

# 6TH WORLD CONGRESS ON HYDROGEN SULFIDE IN BIOLOGY & MEDICINE

BUDAPEST, HUNGARY  
19-21 MAY 2022

## PROGRAM

Thursday May 19th		
08:00-08:05	Welcome speech - Miklós Kásler	
08:05-08:10	Opening Remarks - Péter Nagy	
MOLECULAR MECHANISMS	Chairs: Bindu D. Paul, Giuseppe Cirino	
08:10-09:00	Takaaki Akaike	Reactive persulfide regulation of redox signaling and immune response
09:00-09:25	Tobias P. Dick	Mechanisms of sulfane sulfur mediated cytoprotection
09:25-09:50	Milos Filipovic	PSSH/PSOH remodelling in aging brain
09:50-10:15	Péter Nagy	Control of protein function through oxidation and reduction of persulfidated states
10:15-10:30	Vincenzo Brancaleone	Hydrogen sulfide donor AP123 restores endothelial nitric oxide via CREB-dependent pathway
10:30-10:45	Viviana Greco	Investigating the role of hydrogen sulfide in the redox dysregulation of Amyotrophic Lateral Sclerosis
10:45-11:05	Coffee break at Jasmine Hall	
11:05-11:20	Katalin Modis	Deletion of Cystathionine- $\gamma$ -lyase (CSE) in Bone Marrow (BM) Cells Promotes Colitis-associated Carcinogenesis
11:20-11:35	Yasou Watanabe	Cysteine-based redox switches in cystathionine $\gamma$ -lyase
11:35-11:50	Yann Herval	Contribution of the cystathionine beta-synthase (CBS) overdosage to Down syndrome cognitive dysfunction, a perspective from mouse and rat model organisms.
11:50-12:05	Francesco Grassi	Hydrogen sulfide regulates osteoblast differentiation and bone formation in vivo: potential role as a biomarker of bone metabolism
12:05-12:20	Vellecco Valentina	Duchenne's Muscular Dyhy involves a defective transsulfuration pathway activity
12:20-13:35	Lunch at Platan Restaurant	
CHEMISTRY	Chairs: Takaaki Akaike, Milos Filipovic	
13:35-14:25	Jon M. Fukuto	Studies on the Chemical Biology of Hydropersulfides: Cellular Protective Effects
14:25-14:50	Michael Pluth	Chemical Tools for Reactive Sulfur Species Delivery
14:50-15:15	John B. Matson	Triggered and Controlled Delivery of Reactive Sulfur Species: From Small Molecules to Materials
15:15-15:40	Kenneth R. Olson	Reactive Sulfur Species, The New Paradigm In Redox Biology
15:40-15:55	Thomas Kent	Quinone-rich oxidized therapeutic carbon nanozymes accelerate catabolism of hydrogen sulfide to polysulfides
15:55-16:15	Coffee break at Jasmine Hall	
16:15-16:30	Ritesh R Sevalkar	Mycobacterium tuberculosis DosS binds H <sub>2</sub> S through its Fe <sup>3+</sup> heme iron to regulate the DosR dormancy regulon
16:30-16:45	Virág Bogdáni	Speciation of reactive sulfur species and their reactions with alkylating agents: do we have any clue about what is present inside the cell?

## Thursday May 19th

16:45-18:30 Poster Session I.

### **AL dahamni, Zayana**

Characterization of novel compound that activates Thiosulfate Sulfurtransferase (TST) and stimulates mitochondrial respiration

### **Almehaize, Maha**

Discovery of a Novel 3-Mercaptopyruvate Sulfurtransferase Inhibitor

### **Aydemir Basak Gunes**

The Effect of Hydrogen Sulfide and Its Interaction with Nitric Oxide in Experimental Model of Metabolic syndrome: Spontaneously Hypertensive Rats Fed with Fructose Diet

### **Barayeu, Uladzimir**

Sulfane sulfur species suppress ferroptosis by scavenging radicals

### **Berenyiova, Andrea**

Chronic Fructose Intake Affects the Synergistic Interaction of Nitric Oxide and Hydrogen Sulfide Signaling Pathways in Vasoregulation of Thoracic Aorta

### **Boekhoud, Lisanne**

Acute Kidney Injury is Associated with Lowered Plasma-Free Thiol Levels

### **Brito, Jose Artur**

Structural and functional insights into hydrogen sulfide homeostasis in pathogenic bacteria

### **Cacanyiova, Sona**

Perivascular adipose tissue determines the vasoactive effect of hydrogen sulfide in isolated thoracic aorta of hypertriglyceridemic rats as a model of metabolic syndrome

### **Coavoy-Sánchez, Silvia A.**

Mitochondria-targeted hydrogen sulfide (H<sub>2</sub>S) donors exert protective effects in a mouse model of atopic dermatitis

### **Costa, Sofia Soares**

Structural and functional insights into hydrogen sulfide homeostasis in pathogenic bacteria

### **Drekolia, Maria Kyriaki**

Endothelial cysteinolysis in age-related cardiac hypertrophy

### **Dóka, Éva**

Control of protein function through oxidation and reduction of persulfidated states

### **Dombi, Ágnes**

Dimethyl trisulfide reduces duration of immobility and increases activity frequency in the mouse forced swim test via TRPA1 ion channel

### **Fu Chun-Yu**

Converging evidence for H<sub>2</sub>S-related pathologies in SOX and CDO deficiencies

### **Gad, Mohamed**

Crosstalk between Hydrogen Sulphide and Nitric Oxide in Triple Negative Breast Cancer

## Thursday May 19th

### **Gerush, Igor**

Effect of 3-days introduction of melatonin on hydrogen sulfide level in the kidneys by experimental nephropathy

### **Gilbert, Annie**

Subcellular delivery of hydrogen sulfide via small molecule donors

### **Głowacka, Urszula**

Hydrogen sulfide (H<sub>2</sub>S)-releasing non-steroidal anti-inflammatory drugs (NSAIDs) in modulation of esophageal epithelium pathophysiology

### **Golas, Samuel**

The effect of perivascular adipose tissue in interaction with hydrogen sulfide in vasoactive responses of isolated thoracic aorta in normotensive and spontaneously hypertensive rats

### **Griffiths, Kayleigh**

Cysteine Persulfide and Myocardial Ischaemia Reperfusion Injury

### **Grman, Marian**

Antioxidant properties of sulfide/selenite interaction mixture

### **Ida, Tomoaki**

Reactive sulfur metabolome newly developed by an ideal probe without artificial decomposition of polysulfides

### **Inaoka, Daniel K**

Biochemical characterization of the putative sulfide:quinone oxidoreductase from an intestinal parasite *Schistosoma mansoni*

### **Jain, Neha**

Role of Hydrogen Sulfide in Redox Signaling Downstream of Cardiac  $\beta$ -Adrenergic Stimulation

### **Janickova, Lucia**

Cystathionine  $\beta$ -synthase is overexpressed in the brain and contributes to the neuromorphological alterations in murine models of Down syndrome

### **Joschko, Christian P**

Homozygous whole body *Cbs* knockout in adult mice features minimal pathology during ageing despite severe homocysteinemia

### **Katsouda, Antonia**

Sodium trisulfide and *Eruca sativa*-derived extracts and natural products exhibit beneficial effects on energy homeostasis and metabolic health

### **Katsouda, Antonia**

MPST attenuates obesity by maintaining mitochondrial protein import and metabolic flux

### **Kiss, Levente**

Effects of hydrogen sulfide on the vascular tone of rat anterior cerebral artery segments

### **Kloesch, Burkhard**

Evaluation of the pro-apoptotic effects of menadione and a novel mitochondria-targeted H<sub>2</sub>S-releasing compound against the colorectal cancer cell line Caco-2

19:30-22:30 Dinner at Széchenyi Restaurant of the connected Ensana Grand Margitsziget Hotel

## Friday May 20th

### **METABOLISM**

**Chairs: Kenneth R. Olson, Jon M. Fukuto**

08:00-08:50	<b>Bindu D. Paul</b>	Role of Hydrogen sulfide in aging and age-related neurodegenerative disorders
08:50-09:15	<b>Andreas Papapetropoulos</b>	H <sub>2</sub> S, adipose tissue and obesity
09:15-09:40	<b>Viktor Kozich</b>	Inborn errors of metabolism: a window into hydrogen sulfide metabolism
09:40-10:05	<b>Guenther Schwarz</b>	Sulfite oxidase in health and disease: Unexpected links between cysteine catabolism and H <sub>2</sub> S homeostasis
10:05-10:20	<b>Shingo Kasamatsu</b>	High precision sulfur metabolomics innovated by a new specific probe for trapping reactive sulfur species
10:20-10:35	<b>Anne Sophie Scheller</b>	Differentiation-induced modulation of H <sub>2</sub> S production in Caco-2 human intestinal cells

10:35-10:55 Coffee break at Jasmine Hall

10:55-11:10	<b>Christopher H Switzer</b>	SOD1 is an essential H <sub>2</sub> S detoxifying enzyme
11:10-11:25	<b>Ágnes Czikora</b>	Investigation of the role of cystathionine $\beta$ -synthase overexpression in pancreatic ductal adenocarcinoma

### **MITOCHONDRION**

**Chairs: Frédéric Bouillaud, Harry van Goor**

11:25-12:15	<b>Csaba Szabó</b>	Pathogenetic role of hydrogen sulfide in Down Syndrome
12:15-12:40	<b>Matthew Whiteman</b>	Mitochondria-targeted sulfide delivery molecules
12:40-13:05	<b>Frédéric Bouillaud</b>	Sulfide, bioenergetics and pathophysiology

13:05-14:05 Lunch

14:05-14:30	<b>Masanobu Morita</b>	NRF2 Promotes Mitochondrial Energy Metabolism via Persulfide Regulation
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### **DRUG DISCOVERY**

**Chairs: David Lefer, Miriam Cortese-Krott**

14:30-15:20	<b>Giuseppe Cirino</b>	The role of CSE- derived hydrogen sulfide in cardiovascular homeostasis
15:20-15:45	<b>Fumito Ichinose</b>	Sulfide catabolism and neurodegenerative disorders
15:45-16:10	<b>Moran Benhar</b>	Regulation of cancer cell apoptosis and necrosis by hydrogen sulfide

16:10-16:30 Coffee break at Jasmine Hall

16:30-16:55	<b>Erika Pintér</b>	Effects of sulfide and polysulfides mediated by TRPA1 receptors
16:55-17:10	<b>Lóránd Kiss</b>	The promising therapeutic possibilities of dimethyl trisulfide in experimental acute pancreatitis
17:10-17:25	<b>Alex Dyson</b>	Thiometallate sulfide donors confer cardioprotection in large mammals

17:25-19:25 **Poster Session II.**

20:00-23:00 Danube Dinner Cruise

## Friday May 20th

17:25-19:25 Poster Session II.

### **Sofia Iris Bibli**

Cystathionine gamma lyase expression/activity delays endothelial senescence

### **Masanobu Morita**

Sulfide: quinone oxidoreductase is essential for sulfur respiration in mitochondria

### **Korbut, Edyta**

Pharmacologically-derived or endogenously produced hydrogen sulfide (H<sub>2</sub>S) in pathophysiology of esophageal epithelium diseases.

### **Křížková, Michaela**

Stability of sulfite and thiosulfate in stored plasma and urine

### **László, Szabolcs**

Silicone based transdermal delivery system for diallyl disulfide

### **Li, Zhen**

Endothelium-Derived Hydrogen Sulfide Modulates Endothelial-Mesenchymal Transition in Heart Failure

### **Li, Zhen**

Deficiency of the Hydrogen Sulfide Producing Enzyme, 3-Mercaptopyruvate Sulfurtransferase, Inhibits Branched-Chain Amino Acids Catabolism and Exacerbates Heart Failure

### **Marcin, Magierowski**

Time-dependent therapeutic effect of AP39 as mitochondria-targeted hydrogen sulfide (H<sub>2</sub>S) prodrug in the healing of chronic gastric ulcer

### **Marinko, Marija J**

Different K<sup>+</sup> channels mediate NaHS-induced relaxation of human vessels

### **Mayr, Simon J**

The beneficial effect of hydrogen sulfide on human cell physiology during homocysteine toxicity

### **Misak, Anton**

In vitro interaction of tetracycline antibiotics with hydrogen sulfide and polysulfides mediates free radical processes with an effect on the plasmid DNA structure stability

### **Myszka, Małgorzata Paulina**

Hydrogen sulfide exerts protective effects in the mouse model of Duchenne muscular dystrophy

### **Nakladal, Dalibor**

Conditional Cbs knockout in liver exacerbates organ damage, endothelial dysfunction, and oxidative stress in mice fed a high-fat diet

### **Newton, Turner D.**

Development of Small Molecule Hydrogen Selenide Donors

### **Petrosino, Maria**

Unveiling the ability of serine to re-activate aminooxyacetic acid-inhibited cystathionine beta-synthase: biophysical and structural insight and consequences for H<sub>2</sub>S biogenesis.

## Friday May 20th

17:25-19:25 Poster Session II.

### **Philipp, Thilo M**

SEMO-1, a novel H<sub>2</sub>S-producing enzyme and a pro-aging factor in *C. elegans*

### **Schilling, Danny**

Stabilization and destabilization of protein persulfides by alkylating agents

### **Sikora, Adam B.**

Peroxynitrite formation in the reactions between nitric oxide, hydrogen sulfide and molecular oxygen

### **Slade, Luke**

Novel mitochondria-targeted hydrogen sulfide delivery molecules restore healthspan in *C. elegans* models of primary mitochondrial diseases.

### **Suguta, Saki**

Biochemical characterization of the putative sulfite oxidase from an intestinal parasite *Schistosoma mansoni*

### **Takata, Tsuyoshi**

Functional diversity of calmodulin kinase I/IV in response to reactive sulfur species

### **Tomasova, Lenka**

Selenite attenuates the vasodilation and blood pressure lowering mediated by sulfide in rats.

### **Trummer, Modesta**

Anti-inflammatory effects of the hydrogen sulfide and persulfide donor P\* on the chondrogenic cell line ATDC5

### **Turnaturi, Carlotta**

Impairment of gasotransmitters in Glucocorticoid-Induced Leucine Zipper knockout mice vasculature

### **Vanacore, Domenico**

Beta-3 adrenergic receptor activation causes hydrogen sulfide production via cystathionine gamma-lyase in human urothelium

### **Vellecco, Valentina**

Protective effect of slow H<sub>2</sub>S donors on skeletal muscle in an in vitro model of lipotoxicity

### **Vrettou, Sofia**

Investigation of the Pattern of S-Glutathionylation and S-Nitrosylation in Spinal Muscular Atrophy

### **Wittig, Janina**

The role of carbon flux from cysteine in the regulation of stemness.

### **Zampas, Paraskevas**

Impaired left ventricular function after 3-mercaptopyruvate sulfurtransferase deletion in mice with metabolic syndrome

20:00-23:00 Danube Dinner Cruise

**Saturday May 21th****CARDIOVASCULAR  
FUNCTIONS****Chairs: József Balla, Ingrid Fleming**

08:00-08:50	David Lefer	Deficiency of the Hydrogen Sulfide Producing Enzyme, 3-Mercaptopyruvate Sulfurtransferase, Inhibits Branched-Chain Amino Acids Catabolism and Exacerbates Heart Failure
08:50-09:40	Ingrid Fleming	Insights into the role of protein S-sulfhydration in vascular function gleaned from the endothelial cell S-sulfhydrome
09:40-10:05	Miriam Cortese-Krott	The role of RBCs in control of NO/H <sub>2</sub> S systemic cross talk and metabolism
10:05-10:20	Melanie Madhani	Nitrite and persulfides lowers blood pressure
10:20-10:35	Diane Macabrey	Sodium Thiosulfate, a source of Hydrogen Sulfide, promotes angiogenesis via metabolic reprogramming of endothelial cells
10:35-10:55	Coffee break at Jasmine Hall	

**CLINICAL RESEARCH****Chairs: Guenter Schwarz, Andreas Papapetropoulos**

10:55-11:45	József Balla	Vascular calcification and hydrogen sulfide
11:45-12:10	Harry van Goor	Therapeutical interventions using sodium thiosulfate
12:10-12:35	Asif Ahmed	Is hydrogen sulfide a panacea for preeclampsia and fetal growth restriction?
12:35-12:50	Markéta Tesařová	Analysis of hydrogen sulfide metabolism and other sulfur compounds in patients with mitochondrial disease
12:50-13:05	Marcin Magierowski	Hydrogen sulfide (H <sub>2</sub> S) and carbon monoxide (CO) prodrugs in the treatment and prevention of gastrointestinal pathologies- overview, updates and future perspectives
13:05	Closing remarks	