

## *Program*

# **Computational Fluid Dynamics (CFD) in Medicine and Biology**

*in conjunction with the*  
**Seventh International Biofluid Mechanics Symposium**

**March 25 – 30, 2012**  
**Crowne Plaza Dead Sea, Ein Bokek, Dead Sea, Israel**

### **Conference Chair:**

**David Elad**  
Tel Aviv University

### **Conference Co-Chairs:**

**Danny Bluestein**  
Stony Brook University

**Denis Doorly**  
Imperial College London

**Morteza Gharib**  
California Institute of Technology

**Peter Hunter**  
University of Auckland

**Michael Engelman**  
ANSYS, Inc.



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**Sunday, March 25, 2012**

- |               |  |
|---------------|--|
| 14:00 – 17:00 | Arrival and Check-in   |
| 17:00 – 18:00 | Welcome Reception – Balcony facing the Dead Sea  |
| 18:00 – 18:15 | Opening Comments<br><b>David Elad</b> , Chairman of the conference<br><b>Dov Litvinoff</b> , Mayor of Tamar Regional Council   |
| 18:15 – 18:30 | Vocal Performance – “Desert Voices”  |
| 18:30 – 19:30 | Opening Lecture:<br><b>THE DELICATE DISTINCTION BETWEEN MOLECULAR DYNAMICS AND FUNCTIONAL DISORDER: LESSONS FROM THE DEAD SEA BACTERIA RIBOSOMES</b><br>Nobel Laureate Prof. Ada Yonath, Weizmann Institute of Science, Israel |
| 20:00 – 21:00 | Dinner   |
| 21:00 – 23:00 | Social Hour  |

**Monday, March 26, 2012**

07:00 – 08:00 Breakfast

**Session I: New CFD Methods**

Chairman: Robert Nerem, USA  
Ezra Neufeld, Switzerland

08:00 – 08:18 **CFD SIMULATION IN BIOMEDICAL APPLICATIONS**  
Michael Engelman, ANSYS Inc., USA

08:18 – 08:36 **WAVING RINGS AND SWIMMING IN CIRCLES: SOME LESSONS THROUGH COMPUTATIONAL FLUID DYNAMICS**  
Lisa Fauci, Tulane University, USA

08:36 – 08:54 **TAKING IMAGE-BASED CFD OUT OF THE LAB AND INTO THE CLINICS: APPROACHES, PITFALLS, OPEN-SOURCE SOFTWARE AND THE CLOUD**  
Luca Antiga, Orobix, Srl, Italy

08:54 – 09:12 **LARGE EDDY SIMULATION OF A NOVEL CAVOPULMONARY ASSIST DEVICE FOR FONTAN CIRCULATION**  
Steven Frankel, Purdue University, USA

09:12 – 09:30 **APPLICATION OF LATTICE BOLTZMANN MODELS TO INVESTIGATE MULTISCALE TRANSPORT, MIXING AND DRUG DISSOLUTION IN THE INTESTINE**  
James Bresseur, Pennsylvania State University, USA

09:30 – 09:48 **BUILDING 'BOTTOM UP' BLOOD FLOW COAGULATION MODELS USING MECHANICAL STATISTICS**  
Gilead Moiseyev, Pinchas Bar-Yoseph, Technion, Israel

09:48 – 10:06 **HIGH-RESOLUTION NUMERICAL SIMULATION OF PATIENT-SPECIFIC HEMODYNAMICS WITH IMPLANTED MEDICAL DEVICES**  
Fotis Sotiropoulos, University of Minnesota, USA

10:10 – 10:35 Coffee Break

**Session 2: Flow & Transport on the Cellular & Molecular Scale**

Chairman: Sheldon Weinbaum, USA  
Jos Spaan, The Netherlands

10:35 – 10:53 **CELLULAR AND MOLECULAR DYNAMICS: MODELING NATURE'S ORCHESTRA**  
Robert Nerem, Georgia Institute of Technology, USA

10:53 – 11:11 **COLLECTIVE CELL GUIDANCE BY COOPERATIVE INTERCELLULAR FORCES**  
Jeffrey Fredberg, Harvard School of Public Health, USA

11:11 – 11:29 **ON INTRA-MEMBRANE CAVITATION AND PRESSURE IN THE MOLECULAR LEVEL**  
Eitan Kimmel, Technion, Israel

**Monday, March 26, 2012 (continued)**

- 11:29 – 11:47      **HOW FORCES REGULATE THE CELL RESPONSE TO THE SURROUNDING ENVIRONMENT?**  
Daniel Isabey, Inserm-CNRS & University Paris Est Créteil, France
- 11:47 – 12:05      **MECHANOTRANSDUCTION AND THE GLYCOCALYX**  
John Tarbell, City College of the City University of New York, USA
- 12:05 – 12:23      **MECHANICS OF SOLUTE TRANSPORT THROUGH THE ENDOTHELIAL GLYCOCALYX**  
Herbert Lipowsky, Penn State University, USA
- 12:23 – 12:38      **ENDOTHELIAL SURFACE GLYCOCALYX AND TUMOR CELL ADHESION IN THE MICROVESSEL**  
Bingmei Fu, City College of the City University of New York, USA
- 12:45 – 15:10      Lunch & Free Time
- 15:10 – 15:30      Coffee Break
- 15:30 – 16:00      **FDA Session**  
Chairman:      Marvin Slepian, USA
- MEDICAL DEVICE REGULATION AND THE ROLE OF MODELING STRATEGIES TO AID PRE-CLINICAL TESTING**
- Session 3: Respiratory Flows**  
Chairman:      Kerry Hourigan, Australia  
                         Kelly Burrowes, New Zealand
- 16:00 – 16:18      **HOW WELL DOES MODELING INFORM THE PHYSIOLOGY FROM WHICH IT STEMS?**  
Robert Schroter, Imperial College London, UK
- 16:18 – 16:36      **BIOFLUID MECHANICS OF PULMONARY ATELECTRAUMA**  
Don Gaver, Tulane University, USA
- 16:36 – 16:54      **UNDERSTANDING RESPIRATORY AIR AND BLOOD FLOW DELIVERY**  
Merryn Tawhai, University of Auckland, New Zealand
- 16:54 – 17:12      **PARTICLE DEPOSITION & DRUG DELIVERY THROUGH THE LUNG AIRWAY SYSTEM: PATIENT-SPECIFIC OR STATISTICAL APPROACH?**  
Marcel Filoche, Ecole Polytechnique, France
- 17:12 – 17:30      **EXERCISES IN NATURAL ANATOMICAL VARIATIONS: THE NASAL AIRWAYS**  
Denis Doorly, Imperial College London, UK
- 17:30 – 17:48      **CFD ON THE NASAL AIRFLOWS: ROLE IN DIAGNOSIS AND SURGERY**  
Sung-Kyun Kim, Seung-Kyu Chung, Konkuk University & Sungkyunkwan University, South Korea
- 17:48 – 18:06      **TWO PHASE FLOWS IN PULMONARY AIRWAYS**  
James Grotberg, University of Michigan, USA

**Monday, March 26, 2012 (continued)**

19:00 – 20:00

Dinner

20:00 – 22:00

Posters & Social Hour

**Tuesday, March 27, 2012**

07:00 – 08:00 Breakfast

**Session 4: Virtual Prototyping of Medical Devices**

Chairman: Mory Gharib, USA  
Idit Avrahami, Israel

08:00 – 08:18 **VASCULAR DEVICE DESIGN AND THE ROLE OF CFD**  
Tim McGloughlin, University of Limerick, Ireland

08:18 – 08:36 **STENT STRUT CROSS-SECTIONAL GEOMETRY: STREAMLINING  
REDUCES FLOW SEPARATION**  
Juan Jimenez, Peter Davies, University of Pennsylvania, USA

08:36 – 08:54 **FROM VIRTUAL TO RAPID PROTOTYPING AND EXPERIMENTAL  
VALIDATION: ECMO REDEFINED**  
Ulrich Steinseifer, RWTH Aachen University, Germany

08:54 – 09:12 **QUANTITATIVE COMPARISON OF MECHANICAL BLOOD DAMAGE  
PARAMETERS IN ROTARY VENTRICULAR ASSIST DEVICES**  
Katharine Fraser, University of Maryland, USA

09:12 – 09:30 **SHEAR STRESS AND VULNERABLE PLAQUE FORMATION**  
Rob Krams, Imperial College London, UK

09:30 – 09:48 **APPLICATION OF THE EULERIAN HEMOLYSIS INDEX METHOD FOR  
SIMULATING HEMOLYSIS IN PERIPHERAL INTRAVENOUS CATHETER  
DEVELOPMENT**  
Patrick Downie, Austin McKinnon, Ray Isaacson, BD, USA

09:50 – 10:20 Coffee Break

**Session 5: Microfluidic Devices**

Chairman: Nikos Stergiopoulos, Switzerland  
Joseph Bull, USA

10:20 – 10:38 **MICROFLUIDIC STUDIES OF CANCER METASTASIS**  
Roger Kamm, Massachusetts Institute of Technology, USA

10:38 – 10:56 **MICROFLUIDIC PLATFORM FOR VASCULAR BIOLOGY: ANGIOGENESIS  
AND ANASTOMOSIS IN MICROFLUIDIC DEVICES**  
Noo Li Jeon, Seoul National University, Korea

10:56 – 11:14 **MECHANICS BASED MICROFLUIDIC DEVICE FOR THE DETECTION AND  
RETRIVAL OF RARE CIRCULATING TUMOR CELLS**  
Chwee Teck Lim, National University of Singapore, Singapore

11:14 – 11:32 **FLUID MECHANICS AND MASS TRANSPORT IN A MICROGRAVITY-  
SIMULATING CELL BIOREACTOR**  
Mian Long, Chinese Academy of Sciences, China

11:32 – 11:50 **MULTIPLE PARALLEL FLOW-CHAMBER FOR SHEAR-DEPENDENT  
LEUKOCYTES ADHESION ASSAYS**  
Gabriele Dubini, Politecnico di Milano, Italy

**Tuesday, March 27, 2012 (continued)**

11:50 – 12:08      **MICROFLUIDIC DESIGNS OF PULMONARY ACINAR NETWORKS: CFD AND EXPERIMENT**

Josue Sznitman, Technion, Israel

12:10 – 23:00

***Tour to Jerusalem***  
*Lunch box on the bus*  
*Dinner in Jerusalem*

**Wednesday, March 28, 2012 – The Elizabeth & Nicholas Slezak Day**

- 07:00 – 08:00 Breakfast
- Session 6: Patient Specific & Multi-Scale Modeling**  
Chairman: Mort Friedman, USA  
Andrea Remuzzi, Italy
- 08:00 – 08:17 **USING CFD FOR PATIENT SPECIFIC SURGICAL PLANNING IN SINGLE VENTRICLE PATIENTS**  
Ajit Yoganathan, Georgia Institute of Technology, USA
- 08:17 – 08:34 **TECHNIQUES FOR CARDIAC VALVE REPAIR: SIMULATION OF PATIENT SPECIFIC POSTOPERATIVE SCENARIOS FOR PERSONALIZED SURGICAL PLANNING**  
Alberto Redaelli, Politecnico di Milano, Italy
- 08:34 – 08:51 **SHEAR STRESS AND ATHEROSCLEROSIS IN HUMAN CORONARY ARTERIES**  
Frank Gijsen, Erasmus Medical Center Rotterdam, The Netherlands
- 08:51 – 09:08 **PATIENT-SPECIFIC AORTIC VALVE DYNAMIC SIMULATIONS AND PATHOLOGY OF THE ASCENDING AORTIC SEGMENTS**  
Krishnan Chandran, University of Iowa, USA
- 09:08 – 09:25 **IMAGE-BASED COMPUTATIONAL FLUID DYNAMICS SIMULATIONS IN PATIENT-SPECIFIC VASCULAR MODELS USING THE MIMICS INNOVATION SUITE**  
Patricia Lopes, Erik Boelen, Materialise Group, Belgium
- 09:25 – 09:42 **A MULTI-SCALE PATIENT SPECIFIC COMPUTATIONAL STUDY TO PREDICT HEMODYNAMICS OF STAGE 2 PALLIATION FOR SINGLEVENTRICLE HEARTS**  
Francesco Migliavacca, Politecnico di Milano, Italy
- 09:42 – 09:59 **IMAGE-BASED VS. PATIENT-SPECIFIC MODELS: WHAT IS THE DIFFERENCE AND DOES IT MATTER?**  
David Steinman, University of Toronto, Canada
- 10:00 – 10:25 Coffee Break
- Session 7: Cardiovascular Engineering 1**  
Chairman: Forbes Dewey, USA
- 10:25 – 10:42 **DESIGN OPTIMIZATION IN BIOFLUID MECHANICS**  
Ross Ethier, Imperial College London, UK
- 10:42 – 10:59 **INTERFACING BASIC COMPUTATIONAL RESEARCH AND CLINICAL PRACTICE: A VASCULAR ACCESS CASE STUDY**  
Pascal Verdonck, Ghent University, Belgium
- 10:59 – 11:16 **THREE-DIMENSIONAL NUMERICAL SIMULATION OF BLOOD FLOW IN APOE-/- MICE AORTIC ARCH AROUND ATHEROSCLEROSIS PLAQUES**  
Kerry Hourigan, Monash University, Australia



**Wednesday, March 28, 2012 – The Elizabeth & Nicholas Slezak Day (continued)**

- 11:16 – 11:33      **CORONARY PERFUSION IN HEALTH AND DISEASE: TRANSLATION FROM PHYSIOLOGICAL MODELS TO CLINICAL PRACTICE**  
Maria Siebes, University of Amsterdam, The Netherlands
- 11:33 – 11:50      **EMERGING ROLE OF MECHANICAL CIRCULATORY SUPPORT IN THE MANAGEMENT OF ADVANCED HEART FAILURE: SUCCESS, LIMITATIONS AND OPPORTUNITIES**  
Marvin Slepian, University of Arizona, USA
- 11:50 – 12:07      **WALL SHEAR STRESS AND ATHEROSCLEROSIS; A HETERODOX VIEW**  
Peter Weinberg, Imperial College London, UK
- 12:07 – 12:24      **WALL SHEAR STRESS AND ATHEROSCLEROSIS: AGE RELATED VARIATIONS IN A STUDY OF RABBIT AORTAS**  
Spencer Sherwin, Imperial College London, UK
- 12:24 – 12:41      **AORTIC WAVE DYNAMICS AND ITS INFLUENCE ON LEFT VENTRICULAR WORKLOAD**  
Mory Gharib, California Institute of Technology, USA
- 12:45 – 15:20      Lunch & Free Time
- 15:20 – 15:40      Coffee Break
- Session 8: Cardiovascular Engineering 2**  
Chairman:      Yacov Shamash, USA
- 15:40 – 15:57      **ISRAELI TECH-INNOVATIONS IN CARDIOVASCULAR MEDICINE – THE "START UP" NATION**  
Ran Koronowski, Rabin Medical Center, Israel
- 15:57 – 16:14      **FLUID DYNAMICS IN CARDIOVASCULAR SURGERY: EXPERIMENTAL MODELING, COMPUTATIONAL SIMULATION AND CLINICAL RELEVANCE**  
Ikuo Fukuda, Hirosaki University School of Medicine, Japan
- 16:14 – 16:31      **THE ROLE OF LOW SHEAR STRESS RATES FOR PLATELET DEPOSITION**  
Klaus Affeld, Medical University Berlin, Germany
- 16:31 – 16:48      **BIOMECHANICS AND PLAQUE PROGRESSION IN HUMAN CORONARY ARTERIES**  
Don Giddens, Georgia Institute of Technology, USA
- 16:48 – 17:05      **OPTIMIZING THE THROMBORESISTANCE OF MECHANICAL CIRCULATORY SUPPORT DEVICES - DEMONSTRATION IN A VENTRICULAR ASSIST DEVICE**  
Danny Bluestein, Stony Brook University, USA
- 17:05 – 17:22      **FREQUENCY AND DISTRIBUTION OF MICROCALCIFICATIONS IN VULNERABLE PLAQUE AND THEIR ROLE IN FIBROUS CAP RUPTURE**  
Sheldon Weinbaum, City College of the City University of New York, USA

**Wednesday, March 28, 2012 – The Elizabeth & Nicholas Slezak Day (continued)**

- 17:22 – 17:39      **MICROCIRCULATORY TRANSPORT INFORMS THE STUDY OF ARTERIAL DISEASE**  
Forbes Dewey, Massachusetts Institute of Technology, USA
- 17:39 – 18:00      **CONCLUDING REMARKS**  
Shmuel Einav, Tel Aviv University, Israel
- 19:00 – 22:00      **Banquet Dinner + Celebration of Shmuel's 70<sup>th</sup> birthday**  
**Keynote Lecture: THE ISRAELI SPACE INDUSTRY**  
Prof. Daniel HersHKovitz, Minister of Science and Technology, Israel

**Thursday, March 29, 2012**

07:00 – 08:00 Breakfast

**Session 9: Physiological Flow Modeling 1**

Chairman: Patrick Segers, Belgium  
Alexander Yakhot, Israel

08:00 – 08:18 **A MULTISCALE MODEL OF HYPERACTIVATED SPERM**  
Sarah Olson, Lisa Fauci, Worcester Polytechnic University, USA

08:18 – 08:36 **LEFT-RIGHT PATTERNING IN DEVELOPING EMBRYOS: A CASE OF THEORETICAL PREDICTION FROM FLUID DYNAMICS IN BIOLOGY**  
Oreste Piro, University of Balearic Islands, Spain

08:36 – 08:54 **EMBRYONIC GROWTH APPLICATIONS OF CARDIOVASCULAR FLUID MECHANICS**  
Kerem Pekkan, Carnegie Mellon, USA

08:54 – 09:12 **FSI SIMULATION OF THE VELOCITY PROFILE IN THE HUMAN FETAL DUCTUS VENOSUS**  
Leif Rune Hellevik, Norwegian Institute of Science & Technology, Norway

09:12 – 09:30 **AN INITIAL CORRELATION STUDY OF PULSATILE VENTRICULAR ASSIST DEVICE THROMBUS DEPOSITION BETWEEN EXPERIMENTAL FLUID DYNAMICS AND AN IN VIVO IMPLANT**  
Keefe Manning, Pennsylvania State University, USA

09:30 – 09:48 **QUANTITATIVE COMPARISON OF 4D MRI FLOW MEASUREMENTS TO 3D CFD OF CEREBROSPINAL FLUID MOVEMENT IN THE SPINAL SUBARACHNOID SPACE**  
Bryn Martin, Nikos Stergiopoulos, Swiss Federal Institute of Technology (EPFL), Switzerland

09:50 – 10:20 Coffee Break

**Session 10: Physiological Flow Modeling 2**

Chairman: Ronald Magness, USA  
Yoram Lanir, Israel

10:20 – 10:38 **INTERSTITIAL FLOW IN THE HIERARCHICAL PORE SPACE ARCHITECTURE OF BONE TISSUE**  
Steve Cowin, City College of the City University of New York, USA

10:38 – 10:56 **SLOW FRICTIONAL FLOW AND ION TRANSPORT WITH EMPHASIS ON CARTILAGE CELLULAR ELECTROMECHANICAL-SIGNAL TRANSDUCTION**  
Van Mow, Columbia University, USA

10:56 – 11:14 **EXPERIMENTAL CHARACTERIZATION OF LYMPHATIC VESSEL MECHANICS AND PUMPING**  
James Moore, Texas A&M University, USA

11:14 – 11:32 **LUMPED-PARAMETER MODELING OF MICROLYMPHATIC VESSELS**  
Chris Bertram, University of Sydney, Australia

**Thursday, March 29, 2012 (continued)**

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|---------------|--|
| 11:32 – 11:50 | <b>COMPUTATIONAL FLUID DYNAMIC MODEL OF FISH FEEDING</b><br>Roi Holzman, Tel Aviv University, Israel                         |
| 11:50 – 12:08 | <b>GENERATION AND CONTROL OF FLOW RATE BY A MULTI-PINCHER IMPEDANCE PUMP</b><br>Moshe Rosenfeld, Tel Aviv University, Israel |
| 12:10 – 18:00 | <b>Tour to Masada</b><br>Lunch box on the bus  |
| 19:00 – 20:00 | Dinner   |
| 20:00 – 22:00 | Posters & Social Hour  |

**Friday, March 30, 2012**

07:00 – 09:00	Breakfast
09:00	Departures

# Poster Presentations – Session I

Monday, March 26, 2012

1. **A FLUID STRUCTURE INTERACTION MODEL OF PHYSIOLOGIC PORCINE AORTIC VALVE UNDER FULL CARDIAC CYCLE**  
Gil Marom, Tel-Aviv University, Israel
2. **CORRELATION BETWEEN PLAQUE COMPOSITION AND SHEAR STRESS USING THREE-DIMENSIONAL RECONSTRUCTED HISTOLOGY AND COMPUTATIONAL FLUID DYNAMICS OF DISEASED HUMAN CAROTID ARTERIES**  
Jolanda Wentzel, ErasmusMC, The Netherlands
3. **SHEAR STRESS DISTRIBUTION IN 3D RECONSTRUCTED CORONARY BIFURCATIONS BY FUSION OF IVUS AND MSCT**  
Frank JH Gijzen, ErasmusMC, The Netherlands
4. **A PATIENT-SPECIFIC MULTISCALE STUDY OF THE NORWOOD PROCEDURE INCLUDING AORTIC COARCTATION: EXPERIMENTAL VERSUS COMPUTATIONAL MODELING**  
Francesco Migliavacca, Politecnico di Milano, Italy
5. **STATISTICAL WSS MAPS IN RUPTURED AND UNRUPTURED CEREBRAL ANEURYSMS**  
Leonid Goubergrits, Biofluid Mechanics Laboratory, Charité, Germany
6. **NUMERICAL SIMULATION OF BLOOD FLOW IN FEMORAL PERFUSION WITH CANNULA OR GRAFT**  
Takeshi Goto, Hirosaki University, Japan
7. **FULLY COUPLED 3D FLUID-STRUCTURE-INTERACTION SIMULATIONS OF A TOTAL ARTIFICIAL HEART**  
Simon Sonntag, RWTH Aachen University, Germany
8. **CFD EVALUATION OF THE THROMBOGENIC POTENTIAL OF BLOOD RECIRCULATING DEVICES IN EXTRACORPOREAL CIRCULATION.**  
Alessandra Pelosi, Politecnico di Milano, Italy
9. **NOVEL AORTIC CANNULA FOR CARDIOPULMONARY BYPASS TO REDUCE CEREBRAL EMBOLI – A NUMERICAL STUDY**  
Idit Avrahami, Ariel University, Israel
10. **MECHANICAL ASPECTS OF FENESTRATED ENDOGRAFTS FOR TREATMENT OF ABDOMINAL AORTIC ANEURYSM**  
Idit Avrahami, Ariel University center of Samaria, Israel, Israel
11. **COMPUTATIONAL FLUID DYNAMICS IN BIFURCATED STENTED CORONARY ARTERIES**  
Gabriele Dubini, Politecnico Di Milano, Italy
12. **THE INFLUENCE OF SIMPLIFIED BOUNDARY CONDITIONS ON THE OUTCOME OF CFD SIMULATIONS IN THE MOUSE AORTA**  
Patrick Segers, Ghent University, Belgium

## Poster Presentations – Session I

Monday, March 26, 2012

13. **MITRAL VALVE ANTERIOR LEAFLET IN VIVO SHAPE MAY CONTRIBUTE TO OPTIMIZING VENTRICULAR EJECTION**  
Marco Stevanella, Politecnico di Milano, Italy
14. **REDUCING THE DATA: ANALYSIS OF THE ROLE OF VASCULAR GEOMETRY ON BLOOD FLOW PATTERNS IN CURVED VESSELS**  
Spencer Sherwin, Imperial College London, United Kingdom
15. **TOWARD OPTIMIZING HEMODYNAMIC EFFICIENCY OF THE FONTAN Y-GRAFT WITHIN ANATOMIC CONSTRAINTS**  
Christopher Haggerty, Georgia Institute of Technology, USA
16. **FLOW DEVELOPMENT PAST BICUSPID AORTIC VALVES AND THE RELATIONSHIP TO ASCENDING AORTIC PATHOLOGY**  
Sarah C. Vigmostad, The University of Iowa, USA
17. **EFFECT OF ARTERIAL WALL HYPERTROPHY AND STIFFNESS ON THE BLOOD FLOW IN FLEXIBLE CAROTID ARTERY BIFURCATION**  
Jung Yul Yoo, Seoul National University, Korea
18. **EXPERIMENTAL AND COMPUTATIONAL STUDIES OF A FORMED THROMBUS WITHIN A BACKWARDS FACING STEP GEOMETRY**  
Joshua O. Taylor, The Pennsylvania State University, USA
19. **CELL FREE LAYER AND SHEAR STRESS VARIATION IN MICROVESSELS**  
Junfeng Zhang, Laurentian University, Canada
20. **UNDERSTANDING WAVE PROPAGATION PHENOMENA IN THE ARTERIAL TREE**  
Nikos Stergiopoulos, EPFL, Switzerland
21. **MIDDLE MEATAL ANTROSTOMY AND NASAL AIRFLOW: A COMPUTATIONAL FLUID DYNAMIC STUDY**  
Seung-Kyu Chung, Sungkyunkwan University School of Medicine, Korea
22. **EFFECT OF ARTERIAL DISTENSIBILITY AND STENOSES ON PRESSURE DROP IN PULSATILE FLOW**  
Oren Rotman, Tel Aviv University, Israel
23. **COMPUTATIONAL MODELING AND CHARACTERIZATION OF ARTERIAL BLOOD FLOW DEVELOPMENT IN MAGNETIC ENVIRONMENT**  
Gopal Chandra Shit, Jadavpur University, India

## Poster Presentations – Session II

Thursday, March 29, 2012

- 1. PERMEABILITY OF THE PLASMA MEMBRANE INCREASES WITH THE STRAIN LEVEL IN STATICALLY-STRETCHED MYOBLASTS**  
Amit Gefen, Tel Aviv University, Israel
- 2. BENCHMARKING OF FLUID/STRUCTURE-INTERACTION MODELS OF WAVE PROPAGATION**  
C.D. Bertram, University of Sydney, Australia
- 3. MEASUREMENT AND MR IMAGING BASED SIMULATION OF THE MAGNETO-HEMODYNAMIC EFFECT**  
Esra Neufeld, Foundation for Research on Information Technologies in Society (IT'IS), Switzerland
- 4. PATIENT SPECIFIC MULTI-SCALE HEMODYNAMIC COMPUTATIONAL MODEL FOR PLANNING VASCULAR ACCESS SURGERY IN HEMODIALYSIS PATIENTS**  
Andrea Remuzzi, University of Bergamo, Italy
- 5. OSCILLATORY COUETTE FLOW OF A SISO FLUID IN A ROTATING SYSTEM**  
Shirley Abelman, University of the Witwatersrand, South Africa
- 6. ANALYSIS OF NEUROLOGIC COMPLICATIONS DURING CARDIOPULMONARY BYPASS**  
Tim A.S. Kaufmann, RWTH Aachen University, Germany
- 7. WAKE FLOW OF ECCENTRIC STENOTIC GEOMETRIES**  
Kerry Hourigan, Monash University, Australia
- 8. THE OPTICAL VIRTUAL ENDOSCOPY FOR VISUALIZATION OF THE URINE FLOW IN THE PROSTATIC URETHRA**  
Takuro Ishii, Chiba University, Japan
- 9. OPTIMAL SWIMMING GAIT OF UNDULATORY SWIMMERS AT LOW REYNOLDS NUMBER: THE NEMATODE C. ELEGANS**  
Josue Sznitman, Technion - Israel Institute of Technology, Israel
- 10. EFFECTS OF ANASTOMOTIC ANGLE AND FLOW DIVISION ON DISTURBED FLOW IN RADIAL-CEPHALIC FISTULAE FOR HAEMODIALYSIS**  
Bogdan Ene-Iordache, Mario Negri Institute, Italy
- 11. ROLE OF SHEAR STRESS FOR SURFACTANT PRODUCTION IN A MICROFLUIDIC MODEL OF FETAL AIRWAYS**  
Janna Tenenbaum-Katan, Technion - Israel Institute of Technology, Israel
- 12. A MICROFLUIDIC NETWORK FOR DRUG SCREENING WITH STRONTIUM RANELATE ON CULTURED SAOS-2 CELLS FOR OSTEOPOROSIS THERAPY: DESIGN AND FABRICATION**  
Gabriele Dubini, Politecnico di Milano, Italy
- 13. ROLE OF CONFINED JETS ON BLOOD CLOTTING WITHIN INTRACRANIAL CEREBRAL ANEURYSMS**  
S. Cito, Universitat Pompeu Fabra, Spain



## Poster Presentations – Session II

Thursday, March 29, 2012

14. **ACOUSTIC DROPLET VAPORIZATION FOR GAS EMBOLOTHERAPY**  
Joseph L. Bull, University of Michigan, USA
15. **REVISITING TURBULENCE IN CEREBRAL ANEURYSMS: A RISK FACTOR FOR RUPTURE?**  
Kristian Valen-Sendstad, University of Toronto, Canada
16. **CEREBRAL ARTERY HEMODYNAMICS IN PEDIATRIC SICKLE CELL DISEASE: A PRELIMINARY STUDY**  
Amanda K. Wake-Buck, Vanderbilt University, USA
17. **VALIDATION OF CORONARY PERFUSION PREDICTED FROM CUMULATIVE ARTERIAL LUMEN VOLUME**  
P. van Horssen, Academic Medical Center, The Netherlands
18. **NUMERICAL SIMULATION OF ULTRASOUND-INDUCED BIOMARKER CAPTURING INTO LIPOSOMES**  
Luai R. Khoury, Ben-Gurion University of the Negev, Israel
19. **MIMICKING PULMONARY ACINAR FLOWS AT THE MICROSCALE USING MICROFLUIDICS**  
Ramy Fischler, Technion - Israel Institute of Technology, Israel
20. **ACUTE CHANGES IN CORONARY WAVE INTENSITY IN PATIENTS UNDERGOING TRANSCUTANEOUS AORTIC VALVE IMPLANTATION**  
Cristina Rolandi, University of Amsterdam, The Netherlands
21. **DETERMINANTS OF TRANSMURAL CORONARY FLOW: MECHANISMS OF SUBENDOCARDIAL VULNERABILITY**  
Yoram Lanir, Technion ITT, Israel
22. **CHANGES IN UTERINE ARTERY SHEAR STRESS AND BLOOD PRESSURE IN NORMAL PREGNANT VS. PREECLAMPTIC WOMEN: EFFECTS OF HIGH ALTITUDE AND ANCESTRY**  
Ronald R. Magness, University of Wisconsin-Madison, USA
23. **VALVELESS PUMPING IN A THICK WALL ELASTIC TUBE**  
Pavel Kozlovsky, Tel Aviv University, Israel
24. **ON APPLICATION OF PROPER ORTHOGONAL DECOMPOSITION FOR ANALYZING BLOOD FLOWS IN ARTERIES**  
Alexander Yakhot, Ben-Gurion University, Israel
25. **ROLE OF SLIP VELOCITY ON THE PERISTALTIC TRANSPORT OF A MICROPOLAR FLUID THROUGH A NON-UNIFORM POROUS CHANNEL**  
Gopal Chandra Shit, Jadavpur University, India