Simulation Educational Center
Department of Pathological Physiology
Department of Medical Biophysics

COUGH IT UP

Simulation and modeling in understanding of airway defensive mechanisms

PROGRAM

MARTIN
30th June - 2nd July 2014
VENUE & CONTACT

Simulation Educational Center of Jessenius Faculty of Medicine
L. Novomeskeho St. 7A, MARTIN

Organizing committee

Assoc. prof. Jana Plevkova MD, PhD, Assoc. prof. Ivan Poliacek Dr, PhD,
Assoc. prof. Juraj Mokry MD, PhD, Martina Antosova MSc., PhD, MBA, Michal Simera Dr,
PhD, Marcel Veternik Ing, Tomas Buday MD, Eva Hanuskova MD, Silvia Gavliaikova Ing.

Contact: Simulation Educational Center
L. Novomeskeho St. 7A, 036 01 Martin
+421 43 2633 635, 2633 205, 2633 224,
plevkova@ifmed.uniba.sk, simcentrum@ifmed.uniba.sk

„Saving life through simulation technology“

Session chairs
Professor Jan Jakus, MD, DSc
Professor Jan Hanacek, MD, CsC
Professor Milos Tatar, MD, CsC
Professor Donald C. Bolser PhD
Monday, JUNE 30th

Round table (organizers and guests): International cooperation. The future of Cough it up meeting.

Tuesday, JULY 1st

Discussion panel (invited professionals): Simulation and modeling of neuronal processes involved in regulation of breathing and airway protective mechanisms.

Wednesday, July 2nd

Interactive videoconference with Professor Tomori, Košice

Session 1: Modeling as an approach to understanding (chairs: DC Bolser, M Tatar)

13:00  **TE Pitts:** Stimulation of repetitive cough in humans

13:25  **D Baekey:** Multielectrode recording: Developing the tools to define respiratory network assemblies

13:50  **M Veternik:** Computer modeling of D,L - homocysteic acid microinjection into the Bötzinger complex

14:05  **S Gavliakova:** Graphical tool for 3-D quantitative visualisation of neuronal population in the brainstem – aspiration reflex, expiration reflex and cough – comparison to tidal breathing

14:20  **L Babalova:** Depression of coughing during reduced cough afferent drive in the vagus nerve of cats

14:35-15:00 Coffee break

Session 2: Cough reflex up-date – novel information from experimental and clinical studies (chairs: J Hanacek, J Jakus)

15:00  **DC Bolser:** Role of the medial medullary reticular formation in the control of airway protection

15:30  **GA Fontana:** Value of deflation cough in the exclusion of acidic reflux in patients with gastro-oesophageal disorders and chronic cough

16:00  **M Simera:** Cough and sneeze: a separate or a common CPG?

16:15  **B Dobrolubov:** GABA microinjections in the medullary raphe of cat, effects on cough

16:30  **J Mokry:** Phosphodiesterases and cough

16:45  **V Sivova:** Cough suppressive activity of herbal polysaccharides
Our guests:

Teresa Pitts

Teresa’s research has brought to light the co-existence of disordered swallow and cough in Parkinson’s disease which puts these patients at risk for significant respiratory complications. Pertinent findings included the viability of using voluntary cough to detect at-risk patients for swallowing disorders, and then treating those at-risk patients with Expiratory Muscle Strength Training which improved cough and swallowing safety scores. She is currently working to develop a model of airway protection including dysphagia (disorder of swallow) and dystussia (disorder of cough) for testing of novel therapies to extend the quality-of-life of persons living with neuromuscular diseases.

Don Bolser

The long-range goal of prof. Bolser’s laboratory is to delineate how the nervous system produces and regulates cough. They use antitussive drugs as tools to determine how the cough system is controlled. As such, their work also will expand the knowledge of the mechanisms by which these drugs inhibit cough. Our current approach incorporates the use of multiple extracellular electrode array technology to investigate the behavior of spontaneously active and recruited neurons in the brainstem during cough. Determination of the identity and functional relationships between these neurons will allow modeling of the configuration of the brainstem cough network.

David Beakey

David’s research involves the neural control of respiratory and cardiovascular control. Previous work has focused on airway defensive reflexes altering distributed brainstem neural networks involved in respiratory control. Present projects are focused on the coordination between respiration and sympathetic outflow. Unique methods include ensemble recordings (multi-electrode extracellular array) of in vivo and in situ preparations and computer simulations of neural networks inferred from collected data

Giovanni Fontana

Prof. Fontana is a world recognized expert on the physiology and pathophysiology of cough. He is a clinician with huge physiology basis, running specialized cough clinic in Florence, Italy, with attention given to the patients suffering from chronic cough. His research described problems with cough in subjects with Parkinson disease, and he is interested also in so called paradoxical reflexes. Together with his team he described Fontana’s paradoxical reflex, and they are now working on the concept of deflation cough, and its significance in health and disease.