

CMBBE 2019 Detailed program

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CMBBE 2019

16th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering and 4th Conference on Imaging and Visualization

Wednesday, 14 August 2019		
7:30 am - 6:00 pm	Registration	
8:45 am - 9:00 am	Welcome	
9:00 am - 10:30 am	A - 01 Auditorium East	Cardiovascular fluid dynamics: Patient-specific modeling I Chairs: <i>Lucas H. Timmins, John LaDisa</i>
	A-01.1	9:00 am - 9:15 am The synergistic effect of NIRS-detected lipid rich plaque and wall shear stress metrics on human coronary plaque growth; <i>Frank Gijzen (Netherlands)</i> [D]
	A-01.2	9:15 am - 9:30 am Reduced order models for blood pressure drop across arterial stenoses; <i>Jeanne Ventre (France)</i> [S]
	A-01.3	9:30 am - 9:45 am Comparing apples to oranges; Measured skin vibrations correlate phenotypically with computed post-stenotic flow instabilities. A pragmatic but robust tool for early detection of carotid stenoses?; <i>Viviana Mancini (Belgium)</i> [S]
	A-01.4	9:45 am - 10:00 am Intracardiac flow during early and late left ventricular filling in adolescent volunteer: Quantitative characterization using 4D flow MRI; <i>Liwei Hu (China)</i> [D]
	A-01.5	10:00 am - 10:15 am A meta-model of the trans-valvular pressure-gradient by combining statistical shape modeling and computational fluid dynamics; <i>Martijn Hoeijmakers (Netherlands)</i> [S]
A-01.6	10:15 am - 10:30 am A mock-flow loop (MFL) investigation of a self-powered fontan for single -ventricle congenital heart disease; <i>Arka Das (United States)</i> [S]	
9:00 am - 10:30 am	B - 01 Auditorium West	Design and evaluation of implant systems I Chairs: <i>Heath Henninger, Kevin Moerman</i>
	B-01.1	9:00 am - 9:15 am Application of statistical shape modeling in osseointegrated implant design; <i>Alex Drew (United States)</i> [D]
	B-01.2	9:15 am - 9:30 am Computational parametric studies for preclinical evaluation of total knee replacements; <i>Hannah Lundberg (United States)</i> [D]
	B-01.3	9:30 am - 9:45 am Effect of the fixation of total ankle replacements on the burden placed on the bone-implant system; <i>Fernando Quevedo (United States)</i> [S]
	B-01.4	9:45 am - 10:00 am How computer models can optimize shoulder joint replacement implantation; <i>Andreas Kontaxis (United States)</i> [D]
	B-01.5	10:00 am - 10:15 am Trade-offs between range of motion and stability in reverse total shoulder arthroplasty; <i>Ryan Willing (Canada)</i> [D]
B-01.6	10:15 am - 10:30 am Computational modeling and clinical validation of total wrist arthroplasty; <i>Magnus Gislason (Iceland)</i> [D]	
9:00 am - 10:30 am	C - 01 569 (60 theatre)	Agent-based modeling Chairs: <i>Sandra Loerakker, James Moore</i>
	C-01.1	9:00 am - 9:15 am Hybrid agent-based/transport modeling of immune cell interactions in lymph nodes; <i>James Moore (United Kingdom)</i> [D]
	C-01.2	9:15 am - 9:30 am A cell-based model of drug-oriented treatment during initial stages of pancreatic cancer; <i>Jiao Chen (Netherlands)</i> [S]
	C-01.3	9:30 am - 9:45 am Probing the mechanisms of muscle degeneration in cerebral palsy using agent-based modeling; <i>Stephanie Khuu (New Zealand)</i> [S]
	C-01.4	9:45 am - 10:00 am Combining imaging and in vitro data with mathematical models to understand chemokine biology: a Bayesian Parameter Inference approach; <i>Bindi Brook (United Kingdom)</i> [D]
	C-01.5	10:00 am - 10:15 am Coupling agent-based and finite-element models to simulate cell-cell signaling in arteries and tissue-engineered vascular grafts; <i>Tommaso Ristori (Netherlands)</i> [S]
C-01.6	10:15 am - 10:30 am Large scale tissue slice simulations of cortical spreading depression and the effects of cerebral curvature; <i>Allanah Kenny (New Zealand)</i> [D]	
9:00 am - 10:30 am	D - 01 555 (147 theatre)	Biomechanics of tendon and ligament Chairs: <i>Mark R. Buckley, Kristin Miller</i>
	D-01.1	9:00 am - 9:30 am Experimental characterization, constitutive modeling, and computational simulations of ligaments of the knee; <i>Ellen Arruda (United States)</i> [K]
	D-01.2	9:30 am - 9:45 am Mathematical model of age-specific tendon healing; <i>Kristin Miller (United States)</i> [D]
	D-01.3	9:45 am - 10:00 am Ultrasound strain mapping for measuring tendon compression in patients with tendinopathy; <i>Michael Richards (United States)</i> [D]
	D-01.4	10:00 am - 10:15 am Ultrasound strain mapping of transverse compressive strains in the mouse achilles tendon insertion during dorsiflexion; <i>Keshia Mora (United States)</i> [S]
D-01.5	10:15 am - 10:30 am Helical grouping is a potential mechanism of interfibrillar load transfer: a fe study based on serial block-face sem of tendon; <i>Babak Safa (United States)</i> [S]	
9:00 am - 10:30 am	E - 01 476 A (36 theatre)	Dental biomechanics I Chairs: <i>Jing Du, Christoph Bourauel</i>
	E-01.1	9:00 am - 9:30 am Systematic analysis of the influence of the framework material choice on the biomechanical behavior of a dental bridge on four implants; <i>Ludger Keilig (Germany)</i> [K]
	E-01.2	9:30 am - 9:45 am Image-based experiments and modeling of immediately-loaded dental implants; <i>Jing Du (United States)</i> [D]
	E-01.3	9:45 am - 10:00 am Effect of cutting flute on dental implant insertion process with three-dimensional element analysis; <i>Baixuan Yang (Canada)</i> [S]
	E-01.4	10:00 am - 10:15 am Fatigue and wear analysis for temporomandibular joint prosthesis by means of finite elements method; <i>Angelica Ramirez Martinez (Colombia)</i> [S]
E-01.5	10:15 am - 10:30 am Noninvasive measurement of tooth stability and periodontal ligament stiffness; <i>Lindsey Westover (Canada)</i> [D]	

S=student, K=keynote, D=delegate

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9:00 am - 10:30 am	F - 01 476 B (36 theatre)	Brain biomechanics I - Imaging and modeling Chairs: <i>Yuan Feng, Kaveh Laksari</i>	
	F-01.1	9:00 am - 9:30 am	In vivo measurements of brain biomechanics; <i>Philip Bayly (United States)</i> [K]
	F-01.2	9:30 am - 9:45 am	Patterns of axonal fiber stretch during mild axial and sagittal acceleration in the live human brain; <i>Andrew Knutsen (United States)</i> [D]
	F-01.3	9:45 am - 10:00 am	In vivo deformation mapping of the human optic nerve head using optical coherence tomography and digital volume correlation; <i>Thao Nguyen (United States)</i> [D]
	F-01.4	10:00 am - 10:15 am	Sensing the Brain during Mechanical Trauma: from Biomechanics to Functional Outcomes; <i>Lyndia Wu (Canada)</i> [D]
	F-01.5	10:15 am - 10:30 am	Biomechanics of the Rat Pia-Arachnoid Complex Through Multimodal Imaging; <i>Gloria Fabris (United States)</i> [S]
	G - 01 568 (36 theatre)	Biomechanics of morphogenesis Chairs: <i>Nandan Nerurkar, Karen Kasza</i>	
G-01.1	9:00 am - 9:25 am	The mechanics of inter-tissue adhesion and predisposition to spina bifida; <i>Scott Holley (United States)</i> [K]	
G-01.2	9:25 am - 9:38 am	Spatiotemporal control of the mechanical forces that build and shape tissues during morphogenesis; <i>Karen Kasza (United States)</i> [D]	
G-01.3	9:38 am - 9:51 am	Synthetic morphogenesis by reconstitution of embryonic connective tissue biomechanics; <i>Alex Hughes (United States)</i> [D]	
G-01.4	9:51 am - 10:04 am	Robustness in the morphogenesis of vascular networks and developmental morphogen patterns; <i>Jason Gleghorn (United States)</i> [D]	
G-01.5	10:04 am - 10:17 am	Modeling the influence of local mechanical stimuli on joint morphogenesis in regenerating axolotl limbs; <i>Ester Comellas (United States)</i> [D]	
G-01.6	10:17 am - 10:30 am	Molecular control of forces driving vertebrate morphogenesis; <i>Nandan Nerurkar (United States)</i> [D]	
10:30 am - 11:00 am	Coffee break		
11:00 am - 12:30 pm	A - 02 Auditorium East	Cardiovascular fluid dynamics: patient-specific modeling II Chairs: <i>Lucas H. Timmins, Frank Gijzen</i>	
	A-02.1	11:00 am - 11:15 am	Toward predictive personalized stenting to reduce restenosis and thrombosis; <i>John LaDisa (United States)</i> [D]
	A-02.2	11:15 am - 11:30 am	Impacts on flow diverters on hemodynamics of intracranial aneurysms; <i>Trung Le (United States)</i> [D]
	A-02.3	11:30 am - 11:45 am	Hypertrophic cardiomyopathy treatment - A numerical study; <i>Idit Avrahami (Israel)</i> [D]
	A-02.4	11:45 am - 12:00 pm	Numerical study of the conduit hemodynamics on the different types of systemic-to-pulmonary arterial shunt; <i>Liwei Hu (China)</i> [D]
	A-02.5	12:00 pm - 12:15 pm	Influence of ventricular torsion on left ventricular hemodynamics: a patient-specific model using the chimera technique; <i>Federico Cane' (Belgium)</i> [S]
	A-02.6	12:15 pm - 12:30 pm	Numerical simulations of blood flow patterns in the patient-specific left ventricle model with dynamic mitral and aortic valves; <i>Fei Xu (Netherlands)</i> [S]
B - 02 Auditorium West	Design and evaluation of implant systems II Chairs: <i>Heath Henninger, Kevin Moerman</i>		
B-02.1	11:00 am - 11:15 am	Musculoskeletal adaptation in response to joint instability; <i>Clare Fitzpatrick (United States)</i> [D]	
B-02.2	11:15 am - 11:30 am	Simulation and in vivo validation of knee mechanics during walking following total knee arthroplasty; <i>Colin Smith (Switzerland)</i> [D]	
B-02.3	11:30 am - 11:45 am	Effect of an internal unloading implant on tibiofemoral joint stress during stair descent; <i>Rajshree Hillstrom (United Kingdom)</i> [D]	
B-02.4	11:45 am - 12:00 pm	Comparison of different methods for uncertainty prediction of TF-kinematics and CL-strains using a biomechanical rigid body knee model; <i>Laura Bartsoen (Belgium)</i> [S]	
B-02.5	12:00 pm - 12:15 pm	Peak axial loads do not suffice to evaluate the biomechanical burden placed on total ankle replacement fixation; <i>Brett Steineman (United States)</i> [S]	
B-02.6	12:15 pm - 12:30 pm	Performance indicators for prosthesis surface integrity after dental CAD/CAM milling; <i>Lebon Nicolas (France)</i> [D]	
C - 02 568 (36 theatre)	Artificial intelligence and machine learning in biomechanics I Chairs: <i>Ferris M. Pfeiffer, James Moore</i>		
C-02.1	11:00 am - 11:15 am	Machine learning in human movement biomechanics: lessons, challenges, and opportunities for the field; <i>Eni Halilaj (United States)</i> [D]	
C-02.2	11:15 am - 11:30 am	Determination of cartilage biomechanics from tissue biomarkers using artificial neural networks; <i>Joe Rexwinkle (United States)</i> [D]	
C-02.3	11:30 am - 11:45 am	A machine learning material model for soft tissue remodeling; <i>Wenbo Zhang (United States)</i> [S]	
C-02.4	11:45 am - 12:00 pm	Deep learning-based segmentation of mineralized cartilage versus bone on high-resolution micro-CT images; <i>Jean Léger (Belgium)</i> [S]	
C-02.5	12:00 pm - 12:15 pm	Statistical finite element analysis of the mechanical response of the intact human femur using a wide range of individual anatomies; <i>Mamadou Bah (United Kingdom)</i> [D]	
D - 02 569 (60 theatre)	Workshop - Introducing FEBio3 <i>Steve A. Maas, Gerard A. Ateshian, Jeffrey Weiss</i>		

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11:00 am - 12:30 pm	E - 02 476 A (36 theatre)	Dental biomechanics II Chairs: <i>Christoph BouraueI, Ludger Keilig</i>
	E-02.1	11:00 am - 11:30 am Simulation and visualization of long-term orthodontic tooth movement using the finite element method; <i>Noriaki Yoshida (Japan)</i> [K]
	E-02.2	11:30 am - 11:45 am Assessment of alveolar bone remodeling and relaxation phenomena in orthodontic extrusion procedures; <i>Grzegorz Milewski (Poland)</i> [D]
	E-02.3	11:45 am - 12:00 pm Experimental and numerical analysis of orthodontic aligners made of a novel shape memory polymer; <i>Tarek Elshazly (Germany)</i> [S]
	E-02.4	12:00 am - 12:15 pm Influence of the multiscale tubular network on the mechanical properties of the dentine; <i>Vennat Elsa (France)</i> [D]
12:30 pm - 2:00 pm	F - 02 476 B (36 theatre)	Brain biomechanics II - Measurement and modeling Chairs: <i>Mehmet Kurt, Reuben Kraft</i>
	F-02.1	11:00 am - 11:30 am Precision measurement of mild brain trauma using an instrumented mouthguard; <i>David Camarillo (United States)</i> [K]
	F-02.2	11:30 am - 11:45 am An optimized worcester head injury model version 2.0; <i>Wei Zhao (United States)</i> [D]
	F-02.3	11:45 am - 12:00 pm Using fundamental fracture mechanics to predict infant skull fracture patterns; <i>Brittany Coats (United States)</i> [D]
	F-02.4	12:00 pm - 12:15 pm Understanding brain injury mechanisms through modeling; <i>Haojie Mao (Canada)</i> [D]
2:00 pm - 3:00 pm	G - 02 555 (147 theatre)	Growth and remodeling I Chairs: <i>Salvatore Federico, Chiara Bellini, Alfio Grillo</i>
	G-02.1	11:00 am - 11:15 am Biomechanical modeling of vascular tissue with application to the aneurysmatic aorta; <i>T. Christian Gasser (Sweden)</i> [D]
	G-02.2	11:15 am - 11:30 am An active remodeling approach to cartilage fatigue mechanics can predict experimental results; <i>Brandon Zimmerman (United States)</i> [S]
	G-02.3	11:30 am - 11:45 am Strain-induced apparent collagen density fails to predict neovessel growth in collagen constructs under compressive loading; <i>Steven LaBelle (United States)</i> [S]
	G-02.4	11:45 am - 12:00 pm On the preservation of branched network structure during developmental vascular remodeling; <i>Lowell Edgar (United Kingdom)</i> [S]
3:15 pm - 4:45 pm	G-02.5	12:00 pm - 12:15 pm Graphical analysis of developing trabecular architecture: an application of Dijkstra's algorithm.; <i>Nicholas Roberts (United Kingdom)</i> [D]
	G-02.6	12:15 pm - 12:30 pm Glycolytic inhibition leads to a global metabolic shift in a genome-scale endothelial cell model; <i>Jonathan Garcia (United States)</i> [S]
	Lunch & Poster Session 1	
	Plenary lecture - Blending engineering and medicine; Natalia Trayanova	
	A - 03 569 (60 theatre)	Multiscale modeling of thrombosis and transport Chairs: <i>Kevin Moerman, Danny Bluestein</i>
3:15 pm - 4:45 pm	A-03.1	3:15 pm - 3:30 pm Multiscale modeling of thrombus formation; <i>He Li (United States)</i> [S]
	A-03.2	3:30 pm - 3:45 pm Multiscale modeling of blood flow and platelet mediated thrombosis; <i>Danny Bluestein (United States)</i> [D]
	A-03.3	3:45 pm - 4:00 pm Multiscale investigation of cellular flow conditions at the initial stage of thrombus formation; <i>Gabor Zavodszky (Netherlands)</i> [D]
	A-03.4	4:00 pm - 4:15 pm Computational fluid dynamics with solute transport in FEBio; <i>Jay Shim (United States)</i> [S]
	A-03.5	4:15 pm - 4:30 pm Computational modeling of blood component transport related to coronary artery thrombosis in Kawasaki disease patients; <i>Noelia Grande Gutierrez (United States)</i> [S]
3:15 pm - 4:45 pm	A-03.6	4:30 pm - 4:45 pm Experiments and Models of Venous Thrombus Evolution & Damage; <i>Manuel Rausch (United States)</i> [D]
	B - 03 Auditorium West	Cartilage mechanics and tissue engineering Chairs: <i>Corinne Henak, Michael Albro</i>
	B-03.1	3:15 pm - 3:45 pm Initiation and propagation of microcracks in collagen networks of articular cartilage; <i>David Pierce (United States)</i> [K]
	B-03.2	3:45 pm - 4:00 pm Collagen destructuring based on fiber and crosslink rupture is consistent with loss of mechanical properties in aging articular cartilage; <i>Corrinus van Donkelaar (Netherlands)</i> [D]
	B-03.3	4:00 pm - 4:15 pm A three-dimensional rotationally nonsymmetric continuous fiber distribution for articular cartilage; <i>Brandon Zimmerman (United States)</i> [S]
3:15 pm - 4:45 pm	B-03.4	4:15 pm - 4:30 pm Computational models of growth factor delivery to engineered cartilage tissues; <i>Michael Albro (United States)</i> [D]
	B-03.5	4:30 pm - 4:45 pm Computational models for optimizing engineered cartilage geometry for growth and therapeutic drug delivery; <i>Robert J. Nims (United States)</i> [D]
	C - 03 568 (36 theatre)	Artificial intelligence and machine learning in biomechanics II Chairs: <i>Ferris M. Pfeiffer</i>
	C-03.1	3:15 pm - 3:30 pm Shrinking window optimization algorithm applied to pneumatic artificial muscle position control; <i>William Scaff (Brazil)</i> [S]
	C-03.2	3:30 pm - 3:45 pm Statistical learning for estimating central systolic blood pressure from cuff-based brachial pressure; <i>Vasiliki Bikia (Switzerland)</i> [S]
3:15 pm - 4:45 pm	C-03.3	3:45 pm - 4:00 pm Patient specific cardiovascular flow resolution improvement using 4D flow MRI, computational fluid dynamics, and machine learning; <i>David Rutkowski (United States)</i> [S]
	C-03.4	4:00 pm - 4:15 pm Development of a MRI-based statistical shape modeling bone morphing workflow for the Anybody Glasgow-Maastricht foot model; <i>Zach Welshman (United Kingdom)</i> [S]
	C-03.5	4:15 pm - 4:30 pm Implementation of deep deterministic policy gradients for controlling dynamic bipedal walking; <i>Roger Quinn (United States)</i> [D]
	C-03.6	4:30 pm - 4:45 pm Aging health behind an image quantifying sarcopenia and associated risk factors from CT analysis and machine learning technologies; <i>Paolo Gargiulo (Iceland)</i> [D]

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3:15 pm - 4:45 pm	D - 03 555 (147 theatre)	Soft tissue damage, strength and fracture I Chairs: <i>Anne Robertson, Spandan Maiti</i>
	D-03.1	3:15 pm - 3:30 pm Mechanical predictors of atherosclerotic plaque rupture: beyond 'where stress, there rupture'; <i>Frank Gijzen (Netherlands)</i> [D]
	D-03.2	3:30 pm - 3:45 pm Mechanical damage in cerebral arteries; <i>Ken Monson (United States)</i> [D]
	D-03.3	3:45 pm - 4:00 pm Structural modeling of the biomechanical failure of cerebral arterial wall tissue; <i>Ronald Fortunato (United States)</i> [S]
	D-03.4	4:00 pm - 4:15 pm On cracks in arteries; <i>Konstantin Volokh (Israel)</i> [D]
	D-03.5	4:15 pm - 4:30 pm Digital image correlation for studies of arterial failure mechanics; <i>Susan Lessner (United States)</i> [D]
	D-03.6	4:30 pm - 4:45 pm Structural modeling of ascending aortic tissue failure using a fiber-embedded finite element method; <i>Spandan Maiti (United States)</i> [D]
E - 03 476 A (36 theatre)	Bone biomechanics I Chairs: <i>Ani Ural, Jeffrey Stephen Nyman</i>	
	E-03.1	3:15 pm - 3:30 pm Peak trabecular bone microarchitecture predicts rate of estrogen-deficiency-induced bone loss; <i>X. Sherry Liu (United States)</i> [D]
	E-03.2	3:30 pm - 3:45 pm Seven laboratories performing biomechanical calculation of the same human femur: A round-robin finite element analysis with experimentally achieved ground truth; <i>Hans-E. Lange (Germany)</i> [D]
	E-03.3	3:45 pm - 4:00 pm Micro-scale numerical model of cancellous bone; <i>Samer Adeeb (Canada)</i> [D]
	E-03.4	4:00 pm - 4:15 pm Development and calibration of micro-finite element models of porcine ankle subchondral bone; <i>Lekha Korla (United Kingdom)</i> [S]
	E-03.5	4:15 pm - 4:30 pm 3D segmentation and characterization of the subchondral mineralized zone of mouse femur condyles, a new opportunity for addressing morphological changes during musculoskeletal pathologies; <i>Jean-Philippe Berteau (United States)</i> [D]
	E-03.6	4:30 pm - 4:45 pm Predicting femoral growth plate shape: a surface of minimum shear?; <i>Mahsa Sadeghian (United States)</i> [S]
F - 03 Auditorium East	Brain biomechanics III - Modeling and evaluation Chairs: <i>Brittany Coats, Haojie Mao</i>	
	F-03.1	3:15 pm - 3:45 pm Modeling dementia; <i>Ellen Kuhl (United States)</i> [K]
	F-03.2	3:45 pm - 4:00 pm A network-based brain injury metric; <i>Songbai Ji (United States)</i> [D]
	F-03.3	4:00pm - 4:15 pm Nonlinear biomechanics of the human brain with implications for mechanisms of brain injury; <i>Mehmet Kurt (United States)</i> [D]
	F-03.4	4:15 pm - 4:30 pm Brain structure influences stress transfer patterns after TBI; <i>Vickie Shim (New Zealand)</i> [D]
	F-03.5	4:30 pm - 4:45 pm A multi-modality characterization of injured brain tissue; <i>Yuan Feng (China)</i> [D]
G - 03 476 B (36 theatre)	Growth and remodeling II Chairs: <i>Salvatore Federico, Chiara Bellini, Alfio Grillo</i>	
	G-03.1	3:15 pm - 3:45 pm A general modeling framework for phenomena of material evolution; <i>Marcelo Epstein (Canada)</i> [K]
	G-03.2	3:45 pm - 4:00 pm Theories of growth and structural evolution of biological materials: a review of existing literature and an outlook on new methodologies; <i>Alfio Grillo (Italy)</i> [D]
	G-03.3	4:00 pm - 4:15 pm The role of graft and microenvironmental parameters on growth and remodeling of in situ engineered vascular grafts; <i>Piyusha Gade (United States)</i> [S]
	G-03.4	4:15 pm - 4:30 pm Effects of hypertension-induced remodeling on the mechanics of the left ventricle; <i>Sara Roccabianca (United States)</i> [D]
	G-03.5	4:30 pm - 4:45 pm Computational and analytical methods for modeling the overall behavior of heterogeneous tissues; <i>Ariel Ramirez Torres (Italy)</i> [S]
4:45 pm - 5:15 pm	Coffee break	
5:15 pm - 6:45 pm	A - 04 Auditorium East	Thrombosis biomechanics and transport Chairs: <i>Danny Bluestein, Kevin Moerman</i>
	A-04.1	5:15 pm - 5:30 pm Computational tools for in-silico trials of mechanical thrombectomy; <i>Kevin Moerman (Ireland)</i> [D]
	A-04.2	5:30 pm - 5:45 pm Role of fibrin fibers on the fracture properties of thrombus; <i>Kevin Moerman (Ireland)</i> [D]
	A-04.3	5:45 pm - 6:00 pm Common geometric features can interact synergistically to generate high frequency oscillations in cerebral vasculature flows; <i>Michael Durka (United States)</i> [S]
	A-04.4	6:00 pm - 6:15 pm Quantifying transient flow patterns in patient-specific simulations; <i>Simona Hodis (United States)</i> [D]
	A-04.5	6:15 pm - 6:30 pm Illustration-inspired techniques for visualizing 4D blood flow dynamics; <i>Thangam Natarajan (Canada)</i> [S]
	A-04.6	6:30 pm - 6:45 pm Surface Stiffness Correlation with Stent Expansion in a Patient-Specific Superficial Femoral Artery Model based on Plaque Inhomogeneity; <i>Sean Doherty (United States)</i> [D]
B - 04 555 (147 theatre)	Modelling of diarthrodial joints I - The art of it Chairs: <i>Nigel Shrive, Ahmet Erdemir</i>	
	B-04.1	5:15 pm - 5:30 pm Issues to consider in validation of numerical models of diarthrodial joints through experiment; <i>Nigel G. Shrive (Canada)</i> [D]
	B-04.2	5:30 pm - 5:45 pm Understanding approaches to creating finite element models of osteochondral grafts in joints; <i>Gavin Day (United Kingdom)</i> [D]
	B-04.3	5:45 pm - 6:00 pm Impact of personalisation of geometry on the passive kinematic response of the knee joint in flexion-extension; <i>Bhriagu Kumar Lahkar (France)</i> [S]
	B-04.4	6:00 pm - 6:15 pm Knee modeling - A first hand experience in documenting for reproducibility; <i>Jason Halloran (United States)</i> [D]
	B-04.5	6:15 pm - 6:30 pm What we said, what we did: Understanding subjective decisions during development of knee models; <i>Ahmet Erdemir (United States)</i> [D]
	B-04.6	6:30 pm - 6:45 pm Identifying bone and ligament geometries of the knee for computational modeling: easier said than done; <i>Carl Imhauser (United States)</i> [D]

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5:15 pm - 6:45 pm	C - 04 Auditorium West	Mimics Innovation Awards	
	D - 04 568 (36 theatre)	Soft tissue damage, strength and fracture II Chairs: <i>Michelle L. Oyen, Anne Robertson</i>	
	D-04.1	5:15 pm - 5:30 pm	Discrete models of fibrous soft tissue fracture; <i>Michelle Oyen (United States)</i> [D]
	D-04.2	5:30 pm - 5:45 pm	On modeling soft tissue damage and failure using smoothed particle hydrodynamics; <i>Manuel Rausch (United States)</i> [D]
	D-04.3	5:45 pm - 6:00 pm	Development of PVA models for biomechanical and biophysical in-vitro simulations; <i>Rosaire Mongrain (Canada)</i> [D]
	D-04.4	6:00 pm - 6:15 pm	Collagen molecular damage evolves with creep strain during fatigue loading; <i>Jeffrey Weiss (United States)</i> [D]
	D-04.5	6:15 pm - 6:30 pm	Computational simulations for engineering of biomimetic soft tissue structures using ultra-long collagen fibers; <i>Mirit Sharabi (Israel)</i> [D]
	D-04.6	6:30 pm - 6:45 pm	Development of a new visco-elastic hemolysis model with sublethal hemoglobin release; <i>Amy McKean (Canada)</i> [S]
	E - 04 476 A (36 theatre)	Bone biomechanics II Chairs: <i>Jeffrey Stephen Nyman, X. Sherry Liu</i>	
	E-04.1	5:15 pm - 5:30 pm	MRI measures of bone fragility: opportunities for computational modeling; <i>Mark Does (United States)</i> [D]
E-04.2	5:30 pm - 5:45 pm	Phase-contrast nano-CT reveals porous network in intermuscular bones of herring fish; <i>Imke A.K. Fiedler (Germany)</i> [S]	
E-04.3	5:45 pm - 6:00 pm	Understanding the modifications in microscale fracture toughening mechanisms of bone due to aging, disease, and treatments using computational modeling; <i>Ani Ural (United States)</i> [D]	
E-04.4	6:00 pm - 6:15 pm	In silico platform for perturbation experiment in mechano-biochemical coupling system of bone remodeling; <i>Tajji Adachi (Japan)</i> [D]	
E-04.5	6:15 pm - 6:30 pm	Changes in trabecular bone apparent density under cyclic loading throughout life in men and women: finite element simulation; <i>Rabeb Ben Kahla (Tunisia)</i> [S]	
E-04.6	6:30 pm - 6:45 pm	Bone healing simulation in the mandible after orthognathic surgery; <i>Maria Hilvert (Belgium)</i> [S]	
F - 04 476 B (36 theatre)	Brain biomechanics IV - Measurement and modeling Chairs: <i>Songbai Ji, Lyndia Wu</i>		
F-04.1	5:15 pm - 5:30 pm	Computational model versus kinematic motion based metrics in subconcussion: which is superior?; <i>Joel Stitzel (United States)</i> [D]	
F-04.2	5:30 pm - 5:45 pm	Multiscale modeling of axonal fiber bundles in the brain; <i>Reuben Kraft (United States)</i> [D]	
F-04.3	5:45 pm - 6:00 pm	Spatio-temporal dynamics of human brain during head impacts in contact sports; <i>Kaveh Laksari (United States)</i> [D]	
F-04.4	6:00 pm - 6:15 pm	Computational modeling of fluid and tracer movement in brain perivascular spaces; <i>Adam Martinac (Australia)</i> [S]	
F-04.5	6:15 pm - 6:30 pm	Mechanical injury thresholds and mechanisms for a rodent finite element model of blast-induced traumatic brain injury; <i>Molly Townsend (United States)</i> [D]	
F-04.6	6:30 pm - 6:45 pm	A novel nonlinear dynamic reduced order model of the human brain under coronal rotation for study of traumatic injury; <i>Alireza Mojahed (United States)</i> [S]	
	G - 04 569 (60 theatre)	Workshop - SlicerSALT for Biomedical and Biomechanical Research <i>Beatriz Paniagua</i>	
7:00 pm	Welcome reception		

8:00 am - 5:00 pm	Registration	
9:00 am - 10:30 am	A - 05 555 (147 theatre)	Calcific aortic valve disease, bicuspid aortic valve and transcatheter aortic valve replacement Chairs: <i>Gil Marom, Rami Haj-Ali</i>
	A-05.1 9:00 am - 9:30 am	Calcific aortic valve disease and transcatheter aortic valve replacement (TAVR) - A biomechanics perspective; <i>Danny Bluestein (United States)</i> [K]
	A-05.2 9:30 am - 9:42 am	Impact of transcatheter aortic valve size on the estimation of paravalvular leakage: an FSI study; <i>Laura Iannetti (Italy)</i> [D]
	A-05.3 9:42 am - 9:54 am	Hemodynamics of the aortic sinus and the coronary perfusion - numerical and experimental study; <i>Idit Avrahami (Israel)</i> [D]
	A-05.4 9:54 am - 10:06 am	Numerical models of valve-in-valve deployment: effect of leaflet laceration on anchorage; <i>Gil Marom (Israel)</i> [D]
	A-05.5 10:06 am - 10:18 am	Determination of patient-specific aortic valve leaflet strains from in-vivo images; <i>Bruno Rego (United States)</i> [S]
	A-05.6 10:18 am - 10:30 am	The reverse calcification technique and its impact on simulations of transcatheter in bicuspid aortic valve replacement; <i>Karin Lavon (Israel)</i> [S]
	B - 05 Auditorium West	Modeling of diarthrodial joints II - Cartilage and mechanics Chairs: <i>Petri Tanska, Leping Li</i>
	B-05.1 9:00 am - 9:15 am	Focal chondral defects in the dysplastic hip cause activity - and size-dependent increases in stress and strain; <i>Jocelyn Todd (United States)</i> [S]
	B-05.2 9:15 am - 9:30 am	Cartilage and joint mechanics: New insights into the conditions of the buried interface; <i>David Burris (United States)</i> [S]
	B-05.3 9:30 am - 9:45 am	Time-dependent in vitro validation of first metatarsophalangeal joint biphasic finite element models; <i>Oliver Morgan (United Kingdom)</i> [S]
	B-05.4 9:45 am - 10:00 am	Finite element analysis of patellofemoral joint contact using a triphasic model for cartilage; <i>Brian Jones (United States)</i> [S]
	B-05.5 10:00 am - 10:15 am	Poromechanical modeling of porcine knee joint using indentation map of articular cartilage; <i>Li LePing (Canada)</i> [D]
	B-05.6 10:15 am - 10:30 am	Fibril-reinforced poroelastic and poroviscoelastic modeling of cartilage, meniscus and ligaments; <i>Rami Korhonen (Finland)</i> [D]
	C - 05 476 A (36 theatre)	Computer-aided surgery I Chairs: <i>Songbai Ji, Stéphane Avril</i>
	C-05.1 9:00 am - 9:30 am	Toward a patient-specific image data-driven predictive modeling framework for guiding microwave ablative therapy; <i>Michael Miga (United States)</i> [K]
	C-05.2 9:30 am - 9:45 am	Computer-assisted surgery for EVAR procedures: Coupling 2D perioperative images with 3D mechanical models; <i>Aymeric Pionteck (France)</i> [S]
	C-05.3 9:45 am - 10:00 am	Template-based rectification and registration for image-guided spine surgery; <i>Songbai Ji (United States)</i> [D]
	C-05.4 10:00 am - 10:15 am	Finite element analysis for guiding interstitial laser therapy of bone tumors in an animal model - A computational study; <i>Emily Oakley (United States)</i> [S]
	C-05.5 10:15 am - 10:30 am	Assessing nasal symmetry using mobile 3D scanning technology for reconstructive plastic surgery; <i>Zachary Fishman (Canada)</i> [S]
	D - 05 Auditorium East	Soft tissue mechanics, damage, remodeling I Chairs: <i>Grace O'Connell, Jeffrey Weiss</i>
	D-05.1 9:00 am - 9:30 am	Incorporating material residual stress using a multigenerational growth approach in an intervertebral disc finite element model; <i>Dawn Elliott (United States)</i> [K]
	D-05.2 9:30 am - 9:45 am	Constitutive modeling of lung bronchi; <i>Mona Eskandari (United States)</i> [D]
	D-05.3 9:45 am - 10:00 am	Respiratory mechanics in healthy and cigarette exposed apoE-/- mice; <i>Jessica Oakes (United States)</i> [D]
	D-05.4 10:00 am - 10:15 am	Novel structure-based model for investigating damage in the annulus fibrosus; <i>Minhao Zhou (United States)</i> [S]
	D-05.5 10:15 am - 10:30 am	Simulation and prediction of human intervertebral disc degeneration and repair; <i>Weiyong Gu (United States)</i> [D]
	E - 05 569 (60 theatre)	Workshop - SimVascular and New User Training <i>Noelia Grande Gutierrez, Vijay Vedula,</i>
	F - 05 476 B (36 theatre)	In vivo imaging and visualization Chairs: <i>Lucas H. Timmins, Craig Goergen</i>
	F-05.1 9:00 am - 9:30 am	Image-based biomedical visualization; <i>Chris Johnson (United States)</i> [K]
	F-05.2 9:30 am - 9:45 am	Cardiovascular biomechanics using 4D flow MRI; <i>Alejandro Roldán-Alzate (United States)</i> [D]
	F-05.3 9:45 am - 10:00 am	Recent advances in cardiovascular photoacoustic imaging; <i>Craig Goergen (United States)</i> [D]
	F-05.4 10:00 am - 10:15 am	Establishment of an analysis and visualization framework to interrogate the in vivo vascular biomechanical environment with 4D Flow CMR; <i>Elliott Hurd (United States)</i> [S]
	F-05.5 10:15 am - 10:30 am	Deep learning based super-resolution of 4D flow MRI in brain aneurysms; <i>Augusto Sanches (Germany)</i> [S]

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9:00 am - 10:30 am	G - 05 568 (36 theatre)	Urinary tract and reproductive biomechanics I Chairs: <i>Kristin Myers, Choon Hwai Yap</i>
	G-05.1 9:00 am - 9:30 am	Computer methods for the understanding and repair of pelvic organ prolapse; <i>Steven Abramowitch (United States)</i> [K]
	G-05.2 9:30 am - 9:45 am	Biomechanics of female pelvic cavity: lessons from computational models; <i>Renato Natal Jorge (Portugal)</i> [D]
	G-05.3 9:45 am - 10:00 am	Investigation of mechanical properties of whole placenta tissues and of using ultrasound placenta strain elastography to detect intrauterine growth restriction; <i>Choon Hwai Yap (Singapore)</i> [D]
	G-05.4 10:00 am - 10:15 am	Statistical shape modeling to describe the pelvic floor of women with obstructed defecation; <i>Megan Routzong (United States)</i> [S]
	G-05.5 10:15 am - 10:30 am	Impact of performing multiple small incisions on the pelvic floor during vaginal delivery; <i>Dulce Oliveira (Portugal)</i> [D]
10:30 - 11:00 am	Coffee break	
11:00 am - 12:30 pm	A - 06 Auditorium East	Cardiac mechanics I - Heart valve mechanics Chairs: <i>Joao Soares, Daniel Hurtado</i>
	A-06.1 11:00 am - 11:30 am	Development of integrated patient specific models of the mitral valve and the left ventricle; <i>Michael Sacks (United States)</i> [K]
	A-06.2 11:30 am - 11:45 am	Bioprosthetic valve mechanics and the onset of turbulent systolic blood flow; <i>Dominik Obrist (Switzerland)</i> [D]
	A-06.3 11:45 am - 12:00 pm	Computational fluid-structure interaction models of heart valve dynamics in vitro and in vivo; <i>Boyce Griffith (United States)</i> [D]
	A-06.4 12:00 pm - 12:15 pm	Patient-specific modeling of revascularization and mitral repair therapies in functional mitral regurgitation associated with coronary disease; <i>Vicky Wang (United States)</i> [D]
	B - 06 555 (147 theatre)	Modeling of diarthrodial joints III Chairs: <i>Samer Adeeb, Tao Liu</i>
	B-06.1 11:00 am - 11:15 am	A combined musculoskeletal model of the trunk and finite element model of lumbosacral passive spine towards individualized muscle forces and stress/strain profiles; <i>Tao Liu (United Arab Emirates)</i> [D]
	B-06.2 11:15 am - 11:30 am	Geometry and mechanics of diarthrodial joints with emphasis on the talus joint; <i>Samer Adeeb (Canada)</i> [D]
	B-06.3 11:30 am - 11:45 am	Displacement-encoded magnetic resonance imaging of tissue and interface biomechanical behavior; <i>Deva Chan (United States)</i> [D]
	B-06.4 11:45 am - 12:00 pm	Multiscale finite element investigation of the rabbit medial collateral ligament femoral enthesis microscopic load response; <i>John Sevick (Canada)</i> [S]
	B-06.5 12:00 pm - 12:15 pm	3D Subject-Specific finite element foot modeling with automatic ligaments positioning and bone registration on global skeleton; <i>Nicolas Kroupa (France)</i> [S]
	B-06.6 12:15 pm - 12:30 pm	Validation of porcine knee finite element models with varied flexion angles and tibial freedoms; <i>Robert Cooper (United Kingdom)</i> [D]
	C - 06 569 (60 theatre)	Computer-aided surgery II Chairs: <i>Stéphane Avril, Songbai Ji</i>
	C-06.1 11:00 am - 11:30 am	Investigation of pelvic symmetry and the development of 3D pelvic models using CAD software; <i>Lindsey Westover (Canada)</i> [K]
	C-06.2 11:30 am - 11:45 am	Biomechanical stress changes on forefoot and hindfoot caused by the medializing calcaneal osteotomy as adult acquired flatfoot deformity treatment; <i>Christian Cifuentes (Spain)</i> [D]
	C-06.3 11:45 am - 12:00 pm	The role of physiological loading on bone fracture healing under Ilizarov circular fixator: the effects of load duration and loading frequency; <i>Ganesharajah Ganadhepan (Australia)</i> [S]
	C-06.4 12:00 pm - 12:15 pm	Decision support system in cranial implantology based on results from computational modeling - a feasibility study; <i>Jakub Chamrad (Czech Republic)</i> [S]
	C-06.5 12:15 pm - 12:30 pm	Clinical decision support model to guide fluid administration in intensive care patients; <i>Tilai Rosalina (Netherlands)</i> [S]
	D - 06 Auditorium West	Soft tissue mechanics, damage, remodeling II Chairs: <i>Grace O'Connell, Weiyong Gu</i>
	D-06.1 11:00 am - 11:15 am	Multiscale and multiphase model of the human liver for description of perfusion, metabolism and fat deposition; <i>Tim Ricken (Germany)</i> [D]
	D-06.2 11:15 am - 11:30 am	Modeling of abdominal wall under uncertainty of material properties; <i>Katarzyna Szepietowska (Poland)</i> [D]
	D-06.3 11:30 am - 11:45 am	Simulating Cerebral Edema and Delayed Fatality After Traumatic Brain Injury Using Triphasic Swelling Biomechanics; <i>Andrew Basilio (United States)</i> [S]
	D-06.4 11:45 am - 12:00 pm	Computation of in-plane left ventricular myocardial strain via image registration; <i>Miguel Rodriguez (United States)</i> [S]
	D-06.5 12:00 pm - 12:15 pm	In-vivo measurements of human tongue elasticity under general anesthesia using a volume based aspiration method; <i>Kilian Kappert (Netherlands)</i> [S]
	D-06.6 12:15 pm - 12:30 pm	A computational framework for prediction of bioprosthetic heart valve function under long-term cyclic loading; <i>Michael Sacks (United States)</i> [D]

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11:00 am - 12:30 pm	E - 06 476 A (36 theatre)	Biomechanics of movement and rehabilitation bioengineering I Chairs: <i>Antonia Zaferiou, Victoria Chester</i>
	E-06.1	11:00 am - 11:15 am Connection between gait and balance functions in pediatric patients with either neurological or sensory integration problems; <i>Malgorzata Syczewska (Poland)</i> [D]
	E-06.2	11:15 am - 11:30 am Determining optimal biomechanical parameters for classification of elderly fallers during balance and gait tasks; <i>Ashirbad Pradhan (Canada)</i> [S]
	E-06.3	11:30 am - 11:45 am Accuracy of anthropometric measurements by a video-based 3D modelling techniques; <i>Chuang-Yuan Chiu (United Kingdom)</i> [D]
	E-06.4	11:45 am - 12:00 pm Biomechanical model for dynamic analysis of the human gait; <i>Claysson Bruno Santos Vimieiro (Brazil)</i> [D]
	E-06.5	12:00 pm - 12:15 pm The effect of non-linear spring-loaded knee orthosis on lower extremity biomechanics; <i>Yeram Lim (United States)</i> [S]
	E-06.6	12:15 pm - 12:30 pm Scapular and humeral elevation patterns used before vs. after reverse total shoulder arthroplasty; <i>Antonia Zaferiou (United States)</i> [D]
F - 06 476 B (36 theatre)	Biomedical image analysis and processing Chairs: <i>João Tavares</i>	
	F-06.1	11:00 am - 11:15 am 4D point cloud registration for tumor vascular networks monitoring from ultrasensitive doppler images; <i>Emmanuel Cohen (France)</i> [D]
	F-06.2	11:15 am - 11:30 am Mathematical challenges in diffuse optical tomography: Enhancing accuracy and speed; <i>Paola Causin (Italy)</i> [D]
	F-06.3	11:30 am - 11:45 am Breast cancer categorization using convolutional neural networks; <i>Joao Papa (Brazil)</i> [D]
	F-06.4	11:45 am - 12:15 pm Liver tumour segmentation with convolutional neural networks; <i>Joao Tavares (Portugal)</i> [D]
	F-06.5	12:15 pm - 12:30 pm Quantification of 3D Collagen Fiber Distributions from SHG Image Data using Q-Ball Algorithm; <i>Adam Rauff (Portugal)</i> [S]
F - 12 Party space	BETA CAE Systems Workshop: From CT Scans to FE Simulations (11:00 am - 12:00pm) <i>Evangelos Karatsis, Laura Ianneti</i>	
G - 06 568 (36 theatre)	Urinary tract and reproductive biomechanics II Chairs: <i>Duncan Morhardt, Sara Roccabianca</i>	
	G-06.1	11:00 am - 11:15 am Mechanical biomarkers by torsional waves for gestational diagnosis; <i>Guillermo Rus (Spain)</i> [D]
	G-06.2	11:15 am - 11:30 am Bladder physiology and biomechanics; from bed-side to bench-top and back; <i>Michael Chancellor (United States)</i> [D]
	G-06.3	11:30 am - 11:45 am Modeling the multi-stage remodeling during bladder outlet obstruction; <i>Fangzhou Cheng (United States)</i> [S]
	G-06.4	11:45 am - 12:00 pm Extracellular matrix remodeling of the diabetic urinary bladder; <i>Sara Roccabianca (United States)</i> [D]
	G-06.5	12:00 pm - 12:15 pm Viscoelastic properties of fresh human bladder tissue; <i>Duncan Morhardt (United States)</i> [D]
	G-06.6	12:15 pm - 12:30 pm Tissue engineered endometrial barrier exposed to peristaltic flow shear stresses; <i>David Elad (Israel)</i> [D]
12:30 pm - 2:00 pm	Lunch & Poster Session 2	
2:00 pm - 3:00 pm	Plenary lecture - Integrated models of cell shape and function in tissue organization; Ravi Iyengar	
3:15 pm - 4:45 pm	A - 07 Auditorium East	Cardiac mechanics II - Myocardial mechanics Chairs: <i>Lik Chuan Lee, Choon Hwai Yap</i>
	A-07.1	3:15 pm - 3:30 pm Modeling cardiac growth and remodeling; <i>Peter Bovendeerd (Netherlands)</i> [D]
	A-07.2	3:30 pm - 3:45 pm A new robust 3D constitutive model for the passive properties of left ventricular myocardium; <i>David Li (United States)</i> [S]
	A-07.3	3:45 pm - 4:00 pm 3D strain mapping of murine left ventricular remodeling post infarction; <i>Arvin Soepriatna (United States)</i> [S]
	A-07.4	4:00 pm - 4:15 pm Cardiac growth and remodeling in heart failure: Correlating cell and organ scales using multiscale modeling and machine learning; <i>Mathias Peirlinck (Belgium)</i> [S]
	A-07.5	4:15 pm - 4:30 pm A computational approach on sensitivity of left ventricular wall strains to fiber orientation and geometry; <i>Luca Barbarotta (Netherlands)</i> [S]
	A-07.6	4:30 pm - 4:45 pm Myocardial material parameter estimation: overcoming the effect of unknown boundary tractions in energetics analysis; <i>Anastasia Nasopoulou (United Kingdom)</i> [S]
	B - 07 Auditorium West	Spine biomechanics I - Intervertebral disc and vertebrae Chairs: <i>Francesco Travascio, Giovanni F. Solitro</i>
	B-07.1	3:15 pm - 3:30 pm Microstructural analysis of nutrition canals in the human lumbar vertebral endplate; <i>Alejandro Espinoza (United States)</i> [D]
	B-07.2	3:30 pm - 3:45 pm Mechanical effects of enzymatic digestion of the tissues composing the intervertebral disc; <i>Ruth Wilcox (United Kingdom)</i> [D]
	B-07.3	3:45 pm - 4:00 pm Numerical modeling of intervertebral disc failure during hyperflexion and hyperflexion-compression injuries; <i>Marie-Helene Beausejour (Canada)</i> [S]
	B-07.4	4:00 pm - 4:15 pm Precise mean axis of rotation (MAR) analysis for clinical and research applications; <i>Mayar Abbasi (Canada)</i> [D]
	B-07.5	4:15 pm - 4:30 pm Investigation of Fracture Patterns after Pure Compression in the Spinal Thoracic Regions. An Experimental and Analytical Biomechanics; <i>Farid Amirouche (United States)</i> [D]
	B-07.6	4:30 pm - 4:45 pm Subject-specific vertebral fracture risk assessment: What's missing?; <i>Hugo Giambini (United States)</i> [D]
C - 07 555 (147 theatre)	Micro-physiological systems or organ-on-chip I Chairs: <i>Ben Maoz, James Hickman</i>	
C-07.1	3:15 pm - 3:45 pm Microphysiological systems for modeling neurological disease; <i>Roger Kamm (United States)</i> [K]	
C-07.2	3:45 pm - 4:15 pm Illuminating human function: development of a smart micro-physiological bioanalyzer; <i>Yaakov Nahmias (Israel)</i> [D]	
C-07.3	4:15 pm - 4:45 pm PDMS-free organ on chip platforms for modeling human disease; <i>Ashutosh Agarwal (United States)</i> [D]	

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3:15 pm - 4:45 pm	D - 07 569 (60 theatre)	Workshop - Patient-specific blood flow simulations using CRIMSON (3:15pm - 5:15pm) <i>C. Alberto Figueroa, Christopher J. Arthurs</i>	
	E - 07 476 A (36 theatre)	Biomechanics of movement and rehabilitation bioengineering II Chairs: <i>Scott Delp, Brian Jones</i>	
	E-07.1	3:15 pm - 3:30 pm	Evaluation of a 1-DOF hand exoskeleton for neuromuscular rehabilitation; <i>Ashley Mont (United States)</i> [S]
	E-07.2	3:30 pm - 3:45 pm	Computational prediction of grasp performance on a compliant surface during altered visual operation; <i>Raviraj Nataraj (United States)</i> [D]
	E-07.3	3:45 pm - 4:00 pm	Model based predictive control applied to prosthetic hands; <i>Jose Vicente García Ortiz (Spain)</i> [D]
	E-07.4	4:00pm - 4:15 pm	A new musculoskeletal AnyBody detailed hand model validated by electromyography; <i>Maximilian Melzner (Germany)</i> [S]
	E-07.5	4:15 pm - 4:30 pm	Recursive estimation of the human body's center of mass and angular momentum derivative; <i>François Bailly (France)</i> [D]
	F - 07 568 (36 theatre)	Imaging and image analysis for biomechanics I - Head and brain biomechanics Chairs: <i>Philip V. Bayly, Johannes Weickenmeier</i>	
	F-07.1	3:15 pm - 3:45 pm	Mechanically mapping the human brain with magnetic resonance elastography; <i>Curtis Johnson (United States)</i> [K]
	F-07.2	3:45 pm - 4:00 pm	Prion-like propagation of toxic proteins along the axon network in neurodegenerative diseases; <i>Johannes Weickenmeier (United States)</i> [D]
	F-07.3	4:00 pm - 4:15 pm	Investigating the pulsatile motion of the brain thorough 3D phase-based amplified MRI; <i>Javid Abderezaei (United States)</i> [S]
	F-07.4	4:15 pm - 4:30 pm	The significance of abdominal pressure on respiratory cerebrospinal fluid dynamics; <i>Robert Lloyd (Australia)</i> [S]
	F-07.5	4:15 pm - 4:30 pm	Evaluation of facial symmetry after head and neck reconstruction; <i>Daniel Aalto (Canada)</i> [D]
	G - 07 476 B (36 theatre)	Injury biomechanics: Dynamics Chairs: <i>Peter Cripton, Lyndia Wu</i>	
	G-07.1	3:15 pm - 3:45 pm	Odontoid fracture: From injury to intubation; <i>Christian Puttlitz (United States)</i> [K]
G-07.2	3:45 pm - 3:57 pm	On the challenges in prediction of hip fracture risk caused by fall among elderly people; <i>Yunhua Luo (Canada)</i> [D]	
G-07.3	3:57 pm - 4:09 pm	The role of corpus callosum myelination in the biomechanics of TBI; <i>Mehmet Kurt (United States)</i> [D]	
G-07.4	4:09 pm - 4:21 pm	Consideration of structural behavior of bones in musculoskeletal simulation models; <i>Robert Eberle (Austria)</i> [D]	
G-07.5	4:21 pm - 4:33 pm	Development and validation of a high-fidelity human thorax model for impact scenarios; <i>Wei Zeng (United States)</i> [S]	
G-07.6	4:33 pm - 4:45 pm	Uncertainty characterization of the multi-body reconstruction of real-life bicycle accidents; <i>Lise Gheysen (Belgium)</i> [S]	
7:30 pm	CMBBE 2019 Cruise ship dinner (tickets required, see directions on p. 34)		

8:00 am - 6:00 pm	Registration	
9:00 am - 10:30 am	A - 08 Auditorium East	Cardiac mechanics III - Cardiac function Chairs: <i>Vicky Wang, Reza Avaz</i>
	A-08.1 9:00 am - 9:15 am	Image tracking and flow modelling of human fetal and animal embryonic hearts; <i>Choon Hwai Yap (Singapore)</i> [D]
	A-08.2 9:15 am - 9:30 am	Multiscale modeling of non-ohmic conduction in cardiac tissue: Upscaling the non-linear behavior of gap junctions; <i>Daniel Hurtado (Chile)</i> [D]
	A-08.3 9:30 am - 9:45 am	Simulating ventricular growth caused by abnormalities in cardiac electromechanics; <i>Lik Chuan Lee (United States)</i> [D]
	A-08.4 9:45 am - 10:00 am	Computational cardiac modeling: Application to pulmonary arterial hypertension; <i>Reza Avaz (United States)</i> [S]
	A-08.5 10:00 am - 10:15 am	The response of integrated parametric aortic valve in a mechano-electrical full heart model; <i>Adi Morany (Israel)</i> [S]
	A-08.6 10:15 am - 10:30 am	A multiphysics model of cardiac function: Methods and validation; <i>Vijay Vedula (United States)</i> [D]
	B - 08 555 (147 theatre)	Spine biomechanics II - Patient specific modeling and scoliosis Chairs: <i>Giovanni F. Solitro, Francesco Travascio</i>
	B-08.1 9:00 am - 9:15 am	Postoperative effect of lumbar fusion on adjacent segment biomechanics - A personalized parametric finite element study; <i>Kinda Khalaf (United Arab Emirates)</i> [D]
	B-08.2 9:15 am - 9:30 am	Image-based finite element modeling as a pre-clinical evaluation tool for spinal interventions; <i>Ruth Wilcox (United Kingdom)</i> [D]
	B-08.3 9:30 am - 9:45 am	Methods to investigate the effects of vertebral variation on the mechanical outcomes of vertebroplasty using statistical shape and appearance modeling; <i>Gavin Day (United Kingdom)</i> [D]
	B-08.4 9:45 am - 10:00 am	A preliminary sensitivity study of vertebral tethering configurations using a patient-specific finite element model of idiopathic scoliosis; <i>J. Paige Little (Australia)</i> [D]
	B-08.5 10:00 am - 10:15 am	Experimental in-vitro evaluation of a numerical model of the spine and its application for the comparison of different approaches to scoliosis corrective surgery; <i>Wafa Skalli (France)</i> [D]
	B-08.6 10:15 am - 10:30 am	Transpositions of intervertebral centroids in adolescents suffering from idiopathic scoliosis optically diagnosed; <i>Sasa Cukovic (Serbia)</i> [D]
	C - 08 569 (60 theatre)	Micro-physiological systems or organ-on-chip II Chairs: <i>David Elad, Ashutosh Agarwal</i>
	C-08.1 9:00 am - 9:30 am	Body-on-a-chip human systems for drug development using PBPK/PD models; <i>Michael Shuler (United States)</i> [K]
	C-08.2 9:30 am - 10:00 am	Human-on-a-chip systems for use in efficacy and toxicological investigations in pre-clinical drug discovery for applications in neurological diseases; <i>James Hickman (United States)</i> [K]
	C-08.3 10:00 am - 10:30 am	Organs on a chip: A new tool for the study of brain physiology; <i>Ben Maoz (Israel)</i> [D]
	D - 08 Auditorium West	Soft Tissues and Gels I: Testing methods and constitutive models Chairs: <i>Martyn Nash, Dominique Pioletti</i>
	D-08.1 9:00 am - 9:15 am	The mechanical behaviour of skin: A struggle for the appropriate testing method; <i>Cees Oomens (Netherlands)</i> [D]
D-08.2 9:15 am - 9:30 am	Designing experiments for identifying mechanical properties of soft tissues; <i>Thiranjia Babarenda Gamage (New Zealand)</i> [D]	
D-08.3 9:30 am - 9:45 am	Collapse of vessels in soft tissues; <i>Sam Evans (United Kingdom)</i> [D]	
D-08.4 9:45 am - 10:00 am	Ultrasound-based biomechanical modeling of abdominal aortic aneurysms for clinical decision support; <i>Richard Lopata (Netherlands)</i> [D]	
D-08.5 10:00 am - 10:15 am	Multiple scales broad band-width frequency (0.1 -1 kHz) study on dynamic poroviscoelasticity of neutral and polyelectrolyte hydrogels; <i>Yin Chang (United Kingdom)</i> [S]	
D-08.6 10:15 am - 10:30 am	Computational modeling inspired valve design enables long-term functionality of tissue-engineered heart valves; <i>Sandra Loerakker (Netherlands)</i> [D]	
E - 08 476 A (36 theatre)	Biomechanics of movement and rehabilitation bioengineering III Chairs: <i>Brian Jones, Victoria Chester</i>	
E-08.1 9:00 am - 9:15 am	A forward dynamics approach to explore the mechanics of muscle size scaling in humans; <i>Geoffrey Handsfield (New Zealand)</i> [D]	
E-08.2 9:15 am - 9:30 am	Validation of micromechanical muscle modeling technique to predict muscle membrane strain; <i>Emily Miller (United States)</i> [S]	
E-08.3 9:30 am - 9:45 am	Leading the muscle path: A via-ellipse approach for three-dimensional musculoskeletal models; <i>Maria Hammer (Germany)</i> [S]	
E-08.4 09:45 am - 10:00 am	Index finger musculoskeletal dynamic model; <i>Jumana Ma'touq (Germany)</i> [S]	
E-08.5 10:00 am - 10:15 am	Multimodal image-based finite element modeling of the craniomaxillofacial skeleton: the impact of 3D muscle anatomy; <i>Hanieh Arjmand (Canada)</i> [S]	
E-08.6 10:00 am - 10:15 am	Assessment of a shoulder finite element model to predict muscle trajectories; <i>Marion Hoffmann (Canada)</i> [S]	

9:00 am - 10:30 am	F - 08 568 (36 theatre)	Imaging and image analysis for biomechanics II - Cardiovascular biomechanics Chairs: <i>Manuel Rausch, Emma Lejeune</i>	
	F-08.1	9:00 am - 9:30 am	Murine cardiac and vascular 4D ultrasound; <i>Craig Goergen (United States)</i> [K]
	F-08.2	9:30 am - 9:45 am	Computational modeling of valve interstitial cells; <i>Emma Lejeune (United States)</i> [D]
	F-08.3	9:45 am - 10:00 am	Murine cardiac hypertrophy reduces in vivo green-lagrange strain quantified from 4D ultrasound; <i>Alycia Berman (United States)</i> [S]
	F-08.4	10:00 am - 10:15 am	An image-based modeling pipeline for predicting patient-specific mitral valve repair outcomes; <i>Harshita Narang (United States)</i> [S]
	F-08.5	10:15 am - 10:30 am	Optimization of contrast-enhanced micro-CT for characterization of the in vivo behavior of biodegradable metallic intravascular stents; <i>Lisa Leyssens (Belgium)</i> [S]
	G - 08 476 B (36 theatre)	3D printing for patient-specific modeling Chairs: <i>Paulo Rui Fernandes, André Castro</i>	
	G-08.1	9:00 am - 9:30 am	Nonlinear FEA for design and quality control of 3D printed patient specific medical devices; <i>Scott Hollister (United States)</i> [K]
	G-08.2	9:30 am - 9:45 am	Finite element modeling of TPMS scaffolds for bone tissue engineering; <i>André Castro (Portugal)</i> [D]
	G-08.3	9:45 am - 10:00 am	Case report: Developing forehead flap templates to guide partial or full nasal reconstruction from 2D and 3D images; <i>Zachary Fishman (Canada)</i> [S]
G-08.4	10:00 am - 10:15 am	Image-based 3D printing for surgical preparation and experimental validation; <i>David Rutkowski (United States)</i> [S]	
10:30 am - 11:00 am	Coffee break		
11:00 am - 12:30 pm	A - 09 555 (147 theatre)	Vascular mechanics I Chairs: <i>Chiara Bellini, Salvatore Federico, Alfio Grillo</i>	
	A-09.1	11:00 am - 11:15 am	Consistent biomechanical phenotyping of murine arteries - Lessons learned, future needs; <i>Jay Humphrey (United States)</i> [D]
	A-09.2	11:15 am - 11:30 am	Biomechanics of the aorta in mouse models of aortic dissection: From synchrotron imaging to computational modeling; <i>Patrick Segers (Belgium)</i> [D]
	A-09.3	11:30 am - 11:45 am	Multi-scale ECM mechanics and transmural integrity of the arterial wall; <i>Yanhang (Katherine) Zhang (United States)</i> [D]
	A-09.4	11:45 am - 12:00 pm	Tissue re-modeling during the pathogenesis of abdominal aortic aneurysms; <i>Justyna Anna Niestrawska (Austria)</i> [D]
	A-09.5	12:00 pm - 12:15 pm	Collagen remodeling in saccular aneurysms: A study in an elastase induced animal model; <i>Chao Sang (United States)</i> [S]
	A-09.6	12:15 pm - 12:30 pm	Patient-specific computational predictions of human ascending thoracic aneurysm growth; <i>Stéphane Avril (France)</i> [D]
	B - 09 Auditorium East	Symposium in honor of Prof. Christopher Jacobs: Chris Jacobs' students and fellows Chairs: <i>Ronald Kwon, Alesha Castillo</i>	
	B-09.1	11:00 am - 11:25 am	Bone cell cross talk under mechanical loading; <i>Lidan You (Canada)</i> [K]
	B-09.2	11:25 am - 11:38 am	Osteocyte primary cilia mechanosensing: Intraciliary signals, extraciliary dynamics, and beyond; <i>Michael Duffy (United States)</i> [S]
B-09.3	11:38 am - 11:51 am	Targeting mechanobiological cues to drive stem cell osteogenesis and bone regeneration; <i>David Hoey (Ireland)</i> [D]	
B-09.4	11:51 am - 12:04 pm	Osteo-angio coupling during mechanically-regulated bone repair; <i>Alesha Castillo (United States)</i> [D]	
B-09.5	12:04 pm - 12:17 pm	Extreme biomechanical adaptations of bone and bioinspired material design; <i>Seth Donahue (United States)</i> [D]	
B-09.6	12:17 pm - 12:30 pm	Deep phenotyping in the zebrafish skeleton enhances somatic mutant detection and mosaic pattern recognition; <i>Ronald Kwon (United States)</i> [D]	
C - 09 Auditorium West	Inverse modeling/parameter identification I Chairs: <i>Johannes Weickenmeier, Stéphane Avril</i>		
C-09.1	11:00 am - 11:30 am	Identification of poroviscoelastic material properties of hydrogels; <i>Michelle Oyen (United States)</i> [K]	
C-09.2	11:30 am - 11:45 am	The effect of model discretization on parameter identification. Application to real-time finite element simulations; <i>Nava Schulmann (France)</i> [D]	
C-09.3	11:45 am - 12:00 pm	Identification of a cerebral contusion injury threshold by means of coupled Eulerian-Lagrangian finite element analysis of a porcine brain model; <i>Andrea Menichetti (Belgium)</i> [S]	
C-09.4	12:00 pm - 12:15 pm	Hyperelastic biomechanical model of a transibial residuum from in-vivo indentation using inverse FEA and 3D digital image correlation; <i>Dana Solav (United States)</i> [D]	
C-09.5	12:15 pm - 12:30 pm	Local stiffness estimation of the human eardrum via the virtual fields method; <i>Felipe Pires (Belgium)</i> [S]	
D - 09 568 (36 theatre)	Soft tissues and hydrogels II: Brain and Gels Chairs: <i>Cees Oomens, Sam Evans</i>		
D-09.1	11:00 am - 11:15 am	The modeling and mechanics of positional brain shift; <i>Nicholas Bennion (United Kingdom)</i> [S]	
D-09.2	11:15 am - 11:30 am	Imaging of positional brain shift in a deformable phantom; <i>Matthew Potts (United Kingdom)</i> [S]	
D-09.3	11:30 am - 11:45 am	Digital volume correlation via magnetic resonance imaging: An in-vivo investigation of positional brain shift; <i>Stefano Zappala (United Kingdom)</i> [D]	
D-09.4	11:45 am - 12:00 pm	Enriched hydrogels as regenerative scaffolds for neuronal regrowth; <i>Orit Shefi (Israel)</i> [D]	
D-09.5	12:00 pm - 12:15 pm	The anisotropic material properties of human cervical tissue in tension and compression; <i>Kristin Myers (United States)</i> [D]	
D-09.6	12:15 pm - 12:30 pm	Mechanobiology controlled by dissipation in hydrogel; <i>Dominique Pioletti (Switzerland)</i> [D]	

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11:00 am - 12:30 pm	E - 09 569 (60 theatre)	Workshop - GIBBON Workshop <i>Kevin M. Moerman</i>	
	F - 09 476 A (36 theatre)	Elastography imaging Chairs: <i>Daniel H. Cortes, Deva Chan</i>	
	F-09.1	11:00 am - 11:30 am	DENSE and HARP: two sides of the same elastography coin; <i>Deva Chan (United States)</i> [K]
	F-09.2	11:30 am - 11:45 am	Interface and consistency characterization of meningioma through MRE and aMRI; <i>Efe Ozkaya (United States)</i> [S]
	F-09.3	11:45 am - 12:00 pm	Regularization-free strain mapping in three dimensions; <i>Guy Genin (United States)</i> [D]
	F-09.4	12:00 pm - 12:15 pm	Strain imaging with subsample displacement estimation using a projection method; <i>Mohamed Almekkawy (United States)</i> [D]
	F-09.5	12:15 pm - 12:30 pm	Narrow-band shear wave generation and detection using a single ultrasound clinical transducer; <i>Daniel Cortes (United States)</i> [D]
	G - 09 476 B (36 theatre)	Patient-specific modeling Chairs: <i>Sarah Vigmostad, Laura Marx</i>	
	G-09.1	11:00 am - 11:15 am	Complex cellular models of neurovascular coupling; <i>Tim David (New Zealand)</i> [D]
	G-09.2	11:15 am - 11:30 am	Towards a real-time solution for virtual surgical planning of upper airway procedures, including computational fluid dynamics; <i>Rachel Clipp (United States)</i> [D]
G-09.3	11:30 am - 11:45 am	Patient-specific parameterization of pressure-overloaded left ventricular electro-mechanical models; <i>Laura Marx (Austria)</i> [S]	
G-09.4	11:45 am - 12:00 pm	An eulerian approach to patient-specific hemodynamic modeling using image-derived left ventricle motion; <i>Sarah Vigmostad (United States)</i> [D]	
G-09.5	12:00 pm - 12:15 pm	4D flow MRI estimation of boundary conditions for patient specific cardiovascular simulation; <i>Alejandro Roldán-Alzate (United States)</i> [D]	
12:30 pm - 2:00 pm	Lunch & Poster Session 3		
2:00 pm - 3:00 pm	Plenary lecture - Digital twins in tissue engineering: from bench to bedside via the computer; Liesbet Geris		
3:15 pm - 4:45 pm	A - 10 476 A (36 theatre)	Vascular mechanics II Chairs: <i>Chiara Bellini, Salvatore Federico, Alfio Grillo</i>	
	A-10.1	3:15 pm - 3:30 pm	Dissection potential index (DPI): a biomechanics-based risk prediction metric for aortic dissection; <i>Spandan Maiti (United States)</i> [D]
	A-10.2	3:30 pm - 3:45 pm	Understanding failure mechanisms in tunica adventitia: multi directional experiments and a unifying microstructural finite element model; <i>Venkat Siva Radha Krishna Ayyalasomayajula (France)</i> [S]
	A-10.3	3:45 pm - 4:00 pm	Multiscale biomechanical investigation of human aortas: extracellular matrix ultrastructure under load; <i>Anna Pukaluk (Austria)</i> [S]
	A-10.4	4:00 pm - 4:15 pm	Numerical implementation of fiber dispersion in a growth and remodeling model; <i>Nino Horvat (Croatia)</i> [S]
	B - 10 Auditorium East	Symposium in honor of Prof. Christopher Jacobs: Musculoskeletal mechanobiology Chairs: <i>Farsh Guilak, Seth Donahue</i>	
	B-10.1	3:15 pm - 3:37 pm	Harnessing chondrocyte mechanotransduction to drive therapeutic transgene production via a synthetic mechanogenetic circuit; <i>Robert J. Nims (United States)</i> [D]
	B-10.2	3:37 pm - 3:59 pm	Actomyosin contractility and inflammation mediates mechanobiology in DD; <i>Nadeen Chahine (United States)</i> [D]
	B-10.3	3:59 pm - 4:21 pm	Mechanobiology of embryonic development to inform adult tendon regeneration; <i>Catherine Kuo (United States)</i> [D]
	B-10.4	4:21 pm - 4:43 pm	Synovium Mechanobiology and Joint Inflammation; <i>Robert Stefani (United States)</i> [S]
	C - 10 476 B (36 theatre)	Inverse modeling/parameter identification II Chairs: <i>Johannes Weickenmeier, Michelle Oyen</i>	
	C-10.1	3:15 pm - 3:30 pm	Inverse identification of regional material properties in a mouse model of suprarenal aortic dissections; <i>Stéphane Avril (France)</i> [D]
	C-10.2	3:30 pm - 3:45 pm	Reconstruction of local contractility of the heart based on visible kinematics; <i>Simone Pezzuto (Switzerland)</i> [D]
	C-10.3	3:45 pm - 4:00 pm	Inverse elastostatics to compute the in vivo loaded stress state of human cardiovascular tissue; <i>Mathias Peirlinck (Belgium)</i> [S]
	C-10.4	4:00 pm - 4:15 pm	Identification of damage criteria in pressure ulcers using the virtual fields method; <i>Bethany Keenan (United Kingdom)</i> [D]
	C-10.5	4:15 pm - 4:30 pm	Optimization-derived glenohumeral capsule properties from in-vivo laxity data; <i>Andrew Kraszewski (United States)</i> [S]
	C-10.6	4:30 pm - 4:45 pm	In vivo identification of the mechanical properties of the thigh tissues from FreeHand Ultrasound for the numerical investigation of loads at the socket/residual limb interface of amputee people; <i>Fougeron Nolwenn (France)</i> [S]
	D - 10 569 (60 theatre)	Cellular and molecular biomechanics Chairs: <i>Stavros Thomopoulos, Guy Genin</i>	
	D-10.1	3:15 pm - 3:45 pm	Regulation of nuclear architecture, mechanics and nucleo-cytoplasmic shuttling of epigenetic factors by cell geometric constraints; <i>Vivek Shenoy (United States)</i> [K]
	D-10.2	3:45 pm - 4:00 pm	Mathematical model of osteoblast growth kinetics in a microcarrier culture; <i>Iva Burova (United Kingdom)</i> [S]
	D-10.3	4:00 pm - 4:15 pm	Microstructural heterogeneity influences on the flexural rigidity of the axon; <i>Lucy Wang (United States)</i> [S]
	D-10.4	4:15 pm - 4:30 pm	The importance of mesh and analysis type in cellular modelling; <i>Evangelos Karatsis (Switzerland)</i> [D]

3:15 pm - 4:45 pm	E - 10 568 (36 theatre)		Injury biomechanics: Prevention Chairs: <i>Lyndia Wu, Peter Cripton</i>
	E-10.1	3:15 pm - 3:45 pm	Combining computational and experimental studies in injury biomechanics: Towards prevention of SCI, TBI and hip fracture; <i>Peter Cripton (Canada)</i> [K]
	E-10.2	3:45 pm - 4:00 pm	Human body modeling: A priority for future vehicle safety landscape; <i>Saeed Barbat (United States)</i> [D]
	E-10.3	4:00 pm - 4:15 pm	Scalable human body model for multi-modal safety; <i>Ludek Hyncik (Czech Republic)</i> [D]
	E-10.4	4:15 pm - 4:30 pm	Evaluation of occupant response in side impact crash scenarios using human body models; <i>Donata Gierczycka (Canada)</i> [D]
	E-10.5	4:30 pm - 4:45 pm	Virtual assessment of advanced safety systems for new mobility modes; <i>Jan Spicka (Czech Republic)</i> [S]
	F - 10 555 (147 theatre)		Imaging and image analysis for biomechanics III - Cellular and orthopedic biomechanics Chairs: <i>David Pierce, Greet Kerckhofs</i>
	F-10.1	3:15 pm - 3:45 pm	Deformation microscopy for dynamic mapping of intracellular and intranuclear mechanics; <i>Corey Neu (United States)</i> [K]
	F-10.2	3:45 pm - 4:00 pm	Image-based constitutive modeling of articular cartilage; <i>David Pierce (United States)</i> [D]
	F-10.3	4:00 pm - 4:15 pm	High-resolution contrast-enhanced micro-CT for spatial assessment of biological tissues; <i>Greet Kerckhofs (Belgium)</i> [D]
	F-10.4	4:15 pm - 4:30 pm	Contrast-enhanced micro-CT reveals alterations in the cascade of fracture healing in obesity-driven diabetic mice; <i>Carlos Marin (Belgium)</i> [S]
	F-10.5	4:30 pm - 4:45 pm	Residual limb shape and deformation using multi-camera 3D digital image correlation; <i>Dana Solav (United States)</i> [D]
	G - 10 Auditorium West		Ocular biomechanics Chairs: <i>Ross Ethier, Jonathan Vande Geest</i>
	G-10.1	3:15 pm - 3:45 pm	How vision-guided scleral remodeling shapes our eyes and produces clear vision or not; <i>Rafael Grytz (United States)</i> [K]
	G-10.2	3:45 pm - 4:00 pm	Pediatric retinal microvasculature mechanics during trauma; <i>Brittany Coats (United States)</i> [D]
	G-10.3	4:00 pm - 4:15 pm	Biomechanical assessment of the iris in relation to angle-closure glaucoma: A multi-scale computational approach; <i>Rouzbeh Amini (United States)</i> [D]
	G-10.4	4:15 pm - 4:30 pm	Utilizing finite element analysis to determine scleral mechanical properties and optic nerve head strain in the rat eye; <i>Ross Ethier (United States)</i> [D]
	G-10.5	4:30 pm - 4:45 pm	Quantifying the mechanical properties of the human lamina cribrosa - A preliminary study; <i>Jonathan Vande Geest (United States)</i> [D]
4:45 pm - 5:15 pm	Coffee break		
5:15 pm - 6:45 pm	A - 11 476 A (36 theatre)		Biomechanics of pulse wave propagation Chairs: <i>Patrick Segers, Vijay Vedula</i>
	A-11.1	5:15 pm - 5:30 pm	Computational assessment of risk of subdural hematoma associated with ventriculoperitoneal shunt placement; <i>Milan Toma (United States)</i> [D]
	A-11.2	5:30 pm - 5:45 pm	Shear wave speed is sensitive to tensiometer-tissue interactions: A parametric modeling study; <i>Joshua Roth (United States)</i> [D]
	A-11.3	5:45 pm - 6:00 pm	Estimation of patient-specific central hemodynamic qualities from brachial pressure and pulse wave velocity; <i>Vasiliki Bikia (Switzerland)</i> [S]
	A-11.4	6:00 pm - 6:15 pm	Modeling skin and soft tissue vibrations generated by pressure pulse propagation in the common carotid artery; <i>Daniela Tommasin (Belgium)</i> [S]
	A-11.5	6:15 pm - 6:30 pm	Modelling pulse wave propagation in stenotic arteries with fluid-structure interaction: Comparison with pulse wave imaging; <i>Pierre Nauleau (United States)</i> [D]
	B - 11 Auditorium East		Symposium in honor of Prof. Christopher Jacobs: Computational biomechanics Chairs: <i>Ellen Kuhl, Scott Delp</i>
	B-11.1	5:15 pm - 5:37 pm	Machine learning in drug development; <i>Ellen Kuhl (United States)</i> [D]
	B-11.2	5:37 pm - 5:59 pm	Open source software for simulation of human movement; <i>Scott Delp (United States)</i> [D]
	B-11.3	5:59 pm - 6:21 pm	History and overview of the FEBio software project; <i>Jeffrey Weiss (United States)</i> [D]
	B-11.4	6:21 pm - 6:43 pm	A foundational reactive mixture theory framework for computational biomechanics; <i>Gerard Ateshian (United States)</i> [D]
	C - 11 569 (60 theatre)		Human modeling for robotics Chairs: <i>Carlotta Mummolo, Joo H. Kim</i>
	C-11.1	5:15 pm - 5:30 pm	Toward an expressive bipedal robot: Variable gait generation and validation on a planar compass biped and a core-driven planar biped across multiple environments; <i>Amy LaViers (United States)</i> [D]
	C-11.2	5:30 pm - 5:45 pm	Walking principle from balance stability perspective: From rolling wheel to human to robot; <i>Joo H. Kim (United States)</i> [D]
	C-11.3	5:45 pm - 6:00 pm	Multimodal foot-ground contact interaction in human postural stability; <i>Carlotta Mummolo (United States)</i> [D]
	C-11.4	6:00 pm - 6:15 pm	Predictive models of energy expenditure for actuated dynamic systems: Human versus robot; <i>Joo H. Kim (United States)</i> [D]
	C-11.5	6:15 pm - 6:30 pm	Design and evaluation of exoskeletons with neuromusculoskeletal modeling; <i>Xianlian Zhou (United States)</i> [D]
	C-11.6	6:30 pm - 6:45 pm	Optimization of the kinematic chain of the thumb for a hand prosthesis based on the Kapandji opposition test; <i>Immaculada Llop-Harillo (Spain)</i> [S]

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5:15 pm - 6:45 pm	D - 11 555 (147 theatre)		Soft tissues and hydrogels III: Skin damage Chairs: <i>Cees Oomens, Martyn Nash</i>
	D-11.1	5:15 pm - 5:30 pm	Effect of skin model and material parameters in finite element modelling indentation; <i>Hayley Wyatt (United Kingdom)</i> [D]
	D-11.2	5:30 pm - 5:45 pm	From deep learning towards finding skin lesion biomarkers; <i>Junyan Wu (United States)</i> [S]
	D-11.3	5:45 pm - 6:00 pm	Multiscale and multiphysics modeling of pressure ulcers and wound healing in the skin; <i>Adrian Tepole (United States)</i> [D]
	D-11.4	6:00 pm - 6:15 pm	Application of digital volume correlation to the in-vivo deformation of the sub-dermal tissues in the human buttock; <i>Stefano Zappala (United Kingdom)</i> [D]
D-11.5	6:15 pm - 6:30 pm	MRI based 3D finite element modeling to investigate heel pressure ulcers - Is Haglund's a risk factor?; <i>Bethany Keenan (United Kingdom)</i> [D]	
E - 11 568 (36 theatre)		Sports biomechanics Chairs: <i>António Veloso, Scott Selbie</i>	
E-11.1	5:15 pm - 5:28 pm	The current state of in-game markerless motion capture; <i>Scott Selbie (Canada)</i> [D]	
E-11.2	5:28 pm - 5:41 pm	Markerless motion capture for in-game baseball biomechanics assessment; <i>Thomas Kepple (United States)</i> [D]	
E-11.3	5:41 pm - 5:54 pm	On field assessment of elite goalkeepers movement strategies for penalty kicks in football; <i>António Veloso (Portugal)</i> [D]	
E-11.4	5:54 pm - 6:07 pm	Generating meaningful biomechanical data during live track and field events; <i>Athanassios Bissas (United Kingdom)</i> [D]	
E-11.5	6:07 pm - 6:20 pm	Integrating FE analysis and T2 MRI relaxation times reveals different responses to barefoot running in novice and experienced athletes; <i>Justin Fernandez (New Zealand)</i> [D]	
E-11.6	6:20 pm - 6:33 pm	Comparison of energy and power during muscle-up and pull-up; <i>Bruno Watier (France)</i> [D]	
E-11.7	6:33 pm - 6:46 pm	Optimizing padding thickness in football helmets to minimize angular acceleration; <i>Michael Fanton (United States)</i> [S]	
F - 11 Auditorium West		Société de Biomécanique session: Joint imaging and musculoskeletal modelling Chairs: <i>Raphael Dumas</i>	
F-11.1	5:15 pm - 5:40 pm	Imaging data fusion and subject specific spine modelling; <i>Wafa Skalli (France)</i> [K]	
F-11.2	5:40 pm - 5:53 pm	Effect of CT-based patient-specific data in evaluation of joint reaction force after total shoulder arthroplasty; <i>Alexandre Terrier (Switzerland)</i> [D]	
F-11.3	5:53 pm - 6:06 pm	Development and validation of subject-specific patellofemoral joint kinematic models for children and adolescents with recurrent patellar dislocation; <i>Martina Barzan (Australia)</i> [D]	
F-11.4	6:06 pm - 6:19 pm	From scaling to MRI defined subject-specific ankle joint models: A comparison of three approaches with increasing level of anatomical consistency; <i>Erica Montefiori (United Kingdom)</i> [S]	
F-11.5	6:19 pm - 6:32 pm	Subject-specific model with hip muscles' pathways determined using optimized wrapping surfaces; <i>David Lloyd (Australia)</i> [D]	
F-11.6	6:32 pm - 6:45 pm	Knee medial and lateral contact forces computed along subject-specific contact trajectories; <i>Raphael Dumas (France)</i> [D]	
G - 11 476 B (36 theatre)		Growth and remodeling in reproductive biomechanics Chairs: <i>Kristin Miller, Raffaella De Vita</i>	
G-11.1	5:15 pm - 5:45 pm	Hormone mediated growth and remodeling in mouse cervix; <i>Kristin Myers (United States)</i> [K]	
G-11.2	5:45 pm - 6:00 pm	Modeling longitudinal placental perfusion using molecularly targeted contrast-enhanced ultrasound; <i>Carolyn Bayer (United States)</i> [D]	
G-11.3	5:00 pm - 6:15 pm	Computational models of human pregnancy from a cohort of patients at high risk for preterm birth; <i>Erin Louwagie (United States)</i> [S]	
G-11.4	5:15 pm - 6:30 pm	Bursting the vagina into tears; <i>Raffaella De Vita (United States)</i> [D]	
6:45 pm - 7:00 pm	Closing session Paper and poster awards		