

CURRICULUM VITAE

1) Personal Data

Name: Avital Cnaan

Home address: (b) (6)

Home telephone: (b) (6)

Office telephone: (b) (6)

Fax number: (b) (6)

E-mail address: (b) (6)

2) Education

Hebrew University, Jerusalem, Israel

(b) (6)

B.Sc. (Mathematics & Statistics)

Carnegie-Mellon University, Pittsburgh, PA

(b) (6)

M.S. (Statistics)

Carnegie-Mellon University, Pittsburgh, PA

(b) (6)

Ph.D. (Statistics)

3) Employment

(b) (6)

Israeli Defense Army [Lieutenant]

(b) (6)

Research Assistant, Graduate School of Industrial Administration, Carnegie-Mellon University, Pittsburgh, PA

(6)

(b) (6)

Teaching Assistant, Dept. of Statistics, Carnegie-Mellon University

1982 – 1983

Assistant Director, Statistical Analysis Unit, Central Bureau of Statistics, Israel

1982 – 1984

Post-doctoral fellow in Statistics, Department of Statistics, Tel-Aviv University, School of Mathematical Sciences, Faculty of Exact Sciences

1984 – 1986

Lecturer in Statistics, Department of Statistics, Tel-Aviv University, School of Mathematical Sciences, Faculty of Exact Sciences Public Health

1986 – 1989

Lecturer, Department of Biostatistics, Harvard University, School of Public Health

1986 – 1989

Statistician for the Eastern Cooperative Oncology Group, Dana-Farber Cancer Institute, Boston, MA

1990 – 1992

Senior Biometrician, Merck Research Labs, Merck & Co., West Point, PA

1992 – 1998

Assistant Professor of Biostatistics in Pediatrics at The Children's Hospital of Philadelphia, University of Pennsylvania, School of Medicine, Philadelphia, PA

1992 – 2008

Chief, Division of Biostatistics and Epidemiology, Department of Pediatrics, University of Pennsylvania, School of Medicine, Philadelphia, PA

1993 – 2008

Associate Scholar, Center for Clinical Epidemiology and Biostatistics, University of Pennsylvania, School of Medicine, Philadelphia, PA

1995 – 1998

Assistant Professor of Biostatistics, Department of Biostatistics & Epidemiology (secondary), University of Pennsylvania, School of Medicine

1998 – 2006

Associate Professor of Biostatistics in Pediatrics at the Children's Hospital of Philadelphia, and Department of Biostatistics & Epidemiology, (secondary) University of Pennsylvania, School of Medicine

2006 – 2008	Professor of Biostatistics in Pediatrics at The Children's Hospital of Philadelphia, and Department of Biostatistics & Epidemiology (secondary), University of Pennsylvania, School of Medicine
2008 – Present	Director, Multi-Center Studies Section, Center for Clinical and Community Research, Children's Research Institute, Children's National Medical Center
2009 – Present	Professor of Pediatrics and Epidemiology and Biostatistics, George Washington University, School of Medicine and Health Sciences and School of Public Health and Health Services

4) Professional Registrations, Licenses, Certifications

N/A

5) Societies and Honors

a. Societies – Membership and Positions Held

International:

- The Israeli Statistical Association (1982 - 1986)
(Secretary, 1985-86)
- International Biometric Society – Eastern North American Region (1984-Present)
(Invited session organizer: Measurement of efficacy with repeated measures and missing data, ENAR 1993)
(Scientific Program Chair, ENAR 2008)
(Organizer of roundtable luncheon: Careers in a medical center environment, ENAR 2008)
(Member, Regional Advisory Board, 2008-2010)
- International Association of Survey Statisticians (1982-1984)

National:

- The American Statistical Association (1979-Present)
(Member, Executive Committee of the Biopharmaceutical Section, 1990-1991)
(Member, Executive Committee of the Biopharmaceutical Section, 1997- 2005)
(Organizer of roundtable luncheon for Biopharmaceutical Section: Design and analysis challenges in pediatric clinical trials, 2000)
(Chair, Best Student Paper Committee of Biopharmaceutical Section, 2000)
(Representative of the Biopharmaceutical Section to the Council of Sections, 2001-2003)
(Chair, Membership Committee of the Biopharmaceutical Section, 2003-2005)
(Member, Fellows Committee of the Biopharmaceutical Section, 2003-2005)
- The Society for Clinical Trials (1987-2000)
- Caucus for Women in Statistics (1989-1993)

Local:

- Philadelphia Chapter of the American Statistical Association (1990 - Present)
(Representative, Philadelphia Chapter to the Council of Chapters, 1991- 1993)
(Vice President of the Philadelphia Chapter, 1993-1994)

(President of the Philadelphia Chapter, 1994-1995)

b. Honors

(b) (6)	Graduate student of the year, Pittsburgh Chapter of the American Statistical Association, Pittsburgh, PA
(b) (6)	Post-doctoral fellowship, Tel-Aviv University, Israel
1983	Worker of the year - Central Bureau of Statistics, Israel.
1993	Foerderer Award of Excellence, Children's Hospital of Philadelphia, PA
1996	Foerderer Award of Excellence, Children's Hospital of Philadelphia, PA
2002	Fellow of the American Statistical Association

c. Journal Reviewer

- Journal of the American Statistical Association
- The American Statistician
- Statistics & Probability Letters
- Journal of Statistical Planning and Inference Biometrics
- Statistics in Medicine Controlled Clinical Trials
- Journal of Adolescent Medicine
- Journal of Pediatrics Medical and Pediatric Oncology
- Journal of Clinical Oncology Archives of Neurology
- Journal of Family Psychology
- Clinical and Diagnostic Laboratory Immunology
- Acta Neurologica
- Epilepsia
- Neurology

d. Grant Review Panels

- Glioma Tissue Markers of Potential Diagnostic and Prognostic Value, NCI, Metabolic Pathology Study Section (Member, 1997)
- The Pathophysiology of Hemolytic Uremic Syndrome, NIDDK, Special Review Group (Member, 1999-2000)
- Multicenter Therapeutic Trials of X-Linked ALD, NICHD, Special Emphasis Panel (Member, 2001)
- Familial IgA Nephropathy: Genetic and Metabolic Studies, NIDDK, Special Emphasis Panel (Member, 2002)
- Consortium for Identification of Environmental Triggers of Type I Diabetes NIDDK, RFA-DK-02-029, Review Committee (Member, 2002)
- The African-American Study of Kidney Disease and Hypertension (AASK): The Cohort Study, NIDDK, RFA-DK-03-500 Special Emphasis Panel (Member, 2003)

Subcommittee C - Basic & Preclinical, National Cancer Institute Initial Review Group, NCI-C RPRB (D3)
(Member, 2004)

Obstetrical Pharmacology Research Network – Data Coordination and Analyses Center (OPRU-DCAC), NICHD, RFA-HD-07-019 Special Emphasis Panel
(Member, 2007)

The Environmental Determinants of Diabetes in the Youth (TEDDY) study (U01), Special Emphasis panel, NIDDK, RFA-DK-07-500 (Member, 2007)

Drug-induced Liver Disease (U01), Special emphasis panel, NIDDK, RFA-DK- 07-012
(Member, 2008)

Prematurity and Respiratory Outcomes Program (PROP), NHLBI, Special Emphasis Panel
(Member, 2009)

Clinical protocol for a pharmacokinetic study in epilepsy, NINDS, Special Review Committee
(Member, 2010)

Ancillary Studies to Major Ongoing Clinical Research Studies to Advance Areas of Scientific Interest within the Mission of the NIDDK (R01), NIDDK, PAR-09-247, Special Emphasis Panel
(Member, 2011)

Data Coordinating Center for the Network of Excellence in Neuroscience Clinical Trials (NEXT - DCC) (U01), NINDS, RFA-NS-11-010, Special Emphasis Panel
(Member, 2011)

Data, Statistics, and Clinical Trial Support for NIDA, N01DA-12-2229. Review Committee
(Member, 2012)

Limited Competition for the Continuation of the Clinical Centers for The Environmental Determinants of Diabetes in the Young (TEDDY) Study (UC4), NIDDK, RFA-DK-12-504, Special Emphases Panel
(Member, 2012)

Ancillary Studies on Molecular Genetics of Kidney and Urinary Tract Diseases, NIDDK, Special Emphasis Panel,
(Member, 2012)

Consortium to Alleviate PTSD (CAP-C), 2013 Psychological Health and Traumatic Brain Injury (PH/TBI) Research Program for the Department of Defense Congressionally Directed Medical Research Programs
(Panel Member, 2013)

Institutional Clinical and Translational Science Award (U54), NCATS, RFA-TR-12-006
(Member, 2013)

Intellectual and Developmental Disabilities Research Centers, NICHD, RFA-HD-13-002
(Member, 2013)

e. NIH and FDA Committees

- Treatment of Hypertension with Two Exercise Regimens, NHLBI, Data and Safety Monitoring Committee
(Member, 1997 - 2001)
- Dietary Approaches to Stop Hypertension 2, NHLBI, Data and Safety Monitoring Committee
(Member, 1998 - 2000)
- Clonidine in ADHD, NINDS, Data & Safety Monitoring Board
(Member 2002 - 2005)
- Vesicoureteral Reflux Workshop, NIDDK
(Member, 2003)
- Clinical Trial in Spinal Muscular Atrophy Workshop, NINDS
(Member, 2004)
- Chronic Kidney Disease in Children, NIDDK, External Advisory Committee
(Member, 2004 - present)
- Rare Diseases Clinical Research Network (RDCRN), ORD/NCRR, Data and Safety Monitoring Board #2
(Member, 2005 – 2009)
- Pediatric Advisory Committee of the FDA
(Member, 2006 – 2010)
- Protocolized Care for Early Septic Shock (ProCESS), NIGMS, Data & Safety Monitoring Board
(Member, 2007- 2013)

f. International Review

2007 External reviewer, Tel Aviv University - Approval of a new Master's Degree Program in Biostatistics

6) Administrative Duties & University Activities (include voluntary committee service)

a. Departmental

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| 1983 | Acting Head, Statistical Consulting Unit, Department of Statistics, Tel-Aviv University, Tel-Aviv, Israel |
| 1993 – 1996 | Department of Pediatrics, Member, Research Division Chiefs Committee |
| 1994 – 2008 | Department of Pediatrics, Division of Oncology, Pediatric Protocol Review and Monitoring Committee |
| 1994 – 1995 | Department of Pediatrics, Member, Subcommittee on Appointments and promotions, clinician-educator track |
| 1994 | Department of Pediatrics, Member, Authorship Committee, |
| 1994 | Department of Pediatrics, Member, Clinical Research Retreat Committee |
| 1994 – 1996 | Department of Pediatrics, Member, Fellowship Committee |
| 1995 – 1995 | Department of Pediatrics, Member, Search Committee for General Pediatrics Division Chief |

1997 – 2000	Department of Biostatistics and Epidemiology, Member, Search Committee for Biostatistics Faculty
1997 – 1998	Department of Biostatistics and Epidemiology, Member, Committee for Curriculum, M.S. and Ph.D. in Biostatistics
1998 – 1999	Department of Biostatistics and Epidemiology, Member, Committee for Consulting Services
2010-	Department of Pediatrics, Member, Appointments and Promotions Committee

b. Hospital

1992 – 2000	Member, Children’s Hospital of Philadelphia (CHOP) – Institutional Review Board Committee #1
1993 – 1998	Member, Stokes Research Committee
1994 – 2001	Member, Children’s Hospital of Philadelphia - Institutional Review Board Committee #2
1995 – 2003	Member, General Clinical Research Center Advisory Committee
2000 – 2001	Member, Children’s Hospital of Philadelphia – Institutional Review Board Committee #3
2000 – 2003	Director of Biostatistics, Children's Clinical Research Institute (CHOP)
2001 – 2003	Member, Hiring Incentives Committee (CHOP)
2001 – 2005	Member, Ethel Brown Foerderer Fund for Excellence Scientific Review Committee (CHOP)
2001 – 2008	Member, CHOP – Institutional Review Board Committee B
2001 – 2006	Member, CHOP – Institutional Review Board Committee C
2003 – 2006	Faculty Director, Biostatistics and Data Management Core (CHOP)
2004 – 2005	Vice – Chairperson, Ethel Brown Foerderer Fund for Excellence Scientific Review Committee (CHOP)
2006 – 2008	Member, CHOP – Institutional Review Board Oncology Subcommittee
2006 – 2008	Staff Member, University of Pennsylvania and Children’s Hospital of Philadelphia Clinical and Translational Research Council

c. University

1992 – 2008	Member, University of Pennsylvania Cancer Center, Philadelphia, PA
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7) Educational Achievements (Include Dates of participation for all categories.

a. Courses Taught

1982	Linear Models, Course Director, 2x per week, semester course
1982 – 1985	Seminar in Biostatistics, Course Director, 1x per week, semester course
1983 – 1984	Statistical Theory, Course Director, 2x per week, semester course
1983 – 1985	Regression Analysis, Course Director, 2x per week, semester course

1984 – 1985	Categorical Data Analysis, Course Director, 2x per week, semester course
1984 – 1986	Decision Theory, Course Director, 2x per week, semester course
1984 – 1987	Survival Analysis, Course Director, 2x week, semester course
1986 – 1986	Project in Data Analysis, Course Director, 1x week, semester course
1993 – Present	Giving statistical support for research projects in design and statistical analysis to Pediatric Fellows
1995	ME154 Epidemiology Course- guest lecturer (one lecture) on Biostatistics; co-taught several workshops
1995	ME154 Epidemiology Course-lecture on Biostatistics and several workshops
1996	ME154 Epidemiology Course-guest lecturer (two lectures) on Biostatistics and all workshops (twice weekly; semester course)
1996	ME154 Epidemiology Course-two lectures on Biostatistics and all workshops
1997 Spring	ME154 Epidemiology Course-two lectures on Biostatistics and all workshops
1997 – 1999	ME154 Epidemiology Course-all workshops
1998	ME154 Epidemiology Course-all workshops - Member, Ph.D. in Statistics Dissertation Committee
1997 – 2001	ME154 Epidemiology Course-all workshops

b. New Courses or Programs Developed

1982	Linear Models
1982 – 1986	Regression Analysis
1982 – 1987	Categorical Data Analysis
1982 – 1988	Decision Theory
1982 – 1989	Survival Analysis
1983 – 1983	Statistical Theory
1993	Organizing and teaching a pre-conference course: Designing a successful
1993 – 1994	Organizing and conducting series on medical literature review from a statistical perspective for senior pediatric residents
1993 – 1994	Organizing and co-teaching a course on Methods in Clinical Research for the Mental Retardation Research Center members
1993 – 2007	Organizing and co-teaching annual course for Pediatric Fellows on Statistical Design and Analysis for Medical Researchers
2004 – 2004	Developing and Presenting Statistics 101 for Reviewing Protocols at Institutional Review Board training for members.
2004 – 2005	Developing and presenting Monitoring Data and Safety as part of training for Responsible Conduct of Research at CHOP

c. Students or post-doctoral fellows for whom you served as primary advisor

1993	Member, Dissertation Committee, (b) (6), Wharton School of Business, Statistics Department
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1994 – 1995	Member, Dissertation Committee, (b) (6), Wharton School of Business, Statistics Department
1997 – 2000	Biostatistical Advisor for MSCE: (b) (6)
1997 – 2008	Biostatistical Advisor for MSCE, (b) (6)
1998 – 2001	Biostatistical Advisor for MSCE: (b) (6)
2000 – 2008	Biostatistical Advisor for MSCE, (b) (6)
2002	Biostatistical Advisor for MSCE; (b) (6)
2001 – 2003	Biostatistical Advisor for MSCE, (b) (6)
2001 – 2003	Biostatistical Advisor for MSCE, (b) (6)
2002 – 2004	Mentor, (b) (6)
2002 – 2008	Biostatistics collaborator, (b) (6)
2003 – 2004	Biostatistical Advisor for (b) (6)
2004 – 2006	Biostatistical Advisor for (b) (6)
2004 – Present	Mentor, (b) (6)
2005 – 2007	Biostatistical Advisor for (b) (6)
2006 – 2007	Biostatistical Advisor for (b) (6)
2011- Present	Mentor, (b) (6)
2012- Present	Mentor, (b) (6)

8) Consultant Appointments

1983	Consulting Statistician, (b) (6) Israel, paid.
1985 – 1986	Consulting Statistician, (b) (6) Israel, unpaid.
1987 – 1988	Consulting Statistician for (b) (6), (b) (6), paid.
1989 – 1990	Consulting Statistician for (b) (6), (b) (6), paid.
1992	(b) (6), Consulting Statistician, (b) (6), (b) (6) paid.
1993 – 1995	(b) (6), Statistician for (b) (6), (b) (6) paid.
1997	(b) (6), Consulting statistician (b) (6), paid.
1998 – 1999	(b) (6), (b) (6) Statistician, paid.
1998 – 2000	(b) (6), (b) (6) Statistician for (b) (6) paid.
2000 – 2001	(b) (6) statistician, paid.
2008 – 2010	(b) (6). Consultant (b) (6)
2010-2013	(b) (6) Duchenne muscular dystrophy. (b) (6) (b) (6) Statistician Member.
2011 – 2016	(b) (6). Consultant (b) (6) (b) (6) paid.
2011 –	(b) (6). Statistician (b) (6) (b) (6), paid.

(b) (6)

2012 – 2017

(b) (6)
(b) (6)

Database development/management and statistical
paid.

9) Grants Awarded or Pending

Mental Retardation Research Center Core Grant (Core B-Epidemiology & Biostatistics Core; Study Design and Statistical Analysis Core; Biostatistics and Bioinformatics Core)

NIH-NICHD

08/01/90 - 12/31/06

\$804,908

Associate Director of Core (09/01/92 - 12/31/97) Core
Director (1/1/98-12/31/2006)

10% (Assoc. Dir) 15% (Dir.) Dietary Intake and Cardiovascular Risk
Factors in Early Life

NIH-NINR

01/01/93 - 12/31/93

\$11,652 (sub-contract only)

Principal Investigator for Sub-Contract
10%

University of Pennsylvania Cancer Center Support Grant - Statistical Core

NIH-NCI

12/01/92 - 4/30/08

\$11,155,610 Faculty

Biostatistician

5%-20% (different effort at different grant cycles)

Philadelphia Pediatric AIDS Clinical Trials Unit

NIH-NIAID

03/01/92 - 02/28/97

\$648,687

Co-Investigator (03/01/93 - 02/28/96)
2.5%

TRH and Prevention of Chronic Lung Disease

NIH-NICHD

08/10/93 - 11/30/97

\$1,934,954

Co-Investigator, Director of Data Coordinating Center
10%

Neurofibromatosis: Tumor Biology, Paternal Mutations, and Novel Approaches to
Diagnosis and Treatment

Department of Defense

09/22/93 - 09/21/96

\$696,437

Co-Investigator, Director of Data Coordinating Center

10%

A Trial Promotion with Teenage Mothers

NIH

10/01/93-09/30/96

\$831,245

Senior Statistician

3%

Neonatal Brain Damage & Elementary School Performance

NIH-NINDS

12/06/93 - 11/30/97

\$1,599,632

Co-Investigator, PI on sub-contract

20%

ACE Inhibitors after Anthracyclines

NIH-NHLBI

04/01/94 - 02/28/03

\$588,506

Investigator

10%

Maternal Diet & Risk of Brain Tumor (PNET) in Children

NIH-NCI

05/01/94 - 03/30/98

\$979,301

Co-Investigator

5%

General Clinical Research Center - Children's Hospital of Philadelphia

NIH-NIRR

12/01/90 - 9/30/06

\$2,600,113

Faculty Biostatistician (from 12/01/94)

15%-30% (different effort at different grant cycles)

(b) (4)

07/01/95 - 06/30/96

(b) (4)

Principal Investigator

(b)
(4)

Tachykinins, mononuclear phagocytes and HIV-1 infection

NIH- NIMH

07/01/95-04/30/08

\$273,788

Investigator

3%-10% (different effort at different grant cycles)

Applying Biomechanical Epidemiology to Injury Prediction

AHCPR

09/01/95-08/31/99

\$157,385

Senior Statistician

10%

Behavioral Diagnosis and Treatment of Self-Injury

NIH

09/15/95-08/31/00

\$138,507

Senior Statistician

5%

SCOR in Pathobiology of Lung Development

NIH-NHLBI

09/01/96 - 07/31/02

\$85,948 (Core only)

Faculty Biostatistician

5%-14% (different effort at different grant cycles)

Primitive Neuroectodermal Tumors of Childhood

NIH-NCI

09/01/96 - 06/30/01

\$82,079

Core Director

5%

Multicenter Trial of SYNSORB Pk in E.Coli-related

HUS NIH-NIDDK

09/01/96-04/30/02

\$33,639 (subcontract only)

PI of subcontract, Director, Data Coordinating Center

5%

Post Traumatic Stress Disorder After Pediatric Traffic Related Injury

MCHB

03/01/99-08/31/02

\$361,007
Investigator
5%

Inhaled Nitric Oxide in Prevention of Chronic Lung Disease
NIH-NHLBI
03/01/00-02/28/07
\$1,502,587
Investigator, Director of Data Coordinating Center
10%

Paternal Exposure and Sporadic Bilateral Retinoblastoma
NIH-NCI
04/01/01-03/31/06
\$362,572
Investigator
3%

Interaction of Human Immune Cells, Alcohol & HIV
NIH-NIAAA
09/28/01– 09/27/06
\$276,878
Investigator
2%

Pediatric Emergency Care Applied Research Network
MCHB
10/01/01-09/30/03
\$91,150
Investigator
2%

Neuroblastoma Biology and Therapy
NIH-NCI
09/01/03-08/31/08
\$1,219,212
Core Director, Biostatistics and Bioinformatics
7.5%-10%

Childhood Absence Epilepsy: Multi Center Coordinating Center
NIH-NINDS
9/30/03-10/31/08
\$508,798
Principal Investigator
20%

Substance P Receptor (Neurokinin-1) Antagonists as Therapeutic Agents in HIV

NIH-NIMH

07/01/05-06/30/09

\$1,139,978

Director, Biostatistics and Pharmacology Core (through 12/31/2007)

7.5%-10%

(b) (4)

07/01/05-06/30/09

(b) (4)

Director Coordinating Center

(b) (4)

International Network and Registry for TMA

NIH-NIDDK

04/01/06-03/31/08

\$60,034 (subcontract only)

PI of subcontract, Dir, Data Coord Ctr and Epidemiology Research

4%

Childhood Absence Epilepsy: RX, PK-PD-Pharmacogenetics

NINDS, NIH

9/30/03-8/31/10

\$17,336,053

Statistician

20% (from 1/11/10)

Clinical and Translational Science Award, University
of Pennsylvania

NIH-NIRR

09/30/06-06/30/11

\$2,115,797

Assoc Dir, Study Design and Biostatistics Core

27.5% (through 4/30/2008)

Clinical Trial of Coenzyme Q10 and Prednisone in Duchenne Muscular Dystrophy

Department of Defense

5/1/08 – 8/31/09

\$3,039,420

Director of Coordinating Center

(b) (4)

09/30/2009 – 06/30/2010

(b) (4) 6

Director of CINRG Coordinating Center

(b)
(4)

NCMRR-DC Core Molecular and Functional Outcome Measures in Rehabilitation

NIH/NICHHD

9/15/2005 – 5/31/2015

\$565,895

Director of Coordinating Center

10%

Infrastructure for Clinical Trials in Duchenne Dystrophy

USA Medical Research ACQ Activity

8/14/2009 – 8/13/2013

\$ 1,962,000

Principal Investigator

30%

Rehabilitation research and Training Centers – Enhancing the Health and wellness of individuals with Neuromuscular Diseases

U.S. Department of Education – NIDRR

10/01/2009 – 9/30/2014

\$ 1,030,883

Director of CINRG Coordinating Center

7.5%

IDDRC at CNMC- Core B- Biostatistics and Informatics Core

NIH/NICHHD

6/26/11 – 6/30/16

\$696,354

Associate Director of Core

6%

Center of Research Translation of Systemic Exon-Skipping in Muscular Dystrophy- Project 3

NIH/NIAMS

9/9/2011 – 8/31/2016

\$1,177,071

Co-Investigator

12%

Clinically Meaningful Outcomes for Duchenne Muscular Dystrophy Therapeutic Trials

NIH/NIAMS

9/1/2011 – 8/31/2016

\$169,986

Principal Investigator

7.5%

Biomarker Discovery and Validation in a Duchenne Dystrophy natural History Study

NIH/NIAMS

9/9/11 – 8/31/2016

\$161,237

Director of CINRG Coordinating Center

1.5%

N-Carbamylglutamate in the treatment of Hyperammonemia

NIH/NICHD

3/15/2012 – 2/28/2017

\$597,455

Co-Investigator and Director of Coordinating Center

7.5%

Clinical and Translational Science Award

NIH/NCATS

7/1/2010 – 3/31/2015

\$2,512,843

Director of DBE/RKS component

20%

Establishing Minimal Clinically Important Differences for Current Clinical Trial Endpoints and Composite Outcome Measures in Duchenne Muscular Dystrophy via Extension of Multicenter Natural History

DOD

9/30/2012 – 9/29/2015

\$273,403

Co-Investigator

5%

(b) (4)

1/1/2013 – 12/31/2015

(b) (4)

Director of Coordinating Center

(b)

(4)

(b) (4)

7/1/2013 – 12/31/2014

(b) (4)

Principal Investigator

(b)

(4)

10) Publications

a. Papers in Refereed Journals

Cnaan, A.: Survival models with two phases and length-biased sampling. *Communications in Statistics, Theory and Methods* A14:861-885, 1985

Shapira, Z, Cnaan, RA, and **Cnaan, A.:** Reactions to job characteristics: evidence concerning the mentally retarded workers. *American Journal of Mental Deficiency* 90(2):160-166, 1985.

Cnaan, RA and **Cnaan, A.:** Allocation of resources for social services: Israel as a case study. *Social Indicators Research* 19:585-605, 1987.

Matoth, Y, Chazan, S, **Cnaan, A.**, Gelernter, I., and Klibansky, C.: Frequency of carriers of chronic (Type I) Gaucher disease in Ashkenazi Jews. *American Journal of Medical Genetics* 27(3): 561-565, 1987.

Falkson, G, **Cnaan, A.**, Schutt, A, Ryan, LM, and Falkson, HC: Prognostic factors in hepatocellular carcinoma. *Cancer Research* 48(24 Pt 1):7314-7318, 1988.

Cnaan, A. and Ryan, LM: Survival analysis in natural history studies of disease. *Statistics in Medicine* 8(10):1255-1268, 1989.

Benacerraf, BR, **Cnaan, A.**, Gelman, R, Laboda, LA, and Frigoletto, FD: Can sonographers reliably identify anatomic features associated with Down syndrome in fetuses? *Radiology* 173(2): 377-380, 1989.

Falkson, G, **Cnaan, A.**, Haller, DG, and Falkson, HC: A randomized phase II study of Acivicin and 4'deoxydoxorubicin in patients with hepatocellular carcinoma. *American Journal of Clinical Oncology* 13(6): 510-515, 1990.

Gutman, M, **Cnaan, A.**, Inbar, M, Shafir, R, Chaitchik, S, Rozin, RR, and Klausner, JM: Are malignant melanoma patients at higher risk for second cancer? *Cancer* 68(3):660-665, 1991.

Cnaan, RA, Hasenfeld, Y, **Cnaan, A.**, and Rafferty, J: Cross cultural comparison of attitudes toward welfare programs: Path analysis with log-linear models. *Social Indicators Research* 29:123-152, 1993.

Asbury, RF, **Cnaan, A.**, Johnson, L, Harris, J, Zaentz, SD, and Haller, DG: An Eastern Cooperative Oncology Group phase II study of single agent DHAD, VP-16, aclacinomycin, or spirogermanium in metastatic pancreatic cancer. *American Journal of Clinical Oncology* 17(2):166-169, 1994.

Pinto-Martin, J, Riolo, S, **Cnaan, A.**, Holzman, C, and Paneth, N: Cranial ultrasound prediction of disabling and nondisabling cerebral palsy at age two in a low birthweight population,

Pediatrics 95(2):249-254, 1995.

O'Neill, JA, **Cnaan, A.**, Altman, RP, Donahoe, PK, Holder, TM, Neblett, WW, Schwartz, MZ, and Smith, CD: Update on the analysis of the need for pediatric surgeons in the United States. *Journal of Pediatric Surgery* 30(2):204-210; discussion 211-3, 1995.

Watson, B., Boardman, C., Laufer, D., Peirce, Tustin, S., Olayle, D., **Cnaan, A.**, and Starr, S.: Humoral and cell-mediated immune responses in healthy children who received one or two doses of varicella vaccine. *Clinical Infectious Diseases* 20(2):316-319, 1995.

Janss, A.J., Grundy, R., **Cnaan, A.**, Savino, P., Packer, R., Zackai, E., Sutton, L., Radcliffe, J., Goldwein, J., Molloy, P., Phillips, P., and Lange, B.: Optic pathway and hypothalamic/chiasmatic gliomas in children under age 5 with six year follow-up. *Cancer* 75(4):1051-1059, 1995.

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Cnaan A., Kuntz N., Hache L., Clemens P., Hoffman E. A Trial of Chronotherapy of Corticosteroids in Duchenne Muscular Dystrophy. (Presented at the 2013 Muscular Dystrophy Association Scientific Conference)

Avery R.A., **Cnaan A.**, Schuman J.S., Chen C., Glaug N.C., Packer R.J., Quinn G.E., Ishikawa H. Reproducibility of Circumpapillary Retinal Nerve Fiber Layer Measurements Using Hand-held Optical Coherence Tomography in Sedated Children. (Presented at the American Association of Pediatric Ophthalmology and Strabismus meeting, April 2014)

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f. Invited Publications

Cnaan, A. (1993): Invited commentary to David Bank's paper "Is industrial statistics out of control?" *Statistical Science* 8, 378-379.

g. Letters

Ballard, R.A., Ballard, P.L., **Cnaan, A.**, and Pinto-Martin, J. (1995), Thyrotropin-releasing hormone prevention of neonatal respiratory disease. *The Lancet* 345, 1572-1573.

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h. Book Reviews

N/A

i. Any Other Publications

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Cnaan, A. and Pfeffermann, D. Regression analysis with known regressors for the entire finite population. Technical Report, Tel-Aviv University, March, 1985.

Cnaan, A. Analysis of survival data from organ transplant studies. Technical Report, Tel-Aviv University, June, 1986.

James, B.C., McFadden, E., **Cnaan, A.**, Sliwa, D.M., Addis, O., and Zicarelli, T.: The PSM/PRS distributed patient registration/treatment assignment system. Frontier Science and Technology Institute System Specification Report No. 1, 1988.

Cnaan, A. and Lefkopoulou, M. Grouped residuals for proportional hazards models. Technical report #009, Biostatistics and Research Data Systems Series, Merck Research Laboratories, 1992.

11) Presentations (List Titles and Dates of Presentations as well as Complete Authorship in order for each Category)

a. Regional Presentations

Cnaan, A.: Grouped residuals for proportional hazards models. University of Pennsylvania, Wharton Business School, Philadelphia, PA, December 8, 1993.

Cnaan, A. A comparison of methods of analyzing longitudinal nutrition status and energy balance data on cystic fibrosis patients. Nutrition Center Seminar Series, Philadelphia, PA, February 9, 1994.

Cnaan, A. Statistical considerations in social sciences research. University of Pennsylvania, School of Social Work, Philadelphia, PA, April 6, 1994.

Getson, A.L., and **Cnaan, A.** Assessment of the effect of missing data in the longitudinal setting: A pair of case studies. 15th Spring Symposium of The Northern New Jersey Chapter of the American Statistical Association. New Brunswick, NJ, May 24, 1994.

Cnaan, A. Attrition in a mental health clinical trial - separating efficacy and side effects. Harvard School of Public Health/Schering-Plough Workshop: Handling Dropouts in Longitudinal Clinical Trials, Boston, Mass, June 2, 1994.

Cnaan, A. Longitudinal methods for analysis of clinical trial data. SRCOS/ASA Summer Research Conference, Williamsburg, VA, June 11, 1994.

Cnaan, A., and Getson, A.L.: Assessment of the effect of missing data in the longitudinal

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Cnaan, A., Sutton, L.N., Klatt, L., Molloy, P., Needle, M., Phillips, P., Zhao, H., Zimmerman, R., Frequency of Post-operative Surveillance Scanning of Children with cerebellar Astrocytomas. Center for Clinical Epidemiology and Biostatistics, Clinical Epidemiology/Health Services Research Seminars, University of Pennsylvania, Philadelphia, PA, October 20, 1995.

Cnaan, A., Frequency of Post-Operative Surveillance Scanning of Children with Cerebellar Astrocytomas. University of Virginia, Medical College of Virginia Dept. of Biostatistics Seminar, Richmond, VA, November 8, 1996.

Hogarty, A., Hogarty, M., Leahey, A., Bunin, N., Zhao, H., **Cnaan, A.**, Carey, A., Paridon, S.: Cardiopulmonary performance during exercise after pediatric bone marrow transplantation. Fifth Annual Scientific Symposium and Retreat of the University of Pennsylvania Cancer Center, February, 1997.

Cnaan, A., Zhao, H., Tartaglione, M., Timlin, P., and Silber, J.H.: Measuring compliance in longitudinal clinical trials, Children's National Medical Center, Washington, D.C., July, 2002.

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Kazak, A.E., Alderfer, M.A., Streisand, R., Simms, S., Rourke, M.T., Barakat, L.P., Gallagher, P., and **Cnaan, A.**: Treatment of posttraumatic stress symptoms in adolescent survivors of childhood cancer and their families: A randomized clinical trial. Cancer Survivorship: Pathways to Health after Treatment, Washington, D.C., June 2004.

Alderfer, M.A., Annunziato, R., **Cnaan, A.**, and Kazak, A.E.: Patterns of Posttraumatic Stress Symptoms in Parents of Adolescent Cancer Survivors and Family Functioning. Society of Behavioral Medicine, Boston, MA, April 2005.

Cnaan, A., Zhao, H. Borgna- Pignatti, C. A natural history study to compare treatments: Deferoxamine and deferiprone for patients with thalassemia major” - University of Iowa, Iowa City, IA, April 2006.

Cnaan, A. and Luan, X. Analyzing Correlated Data with Partial and Small Clusters” – University of Pittsburgh, Pittsburgh, PA, March 2007.

Cnaan, A. Kuntz, N., Hache, L., Clemens, P., Hoffman, E. “A Trial of Chronotherapy of Corticosteroids in Duchenne Muscular Dystrophy” –Muscular Dystrophy Association Scientific conference, Washington DC, April 2013.

b. National Presentations

Cnaan, A. A modified Mantel- Haenszel statistic for organ transplant patients. Joint Statistical Meetings, Las Vegas, Nevada, August 5-8, 1985.

Cnaan, A. and Ryan, L. Analysis of survival from initial diagnosis. Society for Clinical Trials. Atlanta, GA, May 17-20, 1987.

Ryan, L. and **Cnaan, A.** Survival analysis in natural history studies of disease. Joint Statistical Meetings, San Francisco, CA, August 17-20, 1987.

Cnaan, A. and Zelen, M. A new test for treatment covariate interaction. Joint Statistical Meetings, New Orleans, LA, August 22-25, 1988.

Scott, D.A., Fox, J.A., Philip, B.K., Lind, L.J., **Cnaan, A.**, Palleiko, M.A., Stelling, J.M., Philip, J.H., Hydraulic resistance measurements can detect venous catheter infiltration. Association for the Advancement of Medical Instrumentation Annual Meeting, St. Louis, M.O., 1989.

Cnaan, A., Lefkopoulou, M., Grouped residuals for proportional hazards models. American Statistical Association Joint Annual Meetings, Washington D.C., August, 1989.

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Getson, A.J., Bush, D.F., **Cnaan, A.**, Kramer, M., Whipple, J.P.: The influence of positive control treatments on the evaluation of a new antipsychotic agent. NCDU, Florida, June, 1993.

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Boardman, C., **Cnaan, A.**, Planer, B., Ballard, R., Adjusting Estimates of a Laboratory Parameter Effect in a Neonatal Study Based on Center Differences in a Multi-Center Clinical Trial. Society for Clinical Trials, Seattle, Washington, May, 1995.

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Collins, M.H., Yang, R., Liu, Q., and Cnaan, A.: Cyclosporine A Reduces Apoptosis in Rat Small Bowel Transplants. Annual Meeting of the Society for Pediatric Pathology, Washington, D.C., March 23-24, 1996.

Molloy, P.T., Alavi, A., Vaughan, S. N., Needle, M. N., Gallagher, P. R., **Cnaan, A.**, Sadek, A. H., Phillips, P. C.: (F-18) Fluorodeoxyglucose (FDG) positron emission tomography (PET) visual grade of optic pathway and brainstem tumors in patients with neurofibromatosis Type 1 (NF1). Society of Nuclear Medicine 44th Annual Meeting, San Antonio, TX, June 5, 1997.

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- Grotzer, M.A., Janss, A.J., Fung, K-M., Rorke, L.B., Sutton, L.N., **Cnaan, A.**, Phillips, P.C., Lee, V. M.-Y., Trojanowski, J.Q. Neurotrophin Receptor trkC predicts good clinical outcome in medulloblastoma/primitive neuroectodermal brain tumors. Presented at The Annual Meeting of the American Association of Cancer Research (AACR), Philadelphia, PA, April 10-14, 1999.
- Winston, F.K., Posner, J., Vivarelli, C.M., Gallagher, P.R., Shaw, K.N., and **Cnaan, A.** Who Can Give A Pediatric Trauma History for Children Injured in Bicycle Crashes? Presented, 44th Annual Proceedings Association for the Advancement of Automotive Medicine. Chicago, IL, October 2-4, 2000.
- Brake, V., Cahn, D., Gallagher, P., Jawad, A.F., **Cnaan, A.**, Paulhamas, D., Rovner, A., Stallings, V., and Zemel, B.: Three-day vs seven-day diet records for pediatric subjects with cystic fibrosis. 2001 Annual GCRC National Meeting. Arlington, VA, March 9-11, 2001.
- Silber, J.H., **Cnaan, A.**, Clark, B.J. and the AAA Study Multicenter Investigative Team: Enalapril to Prevent Cardiac Function Decline in Long-Term Survivors of Pediatric Cancer Exposed to Anthracyclines: American Society Clinical of Oncology, Orlando, FL, May 18-21, 2002
- Kassam-Adams, N., Winston, W., Baxt, C., Fein, J., Ittenbach, R.F., and **Cnaan, A.**: Integrating screening for PTSD risk in the emergency medical setting. 2002 ISTSS Annual Meeting in Baltimore in November.
- Cnaan, A.** Incorporating repeated assessments of compliance information in analysis of clinical trials data - Association of General Clinical Research Center Statisticians, San Francisco, CA (invited), August, 2003.
- Cnaan, A.**, Alderfer, M., Kazak, A., Gallagher, P.R.: Statistical approaches to differential dropout in pediatric intervention research. (Presented at the American Psychological Association, Toronto, CA , August 2003)
- Metzger D, Im C, Wickrema R, Davis-Vogel-A, **Cnaan A**, Ho W-Z, Mounzer K.C., Schmidt E and Douglas SD. Screening for substance abuse among patient in care for HIV. Presented at the Sixty-Fifth Annual Scientific Meeting of the College of Problems of Drug Dependence (CPDD), Bal Harbour, FL, June 2003.

Alderfer, M.A., Annunziato, R., **Cnaan, A.**, Kazak, A.E. patterns of posttraumatic stress in parents of childhood cancer survivors (Presented at the Society of Pediatric psychology National Conference on Child health Psychology, Charleston, NC, April, 2004).

Kazak, A.E., Alderfer, M.A., Streisand, R., Simms, S., Rourke, M.T., Barakat, L.P., Gallagher, P., and **Cnaan, A**: Treatment of posttraumatic stress symptoms in adolescent survivors of childhood cancer and their families: A randomized clinical trial. (Presented at the Society of Pediatric Psychology National Conference on Child health Psychology, Charleston, NC, April, 2004).

Kazak, A.E., Alderfer, M.A., Streisand, R., Simms, S., Rourke, M.T., Barakat, L.P., Gallagher, P., and **Cnaan, A**: Treatment of posttraumatic stress symptoms in adolescent survivors of childhood cancer and their families: A randomized clinical trial. (Presented at the Cancer Survivorship: Pathways to Health after Treatment, Washington, D.C., June 2004).

Wang Q, Diskin S, Shue D, Attiyeh E, Mosse Y, Shusterman S, King R, Rappaport E, Khazi D, Winter C, Hii G, Rhodin NA, Jagannathan J, Grant G, Shabbout M, **Cnaan A**, Brodeur GM, Cheung NK, Gerald W, and Maris JM. Combining genome-wide transcriptome and regional DNA copy number analyses for candidate gene discovery in neuroblastoma. American Association for Cancer Research (AACR) Annual Meeting in Anaheim, California, April 2005.

Gow AJ, Ballard PL, Ischiropoulos H, Merrill JD, Truog WH, **Cnaan A**, Luan X, Golombek S, and Ballard RA: The NO CLD trial: Effect of inhaled nitric oxide in premature infants on oxidative modification of plasma proteins. 2006 PAS and Eastern SPR Annual Meeting, San Francisco, CA, April 29-May 2, 2006.

Gow AJ, Ballard PL, Merrill JD, Ischiropoulos H, Truog WE, **Cnaan A**, Luan X, Golombek SG, and Ballard RA: The NO CLD trial: Effect of inhaled nitric oxide in premature infants on tracheal aspirate nitric oxide metabolites. 2006 PAS and Eastern SPR Annual Meeting, San Francisco, CA, April 29-May 2, 2006.

Ballard PL, Merrill JD, Truog WH, **Cnaan A**, Luan X, Godinez R, Godinez M, Golombek S, And Ballard RA: The NO CLD trial: Effect of inhaled nitric oxide in premature infants on surfactant function and composition. 2006 PAS and Eastern SPR Annual Meeting, San Francisco, CA, April 29-May 2, 2006.

Kaplan H, Lorch SA, Luan X, Wadlinger S, Servaes S, Martin RJ, Truog WE, **Cnaan A**, and Ballard R: Role of inhaled nitric oxide in evolution of brain lesions in the premature infant. 2006 PAS and Eastern SPR Annual Meeting, San Francisco, CA, April 29-May 2, 2006.

Cnaan, A. and Luan, X. Analyzing Correlated Data with Partial and Small Clusters, Joint Statistical Meetings, Salt Lake City, Utah, July 2007.

Cnaan, A., Dorman, D.E and Sokol, R.J. Sharing across diseases panel. Advancing Rare

Diseases Research Through Networks and Collaboration, Bethesda, MD, July 2009.

Cnaan, A. Kuntz, N., Hache, L., Clemens, P., Hoffman, E. “A Trial of Chronotherapy of Corticosteroids in Duchenne Muscular Dystrophy” –Muscular Dystrophy Association Scientific conference, Washington DC, April 2013.

c. International Presentations

Cnaan, A. Exponential sum survival models with length biased data. Annual meeting of the Israeli Statistical Association, Haifa, Israel, May 1985.

Cnaan, A. and Atzmoni, S. Analysis of survival data from organ transplant studies. International Conference on Foundations of Statistical Inference. Tel-Aviv, Israel, December, 1985.

Cnaan, A. and Zelen, M. A test for qualitative interaction in clinical trials. Eastern North American Region of the International Biometric Society. Boston, MA, March 27-29, 1988.

Cnaan, A. and Lefkopoulou, M.: Grouped residuals for proportional hazards models. Society for Clinical Trials Annual Meeting, Toronto, Canada, 1990.

Zicarelli, T., **Cnaan, A.**, James, B., McFadden, E., Sliwa, D.: PSM/PRS – Micro to mainframe system for protocol selection, eligibility checking and randomization. Society for Clinical Trials Annual Meeting, Toronto, Canada, 1990.

Cnaan, A., Getson, AL A comparison of some longitudinal methods to analyze treatment response in the presence of missing data. Eastern North American Region of the Biometric Society, Philadelphia, PA, March 1993.

Cohen, D., Howe, C., **Cnaan, A.**, Patient Controlled analgesia Infusion Patterns in Children. International Association for the Study of Pain, Paris, France, August, 1993.

Getson, AL, **Cnaan A.** Assessment of the effect of missing data in the longitudinal setting: A pair of case studies. Epidemiology Seminar, Department of Community Medicine, Hebrew University – Hadassah, Jerusalem, Israel, August 1, 1994.

Cnaan, A. and Getson, A.L.: Assessment of the effect of missing data in the longitudinal setting: A pair of case studies. Epidemiology Seminar, Department of Community Medicine, Hebrew University-Hadassah, Jerusalem, Israel, August 1, 1994.

Cnaan, A., Boardman, C., Yue, N., Ballard, P. Examining the Effect of Administering Drug to a mother in Pre-term Labor on a Laboratory Parameter of the Infant in a Multi-Center Setting, Eastern North American Region of the International Biometric Society, Birmingham, Alabama, March, 1995.

Boardman, C., Zemel, B., **Cnaan A.** Method comparison: A body composition example. Eastern

- North American Region of the International Biometric Society, Birmingham, Alabama, March, 1995.
- Pinto-Martin, J.A., **Cnaan, A.**, Zhao, H., Paneth, N.: Neonatal Brain Damage and Cognitive Outcome at Age 9. (Presented, The International Epidemiology Meeting, 1999).
- Cnaan, A.**, Stouffer, N., Banks, B., Ballard, R. Analysis of Binary Outcomes When Part of the Data Set is Clustered. (Presented, 1999 International Biometric Society - Eastern North American Region, Atlanta, GA, March, 1999).
- Zhao, H., **Cnaan, A.**, Pinto-Martin, J., Brodeur, G. Dichotomizing a Continuous Explanatory Variable in Logistic and Cox Regression. (Presented, 1999 International Biometric Society - Eastern North American Region, Atlanta, GA, March, 1999).
- Bunin, G.R., Brown, J.E., Gallagher, P.R., **Cnaan, A.**, Rorke, L.B., and Kushi, L.H.: Maternal diet during pregnancy and child's risk of brain tumor (medulloblastoma). Congress of Epidemiology, Toronto, Canada, June 13-16, 2001.
- Silber, J.H., **Cnaan, A.**, Clark, B.J. and the AAA Study Multicenter Investigative Team: Enalapril to Prevent Cardiac Function Decline in Long-Term Survivors of Pediatric Cancer Exposed to Anthracyclines: 7th International Conference on Long-Term Complications of Treatment of Children and Adolescent for Cancer, Niagara-on-Lake, Ontario, Canada, June 2002.
- Cnaan, A.**, Zhao, H., Timlin, P., Tartaglione, M., and Silber, J.H.: Measuring Compliance and its Effect on Analyses in Longitudinal Clinical Trials, Eastern North American Region of the Biometric Society, Arlington, VA, March 2002.
- Cnaan, A.**, Alderfer, M., Kazak, A., Gallagher, P.R.: Statistical approaches to differential dropout in pediatric intervention research. American Psychological Association, Toronto, Canada, August 2003.
- Metzger D, Im C, Wickrema R, Mauzar K, Frank I, Zhao H, O'Brien C, **Cnaan A**, Ho W-Z and Douglas SD. Risk behaviors among substance users in HIV care clinics. Sixty-Sixth Annual Scientific Meeting of the College on Problems of Drug Dependence (CPDD), San Juan, Puerto Rico, June 2004).
- Wickrema R, Metzger D, Im C, Davis-Vogel A, O'Brien C, Schmidt E, **Cnaan A**, Zhao H, Ho W-Z, and Douglas SD. Correlates of HIV medications adherence for HIV+ patients in treatment for HIV. Sixty-Sixth Annual Scientific Meeting of the College on Problems of Drug Dependence (CPDD), San Juan, Puerto Rico, June 2004.
- Pinto-Martin J, Whitaker A, Feldman J, **Cnaan A**, Zhao HQ, Bloch JR, McCulloch D, Paneth N: Special education services and school performance in a regional cohort of low- birthweight infants at age nine. 5th Extraordinary International Symposium on Recent Advances in Otitis Media, Amsterdam, Netherlands, April 24-27, 2005.

Bunin GR, Kushi LH, Gallagher PR, Rorke-Adams LB, McBride ML, and **Cnaan A.**: Maternal diet and its association with medulloblastoma in children. World Federation of NeuroOncology Meeting, Edinburgh, United Kingdom, 2005.

Cnaan, A, Zhao H, Borgna-Pignatti, C.: A natural history study to compare treatments. XXIII International Biometric Conference, Montréal, Québec, Canada, July 16-21, 2006.

Cnaan, A., Luan, X., Wadlinger, S. Coburn, C., and Ballard, R. nalyzing data with partial and small clustering. Eastern Mediterranean Region of the International Biometric Society, Eilat, Israel (invited), January, 2007.

Conway, PH, Henry, B, **Cnaan, A,** Grundmeier, R, Zaoutis, T, and Keren, R: Recurrent urinary tract infections and resistant organisms in a primary care cohort. APA Presidential Plenary Session at 2007 PAS, Toronto, Canada, May 7, 2007.

Ballard, R.A., **Cnaan, A.,** Truog, W., Martin, R., Hibbs, A.M., Ballard, P.L., Merrill, J., Luan, X., Wadlinger, S., and the NO CLD Study Group. Decreased health services utilization in preterm infants treated with inhaled nitric oxide. PAS, Toronto, Canada, May 7, 2007.

12) Service to Community (List agency, duration of participation, amount of effort and role on project. Specify whether involvement was paid or unpaid, and whether your involvement was at regional, national or international level.

1990- 1991 American Statistical Association, Founding Editor, Newsletter of the Biopharmaceutical Section. Three published issues each year including professional articles (non-peer reviewed), unpaid, national

1992-1994 American Statistical Association, Founding Editor, *Biopharmaceutical Report*, American Statistical Association, Biopharmaceutical Section. Three published issues each year including professional articles (non-peer reviewed), unpaid, national.