Dr. Richard Collins, Ph.D., M.A.Sc., B.A.Sc.

Biomechanics and Biomedical Engineering

Curriculum Vitae

Profile

Principal Scientist and Professor
Mechanical and Biomedical Engineering, Medicine, Physics & Mathematics

Birthplace: Toronto, Canada **Citizenship: U.S.A.**

Mailing address: 440 Monmouth Drive **Tel/Fax: +1 (724) 742-0414**
Cranberry Township, PA 16066-5756 (U.S.A.) **E-mail: richardcollins@consolidated.net**

Areas of Specialization

- BIOENGINEERING/BIOMECHANICS, PHYSIOLOGICAL FLUID DYNAMICS: cardiovascular and pulmonary hemodynamics, blood flow transport to the brain, eyes, rheology of blood and biological tissues, flow dynamics in collapsible vessels, computer-aided design codes, mathematical modeling and numerical computer-based predictions of physiological response to a wide variety of underlying complex physiological mechanisms, lubrication of articular joints and design of articular prostheses, macromolecular transport in the arterial wall, fluid dynamics of the eye, cardiac mechanics, particle deposition in the pulmonary airways, subcutaneous circulation, biomedical device development, biomedical instrumentation, environmental and toxicological impact of chemical uptake by the body uptake of volatile toxicant vapors by the inhalatory tract and the skin, physiologically based pharmacokinetic modeling, risk analysis of toxicant exposures, risk analysis of toxicant exposures, impact biophysics (high strain-rate response of biological tissues), aerospace medicine: cardiovascular response to G-stress in both microgravity (space environment) and hypergravity (aviation physiology), inhalation toxicology, transdermal drug transport, biomolecular transport dynamics, controlled-release drug delivery systems (implantable) with pre-programmable time-varying outputs, medical device development and commercialization, injury causation analysis for litigation support

Academic Credentials

Ph.D.	Mechanical Engineering/Aeronautical Sciences University of California, Berkeley, California
M.A.Sc.	Aeronautical and Aerospace Engineering University of Toronto, Institute of Aerospace Studies, Toronto, Canada
B.A.Sc.	Engineering Physics University of Toronto, Toronto, Canada

Academic and Professional Accomplishments

International activities, including numerous invited scientific lectures in 38 countries

- Member of the Board of Directors of the Société française des microtechniques et de chronométrie (1981-86) France.
- International Research Program in Orthopaedics, organized between France and Canada, under NATO sponsorship (1981-1983).
- International research program in cardiology organized between France and the United States, under the Sponsorship of the North Atlantic Treaty Organization (NATO) 1978-1980.
- Organization of and participation in Franco-Indian Exchange Program for Biomedical Research under the direct auspices of the French Ministry of Foreign Affairs and the Indian Institute of Technology and the All Indian Institutes of Medical Sciences, in New Delhi (1976).
- International bilateral agreements on technical cooperation organized, negotiated, edited and signed with research institutes in Germany, France, Canada, India and China.
- International scholarly exchange agreements signed with the Thai Ministry of University Affairs

Invited Scientific Reviewer for many national and international journals, including:

Journal: Heat and Mass Transfer – published by Springer Berlin / Heidelberg (Germany)
NSF (National Science Foundation) SBIR/STTR grant proposal reviewer, Panel Participant
Journal of Biomechanical Engineering (U.S.A.)
Journal of Biomechanics
Journal Series on Biomechanics (Bulgaria)
Applied Mechanics Reviews (U.S.A.)
Canadian Heart Foundation Applications
Mathematical and Computer Modeling - An International Journal
International Journal of Pharmaceutics
Cooperative Grants Program of the U.S. Civilian Research and Development Foundation for the Independent States of the Former Soviet Union
National Medical Research Council (NMRC) Singapore
Heat Transfer Engineering Journal – an International Journal (published by Taylor and Francis)

Board Memberships:

Member of the Editorial Board, J. Series on Biomechanics, headquartered in Sofia, Bulgaria
Member of the Editorial Board, World Scientific Publishing Co., headquartered in Singapore, with offices in New Jersey, London, Hong Kong, Taipei, Bangalore, Chennai, Beijing and Shanghai (2003-present)
Associate Editor and Member of Editorial Board: World Scientific Series in Health Informatics
Member, Editorial Board: Applied Microgravity Technology
Associate Editor: Annales Françaises de Chronométrie et Microtechnique
Scientific Committee: International Union of Theoretical and Applied Mechanics (IUTAM)
Executive Board Program Committee: SAFE Wright Brothers Chapter

Academic Supervision

Dr. Collins has directly supervised 14 Representative Doctoral Dissertations and 6 Post-Doctoral Fellows internationally.

Dr. Richard Collins, Ph.D., M.Sc., B.Sc.
Biomechanics and Biomedical Engineering

Professional Experience: **over 30 years of teaching, research and industrial activities**

1989 – Present: Biomechanics International – CEO and Senior Consultant in Biomechanics, Biomedical and Mechanical Engineering

2004 – 2009 Full Graduate Faculty Status and Graduate Faculty Advisor in the Department of Mechanical Engineering, University of Nevada, Las Vegas (UNLV).

2004 – 2005 Scientific Consultant to General Electric Nuclear Energy, San José, California

2001 – Present: Senior Associate in Injury Causation Analysis and Litigation Support, Forensic Biomechanics Pittsburgh, Pennsylvania

1995 – 2001: Wright State University, Dayton, OH - Research Professor of Biomedical and Human Factors Engineering; Visiting Professor of Mathematics; Research Professor of Physics

1994 – 1997: Principal Scientist; Senior Consultant, US Air Force Armstrong Laboratory (Toxicology and Human Systems Divisions), Wright-Patterson Air Force Base, Dayton, Ohio

1985 – 1989: A. D. Foulis Endowed Chair Professor of Biomedical Engineering and Professor of Mechanical Engineering, Technical University of Nova Scotia, Halifax, Canada

1985: Senior Scientist, Stanford Research International - Menlo Park, California

Areas of Specialization

Gas dynamics - **Theoretical & experimental research programs in fluid flow phenomena:**

- Shock Physics: Development and implementation of experimental programs for generating cylindrical explosions by strong electrical discharge into stoichiometric mixtures of hydrogen and oxygen. High speed rotating drum and multi-spark Schlieren photography. Analysis of results within a framework of wave propagation theory.
- Nuclear Explosions at the Ocean Surface: Theoretical analysis of shock wave propagation with special attention to the air-water interface.
- Shock Wave Propagation of arbitrary strength into regions of non-uniform density separated by a free surface - Analytical and numerical techniques based on the method of characteristics.
- Breakup of liquid droplets released into high-speed gas flows (2 to 5 km/sec) - analysis subsequently corroborated by experiments.
- Fluid-Shell Interactions: Theoretical analysis of the dynamic response of a submerged structure to underwater explosions - numerical computations of diffracted shock wave patterns and structural loading.

Biomedical phenomena:

Bioengineering/Biomechanics,

- Physiological fluid dynamics, cardiovascular and pulmonary hemodynamics

- Uptake of volatile toxicant vapors by the respiratory tract and the skin, blood flow transport to the brain and eyes;
- Biomedical instrumentation, mathematical modeling and numerical computer-based predictions of physiological response to a wide variety of underlying complex physiological mechanisms;
- Physiologically based pharmacokinetic modeling and rheology of biological tissues;
- Flow dynamics in collapsible vessels, lubrication of articular joints, macromolecular transport in the arterial wall, fluid dynamics of the eye, and cardiac mechanics; and
- Particle deposition in the pulmonary airways, subcutaneous circulation, cardiovascular response to G-stress in both microgravity (space environment) and hypergravity (aviation physiology).
- Controlled release of drugs from implanted polymeric monoliths

Research Accomplishments in Biomechanics:

♦ Biomechanics of joint lubrication: modification of cartilage permeability and consequently, deformation and fluid transport, across the articular surfaces; determination of rheological properties of synovial fluid; development of new mathematical models for computing the criteria for formation and maintenance of a monomolecular intrarticular mucin film.

♦ Pulmonary circulation: developed first analytical model to demonstrate that variations in flow and pressure transmission as a function of frequency depend critically upon the capacity of the pulmonary vessels to collapse and re-open, and much less upon radial expansion of already patent vessels.

♦ Fluid flow in collapsible tubes: theoretical study of the fluid-wall interaction and mechanism of vessel opening and closing; application to controlled collapse of the veins, and to nonstationary flow phenomena occurring in coronary and pulmonary blood vessels.

♦ Cardiac mechanics: theoretical and clinical evaluation of myocardial contractility on the basis of left ventricular regional ejection dynamics using wall markers and cineangiography.

♦ Respiratory mechanics: development of an original computational model for periodic flow in the airways of the complete human lung and evaluation of regional particle deposition using radioisotopes as tracers.

♦ Autoregulation of the cerebral circulation: formulation of a model for the complete branching network of the circulation of the human brain, direct laboratory measurements of the detailed anatomy of the cerebral venous network from precision polymer casts; computation of the unsteady pressure and flow fields as a function of boundary conditions at the carotid arteries and jugular veins; assessment of the quantitative role of local CO_2 and O_2 distributions on non-invasively measured flow profiles.

♦ Passive and active control of the coronary circulation: mathematical model for blood flow in the complete coronary circulation subjected to high gravitational loading.

♦ Development of an artificial cartilage: embedded fixed electrical charges in a cross-linked polymer matrix to simulate the natural osmotic swelling pressure.

♦ Cardiovascular response to G-stress in microgravity (space) and hypergravity (aerial combat) with autonomic nervous system involvement.

♦ Biodynamics of the eye: characterization of the material properties of the ocular tissues (corneo-scleral envelope, aqueous humor) and the role of relaxation coefficients in the autoregulation of intraocular pressure with consequences for glaucoma.

- Uptake of volatile vapors by inhalation: construction of a mathematical model for the estimation of the uptake by the pulmonary airflow of volatile (toxic) vapors in the lower respiratory tract. Account taken of the lipophilicity of the chemicals and their concentrations at the alveolar level. Solutions computed for a variety of breathing and cardiac cycles. Of particular interest are short-term exposures to acutely toxic vapors.

- Dermal absorption of volatile vapors: computational model for the solution of the diffusion equation for a highly anisotropic lipid bilayer medium. Particular account taken of the variation in path length and permeability coefficients in the estimation of the penetration of toxic chemicals into and out of the skin, with eventual uptake of the chemical by the venous circulation draining from the skin into the systemic circulation.

- Controlled release drug delivery from implanted ceramic and polymeric capsules:
  Mathematical modeling and computer simulations can be very effective in improving and optimizing the performance of the self-regulating release of therapeutic drugs into specific regions of the body. Development of a reliable computational design tool for predicting the resulting pharmacokinetic dose distributions as a function of time and space. Of primary importance in such models are the time-varying effective permeability of the capsule to the various molecules composing the drug, the effective solubility and diffusion coefficients of the drug and its metabolites in the surrounding tissues and fluids and the uptake of the drug at the target organ.

- Forensic Biomechanics: analysis of trauma-related failures of: **a)** soft tissues: ligament, tendon, muscle, cervical and thoracolumbar spine, and articulations such as the knee, hip and shoulder joints; **b)** hard tissues: skull fractures, closed head injuries; and **c)** medical device failure analysis.

Current and Past Affiliations

- American Society of Mechanical Engineers (ASME) - U.S.A.
- Biomedical Engineering Society (BMES) - U.S.A.
- Biological Engineering Society - U.K.
- Société de Biomécanique - France
- American Society of Engineering Education (ASEE) - U.S.A.
- American Association for the Advancement of Science (AAAS) - U.S.A.
- Association for the Advancement of Modeling & Simulation Techniques in Enterprises - France
- American Institute of Aeronautics and Astronautics (AIAA) - U.S.A.
- Canadian Medical and Biological Engineering Society (CMBES) - Canada
- European Society of Biomechanics - Netherlands
- Canadian Aeronautics and Space Institute (CASI) - Canada
- Canadian Society of Aviation Medicine (CSAM) - Canada
- Canadian Applied Mathematics Society - Canada
- Aerospace Medical Association/Life Sciences & Biomedical Engineering Branch (LSBEB) – U.S.A.
- The Society of Automobile Engineers (SAE)
- The International Society of Bionic Engineering

Honors – Cited in:

- International Who's Who of Contemporary Achievement – 1984
- Who's Who in the World, Sixth Edition - 1982-1983
- Men of Achievement, Ninth Edition - 1982
- Who's Who in the World, Fifth Edition - 1980-1981
- Who's Who in Western Europe - 1978-1979
- NATO-AGARD Scientific Consultant (Europe) - 1972-1973
- American Men of Science - 1969

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Biomechanics and Biomedical Engineering

Academic Leadership

- **Created interdisciplinary research teams in science, medicine, and engineering aimed at quantitative elucidation of underlying complex human physiological processes using both laboratory experimentation and mathematical/computer modelling. Held faculty positions in these fields.**

- **Successful innovative efforts to attract research and development funding, at the**

  mega-dollar level, from combinations of national and international sources, both public and private.

- **Publication of over 100 research works in international journals and monographs or chapters thereof. Most recent projects focus on the applications of applied mechanics/fluid dynamics to cardiovascular physiology and quantitative toxicology.**

Professional qualifications

- **able to formulate and communicate a clear academic and organizational vision within a teaching and research university setting**
- **imaginative, innovative and persuasive in the pursuit of the University's goals and objectives to be a leading research and teaching institution**
- **able to demonstrate the highest degree of personal integrity**
- **willing to take measured risks for the improvement of educational experiences for students**
- **able to motivate others, to delegate authority and to trust in the ability of others**
- **an effective, open negotiator in the context of academic and international communities**
- **accessible to students, faculty, staff and alumni, working comfortably in both informal and formal settings**
- **willing to share information with all constituencies, particularly when it impacts on the overall direction of the School and University**
- **comfortable in relating to representatives of business and industry, as well as with local, state and federal policy makers**
- **sensitive to issues of race, ethnic and economic diversity and gender equality**
- **able to evaluate and judge character and ability**
- **committed to consensus building**
- **sensible, fair compassionate and objective in decision-making**
- **active, energetic and well-organized**
- **appreciative of the culture and history of a teaching and research institution**

Administrative experience: government/academic/industry

- **Continual involvement in editing of project proposals, budgets, and personnel requirements and management with Government agencies, industrial sectors, and University research laboratories (biomedical and engineering).**

Contract negotiation, organization and supervision of interdisciplinary research teams,

preparation of interim and final technical reports, communication of results at national and international symposia and working meetings, publications in the international literature.

- **Structured international agreements for scientific cooperation (eg. accords with India for exchange of scientific personnel for work on projects of common mutual interest in BIOTECHNOLOGY and BIOMEDICAL ENGINEERING.**
- **Appointed and served as Acting Department Chairman at the University of California, Los Angeles, beginning in late 1960's**
- **Created and successfully obtained Academic Senate accreditation and government funding for new cross-disciplinary graduate programs in biomedical research/teaching in the U.S. (University of California at Los Angeles) and in Europe (University of Paris and other European and also Canadian universities).**

Research Publications - Books and Book Chapters

- Collins, R. and T.J. van der Werff. 1980. *Mathematical Models of the Dynamics of the Human Eye*, Springer-Verlag, Berlin, Heidelberg, New York, 100 pp.
- Collins, R.: Guest editor. 1978. *"Physiological Mechanisms and Therapies - Engineering Formulations and Techniques"*.
- Collins, R.: Guest editor. 1977. Special Issue of Automedica*: "Uterine, placental and fetal mechanics and monitoring"*, Utrecht, Holland.

International Scientific Journal Publications and Reports

1960 – present: Dr. Collins has authored 120 international scientific journal publications and reports.

Stoytchev, S and R. Collins (2015) Biomechanics of glaucoma: factors influencing the intraocular pressure. *Series on Biomechanics*, Vol. 29, No. 2-3, pp 58-65.

Collins, R. (2009) Properties of openFoam Software for Computational Fluid Dynamics. *Computational Engineering for Engineering Educators*, Ohio Supercomputer Center, Ohio State University, Columbus, OH. July 13 – 18, 2009

Gemci, T., V. Ponyavin, Y. Chen and R. Collins (2008) Computational Model of Airflow in upper 17 Generations of Human Respiratory Tract. *Journal of Biomechanics* 41(9):2047-2054

Gemci, T., V. Ponyavin, Y. Chen, H. Chen and R. Collins (2007) CFD Simulation of Airflow in a 17-Generation Digital Reference Model of the Human Bronchial Tree. *Series on Biomechanics*, Vol. 23, No.1, pp 5-18.

Gemci, T., V. Ponyavin, Y. Chen and R. Collins (2005) "Oscillatory Flow in an Anatomically Realistic 17-Generation Human Bronchial Airway Model. In: *10th Jubilee National Congress on Theoretical and Applied Mechanics*, Proceedings Volume II, eds. Ya Ivanov, E. Manoach, and R. Kazandjiev, Prof. M. Drinov Academic Publishing House, Sofia, Bulgaria, pp 107-119

Wasuwanich S., N. Jinuntuya, P. Petpirom and R. Collins (2004) "Diffusional release of a dispersed solute from a polymeric matrix: approximation of the exact solutions using finite region continuity". In: *Proceedings of Dynamic Systems and Applicati*ons, Volume 4, pp.167-174

Collins R. (2000) "A new computationally aided design tool for controlled-release drug delivery systems". *Proc. 19th Southern Biomedical Engineering Conference*, Virginia Tech, Blacksburg, VA, p. 29

R. Collins, N. Jinuntuya, J. Menart and S. Wasuwanich (2000) "Analysis of Controlled Release of Drug from an Erodible Matrix" In: *Medical Diagnostic Techniques and Procedures*, eds. M. Singh, S. Radhakrishnan, K.M. Patil and M.R.S. Reddy, Narosa Publishing House, New Delhi, pp 266-276

Collins, R. (1998) "Mathematical modelling of controlled-release from implanted drug-impregnated monoliths". *Pharmaceutical Science & Technology Today,* Elsevier Science Ltd., vol. 1, no. 6, 269-276.

Collins, R., N. Jinuntuya, P. Petpirom and S. Wasuwanich (1998) "Mathematical model for controlled diffusional release of dispersed solute drugs from monolithic implants". In: *Biotransport: Heat and Mass Transfer in Living Systems*, (ed. K. R. Diller), Annals of the New York Academy of Sciences, vol. 858:116-126, New York, N.Y.

Wasuwanich, S., N. Jinuntuya, P. Petpirom and R. Collins (1997) "Applications of the theory of mass transfer to the design of controlled drug delivery systems. *Proc. 23rd Congress on Science and Technology of Thailand*, pp 136-137

Collins, R. and S. Wasuwanich (1997). "A mathematical model for controlled-release drug delivery", *Proc. First Congress on Mathematical Models and Methods Applied to Biology and Medicine*, Alicante, Spain, p. 98

Jinuntuya, N., R. Collins, P. Petpirom and S. Wasuwanich (1997). "Applications of the Theory of Mass Transfer to Controlled-Release of Therapeutic Drugs from Implanted Ceramic Capsules", *Proc. 4th International Conference on Computational Physics, International Union of Pure and Applied Physics (IUPAP*), Singapore.

Collins, R., Z. Paul, D.B. Reynolds, R.F. Short and S. Wasuwanich (1997). "Controlled diffusional release of dispersed solute drugs from biodegradable implants of various geometries". In: *Biomedical Sciences Instrumentation*, Vol. 33, pp. 137-142, Instrument Society of America, Research Triangle Park, North Carolina (U.S.A.)

Collins, R., G.W. McCarthy, I. Kaleps, F.S. Knox (1997). "Review of Major Injuries and Fatalities in USAF Ejections, 1981-1995". In: *Biomedical Sciences Instrumentation*, Vol. 33, pp. 350-353, Instrument Society of America, Research Triangle Park, North Carolina (U.S.A.)

Collins, R. (1996), Pharmacokinetic Models for Uptake of Vapors. In: *Advances in Physiological Fluid Dynamics*, eds. M. Singh and V.P. Saxena, Narosa Publishing House, pp. 165-176.

Collins, R. (1995), Overview of modelling of dynamic pulmonary ventilation and uptake by inhalation of chemical toxicants. *Proc. International Conference on Mathematical Modelling*, Invited Lectures, Universiti Brunei Darussalam, p 1-23.

Collins, R. (1994), Formulation of Environmental Policy and Decision Making: Benefits of an integrated interdisciplinary approach. Environments, 20 pp.

Collins, R. (1994), Improvements in Modeling of Pulmonary Uptake of Toxicants. US Air Force Technical Report, AL/OE-TR-1994-0150, Wright-Patterson AFB.

Collins, R. (1992), Cardiovascular response in microgravity environments - An overview. IUTAM (International Union of Theoretical and Applied Mechanics) Symposium on Microgravity Fluid Mechanics, In: Microgravity Fluid Mechanics, ed. H.J. Rath, Springer, pp 583-597.

Collins, R. (1992), Overview of Space Life Sciences: Synthesis of Panel Discussion on Microgravity Fluid Mechanics, In: *Microgravity Fluid Mechanics,* Springer-Verlag, Berlin, Heidelberg, New York, pp. 592-595.

Collins, R. and E. Mateeva (1992), Cardiovascular response to varying gravitational stresses - Application to microgravity and hypergravity environments. In: *Physiological Fluid Dynamics III* (eds. N.V.C. Swamy and M. Singh), Narosa Publ, New Delhi, pp. 1-13.

Collins, R. (1991), Coronary models in Aerospace Medicine. In: Workshop on the Mathematical Modeling of the Cardiovascular System under altered G, *U.S. Air Force Technical Report.*

Collins, R. and E. Mateeva. (1991), Assessment of physiological requirements for protection of

the human cardiovascular system against high sustained gravitational stresses. NATO/AGARD publication AGARD-CP-516, pp. 18-1 to 18-12.

Stoytchev, S., E. Mateeva, R. Collins (1990), Mechanics of the left ventricle based on a confocal ellipsoidal model. First World Conference of Biomechanics, San Diego, USA.

Zhou, S.H., E. Mateeva, R. Collins (1990), Coronary Blood Flow, In Biofluid Mechanics (ed. D.W. Liepsch), Springer Verlag, Berlin. pp. 463-470.

Collins, R. (1989), Mathematical modelling of blood flow in the human cardiovascular system. Proc. 6th National Congress of Theoretical and Applied Mechanics, Bulgarian Academy of Sciences.

Collins, R., E. Mateeva, S.H. Zhou, (1989), Coronary Circulation-A Mathematical Model. Proc. 10th Brazilian Congress of Mechanical Engineering.

Stoytchev S., E. Mateeva, and R. Collins (1989), Distribution of the pressure across the ventricular wall based on an ellipsoidal model and two-dimensional material properties of the left ventricle. Proc. Vth Mediterranean Conference on Biological Engineering. Medicon, ed. G. Kikiforidis et al., pp. 28-29.

Stoytchev, S., E. Mateeva, and R. Collins. (1989), Pressure distribution across the ventricular wall based on a confocal ellipsoidal model of the left ventricle. Proc 6th National Congress of Theoretical and Applied Mechanics, Bulgarian Academy of Sciences p V-45.

Zhou, S.H., E. Collins, and R. Collins (1989), Coronary Circulation - A Mathematical Model. Proc 1st Caribbean Conference on Fluid Dynamics, pp. 346-349.

Zhou, S.H., E. Mateeva and R. Collins (1989), A Computational Model for Blood Flow in the Heart under External Force Fields. Proc. 4th International Conference on Computational Methods and Experimental Measurements, Springer-Verlag.

Zhou, S.H., E. Mateeva, and R. Collins (1989), A Mathematical Model for the Response of the Coronary Circulation to High Sustained Gravitational Force Fields, In: Advances in Fluid Dynamics, a special volume of invited collected papers in honor of the 70th birthday of Professor Maurice Holt at the University of California at Berkeley, ed. W.F. Ballhaus and M.Y. Hussaini, Springer-Verlag, New York, Berlin, Heidelberg, pp. 284-304.

Zhou, S.H., E.M. Collins and R. Collins (1988), Coronary Circulation under High Sustained Gravity. Proc. World Congress on Medical Physics and Biomedical Engineering: In Medical Physics 15, 455.

Zhou, S.H., E. Mateeva and R. Collins (1988), Coronary Circulation - A Model. Proc. 9th International Conference of the Cardiovascular System Dynamics Society, 4 pp.

Collins, R. (1987), Cardiovascular response to high acceleration, Proc. 13th CMBEC, Halifax (Canada), pp. 135-136.

Collins, R. and E.M. Collins (1987), Cardiovascular Dynamics, Proc. 11th International Congress on Cybernetics, Namur (Belgium), pp. 1255-1268.

Collins, R. and E.M. Collins (1987), Cardiovascular Response under Accelerative Loading, in Physiological Fluid Dynamics II, ed. L.S. Srinath & M. Singh, Tata McGraw-Hill Publ. Co. Ltd., New Delhi, pp. 229-236.

Collins, R. and E.M. Collins (1987), Response of Cardiovascular System to High $+G_z$ Acceleration. Proc. 40th ACEMB-Annual Conference on Engineering in Medicine and Biology, AEMB Publishers, Washington, D.C., p. 211.

Collins, R. (1986), Pulsatile flow in a collapsible tube subjected to longitudinal tension, Comput. Methods and Expt'l Measurements, Vol. I, Sect. 3, Fluid Dynamics, pp. 221-240, Springer-Verlag, Berlin, Heidelberg.

Collins, R. (1986), Role of vessel compliance and collapse on pulmonary haemodynamics, Proc. 2nd Conf. Europ. Rheol., Prague, p. 26.

Collins, R. and E.M. Collins (1986), Contractility of the Left Ventricle, Proc. Fifth Meeting of the European Society of Biomechanics, Berlin (Germany), p. 100.

Collins, R. (1985), Mechanical Properties of Myocardial Tissue, Proc. XIV ICMBE and VII ICMP,

Espoo (Finland), pp. 641-2.

Contributions to Conferences, Seminars and Symposia

1985 – 2015: Dr. Collins has contributed to 200 seminars, conferences and symposia in the following 38 countries.

Armenia	China	Holland	Poland	Thailand
Austria	Czech Republic	Hong Kong	Russia	Trinidad
Australia	Denmark	India	Scotland	Turkey
Azerbaijan	England	Israel	Singapore	Ukraine
Belgium	France	Italy	South Africa	United States
Bulgaria	Georgia	Japan	Spain	Venezuela
Brunei	Germany	Malaysia	Sweden	
Canada	Greece	Norway	Switzerland	

Stoychev, S. and R. Collins (2015) Biomechanical model of glaucoma: factors influencing the intraocular pressure. XIII Symposium of the National Glaucoma Association, Sofia (Bulgaria), March 20 – 21, 2015

Stoychev, S. and R. Collins (2014) Biomechanics of Glaucoma: Factors affecting the intraocular pressure. Научната конференция *"Дни на биомеханиката-2014"* Plenary presentation: *Days of Biomechanics*, Sofia (Bulgaria), November 20–21, 2014

Collins, R. (2009) Properties of openFoam Software for Computational Fluid Dynamics. *Computational Engineering for Engineering Educators*, Ohio Supercomputer Center, Ohio State University, Columbus, OH. July 13 – 18, 2009

R. Collins (2008) CFD Study of Unsteady Airflow in the Human Lung, special colloquium presented at the University of Zurich (ETH – Eidgenössische Technische Hochschule), Institute of Biomedical Engineering (Institut für Biomedizinische Technik), October 31, 2008.

(Invited) R. Collins (2006) Mathematical and Computational Modeling in Biomedical Engineering. Seminar presented at the South Dakota School of Mines and Technology, Rapid City, South Dakota, July 24, 2006

(Invited) R. Collins (2005) Oscillatory Flow in an Anatomically Realistic 17-Generation Human Bronchial Airway Model. Keynote Lecture presented at the *10th Jubilee National Congress on Theoretical and Applied Mechanics*, Institute of Mechanics, Bulgarian Academy of Sciences, Varna, Bulgaria, September 14, 2005

(Invited) R. Collins (2003) Engineering and Technology Development: Part A – Introduction. Bradley University, College of Engineering and Technology, Peoria, IL, USA, October 22, 2003

(Invited) R. Collins (2003) Engineering and Technology Development: Part B – Roadmap. Bradley University, College of Engineering and Technology, Peoria, IL, USA, October 23, 2003

R. Collins, N. Jinuntuya, S. Wasuwanich and P. Petpirom (2003) Implantable controlled-release drug delivery systems - A computational design approach. Accepted for presentation at the Fourth International Conference on Dynamic Systems and Applications in Atlanta, Georgia, U.S.A, May 21-24, 2003

Wasuwanich S., N. Jinuntuya, P. Petpirom and R. Collins (2003) Diffusional release of a dispersed solute from a polymeric matrix: Approximation of analytical solution using finite region continuity. Accepted for presentation at the Fourth International Conference on Dynamic Systems and

Applications in Atlanta, Georgia, U.S.A, May 21-24, 2003

(Invited) Collins, R. (2003) Computational Biomechanics. Presentation at the Oak Ridge National Laboratory (ORNL), Modeling and Simulation Group, Computational Sciences and Engineering Division, Oak Ridge, Tennessee, April 30, 2003.

(Invited) Collins, R. (2003) Computational and Experimental Biomechanics / Injury Biomechanics. Presentation at the University of Tennessee, Knoxville, Department of Mechanical and Aerospace Engineering and Engineering Science, April 29, 2003.

Collins, R. (2002) Overview of the Biomechanics of Impact Associated with Vehicular Collisions. Accepted for oral presentation at the Czech Society of Biomechanics Conference: Biomechanics of Man 2002, Cejkovice, Czech Republic, November 13-15, 2002.

(Invited) Collins, R. (2002) Biomechanics of Spinal Cord Injury. Presented at the National Institutes of Health, National Institute on Deafness and other Communication Disorders (NIH/NIDCD), Rockville, MD, October 25, 2002.

(Invited) Collins, R. (2002) Biomedical Engineering Analysis in Injury Causation. Seminar presented to Exponent, Failure Analysis Associates, Los Angeles, California (U.S.A.) June 19, 2002

(Invited) Collins, R. (2002) Spinal Biomechanics in Crash Trauma. Presented at the ASME International Symposium on Biomechanical Engineering, Ohio State University, Columbus, OH, March 23, 2002.

(Invited) Collins, R. (2002) Controlled release of therapeutic drugs from an erodible implanted polymeric matrix. Presented to the Department of Biomedical Engineering, New Jersey Institute of Technology (NJIT), Feb. 7, 2002.

Wasuwanich, S., N. Jinuntuya P. Petpirom and R. Collins (2001) Mathematical and Computationally Aided Design of Controlled-Release of Drug from an Implanted Non-Erodible Matrix. First National Meeting on Biomedical Engineering, Central Hotel Grand Plaza Ladprao, Bangkok, Thailand, September 13-14, 2001.

(Invited) Collins, R. (2001) Biomedical Device Development and Computational Modeling with Applications to Industry and Government. Presentation to the Department of Electrical and Computer Engineering, Western Michigan University, Kalamazoo, MI, May 16, 2001.

(Invited) Collins, R. (2001) Perspectives on Computational Biomedicine with Applications in Biomedical Engineering. Presentation (also webcast live) to the School of Health Information Sciences, University of Texas Health Science Center, Houston, Texas, April 9, 2001.

R. Collins (2000) Controlled Release of therapeutic drug from an erodible implanted polymeric matrix. Presentation scheduled at BioMed 2000, National Conference on Biomedical Engineering 2000, Petaling Jaya, Selangor, Malaysia, 27-28 September 2000.

R. Collins (2000) Applications of advanced medical technology in military medicine/telemedicine. Presentation to the U.S. Army Materiel Command, USAMRMC/TATRC (Telemedicine and Advanced Technology Research Center), Fort Detrick, MD, May 18, 2000

R. Collins (2000) A new computationally aided design tool for controlled-release drug delivery systems. Presented at the 19th Southern Biomedical Engineering Conference, Virginia Tech,

Blacksburg, VA, April 14-16, 2000

(Invited) Collins, R. (2000) Stable planetary boundary layers subject to intermittent turbulent bursts. Seminar presented in the Department of Mathematics and Statistics, College of Science and Mathematics, Wright State University, Dayton, Ohio, April 06, 2000.

(Invited) Collins, R. (1999) Computationally aided design tool for controlled release of drug from an implantable drug delivery system. Seminar presented in the Department of Applied Mechanics, Indian Institute of Technology - Madras, Dec. 21, 1999

(Invited) Collins, R. (1999) Analysis of controlled release of drug from an erodible matrix. International Conference on Diagnostic Techniques and Procedures. Indian Institute of Technology, Chennai, Tamil Nadu, India, Dec. 15-19, 1999

(Invited) Collins, R. (1999) Chairman of Conference Session: Medical Diagnostic Techniques I, International Conference on Diagnostic Techniques and Procedures, Indian Institute of Technology, Chennai, Tamil Nadu, India, Dec. 15-19, 1999

Collins, R. , J. Menart, N. Jinuntaya, and S. Wasuwanich (1999) Computationally aided design of implanted controlled-release drug delivery systems. Asian Conference and Exhibition of Controlled Release. Controlled Release Society, Inc., Hong Kong, Nov. 29-Dec. 1, 1999

(Invited) Collins, R. and J. Menart (1999) Modeling of controlled-release drug delivery systems. Research seminar presented in the Mathematics and Statistics Department, College of Science and Mathematics, Wright State University, Dayton, Ohio (U.S.A.) on October 25, 1999.

(Invited) Collins, R. (1999) An Approach to Mathematical and Computational Modeling of Turbulent Bursts in Stable Atmospheric Boundary Layers. Research seminar presented at the Army Research Laboratory, Boundary Layer Meteorology & Aerosol Research Branch, Adelphi, Maryland (USA) on August 10, 1999.

(Invited) Collins, R. (1999) Mathematical and Computational Modeling — Innovative Research Directions. Research seminar presented in the Mathematics and Statistics Department, College of Science and Mathematics, Wright State University, Dayton, Ohio (U.S.A.) on May 4, 1999.

Collins, R. , N. Jinuntaya, P. Petpirom and S. Wasuwanich (1999) Mathematical Model for controlled drug release from a non-erodible slab matrix. Accepted for presentation at the 9th International Conference on Computational Methods and Experimental Measurements (CMEM 99) in Sorrento, Italy, 27 - 29 April 1999.

(Invited) Collins, R. (1999) Research Seminar: Future research topics in polymer engineering. Seminar presented in the Department of Polymer Engineering, University of Akron, Ohio (U.S.A.), April 13, 1999.

(Invited) Collins, R. (1999) Polymer Engineering Seminar: Computationally aided design of the next generation of implantable controlled-release drug delivery systems. Seminar presented in the Goodyear Auditorium, Goodyear Polymer Center, Akron, Ohio (U.S.A.), April 12, 1999.

(Invited) Collins, R. (1999) Mathematics Seminar: Controlled drug release in implanted ceramic and polymeric matrices. Seminar presented in the Department of Mathematics and Statistics, Wright State

University, Feb. 18, 1999.

(Invited) Collins, R. (1999) Human Crash Simulation: traumatic rupture of the aorta. Seminar presented to Exponent, Failure Analysis Associates, Menlo Park, California (U.S.A.) Jan. 25, 1999

(Invited) Collins, R. (1998) Fluid Mechanics- and Chemistry-based Computational Modeling with Applications to Industry and Government. Centre de Recherche en Calcul Appliqué (CERCA)/ Research Center for Applied Computations, Montreal, Canada, 17 November 1998

Collins, R., S. Wasuwanich, N. Jinuntuya, and P. Petpirom (1998) "Analysis of controlled drug release from a non-erodible slab matrix", accepted for presentation at the 3rd World Congress of Biomechanics, Hokkaido University, Sapporo, Hokkaido, Japan, August 2-8, 1998

(Invited) Collins, R. (1998) Conference Chairman, Session 6: Mass Transfer - II, International Symposium on Heat and Mass Transfer in Biological and Medical Engineering, Kusadasi, Turkey, 8-12 June 1998.

Collins, R. , N. Jinuntaya, P. Petpirom and S. Wasuwanich (1998) "Mathematical Model for Controlled Diffusional Release of Dispersed Solute Drugs from Monolithic Implants". Session 5: Mass Transfer - I, International Symposium on Heat and Mass Transfer in Biological and Medical Engineering, Kusadasi, Turkey, June 9, 1998.

(Invited) Collins, R. (1998) "Head positioning for high +Gz loads: an analysis of the techniques used by F/A-18 pilots". Seminar presented at Korat AFB, Royal Thai Air Force, Nakhon Ratchasima (Thailand), March 18, 1998.

(Invited) Collins, R. (1998) "Sustained high gravitational forces in fighter aircraft operations". Seminar presented at the Institute of Aviation Medicine, Royal Thai Air Force, Bangkok (Thailand), March 17, 1998

(Invited) Collins, R. (1998) "The use of mathematical and biomechanical models in aviation medicine and military operations research". Nanyang Technological University, Singapore, March 10, 1998.

(Invited) Collins, R. (1998) "Aviation Injuries - Causes and Prevention". Defence Medical Research Institute (DMRI), Ministry of Defence, Singapore, March 09, 1998.

(Invited) Collins, R. (1998) "Mechanical force-induced injuries in military aviation operations". Seminar presented at the Institute for Biomedical Engineering and Medical Informatics, Swiss Federal Institute of Technology Zürich (Institut für Biomedizinische Technik, Universität und ETHZ - Eidgenössische Technische Hochschule Zürich), 06 March 1998.

(Invited) Collins, R. (1998) "Mathematical Models for Controlled Drug Release in Implanted Ceramic and Polymeric Matrices". Mathematics Seminar presented in the Mathematics, Physics and Computer Science Department, Philadelphia College of Pharmacy and Science, 17 February 1998.

(Invited) Collins, R., "Formulation d'un modèle analytique et numérique pour le transport par diffusion d'un agent thérapeutique incorporé dans un monolithe (polymérique ou céramique) implanté à long terme dans le corps". University of Paris VII, Laboratoire de Biorhéologie-hydrodynamique et Physico-chimique, Paris (France), Jan. 20, 1998.

Wasuwanich, S., N. Jinuntuya, P. Petpirom and R. Collins (1997) "Applications of the theory of mass

transfer to the design of controlled drug delivery systems. Presented at the 23rd Congress on Science and Technology of Thailand, Chiang Mai, 20-22 October 1997

(Invited) Collins, R. (1997) "Formulation of a Mathematical Model for Controlled Drug Release in Implanted Ceramic and Polymeric Matrices". Numerical Analysis Seminar presented in the Mathematics Department, Texas A & M University, College Station, Texas, 19 September 1997.

(Invited) Collins, R. (1997). "Mathematical and Computationally Aided Design of Implanted Controlled-Release Drug Delivery Systems". Seminar presented at Los Alamos National Laboratory, Center for Nonlinear Studies, Los Alamos, New Mexico, 11 August 1997

(Invited) Collins, R. and S. Wasuwanich (1997). "A mathematical model for controlled-release drug delivery", Proc. First Congress on Mathematical Models and Methods Applied to Biology and Medicine, Alicante, Spain, 30 June - 03 July 1997.

Collins, R., D.B. Reynolds, S. Wasuwanich, "Applications of the theory of mass transfer to the design of controlled-release drug delivery systems". 34th Annual Rocky Mountain Bioengineering Symposium, Dayton, Ohio, April 11-13, 1997

Collins, R., I. Kaleps, F.S. Knox, G.W. McCarthy, "Review of Serious Injuries Sustained in Aviation Operations". 34th Annual Rocky Mountain Bioengineering Symposium, Dayton, Ohio, April 11-13, 1997

(Invited) Collins, R., Participation in the Foreign Expert Invitation Program under the Ministry of University Affairs, Government of Thailand, in the Mathematics Department of Kasetsart University, Bangkok, Feb. 12-April 16, 1997.

(Invited) Collins, R., "Formulation of a mathematical model for the diffusion of a chemical substance from an implanted matrix". Interdisciplinary seminar presented at Thammasat University, Mathematics Department, Rangsit Campus (Thailand), March 21, 1997.

(Invited) Collins, R., "Pharmacokinetic models for uptake of vapors". Fourth International Conference on Physiological Fluid Dynamics, School of Mathematics and Allied Sciences, Jiwaji University, Gwalior, India, December 8-10, 1995.

(Invited) Collins, R., "Tracheobronchial Fluid Dynamics: Application to the Uptake of Toxicants by Inhalation". Combined seminar in Departments of Biomedical Engineering and Pharmacology, Wright State University, Dayton, OH, June 9, 1995.

(Invited Keynote Speaker) Collins, R., "Microgravity Fluid Mechanics/ Pulmonary Dynamics" and Chairman Technical Session, International Conference on Mathematical Modeling." Universiti Brunei Darussalam, May 29-June 1, 1995.

(Invited) Collins, R.,"Mathematical Modeling of the Uptake of Volatile Vapors by Inhalation". Special Applied Mathematics/Analysis Colloquium, Wright State University, Dayton, OH, May 18, 1995.

(Invited) Collins, R., "Biomathematical Modeling - An Overview", Wright-Patterson AFB, Biological Simulation Research Program, Dayton, Ohio, Feb. 25, 1994.

(Invited) Collins, R., "Space Physiology - Autoregulatory Mechanisms and Countermeasures", presented at the SPACEBOUND '93 Symposium, Canadian Space Agency, Ottawa, May 16-18, 1993.

(Invited) Collins, R., "Interesting perspectives on cross-disciplinary research and development in mechanical engineering in the 1990's", presented at Stevens Institute of Technology, Hoboken, N.J. (U.S.A.) Department of Mechanical Engineering, Sept. 18, 1992.

(Invited) Collins, R., "Perspective on strategies for large-scale interactive pluridisciplinary research in the physical and biological sciences in the 1990's". The University of Adelaide, Adelaide, Australia, March 26, 1992.

(Invited) Collins, R., "Formulation of a Model for Evaluating the Influence of Arterial Baroreflex Activity on the Vascular Resistance of the Hypertensive Wall", McMaster University, Health Sciences Centre, Smooth Muscle Group, Hamilton, (Canada), Feb. 21, 1992.

(Invited Keynote Speaker) Collins, R., "Influence of Microgravity and Hypergravity Environments on Blood Flow in the Systemic and Pulmonary Circulations", Third International Conference on Physiological Fluid Dynamics, Indian Institute of Technology, New Delhi, December 1991.

(Invited) Collins, R., "A Computational Model for Blood Flow in the Coronary Vasculature", presented at the Seminar-School on Mechanics of Blood Circulation, International Centre of Biocybernetics, Polish Academy of Sciences, held in Mądralin, Poland, Oct. 14-24, 1991.

(Invited) Collins, R., "Cardiovascular Modelling under G-Loading", American Physiological Society Meeting, Brooks Air Force Base, San Antonio, Texas (USA), Sept. 29-Oct. 3, 1991.

(Invited Keynote Speaker) Collins, R., "Mechanics of Blood Circulation", International Center of Biocybernetics, (by invitation of the Polish Academy of Sciences, Mądralin Poland), October 1991.

(Invited) Collins, R., "Cardiovascular response in microgravity environments - An overview", presented at the International Union of Theoretical and Applied Mechanics (IUTAM) Symposium on Microgravity Fluid Mechanics, Bremen, Germany, September 2-6, 1991.

(Invited) Collins, R., "On the Development of Biomedical Engineering", presented at the Flinders University of South Australia Medical Centre, Adelaide, August 13, 1991.

(Invited) Collins, R., "A Biomedical Approach to the Assessment of Cardiovascular Response to Altered Gravitational Fields: Applications to Microgravity and Hypergravity Environments". Biomedical Engineering Seminar presented at the Flinders University of South Australia, Adelaide, August 12, 1991.

Invited) Collins, R., "Coronary models". Workshop on the Mathematical Modeling of the Cardiovascular System under altered G. Aerospace Medical Directorate, Armstrong Laboratory, Brooks Air Force Base, San Antonio, Texas (U.S.A.), 7-9 August 1991.

(Invited) Collins, R., "Model for blood flow in the heart under high G loading", University of Nevada, Department of Mechanical Engineering, Las Vegas, Nevada (USA), June 4, 1990.

(Invited) Collins R., "Protection of the human cardiovascular system under high sustained gravity". 71st Aerospace Medical Panel (AMP-NATO/AGARD) Symposium, Pensacola, FL (USA) 29-30 April 1991.

(Invited) Collins, R., "Blood flow in the myocardium", Cleveland State University, Department of Mechanical Engineering, Cleveland, Ohio (USA), April 23, 1990.

(Invited) Collins, R., "Response of the coronary circulation to gravitational stress fields". Seminar presented at the University of Houston, Cullen College of Engineering, April 4, 1991.

(Invited) Collins, R., "Cardiovascular response to high sustained gravity (HSG)", Lamar University, Department of Mechanical Engineering, Beaumont, Texas (USA), March 26, 1990.

(Invited) Collins, R., "Exercise Physiology - effect on blood distribution in the human lung", University of California at Berkeley, March 9, 1990.

(Invited) Collins, R., "Quantitative Physiology - Importance in Physical Education", University of California, Berkeley, California, (U.S.A.), March 8, 1990.

(Invited) Collins, R., "Blackout of F-18 pilots during high gravity combat maneuvers", University of Central Florida, Department of Mechanical Engineering and Aerospace Sciences, Orlando, FL., Feb. 27, 1990.

(Invited) Collins, R., "Response of combat pilots to high gravitational loading", Massachusetts Institute of Technology, Department of Aerospace Engineering, Cambridge, MA., November 3, 1989.

(Invited) Collins, R., "Interdisciplinary research in Biomedical Engineering", University of Ulm, Faculty of Medicine, Ulm, W. Germany, Nov. 27, 1989.

(Invited) Collins, R., "Effects of high sustained gravity on the cardiovascular system." National Institutes of Health, Biomedical Engineering and Instrumentation Branch, Bethesda, MD, November 2, 1989.

(Invited) Collins, R., "A Mathematical and Computational Model of the Coronary Circulation", University of Delaware, Department of Mechanical Engineering, Newark, DE (USA), October 31, 1989.

(Invited) Collins, R., "Coronary Circulation", 1st Caribbean Conference on Fluid Dynamics, University of the West Indies, Department of Mathematics, Faculty of Engineering, St. Augustine (Trinidad), and Session Chairman, January 11, 1989.

Collins, R., "Coronary Circulation - A Mathematical Model", 9th International Conference of the Cardiovascular System Dynamics Society, Halifax (Canada), November 9, 1988.

Collins, R., "Coronary Circulation under High Sustained Gravity", 1988 World Congress on Medical Physics and Biomedical Engineering and 6th International Conference on Mechanics in Medicine and Biology, San Antonio, Texas (USA), August 9, 1988.

(Invited) Collins, R., "Blood Flow under High Sustained Gravity", presented at Symposium in Honor of Maurice Holt on his 70th Birthday, Williamsburg, VA., June 26, 1988.

(Invited) Collins, R., "Cardiovascular Response to High Gravitational Loading - A Review", special colloquium presented at the University of Zurich (ETH), Institute of Biomedical Engineering and Medical Informatics, April 14, 1988.

Collins R. "Response of cardiovascular system to high +G_z acceleration", 40th Annual Conference on Engineering in Medicine and Biology, Niagara Falls, N.Y. (USA), September 10-13, 1987.

Collins R. "Cardiovascular response under accelerative loading - A Review", 2nd International

Conference on Physiological Fluid Dynamics", Madras (India), August 10-12, 1987.

(Invited) Collins R., Chairman, Session on Biofluid Mechanics-II, 2nd International Conference on Physiological Fluid Dynamics, Madras (India), August 10-12, 1987.

Collins R., Co-Chairman, Technical Program and Publications, 13th Canadian Medical and Biological Engineering Conference, Halifax, Nova Scotia (Canada), on June 9-12, 1987.

Collins R. "Cardiovascular response to high acceleration", 13th Canadian Medical and Biological Engineering Conference, Halifax, Nova Scotia (Canada), on June 9-12, 1987.

Collins R. and E. Mateeva-Collins, "Mathematical modelling of the tolerance of military pilots to high sustained levels of G_z loading", Canadian Applied Mathematics Society Annual Meeting, Quebec City, Quebec (Canada), on June 1-2, 1987.

(Invited) Collins R., "Cerebral Circulation" - Special seminar presented to the Faculty of Medicine, Department of Physiology and Biophysics, Dalhousie University, in Halifax, Nova Scotia (Canada) on April 6, 1987.

(Invited) Collins, R. "Engineering in Medicine" public lecture presented at the University of New Brunswick, Division of Mathematics, Engineering and Computer Science, in Saint John, New Brunswick (Canada) on March 26, 1987.

(Invited) Collins, R., "Mathematical Modelling of Physiological Processes", Applied Mathematics seminar presented at Dalhousie University, Halifax, Nova Scotia (Canada), Department of Mathematics, Statistics and Computing Science on March 6, 1987.

(Invited) Collins R., "Mathematical model for unsteady fluid flow in a collapsible tube", Special lecture presented at the University of Bremen (W. Germany), Department of Mechanics and Fluid Dynamics, Sept. 12, 1986.

Collins R., "Computational Solution for Pulsatile Flow in a Collapsible Tube", 3rd International Conference on Computational Methods and Experimental Measurements, Porto Carras (Greece), Sept. 2-5, 1986.

Collins R., "Contractility of the left ventricle", Fifth Meeting of the European Society of Biomechanics, West Berlin (Germany), Sept.8-10, 1986.

Collins R., and Collins E.M., "Cardiovascular Dynamics", 11th International Congress on Cybernetics, Namur (Belgium), August 25-29, 1986.

Collins R., "Role of vessel compliance and collapse on pulmonary haemodynamics", 2nd Conference of European Rheologists, Czechoslovakian Acad. Sciences, Prague, June 17-20, 1986.

Collins R., "Blood Flow in the Lungs", IEEE Spring Seminar - Engineering in Medicine - presented at Dalhousie University, Faculty of Medicine, Halifax, Canada, March 21, 1986.