

Gou Young Koh

Position Director, Center for Vascular Research, IBS
Distinguished Professor, KAIST
Scientific Member, Max Plank Institute

Education

1977-1983 Chonbuk National University Medical School M.D.
1983-1990 Chonbuk National University Medical School Ph.D.



Editorial Board: Cancer Research, eLife (reviewing editor), Trends Molecular Medicine
(Former, Blood, ATVB, Molecular Cancer)

Position

2011- Distinguished Professor, KAIST
2015- Founding director, Center for Vascular Research, Institute for Basic Science

Honor and Awards:

- The 7th Kyung-Am Prize (Life Science) (2011) – Kyung-Am Foundation
- Asan Medical Research Award (2012) – Asan Foundation
- Ho-Am Award 2018 in Medicine (2018) – Ho-Am Foundation

Selected Publications as a corresponding author* for last 10 years

1. Jeong S-h, Yang MJ, Choi S, Kim JM, Koh GY* (2021) Refractoriness of STING therapy is relieved by additional AKT Inhibitor through effective vascular disruption in tumour. **Nature Communications** (in press)
2. Ahn JH, Kim JM, Hong SP, Choi SY, Yang MJ, Ju YS, Kim YT, Kim HM, Rahman MDT, Chung MK, Hong SD, Bae H*, Lee CS*, Koh GY* (2021) Nasal ciliated cells are primary targets for SARS-CoV-2 replication in early stage of COVID-19. **Journal of Clinical Investigation** (in press) (cover illustration)
3. Jo G, Bae J, Hong HJ, Han A-r, Kim DK, Kim JA, Lee S, Koh GY*, Kim HM* (2021) Structural basis for Tie2 clustering and activation mediated by a novel Tie2-agonistic antibody **Nature Communications** (under revision)
4. Andrade J, Shi C, Costa ASH, Choi J, Kim J, Doddaballapur A, Sugino T, Ong YT, Castro M, Zimmermann B, Kaulich M, Guenther S, Wilhelm K, Kubota Y, Braun T, Koh GY, Grosso AR, Frezza C, Potente M* (2021) Control of endothelial quiescence by FOXO-regulated metabolites. **Nature Cell Biology** 23:413-423.
5. Youk J, Kim T, Evans KV, Jeong Y-I, Hur Y, Hong SP, Kim JH, Yi K, Kim SY, Na KJ, Bleazard T, Kim HM, Fellows M, Mahbubani KT, Saeb-Parsy K, Kim SY, Kim YT*, Koh GY*, Choi B-S*, Ju YS*, Lee J-H* (2020) Three-dimensional human alveolar stem cell culture models reveal infection response to SARS-CoV-2. **Cell Stem Cell** 27:905-919.

6. Petrova T* and Koh GY* (2020) New biological functions of lymphatic vessels. **Science** 369(6500):eaax4063. doi: 10.1126/science.aax4063.
7. Hong SP, Yang MJ, Cho H, Park I, Bae H, Choe K, Suh SH, Adams RH, Alitalo K, Lim D, Koh GY* (2020) Distinct fibroblast subsets regulate lacteal integrity through YAP/TAZ-induced VEGF-C in intestinal villi. **Nature Communications** 2020 Aug 14;11(1):4102. .
8. Koh BI, Lee HJ, Kwak PA, Yang MJ, Kim JH, Kim HS, Koh GY*, Kim I* (2020) VEGFR2 signaling drives meningeal vascular regeneration upon head injury. **Nature Communications** 2020 Jul 31;11(1):3866.
9. Bae H, Hong KY, Lee C-k, Jang C, Lee S-J, Choe K, Offermanns S, He Y, Lee HJ, Koh GY* (2020) Angiopoietin-2–integrin $\alpha 5\beta 1$ signaling enhances vascular fatty acid transport and prevents ectopic lipid–induced insulin resistance. **Nature Communications** 11(1):2980.
10. Choi SY, Bae H, Jeong S-H, Park I, Cho H, Hong SP, Lee DH, Lee CK, Park JS, Suh SH, Choi J, Yang MJ, Jang JY, Onder L, Moon JH, Jeong HS, Adams RH, Kim JM, Ludewig B, Song JH, Lim DS*, Koh GY* (2020) YAP/TAZ direct commitment and maturation of lymph node fibroblastic reticular cells. **Nature Communications**. 2020 Jan 24;11(1):519
11. Ahn JH, Cho H, Kim JH, Kim SH, Ham JS, Park I, Suh SH, Hong SP, Song JH, Hong YK, Jeong Y, Park SH*, Koh GY* (2019) Meningeal lymphatic vessels at the skull base drain cerebrospinal fluid. **Nature**. 572(7767)
12. Kim YH, Choi J, Yang MJ, Hong SP, Lee C-k, Kubota Y, Lim DS, Koh GY* (2019) MST1-FOXO1 cascade establishes endothelial tip polarity facilitating sprouting angiogenesis. **Nature Communication** 10:838-8
13. Suh SH, Choe K, Hong SP, Jeong S-h, Mäkinen T, Kim KS, Alitalo K, Surh C, Koh GY*, Song J-H* (2019) Gut microbiota regulate lacteal integrity by inducing VEGF-C in intestinal villus macrophages. **EMBO Reports** 20. pii: e46927
14. Kim J, Park JR, Choi J, Park I, Hwang Y, Bae H, Kim Y, Choi WJ, Yang JM, Han S, Chung T-Y, Kim P, Kubota Y, Augustin HG, Oh W-Y, Koh GY* (2019) Tie2 activation promotes choriocapillary regeneration for alleviating neovascular age-related macular degeneration. **Science Advances** 5(2):eaau6732.
15. Lee C-k, Jeong S-h, Jang C, Bae H, Kim YH, Park I, Kim S-k, Koh GY* (2019) Tumor metastasis to lymph node requires YAP-dependent metabolic adaptation. **Science** 363:644-649. (Research highlight in Nature Reviews of Cancer, April. 2019: Adapting to change by Ulrike Harjes). (Preview in Cell Metabolism 2019: Metabolic adaptation fuels lymph node metastasis by Jessalyn M. Ubellacker and Sean J. Morrison)
16. Cho H, Kim J, Ahn JH, Hong SP, Seo J, Hong Y-K, Makinen T, Lim DS, Koh GY* (2019) YAP and TAZ negatively regulate Prox1 during developmental and pathologic lymphangiogenesis. **Circulation Research** 124:225-242, 2019.

17. Park I, Kim M, Choe K, Song E, Seo H, Hwang Y, Ahn J, Lee SH, Lee JH, Jo YH, Kim K, Koh GY*, Kim P* (2019) Neutrophils disturb pulmonary microcirculation in sepsis-induced acute lung injury. **European Respiratory Journal** doi: 10.1183/13993003.00786-2018 Jan 11.
18. Lee S-J, Lee C-K, Kang S, Park I, Kim YH, Kim SK, Hong SP, Bae H, He Y, Kubota Y, Koh GY* (2018) Angiotensin-2 exacerbates cardiac hypoxia and inflammation after myocardial infarction. **Journal of Clinical Investigation** (128:5018-5033) (Cover illustration, November issue) (selected as "Editor's Pick in this month of JCI).
19. Kim KH, Nakaoka Y, Augustin HG, Koh GY*. (2018) Myocardial angiotensin-1 controls atrial chamber morphogenesis by spatiotemporal degradation of cardiac Jelly. **Cell Report** 23:2455-2466
20. Petrova T* and Koh GY* (2018) Organ-specific lymphatic vasculatures: From development to pathophysiology. **Journal of Experimental Medicine** 215:35-49 (Review)
21. Kim J, Park D-Y, Bae H, Park DY, Kim D, Lee C-K, Song S, Chung T-Y, Lim DH, Kubota Y, Hong Y-K, He Y, Augustin HG, Oliver G, Koh GY* (2017) Impaired angiotensin/Tie2 signaling compromises Schlemm's canal integrity and induces glaucoma. **Journal of Clinical Investigation** 127:3877-3896 (Cover illustration, October issue) (Commentary by Jeremiah Bernier-Latmani and Tatiana V. Petrova, All TIEd up: mechanisms of Schlemm's canal maintenance. 127:3594-3597) (featured by Author's takes video) (Research highlight in Eye World 20, Feb. 2018: Study sheds light on underlying pathogenesis of primary open angle glaucoma by Liz Hillman).
22. Kim J, Kim YH, Kim J, Park DY, Bae H, Lee DH, Kim KH, Hong SP, Jang SP, Kubota Y, Kwon YG, Lim DS*, Koh GY* (2017). YAP/TAZ regulates sprouting angiogenesis and vascular barrier maturation. **Journal of Clinical Investigation** 2017 Aug 14. pii: 93825. doi: 10.1172/JCI93825. (featured by "Scientific Show Stopper")
23. Augustin HG*, Koh GY* (2017) Organotypic vasculature: From descriptive heterogeneity to functional pathophysiology. **Science** 357 (6353), eaal2379 (Review- 12 pages and 6 Figures)
24. Park DY, Lee J, Kim J, Kim K, Hong S, Han S, Kubota Y, Augustin HG, Ding L, Kim JW, Kim H, He Y, Adams RH, Koh GY* (2017) Plastic roles of pericytes in the blood-retinal barrier. **Nature Communications** 8:15296
25. Jang JY, Choi SY, Park I, Park DY, Choe K, Kim P, Kim YK, Lee BJ, Hirashima M, Kubota Y, Park JW, Cheng SY, Nagy A, Park YJ, Alitalo K, Shong M*, Koh GY* (2017) VEGFR2 but not VEGFR3 governs integrity and remodeling of thyroid angiofollicular unit in normal state and during goitrogenesis. **EMBO Mol Med**. pii: e201607341. doi: 10.15252/emmm.201607341.
26. Park JS, Kim IK, Han S, Park I, Kim C, Bae J, Oh SJ, Lee S, Kim JH, Woo DC, He Y, Augustin HG, Kim I, Lee D*, Koh GY* (2016) Normalization of tumor vasculature by Tie2 activation and Ang2 inhibition enhances drug delivery and produces a favorable tumor microenvironment. **Cancer Cell** 30:953-967, 2016 (Research Highlight in Nature Reviews of Drug Discovery, Feb, 2017)

27. Han S*, Lee S-J, Kim KE, Lee HS, Oh N, Park I, Ko E, Oh SJ, Lee YS, Kim D, Lee S, Lee DH, Lee KH, Chae SY, Lee JH, Kim SJ, Kim SJ, Kim HC, Kim S, Kim SH, Kim C, Nakaoka Y, He Y, Augustin HG, Hu J, Song PH, Kim YI, Kim P, Kim I, Koh GY* (2016) Amelioration of sepsis by Tie2 activation-induced vascular protection. **Science Translational Medicine** 8:335ra55 (April 20, Cover story) (Focused in SciTM) (Research Highlight in Nature Reviews of Drug Discovery, June, 2016- TIEing down vascular integrity during sepsis by Katie Kingwell)
28. Choe K, Jang JY, Park I, Kim Y, Ahn S, Park DY, Hong YK, Alitalo K, Koh GY*, Kim P* (2015) Intravital imaging of intestinal lacteal unveils lipid drainage through contractility. **Journal of Clinical Investigation** 125:4042-4052 (Co-corresponding author) (selected as "Editor's Pick in this month of JCI).
29. Hong KY, Bae H, Park I, Park DY, Kim KH, Kubota Y, Cho ES, Kim H, Adams RH, Yoo OJ*, Koh GY* (2015) Perilipin+ embryonic preadipocytes actively proliferate along growing vasculatures for adipose expansion. **Development** 142:2623-2632.
30. Kim C, Yang H, Fukushima Y, Saw PE, Lee J, Park I, Kataoka H, Heo WD, Kim I, Jon S, Adams R, Nishikawa S, Uemura A*, Koh GY* (2014) Vascular RhoJ is an effective and selective target for tumor angiogenesis and vascular disruption. **Cancer Cell** 25:102-117. (Introduced in SciBX Vol 7; issue 6, 2014) (Selected as Faculty of 1,000 prime paper).
31. Park DY, Lee J, Park I, Choi D, Lee S, Song S, Hwang Y, Hong KY, Nakaoka Y, Makinen T, Kim P, Alitalo P, Hong YK, Koh GY* (2014). Lymphatic regulator Prox1 determines Schlemm's canal integrity and identity. **Journal of Clinical Investigation** 124:3960-3974. (Editorial commentary- "Schlemm's canal: more than meets the eye, lymphatics in disguise" by Karpinich and Caron).
32. Lee SH, Lee S, Yang H, Song S, Kim K, Saunders TL, Yoon JK, Koh GY*, Kim I* (2014) The notch pathway targets proangiogenic regulator Sox17 to restrict angiogenesis. **Circulation Research** 115:215-226.
33. Lee J, Kim KE, Choi D-K, Jang JY, Jung J-J, Kiyonari H, Shioi G, Chang W, Suda T, Mochizuki N, Nakaoka Y, Komuro I, Yoo O-J*, Koh GY* (2013) Angiopoietin-1 guides directional angiogenesis through integrin $\alpha\beta 5$ signaling pathway. **Science Translational Medicine** 5:203ra127 (September 18, Cover story) (introduced via EurekaAlert).
34. Kim M, Park HJ, Seol JW, Jang JY, Cho Y-S, Kim KR, Choi Y, Lydon JP, DeMayo FJ, Shibuya M, Ferrara N, Sung H-K, Nagy A, Alitalo K, Koh GY* (2013) VEGF-A regulated by progesterone governs uterine vascular remodeling during pregnancy. **EMBO Molecular Medicine** 5:1415-1430 (September, Cover illustration)
35. Jang JY, Koh YJ, Lee SH, Lee J, Kim KH, Kim D, Koh GY*, Yoo O-J* (2013) Conditional ablation of LYVE-1+ cells unveils defensive roles of lymphatic vessels in intestine and lymph node. **Blood** 122: 2151-61 (September, Cover illustration) (*Co-corresponding author).
36. Joo HJ, Choi D-K, Lim JS, Park J-S, Lee S-H, Song S, Shin JH, Lim DS, Kim I, Hwang K-C, Koh GY* (2012) ROCK suppression promotes differentiation and expansion of endothelial cells

from embryonic stem cells-derived Flk1+ mesodermal precursor cells. **Blood**, 120:2733-2744.

37. Joo HJ, Kim H, Park SW, Cho HJ, Kim HS, Lim DS, Chung HM, Kim I, Han YM, Koh GY* (2011) Angiopoietin-1 promotes endothelial differentiation from embryonic stem cells and induced pluripotent stem cells. **Blood** 118:2094-2104 (Cover illustration).
38. Han J, Lee J-E, Jin J, Lim JS, Oh N, Kim K, Chang S-I, Shibuya M, Kim H, Koh GY* (2011) The spatiotemporal development of adipose tissue. **Development** 138:5027-5037 (Highlighted in Development 138, e2206; Spotlight on adipogenesis).
39. Kataru RP, Kim H, Jang C, Choi DK, Koh BI, Kim M, Gollamudi S, Kim YK, Lee SH*, Koh GY* (2011) T Lymphocytes Negatively Regulate Lymph Node Lymphatic Vessels Through Interferon-Gamma. **Immunity** 34:96-107. (Cover illustration). Commented by Zhu M and Fu X-Y, Deflating the lymph node. *Immunity* 34:8-10 (Highlighted in Faculty 1,000).
40. Kim M, Koh YJ, Kim KE, Koh BI, Nam DH, Alitalo K, Kim I, Koh GY* (2010) Regulation of chemo-resistant melanoma cell metastasis by a lymphatic metastatic niche: a key role of CXCR4 signaling. **Cancer Research** 70:10411-10421. (Highlighted in Faculty 1,000).
41. Koh YJ, Kim HZ, Hwang SI, Lee JE, Oh N, Jung K, Kim M, Kim KE, Kim H, Lim NK, Jeon CJ, Lee GM, Jeon BH, Nam DH, Sung HK, Nagy A, Yoo OJ, Koh GY* (2010) Double anti-angiogenic protein, DAAP, targeting VEGF-A and angiopoietins in tumor angiogenesis, metastasis, and vascular leakage. **Cancer Cell** 18:171-184. (Cover illustration) (Selected as top 10 bio-news of the year 2010 by BRIC).
42. Han J, Koh YJ, Moon HR, Ryoo HG, Cho CH, Kim I, Koh GY* (2010) Adipose tissue is an extramedullary reservoir for functional hematopoietic stem and progenitor cells. **Blood** 115, 957-964 (Cover illustration) (Press release from American Society of Hematology, Washington, Jan 17, 2010. Title: Fat tissue may be a source of valuable blood stem cells, study says).