

## Recent Highlights of *ATVB*

### Reporting Sex and Sex Differences in Preclinical Studies

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**A** *ATVB* publishes research work that advances scientific fields in a rigorous and reproducible manner. We have implemented multiple approaches to follow the National Institutes of Health guidelines for rigor and reproducibility. In 2013, *ATVB* developed a checklist in the peer review process to facilitate comments on multiple technical requirements, including the sex of animals used in preclinical studies. We have also emphasized the National Institutes of Health guidelines that encourage researchers to study both sexes in preclinical animal models. These include publishing a review<sup>1</sup> entitled “Sex Differences in the Development of Cardiovascular Diseases” and an *ATVB* Council statement<sup>2</sup> to encourage authors to consider sex differences in designing and reporting experimental arterial pathology studies that detail the mode by which *ATVB* complies with the National Institutes of Health guidelines.<sup>3</sup> The journal appointed a technical review editor, Dr Hong Lu, who assumed the role in September 2017 to assess the many elements required for adherence to the National Institutes of Health guidelines. These include issues such as the rigor of statistical analyses and animal background strain, age, and sex. The designation of sex of origin in studies of primary cells derived from cell culture is not as common as it is in animal studies. This is probably because of the unproven assumption that the lack of the hormonal environment in cell culture eliminates the need for designation of sex. However, because the differences of X and Y sex chromosomes and possibly sex-related differences in genomic imprinting are preserved in cultured cells, these cells could theoretically retain the ability to respond in a sex-dependent manner.<sup>4</sup> Therefore, we also

encourage and will monitor the reporting of sex in primary cell isolation and culture.

In a recent letter to the *ATVB* editors, Ramirez and Hibbert<sup>5</sup> performed a comprehensive literature search and detailed statistical analysis on articles focusing on preclinical research of atherosclerosis and aneurysms from 2006 through 2016. They concluded that publication of guidelines and statements alone is not sufficient to assure the reporting of sex and sex differences in preclinical studies. To more objectively assess whether and how sex information in preclinical research has been reported, the *ATVB* editors reviewed 332 basic science research articles published in *ATVB* between 2016 and 2017.<sup>6–337</sup> After excluding those that studied only human samples, human cells, cell lines, or computational models, 159 articles published in 2016 and 136 articles published in 2017 were analyzed (Tables 1 through 5), which reported studies in animal models or primary cells isolated from animals.<sup>6–300</sup> There were 7 species reported in these articles (Table 1), including zebrafish, mouse, rat, rabbit, dog, pig, and nonhuman primates. Among these 295 articles analyzed, 79% and 92% of those from 2016 to 2017, respectively, provided sex information for in vivo models. However, only 11% of the articles in 2016 and 21% in 2017 reported results from both males and females. One hundred and thirty-three of the 295 articles reported primary cells isolated from mouse, rat, cow, or pig. Twenty-eight percent of the articles in 2016 and 27% in 2017 provided sex information, whereas only 3 articles studied cells from both male and female animals.

In this article, we provide the results of analysis of reported data on sex from animal models (Tables 2 through 5) and primary animal cell cultures among basic science articles published in *ATVB* between 2016 and 2017.<sup>6–300</sup> We also discuss what we have already implemented and what we will do in the future to encourage authors to report findings from both sexes in preclinical studies. We will continue to monitor and document the analytic results of reporting sex and sex differences in *ATVB* on an annual basis.

#### Zebrafish

Zebrafish have become an increasingly valuable model to study cardiovascular development and functions. Zebrafish breed prodigiously and generate large numbers of offspring rapidly. Their larvae are transparent, which make many anatomic features easily visible during development. Zebrafish have similar genetic structure and organ distributions to humans and share ≈70% of their genome with humans.<sup>338</sup> The popularity and value of zebrafish research have also been reflected by the number of research articles published recently in *ATVB*. In 2016 and 2017, 8 articles reported zebrafish models,<sup>6–13</sup> involving studies of lipoprotein signaling, endothelial development

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**Table 1. All Animal Species Reported in Preclinical Studies**

Species	No. of Articles		References
	2016	2017	
Zebrafish	5	3	6–13
Mouse	134	117	14–264
Rat	10	11	265–285
Rabbit	2	4	286–291
Dog	1	0	263
Pig	2	4	11,292,293,295–297
Primate	3	0	298–300

and functions, angiogenesis, and lymphangiogenesis. These articles studied zebrafish at stages during embryonic or larval development when the sex cannot be identified.

Sex determination is more complicated compared with mammalian organisms because zebrafish do not have sex chromosomes.<sup>339,340</sup> However, there are multiple features that can help identify male and female zebrafish at the adult stage. Because sexual dimorphism has been noted in zebrafish (in a few examples<sup>341–344</sup>), the *ATVB* editors encourage authors to study both sexes and provide the sex identification information if adult zebrafish are studied. If the sex cannot be identified before the adult stage, we encourage the authors to briefly state this potential limitation in the Methods section.

### Rodent Models

Rodents are the most common species used to study cardiovascular functions and diseases. The most popular species are mice and rats. Among the 295 articles analyzed, 251 (85%) articles reported mouse models,<sup>14–264</sup> 114 (39%) reported results on primary cells isolated from mice, 21 (7%) reported rat models,<sup>265–285</sup> and 14 (5%) reported results on primary cells isolated from rats. For *in vivo* studies, 84% of the articles reported sex in mouse models, and 95% reported sex in rat models after exclusion of those that only used embryos or neonates. The most commonly studied sex is male in both mice and rats (Tables 3 and 4). In adult mice and rats, the estrous cycle is  $\approx$ 4 to 5 days, which leads to striking changes in sex hormones during this brief interval.<sup>345,346</sup> In addition, some cardiovascular diseases have milder phenotypes in females than in males.<sup>1,3</sup> For these reasons, many researchers elect to focus their studies on male rodents, especially in mice.

**Table 2. Reporting Sex of Animals in Preclinical Studies**

Species	Articles Reporting Sex, %	
	2016	2017
Mouse	79	91
Rat	100	91
Rabbit	0	100
Dog	100	...
Pig	50	100
Primate	100	...

**Table 3. Percentage of Articles Reporting Sex in Mouse Studies**

Reporting Sex	Year of Publication	
	2016	2017
Male, %	60	53
Female, %	7	15
Both male and female, %	11	23

For articles that studied rodent primary cell cultures, after excluding those that used cells from neonates, sex was reported in  $\approx$ 25% and 40% of the studies in mice and rats, respectively. Many studies included both *in vivo* studies and primary cell cultures from the rodent model. Most articles specified the sex of animals in the Methods section but did not provide sex information for primary cell isolation and culture. Although it is very possible that same sex was used for both *in vivo* and *in vitro* studies, our analysis only counted the articles that clearly stated sex information in the primary cell isolation and culture sections.

*ATVB* publishes articles that cover a spectrum of research areas on lipoprotein metabolism, atherosclerosis, thrombosis, and vascular biology, and related diseases. Sex differences are an important feature of these cardiovascular physiological and pathological states. One example is angiotensin II-induced abdominal aortic aneurysm that was discussed in the recent *ATVB* Council statement.<sup>2</sup> The incidence of angiotensin II-induced abdominal aortic aneurysm is  $\approx$ 80% to 100% in male hypercholesterolemic mice but only  $\approx$ 10% in female mice with the same genetic background. Although the first publication in apolipoprotein E-deficient mice used females,<sup>347</sup> the vast majority of subsequent studies evaluated only male mice,<sup>348</sup> except for a few articles that have studied sex differences of the disease in this mouse model. Therefore, if a strong sexual dimorphism has already been identified and recognized by the research community, the *ATVB* editors recommend monitoring this specific issue and suggest that the authors provide a succinct justification in their manuscripts as to why a specific sex was studied. Otherwise, we recommend that the authors study both male and female rodent models.

### Large Animal Models

Large animals are more expensive to maintain and study than rodent models, and thus data are frequently derived from relatively small sample sizes. However, these larger models may have more relevance to human physiological and pathophysiological conditions.<sup>349</sup> For example, atherosclerotic plaque rupture—a potentially fatal clinical condition—does not occur in the most commonly used mouse models of atherosclerosis.<sup>349</sup> In addition, a common and disease-relevant location of

**Table 4. Percentage of Articles Reporting Sex in Rat Studies**

Reporting Sex	Year of Publication	
	2016	2017
Male, %	90	91
Female, %	10	0
Both male and female, %	0	0

**Table 5. No. of Articles Reporting Sex in Large Animals**

Species	Articles Reporting Sex/Total No. of Articles		
	Male	Female	Both
Rabbit	2/6	0/6	2/6
Dog	...	...	1/1
Pig	4/6	1/6	0/6
Primate	3/3	...	...

human atherosclerosis is the coronary arteries, but atherosclerosis does not occur in coronary artery branches of mice.<sup>350</sup> Large animals, especially pigs and nonhuman primates, not only mimic multiple features of human diseases but also are valuable to test drug toxicology and potency. Therefore, the editors acknowledge the importance of and encourage cardiovascular research studies using large animals.

In articles published between 2016 and 2017 in *ATVB*, 6 studied rabbit models,<sup>286–291</sup> 1 studied a dog model,<sup>263</sup> 6 studied pig models,<sup>11,292,293,295–297</sup> and 3 studied nonhuman primate studies.<sup>298–300</sup> Among these 16 articles, 81% reported sex, 2 articles studied both sexes in rabbits, and 1 article reported both sexes in dogs (Table 5). There are multiple issues that limit large animal studies, such as sample size, the cost, and study duration. Although the journal does not require that both sexes should be evaluated in large animal studies, it is suggested that authors state clearly the sex of animals, provide a necessary justification as to why a specific sex was studied, and discuss the potential limitation if only 1 sex was studied.

### Perspectives

*ATVB* implemented the technical review mechanism in September 2017, which did not impact reporting sex in the articles that were reviewed and analyzed between 2016 and 2017 (Tables 1 through 5). However, we note that more articles have reported both male and female mouse data (26 articles) in 2017, compared with publications (15 articles) in 2016 (Table 3). For those that only studied a single sex, reporting of female mice has also increased (17 articles in 2017 versus 9 articles in 2016; Table 3). The editors expect that this recently instituted technical review process will lead to a further increase in the reporting of sex and sex differences in *ATVB*.

The *ATVB* editors will evaluate each original research article with the following specific requests for reporting sex:

1. Sex of in vivo animal models and ex vivo primary cell culture studies must be clearly stated in the Methods section, Results section, tables, and figure legends.
2. If the authors studied only 1 sex, the authors will be asked to provide a justification for the selection of this specific sex.

We also recommend that the authors state the potential limitations of studying a single sex in either the Methods or Discussion section. The *ATVB* editors appreciate the responsiveness of authors to study sex differences in preclinical models more frequently. We hope that this continued effort from both the editors and authors will help the research community

to enhance understanding and exploring sex differences of cardiovascular functions and diseases.

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### Disclosures

None.

### References

1. Arnold AP, Cassis LA, Eghbali M, Reue K, Sandberg K. Sex hormones and sex chromosomes cause sex differences in the development of cardiovascular diseases. *Arterioscler Thromb Vasc Biol.* 2017;37:746–756. doi: 10.1161/ATVBAHA.116.307301
2. Robinet P, Milewicz DM, Cassis LA, Leeper NJ, Lu HS, Smith JD. Consideration of sex differences in design and reporting of experimental arterial pathology studies—statement from ATVB council. *Arterioscler Thromb Vasc Biol.* 2018;38:292–303. doi: 10.1161/ATVBAHA.117.309524
3. Daugherty A, Hegele RA, Mackman N, Rader DJ, Schmidt AM, Weber C. Complying with the National Institutes of Health Guidelines and Principles for Rigor and Reproducibility: refutations. *Arterioscler Thromb Vasc Biol.* 2016;36:1303–1304. doi: 10.1161/ATVBAHA.116.307906
4. Shah K, McCormack CE, Bradbury NA. Do you know the sex of your cells? *Am J Physiol Cell Physiol.* 2014;306:C3–C18. doi: 10.1152/ajpcell.00281.2013
5. Ramirez FD, Hibbert B. Letter by Ramirez and Hibbert regarding article, “consideration of sex differences in design and reporting of experimental arterial pathology studies: a statement from the Arteriosclerosis, Thrombosis, and Vascular Biology Council”. *Arterioscler Thromb Vasc Biol.* 2018;38:e99–e100. doi: 10.1161/ATVBAHA.118.310942
6. Gibbs-Bar L, Tempelhof H, Ben-Hamo R, Ely Y, Brandis A, Hofi R, Almog G, Braun T, Feldmesser E, Efroni S, Yaniv K. Autotaxin-lysophosphatidic acid axis acts downstream of apoprotein B lipoproteins in endothelial cells. *Arterioscler Thromb Vasc Biol.* 2016;36:2058–2067. doi: 10.1161/ATVBAHA.116.308119
7. Castranova D, Davis AE, Lo BD, Miller MF, Paukstelis PJ, Swift MR, Pham VN, Torres-Vázquez J, Bell K, Shaw KM, Kamei M, Weinstein BM. Aminoacyl-transfer RNA synthetase deficiency promotes angiogenesis via the unfolded protein response pathway. *Arterioscler Thromb Vasc Biol.* 2016;36:655–662. doi: 10.1161/ATVBAHA.115.307087
8. Becker PW, Sacilotto N, Nornes S, Neal A, Thomas MO, Liu K, Preece C, Ratnayaka I, Davies B, Bou-Gharios G, De Val S. An intronic Flk1 enhancer directs arterial-specific expression via RBPJ-mediated venous repression. *Arterioscler Thromb Vasc Biol.* 2016;36:1209–1219. doi: 10.1161/ATVBAHA.116.307517
9. Yang C, Ohk J, Lee JY, Kim EJ, Kim J, Han S, Park D, Jung H, Kim C. Calmodulin mediates Ca<sup>2+</sup>-dependent inhibition of Tie2 signaling and acts as a developmental brake during embryonic angiogenesis. *Arterioscler Thromb Vasc Biol.* 2016;36:1406–1416. doi: 10.1161/ATVBAHA.116.307619
10. Chen J, Zhu RF, Li FF, Liang YL, Wang C, Qin YW, Huang S, Zhao XX, Jing Q. MicroRNA-126a directs lymphangiogenesis through interacting with chemokine and Flt4 signaling in zebrafish. *Arterioscler Thromb Vasc Biol.* 2016;36:2381–2393. doi: 10.1161/ATVBAHA.116.308120
11. Serbanovic-Canic J, de Luca A, Warboys C, et al. Zebrafish model for functional screening of flow-responsive genes. *Arterioscler Thromb Vasc Biol.* 2017;37:130–143. doi: 10.1161/ATVBAHA.116.308502
12. Chrifi I, Louzao-Martinez L, Brandt M, van Dijk CGM, Burgisser P, Zhu C, Kros JM, Duncker DJ, Cheng C. CMTM3 (CKLF-like marvel transmembrane domain 3) mediates angiogenesis by regulating cell surface availability of VE-cadherin in endothelial adherens junctions. *Arterioscler Thromb Vasc Biol.* 2017;37:1098–1114. doi: 10.1161/ATVBAHA.116.308792
13. Matrone G, Meng S, Gu Q, Lv J, Fang L, Chen K, Cooke JP. Lmo2 (LIM-domain-only 2) modulates Sphk1 (sphingosine kinase) and promotes endothelial cell migration. *Arterioscler Thromb Vasc Biol.* 2017;37:1860–1868. doi: 10.1161/ATVBAHA.117.309609
14. Liyanage SE, Fantin A, Villacampa P, Lange CA, Denti L, Cristante E, Smith AJ, Ali RR, Luhmann UF, Bainbridge JW, Ruhrberg C. Myeloid-derived vascular endothelial growth factor and hypoxia-inducible factor



- are dispensable for ocular neovascularization—brief report. *Arterioscler Thromb Vasc Biol*. 2016;36:19–24. doi: 10.1161/ATVBAHA.115.306681
15. Centa M, Gruber S, Nilsson D, Polyzos KA, Johansson DK, Hansson GK, Ketelhuth DF, Binder CJ, Malin S. Atherosclerosis susceptibility in mice is independent of the V1 immunoglobulin heavy chain gene. *Arterioscler Thromb Vasc Biol*. 2016;36:25–36. doi: 10.1161/ATVBAHA.115.305990
  16. Grimm M, Tischner D, Trold K, Albarrán Juárez J, Sivaraj KK, Ferreirós Bouzas N, Geisslinger G, Binder CJ, Wettschurek N. S1P2/G12/13 signaling negatively regulates macrophage activation and indirectly shapes the atheroprotective B1-cell population. *Arterioscler Thromb Vasc Biol*. 2016;36:37–48. doi: 10.1161/ATVBAHA.115.306066
  17. She ZG, Chang Y, Pang HB, Han W, Chen HZ, Smith JW, Stallcup WB. NG2 proteoglycan ablation reduces foam cell formation and atherogenesis via decreased low-density lipoprotein retention by synthetic smooth muscle cells. *Arterioscler Thromb Vasc Biol*. 2016;36:49–59. doi: 10.1161/ATVBAHA.115.306074
  18. Schwanekamp JA, Lorts A, Vagnozzi RJ, Vanhoutte D, Molkentin JD. Deletion of periostin protects against atherosclerosis in mice by altering inflammation and extracellular matrix remodeling. *Arterioscler Thromb Vasc Biol*. 2016;36:60–68. doi: 10.1161/ATVBAHA.115.306397
  19. Lu H, Wu C, Howatt DA, Balakrishnan A, Moorleghen JJ, Chen X, Zhao M, Graham MJ, Mullick AE, Crooke RM, Feldman DL, Cassis LA, Vander Kooi CW, Daugherty A. Angiotensinogen exerts effects independent of angiotensin II. *Arterioscler Thromb Vasc Biol*. 2016;36:256–265. doi: 10.1161/ATVBAHA.115.306740
  20. Diao Y, Mohandas R, Lee P, Liu Z, Sautina L, Mu W, Li S, Wen X, Croker B, Segal MS. Effects of long-term type I interferon on the arterial wall and smooth muscle progenitor cells differentiation. *Arterioscler Thromb Vasc Biol*. 2016;36:266–273. doi: 10.1161/ATVBAHA.115.306767
  21. Nguyen SD, Maaninka K, Lappalainen J, Nurmi K, Metso J, Öörni K, Navab M, Fogelman AM, Jauhiainen M, Lee-Rueckert M, Kovanen PT. Carboxyl-terminal cleavage of apolipoprotein A-I by human mast cell chymase impairs its anti-inflammatory properties. *Arterioscler Thromb Vasc Biol*. 2016;36:274–284. doi: 10.1161/ATVBAHA.115.306827
  22. El Khoury P, Waldmann E, Huby T, Gall J, Couvert P, Lacorte JM, Chapman J, Frisdal E, Lesnik P, Parhofer KG, Le Goff W, Guerin M. Extended-release niacin/laropiprant improves overall efficacy of post-prandial reverse cholesterol transport. *Arterioscler Thromb Vasc Biol*. 2016;36:285–294. doi: 10.1161/ATVBAHA.115.306834
  23. Gray SP, Di Marco E, Kennedy K, Chew P, Okabe J, El-Osta A, Calkin AC, Biessen EA, Touyz RM, Cooper ME, Schmidt HH, Jandeleit-Dahm KA. Reactive oxygen species can provide atheroprotection via NOX4-dependent inhibition of inflammation and vascular remodeling. *Arterioscler Thromb Vasc Biol*. 2016;36:295–307. doi: 10.1161/ATVBAHA.115.307012
  24. Liu D, Lei L, Desir M, Huang Y, Cleman J, Jiang W, Fernandez-Hernando C, Di Lorenzo A, Sessa WC, Giordano FJ. Smooth muscle hypoxia-inducible factor 1 $\alpha$  links intravascular pressure and atherosclerosis—brief report. *Arterioscler Thromb Vasc Biol*. 2016;36:442–445. doi: 10.1161/ATVBAHA.115.306861
  25. Palekar RU, Jallouk AP, Myerson JW, Pan H, Wickline SA. Inhibition of thrombin with PPACK-nanoparticles restores disrupted endothelial barriers and attenuates thrombotic risk in experimental atherosclerosis. *Arterioscler Thromb Vasc Biol*. 2016;36:446–455. doi: 10.1161/ATVBAHA.115.306697
  26. Foks AC, Engelbertsen D, Kuperwaser F, Alberts-Grill N, Gonen A, Witztum JL, Lederer J, Jarolim P, DeKruyff RH, Freeman GJ, Lichtman AH. Blockade of tim-1 and tim-4 enhances atherosclerosis in low-density lipoprotein receptor-deficient mice. *Arterioscler Thromb Vasc Biol*. 2016;36:456–465. doi: 10.1161/ATVBAHA.115.306860
  27. Chu Y, Lund DD, Doshi H, et al. Fibrotic aortic valve stenosis in hypercholesterolemic/hypertensive mice. *Arterioscler Thromb Vasc Biol*. 2016;36:466–474. doi: 10.1161/ATVBAHA.115.306912
  28. Shnerb Ganor R, Harats D, Schiby G, Gailani D, Levkovitz H, Avivi C, Tamarin I, Shaish A, Salomon O. Factor XI deficiency protects against atherogenesis in apolipoprotein E/factor XI double knock-out mice. *Arterioscler Thromb Vasc Biol*. 2016;36:475–481. doi: 10.1161/ATVBAHA.115.306954
  29. Gerdes N, Seijkens T, Lievens D, Kuijpers MJ, Winkels H, Projahn D, Hartwig H, Beckers L, Megens RT, Boon L, Noelle RJ, Soehnlein O, Heemskerk JW, Weber C, Lutgens E. Platelet CD40 exacerbates atherosclerosis by transcellular activation of endothelial cells and leukocytes. *Arterioscler Thromb Vasc Biol*. 2016;36:482–490. doi: 10.1161/ATVBAHA.115.307074
  30. Nakashiro S, Matoba T, Umezuru R, Koga J, Tokutome M, Katsuki S, Nakano K, Sunagawa K, Egashira K. Pioglitazone-incorporated nanoparticles prevent plaque destabilization and rupture by regulating monocyte/macrophage differentiation in ApoE $^{-/-}$  mice. *Arterioscler Thromb Vasc Biol*. 2016;36:491–500. doi: 10.1161/ATVBAHA.115.307057
  31. Yakushiji E, Ayaori M, Nishida T, Shiotani K, Takiguchi S, Nakaya K, Uto-Kondo H, Ogura M, Sasaki M, Yogo M, Komatsu T, Lu R, Yokoyama S, Ikekawi K. Probiotic-oxidized products, spiroquinone and diphenoquinone, promote reverse cholesterol transport in mice. *Arterioscler Thromb Vasc Biol*. 2016;36:591–597. doi: 10.1161/ATVBAHA.115.306376
  32. Babaev VR, Ding L, Zhang Y, May JM, Lin PC, Fazio S, Linton MF. Macrophage IKK $\alpha$  deficiency suppresses Akt phosphorylation, reduces cell survival, and decreases early atherosclerosis. *Arterioscler Thromb Vasc Biol*. 2016;36:598–607. doi: 10.1161/ATVBAHA.115.306931
  33. Rahtu-Korpela L, Määttä J, Dimova EY, Hörrkö S, Gylling H, Walkinshaw G, Hakkola J, Kivirikko KI, Mälyharju J, Serpi R, Koivunen P. Hypoxia-inducible factor prolyl 4-hydroxylase-2 inhibition protects against development of atherosclerosis. *Arterioscler Thromb Vasc Biol*. 2016;36:608–617. doi: 10.1161/ATVBAHA.115.307136
  34. Liang SJ, Zeng DY, Mai XY, Shang JY, Wu QQ, Yuan JN, Yu BX, Zhou P, Zhang FR, Liu YY, Lv XF, Liu J, Ou JS, Qian JS, Zhou JG. Inhibition of oral store-operated calcium channel prevents foam cell formation and atherosclerosis. *Arterioscler Thromb Vasc Biol*. 2016;36:618–628. doi: 10.1161/ATVBAHA.116.307344
  35. Wang X, Raghavan A, Chen T, Qiao L, Zhang Y, Ding Q, Musunuru K. CRISPR-Cas9 targeting of PCSK9 in human hepatocytes in vivo—brief report. *Arterioscler Thromb Vasc Biol*. 2016;36:783–786. doi: 10.1161/ATVBAHA.116.307227
  36. Boulaftali Y, Owens AP III, Beale A, Piatt R, Casari C, Lee RH, Conley PB, Paul DS, Mackman N, Bergmeier W. CalDAG-GEFI deficiency reduces atherosclerotic lesion development in mice. *Arterioscler Thromb Vasc Biol*. 2016;36:792–799. doi: 10.1161/ATVBAHA.115.306347
  37. Belmokhtar K, Robert T, Ortilon J, Braconnier A, Vuiblet V, Boulagnon-Rombi C, Diebold MD, Pietrement C, Schmidt AM, Rieu P, Touré F. Signaling of serum amyloid A through receptor for advanced glycation end products as a possible mechanism for uremia-related atherosclerosis. *Arterioscler Thromb Vasc Biol*. 2016;36:800–809. doi: 10.1161/ATVBAHA.115.306349
  38. Grandoch M, Kohlmorgen C, Melchior-Becker A, et al. Loss of biglycan enhances thrombin generation in apolipoprotein E-deficient mice: implications for inflammation and atherosclerosis. *Arterioscler Thromb Vasc Biol*. 2016;36:e41–e50. doi: 10.1161/ATVBAHA.115.306973
  39. Brinck JW, Thomas A, Lauer E, et al. Diabetes mellitus is associated with reduced high-density lipoprotein sphingosine-1-phosphate content and impaired high-density lipoprotein cardiac cell protection. *Arterioscler Thromb Vasc Biol*. 2016;36:817–824. doi: 10.1161/ATVBAHA.115.307049
  40. Howatt DA, Balakrishnan A, Moorleghen JJ, Muniappan L, Rateri DL, Uchida HA, Takano J, Saido TC, Chishti AH, Baud L, Subramanian V. Leukocyte calpain deficiency reduces angiotensin II-induced inflammation and atherosclerosis but not abdominal aortic aneurysms in mice. *Arterioscler Thromb Vasc Biol*. 2016;36:835–845. doi: 10.1161/ATVBAHA.116.307285
  41. Chen X, Howatt DA, Balakrishnan A, Moorleghen JJ, Wu C, Cassis LA, Daugherty A, Lu H. Angiotensin-converting enzyme in smooth muscle cells promotes atherosclerosis—brief report. *Arterioscler Thromb Vasc Biol*. 2016;36:1085–1089. doi: 10.1161/ATVBAHA.115.307038
  42. Li X, Fang P, Li Y, et al. Mitochondrial reactive oxygen species mediate lysophosphatidylcholine-induced endothelial cell activation. *Arterioscler Thromb Vasc Biol*. 2016;36:1090–1100. doi: 10.1161/ATVBAHA.115.306964
  43. Chellan B, Reardon CA, Getz GS, Hofmann Bowman MA. Enzymatically modified low-density lipoprotein promotes foam cell formation in smooth muscle cells via macropinocytosis and enhances receptor-mediated uptake of oxidized low-density lipoprotein. *Arterioscler Thromb Vasc Biol*. 2016;36:1101–1113. doi: 10.1161/ATVBAHA.116.307306
  44. Zhang N, Liu Z, Yao L, Mehta-D'souza P, McEver RP. P-selectin expressed by a human SELP transgene is atherogenic in apolipoprotein E-deficient mice. *Arterioscler Thromb Vasc Biol*. 2016;36:1114–1121. doi: 10.1161/ATVBAHA.116.307437
  45. Babaev VR, Yeung M, Erbay E, Ding L, Zhang Y, May JM, Fazio S, Hotamisligil GS, Linton MF. Jnk1 deficiency in hematopoietic cells suppresses macrophage apoptosis and increases atherosclerosis in low-density lipoprotein receptor null mice. *Arterioscler Thromb Vasc Biol*. 2016;36:1122–1131. doi: 10.1161/ATVBAHA.116.307580
  46. Matsumoto T, Sasaki N, Yamashita T, Emoto T, Kasahara K, Mizoguchi T, Hayashi T, Yodoi K, Kitano N, Saito T, Yamaguchi T, Hirata K.

- Overexpression of cytotoxic T-lymphocyte-associated antigen-4 prevents atherosclerosis in mice. *Arterioscler Thromb Vasc Biol.* 2016;36:1141–1151. doi: 10.1161/ATVBAHA.115.306848
47. Mehta NU, Grijalva V, Hama S, Wagner A, Navab M, Fogelman AM, Reddy ST. Apolipoprotein E<sup>-/-</sup> mice lacking hemopexin develop increased atherosclerosis via mechanisms that include oxidative stress and altered macrophage function. *Arterioscler Thromb Vasc Biol.* 2016;36:1152–1163. doi: 10.1161/ATVBAHA.115.306991
  48. Srikanthulu P, Hu D, Yin C, Mohanta SK, Bontha SV, Peng L, Beer M, Weber C, McNamara CA, Grassia G, Maffia P, Manz RA, Habenicht AJ. Artery tertiary lymphoid organs control multilayered territorialized atherosclerosis B-cell responses in aged ApoE<sup>-/-</sup> mice. *Arterioscler Thromb Vasc Biol.* 2016;36:1174–1185. doi: 10.1161/ATVBAHA.115.306983
  49. Tarling EJ, Edwards PA. Intracellular localization of endogenous mouse ABCG1 is mimicked by both ABCG1-L550 and ABCG1-P550-brief report. *Arterioscler Thromb Vasc Biol.* 2016;36:1323–1327. doi: 10.1161/ATVBAHA.116.307414
  50. Westerterp M, Tsuchiya K, Tattersall IW, Fotakis P, Bochem AE, Molusky MM, Ntonga V, Abramowicz S, Parks JS, Welch CL, Kitajewski J, Accili D, Tall AR. Deficiency of ATP-binding cassette transporters A1 and G1 in endothelial cells accelerates atherosclerosis in mice. *Arterioscler Thromb Vasc Biol.* 2016;36:1328–1337. doi: 10.1161/ATVBAHA.115.306670
  51. Kockx M, Glaros E, Leung B, Ng TW, Berbée JF, Deswaerte V, Nawara D, Quinn C, Rye KA, Jessup W, Rensen PC, Meikle PJ, Kritharides L. Low-density lipoprotein receptor-dependent and low-density lipoprotein receptor-independent mechanisms of cyclosporin a-induced dyslipidemia. *Arterioscler Thromb Vasc Biol.* 2016;36:1338–1349. doi: 10.1161/ATVBAHA.115.307030
  52. Liu J, Hernandez-Ono A, Graham MJ, Galton VA, Ginsberg HN. Type 1 deiodinase regulates ApoA-I gene expression and ApoA-I synthesis independent of thyroid hormone signaling. *Arterioscler Thromb Vasc Biol.* 2016;36:1356–1366. doi: 10.1161/ATVBAHA.116.307330
  53. Shen J, Tong X, Sud N, Khound R, Song Y, Maldonado-Gomez MX, Walter J, Su Q. Low-density lipoprotein receptor signaling mediates the triglyceride-lowering action of akkermansia muciniphila in genetic-induced hyperlipidemia. *Arterioscler Thromb Vasc Biol.* 2016;36:1448–1456. doi: 10.1161/ATVBAHA.116.307597
  54. Zhu L, Giunzioni I, Tavori H, Covarrubias R, Ding L, Zhang Y, Ormseth M, Major AS, Stafford JM, Linton MF, Fazio S. Loss of macrophage low-density lipoprotein receptor-related protein 1 confers resistance to the antiatherogenic effects of tumor necrosis factor- $\alpha$  inhibition. *Arterioscler Thromb Vasc Biol.* 2016;36:1483–1495. doi: 10.1161/ATVBAHA.116.307736
  55. Butcher MJ, Waseem TC, Galkina EV. Smooth muscle cell-derived interleukin-17C plays an atherogenic role via the recruitment of proinflammatory interleukin-17A<sup>+</sup> T cells to the aorta. *Arterioscler Thromb Vasc Biol.* 2016;36:1496–1506. doi: 10.1161/ATVBAHA.116.307892
  56. Stachon P, Geis S, Peikert A, et al. Extracellular ATP induces vascular inflammation and atherosclerosis via purinergic receptor Y2 in mice. *Arterioscler Thromb Vasc Biol.* 2016;36:1577–1586. doi: 10.1161/ATVBAHA.115.307397
  57. Meiler S, Smeets E, Winkels H, Shami A, Pascutti MF, Nolte MA, Beckers L, Weber C, Gerdes N, Lutgens E. Constitutive G1TR activation reduces atherosclerosis by promoting regulatory CD4<sup>+</sup> T-cell responses-brief report. *Arterioscler Thromb Vasc Biol.* 2016;36:1748–1752. doi: 10.1161/ATVBAHA.116.307354
  58. Park JG, Xu X, Cho S, Lee AH. Loss of transcription factor CREBH accelerates diet-induced atherosclerosis in Ldlr<sup>-/-</sup> mice. *Arterioscler Thromb Vasc Biol.* 2016;36:1772–1781. doi: 10.1161/ATVBAHA.116.307790
  59. Aarup A, Pedersen TX, Junker N, Christoffersen C, Bartels ED, Madsen M, Nielsen CH, Nielsen LB. Hypoxia-inducible factor-1 $\alpha$  expression in macrophages promotes development of atherosclerosis. *Arterioscler Thromb Vasc Biol.* 2016;36:1782–1790.
  60. Herbin O, Regelmann AG, Ramkhalawon B, Weinstein EG, Moore KJ, Alexandropoulos K. Monocyte adhesion and plaque recruitment during atherosclerosis development is regulated by the adapter protein Chat-H/SHEP1. *Arterioscler Thromb Vasc Biol.* 2016;36:1791–1801. doi: 10.1161/ATVBAHA.116.308014
  61. Perisic Matic L, Rykaczewska U, Razuvaev A, et al. Phenotypic modulation of smooth muscle cells in atherosclerosis is associated with downregulation of LMOD1, SYNPO2, PDLIM7, PLN, and SYNM. *Arterioscler Thromb Vasc Biol.* 2016;36:1947–1961. doi: 10.1161/ATVBAHA.116.307893
  62. Jin X, Sviridov D, Liu Y, Vaisman B, Addadi L, Remaley AT, Kruth HS. ABCA1 (ATP-binding cassette transporter A1) mediates ApoA-I (apolipoprotein A-I) and ApoA-I mimetic peptide mobilization of extracellular cholesterol microdomains deposited by macrophages. *Arterioscler Thromb Vasc Biol.* 2016;36:2283–2291. doi: 10.1161/ATVBAHA.116.308334
  63. Mukhamedova N, Hoang A, Cui HL, Carmichael I, Fu Y, Bukrinsky M, Sviridov D. Small GTPase ARF6 regulates endocytic pathway leading to degradation of ATP-binding cassette transporter A1. *Arterioscler Thromb Vasc Biol.* 2016;36:2292–2303. doi: 10.1161/ATVBAHA.116.308418
  64. Katsube A, Hayashi H, Kusuhara H. Pim-1L protects cell surface-resident ABCA1 from lysosomal degradation in hepatocytes and thereby regulates plasma high-density lipoprotein level. *Arterioscler Thromb Vasc Biol.* 2016;36:2304–2314. doi: 10.1161/ATVBAHA.116.308472
  65. Duval C, Ali M, Chaudhry WW, Ridger VC, Ariens RA, Philippou H. Factor XIII A-subunit V34L variant affects thrombus cross-linking in a murine model of thrombosis. *Arterioscler Thromb Vasc Biol.* 2016;36:308–316. doi: 10.1161/ATVBAHA.115.306695
  66. Delaney MK, Kim K, Estevez B, Xu Z, Stojanovic-Terpo A, Shen B, Ushio-Fukai M, Cho J, Du X. Differential roles of the NADPH-oxidase 1 and 2 in platelet activation and thrombosis. *Arterioscler Thromb Vasc Biol.* 2016;36:846–854. doi: 10.1161/ATVBAHA.116.307308
  67. van Eeuwijk JM, Stegner D, Lamb DJ, Kraft P, Beck S, Thielmann I, Kiefer F, Walzog B, Stoll G, Nieswandt B. The novel oral syk inhibitor, BI1002494, protects mice from arterial thrombosis and thromboinflammatory brain infarction. *Arterioscler Thromb Vasc Biol.* 2016;36:1247–1253. doi: 10.1161/ATVBAHA.115.306883
  68. Crescente M, Pluthero FG, Li L, Lo RW, Walsh TG, Schenk MP, Holbrook LM, Loureiro S, Ali MS, Vaiyapuri S, Falet H, Jones IM, Poole AW, Kahr WH, Gibbins JM. Intracellular trafficking, localization, and mobilization of platelet-borne thiol isomerases. *Arterioscler Thromb Vasc Biol.* 2016;36:1164–1173. doi: 10.1161/ATVBAHA.116.307461
  69. Münzer P, Walker-Ailgaier B, Geue S, et al. PDK1 determines collagen-dependent platelet Ca<sup>2+</sup> signaling and is critical to Development of ischemic stroke in vivo. *Arterioscler Thromb Vasc Biol.* 2016;36:1507–1516. doi: 10.1161/ATVBAHA.115.307105
  70. Oe Y, Hayashi S, Fushima T, Sato E, Kisu K, Sato H, Ito S, Takahashi N. Coagulation factor Xa and protease-activated receptor 2 as novel therapeutic targets for diabetic nephropathy. *Arterioscler Thromb Vasc Biol.* 2016;36:1525–1533. doi: 10.1161/ATVBAHA.116.307883
  71. Covarrubias R, Chepurko E, Reynolds A, Huttinger ZM, Huttinger R, Stanfil K, Wheeler DG, Novitskaya T, Robson SC, Dwyer KM, Cowan PJ, Gumina RJ. Role of the CD39/CD73 purinergic pathway in modulating arterial thrombosis in mice. *Arterioscler Thromb Vasc Biol.* 2016;36:1809–1820. doi: 10.1161/ATVBAHA.116.307374
  72. Chen W, Liang X, Syed AK, Jessup P, Church WR, Ware J, Josephson CD, Li R. Inhibiting GPIIb/IIIa shedding preserves post-transfusion recovery and hemostatic function of platelets after prolonged storage. *Arterioscler Thromb Vasc Biol.* 2016;36:1821–1828. doi: 10.1161/ATVBAHA.116.307639
  73. Dhanesha N, Prakash P, Doddapattar P, Khanna I, Pollpeter MJ, Nayak MK, Staber JM, Chauhan AK. Endothelial cell-derived von willebrand factor is the major determinant that mediates von willebrand factor-dependent acute ischemic stroke by promoting postischemic thromboinflammation. *Arterioscler Thromb Vasc Biol.* 2016;36:1829–1837. doi: 10.1161/ATVBAHA.116.307660
  74. Yeung J, Tourdot BE, Adili R, Green AR, Freedman CJ, Fernandez-Perez P, Yu J, Holman TR, Holinstat M. 12(S)-HETrE, a 12-lipoxygenase oxygenated dihydro- $\gamma$ -linolenic acid, inhibits thrombosis via Gcs signaling in platelets. *Arterioscler Thromb Vasc Biol.* 2016;36:2068–2077. doi: 10.1161/ATVBAHA.116.308050
  75. Baig AA, Haining EJ, Geuss E, Beck S, Swieringa F, Wanitchakool P, Schuhmann MK, Stegner D, Kunzelmann K, Kleinschnitz C, Heemskerck JW, Braun A, Nieswandt B. TMEM16F-mediated platelet membrane phospholipid scrambling is critical for hemostasis and thrombosis but not thromboinflammation in mice-brief report. *Arterioscler Thromb Vasc Biol.* 2016;36:2152–2157. doi: 10.1161/ATVBAHA.116.307727
  76. Zhou Y, Abraham S, Renna S, Edelstein LC, Dangelmaier CA, Tsygankov AY, Kunapuli SP, Bray PF, McKenzie SE. TULA-2 (T-cell ubiquitin ligand-2) inhibits the platelet Fc $\gamma$  receptor for IgG IIA (Fc $\gamma$ RIIA) signaling pathway and heparin-induced thrombocytopenia in mice. *Arterioscler Thromb Vasc Biol.* 2016;36:2315–2323. doi: 10.1161/ATVBAHA.116.307979
  77. Moraes LA, Unsworth AJ, Vaiyapuri S, Ali MS, Sasikumar P, Sage T, Flora GD, Bye AP, Kriek N, Dorchie E, Molendi-Coste O, Dombrowicz D, Staels B, Bishop-Bailey D, Gibbins JM. Farnesoid X receptor and its ligands inhibit the function of platelets. *Arterioscler Thromb Vasc Biol.* 2016;36:2324–2333. doi: 10.1161/ATVBAHA.116.308093

78. Liu CL, Wang Y, Liao M, et al. Allergic lung inflammation aggravates angiotensin II-induced abdominal aortic aneurysms in mice. *Arterioscler Thromb Vasc Biol*. 2016;36:69–77. doi: 10.1161/ATVBAHA.115.305911
79. Xia N, Horke S, Habermeier A, Closs EI, Reifenberg G, Gericke A, Mikhed Y, Münzel T, Daiber A, Förstermann U, Li H. Uncoupling of endothelial nitric oxide synthase in perivascular adipose tissue of diet-induced obese mice. *Arterioscler Thromb Vasc Biol*. 2016;36:78–85. doi: 10.1161/ATVBAHA.115.306263
80. Park C, Lee TJ, Bhang SH, et al. Injury-mediated vascular regeneration requires endothelial ER71/ETV2. *Arterioscler Thromb Vasc Biol*. 2016;36:86–96. doi: 10.1161/ATVBAHA.115.306430
81. Godo S, Sawada A, Saito H, Ikeda S, Enkhjargal B, Suzuki K, Tanaka S, Shimokawa H. Disruption of physiological balance between nitric oxide and endothelium-dependent hyperpolarization impairs cardiovascular homeostasis in mice. *Arterioscler Thromb Vasc Biol*. 2016;36:97–107. doi: 10.1161/ATVBAHA.115.306499
82. Gao C, Fu Y, Li Y, Zhang X, Zhang L, Yu F, Xu SS, Xu Q, Zhu Y, Guan Y, Wang X, Kong W. Microsomal prostaglandin E synthase-1-derived PGE2 inhibits vascular smooth muscle cell calcification. *Arterioscler Thromb Vasc Biol*. 2016;36:108–121. doi: 10.1161/ATVBAHA.115.306642
83. Schlosser A, Pilecki B, Hemstra LE, et al. MFAP4 promotes vascular smooth muscle migration, proliferation and accelerates neointima formation. *Arterioscler Thromb Vasc Biol*. 2016;36:122–133. doi: 10.1161/ATVBAHA.115.306672
84. Johns RA, Takimoto E, Meuchel LW, Elsaigh E, Zhang A, Heller NM, Semenza GL, Yamaji-Kegan K. Hypoxia-inducible factor 1 $\alpha$  is a critical downstream mediator for hypoxia-induced mitogenic factor (FIZZ1/RELM $\alpha$ )-induced pulmonary hypertension. *Arterioscler Thromb Vasc Biol*. 2016;36:134–144. doi: 10.1161/ATVBAHA.115.306710
85. Daniel JM, Prock A, Dutzmann J, Sonnenschein K, Thum T, Bauersachs J, Sedding DG. Regulator of G-protein signaling 5 prevents smooth muscle cell proliferation and attenuates neointima formation. *Arterioscler Thromb Vasc Biol*. 2016;36:317–327. doi: 10.1161/ATVBAHA.115.305974
86. Huk DJ, Austin BF, Horne TE, Hinton RB, Ray WC, Heistad DD, Lincoln J. Valve endothelial cell-derived Tgf $\beta$ 1 signaling promotes nuclear localization of Sox9 in interstitial cells associated with attenuated calcification. *Arterioscler Thromb Vasc Biol*. 2016;36:328–338. doi: 10.1161/ATVBAHA.115.306091
87. Yan Z, Wang ZG, Segev N, Hu S, Minshall RD, Dull RO, Zhang M, Malik AB, Hu G. Rab11a mediates vascular endothelial-cadherin recycling and controls endothelial barrier function. *Arterioscler Thromb Vasc Biol*. 2016;36:339–349. doi: 10.1161/ATVBAHA.115.306549
88. Grandoch M, Kohlmorgen C, Melchior-Becker A, et al. Loss of biglycan enhances thrombin generation in apolipoprotein E-deficient mice: implications for inflammation and atherosclerosis. *Arterioscler Thromb Vasc Biol*. 2016;36:e41–e50. doi: 10.1161/ATVBAHA.115.306973
89. Mao H, Lockyer P, Townley-Tilson WH, Xie L, Pi X. LRP1 regulates retinal angiogenesis by inhibiting PARP-1 activity and endothelial cell proliferation. *Arterioscler Thromb Vasc Biol*. 2016;36:350–360. doi: 10.1161/ATVBAHA.115.306713
90. Yang P, Wei X, Zhang J, Yi B, Zhang GX, Yin L, Yang XF, Sun J. Antithrombotic effects of Nur77 and Nor1 are mediated through upregulating thrombomodulin expression in endothelial cells. *Arterioscler Thromb Vasc Biol*. 2016;36:361–369. doi: 10.1161/ATVBAHA.115.306891
91. Rajput C, Tauseef M, Farazuddin M, Yazbeck P, Amin MR, Avin Br V, Sharma T, Mehta D. MicroRNA-150 suppression of angiotensin-2 generation and signaling is crucial for resolving vascular injury. *Arterioscler Thromb Vasc Biol*. 2016;36:380–388. doi: 10.1161/ATVBAHA.115.306997
92. Krohn JB, Hutcheson JD, Martínez-Martínez E, Irvin WS, Bouten CV, Bertazzo S, Bendeck MP, Aikawa E. Discoidin domain receptor-1 regulates calcific extracellular vesicle release in vascular smooth muscle cell fibrocalcific response via transforming growth factor- $\beta$  signaling. *Arterioscler Thromb Vasc Biol*. 2016;36:525–533. doi: 10.1161/ATVBAHA.115.307009
93. Ramakrishnan DP, Hajj-Ali RA, Chen Y, Silverstein RL. Extracellular vesicles activate a CD36-dependent signaling pathway to inhibit microvascular endothelial cell migration and tube formation. *Arterioscler Thromb Vasc Biol*. 2016;36:534–544. doi: 10.1161/ATVBAHA.115.307085
94. Sanada F, Kanbara Y, Taniyama Y, Otsu R, Carracedo M, Ikeda-Iwabu Y, Muratsu J, Sugimoto K, Yamamoto K, Rakugi H, Morishita R. Induction of angiogenesis by a type III phosphodiesterase inhibitor, cilostazol, through activation of peroxisome proliferator-activated receptor- $\gamma$  and cAMP pathways in vascular cells. *Arterioscler Thromb Vasc Biol*. 2016;36:545–552. doi: 10.1161/ATVBAHA.115.307011
95. Hu W, Zhang Y, Wang L, Lau CW, Xu J, Luo JY, Gou L, Yao X, Chen ZY, Ma RC, Tian XY, Huang Y. Bone morphogenic protein 4-smad-induced upregulation of platelet-derived growth factor AA impairs endothelial function. *Arterioscler Thromb Vasc Biol*. 2016;36:553–560. doi: 10.1161/ATVBAHA.115.306302
96. Pachel C, Mathes D, Arias-Loza AP, Heitzmann W, Nordbeck P, Deppermann C, Lorenz V, Hofmann U, Nieswandt B, Frantz S. Inhibition of platelet GPVI protects against myocardial ischemiareperfusion injury. *Arterioscler Thromb Vasc Biol*. 2016;36:629–635. doi: 10.1161/ATVBAHA.115.305873
97. Suzuki K, Satoh K, Ikeda S, et al. Basigin promotes cardiac fibrosis and failure in response to chronic pressure overload in mice. *Arterioscler Thromb Vasc Biol*. 2016;36:636–646. doi: 10.1161/ATVBAHA.115.306686
98. Schossleitner K, Rauscher S, Gröger M, Friedl HP, Finsterwalder R, Habertheuer A, Sibilia M, Brostjan C, Födinger D, Citi S, Petzelbauer P. Evidence that cingulin regulates endothelial barrier function in vitro and in vivo. *Arterioscler Thromb Vasc Biol*. 2016;36:647–654. doi: 10.1161/ATVBAHA.115.307032
99. Ma Q, Xia X, Tao Q, Lu K, Shen J, Xu Q, Hu X, Tang Y, Block NL, Webster KA, Schally AV, Wang J, Yu H. Profound actions of an agonist of growth hormone-releasing hormone on angiogenic therapy by mesenchymal stem cells. *Arterioscler Thromb Vasc Biol*. 2016;36:663–672. doi: 10.1161/ATVBAHA.116.307126
100. Trachet B, Piersigilli A, Fraga-Silva RA, Aslanidou L, Sordet-Dessimoz J, Astolfo A, Stampanoni MF, Segers P, Stergiopoulos N. Ascending aortic aneurysm in angiotensin II-infused mice: formation, progression, and the role of focal dissections. *Arterioscler Thromb Vasc Biol*. 2016;36:673–681. doi: 10.1161/ATVBAHA.116.307211
101. Harmon DB, Srikakulapu P, Kaplan JL, et al. Protective role for B-1b B cells and IgM in obesity-associated inflammation, glucose intolerance, and insulin resistance. *Arterioscler Thromb Vasc Biol*. 2016;36:682–691. doi: 10.1161/ATVBAHA.116.307166
102. Gkatzis K, Thalgot J, Dos-Santos-Luis D, Martin S, Lamandé N, Carette MF, Disch F, Snijder RJ, Westermann CJ, Mager JJ, Oh SP, Miquero L, Arthur HM, Mummery CL, Lebrin F. Interaction between ALK1 signaling and connexin40 in the development of arteriovenous malformations. *Arterioscler Thromb Vasc Biol*. 2016;36:707–717. doi: 10.1161/ATVBAHA.115.306719
103. Reddy MA, Das S, Zhuo C, Jin W, Wang M, Lanting L, Natarajan R. Regulation of vascular smooth muscle cell dysfunction under diabetic conditions by miR-504. *Arterioscler Thromb Vasc Biol*. 2016;36:864–873. doi: 10.1161/ATVBAHA.115.306770
104. Sun JY, Li C, Shen ZX, et al. Mineralocorticoid receptor deficiency in macrophages inhibits neointimal hyperplasia and suppresses macrophage inflammation through SGK1-API/NF- $\kappa$ B pathways. *Arterioscler Thromb Vasc Biol*. 2016;36:874–885. doi: 10.1161/ATVBAHA.115.307031
105. Wakita D, Kurashima Y, Crother TR, et al. Role of interleukin-1 signaling in a mouse model of kawasaki disease-associated abdominal aortic aneurysm. *Arterioscler Thromb Vasc Biol*. 2016;36:886–897. doi: 10.1161/ATVBAHA.115.307072
106. Moran CS, Rush CM, Dougan T, Jose RJ, Biros E, Norman PE, Gera L, Golledge J. Modulation of kinin B2 receptor signaling controls aortic dilatation and rupture in the angiotensin II-infused apolipoprotein E-deficient mouse. *Arterioscler Thromb Vasc Biol*. 2016;36:898–907. doi: 10.1161/ATVBAHA.115.306945
107. Sharma AK, Salmon MD, Lu G, Su G, Pope NH, Smith JR, Weiss ML, Upchurch GR Jr. Mesenchymal stem cells attenuate NADPH oxidase-dependent high mobility group box 1 production and inhibit abdominal aortic aneurysms. *Arterioscler Thromb Vasc Biol*. 2016;36:908–918. doi: 10.1161/ATVBAHA.116.307373
108. Ferruzzi J, Murtada SI, Li G, Jiao Y, Uman S, Ting MY, Tellides G, Humphrey JD. Pharmacologically improved contractility protects against aortic dissection in mice with disrupted transforming growth factor- $\beta$  signaling despite compromised extracellular matrix properties. *Arterioscler Thromb Vasc Biol*. 2016;36:919–927. doi: 10.1161/ATVBAHA.116.307436
109. Liverani E, Rico MC, Tsygankov AY, Kilpatrick LE, Kunapuli SP. P2Y12 receptor modulates sepsis-induced inflammation. *Arterioscler Thromb Vasc Biol*. 2016;36:961–971. doi: 10.1161/ATVBAHA.116.307401
110. Stiber JA, Wu JH, Zhang L, Neplioev I, Zhang ZS, Bryson VG, Brian L, Bentley RC, Gordon-Weeks PR, Rosenberg PB, Freedman NJ. The actin-binding protein drebrin inhibits neointimal hyperplasia. *Arterioscler Thromb Vasc Biol*. 2016;36:984–993. doi: 10.1161/ATVBAHA.115.306140
111. Talia DM, Deliyanti D, Agrotis A, Wilkinson-Berka JL. Inhibition of the nuclear receptor ROR $\gamma$  and interleukin-17A suppresses



- neovascular retinopathy: involvement of immunocompetent microglia. *Arterioscler Thromb Vasc Biol.* 2016;36:1186–1196. doi: 10.1161/ATVBAHA.115.307080
112. Ren B, Best B, Ramakrishnan DP, Walcott BP, Storz P, Silverstein RL. LPA/PKD-1-FoxO1 signaling axis mediates endothelial cell CD36 transcriptional repression and proangiogenic and proarteriogenic reprogramming. *Arterioscler Thromb Vasc Biol.* 2016;36:1197–1208. doi: 10.1161/ATVBAHA.116.307421
  113. Becker PW, Sacilotto N, Nornes S, Neal A, Thomas MO, Liu K, Preece C, Ratnayaka I, Davies B, Bou-Gharios G, De Val S. An intronic Flk1 enhancer directs arterial-specific expression via RBPJ-mediated venous repression. *Arterioscler Thromb Vasc Biol.* 2016;36:1209–1219. doi: 10.1161/ATVBAHA.116.307517
  114. Shindo T, Ito K, Ogata T, et al. Low-intensity pulsed ultrasound enhances angiogenesis and ameliorates left ventricular dysfunction in a mouse model of acute myocardial infarction. *Arterioscler Thromb Vasc Biol.* 2016;36:1220–1229. doi: 10.1161/ATVBAHA.115.306477
  115. Sun Y, Wang K, Ye P, Wu J, Ren L, Zhang A, Huang X, Deng P, Wu C, Yue Z, Chen Z, Ding X, Chen J, Xia J. MicroRNA-155 promotes the directional migration of resident smooth muscle progenitor cells by regulating monocyte chemoattractant protein 1 in transplant arteriosclerosis. *Arterioscler Thromb Vasc Biol.* 2016;36:1230–1239. doi: 10.1161/ATVBAHA.115.306691
  116. Shikatani EA, Chandy M, Besla R, Li CC, Momen A, El-Mounayri O, Robbins CS, Husain M. c-Myb regulates proliferation and differentiation of adventitial Sc $\alpha$ 1+ vascular smooth muscle cell progenitors by transactivation of myocardin. *Arterioscler Thromb Vasc Biol.* 2016;36:1367–1376. doi: 10.1161/ATVBAHA.115.307116
  117. Gomez-Stallons MV, Wrigg-Schwendeman EE, Hassel KR, Conway SJ, Yutzey KE. Bone morphogenetic protein signaling is required for aortic valve calcification. *Arterioscler Thromb Vasc Biol.* 2016;36:1398–1405. doi: 10.1161/ATVBAHA.116.307526
  118. Williams H, Mill CA, Monk BA, Hulin-Curtis S, Johnson JL, George SJ. Wnt2 and WISP-1/CCN4 induce intimal thickening via promotion of smooth muscle cell migration. *Arterioscler Thromb Vasc Biol.* 2016;36:1417–1424. doi: 10.1161/ATVBAHA.116.307626
  119. Boeckel JN, Derlet A, Glaser SF, Luczak A, Lucas T, Heumüller AW, Krüger M, Zehendner CM, Kaluza D, Doddaballapur A, Ohtani K, Treguer K, Dimmeler S. JMJD8 regulates angiogenic sprouting and cellular metabolism by interacting with pyruvate kinase M2 in endothelial cells. *Arterioscler Thromb Vasc Biol.* 2016;36:1425–1433. doi: 10.1161/ATVBAHA.116.307695
  120. Wu H, Cheng XW, Hu L, et al. Cathepsin S activity controls injury-related vascular repair in mice via the TLR2-mediated p38MAPK and PI3K-Akt/p-HDAC6 signaling pathway. *Arterioscler Thromb Vasc Biol.* 2016;36:1549–1557. doi: 10.1161/ATVBAHA.115.307110
  121. Brandes RP, Harenkamp S, Schürmann C, et al. The cytosolic NADPH oxidase subunit NoxO1 promotes an endothelial stalk cell phenotype. *Arterioscler Thromb Vasc Biol.* 2016;36:1558–1565. doi: 10.1161/ATVBAHA.116.307132
  122. Li DJ, Huang F, Ni M, Fu H, Zhang LS, Shen FM.  $\alpha$ 7 nicotinic acetylcholine receptor relieves angiotensin II-induced senescence in vascular smooth muscle cells by raising nicotinamide adenine dinucleotide-dependent SIRT1 activity. *Arterioscler Thromb Vasc Biol.* 2016;36:1566–1576. doi: 10.1161/ATVBAHA.116.307157
  123. Martorell S, Hueso L, Gonzalez-Navarro H, Collado A, Sanz MJ, Piqueras L. Vitamin D receptor activation reduces angiotensin-II-induced dissecting abdominal aortic aneurysm in apolipoprotein E-knockout mice. *Arterioscler Thromb Vasc Biol.* 2016;36:1587–1597. doi: 10.1161/ATVBAHA.116.307530
  124. Kauffenstein G, Tamareille S, Prunier F, et al. Central role of P2Y6 UDP receptor in arteriolar myogenic tone. *Arterioscler Thromb Vasc Biol.* 2016;36:1598–1606. doi: 10.1161/ATVBAHA.116.307739
  125. Hibender S, Franken R, van Roomen C, Ter Braake A, van der Made I, Schermer EE, Gunst Q, van den Hoff MJ, Lutgens E, Pinto YM, Groenink M, Zwinderman AH, Mulder BJ, de Vries CJ, de Waard V. Resveratrol inhibits aortic root dilatation in the Fbn1C1039G/+ marfan mouse model. *Arterioscler Thromb Vasc Biol.* 2016;36:1618–1626. doi: 10.1161/ATVBAHA.116.307841
  126. Sung DC, Bowen CJ, Vaidya KA, Zhou J, Chapurin N, Recknagel A, Zhou B, Chen J, Kotlikoff M, Butcher JT. Cadherin-11 overexpression induces extracellular matrix remodeling and calcification in mature aortic valves. *Arterioscler Thromb Vasc Biol.* 2016;36:1627–1637. doi: 10.1161/ATVBAHA.116.307812
  127. Batchu N, Hughson A, Wadosky KM, Morrell CN, Fowell DJ, Korshunov VA. Role of Axl in T-lymphocyte survival in salt-dependent hypertension. *Arterioscler Thromb Vasc Biol.* 2016;36:1638–1646. doi: 10.1161/ATVBAHA.116.307848
  128. Yan H, Zhou HF, Akk A, Hu Y, Springer LE, Ennis TL, Pham CTN. Neutrophil proteases promote experimental abdominal aortic aneurysm via extracellular trap release and plasmacytoid dendritic cell activation. *Arterioscler Thromb Vasc Biol.* 2016;36:1660–1669. doi: 10.1161/ATVBAHA.116.307786
  129. Lu H, Howatt DA, Balakrishnan A, Graham MJ, Mullick AE, Daugherty A. Hypercholesterolemia induced by a PCSK9 gain-of-function mutation augments angiotensin II-induced abdominal aortic aneurysms in C57BL/6 mice—brief report. *Arterioscler Thromb Vasc Biol.* 2016;36:1753–1757. doi: 10.1161/ATVBAHA.116.307613
  130. Zhu H, Zhang M, Liu Z, Xing J, Moriasi C, Dai X, Zou MH. AMP-activated protein kinase  $\alpha$ 1 in macrophages promotes collateral remodeling and arteriogenesis in mice in vivo. *Arterioscler Thromb Vasc Biol.* 2016;36:1868–1878. doi: 10.1161/ATVBAHA.116.307743
  131. Saker M, Lipskaia L, Marcos E, et al. Osteopontin, a key mediator expressed by aenescent pulmonary vascular cells in pulmonary hypertension. *Arterioscler Thromb Vasc Biol.* 2016;36:1879–1890. doi: 10.1161/ATVBAHA.116.307839
  132. Kirsch J, Schneider H, Pagel JJ, et al. Endothelial dysfunction, and a prothrombotic, proinflammatory phenotype is caused by loss of mitochondrial thioredoxin reductase in endothelium. *Arterioscler Thromb Vasc Biol.* 2016;36:1891–1899. doi: 10.1161/ATVBAHA.116.307843
  133. Kassan M, Ait-Aissa K, Radwan E, Mali V, Haddou S, Gabani M, Zhang W, Belmadani S, Irani K, Trebak M, Matrougui K. Essential role of smooth muscle STIM1 in hypertension and cardiovascular dysfunction. *Arterioscler Thromb Vasc Biol.* 2016;36:1900–1909. doi: 10.1161/ATVBAHA.116.307869
  134. Gong Y, Fu Z, Edin ML, et al. Cytochrome P450 oxidase 2C inhibition adds to  $\omega$ -3 long-chain polyunsaturated fatty acids protection against retinal and choroidal neovascularization. *Arterioscler Thromb Vasc Biol.* 2016;36:1919–1927. doi: 10.1161/ATVBAHA.116.307558
  135. Takei Y, Tanaka T, Kent KC, Yamanouchi D. Osteoclastogenic differentiation of macrophages in the development of abdominal aortic aneurysms. *Arterioscler Thromb Vasc Biol.* 2016;36:1962–1971. doi: 10.1161/ATVBAHA.116.307715
  136. Jiang L, Konishi H, Nurwidya F, Satoh K, Takahashi F, Ebinuma H, Fujimura K, Takasu K, Jiang M, Shimokawa H, Bujo H, Daida H. Deletion of LR11 attenuates hypoxia-induced pulmonary arterial smooth muscle cell proliferation with medial thickening in mice. *Arterioscler Thromb Vasc Biol.* 2016;36:1972–1979. doi: 10.1161/ATVBAHA.116.307900
  137. Dutta P, Hoyer FF, Sun Y, Iwamoto Y, Tricot B, Weissleder R, Magnani JL, Swirski FK, Nahrendorf M. E-selectin inhibition mitigates splenic HSC activation and myelopoiesis in hypercholesterolemic mice with myocardial infarction. *Arterioscler Thromb Vasc Biol.* 2016;36:1802–1808. doi: 10.1161/ATVBAHA.116.307519
  138. Aldabbous L, Abdul-Salam V, McKinnon T, Duluc L, Pepke-Zaba J, Southwood M, Ainscough AJ, Hadinnapola C, Wilkins MR, Toshner M, Wojciak-Stothard B. Neutrophil extracellular traps promote angiogenesis: evidence from vascular pathology in pulmonary hypertension. *Arterioscler Thromb Vasc Biol.* 2016;36:2078–2087. doi: 10.1161/ATVBAHA.116.307634
  139. Imanishi M, Chiba Y, Tomita N, Matsunaga S, Nakagawa T, Ueno M, Yamamoto K, Tamaki T, Tomita S. Hypoxia-inducible factor-1 $\alpha$  in smooth muscle cells protects against aortic aneurysms—brief report. *Arterioscler Thromb Vasc Biol.* 2016;36:2158–2162. doi: 10.1161/ATVBAHA.116.307784
  140. Liao Z, Cantor JM. Endothelial cells require CD98 for efficient angiogenesis—brief report. *Arterioscler Thromb Vasc Biol.* 2016;36:2163–2166. doi: 10.1161/ATVBAHA.116.308335
  141. Ji Y, Weng Z, Fish P, Goyal N, Luo M, Myears SP, Strawn TL, Chandrasekar B, Wu J, Fay WP. Pharmacological targeting of plasminogen activator inhibitor-1 decreases vascular smooth muscle cell migration and neointima formation. *Arterioscler Thromb Vasc Biol.* 2016;36:2167–2175. doi: 10.1161/ATVBAHA.116.308344
  142. Lu WW, Jia LX, Ni XQ, Zhao L, Chang JR, Zhang JS, Hou YL, Zhu Y, Guan YF, Yu YR, Du J, Tang CS, Qi YF. Intermedin-1-53 attenuates abdominal aortic aneurysm by inhibiting oxidative stress. *Arterioscler Thromb Vasc Biol.* 2016;36:2176–2190. doi: 10.1161/ATVBAHA.116.307825
  143. Schaheen B, Downs EA, Serbulea V, Almenara CC, Spinoso M, Su G, Zhao Y, Srikakulapu P, Butts C, McNamara CA, Leitinger N, Upchurch GR Jr, Meher AK, Ailawadi G. B-cell depletion promotes aortic infiltration of immunosuppressive cells and is protective of experimental aortic aneurysm. *Arterioscler Thromb Vasc Biol.* 2016;36:2191–2202. doi: 10.1161/ATVBAHA.116.307559

144. He H, Mack JJ, Güç E, Warren CM, Squadrito ML, Kilarski WW, Baer C, Freshman RD, McDonald AI, Ziyad S, Swartz MA, De Palma M, Iruela-Arispe ML. Perivascular macrophages limit permeability. *Arterioscler Thromb Vasc Biol*. 2016;36:2203–2212. doi: 10.1161/ATVBAHA.116.307592
145. Kick K, Nekolla K, Rehberg M, Vollmar AM, Zahler S. New view on endothelial cell migration: switching modes of migration based on matrix composition. *Arterioscler Thromb Vasc Biol*. 2016;36:2346–2357. doi: 10.1161/ATVBAHA.116.307870
146. Shentu TP, He M, Sun X, Zhang J, Zhang F, Gongol B, Marin TL, Zhang J, Wen L, Wang Y, Geary GG, Zhu Y, Johnson DA, Shyy JY. AMP-activated protein kinase and sirtuin 1 coregulation of cortactin contributes to endothelial function. *Arterioscler Thromb Vasc Biol*. 2016;36:2358–2368. doi: 10.1161/ATVBAHA.116.307871
147. Peghaire C, Bats ML, Sewduth R, Jeanningros S, Jaspard B, Couffignal T, Duplâa C, Dufourcq P. Fzd7 (Frizzled-7) expressed by endothelial cells controls blood vessel formation through Wnt/ $\beta$ -catenin canonical signaling. *Arterioscler Thromb Vasc Biol*. 2016;36:2369–2380. doi: 10.1161/ATVBAHA.116.307926
148. Li Q, Kim YR, Vikram A, Kumar S, Kassan M, Gabani M, Lee SK, Jacobs JS, Irani K. P66Shc-induced microRNA-34a causes diabetic endothelial dysfunction by downregulating sirtuin1. *Arterioscler Thromb Vasc Biol*. 2016;36:2394–2403. doi: 10.1161/ATVBAHA.116.308321
149. Wang C, Chen H, Zhu W, et al. Nicotine accelerates atherosclerosis in apolipoprotein E-deficient mice by activating  $\alpha 7$  nicotinic acetylcholine receptor on mast cells. *Arterioscler Thromb Vasc Biol*. 2017;37:53–65. doi: 10.1161/ATVBAHA.116.307264
150. Sasaki N, Yamashita T, Kasahara K, et al. UVB exposure prevents atherosclerosis by regulating immunoinflammatory responses. *Arterioscler Thromb Vasc Biol*. 2017;37:66–74. doi: 10.1161/ATVBAHA.116.308063
151. Chen X, Qian S, Hoggatt A, Tang H, Hacker TA, Obukhov AG, Herring PB, Seye CI. Endothelial cell-specific deletion of P2Y2 receptor promotes plaque stability in atherosclerosis-susceptible ApoE-null mice. *Arterioscler Thromb Vasc Biol*. 2017;37:75–83. doi: 10.1161/ATVBAHA.116.308561
152. Xu R, Li C, Wu Y, Shen L, Ma J, Qian J, Ge J. Role of KCa3.1 channels in macrophage polarization and its relevance in atherosclerotic plaque instability. *Arterioscler Thromb Vasc Biol*. 2017;37:226–236. doi: 10.1161/ATVBAHA.116.308461
153. Sanz-Garcia C, Sánchez Á, Contreras-Jurado C, Cales C, Barranquero C, Muñoz M, Merino R, Escudero P, Sanz MJ, Osada J, Aranda A, Alemany S. Map3k8 modulates monocyte state and atherogenesis in ApoE<sup>-/-</sup> mice. *Arterioscler Thromb Vasc Biol*. 2017;37:237–246. doi: 10.1161/ATVBAHA.116.308528
154. Nicolaou A, Zhao Z, Northoff BH, Sass K, Herbst A, Kohlmaier A, Chalaris A, Wolfrum C, Weber C, Steffens S, Rose-John S, Teupser D, Holdt LM, Adam17 Deficiency promotes atherosclerosis by enhanced TNFR2 signaling in mice. *Arterioscler Thromb Vasc Biol*. 2017;37:247–257. doi: 10.1161/ATVBAHA.116.308682
155. McNeill E, Iqbal AJ, Jones D, Patel J, Coutinho P, Taylor L, Greaves DR, Channon KM. Tracking monocyte recruitment and macrophage accumulation in atherosclerotic plaque progression using a novel hCD68GFP/ApoE<sup>-/-</sup> reporter mouse-brief report. *Arterioscler Thromb Vasc Biol*. 2017;37:258–263. doi: 10.1161/ATVBAHA.116.308367
156. Mistry RH, Verkade HJ, Tietge UJ. Reverse cholesterol transport is increased in germ-free mice-brief report. *Arterioscler Thromb Vasc Biol*. 2017;37:419–422. doi: 10.1161/ATVBAHA.116.308306
157. Nelson JK, Koenis DS, Scheij S, Cook EC, Moeton M, Santos A, Lobaccaro JA, Baron S, Zelcer N. EEPD1 is a novel LXR target gene in macrophages which regulates ABCA1 abundance and cholesterol efflux. *Arterioscler Thromb Vasc Biol*. 2017;37:423–432. doi: 10.1161/ATVBAHA.116.308434
158. Hasanov Z, Ruckdeschel T, König C, Mogler C, Kapel SS, Korn C, Spegg C, Eichwald V, Wieland M, Appak S, Augustin HG. Endosialin promotes atherosclerosis through phenotypic remodeling of vascular smooth muscle cells. *Arterioscler Thromb Vasc Biol*. 2017;37:495–505. doi: 10.1161/ATVBAHA.116.308455
159. Kurano M, Hara M, Ikeda H, Tsukamoto K, Yatomi Y. Involvement of CETP (cholesteryl ester transfer protein) in the shift of sphingosine-1-phosphate among lipoproteins and in the modulation of its functions. *Arterioscler Thromb Vasc Biol*. 2017;37:506–514. doi: 10.1161/ATVBAHA.116.308692
160. Niu X, Pi SL, Baral S, Xia YP, He QW, Li YN, Jin HJ, Li M, Wang MD, Mao L, Hu B. P2Y12 promotes migration of vascular smooth muscle cells through cofilin dephosphorylation during atherogenesis. *Arterioscler Thromb Vasc Biol*. 2017;37:515–524. doi: 10.1161/ATVBAHA.116.308725
161. Glinzer A, Ma X, Prakash J, Kimm MA, Lohöfer F, Kosanke K, Pelisek J, Thon MP, Vorlova S, Heinze KG, Eckstein HH, Gee MW, Ntziachristos V, Zerneck A, Wildgruber M. Targeting elastase for molecular imaging of early atherosclerotic lesions. *Arterioscler Thromb Vasc Biol*. 2017;37:525–533. doi: 10.1161/ATVBAHA.116.308726
162. Rossignoli A, Shang MM, Gladh H, Moessinger C, Foroughi Asl H, Talukdar HA, Franzén O, Mueller S, Björkegren JL, Folestad E, Skogsberg J. Poliovirus receptor-related 2: a cholesterol-responsive gene affecting atherosclerosis development by modulating leukocyte migration. *Arterioscler Thromb Vasc Biol*. 2017;37:534–542. doi: 10.1161/ATVBAHA.116.308715
163. Samsouondar JP, Burke AC, Sutherland BG, Telford DE, Sawyez CG, Edwards JY, Pinkosky SL, Newton RS, Huff MW. Prevention of diet-induced metabolic dysregulation, inflammation, and atherosclerosis in Ldlr<sup>-/-</sup> mice by treatment with the ATP-citrate lyase inhibitor bempedoic acid. *Arterioscler Thromb Vasc Biol*. 2017;37:647–656. doi: 10.1161/ATVBAHA.116.308963
164. Ouweneel AB, Heestermans M, Verwilligen RAF, Gijbels MJJ, Reitsma PH, Van Eck M, van Vlijmen BJM. Silencing of anticoagulant protein C evokes low-incident but spontaneous atherothrombosis in apolipoprotein E-deficient mice-brief report. *Arterioscler Thromb Vasc Biol*. 2017;37:782–785. doi: 10.1161/ATVBAHA.117.309188
165. Konaniah ES, Kuhel DG, Basford JE, Weintraub NL, Hui DY. Deficiency of LRP1 in mature adipocytes promotes diet-induced inflammation and atherosclerosis-brief report. *Arterioscler Thromb Vasc Biol*. 2017;37:1046–1049. doi: 10.1161/ATVBAHA.117.309414
166. Ouimet M, Ediriweera H, Afonso MS, Ramkhelawon B, Singaravelu R, Liao X, Bandler RC, Rahman K, Fisher EA, Rayner KJ, Pezacki JP, Tabas I, Moore KJ. microRNA-33 regulates macrophage autophagy in atherosclerosis. *Arterioscler Thromb Vasc Biol*. 2017;37:1058–1067. doi: 10.1161/ATVBAHA.116.308916
167. Bermudez B, Dahl TB, Medina I, et al. Leukocyte overexpression of intracellular NAMPT attenuates atherosclerosis by regulating PPAR $\gamma$ -dependent monocyte differentiation and function. *Arterioscler Thromb Vasc Biol*. 2017;37:1157–1167. doi: 10.1161/ATVBAHA.116.308187
168. Kayashima Y, Makhanova N, Maeda N. DBA/2J haplotype on distal chromosome 2 reduces mertk expression, restricts efferocytosis, and increases susceptibility to atherosclerosis. *Arterioscler Thromb Vasc Biol*. 2017;37:e82–e91. doi: 10.1161/ATVBAHA.117.309522
169. Sun L, Yang X, Li Q, et al. Activation of adiponectin receptor regulates proinflammatory convertase subtilisin/kexin type 9 expression and inhibits lesions in ApoE-deficient mice. *Arterioscler Thromb Vasc Biol*. 2017;37:1290–1300. doi: 10.1161/ATVBAHA.117.309630
170. Ditiatkovski M, Palsson J, Chin-Dusting J, Remaley AT, Sviridov D. Apolipoprotein A-I mimetic peptides: discordance between in vitro and in vivo properties-brief report. *Arterioscler Thromb Vasc Biol*. 2017;37:1301–1306. doi: 10.1161/ATVBAHA.117.309523
171. van der Heijden T, Kritikou E, Venema W, van Duijn J, van Santbrink PJ, Slütter B, Foks AC, Bot I, Kuiper J. NLRP3 inflammasome inhibition by MCC950 reduces atherosclerotic lesion development in apolipoprotein E-deficient mice-brief report. *Arterioscler Thromb Vasc Biol*. 2017;37:1457–1461. doi: 10.1161/ATVBAHA.117.309575
172. Chen Y, Huang W, Yang M, Xin G, Cui W, Xie Z, Silverstein RL. Cardiotonic steroids stimulate macrophage inflammatory responses through a pathway involving CD36, TLR4, and Na/K-ATPase. *Arterioscler Thromb Vasc Biol*. 2017;37:1462–1469. doi: 10.1161/ATVBAHA.117.309444
173. Wang Y, Wang W, Wang N, Tall AR, Tabas I. Mitochondrial oxidative stress promotes atherosclerosis and neutrophil extracellular traps in aged mice. *Arterioscler Thromb Vasc Biol*. 2017;37:e99–e107. doi: 10.1161/ATVBAHA.117.309580
174. Bai L, Li Z, Li Q, Guan H, Zhao S, Liu R, Wang R, Zhang J, Jia Y, Fan J, Wang N, Reddy JK, Shyy JY, Liu E. Mediator 1 is atherosclerosis protective by regulating macrophage polarization. *Arterioscler Thromb Vasc Biol*. 2017;37:1470–1481. doi: 10.1161/ATVBAHA.117.309672
175. Chadwick AC, Wang X, Musunuru K. In vivo base editing of PCSK9 (proprotein convertase subtilisin/kexin type 9) as a therapeutic alternative to genome editing. *Arterioscler Thromb Vasc Biol*. 2017;37:1741–1747. doi: 10.1161/ATVBAHA.117.309881
176. Hohensinner PJ, Baumgartner J, Kral-Pointner JB, Uhrin P, Ebenbauer B, Thaler B, Doberer K, Stojkovic S, Demyanets S, Fischer MB, Huber K, Schabbauer G, Speidl WS, Wojta J. PAI-1 (plasminogen activator inhibitor-1) expression renders alternatively activated human macrophages



- proteolytically quiescent. *Arterioscler Thromb Vasc Biol.* 2017;37:1913–1922. doi: 10.1161/ATVBAHA.117.309383
177. Marcovecchio PM, Thomas GD, Mikulski Z, Ehinger E, Mueller KAL, Blatchley A, Wu R, Miller YI, Nguyen AT, Taylor AM, McNamara CA, Ley K, Hedrick CC. Scavenger receptor CD36 directs nonclassical monocyte patrolling along the endothelium during early atherogenesis. *Arterioscler Thromb Vasc Biol.* 2017;37:2043–2052. doi: 10.1161/ATVBAHA.117.309123
  178. Trenteseaux C, Gaston AT, Aguesse A, Poupeau G, de Coppet P, Andriantsitohaina R, Laschet J, Amarger V, Krempf M, Nobecourt-Dupuy E, Ouguerram K. Perinatal hypercholesterolemia exacerbates atherosclerosis lesions in offspring by altering metabolism of trimethylamine-N-oxide and bile acids. *Arterioscler Thromb Vasc Biol.* 2017;37:2053–2063. doi: 10.1161/ATVBAHA.117.309923
  179. Trigueros-Motos L, van Capelleveen JC, Torta F, et al. ABCA8 regulates cholesterol efflux and high-density lipoprotein cholesterol levels. *Arterioscler Thromb Vasc Biol.* 2017;37:2147–2155. doi: 10.1161/ATVBAHA.117.309574
  180. Khound R, Taher J, Baker C, Adeli K, Su Q. GLP-1 elicits an intrinsic gut-liver metabolic signal to ameliorate diet-induced VLDL overproduction and insulin resistance. *Arterioscler Thromb Vasc Biol.* 2017;37:2252–2259. doi: 10.1161/ATVBAHA.117.310251
  181. Xu B, Gillard BK, Gotto AM Jr, Rosales C, Pownall HJ. ABCA1-derived nascent high-density lipoprotein-apolipoprotein AI and lipids metabolically segregate. *Arterioscler Thromb Vasc Biol.* 2017;37:2260–2270. doi: 10.1161/ATVBAHA.117.310290
  182. Zhu QM, Ko KA, Ture S, Mastrangelo MA, Chen MH, Johnson AD, O'Donnell CJ, Morrell CN, Miano JM, Lowenstein CJ. Novel thrombotic function of a human SNP in STXBP5 revealed by CRISPR/Cas9 gene editing in mice. *Arterioscler Thromb Vasc Biol.* 2017;37:264–270. doi: 10.1161/ATVBAHA.116.308614
  183. Unsworth AJ, Flora GD, Sasikumar P, Bye AP, Sage T, Kriek N, Crescente M, Gibbins JM. RXR ligands negatively regulate thrombosis and hemostasis. *Arterioscler Thromb Vasc Biol.* 2017;37:812–822. doi: 10.1161/ATVBAHA.117.309207
  184. Smith CW, Thomas SG, Raslan Z, Patel P, Byrne M, Lordkipanidzé M, Bem D, Meygaard L, Senis YA, Watson SP, Mazharian A. Mice lacking the inhibitory collagen receptor LAIR-1 exhibit a mild thrombocytosis and hyperactive platelets. *Arterioscler Thromb Vasc Biol.* 2017;37:823–835. doi: 10.1161/ATVBAHA.117.309253
  185. Verhenne S, Vandeputte N, Pareyn I, Izsvák Z, Rottensteiner H, Deckmyn H, De Meyer SF, Vanhoorelbeke K. Long-term prevention of congenital thrombotic thrombocytopenic purpura in ADAMTS13 knockout mice by sleeping beauty transposon-mediated gene therapy. *Arterioscler Thromb Vasc Biol.* 2017;37:836–844. doi: 10.1161/ATVBAHA.116.308680
  186. Margraf A, Nussbaum C, Rohwedder I, et al. Maturation of platelet function during murine fetal development in vivo. *Arterioscler Thromb Vasc Biol.* 2017;37:1076–1086. doi: 10.1161/ATVBAHA.116.308464
  187. Chang CH, Chung CH, Tu YS, Tsai CC, Hsu CC, Peng HC, Tseng YJ, Huang TF. Trowaglerix venom polypeptides as a novel antithrombotic agent by targeting immunoglobulin-like domains of glycoprotein VI in platelet. *Arterioscler Thromb Vasc Biol.* 2017;37:1307–1314. doi: 10.1161/ATVBAHA.116.308604
  188. Laurance S, Bertin FR, Ebrahimian T, Kassim Y, Rys RN, Lehoux S, Lemarié CA, Blostein MD. Gas6 promotes inflammatory (CCR2hiCX3CR1lo) monocyte recruitment in venous thrombosis. *Arterioscler Thromb Vasc Biol.* 2017;37:1315–1322. doi: 10.1161/ATVBAHA.116.308925
  189. Rothmeier AS, Marchese P, Langer F, Kamikubo Y, Schaffner F, Cantor J, Ginsberg MH, Ruggeri ZM, Ruf W. Tissue factor prothrombotic activity is regulated by integrin- $\alpha$ 6 trafficking. *Arterioscler Thromb Vasc Biol.* 2017;37:1323–1331. doi: 10.1161/ATVBAHA.117.309315
  190. Beckers CML, Simpson KR, Griffin KJ, Brown JM, Cheah LT, Smith KA, Vacher J, Cordell PA, Kearney MT, Grant PJ, Pearce RJ. Cre/lox studies identify resident macrophages as the major source of circulating coagulation factor XIII-A. *Arterioscler Thromb Vasc Biol.* 2017;37:1494–1502. doi: 10.1161/ATVBAHA.117.309271
  191. Choo HJ, Kholmukhamedov A, Zhou C, Jobe S. Inner mitochondrial membrane disruption links apoptotic and agonist-initiated phosphatidylserine externalization in platelets. *Arterioscler Thromb Vasc Biol.* 2017;37:1503–1512. doi: 10.1161/ATVBAHA.117.309473
  192. Fidler TP, Middleton EA, Rowley JW, Boudreau LH, Campbell RA, Souvenir R, Funari T, Tessandier N, Boilard E, Weyrich AS, Abel ED. Glucose transporter 3 potentiates degranulation and is required for platelet activation. *Arterioscler Thromb Vasc Biol.* 2017;37:1628–1639.
  193. Adili R, Tourdot BE, Mast K, Yeung J, Freedman JC, Green A, Luci DK, Jadhav A, Simeonov A, Maloney DJ, Holman TR, Holinstat M. First selective 12-LOX inhibitor, ML355, impairs thrombus formation and vessel occlusion in vivo with minimal effects on hemostasis. *Arterioscler Thromb Vasc Biol.* 2017;37:1828–1839. doi: 10.1161/ATVBAHA.117.309868
  194. Liu Y, Hu M, Luo D, Yue M, Wang S, Chen X, Zhou Y, Wang Y, Cai Y, Hu X, Ke Y, Yang Z, Hu H. Class III PI3K positively regulates platelet activation and thrombosis via PI(3)P-directed function of NADPH oxidase. *Arterioscler Thromb Vasc Biol.* 2017;37:2075–2086. doi: 10.1161/ATVBAHA.117.309751
  195. Chen W, Druzak SA, Wang Y, Josephson CD, Hoffmeister KM, Ware J, Li R. Refrigeration-induced binding of von Willebrand factor facilitates fast clearance of refrigerated platelets. *Arterioscler Thromb Vasc Biol.* 2017;37:2271–2279. doi: 10.1161/ATVBAHA.117.310062
  196. Zhuang J, Luan P, Li H, Wang K, Zhang P, Xu Y, Peng W. The yin-yang dynamics of DNA methylation is the key regulator for smooth muscle cell phenotype switch and vascular remodeling. *Arterioscler Thromb Vasc Biol.* 2017;37:84–97. doi: 10.1161/ATVBAHA.116.307923
  197. Bianchi R, Russo E, Bachmann SB, Proulx ST, Sesartic M, Smaadahl N, Watson SP, Buckley CD, Halin C, Detmar M. Postnatal deletion of podoplanin in lymphatic endothelium results in blood filling of the lymphatic system and impairs dendritic cell migration to lymph nodes. *Arterioscler Thromb Vasc Biol.* 2017;37:108–117. doi: 10.1161/ATVBAHA.116.308020
  198. Lin YC, Chao TY, Yeh CT, Roffler SR, Kannagi R, Yang RB. Endothelial SCUBE2 interacts with VEGFR2 and regulates VEGF-induced angiogenesis. *Arterioscler Thromb Vasc Biol.* 2017;37:144–155. doi: 10.1161/ATVBAHA.116.308546
  199. Harada T, Yoshimura K, Yamashita O, Ueda K, Morikage N, Sawada Y, Hamano K. Focal adhesion kinase promotes the progression of aortic aneurysm by modulating macrophage behavior. *Arterioscler Thromb Vasc Biol.* 2017;37:156–165. doi: 10.1161/ATVBAHA.116.308542
  200. Yan YF, Pei JF, Zhang Y, Zhang R, Wang F, Gao P, Zhang ZQ, Wang TT, Sheng ZG, Chen HZ, Liu DP. The paraoxonase gene cluster protects against abdominal aortic aneurysm formation. *Arterioscler Thromb Vasc Biol.* 2017;37:291–300. doi: 10.1161/ATVBAHA.116.308684
  201. Endorf EB, Qing H, Aono J, Terami N, Doyon G, Hynynen E, Jones KL, Findeisen HM, Bruegger D. Telomerase reverse transcriptase deficiency prevents Neointima formation through chromatin silencing of E2F1 target genes. *Arterioscler Thromb Vasc Biol.* 2017;37:301–311. doi: 10.1161/ATVBAHA.116.308717
  202. de Jong RJ, Paulin N, Lemnitzer P, Viola JR, Winter C, Ferraro B, Grommes J, Weber C, Reutelingsperger C, Drechsler M, Soehnlein O. Protective aptitude of annexin A1 in arterial neointima formation in atherosclerosis-prone mice—brief report. *Arterioscler Thromb Vasc Biol.* 2017;37:312–315. doi: 10.1161/ATVBAHA.116.308744
  203. Ceneri N, Zhao L, Young BD, et al. Rac2 modulates atherosclerotic calcification by regulating macrophage interleukin-1 $\beta$  production. *Arterioscler Thromb Vasc Biol.* 2017;37:328–340. doi: 10.1161/ATVBAHA.116.308507
  204. Friederich-Persson M, Nguyen Dinh Cat A, Persson P, Montezano AC, Touyz RM. Brown adipose tissue regulates small artery function through NADPH oxidase 4-derived hydrogen peroxide and redox-sensitive protein kinase G-1 $\alpha$ . *Arterioscler Thromb Vasc Biol.* 2017;37:455–465. doi: 10.1161/ATVBAHA.116.308659
  205. Den Hartigh LJ, Omer M, Goodspeed L, Wang S, Wietecha T, O'Brien KD, Han CY. Adipocyte-specific deficiency of NADPH oxidase 4 delays the onset of insulin resistance and attenuates adipose tissue inflammation in obesity. *Arterioscler Thromb Vasc Biol.* 2017;37:466–475. doi: 10.1161/ATVBAHA.116.308749
  206. Krishna SM, Seto SW, Jose RJ, Li J, Morton SK, Biros E, Wang Y, Nsengiyumva V, Lindeman JH, Loots GG, Rush CM, Craig JM, Golledge J. Wnt signaling pathway inhibitor sclerostin inhibits angiotensin II-induced aortic aneurysm and atherosclerosis. *Arterioscler Thromb Vasc Biol.* 2017;37:553–566. doi: 10.1161/ATVBAHA.116.308723
  207. Lee HW, Chong DC, Ola R, Dunworth WP, Meadows S, Ka J, Kaartinen VM, Qyang Y, Cleaver O, Bautch VL, Eichmann A, Jin SW. Alk2/ACVR1 and Alk3/BMPR1A provide essential function for bone morphogenetic protein-induced retinal angiogenesis. *Arterioscler Thromb Vasc Biol.* 2017;37:657–663. doi: 10.1161/ATVBAHA.116.308422
  208. Wu D, Ren P, Zheng Y, Zhang L, Xu G, Xie W, Lloyd EE, Zhang S, Zhang Q, Curci JA, Coselli JS, Milewicz DM, Shen YH, LeMaire SA. NLRP3 (nucleotide oligomerization domain-like receptor family, pyrin domain containing 3)-caspase-1 inflammasome degrades contractile proteins:

- implications for aortic biomechanical dysfunction and aneurysm and dissection formation. *Arterioscler Thromb Vasc Biol*. 2017;37:694–706. doi: 10.1161/ATVBAHA.116.307648
209. Chen D, Tang J, Wan Q, Zhang J, Wang K, Shen Y, Yu Y. E-prostanoid 3 receptor mediates sprouting angiogenesis through suppression of the protein kinase A/ $\beta$ -catenin/notch pathway. *Arterioscler Thromb Vasc Biol*. 2017;37:856–866. doi: 10.1161/ATVBAHA.116.308587
  210. Ghori A, Freimann FB, Nieminen-Kelhä M, Kremenetskaia I, Gertz K, Endres M, Vajkoczy P. EphrinB2 activation enhances vascular repair mechanisms and reduces brain swelling after mild cerebral ischemia. *Arterioscler Thromb Vasc Biol*. 2017;37:867–878. doi: 10.1161/ATVBAHA.116.308620
  211. Riascos-Bernal DF, Chinnasamy P, Gross JN, Almonte V, Egaña-Gorroño L, Parikh D, Jayakumar S, Guo L, Sibinga NES. Inhibition of smooth muscle  $\beta$ -catenin hinders neointima formation after vascular injury. *Arterioscler Thromb Vasc Biol*. 2017;37:879–888. doi: 10.1161/ATVBAHA.116.308643
  212. Candela J, Wang R, White C. Microvascular endothelial dysfunction in obesity is driven by macrophage-dependent hydrogen sulfide depletion. *Arterioscler Thromb Vasc Biol*. 2017;37:889–899. doi: 10.1161/ATVBAHA.117.309138
  213. Desjarlais M, Dussault S, Dhahri W, Mathieu R, Rivard A. MicroRNA-150 modulates ischemia-induced neovascularization in atherosclerotic conditions. *Arterioscler Thromb Vasc Biol*. 2017;37:900–908. doi: 10.1161/ATVBAHA.117.309189
  214. Chenu C, Adlanmerini M, Boudou F, Chantalat E, Guihot AL, Toutain C, Raymond-Letron I, Vicendo P, Gadeau AP, Henrion D, Arnal JF, Lenfant F. Testosterone prevents cutaneous ischemia and necrosis in males through complementary estrogenic and androgenic actions. *Arterioscler Thromb Vasc Biol*. 2017;37:909–919. doi: 10.1161/ATVBAHA.117.309219
  215. Mao Y, Luo W, Zhang L, Wu W, Yuan L, Xu H, Song J, Fujiwara K, Abe JI, LeMaire SA, Wang XL, Shen YH. STING-IRF3 triggers endothelial inflammation in response to free fatty acid-induced mitochondrial damage in diet-induced obesity. *Arterioscler Thromb Vasc Biol*. 2017;37:920–929. doi: 10.1161/ATVBAHA.117.309017
  216. Jiao Y, Li G, Korneva A, Caulk AW, Qin L, Bersi MR, Li Q, Li W, Mecham RP, Humphrey JD, Tellides G. Deficient circumferential growth is the primary determinant of aortic obstruction attributable to partial elastin deficiency. *Arterioscler Thromb Vasc Biol*. 2017;37:930–941. doi: 10.1161/ATVBAHA.117.309079
  217. Zhu LP, Zhou JP, Zhang JX, Wang JY, Wang ZY, Pan M, Li LF, Li CC, Wang KK, Bai YP, Zhang GG. MiR-15b-5p regulates collateral artery formation by targeting AKT3 (protein kinase B-3). *Arterioscler Thromb Vasc Biol*. 2017;37:957–968. doi: 10.1161/ATVBAHA.116.308905
  218. Tian H, Ketova T, Hardy D, Xu X, Gao X, Zijlstra A, Blobe GC. Endoglin mediates vascular maturation by promoting vascular smooth muscle cell migration and spreading. *Arterioscler Thromb Vasc Biol*. 2017;37:1115–1126. doi: 10.1161/ATVBAHA.116.308859
  219. McRobb LS, McGrath KCY, Tsatralis T, Liang EC, Tan JTM, Hughes G, Handelsman DJ, Heather AK. Estrogen receptor control of atherosclerotic calcification and smooth muscle cell osteogenic differentiation. *Arterioscler Thromb Vasc Biol*. 2017;37:1127–1137. doi: 10.1161/ATVBAHA.117.309054
  220. Xue C, Sowden M, Berk BC. Extracellular cyclophilin A, especially acetylated, causes pulmonary hypertension by stimulating endothelial apoptosis, redox stress, and inflammation. *Arterioscler Thromb Vasc Biol*. 2017;37:1138–1146. doi: 10.1161/ATVBAHA.117.309212
  221. Kuwahara G, Hashimoto T, Tsuneki M, et al. CD44 promotes inflammation and extracellular matrix production during arteriovenous fistula maturation. *Arterioscler Thromb Vasc Biol*. 2017;37:1147–1156. doi: 10.1161/ATVBAHA.117.309385
  222. Dou H, Feher A, Davila AC, Romero MJ, Patel VS, Kamath VM, Gooz MB, Rudic RD, Lucas R, Fulton DJ, Weintraub NL, Bagi Z. Role of adipose tissue endothelial ADAM17 in age-related coronary microvascular dysfunction. *Arterioscler Thromb Vasc Biol*. 2017;37:1180–1193. doi: 10.1161/ATVBAHA.117.309430
  223. Reventun P, Alique M, Cuadrado I, Márquez S, Toro R, Zaragoza C, Saura M. iNOS-derived nitric oxide induces integrin-linked kinase endocytic lysosome-mediated degradation in the vascular endothelium. *Arterioscler Thromb Vasc Biol*. 2017;37:1272–1281. doi: 10.1161/ATVBAHA.117.309560
  224. Hood KY, Mair KM, Harvey AP, Montezano AC, Touyz RM, MacLean MR. Serotonin signaling through the 5-HT1B receptor and NADPH oxidase 1 in pulmonary arterial hypertension. *Arterioscler Thromb Vasc Biol*. 2017;37:1361–1370. doi: 10.1161/ATVBAHA.116.308929
  225. Pieterse E, Rother N, Garsen M, Hofstra JM, Satchell SC, Hoffmann M, Loeven MA, Knaapen HK, van der Heijden OWH, Berden JHM, Hilbrands LB, van der Vlag J. Neutrophil extracellular traps drive endothelial-to-mesenchymal transition. *Arterioscler Thromb Vasc Biol*. 2017;37:1371–1379. doi: 10.1161/ATVBAHA.117.309002
  226. Lu YW, Lowery AM, Sun LY, Singer HA, Dai G, Adam AP, Vincent PA, Schwarz JJ. Endothelial myocyte enhancer factor 2c inhibits migration of smooth muscle cells through fenestrations in the internal elastic lamina. *Arterioscler Thromb Vasc Biol*. 2017;37:1380–1390. doi: 10.1161/ATVBAHA.117.309180
  227. Dhanesha N, Doddapattar P, Chorawala MR, Nayak MK, Kokame K, Staber JM, Lentz SR, Chauhan AK. ADAMTS13 retards progression of diabetic nephropathy by inhibiting intrarenal thrombosis in mice. *Arterioscler Thromb Vasc Biol*. 2017;37:1332–1338. doi: 10.1161/ATVBAHA.117.309539
  228. Lockyer P, Mao H, Fan Q, Li L, Yu-Lee LY, Eissa NT, Patterson C, Xie L, Pi X. LRP1-dependent BMPER signaling regulates lipopolysaccharide-induced vascular inflammation. *Arterioscler Thromb Vasc Biol*. 2017;37:1524–1535. doi: 10.1161/ATVBAHA.117.309521
  229. López-Díez R, Shen X, Daffu G, Khursheed M, Hu J, Song F, Rosario R, Xu Y, Li Q, Xi X, Zou YS, Li H, Schmidt AM, Yan SF. Ager deletion enhances ischemic muscle inflammation, angiogenesis, and blood flow recovery in diabetic mice. *Arterioscler Thromb Vasc Biol*. 2017;37:1536–1547. doi: 10.1161/ATVBAHA.117.309714
  230. Tojais NF, Cao A, Lai YJ, Wang L, Chen PI, Alcazar MAA, de Jesus Perez VA, Hopper RK, Rhodes CJ, Bill MA, Sakai LY, Rabinovitch M. Codependence of bone morphogenetic protein receptor 2 and transforming growth factor- $\beta$  in elastic fiber assembly and its perturbation in pulmonary arterial hypertension. *Arterioscler Thromb Vasc Biol*. 2017;37:1559–1569. doi: 10.1161/ATVBAHA.117.309696
  231. Schloss MJ, Hilby M, Nitz K, Guillamat Prats R, Ferraro B, Leoni G, Soehnlein O, Kessler T, He W, Luckow B, Horckmans M, Weber C, Duchene J, Steffens S. Ly6Chigh monocytes oscillate in the heart during homeostasis and after myocardial infarction—brief report. *Arterioscler Thromb Vasc Biol*. 2017;37:1640–1645. doi: 10.1161/ATVBAHA.117.309259
  232. Bharath LP, Cho JM, Park SK, et al. Endothelial cell autophagy maintains shear stress-induced nitric oxide generation via glycolysis-dependent purinergic signaling to endothelial nitric oxide synthase. *Arterioscler Thromb Vasc Biol*. 2017;37:1646–1656. doi: 10.1161/ATVBAHA.117.309510
  233. Jiao Y, Li G, Li Q, Ali R, Qin L, Li W, Qyang Y, Greif DM, Geirsson A, Humphrey JD, Tellides G. mTOR (mechanistic target of rapamycin) inhibition decreases mechanosignaling, collagen accumulation, and stiffening of the thoracic aorta in elastin-deficient mice. *Arterioscler Thromb Vasc Biol*. 2017;37:1657–1666. doi: 10.1161/ATVBAHA.117.309653
  234. Hara T, Monguchi T, Iwamoto N, Akashi M, Mori K, Oshita T, Okano M, Toh R, Irino Y, Shinohara M, Yamashita Y, Shioi G, Furuse M, Ishida T, Hirata KI. Targeted disruption of JCAD (junctional protein associated with coronary artery disease)/KIAA1462, a coronary artery disease-associated gene product, inhibits angiogenic processes in vitro and in vivo. *Arterioscler Thromb Vasc Biol*. 2017;37:1667–1673. doi: 10.1161/ATVBAHA.117.309721
  235. Menendez MT, Ong EC, Shepherd BT, Muthukumar V, Silasi-Mansat R, Lupu F, Griffin CT. BRG1 (brahma-related gene 1) promotes endothelial Mrtf transcription to establish embryonic capillary integrity. *Arterioscler Thromb Vasc Biol*. 2017;37:1674–1682. doi: 10.1161/ATVBAHA.117.309785
  236. Hubert A, Bochenek ML, Schütz E, Gogiraju R, Münzel T, Schäfer K. Selective deletion of leptin signaling in endothelial cells enhances neointima formation and phenocopies the vascular effects of diet-induced obesity in mice. *Arterioscler Thromb Vasc Biol*. 2017;37:1683–1697. doi: 10.1161/ATVBAHA.117.309798
  237. Yu B, Liu Z, Fu Y, Wang Y, Zhang L, Cai Z, Yu F, Wang X, Zhou J, Kong W. CYLD deubiquitinates nicotinamide adenine dinucleotide phosphate oxidase 4 contributing to adventitial remodeling. *Arterioscler Thromb Vasc Biol*. 2017;37:1698–1709. doi: 10.1161/ATVBAHA.117.309859
  238. Regano D, Visintin A, Clapero F, Bussolino F, Valdembrì D, Maione F, Serini G, Giraudo E. Sema3F (semaphorin 3F) selectively drives an extraembryonic proangiogenic program. *Arterioscler Thromb Vasc Biol*. 2017;37:1710–1721. doi: 10.1161/ATVBAHA.117.308226
  239. Prakash S, Borreguero LJJ, Sylva M, Flores Ruiz L, Rezai F, Gunst QD, de la Pompa JL, Ruijter JM, van den Hoff MJB. Deletion of Fstl1 (follistatin-like 1) from the endocardial/endothelial lineage causes mitral

- valve disease. *Arterioscler Thromb Vasc Biol.* 2017;37:e116–e130. doi: 10.1161/ATVBAHA.117.309089
240. Sawada H, Rateri DL, Moorleghen JJ, Majesky MW, Daugherty A. Smooth muscle cells derived from second heart field and cardiac neural crest reside in spatially distinct domains in the media of the ascending aorta—brief report. *Arterioscler Thromb Vasc Biol.* 2017;37:1722–1726. doi: 10.1161/ATVBAHA.117.309599
  241. Wang D, Wu F, Yuan H, Wang A, Kang GJ, Truong T, Chen L, McCallion AS, Gong X, Li S. Sox10+ cells contribute to vascular development in multiple organs—brief report. *Arterioscler Thromb Vasc Biol.* 2017;37:1727–1731. doi: 10.1161/ATVBAHA.117.309774
  242. Pujol F, Hodgson T, Martinez-Corral I, Prats AC, Devenport D, Takeichi M, Genot E, Mäkinen T, Francis-West P, Garmy-Susini B, Tatin F. Dachsous1-Fat4 signaling controls endothelial cell polarization during lymphatic valve morphogenesis—brief report. *Arterioscler Thromb Vasc Biol.* 2017;37:1732–1735. doi: 10.1161/ATVBAHA.117.309818
  243. Aymé G, Adam F, Legendre P, Bazaa A, Proulle V, Denis CV, Christophe OD, Lenting PJ. A novel single-domain antibody against von Willebrand factor A1 domain resolves leukocyte recruitment and vascular leakage during inflammation—brief report. *Arterioscler Thromb Vasc Biol.* 2017;37:1736–1740. doi: 10.1161/ATVBAHA.117.309319
  244. Tavakoli S, Downs K, Short JD, Nguyen HN, Lai Y, Jerabek PA, Goins B, Toczek J, Sadeghi MM, Asmis R. Characterization of macrophage polarization states using combined measurement of 2-deoxyglucose and glutamine accumulation: implications for imaging of atherosclerosis. *Arterioscler Thromb Vasc Biol.* 2017;37:1840–1848. doi: 10.1161/ATVBAHA.117.308848
  245. Miao SB, Xie XL, Yin YJ, Zhao LL, Zhang F, Shu YN, Chen R, Chen P, Dong LH, Lin YL, Lv P, Zhang DD, Nie X, Xue ZY, Han M. Accumulation of smooth muscle 22a protein accelerates senescence of vascular smooth muscle cells via stabilization of p53 in vitro and in vivo. *Arterioscler Thromb Vasc Biol.* 2017;37:1849–1859. doi: 10.1161/ATVBAHA.117.309378
  246. Ijaz T, Sun H, Pinchuk IV, Milewicz DM, Tilton RG, Brasier AR. Deletion of NF- $\kappa$ B/RelA in angiotensin II-sensitive mesenchymal cells blocks aortic vascular inflammation and abdominal aortic aneurysm formation. *Arterioscler Thromb Vasc Biol.* 2017;37:1881–1890. doi: 10.1161/ATVBAHA.117.309863
  247. Chong DC, Yu Z, Brighton HE, Bear JE, Bautch VL. Tortuous microvessels contribute to wound healing via sprouting angiogenesis. *Arterioscler Thromb Vasc Biol.* 2017;37:1903–1912. doi: 10.1161/ATVBAHA.117.309993
  248. Zhang K, Zhang Y, Feng W, Chen R, Chen J, Touyz RM, Wang J, Huang H. Interleukin-18 enhances vascular calcification and osteogenic differentiation of vascular smooth muscle cells through TRPM7 activation. *Arterioscler Thromb Vasc Biol.* 2017;37:1933–1943. doi: 10.1161/ATVBAHA.117.309161
  249. Jourd'heuil FL, Xu H, Reilly T, et al. The hemoglobin homolog cytoglobin in smooth muscle inhibits apoptosis and regulates vascular remodeling. *Arterioscler Thromb Vasc Biol.* 2017;37:1944–1955. doi: 10.1161/ATVBAHA.117.309410
  250. Serbanovic-Canic J, de Luca A, Warboys C, et al. Zebrafish model for functional screening of flow-responsive genes. *Arterioscler Thromb Vasc Biol.* 2017;37:130–143. doi: 10.1161/ATVBAHA.116.308502
  251. Angelov SN, Hu JH, Wei H, Airhart N, Shi M, Dichek DA. TGF- $\beta$  (transforming growth factor- $\beta$ ) signaling protects the thoracic and abdominal aorta from angiotensin II-induced pathology by distinct mechanisms. *Arterioscler Thromb Vasc Biol.* 2017;37:2102–2113. doi: 10.1161/ATVBAHA.117.309401
  252. Xie Y, Potter CMF, Le Bras A, Nowak WN, Gu W, Bhaloo SI, Zhang Z, Hu Y, Zhang L, Xu Q. Leptin induces Sca-1+ progenitor cell migration enhancing neointimal lesions in vessel-injury mouse models. *Arterioscler Thromb Vasc Biol.* 2017;37:2114–2127. doi: 10.1161/ATVBAHA.117.309852
  253. Karlens TV, Reikvam T, Tofteberg A, Nikpey E, Skogstrand T, Wagner M, Tenstad O, Wiig H. Lymphangiogenesis facilitates initial lymph formation and enhances the dendritic cell mobilizing chemokine CCL21 without affecting migration. *Arterioscler Thromb Vasc Biol.* 2017;37:2128–2135. doi: 10.1161/ATVBAHA.117.309883
  254. Haefliger JA, Allagnat F, Hamard L, Le Gal L, Meda P, Nardelli-Haefliger D, Génot E, Alonso F. Targeting Cx40 (connexin40) expression or function reduces angiogenesis in the developing mouse retina. *Arterioscler Thromb Vasc Biol.* 2017;37:2136–2146. doi: 10.1161/ATVBAHA.117.310072
  255. Nakao T, Horie T, Baba O, et al. Genetic ablation of microRNA-33 attenuates inflammation and abdominal aortic aneurysm formation via several anti-inflammatory pathways. *Arterioscler Thromb Vasc Biol.* 2017;37:2161–2170. doi: 10.1161/ATVBAHA.117.309768
  256. Lareyre F, Clément M, Raffort J, Pohlod S, Patel M, Esposito B, Master L, Finigan A, Vandestienne M, Stergiopoulos N, Taleb S, Trachet B, Mallat Z. TGF $\beta$  (transforming growth factor- $\beta$ ) blockade induces a human-like disease in a nondissecting mouse model of abdominal aortic aneurysm. *Arterioscler Thromb Vasc Biol.* 2017;37:2171–2181. doi: 10.1161/ATVBAHA.117.309999
  257. Zhang L, Chen Q, An W, Yang F, Maguire EM, Chen D, Zhang C, Wen G, Yang M, Dai B, Luong LA, Zhu J, Xu Q, Xiao Q. Novel pathological role of hnRNPA1 (heterogeneous nuclear ribonucleoprotein A1) in vascular smooth muscle cell function and neointima hyperplasia. *Arterioscler Thromb Vasc Biol.* 2017;37:2182–2194. doi: 10.1161/ATVBAHA.117.310020
  258. Moran CS, Biros E, Krishna SM, Wang Y, Tikellis C, Morton SK, Moxon JV, Cooper ME, Norman PE, Burrell LM, Thomas MC, Golledge J. Resveratrol inhibits growth of experimental abdominal aortic aneurysm associated with upregulation of angiotensin-converting enzyme 2. *Arterioscler Thromb Vasc Biol.* 2017;37:2195–2203. doi: 10.1161/ATVBAHA.117.310129
  259. Pogoda K, Mannell H, Blodow S, Schneider H, Schubert KM, Qiu J, Schmidt A, Imhof A, Beck H, Tanase LI, Pfeifer A, Pohl U, Kameritsch P. NO augments endothelial reactivity by reducing myoendothelial calcium signal spreading: a novel role for Cx37 (connexin 37) and the protein tyrosine phosphatase SHP-2. *Arterioscler Thromb Vasc Biol.* 2017;37:2280–2290. doi: 10.1161/ATVBAHA.117.309913
  260. Paquin-Veillet J, Lizotte F, Robillard S, Béland R, Breton MA, Guay A, Despatis MA, Gherardes P. Deletion of AT2 receptor prevents SHP-1-induced VEGF inhibition and improves blood flow reperfusion in diabetic ischemic hindlimb. *Arterioscler Thromb Vasc Biol.* 2017;37:2291–2300. doi: 10.1161/ATVBAHA.117.309977
  261. Jin Y, Xie Y, Ostriker AC, Zhang X, Liu R, Lee MY, Leslie KL, Tang W, Du J, Lee SH, Wang Y, Sessa WC, Hwa J, Yu J, Martin KA. Opposing actions of AKT (protein kinase B) isoforms in vascular smooth muscle injury and therapeutic response. *Arterioscler Thromb Vasc Biol.* 2017;37:2311–2321. doi: 10.1161/ATVBAHA.117.310053
  262. Shi P, Zhang L, Zhang M, Yang W, Wang K, Zhang J, Otsu K, Huang G, Fan X, Liu J. Platelet-specific p38 $\alpha$  deficiency improved cardiac function after myocardial infarction in mice. *Arterioscler Thromb Vasc Biol.* 2017;37:e185–e196. doi: 10.1161/ATVBAHA.117.309856
  263. Li DJ, Huang F, Ni M, Fu H, Zhang LS, Shen FM.  $\alpha$ 7 nicotinic acetylcholine receptor relieves angiotensin II-induced senescence in vascular smooth muscle cells by raising nicotinamide adenine dinucleotide-dependent SIRT1 activity. *Arterioscler Thromb Vasc Biol.* 2016;36:1566–1576. doi: 10.1161/ATVBAHA.116.307157
  264. Lu WW, Jia LX, Ni XQ, Zhao L, Chang JR, Zhang JS, Hou YL, Zhu Y, Guan YF, Yu YR, Du J, Tang CS, Qi YF. Intermedin-53 attenuates abdominal aortic aneurysm by inhibiting oxidative stress. *Arterioscler Thromb Vasc Biol.* 2016;36:2176–2190. doi: 10.1161/ATVBAHA.116.307825
  265. Gremmel T, Yanachkov IB, Yanachkova MI, Wright GE, Wider J, Undyala VV, Michelson AD, Frelinger AL III, Przyklenk K. Synergistic inhibition of both P2Y1 and P2Y12 adenosine diphosphate receptors as novel approach to rapidly attenuate platelet-mediated thrombosis. *Arterioscler Thromb Vasc Biol.* 2016;36:501–509. doi: 10.1161/ATVBAHA.115.306885
  266. Dimitrievska S, Gui L, Weyers A, Lin T, Cai C, Wu W, Tuggle CT, Sundaram S, Balestrini JL, Slattery D, Tchouta L, Kyriakides TR, Tarbell JM, Linhardt RJ, Niklason LE. New functional tools for antithrombotic activity assessment of live surface glycofocaly. *Arterioscler Thromb Vasc Biol.* 2016;36:1847–1853. doi: 10.1161/ATVBAHA.116.308023
  267. Gao C, Fu Y, Li Y, Zhang X, Zhang L, Yu F, Xu SS, Xu Q, Zhu Y, Guan Y, Wang X, Kong W. Microsomal prostaglandin E synthase-1-derived PGE2 inhibits vascular smooth muscle cell calcification. *Arterioscler Thromb Vasc Biol.* 2016;36:108–121. doi: 10.1161/ATVBAHA.115.306642
  268. Chiu AP, Wan A, Lal N, Zhang D, Wang F, Vlodyavsky I, Hussein B, Rodrigues B. Cardiomyocyte VEGF regulates endothelial cell GPIIb/IIIa to relocate lipoprotein lipase to the coronary lumen during diabetes mellitus. *Arterioscler Thromb Vasc Biol.* 2016;36:145–155. doi: 10.1161/ATVBAHA.115.306774
  269. Talia DM, Deliyanti D, Agrotis A, Wilkinson-Berka JL. Inhibition of the nuclear receptor ROR $\gamma$  and interleukin-17A suppresses neovascular retinopathy: involvement of immunocompetent microglia. *Arterioscler Thromb Vasc Biol.* 2016;36:1186–1196. doi: 10.1161/ATVBAHA.115.307080
  270. Bussey CE, Withers SB, Aldous RG, Edwards G, Heagerty AM. Obesity-related perivascular adipose tissue damage is reversed by sustained



- weight loss in the rat. *Arterioscler Thromb Vasc Biol*. 2016;36:1377–1385. doi: 10.1161/ATVBAHA.116.307210
271. Sun L, Bai Y, Zhao R, Sun T, Cao R, Wang F, He G, Zhang W, Chen Y, Ye P, Du G. Oncological miR-182-3p, a novel smooth muscle cell phenotype modulator, evidences from model rats and patients. *Arterioscler Thromb Vasc Biol*. 2016;36:1386–1397. doi: 10.1161/ATVBAHA.115.307412
272. Shi L, Zhang Y, Liu Y, Gu B, Cao R, Chen Y, Zhao T. Exercise prevents upregulation of RyRs-BKCa coupling in cerebral arterial smooth muscle cells from spontaneously hypertensive rats. *Arterioscler Thromb Vasc Biol*. 2016;36:1607–1617. doi: 10.1161/ATVBAHA.116.307745
273. Lerchenmüller C, Heißenberg J, Damilano F, Bezzeridis VJ, Krämer I, Bochaton-Piallat ML, Hirschberg K, Busch M, Katus HA, Peppel K, Rosenzweig A, Busch H, Boerries M, Most P. S100A6 regulates endothelial cell cycle progression by attenuating antiproliferative signal transducers and activators of transcription 1 signaling. *Arterioscler Thromb Vasc Biol*. 2016;36:1854–1867. doi: 10.1161/ATVBAHA.115.306415
274. Song SH, Kim K, Jo EK, Kim YW, Kwon JS, Bae SS, Sung JH, Park SG, Kim JT, Suh W. Fibroblast growth factor 12 is a novel regulator of vascular smooth muscle cell plasticity and fate. *Arterioscler Thromb Vasc Biol*. 2016;36:1928–1936. doi: 10.1161/ATVBAHA.116.308017
275. Stott JB, Barrese V, Greenwood IA. Kv7 channel activation underpins EPAC-dependent relaxations of rat arteries. *Arterioscler Thromb Vasc Biol*. 2016;36:2404–2411. doi: 10.1161/ATVBAHA.116.308517
276. de Boer JF, Schonewille M, Dikkers A, Koehorst M, Havinga R, Kuipers F, Tietge UJ, Groen AK. Transintestinal and biliary cholesterol secretion both contribute to macrophage reverse cholesterol transport in rats—brief report. *Arterioscler Thromb Vasc Biol*. 2017;37:643–646. doi: 10.1161/ATVBAHA.116.308558
277. Hoffmann BR, Stodola TJ, Wagner JR, Didier DN, Exner EC, Lombard JH, Greene AS. Mechanisms of Mas1 receptor-mediated signaling in the vascular endothelium. *Arterioscler Thromb Vasc Biol*. 2017;37:433–445. doi: 10.1161/ATVBAHA.116.307787
278. Shi N, Li CX, Cui XB, Tomarev SI, Chen SY. Olfactomedin 2 regulates smooth muscle phenotypic modulation and vascular remodeling through mediating runt-related transcription factor 2 binding to serum response factor. *Arterioscler Thromb Vasc Biol*. 2017;37:446–454. doi: 10.1161/ATVBAHA.116.308606
279. Ye Q, Pang S, Zhang W, Guo X, Wang J, Zhang Y, Liu Y, Wu X, Jiang F. Therapeutic targeting of RNA polymerase I with the small-molecule CX-5461 for prevention of arterial injury-induced neointimal hyperplasia. *Arterioscler Thromb Vasc Biol*. 2017;37:476–484. doi: 10.1161/ATVBAHA.116.308401
280. Li Y, Liu Y, Tian X, Zhang Y, Song H, Liu M, Zhang X, Liu H, Zhang J, Zhang Q, Liu D, Peng C, Yan C, Han Y. Cellular repressor of E1A-activated genes is a critical determinant of vascular remodeling in response to angiotensin II. *Arterioscler Thromb Vasc Biol*. 2017;37:485–494. doi: 10.1161/ATVBAHA.116.308794
281. Wang YC, Cui XB, Chuang YH, Chen SY. Janus kinase 3, a novel regulator for smooth muscle proliferation and vascular remodeling. *Arterioscler Thromb Vasc Biol*. 2017;37:1352–1360. doi: 10.1161/ATVBAHA.116.308895
282. Hodroge A, Trécherel E, Cornu M, et al. Oligogalacturonic acid inhibits vascular calcification by two mechanisms: inhibition of vascular smooth muscle cell osteogenic conversion and interaction with collagen. *Arterioscler Thromb Vasc Biol*. 2017;37:1391–1401. doi: 10.1161/ATVBAHA.117.309513
283. Meloche J, Lampron MC, Nadeau V, Maltais M, Potus F, Lambert C, Tremblay E, Vitry G, Breuils-Bonnet S, Bouché O, Charbonneau E, Provencher S, Paulin R, Bonnet S. Implication of inflammation and epigenetic readers in coronary artery remodeling in patients with pulmonary arterial hypertension. *Arterioscler Thromb Vasc Biol*. 2017;37:1513–1523. doi: 10.1161/ATVBAHA.117.309156
284. Zhang K, Zhang Y, Feng W, Chen R, Chen J, Touyz RM, Wang J, Huang H. Interleukin-18 enhances vascular calcification and osteogenic differentiation of vascular smooth muscle cells through TRPM7 activation. *Arterioscler Thromb Vasc Biol*. 2017;37:1933–1943. doi: 10.1161/ATVBAHA.117.309161
285. Jourd'heuil FL, Xu H, Reilly T, et al. The hemoglobin homolog cytoglobin in smooth muscle inhibits apoptosis and regulates vascular remodeling. *Arterioscler Thromb Vasc Biol*. 2017;37:1944–1955. doi: 10.1161/ATVBAHA.117.309410
286. Li S, Wang YN, Niimi M, Ning B, Chen Y, Kang D, Wang Z, Yu Q, Waqar AB, Liu E, Zhang J, Shiomi M, Chen YE, Fan J. Angiotensin II destabilizes coronary plaques in watanabe heritable hyperlipidemic rabbits. *Arterioscler Thromb Vasc Biol*. 2016;36:810–816. doi: 10.1161/ATVBAHA.115.306871
287. Hytönen J, Leppänen O, Braesen JH, et al. Activation of peroxisome proliferator-activated receptor- $\delta$  as novel therapeutic strategy to prevent in-stent restenosis and stent thrombosis. *Arterioscler Thromb Vasc Biol*. 2016;36:1534–1548. doi: 10.1161/ATVBAHA.115.306962
288. Wacker BK, Dronadula N, Zhang J, Dichek DA. Local vascular gene therapy with apolipoprotein A-I to promote regression of atherosclerosis. *Arterioscler Thromb Vasc Biol*. 2017;37:316–327. doi: 10.1161/ATVBAHA.116.308258
289. Zhang J, Niimi M, Yang D, et al. Deficiency of cholesteryl ester transfer protein protects against atherosclerosis in rabbits. *Arterioscler Thromb Vasc Biol*. 2017;37:1068–1075. doi: 10.1161/ATVBAHA.117.309114
290. Wang C, Nishijima K, Kitajima S, Niimi M, Yan H, Chen Y, Ning B, Matsuhisa F, Liu E, Zhang J, Chen YE, Fan J. Increased hepatic expression of endothelial lipase inhibits cholesterol diet-induced hypercholesterolemia and atherosclerosis in transgenic rabbits. *Arterioscler Thromb Vasc Biol*. 2017;37:1282–1289. doi: 10.1161/ATVBAHA.117.309139
291. Wu BJ, Li Y, Ong KL, Sun Y, Shrestha S, Hou L, Johns D, Barter PJ, Rye KA. Reduction of in-stent restenosis by cholesteryl ester transfer protein inhibition. *Arterioscler Thromb Vasc Biol*. 2017;37:2333–2341. doi: 10.1161/ATVBAHA.117.310051
292. Chen S, Swier VJ, Boosani CS, Radwan MM, Agrawal DK. Vitamin D deficiency accelerates coronary artery disease progression in swine. *Arterioscler Thromb Vasc Biol*. 2016;36:1651–1659. doi: 10.1161/ATVBAHA.116.307586
293. Lester PA, Coleman DM, Diaz JA, Jackson TO, Hawley AE, Mathues AR, Grant BT, Knabb RM, Ramacciotti E, Frost CE, Song Y, Wakefield TW, Myers DD Jr. Apixaban versus warfarin for mechanical heart valve thromboprophylaxis in a swine aortic heterotopic valve model. *Arterioscler Thromb Vasc Biol*. 2017;37:942–948. doi: 10.1161/ATVBAHA.116.308649
294. Gomez-Stallons MV, Wirrig-Schwendeman EE, Hassel KR, Conway SJ, Yutzey KE. Bone morphogenetic protein signaling is required for aortic valve calcification. *Arterioscler Thromb Vasc Biol*. 2016;36:1398–1405. doi: 10.1161/ATVBAHA.116.307526
295. Huk DJ, Austin BF, Horne TE, Hinton RB, Ray WC, Heistad DD, Lincoln J. Valve endothelial cell-derived Tgfb $\beta$ 1 signaling promotes nuclear localization of Sox9 in interstitial cells associated with attenuated calcification. *Arterioscler Thromb Vasc Biol*. 2016;36:328–338. doi: 10.1161/ATVBAHA.115.306091
296. He YH, Wang XQ, Zhang J, Liu ZH, Pan WQ, Shen Y, Zhu ZB, Wang LJ, Yan XX, Yang K, Zhang RY, Shen WF, Ding FH, Lu L. Association of serum HMGB2 levels with in-stent restenosis: HMGB2 promotes neointimal hyperplasia in mice with femoral artery injury and proliferation and migration of VSMCs. *Arterioscler Thromb Vasc Biol*. 2017;37:717–729. doi: 10.1161/ATVBAHA.116.308210
297. Uzuka H, Matsumoto Y, Nishimiya K, et al. Renal denervation suppresses coronary hyperconstricting responses after drug-eluting stent implantation in pigs in vivo through the kidney-brain-heart axis. *Arterioscler Thromb Vasc Biol*. 2017;37:1869–1880. doi: 10.1161/ATVBAHA.117.309777
298. Ouimet M, Hennessy EJ, van Solingen C, Koelwyn GJ, Hussein MA, Ramkhalawon B, Rayner KJ, Temel RE, Perisic L, Hedin U, Maegdefessel L, Garabedian MJ, Holdt LM, Teupser D, Moore KJ. miRNA targeting of oxysterol-binding protein-like 6 regulates cholesterol trafficking and efflux. *Arterioscler Thromb Vasc Biol*. 2016;36:942–951. doi: 10.1161/ATVBAHA.116.307282
299. Zilberman-Rudenko J, Itakura A, Wiesenekker CP, Vetter R, Maas C, Gailani D, Tucker EI, Gruber A, Gerdes C, McCarty OJ. Coagulation factor XI promotes distal platelet activation and single platelet consumption in the bloodstream under shear flow. *Arterioscler Thromb Vasc Biol*. 2016;36:510–517. doi: 10.1161/ATVBAHA.115.307034
300. Zhang J, Zhao X, Vatner DE, McNulty T, Bishop S, Sun Z, Shen YT, Chen L, Meiningner GA, Vatner SF. Extracellular matrix disarray as a mechanism for greater abdominal versus thoracic aortic stiffness with aging in primates. *Arterioscler Thromb Vasc Biol*. 2016;36:700–706. doi: 10.1161/ATVBAHA.115.306563
301. Gupta RM, Meissner TB, Cowan CA, Musunuru K. Genome-edited human pluripotent stem cell-derived macrophages as a model of reverse cholesterol transport—brief report. *Arterioscler Thromb Vasc Biol*. 2016;36:15–18. doi: 10.1161/ATVBAHA.115.305956
302. Gu HM, Wang F, Alabi A, Deng S, Qin S, Zhang DW. Identification of an amino acid residue critical for plasma membrane localization of ATP-binding cassette transporter G1—brief report. *Arterioscler Thromb Vasc Biol*. 2016;36:253–255. doi: 10.1161/ATVBAHA.115.306592

303. Apro J, Tietge UJ, Dikkers A, Parini P, Angelin B, Rudling M. Impaired cholesterol efflux capacity of high-density lipoprotein isolated from interstitial fluid in type 2 diabetes mellitus—brief report. *Arterioscler Thromb Vasc Biol.* 2016;36:787–791. doi: 10.1161/ATVBAHA.116.307385
304. Furuhashi M, Fuseya T, Murata M, et al. Local production of fatty acid-binding protein 4 in epicardial/perivascular fat and macrophages is linked to coronary atherosclerosis. *Arterioscler Thromb Vasc Biol.* 2016;36:825–834. doi: 10.1161/ATVBAHA.116.307225
305. Edsfeldt A, Dunér P, Ståhlman M, Mollet IG, Ascietto G, Grufman H, Nitulescu M, Persson AF, Fisher RM, Melander O, Orho-Melander M, Borén J, Nilsson J, Gonçalves I. Sphingolipids contribute to human atherosclerotic plaque inflammation. *Arterioscler Thromb Vasc Biol.* 2016;36:1132–1140. doi: 10.1161/ATVBAHA.116.305675
306. Rodríguez A, Gonzalez L, Ko A, et al. Molecular characterization of the lipid genome-wide association study signal on chromosome 18q11.2 implicates HNF4A-mediated regulation of the TMEM241 gene. *Arterioscler Thromb Vasc Biol.* 2016;36:1350–1355. doi: 10.1161/ATVBAHA.116.307182
307. Hunegnaw R, Vassilyeva M, Dubrovsky L, Pushkarsky T, Sviridov D, Anashkina AA, Üren A, Brichacek B, Vassilyev DG, Adzhubei AA, Bukrinsky M. Interaction between HIV-1 nef and calnexin: from modeling to small molecule inhibitors reversing HIV-induced lipid accumulation. *Arterioscler Thromb Vasc Biol.* 2016;36:1758–1771. doi: 10.1161/ATVBAHA.116.307997
308. O'Sullivan JM, Jenkins PV, Rawley O, Gegenbauer K, Chion A, Lavin M, Byrne B, O'Kennedy R, Preston RJ, Brophy TM, O'Donnell JS. Galectin-1 and galectin-3 constitute novel-binding partners for factor VIII. *Arterioscler Thromb Vasc Biol.* 2016;36:855–863. doi: 10.1161/ATVBAHA.115.306915
309. Santoso S, Wihadmadyatami H, Bakchoul T, Werth S, Al-Fakhri N, Bein G, Kiefel V, Zhu J, Newman PJ, Bayat B, Sachs UJ. Antiendothelial  $\alpha v \beta 3$  antibodies are a major cause of intracranial bleeding in fetal/neonatal alloimmune thrombocytopenia. *Arterioscler Thromb Vasc Biol.* 2016;36:1517–1524. doi: 10.1161/ATVBAHA.116.307281
310. Leiderman K, Chang WC, Ovanesov M, Fogelson AL. Synergy between tissue factor and exogenous factor XIa in initiating coagulation. *Arterioscler Thromb Vasc Biol.* 2016;36:2334–2345. doi: 10.1161/ATVBAHA.116.308186
311. Sinha RK, Yang XV, Fernández JA, Xu X, Mosnier LO, Griffin JH. Apolipoprotein E receptor 2 mediates activated protein C-induced endothelial Akt activation and endothelial barrier stabilization. *Arterioscler Thromb Vasc Biol.* 2016;36:518–524. doi: 10.1161/ATVBAHA.115.306795
312. Durand MJ, Zinkevich NS, Riedel M, Gutterman DD, Nasci VL, Salato VK, Hijjawi JB, Reuben CF, North PE, Beyer AM. Vascular actions of angiotensin 1–7 in the human microcirculation: novel role for telomerase. *Arterioscler Thromb Vasc Biol.* 2016;36:1254–1262. doi: 10.1161/ATVBAHA.116.307518
313. Manes TD, Pober JS. Significant differences in antigen-induced transendothelial migration of human CD8 and CD4 T effector memory cells. *Arterioscler Thromb Vasc Biol.* 2016;36:1910–1918. doi: 10.1161/ATVBAHA.116.308039
314. Zhao J, Zhang W, Lin M, Wu W, Jiang P, Tou E, Xue M, Richards A, Jourdeheuil D, Asif A, Zheng D, Singer HA, Miano JM, Long X. MYOSLID is a novel serum response factor-dependent long noncoding RNA that amplifies the vascular smooth muscle differentiation program. *Arterioscler Thromb Vasc Biol.* 2016;36:2088–2099. doi: 10.1161/ATVBAHA.116.307879
315. Zhang J, Zamani M, Thiele C, Taher J, Amir Alipour M, Yao Z, Adeli K. AUP1 (ancient ubiquitous protein 1) is a key determinant of hepatic very-low-density lipoprotein assembly and secretion. *Arterioscler Thromb Vasc Biol.* 2017;37:633–642. doi: 10.1161/ATVBAHA.117.309000
316. Zhou L, Hussain MM. Human microRNA-548p decreases hepatic apolipoprotein B secretion and lipid synthesis. *Arterioscler Thromb Vasc Biol.* 2017;37:786–793. doi: 10.1161/ATVBAHA.117.309247
317. Velagapudi S, Yalcinkaya M, Piemontese A, Meier R, Nørrelykke SF, Perisa D, Rzepiela A, Stebler M, Stoma S, Zanoni P, Rohrer L, von Eckardstein A. VEGF- $\alpha$  regulates cellular localization of SR-BI as well as transendothelial transport of HDL but not LDL. *Arterioscler Thromb Vasc Biol.* 2017;37:794–803. doi: 10.1161/ATVBAHA.117.309284
318. Denimal D, Monier S, Brindisi MC, Petit JM, Bouillet B, Nguyen A, Demizieux L, Simoneau I, Pais de Barros JP, Vergès B, Duvillard L. Impairment of the ability of HDL from patients with metabolic syndrome but without diabetes mellitus to activate eNOS: correction by SIP enrichment. *Arterioscler Thromb Vasc Biol.* 2017;37:804–811. doi: 10.1161/ATVBAHA.117.309287
319. Loregger A, Raaben M, Tan J, Scheij S, Moeton M, van den Berg M, Gelberg-Etel H, Stickel E, Roitelman J, Brummelkamp T, Zelcer N. Haploid mammalian genetic screen identifies UBXD8 as a key determinant of HMGCR degradation and cholesterol biosynthesis. *Arterioscler Thromb Vasc Biol.* 2017;37:2064–2074. doi: 10.1161/ATVBAHA.117.310002
320. Zhang H, Shi J, Hachet MA, Xue C, Bauer RC, Jiang H, Li W, Tohyama J, Millar J, Billheimer J, Phillips MC, Razani B, Rader DJ, Reilly MP. CRISPR/Cas9-mediated gene editing in human iPSC-derived macrophage reveals lysosomal acid lipase function in human macrophages—brief report. *Arterioscler Thromb Vasc Biol.* 2017;37:2156–2160. doi: 10.1161/ATVBAHA.117.310023
321. Sané AT, Seidman E, Peretti N, Kleme ML, Delvin E, Deslandres C, Garofalo C, Spahis S, Levy E. Understanding chylomicron retention disease through Sar1b Gtpase gene disruption: insight from cell culture. *Arterioscler Thromb Vasc Biol.* 2017;37:2243–2251. doi: 10.1161/ATVBAHA.117.310121
322. Tutwiler V, Peshkova AD, Andrianova IA, Khasanova DR, Weisel JW, Litvinov RI. Contraction of blood clots is impaired in acute ischemic stroke. *Arterioscler Thromb Vasc Biol.* 2017;37:271–279. doi: 10.1161/ATVBAHA.116.308622
323. Johnson KE, Forward JA, Tippy MD, Ceglowski JR, El-Husayni S, Kulenthirarajan R, Machlus KR, Mayer EL, Italiano JE Jr, Battinelli EM. Tamoxifen directly inhibits platelet angiogenic potential and platelet-mediated metastasis. *Arterioscler Thromb Vasc Biol.* 2017;37:664–674. doi: 10.1161/ATVBAHA.116.308791
324. Brophy TM, Ward SE, McGimsey TR, Schneppenheim S, Drakeford C, O'Sullivan JM, Chion A, Budde U, O'Donnell JS. Plasmin cleaves von Willebrand factor at K1491-R1492 in the A1-A2 linker region in a shear- and glycan-dependent manner in vitro. *Arterioscler Thromb Vasc Biol.* 2017;37:845–855. doi: 10.1161/ATVBAHA.116.308524
325. Berrou E, Adam F, Lebret M, Planche V, Fergelot I, Issertail O, Coupury I, Bordet JC, Nurden P, Bonneau D, Colin E, Goizet C, Rosa JP, Bryckaert M. Gain-of-function mutation in filamin A potentiates platelet integrin  $\alpha IIb \beta 3$  activation. *Arterioscler Thromb Vasc Biol.* 2017;37:1087–1097. doi: 10.1161/ATVBAHA.117.309337
326. Smeets MWJ, Mourik MJ, Niessen HWM, Hordijk PL. Stasis promotes erythrocyte adhesion to von Willebrand factor. *Arterioscler Thromb Vasc Biol.* 2017;37:1618–1627. doi: 10.1161/ATVBAHA.117.309885
327. Campbell RA, Vieira-de-Abreu A, Rowley JW, Franks ZG, Manne BK, Rondina MT, Kraiss LW, Majersik JJ, Zimmerman GA, Weyrich AS. Clots are potent triggers of inflammatory cell gene expression: indications for timely fibrinolysis. *Arterioscler Thromb Vasc Biol.* 2017;37:1819–1827. doi: 10.1161/ATVBAHA.117.309794
328. Wu RF, Liao C, Hatoum H, Fu G, Ochoa CD, Terada LS. RasGRF couples Nox4-dependent endoplasmic reticulum signaling to ras. *Arterioscler Thromb Vasc Biol.* 2017;37:98–107. doi: 10.1161/ATVBAHA.116.307922
329. Ruiz M, Frej C, Holmér A, Guo LJ, Tran S, Dahlbäck B. High-density lipoprotein-associated apolipoprotein M limits endothelial inflammation by delivering sphingosine-1-phosphate to the sphingosine-1-phosphate receptor 1. *Arterioscler Thromb Vasc Biol.* 2017;37:118–129. doi: 10.1161/ATVBAHA.116.308435
330. Kapustin AN, Schoppet M, Schurgers LJ, Reynolds JL, McNair R, Heiss A, Jahnke-Dechent W, Hackeng TM, Schlieper G, Harrison P, Shanahan CM. Prothrombin loading of vascular smooth muscle cell-derived exosomes regulates coagulation and calcification. *Arterioscler Thromb Vasc Biol.* 2017;37:e22–e32. doi: 10.1161/ATVBAHA.116.308886
331. Albanese I, Yu B, Al-Kindi H, Barratt B, Ott L, Al-Refai M, de Varennes B, Shum-Tim D, Cerruti M, Gourgas O, Rhéaume E, Tardif JC, Schwertani A. Role of noncanonical Wnt signaling pathway in human aortic valve calcification. *Arterioscler Thromb Vasc Biol.* 2017;37:543–552. doi: 10.1161/ATVBAHA.116.308394
332. Chui A, Gunatillake T, Brennecke SP, Ignjatovic V, Monagle PT, Whitelock JM, van Zanten DE, Eijnsink J, Wang Y, Deane J, Borg AJ, Stevenson J, Erwich JJ, Said JM, Murthi P. Expression of biglycan in first trimester chorionic villous sampling placental samples and altered function in telomerase-immortalized microvascular endothelial cells. *Arterioscler Thromb Vasc Biol.* 2017;37:1168–1179. doi: 10.1161/ATVBAHA.117.309422
333. Li F, Song R, Ao L, Reece TB, Cleveland JC Jr, Dong N, Fullerton DA, Meng X. ADAMTS5 deficiency in calcified aortic valves is associated with elevated pro-osteogenic activity in valvular

- interstitial cells. *Arterioscler Thromb Vasc Biol.* 2017;37:1339–1351. doi: 10.1161/ATVBAHA.117.309021
334. Xiao J, Feng Y, Li X, Li W, Fan L, Liu J, Zeng X, Chen K, Chen X, Zhou X, Zheng XL, Chen S. Expression of ADAMTS13 in normal and abnormal placentae and its potential role in angiogenesis and placenta development. *Arterioscler Thromb Vasc Biol.* 2017;37:1748–1756. doi: 10.1161/ATVBAHA.117.309735
335. van den Eshof BL, Hoogendijk AJ, Simpson PJ, van Alphen FPJ, Zanivan S, Mertens K, Meijer AB, van den Biggelaar M. Paradigm of biased PAR1 (protease-activated receptor-1) activation and inhibition in endothelial cells dissected by phosphoproteomics. *Arterioscler Thromb Vasc Biol.* 2017;37:1891–1902. doi: 10.1161/ATVBAHA.117.309926
336. Farhan MA, Azad AK, Touret N, Murray AG. FGD5 regulates VEGF receptor-2 coupling to PI3 kinase and receptor recycling. *Arterioscler Thromb Vasc Biol.* 2017;37:2301–2310. doi: 10.1161/ATVBAHA.117.309978
337. Morris GE, Braund PS, Moore JS, Samani NJ, Codd V, Webb TR. Coronary artery disease-associated LIPA coding variant rs1051338 reduces lysosomal acid lipase levels and activity in lysosomes. *Arterioscler Thromb Vasc Biol.* 2017;37:1050–1057. doi: 10.1161/ATVBAHA.116.308734
338. Howe K, Clark MD, Torroja CF, et al. The zebrafish reference genome sequence and its relationship to the human genome. *Nature.* 2013;496:498–503. doi: 10.1038/nature12111
339. Liew WC, Orbán L. Zebrafish sex: a complicated affair. *Brief Funct Genomics.* 2014;13:172–187. doi: 10.1093/bfpg/elt041
340. Nagabhushana A, Mishra RK. Finding clues to the riddle of sex determination in zebrafish. *J Biosci.* 2016;41:145–155.
341. Lee SLJ, Horsfield JA, Black MA, Rutherford K, Gemmill NJ. Identification of sex differences in zebrafish (*Danio rerio*) brains during early sexual differentiation and masculinization using 17 $\alpha$ -methyltestosterone. *Biol Reprod.* 2018;99:446–460. doi: 10.1093/biolre/iox175
342. Zheng W, Xu H, Lam SH, Luo H, Karuturi RK, Gong Z. Transcriptomic analyses of sexual dimorphism of the zebrafish liver and the effect of sex hormones. *PLoS One.* 2013;8:e53562. doi: 10.1371/journal.pone.0053562
343. Huang P, Xiong S, Kang J, Mei J, Gui JF. Stat5b regulates sexually dimorphic gene expression in zebrafish liver. *Front Physiol.* 2018;9:676. doi: 10.3389/fphys.2018.00676
344. Roy T, Bhat A. Divergences in learning and memory among wild zebrafish: do sex and body size play a role? *Learn Behav.* 2018;46:124–133. doi: 10.3758/s13420-017-0296-8
345. Caligioni CS. Assessing reproductive status/stages in mice. *Curr Protoc Neurosci.* 2009;Appendix 4:Appendix 4I. doi: 10.1002/0471142301.nsa04is48
346. Wood GA, Fata JE, Watson KL, Khokha R. Circulating hormones and estrous stage predict cellular and stromal remodeling in murine uterus. *Reproduction.* 2007;133:1035–1044. doi: 10.1530/REP-06-0302
347. Daugherty A, Manning MW, Cassis LA. Angiotensin II promotes atherosclerotic lesions and aneurysms in apolipoprotein E-deficient mice. *J Clin Invest.* 2000;105:1605–1612. doi: 10.1172/JCI17818
348. Trachet B, Fraga-Silva RA, Jacquet PA, Stergiopulos N, Segers P. Incidence, severity, mortality, and confounding factors for dissecting AAA detection in angiotensin II-infused mice: a meta-analysis. *Cardiovasc Res.* 2015;108:159–170. doi: 10.1093/cvr/cvv215
349. Daugherty A, Tall AR, Daemen MJAP, Falk E, Fisher EA, García-Cardeña G, Lusis AJ, Owens AP 3rd, Rosenfeld ME, Virmani R; American Heart Association Council on Arteriosclerosis, Thrombosis, and Vascular Biology; and Council on Basic Cardiovascular Sciences. Recommendation on design, execution, and reporting of animal atherosclerosis studies: a scientific statement from the American Heart Association. *Arterioscler Thromb Vasc Biol.* 2017;37:e131–e157. doi: 10.1161/ATV.0000000000000062
350. Hu W, Polinsky P, Sadoun E, Rosenfeld ME, Schwartz SM. Atherosclerotic lesions in the common coronary arteries of ApoE knockout mice. *Cardiovasc Pathol.* 2005;14:120–125. doi: 10.1016/j.carpath.2005.02.004

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