

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF WISCONSIN

ASHTON WHITAKER, a minor, by his
mother and next friend,
MELISSA WHITAKER,

Plaintiff,

Civ. Action No. 2:16-cv-00943

KENOSHA UNIFIED SCHOOL DISTRICT
NO. 1 BOARD OF EDUCATION and SUE
SAVAGLIO-JARVIS, in her official capacity as
Superintendent of the Kenosha Unified School District
No. 1,

Defendants.

EXPERT DECLARATION of Paul W Hruz, M.D., Ph.D

1. I have been retained by counsel for Defendants as an expert in connection with the above-captioned litigation. I have actual knowledge of the matters stated in this declaration. My professional background, experience, and publications are detailed in my curriculum vitae, a true and accurate copy which is attached as Exhibit A to this declaration.

2. I received my doctor of philosophy degree from the Medical College of Wisconsin in 1993. I received my medical degree from the Medical College of Wisconsin in 1994. I am an Associate Professor of Pediatrics in the Division of Pediatric Endocrinology and Diabetes at Washington University School of Medicine. I also have a secondary appointment as Associate Professor of Cellular Biology and Physiology in the Division of Biology and Biological Sciences at Washington University School of Medicine. I served as chief of the Division of Pediatric Endocrinology and Diabetes at Washington University from 2012-2017. I served as the

Pl. Trial Ex. 093

Director of the Pediatric Endocrinology Fellowship Program at Washington University from 2008-2016.

3. I am board certified in Pediatrics and Pediatric Endocrinology. I have been licensed to practice medicine in Missouri since 2000.

4. My professional memberships include the American Academy of Pediatrics, the Pediatric Endocrine Society, the Endocrine Society, and the American Association for Biochemistry and Molecular Biology.

5. I have extensive experience in treating infants and children with disorders of sexual development and am an active member of the multidisciplinary Disorders of Sexual Development (DSD) program at Washington University. The DSD Team at Washington University is part of the DSD-Translational Research Network, a national multi-institutional research network that investigates the genetic causes and the psychologic consequences of DSD.

6. In the nearly 20 years that I have been in clinical practice I have participated in the care of hundreds of children with disorders of sexual development. In the care of these patients, I have acquired expertise in the understanding and management of associated difficulties in gender identification.

7. In my role as the director of the Division of Pediatric Endocrinology at Washington University, I have extensively studied the existing literature related to the incidence, potential etiology and treatment of gender dysphoria as efforts were made to develop a Transgender clinic at Saint Louis Children's Hospital. I have participated in local and national meetings where the endocrine care of children with gender dysphoria has been discussed and debated. I have met individually with several pediatric endocrinologists, including Dr. Norman Spack, who have developed and led transgender programs in the United States. I have also met with parents of

children with gender dysphoria to understand the unique difficulties experienced by this patient population.

8. Pediatric patients referred to our practice for the evaluation and treatment of gender dysphoria are cared for by an interdisciplinary team of providers that includes a psychologist and pediatric endocrinologist who have been specifically chosen for this role based upon a special interest in this rare patient population. Due to serious concerns regarding the safety, efficacy, and ethics of the current treatment paradigm, I have not directly engaged in hormonal treatment of patients with gender dysphoria.

9. My opinions as detailed in this declaration are based upon my knowledge and direct professional experience in the subject matters discussed. The materials that I have relied upon are the same types of materials that other experts in my field of clinical practice rely upon when forming opinions on the subject. The documents that I have reviewed specifically related to this case are 1.) the medical records for Savannah "Ash" Whitaker (AW0124-AW0223), 2.) the transcript of the deposition of medical expert witness Danial Shumer, MD, MPH, and 3.) the defendants' answer to plaintiff's amended complaint filed on October 18, 2016. A list of the published literature I have relied on is attached as Exhibit B to this declaration.

10. Over my career, I have provided expert medical record review and testified at deposition in less than a dozen cases. I have not given a deposition as an expert witness since 2012 and I have never testified at trial.

11. I am being compensated at an hourly rate for actual time devoted, at the rate of \$300 per hour. My compensation does not depend on the outcome of this litigation, the opinions I express, or the testimony I provide.

Case Details

[REDACTED]

[REDACTED]

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Basic Terminology

13. Biological sex is a term that specifically refers to a member of a species in relation to the member's capacity to either donate (male) or receive (female) genetic material for the purpose of reproduction. This remains the standard definition that has been accepted and used by scientists, medical personnel, and society in general.

14. Gender, a term that had traditionally been reserved for grammatical purposes, is currently used to describe the psychologic and cultural characteristics of a person in relation to biological

sex. Gender therefore exists in reference to societal perceptions, not biology.

15. Gender identity refers to a person's individual perception of being male or female.

16. Sexual orientation refers to a person's arousal and desire for sexual intimacy with members of the male or female sex.

Human sexuality in relation to fundamental biology and observed variations

17. Sex is genetically encoded at the moment of conception due to the presence of specific DNA sequences (i.e. genes) that direct the production of signals that influence the formation of the gonad to develop either into a testis or ovary. This genetic information is normally present on X and Y chromosomes. Chromosomal sex refers to the normal complement of X and Y chromosomes (i.e. normal human males have one X and one Y chromosome whereas normal human females have two X chromosomes). Genetic signals are mediated through the activation or deactivation of other genes and through programmed signaling of hormones and cellular transcription factors. The default pattern of development in the absence of external signaling is female. The development of the male appearance (phenotype) depends upon active signaling processes.

18. For members of the human species, sex is normatively aligned in a binary fashion (i.e., either male or female) in relation to biologic purpose. Medical recognition of an individual as male or female is typically made at birth according to external phenotypic expression of primary sexual traits (i.e., presence of a penis for males and presence of labia and vagina for females).

19. Due to genetic and hormonal variation in the developing fetus, normative development of the external genitalia in any individual differs with respect to size and appearance while maintaining an ability to function with respect to biologic purpose (i.e. reproduction). Internal

structures (e.g. gonad, uterus, vas deferens) normatively align with external genitalia.

20. Reliance upon external phenotypic expression of primary sexual traits is a highly accurate means to assign biologic sex. In over 99.9% of cases, this designation will correlate with internal sexual traits and capacity for normal biologic sexual function.

Gender Dysphoria in relation to Biological Sex

21. Although gender usually aligns with biological sex, some individuals experience discordance in these distinct traits. Specifically, biologic females may identify as males and biologic males may identify as females. As gender by definition is distinct from biological sex, one's gender identity does not change a person's biological sex.

22. Individuals who experience significant distress due to discordance between gender identity and sex are considered to have "gender dysphoria". Although the prevalence of gender dysphoria has not been established by rigorous scientific analysis, estimates reported in the DSM-V are between 0.005% to 0.014% for adult males and 0.002% to 0.003% for adult females. Thus, gender dysphoria is a rare condition. It is currently unknown whether these estimates are falsely low due to under-reporting, or if changing societal acceptance of transgenderism and the growing number of medical centers providing medical intervention for gender dysphoria affects the number of persons who identify as transgender. Recent data suggests that the number of people seeking care for gender dysphoria is increasing with some estimates as high as 4-fold.

23. There is strong evidence against the theory that gender identity is determined at or before birth and is unchangeable. This comes from identical twin studies where siblings share genetic complements and prenatal environmental exposure but have differing gender identities.

24. Further evidence that gender identity is not fixed comes from established peer

reviewed literature demonstrating that the vast majority (80-95%) of children who express gender dysphoria revert to a gender identity concordant with their biological sex by late adolescence. It is not known whether individuals with gender dysphoria persistence have differing etiologies or severity of precipitating factors compared to desisting individuals.

[REDACTED]

26. The recently coined concept of “neurological sex” as a distinct entity or a basis for classifying individuals as male or female has no scientific justification. Limited emerging data has suggested structural and functional differences between brains from normal and transgender individuals. These data do not establish whether these differences are innate and fixed or acquired and malleable. The remarkable neuronal plasticity of the brain is known and has been studied extensively in gender-independent contexts related to health and disease, learning and behavior.

Gender Ideology

27. The modern attempt to equate gender identity with sex is not based upon sound scientific principles but rather is based upon ideology fueled by advocacy. Although worldviews among scientists and physicians, similar to society at large, differ, science is firmly grounded in physical

reality not perception. The inherent link between human sexual biology and teleology is self-evident and fixed.

28. The claims of proponents of transgenderism, which include opinions such as “Gender defines who one is at his/her core” and “Gender is the only true determinant of sex” must be viewed in their proper philosophical context. There is no scientific basis for redefining sex on the basis of a person’s psychological sense of ‘gender’.

29. The prevailing, constant and accurate designation of sex as a biological trait grounded in the inherent purpose of male and female anatomy and as manifested in the appearance of external genitalia at birth remains the proper scientific and medical standard. Redefinition of the classification and meaning of sex based upon pathologic variation is not established medical fact.

Potential Harm Related to Gender Dysphoria Treatments

30. The fundamental purpose of the practice of medicine is to treat disease and alleviate suffering. An essential tenet of medical practice is to avoid doing harm in the process. Due to the frequent lack of clear and definitive evidence on how to best accomplish this goal, treatment approaches can and do frequently differ among highly knowledgeable, competent, and caring physicians.

31. Persons with gender dysphoria as delineated in the DSM-V experience significant psychological distress related to their condition with elevated risk of depression, suicide, and other morbidities. Thus, attempts to provide effective medical care to affected persons are clearly warranted.

32. Efforts to effectively treat persons with gender dysphoria require respect for the inherent dignity of those affected, sensitivity to their suffering, and maintenance of objectivity in

assessing etiologies and long-term outcomes. Desistance (i.e. reversion to gender identity concordant with sex) provides the greatest lifelong benefit and is the outcome in the majority of patients and should be maintained as a desired goal. Any forced societal intervention that could interfere with the likelihood of gender dysphoria resolution is unwarranted and potentially harmful.

33. There is an urgent need for high quality controlled clinical research trials to determine ways to develop supportive dignity affirming social environments that maintain affirmation of biological reality. To date, three approaches have been proposed for managing children with gender dysphoria. The first approach, often referred to as “conversion” or “reparative therapy”, is directed toward actively supporting and encouraging children to identify with their biological sex. The second “neutral” approach, motivated by understanding of the natural history of transgender identification in children, is to neither encourage nor discourage transgender identification, recognizing that the majority of affected children if left alone will eventually realign their gender with their sex. The third “affirming” approach is to actively encourage children to embrace transgender identity with social transitioning followed by hormonal therapy.

34. The gender affirming approach, which includes use of a child’s preferred pronouns, use of sex-segregated bathrooms, other intimate facilities and sleeping accommodations corresponding to a child’s gender identity, has limited scientific support for short-term alleviation of dysphoria and no long-term outcomes data demonstrating superiority over the other approaches. Claims that the other approaches have been scientifically disproven are false. Decades of research, most notably the pioneering work of Dr. Kenneth Zucker, have supported the efficacy of a more conservative approach for the majority of patients experiencing gender dysphoria.

35. Feelings of anxiety, depression, isolation, frustration, and embarrassment are not unique to children with gender dysphoria, but rather are common to children who differ physically or psychologically from their peers. Difficulties are accentuated as children progress through the normal stages of neurocognitive and social development. In the clinical practice of pediatric endocrinology, this is most commonly seen in children with diabetes. Attempts to deny or conceal the presence of disease rather than openly acknowledge and address specific needs can have devastating consequences including death. With proper acknowledgment of the similarity and differences between children with gender dysphoria and other developmental challenges, prior experience can guide the development of effective approaches to both alleviate suffering and minimize harm to school aged children experiencing gender dysphoria.

36. The Endocrine Society published in 2009 clinical guidelines for the treatment of patients with persistent gender dysphoria. The recommendations include temporary suppression of pubertal development of children with GnRH agonists (hormone blockers normally used for children experiencing precocious puberty) followed by hormonal treatments to induce the development of secondary sexual traits consistent with one's gender identity. This guideline was developed using the GRADE (Recommendations, Assessment, Development, and Evaluation) system for rating clinical guidelines. As directly stated in the Endocrine Society publication, "the strength of recommendations and the quality of evidence was low or very low." According to the GRADE system, low recommendations indicate "Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate". Very low recommendations mean that "any estimate of effect is very uncertain".

37. Clinical Practice Guidelines published by the World Professional Association for Transgender Health (WPATH), similarly, though less explicitly, acknowledge the limitation of

existing scientific data supporting their recommendations given and “the value of harm-reduction approaches”.

38. Treatment of gender dysphoric children who experience persistence of symptoms with hormones (pubertal suppression and cross-hormone therapy) carries significant risk. It is generally accepted, even by advocates of transgender hormone therapy, that hormonal treatment results in sterility which in many cases is irreversible. Emerging data also show that treated patients have lower bone density which may lead to increased fracture risk later in life. Other potential adverse effects include disfiguring acne, high blood pressure, weight gain, abnormal glucose tolerance, breast cancer, liver disease, thrombosis, and cardiovascular disease.

39. Since strategies for the treatment of transgendered children as summarized by the Endocrine Society guidelines are relatively new, long-term outcomes are unknown. Evidence presented as support for short term reductions in psychological distress following social transition in a “gender affirming” environment remains inconclusive. When considered apart from advocacy based agendas, multiple potential confounders are evident. The most notable deficiencies of existing research are the absence of proper control subjects and lack of randomization in study design. Although appropriate caution is warranted in extrapolating the outcomes observed from prior studies with current treatments, adults who have undergone social transition with or without surgical modification of external genitalia continue to have rates of depression, anxiety, substance abuse and suicide far above the background population.

40. Evidence cited to support societal measures that promote or encourage gender transition, including the plaintiff’s demand for use of preferred pronouns by teachers and the use of public restrooms, other intimate facilities and sleeping accommodations corresponding with the plaintiff’s gender identity, as a medically necessary treatment for gender dysphoria is limited.

Recent studies reporting reductions in dysphoria following social transition of adolescent patients are small, poorly controlled and of insufficient duration to draw definitive conclusions regarding long-term efficacy. Long-term follow up of patients with gender dysphoria who have undergone social and hormonal transition with or without surgical intervention has shown persistent psychological morbidity far above non-transgendered individuals with suicide attempts 7-fold and completed suicides 19-fold above the general population.

41. Of particular concern is the likelihood that forced societal affirmation including a requirement that the Kenosha Unified School District allow students to use sex-segregated bathrooms corresponding to gender identity rather than access to single unit facilities or provision of sleeping accommodations based upon gender identity rather than sex, will interfere with known rates of gender resolution. Any activity that encourages or perpetuates transgender persistence for those who would otherwise desist can cause significant harm, particularly in light of the current treatment paradigm for persisting individuals. As noted, permanent sterility can be expected with hormonal or surgical disruption of normal gonadal function. This is particularly concerning given that children are likely incapable of making informed consent to castrating treatments.

42. Dignity affirming support for adolescents with gender dysphoria does not necessitate facilitation of a false understanding of human sexuality in schools. Rather, policy requirements that can increase persistence of transgender identification have significant potential for inducing long-term harm to affected children.

43. There remains a significant and unmet need to better understand the biological, psychological, and environmental basis for the manifestation of discordance of gender identity and biological sex in affected individuals. In particular, there is a concerning lack of randomized

controlled trials comparing outcomes of youth with gender dysphoria who are provided mandated access to sex-segregated bathroom facilities corresponding with gender identity to youth provided single user facilities. This includes understanding of how forced public encouragement of social gender transition affects the usual progression to resolution of gender dysphoria in affected children. Such studies can be ethically designed and executed with provision of other dignity affirming measures to both treatment groups. Without this scientific evidence, it is impossible to assert that the approach using sex-segregated bathrooms is an essential component of treatment.

Pursuant to 28 U.S.C § 1746, I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Date: April 26, 2017

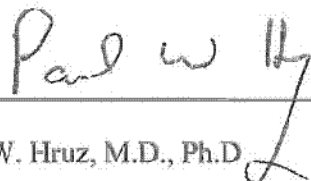
Signed: 
Paul W. Hruz, M.D., Ph.D.

EXHIBIT A

Curriculum Vitae

Paul W. Hruz, M.D., Ph.D.

Date: 04/26/2017 04:18 PM

Personal Information

Birthplace: WI
Citizenship: USA

Address and Telephone Numbers

University: Washington University in St. Louis
School of Medicine
Department of Pediatrics
Endocrinology and Diabetes
660 S. Euclid

Campus Box 8208

Phone: 314-286-2797
Fax: 314-286-2892
eMail: Hruz_P@kids.wustl.edu

Present Positions

Associate Professor of Pediatrics, Endocrinology and Diabetes
Associate Professor of Pediatrics, Cell Biology & Physiology
Researcher, Developmental Biology

Education and Training

1987 BS, Chemistry, Marquette University, Milwaukee, WI
1993 PhD, Biochemistry, Medical College of Wisconsin, Milwaukee, WI
1994 MD, Medicine, Medical College of Wisconsin, Milwaukee, WI

1994 - 1997 Pediatric Residency, University of Washington, Seattle, Washington
1997 - 2000 Pediatric Endocrinology Fellowship, Washington University, Saint Louis, MO

Academic Positions and Employment

1996 - 1997 Locum Tenens Physician, Group Health of Puget Sound Eastside Hospital, Group Health of Puget Sound Eastside Hospital, Seattle, WA
2000 - 2003 Instructor in Pediatrics, Endocrinology and Diabetes, Washington University in St. Louis, St. Louis, MO
2003 - 2011 Assistant Professor of Pediatrics, Endocrinology and Diabetes, Washington University in St. Louis, St. Louis, MO
2004 - 2011 Assistant Professor of Pediatrics, Cell Biology & Physiology, Washington University in St. Louis, St. Louis, MO
2011 - Pres Associate Professor of Pediatrics, Cell Biology & Physiology, Washington University in St. Louis, St. Louis, MO
2011 - Pres Associate Professor of Pediatrics, Endocrinology and Diabetes, Washington University in St. Louis, St. Louis, MO
2012 - 2017 Division Chief, Endocrinology and Diabetes, Washington University in St. Louis, St. Louis, MO

Appointments and Committees

NIH Study Sections

2005 NIH- NIDDK Special Emphasis Panel ZDK1 GRB-6
2009 NIH- ACE Competitive Revisions ZRG1 AARR-H (95) S
2009 NIH- AIDS and AIDS Related Research IRG
2011 NIH- Pediatric Endocrinologist K12 ZDK1 GRB-C
2014 NIH- Special Emphasis Panel ZRG1 BBBPY 58
2014 NIH- AIDS and AIDS Related Research IRG
2015 NIH- Cardiovascular and Respiratory Sciences Special Emphasis Panel ZDK1 GRB-J (02)
2015 NIH- NIDDK Special Emphasis Panel ZRG1 CVRS-Q (80)
2016 NIH Special Emphasis Panel ZRG1 AAR-M
2016 American Diabetes Association Research Grant Review Committee

University Affiliations

2008 - 2016 Director, Pediatric Endocrinology & Diabetes Fellowship Program
2010 - Pres Pediatric Computing Facility Advisory Committee
2012 - 2017 Director, Division of Pediatric Endocrinology & Diabetes
2012 - Pres Disorders of Sexual Development Multidisciplinary Care Program
2013 - Pres Molecular Cell Biology Graduate Student Admissions Committee
2014 - Pres Research Consultant, ICTS Research Forum - Child Health
2014 - Pres Director, Pediatric Diabetes Research Consortium

Hospital Affiliations

2000 - Pres Attending Physician, St. Louis Children's Hospital

Thesis Committees ("Chair") Advisor

2008 - 2011	Kelly Diggs-Andrews	Simon Fisher
2008 - 2010	Irwin Puentes	Simon Fisher
2008 - 2010	Tony Frovola	Kelle Moley
2009 - 2010	Lauren Flessner	Kelle Moley
2010 - 2012	Katie Boehle	Kelle Moley
2010 - 2013	Candace Reno	Simon Fisher
2011 - 2016	Thomas Kraft	Paul Hruz
2013 - 2015	Chi Lun Pui	Audrey Odom
2013 - 2016	Leah Imlay	Audrey Odom
2014 - Pres	Anne Robinson	Katie Henzler-Wildman
2015 - Pres	Allyson Mayer	Brian DeBosch

Scholarship Oversight Committees

2013 - 2016 Brittany Knipsein (Advisor: David Rudnick)
2016 - Pres Pamela Smith (Advisor: Michael Whyte)

Licensure and Certifications

1997 - Pres Board Certified in General Pediatrics
2000 - Pres MO State License #2000155004
2001 - Pres Board Certified in Pediatric Endocrinology & Metabolism

Honors and Awards

1987 National Institute of Chemists Research and Recognition Award
1987 Phi Beta Kappa
1987 Phi Lambda Upsilon (Honorary Chemical Society)
1988 American Heart Association Predoctoral Fellowship Award
1994 Alpha Omega Alpha
1994 Armond J. Quick Award for Excellence in Biochemistry
1994 NIDDK/Diabetes Branch Most Outstanding Resident
1998 Pfizer Postdoctoral Fellowship Award
2002 Scholar, Child Health Research Center of Excellence in Developmental Biology at Washington University
2013 Julio V Santiago, M.D. Scholar in Pediatrics

Editorial Responsibilities

Editorial Ad Hoc Reviews

AIDS
AIDS Research and Human Retroviruses
American Journal of Pathology
American Journal of Physiology
British Journal of Pharmacology
Circulation Research
Clinical Pharmacology & Therapeutics
Comparative Biochemistry and Physiology
Diabetes
Experimental Biology and Medicine
Future Virology
Journal of Antimicrobial Chemotherapy
Journal of Clinical Endocrinology & Metabolism
Journal of Molecular and Cellular Cardiology
Obesity Research
2000 - Pres Journal of Biological Chemistry
2013 - Pres PlosOne
2016 - Pres Scientific Reports

Editorial Boards

2014 - Pres Endocrinology and Metabolism Clinics of North America

Professional Societies and Organizations

1992 - 2004 American Medical Association
1994 - 2005 American Academy of Pediatrics
1995 - 2014 American Association for the Advancement of Science
1998 - Pres American Diabetes Association
1998 - Pres Endocrine Society
1999 - Pres Pediatric Endocrine Society
2004 - Pres American Society for Biochemistry and Molecular Biology
2004 - Pres Society for Pediatric Research
2004 - 2007 American Chemical Society
2005 - Pres Full Fellow of the American Academy of Pediatrics
2013 - Pres International Society for Pediatric and Adolescent Diabetes

Major Invited Professorships and Lectures

2002 St. Louis Children's Hospital, Pediatric Grand Rounds, St. Louis, MO
2004 National Disease Research Interchange, Human Islet Cell Research Conference, Philadelphia, PA
2004 NIDA-NIH Sponsored National Meeting on Hormones, Drug Abuse and Infections, Bethesda, MD
2005 The Collaborative Institute of Virology, Complications Committee Meeting, Boston, MA
2005 University of Indiana, Endocrine Grand Rounds, Indianapolis, IN
2006 Metabolic Syndrome Advisory Board Meeting, Bristol-Myers Squibb, Pennington, NJ
2007 American Heart Association and American Academy of HIV Medicine State of the Science Conference: Initiative to Decrease Cardiovascular Risk and Increase Quality of Care for Patients Living with HIV/AIDS, Chicago, IL
2007 Medical College of Wisconsin, MSTP Annual Visiting Alumnus Lecture, Milwaukee, WI
2007 St. Louis Children's Hospital, Pediatric Grand Rounds, St. Louis, MO
2007 University of Arizona, Minority Access to Research Careers Seminar, Tucson AZ
2008 Boston University, Division of Endocrinology, Diabetes and Nutrition, Boston, MA
2009 St. Louis Children's Hospital, Pediatric Grand Rounds, St. Louis, MO
2010 American Diabetes Association Scientific Sessions, Symposium Lecture Orlando, FL
2010 University of Missouri Kansas City, School of Biological Sciences, Kansas City, MO
2011 Life Cycle Management Advisory Board Meeting, Bristol-Myers Squibb, Chicago, IL
2013 St. Louis Children's Hospital, Pediatric Grand Rounds, St. Louis MO
2013 St. Louis Children's Hospital CPU Lecture, St. Louis MO
2014 Pediatric Academic Societies Meeting, Vancouver, Canada, May 5, 2014
2014 American Diabetes Association 74th Scientific Sessions, San Francisco, CA, June 13, 2014
2017 University of Michigan, Division of Pediatric Endocrinology, Ann Arbor MI

Consulting Relationships and Board Memberships

1996 - 2012 Consultant, Bristol Myers Squibb
1997 - 2012 Consultant, Gilead Sciences

Research Support

Non-Governmental Support

(Hruz)
Gilead Pharma
Novel HIV Protease Inhibitors and GLUT4

MHI-2017-593 (DeBosch) 2/1/2017- 1/31/2020
CDI
Prevention And Treatment Of Hepatic Steatosis Through Selective Targeting Of GLUT8

Completed Support

II (Hruz) 2/1/2012- 1/31/2015
CDI
Solution-State NMR Structure and Dynamics of Facilitative Glucose Transport Proteins

R01 (Hruz) 9/20/2009- 5/31/2014
NIH
Direct Effects of Antiretroviral Therapy on Cardiac Energy Homeostasis
The goal of this project is to characterize the influence of antiretroviral therapies on myocardial energy homeostasis and to elucidate how these changes in substrate delivery adversely affect cardiac function in the stressed heart.

Research Program (Hruz) 6/1/2009- 5/31/2012
MOD
Regulation of GLUT4 Intrinsic Activity
The major goals of this project are to investigate the ability of the GLUT4 tethering protein TUG and an UBL-domain containing N-terminal fragment of this protein to alter the intrinsic activity of the insulin responsive facilitative glucose transporter, to determine whether protein ubiquitination influences this association, and to characterize the role of the GLUT4 binding site on the modulation of glucose transport.

R01 (Hruz) 4/1/2007- 1/31/2012
NIH
Mechanisms for Altered Glucose Homeostasis During HAART
The goal of this project is to identify the cellular targets of HIV protease inhibitors that lead to peripheral insulin resistance, impaired beta-cell function, and alterations in hepatic glucose production and to elucidate the molecular mechanisms of these effects.

R01 Student Supp (Hruz) 6/10/2009- 8/31/2011
NIH
Mechanisms for Altered Glucose Homeostasis During HAART
The goal of this project is to identify the cellular targets of HIV protease inhibitors that lead to peripheral insulin resistance, impaired beta-cell function, and alterations in hepatic glucose production and to elucidate the molecular mechanisms of these effects.

(Hruz) 3/9/2010- 6/8/2011
Bristol-Myers Squibb
Protective Effect of Saxagliptin on a Progressive Deterioration of Cardiovascular Function

II (Hruz) 2/1/2008- 1/31/2011
CDI
Insulin Resistance and Myocardial Glucose Metabolism in Pediatric Heart Failure

Past Trainees

2014 - 2014 David Hannibal, Clinical Research Trainee
 2005 - 2005 Dominic Doran, DSc, Postdoctoral Fellow
 Study area: HIV Protease Inhibitor Effects on Exercise Tolerance
 2002 - 2010 Joseph Koster, PhD, Postdoctoral Fellow
 Study area: Researcher
 2010 - 2014 Lauren Flessner, PhD, Postdoctoral Fellow
 Present position: Instructor, Syracuse University
 2008 - 2011 Arpita Vyas, MD, Clinical Fellow
 Study area: Research
 Present position: Assistant Professor, Michigan State University, Lansing MI
 2008 - 2009 Candace Reno, Graduate Student
 Study area: Research
 Present position: Research Associate, University of Utah
 2005 - 2005 Helena Johnson, Graduate Student
 2007 - 2008 Kai-Chien Yang, Graduate Student
 Study area: Research
 Present position: Postdoctoral Research Associate, University of Chicago
 2007 - 2007 Paul Buske, Graduate Student
 Study area: Research
 2006 - 2006 Ramon Jin, Graduate Student
 Study area: Research
 2009 - 2009 Stephanie Scherer, Graduate Student
 Study area: Research
 2006 - 2006 Taekyung Kim, Graduate Student
 Study area: Research
 2008 - 2008 Temitope Aiyejorun, Graduate Student
 Study area: Research
 2011 - 2016 Thomas Kraft, Graduate Student
 Study area: Glucose transporter structure/function
 Present position: Postdoctoral Fellow, Roche, Penzberg, Germany
 2005 - 2005 Jeremy Etkorn, Medical Student
 Study area: Researcher
 2003 - 2004 Johann Hertel, Medical Student
 Study area: Research
 Present position: Assistant Professor, University of North Carolina, Chapel Hill, NC
 2003 - 2003 John Paul Shen, Medical Student
 Study area: Research
 2007 - 2007 Randy Colvin, Medical Student
 Study area: Researcher
 2011 - 2011 Amanda Koenig- High School Student, Other
 Study area: Research
 2009 - 2009 Anne-Sophie Stolle- Undergraduate Student, Other
 Study area: Research
 2004 - 2005 Carl Cassel- High School Student, Other
 Study area: Research
 2004 - 2004 Christopher Hawkins- Undergraduate Student, Other
 Study area: Researcher
 2010 - 2010 Constance Haufe- Undergraduate Student, Other
 Study area: Researcher
 2010 - 2011 Corinna Wilde- Undergraduate Student, Other
 Study area: Researcher
 2008 - 2012 Dennis Woo- Undergraduate Student, Other
 Study area: Researcher
 Present position: MSTP Student, USC, Los Angeles CA
 2007 - 2007 Jan Freiss- Undergraduate Student, Other
 Study area: Researcher
 2004 - 2004 Kaiming Wu- High School Student, Other
 Study area: Research
 2011 - 2012 Lisa Becker- Undergraduate Student, Other
 2009 - 2009 Matthew Hruz- High School Student, Other
 Study area: Research
 Present position: Computer Programmer, Consumer Affairs, Tulsa OK
 2011 - 2011 Melissa Al-Jaoude- High School Students, Other
 2002 - 2002 Nishant Raj- Undergraduate Student, Other
 Study area: Researcher
 2010 - 2010 Samuel Lite- High School Student, Other
 Study area: Research

Clinical Responsibilities

- Pres General Pediatrician, General Pediatric Ward Attending: 2-4 weeks per year, St. Louis Children's Hospital
- Pres Pediatric Endocrinologist, Endocrinology Night Telephone Consult Service: Average of 2-6 weeks/per yr, St. Louis Children's Hospital
- Pres Pediatric Endocrinologist, Inpatient Endocrinology Consult Service: 4-6 weeks per year, St. Louis Children's Hospital
- Pres Pediatric Endocrinologist, Outpatient Endocrinology Clinic: Approximately 50 patient visits per month, St. Louis Children's Hospital

Teaching Responsibilities

- Facilitator, Cell Biology Graduate Student Journal Club, 4 hour/year
- Facilitator, Discussion: Pituitary, Growth & Gonadal Cases, 2 hours/year
- 2000 - Pres Lecturer, Medical Student Growth Lecture (Women and Children's Health Rotation): Variable
- 2000 - Pres Lecturer, Metabolism Clinical Rounds/Research Seminar: Presentations twice yearly
- 2000 - Pres Lecturer, Pediatric Endocrinology Journal Club: Presentations yearly
- 2009 - Pres Lecturer, Markey Course-Diabetes Module
- 2009 - Pres Facilitator, Medical Student Endocrinology and Metabolism Course, Small group
- 2009 - Pres Facilitator, Biology 5011- Ethics and Research Science, 6 hours/year
- 2016 - Pres Facilitator, Medical Student Endocrinology and Metabolism Course, Small group
- 2016 - Pres Lecturer, Cell Signaling Course, Diabetes module, 3 hours/year

Publications

1. Hruz PW, Narasimhan C, Mizioro HM. 3-Hydroxy-3-methylglutaryl coenzyme A lyase: affinity labeling of the *Pseudomonas mevalonii* enzyme and assignment of cysteine-237 to the active site. *Biochemistry*. 1992;31(29):6842-7. PMID:1637819
2. Hruz PW, Mizioro HM. Avian 3-hydroxy-3-methylglutaryl-CoA lyase: sensitivity of enzyme activity to thiol/disulfide exchange and identification of proximal reactive cysteines. *Protein Sci*. 1992;1(9):1144-53. doi:10.1002/pro.5560010908 PMCID:PMC2142181 PMID:1304393
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EXHIBIT B

Exhibit B

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