

W. Todd Penberthy, PhD
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SUMMARY

With a Ph.D. in biochemistry, extensive training in developmental biology, NIH awarded grant experience, and a stint directing my own laboratory research at the universities, my transition to the role of a freelance medical writing over the past 10 years and counting has been seamlessly enriched by my scientific background.

This multifaceted experience has equipped me with an exceptional ability to manage multiple simultaneous projects while effectively communicating complex biomedical concepts across various mediums.

Repertoire and highlights include:

- Grants, peer-reviewed biomedical manuscripts, conference/news coverage
- A wide range of continuing medical education materials
- Comprehensive meta-analyses with statistical calculations, reviews, book chapters

EXPERIENCE

9/8/24- Present

Texas Medical Association

- Enduring material entitled, “**Advocating for Physician Wellness - It's Everyone's Job!**”
 - Wrote an educational program (approximately 7,000 words and 4 physician vignettes)
 - **Significance:** Suicide rates among medical students, residents, and physicians are significantly higher than the norm. This course focuses on the critical evaluation of the factors impacting the physician’s well-being to prevent professional deterioration environment.

5/2023- Present (CRO: Contiem)

Edward’s Life Sciences

Contract Medical Writer (manuscripts)

- Writing, editing, and critiquing manuscripts for flow, gaps, and making suggestions to strengthen manuscripts scientifically.
- Finding references to insert, updating text to match outcome data, and assisting in the generation of figures
- Multiple manuscripts were regularly generated for submission to the journals: *The Journal of the American College of Cardiology* and *Circulation: Cardiovascular Interventions*. These were entitled:

1. **Clinical Outcomes Due to Closure of Iatrogenic Atrial Septal Defects Following Transseptal SAPIEN Mitral Valve-in-Valve Procedures**
 2. **Contemporary 1-Year Outcomes of Mitral Valve-in-Ring Using the SAPIEN 3/Ultra Transcatheter Heart Valve in the United States**
 3. **Impact of Mitral Stenosis on Patients Undergoing Transcatheter Aortic Valve Replacement**
 4. **Contemporary Outcomes and Trends for the Transeptal Mitral Valve-in-Valve Procedure Using SAPIEN 3 or SAPIEN 3 Ultra Transcatheter Valves**
 5. **Real-World Outcomes for the SAPIEN 3 Ultra Resilia Transcatheter Heart Valve in the United States: A Propensity-Matched Analysis**
 6. **Three-Year Outcomes of 20 mm SAPIEN 3/Ultra Valves Compared to Larger Valves (23, 26, 29 mm) - A Propensity Matched Analysis**
- **Significance:** Examined the effects or dangers of surgeries using registry-based propensity-score matched analysis. This technique determined the risks versus benefits for various surgeries and patient characteristics. The surgeries or characteristics studied included:
 - Closing atrial septal defects
 - Performing valve-in-ring annuloplasties
 - Comparing smaller and larger balloon-expandable valves
 - Comparing the SAPIEN 3 Ultra Resilia transcatheter heart valve with earlier versions, SAPIEN 3 and SAPIEN 3 Ultra
 - Replacing degenerated bioprosthetic valves with the transeptal transcatheter SAPIEN 3 mitral valve in valve (MViv) procedure
 - Assessing how mitral stenosis affects outcomes for patients undergoing transcatheter aortic valve replacement.

7/2019- Present

Aspen Lasers, LLC

Scientific Advisor, Researcher, Writer, & Writer (Meta-analysis, statistical analysis, reviews, presentations, and case study)

- Conducted a comprehensive meta-analysis of all randomized controlled trials (RCTs) investigating high-intensity laser photobiomodulation therapy (PBMT; >0.5 watts, e.g. 5-30 watts) conducted within the last 6-year period 2018-2024. **“The Importance of Power in Photobiomodulation, a Systematic Review and Meta-analysis of High Intensity Laser Therapy.”** This has been submitted for publication.
 - Generated a detailed analysis of all outcome measures from 56 studies included in 6 tables.

- Performed extensive quantitative outcome analyses via Cohen's *d* effect size calculations for over 100 different comparisons. Generated Forest plots to visually represent and interpret data for specific indications.
- **Significance:** Despite the established efficacy, utilization, and insurance coverage of low-level light therapy for superficial tissue pathologies like oral mucositis, these lower power levels have consistently failed in deeper deeper musculoskeletal and neurological pathologies. Conversely, high-powered lasers have yielded positive results in RCTs for these deeper tissues. This growing body of evidence is leading to an increase in the recognition and adoption of high-powered laser therapy as a safe and effective therapy for an increasing range of indications within the medical community.
- Served as an organizing member and keynote presenter for the 5th Annual Global Webinar on Laser, Optics, and Photonics: April 17th-18th, 2024.
- Penberthy, W. Todd and Charles Vorwaller. (2022) **Utilization of the 1064 nm Wavelength in Photobiomodulation: A Systematic Review and Meta-Analysis.** *Journal of Lasers in Medical Sciences*.12:e86. Authored and published in a peer-reviewed journal a comprehensive meta-analysis focusing on the specific utilization of the 1064nm wavelength in high-intensity laser PBMT, contributing to the scholarly discourse in the field. This detailed analysis likely delves deeper into the findings for this specific wavelength, potentially exploring its advantages or unique applications compared to other wavelengths used in PBMT.
- Contributed to the composition of a case study detailing the reversal of memory impairment, specifically prosopagnosia (inability to recognize faces), subsequent to the application of transcranial high-intensity laser photobiomodulation therapy utilizing power levels ranging from 5 to 25 watts. Hedaya R, Lubar J. **Reversal of Acquired Prosopagnosia Using Quantitative Electroencephalography-Guided Laser Therapy.** *Photobiomodulation, Photomedicine, and Laser Surgery*. 2022.
 - **Significance:** This study represents a pioneering endeavor, showcasing the inaugural utilization of quantitative electroencephalography (QEEG) to anatomically pinpoint areas of deficient brain function, thereby facilitating precise laser targeting. This novel methodology, patented as QEEG-guided transcranial laser therapy, signifies a groundbreaking approach. The observed positive outcomes, including dementia reversal, underscore the potential of this innovative therapeutic modality.

3/2024- Present
CME

Healio

- Wrote an educational program (approximately 6,000 words and 15 figures) for healthcare professionals that utilized data and presentations from OSN Hawaiian Eye and Retina 2024 provided by Apellis Pharmaceuticals.
- This program focused on the first FDA-approved treatment for geographic atrophy, an advanced form of age-related macular degeneration that leads to irreversible vision loss.
- It was entitled, **Spotlight on Syfovre® (pegcetacoplan) Breakthrough in the Treatment of Geographic Atrophy. Expert Insights from Controlled Trials and Experiences in the Clinic.**

2018- Present

Peerview Institute for Medical Education

CME Grant Writer

- Each of the following needs assessment grants are approximately 5,000-7,000 words, 15-20 pages, and 30-50 references. Typically, these projects start with 4 learning objectives and I did all of the researching, writing, and grant development from that including the identification of KoLs, identification of sources, and referencing.
- Researching and writing needs assessment grants to obtain funding for courses focused on teaching best practices to clinicians treating all most common cancers and other conditions:
 - **Multidisciplinary Considerations in Breast Cancer Management: Keys to Improving Surgical and Therapeutic Outcomes Across Disease Settings (SSO 2023)**
 - **Best Practices and Emerging Therapeutics for Treating Metastatic HER2+ Breast Cancer (ASCO 2023)**
 - **HER2-positive & HER2-low Metastatic Breast Cancer MasterClass - Translating Science & Transforming Practice (ESMO 2023)**
 - **Gaining an Advantage Over NSCLC: How to Achieve the Greatest Benefit with Immunotherapy from Advanced to Early Disease (ASCO 2023)**
 - **Best Practices and Emerging Therapeutics for Treating Small Cell Lung Cancer (ONS 2023)**
 - **Best Practices and Emerging Therapeutics for Small Cell Lung Cancer - Optimizing Your Diagnosis and Management for Transforming Outcomes with Guideline Directed Treatments in SCLC (IASCLC TTLC 2023)**
 - **HER2-low Metastatic Breast Cancer MasterClass - Translating Science & Transforming Practice (USCap Meeting)**
 - **Updated Best Practices and Emerging Therapeutics for Treating Desmoid Tumors**
 - **Comprehensive Gene Profiling with Next Generation Sequencing in Metastatic NSCLC to Optimize Treatment Selection Based on the Current Knowledge Base Including Exon 20 Insertions**
 - **Expert Insights on Using Noninvasive Prenatal Testing in Routine Obstetrical and Gynecological Practice**
 - **Advances and Best Practices for Treatment of Generalized Tonic-Clonal Seizures**
 - **Alerts on Advances in the Management of Idiopathic Hypersomnia: Spotlight on Emerging Pharmacotherapies**
 - **Reducing the Burden of IgA Nephropathy: Expert Insight on Current Best Practices for Patient Care and the Impact of Emerging Therapeutic Approaches**
 - **The Recognition and Treatment of Progressive Supranuclear Palsy**
 - **Best Practices Using Long-acting Injectable Antipsychotic Agents for Patients with Schizophrenia**
 - **Tactical Approaches for Optimizing Quality of Life in Huntington's Disease: Focus on Treatments for Chorea**
 - **Recognizing Fabry Disease and Key Considerations its Management with Enzyme or Chaperone Therapy**
 - **Recognition and Treatment of Pediatric-Onset Multiple Sclerosis with Disease-Modifying Therapies**

2018- 2023

Medical Logix

CME Grant Writer

- Working with KoLs to develop courses including slide sets, graphics, questions, surveys, and didactic handouts.
- Researching and writing needs assessment grants to obtain funding for courses focused on teaching best practices to clinicians to treating a variety of conditions.
- Courses have included the following therapeutic areas and contexts:
 - **Addressing the Challenges of Telemedicine in Multiple Sclerosis: Best Practices for Patients and Clinicians]**
 - **Addressing the Complexities of Multiple Sclerosis During COVID**
 - **Next Generation Sequencing for the Detection and Appropriate Treatment Selection for Patients with EGFR Exon 20 Insertion Metastatic Non-Small Cell Lung Cancer**
 - **Evidence-Based Management of Progressive Multiple Sclerosis**
 - **Management of Chronic Kidney Disease in Type 2 Diabetes Mellitus: What Clinicians Need to Know**
 - **Navigating the Complexities of Liquid vs Solid Biopsy-derived Genomic Testing for Optimal Treatment Precision Medicine Decision Making in Non-Small Cell Lung Cancer**

4/2022- 11/22

Pharmacy Times

CME Grant Writer

- Researching and writing needs assessment grants to obtain funding for courses focused on pharmaceutical approaches to treating a variety of conditions including all the following:
 - **Updates and Advances in Targeted Therapy for Gastrointestinal Stromal Tumors**
 - **Pharmacist's Overview and Best Practices for Recurrent Unresectable Desmoid Tumors**
 - **Clinical Pharmacist Updates for the Treatment of Cervical Cancer**
 - **Advances and Best Practices for Managed Care Pharmacists in the Treatment of Metastatic Head and Neck Squamous cell Carcinoma**
 - **Pharmacist's Overview and Best Practices for Mycosis Fungoides and Sezary Syndrome**
 - **Best Practices for Pharmacists: ROS1 Targeted Oral Tyrosine Kinase Inhibitor Therapy in the Treatment of Non-Small-Cell Lung Cancer**
 - **Advances and Best Practices for Managed Care Pharmacists in the Treatment of Idiopathic Pulmonary Fibrosis**
 - **Biosimiliars for use in Retinal Pharmacology**
 - **Updates in the Treatment and Management of Patients with Alpha-1 Antitrypsin Deficiency for Managed Care Pharmacists**
 - **Advances and Best Practices for Managed Care Pharmacists in the Treatment of Heart Failure with Preserved Ejection Fraction**

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12/2018- 10/2023

BioWorld / Clarivate Analytics

Writer (medical journalism)

- Interview principal investigator scientists and senior authors that have just published in *Science Translational Medicine*, *Nature*, *Cell*, or related family of journals to generate stories describing the discovery process, significance of their findings, significance, and next steps; ~90 stories
- Generate abstracts describing the newly reported emerging targeted pharmacotherapeutics and biomedical technologies; ~70 abstracts.

5/2021- 3/2022 (CRO: Writing Assistance, Inc.)

RedHill Biopharma

Contract medical writer (manuscript and regulatory)

- Wrote two manuscripts and prepared them for submission
 - **Effect of Opaganib on Supplemental Oxygen and Mortality in Patients with Severe SARS-CoV-2 Pneumonia.** This was originally submitted to *JAMA*, then I reformatted it for a submission to *BMJ Open*, then it was published.
 - Neuenschwander, F.C., Barnett-Griness, O., Piconi, S., Maor, Y., Sprinz, E., Assy, N., Khmelnskiy, O., Lomakin, N., Goloshchekin, B.M., Nahorecka, E., et al. (2022). **Effect of Opaganib on Supplemental Oxygen and Mortality in Patients with Severe SARS-CoV-2 Pneumonia.** Preprint at *MedRxiv*, 10.1101/2022.06.12.22276088 10.1101/2022.06.12.22276088.
 - **The Combination Antibiotic RHB-204 Exerts Maximally Effective Activity Against *M. avium* Biofilm and Airway Infection with *in vivo* Murine Model.** This was prepared for submission to *Antimicrobial Agents and Chemotherapy*.
- Assisted in writing an investigator's brochure (IB) for a triple antibiotic used to treat pulmonary Non-tuberculosis Mycobacterial disease due to *Mycobacterium avium* complex.

9/2021-12/2021 (CRO: Writing Assistance, inc.)

Siemens Healthineers

Contract Medical Writer (white papers)

- I wrote 2 white papers focused on high-throughput industrial scale instruments for use in hospitals. This was the Atellica platform for measuring HbA1c and the ADVIA Centaur platform for measuring androstenedione.
- Two white papers:
 - **The Androstenedione Metric for Diagnosis of Polycystic Ovarian Syndrome, Hyperandrogenism, or Congenital Adrenal Hyperplasia - Evaluation of ADVIA Centaur platform-based androstenedione assay compared to LC-MS/MS with respect to precision, repeatability, and interference**
 - **HbA1c Assay on the Atellica Platform - HPLC-like Precision with Superior Throughput and Wider Applicability** Evaluation of HbA1c assay performance compared to more labor intensive high-performance liquid chromatography assays

5/2021- 9/2021 (CRO: Barrington James)

Neurelis

Contract Medical Writer (manuscripts)

- Wrote and published manuscript describing tolerance, safety and efficacy of 2nd-dose administration of intranasal diazepam for patients experiencing cluster seizures.
 - Cascino, CD, D. Targuinio, J. W. Wheless, R. E.Hogan, et al. **Lack of clinically relevant differences in safety and pharmacokinetics after second-dose administration of intranasal diazepam within 4 h for acute treatment of seizure clusters: A population analysis.** *Epilepsia* 2021; 63(7):1714-1723.

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- Wrote and published manuscript describing the use an intranasal spray for quicker and more effective timely delivery of diazepam to patients experiencing cluster seizures.
 - Rabinowicz, A. L, E. Carrazana, E. T. Maggio. **Improvement of Intranasal Drug Delivery with Intravail® Alkylsaccharide Excipient as a Mucosal Absorption Enhancer Aiding in the Treatment of Conditions of the Central Nervous System.** *Drugs in R&D* 2021; 21(4):361-369.
- Wrote a review to provide practical content for pharmacists to assist in the communication and proper safe execution of rescue therapy treatment of patients experiencing seizure clusters. Entitled: **The Role of the Pharmacist in Optimizing Treatment and Counseling of Patients with Seizure Cluster Epilepsy.**
- Worked on a poster for presentation to the *American Epilepsy Society Annual Meeting 2021* entitled: **Lack of Tolerance after Long-term Diazepam Nasal Spray Rescue Therapy for Seizure Clusters.**

1/2020- 9/2021 (CRO: EPM Scientific)
Contract Medical Writer (manuscripts)

Clene Nanomedicine

- Wrote, submitted, and published manuscript describing the design and rationale for study of the first oral nanotherapeutic for amyotrophic lateral sclerosis (ALS) patients:
 - Vucic S, Kiernan MC, Menon P, Huynh W, Rynders A, Ho KS, et al. **Study protocol of RESCUE-ALS: A Phase 2, randomized, double-blind, placebo-controlled study in early symptomatic amyotrophic lateral sclerosis patients to assess bioenergetic catalysis with CNM-Au8 as a mechanism to slow disease progression.** *BMJ Open* 2021;11:e041479.
- Wrote and prepared a manuscript describing the basic preclinical studies evaluating the activities of nanocrystal CNM-Au8 in boosting NAD levels and protecting neurons from models of glutamate excitotoxicity, ALS, and Alzheimer’s Disease pathogenesis (>7000 words & 6 figures): **CNM-Au8 Gold Nanocatalysis Prevents Neurodegeneration in Human and Murine Models of Amyotrophic Lateral Sclerosis**
- Wrote and prepared a manuscript describing safety and tolerability studies of CNM-Au8 as performed in rats, canine, and minipig models (>6000 words and 5 figures): **Safety and Tolerability of CNM-Au8 Gold Nanocrystal Suspension in Animal Toxicity Studies and First-In-Humans Phase 1 Clinical Trials**

12/2021- 3/2022 (CRO: Writing Assistance, inc.) Greg Hildebrand, PhD (Microbiome Insights Inc; Amway)
Contract Medical Writer (manuscript)

- Using the data from their studies I generated a manuscript for submission to *Clinical Nutrition* that was entitled “**A Stealthy Smart Cap Reveals the True Per-Protocol Population in a Randomized Cross-over Study of a Dietary Resistant Starch Supplement for Increasing Fecal Short Chain Fatty Acids.**”
- This study described the use of a cap equipped with an accelerometer smart cap to monitor at-home supplement consumption for determination of the true per protocol population and reduce false negative outcomes due to subject-dependent misreporting. The study concluded the smart cap opening detection technology should be considered in all clinical studies where knowing true protocol compliance is key to measuring treatment safety and efficacy.

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1/2019-6/2019

James Greenblatt, MD (integrative psychiatry)

CME Medical Writer

- Working with Dr. Greenblatt, MD we created three courses approved by the *American Academy of Family Physicians*
 - **Integrative Therapies for Depression**
 - **Integrative Medicine for Anxiety**
 - **Integrative Therapies for ADHD**
- Projects involved generating:
 - Didactic enduring materials describing the impact, prevalence of conditions, trends, and data from clinical trials evaluating integrative therapies for treating the psychiatric indications depression, attention deficit hyperactivity disorder, and anxiety.

CAREER HISTORY

- 2012 to current: **Principal writer CMEScribe, LLC**
- Jan 2010-Oct 2012: Research Professor
University of Central Florida
Department of Molecular Biology and Microbiology
- Dec 2004-Dec 2009: Research Professor
University of Cincinnati
Department of Molecular Genetics, Biochemistry, and Microbiology
- 2000-2004: Post-doctoral fellow
UCLA
Department of Molecular, Cell, and Developmental Biology
- 1999-2000: Post-doctoral fellow
Tufts New England Medical Center
School of Medicine

EDUCATION

- Ph. D., Biochemistry, University of Tennessee, Memphis, TN
- B.S., Biology, University of Central Florida, Orlando, FL

TECHNICAL SKILLS

- Writing software: MS Word, OmniOutliner, ChatGPT, AI in medical writing
- Referencing software (Zotero, EndNote Reference Managers, Mendeley)
- Presentation & graphics: PowerPoint/ Keynote, OmniGraffle, Adobe Illustrator, Adobe Photoshop
- Statistics: Excel (Cohen's *d* effect size calculations, Forrest plots. *p*-values, standard deviations)

THERAPEUTIC AREAS

- Neurology (epilepsy, multiple sclerosis, other neurodegenerative diseases)
- Oncology
- Cardiology
- Rare diseases
- Nephrology
- More

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SELECT PUBLICATIONS

Penberthy, W. Todd and Charles Vorwaller. (2022) Utilization of the 1064 nm Wavelength in Photobiomodulation: A Systemic Review and Meta-Analysis. *Journal of Lasers in Medical Sciences*.12: e86.

Hedaya R, Lubar J. Reversal of Acquired Prosopagnosia Using Quantitative Electroencephalography-Guided Laser Therapy. *Photobiomodulation, Photomedicine, and Laser Surgery* 2022; 40(3):205-210

Neuenschwander, F.C., Barnett-Griness, O., Piconi, S., Maor, Y., Sprinz, E., Assy, N., Khmelnskiy, O., Lomakin, N., Goloshchekin, B.M., Nahorecka, E., et al. (2022). **Effect of Opaganib on Supplemental Oxygen and Mortality in Patients with Severe SARS-CoV-2 Pneumonia**. Preprint at *MedRxiv*, 10.1101/2022.06.12.22276088 10.1101/2022.06.12.22276088.

Cascino, CD, D. Targuinio, J. W. Wheless, R. E.Hogan, et al. **Lack of clinically relevant differences in safety and pharmacokinetics after second-dose administration of intranasal diazepam within 4 h for acute treatment of seizure clusters: A population analysis**. *Epilepsia* 2021; 63(7):1714-1723.

Rabinowicz, A. L, E. Carrazana, E. T. Maggio. **Improvement of Intranasal Drug Delivery with Intravail® Alkylsaccharide Excipient as a Mucosal Absorption Enhancer Aiding in the Treatment of Conditions of the Central Nervous System**. *Drugs in R&D* 2021; 21(4):361-369.

Vucic S, Kiernan MC, Menon P, Huynh W, Rynders A, Ho KS, et al. **Study protocol of RESCUE-ALS: A Phase 2, randomized, double-blind, placebo-controlled study in early symptomatic amyotrophic lateral sclerosis patients to assess bioenergetic catalysis with CNM-Au8 as a mechanism to slow disease progression**. *BMJ Open* 2021;11:e041479.

Penberthy, W. Todd and James B. Kirkland. Niacin (2020 & 2010) in Present Knowledge in Nutrition. 11th ed., Elsevier, St. Louis, Mo. Edited by Diane Birt and Allison Worden.

Penberthy, W. Todd. Niacin, Riboflavin, and Thiamine (2019) in Biochemical, Physiological, and Molecular Aspects of Human Nutrition. 4th ed., Elsevier, St. Louis, Mo. Edited by Marie A. Caudill and Martha H. Stipanuk.

Penberthy, W. Todd (2009). Nicotinic Acid-Mediated Activation of Both Membrane and Nuclear Receptors Towards Therapeutic Glucocorticoid Mimetics for Potential Treatment of Multiple Sclerosis; *PPAR Research* 853707-.

Penberthy, W. Todd (guest executive editor) Current Pharmaceutical Design, 2009. Developed theme, coordinated authors / reviewers, and provided oversight to completion. Theme: NAD Biology in Disease.

Penberthy, W. Todd & Tsunoda, I. (2009). The Importance of NAD in Multiple Sclerosis. *Current Pharmaceutical Design*. 2009; 15(1): 64-99.

Penberthy, W. Todd (2009). Nicotinamide Biology and Disease. *Current Pharmaceutical Design*;15(1): 1-2.

Jones KS, Alimov AP, Rilo HL, Jandacek RJ, Woollett LA, **Penberthy WT**. A high throughput live transparent animal bioassay to identify non-toxic small molecules or genes that regulate vertebrate fat metabolism for obesity drug development. *Nutr Metab* (Lond) 2008;5:23.

Penberthy WT. Pharmacological targeting of IDO-mediated tolerance for treating autoimmune disease. *Curr Drug Metab* 2007;8:245–66.

Traver, David, Barry H. Paw, Kenneth D. Poss, **W. Todd Penberthy**, Shuo Lin, and Leonard I. Zon (2003). **Transplantation and *in vivo* Imaging of Multi-lineage Engraftment in Zebrafish Bloodless Mutants**. *Nature Immunology*. 4:1238-1246.