

The 5th International Forum on Blast Injury Countermeasures (IFBIC 2021) - Program -

Message from the General Chair

David Dennison

US Army Medical Research & Development Command, USA



Keynote and Tutorial Lectures

Keynote 1

Physics- and systems-based modelling techniques to analyse human protection against blast and ballistic insult

Daniel Pope¹, Spyros Masouros² and Rbert Fryer¹

¹ Defence Science and Technology Laboratory (Dstl), UK

² Imperial College London (ICL), UK



D. Pope



S. Masouros

Keynote 2

US Department of Defense Warfighter Brain Health Initiative: addressing brain threats

Kathy Lee

Casualty Management Policy & Programs

Health Affairs, Department of Defense, USA



Tutorial 1

Decoding the role of astrocytes in the brain structure & function by means of nanostructured materials & devices

Valentina Benfenati

Consiglio Nazionale delle Ricerche,

Istituto per la Sintesi Organica e Fotoreattività, Italy



Tutorial 2

Paralympic brain - compensation and reorganization in human brain -

Kimitaka Nakazawa

Department of Life Sciences, The University of Tokyo, Japan



Tutorial 3

Physiological and pathological roles of aquaporin-4 in glymphatic system

Masato Yasui

Dept. of Pharmacology, Keio University School of Medicine, Japan



Tutorial 4

An excitable systems framework for control of cells

Wolfgang Losert

University of Maryland, USA



Regular papers

Session 1: Primary blast-induced traumatic brain injury

Cortical physiological responses to shock waves with different durations at the same impulse condition in rats

T. Osawa^{1,2}, S. Kawauchi³, M. Namiki², I. Nishidate¹ and S. Sato³

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In vivo imaging of nitric oxide in a rat brain exposed to a laser-induced shock wave

S. Kawauchi¹, M. Inaba², Y. Muramatsu¹, A. Kono¹, Y. Komuta¹, I. Nishidate², T. Adachi³ and S. Sato¹

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Session 2: Secondary blast injury

Fragment penetration injury to cardiac tissues: initial findings

H. Tsukada, T-T Nguyen, J. Breeze and S. D. Masouros
Dept. of Bioengineering, Imperial College London (UK)

Session 3: Auditory system

Recommendations for a military health system auditory blast injury prevention standard

E. B. Brokaw¹, P. Salamone¹, R. Spencer¹, L. Lalis¹ and R. Gupta²

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Session 4: New therapies

Effects of selective serotonin reuptake inhibitors on depression-like behavior in a mouse model of mild blast traumatic brain injury

S. Seno^{1,2}, S. Tomura², H. Miyazaki^{2,3}, S. Sato⁴ and D. Saitoh²

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Prazosin modifies c-fos expression at the spinomedullary junction evoked by light stimulation in mTBI rats

A. Tashiro¹, D. G. Cook^{2,3}, E. R. Peskind^{4,5}, S. Kawauchi⁶, S. Sato⁶ and Y. Morimoto¹

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Session 5: Protection

A study of the effectiveness of body armor on blast injury

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Session 6: Modeling and simulation

Four-dimensional detection of high-speed pressure and deformation given by blast loading inside a detonation-driven blast simulator

T. Mizukaki¹, F. Iwasaki², M. Mori² and D. Numata¹

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²Course of Mechanical Engineering, Graduate school of Engineering, Tokai University (Japan)

Development of a surrogate head model subjected to blast-induced pressure wave impact

R. Banton¹, T. Piehler¹, N. Zander¹, R. Benjamin¹ and O. Petel²

¹U.S. Army Research Laboratory, Aberdeen Proving Ground (USA),

²Carleton University, Ottawa, Ontario (Canada)

Pelvis fracture in under body blast (UBB)

W. Perciballi, K-A Lou and R. Zimmermann

Force Engineering Inc. (USA)

Session 7: New imaging and sensing

RGB camera-based diffuse reflectance imaging of cerebral hemodynamics in rat brain exposed to a Laser-induced shock wave

I. Nishidate¹, S. Kawauchi² and S. Sato²

¹Graduate School of Bio-applications and Systems Engineering, Tokyo University of Agriculture and Technology (Japan),

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Bio-templated fluorescent metal nanocluster photonic pressure sensor for neuronal cells

K. J. Perry¹, S. P. Karna¹ and R. K. Gupta²

¹DEVCOM Army Research Laboratory, Weapons and Materials Directorate (USA),

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Session 8: Human injury and exposure assessments

Blood-based molecular diagnostics of training-associated repeated exposures to subconcussive blasts

D. V. Agoston¹, J. McCullough¹, R. Aniceto¹, I-H Lin¹, A. Kamnaksh¹, M. Eklund, W. M. Graves III², C. Dunbar², J. Engall, E. B. Schneider³, F. Leonessa⁴ and J. L. Duckworth^{2,4}

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Gray matter structural covariance alterations after blast brain injury

S. Hellewell^{1,2} and I. Cernak³

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²Curtin Health and Innovation Research Institute, Curtin University (Australia),

³Dept. of Biomedical Sciences, Mercer University School of Medicine (USA)

The associations between self-reported proximity to blast, combat exposure, concussion, and PTSD during deployment

J. N. Belding^{1,2}, R. Englert^{1,2}, S. Fitzmaurice^{1,2} and C. J. Thomsen¹

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²Naval Health Research Center (USA)

The association between proximity to blast and associated probable mTBI and symptom reporting during deployment

R. M. Englert^{1,2}, J. N. Belding^{1,2}, S. Fitzmaurice^{1,2} and C. J. Thomsen²

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Monitoring blast and blunt force exposures using a single body worn device

A. Bartsch

Prevent Biometrics (USA)

NICoE blast ordnance and occupational exposure measure (BOOM)

R. Sandlain¹, J. Ollinger¹, T. Woo¹, T. Dittmer², D. Bryden², T. DeGraba¹ and C. Rhodes¹

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Blast overpressure tool: A module for human body blast wave exposure for safer weapons training

R. K. Gupta¹, H. T. Garimella², Z. J. Chen², W. Carr³, M. Skotak³, B. A. Garfield³ and A. J. Przekwas²

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Specifying clinically relevant and realistic blast loading conditions for primary blast injury research

J. W. Denny¹, A. S. Dickinson¹ and G. S. Langdon²

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Postdeadline paper

Orientation-independent wearable blast sensor

K. Willens, B. Muzinich, B. Kavlicoglu and F. Gordaninejad
Advanced Materials and Devices, Inc. (USA)