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Manuscript Type REVIEW

Methionine Adenosyltransferases in Liver Cancer

Ben Murray, Lucia Barbier-Torres, Wei Fan, José M Mato, Shelly C Lu

Abstract

Methionine adenosyltransferases (MATs) are essential enzymes for life as they produce S-adenosylmethionine (SAMe), the biological methyl donor required for a plethora of reactions within the cell. Mammalian systems express two genes, *MAT1A* and *MAT2A*, which encode for MATα1 and MATα2, the catalytic subunits of the MAT isoenzymes, respectively. A third gene *MAT2B*, encodes a regulatory subunit known as MATβ which

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Methionine adenosyltransferases (MATs) are essential for cell survival because they catalyze the biosynthesis of the biological methyl donor S-adenosylmethionine (SAMe) from methionine and adenosine triphosphate (ATP). Mammalian cells express two genes, MAT1A and MAT2A, which encode two MAT catalytic subunits, α1 and α2, respectively. The α1 subunit organizes into dimers (MATIII) or ...

Cited by: 4 **Author:** Komal Ramani, Shelly C. Lu
Publish Year: 2017

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This review examines the role of **methionine adenosyltransferases** (MATs) in human **cancer** development, with a particular focus on **liver** cancers in which all three MAT genes are implicated in ...

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Methionine adenosyltransferases in liver health and diseases Komal Ramani * , Shelly C. Lu Division of Digestive and **Liver** Diseases, Cedars-Sinai Medical Center, Los

Role of transcriptional and posttranscriptional regulation ...

onlinelibrary.wiley.com/doi/10.1002/hep.25643/full

Role of transcriptional and posttranscriptional regulation of **methionine adenosyltransferases in liver cancer** progression* Maddalena Frau. Department of Clinical and Experimental Medicine, Division of Experimental Pathology and Oncology, University of Sassari, Sassari, Italy ...

Published in: Hepatology · 2012
Authors: Maddalena Frau · Maria Lauda Tomasi · Maria Maddalena Simile · Maria I Demartis
Affiliation: University of Sassari · Sapienza University of Rome

Role of methionine adenosyltransferase and S ...

https://**www.ncbi.nlm.nih.gov**/pubmed/16054984

Role of **methionine adenosyltransferase** and **S-adenosylmethionine** in **alcohol-associated liver cancer**. In this model, the **liver** is more susceptible to **injury**. In addition, spontaneous steatohepatitis develops by 8 months, and HCC develops by 18 months. Accumulating evidence shows that, in addition to being a methyl donor,...

Cited by: 142 **Author:** Shelly C. Lu, José M. Mato

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Methionine adenosyltransferases in liver cancer

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Dysregulation of **methionine** metabolism is implicated in human **liver cancer**. **Methionine adenosyltransferase** IIα (MAT IIα) is a key enzyme in the **methionine** cycle, catalysing the production of S-adenosylmethionine (SAM), a key **methyl** donor in cellular processes, and is associated with uncontrolled cell proliferation in **cancer**.

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Nov 15, 2017 · This review examines the role of **methionine adenosyltransferases (MATs) in human cancer** development, with a particular focus on **liver cancers** in which all three MAT genes are implicated in tumorigenesis. An overview of MAT genes, isoenzymes and their regulation provide context for understanding consequences of dysregulation.

Cited by: 6 **Author:** Lauren Y Maldonado, Diana Arsene, José...
Publish Year: 2018

Methionine adenosyltransferases in liver health and ...

https://www.sciencedirect.com/science/article/pii/S2542568417000265

Methionine metabolism is impaired in patients with **chronic liver disease** and patients with hepatic **cirrhosis** exhibited reduced MAT1A expression and MATI/III activity, as well as impaired **methionine clearance**.47, 48 Hypermethylation of the MAT1A promoter might be responsible for the reduced expression of MAT1A during **cirrhosis**. 48 Patients with advanced NAFLD exhibit MAT1A hypermethylation and lower **MAT1A mRNA levels** ...

Cited by: 4 **Author:** Komal Ramani, Shelly C. Lu
Publish Year: 2017

Role of transcriptional and posttranscriptional regulation ...

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Role of transcriptional and posttranscriptional regulation of **methionine adenosyltransferases in liver cancer** progression † **Maddalena Frau** Department of Clinical and Experimental Medicine, Division of Experimental Pathology and Oncology, University of Sassari, Sassari, Italy

Cited by: 59 **Author:** Maddalena Frau, Maria L. Tomasi, Maria ...
Publish Year: 2012

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Sep 22, 2016 · **Drug Discovery** via Human-Derived Stem Cell **Organoids**. ... Dysregulation of this system may contribute to the development of **intestinal inflammatory diseases** such as celiac disease, IBD, and **intestinal** ... **drug** screening **platforms** through **organoid** proved to be a useful preclinical model for pharmacodynamic profiling of human tumors (Vaira ...

Cited by: 23 **Author:** Fangkun Liu, Fangkun Liu, Jing Huang, B...
Publish Year: 2016

[PDF] Adult Canine Intestinal Derived Organoids: A Novel In ...

https://smartpharmacology.com/wp-content/uploads/2018/12/BioRxiv-Submission.pdf

3 **intestinal** epithelia interact with the gut microbiome to modulate GI health and disease, 4 for the study of infectious **diseases** of the GI tract, and as a **drug** screening tool for 5 personalized medicine in **diseases** such as cystic fibrosis (CF) [13, 24]. 6 7 In this study, we have developed 3D canine **intestinal organoids** from healthy dogs and

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Drug Discovery via Human-Derived Stem Cell Organoids

https://www.frontiersin.org/articles/10.3389/fphar.2016.00334/full

Sep 22, 2016 · Patient-derived cell lines and animal models have proven invaluable for the understanding of human **intestinal diseases** and **for drug** development although both inherently comprise disadvantages and caveats. Many genetically determined **intestinal diseases** occur in specific tissue microenvironments that are not adequately modeled by monolayer cell culture.