Donny Hanjaya-Putra
Assistant Professor
University of Notre Dame

Ever since I started my independent position at the University of Notre Dame in Fall 2017, I have been regularly attending the Biomedical Engineering Society (BMES) Cellular and Molecular Bioengineering (CMBE) conferences. As a junior faculty, I felt very welcomed and found my "home" within the CMBE Special Interest Group (CMBE-SIG). This was especially important for me and my research group because there was no Bioengineering department at Notre Dame. Therefore, these BMES CMBE conferences had become the primary place for our research group to present our work as well as network with other Bioengineering researchers. Throughout the years, I had also been very involved in fulfilling various responsibilities. My roles so far included being an abstract reviewer, a co-chair for tissue engineering and drug delivery session tracks, as well as a member of the BMES Award Committee.

Last year, I am very honored to receive the 2024 CMBE Rising Star Award from BMES CMBE. I am very grateful for the support of the CMBE community so far that I promise myself to give back and serve this CMBE community as a CMBE Council Member. One of my biggest visions for the CMBE community is to make it an all-around inclusive community – one where we can promote a collaborative interdisciplinary research and exchange exciting ideas among investigators at all levels of their careers. To accomplish this vision, I propose the following concrete plans:

(1) Organize a "Power Hour" at CMBE conferences
Inspired by the success of "Power Hour" at Gordon Research Conference (GRC), we will adapt a similar forum for conversations about the barriers to inclusivity within our CMBE community. For instance, the conference chairs can select speakers who are women or from underrepresented minority groups, who will then share their experiences and engage with the audience in plethora of topics.

(2) Establish a CMBE Diversity Award
CMBE has many awards that have become known to be prestigious recognitions for investigators at all levels. To expand on the current list of awards, a Diversity Award can be given to honor individuals who make impactful contributions towards improving gender and racial diversity within the CMBE community. We should demonstrate our unwavering commitment to create a diverse and inclusive place within our CMBE community.

(3) Provide an on-site childcare at CMBE conferences
Given that CMBE conferences very often happen right after the new year holiday just before school starts, most conference attendees with children at home may struggle to find childcare. To provide equal opportunity to everyone, CMBE will coordinate to provide on-site childcare during the conferences. This can be done by working together with established nationwide childcare providers, such as Bright Horizons, KinderCare, or Kiddie Academy.

With these propositions, I hope to make CMBE a more welcoming place for everyone at all levels of their careers to exchange research ideas, engage in important discussions, and contribute to this scientific community. Thank you for considering my application to serve in this CMBE SIG council.

Donny Hanjaya-Putra
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Highlights

- Published over 33 articles (*h*-index: 19-Google Scholar), including five invited review or perspective articles, hold or submitted 7 patents, and co-authored two books.
- Funding by private foundations (AHA, ACS) and major federal agencies (NSF, DoD, NIH) totaling over $7.5M as PI or Co-PI.
- Advised nine Ph.D. students and four postdoctoral fellows.
- Taught four undergraduate and graduate courses.

Education

2012 Ph.D., Chemical and Biomolecular Engineering, The Johns Hopkins University.
2007 B.S., Chemical and Biomolecular Engineering, University of Notre Dame.

Professional Experience

2017 – Present Assistant Professor.
Aerospace and Mechanical Engineering, University of Notre Dame.
Chemical and Biomolecular Engineering (concurrent), University of Notre Dame.

2012 – 2017 Postdoctoral Research Fellow.
The Wyss Institute for Biologically Inspired Engineering, Harvard University.
Advisor: Elliot L. Chaikof, M.D., Ph.D.

2007 – 2012 Graduate Research Assistant.
Institute for NanoBioTechnology, The Johns Hopkins University.
Advisor: Sharon Gerecht, Ph.D.

2005 – 2007 Undergraduate Research Assistant.
Center for Microfluidics and Medical Diagnostics, University of Notre Dame.
Advisor: Hsueh-Chia Chang, Ph.D.

Awards and Honors

2024 Rising Star Award – Cellular and Molecular Bioengineering – CMBE
2024 Young Investigator Award – Cells, Tissues, Organs
2024 ASME Rising Star – American Society of American Mechanical Engineering
2023 Emerging Investigator Award – Biomaterials Science
2022 Young Innovator in Cellular and Molecular Bioengineering – CMBE
2021 NIH Maximizing Investigators' Research Award – National Institute of Health
2021 NSF CAREER Award – National Science Foundation
2019 Career Development Award – American Heart Association
2018 Emerging Leaders in Biological Engineering – Journal of Biological Engineering.
2014 JDRF Postdoctoral Research Fellowship – Juvenile Diabetes Research Foundation.
2012 Siebel Scholar Class of 2012 – Siebel Foundation
2011 U.S. New Investigator Travel Award – International Society of Thrombosis and Haemostasis (ISTH).
2011 ISSCR 9th Annual Meeting Travel Award – International Society for Stem Cell Research (ISSCR).
2007 *Magna Cum Laude* – University of Notre Dame.

PUBLICATIONS (****advised/co-advised post-doc; **advised/co-advised graduate student; *undergraduate student*)

1. Eva Hall**, Erin Neu*, Laura S. Haneline, **Donny Hanjaya-Putra**, "The Effects of Preeclamptic Milieu on Cord Blood Derived Endothelial Colony-Forming Cells," **bioRxiv.** 2023. Dec 3, **Journal of the American Heart Association,** (in review).
2. Fei Fan***, Yueying Liu, Grace Petrosini*, Niranjan Awasthi, M. Sharon Stack, **Donny Hanjaya-Putra**, "Injectable and Bio-responsive Hydrogels for On-Demand Delivery of Anti-Ovarian Cancer Therapeutics," **Advanced Science,** (in review).
3. Daniel Montes Pinzon**, Sanjoy Saha**, Donghyun Jeong**, Angela Tanglione*, Fei Fan***, Hsueh-Chia Chang, **Donny Hanjaya-Putra,** "Tuning the Anisotropy of Granular Hydrogels to Control Lymphatic Tube Sprouting," **Advanced Materials Interfaces,** (in revision).
4. Leah M. Lund, Angelina N. Marchi, Laura Alderfer**, Eva Hall**, Jacob Hammer, Keelan J. Trull, **Donny Hanjaya-Putra**, Katharine A. White "Intracellular pH Dynamics Respond to Microenvironment Stiffening and Mediate Vasculogenic Mimicry through β-Catenin," **bioRxiv.** 2024. June 4, **Cell Death and Disease,** (in revision).
5. Sanjoy Saha**, Francine Graham*, James Knopp, Christopher Patzke, **Donny Hanjaya-Putra**, "Robust Differentiation of Human Pluripotent Stem Cells into Lymphatic Endothelial Cells Using Transcription Factors", **Cells Tissues Organs**, 2024, August 28, PMID: 39197437.
6. Laura Alderfer**, Fei Fan***, Sanjoy Saha**, Eva Hall**, Laurie Littlepage, **Donny Hanjaya-Putra**, "Multi-parameter Tunable Synthetic Matrix for Engineering Lymphatic Vessels," **Communications Biology**, 2024. October 4, PMID: 39367247.
7. Razeen Shaikh, Nissa J. Larson, **Donny Hanjaya-Putra**, Jeremiah Zartman, David M. Umulis, Linlin Li, Gregory T. Reeves, "Optimal Performance Objective in the Highly Conserved Bone Morphogenetic Protein Signaling Pathway," **bioRxiv.** 2024. Feb 5, **NPJ Systems Biology and Applications,** 2024, September 14, PMID: 39277657.
8. Eva Hall**, Kailee Mendiola*, Keilany Lightsey**, **Donny Hanjaya-Putra**, "Mimicking Blood and Lymphatic Vasculatures using Microfluidic System," **Biomicrofludics**, 2024. May 6, PMID:38726373.
9. Fei Fan***, Bo Su, Alexander Kolodychak*, Matthew J. Webber, **Donny Hanjaya-Putra**, "Viscoelastic Supramolecular Hyaluronic Acid Hydrogels as Phototunable Cellular Microenvironments," **ACS Applied Materials and Interfaces**, 2023 Dec 8, PMID:38065571.
10. Sanjoy Saha**, Fei Fan***, Laura Alderfer**, **Donny Hanjaya-Putra**, "Synthetic Hyaluronic Acid Dopamine Coating to Preserve Lymphatic Endothelial Phenotypes, **Biomaterials Science**, 2023 Nov 7. PMID:37789798. ***Donny Hanjaya-Putra was featured as 2023 Biomaterials Science Emerging Investigator in this issue.***
11. Donghyun Jeong**, Daniel Montes Pinzon**, Hsueh-Chia Chang, **Donny Hanjaya-Putra**, "Fractal Patterns to Analyze Blood and Lymphatic Tube Formation," **Biophysical Journal**, 2023 June 12. PMID:37224822.
12. Donghyun Jeong**, Eva Hall**, Erin Neu*, **Donny Hanjaya-Putra**, "Podoplanin is Responsible for the Distinct Blood and Lymphatic Capillaries," **Cellular and Molecular Bioengineering**, 2022 Aug 6, PMID:36444348. ***Donny Hanjaya-Putra was featured as 2022 CMBE Young Innovator in this issue.***
13. Loan Bui***, Shanique Edwards, Eva Hall**, Laura Alderfer**, Kellen Round*, Madeline Owen*, Pietro Sainaghi*, Siyuan Zhang, Prakash D. Nallathamby, Laura S. Haneline, **Donny Hanjaya-Putra**, "Engineering Bioactive Nanoparticles to Rejuvenate Vascular Progenitor Cells," **Communications Biology**, 2022 June 29. PMID:35768543.

14. Fei Fan***, Sanjoy Saha**, **Donny Hanjaya-Putra**, "Biomimetic Hydrogels to Promote Wound Healing," **Frontiers in Bioengineering and Biotechnology**, 2021 Sep 20. PMID:34616718.

15. Laura Alderfer**, Eva Hall**, **Donny Hanjaya-Putra**, "Harnessing Biomaterials and the Lymphatic System for Immunomodulation," **Acta Biomaterialia**, 2021 June 9. PMID:34118451.

16. Laura Alderfer**, Elizabeth Russo*, Adriana Archilla*, Brian Coe*, **Donny Hanjaya-Putra**, "Matrix Stiffness Primes Lymphatic Tube Formation Directed by Vascular Endothelial Growth Factor-C," **FASEB**, 2021 March 27, 35:e21498. PMID: 33774872.

17. Zehao Pan**, Loan Bui***, Vivek Yadav**, Fei Fan***, Hsueh-Chia Chang[#], **Donny Hanjaya-Putra[#]**, "Conformal Single Cell Hydrogel Coating with Electrically Induced Tip Streaming at an AC Cone," **Biomaterials Science**, 2021 May 4, PMID: 33949367.

18. Zeinab Ramshani***, Fei Fan***, Alicia Wei, Matt George, Carter Cliff, Mervin C. Yoder, **Donny Hanjaya-Putra**, Satyajyoti Senapati, Hsueh-Chia Chang, "A Multiplexed Immuno-Sensor for Online and Automated Monitoring of Tissue Culture Protein Biomarkers," **Talanta**, 2021 April 1, 122021. PMID: 33592751.

19. Liu Yang, Loan Bui***, **Donny Hanjaya-Putra**, Merlin L. Bruening, "Membrane-Based Affinity Purification to Identify Target Proteins of a Small-Molecule Drug," **ACS Analytical Chemistry**, 2020 July 28; 92,17. PMID: 32867494.

20. Laura Alderfer**, Alicia Wei, **Donny Hanjaya-Putra**, "Lymphatic Tissue Engineering and Regeneration," **Journal of Biological Engineering**, 2018 Dec 17; 12.32. PMID: 30564284. ***Donny Hanjaya-Putra was featured as an Emerging Leader in Biological Engineering in this issue.***

21. **Donny Hanjaya-Putra**, Carolyn Haller, Xiaowei Wang, Erbin Dai, Bock Lim, Liyung Liu, Patrick Jaminet, Joy Yao, Amy Searle, Thomas Bonnard, Christoph E. Hagemeyer, Karlheinz Peter, Elliot L. Chaikof, "Platelet-Targeted Dual Pathway Antithrombotic Inhibits Thrombosis with Preserved Hemostasis," **JCI Insight**, 2018 Aug 9; 3(15). PMID: 30089712.

22. Nisarga Naik, **Donny Hanjaya-Putra**, Carolyn Haller, Mark G. Allen, Elliot L. Chaikof, "Rapid homogenous endothelialization of high aspect ratio microvascular networks." **Biomedical Microdevices**, 2015 Aug; 17(4):83. PMID: 26227213.

23. Venkata R. Krishnamurthy, Mohammed Y.R. Sardar, Yu Ying, Xuezheng Song, Carolyn Haller, Erbin Dai, Xiaocong Wang, **Donny Hanjaya-Putra**, Lijun Sun, Vasilios Morikis, Scott I. Simon, Robert J. Woods, Richard D. Cummings, Elliot L. Chaikof, "Glycopeptide analogues of PSGL-1 inhibit P-selectin vitro and in vivo." **Nature Communications**, 2015 Mar 31: 6:6387. PMID: 25824568.

24. Sravanti Kusuma, Yu-I Shen, **Donny Hanjaya-Putra**, Prashant Mali, Linzhao Cheng, Sharon Gerecht, "Self-Organized Vascular Networks from Human Pluripotent Stem Cells in a Synthetic Matrix," **Proc Natl Acad Sci U S A**, 2013 Jul 30; 110(31): 12601-6. PMID: 23858432.

25. **Donny Hanjaya-Putra**, Yu-I Shen, Abby Wilson, Sudhir Khetan, Karen Fox-Talbot, Charles Steenbergen, Jason A. Burdick, Sharon Gerecht, "Integration and Regression of Implanted Human Vascular Networks during Deep Wound Healing," **Stem Cell Translational Medicine**, 2013 Apr; 2(4):297-306. PMID: 23486832.

26. **Donny Hanjaya-Putra**, Kyle T. Wong, Kelsey Hirotsu, Sudhir Khetan, Jason A. Burdick, Sharon Gerecht, "Spatial Control of Cell-Mediated Degradation to Regulate Vasculogenesis and Angiogenesis in Hyaluronan Hydrogels," **Biomaterials**, 2012, Sep; 33. PMID: 22672833.

27. Shyam B. Khatau, Sravanti Kusuma, **Donny Hanjaya-Putra**, Prashant Mali, Linzhao Cheng, Jerry S.H. Lee, Sharon Gerecht, Denis Wirtz, "The Differential Formation of the LINC-mediated

Perinuclear Actin Cap in Pluripotent and Somatic Cells," **PLoS ONE**, 2012, 7(5):e36689. PMID: 22574215.

28. **Donny Hanjaya-Putra**, Vivek Bose, Yu-I Shen, Jane Yee, Sudhir Khetan, Karen Fox-Talbot, Charles Steenbergen, Jason A. Burdick, Sharon Gerecht, "Controlled Activation of Morphogenesis to Generate a Functional Human Microvasculature in a Synthetic Matrix," **Blood**, 2011, Jul 21; 118(3):804-15; PMID: 21527523. ***Commentary in the same issue***: Edward K. Geissler and Peter Angele, "Innovative Blood Vessels Bring New Life," **Blood**, 2011, Jul 21; 118 (3):488-90.
29. Derek Yee, **Donny Hanjaya-Putra**, Vivek Bose, Eli Luong, Sharon Gerecht, "Hyaluronic Acid Hydrogels Support Cord-Like Structures from Endothelial Colony-Forming Cells," **Tissue Engineering: Part A**, 2011 May; 17(9-10):1351-61. PMID: 21247340.
30. Elaine Vo, **Donny Hanjaya-Putra**, Yuanting Zha, Sravanti Kusuma, Sharon Gerecht, "Smooth-Muscle-Like Cells Derived from Human Embryonic Stem Cells Supports and Augment Cord-Like Structures *in vitro*," **Stem Cell Reviews and Reports**, 2010 June; 6(2): 237-47. PMID: 20425149.
31. **Donny Hanjaya-Putra**, Jane Yee, Doug Ceci, Rachel Truitt, Derek Yee, Sharon Gerecht, "Vascular Endothelial Growth Factor and Substrate Mechanics Regulate *in vitro* Tubulogenesis of Endothelial Progenitor Cells." **Journal of Cellular and Molecular Medicine**, 2010 Oct; 14(10):2436-47. PMID: 19968735.
32. **Donny Hanjaya-Putra**, Sharon Gerecht, "Vascular Engineering Using Human Embryonic Stem Cells," **Biotechnology Progress**, 2009 Jan-Feb; 25(1):2-9. PMID: 19197982.
33. **Donny Hanjaya-Putra**, Sharon Gerecht, "Mending the Failing Heart with a Vascularized Cardiac Patch," **Cell Stem Cell**, 2009 Dec 4; 5(6):575-576. PMID: 19951684.

Book Chapters:

1. Erbil E. Abaci, **Donny Hanjaya-Putra**, Sharon Gerecht, "Hypoxia and Matrix Manipulation for Vascular Engineering," Biophysical Regulation of Vascular Differentiation and Assembly, 2011:127-165.
2. **Donny Hanjaya-Putra**, Maureen Wanjare, Sharon Gerecht, "Vascular Tissue Engineering," Biomaterials for Tissue Engineerings: A Review of the Past and Future Trend, 2011:89-109

Patents

1. Fei Fan, Sanjoy Saha, Bo Su, Matthew Webber, **Donny Hanjaya-Putra,** "Supramolecular Hydrogels to Control Lymphatic Tube Formation," (U.S. Provisional Patent 63/516,315).
2. Laura Alderfer, Fei Fan, **Donny Hanjaya-Putra,** "Multiparameter Tunable Synthetic Matrix for Engineering Lymphatic Vessels," (U.S. Provisional Patent 63/516,325).
3. Sanjoy Saha, Fei Fan, **Donny Hanjaya-Putra**, "Synthetic HA-dopamine to Preserve the Phenotypes of Lymphatic Endothelial Cells," (U.S. Provisional Patent 63/516,330).
4. Zehao Pan, Loan Bui, Vivek Yadav, Hsueh-Chia Chang, **Donny Hanjaya-Putra**, "Conformal Single Cell Hydrogel Coating with Electrically Induced Tip Streaming at an AC Cone." (U.S. Patent 18/039,848).
5. **Donny Hanjaya-Putra**, Carolyn A. Haller, Elliot L. Chaikof, "Targeted Anti-FXa for Deep Vein Thrombosis." (U.S. Provisional Application).
6. **Donny Hanjaya-Putra**, Sharon Gerecht, "Hydrogel-Based Vascular Lineage Cell Growth and Uses," (U.S. Patent 14/553,442. Issued 2015).
7. **Donny Hanjaya-Putra**, Elaine Vo, Maureen Wanjare, Sharon Gerecht, "Smooth Muscle-Like Cells (SMLCs) Derived from Human Pluripotent Stem Cells," (U.S. Patent 13/581,341. Issued 2012).

Invited Talks / Lectures:

1. **Donny Hanjaya-Putra**, "Designing Biomaterials for Therapeutic Lymphangiogenesis," BMES Annual Meeting, October 24, 2024.
2. **Donny Hanjaya-Putra,** "Engineering Biomaterials for Stem Cells Morphogenesis and Drug Delivery," Columbia University, June 10, 2024.
3. **Donny Hanjaya-Putra,** "Engineering Biomaterials for Stem Cells Morphogenesis and Drug Delivery," Korea Advanced Institute of Science and Technology (KAIST), May 27, 2024.
4. **Donny Hanjaya-Putra,** "Designing Biomaterials for Stem Cells and Therapeutics Delivery," Purdue University, February 14, 2024.
5. **Donny Hanjaya-Putra,** "Designing Biomaterials for Stem Cells and Therapeutics Delivery," Academia Sinica, December 12, 2023.
6. **Donny Hanjaya-Putra,** "Designing Biomaterials for Stem Cells and Therapeutics Delivery," National Yang Ming University, December 11, 2023.
7. **Donny Hanjaya-Putra,** "Engineering Biomaterials for Stem Cells Morphogenesis and Drug Delivery," The Johns Hopkins University, November 16, 2023.
8. **Donny Hanjaya-Putra,** "Engineering Biomaterials for Stem Cells Morphogenesis and Drug Delivery," University of Maryland, College Park, October 20, 2023.
9. **Donny Hanjaya-Putra,** "Engineering Biomaterials with Stem Cells for Therapeutic Lymphangiogenesis," Swiss Lymphatic Forum, September 9, 2023.
10. **Donny Hanjaya-Putra**, "Engineering Biomimetic Lymphatic Models," Lymphatic Seminar, March 28, 2022.
11. **Donny Hanjaya-Putra**, "Engineering Approaches for Vascular Regeneration," 7th Bioengineering and Translational Medicine Conference, December 2022.
12. **Donny Hanjaya-Putra**, "Engineering Biomaterials to Control Stem Cell Morphogenesis and Targeted Drug Delivery," Hebei University, May 10, 2022.
13. **Donny Hanjaya-Putra**, "Synthetic Biomaterials to Control Stem Cell Morphogenesis," Biomaterials and Medical Devices, Nanotech Expo, Washington DC, October 20, 2021.
14. **Donny Hanjaya-Putra**, "Biomaterials to Bridge the Blood and Lymphatic Vasculatures," Bioengineering e-Seminar Series, October 9, 2020.
15. **Donny Hanjaya-Putra, "**Delivering Therapeutic Drugs to Rejuvenate Progenitor Cells," 8th International Conference on Bioengineering and Nanotechnology, May 29, 2019.
16. **Donny Hanjaya-Putra,** "Engineering Therapeutics Angiogenesis," Indiana Center for Regenerative Medicine and Engineering, August 26, 2019.

National and International Conferences

Oral Presentations:

1. **Donny Hanjaya-Putra**, "Designing Biomaterials for Stem Cell Morphogenesis and Drug Delivery," 8th International Congress of Biotechnology, November 20, 2024.
2. **Donny Hanjaya-Putra**, "Engineering Biomaterials for Therapeutic Lymphangiogenesis," World Congress of Biomaterials, May 31, 2024.
3. **Donny Hanjaya-Putra**, "Coupling Calcium Signaling Dynamics and Machine Learning for Directing Lymphatic Differentiation," Cellular and Biomolecular Engineering, January 2024.
4. **Donny Hanjaya-Putra**, "Designing Biomaterials for Therapeutic Lymphangiogenesis," IEEE NanoMed Conference, December 2023.
5. **Donny Hanjaya-Putra**, "Designing Biomaterials for Therapeutic Lymphangiogenesis," Cellular and Biomolecular Engineering, January 2023.
6. **Donny Hanjaya-Putra,** "Engineering Stem Cell for Therapeutic Lymphangiogenesis," International Vascular Biology Meeting, October 2022.
7. **Donny Hanjaya-Putra,** "Podoplanin is Responsible for the Distinct Blood and Lymphatic Capillaries," Young Innovator Award CMBE, BMES Annual Meeting 2022.

8. **Donny Hanjaya-Putra**, "Biomaterials to Bridge the Blood and Lymphatic Vasculatures," Bioengineering e-Seminar Series, October 9, 2020.
9. **Donny Hanjaya-Putra**, "Engineering Biomaterials with Stem Cells for Lymphatic Morphogenesis," GRC Lymphatics, March 5, 2020.
10. **Donny Hanjaya-Putra**, "Delivering Therapeutic Drugs to Rejuvenate Progenitor Cells," AIChE Annual Meeting, November 11, 2019.
11. Laura Alderfer, **Donny Hanjaya-Putra,** "Co-Regulation of Lymphatic Tube Formation by Matrix Stiffness and VEGF-C," BMES Annual Meeting, October 18, 2019**.**
12. **Donny Hanjaya-Putra,** "Engineering Bioactive Nanoparticles to Rejuvenate Progenitor Cells," GRC Biomaterials, August 2, 2019. (selected to give the **Young Investigator Presentation**)
13. Laura Alderfer, **Donny Hanjaya-Putra,** "Co-Regulation of Lymphangiogensis by Mechanical and Biochemical Cues," Lymphatic Forum, May 30, 2019**.**
14. **Donny Hanjaya-Putra,** "Controlling Vascular Morphogenesis in Tumor Microenvironments," Harper Cancer Research Institute, Jan 28, 2019, (*invited lecture*).
15. Loan Bui, **Donny Hanjaya-Putra**, "Microfluidics Hydrogels-Based Platform to Study Breast Cancer Cell and Lymphatic Capillary Interaction, American Institute of Physics (AIP), Notre Dame, I.N., July 23-24, 2018.
16. **Donny Hanjaya-Putra**, Erbin Dai, Carolyn Haller, Christoph E. Hagemeyer, Karlheinz Peter, Elliot L. Chaikof, "Targeted Anti-Thrombotic Prophylaxis for Deep Vein Thrombosis" Biomedical Engineering Society (BMES) Annual Meeting, Phoenix, A.Z., October, 11-14, 2017.
17. **Donny Hanjaya-Putra**, Erbin Dai, Carolyn Haller, Christoph E. Hagemeyer, Peter Karlheinz, Elliot L. Chaikof, "Targeted Anticoagulation Therapy for the Prevention of Venous Thrombosis." American Institute of Chemical Engineers (AIChE) Annual Meeting, San Francisco, C.A., November 13-18, 2016.
18. **Donny Hanjaya-Putra**, Charles Steenbergen, Jason A. Burdick, Sharon Gerecht, "Functionality and Durability of Engineered Human Vascular Networks from Endothelial Progenitor Cells in a Deep Thermal Wound." International Society of Stem Cell Research (ISSCR) 11th Annual Meeting*,* Boston, M.A., June 12-15, 2013*.*
19. **Donny Hanjaya-Putra**, Vivek Bose, Sudhir Khetan, Jason A. Burdick, Sharon Gerecht, "Controlling Morphogenesis of Endothelial Progenitors to Generate Functional Microvasculature in a Synthetic Matrix." International Society of Stem Cell Research (ISSCR) 9th Annual Meeting*,* Toronto, Canada, June 15-18, 2011*.*
20. **Donny Hanjaya-Putra**, Sudhir Khetan, Jason A. Burdick, Sharon Gerecht, "Controllable and Robust Morphogenesis of Functional Vascular Network Assembly within Synthetic Environment." Experimental Biology (EB)*,* Washington D.C., April 9-13, 2011.
21. **Donny Hanjaya-Putra**, Rachel Truitt, Jane Yee, Doug Ceci, Derek Yee, Sharon Gerecht, "Angiogenesis by Endothelial Progenitor Cells is co-regulated by Vascular Endothelial Growth Factor and Matrix Stiffness, Experimental Biology (EB), New Orleans, L.A., April 18-22, 2009.

Poster Presentations:

1. Eva Hall, Laura Alderfer, Laura S. Haneline, **Donny Hanjaya-Putra**, "Preeclampsia Dysregulates the MicroRNA Profile of Extracellular Vesicles from Endothelial Colony Forming Cells," Hypertension, September 27, 2024.
2. Nancy Keilany Lightsey, **Donny Hanjaya-Putra**, "Oscillatory Shear Stress Modulates Lymphatic Progenitor Cells Maturation into Lymphatic Vessels with Anti-Cancer Phenotypes," Cell Culture Under Flow Conference, July 25, 2024.
3. Brenda Cruz González, **Donny Hanjaya-Putra**, "Enhancing the Targeting Efficacy of Endothelial Colony Forming Cells for Renal Regeneration," Cell Culture Under Flow Conference, July 25, 2024.

4. Brenda Cruz González, **Donny Hanjaya-Putra**, "Enhancing the Targeting Efficacy of Endothelial Colony Forming Cells for Renal Regeneration," Biomechanics, Bioengineering, Biotransport Conference, June 14, 2024.
5. Eva Hall, **Donny Hanjaya-Putra**, "Shear Stress Modulates Transgelin Expression in Preeclampsia Affected Endothelial Colony-Forming Cells," Biomedical Engineering Society (BMES) Annual Meeting, October 11-14, 2023.
6. Ellie Johandes, **Donny Hanjaya-Putra**, "Hypoxia Modifies Endothelial Cell Behavior and Promotes Tube Formation *in vitro*," Biomedical Engineering Society (BMES) Annual Meeting, October 11-14, 2022.
7. Donghyun Paul Jeong, **Donny Hanjaya-Putra**, "Acetyl-CoA mediated differentiation of Lymphatic Endothelial Cells," Biomedical Engineering Society (BMES) Annual Meeting, October 12-15, 2022.
8. Sanjoy Saha, **Donny Hanjaya-Putra**, "Dopamine-HA Coating Preserves Lymphatic Endothelial Phenotypes," Biomedical Engineering Society (BMES) Annual Meeting, October 12-15, 2022.
9. Laura Alderfer, **Donny Hanjaya-Putra**, "Hyaluronic Acid Hydrogels for Controlling Lymphatic Vessel Formation," Biomedical Engineering Society (BMES) Annual Meeting, October 14-17, 2020.
10. Loan Bui, **Donny Hanjaya-Putra**, "Engineering Bioactive Nanoparticles to Rejuvenate Progenitor Cells," Biomedical Engineering Society (BMES) Annual Meeting, October 16-19, 2019.
11. Fei Fan, **Donny Hanjaya-Putra**, "Synthesis and Photopatterning of Norbornene Modified Hyaluronic Acid Hydrogels," Notre Dame-Purdue Symposium on Soft Matter and Polymers, September 21, 2019.
12. Loan Bui, **Donny Hanjaya-Putra**, "Interplay of Lymphatic Vasculature and Breast Cancer on Lymphatic Invasion," Biomedical Engineering Society (BMES) Annual Meeting, Atlanta, G.A., October 17-20, 2018.
13. Laura Alderfer, David B. Go, Hsueh-Chia Chang, **Donny Hanjaya-Putra**, "Early Prediction of Preeclampsia using Maternal Exosomal miRNAs Secreted by Endothelial Colony-Forming Cells, American Institute of Physics (AIP), Notre Dame, I.N., July 23-24, 2018.
14. **Donny Hanjaya-Putra**, Erbin Dai, Carolyn Haller, Christoph E. Hagemeyer, Karlheinz Peter, Elliot L. Chaikof, "Targeted Factor Xa Inhibition for the Prevention of Venous Thrombosis." Biomedical Engineering Society (BMES) Annual Meeting, Minneapolis, M.N., October 5-8, 2016.
15. Venkata R. Krishnamurthy, Mohammed Y.R. Sardar, Carolyn Haller, **Donny Hanjaya-Putra**, Richard D. Cummings, Elliot L. Chaikof, "PSGL-1 Glycomimetic Inhibits P-Selectin in vitro and in vivo." Harvard Medical School Surgery Research Day, Boston, M.A., May 9, 2015.
16. Nisarga Naik, **Donny Hanjaya-Putra,** Carolyn Haller, Mark G. Allen, Elliot L. Chaikof, "Biodegradable Polymer for Spatially Homogenous and Rapid Endothelialization of a High Aspect Ratio Microvascular Construct." Harvard Medical School Surgery Research Day, Boston, M.A., May 10, 2014.
17. Nisarga Naik, **Donny Hanjaya-Putra**, Carolyn Haller, Mark G. Allen, Elliot L. Chaikof, "Spatially Homogenous and Rapid Endothelialization of a High Aspect Ratio Microvascular Construct." Harvard Medical School Surgery Research Day, Boston, M.A., May 11, 2013.
18. **Donny Hanjaya-Putra**, Vivek Bose, Sudhir Khetan, Jason A. Burdick, Sharon Gerecht, "Controlled Activation of Morphogenesis to Generate a Functional Human Microvasculature in a Synthetic Matrix." XXIII Congress of the International Society on Thrombosis and Haemostasis (ISTH), Kyoto, Japan, July 23-28, 2011.
19. **Donny Hanjaya-Putra**, Derek Yee, Jane Yee, Sharon Gerecht, "Tunable Matrix to Study and Generate Vascular Networks from Endothelial Colony-Forming Cells, New York Stem Cell Foundation (NYSCF) 5th Annual Translational Stem Cell Research Conference, New York City, N.Y., October 12-13, 2010.

20. **Donny Hanjaya-Putra**, Elaine Vo, Sudhir Khetan, Jane Yee, Yuanting Zha, Vivek Bose, Sravanti Kusuma, Jason A. Burdick, Sharon Gerecht, "Controllable and Robust Vascular Differentiation and Assembly Within Synthetic Environment." International Society for Stem Cell Research (ISSCR) 8th Annual Meeting, San Francisco, C.A., June 16-19, 2010.

Research Support: (~7.5 M total as PI and Co-PI)

Active External Research Support:

National Science Foundation (PI: Hanjaya-Putra) 08/2021-07/2026 1.0 calendar
NSF CAREER $ 70,489 Annual Direct
$ 548,840 Total Cost

"CAREER: An Integrated Research and Education Program to Investigate Hypoxia and Matrix Remodeling During Stem Cell Differentiation and Lymphatic Morphogenesis."

The major goal of this project is to determine the roles of oxygen signaling and matrix remodeling in regulating stem cell differentiation and morphogenesis during early embryonic development. In addition, the integrated education and outreach program aims to promote learning at all levels by focusing on early engagement of students in service learning to inspire their interests in STEM fields.

National Institute of Health (PI: Hanjaya-Putra) 08/2021-07/2026 1.5 calendar
NIH MIRA R35 $ 250,000 Annual Direct
$ 1,956,250 Total Cost

"Engineering the Stem Cell Microenvironment for Lymphatic Regeneration."

The major goal of this project is to utilize scalable and high-throughput approaches to map the cellular reprograming of hPSCs, which can be used to emulate lymphatic function and physiology in a "lymphatic-on-a-chip" model. In addition, the resulting stem cells will be engineered within a synthetic and controllable matrix environment as a therapeutic approach to promote lymphatic regeneration in an *in vivo* model of wound healing.

National Institute of Health (PI: Hanjaya-Putra) 08/2023-07/2026 0.1 calendar
NIH MIRA R35 Instrument Supplement $ 250,000 Total Cost

"Confocal Microscopy for Engineering the Stem Cell Microenvironment in Lymphatic Regeneration."

This is an instrument supplement to purchase a confocal microscope, which will be used to support research project related to Engineering the Stem Cell Microenvironment for Lymphatic Regeneration.

National Science Foundation (PI: Hanjaya-Putra) 09/2022-08/2026 0.5 calendar
NSF RECODE $ 240,000 Annual Direct
$ 1,500,000 Total Cost

"RECODE: Vascular Differentiation and Morphogenesis Controlled with Hybrid Memristors."

The major goal of this project is to exploit calcium signaling for reproducible directed differentiation of hiPSCs into vascular endothelial cells. The overall goal is to develop an autonomous coupled cellular and memristor circuitry with its own local memory and range-weighted coupling that serve as an artificial neuronal network to generate long-range patterns of cell differentiation and morphogenesis through synthetic control of multicellular gene regulatory and physiological networks.

National Science Foundation 09/2024-08/2028 0.25 calendar
NSF CBET (PI: Reeves, Co-I: Hanjaya-Putra) $ 1,200,000 Total Cost

"Optimality of Morphogen Signal Transduction Across the Animal Kingdom."

Quantify the relationships among three competing Performance Objectives in the SMAD signal transduction pathway across a broad range of experimental systems: the Drosophila and zebrafish embryo systems, larval Drosophila wing disc system, and human stem cell system. The major goals of this project are to measure perturbed SMAD signaling in live tissues, use the data to calibrate a cross species model – which will be used to generate predictions – and test predictions by perturbing the systems and measuring response.

National Science Foundation 05/2023-04/2026 0.05 calendar
REU Site (PI: Phillip, Co-I: Hanjaya-Putra) $ 416,980 Total Cost

"REU Site: Soft Materials for Applications in Sustainability and Healthcare Engineering."

The proposed REU site, guided by faculty across the College of Engineering at the University of Notre Dame, will expose REU participants to state-of-the-art research in the molecular engineering of soft materials.

Pending Research Support:

Burroughs Wellcome Fund (PI: Hanjaya-Putra)
2024 Next Gen Pregnancy Initiative (finalist interview) $ 500,000 Total Cost
"Human Progenitor Cells for Predicting and Improving Developmental Health Outcomes Precipitated by Preeclampsia"

National Institute of Health (PI: White, co-I: Hanjaya-Putra)
NIH PSOC UO1 $ 2,500,000 Total Cost
"Bidirectional Roles of ECM Stiffness and Intracellular pH Dynamics in Cancer"

National Science Foundation (PI: Hanjaya-Putra) $ 2,000,000 Total Cost
"EFRI BEGIN OI: Hybrid Brain Organoids with Astrocyte-Supported Memory for Multi-Timescale Biocomputing."

Novo Nordisk (PI: Hanjaya-Putra) $ 75,000 Total Cost
"Modular Biomaterials Platforms for Site-Specific Delivery of Stem Cells and Therapeutics."

ARPA-H GLIDE (PI: Hanjaya-Putra) $ 23,000,000 Total Cost
"BOLT: Bioengineered Artificial Lymph Node Organs for Lymphedema Therapy"

Completed Research Support:

American Heart Association (PI: Hanjaya-Putra) 07/2019-09/2022 1.0 calendar
Career Development Award 2019 $ 70,000 Annual Direct
$ 231,000 Total Cost

"Engineering Therapeutic Lymphangiogenesis to Heal the Heart"

The major goal of this project is to promote lymphangiogenesis in cardiac wound using biomaterials. Hanjaya-Putra Lab contributed protocol to control lymphatic morphogenesis using synthetic biomaterials.

Indiana CTSI (PI: Hanjaya-Putra, co-I: Haneline) 05/2018 – 02/2021 (NCE) 0.5 calendar
Collaboration in Translational Research $ 37,500 Annual Direct
$ 75,000 Total Cost

"Therapeutic Cell Engineering with Synthetic Nanoparticles to Rejuvenate ECFCs."

The major goal of this project is to improve the clinical potential of endothelial colony-forming cells (ECFCs) isolated from diabetic patients. Hanjaya-Putra Lab contributes nanoparticles to release bioactive molecules to rejuvenate ECFCs.

ARMI BioFab USA (PI: Chang, co-I: Hanjaya-Putra) 07/2019-06/2021 1.0 calendar
Technical Project Grant 2019 $ 442,220 Annual Direct
$ 1,443,163 Total Cost

"An Automated High-Throughput Multiplexed Detection Platform for Real-Time Monitoring of Protein Fingerprints in Cell Culture Media"

The major goal of this project is to engineer sensitive biosensor for real-time monitoring of protein from tissue engineered products. Hanjaya-Putra Lab contributes clinically-relevant ECFCs differentiated from hPSCs.

NSF (PI: Chang, Co-I: Hanjaya-Putra) 01/2023-12/2023 0.25 calendar
NSF Center for Bioanalytic Metrology $ 50,000 Total Cost

"A High-Throughput Gel Droplet Organoid for Drug Screening Platform"

The major goal of this project is to a high-throughput gel droplet organoids for screening anti-cancer drugs.

Teaching and Advising

University of Notre Dame

- AME 20231 Thermodynamics (undergraduate required course)
  - 88 students (Spring 2023)
  - 35 students (Fall 2023)
  - 50 students (Fall 2024)
- AME 30386 / CBE 30386 Introduction to Bioengineering (undergraduate course)
  - 52 students (Spring 2020)
- AME 40571 / AME 60571 Biomaterials (undergraduate and graduate elective course)
  - 12 students (Spring 2018)
  - 35 students (Fall 2018)
  - 21 students (Fall 2019)
  - 28 students (Fall 2020)
  - 29 students (Fall 2021)
  - 15 students (Fall 2022)
- AME 60770 Stem Cell Engineering (graduate course)
  - 7 students (Spring 2019)
  - 6 students (Spring 2021)
  - 4 students (Spring 2022)
  - 7 students (Spring 2024)

Post-doctoral Scholars

- Dr. Loan Bui, Post-doctoral Scholar, 01/2018-07/2020
  Current Position: **Assistant Professor, University of Dayton, Ohio**
- Dr. Zeinab Ramshani, Post-doctoral Scholar, 05/2018-04/2020
- Dr. Fei Fan, Post-doctoral Scholar, 03/2019-11/2022
  Current Position: Michigan State University
- Dr. Ahmad Elsebahy, Post-doctoral Scholar, 01/2024-present
- Dr. Subash Gamage, Post-doctoral Scholar, 10/2024-present

Graduate Students

Ph.D.

- Laura Alderfer (March 2023), WCF Interdisciplinary Fellowship, **Fulbright Fellowship**, **2023 Eli J. and Helen Shaheen Graduate School Award in Engineering**
- Eva Hall (anticipated 2025)
- Sanjoy Saha (anticipated 2025), MSE Student
- Donghyun Paul Jeong (anticipated 2026), **Remick Fellowship, 2023 NSF GRFP**
- Brenda Cruz Gonzalez (anticipated 2027), **CEST Fellowship**
- Daniel Montes Pinzon (anticipated 2027)
- Ellie Johandes (anticipated 2028)
- Nancy Keilany Lightsey (anticipated 2029), **Dean's Fellowship, GEM Fellowship**
- Heejeong Youn (anticipated 2030)
- Dominique Gramm (anticipated 2030), **ND PREP**, **Dean's Fellowship, 2024 NSF GRFP**
- Kailee Mendiola (anticipated 2030), **Dean's Fellowship**
- Salmady Valentin Ramos (anticipated 2030), **Kinesis Fellowship**

Undergraduate Students – Notre Dame

- Elizabeth Russo, Aerospace and Mechanical Engineering (Fall 2017, Spring 2018, Fall 2018, Spring 2019). Current position: **BME Johns Hopkins University**
- Brian Coe, Aerospace and Mechanical Engineering (Summer 2018, Fall 2018, Spring 2019)
- Henry Davis, Aerospace and Mechanical Engineering (Summer 2018, Fall 2018, Spring 2019) Current position: Accenture Health Consulting
- Kellen Round, Biological Science (Fall 2018, Spring 2019)
- Grace Petrosini, Biological Science (Fall 2018-2020), **BME Johns Hopkins University**
- Madeline Owen, Stamps Scholar (Spring 2019-Spring 2021), **2021 Valedictorian** Current Position: Medical student at **Northwestern University**
- Abigayle Batkoff, Biological Science (Spring 2019)
- Erin Neu, Chemical and Biomolecular Engineering (Fall 2020), **BME BU**, **2024 NSF GRFP**
- Alexander Kolodychak, Chemical and Biomolecular Engineering (Fall 2020)
- Onyi Okwueme, Biological Science (Fall 2021)
- Francine Graham, Chemical and Biomolecular Engineering (Fall 2022), **BE Case Western**
- Maddie Klefeker, Chemical and Biomolecular Engineering (Fall 2022)
- Jamil Allan, Biological Science (Spring 2023)
- Karlee Waugh, Biochemistry (Fall 2023)
- Angela Taglione, Chemical and Biomolecular Engineering (Fall 2023)
- Grace Fluskey, Aerospace and Mechanical Engineering (Fall 2023)
- Kari Pendegraft, Electrical Engineering (Spring 2023)
- Kaitlin Ryan, Biochemistry (Spring 2023)
- Tomasz Harbut, Aerospace and Mechanical Engineering (Spring 2023)
- Alexander Yusman, Biochemistry (Spring 2023)
- Fred Foueppe, Chemical and Biomolecular Engineering (Fall 2024)
- Shirley Wei, Chemical and Biomolecular Engineering (Fall 2024)
- Pilar Sanchez, Aerospace and Mechanical Engineering (Fall 2024)

Visiting Undergraduate Students

- Eric Pfrender, Chemical and Biomolecular Engineering, Northwestern University (Summer 2018)
- Adriana M. Archilla, Chemical and Biomedical Engineering, Syracuse University (Summer 2019)

- Aisling Hanrahan, Biomedical Engineering, Naughton Fellowship (Summer 2023)
- Ada Jaramillo, Biomedical Engineering, University of Texas at Arlington (Summer 2024)

High School Students

- Benjamin Capdevielle, Trinity High School (Fall 2018, Spring 2019).
- Christin Preuss, Trinity High School (Fall 2018, Spring 2019).
- Mylia Vigue, St, Anthony de Padua (RC3 Summer 2022).

Qualification Exam, Candidacy Exam, and Dissertation Committees

- Tyler Finamore, Aerospace and Mechanical Engineering (expected 2021)
- Kimberly Curtis, Bioengineering Graduate Program (expected 2019)
- Dharsan Soundarrajan, Chemical and Biomolecular Engineering (expected 2022)
- Chenguang Zhang, Chemical and Biomolecular Engineering (expected 2022)
- John Nganga, Aerospace and Mechanical Engineering (expected 2023)
- Dharsan Soundarrajan, Chemical and Biomolecular Engineering
- Chenguang Zhang, Chemical and Biomolecular Engineering
- Matthew Sis, Chemical and Biomolecular Engineering
- Francisco Huizar, Chemical and Biomolecular Engineering
- Zhe Feng, Aerospace and Mechanical Engineering
- George Ronan, Aerospace and Mechanical Engineering
- Mayesha Sahir Mim, Chemical and Biomolecular Engineering
- Jack Consolini, Aerospace and Mechanical Engineering
- Vivek, Chemical and Biomolecular Engineering
- Lan Li, Bioengineering Graduate Program
- Audrey Hansrisuk, Bioengineering Graduate Program
- Kyle McCarthy, Chemical and Biomolecular Engineering
- Shuman Liu, Chemical and Biomolecular Engineering
- Lan Li, Bioengineering Graduate Program

Service and Outreach

Service to the Profession

Scientific Organizations:

- Member, American Institute of Chemical Engineering (AIChE).
- Member, Biomedical Engineering Society (BMES).
- Member, International Society of Stem Cell Research (ISSCR).
- Member, International Society for Thrombosis and Haemostasis (ISTH).
- Member, American Heart Association (AHA).
- Organizer, 2019 Midwest Tumor Microenvironment Meeting
- Co-Chair, 8th International Conference on Bioengineering and Nanotechnology (ICBN) Meeting
- Co-Chair, Biomaterials and Vascular Therapeutics, Vascular Biology 2021
- *Ad hoc* reviewer, American Heart Association (AHA)
- Award Committee, Biomedical Engineering Society (BMES)
- Education Committee, North America Vascular Biology Organization (NAVBO)

Invited *Ad Hoc* Reviewer:

- PloS ONE, Scientific Reports.
- Cell Tissue Organs.
- BMC Technology.
- Journal of Visualized Experiments.
- Stem Cell Translational Medicine.
- Journal Biomedical Materials Research.

- Cardiovascular Research.
- Annals of Biomedical Engineering.
- Cellular and Molecular Life Sciences.
- Journal of Vascular Research
- Acta Biomaterialia
- Biomicrofluidics
- Science Advances
- Nature Communications

Invited Grant Reviewer:

- I-CTSI Core Pilot Grant Review Panel (May 2018, May 2019, October 2020)
- I-CTSI Surgical Device Review Panel (June 2018)
- Peer Reviewed Medical Research Program of the Congressionally Directed Medical Research Program (CDMRP, July 2018, July 2019)
- ACS-HCRI Grant Review Panel (Dec 2018, July 2019)
- Swiss National Science Foundation (June 2021, January 2023)
- EPSRC UK Research and Innovation (July 2024)
- NSF Center for Single-Cell Omics, Regeneration and Engineering (February 2023)
- NSF EBMS Panel (May 2023)
- NSF CAREER Panel (October 2023, October 2024)
- AHA Career Development Award Panel (March 2024)
- NIH F31/F32 Panel (June 2024)

Service to the Department, College, and University

Departmental Committees and Service

- AME *Ad Hoc* Committee on Strategic Planning (2018)
- Faculty Search Committee (2022-2023)
- Bioengineering Seminar Coordinator (2020-present)
- Bioengineering Graduate Admission Coordinator (2021-present)
- Bioengineering Executive Committee (2024-present)
- Quantitative Biology Steering Committee (2024-present)
- Bioengineering and Life Science Initiative Research Strategy Committee (2024-present)

Outreach

- Co-Coordinator, MATHCOUNTS Competition, St. Joseph Valley Chapter, Indiana.
- Module organizer, DNA Learning Center, University of Notre Dame, Indiana.
- Paper Trail Undergraduate Research Symposium, Biomedical Engineering Society.

Service

- Volunteer, Scientific Judges for Siemens Region 3 Competition, Notre Dame, Indiana.
- Faculty advisor, Indonesian Student Association PERMIAS Club, Notre Dame, Indiana.
- Mentor, Building Bridges Mentoring Program, Notre Dame, Indiana.
- Mentor, Mary E. Galvin Science and Engineering Scholars Program, Notre Dame, Indiana.