

Stephen Andrew Krawetz, Ph.D.

Charlotte B. Failing Professor Director, Translational Reproductive Systems. Department of Obstetrics and Gynecology. Center for Molecular Medicine & Genetics
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Education

Degrees

1977 B.Sc., Biochemistry Specialist, University of Toronto.

1983 Ph.D., Department of Biochemistry, Faculty of Medicine, University of Toronto, Toronto, Ontario, Canada. Thesis: Isolation of Elastin mRNA: Characterization and Processing of the *In Vitro* Translated Products and the Signal Sequence of Elastin 'a'. Thesis Advisor: R.A. Anwar

Training

- 04/1983 - 04/1984 Postdoctoral Fellow,
Department of Medical Biochemistry, Faculty of Medicine, The University of Calgary. Advisor: G.H. Dixon
- 04/1984 - 02/1989 Alberta Heritage Foundation for Medical Research Postdoctoral Fellow,
Department of Medical Biochemistry, Faculty of Medicine, The University of Calgary. Advisor: G.H. Dixon.

Faculty Appointments

- 02/1989 - 11/1989 Assistant Professor (Research)
Department of Molecular Biology and Genetics, Center for Molecular Biology, Wayne State University School of Medicine.
- 11/1989 - 07/1992 Assistant Professor
Department of Molecular Biology and Genetics, Wayne State University School of Medicine.
- 07/1992 - 08/1994 Assistant Professor
Departments of Obstetrics and Gynecology, Molecular Biology and Genetics, Wayne State University School of Medicine.

- 08/1994 - 10/1994 Associate Professor (TENURE)
Departments of Obstetrics and Gynecology, Molecular Biology and Genetics, Wayne State University School of Medicine.
- 10/1994 - 01/2000 Associate Professor (TENURE)
Department of Obstetrics and Gynecology, Center for Molecular Medicine & Genetics, Wayne State University School of Medicine.
- 01/2000 – 08/2000 Associate Professor (TENURE)
Department of Obstetrics and Gynecology, Center for Molecular Medicine & Genetics, Institute for Scientific Computing, Wayne State University School of Medicine.
- 08/2000 - 06/2001 Professor (TENURE)
Department of Obstetrics and Gynecology, Center for Molecular Medicine & Genetics, Institute for Scientific Computing, Wayne State University School of Medicine.
- 06/2001 – date Charlotte B. Failing Professor (TENURE)
Department of Obstetrics and Gynecology, Center for Molecular Medicine & Genetics, Institute for Scientific Computing, Wayne State University School of Medicine.

Additional Professional Appointments

- 09/1976 - 06/1977 Occasional Teacher (High School)
Scarborough Board of Education, Scarborough, Ontario, Canada
- 01/1985 - date Biotechnology Consultant (over ten major companies)
- 01/1988 Co-founder, Genetic Imaging Inc., Calgary, Alberta, Canada
- 09/2001 – 08/2006 Director, Wayne State University Bioinformatics Node, Michigan Life Sciences Corridor
- 09/2004 – 08/2007 Director, Michigan Wide Center of Excellence for Combating the Paternal Impact of Toxicological Waste on the Next Generation
- 11/2006 – date Director, Translational Reproductive Systems.

Major Professional Societies

- 1980 - 1995 Canadian Biochemical Society
- 1981 - date American Association for the Advancement of Science

1989 - 1993	Comprehensive Cancer Center of Metropolitan Detroit
1989 - 1995	New York Academy of Sciences (elected)
1991 - date	The American Society of Human Genetics
1993 - 1998	International Society for Matrix Biology (Founding Member)
1996 - 1997	American Society for Reproductive Medicine
1996 - date	Society for the Study of Reproduction
1997 - 2000	The American Society of Gene Therapy
1998 – date	Barbara Ann Karmanos Cancer Institute (Full Member Cancer Genetics Program)
2003 – date	American Society for Biochemistry and Molecular Biology (Elected Regular Member)
2005 – 2007	The International Society For Computational Biology

Awards/Honors

Awards

1984	British Columbia Children's Hospital Postdoctoral Research Fellowship (inaugural competition)
1984 – 1988	Alberta Heritage Foundation for Medical Research Postdoctoral Fellowship
1988	IntelliGenetics Computer Application Award (inaugural competition): "Biological Sequence Alignment of the Protamine Genes and Assessment of the Evolution of the Core Sequence"
1998	Society of Perinatal Obstetricians 18th Annual Meeting First Prize Genetics and Ultrasound "Temporal Expression of the transgenic human protamine locus PRM1→PRM2→TNP2" Stewart, K.A., Kramer, J.A., Evans, M.I. and Krawetz, S.A.
1999	Outstanding Basic Scientist of the Year 1998-1999. C.S. Mott Center for Human Growth and Development
2000	Research Excellence Award. Wayne State University School of Medicine
2001	Charlotte B. Failing Professor of Fetal Therapy and Diagnosis
2004	CEGYR 5th Magisterial Tribune Gold Medal
2005	Wayne State University School of Medicine Dean's "Making a Difference" research funding exceeding \$1 million dollars
2005	Wayne State University Board of Governors Faculty Recognition Award

Honors

1988	CANADIAN WHO'S WHO
1988	AMERICAN MEN AND WOMEN OF SCIENCE
1990	WHO'S WHO IN SCIENCE AND ENGINEERING
1993	WHO'S WHO IN THE MIDWEST
1993	WHO'S WHO IN THE WORLD
1994	WHO'S WHO IN AMERICA
1994	MEN OF ACHIEVEMENT
1995	WHO'S WHO IN MEDICINE AND HEALTHCARE (1st Edition)
1999	INTERNATIONAL WHO'S WHO OF PROFESSIONALS
2003	WHO'S WHO IN AMERICAN EDUCATION

Service

Editorial Board Membership

1992 - 2006	BioTechniques
1992 - date	AgBiotech News and Information
1995 - 1999	Gene-COMBIS, Founding Editorial Board Member, the first complete electronic journal for molecular biology & genetics
2000 – 2001	CBGI 2001 (Atlantic Symposium on Computational Biology and Genome Information Systems & Technology)
2004 – 2007	Cellular and Molecular Biology Letters
2005 – date	Gene Therapy & Molecular Biology
2007 – 2008	Archives of Andrology: Journal of Reproductive Systems: Editor-in-Chief
2008 – date	SBiRM: Systems Biology in Reproductive Medicine: Founding Editor-in-Chief

Study Section Service

1994	American Heart Association of Michigan, Student Research Fellowship
1998	National Institutes of Health, Scientific Technical and Review Board
1998 - 2002	American Heart Association, Great America Five D Consortium, Molecular Biology of Muscle, Developmental Biology and Cardiovascular Development (Pediatric)
1999	National Institutes of Health, Specialized cooperative centers program in reproduction research. Center for the study of male germ cell function, University of Pennsylvania site visit.

- 2000 – 2003 National Institutes of Health, Scientific Technical and Review Board
- 2001 American Heart Association, Great America Five D Consortium, Molecular Genetics and Biotechnology (**Co-Chair**)
- 2002 National Institute of Child Health and Human Development Special Emphasis Panel (**Chair**)
- 2002 – date Canada Research Chair’s College of Reviewers
- 2005 – 2006 National Institute of Child Health and Human Development CMIR
- 2008 National Institute of Child Health and Human Development Special Emphasis Review Panel

National Advisory Boards and Committee Service

- 1998 – 2006 EPAMAC Environmental Protection Agency Microarray Consortium
- 1999 – 2006 IMARC, International MAR Consortium (founder)
- 2001 – 2002 Publicity **Chair**: Atlantic Symposium on Computational Biology, Genome, Information Systems & Technology, Duke University, Durham, NC
- 2001 – 2003 SSR Industrial Relations Subcommittee of the Development Committee
- 2007 – date NICHD Reproductive Medicine Network – Resource Allocation
- 2008 – date NIH National Children’s Study Epigenomics Committee
- 2008 – date NICHD Reproductive Medicine Network – Biologic Repository

Advisory Boards and Committees

- 1999 – 2001 Michigan Health and Aging Research and Development Initiative, Michigan Life Sciences Research Corridor, Microarray Technology (and Genomics) Subcommittee
- 2000 – 2003 High Performance Computing Policy Committee, Wayne State University
- 2002 – 2003 Board of Advisors for the Applied Genomics Center, Michigan Life Sciences Research Corridor
- 2002 – 2005 General Clinical Research Center, Children’s Hospital of Michigan
- 2003 – 2006 School of Medicine Scientific Advisory Committee, Wayne State University
- 2003 – 2006 International Society for Computational Biology, Great Lakes Bioinformatics Consortium Chapter, Board of Directors
- 2004 - 2006 The Future of Research at the C.S. Mott Center for Human Growth & Development, Wayne State University

2006 – date Michigan Department of Community Health – Newborn screening dried blood spot archive

2007 – 2008 Eastern Michigan University Bioinformatics Advisory Board (Dept. of Biology)

Reviewer (ad hoc)

Journals:

Genomics, Cytogenetics and Cell Genetics, Applied and Theoretical Electrophoresis, Analytical Biochemistry, American Journal of Respiratory Cell and Molecular Biology, Developmental Genetics, Journal of Molecular and Cellular Cardiology, BioTechniques, The Journal of Biological Chemistry, Human Reproduction, Biology of Reproduction, DNA and Cell Biology, Human Reproduction Update, Molecular and Cellular Biology, Briefings in Bioinformatics, Journal of Bone and Mineral Research, Urology, Information Sciences: An International Journal, Molecular Human Reproduction, Toxicology and Applied Pharmacology, Proceedings of the National Academy of Science (U.S.A), Biochemistry, Stem Cells, Cellular and Molecular. Biology Letters, Reproductive Toxicology, Endocrinology, Artificial Intelligence in Medicine, Molecular Endocrinology, Nature, Reproduction, Cancer Therapy, BMC Bioinformatics, Genome Biology, Molecular Biology and Evolution, Nature Methods, Targeted Protein Database, Genome Biology, International Journal of Andrology, Journal of Histochemistry & Cytochemistry, Nature Medicine, Journal of Molecular Biology, BMC Genomics.

Granting Agencies:

United States Department of Agriculture, National Sciences and Engineering Research Council of Canada, Cottrell Science Awards, Human Frontier Science Program, The Italian Ministry for University and Research, National Science Foundation, Lalor Foundation, Wellcome Trust, Manitoba Medical Service Foundation.

Universities:

Oakland University faculty performance review, Georgetown University faculty promotion review, University of Manchester Institute of Science and Technology faculty promotion review, University of Missouri at Columbia faculty promotion review, Center for Molecular Medicine and Genetics, Wayne State University.

Judging:

Wayne State University School of Medicine Medical Student Research Symposium 1992 – 1996

Wayne State University School of Medicine Graduate Student Research Day 1999

Wayne State University School of Medicine Medical Student Research Symposium 2000
Wayne State University School of Medicine Graduate Student Research Day 2004 – 2005
The Burning Question, A National Symposium on Inflammation and Disease Progression,
Wayne State University School of Medicine 2008.

Wayne State University School of Medicine Graduate Student Research Day 2008 - 2009

Societies:

New York Academy of Sciences STRP program 1993

Symposia

Session Chair:

- 1999 Society for the Study of Reproduction Thirty-Second Annual Meeting, Pullman WA. Co-Chair: Multiple levels of Gene Regulation
- 1999 Sperm-mediated gene transfer: advances in sperm cell research and applications, Siena, Italy. “The sperm nucleus and sperm/DNA interaction: structure and mechanism”
- 2000 Wayne State University, Institute for Scientific Computing, Bioinformatics Workshop
- 2003 Wayne State University, Institute for Scientific Computing, Bioinformatics Workshop
- 2007 Florence-Utah International Symposium on "Genetics of male infertility", Florence, Italy.
- 2009 ICA 2009 Satellite Symposium Sperm DNA Damage: from Research to Clinic, Rome, Italy.

Program Committees

- 1996 Symposium Organizing Committee, Center for Molecular Medicine and Genetics: Genetics in Development, Evolution and Disease, Wayne State University, Detroit, MI
- 2000 - 2001 Program committee member, Atlantic Symposium on Computational Biology, Genome Information System & Technology, Duke University, Durham, NC
- 2002 - 2005 Michigan Center for Biological Information Annual Retreat co-host, Waldenwoods & Frankenmuth, MI
- 2005 – 2006 British Andrology Society 2006 Annual Meeting: The testis as a conduit for genomic plasticity

Medical Interest Group Membership

- 1994 - 1999 Fetal Therapy, Hutzel Hospital, Wayne State University
- 1996 - 2000 Gene Therapy Club, Karmanos Cancer Institute, Wayne State University
- Present Committee Service
- 07/2007 – date Reproductive Systems Biology Search Committee.
- 10/2007 – date Center/Faculty Development, Wayne State University School of Medicine, Center for Molecular Medicine & Genetics (**Chair 2008**)
- 04/2008 – date Faculty Mentor Committee, Leonard Lipovich, Assistant Professor, Center for Molecular Medicine & Genetics
- 05/2008 – date Faculty Mentor Committee, Derek Wildman, Assistant Professor, Center for Molecular Medicine & Genetics
- 09/2008 – date Mott Center DLAR Liaison Committee
- 09/2008 – date Mott Center Website Committee
- 12/2008 – date Promotion and Tenure (**elected**), Wayne State University School of Medicine, Center for Molecular Medicine & Genetics
- 05/2009 – date Stem Cell Research Oversight (SCRO) Committee
- 07/2009 – date Chair Search Committee (**elected**), Wayne State University School of Medicine, Department of Obstetrics and Gynecology

Past University Committee Service

- 09/1980 - 09/1981 Tithe Committee, Department of Biochemistry, University of Toronto
- 04/1989 - 04/1992 Graduate Student Recruitment Committee, **Chair** 06/90 - 04/92. Department of Molecular Biology and Genetics, Wayne State University School of Medicine
- 11/1991 - 04/1992 Faculty Salary Committee, Department of Molecular Biology and Genetics, Wayne State University School of Medicine
- 07/1990 - 07/1993 **Director and Founder**, Molecular Biology Computer Facility, Wayne State University and Wayne State University School of Medicine
- 10/1991 - 06/1993 Seminar Committee, Department of Molecular Biology and Genetics, Wayne State University School of Medicine
- 12/1992 - 02/1993 Graduate Training Committee, Department of Molecular Biology and Genetics, Wayne State University School of Medicine

10/1992 - 07/1994 Equipment Committee, C.S. Mott Center for Human Growth and Development, Wayne State University School of Medicine

07/1993 - 07/1994 Computer Committee, Center for Molecular Biology, Department of Molecular Biology and Genetics, Wayne State University School of Medicine

01/1994 – 12/1994 Wayne State University Computing & Information Technology Strategic Planning Round Table

09/1989 - 07/1996 Laboratory Safety Committee, Wayne State University School of Medicine

09/1994 - 12/1996 Technology Transfer/Industrial Liaison, Center for Molecular Medicine & Genetics

07/1996 - 03/2002 Wayne State University Biosafety Committee

05/1997 - 08/1998 Graduate Recruitment Committee, Center for Molecular Medicine & Genetics

08/1997 - 08/1998 Biocomputing Support Task Force, Wayne State University School of Medicine, Center for Molecular Medicine & Genetics

08/1997 – 02/2000 Promotion and Tenure (**elected**), Wayne State University School of Medicine, Center for Molecular Medicine & Genetics

08/1997 - 04/2000 Biotechnology/Tech-Transfer/Biocomputing Task Force, Wayne State University School of Medicine, Center for Molecular Medicine & Genetics **Chair** 08/99 – 04/00

08/1997 – 06/2001 Research Committee, C.S. Mott Center

08/1997 – 06/2001 Equipment Committee, C.S. Mott Center

08/1997 – 08/2003 Faculty Senate Library Service, Wayne State University School of Medicine

11/1999 - 04/2000 Center for Molecular Medicine and Genetics Distinguished Lecture task force

02/2000 – 02/2001 Wayne State University Research Grant Review Committee

07/2000 – 06/2001 Promotion and Tenure, Wayne State University School of Medicine, Department of Obstetrics and Gynecology

02/2000 – 01/2003 Promotion and Tenure (**elected chair**), Wayne State University School of Medicine Center for Molecular Medicine & Genetics

02/2000 – 09/2005 Promotion and Tenure Wayne State University School of Medicine, Center for Molecular Medicine & Genetics

07/2000 – 12/2003 Faculty Computer Committee, Wayne State University School of Medicine

07/2001 – 09/2002 Department of Pharmaceutical Sciences, Pharmaceutics Faculty Recruiting Committee, Wayne State University

01/2001 - 12/2002 IGERT Graduate Committee

01/2002 – 09/2003 Center for Molecular Medicine and Genetics Graduate Student Recruitment/ Retention

06/2003 – 12/2003 Dean's Bioinformatics Task Force (**chair**)

09/2003 – 04/2004 CMMG Graduate Student Examination Committee

12/2003 – 10/2004 Department of Obstetrics and Gynecology Faculty Standards Committee

05/2004 – 04/2005 Wayne Sate School of Medicine Faculty Salary Review Committee

09/2004 – 09/2005 Graduate & Medical Curriculum/Training, Center for Molecular Medicine & Genetics

07/2005 – 06/2006 Promotion and Tenure, Wayne State University School of Medicine, Department of Obstetrics and Gynecology

09/2004 – 09/2006 Graduate Student Recruitment/Retention, Center for Molecular Medicine & Genetics

11/2005 – 09/2006 Board of Governors Faculty Recognition Award

11/2005 – 10/2006 Office Vice President for Research, Reproductive Systems Biology Task Force

03/2001 – 08/2006 Advisory Board, Wayne State University Michigan Life Sciences Corridor Genomics Technology Core

01/2006 – 10/2006 Office Vice President for Research, Stem Cell Research

09/2006 – 08/2007 Graduate Student Examination Committee, Wayne State University School of Medicine, Center for Molecular Medicine & Genetics

06/2007 – 10/2007 Wayne State University School of Medicine Strategic Planning Workgroup for Research.

09/2006 – 06/2007 Merit (**elected**), Wayne State University School of Medicine, Department of Obstetrics and Gynecology

09/2006 – 06/2007 Merit & Promotion and Tenure (**elected**), Wayne State University School of Medicine, Center for Molecular Medicine & Genetics

08/2006 – 07/2008 Biostatistics and Bioinformatics CTSA Working Groups, Wayne State University School of Medicine

Community Service

Judging:

1992 - 1994 Science and Engineering Fair of Metropolitan Detroit Inc.

1998 - 1999 Science and Engineering Fair of Metropolitan Detroit Inc.

Public School:

1992 - 1994 EduMentor Program, grades 9 - 12

Teaching

Courses developed, coordinated and taught

Undergraduate:

1997 - 1999 **Director and Founder** - Undergraduate Summer Laboratory Research Program

2003 - 2005 **Director and Founder** - C.S. Mott Center Summer Undergraduate Laboratory Research Program

Graduate:

1990 MBG 709 Communication of Molecular Biology Data, Wayne State University School of Medicine

1990 MBG 702 Advanced Molecular Biology, Wayne State University School of Medicine.

1990 Molecular Biology Retraining Course "The Use of Computers in Molecular Biology." Wayne

1991 MBG 785 Current Literature

1992 - 1993 **Director**- MBG 702 Advanced Molecular Biology

1994 **Director** - MBG 785 Current Literature

1995 - 2005 **Director and Founder** - MBG 8680 Computer Applications in Molecular Genetics

Graduate Professional:

1990 Introduction to the IntelliGenetics Suite at the Wayne State University and Wayne State University School of Medicine Molecular Biology Computer Facility

1998 **Session Director** - MBG 770 Introduction to Computer Applications in Molecular Medicine & Genetics

- 2006 Gene Chip Diagnosis of Male Factor Infertility, MBA- business plans and partnerships MGT 7660 New Ventures Course
- 2006 **Mentor Directed Study** – PSL 7996 - Hosain Shazzad (Computer Science)
- 2006 - date **Director and Founder** - PSL 7090 Sections: 001.MBG Readings in Molecular Male Reproduction and Chromatin Systems Biology
- 2008 CSE480/CIT480 Senior Capstone Project Oakland University, Toxicity Factors DB for studying Male Fertility

Medical Student:

- 1989 - date **Coordinator and Founder** - Year IV Senior Medical Student Elective, Wayne State University School of Medicine, Course 2424029. Molecular Biology & Genetics of Human Disease, Molecular Medicine and Genetics
- 1993 - date **Coordinator and Founder** - Year IV Senior Medical Student Elective, Wayne State University School of Medicine, Course 0813041. Molecular and Cellular Biology of Development and Disease, Department of Obstetrics and Gynecology

Professional Workshops:

- 2003 Sperm RNA Profiles of fertile men: does dad deliver? American Society of Andrology Workshop, Phoenix, Arizona
- 2005 Molecular bioinformatics resources for the clinical andrologist. 8th International Congress of Andrology, Seoul, South Korea

Personnel trained in laboratory

Visiting Professors

- 05/2001 – 09/2001 Dr. Ronghua Li,
CMB Scholar
Department of Forensic Biology,
Sichuan University, Peoples Republic of China
- 04/2001 – 03/2002 Dr. David Miller,
Leverhulme Scholar
Department of Obstetrics and Gynaecology,
University of Leeds, England

Postdoctoral

- 01/1990 - 10/1992 Dr. David M. Svinarich
(assumed an Assistant Professor position)
- 12/1992 - 11/1994 Dr. Suresh Choudhary

02/1993 - 12/1994	Dr. Terence McAlinden American Heart Association Postdoctoral Fellow (entered Dental School)
03/1993 - 02/1994	Dr. Terrence Puryear ADAHMA/NIAAA Prenatal Alcohol Research Postdoctoral Fellow (assumed an Assistant Professor position)
08/1994 - 05/1998	Dr. J. Kramer
1994 - 1996	Deans Postdoctoral Fellowship award recipient
1996 - 1998	Lalor Foundation Postdoctoral Fellow (assumed Research Scientist position at Monsanto Corporation)
10/2000 – 03/2005	Dr. Charles Ostermeier
2001 – 2002	Dean’s Postdoctoral Fellowship award recipient (assumed Research Scientist position at Jackson Laboratories)
12/2005 – 07/2007	Dr. Yan Li
01/2006 – 09/2006	Dr. Xin Li (assumed position at NIA with Minoru Ko)
01/2007 – 08/2007	Dr. Rui Martins (assumed EMBO Postdoctoral Fellowship with Monika Goetz, Cambridge, UK)
01/2007 – present	Dr. Claudia Lalancette
2007 – 2009	Dean’s Postdoctoral Fellowship award recipient
M.D.	
01/1990 - 06/1990	Dr. Mitchell Shek (Dermatology)
04/1994 - 09/1994	Dr. A. Reichler (Reproductive Genetics)
09/1995 - 09/1997	Dr. Y. Yorán (Reproductive Genetics)
03/1996 - 09/1996	Dr. In-Bai Chung (Reproductive Genetics)
11/1996 - 06/1998	Dr. Katherine Stewart (Maternal Fetal Medicine) American College of Obstetricians and Gynecologists Michigan 1998 Fellows meeting, First Prize “Temporal expression of the transgenic human protamine locus PRM1→PRM2→ TNP2.” OHEP Center for Medical Education Research Forum 1998, Excellence in Research First Prize “Temporal expression of the transgenic human protamine locus PRM1→PRM2→TNP2.” (assumed faculty position at University of Wisconsin)

- 04/1999 – 02/2002 Dr. Richard Leach (Reproductive Endocrinology) National Institute of Child Health and Human Development Research Scholars Program
- 09/2002 – 08/2005 Dr. Julie Moldenhauer (Maternal Fetal Medicine and Reproductive Genetics; assumed a faculty position at University of Chicago)
- 10/2006 – 06/2009 Dr. Kathryn Drennan (Maternal Fetal Medicine)

GRANT SUPPORT (ACTIVE)

- 2005 – 2010 National Institutes of Health HD36512. (**Principal Investigator**) Genetic mechanisms that potentiate human spermatogenesis. (\$1,483,567).
- 2007 – 2012 National Institutes of Health U10 HD-39005. WSU Cooperative Reproductive Medicine Network Center. (\$1,510,000)
- 2008 – 2013 National Institutes of Health/National Cancer Center R01CA131490-01(**Co- Investigator**) Proteolytic Pathways in Progression of Pre-Malignant Breast Disease
- 2009–2011 Crossover Study on Human Exposure to Phthalates and Modification of the Paternal Transcriptome (**Collaborator**) Harvard Medical School. (\$200,000)

GRANT SUPPORT (SUBMITTED)

- Detroit Reproductive Career Development Research Center (**Mentor**) NIH.
- Crossover Study on Human Exposure to Phthalates and Male Fertility (**Co-Principal Investigator**) NIH.
- Treatments for Menopause-Related Sleep Disorders and Their Mechanisms (**Co-Principal Investigator**) NIH.

GRANT SUPPORT (PAST) \$ 21,010,561

- 1987 Alberta Provincial Career Development and Employment Summer Temporary Employment Program (**Principal Investigator**): Expression of the bovine protamine genes. (\$2,640)
- 1987 Alberta Heritage Foundation For Medical Research Technology Transfer Program Phase 1 (**Principal Investigator**): Computer/Video expert system for biomedical applications. (\$25,000)

- 1988 National Science and Engineering Research Council of Canada (IRAP with Alta Genetics) (**Principal Investigator**): Development of a non-radioactive molecular assay for bovine embryo sexing. (\$519,036)
- 1990 Wayne State University Faculty Research Award (**Principal Investigator**): Isolation of a human lysyl oxidase cDNA. (\$6,000)
- 1990 Wayne State University Supplemental Research Equipment Fund Application for a centralized molecular biology computer resource. (**Director**) Funds committed for equipment from 11 Departments from the Faculties of Liberal Arts, Science and Medicine, 4 Centers and Institutes and the School of Medicine. (\$101,905)
- 1989 - 1991 American Heart Association Florida (**Collaborating Investigator**): Cloning and characterization of the human lysyl oxidase gene. (\$60,000)
- 1991 - 1992 Wayne State University School of Medicine (**Mentor**): Faculty retraining in Molecular Biology. (\$30,000)
- 1990 - 1992 Contract (**Principal Investigator**): MilliGen/Biosearch to evaluate DNA Image analysis system. (\$40,000)
- 1992 SUN Microsystems (**Principal Investigator**): SUN microsystems computational biology research and training facility. (\$44,365)
- 1991 Wayne State University Small Research Grant (**Principal Investigator**): Activation of a haploid-specific domain during spermatogenesis. (\$650)
- 1992 American Society for Microbiology: (**Lead Scientist**): Scientist-Educator Team (SET): four training positions awarded.
- 1992 Wayne State University Medical Student Summer Research Grant. (\$1,200)
- 1992 Wayne State University International Travel Award: **To present** at the Winternational Symposium "Gene expression during gametogenesis" the definition of the protamine genic domain: current developments. (\$500)
- 1992 Department of Molecular Biology and Genetics matching funds Travel Award: **To present** at the Winternational Symposium "Gene expression during gametogenesis" the definition of protamine genic domain: current developments. (\$100)
- 1991 - 1993 American Cancer Society (**Collaborating Investigator**): Identification of multiple endocrine neoplasia type I gene transcripts. PDT-410 (\$300,000)

- 1992 - 1993 DNX NTDF Program (**Principal Investigator**): Activation of a haploid-specific domain during spermatogenesis. N01-HD-0-2911 (\$7,500 for transgenic services)
- 1993 Wayne State University Small Research Grant (**Principal Investigator**): Interim support for Sun computer maintenance. (\$650)
- 1991 – 1994 American Heart Association National Center (**Principal Investigator**): Isolation and analysis of the human lysyl oxidase gene. 91008530 (\$132,000)
- 1993 - 1994 The Fund For Medical Research and Education (**Principal Investigator**): Activation of haploid-specific domains during spermatogenesis. (\$20,000)
- 1994 Wayne State University Interdisciplinary Research Seed Fund, Departments of Electrical and Computer Engineering and Obstetrics & Gynecology and Molecular Biology & Genetics (**Co-Principal Investigator**): ISWAC: Integrated System for Wholistic Assembly of Chromosomes computer design and feasibility study. (\$9,970)
- 1994 Wayne State University Small Research Grant (**Principal Investigator**): Support for PC connectivity to Sun Sparc stations. (\$650)
- 1994 - 1995 American Heart Association Michigan (**Principal Investigator**): Analysis of a candidate predisposing factor for Progeria. 43GS945 (\$28,000).
- 1995 Wayne State University Small Research Grant (**Principal Investigator**): Support for computer image and analysis facility maintenance. (\$650).
- 1992 - 1996 National Institutes of Health (**Principal Investigator**): Activation of a haploid-specific domain during spermatogenesis. RO1 HD28504 (\$420,245)
- 1994 - 1996 Dean's Postdoctoral Recruiting Award (**Principal Investigator**): Activation of a haploid-specific domain during spermatogenesis. (\$20,000)
- 1996 - 1997 Lalor Foundation (**Sponsor**: Postdoctoral Fellowship to J.A. Kramer): The role of chromatin structure in templating the paternal genome. (\$20,000)
- 1992 - 1997 National Institute on Alcohol Abuse and Alcoholism Center Grant "Alcohol Exposure: From Mechanism to Prevention." 2 P50 AA07606-06 (**Co-Principal Investigator**): Component 2, Molecular changes following *in vitro* ethanol exposure of mouse pre-implantation embryos. (\$953,519)
- 1995 - 1997 American Heart Association of Michigan (**Principal Investigator**): Potentiation of the lysyl oxidase genic domain. 22GS956 (\$56,000)
- 1997 - 1998 Lalor Foundation (**Sponsor**: Postdoctoral Fellowship to J.A. Kramer): The molecular mechanisms of control in the male haploid genome. (\$22,500)

- 1997 - 1998 Research Stimulation Fund Wayne State University (**Co-Investigator**):
Molecular characterization of early testicular development in congenital
cryptorchidism. (\$9,981)
- 1998 American Heart Association. Summer Studentship, Ms. Jeanna Wheeler (**Mentor**)
(\$2,500)
- 1998 Gordon Research Conferences. Mammalian Embryogenesis and Gametogenesis
(**Participant**): (\$583)
- 1998 - 1999 Wayne State University Research Grant Program (**Principal Investigator**): Gene
potentiation during human spermatogenesis. (\$7,000)
- 1999 XVIIIth International Congress of Genetics (**Invited Speaker**) (\$1,000)
- 1999 Sperm-mediated gene transfer: advances in sperm cell research and applications.
(**Invited Speaker**) (\$961)
- 2000 Gene Therapy and Molecular Biology International Conference. (**Invited Speaker**)
(\$400)
- 1998 - 2000 American Heart Association Mid-America 9807710. (**Principal Investigator**):
Readying the lysyl oxidase gene for expression. (\$60,000)
- 1999 - 2000 Karmanos Cancer Institute (**Sponsor** with H. Heng) New sensitive diagnostic
tool for cancer research: high resolution SKY for detection of small chromosomal
insertion/translocation/ amplification. (\$18,000).
- 2001 Contract with Open Channel Software (**Co-Principal Investigator**): ONTO-
EXPRESS: A tool for microarray analysis. (\$60,000)
- 2001 – 2003 Dean's Postdoctoral Recruiting Award (**Principal Investigator**): Activation of a
haploid specific domain during spermatogenesis. (\$20,000)
- 1999 - 2003 National Institutes of Health HD36512. (**Principal Investigator**): Genetic
mechanisms that potentiate human spermatogenesis. (\$934,874)
- 2003 – 2004 National Institutes of Health 1S10RR017857-01 (**Co-Principal Investigator**):
Infrastructure equipment for gene expression analysis (\$188,284)
- 2000 – 2005 National Science Foundation DGE-9987598 (**Participant**) IGERT:
Interdisciplinary Traineeship in High Performance Computing Applications.
(\$2,559,322).
- 2000 – 2005 National Institutes of Health (**Co-Principal Investigator**) WSU Cooperative
Reproductive Medicine Network Center. (\$3,084,230).
- 2000 – 2006 Michigan Life Sciences Corridor. (**Co-Principal Investigator, Node Director**)
Michigan Center for Biological Information. (\$8,667,765).

2003 – 2008 National Science Foundation 0234806 (**Co-Principal Investigator**) Novel Tools for the Vertical Analysis of Genomic Data (\$1,221,674).

2004–2007 Michigan Life Sciences Corridor Center of Excellence 197 (**Principal Investigator**): Combating the Paternal Impact of Toxicological Waste on the Next Generation of Michiganders (\$1,004,647).

2005- 2008 Wayne State University 12-month Graduate Research Assistant Award (**Principal Investigator**) Genetic mechanisms that potentiate human spermatogenesis. (\$88,401)

2007–2008 Wayne State University Research Enhancement Program in Computational Biology. (**Principal Investigator**) A multidisciplinary strategy to identify MARs (\$217,259).

2007 – 2009 Dean's Postdoctoral Recruiting Award (**Principal Investigator**) (\$40,000)

2007 - 2009 Department of Energy LSP Small Scale Sequencing Proposal JGI (**Principal Investigator** with Norman A Doggett) Genome-wide sequencing and analysis of nuclear matrix attachment regions (MARs). (in kind value of \$40,000)

RESEARCH GOAL

To understand the genetic mechanism(s) that controls the selection of genes for development and differentiation.

RESEARCH FOCUS: SYSTEMS BIOLOGY

Control of development and differentiation gene expression during spermatogenesis
assessing toxicological exposure computer assisted sequence analysis translational
mechanistic analysis gene therapy & molecular diagnostics

PUBLICATIONS - 174

Papers: 137

- 1) Krawetz, S.A. and Israelstam, G.F. (1978) Kinetics of pyridine nucleotide transhydrogenase from chlorella. *Plant Science Letters* **12**:323-326.
- 2) Krawetz, S.A., Narayanan, A.S. and Anwar, R.A. (1983) *In vitro* translation of elastin mRNA and processing of the translated products and the signal sequence of elastin 'a'. *Canadian Journal of Biochemistry and Cell Biology* **61**:274-286.
- 3) Krawetz, S.A. and Dixon G.H. (1984) Isolation and *in vitro* translation of a mammalian protamine mRNA. *Bioscience Reports* **4**:593-603.

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