

John F. McCarthy

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RESEARCH INTERESTS

Development and application of bioinformatics, bioengineering, computational biology, and biostatistical methods to problems in genetics, functional genomics, and molecular medicine. Application of artificial intelligence, machine learning, and data mining techniques to knowledge representation and discovery in clinical and molecular databases. Understanding the respective roles of both genes and environment in the etiology and pathophysiology of complex human diseases.

EDUCATION

M.P.H., 1998-present

University of Pittsburgh Graduate School of Public Health, Pittsburgh, PA

Essay: *Application of machine learning and biostatistical techniques to knowledge representation and discovery in a clinical database of pregnancy outcomes*

M.D., 1989-1993

University of Illinois College of Medicine, Urbana, IL

Ph.D., Biophysics, 1979-1989

University of Illinois, Urbana, IL

Thesis: *Development and Evaluation of a Fluorescence Emission Ratio Based Fiber Optic pH Measurement System for Use in Monitoring Changes in Tumor pH During Clinical Hyperthermia*

M.S., Electrical Engineering, 1976-1978

University of Connecticut, Storrs, CT

B.A., Physics and Chemistry, 1972-1976

Boston University, Boston, MA

RESEARCH EXPERIENCE

NLM Postdoctoral Fellow, 1997-present

University of Pittsburgh Medical Center, Pittsburgh, PA
Center for Biomedical Informatics

Applying artificial intelligence and biostatistical methods to data mining and knowledge discovery in both clinical and molecular databases

MWRI Postdoctoral Fellow, 1994-1997

University of Pittsburgh Medical Center, Pittsburgh, PA
Magee-Womens Research Institute

Conducted research on the pathophysiology, genetics, and molecular epidemiology of preeclampsia

Developed new methods for banking, extracting, and analyzing DNA specimens

Conducted genetic studies on several putative candidate genes for preeclampsia

Researched the role of the metabolic hormone leptin in pregnancy using a variety of molecular techniques

Developed and assisted in testing a mathematical model of the effect of vasomotion on vascular resistance during pregnancy

**RESEARCH
EXPERIENCE
(CONTINUED)**

Research Assistant, 1983-1991
University of Illinois, Urbana, IL
Department of Electrical Engineering and Computer Science

Assisted in the design and development of simulation, control, and graphical display software for a clinical hyperthermia system
Developed hardware, software, optics, and fluorescence based chemical sensors for a fiber optic pH measurement system
Collaborated with the USDA in the development of fluorescence instrumentation for on-line monitoring of fermentation processes
Assisted in the development and clinical trial of a prototype optical instrument for measuring tissue perfusion in a variety of disease states

Research Assistant, 1980-1981
University of Illinois, Urbana, IL
Department of Physiology and Biophysics

Designed, developed, and tested microprocessor based fluorescence instrumentation for use in photosynthesis research.

Research Assistant, 1977-1978
University of Connecticut, Storrs, Connecticut
Department of Electrical Engineering and Computer Science

Designed, developed, and tested a pulsed DC underwater electromagnetic system for controlling fish movements on the Connecticut River
Assisted the Connecticut Department of Fish and Game and a local power company in deploying and field testing the effectiveness of the above system at the water intake to a hydroelectric plant

**TEACHING
EXPERIENCE**

Adjunct Faculty in Epidemiology, 1996-1998
LaRoche College, Pittsburgh, PA
Division of Natural Sciences

Developed and taught a graduate level course in epidemiology, with an associated computer laboratory, and supervised epidemiological research projects

Teaching Assistant, 1991-1992
University of Illinois College of Medicine, Urbana, IL
Department of Epidemiology and Medical Informatics

Responsible for conducting epidemiology review sessions, submitting and grading exam questions, and maintaining regular office hours to work with medical students on an individual basis

Teaching Assistant, 1981-1982
University of Illinois, Urbana, IL
Department of Physiology and Biophysics

Responsible for teaching, grading, and assisting undergraduate students with labs in both cell and human system physiology

**TEACHING
EXPERIENCE
(CONTINUED)**

Teaching Assistant, 1979-1980
University of Illinois, Urbana, IL
Department of Physics

Responsible for teaching and grading the laboratory section of a course in both analog and digital electronics for graduate students and supervising independent projects

**CLINICAL
EXPERIENCE**

Medical Intern, 1993-1994
University of Pittsburgh Medical Center, Pittsburgh, PA
Department of Internal Medicine

Provided direct patient care, supervised medical students, and managed all clinical data

**INDUSTRY
EXPERIENCE**

Software Consultant, 1983-1984
URI Therm-X, Champaign, IL

Assisted in developing both assembly and high level language control software, as well as graphical user interface, for a clinical ultrasound hyperthermia system

Software Consultant, 1982-1983
Grason-Stadler, Inc., Littleton, MA

Developed, debugged, and tested embedded software for a microprocessor controlled clinical screening audiometer and middle ear analyzer

Development Engineer, 1978-1979
Grason-Stadler, Inc., Littleton, MA

Developed hardware and software for a complete line of audiometric instrumentation and supervised technicians

**GRANTS
FELLOWSHIPS
AND AWARDS**

National Library of Medicine Fellowship in Biomedical Informatics, 1997-1999
Irene McLenahan Young Investigators Research Grant, 1997
Magee-Womens Health Foundation Fellowship, 1994-1997
Diplomate of the National Board of Medical Examiners, 1994
Medical Scholars Fellowship, 1992-1993
Medical Scholars Program, 1989-1993
U.S. Patent (shared) for Clinical Hyperthermia Control System, 1987
Radiation Oncology Training Program Research Fellowship, 1982-1985
Cited for Outstanding Teaching Evaluation, 1979-1980

LICENSURE

Fully licensed to practice medicine in the state of Massachusetts

**SPECIALIZED
TRAINING**

Biomolecular Mechanics and Dynamics (1998) at Pittsburgh Supercomputer Center
Statistical Analysis for Genetic Epidemiology (1997) at Case Western University
Genetic Analysis for Medical Researchers (1997) at Duke University
Genetic Sequence Analysis Workshop (1997) at Pittsburgh Supercomputer Center
Advanced Linkage Analysis Workshop (1996) at Rockefeller University

PROFESSIONAL MEMBERSHIPS American Association for the Advancement of Science
American Association for Artificial Intelligence
American Chemical Society
American Medical Association
American Medical Informatics Association
American Public Health Association
American Society for Human Genetics
Biophysical Society
Institute of Electrical and Electronic Engineers
International Society for Computational Biology
Society for Computer Simulation

PUBLICATIONS **McCarthy, J.F.;** Misra, D.N; Kanbour-Shakir, A.; Roberts, J.M. "Expression and Localization of Leptin and Leptin Receptor in Human Placental Tissue in Preeclampsia and Normal Pregnancy." (In Preparation)

Gratton, R. J.; Gandle, R.E.; Genbacev, O.; **McCarthy, J.F.;** Fisher, S. J.; McLaughlin, M.K. "Conditioned Media from Hypoxic Trophoblast Alters Arterial Function." (Submitted)

McCarthy, J.F.; Misra, D.N.; Roberts, J.M. "Maternal Plasma Leptin Is Increased in Preeclampsia and Positively Correlates With Fetal Cord Concentration. " *American Journal of Obstetrics and Gynecology* 180(Part 1):3: 731-736, 1999.

Gratton, R. J.; Gandle, R.E.; **McCarthy, J.F.;** Michaluk, W.K.; Slinker, B.K.; McLaughlin, M.K. "Contribution of vasomotion to vascular resistance: a comparison of arteries from virgin and pregnant rats." *Journal of Applied Physiology* 85:6: 2255-2260, 1998.

McCarthy, J.F.; Magin, R.L.; Kisaalita, W.S.; Slininger, P.J. "A Fiber Optic System for Measuring Single Excitation-Dual Emission Fluorescence Ratios in Real Time." *Biotechnology Progress* 8:4: 360-368, 1992.

Kisaalita, W.S.; Slininger, P.J.; Bothast, R.J.; **McCarthy, J.F.;** Magin, R.L. "Application of Fiber-Optic Fluorescence Measurements to On-Line pH Monitoring of a Pseudomonad Fermentation Process." *Biotechnology Progress* 7:6: 564-569, 1991.

Goss, S.A.; Cain, C.A.; Magin, R.L.; Frizzell, L.A.; Chen, M.M.; Holmes, K.R.; Badger, C.W.; **McCarthy, J.F.** "Systems concept for controlled delivery of clinical ultrasound hyperthermia." Proceedings of the American Institute of Ultrasound in Medicine (29 th), *Journal of Ultrasound in Medicine* 3:9 Supplement, September 1984.

PRESENTATIONS **McCarthy, J.F.;** Misra, D.N; Lykins, D.L.; Roberts, J.M. "Maternal Leptin Concentration is Increased and Strongly Correlates with Cord Concentration in Preeclampsia but not in Transient Hypertension." (Oral Presentation at the Society for Gynecological Investigation, 1998)

PRESENTATIONS **McCarthy, J.F.;** Misra, D.N; Kanbour-Shakir, A.; Roberts, J.M. "Expression and Immunohistochemical Localization of Leptin and Leptin Receptor in Normal and Preeclamptic Placenta." (Poster Presentation at the Society for Gynecological Investigation, 1998)
(CONTINUED)

McCarthy, J.F.; Patrick, T.E.; Lykins, D.L.; DeVaskar, S.U.; Rajakumar, P.A; Roberts, J.M. "Leptin Concentration is Higher in the Plasma of Preeclamptic Women Compared to Pregnant Controls Matched for Body Mass Index (BMI) and Gestational Age." (Poster Presentation at the Society for Gynecological Investigation, 1997)

McCarthy, J.F.; Minich, L.A.; Lykins, D.L.; Roberts, J.M. "Angiotensinogen Gene T235 Variant Neither Correlates with Preeclampsia nor with a Marker of Endothelial Cell Activation." (Poster Presentation at the Society for Gynecological Investigation, 1997)

REFERENCES Available Upon Request