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<https://scholar.google.com/citations?user=Q0Gjc94AAAAJ&hl=en> (3147 citations, h-index:22)

EDUCATION

1986 Ph. D. in Mathematics, University of California, Berkeley, Princeton University, 1985-6.
Thesis: Blowup and Stability for an Equation Modeling Stretched Vortices.
Dissertation supervisor: Professor Andy Majda.

1984 Master of Arts, University of California, Berkeley.

1980 Bachelor of Arts, cum laude in mathematics, Harvard University.

PROFESSIONAL EXPERIENCE

July 2018-present: Professor, Math Department, Utah Valley University

April 2018-June 2021: Chair, Math Department, Utah Valley University

July 2013-June 2018: Associate Professor, Math Department, Utah Valley University

February 2014-March 2018: Associate Chair, Math Department, Utah Valley University

August 2011-June 2013: Assistant Professor, Math Department, Utah Valley University

January 2007-present: Adj. Research Associate Professor, Pathology Department, University of Utah.

March 2009-June 2011: Research Professor, Math Department, University of Utah.

September 2000-March 2009: Research Associate Professor, Math Department, University of Utah.

September 1998-August 2000: Associate Professor, Math Department, Westminster College.

September 1996-August 1998: Assistant Professor, Math Department, Westminster College.

September 1990-August 1996: Assistant Professor, Math Department, University of Utah.

September 1988-August 1990: Morrey Visiting Assistant Professor, UC Berkeley.

September 1986-August 1988: N.S.F Postdoctoral Research Fellow and Visiting Member,
Courant Institute of Mathematical Sciences, New York University.

SELECTED PUBLICATIONS & PATENTS

2020:

Systems and methods for computer-based visualization, rendering, and representation of regions of space using point clouds **RA Palais**, RS Palais, HRT Karcher. (U.S. Utility Patent 10,614,620: **Issued:** Apr 7, 2020)

Assessing the Potential Impact of the Declaration of Istanbul 2008 on Internet Reporting of Human Organ Transplantation-Related Crimes Using Interrupted Time Series Analysis and Meta-Analysis Approaches. Islam MM, Webb B, **Palais R**, Kuddus RH. *Transplant Proc.* 2020 Jan-Feb;52(1):12-19.

2019:

Methods of Detecting Copy Number Variation, CT Wittwer, L Zhou, **RA Palais**. (U.S. Utility Patent 10,494,682: **Issued:** Dec 3, 2019)

Allele Amplification Bias, L Zhou, **RA Palais**. (U.S. Utility Patent 10,351,903: **Issued:** Jul 16, 2019)

Integrated Extreme Real-Time PCR and High-Speed Melting Analysis in 52 to 87 Seconds. Myrick JT, Pryor RJ, **Palais RA**, Ison SJ, Sanford L, Dwight ZL, Huuskonen JJ, Sundberg SO, Wittwer CT. *Clin Chem.* 2019 Feb;65(2):263-271

Systems and methods for computer-based visualization, rendering, and representation of surfaces using point clouds **RA Palais**, RS Palais, HRT Karcher. (U.S. Utility Patent 10,176,626: **Issued:** Jan 8, 2019)

2018:

A Proof for a Slightly Different Limit of a Product. Yingxian Zhu and **Bob Palais** *Utah Mathematics Teacher*, Fall/Winter, 2018-2019, Volume 11.

A Slightly Different Proof for the Limit of a Product. **Bob Palais**. *Utah Mathematics Teacher*, Fall/Winter, 2018-2019, Volume 11.

Accurate diagnosis of spinal muscular atrophy and 22q11.2 deletion syndrome using limited deoxynucleotide triphosphates and high-resolution melting. Zhang X, Wang B, Zhang L, You G, **Palais RA**, Zhou L, Fu Q. *BMC Genomics.* 2018 Jun 20;19(1):485

Generating Point Clouds **RA Palais**, RS Palais, HRT Karcher. (U.S. Utility Patent 9,881,415: **Issued:** Jan 30, 2018)

2017:

Quantifying variant differences in DNA melting curves: Effects of length, melting rate, and curve overlay. Li M, **Palais RA**, Zhou L, Wittwer CT. Anal Biochem. 2017 Dec 15;539:90-95.

High-speed Melting Analysis: The Effect of Melting Rate on Small Amplicon Microfluidic Genotyping. Pryor RJ, Myrick JT, **Palais RA**, Sundberg SO, Paek JY, Wittwer CT, Knight IT. Clin Chem. 2017 Aug 17

Competitive PCR for copy number assessment by restricting dNTPs, Luming Zhou, **Robert A. Palais**, Yotam Ardon and Carl T. Wittwer, Chapter 8 Genomic Mosaicism in Neurons and Other Cell Types Editors: Frade, Jose Maria, Gage, Fred H. (Eds.) 978-1-4939-7279-1 Humana Press (Springer Science). Sep 2017

Implementing And Interpolating Rotations From a Computing Input Device. **RA Palais** and RS Palais. (U.S. Utility Patent 9,595,080: **Issued:** Mar 14, 2017)

2016:

A Brief History of τ : A Useful Alternative to π **Robert Palais** and Vivienne Faurot (UVU). Utah Teacher UCTM Aug 2016, 51-61.

Allele Amplification Bias and Quantification. JT McKinney, L Zhou, CN Gundry, **RA Palais**. (U.S. Utility Patent 9,422,597: **Issued:** Aug 23, 2016)

Systems and Methods for Automated Melting Curve Analysis. TC Robbins, **RA Palais**, CT Wittwer. . (U.S. Utility Patent 9,273,346: **Issued:** Mar 1, 2016)

2015:

Copy Number Assessment by Competitive PCR with Limiting dNTPs and High Resolution Melting. Zhou, L, **Palais R**, Paxton C, Geiersbach K, Wittwer, CT, Clin Chem. 2015 May;61(5):724-33

2014:

Climate Science: Why Mathematicians Should Be Interested. JR Bacon, TP Kendall, T Mussmann, **R Palais**, VE Trujillo II, F Wattenberg. Proceedings of the 25th Annual ICTCM, Boston, Massachusetts, March 2014

Palais B,. A Missing Piece: Early Elementary Plane Rotations. Doceamus: Notices of the American Mathematical Society, Vol. 61, Issue 2, Feb 2014 - pp. 174-176.

Microfluidic genotyping by rapid serial PCR and high-speed melting analysis. Sundberg SO, Wittwer CT, Howell RM, Huuskonen J, Pryor RJ, Farrar JS, Stiles HM, **Palais RA**, Knight IT. Clin Chem. 2014 Oct;60(10):1306-13.

Quasi-digital PCR: Enrichment and quantification of rare DNA variants. Sundberg SO, Wittwer CT, Zhou L, **Palais R**, Dwight Z, Gale BK. Biomed Microdevices. 2014 Aug;16(4):639-44.

Genotyping accuracy of high-resolution DNA melting instruments. Li M, Zhou L, **Palais RA**, Wittwer CT. Clin Chem. 2014 Jun;60(6):864-72.

Heterozygote PCR product melting curve prediction. Dwight ZL, **Palais R**, Kent J, Wittwer CT. Hum Mutat. 2014 Mar;35(3):278-82

Implementing And Interpolating Rotations From a Computing Input Device. **RA Palais** and RS Palais. (U.S. Utility Patent 8,860,764: **Issued:** Oct 14, 2014)

2013:

Zhou L, **Palais RA**, Ye F, Chen J, Montgomery JL, Wittwer CT. Symmetric Snapback Primers for Scanning and Genotyping of the Cystic Fibrosis Transmembrane Conductance Regulator Gene. Clin Chem. 2013 Jul;59(7):1052-61

2012:

Dwight ZL., **Palais R.**, Wittwer CT., uAnalyze : Web-Based High Resolution DNA Melting Analysis with Comparison to Thermodynamic Predictions. IEEE/ACM Trans Comput Biol Bioinform. 2012 Nov-Dec;9(6):1805-11.

B. Palais, R. Palais. Chasles' fixed point theorem for Euclidean motions. J. Fixed Point Theory & Applications. June 21 2012 15(4):1-7.

Melting Curve Analysis with Exponential Background Subtraction.
B Palais and CT Wittwer. (U.S. Utility Patent 8,296,074: **Issued:** Oct 23, 2012)

2011:

Melting Curve Analysis with Exponential Background Subtraction.
B Palais and CT Wittwer. (U.S. Utility Patent 8,068,992: **Issued:** Nov 29, 2011)

Snapback primer genotyping of the Gilbert syndrome UGT1A1 (TA)(n) promoter polymorphism by high-resolution melting. Farrar JS, **Palais RA**, Wittwer CT. Clin Chem. 2011 Sep;57(9):1303-10.

A. M. Svensson, L-S. Chou, C. Meadows, C. Miller, **R. Palais**, K. Sumner, T. C. Wayman², R. Mao^{1,2}, E. Lyon. Implementation of a Cost-effective Unlabeled Probe High-Resolution Melt Assay for Genotyping of Factor V Leiden. Genetic Testing and Molecular Biomarkers. 2011 15(4):1-7.

Kempe-Dustin, J, Aboul-Fadl, T., **Palais, R.**, Gerald J. Gleich, G, Wagner, L., Cell Screening Assay For Identifying Inhibitors of Eosinophil Proliferation. Drug Development Research Wiley-Liss 2011 72

Dwight Z., Palais R., Wittwer CT., uMELT : Prediction of high-resolution melting curves and dynamic melting profiles of PCR products in a rich web application. Bioinformatics. 2011 Apr 1;27(7):1019-20.

2010:

Zhou L, **Palais RA**, Smith GD, Anderson D, Rowe LR, Wittwer CT. Enrichment and Detection of Rare Alleles by Means of Snapback Primers and Rapid-Cycle PCR. Clin Chem. 2010 56(5):814-22.

Palais, B., Patents and Mathematics. Letter to the Editor, Notices of the AMS, Vol. 57(1). p. 7.

Palais, B., The Fast Fourier Transform, **B. Palais** and R. Palais, Introduction to Fourier Methods. (e-book Appendices to Differential Equations, Mechanics and Computation.)

McKinney JT, Nay LM, De Koeyer D, Reed GH, Wall M, **Palais RA**, Jarret RL, Wittwer CT. Mutation scanning and genotyping in plants by high resolution DNA melting. In: The Handbook of Plant Mutation Screening, Meksem K, Kahl G, eds. Wiley-VCH, Weinheim, 149-165, 2010.

2009:

Palais, RA, Wittwer, CT., Mathematical algorithms for high-resolution DNA melting analysis. (Invited) Methods in Enzymology. Vol. 454. Computer Methods, Part A) Elsevier, Jan. 2009.

Palais, B., Palais, R., Rodi, S., A Disorienting Look at Euler's Theorem on the Axis of a Rotation. Am. Math Monthly. Volume 116, Number 10, December 2009 , pp. 892-909(18) **(Recipient of the 2010 Lester R. Ford Writing Award)**

Palais, R and Palais R, Differential Equations, Mechanics, and Computation, IAS/Park City Mathematics Series, American Mathematical Society (2009)

2008

Szabo, A., Perou, C., Karaca, M., Perreard, L., **Palais, R.**, Quackenbush, J., Bernard, P., Statistical Methods for Selecting Housekeeper Genes. Genome Biology 2008, 9:405

Crews, N., Wittwer, C., **Palais, R.**, Gale, B., Product differentiation during continuous-flow thermal gradient PCR. Lab Chip. 2008 Jun;8(6):919-24.

2007

Palais, B., Palais R. Euler's fixed-point theorem: The axis of a rotation. *J. Fixed Point Theory and Applications*. Dec. 2007, Vol. 2, no. 2, 215-220.

Vandersteen, JG, Bayrak-Toydemir, P, **Palais RA**, Wittwer CT, Identifying Common Genetic Variants by High-Resolution Melting. *Clin. Chem* 2007; 53:1191-8.

Palais R, Quantitative Heteroduplex Analysis, *Clin. Chem* 2007; 53:1001-3.

Jesse Montgomery, Carl T. Wittwer, **Robert Palais**, Luming Zhou, Simultaneous Mutation Scanning and Genotyping by High-Resolution DNA Melting Analysis. *Nature Protocols*. 2007 Feb 22;2(1), 59-66.

Erali, M, **Palais, B**, Wittwer, CT. SNP genotyping by unlabeled probe melting analysis. In: *Molecular Beacons (Methods in Molecular Biology)*, Seitz, O and Marx, A, eds., Humana Press, Totowa, New Jersey, 2007.

2005

Palais RA, Liew MA, Wittwer CT. Quantitative heteroduplex analysis for single nucleotide polymorphism genotyping. *Anal Biochem*. 2005 Nov 1;346(1):167-75.

Zhou L, Wang L, **Palais R**, Pryor R, Wittwer CT. High-resolution DNA melting analysis for simultaneous mutation scanning and genotyping in solution. *Clin Chem*. 2005 Oct;51(10):1770-7.

2004 and prior

L. Zhou, J. Vandersteen, L. Wang, T. Fuller, M. Taylor, **B. Palais**, C.T. Wittwer, High-resolution DNA melting curve analysis to establish HLA genotypic identity. *Tissue Antigens* 2004, 64:156-164.

M. Liew, R. Pryor, **R. Palais**, C. Meadows, M. Erali, E. Lyon, and C. Wittwer, Genotyping of Single-Nucleotide Polymorphisms by High-Resolution Melting of Small Amplicons, *Clinical Chemistry* Jul 1, 2004, 50(7).

Elenitoba-Johnson, Kojo S.J., Stephen D. Jenson, Robert T. Abbott, **Robert A. Palais**, Sandra D. Bohling, Zhaosheng Lin, Sheryl Tripp, Paul J. Shami, Lai Y. Wang, Robert W. Coupland, Rena Buckstein, Bayardo Perez-Ordenez, Sherrie L. Perkins, Ian D. Dube, and Megan S. Lim, Involvement of multiple signaling pathways in follicular lymphoma transformation: p38-mitogen-activated protein kinase as a target for therapy. *Proceedings of the National Academy of Sciences* 2003 100: 7259-7264.

Palais, R. The Natural Sine and Cosine Curves. *Journal of Online Math and its Applications*, Jan. 2001

Palais, B. An example demonstrating the fundamental theorem of calculus, *College Mathematics Journal*, Vol. 29, No. 4, September 1998, pp. 311-2

Palais, B. Pi is wrong!, *The Mathematical Intelligencer*, Vol. 23, no. 3, Summer 2001, pp. 7-8.

Cherkaev, A. and **Palais, R.** Optimal design of three-dimensional axisymmetric elastic structures. *Structural Dynamic Systems, Computational Techniques and Optimization*, C. Leondes, ed. Gordon and Breach Intl. Series in Engineering, Technology, and Applied Science, v.9, 1999

Palais, B., Blowup for nonlinear equations using a comparison principle in Fourier space. *Comm. Pure and Appl. Math.*, vol. XLI, pp.165-196 (1988).

SELECTED LECTURES AND PRESENTATIONS

Math for rapid identification of SARS-CoV-2 and other disease-causing pathogens and mutations using high-resolution melting analysis. AMS Special Session on The Mathematics of RNA and DNA, Joint Mathematical Meetings, January, 2021

Gregor Mendel and Combinatorial Mathematics at the DNA Level (joint invited presentation with Dr. Daniel Fairbanks) AMS Special Session on The Mathematics of RNA and DNA, Joint Mathematical Meetings, January, 2021

How Good is the χ^2 Goodness-of-Fit test? Revisiting a controversy from the birth of modern statistics and genetics. Joint invited talk with Dr. Daniel Fairbanks, AMS/MAA/SIAM Joint Mathematical Meetings, Denver, January, 2020

Measuring the Earth, Measuring the Universe: Geometry in the Roots of Knowledge, Utah Valley University, January, 2019

Computational advantages and historical insights from viewing quaternionic interpolation of three-dimensional rotations as geodesic vector interpolation on S^2 . AMS/MAA/SIAM Joint Mathematical Meetings, Baltimore, January, 2019

A Proof for a Slightly Different Limit of a Product. (with Yingxian Zhu, UVU): 2018 Annual Utah Council of Teachers of Mathematics Conference, Oct. 13 2018, Draper Park Middle School, Draper, UT

A Slightly Different Proof for the Limit of a Product: 2018 Annual Utah Council of Teachers of Mathematics Conference, Oct. 13 2018, Draper Park Middle School, Draper, UT

Spherical Triangles, Platonic Solids, and Computer Animation. MAA Intermountain Section Meeting, Utah State University, March 2018

Computational advantages and historical insights from viewing quaternion multiplication as geodesic vector addition on S^2 . AMS/MAA/SIAM Joint Mathematical Meetings San Diego January, 2018

Math in 3D for Medicine, for Learning, and for Fun! Empowering Your Tomorrows Math Workshops, Utah Valley University, November 2017

A Proof for a Slightly Different Limit of a Product and A Slightly Different Proof for the Limit of a Product, . (with Yingxian Zhu, UVU): 2017 Annual Meeting of the Intermountain Section of the MAA, April 8, 2017, Weber State University, Ogden, UT

Desmos in the Classroom, MAA Intermountain Section Meeting, Weber State University, April 2017

7th Xiamen qPCR Conference, Xiamen, PRC, 7th Xiamen qPCR Conference, Xiamen, PRC, December 2016, Software and Algorithms for High-Resolution Melting Analysis.

Taiwan National University, Math Department Seminar, Taipei, ROC, November, 2016, A Journey on a Double-Helix: From Mathematics to Commercialized Personalized Medicine.

2016 Shanghai Molecular Diagnostic Congress, Shanghai, PRC, Software and Algorithms for High-Resolution Melting Analysis.

Boise State University Math Department Colloquium, October 2016, Math and DNA-based Medicine.

Boise State University Graduate Seminar, Oct 2016, Quaternions in 3 Dimensions and their Algorithms.

UVU Math Club October 2016 (with Alan Parry, UVU), The Great Pi-Tau Debates.

AIS PREP, Blanding, UT, July 2016, Math in 3D for Learning and for Fun!

Plenary Speaker, MAA Joint Intermountain and Rocky Mountain Section Meeting, Mesa State University, Grand Junction, CO, April 2016, Math, DNA, and Precision Medicine.

Empowering Your Tomorrows Math Workshops, Utah Valley University, January 2016, Math in 3D for Medicine, for Learning, and for Fun!

UVU PREP, Orem UT, June 2015, Math in 3D for Medicine, for Learning, and for Fun!

UVU Chemistry Seminar, March 2015, Mathematical models for sequence specific thermal separation of DNA helices.

UVU NSF Scholars Roundtable, December 2014, The Very Reasonable Effectiveness of Math in the Natural Sciences...and Beyond.

BYU Biology Seminar, November 2014, Engaging Math Students With Biology.

UVU Physics Colloquium, Oct 2014, 2-Pi is Wrong: Quaternions and the significance of 720 degrees.

UVU Biology Colloquium, Sept 2014, Counting Copies of DNA with Melting and Math.

UVU PREP, Orem UT, June 2014, Math in 3D for Medicine, for Learning, and for Fun!

Northern Arizona University Honors Graduation, Flagstaff, AZ April 2014

Playing House: A Mathematician Meets the Pathology Department.

MAA Intermountain Section Meeting, Utah Valley University, Orem, UT March 2014
The Math of Artificial Intelligence.

PCR for Molecular Medicine Tri-Conference, San Francisco, CA. Feb 2014. Novel Approaches and New Ways of Thinking. (Session Chair and Speaker) Counting Copies: Digital Distributions and Math for Melting.

UVU PREP, Orem UT, June 2013, Math in 3D for Medicine, for Learning, and for Fun!

MAA Intermountain Section Meeting, BYU Idaho, Rexburg, ID, March 2013, Math of Digital PCR.

25th International Conference on Technology in Collegiate Mathematics, Boston, MA, March 2013
Real World Applications: Math and Climate Change and Why it Matters, Organizer and Presenter

Duke University Math Union, Durham, NC, Analyzing DNA Without Sequencing Using Math,
Duke University Graduate Seminar, Understanding Quaternions Without Four Dimensions, March 2013

Math Fest 2012, National MAA Meeting, Madison, WI, August 2012
How Rodrigues Did It: The Geometric Discovery of Quaternion Multiplication

College of Science and Health Symposium, Utah Valley University, Orem, UT, April 2012
Math and Molecular Medicine

24th International Conference on Technology in Collegiate Mathematics, Orlando, FL, March 2012
Real World Applications: Calculus For DNA Analysis

Math Club Presentation, Utah Valley University, Orem, UT, December 2011
The Math of Artificial Intelligence

MAA Intermountain Section Meeting, Southern Utah University, Cedar City, UT, April 2011
A new formula for computing a rotation matrix.

Mathematics Colloquium, Weber State University, Ogden, UT, April 2010
Discovering New Math While Analyzing DNA.

MAA Intermountain Section Meeting, Utah State University, Logan, UT, March 2010
Runge-Kutta Methods, Rooted Trees, and the LISP programming language.

Mathematics Colloquium, University of Utah, Salt Lake City, UT, April 2009
Rendering with Randomness, Rotating With Reflections.

Mathematics Colloquium, Utah State University, Logan, UT, April 2009
From Linear Algebra to Molecular Classification and Quaternions.

MAA Intermountain Section Meeting, Brigham Young University, Provo, UT, 2008,
A new formula for computing a rotation matrix.

Mathematics Colloquium, USMA, West Point
3D Visualization and Molecular Diagnostics, Feb. 2007

19th International Conference on Technology in Collegiate Mathematics, Boston, MA, Feb. 2007
Pre-Session on 3D Visualization in the Math Curriculum

Applied Mathematical Colloquium, Massachusetts Institute of Technology
Surprising Algorithms for Performing Rotations and their Consequences, Feb. 2007

Institute of Mathematical Sciences Colloquium, University of Virginia, Charlottesville
Modeling and Analyzing DNA Melting Transitions for Molecular Diagnostics, Oct. 2006

AMS-MAA-SIAM Joint Meetings: San Antonio, 2006, Atlanta, GA 2005, Phoenix, AZ 2004.
NSF-DUE Poster Session: Linking visualizations online to discover and unify mathematics.

MAA Intermountain Section Meeting, Idaho State University, Pocatello, ID, 2005,
Odds ratios, event frequencies, and an optimization problem in DNA genotyping.

Beyond Genome Conference, San Francisco, CA 2004 Quantitative heteroduplex analysis for single
nucleotide polymorphism genotyping.

MAA Intermountain Section Meetings, Weber State University, Ogden, UT, 2003,
Enumerating Finite Abelian Groups and Jordan Canonical Forms with the FFT.

The belt trick, the plate trick, and orientation entanglement. Rick's College, Idaho Falls, ID, 2001

Joint Math Meetings Session on Geometry in the Classroom, San Antonio, Texas, Jan. 1999.
Unifying, motivating, and understanding fundamentals using the rotation formula

Legendre=Lagrange, An example in duality. MAA Section meeting, Provo, Utah, April, 1998.

SES Annual Meetings, College Station, 1994; New Orleans, 1995.

NIST International Workshop in Optimal Design, Salt Lake City, 1995.

ISSMO 1st World Congress, Goslar, Germany, 1995.

Danish Technical University, Lyngby, Denmark, 1995.

Princeton University, Applied Mathematics Colloquium 1995.

NATO Workshop on Singularities in Vortex Dynamics, Crete, 1992.

ORGANIZING COMMITTEES

2018 TPSE Math Mountain Regional Meeting (Upper Division Pathways), Sept. 28-29, Utah Valley University, Orem, UT

2018 Intermountain MAA Section Meeting, Utah State University, Logan, UT

2017 Intermountain MAA Section Meeting, Weber State University, Ogden, UT

25th International Conference on Technology in Collegiate Mathematics, Boston, MA, March 2013
Session on Real World Applications

DiYModeling Project Workshop, NASA, Clear Lake, TX, June 2012

High-Resolution DNA Melting Analysis: Simpler and More Efficient Next-generation Molecular Diagnostics. American Association for Clinical Chemistry Annual Meeting, 2006.

The NIST International Workshop on Optimal Design of Materials and Structures. Salt Lake City, Utah, August, 1995.

UNIVERSITY AND ORGANIZATIONAL MEMBERSHIP AND SERVICE

Mathematical Association of America (1st Vice President, Intermountain Section)

American Mathematical Society

Reviewer for Clinical Chemistry journal

Reviewer for the National Science Foundation Division of Undergraduate Education CCLI, TUES, and IUSE grant programs, most recently in March 2017.

American Alpine Club (past chair, International Exchanges Committee)

Served on the UVU Math Department's RTP Committee, Outreach Committee, Math 1050 Committee, Undergraduate Research Committee, and Math Week Committee. Served on the University's: Large Auditorium, 21st Century Teaching and Learning, Graduate Studies, and Research and Compliance Committees, and co-advisor of the Sustainable Mountain Development Club.

GRANTS AWARDED

Linking Visualizations Online to Discover and Unify Mathematics (NSF Division of Undergraduate Education, CCLI-Educational Materials Development Award Abstract #0231459, Principal Investigator Robert Palais. Co-Principal Investigators Elena Cherkhev and Andrej Cherkhev. February 1, 2003 – January 31, 2006, \$74,996.00.)

Theoretical and Computational Methods in Optimal Design of Elastic Structures (NSF Division of Mathematical Sciences, Applied Math Award Abstract #9625129) (Principal Investigator: Andrej Cherkhev. Co-Principal Investigator Robert Palais. August 1, 1996– July 31, 2000, \$ 116,400.00.)

POSTERS AND WORKSHOPS

Association for Molecular Pathology Annual Meeting, November 2017 Salt Lake City, UT

1. High Speed Melting Analysis for Microfluidic Genotyping. RJ Pryor, JT Myrick, RA Palais, SO Sundberg, JY Paek, CT Wittwer, IT Knight.
2. Analyzing Copy Number Variation Inheritance with dNTP Limited PCR and High-Resolution Melting Analysis. L. Zhou RA Palais RM Toydemir, CT Wittwer.
3. High Speed DNA Melting Analysis in Single Nucleotide Variance Detection. M Li, RA Palais, L Zhou, CT Wittwer.

26th International Congress of the Transplantation Society, August 2016, Hong Kong
A Google Advanced Search for illegal and immoral activities related to organ transplantation in twenty-five developed and developing countries Ruhul Kuddus (UVU), **Robert Palais**.

Association for Molecular Pathology Annual Meeting, November 2016 Charlotte, NC
Rapid Serial PCR Instrument with High Speed Melting (HSM) Analysis, J Huuskonen, SO Sundberg, RJ Pryor, J Farrar, CT Wittwer, R Palais, H Stiles, L Xu, RM Howell.

Association for Molecular Pathology Annual Meeting, November 2015 Austin, TX
Rapid Identity DNA Matching using a 2-Phase PCR System Coupled with High Resolution Melting
RJ Pryor, L Zhou, **B Palais**, Y Ardon, CT Wittwer.

Association for Laboratory Automation, LabAutomation 2008 Palm Springs, CA, Automation of a Genetic Assay With Real and Virtual Instruments, Integrating DNA Extraction, Amplification, High-Resolution Melting, and Analysis.

Association for Molecular Pathology Annual Meeting 2007, Los Angeles, CA. Thermodynamic parameters derived under standard conditions eliminating multiple correction factors.

American Association for Clinical Chemistry Annual Meeting 2006, Chicago, IL Mini-Course on High-Resolution DNA Melting.

COURSES TAUGHT

At UVU: MATH 4610 Introduction to Numerical Analysis I, MATH 4620 Introduction to Numerical Analysis II, MATH 4310 Introduction to Modern Algebra I, MATH 1100 Introduction to Calculus, MATH 1220 Calculus II, MATH 1050 College Algebra, including Auditorium, Hybrid, and Online.

Previous Positions: , Numerical Analysis Survey-I-II-Graduate I-II, The Math of DNA, Scientific Computing I-II, Complex Analysis, Abstract Algebra, Linear Algebra, Applied Mathematics, Partial Differential Equations (Introduction and Graduate), Chaos, Fractals and Nonlinear Systems/Applied Dynamical Systems, Calculus I-II-III, both lecture and online offerings, Quantitative Analysis/Business Calculus.

ACADEMIC INTERESTS

Scientific computation; mathematical methods in molecular medicine and bioinformatics, high-resolution DNA melting analysis, diagnostic and therapeutic genomics and expression analysis; mathematical visualization and computer graphics; math education; history of math; singularity formation for nonlinear evolution equations; optimal design for materials and microstructures, theory and computation; pattern formation and recognition; adaptive algorithms (genetic, multigrid, multipole, wavelet, FFT, IFS); numerical analysis; mathematical modeling; variational and inverse problems; geometry and transformation groups.