

Iwijn De Vlaminck

Meinig school of Biomedical Engineering
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Education

- 3/2008 **Ph.D. in Science and Engineering**
K.U. Leuven, Belgium
Adviser: Gustaaf Borghs; Co-adviser: Robert Mertens
- 6/2003 **Masters in electrical engineering**
Burgerlijk elektrotechnisch ingenieur, K.U. Leuven, Belgium
Graduate coursework in electrical engineering and solid-state physics
- 6/2000 **Bachelors in civil engineering**
Kandidatuur Burgerlijk ingenieur, K.U. Leuven, Belgium

Professional Employment

- 2/2021 - Present **Associate Professor of Biomedical Engineering, Cornell University, USA**
- 1/2015 - 1/2021 **Assistant Professor of Biomedical Engineering, Cornell University, USA**
- 1/2012-11/2014 **Postdoctoral researcher, HHMI research associate, Stanford University, USA**
Biomedical and single-cell genomics
Stephen Quake lab, Department of Bioengineering
- 4/2008-12/2011 **Postdoctoral researcher, Delft University of Technology, The Netherlands**
Single molecule biophysics
Cees Dekker lab, Department of BioNanoScience
- 1/2004-3/2008 **PhD research, IMEC, K.U. Leuven, Belgium**

Awards

- 2020 **Research Excellence Award** Cornell College of Engineering
- 2020 **Associate Scientific Advisor** Science Translational Medicine
- 2019 **Rainin Foundation Synergy Award**
- 2019 **Inspiring mentor** Merrill Scholars program, Cornell University
- 2018 **Agilent Early Career Professor Awards Finalist**
- 2017 **Robert '55 and Vanne '57 Cowie Excellence in Teaching Award**
- 2017 **NIH Director's New Innovator Award**
- 2015 **Robert N. Noyce Assistant Professorship in Life Science and Technology**, selected by Provost
- 2014 **BOFZAP research professorship award.** KULeuven Belgium
- 2014 **Genome advance of the month.** National Human Genome Research Institute
- 2013 **Best poster award.** Stanford Translational Medicine symposium
- 2008 **Best publication track record award** for graduate students at IMEC, Leuven, 2008
- 2007 **Best paper award** at the MOEMS-MEMS (2007), part of SPIE Photonics West
- 2004 – 2008 Graduate research **fellowship** from IWT ("Agentschap voor Innovatie door Wetenschap en Technologie")

Publications, Submitted

59. Umji Lee, Pascal Stuelsatz, Sonia Karaz, David W. McKellar, Julie Russeil, Maria Deak, Iwijn De Vlaminck, Christoph Lepper, Bart Deplancke, Benjamin D. Cosgrove, and Jerome N. Feige, A Tead1-Apelin axis directs paracrine communication from myogenic to endothelial cells in skeletal muscle, submitted.
58. Alexandre Pellan Cheng, Matthew Pellan Cheng, Joan Sesing Lenz, Kaiwen Chen, Philip Burnham, Kaitlyn Marie Timblin, Jose Luis Orejas, Emily Silverman, Francisco M. Marty, Jerome Ritz, Iwijn De Vlaminck, Cell-free DNA Tissues-of-Origin Profiling Predicts Graft versus Host Disease and Detects Infection after Hematopoietic Cell Transplantation, bioRxiv 2020.04.25.061580.
57. Mark Kowarsky, Iwijn De Vlaminck, Jennifer Okamoto, Norma F Neff, Nathan D Wolfe, Stephen R Quake, Cell-free DNA Reveals Potential Zoonotic Reservoirs in the Non-Human Primate Microbiome, submitted.

Publications, published in refereed journals or in press

56. David W. McKellar, Lauren D. Walter, Leo T. Song, Madhav Mantri, Michael F.Z. Wang, Iwijn De Vlaminck*, and Benjamin D. Cosgrove*, Power in numbers: Large-scale integration of single-cell transcriptomic data reveals rare, transient muscle progenitor cell states in muscle regeneration, **Communications Biology**, in press (2021). * Equal contribution.
55. Philip Burnham, Fanny Chen, Alexandre P. Cheng, Vesh Srivatana, Lisa T. Zhang, Emmanuel Edusei, Shady Albakry, Brittany Botticelli, Xunxi Guo, Amanda Renaghan, Jeffrey Silberzweig, Darshana M. Dadhanian, Joan S. Lenz, Michael Heyang, Lars Westblade, Iwijn De Vlaminck*, John R. Lee*, Cell-Free DNA Sequencing of Peritoneal Fluid Informs Infections within the Abdominal Cavity, **Kidney Medicine**, in press (2021). * Equal contribution.
54. Adrienne Chang, Omary Mzava, Joan S. Lenz, Alexandre P. Cheng, Philip Burnham, S. Timothy Motley, Crissa Bennett, John T. Connelly, Darshana Dadhanian, Manikkam Suthanthiran, John R. Lee, Amy Steadman, Iwijn De Vlaminck, Fragment length biases distort measurements of cell-free DNA fragment length profiles and define the sensitivity of metagenomic cell-free DNA sequencing assays, **Clinical Chemistry**, in press (2021).
53. Hao Shi*, Benjamin Grodner*, Iwijn De Vlaminck, Recent advances in tools to map the microbiome, **Current Opinion in Biomedical Engineering** (2021). * Equal contribution.
52. Jiayin Fu, Michael Wang, Iwijn De Vlaminck and Yadong Wang, Thick PCL Fibers Improving Host Remodeling of PGS-PCL Composite Grafts Implanted in Rat Common Carotid Arteries, **Small** (2021).
51. Michael F.Z. Wang, Madhav Mantri, Shao-Pei Chou, Gaetano J. Scuderi, David McKellar, Jonathan T. Butcher, Charles G. Danko and Iwijn De Vlaminck, Uncovering Transcriptional Dark Matter via Gene Annotation Independent Single-Cell RNA Sequencing Analysis, **Nature Communications**, (2021).
50. Madhav Mantri, Gaetano Scuderi, Roozbeh Abedini Nassab, Jonathan Butcher, Iwijn De Vlaminck, Spatiotemporal single-cell RNA sequencing of developing hearts reveals interplay between cellular differentiation and morphogenesis, **Nature Communications**, (2021).
49. Alexandre Pellan Cheng*, Matthew Pellan Cheng*, Wei Gu*, Joan Sesing Lenz, Elaine Hsu, Erwin Schurr, Guillaume Bourque, Mathieu Bourgey, Jerome Ritz, Francisco Marty, Charles Y. Chiu, Donald Cuong Vinh, Iwijn De Vlaminck, Cell-Free DNA Tissues-of-Origin by Methylation Profiling Reveals Significant Cell, Tissue and Organ-Specific injury related to COVID-19 Severity, **Cell Med**, (2021). * Equal contribution.
48. Daniela Bezdán, Kirill Grigorev, Cem Meydan, Fanny Augusta Vatter, Michele Cioffi, Varsha Rao, Kiichi Nakahira, Philip Burnham, Ebrahim Afshinnekoo, Craig Westover, Daniel J Butler, Chris Moszary, Matthew MacKay, Jonathan Foox, Tejaswini Mishra, Serena Lucotti, Brinda K Rana, Ari M Melnick, Haiying Zhang, Irina Matei, David P Kelsen, Kenneth H Yu, Lynn Taylor, Susan Bailey, Michael Snyder, Francine Garrett-Bakelman, David C Lyden, Stephan Ossowski, Iwijn De Vlaminck, Christopher E Mason, Dynamics of cell-free DNA and exosomes before, during, and after long duration human spaceflight, **iScience** (2020).
47. Kiran Khush, John Beausang, Iwijn De Vlaminck, Helen Luikart, Mark Nicolls, G Dhillon, Robert Woodward, David J Ross, David Weill, Donor-derived Cell-free DNA is Elevated During Allograft Rejection after Lung Transplantation, **ERJ Open Research** (2020).
46. Hao Shi, Qiaojuan Shi, Benjamin Grodner, Warren Zipfel, Ilana Brito, Iwijn De Vlaminck, Highly Multiplexed Spatial Mapping of Microbial Communities, **Nature** (2020).

45. Iwijn De Vlaminc, The proportion of donor specific cell-free DNA in blood as a marker of transplant rejection: not an absolute, in press, **Clinical Chemistry** (2020).
44. Iwijn De Vlaminc, Blood-borne biomarkers may help predict COVID-19 mortality, **Science Translational Medicine**, 12, eabb7102 (2020).
43. Shamik Dholakia, Iwijn De Vlaminc, Kiran Khush, Adding insult on injury: immunogenic role for donor-derived cell-free DNA?, **Transplantation**, Online First (2020).
42. Andrea J. De Micheli, Paula Fraczek, Sharon Soueid-Baumgarten, Hiranmayi Ravichandran, Iwijn De Vlaminc, Olivier Elemento, and Benjamin D. Cosgrove, Single-cell analysis of the muscle stem cell hierarchy identifies heterotypic communication signals involved in skeletal muscle regeneration, **Cell Reports**, 30, 10 (2020).
41. Akanksha Verma, Thangamani Muthukumar, Hua Yang, Michelle Lubetzky, Michael Cassidy, Darshana M. Dadhania, John R. Lee, Catherine Snopkowski, Steve P. Salvatore, Vijay K. Sharma, Jenny Z. Xiang, Iwijn De Vlaminc, Surya V. Seshan, Franco B. Mueller, Olivier Elemento, Manikkam Suthanthiran, Transcriptomics of Acute Rejection in Kidney Allografts, **JCI Insight**, 5(4):e131552 (2020).
40. Philip Burnham, Nardhy Gomez-Lopez, Michael Heyang, Alexandre Pellan Cheng, Joan Sesing Lenz, Darshana Dadhania, John Richard Lee, Manikkam Suthanthiran, Roberto Romero, Iwijn De Vlaminc, Separating the signal from the noise in metagenomic cell-free DNA sequencing, **Microbiome**, 8,18 (2020).
39. Matthew Magruder, Nidal Sholi, Catherine Gong, Lisa Zhang, Emmanuel Edusei, Jennifer Huang, Shady Al-bakry, Michael J Satlin, Lars F Westblade, Carl Crawford, Darshana Dadhania, Michelle Lubetzky, Lilan Ling, Philip Burnham, Iwijn De Vlaminc, Eric Pamer, John Richard Lee, Gut Dysbiosis with Uropathogens Predicts Future Development of Infections in the Urinary Tract, **Nature Communications**, 10, 1-9 (2019).
38. Alexandre Pellan Cheng, Philip Burnham, John Richard Lee, Matthew Pellan Cheng, Manikkam Suthanthiran, Darshana Dadhania, Iwijn De Vlaminc, A cell-free DNA metagenomic sequencing assay that integrates the damage response to infection, **Proceedings of the National Academy of Sciences**, 1906320116 (2019).
37. Sean Agbor-Enoh, Ilker Tunc, Andrew Davis, Iwijn De Vlaminc, Sasha Gorham, Jennifer Wylie, Natalie Goodwin, Moon Kyoo Jang, Argit Marihsta, Kenneth Bhatti, Ulgen Fideli, Yanqin Yang, Kapil Patel, Yan Wang, Helen Luikart, Jun Zhu, Stephen R. Quake, Kiran Khush, Hannah A. Valentine, Early elevated Donor-derived cell-free DNA predicts early death after lung transplantation, **EBioMedicine** (2019).
36. Mridusmita Saikia*, Philip Burnham*, Sara H. Keshavjee, Michael F. Z. Wang, Pablo Moral-Lopez, Meleana M. Hinchman, Charles G. Danko, John S. L. Parker, Iwijn De Vlaminc, Simultaneous multiplexed amplicon sequencing and transcriptome profiling in single cells, **Nature Methods**, 16, 59-62 (2019). * Equal contribution.
35. Alexandre Cheng, Philip Burnham, Iwijn De Vlaminc, Biopsy-free screening of Glioma, **EMBO Molecular Medicine**, e9484 (2018).
34. Carolina Malcher, Guilherme L. Yamamoto, Philip Burnham, Suzana A. M. Ezquina, Naila C. V. Lourenco, Sahilla Balkassmi, David S. Marco Antonio, Gabriella S. P. Hsia, Thomaz Gollop, Rita C. Pavanello, Marco Antonio Lopes, Egbert Bakke, Mayana Zatz, Debora Bertola, Iwijn De Vlaminc and Maria Rita Passos-Bueno, Development of a comprehensive noninvasive prenatal test, **Genetics and Molecular Biology** (2018).
33. Philip Burnham, Darshana Dadhania, Michael Heyang, Fanny Chen, Manikkam Suthanthiran, John Richard Lee*, Iwijn De Vlaminc, Urinary cell-free DNA is a versatile analyte for monitoring infections of the urinary tract, **Nature Communications**, 13, 2412 (2018).
32. Eilon Sharon, Hao Shi, Sandhya Kharbanda, Winston Koh, Lance R. Martin, Kiran K. Khush, Jonathan K. Pritchard, Iwijn De Vlaminc, Quantification of transplant-derived circulating cell-free DNA in absence of a donor genotype, **Plos Computational Biology**, 13(8): e1005629, (2017).
31. Rose Diloreto, Kiran Khush, Iwijn De Vlaminc, Precision Monitoring of Immunotherapies in Solid Organ and Hematopoietic Stem Cell Transplantation, **Advanced Drug Delivery Reviews**, pii: S0169-409X, (2017).
30. Phillip Burnham, Kiran Khush, Iwijn De Vlaminc, Myriad applications of circulating cell-free DNA in precision organ transplant monitoring, **Annals of the American Transplant Society**, S3, S237-241 (2017).

29. Philip Burnham, Min Seong Kim, Sean Agbor-Enoh, Helen Luikart, Hannah A Valantine, Kiran K Khush, Iwijn De Vlaminc, Single-stranded DNA library preparation uncovers the origin and diversity of ultrashort cell-free DNA in plasma, **Scientific Reports**, 6, 27859 (2016).
28. Sean Agbor-Enoh, Ilker Tunc, Iwijn De Vlaminc, Ulgen Fideli, Andrew Davis, Karen Cuttin, Kenneth Bhatti, Argit Marista, Michael Solomon, Annette Jackson, Grace Graninger, Bonnie Harper, Helen Luikart, Jennifer Wylie, Xujing Wang, Gerald Berry, Charles Marboe, Kiran Khush, Jun Zhu, and Hannah Valantine, Applying rigor and reproducibility standards to assay donor-derived cell-free DNA as a non-invasive method for detection of acute rejection and graft injury after heart transplantation, **Journal of Heart and Lung Transplantation**, 36, 1004 (2017).
27. iGeneTRAiN consortium, Design and Implementation of the International Genetics and Translational Research in Transplantation Network (iGeneTRAiN), **Transplantation**, 99, 2401-2412, (2015).
26. Daniel Burnham, Bas Nijholt, Iwijn De Vlaminc, Jinhua Quan, Timur Yusufzai, and Cees Dekker, Annealing helicase HARP closes RPA stabilised DNA bubbles non-processively, **Nucleic Acids Research**, 45, 4687 (2017).
25. Mark Kowarsky, Joan Camunas, Michael Kertesz, Iwijn De Vlaminc, Winston Koh, Wenying Pan, Lance Martin, Norma Neff, Jennifer Okamoto, Yasser El-Sayed, Yair Blumenfeld, Kiran Khush, Hannah Valantine, David Weill, Mark Nicholls, David Cornfield, Nathan Wolfe, and Stephen R. Quake, Numerous previously uncharacterized divergent microbial and viral species which colonize humans are revealed in circulating cell free DNA, **Proceedings of the National Academy of Sciences**, 114, 9623 (2017).
24. Wesley Swingley, Jeremy Dodsworth, Senthil Murugapiran, Jan Ohlsson, Brandon Briggs, Jad Kanbar, Iwijn De Vlaminc, Stephen Quake, Hailiang Dong, Brian Hedlund, and Eric Becraft, Single-cell Genomics-Facilitated Read-first Binning of Candidate Phylum EM19 Genomes from Geothermal Spring Metagenomes, **Applied and Environmental Microbiology**, 82, 992-1003, (2015).
23. Christopher Vollmers*, Iwijn De Vlaminc*, Hannah A.Valantine, Lolita Penland, Helen Luikart, Calvin Strehl, Garrett Cohen, Kiran K. Khush, Stephen R. Quake, Monitoring Pharmacologically Induced Immunosuppression by Immune Repertoire Sequencing to Detect Acute Allograft Rejection in Heart Transplant Patients: A Proof-of-Concept Diagnostic Accuracy Study, **Plos Medicine**, 14, e1001890 (2015). *Equal Contribution.
22. Iwijn De Vlaminc*, Lance Martin*, Mickey Kertesz, Kapil Patel, Mark Kowarsky, Calvin Strehl, Garrett S. Cohen, Helen Luikart, Norma F. Neff, Jennifer Okamoto, Mark N. Niccols, David N. Cornfield, David Weill, Hannah A. Valantine, Kiran K. Khush and Stephen R. Quake, Non-invasive monitoring of infection and rejection after lung transplantation, **Proceedings of the National Academy of Sciences**, 112, 13336-41, (2015). *Equal Contribution.
21. Qiuyuan Huang, Brandon R. Briggs, Hailiang Dong, Hongchen Jiang, Geng Wu, Christian Edwardson, Iwijn De Vlaminc, and Stephen Quake, Taxonomic and Functional Diversity Provides Insight into Microbial Pathways and Stress Responses in the Saline Qinghai Lake, China, **Plos One**, 9, e111681 (2014).
20. Charles de Bourcy*, Iwijn De Vlaminc*, Jad kanbar*, Jianbin Wang, Charles Gawad, Stephen R. Quake, Quantitative Comparison of Single-Cell Whole Genome Amplification Methods, **Plos One**, 9, e105585 (2014). * Equal contribution.
19. Daniel Burnham, Iwijn De Vlaminc, Thomas Henighan and Cees Dekker, Non-normal Brownian fluctuations in magnetic tweezers and consequences for single molecule experiments, **Plos One**, 9, e108271 (2014).
18. Iwijn De Vlaminc, Hannah A. Valantine, Thomas M. Snyder, Calvin Strehl, Garrett Cohen, Helen Luikart, Norma F. Neff, Jennifer Okamoto, Daniel Bernstein, Dana Weisshaar, Stephen R. Quake, and Kiran K. Khush, Cell-free DNA enables non-invasive diagnosis of heart transplant rejection, **Science Translational Medicine**, 6, 241ra77 (2014).
17. Iwijn De Vlaminc, Kiran K. Khush, Calvin Strehl, Bitika Kohli, Helen Luikart, Norma F. Neff, Jennifer Okamoto, Thomas M. Snyder, David N. Cornfield, Mark R. Nicolls, David Weill, Daniel Bernstein, Hannah A. Valantine, and Stephen R. Quake, Temporal response of the human virome to immunosuppression and antiviral therapy, **Cell**, 155, 1178 (2013).

16. Marijn van Loenhout, Iwijn De Vlaminck, Benedetta Flebus, Ludovit Zweifel, Johan den Blanken, Koen Hooning, Jacob Kerssemakers, , Cees Dekker, Scanning a DNA molecule for bound proteins using hybrid magnetic and optical tweezers, **Plos One**, 8, e65329, (2013).
15. Marijn van Loenhout, Jacob Kerssemakers, Iwijn De Vlaminck, and Cees Dekker, Non-bias-limited tracking of spherical particles, enabling nanometer resolution at low magnification, **Biophysical Journal**, (2012).
14. Iwijn De Vlaminck*, Thomas Henighan*, Marijn T.J. van Loenhout, Daniel Burnham, and Cees Dekker, Magnetic forces and DNA mechanics in multiplexed magnetic tweezers, **Plos One**, 7, e41432 (2012). * Equal contribution.
13. Iwijn De Vlaminck, Marijn van Loenhout, Ludovit Zweifel, Johan den Blanken, Susanne Hage, Jacob Kerssemakers, and Cees Dekker, Mechanism of homology recognition in DNA recombination from dual molecule experiments, **Molecular Cell**, 46, 616 (2012).
12. Iwijn De Vlaminck and Cees Dekker, "Recent advances in magnetic tweezers", **Annual Reviews of Biophysics**, 41, (2012).
11. Iwijn De Vlaminck, Thomas Henighan, Marijn T.J. van Loenhout, Indriati Pfeiffer, Julius Huijts, Jacob W. J. Kerssemakers, Allard J. Katan, Anja van Langen-Suurling, Emile van der Drift, Claire Wyman, and Cees Dekker, Highly Parallel Magnetic Tweezers by Targeted DNA Tethering, **Nano Letters**, 11, 5489 (2011).
10. Iwijn De Vlaminck, Iztok Vidic, Marijn van Loenhout, Joyce Lebbink, Roland Kanaar, and Cees Dekker, Torsional regulation of hRPA-induced unwinding of double stranded DNA, **Nucleic Acids Research**, 38,4133 (2010).
9. Chang Chen, James Andell Hutchison, Pol Van Dorpe, Ronald Kox, Iwijn De Vlaminck, Hiroshi Uji-i, Johan Hofkens, Liesbet Lagae, Guido Maes, and Gustaaf Borghs, Focusing Plasmons in Nanoslits for Surface-Enhanced Raman Scattering, **Small**, 24, 2876 (2009).
8. Joris Roels, Iwijn De Vlaminck, Liesbet Lagae, Bjorn Maes, Dries Van Thourhout and Roel Baets, Tunable optical forces between nanophotonic waveguides, **Nature Nanotechnology**, 4, 510 (2009).
7. Chengjun Huang, Kristien Bonroy, Gunter Reekmans, Wim Laureyn, Katarina Verhaegen, Iwijn De Vlaminck, Liesbet Lagae and Gustaaf Borghs, 'Localized surface plasmon resonance biosensor integrated with microfluidic chip, **Biomedical microdevices**, 11, 893 (2009).
6. Jian Ye, Pol Van Dorpe, Willem Van Roy, Kristof Lodewijks, Iwijn De Vlaminck, Guido Maes and Gustaaf Borghs, Fabrication and Optical Properties of Gold Semishells, **Journal of Physical Chemistry C**, 113, 3110 (2009).
5. Pieter Neutens, Pol Van Dorpe, Iwijn De Vlaminck, Liesbet Lagae, Gustaaf Borghs, Electrical detection of confined gap plasmons in metal insulator metal waveguides, **Nature Photonics**, 3, 283 (2009).
4. Sotiris masmanidis, Rassul Karabalin, Iwijn De Vlaminck, Gustaaf Borghs, Mark R. Freeman, Michael L. Roukes, Multifunctional nanomechanical systems via tunably-coupled piezoelectric actuation, **Science**, 317, 717 (2007).
3. Iwijn De Vlaminck, Pol Van Dorpe, Liesbet Lagae, Gustaaf Borghs, Local electrical detection of single nanoparticle plasmon resonance, **Nano Letters**, 7, 703 (2007).
2. Iwijn De Vlaminck, Joris Roels, Dirk Taillaert, Dries Van Thourhout, Liesbet Lagae, Roel Baets, Gustaaf Borghs, 'Detection of nanomechanical motion through evanescent light-wave coupling', **Applied Physics Letters**, 90, 233116 (2007).
1. Iwijn De Vlaminck, Kristiaan De Greve, Liesbet Lagae, Gustaaf Borghs, Silicon nanomechanical resonators with double-triangle cross section leading to an enhanced mass sensitivity', **Applied Physics Letters**, 88, 063112 (2006).

Patents, including provisional applications

13. Iwijn De Vlaminck, Alexandre Cheng, Omary Mzava, Adrienne Chang, Contamination-Free Metagenomic DNA Sequencing, US Prov USSN 63/237,367.
12. Iwijn De Vlaminck, Alexandre Cheng, Matthew Cheng, Wei Gu, Don Vinh, METHODS FOR ASSESSING THE SEVERITY AND PROGRESSION OF SARS-COV2 INFECTIONS USING CELL-FREE DNA", US Prov No. 63/056,249.
11. Iwijn De Vlaminck, Alexandre Cheng, Matthew Cheng, Francisco Marty, Jerome Ritz, US Prov No. 63/015,095.
10. Hao Shi, Iwijn De Vlaminck, Highly Multiplexed Phylogenetic Imaging of Microbial Communities, U.S. PCT/US2019/021088.
9. Iwijn De Vlaminck, Philip Burnham, John Lee, Darshana Dadhania, Manikkam Suthanthiran, Comprehensive monitoring of viral and bacterial infections of the urinary tract via unbiased sequencing of urinary cell-free DNA", PCT/US2018/026163
8. Iwijn De Vlaminck, Philip Burnham, 'Analysis Method and Application of Ultrashort Circulating Cell-free DNA", USSN 62/243,355
7. Iwijn De Vlaminck, Eilon Sharon, Jonathan Pritchard, Stephen R. Quake, Hannah Valantine, Kiran Khush, 'Quantification of transplant-derived circulating cell-free DNA in the absence of a donor genotype", PCT/US2018/025719
6. Christopher Vollmers, Iwijn De Vlaminck, Stephen R. Quake 'Monitoring Immunocompetence using Immune Repertoire Sequencing", USSN 61/957,908
5. Iwijn De Vlaminck, Kiran K. Khush, Hannah Valantine, Stephen R. Quake "Cell-free Nucleic Acids for the Analysis of the Human Microbiome and Components Thereof", United States Patent No. 10,450,620
4. Gregory Schneider, Cees Dekker, Iwijn De Vlaminck, "Image forming technique" NL2007938
3. Iwijn De Vlaminck, Calin Plesa, Cees Dekker, "Electrical detection of analytes in a sample" NL 48547-VB
2. Gustaaf Borghs, Iwijn De Vlaminck, Liesbet Lagae, Pol Van Dorpe, 'Molecular spectroscopy apparatus for use in analysis of DNA, has field confining structure that is provided in nanopore, to create electromagnetic hotspot' WO2010066794-A1
1. Iwijn De Vlaminck, Liesbet Lagae , Pol Van Dorpe, "Method for determining concentration of analyte in sample, involves absorbing portion of spectrum related to plasmon effect by semiconductor to determine concentration of analyte', US2009027681-A1

Conference proceedings and Book Chapters

5. Pieter Neutens, Iwijn De Vlaminck, Sergii Lozenko, Liesbet Lagae and Pol Van Dorpe, "Nanoscale electrical transducers of surface plasmons for integrated biosensing", Nanoplasmonics sensors, integrated analytical systems part 2, 369 (2012)".
4. Joris Roels, Iwijn De Vlaminck, Dries Van Thourhout, Liesbet Lagae, Dirk Taillaert, and Roel Baets, "A nanophotonic NEMS-modulator in silicon-on-insulator", Proceedings of the 7th UGent PhD symposium, 43 (2006).
3. Mario Gonzalez, Anne Jourdain, Iwijn De Vlaminck, Bart VandeVelde, Harrie A.C. Tilmans "A Study on the 0-Level Package Design of a High Accuracy Silicon MEMS Resonator", proceedings of the electronics system integration conference, 2, 1082 (2006).
2. Iwijn De Vlaminck, Joris Roels, Dirk taillaert, Dries Van Thourhout, Liesbet Lagae, Roel Baets, Gustaaf Borghs "Integrated nanomechanical motion detection by means of optical evanescent wave coupling" proceedings of the SPIE Photonics West conference, San Jose, 6464 (2007).

1. Iwijn De Vlaminck, Kristiaan De Greve, Rik Naulaerts, Venkatesh Sivasubramaniam, Liesbet Lagae, Harrie A.C. Tilmans, Gustaaf Borghs , "Enhanced mass sensing for nanomechanical resonators with a non-rectangular cross-section", Technical Proceedings of the 2005 NSTI Nanotechnology Conference, 2, Anaheim, (2005).

Invited Talks and Seminars

58. Invited talk, American Society for Histocompatibility and Immunogenetics (2021).
57. Invited talk, Oxford Global Spatial Conference (2021).
56. Invited talk, Physical Biology of the Cell meeting (2021).
55. Invited seminar, ETH Zurich (2021).
54. Invited seminar, Hong Kong University of Science and Technology (2021).
53. Upstate Medical, Transplant Grand Rounds (2021).
52. American College of Rheumatology Convergence conference (2020).
51. COVID-19 Genomics Research Network Meeting (2020).
50. Virtual Spatial Omics Seminar series (2020).
49. Columbia University BME seminar, NYC (2019).
48. MIT Bioengineering seminar, Boston(2019).
47. 11th International meeting on Circulating Nucleic Acids in Plasma and Serum, Jerusalem (2019).
46. University of Texas at Austin (2019).
45. Viracor Eurofins, Kansas City (2019).
44. Georgia Institute of Technology (2019).
43. Emergent Simplicity in Biophysical Dynamics Workshop, Telluride (2019).
42. BioE seminar, UC San Diego (2019).
41. BioE seminar, UC Berkeley (2019).
40. BioE seminar, Duke University (2018).
39. Wake Forest BME, Virginia Tech (2018).
38. New Technologies and Translational Applications of Genomics workshop, Hong Kong (2018).
37. Association for Medical Laboratory Immunologists, Annual meeting, Scottsdale, USA (2018).
36. Dana Farber Cancer Institute, Boston, USA (2018).
35. Memorial Sloan Kettering, NY, USA (2018).
34. Transplant Grand Rounds, Barnes-Jewish Hospital/Washington University, St Louis, USA (2017).
33. International Society for Heart and Lung Transplantation annual meeting, San Diego, USA (2017).
32. Karius DX, Menlo Park, USA (2017).
31. Meyer Cancer Center Transplant Working Group Meeting, NYC, USA (2017).
30. Liquid Biopsies and Minimally-Invasive Diagnostics, San Diego (2016).
29. State of the Art speaker, Thomas L. Petty Aspen Lung Conference, Aspen, USA (2016).
28. 32nd Clinical Virology Symposium, Daytona Beach, USA (2016).
27. NIH Clinical Trials in Transplantation (CTOT) meeting, Washington USA (2016)
26. Delbruck session, American Physical Society Meeting, Baltimore, USA (2016).
25. University of Pennsylvania (2015).
24. Gates foundation Grand Challenges Meeting, Beijing, China (2015).
23. Next Generation DX, Washington, USA (2015).
22. National Biotechnology conference, AAPS, San Francisco, USA (2015) .
21. Invited talk 2/2, 10th Cardiothoracic meeting, Vail, USA (2015).
20. Invited talk 1/2, 10th Cardiothoracic meeting, Vail, USA (2015).
19. American Society for Human Genetics Meeting, San Diego, USA (2014).
18. NIH, Bethesda, USA (2014) .
17. CareDX, Brisbane, USA (2014).
16. Bio Conference Live (2014).
15. Cornell University, Ithaca, USA (2014).

14. EPFL, Lausanne, Switzerland (2014).
13. Immunology seminar, Stanford, USA (2014).
12. MedTri Conference, San Francisco, USA (2014).
11. TUDelft, The Netherlands (2013).
10. Microbial Bug Club, Stanford University, USA (2013).
9. Leiden University, The Netherlands (2013).
8. KULeuven, Belgium (2013).
7. KULeuven, Belgium (2012).
6. UCSB, Santa Barbara, USA (2011).
5. Ion Torrent, South San Francisco, USA (2011).
4. Photonics Research group, Ghent University, Belgium (2011).
3. Ludwig Maximilian University of Munich, Germany (2008).
2. LNC conference in Leuven, Belgium (2007).
1. Roukes group Seminar in Pasadena, USA (2005).

Invited Public Lectures

5. Science on Tap, Cornell University (2019)
4. College of Engineering Support Staff Research seminar, Cornell University (2017)
3. Conversations at Keeton House, Cornell University (2017).
2. Keynote speaker, CCMR Teacher workshop, NYC (2016).
1. Cornell Center for Materials Research, "Hot Materials", Cornell University (2016).

Research Funding

31. **DOD USAMRAA**, Role: KP with PI Yadong Wang, Coacervates for Localized and Sustained Delivery of Immunomodulators to Prevent Islet Allograft Rejection, 08/01/21-07/31/26.
30. **R01 NHLBI**, Role: KP with PI Yadong Wang, Elastic, Degradable Vascular Grafts with Helical Microfibers, 07/01/21-06/30/26.
29. **R21 NIH-NIAID**, Role: PI with PI John Lee, Cell-Free DNA in Peritoneal Fluid as a Novel and Versatile Analyte for Monitoring Peritonitis, 01/20-12/22.
28. **R61 NIH-NIAID**, Role: PI, Discovery and clinical validation of host biomarkers of disease severity and multisystem inflammatory syndrome in children (MIS-C) with Covid-19, 01/20-12/22.
27. **Center for Vertebrate Genomics seed grant**, Role-co-PI, Spatiotemporal single-cell RNA sequencing of muscular-lymphatic heterogeneity and function in the mouse intestine.
26. **Cornell Rapid Research Response to SARS-CoV-2 phase II Seed Grant**, Role: PI, Minimally invasive monitoring of Disease Severity and Multisystem Inflammatory Syndrome in Children (MIS-C) with COVID-19, 11/20-11/21.
25. **NASA Human Research Program**, Role: co-PI, The Impact of Spaceflight and Radiation on Clonal Hematopoiesis, 12/20-12-23.
24. **Cornell Rapid Research Response to SARS-CoV-2 phase I Seed Grant**, Role: PI, A blood test for Coronavirus related lung injury to serve as a patient screening and management tool and surrogate biomarker for clinical trials of COVID-19 treatments, 05/20.
23. **R01 NIH-NIAID**, Role: PI, Metagenomic profiling of urinary cell-free DNA to monitor urinary tract infection after kidney transplantation, 02/20-01/25.
22. **R01 NIH-NIAID**, Role: PI, Epigenetic Profiling of circulating cell-free DNA for the Monitoring of Graft-Versus-Host Disease after Hematopoietic Cell Transplantation, 01/20-12/24.
21. **Bill and Melinda Gates Foundation**, Role: PI, Characterizing cell-free DNA in urine, plasma and sputum of TB patients, 10/19-04/21.

20. **Academic Integration Pilot Award**, Role: co-I, PI Jan lammerding, iCONIIC: Immunoengineering at Cornell for Improved Immunotherapy against Cancer, Cornell University Intercampus seed grant, 9/19-9/20.
19. **R33 IMAT NIH-NCI** Role: PI, with Drs. Ilana Brito and Warren Zipfel, Spatially Resolved Metagenomics to Explore Tumor-Microbiome Interactions in Human Colorectal Cancer, 9/19-08/22.
18. **DP2 NIH Director's New Innovator**, Role: PI, Precision Monitoring of Kidney Transplants using Single Cell and Single Molecule Sequencing, 10/17-09/22.
17. **R21 NIH-NIAID**, Role: PI, Droplet-assisted RNA targeting by single-cell sequencing (DART-seq) to dissect the single-cell heterogeneity of RNA virus infection, 03/19-02/21.
16. **R21 NIH-NIAID**, Role: PI, with PI J. Lee, Host-Pathogen Interactions From Measurements of Urinary Cell Free DNA in Kidney Transplantation, 07/17-06/19.
15. **R21 NIH-NIAID**, Role: PI, Mitochondrial Cell-Free DNA as a Marker of Rejection and Damage-Associated Molecular Pattern in Transplantation., 08/16-07/18.
14. **Bill and Melinda Gates Foundation**, Role: PI, Supplement award - Cross-cutting evaluation of cell-free DNA, 11/16-10/18.
13. **Bill and Melinda Gates Foundation**, Role: PI, Cross-cutting evaluation of cell-free DNA, 11/16-10/18.
12. **Kenneth Rainin Foundation**, Role: PI, with PI Randy Longman, Cell-free DNA as a noninvasive test of bacterial translocation, ileal inflammation, and extra-intestinal Crohn's disease, 3/19-2/21.
11. **DOD-CDMRP**, Role: co-PI with PI Y. Wang, Transform Off-the-Shelf Synthetic Grafts to Autologous Conduits for Coronary Artery Bypass Grafting, 4/19-3/22.
10. **R01 NIH-NHLBI**, Role: co-PI with PI J. Butcher, Endothelial-Interstitial Interactions in Aortic Valve Homeostasis and Disease, 8/18-7/23.
9. **R01 NIH-NIAMS**, Role: co-PI with PI B. Cosgrove, Revealing muscle stem cell heterogeneity in mice and humans through deep single-cell analysis, 9/18-8/23.
8. **Clinical and Translational Research Science Center**, Role: PI, with PI L. Malha, Multiscale investigation of maternal plasma to develop prognostic biomarkers of preeclampsia, 7/19-6/20.
7. **Grayson Research Foundation**, Role: co-I with PI T. Stokol, Uncovering the Blood B cell Immune response to EHV-1, 04/19-03/20.
6. **Clinical and Translational Research Science Center**, Role: co-PI, with PI O. Elemento, Analyzing cell free DNA methylation to quantify tumor burden and detect co-morbidities, 11/16-11/17.
5. **National Kidney Foundation**, Role: co-PI with PI J. Lee, Peritoneal Fluid Microbiome Predictive of Peritonitis, 2017 NFK Young Investigator Award, 07/17-06/18.
4. **Kavli Institute at Cornell Instrumentation grant**, Faculty sponsor, with W. Zipfel, and I. Brito I, A large optical bandwidth confocal microscope for multispectral imaging at the nanoscale, 11/17-10/18.
3. **Academic Integration Pilot Award**, Role: co-PI with PI C. Mason, Precision blood profiling technologies for health and disease, Cornell University Intercampus seed grant, 8/18-7/19. .
2. **American Federation for Aging Research**, Role: co-PI with PI C. Cosgrove, Single-cell dissociation of muscle stem cell dysfunction in human aging, 7/18-6/19.
1. **Robert N. Noyce Foundation**, Role: PI, Assistant professor fellowship in support of research Program, 09/15-08/18.

Teaching

Main Instructor

Spring 2015	BME 1310. Introduction to Biomedical engineering, Cornell University. Enrollment: 44.
Spring 2016	BME 1310. Introduction to Biomedical engineering, Cornell University. Enrollment: 25.
Fall 2016	BME 6120. Precision and Genomic Medicine. Cornell University. Enrollment: 16.

Spring 2017	BME 1310. Introduction to Biomedical engineering, Cornell University. Enrollment: 30.
Spring 2018	BME 1310. Introduction to Biomedical engineering, Cornell University. Enrollment: 36.
Fall 2018	BME 6120. Precision and Genomic Medicine. Cornell University. Enrollment: 17.
Spring 2019	BME 4020. Electrical and Chemical Physiology. Cornell University. Enrollment: 38.
Fall 2020	BME 6120. Precision and Genomic Medicine. Cornell University. Enrollment: 13.
Fall 2020	BME 7900. Biomedical Engineering Colloquium. Cornell University. Enrollment: 60.
Spring 2020	BME 4020. Electrical and Chemical Physiology. Cornell University. Enrollment: 40.
Spring 2020	BME 7900. Biomedical Engineering Colloquium. Cornell University. Enrollment: 45.
Spring 2021	BME 6120. Precision and Genomic Medicine. Cornell University. Enrollment: 36.

Mentoring

Postdoctoral Fellows

2020- Present	Shaun Cross (with John Parker)
2016-2019	Mridusmita Saikia (current position, lecturer, Cornell University)
2017-2018	Roozbeh Abedini Nassab (current position, Assistant Professor, University of Neyshabur)

Past Graduate Students

2015-2019	Philip Burnham, Physics, Cornell University, current position: postdoctoral scholar at UPenn.
2015-2020	Hao Shi, Physics, Cornell University, current position: Founder and CEO Kanvas Biosciences.
Summer 2015	Carolina Malcher Amorim de C. Silva, visiting graduate student, University of Sao Paulo, Brazil
2016-2021	Alex Cheng, Biomedical Engineering, Cornell University, current position: postdoc Weill Cornell Medicine

Current Graduate Students

2018-Present	Michael Wang, Computational Biology, Cornell University, expected graduation, Spring 2022
2018-Present	David McKellar, Biomedical Engineering, co-advised with Dr. Cosgrove, Cornell University, Expected graduation, Spring 2023
2019-Present	Benjamin Grodner, Biomedical Engineering, Cornell University, expected graduation Spring 2023
2019-Present	Adrienne Chang, Biophysics, Cornell University, expected graduation Spring 2023
2019-Present	Madhav Mantri, Computational Biology, Cornell University, expected graduation Spring 2023
2020-Present	Omary Mzava, Biomedical Engineering, Cornell University, expected graduation Spring 2024
2020-Present	Yannis Ntekas, Biomedical Engineering, Cornell University, expected graduation Spring 2024
2020-Present	Conor Loy, Genetics Genomics and Development, Cornell University, expected graduation Spring 2024
2020-Present	Liz-Audrey Djomnang Kounatse, Biomedical Engineering, Cornell University, expected graduation Fall 2024

Laboratory Technicians

Tiffany Ho (2017), Joan Sesing Lenz (2017-Present), Deepan Thirupaththy (2018-2019)

Masters Students

Jiaming Xu, Biomedical engineering, Cornell University (2015-2016), Eamon Collins, Biomedical Engineering, Cornell University (2016), Selina Taferner, visiting from University of Applied Sciences Krems, Austria (2016), Julie Shields, Biomedical Engineering, Cornell University (2018), Fanny Chen, Biomedical Engineering, Cornell University (2018)

Undergraduate Students

Logan Allen (2015), Min Seong Kim (2015-2016), Fanny Chen (2015-2018), Rosario Majano (2015, HHMI CHAMPS program), Rena Ryumae(2016), Micheal Heyang(2016-Present), Gefei Xu (2016-2017), Sara Keshavjee (2016-2019), Nancy Engel (2017-2018), Michael Bashta (2017-2018), Jonathan Han (2017-2019), Leo Song (2019-Present), Jordan Johnson (2019-2020), Aaron Yao-Smith (2019-2020), Peter Kaplinsky (2019-Present), Andrew Bliss (2020-Present), Owen Farchione (2020-Present)

High School Students

Hayley Ackermann (summer 2017), Isaiah Gutman (summer 2017 and 2018), Mufei Guo (summer 2019)

Freshman advising

2016-2020 Contact and mentor for 17 first-year students in the College of Engineering.

2021-Present Contact and mentor for 17 first-year students in the College of Engineering.

Before 2015 **Supervisor** for several students during their Bachelor and Master theses and summer research projects: Johan den Blanken (Master), Ludovit Zweifel (Master), Thomas Henighan (Master), Venkatesh Sivasubramaniam (Master), Rachid El Boubsi (Master), Thomas Batardi (summer research project), Rik Naulaerts (summer research project), Koen Hooning (Bachelor), Julius Huijts (Bachelor)

Invited tutor at the workshop QECG2011: Linkage and Recombination in Genome Sequences (Okinawa, Japan)

Professional Service

Conference program and society activity

Micro and Nano Engineering conference 2010, abstract reviewer

Micro and Nano Engineering conference 2011, abstract reviewer

NIHLBI, microbiome workshop, Invited participant, (2014).

COMMANMD workshop at BIBM 2015, abstract reviewer.

Next Generation DX meeting 2015, discussion section leader.

NIH Clinical Trials in Transplantation workshop (CTOT) 2016, invited participant and panelist.

Gut Function Biomarker Meeting, Gates Foundation, Invited participant (2016).

Illumina Single-cell Sequencing Expert Panel, Invited participant (2016).

Clinical Trial Design for Diagnostic Genomic Testing in Organ Transplant: From Bench-to-Bedside workshop 2016, participant and discussion leader.

International Society of Heart and Lung Transplantation 2017, together with Dr. Khush organized session on precision medicine approaches to transplant monitoring.

11th International meeting on Circulating Nucleic Acids in Plasma and Serum 2019, member of the program committee and session chair.

12th International meeting on Circulating Nucleic Acids in Plasma and Serum 2021, member of the program committee.

Biomedical Engineering Society Meeting 2019, abstract reviewer and session chair.

International students, PhD committee member

Joris Roels, University of Ghent, Belgium (2011), Abel Bronkhorst, North-West University, South Africa (2017)

Industry relations

Technical consultant for Viracor Eurofins Clinical Diagnostics.

Scientific Advisory Board member, Karius, Inc.

Founder and Chair of the Scientific Advisory Board, Kanvas Biosciences

Reviewer for Grants

Reumafonds (The Netherlands, 2015-Present), Fonds voor Wetenschappelijk Onderzoek (Belgium 2015-Present), NSF CAREER (ad hoc reviewer), FWF Der Wissenschaftsfonds (Austria, 2017), NSF Graduate Research Fellowship Program (2016), Panel reviewer.

Professional society membership

International Society for Heart and Lung Transplantation ISHLT (2015-Present), American Physical Society (2017-Present), Biomedical Engineering Society (2018-Present)

Reviewer for Journals

Nano Letters (2012), Nucleic Acids Research (2012-Present), Nanotechnology (2010), New Journal of Physics (2010), Micro electronic engineering (2011), Plos One (2014-Present), Giga Science (2015-Present), American Journal of Transplantation (2015-Present), European Journal of Biophysics (2015-Present), Scientific Reports (2016-Present), Proceedings of the National Academy of Sciences (2015-Present), European Journal of Human Genetics (2016-Present), Journal of Translational Medicine (2017-Present), BMC Bioinformatics (2017-Present), Clinical Chemistry (2017-Present), Science Translational Medicine (2018), EMBO Molecular Medicine (2018), Journal of Immunological Methods (2018), Nature Methods (2018), Cancer Cell (2019), Molecular Diagnosis and Therapy (2019), Nature Biotechnology (2020-Present), Nature Immunology (2021-Present), Nature Communications (2021-Present), Science (2021-Present), Proceedings of the National Academy of Sciences (2020-Present) eLife (2020-Present).

Editor for Journals

Frontiers in Immunology (2021-Present), eLife (ad Hoc, 2021-Present)

Ithaca, August 2021