

# Margaret M. Gedde, MD, PhD, DABPath

## Gedde Whole Health LLC

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### Degrees, Certificates, Licenses

1981	B.A.	Barnard College, Columbia University (Biochemistry) Cum Laude
1993	M.D.	Stanford University School of Medicine
1993	Ph.D.	Stanford University Department of Chemistry (Biophysical Chemistry)
1997		Board Certification, Clinical Pathology, American Board of Pathology
2003–2006		Medical Licensure: Hawaii
2004–Active		Medical Licensure: Colorado
2023–Active		Medical Licensure: Virginia

### Areas of Expertise

Forensic toxicology test interpretation for cannabinoids, alcohol, methamphetamine, benzodiazepines, opiates, cocaine, phencyclidine, and other substances in blood, urine, oral fluid, and hair, including postmortem sampling. Cannabinoid pharmacokinetics. Marijuana driving impairment. Cannabinoid medicine. Cannabinoids for management of epilepsy. Clinical risk assessment. Medical cannabis and hemp product testing. Expert witness report preparation. Expert witness testimony.

### Current and Previous Positions

2020–Current	<b>Expert Witness Service</b> <u>Expert Witness</u> , Gedde Whole Health, LLC Contract expert witness for legal cases involving forensic toxicology testing
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I provide consulting and testifying services for cases involving forensic toxicology testing and for any legal case involving cannabis. I have been retained for criminal, civil, employment, parental, regulatory, and patent cases. When requested, I prepare expert opinion reports and testify at depositions, hearings, and trials to provide triers of fact with a clear understanding of complex issues and assist them in deciding difficult questions. I have a particular interest and expertise in interpretation of blood cannabinoid panels in THC DUI cases.

Since 2015, I have been retained as an expert for 73 cases and have testified 16 times at a deposition, hearing, or trial. Toxicology tests were involved in 59 cases, and I provided testimony for 10 of these. No court has failed to admit me as an expert in toxicology.

Regarding marijuana driving impairment: of the 16 cases for which I have prepared an expert report, drug impairment charges were dropped or the juries acquitted or hung in 15 of them following my input.

2009–Current      **Medical Cannabis Clinical Practice**  
Staff Physician and Medical Director, Vibrant Health Clinic LLC  
2011–2020, Colorado Springs, CO  
Solo Practice Physician, Gedde Whole Health, LLC  
2020–Current, Fredericksburg, VA  
2013–2020, Buena Vista, CO  
2009-2013, Multiple Sites in Colorado

As a provider of medical cannabis-related physician services, I have performed over 21,000 patient visits and counseling sessions, including individualized clinical risk assessments, since 2009. Currently, I have an ongoing, telemedicine-only medical cannabis practice guiding a small number of long-term patients in the use of cannabinoids for management of epilepsy.

My medical cannabis-related activities include:

- Pioneered methods of clinical practice in the emerging Colorado medical marijuana space.
- Developed cannabinoid medicine best practices.
- First Colorado physician to approve cannabinoid therapy for a pediatric epilepsy patient.
- Trained and supervised other medical cannabis physicians.
- Presented continuing medical education talks on use of cannabinoids in pediatric epilepsy.
- Developed and taught the patient-oriented telecourse "How to Use Cannabis Oil for Epilepsy."
- Advised investment firms on regulatory environment, product viability, and investment value.
- Served on seven cannabis industry medical and scientific advisory boards.
- Collaborated with academicians on clinical research projects, resulting in two publications.

2003–2008      **General Clinical Practice—Alternative & Holistic Physician Services**  
Private Practice Physician, Gedde Whole Health, LLC  
2004-2008, Salida, CO  
2003-2004, Maui, HI

Implemented intensive, closely monitored hormonal rebalancing and nutritional support protocols for select patients, aimed at relief of debilitating symptoms and restoration of quality of life.

2002–2003      **Pharmaceutical Development Consultants, LLC**  
Principal Consultant

Provided pharmaceutical development consulting services to multiple pharmaceutical companies in support of their pre-clinical and clinical anti-infective development programs.

1999–2002      **IntraBiotics Pharmaceuticals, Inc.**, Mountain View, CA  
Department of Microbiology  
6/2001–4/2002      Director  
10/2000–6/2001      Assistant Director  
9/1999–9/2000      Senior Scientist

Implemented microbiology portions of anti-infective programs in clinical development in a team matrix environment. Devised and implemented integrated microbiology development plans. Developed data analysis

plans for customized microbiology data. Developed and validated clinical trial testing protocols in collaboration with the clinical department, clinical investigators, and study sites.

Wrote the microbiology sections of clinical protocols and clinical study reports for phase 1 to phase 3 studies. Communicated the significance of research findings and championed the needs of my department to clinical, regulatory, and marketing stakeholders. Managed external contractors responsible for clinical trial testing. Developed relationships with external investigators and laboratory professionals. Supervised and mentored five junior microbiologists.

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| 1995–1997 | <b>University of Pennsylvania School of Medicine</b> , Philadelphia, PA<br>Postdoctoral Fellow, Department of Microbiology                                |
| 1997–1999 | <b>University of California at Berkeley</b> , Berkeley, CA<br>Postdoctoral Fellow, Department of Molecular and Cell Biology<br>Advisor: Daniel A. Portnoy |
| 1996–1999 | Howard Hughes Medical Institute (HHMI) Physician Postdoctoral Fellow  |

Completed structure-function studies of pathogenicity of the pore-forming bacterial toxin listeriolysin O. Demonstrated that the pH-dependence of listeriolysin O, a pore-forming virulence factor of the intracellular pathogen *Listeria monocytogenes*, compartmentalizes the activity of the toxin and prevents premature destruction of the host cell.

In response to my competitive grant application “Structural Basis of the pH Dependence of the Bacterial Pore-Forming Toxin Listeriolysin O,” I was awarded an HHMI Physician Postdoctoral Fellowship. Research methods included protein purification, site-directed mutagenesis, exchange of mutant alleles, and tissue culture and animal model investigation of mutant and native protein expression.

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| 1993–1997 | <b>University of Pennsylvania Medical Center</b> , Philadelphia, PA<br><u>Resident and Clinical Instructor</u> ,<br>Division of Laboratory Medicine,<br>Department of Pathology and Laboratory Medicine |
| 1994–1995 | <u>Chief Resident</u> , Division of Laboratory Medicine   |
| 1997      | Board Certification, Clinical Pathology   |

Trained on all laboratory medicine services—clinical chemistry (including medical and forensic toxicology), clinical microbiology, hematology, immunology, molecular genetics, and transfusion medicine—in support of clinical services and therapeutic areas throughout the hospital via consultations, nightly call, and clinical rounds. As Chief Resident, I led rounds, organized didactic series, and liaised with administration and faculty. As Clinical Instructor, I taught general pathology and advanced topics to medical students and designed and taught a course on basics of laboratory testing for nurses.

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| 1985–1993 | <b>Stanford University School of Medicine</b> , Stanford, CA<br><b>Stanford University Department of Chemistry</b> , Stanford, CA<br>MD-PhD Doctoral Student (Biophysical Chemistry)<br>Thesis: “Cell pH-Mediated Shape Change in the Human Erythrocyte” |
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Furthered understanding of protein-membrane interactions in the red blood cell membrane model. Solved the paradox of pH-associated red cell shape by developing assays and mathematical models for red cell physiological relationships, performing nonlinear multivariate statistical analysis on a 500-entry dataset, and assessing red cell

protein-membrane interactions using a hydrophobic, radio-iodinated, photoactivatable membrane probe. Served as a teaching assistant in the advanced undergraduate physical chemistry course.

1985–1986      **Stanford University School of Medicine**, Stanford, CA  
Medical Student Research Assistant, Department of Neurology

Developed a chromium-51 assay of damage to primary neurons in culture and used it to assess glutamate neurotoxicity.

1984–1985      **The Rockefeller University**, New York, NY  
Research Assistant, Laboratory of Metabolism/Pharmacology

Performed clinical assays of hemoglobin synthesis pathway enzymes and intermediates using biochemical and organic chemical separations and assays.

1983–1984      **Memorial Sloan-Kettering Cancer Center**, New York, NY  
Research Assistant, Laboratory of Developmental Genetics

Investigated the molecular basis of a murine developmental defect using tissue culture and protein chemistry approaches.

## **Presentations**

- 10/12/2024      **Society of Cannabis Clinicians, Baltimore MD**  
2nd Annual Medical Cannabis Conference  
Poster Presentation: “Physician-Guided Titration of Cannabidiol for Optimized Seizure Control”
- 11/21/2022      **Pennsylvania Bar Institute, Philadelphia PA**  
Medical Marijuana and Hemp Law Symposium  
Invited Panelist: “The Medical Perspective: Use, Research, Hurdles”
- 09/12/2022      **Colorado Office of Respondent Parents’ Counsel, Colorado Springs CO**  
Seventh Annual Conference  
Invited Speaker: “Parental Use of Marijuana: What Is the Harm”
- 02/25/2022      **Colorado Office of Respondent Parents’ Counsel (Virtual Meeting)**  
3rd Annual Carrie Ann Lucas Disability Advocacy Training  
Invited Speaker: “Can Cannabis Be Part of Safe Parenting?”
- 09/15/2019      **Elevated Wellness Conference, Denver CO**  
Benefits of Bringing Cannabis into Your Medical Practice  
Invited Speaker: “Reflections from a Medical Cannabis Physician”
- 11/16/2016      **Marijuana for Medical Professionals, Denver CO**  
Second Biannual Conference  
Invited Speaker: “Clinical Experience with Cannabis in Pediatric Epilepsy”

- 05/10/2016      **Society of Cannabis Clinicians Colorado, Denver CO**  
Member's Meeting  
Invited Speaker: "Increased Plant Counts: A Physician's Rationale and Tool Kit"
- 09/24/2015      **Northern Colorado Health Alliance, Denver CO**  
Third Annual Conference on Pain Management and Opioids  
Invited Panel: "Role of Medical Cannabis in Treatment of Chronic Pain"
- 09/10/2014      **Marijuana for Medical Professionals, Denver CO**  
First Biannual Conference  
Invited Speaker: "Clinical Experience with Cannabis in Treatment-Resistant Pediatric Epilepsy"

### Corporate Board Memberships

- 2019-2020**      **Pure Harvest Solutions, Denver, CO**  
Scientific Advisory Board  
Manufacturer of cultivation-support products
- 2016**            **Cannabistry, Niles, IL**  
Scientific Advisory Board  
Operator of platform for research and development of cannabis-infused products
- 2015-2016**      **Knox Nursery, Inc, Winter Garden, FL**  
Advisory Committee  
Cultivation company applicant for Florida medical cannabis registration
- 2015-2016**      **Chestnut Hill Tree Farm, LLC, Alachua, FL**  
Advisory Committee  
Cultivation company applicant for Florida medical cannabis registration
- 2015-2016**      **Bloomfield Industries, Staten Island, NY**  
Advisory Board  
Producer and distributor of medical marijuana products
- 2015**            **Compassionate Care Center of New York, Carle Place, NY**  
Medical Advisory Board  
Biopharmaceutical company applicant for New York State medical cannabis registration
- 2013-2015**      **CannLabs, Inc, Denver, CO**  
Scientific Advisory Board  
Analytical laboratory serving cannabis cultivators, manufacturers, and patients

## Honors and Awards

1985	Kevin Walton Summer Fellowship
1990–1992	Jameson Research Foundation Fellowship
1995–1996	Infectious Diseases and Virology Training Grant (NIH)
1996–1999	Howard Hughes Medical Institute Physician Postdoctoral Research Fellowship

## Publications

Peer-Reviewed Article	Rhyne DN, Anderson SL, <b>Gedde MM</b> , Borgelt LM. Effects of Medical Marijuana on Migraine Headache Frequency in an Adult Population. <i>Pharmacotherapy</i> . 2016 May;36(5):505-10.
Abstract	American Epilepsy Society Annual Meeting, Washington, DC, Dec 2013. <b>Gedde MM</b> , Maa E. Whole Cannabis Extract of High Concentration Cannabidiol May Calm Seizures in Highly Refractory Pediatric Epilepsies. December 6-10, 2013.
Peer-Reviewed Article	Chen JY, Brunauer LS, Chu FC, Hesel CM, <b>Gedde MM</b> , Huestis WH. 2003. Selective amphipathic nature of chlorpromazine binding to plasma membrane bilayers. <i>Biochimica Biophysica Acta (Biomembranes)</i> 1616(1):95-105.
Peer-Reviewed Article	Baden LR, Critchley IA, Sahm DF, So W, <b>Gedde M</b> , Porter S, Moellering RC Jr, Eliopoulos G. 2002. Molecular characterization of vancomycin-resistant enterococci repopulating the gastrointestinal tract following treatment with a novel glycolipodepsipeptide, ramoplanin. <i>Journal of Clinical Microbiology</i> 40:1160-3.
Peer-Reviewed Article	Glomski IJ,* <b>Gedde MM</b> ,* Tsang AW, Swanson JA, Portnoy DA. 2002. The <i>Listeria monocytogenes</i> hemolysin has an acidic pH optimum to compartmentalize activity and prevent damage to infected host cells. <i>Journal of Cell Biology</i> 156:1-12. *These authors contributed equally.
Abstract	North American Cystic Fibrosis Conference, Orlando, FL, Oct 2001. Loury DL, <b>Gedde MM</b> , Woods DE. "Aerosolized protegrin analog iseganan (IB-367) reduces microbial density in a rat model of lung infection with <i>Pseudomonas aeruginosa</i> ." October 25-28, 2001.
Abstract	1st Intl Symp on Resistant Gram-Positive Infections, San Antonio, TX, Dec 2000. White DJ, Visweswaran V, So W, Hurst MA, <b>Gedde MM</b> . "Resistance profile of ramoplanin, a novel glycolipodepsipeptide with selective gram-positive activity." December 3-5, 2000.
Abstract	Symposium on Pore-Forming Toxins, Trento, Italy, Sep 2000. Glomski IJ, <b>Gedde MM</b> , Portnoy DA. "Increasing the hemolytic activity of listeriolysin O at neutral pH decreases the virulence of <i>Listeria monocytogenes</i> ." September 14-17, 2000.
Abstract	American Society for Microbiology, Los Angeles, CA, May 2000. <b>Gedde MM</b> , Glomski IJ, Portnoy DA. "The role of the acidic pH optimum of listeriolysin O in <i>Listeria monocytogenes</i> pathogenesis." 100th General Meeting. Abstract D-59, p 239.

- Abstract 1st Int ASM Conference on Enterococci, Banff, Alberta, Canada, Feb 2000. Baden L, Critchley I, Sahm D, So W, **Gedde MM**, Porter S, Moellering RC Jr, Eliopoulos G. "Pulsed-field gel electrophoresis of VRE DNA isolated during a phase II clinical study of the novel glycolipodepsipeptide ramoplanin." February 27 to March 2, 2000.
- Abstract 1st Int ASM Conference on Enterococci, Banff, Alberta, Canada, Feb 2000. So W, White DJ, **Gedde MM**. "Comparison of selective media for isolation of vancomycin-resistant enterococci." February 27 to March 2, 2000.
- Peer-Reviewed Article **Gedde MM**, Higgins DE, Tilney LG, Portnoy DA. 2000. Role of listeriolysin O in cell-to-cell spread of *Listeria monocytogenes*. *Infection and Immunity* 68:999-1003.
- Peer-Reviewed Article **Gedde MM**, Yang E, Huestis WH. 1999. Resolution of the paradox of red cell shape changes in low and high pH. *Biochimica et Biophysica Acta* 1417:246-253.
- Abstract Biophysical Society, Baltimore, MD, Feb 1999. **Gedde MM**, Portnoy DA. "Structural basis of the pH-dependence of the pore-forming protein listeriolysin O." *Biophysical Journal* 76:22a.
- Abstract American Society for Cell Biology, San Francisco, CA, Dec 1998. Chen JY, Chu FC, **Gedde MM**, Huestis WH. "Selective electrostatic interactions of chlorpromazine with plasma membrane components." *Molecular Biology of the Cell* 9:80a.
- Abstract American Society for Cell Biology, Washington, D.C., Dec 1997. **Gedde MM**, Higgins DE, Tilney LG, Portnoy DA. "Role of the pore-forming protein, listeriolysin O, in the cell-to-cell spread of *Listeria monocytogenes*." *Molecular Biology of the Cell* 8:237a.
- Peer-Reviewed Article **Gedde MM**, Davis DK, Huestis WH. 1997. Cytoplasmic pH and human erythrocyte shape. *Biophysical Journal* 72:1234-1246.
- Peer-Reviewed Article **Gedde MM**, Huestis WH. 1997. Membrane potential and human erythrocyte shape. *Biophysical Journal* 72:1220-1233.
- Peer-Reviewed Article Mazzaccaro RJ, **Gedde MM**, Jensen ER, van Santen HM, Ploegh HL, Rock KL, Bloom BR. 1996. Major histocompatibility class 1 presentation of soluble antigen facilitated by *Mycobacterium tuberculosis* infection. *Proceedings of the National Academy of Science, USA* 93:11786-11791.
- Peer-Reviewed Article **Gedde MM**, Yang E, Huestis WH. 1995. Response of human erythrocyte shape to altered cell pH. *Blood* 86:1595-1599.
- Review **Gedde MM**, Kricka LJ. 1994. Rhabdomyolysis. *Endocrinology and Metabolism In-Service Training and Continuing Education* 12(9): 241-246.
- Review **Gedde MM**, Kricka LJ. 1994. Serum ferritin measurement: a case study approach to quality improvement. *Endocrinology and Metabolism In-Service Training and Continuing Education* 12(7): 179-183.

- Thesis **Gedde MM**. 1993. Cell pH-mediated shape change in the human erythrocyte. Department of Chemistry, Stanford University.
- Abstract American Society for Cell Biology, New Orleans, LA, Dec 1993. **Gedde MM**, Yang E, Huestis WH. Hydrophobic protein-lipid associations in human erythrocyte cell pH-mediated shape change." *Molecular Biology of the Cell* 4:85a.
- Abstract Biophysical Society, San Francisco, CA, Feb 1991. **Gedde MM**, Huestis WH. Human erythrocyte shape change induced by changes in buffer pH is most dependent on changes in cytoplasmic pH." *Biophysical Journal* 59:639a.
- Abstract American Society for Cell Biology, Houston, TX, Dec 1989. **Gedde MM**, Huestis WH. "Roles of internal pH, cell volume, and membrane potential in human erythrocyte pH-induced shape change." *Journal of Cell Biology* 109:175a.
- Peer-Reviewed Article Choi DW, **Maulucci-Gedde M**, Kriegstein AR. 1987. Glutamate toxicity in cortical cell culture. *Journal of Neuroscience* 7:357-368.
- Peer-Reviewed Article **Maulucci-Gedde M**, Choi DW. 1987. Cortical neurons exposed to glutamate rapidly leak preloaded 51-chromium. *Experimental Neurology* 96:420-429.