

A Novel Biomarker for Abdominal Aortic Aneurysm

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BACKGROUND

Abdominal aortic aneurysm (AAA) is a severe human vascular disease resulting in progressive aortic dilation and eventual lethal rupture. Approximately one in every 250 people over the age of 50 will die of a ruptured AAA. While the success rate of surgical repair is high for aneurysms bigger than 5cm, reliable prediction of the asymptomatic disease remains elusive. Moreover, smaller instances of the disease cannot be easily diagnosed with radiography, or ultrasound, potentially resulting in silent growth and sudden rupture. Even CT and MRI will not be able to detect aneurysms at the early initiation stage that only involve molecular remodeling of the aortas. Thus, there is an urgent need for a more robust and sensitive method to predict AAA development at very early stages to enable better monitoring and treatment of the disease.

INNOVATION

Researchers at the UCLA Cardiovascular Research Laboratory have identified the first known biomarker for abdominal aortic aneurysm (AAA). Through studying two different mouse models of the disease (including one that is innovative and unique, and another that is most commonly used in the field of study), they found positive and consistent correlations between a biomarker deficiency and AAA development. The biomarker is also indicative of treatment efficacies, for instance, by folic acid that completely prevented AAA to occur (see publication below in Hypertension 2012). Therefore, monitoring plasma levels of this biomarker represents a potentially rapid and convenient method for assessing AAA risk, and more importantly, a reliable and sensitive predictor of early AAA development, as well as a useful indicator of treatment efficacies by orally administrated agents (i.e. by folic acid).

APPLICATIONS

- Screening for AAA risk and early development
- Diagnose undetectable AAA cases with current technologies
- Indicator of treatment efficacies by orally administrated agents

ADVANTAGES

- First and only known biomarker for AAA
- Able to detect small aneurysms that evade current detecting technologies, or those initiating aneurysms evolving at molecular levels
- Determining plasma concentration of the biomarker is likely to be much less costly than detecting bigger aneurysms with current technologies
- Can also be used as a useful indicator of treatment efficacies by orally administrated agents (i.e. folic acid, see publication below in Hypertension 2012)

STATE OF DEVELOPMENT

Researchers have established a correlation between deficiency of the biomarker and AAA formation in two different mouse models of the disease.

RELATED MATERIALS

- [Recoupling of eNOS with Folic Acid Prevents Abdominal Aortic Aneurysm Formation in Angiotensin II-Infused Apolipoprotein E Null Mice. PLoS One. \(2014\)](#)

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OTHER INFORMATION

KEYWORDS

Abdominal aortic aneurysm,
biomarker, diagnostic, monitoring of
disease development and treatment.

CATEGORIZED AS

- [Biotechnology](#)
 - [Health](#)
- [Medical](#)
 - [Diagnostics](#)
 - [Disease: Cardiovascular and Circulatory System](#)
 - [Research Tools](#)
 - [Screening](#)
- [Research Tools](#)
 - [Other](#)
 - [Screening Assays](#)

RELATED CASES

2011-872-0

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	10,047,386	08/14/2018	2011-872

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- ▶ [Netrin-1 Compounds as Post-MI and Post-Angioplasty Therapeutics as well as for Treating Renal and CNS Reperfusion Injury](#)
- ▶ [Circulating Biomarker for Early Detection of Post-Operative Cardiac Arrhythmias](#)

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