



## Hydrogen Sulfide: Metabolism, Biological and Medical Role

Guest Editor:

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Deadline for manuscript  
submissions:

**closed (31 August 2020)**

### Message from the Guest Editor

Hydrogen sulfide (H<sub>2</sub>S) is a gaseous signaling molecule which modulates a wide range of mammalian physiological processes. H<sub>2</sub>S elicits an effect on neuronal activity, vascular tone, inflammation, and energy metabolism under both normal and pathological conditions. H<sub>2</sub>S is produced by enzymes of sulfur metabolic pathway viz. cystathionine  $\beta$ -synthase (CBS),  $\gamma$ -cystathionase (CSE), and mercaptopyruvate sulfurtransferase (MST) utilizing cysteine, homocysteine, and mercaptopyruvate as the substrate. In addition to its beneficial effect, H<sub>2</sub>S is well known for causing cell toxicity at higher concentration. Mammalian cells are equipped with the mitochondrial H<sub>2</sub>S clearing system which comprises multiple enzymes, i.e., sulfide quinone oxidoreductase (SQR), sulfur dioxygenase (ETHE1 or persulfide dioxygenase), rhodanese, and sulfite oxidase. All these enzymes jointly work and metabolize the extra toxic H<sub>2</sub>S to nontoxic thiosulfate and sulfate and play an important role in maintaining the steady-state level of cellular H<sub>2</sub>S needed for signaling, which is important for cellular homeostasis.





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