

# 2 Hydroxyglutarate Detection By Magnetic Resonance

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### 2 Hydroxyglutarate Detection By Magnetic

#### **2-hydroxyglutarate detection by magnetic resonance ...**

2-hydroxyglutarate detection by magnetic resonance spectroscopy in subjects with IDH-mutated gliomas Changho Choi<sup>1,2</sup>, Sandeep K Ganji<sup>1,2</sup>, Ralph J DeBerardinis<sup>3-5</sup>, Kimmo J Hatanpaa<sup>5-7</sup>, Dinesh Rakheja<sup>6,8</sup>, Zoltan Kovacs<sup>1</sup>, Xiao-Li Yang<sup>5,7,9</sup>, Tomoyuki ...

#### **Nat. Med.; doi:10.1038/nm.2682 2-hydroxyglutarate ...**

2-hydroxyglutarate detection by magnetic resonance spectroscopy in subjects with IDH-mutated gliomas Changho Choi, Sandeep K Ganji, Ralph J DeBerardinis, Kimmo J Hatanpaa, Dinesh Rakheja, Zoltan Kovacs, Xiao-Li Yang, Tomoyuki Mashimo, Jack M Raisanen, Isaac Marin-Valencia, Juan M Pascual, Christopher J Madden, Bruce E Mickey, Craig M Malloy,

#### **Detection of 2-Hydroxyglutarate in IDH-Mutated Glioma ...**

Detection of 2-Hydroxyglutarate in IDH-Mutated Glioma Patients by In Vivo Spectral-Editing and 2D Correlation Magnetic Resonance Spectroscopy Ovidiu C Andronesi,<sup>1\*</sup> Grace S Kim,<sup>1</sup> Elizabeth Gerstner,<sup>2</sup> Tracy Batchelor,<sup>2</sup> Aria A Tzika,<sup>1,3</sup> Valeria R Fantin,<sup>4</sup> Matthew G Vander Heiden,<sup>5,6</sup> A Gregory Sorensen<sup>1</sup>

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#### **Detection of "oncometabolite" 2-hydroxyglutarate by ...**

Detection of "oncometabolite" 2-hydroxyglutarate by Magnetic Resonance Analysis as a Biomarker of IDH1/2 Mutations in Glioma Juliya Kalinina<sup>1</sup>, Anne Carroll<sup>2</sup>, Liya Wang<sup>2</sup>, Qiqi Yu, Danny E Mancheno<sup>3</sup>, Shaoxiong Wu<sup>3</sup>, Frank Liu, Jun Ahn<sup>4</sup>, Miao He, Hui Mao<sup>2,6\*</sup> and Erwin G Van

Meir<sup>1,5,6</sup> <sup>1</sup>Departments of Neurosurgery, Emory University, Atlanta GA 30322, <sup>2</sup>Radiology and Imaging ...

### **Advanced Imaging Research Center, University of Texas ...**

2-hydroxyglutarate detection by magnetic resonance spectroscopy in IDH-mutated glioma patients Changho Choi, Advanced Imaging Research Center, University of ...

### **Magnetic Resonance Spectroscopy for Detection of 2 ...**

metabolites H OH OH Review Magnetic Resonance Spectroscopy for Detection of 2-Hydroxyglutarate as a Biomarker for IDH Mutation in Gliomas Thomas Leather 1, Michael D Jenkinson 2,3, Kumar Das 4 and Harish Poptani 1,\* <sup>1</sup> Centre for Pre-clinical Imaging, Department of Cellular and Molecular Physiology, University of Liverpool, Liverpool L69 3BX, UK; hltleath@studentliverpool.ac.uk

### **Detection of oncometabolite 2-hydroxyglutarate by magnetic ...**

ORIGINAL ARTICLE Detection of “oncometabolite” 2-hydroxyglutarate by magnetic resonance analysis as a biomarker of IDH1/2 mutations in glioma

### **Magnetic Resonance Spectroscopy for Detection of 2 ...**

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### **Improved Localization for 2-Hydroxyglutarate Detection at ...**

2-hydroxyglutarate (2-HG) has emerged as a biomarker of tumor cell isocitrate dehydrogenase mutations that may enable the differential diagnosis of patients with glioma At 3 T, detection of 2-HG with magnetic resonance spectroscopy is challenging because of metabolite signal overlap and ...

### **Detection of “oncometabolite” 2-hydroxyglutarate by ...**

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### **Detection of oncogenic IDH1 mutations using magnetic ...**

Detection of oncogenic IDH1 mutations using magnetic resonance spectroscopy of 2-hydroxyglutarate Ovidiu C Andronesi,<sup>1</sup> Otto Rapalino,<sup>2</sup> Elizabeth Gerstner,<sup>3,4</sup> Andrew Chi,<sup>3,4</sup> Tracy T Batchelor,<sup>3,4,5</sup> Dan P Cahill,<sup>6</sup> A Gregory Sorensen,<sup>7</sup> and Bruce R Rosen<sup>1</sup>

### **Detection of 2-hydroxyglutarate in Mutant Brain Tumors in ...**

Detection of 2-hydroxyglutarate in Mutant Brain Tumors in vivo using Proton Magnetic Resonance Spectroscopy R Nagarajan<sup>1</sup>, M A Thomas<sup>1</sup>, W B Pope<sup>1</sup>, (1H) magnetic resonance spectroscopy (MRS) This compares to a few hundred nM/g in wild type tumors

### **Magnetic Resonance of 2-Hydroxyglutarate in IDH1-Mutated ...**

IDH1/2 mutations result in aberrant enzymatic production of the potential oncometabolite D-2-hydroxyglutarate (2HG) Here, we report on the ex vivo detection of 2HG in IDH1-mutated tissue samples from patients with recurrent low-grade gliomas using the nuclear magnetic resonance technique of proton high-resolution magic angle spinning spectroscopy

**13C-NMR Spectroscopy in the Detection of 2 ...**

13C-NMR Spectroscopy in the Detection of 2-Hydroxyglutarate as a Novel Biomarker of IDH Mutation Status in Glioma Hyeon-Man Baek 1, Yun-Ju Lee , Eun-Hee Kim , Chaejoon Cheong , and Seung-Ho Yang 2 1Division of Magnetic Resonance, Korea Basic Science Institute, Ochang, Chungbuk, Korea, 2Neurosurgery St Vincent's Hospital, Catholic University, Suwon,

**2-Hydroxyglutarate as a Magnetic Resonance Biomarker for ...**

and accumulation of the oncometabolite 2-hydroxyglutarate (2-HG) instead of  $\alpha$ -ketoglutarate [1,5,6] Being a direct and noninvasively detectable metabolic consequence of a genetic mutation in cancer, 2-HG detection in glioma serves as a unique biomarker for identifying IDH mutations The potential diag-

**Advances and Challenges in Assessing 2-Hydroxyglutarate in ...**

1833 Advances and Challenges in Assessing 2-Hydroxyglutarate in Gliomas by Magnetic Resonance Spectroscopy: Review A Short Review Figure 2: Structural similarities of glutamine, glutamate,  $\alpha$ -ketoglutarate and 2-hydroxyglutarate Glutamine, glutamate,  $\alpha$ -ketoglutarate and 2 ...

**Rapid detection of 2-hydroxyglutarate in frozen sections ...**

for rapid detection of 2HG levels and illustrate the possibility to use MALDI-TOF for the detection of metabolites on frozen tissue sections in a diagnostic setting Keywords: IDH mutation, 2-hydroxyglutarate, Diffuse glioma, MALDI-TOF, Mass spectrometry Introduction Mutations of the isocitrate dehydrogenase genes ( IDH1 and

**IDH-Mutated Glioma Patients by In Vivo Spectral-Editing ...**

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