08 $30,000
- With Dr. Brent Foy, Dept. Physics, Wright State University. Dayton Area Graduate Studies Institute (DAGSI). "Bioinformatics Support for Toxicogenomics".
  15-Jul-2001 to 14-Jul-2003 Total Costs: $83,370
- With Dr. Roger M. Siervogel, Department of Community Health & Pediatrics, Wright State University, Dayton, OH. National Institutes of Health, "Subcutaneous Fat, Blood Lipids and Subsequent Outcome".
  01-Dec-94 to 30-Nov-98 Total Costs Approx. $5,000,000
- With Dr. James E. Olson, Department of Emergency Medicine, Wright State University, Dayton, OH. School of Medicine Seed Grant Program, "Brain Edema Development Following Closed Head Injury".
  01-Mar-98 to 30-Apr-99 Total Costs: $7,500
- With James E. Olson, Ph.D., Department of Emergency Medicine, Wright State University, Dayton, OH. National Institutes of Health, National Center for Research Resources; RO3. "Measurement of Brain Water with in Vivo Deuterium NMR".
  15-May-96 to 14-May-98 Total Costs: $50,400
- With Dr. J.E. Olson, Department of Emergency Medicine, Wright State University, Dayton, OH. State of Ohio Research Challenge Program, "Measurement of Brain Water Movements Using NMR."
  Feb 1993 to Dec 1993 Total Cost: $14,453
- With Drs. Wm. Cameron Chumlea, Department of Pediatrics, Wright State University, Dayton, OH. Grant from Ross Laboratories entitled: "Body Composition Analysis Using Multiple Frequency Bioelectric Impedance."
  Jul-1991 to Jun-1992 Total Costs: $130,831

- With Dr. Roger M. Siervogel, Department of Community Health & Pediatrics, Wright State University, Dayton, OH. NIH Grant # 5 RO1-HDAM-12252, entitled: "Subcutaneous Fat, Blood Lipids and Subsequent Outcome".
  1-Dec-88 to 30-Nov-93 Total Direct Costs: $2,895,820.
- With Dr. Robert Weisman, Department of Biochemistry, Wright State University, Dayton, OH. State of Ohio Research Challenge Program, "Collaborative Research Projects at the Kettering-Scott Magnetic Resonance Laboratory."
  1-Feb-1987 to 31-Jan-88 Total Costs: $76,250
- With Dr. J.J.H. Ackerman, Department of Chemistry, Washington University, St. Louis, MO. NIH DRR-BRSG Shared Instrument Grant Program, Purchase of an NMR Spectrometer for Studies *in Vivo*. Section entitled: "The Study of Hormonal Regulation *in Vivo* of Carbohydrate and High Energy Phosphate Metabolism by C-13 and P-31 NMR"; 1984 Total Costs: $300,000

Previous Support -- AS COLLABORATOR/CONSULTANT:

- With Dr. J.E. Olson, Department of Emergency Medicine, Wright State University, Dayton, OH. National Institutes of Health, entitled: "Mechanisms of Cytotoxic Brain Edema".
  February 1991 to 1994 Total Costs Approx: $700,000
- With Dr. J.E. Olson, Department of Emergency Medicine, Wright State University, Dayton, OH. Sunny von Bulow Coma and Head Trauma Research Foundation entitled: "Brain Water Homeostasis and Edema in Traumatic Head Injury".
  Sep-1990 Total Costs: $35,000
- With Dr. Mark Angelos, Department of Emergency Medicine, Wright State University, Dayton, OH. Biomedica Foscama (an Italian-based pharmaceutical company), entitled: "Effect of Fructose 1,6-Diphosphate in Limiting Reperfusion Injury in a Canine Myocardial Reperfusion Model - A Histochemical and MRI Study".
  1-Feb-89 to 1-Jul-90 Total Costs: $44,976

INVITED LECTURES — EXTERNAL VENUES

1. "NMR Studies of Liver Metabolism *in Vivo*." Presented to: Baylor University, School of Medicine, Houston, TX. May 1985.
2. "Applications of Carbon-13 NMR to the Study of Liver Metabolism *in Vivo*". Presented to: The Procter and Gamble Company, Miami Valley Laboratory, Cincinnati, OH. January 1988.
3. "Applications of NMR to the Study of Metabolism *in Vivo*". Presented to: Departments of Physiology and Toxicology, Wright-Patterson Air Force Base, OH. May 1989.
4. "Biological Applications of NMR Spectroscopy/Imaging *in Vivo"*. Presented to: Departments of Chemistry and Biology, University of Southern Indiana, Evansville, IN. October 1990.
5. "Magnetic Resonance Imaging: Principles and Applications". Presented to: Indiana-Kentucky Border Chapter of the American Chemical Society, Evansville, IN. October 1990.
6. "MRI and T2 Relaxation Measurements of Methacholine and Histamine Induced Alterations in Upper Airways of Ferrets". Presented at a symposium on *In Vivo Magnetic Resonance Imaging/Spectroscopy*. Procter and Gamble Company, Miami Valley Laboratories, Cincinnati, OH. October 1990.
7. "MRI Studies of Upper Airways in the Ferret". Presented to the Respiratory Division at the Miami Valley Laboratories, Procter and Gamble Company, Cincinnati, OH. November 1990.
8. "Magnetic Resonance Imaging: Principles and Applications". Presented to the Cincinnati Section of the American Chemical Society, Hilton North Hotel, Cincinnati, OH. March 1991.
9. "Hepatotoxicity of Perfluorocarboxylic Acids: NMR and Biochemical Investigations". Presented to: Department of Chemistry, Syracuse University, Syracuse, NY. February 7, 1995.

10. "NMR Spectroscopy as a Tool for Studies of Hepatotoxicity *in Vivo*". Presented at a symposium sponsored by the Air Force Office of Scientific Research (AFOSR) entitled: AFOSR Predictive Toxicology Program Review, Holiday Inn, Fairborn, OH. May 30 - June 1, 1995.
11. "NMR Studies of Peroxisome Proliferator-Induced Hepatotoxicity". Presented to: Department of Radiology, University Medical Center, State University of New York at Stony Brook, Stony Brook, NY. June 14, 1995.
12. "NMR Studies of Liver Metabolism Following Exposure to Trichloroacetate and Other Peroxisome Proliferators." Presented at a symposium sponsored by the Air Force Office of Scientific Research (AFOSR) entitled: AFOSR Toxicology Program Review, Holiday Inn, Fairborn, OH. December 12-13, 1996.
13. "Hepatotoxicity of Peroxisome Proliferators." Presented to: Triservice Toxicology Laboratory, Armstrong Laboratory, Wright-Patterson Air Force Base, OH. November 19, 1997.
14. "NMR Studies of Peroxisome Proliferator-Induced Hepatotoxicity". Department of Radiology, University of Pennsylvania, Philadelphia, PA. July 10, 1998.
15. "Metabolomics: New Challenges for NMR Spectroscopy". Invited Speaker at a symposium sponsored by Tri-Services Toxicology, US EPA, NCEA, AFOSR, NIEHS, and FDA entitled: Issues and Applications in Toxicology and Risk Assessment. Holiday Inn Conference Center, Fairborn, OH. April 23-26, 2001.
16. "Isotopic ^{13}C NMR Studies of Liver Phospholipid Metabolism". Presented to: Isotec, Inc., Miamisburg, OH. December 10, 2002.
17. "NMR Studies of Tissue Phospholipid Metabolism in Toxicology". Department of Environmental Health, University of Cincinnati, OH. May 31, 2006.
18. "NMR-based Metabolomics in Toxicology Research". Air Force Research Laboratory, Wright-Patterson AFB, Dayton, OH. August 10, 2007.
19. "Metabolomics: Applications in Toxicology and Implications for Personalized Medicine". Division of Arts & Sciences, Radiologic Sciences & Imaging, Kettering College of Medical Arts, Dayton, OH. Nov. 6, 2008.
20. "Integrating Genomics and Metabolomics – Lessons Learned from a Study of TCDD Toxicity in Rodent Liver". Systems Biology Working Group of Southwest Ohio, Sponsored by: Air Force Research Lab, Procter & Gamble, and Wright State Unviersity. Dayton, OH; November 18, 2011.

INVITED LECTURES — INTERNAL (WRIGHT STATE UNIVERSITY)

21. "Applications of C-13 NMR to the Study of Liver Metabolism *in Vivo"*. Presented to: Department of Chemistry, Wright State University, Dayton, OH. January 1986.
22. "Nuclear Magnetic Resonance in Biomedicine", joint seminar with Dr. M. Boska. Presented to: The Department of Physics, Wright State University, Dayton, OH. December 1989.
23. "Hepatotoxicity of Peroxisome Proliferators." Presented to: Department of Biochemistry and Molecular Biology, Wright State University, Dayton, OH. October 24, 1997.
24. "Phospholipid Metabolism and the Peroxisome Proliferator Activated Receptor." Presented to: Department of Biochemistry and Molecular Biology, Wright State University, Dayton, OH. November 8, 2002.
25. "Tissue Phospholipid Metabolism". Department of Pharmacology and Toxicology, Wright State University, Dayton, OH. May 24, 2006.
26. "NMR-Based Metabolomics: Studies of α–Naphthylisothiocyanate Toxicity". Department of Biochemistry and Molecular Biology, Wright State University, Dayton, OH. June 1, 2007.
27. "Functional Metabolomics: A Methodology to Enhance Assessment of Tissue Function". Department

of Biochemistry & Molecular Biology, Wright State University, Dayton, OH. March 9, 2012.

PUBLICATIONS

1. K. W. Miller, N. V. Reo, A. J. M. Schoot Uiterkeamp, D. P. Stengle, T. R. Stengle, and K. L. Williamson: "Xenon NMR - Chemical Shifts of a General Anesthetic in Common Solvents, Proteins, and Membranes." *Proc. Natl. Acad. Sci. USA*., **78**, 4946-4949 (1981).
2. T. R. Stengle, N. V. Reo, and K. L. Williamson: "Nuclear Magnetic Resonance Solvent Shifts of Xenon. A Test of the Reaction Field Model." *J. Phys. Chem.*, **85**, 3772-3775 (1981).
3. N. V. Reo: "A Study of Non-specific Solute-Solvent Interactions in Liquid Solutions by Xenon Nuclear Magnetic Resonance Spectroscopy - Chemical Shifts and Spin Lattice Relaxation." Ph.D. Dissertation, University of Massachusetts at Amherst, (1983).
4. N. V. Reo, C. W. Ewy, B. A. Siegfried, and J. J. H. Ackerman: "High Field (8.5 Tesla) C-13 NMR Spectroscopy of Tissue *in Vivo* - A Double Resonance Surface Coil Probe." *J. Magn. Reson.*, **58**, 76-84 (1984).
5. T. R. Stengle, N. V. Reo, and K. L. Williamson: "Nuclear Magnetic Resonance of Xe-131 in Solution. The Influence of Solvent Electric Moment and Dynamics on Solute Relaxation." *J. Phys. Chem.*, **88**, 3225-3228 (1984).
6. N. V. Reo, B. A. Siegfried, and J. J. H. Ackerman: "Direct Observation of Glycogenesis and Glucagon-Stimulated Glycogenolysis in the Rat Liver *in Vivo* by High Field Carbon-13 Surface Coil NMR." *J. Biol. Chem.*, **259**, 13664-13667 (1984).
7. K. L. Williamson, N. V. Reo, and T. R. Stengle: "Additivity of Carbon-13 Spin Lattice Relaxation Times." *J. Am. Chem. Soc.*, **107**, 4162-4167 (1985).
8. B. A. Siegfried, N. V. Reo, C. S. Ewy, R. A. Shalwitz, J. J. H. Ackerman, and J. M. McDonald: "Effects of Hormones and Glucose Administration on Hepatic Glucose and Glycogen Metabolism *in Vivo* - A C-13 NMR Study." *J. Biol. Chem.*, **260**, 16137-16142 (1985).
9. R. A. Shalwitz, N. V. Reo, N. N. Becker, and J. J. H. Ackerman: "Visibility of Mammalian Hepatic Glycogen to the NMR Experiment, *in Vivo*." *Magn. Reson. Med.*, **5**, 462-465 (1987).
10. R. A. Shalwitz, N. V. Reo, N. N. Becker, A. C. Hill, C. S. Ewy, and J. J. H. Ackerman: "Hepatic Glycogen Synthesis from Duodenal Glucose and Alanine - An *in Situ* C-13 NMR Study." *J. Biol. Chem*., **264**, 3930-3934 (1989).
11. H. Fujise, P. Cruz, N. V. Reo, and P. K. Lauf: "Relationship Between Total Magnesium Concentration and Free Intracellular Magnesium in Sheep Red Blood Cells". *Biochim. Biophys. Acta*, **1094**, 51-54 (1991).
12. J. E. Olson, A. Katz-Stein, N. V. Reo, and F. A. Jolesz: "Evaluation of Acute Brain Edema Using Quantitative NMR Imaging - Effects of Pretreatment with Dexamethasone". *Magn. Reson. Med.*, **24 (1)**, 64-74 (1992).
13. C. M. Goecke, B. M. Jarnot, and N. V. Reo. "A Comparative Toxicological Investigation of Perfluorocarboxylic Acids in Rats by Fluorine-19 NMR Spectroscopy." *Chem. Research Toxicol.*, **5 (4)**, 512 - 519 (1992).
14. N. V. Reo, M. E. Alexander, and R. Goel. "A Nuclear Magnetic Resonance Investigation of the Upper Airways in Ferrets: II. Contrast-Enhanced Imaging to Distinguish Vascular from Other Nasal Fluids". *Magn. Reson. Med.*, **27 (1)**, 34-43, (1992).
15. N. V. Reo, J. K. C. Barnett, T. A. Neubecker, M. E. Alexander, and C. M. Goecke. "A Nuclear Magnetic Resonance Investigation of the Upper Airways in Ferrets: I. Effects of Histamine and Methacholine". *Magn. Reson. Med.*, **27 (1)**, 21-33 (1992).

16. C. K. McKibben and N. V. Reo. "A Piezoelectric Respiratory Monitor for *In Vivo* NMR." *Magn. Reson. Med.*, **27**, 338-342 (1992).
17. C. M. Goecke, B. M. Jarnot, and N. V. Reo. "Effects of the Peroxisome Proliferator, Perfluoro-n-decanoic Acid, on Hepatic Gluconeogenesis and Glycogenesis: A ^{13}C NMR Investigation." *Chem. Research Toxicol.* **7**, 15-22 (1994).
18. N. V. Reo, C. M. Goecke, L. Narayanan, and B. M. Jarnot. "Effects of Perfluoro-*n*-octanoic Acid, Perfluoro-*n*-decanoic Acid, and Clofibrate on Hepatic Phosphorus Metabolism in Rats and Guinea Pigs *in Vivo*." *Toxicol. Appl. Pharmacol.* **124**, 165-173 (1994).
19. R. Wellens, W. C. Chumlea, S. Guo, A. F. Roche, N. V. Reo, and R. M. Siervogel. "Body Composition in White Adults by Dual-Energy X-Ray Absorptiometry, Densitometry, and Total Body Water." *American Journal of Clinical Nutrition* **59**, 547-555 (1994).
20. C. M. Goecke-Flora, J. F. Wyman, B. M. Jarnot, and N. V. Reo. "Effects of the Peroxisome Proliferator Perfluoro-*n*-decanoic Acid on Glucose Transport in the Perfused Rat Liver." *Chem. Research Toxicol.* **8** (1), 77-81 (1995).
21. C. M. Goecke-Flora and N. V. Reo. "Influence of Carbon Chain Length on the Hepatic Effects of Perfluorinated Fatty Acids: A ^{19}F and ^{31}P NMR Investigation". *Chem. Research Toxicol.* **9** (4), 689-695 (1996).
22. N. V. Reo, L. Narayanan, K. B. Kling and M. Adinehzadeh. "Perfluorodecanoic Acid, a Peroxisome Proliferator, Activates Phospholipase C, Inhibits CTP:phosphocholine Cytidylyltransferase, and Elevates Diacylglycerol in Rat Liver". *Toxicol. Lett.* **86**, 1-11 (1996).
23. M. Adinehzadeh and N. V. Reo. "NMR Analysis of Liver Phospholipids: Temperature Dependence of ^{31}P Chemical Shifts and Absolute Quantitation." *Q. Magn. Reson. Biol. Med.* **3** (4), 171-176 (1996).
24. M. Adinehzadeh and N. V. Reo. "Effects of Peroxisome Proliferators on Rat Liver Phospholipids. Sphingomyelin Degradation may be involved in Hepatotoxic Mechanism of Perfluorodecanoic Acid." *Chem. Res. Toxicol.* **11**, 428-440 (1998).
25. W. C. Chumlea, S. S. Guo, C. M. Zeller, N. V. Reo, and R. M. Siervogel. "Total Body Water Data for White Adults 18 to 64 Years of Age: The Fels Longitudinal Study". *Kidney International* **56**, 244-252 (1999).
26. M. Adinehzadeh, N. V. Reo, B. M. Jarnot, C. A. Taylor, and D. R. Mattie. "Dose-Response Hepatotoxicity of the Peroxisome Proliferator, Perfluorodecanoic Acid, and the Relationship to Phospholipid Metabolism in Rats". *Toxicology* **134**, 179-195 (1999).
27. N. V. Reo and M. Adinehzadeh. "NMR Spectroscopic Analyses of Liver Phosphatidylcholine and Phosphatidylethanolamine Biosynthesis in Rats Exposed to Peroxisome Proliferators — a Class of Nongenotoxic Hepatocarcinogens." *Toxicol. Appl. Pharmacol.* **164**, 113-126 (2000).
28. W. C. Chumlea, S. S. Guo, C. M. Zeller, N. V. Reo, R. N. Baumgartner, P. Garry, J. Wang, R. N. Pierson Jr., S. B. Heymsfield, and R. M. Siervogel. "Total Body Water Reference Values and Prediction Equations for Adults". *Kidney International* **59**, 2250-2258 (2001).
29. N. V. Reo, M. Adinehzadeh, and B. D. Foy. "Kinetic Analyses of Liver Phosphatdiylcholine and Phosphatidylethanolamine Biosynthesis Using ^{13}C NMR Spectroscopy". *Biochim. Biophys. Acta. (Mol. Cell Biol. Lipids),* **1580,** 171-188 (2002).
30. N. V. Reo. "NMR-Based Metabolomics". Proceedings from 'Issues and Applications in Toxicology and Risk Assessment', *Drug Chem. Toxicol.* **25 (4),** 375-382 (2002).
31. B. Hoffman-Kuczynski and N. V. Reo. "Studies of Myo-Inositol and Plasmalogen Metabolism in Rat Brain", *Neurochem. Res.* **29**, 843-855 (2004).

32. B. Hoffman-Kuczynski and N. V. Reo. "Administration of Myo-Inositol Plus Ethanolamine Elevates Phosphatidylethanolamine Plasmalogen in the Rat Cerebellum", *Neurochem. Res.* **30 (1)**, 47-60 (2005).

33. W. C. Chumlea, C. M. Schbert, N. V. Reo, S S. Sun, and R. M. Siervogel. "Total Body Water Volume for White Children and Adolescents and Anthropometric Prediction Equations: the Fels Longitudinal Study", *Kidney International* **68**, 2317-2322 (2005).

34. G.L. Jahns, N. DelRaso, M.P. Westrick, V. Chan, N.V. Reo and T.R. Zacharewski. **"**Joint Genomic and Metabolomic Analysis of Toxic Dose-Response Experiments". IEEE Computational Systems Bioinformatics, Conference Proceedings (full paper), pp. 195-196, Aug-2005.

35. B. Hoffman-Kuczynski and N. V. Reo. "Evidence that Plasmalogen Protects Against Oxidative Stress in the Rat Brain *in Vivo"*, *Neurochem. Res.* **31**, 639-656 (2006).

36. B. J. Kelly, P. E. Anderson, N. V. Reo, N. J. DelRaso, T. E. Doom, and M. L. Raymer, "A Proposed Statistical Protocol for the Analysis of Metabolic Toxicological Data Derived from NMR Spectroscopy". Proc. 7th IEEE Int. Conf. Bioinformatics & Bioengineering (IEEE BIBE) (Short Paper), **2**, 1414-18 (2007).

37. P. Anderson, N.V. Reo, N.J. DelRaso, T.E. Doom and M.L. Raymer. "Gaussian binning: A new kernel-based method for processing NMR spectroscopic data for metabolomics", *Metabolomics* **4**, 261-272 (2008).

38. G. L. Jahns, M. N. Kent, L. Burgoon, N. DelRaso, T. R. Zacharewski and N. V. Reo. "Development of Analytical Methods for NMR Spectra and Application to a ^{13}C Toxicology Study". *Metabolomics* **5**, 253-262 (2009).

39. P. E. Anderson, M. L. Raymer, B. J. Kelly, N. V. Reo, N. J. DelRaso, and T. E. Doom, "Characterization of ^{1}H NMR spectroscopic data and the generation of synthetic validation sets". *Bioinformatics* **25**, 2992-3000 (2009).

40. N. DelRaso, R. Rietcheck, D. Mahle, N Reo, M. Raymer, and A. Neuforth. "Biomarkers of Exposure to Toxic Substances", **Vol 4**: "Metabonomics Biomarkers to Liver and Organ Damage". *US Air Force Technical Report*, AFRL-RH-WP-TR-2009-0105 (2009).

41. N. DelRaso, D. Mahle, R. Rietcheck. J. Young, N Reo, M. Raymer, P. Anderson, A. Neuforth, H Luithardt, N. Tarragona, and M Westrick. "Metabonomics Approach to Biomarker Discovery*"*, **Vol 6**: "Dose and Time Response of Liver Toxicant". *US Air Force Technical Report*, AFRL-RH-WP-TR-2010-0143 (2010).

42. P. E. Anderson, S. S. Sahoo, A. Manjunatha, A. H. Ranabahu, N. J. Delraso, N. V. Reo, A. P. Sheth, and M. L. Raymer. "Cloud-based map-reduce architecture for nuclear magnetic resonance based metabolomics". Proceedings of the 7th Microsoft Research eScience Workshop (Short Paper), Berkley, CA. October 11-13, 2010.

43. P. E. Anderson, D. A. Mahle, T. E. Doom, N. V. Reo, N. J. DelRaso, and M. L. Raymer, "Dynamic Adaptive Binning: An Improved Quantification Technique for NMR Spectroscopic Data". *Metabolomics* **7**, 179-190 (2011).

44. D.A. Mahle, P.E. Anderson, N.J. DelRaso, M.L. Raymer, A. Neuforth, and N.V. Reo. "A generalized model for metabolomics analyses: Application to dose and time dependent toxicity". *Metabolomics* **7**, 206-216 (2011).

45. G. Onady, N. V. Reo, and L. Prochaska. "pH and Acid-Base Chemistry, A Team-Based Learning Exercise for Medical Biochemistry", MedEdPORTAL, mededportal.org/publication/8466 (2011). Available from: https://www.mededportal.org/publication/8466

46. A.L. Forgacs, M. N. Kent, M. K. Makley, B. Mets, N. DelRaso, G. L. Jahns, L. D. Burgoon, T. R. Zacharewski and N.V. Reo (NVR & TRZ are co-corresponding authors). "Comparative Metabolomic and Genomic Analysis of TCDD-Elicited Metabolic Disruption in Mouse and Rat Liver". *Toxicological Sciences* **125** (1), 41-55 (2012).

47. P.E. Anderson, A. Ranabahu, D.A. Mahle, N.V. Reo, M.L. Raymer, A.P. Sheth, N.J. DelRaso. "Localized Deconvolution: Characterizing NMR-based Metabolomics Spectroscopic Data Using Localized High-throughput Deconvolution". *Proceedings of the 13th Annual International Conference on Bioinformatics & Computational Biology* (*BIOCOMP* 2012) (Full Paper), pp. 229-235 (2012).

48. M.S. Lustgarten, L.L. Price, T. Logvinenko, C. Hatzis, N. Padukone, N.V. Reo, E.M. Phillips, D. Kirn, J. Mills and R.A. Fielding. "Identification of serum analytes and metabolites associated with aerobic capacity". *Eur. J. Appl. Physiol.* **113** (5), 1311-20 (2013).

49. N. DelRaso, D. Mahle, J. Schlager, D. Harville, S. Chaiken, D. Roddy, M. Chamberlain, P. Anderson, I. Sibomana, M. Raymer and N.V. Reo. "Biomarkers of fatigue: Metabolomic profiles predictive of cognitive performance." *US Air Force Technical Report*, AFRL-RH-WP-TR-2013-009 (2013).

50. S. Michail, M. Lin, M.R., Frey, R. Fanter, O. Paliy, B. Hilbush, and N.V. Reo. "Altered Gut Microbial Energy and Metabolism in Children with Non-Alcoholic Fatty Liver Disease". *FEMS Microbiology Ecology,* **91**, 1-9 (2015); doi: 10.1093/femsec/fiu002.

51. V. Shankar, D. Homer, L. Rigsbee, H.J. Khamis, S. Michail, M. Raymer, N.V. Reo and O. Paliy. (NVR & OP are co-corresponding authors). "The Network of Human Gut Microbe-Metabolite Associations are Different Between Health and Irritable Bowel Syndrome". International Society for Microbial Ecology, *The ISME Journal*, **9**, 1899-1903 (2015); doi: 10.1038/ismej.2014.258.

52. V. Shankar, N.V. Reo, and O. Paliy, "Simultaneous fecal microbial and metabolite profiling enables accurate classification of pediatric irritable bowel syndrome". *Microbiome* **3**:73 (2015) DOI 10.1186/s40168-015-0139-9.

53. N.J. DelRaso, D.L. Harville, M.L. Chamberlain, P.E. Anderson, I. Sibomana, M.L. Raymer and N.V. Reo. "Urinary Metabolite Profiles May Be Predictive of Cognitive Performance Under Conditions of Acute Sleep Deprivation". *Current Metabolomics* **4** (1), 63-77 (2016). DOI: 10.2174/2213235X04666151117211154

54. I. Sibomana, N.J. DelRaso, D.R. Mattie, M.L. Raymer, and N.V. Reo "Furosemide enhances the sensitivity of urinary metabolomics for assessment of kidney function" *Metabolomics* **13**(3), 1-17 (2017); DOI: 10.1007/s11306-017-1162-6.

55. V. Shankar, M. Gouda, J. Moncivaiz, A. Gordon, N.V. Reo, L. Hussein, and O. Paliy. "Differences in gut metabolites and microbial composition and functions between Egyptian and US children are consistent with their diets", *mSystems* **2** (1), e00169-16 (2017).

56. D.A. Mahle, M.C. Moulton, N. Grobe, S. Pak, A.M. Lowman, M. E. Chapleau, M. Grogg, S.T. Law, M.K Makley, L. Narayanan, A. Hoffman, A. Campo, and N.V. Reo. "Mechanistic interpretation of hypobaria and hyperoxia using metabolomics and proteomics". Air Force Research Laboratory Technical Reports, AFRL-RH-WP-TR-2018-0001.

57. E. Kim, M. Lambert, G.M. Fallata, J.C. Rowe, T. Martin, A.R. Satoskar, N.V. Reo, O. Paliy, E. Cormet-Boyaka, P.N. Boyaka, Intestinal epithelial cell IKKβ regulates gut eosinophil homeostasis and allergic responses to ingested antigens. *J. Allergy & Clinical. Immunology*, submitted (2017).

58. I. Sibomana, N.J. DelRaso, and N.V. Reo. "Influence of Plasmalogens on Cell Viability. PART 1: Effects of *Myo*-inositol, Ethanolamine and H_2O_2". *J. Lipid Res.* (submitted).

59. I. Sibomana, N. Grobe, N.J. DelRaso and N.V. Reo. "Influence of Plasmalogens on Cell Viability. PART 2: Effects on ethanolamine phospholipid species during oxidative stress", *J. Lipids Res.* (submitted).

60. N. Grobe, L. Narayanan, D.N. Brown, S.T. Law, I. Sibomana, P. Shiyanov, N.V. Reo, C.E. Hack, T.R. Sterner, D.R. Mattie. "Simple and Reliable Tissue Lipid Composition Method for Modeling Auditory Toxicity due to Jet Fuels". *J. Lipid Res.* (in preparation).

61. D. Homer, P.E. Anderson, K.A. Fluette, M.L. Raymer and N.V. Reo. "Statistical Population Thresholding: A novel non-linear method for automated signal map generation and baseline correction of NMR spectra" *J. Magn. Reson.* (in preparation).

PUBLISHED ABSTRACTS/PRESENTATIONS

1. N. V. Reo and P. Hemmes: "Study of Kinetic and Thermodynamic Hydrogen Isotope Effects on the Dimerization of 2-Pyridone in 1,4 Dioxane by Ultrasonic Relaxation." Undergraduate Research Presentation, American Chemical Society, Northeastern Chapter, Newark, NJ, 1978.

2. T. R. Stengle, N. V. Reo, K. W. Miller, A. J. M. Schoot Uiterkeamp, D. P. Stengle, and K. L. Williamson: "NMR Studies of the Interaction of Xenon with Water, Lipid Bilayers and Proteins." Gordon Conference on Water and Aqueous Solution, Plymouth, NH, Summer 1980.

3. T. R. Stengle, N. V. Reo and K. L. Williamson: "NMR Chemical Shifts of Xe-129 in Common Solvents." Second Chemical Congress of the North American Continent, Las Vegas, NV, Fall 1980.

4. T. R. Stengle, N. V. Reo, K. W. Miller, A. J. M. Schoot Uiterkeamp, D. P. Stengle, and K. L. Williamson: "Nuclear Magnetic Resonance Studies of the Interaction of Xenon with Simple Liquids, Lipid Bilayers, Proteins and Biological Membranes." 181st American Chemical Society National Meeting, Atlanta, GA, Spring 1981.

5. K. L. Williamson, N. V. Reo, and T. R. Stengle: "Biochemical Applications of Xenon NMR." NMR in the '80's - The Fourth Decade - Rare Spin NMR Symposium, London, Canada, March 1982.

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7. N. V. Reo, C. S. Ewy, B. A. Siegfried, and J. J. H. Ackerman: "A High Field (8.5 Tesla) Surface Coil C-13 NMR Probe for Monitoring Cellular Metabolism of Tissue *in Vivo*." 187th American Chemical Society National Meeting, St. Louis, MO, Spring 1984.

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72. C. Hatzis, N.V. Reo, R. Carabello, E. Phillips, N. Padukone, R. Fielding. "A Metabolomics Approach to Develop Assays for Warfighter Fitness Prediction". Beyond SBIR Phase II Conference & Exhibition (Event #7750), National Defense-Industrial Association, Hyatt Regency Crystal City Hotel, Arlington, VA, Aug 21-23, 2007.

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79. D. Homer, M. Raymer and N. V. Reo, "Statistical Population Thresholding: A novel non-linear thresholding method for peak and baseline selection in biological spectra containing thermally generated noise." WSU Biomedical Sciences Program Research Retreat, D. H . Ponitz Sinclair Center, Sinclair Community College, Dayton, OH. May 19, 2008. (Platform presentation).

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83. M. N. Kent, M. K. Makley, G. L. Jahns, N. DelRaso, L. Burgoon, T. Zacharewski. and N. V. Reo, "TCDD Effects on Hepatic Metabolites: Mouse Versus Rat". WSU Central Research Forum, March 10, 2009.

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86. GL Jahns, MN Kent, NV Reo, MK Makley, A Kopec, L Burgoon, BD Mets, N DelRaso, and TR Zacharewski. "A Feature-Extraction and Data-Fusion Workflow for Metabolomic Analysis", Metabolomics Society 5th Annual Meeting, Edmonton, Canada, Aug 30-Sep 2, 2009.

87. DA Mahle and NV Reo, "Effect of Low Level Exposure to Diisopropylfluorophosphate on Regional Brain Metabolism in F344 Rats". Chemical and Biological Defense Science and Technology Conference, Dallas, TX, Nov. 16-20, 2009.

88. MN Kent, MK Makley, GL Jahns, N DelRaso, B Metz, LD Burgoon, T Zacharewski. and NV Reo. "Synergism between omics technologies: what transcriptomic and metabolomic correlations reveal about effects of TCDD in rat and mouse liver". Society of Toxicology 49th Annual Meeting, Salt Lake City, UT. *The Toxicologist* **114 (1)**, Abstract #1629 (2010).

89. DA Mahle, PE Anderson, JM Gearhart, and NV Reo, "Effect of Low Level Exposure to Diisopropylfluorophosphate on Regional Brain Metabolism in F344 Rats". Society of Toxicology 49th Annual Meeting, Salt Lake City, *The Toxicologist* **114 (1)**, Abstract #1256 (2010).

90. Z Markwell, ML Raymer, NV Reo, T Doom and P Anderson. "A visualization package for improving nuclear magnetic resonance metabolite identification." Ohio Collaborative Conference on Bioinformatics, Columbus, OH June 15, 2010 (Platform presentation).

91. P. E. Anderson, S. S. Sahoo, A. Manjunatha, A. H. Ranabahu, N. J. Delraso, N. V. Reo, A. P. Sheth, and M. L. Raymer. "Cloud-based map-reduce architecture for nuclear magnetic resonance based metabolomics". 2010 Microsoft Research eScience Workshop (Short Paper), Berkley, CA. October 11-13, 2010 (oral presentation).

92. DA Mahle, JM Gearhart, and NV Reo, "Perturbation of Regional Brain Metabolism in F344 Rats after Low Level Exposure to Diisopropylfluorophosphate (DFP)". Society of Toxicology 50th Annual Meeting, Washington, DC, March 6-10, 2011 *The Toxicologist* **120** (suppl. 2), 35 (2011).

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