

Topic: [Thimerosal](#)



# Thimerosal

05/27/2015

## What is Cumulative Knowledge, and Why Should it Interest Me?

**Cumulative Knowledge** is determined by ascribing a numerical value to all the articles indexed on our database. The [GreenMedInfo.com](http://GreenMedInfo.com) algorithm appraises a study's overall evidentiary power and quality by generating a numerical value. This "Cumulative Knowledge" score incorporates variables such as study type, with the following types listed in descending order by their power: Meta-Analysis, Human Study, Human: Case Study, Animal:Transgenic, Animal, In Vitro, Review, and Commentary. The cumulative total will provide you an idea about the depth and quality of information that this topic has accumulated on our site. For instance, if you downloaded a document on "**Cancers: All**", you might see "**Curcumin**" with a **Cumulative Knowledge** of **677** and **Resveratrol** with a **Cumulative Knowledge** of **175**. This does not mean that **Curcumin** is better, but just that we have gathered more quality research on the Substance **Curcumin**. [Click here to read a more in depth explanation](#)

## How are Topics and Articles Sorted in this PDF?

Articles in this document are placed within their respective **Topic** category. If you download a document on the Disease "**Cancers: All**" and are interested in all articles pertaining to the Substance "**Curcumin**" with regard to "**Cancers: All**", you will find them under the "**Curcumin**" sub-section underneath the **Cumulative Knowledge** section. **Topics** are sorted based on their **Cumulative Knowledge** in relation to the main topic of the download. In the previous example, it would be in relation to "**Cancers: All**". Articles are then sorted based on the articles **Published Date**. **Articles** are sorted in a descending fashion, which means that the most recent articles are displayed first. **Articles** may appear more than once in this document. For each **Topic** that an **Article** contains, it will be displayed in that sub-section. For example, if an **Article** contains the **Substances "Pterostilbene"** and "**Resveratrol**", the article will be displayed under each **Topic**.

Quick Summary: 34 Diseases

Name	Cumulative Knowledge	Article Count
<a href="#">Neurodevelopmental Disorders</a>	139	14
<a href="#">Autism Spectrum Disorders</a>	114	19
<a href="#">Autism</a>	82	8
<a href="#">Tic Disorders</a>	61	4
<a href="#">Vaccine-induced Toxicity</a>	48	8
<a href="#">Learning disorders</a>	42	3
<a href="#">Attention Deficit Disorder</a>	41	3
<a href="#">Mental Retardation</a>	40	3
<a href="#">Speech Disorders</a>	30	2
<a href="#">Mercury Poisoning</a>	28	7
<a href="#">Childhood Chemical Exposures</a>	20	1
<a href="#">Cognitive Decline/Dysfunction</a>	20	1
<a href="#">Emotional Disorders</a>	20	1
<a href="#">Infantile Spasms</a>	20	1
<a href="#">Seizures</a>	20	1
<a href="#">Sexual Development: Dysfunctions and Abnormalities</a>	20	1
<a href="#">Oxidative Stress</a>	19	5
<a href="#">Mitochondrial Dysfunction</a>	15	2
<a href="#">Infant Chemical Exposures</a>	12	2

<a href="#">Attention Deficit Disorder with Hyperactivity</a>	11	2
<a href="#">Developmental Disorder: Children</a>	11	2
<a href="#">Ataxia: Cerebellar</a>	10	1
<a href="#">Atopic Dermatitis</a>	10	1
<a href="#">Atopic Disease</a>	10	1
<a href="#">Atopic Hypersensitivity</a>	10	1
<a href="#">Detoxification: Impaired</a>	10	1
<a href="#">Personality Disorder: Borderline</a>	10	1
<a href="#">Neurodegenerative Diseases</a>	5	2
<a href="#">Excitotoxicity</a>	3	2
<a href="#">Amygdala: Damage/Abnormalities</a>	2	1
<a href="#">Autoimmune Diseases</a>	2	1
<a href="#">Neurotoxicity</a>	2	2
<a href="#">DNA damage</a>	1	1
<a href="#">Immune Disorders: Low Immune Function</a>	1	1

Quick Summary: 6 Adverse Pharmacological Actions

Name	Cumulative Knowledge	Article Count
<a href="#">Neurotoxic</a>	121	11
<a href="#">Endocrine Disruptor</a>	20	1
<a href="#">Apoptotic</a>	1	1
<a href="#">Cytotoxicity</a>	1	1
<a href="#">Excitotoxic</a>	1	1
<a href="#">Hypermethylation</a>	1	1

Quick Summary: 10 Problem Substances

Name	Cumulative Knowledge	Article Count
<a href="#">Thimerosal</a>	299	44
<a href="#">Mercury</a>	67	10
<a href="#">2-phenoxyethanol</a>	1	1
<a href="#">Adjuvant</a>	1	1
<a href="#">Aluminum</a>	1	1
<a href="#">Benzethonium chloride</a>	1	1
<a href="#">Ethanol</a>	1	1
<a href="#">Lead</a>	1	1
<a href="#">Phenol</a>	1	1
<a href="#">heavy metals</a>	1	1

**Total Distinct Articles in this Document - 44**

## Category: Diseases

### Topic: Neurodevelopmental Disorders

#### As thimerosal was removed from childhood vaccines, the number of neurodevelopmental disorders decreased in the US. - GMI Summary

**Pubmed Data** : Med Sci Monit. 2006 Jun;12(6):CR231-9. Epub 2006 May 29. PMID: [16733480](#)

**Article Published Date** : Jun 01, 2006

**Authors** : David A Geier, Mark R Geier

**Study Type** : Meta Analysis

**Additional Links**

**Diseases** : [Childhood Chemical Exposures : CK\(155\) : AC\(17\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#), [Vaccine-induced Toxicity : CK\(1242\) : AC\(180\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Neurotoxic : CK\(1116\) : AC\(188\)](#)

**[Exposure to mercury from thimerosal-containing vaccines was associated with an increased risk of neurodevelopmental problems in infants from 1992-1997. - GMI Summary](#)**

**Pubmed Data** : Med Sci Monit. 2005 Apr;11(4):CR160-70. Epub 2005 Mar 24. PMID: [15795695](#)

**Article Published Date** : Apr 01, 2005

**Authors** : David A Geier, Mark R Geier

**Study Type** : Meta Analysis

**Additional Links**

**Diseases** : [Attention Deficit Disorder : CK\(397\) : AC\(12\)](#), [Learning disorders : CK\(154\) : AC\(36\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#), [Seizures : CK\(135\) : AC\(33\)](#), [Speech Disorders : CK\(30\) : AC\(2\)](#), [Tic Disorders : CK\(60\) : AC\(3\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Neurotoxic : CK\(1116\) : AC\(188\)](#)

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**[Rates of autism, speech disorders, mental retardation, infantile spasms, and thinking abnormalities were higher in children exposed to higher thimerosal levels. - GMI Summary](#)**

**Pubmed Data** : J Toxicol Environ Health A. 2006 Aug;69(15):1481-95. PMID: [16766480](#)

**Article Published Date** : Aug 01, 2006

**Authors** : David A Geier, Mark R Geier

**Study Type** : Meta Analysis

**Additional Links**

**Diseases** : [Autism : CK\(570\) : AC\(65\)](#), [Cognitive Decline/Dysfunction : CK\(579\) : AC\(95\)](#), [Infantile Spasms : CK\(50\) : AC\(4\)](#), [Mental Retardation : CK\(71\) : AC\(7\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Neurotoxic : CK\(1116\) : AC\(188\)](#)

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**[Thimersol exposure in infants significantly increases neurodevelopment disorders in infants, e.g. autism, autism spectrum disorders, tics, attention deficit disorder, and emotional disturbances. - GMI Summary](#)**

**Pubmed Data** : J Neurol Sci. 2008 Aug 15;271(1-2):110-8. Epub 2008 May 15. PMID: [18482737](#)

**Article Published Date** : Aug 15, 2008

**Authors** : Heather A Young, David A Geier, Mark R Geier

**Study Type** : Meta Analysis

**Additional Links**

**Diseases** : [Attention Deficit Disorder : CK\(397\) : AC\(12\)](#), [Autism : CK\(570\) : AC\(65\)](#), [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Emotional Disorders : CK\(71\) : AC\(6\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#)

**Problem Substances** : [Mercury : CK\(131\) : AC\(17\)](#), [Thimerosal : CK\(299\) : AC\(44\)](#)

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**[Thimersol exposure is associated with tics and delayed language acquisition in infants. - GMI Summary](#)**

**Pubmed Data** : Pediatrics. 2003 Nov;112(5):1039-48. PMID: [14595043](#)

**Article Published Date** : Nov 01, 2003

**Authors** : Thomas Verstraeten, Robert L Davis, Frank DeStefano, Tracy A Lieu, Philip H Rhodes, Steven B Black, Henry Shinefield, Robert T Chen,

**Study Type** : Meta Analysis

**Additional Links**

**Diseases** : [Learning disorders : CK\(154\) : AC\(36\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#), [Tic Disorders : CK\(60\) : AC\(3\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Neurotoxic : CK\(1116\) : AC\(188\)](#)

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**[Administration of thimerosal-containing vaccines in the United States resulted in a significant number of children developing neurodevelopmental disorders. - GMI Summary](#)**

**Pubmed Data** : Int J Toxicol. 2004 Nov-Dec;23(6):369-76. PMID: [15764492](#)

**Article Published Date** : Nov 01, 2004

**Authors** : David Geier, Mark R Geier

**Study Type** : Human Study

**Additional Links**

**Diseases** : [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

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### **[Mothers receiving thimerosal via Rho\(D\) immune globulin injection saw a significantly higher rate of autism in the children exposed to mercury in utero.](#) - GMI Summary**

**Pubmed Data** : Neuro Endocrinol Lett. 2008 Apr ;29(2):272-80. PMID: [18404135](#)

**Article Published Date** : Mar 31, 2008

**Authors** : David A Geier, Elizabeth Mumper, Bambi Gladfelter, Lisa Coleman, Mark R Geier

**Study Type** : Human Study

**Additional Links**

**Diseases** : [Attention Deficit Disorder with Hyperactivity : CK\(283\) : AC\(31\)](#), [Developmental Disorder: Children : CK\(30\) : AC\(3\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#)

**Additional Keywords** : [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

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### **[There is an association between neurodevelopmental disorders and thimerosal-containing vaccines.](#) - GMI Summary**

**Pubmed Data** : Exp Biol Med (Maywood). 2003 Jun;228(6):660-4. PMID: [12773696](#)

**Article Published Date** : Jun 01, 2003

**Authors** : Mark R Geier, David A Geier

**Study Type** : Human Study

**Additional Links**

**Diseases** : [Autism : CK\(570\) : AC\(65\)](#), [Mental Retardation : CK\(71\) : AC\(7\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

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### **[Data demonstrates a negative neurodevelopmental impact of perinatal exposure to thimerosal.](#) - GMI Summary**

**Pubmed Data** : Cerebellum. 2012 Jun ;11(2):575-86. PMID: [22015705](#)

**Article Published Date** : May 31, 2012

**Authors** : Z L Sulkowski, T Chen, S Midha, A M Zavacki, Elizabeth M Sajdel-Sulkowska

**Study Type** : Animal Study

**Additional Links**

**Diseases** : [Learning disorders : CK\(154\) : AC\(36\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#), [Oxidative Stress : CK\(2152\) : AC\(750\)](#)

**Additional Keywords** : [Oxidative Stress : CK\(2152\) : AC\(750\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Neurotoxic : CK\(1116\) : AC\(188\)](#)

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### **[Maturation changes in amygdala volume and the binding capacity of an opioid antagonist in the amygdala was significantly altered in infant macaques receiving the vaccine schedule.](#) - GMI Summary**

**Pubmed Data** : Acta Neurobiol Exp (Wars). 2010 ;70(2):147-64. PMID: [20628439](#)

**Article Published Date** : Dec 31, 2009

**Authors** : Laura Hewitson, Brian J Lopresti, Carol Stott, N Scott Mason, Jaime Tomko

**Study Type** : Animal Study

**Additional Links**

**Diseases** : [Amygdala: Damage/Abnormalities : CK\(12\) : AC\(1\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#), [Vaccine-induced Toxicity : CK\(1242\) : AC\(180\)](#)

**Anti Therapeutic Actions** : [Vaccination: All : CK\(4715\) : AC\(363\)](#), [Vaccination: Animal Model : CK\(41\) : AC\(17\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

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### **[These findings implicate a genetic influence in autistic disorders and provides a model for investigating thimerosal related neurotoxicity. - GMI Summary](#)**

**Pubmed Data** : Mol Psychiatry. 2004 Sep ;9(9):833-45. PMID: [15184908](#)

**Article Published Date** : Aug 31, 2004

**Authors** : M Hornig, D Chian, W I Lipkin

**Study Type** : Animal Study

**Additional Links**

**Diseases** : [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Autoimmune Diseases : CK\(5523\) : AC\(880\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#)

**Additional Keywords** : [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Neurotoxic : CK\(1116\) : AC\(188\)](#)

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### **[Culmination of the research that examines the effects of thimerosal in humans indicates that it is a poison at minute levels with a plethora of deleterious consequences. - GMI Summary](#)**

**Pubmed Data** : Clin Chim Acta. 2015 Apr 15 ;444:212-220. Epub 2015 Feb 21. PMID: [25708367](#)

**Article Published Date** : Apr 14, 2015

**Authors** : David A Geier, Paul G King, Brian S Hooker, José G Dórea, Janet K Kern, Lisa K Sykes, Mark R Geier

**Study Type** : Review

**Additional Links**

**Diseases** : [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#), [Tic Disorders : CK\(60\) : AC\(3\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

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### **[High susceptibility of neural stem cells to methylmercury toxicity: effects on cell survival and neuronal differentiation. - GMI Summary](#)**

**Pubmed Data** : J Neurochem. 2006 Apr ;97(1):69-78. Epub 2006 Mar 8. PMID: [16524380](#)

**Article Published Date** : Mar 31, 2006

**Authors** : Christoffer Tamm, Joshua Duckworth, Ola Hermanson, Sandra Ceccatelli

**Study Type** : In Vitro Study

**Additional Links**

**Diseases** : [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#)

**Pharmacological Actions** : [Antiproliferative : CK\(1274\) : AC\(831\)](#), [Apoptotic : CK\(1758\) : AC\(1221\)](#)

**Additional Keywords** : [Apoptotic : CK\(1758\) : AC\(1221\)](#), [Vaccine Adjuvant : CK\(17\) : AC\(6\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

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### **[This study shows that inhibition of methionine synthase\(MS\) activity by ethanol, lead, mercury, aluminum and thimerosal suggesting that it may be an important target of neurodevelopmental toxins. - GMI Summary](#)**

**Pubmed Data** : Mol Psychiatry. 2004 Apr ;9(4):358-70. PMID: [14745455](#)

**Article Published Date** : Mar 31, 2004

**Authors** : M Waly, H Olteanu, R Banerjee, S-W Choi, J B Mason, B S Parker, S Sukumar, S Shim, A Sharma, J M Benzecry, V-A Power-Charnitsky, R C Deth

**Study Type** : In Vitro Study

**Additional Links**

**Diseases** : [Attention Deficit Disorder : CK\(397\) : AC\(12\)](#), [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#)

**Problem Substances** : [Aluminum : CK\(170\) : AC\(43\)](#), [Ethanol : CK\(22\) : AC\(7\)](#), [Lead : CK\(140\) : AC\(15\)](#), [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Hypermethylation : CK\(11\) : AC\(1\)](#)

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## **Topic: Autism Spectrum Disorders**

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### **Thimersol exposure in infants significantly increases neurodevelopment disorders in infants, e.g. autism, autism spectrum disorders, tics, attention deficit disorder, and emotional disturbances. - GMI Summary**

**Pubmed Data** : J Neurol Sci. 2008 Aug 15;271(1-2):110-8. Epub 2008 May 15. PMID: [18482737](#)

**Article Published Date** : Aug 15, 2008

**Authors** : Heather A Young, David A Geier, Mark R Geier

**Study Type** : Meta Analysis

**Additional Links**

**Diseases** : [Attention Deficit Disorder : CK\(397\) : AC\(12\)](#), [Autism : CK\(570\) : AC\(65\)](#), [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Emotional Disorders : CK\(71\) : AC\(6\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#)

**Problem Substances** : [Mercury : CK\(131\) : AC\(17\)](#), [Thimerosal : CK\(299\) : AC\(44\)](#)

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### **A meta-analysis reveals that thimerosal containing vaccines significantly increase the risk of neurodevelopmental disorders. - GMI Summary**

**Pubmed Data** : Neuro Endocrinol Lett. 2006 Aug;27(4):401-13. PMID: [16807526](#)

**Article Published Date** : Aug 01, 2006

**Authors** : David A Geier, Mark R Geier

**Study Type** : Human Study

**Additional Links**

**Diseases** : [Ataxia: Cerebellar : CK\(67\) : AC\(3\)](#), [Autism : CK\(570\) : AC\(65\)](#), [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Mental Retardation : CK\(71\) : AC\(7\)](#), [Personality Disorder: Borderline : CK\(10\) : AC\(1\)](#), [Speech Disorders : CK\(30\) : AC\(2\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

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### **A subpopulation of eight individuals from four of the families showed thimerosal hypersensitivity. - GMI Summary**

**Pubmed Data** : J Toxicol. 2013 ;2013:801517. Epub 2013 Jun 9. PMID: [23843785](#)

**Article Published Date** : Dec 31, 2012

**Authors** : Martyn A Sharpe, Taylor L Gist, David S Baskin

**Study Type** : Human Study

**Additional Links**

**Diseases** : [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Mitochondrial Dysfunction : CK\(157\) : AC\(57\)](#), [Oxidative Stress : CK\(2152\) : AC\(750\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

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### **Administration of thimerosal-containing vaccines in the United States resulted in a significant number of children developing neurodevelopmental disorders. - GMI Summary**

**Pubmed Data** : Int J Toxicol. 2004 Nov-Dec;23(6):369-76. PMID: [15764492](#)

**Article Published Date** : Nov 01, 2004

**Authors** : David Geier, Mark R Geier

**Study Type** : Human Study

**Additional Links**

**Diseases** : [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

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### **Children with autism were twice as likely as non-autistic controls to be born from mothers who had Rh incompatibilities with the developing fetus during pregnancy. - GMI Summary**

**Pubmed Data** : J Matern Fetal Neonatal Med. 2007 May ;20(5):385-90. PMID: [17674242](#)

**Article Published Date** : Apr 30, 2007

**Authors** : David A Geier, Mark R Geier

**Study Type** : Human Study

**Additional Links**

**Diseases** : [Autism Spectrum Disorders](#) : CK(1286) : AC(112)

**Additional Keywords** : [Autism Spectrum Disorders](#) : CK(1286) : AC(112), [Increased Risk](#) : CK(104) : AC(5), [Increased Risk](#) : CK(104) : AC(5)

**Problem Substances** : [Thimerosal](#) : CK(299) : AC(44)

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### **[In this reanalysis data shows that a statistically significant link appears between blood mercury levels and autistic disorder in children.](#) - GMI Summary**

**Pubmed Data** : J Child Neurol. 2007 Nov ;22(11):1308-11. PMID: [18006963](#)

**Article Published Date** : Oct 31, 2007

**Authors** : M Catherine Desoto, Robert T Hitlan

**Study Type** : Human Study

**Additional Links**

**Diseases** : [Autism Spectrum Disorders](#) : CK(1286) : AC(112)

**Additional Keywords** : [Autism Spectrum Disorders](#) : CK(1286) : AC(112)

**Problem Substances** : [Mercury](#) : CK(131) : AC(17), [Thimerosal](#) : CK(299) : AC(44)

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### **[Mercury levels are 1.9 times higher in subjects diagnosed with autism spectrum disorders.](#) - GMI Summary**

**Pubmed Data** : Acta Neurobiol Exp (Wars). 2010;70(2):177-86. PMID: [20628441](#)

**Article Published Date** : Jan 01, 2010

**Authors** : David A Geier, Tapan Audhya, Janet K Kern, Mark R Geier

**Study Type** : Human Study

**Additional Links**

**Diseases** : [Autism](#) : CK(570) : AC(65), [Autism Spectrum Disorders](#) : CK(1286) : AC(112)

**Problem Substances** : [Mercury](#) : CK(131) : AC(17), [Thimerosal](#) : CK(299) : AC(44)

**Adverse Pharmacological Actions** : [Neurotoxic](#) : CK(1116) : AC(188)

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### **[There is evidence supporting an association between increasing organic-Hg exposure from Thimerosal-containing childhood vaccines and the subsequent risk of an ASD.](#) - GMI Summary**

**Pubmed Data** : Transl Neurodegener. 2013 ;2(1):25. Epub 2013 Dec 19. PMID: [24354891](#)

**Article Published Date** : Dec 31, 2012

**Authors** : David A Geier, Brian S Hooker, Janet K Kern, Paul G King, Lisa K Sykes, Mark R Geier

**Study Type** : Human Study

**Additional Links**

**Diseases** : [Autism](#) : CK(570) : AC(65), [Autism Spectrum Disorders](#) : CK(1286) : AC(112), [Mercury Poisoning](#) : CK(172) : AC(45), [Vaccine-induced Toxicity](#) : CK(1242) : AC(180)

**Anti Therapeutic Actions** : [Vaccination: All](#) : CK(4715) : AC(363)

**Problem Substances** : [Mercury](#) : CK(131) : AC(17), [Thimerosal](#) : CK(299) : AC(44)

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### **[This study shows that autistic children had significantly reduced excretion levels of mercury via hair than the control group.](#) - GMI Summary**

**Pubmed Data** : Int J Toxicol. 2003 Jul-Aug;22(4):277-85. PMID: [12933322](#)

**Article Published Date** : Jun 30, 2003

**Authors** : Amy S Holmes, Mark F Blaxill, Boyd E Haley

**Study Type** : Human Study

**Additional Links**

**Diseases** : [Autism Spectrum Disorders](#) : CK(1286) : AC(112), [Detoxification: Impaired](#) : CK(1) : AC(1)

**Additional Keywords** : [Detoxification: Impaired](#) : CK(1) : AC(1), [Methylmercury](#) : CK(2) : AC(1)

**Problem Substances** : [Mercury](#) : CK(131) : AC(17), [Thimerosal](#) : CK(299) : AC(44)

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### **[A series of case studies demonstrate that thimerosal exposure is a major](#)**



## **[contributing factor to the pathogenesis of autism spectrum disorders.](#) - GMI Summary**

**Pubmed Data** : J Toxicol Environ Health A. 2007 May 15;70(10):837-51. PMID: [17454560](#)

**Article Published Date** : May 15, 2007

**Authors** : David A Geier, Mark R Geier

**Study Type** : Human: Case Report

**Additional Links**

**Diseases** : [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Mercury Poisoning : CK\(172\) : AC\(45\)](#), [Neurodegenerative Diseases : CK\(2087\) : AC\(447\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Neurotoxic : CK\(1116\) : AC\(188\)](#)

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## **[These findings implicate a genetic influence in autistic disorders and provides a model for investigating thimerosal related neurotoxicity.](#) - GMI Summary**

**Pubmed Data** : Mol Psychiatry. 2004 Sep ;9(9):833-45. PMID: [15184908](#)

**Article Published Date** : Aug 31, 2004

**Authors** : M Hornig, D Chian, W I Lipkin

**Study Type** : Animal Study

**Additional Links**

**Diseases** : [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Autoimmune Diseases : CK\(5523\) : AC\(880\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#)

**Additional Keywords** : [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Neurotoxic : CK\(1116\) : AC\(188\)](#)

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## **[This study proposes the novel hypothesis that abnormalities involving the zinc-metalloprotease-BDNF axis may play a pivotal role in hyperconnectivity and megalencephaly observed in ASD.](#) - GMI Summary**

**Pubmed Data** : Mol Brain. 2014 ;7:64. Epub 2014 Sep 3. PMID: [25182223](#)

**Article Published Date** : Dec 31, 2013

**Authors** : Jae-Young Koh, Joon Seo Lim, Hyaee-Ran Byun, Min-Heui Yoo

**Study Type** : Animal Study

**Additional Links**

**Diseases** : [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

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## **[A comprehensive analysis is included on the comorbidities of autism and their corresponding analogs due to mercury exposure.](#) - GMI Summary**

**Pubmed Data** : Med Hypotheses. 2001 Apr ;56(4):462-71. PMID: [11339848](#)

**Article Published Date** : Mar 31, 2001

**Authors** : S Bernard, A Enayati, L Redwood, H Roger, T Binstock

**Study Type** : Review

**Additional Links**

**Diseases** : [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Mercury Poisoning : CK\(172\) : AC\(45\)](#)

**Additional Keywords** : [Mercury Poisoning : CK\(172\) : AC\(45\)](#), [Mercury Poisoning : CK\(172\) : AC\(45\)](#), [Methylmercury : CK\(2\) : AC\(1\)](#)

**Problem Substances** : [Mercury : CK\(131\) : AC\(17\)](#), [Thimerosal : CK\(299\) : AC\(44\)](#)

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## **[A review of medical literature has shown that exposure to organic or inorganic mercury can give rise to the symptoms and traits defining or commonly found in ASD individuals.](#) - GMI Summary**

**Pubmed Data** : Mol Psychiatry. 2002 ;7 Suppl 2:S42-3. PMID: [12142947](#)

**Article Published Date** : Dec 31, 2001

**Authors** : S Bernard, A Enayati, H Roger, T Binstock, L Redwood

**Study Type** : Review

**Additional Links**

**Diseases** : [Attention Deficit Disorder with Hyperactivity : CK\(283\) : AC\(31\)](#), [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#)

**Additional Keywords** : [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Methylmercury : CK\(2\) : AC\(1\)](#)

**Problem Substances** : [Mercury : CK\(131\) : AC\(17\)](#), [Thimerosal : CK\(299\) : AC\(44\)](#)

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**[Culmination of the research that examines the effects of thimerosal in humans indicates that it is a poison at minute levels with a plethora of deleterious consequences.](#) - GMI Summary**

**Pubmed Data** : Clin Chim Acta. 2015 Apr 15 ;444:212-220. Epub 2015 Feb 21. PMID: [25708367](#)

**Article Published Date** : Apr 14, 2015

**Authors** : David A Geier, Paul G King, Brian S Hooker, José G Dórea, Janet K Kern, Lisa K Sykes, Mark R Geier

**Study Type** : Review

**Additional Links**

**Diseases** : [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#), [Tic Disorders : CK\(60\) : AC\(3\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

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**[Scientific research does not support rejecting the link between the neurodevelopmental disorder of autism and toxic exposures.](#) - GMI Summary**

**Pubmed Data** : Acta Neurobiol Exp (Wars). 2010 ;70(2):165-76. PMID: [20628440](#)

**Article Published Date** : Dec 31, 2009

**Authors** : Mary Catherine Desoto, Robert T Hitlan

**Study Type** : Commentary

**Additional Links**

**Diseases** : [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#)

**Problem Substances** : [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Mercury : CK\(131\) : AC\(17\)](#), [Thimerosal : CK\(299\) : AC\(44\)](#)

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**[There appears to be little difference in the neurotoxicity of MeHg and EthylHg.](#) - GMI Summary**

**Pubmed Data** : Mol Psychiatry. 2002 ;7 Suppl 2:S40-1. PMID: [12142946](#)

**Article Published Date** : Dec 31, 2001

**Authors** : M Aschner, S J Walker

**Study Type** : Review

**Additional Links**

**Diseases** : [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Developmental Disorder: Children : CK\(30\) : AC\(3\)](#), [Mercury Poisoning : CK\(172\) : AC\(45\)](#), [Neurotoxicity : CK\(37\) : AC\(15\)](#)

**Additional Keywords** : [Neurotoxicity : CK\(37\) : AC\(15\)](#), [Methylmercury : CK\(2\) : AC\(1\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

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**[There is a biological basis for mercury-induced autism spectrum disorders and the sexual dimorphism associated with disease prevalence.](#) - GMI Summary**

**Pubmed Data** : Acta Neurobiol Exp (Wars). 2010;70(2):209-26. PMID: [20628444](#)

**Article Published Date** : Jan 01, 2010

**Authors** : David A Geier, Janet K Kern, Mark R Geier

**Study Type** : Review

**Additional Links**

**Diseases** : [Autism : CK\(570\) : AC\(65\)](#), [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

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**[This study shows that inhibition of methionine synthase\(MS\) activity by ethanol, lead, mercury, aluminum and thimerosal suggesting that it may be an important target of neurodevelopmental toxins.](#) - GMI Summary**

**Pubmed Data** : Mol Psychiatry. 2004 Apr ;9(4):358-70. PMID: [14745455](#)

**Article Published Date** : Mar 31, 2004

**Authors** : M Waly, H Olteanu, R Banerjee, S-W Choi, J B Mason, B S Parker, S Sukumar, S Shim, A Sharma, J M Benzecry, V-A Power-Charnitsky, R C Deth

**Study Type** : In Vitro Study

**Additional Links**

**Diseases** : [Attention Deficit Disorder : CK\(397\) : AC\(12\)](#), [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#)

**Problem Substances** : [Aluminum : CK\(170\) : AC\(43\)](#), [Ethanol : CK\(22\) : AC\(7\)](#), [Lead : CK\(140\) : AC\(15\)](#), [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Hypermethylation : CK\(11\) : AC\(1\)](#)

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## **Topic: Autism**

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### **[Rates of autism, speech disorders, mental retardation, infantile spasms, and thinking abnormalities were higher in children exposed to higher thimerosal levels.](#) - GMI Summary**

**Pubmed Data** : J Toxicol Environ Health A. 2006 Aug;69(15):1481-95. PMID: [16766480](#)

**Article Published Date** : Aug 01, 2006

**Authors** : David A Geier, Mark R Geier

**Study Type** : Meta Analysis

**Additional Links**

**Diseases** : [Autism : CK\(570\) : AC\(65\)](#), [Cognitive Decline/Dysfunction : CK\(579\) : AC\(95\)](#), [Infantile Spasms : CK\(50\) : AC\(4\)](#), [Mental Retardation : CK\(71\) : AC\(7\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Neurotoxic : CK\(1116\) : AC\(188\)](#)

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### **[Thimersol exposure in infants significantly increases neurodevelopment disorders in infants, e.g. autism, autism spectrum disorders, tics, attention deficit disorder, and emotional disturbances.](#) - GMI Summary**

**Pubmed Data** : J Neurol Sci. 2008 Aug 15;271(1-2):110-8. Epub 2008 May 15. PMID: [18482737](#)

**Article Published Date** : Aug 15, 2008

**Authors** : Heather A Young, David A Geier, Mark R Geier

**Study Type** : Meta Analysis

**Additional Links**

**Diseases** : [Attention Deficit Disorder : CK\(397\) : AC\(12\)](#), [Autism : CK\(570\) : AC\(65\)](#), [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Emotional Disorders : CK\(71\) : AC\(6\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#)

**Problem Substances** : [Mercury : CK\(131\) : AC\(17\)](#), [Thimerosal : CK\(299\) : AC\(44\)](#)

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### **[A meta-analysis reveals that thimerosal containing vaccines significantly increase the risk of neurodevelopmental disorders.](#) - GMI Summary**

**Pubmed Data** : Neuro Endocrinol Lett. 2006 Aug;27(4):401-13. PMID: [16807526](#)

**Article Published Date** : Aug 01, 2006

**Authors** : David A Geier, Mark R Geier

**Study Type** : Human Study

**Additional Links**

**Diseases** : [Ataxia: Cerebellar : CK\(67\) : AC\(3\)](#), [Autism : CK\(570\) : AC\(65\)](#), [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Mental Retardation : CK\(71\) : AC\(7\)](#), [Personality Disorder: Borderline : CK\(10\) : AC\(1\)](#), [Speech Disorders : CK\(30\) : AC\(2\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

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### **[Mercury levels are 1.9 times higher in subjects diagnosed with autism spectrum disorders.](#) - GMI Summary**

**Pubmed Data** : Acta Neurobiol Exp (Wars). 2010;70(2):177-86. PMID: [20628441](#)

**Article Published Date** : Jan 01, 2010

**Authors** : David A Geier, Tapan Audhya, Janet K Kern, Mark R Geier

**Study Type** : Human Study

**Additional Links**

**Diseases** : [Autism : CK\(570\) : AC\(65\)](#), [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#)

**Problem Substances** : [Mercury : CK\(131\) : AC\(17\)](#), [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Neurotoxic : CK\(1116\) : AC\(188\)](#)

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**[There is an association between neurodevelopmental disorders and thimerosal-containing vaccines.](#) - GMI Summary**

**Pubmed Data** : Exp Biol Med (Maywood). 2003 Jun;228(6):660-4. PMID: [12773696](#)

**Article Published Date** : Jun 01, 2003

**Authors** : Mark R Geier, David A Geier

**Study Type** : Human Study

**Additional Links**

**Diseases** : [Autism : CK\(570\) : AC\(65\)](#), [Mental Retardation : CK\(71\) : AC\(7\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

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**[There is evidence supporting an association between increasing organic-Hg exposure from Thimerosal-containing childhood vaccines and the subsequent risk of an ASD.](#) - GMI Summary**

**Pubmed Data** : Transl Neurodegener. 2013 ;2(1):25. Epub 2013 Dec 19. PMID: [24354891](#)

**Article Published Date** : Dec 31, 2012

**Authors** : David A Geier, Brian S Hooker, Janet K Kern, Paul G King, Lisa K Sykes, Mark R Geier

**Study Type** : Human Study

**Additional Links**

**Diseases** : [Autism : CK\(570\) : AC\(65\)](#), [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Mercury Poisoning : CK\(172\) : AC\(45\)](#), [Vaccine-induced Toxicity : CK\(1242\) : AC\(180\)](#)

**Anti Therapeutic Actions** : [Vaccination: All : CK\(4715\) : AC\(363\)](#)

**Problem Substances** : [Mercury : CK\(131\) : AC\(17\)](#), [Thimerosal : CK\(299\) : AC\(44\)](#)

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**[The vaccine adjuvant thimerosal is cytotoxic to neuronal cells.](#) - GMI Summary**

**Pubmed Data** : Int J Mol Med. 2005 Dec;16(6):971-7. PMID: [16273274](#)

**Article Published Date** : Dec 01, 2005

**Authors** : Leman Yel, Lorrel E Brown, Kevin Su, Sastry Gollapudi, Sudhir Gupta

**Study Type** : In Vitro Study

**Additional Links**

**Diseases** : [Autism : CK\(570\) : AC\(65\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

---

**[There is a biological basis for mercury-induced autism spectrum disorders and the sexual dimorphism associated with disease prevalence.](#) - GMI Summary**

**Pubmed Data** : Acta Neurobiol Exp (Wars). 2010;70(2):209-26. PMID: [20628444](#)

**Article Published Date** : Jan 01, 2010

**Authors** : David A Geier, Janet K Kern, Mark R Geier

**Study Type** : Review

**Additional Links**

**Diseases** : [Autism : CK\(570\) : AC\(65\)](#), [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

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**Topic: [Tic Disorders](#)**

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**[Exposure to mercury from thimerosal-containing vaccines was associated with an increased risk of neurodevelopmental problems in infants from 1992-1997.](#) - GMI Summary**

**Pubmed Data** : Med Sci Monit. 2005 Apr;11(4):CR160-70. Epub 2005 Mar 24. PMID: [15795695](#)

**Article Published Date** : Apr 01, 2005

**Authors** : David A Geier, Mark R Geier

**Study Type** : Meta Analysis

**Additional Links**

**Diseases** : [Attention Deficit Disorder : CK\(397\) : AC\(12\)](#), [Learning disorders : CK\(154\) : AC\(36\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#), [Seizures : CK\(135\) : AC\(33\)](#), [Speech Disorders : CK\(30\) : AC\(2\)](#), [Tic Disorders : CK\(60\) : AC\(3\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Neurotoxic : CK\(1116\) : AC\(188\)](#)

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### **[Thimerosal exposure in infants is associated with an increase risk for tics. - GMI Summary](#)**

**Pubmed Data** : Pediatrics. 2004 Sep;114(3):584-91. PMID: [15342825](#)

**Article Published Date** : Sep 01, 2004

**Authors** : Nick Andrews, Elizabeth Miller, Andrew Grant, Julia Stowe, Velda Osborne, Brent Taylor

**Study Type** : Meta Analysis

**Additional Links**

**Diseases** : [Tic Disorders : CK\(60\) : AC\(3\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Neurotoxic : CK\(1116\) : AC\(188\)](#)

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### **[Thimerosal exposure is associated with tics and delayed language acquisition in infants. - GMI Summary](#)**

**Pubmed Data** : Pediatrics. 2003 Nov;112(5):1039-48. PMID: [14595043](#)

**Article Published Date** : Nov 01, 2003

**Authors** : Thomas Verstraeten, Robert L Davis, Frank DeStefano, Tracy A Lieu, Philip H Rhodes, Steven B Black, Henry Shinefield, Robert T Chen,

**Study Type** : Meta Analysis

**Additional Links**

**Diseases** : [Learning disorders : CK\(154\) : AC\(36\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#), [Tic Disorders : CK\(60\) : AC\(3\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Neurotoxic : CK\(1116\) : AC\(188\)](#)

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### **[Culmination of the research that examines the effects of thimerosal in humans indicates that it is a poison at minute levels with a plethora of deleterious consequences. - GMI Summary](#)**

**Pubmed Data** : Clin Chim Acta. 2015 Apr 15 ;444:212-220. Epub 2015 Feb 21. PMID: [25708367](#)

**Article Published Date** : Apr 14, 2015

**Authors** : David A Geier, Paul G King, Brian S Hooker, José G Dórea, Janet K Kern, Lisa K Sykes, Mark R Geier

**Study Type** : Review

**Additional Links**

**Diseases** : [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#), [Tic Disorders : CK\(60\) : AC\(3\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

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## **[Topic: Vaccine-induced Toxicity](#)**

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### **[As thimerosal was removed from childhood vaccines, the number of neurodevelopmental disorders decreased in the US. - GMI Summary](#)**

**Pubmed Data** : Med Sci Monit. 2006 Jun;12(6):CR231-9. Epub 2006 May 29. PMID: [16733480](#)

**Article Published Date** : Jun 01, 2006

**Authors** : David A Geier, Mark R Geier

**Study Type** : Meta Analysis

**Additional Links**

**Diseases** : [Childhood Chemical Exposures : CK\(155\) : AC\(17\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#), [Vaccine-induced Toxicity : CK\(1242\) : AC\(180\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Neurotoxic : CK\(1116\) : AC\(188\)](#)

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### **[There is evidence supporting an association between increasing organic-Hg exposure from Thimerosal-containing childhood vaccines and the subsequent risk of an ASD. - GMI Summary](#)**

**Pubmed Data** : Transl Neurodegener. 2013 ;2(1):25. Epub 2013 Dec 19. PMID: [24354891](#)

**Article Published Date** : Dec 31, 2012

**Authors** : David A Geier, Brian S Hooker, Janet K Kern, Paul G King, Lisa K Sykes, Mark R Geier

**Study Type** : Human Study

**Additional Links**

**Diseases** : [Autism : CK\(570\) : AC\(65\)](#), [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Mercury Poisoning : CK\(172\) : AC\(45\)](#), [Vaccine-induced Toxicity : CK\(1242\) : AC\(180\)](#)

**Anti Therapeutic Actions** : [Vaccination: All : CK\(4715\) : AC\(363\)](#)

**Problem Substances** : [Mercury : CK\(131\) : AC\(17\)](#), [Thimerosal : CK\(299\) : AC\(44\)](#)

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### **[Thimerosal containing vaccines may cause atopy in children. - GMI Summary](#)**

**Pubmed Data** : Contact Dermatitis. 1999 Feb;40(2):94-7. PMID: [10048654](#)

**Article Published Date** : Feb 01, 1999

**Authors** : A Patrizi, L Rizzoli, C Vincenzi, P Trevisi, A Tosti

**Study Type** : Human Study

**Additional Links**

**Diseases** : [Atopic Dermatitis : CK\(719\) : AC\(84\)](#), [Atopic Disease : CK\(91\) : AC\(9\)](#), [Atopic Hypersensitivity : CK\(10\) : AC\(1\)](#), [Vaccine-induced Toxicity : CK\(1242\) : AC\(180\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

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### **[Maturation changes in amygdala volume and the binding capacity of an opioid antagonist in the amygdala was significantly altered in infant macaques receiving the vaccine schedule. - GMI Summary](#)**

**Pubmed Data** : Acta Neurobiol Exp (Wars). 2010 ;70(2):147-64. PMID: [20628439](#)

**Article Published Date** : Dec 31, 2009

**Authors** : Laura Hewitson, Brian J Lopresti, Carol Stott, N Scott Mason, Jaime Tomko

**Study Type** : Animal Study

**Additional Links**

**Diseases** : [Amygdala: Damage/Abnormalities : CK\(12\) : AC\(1\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#), [Vaccine-induced Toxicity : CK\(1242\) : AC\(180\)](#)

**Anti Therapeutic Actions** : [Vaccination: All : CK\(4715\) : AC\(363\)](#), [Vaccination: Animal Model : CK\(41\) : AC\(17\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

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### **[Neonatal exposure to thimerosal-containing vaccines might induce excitotoxic brain injuries, leading to neurodevelopmental disorders. DHEA may protect against mercury-induced neurotoxicity. - GMI Summary](#)**

**Pubmed Data** : Neurochem Res. 2011 Oct 21. Epub 2011 Oct 21. PMID: [22015977](#)

**Article Published Date** : Oct 21, 2011

**Authors** : Michalina Duszczyc-Budhathoki, Mieszko Olczak, Malgorzata Lehner, Maria Dorota Majewska

**Study Type** : Animal Study

**Additional Links**

**Substances** : [DHEA \(Dehydroepiandrosterone\) : CK\(209\) : AC\(34\)](#)

**Diseases** : [Excitotoxicity : CK\(57\) : AC\(34\)](#), [Mercury Poisoning : CK\(172\) : AC\(45\)](#), [Vaccine-induced Toxicity : CK\(1242\) : AC\(180\)](#)

**Pharmacological Actions** : [Neuroprotective Agents : CK\(1050\) : AC\(544\)](#)

**Problem Substances** : [Mercury : CK\(131\) : AC\(17\)](#), [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Neurotoxic : CK\(1116\) : AC\(188\)](#)

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## **There are lasting neuropathological changes in rat brain after intermittent neonatal administration of thimerosal. - GMI Summary**

**Pubmed Data** : Folia Neuropathol. 2010 ;48(4):258-69. PMID: [21225508](#)

**Article Published Date** : Jan 01, 2010

**Authors** : Mieszko Olczak, Michalina Duszczyk, Paweł Mierzejewski, Teresa Wierzba-Bobrowicz, Maria D Majewska

**Study Type** : Animal Study

**Additional Links**

**Diseases** : [Infant Chemical Exposures](#) : CK(165) : AC(24), [Neurodegenerative Diseases](#) : CK(2087) : AC(447), [Vaccine-induced Toxicity](#) : CK(1242) : AC(180)

**Problem Substances** : [Thimerosal](#) : CK(299) : AC(44)

**Adverse Pharmacological Actions** : [Neurotoxic](#) : CK(1116) : AC(188)

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## **Compounds commonly used as preservatives in US licensed vaccine/biological preparations exhibit significant toxicity and may not comply with the US Code of Federal Regulations for preservatives. - GMI Summary**

**Pubmed Data** : Med Sci Monit. 2010 Apr 28;16(5):SR21-7. PMID: [20424565](#)

**Article Published Date** : Apr 28, 2010

**Authors** : David A Geier, Sarah K Jordan, Mark R Geier

**Study Type** : In Vitro Study

**Additional Links**

**Diseases** : [Vaccine-induced Toxicity](#) : CK(1242) : AC(180)

**Problem Substances** : [2-phenoxyethanol](#) : CK(2) : AC(2), [Adjuvant](#) : CK(18) : AC(6), [Benzethonium chloride](#) : CK(2) : AC(2), [Phenol](#) : CK(2) : AC(2), [Thimerosal](#) : CK(299) : AC(44)

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## **Review: Thimerosal use represents a medical crisis. - GMI Summary**

**Pubmed Data** : J Toxicol Environ Health B Crit Rev. 2007 Dec;10(8):575-96. PMID: [18049924](#)

**Article Published Date** : Dec 01, 2007

**Authors** : David A Geier, Lisa K Sykes, Mark R Geier

**Study Type** : Review

**Additional Links**

**Diseases** : [Mercury Poisoning](#) : CK(172) : AC(45), [Vaccine-induced Toxicity](#) : CK(1242) : AC(180)

**Problem Substances** : [Thimerosal](#) : CK(299) : AC(44)

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## **Topic: Learning disorders**

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### **Exposure to mercury from thimerosal-containing vaccines was associated with an increased risk of neurodevelopmental problems in infants from 1992-1997. - GMI Summary**

**Pubmed Data** : Med Sci Monit. 2005 Apr;11(4):CR160-70. Epub 2005 Mar 24. PMID: [15795695](#)

**Article Published Date** : Apr 01, 2005

**Authors** : David A Geier, Mark R Geier

**Study Type** : Meta Analysis

**Additional Links**

**Diseases** : [Attention Deficit Disorder](#) : CK(397) : AC(12), [Learning disorders](#) : CK(154) : AC(36), [Neurodevelopmental Disorders](#) : CK(149) : AC(13), [Seizures](#) : CK(135) : AC(33), [Speech Disorders](#) : CK(30) : AC(2), [Tic Disorders](#) : CK(60) : AC(3)

**Problem Substances** : [Thimerosal](#) : CK(299) : AC(44)

**Adverse Pharmacological Actions** : [Neurotoxic](#) : CK(1116) : AC(188)

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### **Thimersol exposure is associated with tics and delayed language acquisition in infants. - GMI Summary**

**Pubmed Data** : Pediatrics. 2003 Nov;112(5):1039-48. PMID: [14595043](#)

**Article Published Date** : Nov 01, 2003

**Authors** : Thomas Verstraeten, Robert L Davis, Frank DeStefano, Tracy A Lieu, Philip H Rhodes, Steven B Black, Henry Shinefield, Robert T Chen,

**Study Type** : Meta Analysis

**Additional Links**

**Diseases** : [Learning disorders : CK\(154\) : AC\(36\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#), [Tic Disorders : CK\(60\) : AC\(3\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Neurotoxic : CK\(1116\) : AC\(188\)](#)

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### **[Data demonstrates a negative neurodevelopmental impact of perinatal exposure to thimerosal.](#) - GMI Summary**

**Pubmed Data** : Cerebellum. 2012 Jun ;11(2):575-86. PMID: [22015705](#)

**Article Published Date** : May 31, 2012

**Authors** : Z L Sulkowski, T Chen, S Midha, A M Zavacki, Elizabeth M Sajdel-Sulkowska

**Study Type** : Animal Study

**Additional Links**

**Diseases** : [Learning disorders : CK\(154\) : AC\(36\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#), [Oxidative Stress : CK\(2152\) : AC\(750\)](#)

**Additional Keywords** : [Oxidative Stress : CK\(2152\) : AC\(750\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Neurotoxic : CK\(1116\) : AC\(188\)](#)

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## **Topic: Attention Deficit Disorder**

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### **[Exposure to mercury from thimerosal-containing vaccines was associated with an increased risk of neurodevelopmental problems in infants from 1992-1997.](#) - GMI Summary**

**Pubmed Data** : Med Sci Monit. 2005 Apr;11(4):CR160-70. Epub 2005 Mar 24. PMID: [15795695](#)

**Article Published Date** : Apr 01, 2005

**Authors** : David A Geier, Mark R Geier

**Study Type** : Meta Analysis

**Additional Links**

**Diseases** : [Attention Deficit Disorder : CK\(397\) : AC\(12\)](#), [Learning disorders : CK\(154\) : AC\(36\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#), [Seizures : CK\(135\) : AC\(33\)](#), [Speech Disorders : CK\(30\) : AC\(2\)](#), [Tic Disorders : CK\(60\) : AC\(3\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Neurotoxic : CK\(1116\) : AC\(188\)](#)

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### **[Thimersol exposure in infants significantly increases neurodevelopment disorders in infants, e.g. autism, autism spectrum disorders, tics, attention deficit disorder, and emotional disturbances.](#) - GMI Summary**

**Pubmed Data** : J Neurol Sci. 2008 Aug 15;271(1-2):110-8. Epub 2008 May 15. PMID: [18482737](#)

**Article Published Date** : Aug 15, 2008

**Authors** : Heather A Young, David A Geier, Mark R Geier

**Study Type** : Meta Analysis

**Additional Links**

**Diseases** : [Attention Deficit Disorder : CK\(397\) : AC\(12\)](#), [Autism : CK\(570\) : AC\(65\)](#), [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Emotional Disorders : CK\(71\) : AC\(6\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#)

**Problem Substances** : [Mercury : CK\(131\) : AC\(17\)](#), [Thimerosal : CK\(299\) : AC\(44\)](#)

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### **[This study shows that inhibition of methionine synthase\(MS\) activity by ethanol, lead, mercury, aluminum and thimerosal suggesting that it may be an important target of neurodevelopmental toxins.](#) - GMI Summary**

**Pubmed Data** : Mol Psychiatry. 2004 Apr ;9(4):358-70. PMID: [14745455](#)



**Article Published Date** : Mar 31, 2004

**Authors** : M Waly, H Olteanu, R Banerjee, S-W Choi, J B Mason, B S Parker, S Sukumar, S Shim, A Sharma, J M Benzecry, V-A Power-Charnitsky, R C Deth

**Study Type** : In Vitro Study

**Additional Links**

**Diseases** : [Attention Deficit Disorder : CK\(397\) : AC\(12\)](#), [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#)

**Problem Substances** : [Aluminum : CK\(170\) : AC\(43\)](#), [Ethanol : CK\(22\) : AC\(7\)](#), [Lead : CK\(140\) : AC\(15\)](#), [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Hypermethylation : CK\(11\) : AC\(1\)](#)

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## **Topic: [Mental Retardation](#)**

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### **[Rates of autism, speech disorders, mental retardation, infantile spasms, and thinking abnormalities were higher in children exposed to higher thimerosal levels.](#) - GMI Summary**

**Pubmed Data** : J Toxicol Environ Health A. 2006 Aug;69(15):1481-95. PMID: [16766480](#)

**Article Published Date** : Aug 01, 2006

**Authors** : David A Geier, Mark R Geier

**Study Type** : Meta Analysis

**Additional Links**

**Diseases** : [Autism : CK\(570\) : AC\(65\)](#), [Cognitive Decline/Dysfunction : CK\(579\) : AC\(95\)](#), [Infantile Spasms : CK\(50\) : AC\(4\)](#), [Mental Retardation : CK\(71\) : AC\(7\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Neurotoxic : CK\(1116\) : AC\(188\)](#)

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### **[A meta-analysis reveals that thimerosal containing vaccines significantly increase the risk of neurodevelopmental disorders.](#) - GMI Summary**

**Pubmed Data** : Neuro Endocrinol Lett. 2006 Aug;27(4):401-13. PMID: [16807526](#)

**Article Published Date** : Aug 01, 2006

**Authors** : David A Geier, Mark R Geier

**Study Type** : Human Study

**Additional Links**

**Diseases** : [Ataxia: Cerebellar : CK\(67\) : AC\(3\)](#), [Autism : CK\(570\) : AC\(65\)](#), [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Mental Retardation : CK\(71\) : AC\(7\)](#), [Personality Disorder: Borderline : CK\(10\) : AC\(1\)](#), [Speech Disorders : CK\(30\) : AC\(2\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

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### **[There is an association between neurodevelopmental disorders and thimerosal-containing vaccines.](#) - GMI Summary**

**Pubmed Data** : Exp Biol Med (Maywood). 2003 Jun;228(6):660-4. PMID: [12773696](#)

**Article Published Date** : Jun 01, 2003

**Authors** : Mark R Geier, David A Geier

**Study Type** : Human Study

**Additional Links**

**Diseases** : [Autism : CK\(570\) : AC\(65\)](#), [Mental Retardation : CK\(71\) : AC\(7\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

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## **Topic: [Speech Disorders](#)**

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### **[Exposure to mercury from thimerosal-containing vaccines was associated with an increased risk of neurodevelopmental problems in infants from 1992-1997.](#) - GMI Summary**

**Pubmed Data** : Med Sci Monit. 2005 Apr;11(4):CR160-70. Epub 2005 Mar 24. PMID: [15795695](#)

**Article Published Date** : Apr 01, 2005

**Authors** : David A Geier, Mark R Geier

**Study Type** : Meta Analysis

**Additional Links**

**Diseases** : [Attention Deficit Disorder : CK\(397\) : AC\(12\)](#), [Learning disorders : CK\(154\) : AC\(36\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#), [Seizures : CK\(135\) : AC\(33\)](#), [Speech Disorders : CK\(30\) : AC\(2\)](#), [Tic Disorders : CK\(60\) : AC\(3\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Neurotoxic : CK\(1116\) : AC\(188\)](#)

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### **[A meta-analysis reveals that thimerosal containing vaccines significantly increase the risk of neurodevelopmental disorders.](#) - GMI Summary**

**Pubmed Data** : Neuro Endocrinol Lett. 2006 Aug;27(4):401-13. PMID: [16807526](#)

**Article Published Date** : Aug 01, 2006

**Authors** : David A Geier, Mark R Geier

**Study Type** : Human Study

**Additional Links**

**Diseases** : [Ataxia: Cerebellar : CK\(67\) : AC\(3\)](#), [Autism : CK\(570\) : AC\(65\)](#), [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Mental Retardation : CK\(71\) : AC\(7\)](#), [Personality Disorder: Borderline : CK\(10\) : AC\(1\)](#), [Speech Disorders : CK\(30\) : AC\(2\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

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## **Topic: [Mercury Poisoning](#)**

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### **[2001: Depending on the immunization schedule, vaccine formulation, and infant weight, cumulative exposure of infants to mercury from thimerosal during the first 6 months of life may exceed EPA guidelines.](#) - GMI Summary**

**Pubmed Data** : Pediatrics. 2001 May;107(5):1147-54. PMID: [11331700](#)

**Article Published Date** : May 01, 2001

**Authors** : L K Ball, R Ball, R D Pratt

**Study Type** : Human Study

**Additional Links**

**Diseases** : [Infant Chemical Exposures : CK\(165\) : AC\(24\)](#), [Mercury Poisoning : CK\(172\) : AC\(45\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

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### **[There is evidence supporting an association between increasing organic-Hg exposure from Thimerosal-containing childhood vaccines and the subsequent risk of an ASD.](#) - GMI Summary**

**Pubmed Data** : Transl Neurodegener. 2013 ;2(1):25. Epub 2013 Dec 19. PMID: [24354891](#)

**Article Published Date** : Dec 31, 2012

**Authors** : David A Geier, Brian S Hooker, Janet K Kern, Paul G King, Lisa K Sykes, Mark R Geier

**Study Type** : Human Study

**Additional Links**

**Diseases** : [Autism : CK\(570\) : AC\(65\)](#), [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Mercury Poisoning : CK\(172\) : AC\(45\)](#), [Vaccine-induced Toxicity : CK\(1242\) : AC\(180\)](#)

**Anti Therapeutic Actions** : [Vaccination: All : CK\(4715\) : AC\(363\)](#)

**Problem Substances** : [Mercury : CK\(131\) : AC\(17\)](#), [Thimerosal : CK\(299\) : AC\(44\)](#)

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### **[A series of case studies demonstrate that thimerosal exposure is a major contributing factor to the pathogenesis of autism spectrum disorders.](#) - GMI Summary**

**Pubmed Data** : J Toxicol Environ Health A. 2007 May 15;70(10):837-51. PMID: [17454560](#)

**Article Published Date** : May 15, 2007

**Authors** : David A Geier, Mark R Geier

**Study Type** : Human: Case Report

### **Additional Links**

**Diseases** : [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Mercury Poisoning : CK\(172\) : AC\(45\)](#), [Neurodegenerative Diseases : CK\(2087\) : AC\(447\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Neurotoxic : CK\(1116\) : AC\(188\)](#)

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### **[Neonatal exposure to thimerosal-containing vaccines might induce excitotoxic brain injuries, leading to neurodevelopmental disorders. DHEA may protect against mercury-induced neurotoxicity.](#) - GMI Summary**

**Pubmed Data** : Neurochem Res. 2011 Oct 21. Epub 2011 Oct 21. PMID: [22015977](#)

**Article Published Date** : Oct 21, 2011

**Authors** : Michalina Duszczak-Budhathoki, Mieszko Olczak, Malgorzata Lehner, Maria Dorota Majewska

**Study Type** : Animal Study

### **Additional Links**

**Substances** : [DHEA \(Dehydroepiandrosterone\) : CK\(209\) : AC\(34\)](#)

**Diseases** : [Excitotoxicity : CK\(57\) : AC\(34\)](#), [Mercury Poisoning : CK\(172\) : AC\(45\)](#), [Vaccine-induced Toxicity : CK\(1242\) : AC\(180\)](#)

**Pharmacological Actions** : [Neuroprotective Agents : CK\(1050\) : AC\(544\)](#)

**Problem Substances** : [Mercury : CK\(131\) : AC\(17\)](#), [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Neurotoxic : CK\(1116\) : AC\(188\)](#)

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### **[A comprehensive analysis is included on the comorbidities of autism and their corresponding analogs due to mercury exposure.](#) - GMI Summary**

**Pubmed Data** : Med Hypotheses. 2001 Apr ;56(4):462-71. PMID: [11339848](#)

**Article Published Date** : Mar 31, 2001

**Authors** : S Bernard, A Enayati, L Redwood, H Roger, T Binstock

**Study Type** : Review

### **Additional Links**

**Diseases** : [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Mercury Poisoning : CK\(172\) : AC\(45\)](#)

**Additional Keywords** : [Mercury Poisoning : CK\(172\) : AC\(45\)](#), [Mercury Poisoning : CK\(172\) : AC\(45\)](#), [Methylmercury : CK\(2\) : AC\(1\)](#)

**Problem Substances** : [Mercury : CK\(131\) : AC\(17\)](#), [Thimerosal : CK\(299\) : AC\(44\)](#)

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### **[Review: Thimerosal use represents a medical crisis.](#) - GMI Summary**

**Pubmed Data** : J Toxicol Environ Health B Crit Rev. 2007 Dec;10(8):575-96. PMID: [18049924](#)

**Article Published Date** : Dec 01, 2007

**Authors** : David A Geier, Lisa K Sykes, Mark R Geier

**Study Type** : Review

### **Additional Links**

**Diseases** : [Mercury Poisoning : CK\(172\) : AC\(45\)](#), [Vaccine-induced Toxicity : CK\(1242\) : AC\(180\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

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### **[There appears to be little difference in the neurotoxicity of MeHg and EthylHg.](#) - GMI Summary**

**Pubmed Data** : Mol Psychiatry. 2002 ;7 Suppl 2:S40-1. PMID: [12142946](#)

**Article Published Date** : Dec 31, 2001

**Authors** : M Aschner, S J Walker

**Study Type** : Review

### **Additional Links**

**Diseases** : [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Developmental Disorder: Children : CK\(30\) : AC\(3\)](#), [Mercury Poisoning : CK\(172\) : AC\(45\)](#), [Neurotoxicity : CK\(37\) : AC\(15\)](#)

**Additional Keywords** : [Neurotoxicity : CK\(37\) : AC\(15\)](#), [Methylmercury : CK\(2\) : AC\(1\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

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## **Topic: [Childhood Chemical Exposures](#)**

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## **[As thimerosal was removed from childhood vaccines, the number of neurodevelopmental disorders decreased in the US. - GMI Summary](#)**

**Pubmed Data** : Med Sci Monit. 2006 Jun;12(6):CR231-9. Epub 2006 May 29. PMID: [16733480](#)

**Article Published Date** : Jun 01, 2006

**Authors** : David A Geier, Mark R Geier

**Study Type** : Meta Analysis

**Additional Links**

**Diseases** : [Childhood Chemical Exposures](#) : CK(155) : AC(17), [Neurodevelopmental Disorders](#) : CK(149) : AC(13), [Vaccine-induced Toxicity](#) : CK(1242) : AC(180)

**Problem Substances** : [Thimerosal](#) : CK(299) : AC(44)

**Adverse Pharmacological Actions** : [Neurotoxic](#) : CK(1116) : AC(188)

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## **Topic: [Cognitive Decline/Dysfunction](#)**

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### **[Rates of autism, speech disorders, mental retardation, infantile spasms, and thinking abnormalities were higher in children exposed to higher thimerosal levels. - GMI Summary](#)**

**Pubmed Data** : J Toxicol Environ Health A. 2006 Aug;69(15):1481-95. PMID: [16766480](#)

**Article Published Date** : Aug 01, 2006

**Authors** : David A Geier, Mark R Geier

**Study Type** : Meta Analysis

**Additional Links**

**Diseases** : [Autism](#) : CK(570) : AC(65), [Cognitive Decline/Dysfunction](#) : CK(579) : AC(95), [Infantile Spasms](#) : CK(50) : AC(4), [Mental Retardation](#) : CK(71) : AC(7), [Neurodevelopmental Disorders](#) : CK(149) : AC(13)

**Problem Substances** : [Thimerosal](#) : CK(299) : AC(44)

**Adverse Pharmacological Actions** : [Neurotoxic](#) : CK(1116) : AC(188)

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## **Topic: [Emotional Disorders](#)**

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### **[Thimersol exposure in infants significantly increases neurodevelopment disorders in infants, e.g. autism, autism spectrum disorders, tics, attention deficit disorder, and emotional disturbances. - GMI Summary](#)**

**Pubmed Data** : J Neurol Sci. 2008 Aug 15;271(1-2):110-8. Epub 2008 May 15. PMID: [18482737](#)

**Article Published Date** : Aug 15, 2008

**Authors** : Heather A Young, David A Geier, Mark R Geier

**Study Type** : Meta Analysis

**Additional Links**

**Diseases** : [Attention Deficit Disorder](#) : CK(397) : AC(12), [Autism](#) : CK(570) : AC(65), [Autism Spectrum Disorders](#) : CK(1286) : AC(112), [Emotional Disorders](#) : CK(71) : AC(6), [Neurodevelopmental Disorders](#) : CK(149) : AC(13)

**Problem Substances** : [Mercury](#) : CK(131) : AC(17), [Thimerosal](#) : CK(299) : AC(44)

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## **Topic: [Infantile Spasms](#)**

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### **[Rates of autism, speech disorders, mental retardation, infantile spasms, and thinking abnormalities were higher in children exposed to higher thimerosal levels. - GMI Summary](#)**

**Pubmed Data** : J Toxicol Environ Health A. 2006 Aug;69(15):1481-95. PMID: [16766480](#)

**Article Published Date** : Aug 01, 2006

**Authors** : David A Geier, Mark R Geier

**Study Type** : Meta Analysis

**Additional Links**

**Diseases** : [Autism](#) : CK(570) : AC(65), [Cognitive Decline/Dysfunction](#) : CK(579) : AC(95), [Infantile Spasms](#)

: [CK\(50\)](#) : [AC\(4\)](#), [Mental Retardation](#) : [CK\(71\)](#) : [AC\(7\)](#), [Neurodevelopmental Disorders](#) : [CK\(149\)](#) : [AC\(13\)](#)  
**Problem Substances** : [Thimerosal](#) : [CK\(299\)](#) : [AC\(44\)](#)  
**Adverse Pharmacological Actions** : [Neurotoxic](#) : [CK\(1116\)](#) : [AC\(188\)](#)

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## Topic: [Seizures](#)

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### [Exposure to mercury from thimerosal-containing vaccines was associated with an increased risk of neurodevelopmental problems in infants from 1992-1997.](#) - GMI Summary

**Pubmed Data** : Med Sci Monit. 2005 Apr;11(4):CR160-70. Epub 2005 Mar 24. PMID: [15795695](#)

**Article Published Date** : Apr 01, 2005

**Authors** : David A Geier, Mark R Geier

**Study Type** : Meta Analysis

**Additional Links**

**Diseases** : [Attention Deficit Disorder](#) : [CK\(397\)](#) : [AC\(12\)](#), [Learning disorders](#) : [CK\(154\)](#) : [AC\(36\)](#), [Neurodevelopmental Disorders](#) : [CK\(149\)](#) : [AC\(13\)](#), [Seizures](#) : [CK\(135\)](#) : [AC\(33\)](#), [Speech Disorders](#) : [CK\(30\)](#) : [AC\(2\)](#), [Tic Disorders](#) : [CK\(60\)](#) : [AC\(3\)](#)

**Problem Substances** : [Thimerosal](#) : [CK\(299\)](#) : [AC\(44\)](#)

**Adverse Pharmacological Actions** : [Neurotoxic](#) : [CK\(1116\)](#) : [AC\(188\)](#)

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## Topic: [Sexual Development: Dysfunctions and Abnormalities](#)

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### [Thimerosal exposure is associated with increasing trends of premature puberty in 278,624 subjects from 1990-1996.](#) - GMI Summary

**Pubmed Data** : Indian J Med Res. 2010 Apr;131:500-7. PMID: [20424300](#)

**Article Published Date** : Apr 01, 2010

**Authors** : David A Geier, Heather A Young, Mark R Geier

**Study Type** : Meta Analysis

**Additional Links**

**Diseases** : [Sexual Development: Dysfunctions and Abnormalities](#) : [CK\(78\)](#) : [AC\(10\)](#)

**Problem Substances** : [Thimerosal](#) : [CK\(299\)](#) : [AC\(44\)](#)

**Adverse Pharmacological Actions** : [Endocrine Disruptor](#) : [CK\(482\)](#) : [AC\(88\)](#)

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## Topic: [Oxidative Stress](#)

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### [A subpopulation of eight individuals from four of the families showed thimerosal hypersensitivity.](#) - GMI Summary

**Pubmed Data** : J Toxicol. 2013 ;2013:801517. Epub 2013 Jun 9. PMID: [23843785](#)

**Article Published Date** : Dec 31, 2012

**Authors** : Martyn A Sharpe, Taylor L Gist, David S Baskin

**Study Type** : Human Study

**Additional Links**

**Diseases** : [Autism Spectrum Disorders](#) : [CK\(1286\)](#) : [AC\(112\)](#), [Mitochondrial Dysfunction](#) : [CK\(157\)](#) : [AC\(57\)](#), [Oxidative Stress](#) : [CK\(2152\)](#) : [AC\(750\)](#)

**Problem Substances** : [Thimerosal](#) : [CK\(299\)](#) : [AC\(44\)](#)

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### [Findings suggest that the epidemiological link between environmental mercury exposure and an increased risk of developing autism may be mediated through mitochondrial dysfunction.](#) - GMI Summary

**Pubmed Data** : J Toxicol. 2015 ;2015:573701. Epub 2015 Jan 21. PMID: [25688267](#)

**Article Published Date** : Dec 31, 2014

**Authors** : Shannon Rose, Rebecca Wynne, Richard E Frye, Stepan Melnyk, S Jill James

**Study Type** : Human In Vitro

**Additional Links**

**Diseases** : [Mitochondrial Dysfunction : CK\(157\) : AC\(57\)](#), [Oxidative Stress : CK\(2152\) : AC\(750\)](#)

**Additional Keywords** : [Oxidative Stress : CK\(2152\) : AC\(750\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

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**[Data demonstrates a negative neurodevelopmental impact of perinatal exposure to thimerosal.](#) - GMI Summary**

**Pubmed Data** : Cerebellum. 2012 Jun ;11(2):575-86. PMID: [22015705](#)

**Article Published Date** : May 31, 2012

**Authors** : Z L Sulkowski, T Chen, S Midha, A M Zavacki, Elizabeth M Sajdel-Sulkowska

**Study Type** : Animal Study

**Additional Links**

**Diseases** : [Learning disorders : CK\(154\) : AC\(36\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#), [Oxidative Stress : CK\(2152\) : AC\(750\)](#)

**Additional Keywords** : [Oxidative Stress : CK\(2152\) : AC\(750\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Neurotoxic : CK\(1116\) : AC\(188\)](#)

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**[The results of this study suggest that ethylmercury is a mitochondrial toxin in human astrocytes.](#) - GMI Summary**

**Pubmed Data** : J Toxicol. 2012 ;2012:373678. Epub 2012 Jun 28. PMID: [22811707](#)

**Article Published Date** : Dec 31, 2011

**Authors** : Martyn A Sharpe, Andrew D Livingston, David S Baskin

**Study Type** : In Vitro Study

**Additional Links**

**Diseases** : [DNA damage : CK\(728\) : AC\(304\)](#), [Excitotoxicity : CK\(57\) : AC\(34\)](#), [Oxidative Stress : CK\(2152\) : AC\(750\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Apoptotic : CK\(8\) : AC\(7\)](#), [Excitotoxic : CK\(10\) : AC\(1\)](#)

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**[The vaccine adjuvant thimerosal is cytotoxic to T cells.](#) - GMI Summary**

**Pubmed Data** : Genes Immun. 2002 Aug;3(5):270-8. PMID: [12140745](#)

**Article Published Date** : Aug 01, 2002

**Authors** : S Makani, S Gollapudi, L Yel, S Chiplunkar, S Gupta

**Study Type** : In Vitro Study

**Additional Links**

**Diseases** : [Immune Disorders: Low Immune Function : CK\(485\) : AC\(116\)](#), [Oxidative Stress : CK\(2152\) : AC\(750\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

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**Topic: [Mitochondrial Dysfunction](#)****[A subpopulation of eight individuals from four of the families showed thimerosal hypersensitivity.](#) - GMI Summary**

**Pubmed Data** : J Toxicol. 2013 ;2013:801517. Epub 2013 Jun 9. PMID: [23843785](#)

**Article Published Date** : Dec 31, 2012

**Authors** : Martyn A Sharpe, Taylor L Gist, David S Baskin

**Study Type** : Human Study

**Additional Links**

**Diseases** : [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Mitochondrial Dysfunction : CK\(157\) : AC\(57\)](#), [Oxidative Stress : CK\(2152\) : AC\(750\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

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**[Findings suggest that the epidemiological link between environmental mercury exposure and an increased risk of developing autism may be mediated through](#)**

## **mitochondrial dysfunction. - GMI Summary**

**Pubmed Data** : J Toxicol. 2015 ;2015:573701. Epub 2015 Jan 21. PMID: [25688267](#)

**Article Published Date** : Dec 31, 2014

**Authors** : Shannon Rose, Rebecca Wynne, Richard E Frye, Stepan Melnyk, S Jill James

**Study Type** : Human In Vitro

**Additional Links**

**Diseases** : [Mitochondrial Dysfunction : CK\(157\) : AC\(57\)](#), [Oxidative Stress : CK\(2152\) : AC\(750\)](#)

**Additional Keywords** : [Oxidative Stress : CK\(2152\) : AC\(750\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

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## **Topic: Infant Chemical Exposures**

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### **2001: Depending on the immunization schedule, vaccine formulation, and infant weight, cumulative exposure of infants to mercury from thimerosal during the first 6 months of life may exceed EPA guidelines. - GMI Summary**

**Pubmed Data** : Pediatrics. 2001 May;107(5):1147-54. PMID: [11331700](#)

**Article Published Date** : May 01, 2001

**Authors** : L K Ball, R Ball, R D Pratt

**Study Type** : Human Study

**Additional Links**

**Diseases** : [Infant Chemical Exposures : CK\(165\) : AC\(24\)](#), [Mercury Poisoning : CK\(172\) : AC\(45\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

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### **There are lasting neuropathological changes in rat brain after intermittent neonatal administration of thimerosal. - GMI Summary**

**Pubmed Data** : Folia Neuropathol. 2010 ;48(4):258-69. PMID: [21225508](#)

**Article Published Date** : Jan 01, 2010

**Authors** : Mieszko Olczak, Michalina Duszczyk, Paweł Mierzejewski, Teresa Wierzba-Bobrowicz, Maria D Majewska

**Study Type** : Animal Study

**Additional Links**

**Diseases** : [Infant Chemical Exposures : CK\(165\) : AC\(24\)](#), [Neurodegenerative Diseases : CK\(2087\) : AC\(447\)](#), [Vaccine-induced Toxicity : CK\(1242\) : AC\(180\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Neurotoxic : CK\(1116\) : AC\(188\)](#)

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## **Topic: Attention Deficit Disorder with Hyperactivity**

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### **Mothers receiving thimerosal via Rho(D) immune globulin injection saw a significantly higher rate of autism in the children exposed to mercury in utero. - GMI Summary**

**Pubmed Data** : Neuro Endocrinol Lett. 2008 Apr ;29(2):272-80. PMID: [18404135](#)

**Article Published Date** : Mar 31, 2008

**Authors** : David A Geier, Elizabeth Mumper, Bambi Gladfelter, Lisa Coleman, Mark R Geier

**Study Type** : Human Study

**Additional Links**

**Diseases** : [Attention Deficit Disorder with Hyperactivity : CK\(283\) : AC\(31\)](#), [Developmental Disorder: Children : CK\(30\) : AC\(3\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#)

**Additional Keywords** : [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

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### **A review of medical literature has shown that exposure to organic or inorganic mercury can give rise to the symptoms and traits defining or commonly found**

## **in ASD individuals. - GMI Summary**

**Pubmed Data** : Mol Psychiatry. 2002 ;7 Suppl 2:S42-3. PMID: [12142947](#)

**Article Published Date** : Dec 31, 2001

**Authors** : S Bernard, A Enayati, H Roger, T Binstock, L Redwood

**Study Type** : Review

**Additional Links**

**Diseases** : [Attention Deficit Disorder with Hyperactivity : CK\(283\) : AC\(31\)](#), [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#)

**Additional Keywords** : [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Methylmercury : CK\(2\) : AC\(1\)](#)

**Problem Substances** : [Mercury : CK\(131\) : AC\(17\)](#), [Thimerosal : CK\(299\) : AC\(44\)](#)

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## **Topic: Developmental Disorder: Children**

### **Mothers receiving thimerosal via Rho(D) immune globulin injection saw a significantly higher rate of autism in the children exposed to mercury in utero. - GMI Summary**

**Pubmed Data** : Neuro Endocrinol Lett. 2008 Apr ;29(2):272-80. PMID: [18404135](#)

**Article Published Date** : Mar 31, 2008

**Authors** : David A Geier, Elizabeth Mumper, Bambi Gladfelter, Lisa Coleman, Mark R Geier

**Study Type** : Human Study

**Additional Links**

**Diseases** : [Attention Deficit Disorder with Hyperactivity : CK\(283\) : AC\(31\)](#), [Developmental Disorder: Children : CK\(30\) : AC\(3\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#)

**Additional Keywords** : [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

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### **There appears to be little difference in the neurotoxicity of MeHg and EthylHg. - GMI Summary**

**Pubmed Data** : Mol Psychiatry. 2002 ;7 Suppl 2:S40-1. PMID: [12142946](#)

**Article Published Date** : Dec 31, 2001

**Authors** : M Aschner, S J Walker

**Study Type** : Review

**Additional Links**

**Diseases** : [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Developmental Disorder: Children : CK\(30\) : AC\(3\)](#), [Mercury Poisoning : CK\(172\) : AC\(45\)](#), [Neurotoxicity : CK\(37\) : AC\(15\)](#)

**Additional Keywords** : [Neurotoxicity : CK\(37\) : AC\(15\)](#), [Methylmercury : CK\(2\) : AC\(1\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

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## **Topic: Ataxia: Cerebellar**

### **A meta-analysis reveals that thimerosal containing vaccines significantly increase the risk of neurodevelopmental disorders. - GMI Summary**

**Pubmed Data** : Neuro Endocrinol Lett. 2006 Aug;27(4):401-13. PMID: [16807526](#)

**Article Published Date** : Aug 01, 2006

**Authors** : David A Geier, Mark R Geier

**Study Type** : Human Study

**Additional Links**

**Diseases** : [Ataxia: Cerebellar : CK\(67\) : AC\(3\)](#), [Autism : CK\(570\) : AC\(65\)](#), [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Mental Retardation : CK\(71\) : AC\(7\)](#), [Personality Disorder: Borderline : CK\(10\) : AC\(1\)](#), [Speech Disorders : CK\(30\) : AC\(2\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

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## Topic: Atopic Dermatitis

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### Thimerosal containing vaccines may cause atopy in children. - GMI Summary

**Pubmed Data** : Contact Dermatitis. 1999 Feb;40(2):94-7. PMID: [10048654](#)

**Article Published Date** : Feb 01, 1999

**Authors** : A Patrizi, L Rizzoli, C Vincenzi, P Trevisi, A Tosti

**Study Type** : Human Study

**Additional Links**

**Diseases** : [Atopic Dermatitis : CK\(719\) : AC\(84\)](#), [Atopic Disease : CK\(91\) : AC\(9\)](#), [Atopic Hypersensitivity : CK\(10\) : AC\(1\)](#), [Vaccine-induced Toxicity : CK\(1242\) : AC\(180\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

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## Topic: Atopic Disease

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### Thimerosal containing vaccines may cause atopy in children. - GMI Summary

**Pubmed Data** : Contact Dermatitis. 1999 Feb;40(2):94-7. PMID: [10048654](#)

**Article Published Date** : Feb 01, 1999

**Authors** : A Patrizi, L Rizzoli, C Vincenzi, P Trevisi, A Tosti

**Study Type** : Human Study

**Additional Links**

**Diseases** : [Atopic Dermatitis : CK\(719\) : AC\(84\)](#), [Atopic Disease : CK\(91\) : AC\(9\)](#), [Atopic Hypersensitivity : CK\(10\) : AC\(1\)](#), [Vaccine-induced Toxicity : CK\(1242\) : AC\(180\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

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## Topic: Atopic Hypersensitivity

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### Thimerosal containing vaccines may cause atopy in children. - GMI Summary

**Pubmed Data** : Contact Dermatitis. 1999 Feb;40(2):94-7. PMID: [10048654](#)

**Article Published Date** : Feb 01, 1999

**Authors** : A Patrizi, L Rizzoli, C Vincenzi, P Trevisi, A Tosti

**Study Type** : Human Study

**Additional Links**

**Diseases** : [Atopic Dermatitis : CK\(719\) : AC\(84\)](#), [Atopic Disease : CK\(91\) : AC\(9\)](#), [Atopic Hypersensitivity : CK\(10\) : AC\(1\)](#), [Vaccine-induced Toxicity : CK\(1242\) : AC\(180\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

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## Topic: Detoxification: Impaired

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### This study shows that autistic children had significantly reduced excretion levels of mercury via hair than the control group. - GMI Summary

**Pubmed Data** : Int J Toxicol. 2003 Jul-Aug;22(4):277-85. PMID: [12933322](#)

**Article Published Date** : Jun 30, 2003

**Authors** : Amy S Holmes, Mark F Blaxill, Boyd E Haley

**Study Type** : Human Study

**Additional Links**

**Diseases** : [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Detoxification: Impaired : CK\(1\) : AC\(1\)](#)

**Additional Keywords** : [Detoxification: Impaired : CK\(1\) : AC\(1\)](#), [Methylmercury : CK\(2\) : AC\(1\)](#)

**Problem Substances** : [Mercury : CK\(131\) : AC\(17\)](#), [Thimerosal : CK\(299\) : AC\(44\)](#)

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## Topic: Personality Disorder: Borderline

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## **[A meta-analysis reveals that thimerosal containing vaccines significantly increase the risk of neurodevelopmental disorders.](#) - GMI Summary**

**Pubmed Data** : Neuro Endocrinol Lett. 2006 Aug;27(4):401-13. PMID: [16807526](#)

**Article Published Date** : Aug 01, 2006

**Authors** : David A Geier, Mark R Geier

**Study Type** : Human Study

**Additional Links**

**Diseases** : [Ataxia: Cerebellar : CK\(67\) : AC\(3\)](#), [Autism : CK\(570\) : AC\(65\)](#), [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Mental Retardation : CK\(71\) : AC\(7\)](#), [Personality Disorder: Borderline : CK\(10\) : AC\(1\)](#), [Speech Disorders : CK\(30\) : AC\(2\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

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## **Topic: [Neurodegenerative Diseases](#)**

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## **[A series of case studies demonstrate that thimerosal exposure is a major contributing factor to the pathogenesis of autism spectrum disorders.](#) - GMI Summary**

**Pubmed Data** : J Toxicol Environ Health A. 2007 May 15;70(10):837-51. PMID: [17454560](#)

**Article Published Date** : May 15, 2007

**Authors** : David A Geier, Mark R Geier

**Study Type** : Human: Case Report

**Additional Links**

**Diseases** : [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Mercury Poisoning : CK\(172\) : AC\(45\)](#), [Neurodegenerative Diseases : CK\(2087\) : AC\(447\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Neurotoxic : CK\(1116\) : AC\(188\)](#)

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## **[There are lasting neuropathological changes in rat brain after intermittent neonatal administration of thimerosal.](#) - GMI Summary**

**Pubmed Data** : Folia Neuropathol. 2010 ;48(4):258-69. PMID: [21225508](#)

**Article Published Date** : Jan 01, 2010

**Authors** : Mieszko Olczak, Michalina Duszczyk, Paweł Mierzejewski, Teresa Wierzba-Bobrowicz, Maria D Majewska

**Study Type** : Animal Study

**Additional Links**

**Diseases** : [Infant Chemical Exposures : CK\(165\) : AC\(24\)](#), [Neurodegenerative Diseases : CK\(2087\) : AC\(447\)](#), [Vaccine-induced Toxicity : CK\(1242\) : AC\(180\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Neurotoxic : CK\(1116\) : AC\(188\)](#)

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## **Topic: [Excitotoxicity](#)**

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## **[Neonatal exposure to thimerosal-containing vaccines might induce excitotoxic brain injuries, leading to neurodevelopmental disorders. DHEA may protect against mercury-induced neurotoxicity.](#) - GMI Summary**

**Pubmed Data** : Neurochem Res. 2011 Oct 21. Epub 2011 Oct 21. PMID: [22015977](#)

**Article Published Date** : Oct 21, 2011

**Authors** : Michalina Duszczyk-Budhathoki, Mieszko Olczak, Malgorzata Lehner, Maria Dorota Majewska

**Study Type** : Animal Study

**Additional Links**

**Substances** : [DHEA \(Dehydroepiandrosterone\) : CK\(209\) : AC\(34\)](#)

**Diseases** : [Excitotoxicity : CK\(57\) : AC\(34\)](#), [Mercury Poisoning : CK\(172\) : AC\(45\)](#), [Vaccine-induced Toxicity : CK\(1242\) : AC\(180\)](#)

**Pharmacological Actions** : [Neuroprotective Agents : CK\(1050\) : AC\(544\)](#)

**Problem Substances** : [Mercury : CK\(131\) : AC\(17\)](#), [Thimerosal : CK\(299\) : AC\(44\)](#)

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**Adverse Pharmacological Actions :** [Neurotoxic : CK\(1116\) : AC\(188\)](#)

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### **[The results of this study suggest that ethylmercury is a mitochondrial toxin in human astrocytes.](#) - GMI Summary**

**Pubmed Data :** J Toxicol. 2012 ;2012:373678. Epub 2012 Jun 28. PMID: [22811707](#)

**Article Published Date :** Dec 31, 2011

**Authors :** Martyn A Sharpe, Andrew D Livingston, David S Baskin

**Study Type :** In Vitro Study

**Additional Links**

**Diseases :** [DNA damage : CK\(728\) : AC\(304\)](#), [Excitotoxicity : CK\(57\) : AC\(34\)](#), [Oxidative Stress : CK\(2152\) : AC\(750\)](#)

**Problem Substances :** [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions :** [Apoptotic : CK\(8\) : AC\(7\)](#), [Excitotoxic : CK\(10\) : AC\(1\)](#)

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### **Topic: Amygdala: Damage/Abnormalities**

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### **[Maturational changes in amygdala volume and the binding capacity of an opioid antagonist in the amygdala was significantly altered in infant macaques receiving the vaccine schedule.](#) - GMI Summary**

**Pubmed Data :** Acta Neurobiol Exp (Wars). 2010 ;70(2):147-64. PMID: [20628439](#)

**Article Published Date :** Dec 31, 2009

**Authors :** Laura Hewitson, Brian J Lopresti, Carol Stott, N Scott Mason, Jaime Tomko

**Study Type :** Animal Study

**Additional Links**

**Diseases :** [Amygdala: Damage/Abnormalities : CK\(12\) : AC\(1\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#), [Vaccine-induced Toxicity : CK\(1242\) : AC\(180\)](#)

**Anti Therapeutic Actions :** [Vaccination: All : CK\(4715\) : AC\(363\)](#), [Vaccination: Animal Model : CK\(41\) : AC\(17\)](#)

**Problem Substances :** [Thimerosal : CK\(299\) : AC\(44\)](#)

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### **Topic: Autoimmune Diseases**

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### **[These findings implicate a genetic influence in autistic disorders and provides a model for investigating thimerosal related neurotoxicity.](#) - GMI Summary**

**Pubmed Data :** Mol Psychiatry. 2004 Sep ;9(9):833-45. PMID: [15184908](#)

**Article Published Date :** Aug 31, 2004

**Authors :** M Hornig, D Chian, W I Lipkin

**Study Type :** Animal Study

**Additional Links**

**Diseases :** [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Autoimmune Diseases : CK\(5523\) : AC\(880\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#)

**Additional Keywords :** [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#)

**Problem Substances :** [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions :** [Neurotoxic : CK\(1116\) : AC\(188\)](#)

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### **Topic: Neurotoxicity**

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### **[There appears to be little difference in the neurotoxicity of MeHg and EthylHg.](#) - GMI Summary**

**Pubmed Data :** Mol Psychiatry. 2002 ;7 Suppl 2:S40-1. PMID: [12142946](#)

**Article Published Date :** Dec 31, 2001

**Authors :** M Aschner, S J Walker

**Study Type :** Review

### Additional Links

**Diseases** : [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Developmental Disorder: Children : CK\(30\) : AC\(3\)](#), [Mercury Poisoning : CK\(172\) : AC\(45\)](#), [Neurotoxicity : CK\(37\) : AC\(15\)](#)

**Additional Keywords** : [Neurotoxicity : CK\(37\) : AC\(15\)](#), [Methylmercury : CK\(2\) : AC\(1\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

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## **[This study investigated the cellular response to thimerosal toxicity including a very profound decrease in intracellular glutathione levels.](#) - GMI Summary**

**Pubmed Data** : Neurotoxicology. 2005 Jan ;26(1):1-8. PMID: [15527868](#)

**Article Published Date** : Dec 31, 2004

**Authors** : S J James, William Slikker, Stepan Melnyk, Elizabeth New, Marta Pogribna, Stefanie Jernigan

**Study Type** : In Vitro Study

### Additional Links

**Diseases** : [Neurotoxicity : CK\(37\) : AC\(15\)](#)

**Additional Keywords** : [Neurotoxicity : CK\(37\) : AC\(15\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Cytotoxicity : CK\(1\) : AC\(1\)](#)

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## **Topic: DNA damage**

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## **[The results of this study suggest that ethylmercury is a mitochondrial toxin in human astrocytes.](#) - GMI Summary**

**Pubmed Data** : J Toxicol. 2012 ;2012:373678. Epub 2012 Jun 28. PMID: [22811707](#)

**Article Published Date** : Dec 31, 2011

**Authors** : Martyn A Sharpe, Andrew D Livingston, David S Baskin

**Study Type** : In Vitro Study

### Additional Links

**Diseases** : [DNA damage : CK\(728\) : AC\(304\)](#), [Excitotoxicity : CK\(57\) : AC\(34\)](#), [Oxidative Stress : CK\(2152\) : AC\(750\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Apoptotic : CK\(8\) : AC\(7\)](#), [Excitotoxic : CK\(10\) : AC\(1\)](#)

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## **Topic: Immune Disorders: Low Immune Function**

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## **[The vaccine adjuvant thimerosal is cytotoxic to T cells.](#) - GMI Summary**

**Pubmed Data** : Genes Immun. 2002 Aug;3(5):270-8. PMID: [12140745](#)

**Article Published Date** : Aug 01, 2002

**Authors** : S Makani, S Gollapudi, L Yel, S Chiplunkar, S Gupta

**Study Type** : In Vitro Study

### Additional Links

**Diseases** : [Immune Disorders: Low Immune Function : CK\(485\) : AC\(116\)](#), [Oxidative Stress : CK\(2152\) : AC\(750\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

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# **Category: Adverse Pharmacological Actions**

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## **Topic: Neurotoxic**

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## **[As thimerosal was removed from childhood vaccines, the number of neurodevelopmental disorders decreased in the US.](#) - GMI Summary**

**Pubmed Data** : Med Sci Monit. 2006 Jun;12(6):CR231-9. Epub 2006 May 29. PMID: [16733480](#)

**Article Published Date** : Jun 01, 2006

**Authors** : David A Geier, Mark R Geier

**Study Type** : Meta Analysis

**Additional Links**

**Diseases** : [Childhood Chemical Exposures](#) : CK(155) : AC(17), [Neurodevelopmental Disorders](#) : CK(149) : AC(13), [Vaccine-induced Toxicity](#) : CK(1242) : AC(180)

**Problem Substances** : [Thimerosal](#) : CK(299) : AC(44)

**Adverse Pharmacological Actions** : [Neurotoxic](#) : CK(1116) : AC(188)

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### **[Exposure to mercury from thimerosal-containing vaccines was associated with an increased risk of neurodevelopmental problems in infants from 1992-1997.](#) - GMI Summary**

**Pubmed Data** : Med Sci Monit. 2005 Apr;11(4):CR160-70. Epub 2005 Mar 24. PMID: [15795695](#)

**Article Published Date** : Apr 01, 2005

**Authors** : David A Geier, Mark R Geier

**Study Type** : Meta Analysis

**Additional Links**

**Diseases** : [Attention Deficit Disorder](#) : CK(397) : AC(12), [Learning disorders](#) : CK(154) : AC(36), [Neurodevelopmental Disorders](#) : CK(149) : AC(13), [Seizures](#) : CK(135) : AC(33), [Speech Disorders](#) : CK(30) : AC(2), [Tic Disorders](#) : CK(60) : AC(3)

**Problem Substances** : [Thimerosal](#) : CK(299) : AC(44)

**Adverse Pharmacological Actions** : [Neurotoxic](#) : CK(1116) : AC(188)

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### **[Rates of autism, speech disorders, mental retardation, infantile spasms, and thinking abnormalities were higher in children exposed to higher thimerosal levels.](#) - GMI Summary**

**Pubmed Data** : J Toxicol Environ Health A. 2006 Aug;69(15):1481-95. PMID: [16766480](#)

**Article Published Date** : Aug 01, 2006

**Authors** : David A Geier, Mark R Geier

**Study Type** : Meta Analysis

**Additional Links**

**Diseases** : [Autism](#) : CK(570) : AC(65), [Cognitive Decline/Dysfunction](#) : CK(579) : AC(95), [Infantile Spasms](#) : CK(50) : AC(4), [Mental Retardation](#) : CK(71) : AC(7), [Neurodevelopmental Disorders](#) : CK(149) : AC(13)

**Problem Substances** : [Thimerosal](#) : CK(299) : AC(44)

**Adverse Pharmacological Actions** : [Neurotoxic](#) : CK(1116) : AC(188)

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### **[Thimersol exposure in infants is associated with an increase risk for tics.](#) - GMI Summary**

**Pubmed Data** : Pediatrics. 2004 Sep;114(3):584-91. PMID: [15342825](#)

**Article Published Date** : Sep 01, 2004

**Authors** : Nick Andrews, Elizabeth Miller, Andrew Grant, Julia Stowe, Velda Osborne, Brent Taylor

**Study Type** : Meta Analysis

**Additional Links**

**Diseases** : [Tic Disorders](#) : CK(60) : AC(3)

**Problem Substances** : [Thimerosal](#) : CK(299) : AC(44)

**Adverse Pharmacological Actions** : [Neurotoxic](#) : CK(1116) : AC(188)

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### **[Thimersol exposure is associated with tics and delayed language acquisition in infants.](#) - GMI Summary**

**Pubmed Data** : Pediatrics. 2003 Nov;112(5):1039-48. PMID: [14595043](#)

**Article Published Date** : Nov 01, 2003

**Authors** : Thomas Verstraeten, Robert L Davis, Frank DeStefano, Tracy A Lieu, Philip H Rhodes, Steven B Black, Henry Shinefield, Robert T Chen,

**Study Type** : Meta Analysis

**Additional Links**

**Diseases** : [Learning disorders](#) : CK(154) : AC(36), [Neurodevelopmental Disorders](#) : CK(149) : AC(13), [Tic Disorders](#) : CK(60) : AC(3)

**Problem Substances** : [Thimerosal](#) : CK(299) : AC(44)

**Adverse Pharmacological Actions :** [Neurotoxic : CK\(1116\) : AC\(188\)](#)

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### **[Mercury levels are 1.9 times higher in subjects diagnosed with autism spectrum disorders.](#) - GMI Summary**

**Pubmed Data :** Acta Neurobiol Exp (Wars). 2010;70(2):177-86. PMID: [20628441](#)

**Article Published Date :** Jan 01, 2010

**Authors :** David A Geier, Tapan Audhya, Janet K Kern, Mark R Geier

**Study Type :** Human Study

**Additional Links**

**Diseases :** [Autism : CK\(570\) : AC\(65\)](#), [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#)

**Problem Substances :** [Mercury : CK\(131\) : AC\(17\)](#), [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions :** [Neurotoxic : CK\(1116\) : AC\(188\)](#)

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### **[A series of case studies demonstrate that thimerosal exposure is a major contributing factor to the pathogenesis of autism spectrum disorders.](#) - GMI Summary**

**Pubmed Data :** J Toxicol Environ Health A. 2007 May 15;70(10):837-51. PMID: [17454560](#)

**Article Published Date :** May 15, 2007

**Authors :** David A Geier, Mark R Geier

**Study Type :** Human: Case Report

**Additional Links**

**Diseases :** [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Mercury Poisoning : CK\(172\) : AC\(45\)](#), [Neurodegenerative Diseases : CK\(2087\) : AC\(447\)](#)

**Problem Substances :** [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions :** [Neurotoxic : CK\(1116\) : AC\(188\)](#)

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### **[Data demonstrates a negative neurodevelopmental impact of perinatal exposure to thimerosal.](#) - GMI Summary**

**Pubmed Data :** Cerebellum. 2012 Jun ;11(2):575-86. PMID: [22015705](#)

**Article Published Date :** May 31, 2012

**Authors :** Z L Sulkowski, T Chen, S Midha, A M Zavacki, Elizabeth M Sajdel-Sulkowska

**Study Type :** Animal Study

**Additional Links**

**Diseases :** [Learning disorders : CK\(154\) : AC\(36\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#), [Oxidative Stress : CK\(2152\) : AC\(750\)](#)

**Additional Keywords :** [Oxidative Stress : CK\(2152\) : AC\(750\)](#)

**Problem Substances :** [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions :** [Neurotoxic : CK\(1116\) : AC\(188\)](#)

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### **[Neonatal exposure to thimerosal-containing vaccines might induce excitotoxic brain injuries, leading to neurodevelopmental disorders. DHEA may protect against mercury-induced neurotoxicity.](#) - GMI Summary**

**Pubmed Data :** Neurochem Res. 2011 Oct 21. Epub 2011 Oct 21. PMID: [22015977](#)

**Article Published Date :** Oct 21, 2011

**Authors :** Michalina Duszczyk-Budhathoki, Mieszko Olczak, Malgorzata Lehner, Maria Dorota Majewska

**Study Type :** Animal Study

**Additional Links**

**Substances :** [DHEA \(Dehydroepiandrosterone\) : CK\(209\) : AC\(34\)](#)

**Diseases :** [Excitotoxicity : CK\(57\) : AC\(34\)](#), [Mercury Poisoning : CK\(172\) : AC\(45\)](#), [Vaccine-induced Toxicity : CK\(1242\) : AC\(180\)](#)

**Pharmacological Actions :** [Neuroprotective Agents : CK\(1050\) : AC\(544\)](#)

**Problem Substances :** [Mercury : CK\(131\) : AC\(17\)](#), [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions :** [Neurotoxic : CK\(1116\) : AC\(188\)](#)

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### **[There are lasting neuropathological changes in rat brain after intermittent neonatal administration of thimerosal.](#) - GMI Summary**

**Pubmed Data** : Folia Neuropathol. 2010 ;48(4):258-69. PMID: [21225508](#)

**Article Published Date** : Jan 01, 2010

**Authors** : Mieszko Olczak, Michalina Duszczak, Paweł Mierzejewski, Teresa Wierzba-Bobrowicz, Maria D Majewska

**Study Type** : Animal Study

**Additional Links**

**Diseases** : [Infant Chemical Exposures : CK\(165\) : AC\(24\)](#), [Neurodegenerative Diseases : CK\(2087\) : AC\(447\)](#), [Vaccine-induced Toxicity : CK\(1242\) : AC\(180\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Neurotoxic : CK\(1116\) : AC\(188\)](#)

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### **[These findings implicate a genetic influence in autistic disorders and provides a model for investigating thimerosal related neurotoxicity.](#) - GMI Summary**

**Pubmed Data** : Mol Psychiatry. 2004 Sep ;9(9):833-45. PMID: [15184908](#)

**Article Published Date** : Aug 31, 2004

**Authors** : M Hornig, D Chian, W I Lipkin

**Study Type** : Animal Study

**Additional Links**

**Diseases** : [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Autoimmune Diseases : CK\(5523\) : AC\(880\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#)

**Additional Keywords** : [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Neurotoxic : CK\(1116\) : AC\(188\)](#)

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### **Topic: Endocrine Disruptor**

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### **[Thimerosal exposure is associated with increasing trends of premature puberty in 278,624 subjects from 1990-1996.](#) - GMI Summary**

**Pubmed Data** : Indian J Med Res. 2010 Apr;131:500-7. PMID: [20424300](#)

**Article Published Date** : Apr 01, 2010

**Authors** : David A Geier, Heather A Young, Mark R Geier

**Study Type** : Meta Analysis

**Additional Links**

**Diseases** : [Sexual Development: Dysfunctions and Abnormalities : CK\(78\) : AC\(10\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Endocrine Disruptor : CK\(482\) : AC\(88\)](#)

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### **Topic: Apoptotic**

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### **[The results of this study suggest that ethylmercury is a mitochondrial toxin in human astrocytes.](#) - GMI Summary**

**Pubmed Data** : J Toxicol. 2012 ;2012:373678. Epub 2012 Jun 28. PMID: [22811707](#)

**Article Published Date** : Dec 31, 2011

**Authors** : Martyn A Sharpe, Andrew D Livingston, David S Baskin

**Study Type** : In Vitro Study

**Additional Links**

**Diseases** : [DNA damage : CK\(728\) : AC\(304\)](#), [Excitotoxicity : CK\(57\) : AC\(34\)](#), [Oxidative Stress : CK\(2152\) : AC\(750\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Apoptotic : CK\(8\) : AC\(7\)](#), [Excitotoxic : CK\(10\) : AC\(1\)](#)

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### **Topic: Cytotoxicity**

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### **[This study investigated the cellular response to thimerosal toxicity including a](#)**

## **very profound decrease in intracellular glutathione levels. - GMI Summary**

**Pubmed Data** : Neurotoxicology. 2005 Jan ;26(1):1-8. PMID: [15527868](#)

**Article Published Date** : Dec 31, 2004

**Authors** : S J James, William Slikker, Stepan Melnyk, Elizabeth New, Marta Pogribna, Stefanie Jernigan

**Study Type** : In Vitro Study

**Additional Links**

**Diseases** : [Neurotoxicity : CK\(37\) : AC\(15\)](#)

**Additional Keywords** : [Neurotoxicity : CK\(37\) : AC\(15\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Cytotoxicity : CK\(1\) : AC\(1\)](#)

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## **Topic: Excitotoxic**

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### **The results of this study suggest that ethylmercury is a mitochondrial toxin in human astrocytes. - GMI Summary**

**Pubmed Data** : J Toxicol. 2012 ;2012:373678. Epub 2012 Jun 28. PMID: [22811707](#)

**Article Published Date** : Dec 31, 2011

**Authors** : Martyn A Sharpe, Andrew D Livingston, David S Baskin

**Study Type** : In Vitro Study

**Additional Links**

**Diseases** : [DNA damage : CK\(728\) : AC\(304\)](#), [Excitotoxicity : CK\(57\) : AC\(34\)](#), [Oxidative Stress : CK\(2152\) : AC\(750\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Apoptotic : CK\(8\) : AC\(7\)](#), [Excitotoxic : CK\(10\) : AC\(1\)](#)

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## **Topic: Hypermethylation**

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### **This study shows that inhibition of methionine synthase(MS) activity by ethanol, lead, mercury, aluminum and thimerosal suggesting that it may be an important target of neurodevelopmental toxins. - GMI Summary**

**Pubmed Data** : Mol Psychiatry. 2004 Apr ;9(4):358-70. PMID: [14745455](#)

**Article Published Date** : Mar 31, 2004

**Authors** : M Waly, H Olteanu, R Banerjee, S-W Choi, J B Mason, B S Parker, S Sukumar, S Shim, A Sharma, J M Benzecry, V-A Power-Charnitsky, R C Deth

**Study Type** : In Vitro Study

**Additional Links**

**Diseases** : [Attention Deficit Disorder : CK\(397\) : AC\(12\)](#), [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#)

**Problem Substances** : [Aluminum : CK\(170\) : AC\(43\)](#), [Ethanol : CK\(22\) : AC\(7\)](#), [Lead : CK\(140\) : AC\(15\)](#), [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Hypermethylation : CK\(11\) : AC\(1\)](#)

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## **Category: Toxic Ingredients**

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### **Topic: Thimerosal**

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#### **As thimerosal was removed from childhood vaccines, the number of neurodevelopmental disorders decreased in the US. - GMI Summary**

**Pubmed Data** : Med Sci Monit. 2006 Jun;12(6):CR231-9. Epub 2006 May 29. PMID: [16733480](#)

**Article Published Date** : Jun 01, 2006

**Authors** : David A Geier, Mark R Geier

**Study Type** : Meta Analysis



### **Additional Links**

**Diseases** : [Childhood Chemical Exposures : CK\(155\) : AC\(17\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#), [Vaccine-induced Toxicity : CK\(1242\) : AC\(180\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Neurotoxic : CK\(1116\) : AC\(188\)](#)

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### **[Exposure to mercury from thimerosal-containing vaccines was associated with an increased risk of neurodevelopmental problems in infants from 1992-1997.](#) - GMI Summary**

**Pubmed Data** : Med Sci Monit. 2005 Apr;11(4):CR160-70. Epub 2005 Mar 24. PMID: [15795695](#)

**Article Published Date** : Apr 01, 2005

**Authors** : David A Geier, Mark R Geier

**Study Type** : Meta Analysis

### **Additional Links**

**Diseases** : [Attention Deficit Disorder : CK\(397\) : AC\(12\)](#), [Learning disorders : CK\(154\) : AC\(36\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#), [Seizures : CK\(135\) : AC\(33\)](#), [Speech Disorders : CK\(30\) : AC\(2\)](#), [Tic Disorders : CK\(60\) : AC\(3\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Neurotoxic : CK\(1116\) : AC\(188\)](#)

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### **[Rates of autism, speech disorders, mental retardation, infantile spasms, and thinking abnormalities were higher in children exposed to higher thimerosal levels.](#) - GMI Summary**

**Pubmed Data** : J Toxicol Environ Health A. 2006 Aug;69(15):1481-95. PMID: [16766480](#)

**Article Published Date** : Aug 01, 2006

**Authors** : David A Geier, Mark R Geier

**Study Type** : Meta Analysis

### **Additional Links**

**Diseases** : [Autism : CK\(570\) : AC\(65\)](#), [Cognitive Decline/Dysfunction : CK\(579\) : AC\(95\)](#), [Infantile Spasms : CK\(50\) : AC\(4\)](#), [Mental Retardation : CK\(71\) : AC\(7\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Neurotoxic : CK\(1116\) : AC\(188\)](#)

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### **[Thimerosal exposure is associated with increasing trends of premature puberty in 278,624 subjects from 1990-1996.](#) - GMI Summary**

**Pubmed Data** : Indian J Med Res. 2010 Apr;131:500-7. PMID: [20424300](#)

**Article Published Date** : Apr 01, 2010

**Authors** : David A Geier, Heather A Young, Mark R Geier

**Study Type** : Meta Analysis

### **Additional Links**

**Diseases** : [Sexual Development: Dysfunctions and Abnormalities : CK\(78\) : AC\(10\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Endocrine Disruptor : CK\(482\) : AC\(88\)](#)

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### **[Thimersol exposure in infants is associated with an increase risk for tics.](#) - GMI Summary**

**Pubmed Data** : Pediatrics. 2004 Sep;114(3):584-91. PMID: [15342825](#)

**Article Published Date** : Sep 01, 2004

**Authors** : Nick Andrews, Elizabeth Miller, Andrew Grant, Julia Stowe, Velda Osborne, Brent Taylor

**Study Type** : Meta Analysis

### **Additional Links**

**Diseases** : [Tic Disorders : CK\(60\) : AC\(3\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Neurotoxic : CK\(1116\) : AC\(188\)](#)

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### **[Thimersol exposure in infants significantly increases neurodevelopment disorders in infants, e.g. autism, autism spectrum disorders, tics, attention](#)**

## **deficit disorder, and emotional disturbances. - GMI Summary**

**Pubmed Data** : J Neurol Sci. 2008 Aug 15;271(1-2):110-8. Epub 2008 May 15. PMID: [18482737](#)

**Article Published Date** : Aug 15, 2008

**Authors** : Heather A Young, David A Geier, Mark R Geier

**Study Type** : Meta Analysis

**Additional Links**

**Diseases** : [Attention Deficit Disorder : CK\(397\) : AC\(12\)](#), [Autism : CK\(570\) : AC\(65\)](#), [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Emotional Disorders : CK\(71\) : AC\(6\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#)

**Problem Substances** : [Mercury : CK\(131\) : AC\(17\)](#), [Thimerosal : CK\(299\) : AC\(44\)](#)

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## **Thimerosal exposure is associated with tics and delayed language acquisition in infants. - GMI Summary**

**Pubmed Data** : Pediatrics. 2003 Nov;112(5):1039-48. PMID: [14595043](#)

**Article Published Date** : Nov 01, 2003

**Authors** : Thomas Verstraeten, Robert L Davis, Frank DeStefano, Tracy A Lieu, Philip H Rhodes, Steven B Black, Henry Shinefield, Robert T Chen,

**Study Type** : Meta Analysis

**Additional Links**

**Diseases** : [Learning disorders : CK\(154\) : AC\(36\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#), [Tic Disorders : CK\(60\) : AC\(3\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Neurotoxic : CK\(1116\) : AC\(188\)](#)

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## **2001: Depending on the immunization schedule, vaccine formulation, and infant weight, cumulative exposure of infants to mercury from thimerosal during the first 6 months of life may exceed EPA guidelines. - GMI Summary**

**Pubmed Data** : Pediatrics. 2001 May;107(5):1147-54. PMID: [11331700](#)

**Article Published Date** : May 01, 2001

**Authors** : L K Ball, R Ball, R D Pratt

**Study Type** : Human Study

**Additional Links**

**Diseases** : [Infant Chemical Exposures : CK\(165\) : AC\(24\)](#), [Mercury Poisoning : CK\(172\) : AC\(45\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

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## **A meta-analysis reveals that thimerosal containing vaccines significantly increase the risk of neurodevelopmental disorders. - GMI Summary**

**Pubmed Data** : Neuro Endocrinol Lett. 2006 Aug;27(4):401-13. PMID: [16807526](#)

**Article Published Date** : Aug 01, 2006

**Authors** : David A Geier, Mark R Geier

**Study Type** : Human Study

**Additional Links**

**Diseases** : [Ataxia: Cerebellar : CK\(67\) : AC\(3\)](#), [Autism : CK\(570\) : AC\(65\)](#), [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Mental Retardation : CK\(71\) : AC\(7\)](#), [Personality Disorder: Borderline : CK\(10\) : AC\(1\)](#), [Speech Disorders : CK\(30\) : AC\(2\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

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## **A subpopulation of eight individuals from four of the families showed thimerosal hypersensitivity. - GMI Summary**

**Pubmed Data** : J Toxicol. 2013 ;2013:801517. Epub 2013 Jun 9. PMID: [23843785](#)

**Article Published Date** : Dec 31, 2012

**Authors** : Martyn A Sharpe, Taylor L Gist, David S Baskin

**Study Type** : Human Study

**Additional Links**

**Diseases** : [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Mitochondrial Dysfunction : CK\(157\) : AC\(57\)](#), [Oxidative Stress : CK\(2152\) : AC\(750\)](#)

**Problem Substances :** [Thimerosal : CK\(299\) : AC\(44\)](#)

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**[Administration of thimerosal-containing vaccines in the United States resulted in a significant number of children developing neurodevelopmental disorders.](#) - GMI Summary**

**Pubmed Data :** Int J Toxicol. 2004 Nov-Dec;23(6):369-76. PMID: [15764492](#)

**Article Published Date :** Nov 01, 2004

**Authors :** David Geier, Mark R Geier

**Study Type :** Human Study

**Additional Links**

**Diseases :** [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#)

**Problem Substances :** [Thimerosal : CK\(299\) : AC\(44\)](#)

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**[Children with autism were twice as likely as non-autistic controls to be born from mothers who had Rh incompatibilities with the developing fetus during pregnancy.](#) - GMI Summary**

**Pubmed Data :** J Matern Fetal Neonatal Med. 2007 May ;20(5):385-90. PMID: [17674242](#)

**Article Published Date :** Apr 30, 2007

**Authors :** David A Geier, Mark R Geier

**Study Type :** Human Study

**Additional Links**

**Diseases :** [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#)

**Additional Keywords :** [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Increased Risk : CK\(104\) : AC\(5\)](#), [Increased Risk : CK\(104\) : AC\(5\)](#)

**Problem Substances :** [Thimerosal : CK\(299\) : AC\(44\)](#)

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**[In this reanalysis data shows that a statistically significant link appears between blood mercury levels and autistic disorder in children.](#) - GMI Summary**

**Pubmed Data :** J Child Neurol. 2007 Nov ;22(11):1308-11. PMID: [18006963](#)

**Article Published Date :** Oct 31, 2007

**Authors :** M Catherine Desoto, Robert T Hitlan

**Study Type :** Human Study

**Additional Links**

**Diseases :** [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#)

**Additional Keywords :** [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#)

**Problem Substances :** [Mercury : CK\(131\) : AC\(17\)](#), [Thimerosal : CK\(299\) : AC\(44\)](#)

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**[Mercury levels are 1.9 times higher in subjects diagnosed with autism spectrum disorders.](#) - GMI Summary**

**Pubmed Data :** Acta Neurobiol Exp (Wars). 2010;70(2):177-86. PMID: [20628441](#)

**Article Published Date :** Jan 01, 2010

**Authors :** David A Geier, Tapan Audhya, Janet K Kern, Mark R Geier

**Study Type :** Human Study

**Additional Links**

**Diseases :** [Autism : CK\(570\) : AC\(65\)](#), [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#)

**Problem Substances :** [Mercury : CK\(131\) : AC\(17\)](#), [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions :** [Neurotoxic : CK\(1116\) : AC\(188\)](#)

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**[Mothers receiving thimerosal via Rho\(D\) immune globulin injection saw a significantly higher rate of autism in the children exposed to mercury in utero.](#) - GMI Summary**

**Pubmed Data :** Neuro Endocrinol Lett. 2008 Apr ;29(2):272-80. PMID: [18404135](#)

**Article Published Date :** Mar 31, 2008

**Authors :** David A Geier, Elizabeth Mumper, Bambi Gladfelter, Lisa Coleman, Mark R Geier

**Study Type** : Human Study

**Additional Links**

**Diseases** : [Attention Deficit Disorder with Hyperactivity : CK\(283\) : AC\(31\)](#), [Developmental Disorder: Children : CK\(30\) : AC\(3\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#)

**Additional Keywords** : [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

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**[There is an association between neurodevelopmental disorders and thimerosal-containing vaccines.](#) - GMI Summary**

**Pubmed Data** : Exp Biol Med (Maywood). 2003 Jun;228(6):660-4. PMID: [12773696](#)

**Article Published Date** : Jun 01, 2003

**Authors** : Mark R Geier, David A Geier

**Study Type** : Human Study

**Additional Links**

**Diseases** : [Autism : CK\(570\) : AC\(65\)](#), [Mental Retardation : CK\(71\) : AC\(7\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

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**[There is evidence supporting an association between increasing organic-Hg exposure from Thimerosal-containing childhood vaccines and the subsequent risk of an ASD.](#) - GMI Summary**

**Pubmed Data** : Transl Neurodegener. 2013 ;2(1):25. Epub 2013 Dec 19. PMID: [24354891](#)

**Article Published Date** : Dec 31, 2012

**Authors** : David A Geier, Brian S Hooker, Janet K Kern, Paul G King, Lisa K Sykes, Mark R Geier

**Study Type** : Human Study

**Additional Links**

**Diseases** : [Autism : CK\(570\) : AC\(65\)](#), [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Mercury Poisoning : CK\(172\) : AC\(45\)](#), [Vaccine-induced Toxicity : CK\(1242\) : AC\(180\)](#)

**Anti Therapeutic Actions** : [Vaccination: All : CK\(4715\) : AC\(363\)](#)

**Problem Substances** : [Mercury : CK\(131\) : AC\(17\)](#), [Thimerosal : CK\(299\) : AC\(44\)](#)

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**[Thimerosal containing vaccines may cause atopy in children.](#) - GMI Summary**

**Pubmed Data** : Contact Dermatitis. 1999 Feb;40(2):94-7. PMID: [10048654](#)

**Article Published Date** : Feb 01, 1999

**Authors** : A Patrizi, L Rizzoli, C Vincenzi, P Trevisi, A Tosti

**Study Type** : Human Study

**Additional Links**

**Diseases** : [Atopic Dermatitis : CK\(719\) : AC\(84\)](#), [Atopic Disease : CK\(91\) : AC\(9\)](#), [Atopic Hypersensitivity : CK\(10\) : AC\(1\)](#), [Vaccine-induced Toxicity : CK\(1242\) : AC\(180\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

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**[This study shows that autistic children had significantly reduced excretion levels of mercury via hair than the control group.](#) - GMI Summary**

**Pubmed Data** : Int J Toxicol. 2003 Jul-Aug;22(4):277-85. PMID: [12933322](#)

**Article Published Date** : Jun 30, 2003

**Authors** : Amy S Holmes, Mark F Blaxill, Boyd E Haley

**Study Type** : Human Study

**Additional Links**

**Diseases** : [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Detoxification: Impaired : CK\(1\) : AC\(1\)](#)

**Additional Keywords** : [Detoxification: Impaired : CK\(1\) : AC\(1\)](#), [Methylmercury : CK\(2\) : AC\(1\)](#)

**Problem Substances** : [Mercury : CK\(131\) : AC\(17\)](#), [Thimerosal : CK\(299\) : AC\(44\)](#)

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**[Findings suggest that the epidemiological link between environmental mercury exposure and an increased risk of developing autism may be mediated through mitochondrial dysfunction.](#) - GMI Summary**

**Pubmed Data** : J Toxicol. 2015 ;2015:573701. Epub 2015 Jan 21. PMID: [25688267](#)

**Article Published Date** : Dec 31, 2014

**Authors** : Shannon Rose, Rebecca Wynne, Richard E Frye, Stepan Melnyk, S Jill James

**Study Type** : Human In Vitro

**Additional Links**

**Diseases** : [Mitochondrial Dysfunction : CK\(157\) : AC\(57\)](#), [Oxidative Stress : CK\(2152\) : AC\(750\)](#)

**Additional Keywords** : [Oxidative Stress : CK\(2152\) : AC\(750\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

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### **[A series of case studies demonstrate that thimerosal exposure is a major contributing factor to the pathogenesis of autism spectrum disorders.](#) - GMI Summary**

**Pubmed Data** : J Toxicol Environ Health A. 2007 May 15;70(10):837-51. PMID: [17454560](#)

**Article Published Date** : May 15, 2007

**Authors** : David A Geier, Mark R Geier

**Study Type** : Human: Case Report

**Additional Links**

**Diseases** : [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Mercury Poisoning : CK\(172\) : AC\(45\)](#), [Neurodegenerative Diseases : CK\(2087\) : AC\(447\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Neurotoxic : CK\(1116\) : AC\(188\)](#)

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### **[Data demonstrates a negative neurodevelopmental impact of perinatal exposure to thimerosal.](#) - GMI Summary**

**Pubmed Data** : Cerebellum. 2012 Jun ;11(2):575-86. PMID: [22015705](#)

**Article Published Date** : May 31, 2012

**Authors** : Z L Sulkowski, T Chen, S Midha, A M Zavacki, Elizabeth M Sajdel-Sulkowska

**Study Type** : Animal Study

**Additional Links**

**Diseases** : [Learning disorders : CK\(154\) : AC\(36\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#), [Oxidative Stress : CK\(2152\) : AC\(750\)](#)

**Additional Keywords** : [Oxidative Stress : CK\(2152\) : AC\(750\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Neurotoxic : CK\(1116\) : AC\(188\)](#)

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### **[Infant macaques retained significantly higher levels of elemental mercury in their brain tissue when exposed to thimerosal in infant vaccines versus methylmercury.](#) - GMI Summary**

**Pubmed Data** : Environ Health Perspect. 2005 Aug ;113(8):1015-21. PMID: [16079072](#)

**Article Published Date** : Jul 31, 2005

**Authors** : Thomas M Burbacher, Danny D Shen, Noelle Liberato, Kimberly S Grant, Elsa Cernichiari, Thomas Clarkson

**Study Type** : Animal Study

**Additional Links**

**Additional Keywords** : , , [Methylmercury : CK\(2\) : AC\(1\)](#)

**Problem Substances** : [Mercury : CK\(131\) : AC\(17\)](#), [Thimerosal : CK\(299\) : AC\(44\)](#)

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### **[Maturation changes in amygdala volume and the binding capacity of an opioid antagonist in the amygdala was significantly altered in infant macaques receiving the vaccine schedule.](#) - GMI Summary**

**Pubmed Data** : Acta Neurobiol Exp (Wars). 2010 ;70(2):147-64. PMID: [20628439](#)

**Article Published Date** : Dec 31, 2009

**Authors** : Laura Hewitson, Brian J Lopresti, Carol Stott, N Scott Mason, Jaime Tomko

**Study Type** : Animal Study

**Additional Links**

**Diseases** : [Amygdala: Damage/Abnormalities : CK\(12\) : AC\(1\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#), [Vaccine-induced Toxicity : CK\(1242\) : AC\(180\)](#)

**Anti Therapeutic Actions** : [Vaccination: All : CK\(4715\) : AC\(363\)](#), [Vaccination: Animal Model : CK\(41\) : AC\(17\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

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**[Neonatal administration of a vaccine preservative, thimerosal, produces lasting impairment of nociception and apparent activation of opioid system in rats. - GMI Summary](#)**

**Pubmed Data** : Brain Res. 2009 Dec 8;1301:143-51. Epub 2009 Sep 9. PMID: [19747466](#)

**Article Published Date** : Dec 08, 2009

**Authors** : Mieszko Olczak, Michalina Duszczuk, Pawel Mierzejewski, Maria Dorota Majewska

**Study Type** : Animal Study

**Additional Links**

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

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**[Neonatal exposure to thimerosal-containing vaccines might induce excitotoxic brain injuries, leading to neurodevelopmental disorders. DHEA may protect against mercury-induced neurotoxicity. - GMI Summary](#)**

**Pubmed Data** : Neurochem Res. 2011 Oct 21. Epub 2011 Oct 21. PMID: [22015977](#)

**Article Published Date** : Oct 21, 2011

**Authors** : Michalina Duszczuk-Budhathoki, Mieszko Olczak, Malgorzata Lehner, Maria Dorota Majewska

**Study Type** : Animal Study

**Additional Links**

**Substances** : [DHEA \(Dehydroepiandrosterone\) : CK\(209\) : AC\(34\)](#)

**Diseases** : [Excitotoxicity : CK\(57\) : AC\(34\)](#), [Mercury Poisoning : CK\(172\) : AC\(45\)](#), [Vaccine-induced Toxicity : CK\(1242\) : AC\(180\)](#)

**Pharmacological Actions** : [Neuroprotective Agents : CK\(1050\) : AC\(544\)](#)

**Problem Substances** : [Mercury : CK\(131\) : AC\(17\)](#), [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Neurotoxic : CK\(1116\) : AC\(188\)](#)

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**[There are lasting neuropathological changes in rat brain after intermittent neonatal administration of thimerosal. - GMI Summary](#)**

**Pubmed Data** : Folia Neuropathol. 2010 ;48(4):258-69. PMID: [21225508](#)

**Article Published Date** : Jan 01, 2010

**Authors** : Mieszko Olczak, Michalina Duszczuk, Paweł Mierzejewski, Teresa Wierzba-Bobrowicz, Maria D Majewska

**Study Type** : Animal Study

**Additional Links**

**Diseases** : [Infant Chemical Exposures : CK\(165\) : AC\(24\)](#), [Neurodegenerative Diseases : CK\(2087\) : AC\(447\)](#), [Vaccine-induced Toxicity : CK\(1242\) : AC\(180\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Neurotoxic : CK\(1116\) : AC\(188\)](#)

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**[These findings implicate a genetic influence in autistic disorders and provides a model for investigating thimerosal related neurotoxicity. - GMI Summary](#)**

**Pubmed Data** : Mol Psychiatry. 2004 Sep ;9(9):833-45. PMID: [15184908](#)

**Article Published Date** : Aug 31, 2004

**Authors** : M Hornig, D Chian, W I Lipkin

**Study Type** : Animal Study

**Additional Links**

**Diseases** : [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Autoimmune Diseases : CK\(5523\) : AC\(880\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#)

**Additional Keywords** : [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Neurotoxic : CK\(1116\) : AC\(188\)](#)

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**[This study proposes the novel hypothesis that abnormalities involving the zinc-metalloprotease-BDNF axis may play a pivotal role in hyperconnectivity and](#)**

## **[megalocephaly observed in ASD.](#) - GMI Summary**

**Pubmed Data** : Mol Brain. 2014 ;7:64. Epub 2014 Sep 3. PMID: [25182223](#)

**Article Published Date** : Dec 31, 2013

**Authors** : Jae-Young Koh, Joon Seo Lim, Hyaee-Ran Byun, Min-Heui Yoo

**Study Type** : Animal Study

**Additional Links**

**Diseases** : [Autism Spectrum Disorders](#) : CK(1286) : AC(112)

**Problem Substances** : [Thimerosal](#) : CK(299) : AC(44)

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## **[A comprehensive analysis is included on the comorbidities of autism and their corresponding analogs due to mercury exposure.](#) - GMI Summary**

**Pubmed Data** : Med Hypotheses. 2001 Apr ;56(4):462-71. PMID: [11339848](#)

**Article Published Date** : Mar 31, 2001

**Authors** : S Bernard, A Enayati, L Redwood, H Roger, T Binstock

**Study Type** : Review

**Additional Links**

**Diseases** : [Autism Spectrum Disorders](#) : CK(1286) : AC(112), [Mercury Poisoning](#) : CK(172) : AC(45)

**Additional Keywords** : [Mercury Poisoning](#) : CK(172) : AC(45), [Mercury Poisoning](#) : CK(172) : AC(45), [Methylmercury](#) : CK(2) : AC(1)

**Problem Substances** : [Mercury](#) : CK(131) : AC(17), [Thimerosal](#) : CK(299) : AC(44)

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## **[A review of medical literature has shown that exposure to organic or inorganic mercury can give rise to the symptoms and traits defining or commonly found in ASD individuals.](#) - GMI Summary**

**Pubmed Data** : Mol Psychiatry. 2002 ;7 Suppl 2:S42-3. PMID: [12142947](#)

**Article Published Date** : Dec 31, 2001

**Authors** : S Bernard, A Enayati, H Roger, T Binstock, L Redwood

**Study Type** : Review

**Additional Links**

**Diseases** : [Attention Deficit Disorder with Hyperactivity](#) : CK(283) : AC(31), [Autism Spectrum Disorders](#) : CK(1286) : AC(112)

**Additional Keywords** : [Autism Spectrum Disorders](#) : CK(1286) : AC(112), [Autism Spectrum Disorders](#) : CK(1286) : AC(112), [Methylmercury](#) : CK(2) : AC(1)

**Problem Substances** : [Mercury](#) : CK(131) : AC(17), [Thimerosal](#) : CK(299) : AC(44)

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## **[Compounds commonly used as preservatives in US licensed vaccine/biological preparations exhibit significant toxicity and may not comply with the US Code of Federal Regulations for preservatives.](#) - GMI Summary**

**Pubmed Data** : Med Sci Monit. 2010 Apr 28;16(5):SR21-7. PMID: [20424565](#)

**Article Published Date** : Apr 28, 2010

**Authors** : David A Geier, Sarah K Jordan, Mark R Geier

**Study Type** : In Vitro Study

**Additional Links**

**Diseases** : [Vaccine-induced Toxicity](#) : CK(1242) : AC(180)

**Problem Substances** : [2-phenoxyethanol](#) : CK(2) : AC(2), [Adjuvant](#) : CK(18) : AC(6), [Benzethonium chloride](#) : CK(2) : AC(2), [Phenol](#) : CK(2) : AC(2), [Thimerosal](#) : CK(299) : AC(44)

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## **[Culmination of the research that examines the effects of thimerosal in humans indicates that it is a poison at minute levels with a plethora of deleterious consequences.](#) - GMI Summary**

**Pubmed Data** : Clin Chim Acta. 2015 Apr 15 ;444:212-220. Epub 2015 Feb 21. PMID: [25708367](#)

**Article Published Date** : Apr 14, 2015

**Authors** : David A Geier, Paul G King, Brian S Hooker, José G Dórea, Janet K Kern, Lisa K Sykes, Mark R Geier

**Study Type** : Review

**Additional Links**

**Diseases** : [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#), [Tic Disorders : CK\(60\) : AC\(3\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

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### **[High susceptibility of neural stem cells to methylmercury toxicity: effects on cell survival and neuronal differentiation.](#) - GMI Summary**

**Pubmed Data** : J Neurochem. 2006 Apr ;97(1):69-78. Epub 2006 Mar 8. PMID: [16524380](#)

**Article Published Date** : Mar 31, 2006

**Authors** : Christoffer Tamm, Joshua Duckworth, Ola Hermanson, Sandra Ceccatelli

**Study Type** : In Vitro Study

**Additional Links**

**Diseases** : [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#)

**Pharmacological Actions** : [Antiproliferative : CK\(1274\) : AC\(831\)](#), [Apoptotic : CK\(1758\) : AC\(1221\)](#)

**Additional Keywords** : [Apoptotic : CK\(1758\) : AC\(1221\)](#), [Vaccine Adjuvant : CK\(17\) : AC\(6\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

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### **[Review: Thimerosal use represents a medical crisis.](#) - GMI Summary**

**Pubmed Data** : J Toxicol Environ Health B Crit Rev. 2007 Dec;10(8):575-96. PMID: [18049924](#)

**Article Published Date** : Dec 01, 2007

**Authors** : David A Geier, Lisa K Sykes, Mark R Geier

**Study Type** : Review

**Additional Links**

**Diseases** : [Mercury Poisoning : CK\(172\) : AC\(45\)](#), [Vaccine-induced Toxicity : CK\(1242\) : AC\(180\)](#)

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

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### **[Scientific research does not support rejecting the link between the neurodevelopmental disorder of autism and toxic exposures.](#) - GMI Summary**

**Pubmed Data** : Acta Neurobiol Exp (Wars). 2010 ;70(2):165-76. PMID: [20628440](#)

**Article Published Date** : Dec 31, 2009

**Authors** : Mary Catherine Desoto, Robert T Hitlan

**Study Type** : Commentary

**Additional Links**

**Diseases** : [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#)

**Problem Substances** : [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Mercury : CK\(131\) : AC\(17\)](#), [Thimerosal : CK\(299\) : AC\(44\)](#)

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### **[The CDC's current stance that Thimerosal is safe and that there is no relationship to autism was based on six flawed studies coauthored and sponsored by the CDC.](#) - GMI Summary**

**Pubmed Data** : Biomed Res Int. 2014 ;2014:247218. Epub 2014 Jun 4. PMID: [24995277](#)

**Article Published Date** : Dec 31, 2013

**Authors** : Brian Hooker, Janet Kern, David Geier, Boyd Haley, Lisa Sykes, Paul King, Mark Geier

**Study Type** : Review

**Additional Links**

**Additional Keywords** :

**Problem Substances** : [Thimerosal : CK\(299\) : AC\(44\)](#)

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### **[The results of this study suggest that ethylmercury is a mitochondrial toxin in human astrocytes.](#) - GMI Summary**

**Pubmed Data** : J Toxicol. 2012 ;2012:373678. Epub 2012 Jun 28. PMID: [22811707](#)

**Article Published Date** : Dec 31, 2011

**Authors** : Martyn A Sharpe, Andrew D Livingston, David S Baskin

**Study Type** : In Vitro Study

**Additional Links**

**Diseases** : [DNA damage : CK\(728\) : AC\(304\)](#), [Excitotoxicity : CK\(57\) : AC\(34\)](#), [Oxidative Stress : CK\(2152\)](#)



: [AC\(750\)](#)

**Problem Substances** : [Thimerosal](#) : [CK\(299\)](#) : [AC\(44\)](#)

**Adverse Pharmacological Actions** : [Apoptotic](#) : [CK\(8\)](#) : [AC\(7\)](#), [Excitotoxic](#) : [CK\(10\)](#) : [AC\(1\)](#)

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### **[The vaccine adjuvant thimerosal is cytotoxic to neuronal cells.](#) - GMI Summary**

**Pubmed Data** : Int J Mol Med. 2005 Dec;16(6):971-7. PMID: [16273274](#)

**Article Published Date** : Dec 01, 2005

**Authors** : Leman Yel, Lorrel E Brown, Kevin Su, Sastry Gollapudi, Sudhir Gupta

**Study Type** : In Vitro Study

**Additional Links**

**Diseases** : [Autism](#) : [CK\(570\)](#) : [AC\(65\)](#)

**Problem Substances** : [Thimerosal](#) : [CK\(299\)](#) : [AC\(44\)](#)

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### **[The vaccine adjuvant thimerosal is cytotoxic to T cells.](#) - GMI Summary**

**Pubmed Data** : Genes Immun. 2002 Aug;3(5):270-8. PMID: [12140745](#)

**Article Published Date** : Aug 01, 2002

**Authors** : S Makani, S Gollapudi, L Yel, S Chiplunkar, S Gupta

**Study Type** : In Vitro Study

**Additional Links**

**Diseases** : [Immune Disorders: Low Immune Function](#) : [CK\(485\)](#) : [AC\(116\)](#), [Oxidative Stress](#) : [CK\(2152\)](#) : [AC\(750\)](#)

**Problem Substances** : [Thimerosal](#) : [CK\(299\)](#) : [AC\(44\)](#)

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### **[There appears to be little difference in the neurotoxicity of MeHg and EthylHg.](#) - GMI Summary**

**Pubmed Data** : Mol Psychiatry. 2002 ;7 Suppl 2:S40-1. PMID: [12142946](#)

**Article Published Date** : Dec 31, 2001

**Authors** : M Aschner, S J Walker

**Study Type** : Review

**Additional Links**

**Diseases** : [Autism Spectrum Disorders](#) : [CK\(1286\)](#) : [AC\(112\)](#), [Developmental Disorder: Children](#) : [CK\(30\)](#) : [AC\(3\)](#), [Mercury Poisoning](#) : [CK\(172\)](#) : [AC\(45\)](#), [Neurotoxicity](#) : [CK\(37\)](#) : [AC\(15\)](#)

**Additional Keywords** : [Neurotoxicity](#) : [CK\(37\)](#) : [AC\(15\)](#), [Methylmercury](#) : [CK\(2\)](#) : [AC\(1\)](#)

**Problem Substances** : [Thimerosal](#) : [CK\(299\)](#) : [AC\(44\)](#)

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### **[There is a biological basis for mercury-induced autism spectrum disorders and the sexual dimorphism associated with disease prevalence.](#) - GMI Summary**

**Pubmed Data** : Acta Neurobiol Exp (Wars). 2010;70(2):209-26. PMID: [20628444](#)

**Article Published Date** : Jan 01, 2010

**Authors** : David A Geier, Janet K Kern, Mark R Geier

**Study Type** : Review

**Additional Links**

**Diseases** : [Autism](#) : [CK\(570\)](#) : [AC\(65\)](#), [Autism Spectrum Disorders](#) : [CK\(1286\)](#) : [AC\(112\)](#)

**Problem Substances** : [Thimerosal](#) : [CK\(299\)](#) : [AC\(44\)](#)

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### **[This study investigated the cellular response to thimerosal toxicity including a very profound decrease in intracellular glutathione levels.](#) - GMI Summary**

**Pubmed Data** : Neurotoxicology. 2005 Jan ;26(1):1-8. PMID: [15527868](#)

**Article Published Date** : Dec 31, 2004

**Authors** : S J James, William Slikker, Stepan Melnyk, Elizabeth New, Marta Pogribna, Stefanie Jernigan

**Study Type** : In Vitro Study

**Additional Links**

**Diseases** : [Neurotoxicity](#) : [CK\(37\)](#) : [AC\(15\)](#)

**Additional Keywords** : [Neurotoxicity](#) : [CK\(37\)](#) : [AC\(15\)](#)

**Problem Substances** : [Thimerosal](#) : [CK\(299\)](#) : [AC\(44\)](#)

**Adverse Pharmacological Actions** : [Cytotoxicity](#) : [CK\(1\)](#) : [AC\(1\)](#)

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**[This study shows that inhibition of methionine synthase\(MS\) activity by ethanol, lead, mercury, aluminum and thimerosal suggesting that it may be an important target of neurodevelopmental toxins. - GMI Summary](#)**

**Pubmed Data** : Mol Psychiatry. 2004 Apr ;9(4):358-70. PMID: [14745455](#)

**Article Published Date** : Mar 31, 2004

**Authors** : M Waly, H Olteanu, R Banerjee, S-W Choi, J B Mason, B S Parker, S Sukumar, S Shim, A Sharma, J M Benzecry, V-A Power-Charnitsky, R C Deth

**Study Type** : In Vitro Study

**Additional Links**

**Diseases** : [Attention Deficit Disorder : CK\(397\) : AC\(12\)](#), [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#)

**Problem Substances** : [Aluminum : CK\(170\) : AC\(43\)](#), [Ethanol : CK\(22\) : AC\(7\)](#), [Lead : CK\(140\) : AC\(15\)](#), [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Hypermethylation : CK\(11\) : AC\(1\)](#)

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## **Topic: Mercury**

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**[Thimersol exposure in infants significantly increases neurodevelopment disorders in infants, e.g. autism, autism spectrum disorders, tics, attention deficit disorder, and emotional disturbances. - GMI Summary](#)**

**Pubmed Data** : J Neurol Sci. 2008 Aug 15;271(1-2):110-8. Epub 2008 May 15. PMID: [18482737](#)

**Article Published Date** : Aug 15, 2008

**Authors** : Heather A Young, David A Geier, Mark R Geier

**Study Type** : Meta Analysis

**Additional Links**

**Diseases** : [Attention Deficit Disorder : CK\(397\) : AC\(12\)](#), [Autism : CK\(570\) : AC\(65\)](#), [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Emotional Disorders : CK\(71\) : AC\(6\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#)

**Problem Substances** : [Mercury : CK\(131\) : AC\(17\)](#), [Thimerosal : CK\(299\) : AC\(44\)](#)

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**[In this reanalysis data shows that a statistically significant link appears between blood mercury levels and autistic disorder in children. - GMI Summary](#)**

**Pubmed Data** : J Child Neurol. 2007 Nov ;22(11):1308-11. PMID: [18006963](#)

**Article Published Date** : Oct 31, 2007

**Authors** : M Catherine Desoto, Robert T Hitlan

**Study Type** : Human Study

**Additional Links**

**Diseases** : [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#)

**Additional Keywords** : [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#)

**Problem Substances** : [Mercury : CK\(131\) : AC\(17\)](#), [Thimerosal : CK\(299\) : AC\(44\)](#)

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**[Mercury levels are 1.9 times higher in subjects diagnosed with autism spectrum disorders. - GMI Summary](#)**

**Pubmed Data** : Acta Neurobiol Exp (Wars). 2010;70(2):177-86. PMID: [20628441](#)

**Article Published Date** : Jan 01, 2010

**Authors** : David A Geier, Tapan Audhya, Janet K Kern, Mark R Geier

**Study Type** : Human Study

**Additional Links**

**Diseases** : [Autism : CK\(570\) : AC\(65\)](#), [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#)

**Problem Substances** : [Mercury : CK\(131\) : AC\(17\)](#), [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Neurotoxic : CK\(1116\) : AC\(188\)](#)

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**[There is evidence supporting an association between increasing organic-Hg exposure from Thimerosal-containing childhood vaccines and the subsequent](#)**

## **[risk of an ASD. - GMI Summary](#)**

**Pubmed Data** : Transl Neurodegener. 2013 ;2(1):25. Epub 2013 Dec 19. PMID: [24354891](#)

**Article Published Date** : Dec 31, 2012

**Authors** : David A Geier, Brian S Hooker, Janet K Kern, Paul G King, Lisa K Sykes, Mark R Geier

**Study Type** : Human Study

**Additional Links**

**Diseases** : [Autism : CK\(570\) : AC\(65\)](#), [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Mercury Poisoning : CK\(172\) : AC\(45\)](#), [Vaccine-induced Toxicity : CK\(1242\) : AC\(180\)](#)

**Anti Therapeutic Actions** : [Vaccination: All : CK\(4715\) : AC\(363\)](#)

**Problem Substances** : [Mercury : CK\(131\) : AC\(17\)](#), [Thimerosal : CK\(299\) : AC\(44\)](#)

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## **[This study shows that autistic children had significantly reduced excretion levels of mercury via hair than the control group. - GMI Summary](#)**

**Pubmed Data** : Int J Toxicol. 2003 Jul-Aug;22(4):277-85. PMID: [12933322](#)

**Article Published Date** : Jun 30, 2003

**Authors** : Amy S Holmes, Mark F Blaxill, Boyd E Haley

**Study Type** : Human Study

**Additional Links**

**Diseases** : [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Detoxification: Impaired : CK\(1\) : AC\(1\)](#)

**Additional Keywords** : [Detoxification: Impaired : CK\(1\) : AC\(1\)](#), [Methylmercury : CK\(2\) : AC\(1\)](#)

**Problem Substances** : [Mercury : CK\(131\) : AC\(17\)](#), [Thimerosal : CK\(299\) : AC\(44\)](#)

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## **[Infant macaques retained significantly higher levels of elemental mercury in their brain tissue when exposed to thimerosal in infant vaccines versus methylmercury. - GMI Summary](#)**

**Pubmed Data** : Environ Health Perspect. 2005 Aug ;113(8):1015-21. PMID: [16079072](#)

**Article Published Date** : Jul 31, 2005

**Authors** : Thomas M Burbacher, Danny D Shen, Noelle Liberato, Kimberly S Grant, Elsa Cernichiari, Thomas Clarkson

**Study Type** : Animal Study

**Additional Links**

**Additional Keywords** : , , [Methylmercury : CK\(2\) : AC\(1\)](#)

**Problem Substances** : [Mercury : CK\(131\) : AC\(17\)](#), [Thimerosal : CK\(299\) : AC\(44\)](#)

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## **[Neonatal exposure to thimerosal-containing vaccines might induce excitotoxic brain injuries, leading to neurodevelopmental disorders. DHEA may protect against mercury-induced neurotoxicity. - GMI Summary](#)**

**Pubmed Data** : Neurochem Res. 2011 Oct 21. Epub 2011 Oct 21. PMID: [22015977](#)

**Article Published Date** : Oct 21, 2011

**Authors** : Michalina Duszczyc-Budhathoki, Mieszko Olczak, Malgorzata Lehner, Maria Dorota Majewska

**Study Type** : Animal Study

**Additional Links**

**Substances** : [DHEA \(Dehydroepiandrosterone\) : CK\(209\) : AC\(34\)](#)

**Diseases** : [Excitotoxicity : CK\(57\) : AC\(34\)](#), [Mercury Poisoning : CK\(172\) : AC\(45\)](#), [Vaccine-induced Toxicity : CK\(1242\) : AC\(180\)](#)

**Pharmacological Actions** : [Neuroprotective Agents : CK\(1050\) : AC\(544\)](#)

**Problem Substances** : [Mercury : CK\(131\) : AC\(17\)](#), [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Neurotoxic : CK\(1116\) : AC\(188\)](#)

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## **[A comprehensive analysis is included on the comorbidities of autism and their corresponding analogs due to mercury exposure. - GMI Summary](#)**

**Pubmed Data** : Med Hypotheses. 2001 Apr ;56(4):462-71. PMID: [11339848](#)

**Article Published Date** : Mar 31, 2001

**Authors** : S Bernard, A Enayati, L Redwood, H Roger, T Binstock

**Study Type** : Review

**Additional Links**

**Diseases** : [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Mercury Poisoning : CK\(172\) : AC\(45\)](#)  
**Additional Keywords** : [Mercury Poisoning : CK\(172\) : AC\(45\)](#), [Mercury Poisoning : CK\(172\) : AC\(45\)](#),  
[Methylmercury : CK\(2\) : AC\(1\)](#)  
**Problem Substances** : [Mercury : CK\(131\) : AC\(17\)](#), [Thimerosal : CK\(299\) : AC\(44\)](#)

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**[A review of medical literature has shown that exposure to organic or inorganic mercury can give rise to the symptoms and traits defining or commonly found in ASD individuals. - GMI Summary](#)**

**Pubmed Data** : Mol Psychiatry. 2002 ;7 Suppl 2:S42-3. PMID: [12142947](#)

**Article Published Date** : Dec 31, 2001

**Authors** : S Bernard, A Enayati, H Roger, T Binstock, L Redwood

**Study Type** : Review

**Additional Links**

**Diseases** : [Attention Deficit Disorder with Hyperactivity : CK\(283\) : AC\(31\)](#), [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#)

**Additional Keywords** : [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Methylmercury : CK\(2\) : AC\(1\)](#)

**Problem Substances** : [Mercury : CK\(131\) : AC\(17\)](#), [Thimerosal : CK\(299\) : AC\(44\)](#)

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**[Scientific research does not support rejecting the link between the neurodevelopmental disorder of autism and toxic exposures. - GMI Summary](#)**

**Pubmed Data** : Acta Neurobiol Exp (Wars). 2010 ;70(2):165-76. PMID: [20628440](#)

**Article Published Date** : Dec 31, 2009

**Authors** : Mary Catherine Desoto, Robert T Hitlan

**Study Type** : Commentary

**Additional Links**

**Diseases** : [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#)

**Problem Substances** : [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Mercury : CK\(131\) : AC\(17\)](#),  
[Thimerosal : CK\(299\) : AC\(44\)](#)

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**Topic: [2-phenoxyethanol](#)**

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**[Compounds commonly used as preservatives in US licensed vaccine/biological preparations exhibit significant toxicity and may not comply with the US Code of Federal Regulations for preservatives. - GMI Summary](#)**

**Pubmed Data** : Med Sci Monit. 2010 Apr 28;16(5):SR21-7. PMID: [20424565](#)

**Article Published Date** : Apr 28, 2010

**Authors** : David A Geier, Sarah K Jordan, Mark R Geier

**Study Type** : In Vitro Study

**Additional Links**

**Diseases** : [Vaccine-induced Toxicity : CK\(1242\) : AC\(180\)](#)

**Problem Substances** : [2-phenoxyethanol : CK\(2\) : AC\(2\)](#), [Adjuvant : CK\(18\) : AC\(6\)](#), [Benzethonium chloride : CK\(2\) : AC\(2\)](#), [Phenol : CK\(2\) : AC\(2\)](#), [Thimerosal : CK\(299\) : AC\(44\)](#)

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**Topic: [Adjuvant](#)**

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**[Compounds commonly used as preservatives in US licensed vaccine/biological preparations exhibit significant toxicity and may not comply with the US Code of Federal Regulations for preservatives. - GMI Summary](#)**

**Pubmed Data** : Med Sci Monit. 2010 Apr 28;16(5):SR21-7. PMID: [20424565](#)

**Article Published Date** : Apr 28, 2010

**Authors** : David A Geier, Sarah K Jordan, Mark R Geier

**Study Type** : In Vitro Study

**Additional Links**

**Diseases** : [Vaccine-induced Toxicity : CK\(1242\) : AC\(180\)](#)

**Problem Substances** : [2-phenoxyethanol : CK\(2\) : AC\(2\)](#), [Adjuvant : CK\(18\) : AC\(6\)](#), [Benzethonium chloride : CK\(2\) : AC\(2\)](#), [Phenol : CK\(2\) : AC\(2\)](#), [Thimerosal : CK\(299\) : AC\(44\)](#)

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## Topic: [Aluminum](#)

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**[This study shows that inhibition of methionine synthase\(MS\) activity by ethanol, lead, mercury, aluminum and thimerosal suggesting that it may be an important target of neurodevelopmental toxins. - GMI Summary](#)**

**Pubmed Data** : Mol Psychiatry. 2004 Apr ;9(4):358-70. PMID: [14745455](#)

**Article Published Date** : Mar 31, 2004

**Authors** : M Waly, H Olteanu, R Banerjee, S-W Choi, J B Mason, B S Parker, S Sukumar, S Shim, A Sharma, J M Benzecry, V-A Power-Charnitsky, R C Deth

**Study Type** : In Vitro Study

**Additional Links**

**Diseases** : [Attention Deficit Disorder : CK\(397\) : AC\(12\)](#), [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#)

**Problem Substances** : [Aluminum : CK\(170\) : AC\(43\)](#), [Ethanol : CK\(22\) : AC\(7\)](#), [Lead : CK\(140\) : AC\(15\)](#), [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Hypermethylation : CK\(11\) : AC\(1\)](#)

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## Topic: [Benzethonium chloride](#)

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**[Compounds commonly used as preservatives in US licensed vaccine/biological preparations exhibit significant toxicity and may not comply with the US Code of Federal Regulations for preservatives. - GMI Summary](#)**

**Pubmed Data** : Med Sci Monit. 2010 Apr 28;16(5):SR21-7. PMID: [20424565](#)

**Article Published Date** : Apr 28, 2010

**Authors** : David A Geier, Sarah K Jordan, Mark R Geier

**Study Type** : In Vitro Study

**Additional Links**

**Diseases** : [Vaccine-induced Toxicity : CK\(1242\) : AC\(180\)](#)

**Problem Substances** : [2-phenoxyethanol : CK\(2\) : AC\(2\)](#), [Adjuvant : CK\(18\) : AC\(6\)](#), [Benzethonium chloride : CK\(2\) : AC\(2\)](#), [Phenol : CK\(2\) : AC\(2\)](#), [Thimerosal : CK\(299\) : AC\(44\)](#)

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## Topic: [Ethanol](#)

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**[This study shows that inhibition of methionine synthase\(MS\) activity by ethanol, lead, mercury, aluminum and thimerosal suggesting that it may be an important target of neurodevelopmental toxins. - GMI Summary](#)**

**Pubmed Data** : Mol Psychiatry. 2004 Apr ;9(4):358-70. PMID: [14745455](#)

**Article Published Date** : Mar 31, 2004

**Authors** : M Waly, H Olteanu, R Banerjee, S-W Choi, J B Mason, B S Parker, S Sukumar, S Shim, A Sharma, J M Benzecry, V-A Power-Charnitsky, R C Deth

**Study Type** : In Vitro Study

**Additional Links**

**Diseases** : [Attention Deficit Disorder : CK\(397\) : AC\(12\)](#), [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#)

**Problem Substances** : [Aluminum : CK\(170\) : AC\(43\)](#), [Ethanol : CK\(22\) : AC\(7\)](#), [Lead : CK\(140\) : AC\(15\)](#), [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Hypermethylation : CK\(11\) : AC\(1\)](#)

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## Topic: [Lead](#)

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**[This study shows that inhibition of methionine synthase\(MS\) activity by ethanol, lead, mercury, aluminum and thimerosal suggesting that it may be an important target of neurodevelopmental toxins. - GMI Summary](#)**

**Pubmed Data** : Mol Psychiatry. 2004 Apr ;9(4):358-70. PMID: [14745455](#)

**Article Published Date** : Mar 31, 2004

**Authors** : M Waly, H Olteanu, R Banerjee, S-W Choi, J B Mason, B S Parker, S Sukumar, S Shim, A Sharma, J M Benzecry, V-A Power-Charnitsky, R C Deth

**Study Type** : In Vitro Study

**Additional Links**

**Diseases** : [Attention Deficit Disorder : CK\(397\) : AC\(12\)](#), [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Neurodevelopmental Disorders : CK\(149\) : AC\(13\)](#)

**Problem Substances** : [Aluminum : CK\(170\) : AC\(43\)](#), [Ethanol : CK\(22\) : AC\(7\)](#), [Lead : CK\(140\) : AC\(15\)](#), [Thimerosal : CK\(299\) : AC\(44\)](#)

**Adverse Pharmacological Actions** : [Hypermethylation : CK\(11\) : AC\(1\)](#)

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**Topic: Phenol**

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**[Compounds commonly used as preservatives in US licensed vaccine/biological preparations exhibit significant toxicity and may not comply with the US Code of Federal Regulations for preservatives. - GMI Summary](#)**

**Pubmed Data** : Med Sci Monit. 2010 Apr 28;16(5):SR21-7. PMID: [20424565](#)

**Article Published Date** : Apr 28, 2010

**Authors** : David A Geier, Sarah K Jordan, Mark R Geier

**Study Type** : In Vitro Study

**Additional Links**

**Diseases** : [Vaccine-induced Toxicity : CK\(1242\) : AC\(180\)](#)

**Problem Substances** : [2-phenoxyethanol : CK\(2\) : AC\(2\)](#), [Adjuvant : CK\(18\) : AC\(6\)](#), [Benzethonium chloride : CK\(2\) : AC\(2\)](#), [Phenol : CK\(2\) : AC\(2\)](#), [Thimerosal : CK\(299\) : AC\(44\)](#)

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**Topic: heavy metals**

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**[Scientific research does not support rejecting the link between the neurodevelopmental disorder of autism and toxic exposures. - GMI Summary](#)**

**Pubmed Data** : Acta Neurobiol Exp (Wars). 2010 ;70(2):165-76. PMID: [20628440](#)

**Article Published Date** : Dec 31, 2009

**Authors** : Mary Catherine Desoto, Robert T Hitlan

**Study Type** : Commentary

**Additional Links**

**Diseases** : [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#)

**Problem Substances** : [Autism Spectrum Disorders : CK\(1286\) : AC\(112\)](#), [Mercury : CK\(131\) : AC\(17\)](#), [Thimerosal : CK\(299\) : AC\(44\)](#)

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