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Retrospective Study

Insulin receptor substrate 1 may play divergent roles in human colorectal cancer development and progression

Karolina Lomperta, Katarzyna Jakubowska, Malgorzata Grudzinska, Luiza Kanczuga-Koda, Andrzej Wincewicz, Eva Surmacz, Stanislaw Sulkowski, Mariusz Koda

Abstract

BACKGROUND

Despite effective prevention and screening methods, the incidence and mortality rates associated with colorectal cancer (CRC) are still high. Insulin receptor substrate 1 (IRS-1), a signaling molecule involved in cell proliferation, survival and metabolic

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The Insulin Receptor Substrate 1 (Irs1) in Intestinal ...

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Apr 27, 2012 · Colorectal cancer (CRC) is associated with lifestyle factors that affect insulin/**IGF signaling**, of which the insulin receptor substrate 1 (**IRS1**) is a key transducer. We investigated expression, localization and pathologic correlations of IRS1 in **cancer-uninvolved colonic epithelium**, primary CRCs with paired **liver metastases** and in vitro polarizing Caco2 and HT29 ...

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The insulin receptor substrate-1: A biomarker for cancer ...

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In addition, I would like to propose that **IRS-1 may** have a more **general role in cancer**, and could be considered as a protein having the opposite effect of tumor suppressors, a sort of anti-tumor suppressor molecule. The **insulin receptor substrate-1 (IRS-1)** promotes cell transformation

Cited by: 66

Author: Renato Baserga

Publish Year: 2009

The insulin receptor substrate (IRS) proteins

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3142458>

Jun 01, 2011 · Jackson JG, White MF, Yee D. **Insulin receptor substrate-1** is the predominant signaling molecule activated by insulin-like **growth factor-I**, **insulin** and **interleukin-4** in **estrogen receptor-positive human breast cancer cells**.

Cited by: 97

Author: Leslie M. Shaw

Publish Year: 2011

Insulin Receptor Substrate-1 Suppresses ... - Cancer Research

<https://cancerres.aacrjournals.org/content/69/18/7180> ▾

Sep 15, 2009 · **Insulin receptor substrate-1 (IRS-1)** is a member of the **insulin receptor substrate**

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Insulin promotes progression of colon cancer by ...

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5968618>

May 24, 2018 · These results indicate that **insulin may play an important role in colorectal carcinogenesis**. When **insulin binds** to its **receptor**, PI3K pathways can be activated and **cause cell proliferation** and survival. **Polymorphism of insulin gene** and its association with **colorectal cancer** were demonstrated by some studies.

Cited by: 5 Author: Xin Chen, Huiling Liang, Qibin Song, Ximi...
Publish Year: 2018

Novel insulin receptor substrate 1 and 2 variants in ...

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3810354>

Insulin, insulin-like growth factor 1 and 2 (IGF-1 and IGF-2) and **IGF binding protein (IGFBP)** are involved in cell growth and survival and are thought to be implicated in **colorectal cancer (CRC)**. The **insulin receptor substrates (IRS)** are cytoplasmic signaling adaptor proteins that function as intermediates of the **insulin receptor (IR)** and **IGF-IR (1)**.

Cited by: 3 Author: Diana Liberata Esposito, Fabio Verginelli,...
Publish Year: 2013

Insulin Receptor Substrate-1 Suppresses ... - Cancer Research

<https://cancerres.aacrjournals.org/content/69/18/7180>

Sep 15, 2009 · We investigated the regulatory effect of **insulin receptor substrate-1 (IRS-1)** on transforming growth factor- β 1 (TGF- β 1)-induced epithelial-mesenchymal transition (EMT). TGF- β 1-induced EMT and cell migration in A549 cells are associated with a decrease in IRS-1 tyrosine phosphorylation and protein levels. Tissue microarray analysis of **human lung carcinoma** shows a ...

Cited by: 35 Author: Jian Shi, Dong-Mei Wang, Chun-Mei Wan...
Publish Year: 2009

The insulin-like growth factor system and cancer ...

<https://www.sciencedirect.com/science/article/pii/S0304383503001599>

In fact, the circulating levels of **human IGF-II** are consistently several-fold higher than that of IGF-I, which is consistent with the concept that IGF-I and IGF-II have potentially **divergent roles in human physiology**.

3. The IGF receptors 3.1. IGF and insulin receptors

Cited by: 1498 Author: Derek LeRoith, Charles T. Roberts
Publish Year: 2003

Insulin Receptor Substrate Regulation of Phosphoinositide ...

<https://clincancerres.aacrjournals.org/content/17/2/206>

Jan 15, 2011 · **Insulin receptor substrates (IRS)** serve as downstream messengers from activated **cell surface receptors** to numerous **signaling pathway cascades**. One of these pathways, phosphoinositide 3-kinase (PI3K), frequently displays aberrant function in the setting of **cancer**.

Cited by: 56 Author: Heather E. Metz, A. McGarry Houghton
Publish Year: 2011

Divergent roles for IRS-1 and IRS-2 in breast cancer ...

<https://www.researchgate.net/publication/6446338...>

We supposed that **insulin receptor substrate-1 (IRS-1)** may play a **significant role in pancreatic cancer invasion** and metastasis.

Insulin Receptor Substrate-1 (IRS-1) and IRS-2 expression ...

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0220567>

The **insulin-like growth factor-1 (IGF-1)** signaling pathway has been implicated in non-small cell lung **cancer (NSCLC)** outcomes and resistance to targeted therapies. However, little is known regarding the molecular mechanisms by which this pathway contributes to the biology of NSCLC. The **insulin receptor substrate (IRS)** proteins are cytoplasmic adaptor proteins that signal downstream of the IGF ...

[PDF] Expression and localisation of insulin receptor substrate ...

<https://gut.bmj.com/content/gutjnl/58/9/1250.full.pdf>

whose perturbations are implicated in **human colorectal tumourigenesis**. The **insulin/insulin-like growth factor (IGF)** signalling pathway **may play an important role** in intestinal epithelium homeostasis. **Insulin receptor substrate 2 (IRS2)** is a poorly characterised component in this pathway. Methods: Using complementary in vitro and in vivo

Novel insulin receptor substrate 1 and 2 variants in ...

<https://www.spandidos-publications.com/10.3892/or.2013.2626>

Insulin, insulin-like growth factor 1 and 2 (IGF-1 and IGF-2) and **IGF binding protein (IGFBP)** are involved in cell growth and survival and are thought to be implicated in **colorectal cancer (CRC)**.

miR-195 inhibits tumor growth and angiogenesis through ...

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Insulin receptor substrate 1 (**IRS1**) belongs to Insulin receptor substrates (**IRSs**) family which integrates and **coordinates hormone, cytokine, and growth factor signal**. **IRS1** is a **transforming ontogeny** which **induces transformation and metastasis** in vitro and in vivo.

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[The insulin receptor substrate \(IRS\) proteins](#)

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3142458>

Jun 01, 2011 · Jackson JG, White MF, Yee D. **Insulin receptor substrate-1** is the predominant signaling molecule activated by **insulin-like growth factor-I**, **insulin** and interleukin-4 in estrogen **receptor-positive human breast cancer** cells. J Biol Chem. 1998; 273:9994–10003.

Cited by: 98

Author: Leslie M. Shaw

Publish Year: 2011

[The insulin receptor substrate-1: A biomarker for cancer ...](#)

<https://www.sciencedirect.com/science/article/pii/S0014482708003959>

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Cited by: 69

Author: Renato Baserga

Publish Year: 2009

[Substrate 1 in Human Hepatocellular Carcinoma](#)

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Background. **Insulin receptor substrate 1 (IRS-1)** is an important molecule of the **insulin** signal transduction pathway and has been associated with the occurrence and **development** of many tumors, including hepatocellular carcinoma (HCC). Our study was designed to determine the expression and significance of **IRS-1 in human HCC** *Methods* Two hundred and forty specimens were drawn