I, Gregory T. Carter, M.D., declare:

I am a physician licensed to practice medicine in the State of Washington since 1994, and from 1987 until 1995 in the State of California. I earned a Bachelor’s of Science in Animal Physiology in 1981, and a Master of Science in Physiology in 1982, at the University of California, Davis. I earned a Doctor of Medicine from Loyola from the University Chicago Stritch School of Medicine in 1986. I returned to the University of California, Davis, in 1986 to perform my Internship and Residency, where after I received several fellowships, including as a Neuromuscular Disease post-doctoral research fellow at the National Institute on Disability and Rehabilitation Research (1990-1991), a MayDay Pain Fellow, University of Washington, School of Medicine Multi disciplinary Pain Center (1994-1995), and a Hartford Foundation Fellow in Geriatric Medicine in the University of Washington, School of Medicine Department of Internal Medicine (1999).

I am a certified by the National Board of Medical Examiners (1987), American Board of

I co-founded the Muscular Dystrophy Association/Amyotrophic lateral sclerosis (ALS) Center at the University of Washington and the Muscular Dystrophy Association (MDA) Regional Neuromuscular Disease Center at Providence St. Peter Hospital in Olympia, Washington.

In 2012, I earned the Distinguished Researcher Award from the American Association of Neuromuscular and Electrodiagnostic Medicine. Other honors I have received include, but are not limited to, the Excellence in Research Writing Award from the Association of Academic Physiatric (1998), the Best Research Paper Published by a Physiatrist Award from the American Academy of Physical Medicine and Rehabilitation/Education and Research Foundation (1994). I have been voted one of the Best Doctors in America, on www.bestdoctors.com, every year since 2001, and received the Excellence in Clinical Care Award, Muscular Dystrophy Association (2002).

I am a member of the American Academy of Physical Medicine and Rehabilitation, American Association of Neuromuscular and Electrodiagnostic Medicine, the Association of Academic Physiatrists, and the Washington State Medical Association.

I am currently employed as the Medical Director of St. Luke’s Rehabilitation Institute in Spokane, Washington. I also hold a position at the Providence Sacred Heart Hospital in Spokane, and I perform research in conjunction with Seattle Children’s Hospital in Seattle, Washington, and with the University of California, Davis Medical Center in Sacramento, California. Additionally, I worked for the University of Washington Hospitals, Harborview Medical Center from 1994 until 2010. Past clinical positions I have held include, but are not limited to, the Chief of Medical Staff, Providence Centralia Hospital (2005-2007), the Medical Director, Providence Hospice Services, Lewis County, Washington (2007-2013), and the Founding Medical Director, Muscular Dystrophy Association Regional Neuromuscular Center,
1 Providence Medical Group, Olympia, WA (1995-2013).

Further information, including public and private funding research grants I received, additional research and academic duties, and a bibliography of the significant publications that I authored or co-authored, including peer-reviewed scientific publications (over 185 separate publications), chapters of several medical books (14 book chapters), eight published books/monographs, and numerous other publications, are listed in my Curriculum Vitae, attached hereto.

**Report: Statement of Grounds**

1. In 2011, I co-authored a report regarding the therapeutic value of the plant, genus Cannabis, with Mitchell Earlywine, Ph.d., and Jason T. McGill J.D., at the behest of Washington State Governor Chris Gregoire, who, along with Rhode Island State Governor Lincoln Chafee, submitted the document to the Drug Enforcement Administration as an Exhibit and Statement of Grounds in support of a Petition for Rescheduling of marijuana. The 99-page report, entitled “Exhibit B: Statement of Grounds” (hereafter referred as “The Report”), was purposed to present the most thorough review of the available scientific research on cannabis available, and to analyze the claimed harmful effects of cannabis put forth by various government agencies in order to rationalize its continued inclusion in Schedule I. A comprehensive presentation of the vast body of current scientific research was presented supporting the conclusion made by myself and colleagues: cannabis does not have a high potential for abuse; the substance is currently accepted for medical use in treatment, and there exists clear evidence of accepted safety for use under medical supervision, all contraindicative of the factors set forth in 21 U.S.C. § 812 (b)(1) which defines the properties of a Schedule I controlled substance.

2. While I will not repeat what is contained therein, I highlight the most important sections of the Report below. The Report is attached hereto as Exhibit A, and is incorporated by reference as though fully set forth herein.

I. Pharmacology of Cannabis 21 U.S.C. § 811(c)(2)

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1 As the Report was intended to be filed with the DEA as an administrative petition, it focused on the eight factors set forth in 21 U.S.C. § 811(c)(1)-(8). However, due to subject matter flow, the
Although not set by statute, the DEA assesses that a drug has a currently accepted medical use by looking to five elements: (A) the drug’s chemistry is known and reproducible, (B) adequate safety studies exist on the drug, (C) there are adequate and well-controlled studies proving efficacy, (D) the drug is accepted by qualified experts, and (E) the scientific evidence is widely available. (Exhibit A, p. 6.) The Report addresses each of these elements in depth, concluding the classification of marijuana as a Schedule I controlled substance is untenable and even absurd. I provide the following in support of this opinion:

(A) The drug’s chemistry is remarkably well known and highly reproducible compared even to other legal drugs. The plant contains over 400 chemicals, over 60 of which are considered cannabinoids. Cannabinoids are biologically active compounds found only in the plant cannabis. There are two known cannabinoid receptors in the human body, CB1 and CB2.

(B) Adequate safety studies exist. A breakthrough in the study and scientific organization of the Report addresses the 8 factors under 21 U.S.C. § 811(c)(1)-(8) out of order and, in order to maintain consistency with the Report, my brief recitation summarizes such factors in the same order.


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understanding of cannabis as medicine came in the 1990s when scientists discovered the endogenous endocannabinoid system in humans, thus enhancing our knowledge in regard to cannabis’ unique safety profile and its mechanism of action. At the time the Report was prepared, there were dozens of completed and published controlled clinical trials using cannabis in the United States which evidenced its safety, routes of administration, and its effect when compared to a placebo, standard drugs, and Dronabinol, a synthetic form of Tetrahydrocannabinol (THC), the main isomer found in the cannabis plant. Three years since the Report was completed, even more controlled clinical trials using cannabis have been published, as the medical and scientific communities show no slowing in investigating the therapeutic uses of cannabis. It must be noted here that, despite innumerable clinical trials observing, surveying, and even administering cannabis use in human subjects, there has never been a lethal dose of marijuana reported in humans.4

(C) Adequate and well-controlled studies proving efficacy exist based on four comprehensive reviews of modern human clinical studies with cannabis and cannabinoids in the United States and elsewhere showing that, even by strict evidence-based medicine (EBM) criteria, cannabis does relieve nausea and vomiting. In addition, the research demonstrates that cannabis presents significant therapeutic potential as an antimetic, appetite stimulant, analgesic, and also shows significant benefit in the treatment of multiple sclerosis, spinal cord injuries, Tourette’s syndrome, epilepsy, and glaucoma.5 These findings are consistent with a recent paper


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published earlier this month by the National Institute on Drug Abuse [NIDA], in which this organization acknowledges the potential medical benefits of marijuana.\(^6\)

(D) Cannabis is accepted by qualified experts as meeting the current standards for what constitutes medicine. In 2009, the American Medical Association [AMA] adopted a report entitled “Use of Cannabis for Medicinal Purposes,” which affirmed that marijuana did indeed have a therapeutic benefit. In 2013, the AMA, modified its position regarding the legalization of marijuana; where the organization had previously supported the continued criminalization of the sale and possession of marijuana, their policy statement now has deleted the possession of marijuana in this context. Importantly, the AMA continues to assert marijuana’s therapeutic efficacy, and urges that additional cannabis research “should be encouraged.”\(^7\)

(E) The scientific evidence is widely available, as there exists a large body of randomized, double-blinded, placebo-controlled clinical trials documenting the efficacy of cannabis treatment for many more medical conditions than is typically required of a standard medication to obtain FDA approval. In fact, presently inputting the word “marijuana” into a keyword search on the National Library of Medicine website, (http://www.ncbi.nlm.nih.gov/pubmed), the government repository for peer-reviewed scientific research), will produce more peer reviewed scientific studies relating to marijuana (20,125) than to Acetaminophen (17,485), Dextromethorphan (DXM) (2,288), and Ibuprofen (10,571). Only Acetylsalicylic acid was referenced more often than marijuana (56,259). (See also, Exhibit A, p. 15.)

II. Other Current Scientific Knowledge 21 U.S.C. § 811(c)(3)

4. In combination with the pharmacology section, supra, the vast majority of modern


\(^7\) AMA preliminary report of actions located online at http://www.ama-assn.org/assets/meeting/2013i/i13-refcommk-annotated.pdf.
research indicates that cannabis has significant therapeutic efficacy. Nearly all of the published controlled clinical trials in the United States using cannabis have shown statistically significant and measurable benefits in subjects receiving the treatment. (Exhibit A, p. 18.)

III. Cannabis is not a Precursor 21 U.S.C. § 811(c)(8)

5. Cannabis is a controlled substance that, if metabolized, will not become another controlled substance. (Exhibit A, p. 19.)

IV. Actual and Potential for Abuse 21 U.S.C. § 811(c)(1)

6. Confusion arises regarding the abuse potential of cannabis, as there exists diverse meanings for the word “addiction,” although such a term does not necessarily involve drugs. While some medical texts’ definition of addiction emphasizes preoccupation with the substance, compulsive use, and frequent relapses, there are at least two models of addiction: the moral and the disease. (Exhibit A, p. 19-20.) The moral model identifies the initial source of the disorder as being inside the individual and characterizes their problem as one of will power. The disease model, on the other hand, considers addiction as a medical disorder best treated by medical therapy. Id. Both such definitions, however, exclude important economic, societal and psychological contributors, and recent data suggests that such contributors, rather than biological process, may play a greater role in addiction than previously thought. It is important to note that the word “addiction,” has taken on many different meanings in our society, and is therefore no longer well defined for scientific purposes.

7. Under any interpretation, however, cannabis use, abuse, misuse, or dependence is within reasonable levels when compared with other drugs, as researchers and mental health professionals consistently rate cannabis at the lowest of the addiction spectrum, far below other

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drugs, including nicotine, alcohol, and caffeine.⁹

V. Psychic or Physiological Dependence Liability 21 U.S.C. § 811(c)(7)

8. According to the seven factors for physiological dependence set forth in the Diagnostic and Statistical Manual (DSM) developed by the American Psychiatric Association (APA), cannabis does have some dependence liability, though it is significantly less than other drugs, both licit and illicit.¹⁰ Even the Institute of Medicine, a federal governmental agency, minimizes such dependence, reporting: “[i]n summary, although few marijuana users develop dependence, some do. But they appear to be less likely to do so than users of other drugs (including alcohol and nicotine), and marijuana dependence appears to be less severe than dependence on other drugs.”¹¹

VI. History and Current Pattern of Abuse 21 U.S.C. § 811(c)(4)

9. Some estimates provide that over 40% of our nation’s population have used marijuana (rates being particularly high in the 1970s and among certain age groups.)¹² Despite the prevalence of the use of cannabis, negative consequences remain rare. Rates of cannabis dependence or abuse are also remarkably lower when compared to a host of other drugs, and this factor could be further alleviated where legitimate sources of cannabis are available to medical users, negating the medical use of cannabis from the abuse analysis.¹³

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VII. Scope, Duration, and Significance of Abuse 21 U.S.C. § 811(c)(5)

10. Abuse is widely considered a less severe diagnosis than dependence, as abuse contemplates significant impairment and or distress directly related to the drug. As related to cannabis, it is clear that while the substance is not benign, the prevalence of any associated problems is far less than other legal medicines.\textsuperscript{14}

VIII. Public Health Risk 21 U.S.C. § 811(c)(1)

11. Cannabis plays a reduced role in producing social problems such as amotivation, reckless driving, and aggression or hostility. Evidence for cannabis induced amotivation is lacking and no meaningful or consistent impact on productivity is shown after long-term exposure to cannabis in the laboratory.\textsuperscript{15} As to reckless driving, people with THC but not alcohol in their blood do not have a higher rate of culpability than do THC-free drivers. Laboratory experiments that administer THC and placebo revealed an increased weaving within the lane, although such drivers attempted to compensate by slowing their speed, increasing their following assessment of DSM-IV cannabis tolerance as an indicator of dependence in adolescents. Experimental and Clinical Psychopharmacology. 2004;12:136–146.


distance, and rarely attempted to pass other cars. A recent meta-analysis in the journal Accident Analysis and Prevention concluded that the involvement of cannabis-positive drivers in fatal traffic accidents or in accidents resulting in injury was not statistically significant at the 5 percent level. Finally, causation between cannabis and aggression or criminality cannot be found.

12. In sum, as we concluded in the Report, the continued inclusion of marijuana in Schedule I is untenable and unconscionable, as very ill people have a difficult time obtaining cannabis or defending their possession of it in the courts, despite the irrefutable evidence that it helps alleviate the painful symptoms associated with many serious illnesses. (Exhibit A, pp. 42-43.)

Speciality: Amyotrophic Lateral Sclerosis (ALS)

13. Amyotrophic Lateral Sclerosis (ALS), commonly referred to as “Lou Gehrig’s Disease,” is a progressive neurodegenerative disease that affects nerve cells in the brain and the spinal cord. An ALS patient’s motor neurons, electrically excitable cells that processes and transmits information through electrical and chemical signals from the brain to the spinal cord and then out to the muscles, degenerate and die, resulting in muscle weakness, twitching or cramping of the muscles, impairment of the limbs, and eventually in death in an average of three to five years.

14. As a primary focus of my medical practice has been the treatment of those suffering from ALS, I have been involved in the exploration of if and how cannabis can be used to help this patient population.

15. The significant scientific discovery of the endogenous cannabinoid system referenced in paragraph 3(B), supra, advanced the potential for the application of cannabis therapeutics to ALS patients. Researchers discovered an endogenous molecular signaling system within the human body which is activated by cannabinoids. This system includes specific receptors and ligands that are intricately involved in normal human physiology, specifically in the control of

movement, pain, appetite, memory, immunity, and inflammation, among others. The detection of widespread cannabinoid receptors in the brain and peripheral tissues suggests that the endocannabinoid system represents a previously unrecognized, ubiquitous network in the nervous system. Dense cannabinoid receptor concentrations have been found in the cerebellum, basal ganglia, and hippocampus, which accounts for the effects of marijuana on motor tone, coordination, and mood state. Further, the low concentrations found in the brainstem, account for the remarkably low toxicity of marijuana.

16. This interaction between the exogenous cannabinoids and endogenous cannabinoids system supports the conclusion that marijuana has a tremendous potential in treating neurodegenerative disorders and neuromuscular disease such as ALS.

17. Well over a decade ago, I was one of the first research investigators to report the effectiveness of using marijuana to treat ALS. I hypothesized that the interaction between cannabis and the endocannabinoid system might prove effective in managing many symptoms of the disease, such as analgesia (inability to feel pain), muscle relaxation, bronchodilation (expansion of the bronchial air passages), saliva reduction, appetite stimulation, and sleep induction. Additionally, marijuana had been shown to have strong antioxidative and neuroprotective effects, which may prolong neuronal cell survival and thus prolong the patient’s life.

18. Several years later in 2004, I and my colleagues performed a survey of ALS patients who had used cannabis, and determined that cannabis was indeed moderately effective at reducing symptoms of appetite loss, depression, pain, spasticity, and drooling. The symptoms of depression were abated for two to three hours, a significant time period. Later preclinical data in the G93A-SOD1 ALS mouse, demonstrated prolonged neuronal cell survival, delayed onset, 


and slower progression of the disease were indeed shown.\textsuperscript{19} Thus, it is more than reasonable at this point to believe that cannabis may significantly slow the progression of ALS, potentially extending life expectancy and substantially reducing the overall burden of the disease.

19. Due to these very encouraging and possibly life-extending preclinical research results, I sought to lawfully purchase cannabis from the National Institute on Drug Abuse (NIDA) for use in a clinical trial on my ALS patients. Having been given no response, I re-applied, and again have received no response. Given the short life expectancy of my patients, and the potential for treating them with a life extending medication, NIDA’s disregard is particularly troubling. In effect, because marijuana is classified as a Schedule I controlled substance many of my patients are being deprived of a medication which may extend their lives, and importantly has been proven to enhance the quality of their lives.

20. In sum, it is my considered opinion that including marijuana and THC in Schedule I of the Controlled Substances Act is contrary to all rationality. Not only is such a categorization utterly lacking in scientific support, as I have witnessed the federal restrictions retard the continued study of a potentially beneficial medication, this position is inhumane.

I declare under penalty of perjury that the foregoing is true and correct, except for those matters stated on information and belief, and as to those matters I believe them to be true. This declaration signed on the 19\textsuperscript{th} day of June, 2014, in Spokane, Washington.

\textit{\textsuperscript{/s/} Greg Carter, M.D.}

\underline{GREG CARTER, M.D.}

EDUCATION:

Undergraduate  1981  Bachelor of Science (BS), Honors and Departmental Citation
                   Animal Physiology, University of California, Davis (UC Davis)

Graduate  1982  Master of Science (MS), Physiology, UC Davis;
                   B A Horwitz, PhD, advisor

                   1986  Doctor of Medicine (MD) Loyola University Chicago
                   Stritch School of Medicine

POST DOCTORAL TRAINING

Internship:  1986-87  Internal Medicine UC Davis Medical Center (UCDMC)

Residency:  1987-90  Physical Medicine and Rehabilitation (PM&R), UCDMC

Fellowships:  1990-91  National Institute on Disability and Rehabilitation Research
                   Neuromuscular Disease post-doctoral research fellow; W M Fowler, Jr, 
                   MD, advisor

                   1994-95  MayDay Pain Fellow, University of Washington, School of 
                   Medicine (UW SOM), Multidisciplinary Pain Center, John D Loeser, MD, 
                   advisor

                   1999  Hartford Foundation Fellow in Geriatric Medicine, UW SOM, 
                   Department of Internal Medicine, Division of Gerontology and Geriatric 
                   Medicine, Itamar Abrass, MD, advisor

BOARD CERTIFICATION

1987  Diplomat, National Board of Medical Examiners Certificate #320604

1991  Diplomat, American Board of PM&R, Certificate #3481

1992  Diplomat, American Board of Electrodiagnostic Medicine, Certificate #1562

2006-16  Diplomat, American Board of Psychiatry and Neurology, subspecialty in 
          Neuromuscular Medicine Certificate #3

2008-18  Diplomat, American Board of PM&R, subspecialty certification in 
          Neuromuscular Medicine, Certificate #3
HONORS (academic):

1980  UC Davis President's Undergraduate Academic Fellowship (first award)

1981  UC Davis President's Undergraduate Academic Fellowship (second award)
      (award won independently two years consecutively)

1981  Graduation with Honors and the Departmental Citation for Outstanding
      Undergraduate Accomplishment in Animal Physiology, UC Davis

1982  San Joaquin County Medical Society Scholarship

1994  Best Research Paper Published by a Physiatrist Award from the American Academy
      of Physical Medicine and Rehabilitation/Education and Research Foundation.

1995  National Catholic Education Association Distinguished Graduate Award

1998  Excellence in Research Writing Award, Association of Academic Physiatrists

2012  Distinguished Researcher Award, American Association of Neuromuscular and
      Electodiagnostic Medicine

HONORS (clinical):

2001-current  Best Doctors in America; elected every year since 2001; web site: www.bestdoctors.com

2002  Excellence in Clinical Care Award, Muscular Dystrophy Association

PROFESSIONAL ORGANIZATIONS:

Fellow, American Academy of Physical Medicine and Rehabilitation

Fellow, American Association of Neuromuscular and Electodiagnostic Medicine

Diplomat, Association of Academic Physiatrists

Delegate, Washington State Medical Association

HOSPITAL POSITIONS HELD:

Current

2013-current  St. Luke's Rehabilitation Institute: active

2013-current  Providence Sacred Heart Hospital, Spokane, WA

1994-2013  Providence Hospital, Centralia, WA: active

1994-2013  Providence Saint Peter Hospital, Olympia, WA: active

1994-current  Seattle Children's Hospital, Seattle, WA: research
1990-current University of California, Davis Medical Center, Sacramento, CA: courtesy

Prior

1994-2010 University of Washington Hospitals (UWMC, Harborview Medical Center)

Clinical Duties-present

2013 Medical Director, St Lukes Rehabilitation Institute, Spokane, WA

2007-current Member, Industrial Insurance Medical Advisory Committee, Washington State Department of Labor and Industries

2007-current Member, Agency Medical Director’s Group Advisory Committee on Opioid Dosing Guidelines for Washington State

Clinical Duties-past

1995-2013 Founding Medical Director, Muscular Dystrophy Association Regional Neuromuscular Center, Providence Medical Group, Olympia, WA

2007-2013 Medical Director, Providence Hospice Services, Lewis County, WA

2005-2007 Chief of Medical Staff, Providence Centralia Hospital

2003-2005 Medical Consultant for Quality Assurance, Physical Medicine and Rehabilitation, Washington State Department of Labor and Industries

1991-94 Medical Director, Muscular Dystrophy Association (MDA) Clinics, Department of PM&R, UCDMC

2001-2005 Medical Consultant for Quality Assurance, Electrodiagnostic Medicine, Washington State Department of Labor and Industries

2002-10 Founder/Co-Director, MDA-Amyotrophic Lateral Sclerosis Center, UW Medical Center

ACADEMIC FACULTY APPOINTMENTS:

1990-current UC Davis, SOM, Department of PM&R

2010-current UW SOM MEDEX Northwest Division;

1994-2010 UW SOM Department of Rehabilitation Medicine

LICENSES TO PRACTICE:

Current

1994-present; State of Washington license: MD00031534 [expires 02/03/15]

Federal Drug Enforcement Agency license: BC1116006 [expires 08/31/14]
National Provider Identification (NPI) number: 1073531695
Universal Provider Identification Number (UPIN): E56212
WA state Medicaid Provider: 7058589
WA state L & I Provider: 028551

Expired
1987-1995; State of California license: G060691

EDITORIAL RESPONSIBILITIES

1999-present Editorial Board, The American Journal of Hospice and Palliative Care
2005-2008 Editorial Board, Muscle & Nerve
2009-present Senior Associate Editor, Muscle & Nerve
2011-present Editor, PM&R Clinics of North America, Philadelphia, W.B. Saunders Co; division of Elsevier Publishing
2013- Editorial Board, American Journal of Physical Medicine and Rehabilitation

RESEARCH FUNDING

1990-91 National Institute on Disability and Rehabilitation Research Training Grant #G0087C2005.
1990-96 Co-Director 1990-93; principle investigator 1990-96; National Institute on Disability and Rehabilitation Research Training Center Grant #H133B30026: Longitudinal Assessment of Physical and Neuropsychological Performance in Slowly Progressive Neuromuscular Disease; funding 10/01/90 - 10/01/1996.
1997-2010 Charcot Marie Tooth Research Fund, Providence Healthcare Foundation
1998-2003 Principal Investigator, National Institute on Disability and Rehabilitation Research Training Center Grant #HB133B980008: Pain in Neuromuscular Disease: Incidence, Severity and Relationship to Physical Impairment and Disability; funding 10/01/98 - 10/01/2003.
2002-2007 Co-investigator (Mark Jensen, PhD, principal investigator), National Institutes of Health Program Project Grant 2P01HD33988-06A1; Relationship Between Pain and Disability in Neuromuscular Disease.
2003-2008 Principal Investigator, National Institute on Disability and Rehabilitation Research Training Center Grant # H133B03118: Promotion of Health and Wellness through Community Recreation and Exercise: Impact of Impairment, Pain, Self-efficacy, and Environmental Barriers in Neuromuscular Disease.


2008-09 Co-Investigator, PTC Therapeutics, Inc. (PTC), small molecule drugs targeting post-transcriptional control mechanisms for Duchenne muscular dystrophy; with oral bioavailability.

2008- Principal Investigator, Amicus sponsored trial for novel alpha-glucosidase replacement in children and adults with Acid Maltase Deficiency (Pompe’s disease); trial starting Jan 2009

2009- Investigator, National Institute on Disability and Rehabilitation Research Center Grant # H133B080024: Effects of Aging on Physical Performance, Functional Capacity and Quality of Life in Persons with Neuromuscular Disease.

2010-12 Principal Investigator, Neuraltus sponsored trial for novel mast cell inhibitor to reduce neuronal inflammation in adults with amyotrophic lateral sclerosis (ALS); trial ended October 2012

2013 Investigator, (PI Dr. Bia Carlini, University of Washington) Analysis of Provider Knowledge on Uses of Medical Marijuana in WA state (funded by Attorney General’s office, WA state); funded through 2016

2014 American Heart Association: Smoking Cessation in in-patient rehabilitation

ADDITIONAL RESEARCH and ACADEMIC DUTIES

1990-93 Director of Research and Co-Director, National Institute on Disability and Rehabilitation Research Training Center Grant #H133B30026

1996 Program Evaluation Subcommittee/Advisory Committee, National Institute on Disability and Rehabilitation Research Training Center Grant #H133B30026.

1998-2010 Program Evaluation Subcommittee/Advisory Committee, National Institute on Disability and Rehabilitation Research Training Center Grant #H133B980008.

2002-2004 Faculty, Dannemiller Memorial Education Foundation (by invitation)

2002-04 Neuromuscular Disease Self Assessment Examination Subcommittee, American Academy of Physical Medicine and Rehabilitation; duties involve writing board questions

2002-present Clinical Services Advisory Committee, Muscular Dystrophy Association, National Office, Tucson, AZ

2002-present Neuromuscular Guidelines Steering Committee, Joint Committee, American Academy of Neurology and the American Academy of Physical Medicine and Rehabilitation
2003-07 Oral Board Examiner (Part II), by invitation, American Board of Physical Medicine and Rehabilitation


2005-present Founding Member, Neuromuscular Subspecialty Examination Board, American Board of Psychiatry and Neurology

2010- American Academy of Neurology, Muscular Dystrophy Guidelines Development Committee.

2012- Medical Advisory Committee, Charcot Marie Tooth Association

2013- Agency Medical Director advisory committee for Opioid Dosing Guidelines

2014- WSMA/UW Physician Leadership Program

BIBLIOGRAPHY

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77. Fritz RC, Domroese ME, **Carter GT.** Physiological and anatomical basis of muscle magnetic resonance imaging. *Phys Med Rehabil Clin N Am* 2005; 16(4):1033-1051. PMID:16214058


80. Han JJ, **Carter GT**, Ra JJ, Abresch RT, Chamberlain JS, Robinson LR. Electromyographic studies in mdx and wild-type C57 mice. *Muscle Nerve* 2006; 33:208-214 PMID:16281275


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diagnosis, and pharmacological and psychosocial management. *Lancet Neurol* 2010; 9 (1):77-93 PMID: 19945913


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184. ALSUntangled Group, Fournier C, Bedlack B, Hardiman O, Heiman-Patterson T, Gutmann L, Bromberg M, Ostrow L, **Carter GT,** et al. ALS Untangled No. 23: Vitamin D. *Amyotroph Lateral Scler Frontotemporal Degener* 2014; (submitted)

185. Aggarwal SK, **Carter GT,** Sullivan MD, Morrill R, ZumBrunnen C, Mayer JD. Healthcare and Human-Plant Geography at a Medical Cannabis Delivery Site in Urban Washington State. *Am J Public Health* 2014; (submitted): PMID:


**Book Chapters**


**Published Books/Monographs**


On-Line Publications


Editorials/Commentaries/ Letters to the Editor/ Non-Refereed Journal Articles


**Published Abstracts**


NATIONAL INVITED LECTURES:

1994 Co-Chairperson and Course Faculty, "Natural History Profiles of Neuromuscular Diseases", presented at the American Academy of Physical Medicine and Rehabilitation Annual Meeting, Los Angeles, CA
1996 Course Faculty, "Palliative and Rehabilitative Strategies in ALS", University of Texas, Health Sciences Center, San Antonio

1996 Chairperson and Course Faculty, "Update on Motor Neuron Disorders"; by invitation; American Association of Electrodiagnostic Medicine annual meeting

1998 Moderator and Course Faculty: "STIR MRI: Usefulness Compared to Electromyography as a Diagnostic Tool for Neuromuscular Disorders", presented at the American Academy of Physical Medicine and Rehabilitation Annual Meeting

2001 "Adaptations to Exercise in Animal Models of Neuromuscular Disease"; by invitation; Consensus Conference on Muscle Physiology; San Diego, CA

2001 "Magnetic Resonance Spectroscopy in Metabolic Myopathies"; by invitation; American Association of Electrodiagnostic Medicine, Albuquerque, NM


2002 Dannemiller Memorial Education Foundation invited faculty; Seminars on Painful Neuropathies: Diagnostic Approach, Pathophysiology, and Treatment, Seattle, WA and Dallas, TX

2003 Chairperson and Course Faculty, by invitation, "The Role of Exercise in Neuromuscular Diseases", presented at the American Academy of Physical Medicine and Rehabilitation Annual Meeting, Chicago, IL

2003 Grand Rounds, by invitation, "Adaptations to Exercise in Animal Models of Neuromuscular Disease"; Loyola University Medical Center, Department of Orthopedics and Rehabilitation; Chicago, IL

2004 "Chronic Pain in Persons with Neuromuscular Disease"; joint scientific meeting of the American Pain Society and the Canadian Pain Society. Vancouver, British Columbia, Canada

2004 Course faculty, by invitation, "Rehabilitation Management of Peripheral Neuropathy"; presented at the American Academy of Neurology Annual Meeting, San Francisco, CA

2004 Course faculty, by invitation "Rehabilitation Management of Peripheral Neuropathy"; presented at the American Academy of Physical Medicine and Rehabilitation Annual Meeting, Phoenix, AZ


2005 Course faculty, by invitation; "Methods of Assessing Muscle Function in Neuromuscular Disease"; Course C, American Association of Neuromuscular and Electrodiagnostic Medicine, Monterey, CA
2005  Course faculty, by invitation; "Nerve and Muscle Imaging with MRI"; Symposium F, American Association of Neuromuscular and Electrodiagnostic Medicine, Monterey, CA

2005  Course faculty, by invitation; "Hereditary and New Myopathies"; Course E, American Association of Neuromuscular and Electrodiagnostic Medicine, Monterey, CA

2005  Plenary Session faculty, by invitation; "Rehabilitation of Neuromuscular Disorders"; Plenary Session, American Association of Electrodiagnostic Medicine, Monterey, CA


2005  Course faculty, by invitation; "Rehabilitation Management of Muscular Dystrophy"; Clinic Directors Meeting of the Muscular Dystrophy Association, Tucson, AZ

2006  Course Faculty, "Rehabilitation Management of Neuromuscular Disease", presented at the Oregon Health Sciences University Update on Neuromuscular Disease conference, Portland, OR, January

2006  Course Faculty, "Comprehensive Management of ALS", presented at the Madigan Army Medical Center Physical Medicine and Rehabilitation Update Course, Tacoma, WA

2006  Course Moderator and Faculty, "Maximizing Quality of Life in Neuromuscular Disease, Course C, American Association of Neuromuscular and Electrodiagnostic Medicine, Washington, D.C.

2006  Course Instructor, Workshop on "Distinguishing Lumbar Radiculopathy from Lumbosacral Plexopathy, American Association of Neuromuscular and Electrodiagnostic Medicine, Washington, D.C.

2007  Course Instructor, Workshop on "Lumbosacral Plexopathy", American Association of Neuromuscular and Electrodiagnostic Medicine, Phoenix, AZ.

2007  Course Faculty, “Advances in Neuromuscular Disease: Rehabilitation”, American Association of Neuromuscular and Electrodiagnostic Medicine, Phoenix, AZ.

2008  Course Faculty, “Physiological Responses to Exercise Training in Neuromuscular Disease”, American Association of Neuromuscular and Electrodiagnostic Medicine, Providence, RI

2008  Course Faculty, “Improving Quality of Life through Exercise in Neuromuscular Disease”, American Association of Neuromuscular and Electrodiagnostic Medicine, Providence, RI

2008  Course faculty, "Physiological Adaptations to Exercise in Dystrophic Skeletal Muscle"; American Academy of Physical Medicine and Rehabilitation Annual Meeting, San Diego, CA

2009  Course faculty, "Neuromuscular Update: Hereditary Neuropathy”; American Association of Neuromuscular and Electrodiagnostic Medicine; Annual Meeting, San Diego, CA

2009  Course faculty, "Neuromuscular Update: Postoperative Foot Drop”; American Association of Neuromuscular and Electrodiagnostic Medicine; Annual Meeting, San Diego, CA

2009  Invited Guest Speaker, "Medical Marijuana: The Role of the Pharmacist”; National American Board of Pharmacy; Annual Meeting, Tucson, AZ
2010 Invited Keynote Speaker "Rehabilitation of Spinocerebellar Ataxias"; Canadian Academy of Physical Medicine and Rehabilitation 58th Annual Scientific Meeting, Ottawa, Ontario, Canada

2010 Course director and faculty, "Neuromuscular Update: Orthotic Management of Charcot Marie Tooth disease."; American Association of Neuromuscular and Electodiagnostic Medicine Annual Meeting; Québec City, Québec, Canada

2010 Course Director and faculty, "Pain and Quality of Life in Neuromuscular Disease"; American Academy of Physical Medicine and Rehabilitation Annual Meeting, Seattle, WA

2010 Course Director and faculty, "Update on Research and Management of Amyotrophic Lateral Sclerosis"; American Academy of Physical Medicine and Rehabilitation Annual Meeting, Seattle, WA

2010 Course Director and faculty, "Electrophysiological Characterization of Animal Models of Neuromuscular Disease"; American Academy of Physical Medicine and Rehabilitation Annual Meeting, Seattle, WA


2011 Course faculty, "Aging with Muscular Dystrophy"; National Institute of Disability and Rehabilitation Research; Physical Disability and Aging: A State of the Science Conference, Washington, DC

2011 Course faculty, "Neuromuscular Update: Rehabilitation Management in Autoimmune Neuromuscular Disorders"; American Association of Neuromuscular and Electodiagnostic Medicine Annual Meeting; San Francisco, CA

2011 Course faculty, "Neuromuscular Update: Alternative Medicines in the Management of Neuromuscular Disease"; American Association of Neuromuscular and Electodiagnostic Medicine Annual Meeting; San Francisco, CA

2012 Course faculty, "Alternative Medicines in the Management of Chronic Pain"; PAINWeek National Conference, Las Vegas, NV (Sept 05)

2012 Course faculty, "Chronic Pain in Neuromuscular Disease"; PAINWeek National Conference, Las Vegas, NV (Sept 05)

2012 Course faculty, "Neuromuscular Update: Case Vignettes in Management of Neuromuscular Disease"; American Association of Neuromuscular and Electodiagnostic Medicine Annual Meeting; Orlando, FLA (Oct 3-6)

2012 Invited Speaker, Medical Marijuana in Management of Chronic Pain and Neuromuscular Disease"; WA State Department of Behavioral Health Annual meeting; Yakima, WA Oct 8

2012 Course faculty, "Medical Marijuana – Emerging Role in the Management of Pain", American College of Physicians (ACP) annual meeting, Seattle, WA Nov 3; 11:00 – 11:45 AM


2012 Course faculty, "Practical Update in Neuromuscular Disease Update on Muscle Disease: The Role of Exercise"; American Academy of Physical Medicine and Rehabilitation Annual Meeting, Atlanta, GA; Thurs Nov 15; 11:15 AM

2013 Invited Speaker: “Use of Medical Marijuana for pain management”; Annual "Challenge of Pain"; UW Continuing Nursing Education. Wednesday Jan 23rd 2013, 4:00-4:30 PM


2013 Course Director and faculty, "Medicinal Cannabis in the management of chronic pain – from Pharmacology to Bioethics” PAINWeek National Conference, Las Vegas, NV (Sept 4)

2013 Course Director and faculty, "A Role for Medicinal Cannabis (Marijuana) in the management of chronic pain” American Academy of Physical Medicine and Rehabilitation Annual Meeting, Washington, DC, Oct 3-6

2013 Faculty, "Rehabilitation Management of Multifocal Motor Neuropathy” American Academy of Physical Medicine and Rehabilitation Annual Meeting, Washington, DC, Oct 3-6

2013 Course Director and faculty, "Disease Modification in Peripheral neuropathy: Challenges & opportunities” American Association of Neuromuscular and Electrodiagnostic Medicine, San Antonio, Texas, Oct 16-19, 2013