

# Arteriosclerosis, Thrombosis, and Vascular Biology

Volume 37 Number 10 October 2017

Key: VB=Vascular Biology AL=Atherosclerosis/Lipoproteins TH=Thrombosis

## Recent Highlights of *ATVB*

### AL Recent Advances in the Genetics of Atherothrombotic Disease and Its Determinants

Jacqueline S. Dron, Rosettia Ho, Robert A. Hegele **Online Only** .....e158

## Editorials

### TH $Q_{10}$ Quest for New Therapies to Prevent Antiphospholipid Antibody-Mediated Thrombosis

Steven P. Grover, Robert A.S. Roubey ..... 1801  
See accompanying article on page 1923

### VB Cytoglobin at the Crossroads of Vascular Remodeling

Matthew B. Amdahl, Anthony W. DeMartino, Jesús Tejero, Mark T. Gladwin ..... 1803  
See accompanying article on page 1944

### VB LMO2 (LIM Domain Only 2) and Endothelial Cell Migration in Developmental and Postnatal Angiogenesis

Vijay Chaitanya Ganta, Brian H. Annex ..... 1806  
See accompanying article on page 1860

### VB Protease-Activated Receptor-1 Signaling: The Big Picture

Robert Flaumenhaft ..... 1809  
See accompanying article on page 1891

## Brief Review

### TH Impact of Non-Vitamin K Antagonist Oral Anticoagulants From a Basic Science Perspective

Maureane Hoffman, Dougald M. Monroe ..... 1812

ARTERIOSCLEROSIS, THROMBOSIS, AND VASCULAR BIOLOGY (ISSN 1079-5642 print / 1524-4636 online) is published monthly by Wolters Kluwer Health, Inc. at 14700 Citicorp Drive, Bldg 3, Hagerstown, MD 21742. Business offices are located at Two Commerce Square, 2001 Market St., Philadelphia, PA 19103. Production offices are located at 351 West Camden Street, Baltimore, MD 21201-2436. Individuals may subscribe for their personal use at the following rates for print subscriptions: \$225 for AHA/ASA Domestic and International Members (excluding General Membership level), or \$669 for domestic non-members and \$793 for international non-members. AHA membership information can be found online at professional.heart.org. Periodicals postage paid at Hagerstown, MD and additional mailing offices. POSTMASTER: Send address changes to ARTERIOSCLEROSIS, THROMBOSIS, AND VASCULAR BIOLOGY, American Heart Association, Wolters Kluwer Health, Inc., PO Box 1610, Hagerstown, MD 21740.

## Basic Sciences

---


- TH Clots Are Potent Triggers of Inflammatory Cell Gene Expression: Indications for Timely Fibrinolysis**  
*Robert A. Campbell, Adriana Vieira-de-Abreu, Jesse W. Rowley, Zechariah G. Franks, Bhanu Kanth Manne, Matthew T. Rondina, Larry W. Kraiss, Jennifer J. Majersik, Guy A. Zimmerman, Andrew S. Weyrich*..... 1819 
- TH First Selective 12-LOX Inhibitor, ML355, Impairs Thrombus Formation and Vessel Occlusion In Vivo With Minimal Effects on Hemostasis**  
*Reheman Adili, Benjamin E. Tourdot, Katherine Mast, Jennifer Yeung, John C. Freedman, Abigail Green, Diane K. Luci, Ajit Jadhav, Anton Simeonov, David J. Maloney, Theodore R. Holman, Michael Holinstat*..... 1828 
- VB Characterization of Macrophage Polarization States Using Combined Measurement of 2-Deoxyglucose and Glutamine Accumulation: Implications for Imaging of Atherosclerosis**  
*Sina Tavakoli, Kevin Downs, John D. Short, Huynh Nga Nguyen, Yanlai Lai, Paul A. Jerabek, Beth Goins, Jakub Toczec, Mehran M. Sadeghi, Reto Asmis*..... 1840 
- VB Accumulation of Smooth Muscle 22 $\alpha$  Protein Accelerates Senescence of Vascular Smooth Muscle Cells via Stabilization of p53 In Vitro and In Vivo**  
*Sui-Bing Miao, Xiao-Li Xie, Ya-Juan Yin, Li-Li Zhao, Fan Zhang, Ya-Nan Shu, Rong Chen, Peng Chen, Li-Hua Dong, Yan-Ling Lin, Pin Lv, Dan-Dan Zhang, Xi Nie, Zhen-Ying Xue, Mei Han*..... 1849 
- VB Lmo2 (LIM-Domain-Only 2) Modulates Sphk1 (Sphingosine Kinase) and Promotes Endothelial Cell Migration**  
*Gianfranco Matrone, Shu Meng, Qilin Gu, Jie Lv, Longhou Fang, Kaifu Chen, John P. Cooke*..... 1860   
See accompanying editorial on page 1806
- VB Renal Denervation Suppresses Coronary Hyperconstricting Responses After Drug-Eluting Stent Implantation in Pigs In Vivo Through the Kidney–Brain–Heart Axis**  
*Hironori Uzuka, Yasuharu Matsumoto, Kensuke Nishimiya, Kazuma Ohyama, Hideaki Suzuki, Hirokazu Amamizu, Susumu Morosawa, Michinori Hirano, Tomohiko Shindo, Yoku Kikuchi, Kiyotaka Hao, Takashi Shiroto, Kenta Ito, Jun Takahashi, Koji Fukuda, Satoshi Miyata, Yoshihito Funaki, Hatsue Ishibashi-Ueda, Satoshi Yasuda, Hiroaki Shimokawa*..... 1869 
- VB Deletion of NF- $\kappa$ B/RelA in Angiotensin II-Sensitive Mesenchymal Cells Blocks Aortic Vascular Inflammation and Abdominal Aortic Aneurysm Formation**  
*Talha Ijaz, Hong Sun, Irina V. Pinchuk, Dianna M. Milewicz, Ronald G. Tilton, Allan R. Brasier*..... 1881 
- VB Paradigm of Biased PAR1 (Protease-Activated Receptor-1) Activation and Inhibition in Endothelial Cells Dissected by Phosphoproteomics**  
*Bart L. van den Eshof, Arie J. Hoogendijk, Pelle J. Simpson, Floris P.J. van Alphen, Sara Zanivan, Koen Mertens, Alexander B. Meijer, Maartje van den Biggelaar*..... 1891   
See accompanying editorial on page 1809
- VB Tortuous Microvessels Contribute to Wound Healing via Sprouting Angiogenesis**  
*Diana C. Chong, Zhixian Yu, Hailey E. Brighton, James E. Bear, Victoria L. Bautch* ..... 1903   
See cover image

## Translational Sciences

---

- AL PAI-1 (Plasminogen Activator Inhibitor-1) Expression Renders Alternatively Activated Human Macrophages Proteolytically Quiescent**  
*Philipp J. Hohensinner, Johanna Baumgartner, Julia B. Kral-Pointner, Pavel Uhrin, Benjamin Ebenbauer, Barbara Thaler, Konstantin Doberer, Stefan Stojkovic, Svitlana Demyanets, Michael B. Fischer, Kurt Huber, Gernot Schabbauer, Walter S. Speidl, Johann Wojta* ..... 1913 

**TH Ubiquinol Effects on Antiphospholipid Syndrome Prothrombotic Profile: A Randomized, Placebo-Controlled Trial**


Carlos Pérez-Sánchez, María Ángeles Aguirre, Patricia Ruiz-Limón, María Carmen Ábalos-Aguilera, Yolanda Jiménez-Gómez, Iván Arias-de la Rosa, Antonio Rodríguez-Ariza, Lucía Fernández-del Río, José Antonio González-Reyes, Pedro Seguí, Eduardo Collantes-Estévez, Nuria Barbarroja, Francisco Velasco, Savino Sciascia, Irene Cecchi, María José Cuadrado, José Manuel Villalba, Chary López-Pedreira..... 1923 

See accompanying editorial on page 1801

**VB Interleukin-18 Enhances Vascular Calcification and Osteogenic Differentiation of Vascular Smooth Muscle Cells Through TRPM7 Activation**

Kun Zhang, Yinyin Zhang, Weijing Feng, Renhua Chen, Jie Chen, Rhian M. Touyz, Jingfeng Wang, Hui Huang..... 1933 

**VB The Hemoglobin Homolog Cytooglobin in Smooth Muscle Inhibits Apoptosis and Regulates Vascular Remodeling**


Frances L. Jourd'heuil, Haiyan Xu, Timothy Reilly, Keneta McKellar, Chaymae El Alaoui, Julia Steppich, Yong Feng Liu, Wen Zhao, Roman Ginnan, David Conti, Reynold Lopez-Soler, Arif Asif, Rebecca K. Keller, John J. Schwarz, Le Thi Thanh Thuy, Norifumi Kawada, Xiaochun Long, Harold A. Singer, David Jourd'heuil..... 1944 

See accompanying editorial on page 1803

## Clinical and Population Studies

---


**AL Large-Scale Analysis of Determinants, Stability, and Heritability of High-Density Lipoprotein Cholesterol Efflux Capacity**

Andrea L. Koekemoer, Veryan Codd, Nicholas G.D. Masca, Christopher P. Nelson, Muntaser D. Musameh, Bernhard M. Kaess, Christian Hengstenberg, Daniel J. Rader, Nilesh J. Samani **OPEN** ..... 1956 

**AL Variability in Total Cholesterol Is Associated With the Risk of End-Stage Renal Disease: A Nationwide Population-Based Study**

Mee Kyoung Kim, Kyungdo Han, Eun Sil Koh, Hun-Sung Kim, Hyuk-Sang Kwon, Yong-Moon Park, Kun-Ho Yoon, Seung-Hwan Lee ..... 1963 

**AL Lipoprotein(a) and Risk of Myocardial Infarction and Death in Chronic Kidney Disease: Findings From the CRIC Study (Chronic Renal Insufficiency Cohort)**

Archana Bajaj, Scott M. Damrauer, Amanda H. Anderson, Dawei Xie, Matthew J. Budoff, Alan S. Go, Jiang He, James P. Lash, Akinlolu Ojo, Wendy S. Post, Mahboob Rahman, Muredach P. Reilly, Danish Saleheen, Raymond R. Townsend, Jinbo Chen, Daniel J. Rader; the Chronic Renal Insufficiency Cohort (CRIC) Study Investigators ..... 1971 

**On the cover:** Red fluorescent microspheres injected into the circulation show increased leak into surrounding areas from tortuous microvessels (green fluorescence) surrounding a healing wound. (See pages 1903–1912.)

Instructions to the Authors are available online at <http://atvb.ahajournals.org/site/misc/ifora.xhtml>.

Some figures may appear in color in the online issue, while appearing in black and white for the print issue.

 This article contains online supplementary information that is available at <http://atvb.ahajournals.org>.

# Arteriosclerosis, Thrombosis, and Vascular Biology



JOURNAL OF THE AMERICAN HEART ASSOCIATION

37 (10)

*Arterioscler Thromb Vasc Biol.* 2017;37:e158-1978

*Arteriosclerosis, Thrombosis, and Vascular Biology* is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231

Copyright © 2017 American Heart Association, Inc. All rights reserved.

Print ISSN: 1079-5642. Online ISSN: 1524-4636

The online version of this article, along with updated information and services, is located on the World Wide Web at:

<http://atvb.ahajournals.org/content/37/10>

**Permissions:** Requests for permissions to reproduce figures, tables, or portions of articles originally published in *Arteriosclerosis, Thrombosis, and Vascular Biology* can be obtained via RightsLink, a service of the Copyright Clearance Center, not the Editorial Office. Once the online version of the published article for which permission is being requested is located, click Request Permissions in the middle column of the Web page under Services. Further information about this process is available in the [Permissions and Rights Question and Answer](#) document.

**Reprints:** Information about reprints can be found online at:

<http://www.lww.com/reprints>

**Subscriptions:** Information about subscribing to *Arteriosclerosis, Thrombosis, and Vascular Biology* is online at:

<http://atvb.ahajournals.org/subscriptions/>