

1 ZENIA K. GILG, SBN 171922
HEATHER L. BURKE, SBN 270379
2 809 Montgomery Street, 2nd Floor
San Francisco CA 94133
3 Telephone: 415/394-3800
Facsimile: 415/394-3806

4 Attorneys for Defendant
5 BRIAN PICKARD

6
7 UNITED STATES DISTRICT COURT
8 EASTERN DISTRICT OF CALIFORNIA
9

10 UNITED STATES OF AMERICA,

11 Plaintiff,

12 v.

13 BRIAN PICKARD,

14 Defendant.

Case No. 2:11-CR-00449-KJM-16

DIRECT EXAMINATION OF
CHRISTOPHER CONRAD

15
16 I, CHRISTOPHER CONRAD, declare as follows:

17 I have qualified as an expert witness on marijuana related issues such as cultivation,
18 consumption, genetics, cloning, crop yields, medical use, recreational use, commercial sales, and
19 medical distribution in at least 28 Counties in California, as well as in the states of Colorado,
20 Oklahoma, Oregon, North Dakota, Maryland and the Commonwealth of Virginia. In addition, I
21 have qualified as an expert in all the California District Courts, the District Court for the Middle
22 District of Louisiana, and in Germany at a U.S. Courts Martial.

23 My experience includes the legal cultivation and processing of cannabis in Holland and
24 Switzerland, in accordance with national laws. In addition, I have been asked to consult with
25 government agencies instituting medical marijuana laws, and have testified before the National
26 Academy of Science, Institute of Medicine, and presented my findings at the *Fifth Conference on*
27 *Cannabis Therapeutics*, and the Biannual California Association of Toxicologists Conference.

28 For a more comprehensive description of my training and experience, please see the

1 attached Curriculum Vitae which I attest to be accurate and true.

2 Based on my training and experience, as well as my research, I am attesting to the
3 following facts regarding the criminalization of cannabis under *21 U.S.C. §§ 811 and 812* . If
4 called to testify, I would provide the following information:

5 1. The chemistry of a marijuana plant is known and reproducible. Scientists have
6 identified over 480 natural components found in the *Cannabis sativa* plant, and have classified 66
7 as “cannabinoids” which have further been broken down into six subclasses. Delta-9-
8 tetrahydrocannabinol (THC), the only component known to have a psychoactive effect, has
9 already been synthetically reproduced in the prescription drug Marinol. Like most plants,
10 reproduction can be as simple as planting seeds or taking cuttings from a mother and rooting
11 them in the soil (a process known as cloning). In addition, every known cannabinoid can be, and
12 has been, isolated to allow an examination of each component. In fact, the federal government’s
13 National Institute on Drug Abuse (NIDA) has developed and provided three standardized
14 research-grade potencies of marijuana.

15 2. In 1978, the federal government initiated the Compassionate Investigational New
16 Drug Program (IND), which authorizes cultivation and distribution of medical cannabis to a
17 select group of patients. The marijuana, which is grown at the University of Mississippi, is
18 processed and sent to enrolled patients to be smoked in the form of marijuana cigarettes. This
19 program was established in response to a successful medical necessity defense presented by
20 Robert Randall, who suffered from glaucoma. I am informed and believe that up to 35 patients
21 were approved and 15 enrolled in the program at one time; however, due to the growing number
22 of applicants from patients suffering with AIDS, the program was closed to new patients in 1992.
23 Presently, it is my understanding that there are four remaining patients who each receive 300 or
24 more marijuana cigarettes each month.

25 3. I have personally interviewed many of the IND patients, all of whom report no ill
26 effects from their use of cannabis. In fact the opposite is true, and all those I have spoken with
27 have attested to their improved health and quality of life resulting from their use of cannabis as
28 medicine. While requests to obtain data from the government documenting its success or failure

1 with the IND program have been denied the available information indicates that through the life
2 of the program there have been *no* reports of ill effects suffered by the enrolled patients, rather all
3 available information suggests cannabis as medicine is a remarkable success.

4 4. For example, I am informed and believe that George McMahon wrote a book in
5 2003, and has been on a national tour since 1997 speaking about how cannabis has relieved the
6 pain, spasms and nausea caused by a rare genetic disease called Nail Patelia Syndrome. Prior to
7 his cannabis treatment he had 19 major surgeries, been declared clinically dead five times and
8 was taking 17 different pharmaceutical medications, some of which caused severe side effects
9 resulting in his hospitalization. Mr. McMahon reports that since he was accepted into the IND
10 program in 1990, he smokes 10 marijuana cigarettes daily, and has had *no* surgeries, *no*
11 hospitalizations, and has discontinued the use of *all* pharmaceutical medications. (George
12 McMahon and Christopher Largen, 2003, *Prescription Pot: A Leading Advocate's Heroic Battle*
13 *to Legalize Marijuana*, New Horizon Press.) Similarly, Irvin Rosenfeld, a successful stock
14 broker and one of the surviving IND patients wrote a book called *My Medicine*, in which he
15 describes how the use of medical cannabis helped his multiple congenital cartiliginous
16 exostoses. Seventy-four year old Glaucoma patient Elvy Musikka, gives speaking tours and
17 writes music to promote the merits of medical cannabis. She was born with congenital cataracts
18 and developed glaucoma when in her 30s. During one of several surgeries she lost sight in one,
19 and according to Ms. Musikka the sight in her other eye has been saved through the use of
20 cannabis. All three of above discussed patients have spoken at scientific conferences on the
21 efficacy and safety of using cannabis to treat their serious medical conditions.

22 5. I am informed and believe, that numerous medical associations have called either for
23 legalization of cannabis as medicine, or at minimum further study in specified areas, such as pain
24 treatment, including, but not limited to: the American Medical Association, the American Cancer
25 Society, Epilepsy Foundation of America, American Medical Student Association, American
26 Nurses Association, American Preventive Medical Association, American Public Health
27 Association, American Society of Addiction Medicine and various associations in the following
28 states: Alaska, California, Colorado, Connecticut, Florida, Hawaii, Illinois, Mississippi, New

1 Jersey, New Mexico, New York, North Carolina, Rhode Island, Texas, Vermont, and Wisconsin.

2 6. The Iowa Board of Pharmacy accepted the medical utility of cannabis and moved it
3 out of that state's Schedule I on November 1, 2010.

4 7. In the 18th and 19th Centuries, farmers were legally required to grow marijuana as it
5 was determined to be a necessary product for commerce and the national security of the
6 American people. As recently as 2012, President Obama signed Executive NS2012 authorizing
7 the Secretary of Agriculture to oversee the Nation's supply of hemp for national security
8 purposes. (National Defense Resources Preparedness, § 201(a)(1).) Also, in 2013, both houses
9 of Congress passed legislation within the National Farm Act to authorize hemp cultivation for
10 research.

11 8. The use of cannabis has been recommended and supervised by the medical
12 community since marijuana was first decriminalized for medical use in California in 1996 by a
13 proposition known as the Compassionate Use Act. Since that time physicians have increasingly
14 been willing to recommend cannabis for their patients. It is believed that at least a million
15 Californians use marijuana with a physician's approval or recommendation, and still there have
16 been no reports of a lethal overdose of marijuana, nor detrimental side-effect resulting from its
17 use. In addition, it is apparent that in the 21 states and the District of Columbia where marijuana
18 has been made available for medical use, the physicians have been able to safely administer and
19 supervise their patients' progress.

20 9. Since the passage of the Compassionate Use Act the cost of cannabis has dropped
21 significantly; thereby, reducing the incentive for violent gang and cartel members to involve
22 themselves in the distribution of marijuana. In addition, the quality of the medicine has
23 improved in that quality and labeling controls have been put in place to ensure the product is not
24 tainted with potentially harmful chemicals such as pesticides.

25 10. California has codified the distribution of marijuana in *Cal. Health & Safety Code §*
26 *11362.7, et. seq.* The scope and regulation of this distribution has largely been left to the
27 Counties, although there are some legislative restrictions to the location of dispensaries close to
28 schools and other areas where children predominate. (*Cal Health & Safety Code § 11362.768.*)

1 11. In November of 2012, the people of the states of Colorado and Washington voted to
2 legalize the use of marijuana for all adults regardless of medical need. The federal government
3 thereafter adopted the following policies:

4 (1) Memorandum to U.S. Attorneys from Deputy Attorney General James Cole, issued
5 on August 29, 2013, and entitled “Guidance Regarding Marijuana Enforcement”; which was
6 directed to all United States Attorneys instructing them to decline prosecution of cannabis cases
7 against individuals who are possessing, cultivating and/or distributing marijuana in compliance
8 with a robust regulatory scheme enforced under state law.

9 (2) U.S. Department of the Treasury Memorandum dated February 14, 2014, entitled
10 “BSA Expectations Regarding Marijuana-Related Business,” which permitted banks to accept
11 cash from businesses which distribute marijuana without risking federal prosecution for money
12 laundering.

13 (3) Department of Justice Memorandum dated February 14, 2014, entitled “Guidance
14 Regarding Marijuana-Related Financial Crimes,” which set forth guidelines for banks accepting
15 cash from businesses which distribute marijuana.

16 (4) May 8, 2014 announcement by a spokesperson for the Veterans Administration
17 Eastern Colorado Healthcare System that the use of state-approved marijuana would not
18 disqualify a veteran for healthcare, nor result in any sort of retaliation or denial of services in the
19 State of Colorado.

20 (5) The U.S. House of Representatives passed H.R. 4660 on May 30, 2014, approving
21 the cut of funding for Department of Justice (DOJ) to investigate and enforce the Controlled
22 Substance Act as applied to marijuana (*21 U.S.C. § 841*) in specifically enumerated states.

23 As my experience and expertise includes marijuana issues in both California and
24 Colorado, I am aware of the impact the above described federal action has had on residence of
25 these states.

26 It is my opinion that this government action has caused people to migrate to Colorado in
27 order to minimize the risk of being prosecuted under federal law for cultivating, distributing and
28 using cannabis. Even patients who utilize cannabis as medicine are finding it necessary to

1 relocate, particularly families with children suffering from seizure disorders, and veterans
2 seeking cannabis treatment through the Veterans Administration.

3 I declare under penalty of perjury that the foregoing is true and correct, except for those
4 matters stated on information and belief, and as to those matters I believe them to be true. This
5 declaration signed on the 20th day of June, 2014, in El Sobrante, California.

6 /s/ Christopher Conrad
7 CHRISTOPHER CONRAD

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CHRISTOPHER CONRAD

— Court-qualified cannabis expert —

PO Box 21106, El Sobrante CA 94820

Phone: 510-275-9311 • Fax: 510-275-9245 • Email chris@chrisconrad.com

Curriculum vitae, January 1, 2014

Summary and highlights of experience

Chris Conrad has studied cannabis (marijuana) since 1988. Author of *Cannabis Yields and Dosage*, he also wrote two scholarly books on cannabis, including *Hemp for Health*, and contributed to several others. Presented findings at the *Fifth Clinical Conference on Cannabis Therapeutics* (2008) and California Assn. of Toxicologists (2012). Familiar with many books and scientific studies, including National Institute on Drug Abuse and Drug Enforcement Administration (DEA) data. Consults with government agencies. Reported on dispensaries for California state legislators. Testified before National Academy of Science, Institute of Medicine. Regularly consults with patients, providers and physicians, including some of the world's foremost authorities on cannabis.

Court-qualified as a cannabis expert witness more than 275 times in preparation, consumption, sex, cultivation, odor, genetics, cloning, crop yields, medical use, personal use, dosage, commercial intent, sales, collective associations' activities, etc. Testimony discussed by the California Supreme Court in *People v Kelly* and *People v Mower*. Qualified in at least 38 California counties: Alameda, Butte, Calaveras, Colusa, Contra Costa, Del Norte, El Dorado, Fresno, Glenn, Humboldt, Inyo, Kern, Lake, Los Angeles, Madera, Marin, Monterey, Napa, Nevada, Orange, Placer, Plumas, Riverside, Sacramento, San Francisco, San Joaquin, San Mateo, Santa Clara, Santa Cruz, Shasta, Siskiyou, Solano, Sonoma, Stanislaus, Tulare, Tuolumne, Ventura and Yolo. Testimony mentioned by CA Court of Appeals and Supreme Court. Qualified in US Courts Martial and in the U.S. Ninth Circuit Courts in Northern, Southern and Eastern Districts of California and Fifth Circuit Middle Dist. of Louisiana. Qualified in the States of Colorado, Oklahoma, Oregon, North Dakota, Maryland, Michigan and the Commonwealth of Virginia.

Has since 1991 traveled to Europe numerous times to research cannabis. Has hands-on experience in the breeding, cultivation and processing of cannabis in Holland and Switzerland. Examined personal cannabis gardens in Spain, Argentina, and industrial hemp in Germany and Holland. Observed indoor, outdoor and greenhouse gardens, participated in harvests and processing.

Investigated more than 1750 criminal cases. Reviewed hundreds of police reports and narratives, search warrants, case documents, photos, court transcripts, evidence reports, videos, diagrams, etc. Heard police officers testify at least 150 times. Interviewed scores of defendants and witnesses. Examined, evaluated, weighed, and/or measured forensic material at least 475 times, including microscopic exam, photos, root count, site visit and plant manicure.

Taught accredited CLE courses on marijuana investigations for NORML Criminal Defense Lawyers Committee, Orange County (CA) Office of the Public Defender, and Santa Cruz Criminal Defense Attorneys. Lectured or taught classes on cannabis at institutions including UC Berkeley, Learning Annex, Five Branches Institute, Omega Institute, Mills College, USC, etc. Curator, Hash-Marijuana-Hemp Museum of Amsterdam, designed displays, operating cannabis indoor garden.

Earned Bachelor's degree *magna cum laude* from California State University. Has accredited training by California Medical Association, Institute of Health Professionals, International Association for Cannabis as Medicine, American University, and Nova Institut (Germany). Personally acquainted with patients in the federal Investigational New Drug (IND) medical marijuana program.

Detailed legal qualifications, field research, scientific analysis, literature reviews

- 2013: Qualified as cannabis expert in Kern County Juvenile Court, and in the California Superior Courts of Alameda, Butte, Colusa, Contra Costa, Del Norte, El Dorado, Fresno, Humboldt, Los Angeles, Mendocino, Placer, Sacramento, San Mateo, Shasta, Solano, Sonoma and Tehama Counties on many of the same issues as described in the years below. Qualified as cultivation and processing expert in Michigan court, testified telephonically. Attended presentations on medical marijuana and cultivation at numerous educational events throughout the country including the Bay Area Hempfest, Emerald Cup, International Cannabis and Hemp Expo, International Drug Policy Reform Conference, Rossmore Medical Marijuana Club, Seattle Hempfest, etc. Consulted with the Washington State I-502 implementation team. Prepared educational video for Cannabiz. Curator of the Oaksterdam Cannabis Museum. Faculty member at Oaksterdam University.
- 2012: Presented research on Cannabis Yields and Dosage at NIDA co-sponsored *California Association of Toxicologists Biennial Conference*. Attended CME accredited *Seventh International Clinical Conference on Cannabis Therapeutics* in Arizona. Qualified as a cannabis expert in California Courts in the counties of Butte, Colusa, Contra Costa, El Dorado, Fresno, Humboldt, Los Angeles, Marin, Sacramento, San Diego, San Francisco, San Mateo, Santa Clara, Shasta, Siskiyou, Solano, Sonoma, Tehama, Tuolumne and Yolo. Qualified as a cannabis expert in the State of Maryland. Qualified as a cannabis expert in federal US court, California northern district. Topics include cultivation, yields, consumption, medical use, personal consumption, sales, commercial intent, odor, collective associations' activities, etc. Examined police files, medical records, financial records, transcripts, photos, videos, audiotapes, weighed, photographed, and examined forensic evidence, interviewed defendants, investigated garden sites, heard police testimony and reviewed police training materials. Visited numerous cannabis gardens and dispensaries, met with patient collectives throughout California. Spoke with many cannabis consumers, growers, experts and providers. Curator of the Oaksterdam Cannabis Museum. Faculty member of Oaksterdam University.
- 2011: Qualified as a cannabis expert in Fresno, Kern, Lake, Los Angeles, Napa, Nevada, Sacramento, San Diego, San Francisco, San Luis Obispo, San Mateo, Solano and Yolo Counties. Qualified as a cannabis expert in State of Colorado. Topics include cultivation, yields, consumption, medical use, personal consumption, sales, commercial intent, odor, collectives, etc. Examined police files, medical records, financial records, transcripts, photos, videos, audiotapes, weighed, photographed, and examined forensic evidence, interviewed defendants, investigated garden sites, heard police testimony and reviewed police training materials. Visited numerous cannabis gardens and dispensaries, met with patient collectives throughout California. Spoke with other experts as well as numerous cannabis consumers, growers and providers. Curator of Oaksterdam Cannabis Museum. Faculty member of Oaksterdam University. Consulted with other experts nationally and internationally.
- 2010: Testimony discussed by California Supreme Court in *People v Kelly*. Qualified in numerous counties as an expert on cannabis cultivation, yields, dosage, usage, processing, patient collective organizations, cultivation and operations, lawful and illicit distribution, and related issues in previous years and various counties as detailed below. Qualified as expert on cultivation, medical use, dosage and intent to sell in the Commonwealth of Virginia in Chesterfield County. Taught Mandatory Continuing Legal Education (MCLE) classes in California. Taught accredited CLE for Federal Defenders Of Eastern Washington & Idaho. Examined police files, medical records, financial records, transcripts, photos, videos, audiotapes, weighed, photographed, and examined forensic evidence, interviewed defendants, investigated garden sites, heard police testimony and reviewed police training materials. Consulted with other experts. Faculty of Oaksterdam University. Published revised seventh edition of *Cannabis Yields and Dosage*.
- 2009: Qualified in numerous California counties as an expert on cannabis cultivation, yields, dosage, usage, processing, patient collective organizations, cultivation and operations, lawful and illicit distribution, and related issues in various counties previously listed. Taught accredited CLE in Oregon. Attended

session of the UN High Commission on Narcotic Drugs in Vienna, Austria. Examined and discussed cannabis plants under cultivation in Amsterdam, The Netherlands. Examined personal indoor and outdoor cannabis gardens in Argentina. Participant in the Medical Cannabis Safety Commission. Examined police files, medical records, financial records, transcripts, photos, videos, audiotapes, weighed and examined forensic evidence visually and by microscope, interviewed defendants, investigated garden sites, and heard police testimony as to their training, experience, observations and opinions, thereby familiarizing myself with law enforcement investigative techniques. Viewed numerous indoor and outdoor cannabis gardens. Visited numerous cannabis dispensaries, met with patient collectives throughout California. Consulted with other experts nationally and internationally. Faculty of Oaksterdam University.

- 2008: Qualified as a cannabis expert in Kern, San Diego, numerous other California counties previously listed, and the State of North Dakota. Qualified as an expert on cannabis cultivation, yields, dosage, usage, processing, patient collective organizations and operations, lawful and illicit distribution, and related issues in various counties previously listed. Presented findings on *Cannabis Yields and Dosage* at the CME-accredited *Fifth Clinical Conference on Cannabis Therapeutics*. Participant in the Medical Cannabis Safety Commission. Attended UN International Drug Control Treaty Assessment and Review meeting in Vienna as representative of NGO. Examined personal indoor and outdoor cannabis gardens in Argentina. Examined police files, medical records, financial records, transcripts, photos, videos, audiotapes, weighed and examined forensic evidence visually and by microscope, interviewed defendants, investigated garden sites, heard police testimony and reviewed police training materials. Consulted with other experts. Viewed numerous cannabis gardens. Visited numerous cannabis dispensaries, met with patient collectives throughout the state.
- 2007: Qualified as an expert on cannabis cultivation, yields, dosage, usage, in various counties previously listed. Examined police files, medical records, financial records, transcripts, photos, videos, audiotapes, weighed and examined forensic evidence visually and by microscope, interviewed defendants, investigated garden sites, heard police testimony and reviewed police training materials, familiarizing myself with law enforcement investigative techniques. Consulted with other experts. Viewed numerous cannabis gardens. Visited numerous dispensaries, met with patient collectives, individual patients and caregivers throughout the state. Served on San Francisco DA's cannabis policy taskforce. Faculty member at Oaksterdam University. Gave presentation on medical marijuana regulation to Hawaii State legislators.
- 2006: Qualified as an expert on cannabis odor and detection in federal Northern California district, and in US Courts Martial in Wurzburg, Germany on cultivation, yields, consumption and indicia of intent. Qualified as cannabis expert in California Superior courts of Amador, Fresno, Lake, Humboldt, Los Angeles, Mendocino, Merced, San Bernardino, San Francisco, San Mateo, Santa Clara, Santa Cruz, Siskiyou, Sonoma, and other counties. Research cited to Washington State DOH when it considered the question as to what would constitute a presumptive 60-day medical supply amount. Qualified as an expert on cannabis packaging, consumption, storage and toxicity in Oregon court. Attended CME-accredited *Fourth National Clinical Conference on Cannabis Therapeutics*, UC Santa Barbara. Examined police files, medical records, financial records, transcripts, photos, videos, audiotapes, weighed and examined forensic evidence visually and by microscope, interviewed defendants, investigated garden sites, heard police testimony and reviewed police training materials, familiarizing myself with law enforcement investigative techniques. Consulted with other experts. Viewed numerous gardens. Visited numerous dispensaries, met patient and collectives throughout the state. Served on San Francisco DA's cannabis policy taskforce.
- 2005: Qualified as cannabis expert in California Superior courts of Los Angeles, Calaveras, Lake, Santa Clara, Santa Cruz, Sacramento, Siskiyou, Solano and Orange counties. Participated in San Francisco DA's medical marijuana advisory group. Received two days instruction at Leiden University, The Netherlands, from the International Association for Cannabis as Medicine conference. Toured the

Dutch national medical marijuana garden operated by Bedrocan, B.V. Examined numerous indoor and outdoor cannabis gardens in and around Amsterdam and medical marijuana gardens in California and Oregon. Examined police files, medical records, financial records, transcripts, photos, videos, weighed and examined forensic evidence visually and by microscope, interviewed defendants, investigated garden sites, heard police testimony and reviewed police training materials, familiarizing myself with law enforcement investigative techniques. Consulted with other experts. Viewed gardens, interviewed growers, sellers and consumers of cannabis throughout the state. Taught a CLE on expert issues involving cannabis at the NORML Legal Seminar in Florida. Testimony received favorable mention in California Court of Appeals ruling *People v Urziceau* (2005) 132 Cal.App.4th.

- 2004: Authored and published *Cannabis Yields and Dosage*. Qualified as cannabis expert in the California Superior courts of Humboldt, Alameda, Lake, Yolo, San Francisco, Santa Cruz, Santa Clara, Los Angeles and San Mateo, on issues of cultivation, medical use, consumption, processing, and personal versus commercial intent. Qualified as cannabis expert in State of Oklahoma. Testimony received favorable mention in California Court of Appeals ruling *People v Arbacauskas* (2004) Cal.App.3rd. Examined police files, medical records, financial records, transcripts, photos, videos, weighed and examined forensic evidence visually and under microscope, interviewed defendants, investigated garden sites, heard police testimony and reviewed police training materials, familiarizing myself with police investigative techniques. Consulted with other experts. Viewed gardens, interviewed growers, sellers and consumers of cannabis throughout the state.
- 2003: Qualified as cannabis expert in the California Superior courts of Butte, El Dorado, Fresno, Inyo, Los Angeles, Monterey, Nevada, Sacramento, San Mateo, Santa Cruz, Ventura and Yolo Counties. Qualified as cannabis expert in the Southern District of the Ninth Circuit Federal Court. Examined police files, medical records, financial records, transcripts, photos, videos, weighed and examined forensic evidence visually and under microscope, interviewed defendants, investigated garden sites, heard police testimony and reviewed police training materials, familiarizing myself with police investigative techniques. Taught Continuing Legal Education (CLE) for Defense Attorneys of Santa Cruz County. Viewed gardens, interviewed growers, sellers and consumers of cannabis throughout the state. Consulted on SB 420. Discussed medical marijuana policy with DA Terrence Hallinan of San Francisco and DA Paul Gallegos in Humboldt. Consulted with Senator John Vasconcellos office regarding SB 420. Member of citizen advisory panel that drafted Senate Bill 420, the California Medical Marijuana Program Act.
- 2002: Testimony discussed by California Supreme Court in *People v Mower*. Qualified as cannabis expert in the California Superior courts of Los Angeles, El Dorado, Riverside, Sacramento, San Joaquin, Santa Cruz, Tulare and Yolo Counties on issues of cultivation, medical use, consumption, processing, and personal versus commercial intent. Examined police files, medical records, financial records, transcripts, photos, videos, weighed and examined forensic evidence visually and under microscope, interviewed defendants, investigated garden sites, heard police testimony and reviewed police training materials, familiarizing myself with police investigative techniques. Took 12 hours of accredited training in medical marijuana from Institute for Health Professionals, Portland Oregon. Spent three weeks in Holland where I observed at least 12 cannabis gardens and one week in Italy. In both countries I engaged cannabis cultivators in discussion of their gardens, and yields.
- 2001: Testified as a cannabis expert in California Superior courts of Alameda, Del Norte, Orange, San Joaquin, Sonoma and Ventura Counties on issues of cultivation, medical use, consumption, preparation, and indicia of personal versus commercial intent. Heard court testimony by police officers and other experts. Reviewed numerous court transcripts, search warrants, police reports, evidence lists and case files. Examined medical records, forensic evidence visually and under microscope, analyzed photos and videos, interviewed defendants, reviewed police training materials, and investigated garden sites. Testified as cannabis expert in the Sacramento CA federal district court, on issues of cultivation, consumption, and yields. Gave presentation on yields and consumption to

Berkeley, CA, Health and Safety Commission. Taught an accredited CLE for Orange County Public Defenders office.

- 2000: Testified as cannabis expert in California Superior courts of Butte, Calaveras, Contra Costa, El Dorado, Humboldt, Napa, Placer, Plumas, San Mateo, Shasta, Siskiyou, Santa Cruz, Sonoma and Stanislaus Counties. Qualified on issues of indoor and outdoor cultivation, crop yields, plant sex, olfactory identification (smell), means and rates of consumption, genetic characteristics, indicia of commercial intent, personal and/or medicinal use of cannabis and cannabis preparations, both smoking and otherwise. Investigated cases and provided expert legal services in numerous other counties. Heard court testimony by police officers and other experts. Received seven hours of California Medical Association-accredited training on medical cannabis. Reviewed court transcripts, search warrants, police reports, evidence lists and case files, familiarizing myself with police investigative techniques. Examined forensic evidence and medical records, analyzed photos and videos, interviewed defendants, provided declarations. Researched all aspects of cannabis cultivation and use. Discussed use patterns with at least 30 medical cannabis patients and numerous doctors. Spent four weeks in Amsterdam, where I designed informational exhibits on cannabis and observed indoor cannabis cultivation, curing and processing. Returned in the fall for 10 days observing and discussing cultivation, processing, marketing and consumption with hundreds of American, Dutch and international growers and consumers.
- 1999: Testified as cannabis expert in California Superior courts of Butte, Calaveras, El Dorado, Humboldt, Lake, Los Angeles, Marin, Placer, Santa Clara, Shasta, Solano and Sonoma Counties on issues of cultivation, yields, commercial intent, joint size, rate of consumption, personal and/or medicinal use of cannabis and cannabis preparations, both smoking and otherwise. Investigated cases and provided expert legal services in Alameda, Stanislaus, Napa, Plumas, Sacramento, San Francisco, San Mateo, Santa Barbara and Santa Cruz Counties. Reviewed numerous court transcripts, search warrants, investigator's reports and case files, familiarizing myself with police investigative techniques. Heard court testimony by police officers and other experts. Examined forensic evidence, analyzed photos and videos, inspected garden sites, interviewed witnesses and defendants, provided declarations and reports. Examined numerous California patients' legal cannabis gardens. Discussed use patterns with at least 150 medical cannabis patients and numerous doctors. Read numerous studies and reports by the DEA, NIDA, and other federal government agencies regarding the cultivation, miscellaneous effects, and personal consumption of cannabis. Attended numerous conference presentations on medical marijuana and industrial hemp. Went to the Netherlands to research and monitor legal cannabis cultivation, breeding, distribution and consumption. Examined numerous cannabis gardens in Holland, Germany and Spain. Traveled to Germany to study legal industrial hemp fields and processing facilities, the Hanf (hemp) Museum, and CannaBusiness, an international hemp and cannabis business expo.
- 1998: Testified as qualified expert in the California Superior courts of Butte, Humboldt and Tuolumne Counties regarding cannabis cultivation, yields, plant sex, maturity, preparation, quality, usability, commercial intent versus personal and/or medicinal use, consumption rates, genetics and cannabis preparations, both smoking and otherwise. Reviewed case documents, physical evidence and photos. Investigated cases and/or filed declarations in Alameda, Marin, Merced, Nevada, Placer, San Diego, San Mateo, Santa Cruz, and Sonoma Counties. Examined and evaluated numerous California patients' legal cannabis gardens. Attended numerous conference presentations on medical marijuana and industrial hemp. Read and analyzed *Cannabis Yields*, a cultivation and yield report by the federal DEA and numerous studies by NIDA, and other government agencies regarding the, miscellaneous effects, and personal consumption of cannabis. Discussed use patterns with at least 250 medical cannabis patients and numerous doctors.
- 1997: Testified as qualified expert in the California Superior court of Marin County regarding crop yields, medical marijuana and personal consumption. Reviewed case documents, physical evidence and

photos. Authored *Hemp for Health*. Researched medical literature, visited and surveyed patient gardens. Visited and surveyed patient buyers clubs and discussed medical use of cannabis with at least 300 patients and 20 doctors. Read at least 100 abstracts, studies and peer reviewed medical literature regarding the therapeutic utility of cannabis. Chapters cover cannabis history, botany, pharmacology, clinical research, homeopathy, Ayurvedic medicine, herbalism, therapeutic potential, cannabinoids, side effects, safety tips, recipes for smoked and eaten preparations, and specific symptomatic relief, including diagrams and reference tables, topical applications, nutrition and holistic health care. Attended CannaBusiness Expo, in Germany. Visited patient gardens and buyers clubs throughout California, following passage of Prop 215. Conducted the first survey of state dispensaries at the request of Assemblyman Senator John Vasconcellos office. Consulted and participated in a legal outdoor cannabis harvest in Switzerland of at least six hectares of plants grown by subcontractors for CannaBioLand, a legal commercial enterprise. Selected and harvested cannabis based on sex, ripeness and mold infestation. Participated in sexing, selecting, cutting, curing, manicuring, and otherwise preparing herb for consumption. Investigated legal cannabis outlets throughout Switzerland. Addressed a hearing of the National Academy of Science on medical marijuana.

- 1996: Attended numerous scientific presentations and surveys of scientific studies regarding specific medical and personal use of cannabis including pharmacology and symptomatic relief. Discussed use patterns with at least 400 medical marijuana patients and numerous doctors. Monitored legal cannabis indoor cultivation projects at Sensi Seed Bank, the Hash-Marijuana-Hemp Museum, and at Positronics, b.v., in Amsterdam. Observed and interviewed patients, doctors, caregivers and cannabis culture in the US, Canada and Europe.
- 1995: Monitored legal cannabis indoor cultivation projects at Sensi Seed Bank, the Hash-Marijuana-Hemp Museum, and at Positronics, b.v., in Amsterdam. Discussed medical cannabis and use patterns with at least 300 patients and numerous doctors.
- 1994: Qualified as expert witness in the California Superior court of Madera County on industrial hemp and hempseed. Studied and consulted on Hemp Agrotech's research crop of industrial hemp grown in the Imperial Valley (California) in conjunction with the US Department of Agriculture research station. Met and had informal consultations with owners of Hempline, the first Canadian group to grow a research crop of industrial hemp in North America. Toured hemp stores and museums throughout the US and Canada. Monitored legal cannabis indoor cultivation projects at Sensi Seed Bank, the Hash-Marijuana-Hemp Museum, Positronics, b.v., and at numerous other cannabis gardens located in Amsterdam. Discussed medical use and patterns with at least 100 patients and numerous doctors.
- 1993: Authored *Hemp: Lifeline to the Future*, a comprehensive study of the cannabis plant, including a chapter on cannabis botany. Read at least 100 abstracts, studies and peer reviewed medical literature regarding the therapeutic and industrial utility of cannabis. Spent six months in The Netherlands where I designed and arranged informational exhibits and curated the Hash-Marijuana-Hemp Museum in Amsterdam; collected items, prepared and labeled informational displays and explanatory materials, produced handouts for visitors, maintained a library about cannabis, supervised a legal indoor cannabis "grow room" exhibit featuring hydroponic systems, soil, plants from seed and clones, sexing to maturity, harvest, cure and manicure. Utilized various lighting systems and cycles; evaluated growing techniques and yields, planting densities, and pruning patterns; advised in the design of and adjustments to the system and its operation. Field research included investigation and discussion of social use, customs, commercial sales, consumption patterns, medical case histories, regional cultures, kif and hash making, evaluating quality and use of herbal cannabis. Experimented with raw stalk, fibers, hempseed foods and cannabis medicinal preparations including derivatives, tinctures and poultices. Traveled through France, Holland and Hungary researching legal commercial hemp farms and processing. Made a national tour of Dutch cannabis outlets and interviewed the proprietors, staff and clientele. Monitored legal cannabis indoor cultivation projects at Sensi Seed

Bank, the Hash-Marijuana-Hemp Museum, and at Positronics, b.v., in Amsterdam. Discussed use patterns with at least 200 medical marijuana patients.

1992: Spent six weeks in The Netherlands working at “Cannabis Castle,” a primary facility of Sensi Seed Bank, a legal Dutch cannabis research and breeding company. Participated and monitored all aspects of cultivation from starting seedlings and rooting clones to sexing plants, genetic selection and pollination, hybridization, seed selection and processing for indoor, outdoor and greenhouse varieties. Monitored flower development, resin enhancement, yields, curing, processing and manicure. Researched various genetic materials for characteristics. Met with researchers at Wageningen University (Netherlands) research facility on industrial and horticultural aspects of cannabis hemp. Made a national tour of regional Dutch cannabis outlets and interviewed the proprietors, staff and clientele.

1989-Present: National and international conferences. Ongoing cannabis research, reviewing scientific, law enforcement and media reports. Personally discussing the production, processing and consumption of cannabis products with thousands American, Dutch, Argentine, Canadian and other international consumers, patients, growers and providers.

Formal Education

2012: Attended CME and university accredited *Seventh International Clinical Conference on Cannabis Therapeutics* in Arizona.

2008: Attended and presented findings on *Cannabis Yields and Dosage* at the CME-accredited *Fifth Biennial Clinical Conference on Cannabis Therapeutics*, Asilomar California.

2006: Attended CME-accredited *Fourth Biennial Clinical Conference on Cannabis Therapeutics*, Santa Barbara California.

2005 Received two days instruction at Leiden University, The Netherlands, at the International Association for Cannabis as Medicine conference.

2002: CME-accredited *Second Biennial Clinical Conference on Cannabis Therapeutics*, 12 hours accredited training in medical marijuana, Institute for Health Professionals, Portland Oregon

2000: Attended 7 hours California Medical Association CME-accredited training at the “Cannabis Therapy: Science, Medicine and the Law” symposium at Cal State University San Francisco.

1995: Attended 20 hours Euroean university-accredited training in cannabis botany, agriculture, horticulture, pharmo-chemistry, industrial technologies and medical use at Biofach international symposium, Nova Institute, Frankfurt Germany.

1993: Attended 18 hours accredited training in cannabis botany, agriculture, horticulture, pharmo-chemistry, industrial technologies, medical use and policy at Journee du Cannabis, Paris, France.

1980: Bachelor’s degree. Fine Arts / Communication, California State University Dominguez Hills, Los Angeles California. Graduated *Magna cum laude*. Biology course included botany.

1973: Associate’s degree in Humanities / Fine Arts, Frederick Community College, Frederick Maryland. Graduated *Cum laude*. Biology course included botany.

1967-69: Attended Maryknoll Catholic Seminary, Chesterfield, Missouri.

Books authored or assisted

2004 – Present: *Cannabis Yields and Dosage*, as revised and expanded. Seventh edition published, 2010.

2001: Second edition of *Human Rights and the US Drug War* (Creative Xpressions). Hemp for Health translated into Portuguese as *Hemp: O uso medicinal de maconha*.

2000: Revised printing of *Shattered Lives: Portraits from America’s Drug War* (Creative Xpressions).

- 1999: Contributed to revised *The Very Best of Sinsemilla Tips* (New Moon). Co-authored *Human Rights and the US Drug War* (Creative Xpressions).
- 1998: *Hemp for Health* translated *Heilpflanze Haschisch* (German, Knaur), and *Cannabis para la Salud* (Spanish, M. Roca). Co-authored *Shattered Lives: Portraits from America's Drug War* (Creative Xpressions).
- 1996: Authored *Hemp for Health* (Inner Traditions), reviewing scientific data on medical, physiological and psychological effects of cannabis. It discusses medical cannabis in allopathy, homeopathy, herbalism and Ayurveda; THC and other cannabinoids, hempseed nutrition, uses of seed oil, holistic and ecological value of hemp as a restorative resource. Bibliography, footnotes and appendices. *Hemp, Lifeline to the Future* Australian edition published; *Cannabis, 1 mille usi di una pianta miracolosa*. (Italian, Carravecchi)
- 1995: Contributed portions on the development of the modern hemp industry and fuel potential of industrial hemp to *The Great Book of Hemp*, by Rowan Robinson (Inner Traditions).
- 1994: Contributed a chapter on market potentials to *Hemp Today* compilation (Quick American).
- 1993: Authored *Hemp, Lifeline to the Future* (Creative Xpressions), a comprehensive review of the industrial, medicinal and social / spiritual applications of cannabis with technical data on how to grow and process cannabis, its history, commerce, technologies, botany, ecology, cultivation and medical uses. Contributed chapter to *Le Premier Journee Internationale du Cannabis* (French: Lezard).
- 1990: Designed and edited *The Emperor Wears No Clothes*, by Jack Herer (Hemp Publishing).

Supreme Court cites, legislative and advisory consultation, teaching, conferences, lectures, symposia

- 2012: Presented research on Cannabis Yields and Dosage at NIDA co-sponsored *California Association of Toxicologists Biennial Conference*.
- 2011: Curator, Oaksterdam Cannabis Museum. Qualified as court expert on cultivation in state of Colorado.
- 2010: Testimony discussed by California Supreme Court in *People v Kelly*. Taught accredited CLE for Federal Defenders Of Eastern Washington & Idaho.
- 2008 – 2009: Participant in the Medical Cannabis Safety Commission, based in Berkeley CA. Attended UN International Drug Control Treaty Assessment and Review in Vienna as representative of NGO.
- 2008: Presented findings on *Cannabis Yields and Dosage* at the CME-accredited *Fifth Clinical Conference on Cannabis Therapeutics*.
- 2007: Gave presentation on medical marijuana regulation to Hawaii State legislators.
- 2005 - 2010: Member of San Francisco District Attorney Kamala Harris's Cannabis Advisory Panel.
- 2004: Testified before the Oakland City Council and Humboldt County Board of Supervisors.
- 2003: Testified before the County Board of Supervisors for the counties of Kern and San Francisco, Oakland Public Safety Committee. Taught CLE seminar for Santa Cruz Criminal Defense Attorneys.
- 2002: Testimony discussed by California State Supreme Court in *People v Mower*.
- 2001: Presented expert testimony and prepared displays on issues of cannabis cultivation and consumption and presented a report to Berkeley Public Health and Safety Commission; guest lectured in political science at University of California, Berkeley. Consulted with Sonoma Alliance for Medical Marijuana in developing guidelines adopted by County District Attorney.
- 2000: Keynote speaker on medical marijuana at Alameda Medical Group staff dinner. Guest lectured at Mills College. Presented expert testimony for the City of Martinez (CA) on the federal IND medical marijuana program, garden yields and consumption. Presented data on medical marijuana use and cultivation at the Drug Policy Foundation conference, Washington DC. Gave presentations at Santa Cruz Industrial Hemp Expo (CA). Gave two presentations at Cannabis College (Amsterdam).

- 1999: Guest lectured at Mills College; gave presentations at University of California Davis Forum, UC Berkeley Global Crisis Solutions Conference, CannaBusiness (Germany), Cannabis College (Netherlands), Natural Products Expo, and Santa Cruz Industrial Hemp Expo.
- 1998: Taught cannabis at the Omega Institute (NY). Testified at National Academy of Science / Institute of Medicine hearings on medical marijuana (Irvine). Presented report on medical cannabis to SSSP sociologists convention. Gave presentations at the Hemp Industries Association convention, Santa Cruz Industrial Hemp Expo, VisionQuest, State of the World Forum and National Organization to Reform Marijuana Laws (NORML). Debated former DEA head Peter Bensinger at Cal State University, Northridge.
- 1997: Participated in legislative advisory panel for California medical marijuana research bill SB 535. Supported legislative efforts on industrial hemp bills in 12 state legislatures. Taught classes on medical cannabis at Learning Annex, Five Branches Institute, and California legal patient groups. Lectured on hemp at Eco Expo, Natural Products Expo, and on cannabis research at the Drug Policy Foundation (DPF) conference plenary session.
- 1996: Consulted on hemp legislation with State Representatives Fred Maslack of Vermont and David Tarnas of Hawai'i. Authored the industrial hemp plan for the Jamaican government). Coordinated petitioners for California medical marijuana initiative, Prop. 215 (passed). Testified at Oakland City Council and Contra Costa County Supervisors on medical cannabis, regulations and options. Lectured at Stanford University. Lectured at Eco Expo and Whole Life Expo (CA). Participant in State of the World Forum (CA). Panelist in DPF conference (Washington DC) plenary session on medical cannabis.
- 1995: Met with European Cities on Drug Policy staff to discuss the Frankfurt Resolution on cannabis policy. Testified at Colorado State Senate Agriculture Committee hearing on economic and agricultural value of low-THC industrial hemp as a farm crop, European hemp regulations and subsidies, infrastructure and other commercial aspects, and genetic and environmental influences that maintain the non-drug characteristic of industrial hemp. Panelist in DPF conference plenary session on hemp. Spoke at Land, Air and Water legal conference (Oregon), Chapman University (CA), Whole Earth Expo (CA), Winnipeg University (Canada), European Cannabis Consumers Organization organizing conference (Netherlands). Attended four day *Biorohstoff Hanf* symposium (Nova Institut, Frankfurt, Germany).
- 1994: Had discussions with Eric Fromberg, head of The Netherlands National Institute on Alcohol and Drugs, and other Dutch officials regarding their policy of tolerance, regulation and control of cannabis distribution. Panelist in ACLU drug policy forum (Los Angeles CA). Chapman University (CA). Presented hemp seminars throughout Holland and the US.
- 1993: Presenter at *Le Premier Journee Internationale du Cannabis* (Paris, France). Had discussions with Eric Fromberg, head of the Dutch National Institute on Alcohol and Drugs, and other officials regarding their policy of regulation and control of cannabis distribution.
- 1992: Testified on hemp development and regulatory options at the US Congressional Hearings on Improving the Operations and Activities of the United Nations (Los Angeles, CA).
- 1991: Consulted with Senator Joseph Galiber (NY) to develop separate industrial hemp and cannabis bills. Guest lectured at University of Southern California (USC) program for substance abuse counselors.

Some Honors and Awards

- 2010: Lifetime Achievement Award, Oaksterdam University.
- 2008: Freedom Fighter of the Year, Los Angeles NORML.
- 2004: Achievement in Citizen Activism, from NORML.
- 2002: Strathmore's Who's Who.
- 2001: Strathmore's Who's Who. Lindesmith Center "Robert Randall Award."
- 2000: San Francisco *Bay Guardian* Local Hero Award. Hemp Awareness Group Award.
- 1999: Top 10 Activist of the Century, High Times magazine.

- 1998: Hemp Industries Association President's Award.
- 1991: Long Beach Area Citizens Involved Achievement Award.
- 1980: Who's Who in American Colleges and Universities;
- 1972: Who's Who in American Junior Colleges.
- Born: March 10, 1953.