# Sommer Elizabeth Gentry

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Current Appointments:

1. **Professor**, Mathematics Department, United States Naval Academy, Annapolis, Maryland

2. **Research Associate**, Department of Surgery, Johns Hopkins University School of Medicine, Baltimore, Maryland

Past Appointments:

1. **Associate Professor**, Mathematics Department, United States Naval Academy, Annapolis, Maryland, 2010-2016

2. **Assistant Professor**, Mathematics Department, United States Naval Academy, Annapolis, Maryland, 2005-2010

Education:

1. **Massachusetts Institute of Technology -** Ph.D. Electrical Engineering and Computer Science, 2005

2. **Stanford University -** M.S. Engineering-Economic Systems and Operations Research, 1998

3. **Stanford University -** B.S. Mathematical and Computational Sciences, 1998

Awards:

1. Finalist, INFORMS Daniel H. Wagner Prize for Excellence in Operations Research Practice, 2014

2. Navy Meritorious Civilian Service Award, 2014

3. **Mathematical Association of America Henry L. Alder Award for Distinguished Teaching by a Beginning Faculty Member, 2009**

4. Top Ten Abstracts award, American Society of Transplant Surgeons Winter Symposium, January 2009

5. Top Ten Abstracts award, American Society of Transplant Surgeons Winter Symposium, January 2013

6. Computational Science Graduate Fellows essay contest, awarded for excellence in technical writing that effectively communicates computational science to a lay audience, 2008

7. Faculty Special Act recognition award, U.S. Naval Academy, September 2006

8. Featured Innovator (with Dorry Segev), TIME magazine, 2005

9. Maryland Top 40 Professionals Under 40, Maryland Daily Record, 2010

10. UNOS Transplant Management Forum Abstract Award, Transplant center initiatives to increase donation, April 2005

11. U.S. Department of Energy Computational Science Graduate Fellowship, 2001-2005

12. Best Student Paper, IEEE Systems, Man, Cybernetics Conference, 2003

Research Interests:

Operations research as applied to medical decision making and healthcare policy, especially transplantation and organ allocation. Mathematical modeling, simulation, optimization, graph theory, and linear and integer programming.

Peer-reviewed journal publications:

1. E.K.H. Chow, A.B. Massie, X. Luo, C.E.Wickliffe, S.E. Gentry, A.M. Cameron, D.L. Segev. Waitlist outcomes of liver transplant candidates who were reprioritized under Share 35, American Journal of Transplantation 17(2): 512-8, February 2017.

2. S. Gentry, R. Hirose, D.C. Mulligan. Resolving misconceptions about liver allocation and redistricting methodology, Journal of the American Medical Association Surgery 151(10):991-2, 2016.

3. S. Gentry, E.K.H. Chow, N. Dzebisashvili, M.A. Schnitzler, K.L. Lentine, C.E. Wickliffe, E. Shteyn, J. Pyke, A.K. Israni, B. Kasiske, D.L. Segev, D. A. Axelrod. The impact of redistricting proposals on health care expenditures for liver transplant candidates and recipients. *American Journal of Transplantation* 16(2): 583-93, February 2016.

4. R. Hirose, S. Gentry, D.C. Mulligan. Increasing the number of organs available to transplant is separate from ensuring equitable distribution of available organs: both are important goals. *American Journal of Transplantation* 16(2): 728-9, February 2016.

5. S. Gentry, E.K.H. Chow, A.B. Massie, and D.L. Segev. Gerrymandering for justice: redistricting U.S. liver allocation. *Interfaces* 45 (5): 462-80, September 2015.

6. S. Gentry, D.L. Segev, B.L. Kasiske, D.C. Mulligan, and R. Hirose. Robust models support redistricting liver allocation to reduce geographic disparity. *Transplantation* 99(9): e159-60, September 2015.

7. S. Gentry, D.L. Segev. The best-laid schemes of mice and men often go awry; how should we repair them? *American Journal of Transplantation* 15(10): 2539-40, October 2015.

8. S. Gentry, E.K.H. Chow, A.B. Massie, X. Luo, D. Zaun, J.J. Snyder, A.K. Israni, B. Kasiske, D.L. Segev. Liver sharing and organ procurement organization performance under redistricted allocation. *Liver Transplantation* 21(8): 1031-9, August 2015.

9. S. Gentry, E.K.H. Chow, A.B. Massie, X. Luo, D. Zaun, J.J. Snyder, A.K. Israni, B. Kasiske, D.L. Segev. Liver sharing and organ procurement organization performance. *Liver Transplantation* 21(3): 293-9, March 2015.

10. A.B. Massie, E.K.H. Chow, C.E. Wickliffe, X. Luo, S.E. Gentry, D.C. Mulligan, D.L. Segev. Early changes in liver distribution following implementation of share 35. *American Journal of Transplantation* 15 (3): 659-67, March 2015.

11. S. Gentry, E.K.H. Chow, C.E. Wickliffe, A.B. Massie, T. Leighton, and D.L. Segev. Impact of broader sharing on the transport time for deceased donor livers. *Liver Transplantation* 20(10): 1237-43, October 2014.

12. S. Gentry, A.B. Massie, S.W. Cheek, K.L. Lentine, E.K.H. Chow, C.E. Wickliffe, N. Dzebashvili, P.R. Salvalaggio, M.A. Schnitzler, D.A. Axelrod, and D. Segev. Addressing geographic disparities in liver transplantation through redistricting. *American Journal of Transplantation* 13(8): 2052-8, August 2013.

13. S. Gentry and D. Segev. Fast-tracking and fairness: getting organ offers quickly to candidates who will accept them. *Liver Transplantation* 19(4): 358-9, April 2013.

14. Melcher ML, Blosser CD, Baxter-Lowe LA, Delmonico FL, Gentry SE, Leishman R, Knoll GA, Leffell MS, Leichtman AB, Mast DA, Nickerson PW, Reed EF, Rees MA, Rodrigue JR, Segev DL, Serur D, Tullius SG, Zavala EY, Feng S. Dynamic challenges inhibiting optimal adoption of kidney paired donation: Findings of a consensus conference. *American Journal of Transplantation* 13(4): 851-60, April 2013.

15. A.B. Massie, S. Gentry, R.A. Montgomery, A.A. Bingamin, D. Segev. Center-level utilization of kidney paired donation. *American Journal of Transplantation,* March 2013.

16. N. Dzebisashvili, A.B. Massie, K.L. Lentine, M.A. Schnitzler, D. Segev, J. Tuttle-Newhall, S. Gentry, R. Freeman, D.A. Axelrod. Following the organ supply: Assessing the benefit of inter-DSA travel in liver transplantation. *Transplantation* 95(2):361-371, January 2013.

17. L.F. Ross, W. Parker, R.M. Veatch, S. Gentry, and J.R. Thistlethwaite, Jr. Equal opportunity supplemented by fair innings: Equity and efficiency in allocating deceased donor kidneys. *American Journal of Transplantation* 12: 2115-24, August 2012.

18. S. Gentry, D. Segev. The honeymoon phase and studies of nonsimultaneous chains in kidney paired donation. *American Journal of Transplantation* 11(12): 2778-9, December 2011.

19. A.B. Massie, B. Caffo, S. Gentry, E.C. Hall, D.A. Axelrod, K.L. Lentine, M.A. Schnitzler, A. Gheorgian, P.R. Salvalaggio, D. Segev. MELD exceptions and rates of waiting list outcomes. *American Journal of Transplantation* 11(11): 2362-71, November 2011.

20. D.A. Axelrod, A. Gheorghian, M.A. Schnitzler, N. Dzebisashvili, P. R. Salvalaggio, J. Tuttle-Newhall, E. Pomfret, D.L. Segev, S.E. Gentry, S. Hohmann, K.L. Lentine. The economic implications of broader sharing of liver allografts. *American Journal of Transplantation*. 11(4): 798-807, April 2011.

21. P. R. Salvalaggio, N. Dzebisashvili, K. E. MacLeod, K. L. Lentine, A. Gheorghian, M. A. Schnitzler, S. Hohmann, D. L. Segev, S. E. Gentry, and D. A. Axelrod. The interaction among donor characteristics, severity of liver disease, and the cost of liver transplantation. *Liver Transplantation* 17: 233-242, March 2011.

22. D. A. Axelrod, N. Dzebisashvili, M. A. Schnitzler, P. R. Salvalaggio, D. L. Segev, S. E. Gentry, J. Tuttle-Newhall, K. L. Lentine. The interplay of socioeconomic status, distance to center, and interdonor service area travel on kidney transplant access and outcomes. *Clinical Journal of the American Society of Nephrology*. 5(12):2276-88, December 2010.

23. D. Segev, S. Gentry. Kidneys for sale: Whose attitudes matter? *American Journal of Transplantation*, 10(5): 1113-4, 2010.

24. S. Gentry, R.A. Montgomery, B. Swihart, and D.Segev. The roles of dominos and nonsimultaneous chains in kidney paired donation. *American Journal of Transplantation*, 9(6): 1330-1336, May 2009.

25. D. Segev, L. Kucirka, S. Gentry, and R.A.Montgomery. Utilization and outcomes of kidney paired donation in the United States. *Transplantation*, 86(4):502-10, Aug 27 2008.

26. S. Gentry, D. Segev, and R.A. Montgomery. Working together towards a national kidney paired donation program. Letter, *American Journal of Transplantation* 8(3): 722, March 2008.

27. S. Gentry, D. Segev, M. Simmerling, and R.A. Montgomery. Expanding kidney paired donation through participation by compatible pairs. *American Journal of Transplantation* 7(10): 2361-2370, 2007.

28. D. Segev, S. Gentry, R.A. Montgomery. Association between waiting times for kidney transplantation and rates of live donation. *American Journal of Transplantation* 7(10): 2406-2413*,* October 2007.

29. C. E. Simpkins, R. A. Montgomery, A. M. Hawxby, J. E. Locke, S. E. Gentry, D. S. Warren, D. L. Segev. Cold ischemia time and allograft outcomes in live donor renal transplantation: is live donor organ transport feasible? *American Journal of Transplantation*. 7(1):99-107, Jan 2007.

30. R.A. Montgomery, S. Gentry, W.H. Marks, D.S. Warren, J. Hiller, J. Houp, A.A. Zachary, J.K. Melancon, W.R. Maley, H. Rabb, C.E. Simpkins, and D. Segev. Domino paired kidney donation: a strategy to make best use of live non-directed donation. *Lancet*, vol. 268, p. 419-421, 2006.

31. D. Segev, S. Gentry, and R.A. Montgomery. Relative roles for list paired exchange, live donor paired exchange, and desensitization. *American Journal of Transplantation,* 2006, February, 6(2): 437.

32. D. Segev, S. Gentry, J.K. Melancon, and R.A. Montgomery. Characterization of waiting times in a simulation of kidney paired donation. *American Journal of Transplantation,* 2005, October 5(10): 2448-55.

33. S. Gentry, D. Segev, and R.A. Montgomery. A comparison of populations served by kidney paired donation and list donation. *American Journal of Transplantation*, 2005, August, 5(8): 1914-21.

34. D. Segev, S. Gentry, D. Warren, B. Reeb, and R.A. Montgomery. Kidney paired donation: Optimizing the use of live donor organs. *Journal of the American Medical Association,* vol. 293, p. 1883-1890, 2005.

Book Chapters and Invited Review Articles:

1. S. Gentry, R. Shapiro, and D. Segev. Kidney paired donation programs for incompatible living kidney donors and recipients. Chapter in *Living Donor Advocate: an Evolving Role Within Transplantation*, edited by Jennifer Steel. Springer, 2014.

2. S. Gentry and D. Segev. Paired exchange programs for living donors. Chapter in *Kidney Transplantation, 7th edition*, edited by Sir Peter J. Morris, and Stuart J. Knechtle. Elsevier, 2013.

3. S. Gentry, R.A. Montgomery, D. Segev. Controversies in kidney paired donation. *Advances in Chronic Kidney Disease* 19(4):257-61, July 2012.

4. S. Gentry and D. Segev. Living donor kidney exchange, chapter in *Clinical Transplants 2011*. Los Angeles, Terasaki Foundation.

5. S. Gentry, R.A. Montgomery, and D. Segev. Kidney paired donation: fundamentals, limitations, and expansions. *American Journal of Kidney Diseases* 57(1): 144-51, January 2011.

6. S. Gentry. Practitioner's Commentary: The outstanding kidney exchange papers. *UMAP Journal* 28.2, Summer 2007.

7. S. Gentry. Optimization over graphs for kidney paired donation. Chapter in *Optimization in Medicine and Biology*, edited by Gino Lim, 2008.

8. E.S. Woodle, Y. Miao, D. Goldfarb, D. Segev, S. Gentry, A. Waterman, M. Aeder, R.M. Lewis, R. Shapiro. Kidney paired donation: State of the science and practice. Invited review article, *Current Opinion in Organ Transplantation* 12(4):384-389, August 2007.

Conference publications:

1. S. Gentry, R. Murray-Smith, and E. Feron. Human-human haptic collaboration on a cyclical Fitts' task. *IEEE/RSJ International Conference on Intelligent Robots and Systems*, August 2005.

2. S. Gentry and E. Feron. Musicality experiments in lead and follow dance. *IEEE Systems, Man and Cybernetics Conference*, October 2004, 4: 984-8.

3. S. Gentry and E. Feron. Modeling musically meaningful choreography. *IEEE Systems, Man and Cybernetics Conference*, October 2004, 4: 3880-5.

4. E. Hsu, S. Gentry, and J. Popovic. Example-based control of human motion. *Eurographics / ACM SIGGRAPH Symposium on Computer Animation*, 2004, 69-77.

5. S. Gentry and R. Murray-Smith. Haptic dancing: human performance at haptic decoding with a vocabulary. *IEEE Systems, Man, Cybernetics Conference,* 2003, 4: 3432-7. **Student Best Paper award.**

6. S. Gentry, S. Wall, I. Oakley and and R. Murray-Smith. Got Rhythm? Haptic-only lead and follow dancing. *Proceedings of Eurohaptics*, Dublin, Ireland, p. 481-488, July 2003.

7. V. Kulkarni and S. Gentry. Optimal Mode Changes for Highway Transportation Safety. *IEEE Systems, Man, Cybernetics Conference,* 2003, 2: 1235-40.

8. J. De Mot, V. Kulkarni, S.Gentry and E. Feron**.** Spatial Distribution Results for Efficient Multi-Agent Navigation. *IEEE Conference on Decision and Control,* 2002, 4: 3776-81*.*

9. J. De Mot, V. Kulkarni, S.Gentry,V. Gavrilets and E. Feron. Coordinated Path Planning for a UAV Cluster. *The First AINS Symposium*, UCLA, Los Angeles, CA, May 2002.

10. S. Gentry, V. Saligrama and E. Feron. Dynamic Inverse Optimization. *Proceedings of American Control Conference*, Volume 6, p. 4722-7, 2001.

11. S. Gentry, S. Venkatesh and E. Feron**.** Identifying Constrained Receding Horizon Controllers. *Allerton Control Conference* at UIUC, 2000.

Media Coverage:

1. ***New England Journal of Medicine****,* "Very complicated math – reconfiguring organ allocation", 371(26), 2447-50, December 25, 2015.

2. ***Scientific American***, "Researchers aim to level the playing field for patients awaiting new livers", September 17, 2013.

3. *WYPR Maryland Morning*, "The geography of liver transplants", July 29, 2013.

4. *Baltimore Sun Magazine*, "Unassuming brilliance: genius pair rewrite rules of organ tranplants", November 18, 2012.

5. ***New York Times***, "Kidney experts recommend single registry to oversee kidney transplant donations", March 31, 2012.

6. *Society for Industrial and Applied Mathematicians News*, December 2008.

7. *Science News*. "Kidney Matchmaking", Math Trek, August 28, 2007.

8. ***Reader's Digest***, "The Perfect Match", The Big Idea, March 2006.

9. ***Time Magazine***, "The Kidney Connection", Innovators, September 12, 2005.

10. ***Science***, Vol. 303, March 12, 2004, p. 1609.

11. ***The Diane Rehm Show***, National Public Radio, March 18, 2005.

12. *Baltimore Sun*, "By the Numb3rs", Health and Science, January 27, 2006.

13. *MIT Technology Review*, "Make Me a Match", March 2006.

14. *CBS WJZ Baltimore News,* TV interview, January 27, 2006.

15. *Boston Globe*, Health and Science C1, March 16, 2004.

16. *ScienCentral News*, TV news segment, March 23, 2004.

17. *MIT Technology Review*, "Dance Machine", June 2004, p. 5.

18. *Society for Industrial and Applied Mathematicians News*, December 2004.

Presentations (* plenary or invited):

1. Liver Simulated Allocation Model ++. Arbor Research Seminar Series talk. May 17, 2017.

2. Share and Share Alike: Optimizing Organ Allocation in an Era of Increasing Need.* International Society of Heart and Lung Transplantation. April 5, 2017.

3. Math Department seminar, University of Richmond, April 12, 2017.

4. Redistricting liver allocation: challenges and extensions. INFORMS Annual Meeting, Nashville, TN, November 16, 2016.

5. Challenges and lessons learned from influencing national policy change in organ transplant.* INFORMS Annual Meeting, Nashville, TN, November 13, 2016.

6. State of the Art: Gender (Sex)-Related Variables Affecting Deceased Donor Listing and Allocation Algorithms.* International Congress of The Transplantation Society, Hong Kong, China, August 21, 2016.

7. Gerrymandering for justice. RAND Corporation, Santa Monica, CA, June 30, 2016.

8. Impact of proximity MELD/PELD points on liver redistricting scenarios. American Transplant Congress, Boston, MA, June 14, 2016.

9. Use of compatible pairs in paired exchange. National Kidney Registry annual meeting, New York City, NY, May 5, 2016.

10. Faster, safer, healthier: adventures in operations research.* Keynote at Rhodes Hendrix Sewanee Undergraduate Mathematics Symposium, Memphis, TN, April 22, 2016.

11. Debate: Redistricting liver allocation is beneficial. Controversies in Transplantation conference, Breckinridge, CO, March 4, 2016.

12. Optimization and organs: Computational methods for rationing transplantation. National Nuclear Security Administration Advanced Scientific Computing Principal Investigators' meeting, Las Vegas, NV, February 11, 2016.

13. Optimizing transplantation: the balancing act. Inaugural Association for Women in Mathematics lecture, Mount St. Mary's University, Emmittsburg, MD, January 28, 2016.

14. Of Math and Medicine: Advancing Surgical Science, Novel Mathematical Methods (with Dorry Segev). Duke University School of Medicine Surgery Grand Rounds, Durham, North Carolina, November 11, 2015.

15. Mathematical methods in transplantation (with Dorry Segev). Yale New Haven Transplant Center Grand Rounds, New Haven, Connecticut, October 28, 2015.

16. Redistricting liver transplantation. OneLegacy Organ Procurement Organization, San Diego, California, October 3, 2015.

17. Redistricting liver transplantation. INFORMS Healthcare Conference, Nashville, Tennessee, July 30, 2015.

18. Optimization and organs: computational methods for rationing transplantation.* Computational Science Graduate Fellowship program review, Washington DC, July 28, 2015.

19. Mathematics and transplantation, University of Virginia Transplant Conference, Charlottesville, Virginia, July 17, 2015.

20. Optimization model for reducing geographic disparity, Organ Procurement and Transplantation Network Forum on Liver Redistricting, Chicago, Illinois, June 22, 2015.

21. Redistricting U.S. liver allocation to save lives and mitigate inequity. Showcase Presentation at the College of Healthcare Operations Management Synapse mini-conference at the Production and Operations Management Society Meeting, Washington DC, May 7, 2015.

22. Redistricting of liver organs: looking into the crystal ball. American Transplant Congress, Philadelphia, Pennsylvania, May 3, 2015.

23. Redistricting liver allocation to reduce geographic disparity. United Network for Organ Sharing Transplant Administrators Conference, San Diego, California, April 24, 2015.

24. Student resistance and negotiation in the face of novel tasks. Texas Section NExT meeting, San Antonio, Texas, April 10, 2015.

25. Faster, safer, healthier: adventures in operations research.* Texas Sectional meeting of the MAA, San Antonio, Texas, April 10, 2015.

26. Rational rationing in transplantation, West Chester University Math Department Colloquium, West Chester, Pennsylvania, February 11, 2015.

27. Kidney exchange. Organ Donation Workshop, Human Organ Transplant Center, Bhaktapur, Kathmandu, Nepal, December 22, 2014.

28. Gerrymandering for justice. Wagner Prize Finalist presentation, INFORMS annual meeting, San Francisco, California, November 10, 2014.

29. Reducing geographic disparities in liver allocation with redistricting. INFORMS annual meeting, San Francisco, California, November 8, 2014.

30. Redistricting liver allocation to reduce variation in access to liver transplantation: is it possible? Gift of Life 40th Anniversary Symposium, Philadelphia, Pennsylvania, October 24, 2014.

31. International review of kidney paired donation: Legislative, clinical, and mathematical progress. 7th annual living donor abdominal organ transplantation conference, Padua, Italy, September 26, 2014.

32. Redistricting methods and results. OPTN Forum on Liver Redistricting, Chicago, IL, September 16, 2014.

33. Organ procurement organization performance and net import of deceased donor livers. World Transplant Congress, San Francisco, CA, June 30, 2014.

34. Speaker*, Women in Transplantation Luncheon, World Transplant Congress, San Francisco, CA, June 29, 2014.

35. Optimized redistricting of liver allocation: Exploring the impact of choices by the transplant community. World Transplant Congress, San Francisco, CA, June 28, 2014.

36. Redistricting liver allocation. Industrial and Operations Engineering seminar, University of Michigan, March 19, 2014.

37. TED format: Math at American Society of Transplant Surgeons Winter Meeting, January 25, 2014.

38. Rational rationing in transplantation, Shepherd University, Shepherdstown, West Virginia, November 18, 2013.

39. Adventures in Operations Research. Washington College math department seminar, Chestertown, Maryland, October 23, 2013.

40. Faster, Safer, Healthier.* Plenary Public Lecture, Australian Mathematical Society meeting, Sydney, Australia, September 30, 2013.

41. Rational rationing: the case of organ transplantation, Monash University MAXIMA seminar, Melbourne, Australia, September 26, 2013.

42. Faster, Safer Healthier.* Susan P. Slattery Memorial Lecture, Stevenson University, Maryland, September 19, 2013.

43. Addressing geographic disparities in organ allocation. American Transplant Congress, Seattle, May 22, 2013.

44. Science in Society Seminar Series, Wilson College, Chambersburg PA. April 3, 2013.

45. Rational rationing in healthcare, and the case of transplantation. University of Utah interdisciplinary seminar in mathematics and medicine, March 27, 2013.

46. Math that makes more kidney transplants. Towson University Student Math Conference, Towson MD, March 30, 2013.

47. Faster, Safer, Healthier. Kennesaw Women in Mathematics seminar, Atlanta, February 6, 2013.

48. Redistricting for reducing geographic disparities in liver allocation. American Society of Transplant Surgeons Winter Meeting, Miami, February 2, 2013. ***Top Ten Abstracts award*** – this was the top-rated abstract of the meeting.

49. Careers in Mathematics speaker series, Sioux Falls, South Dakota, September 27, 2012.

50. Invited speaker and workshop presenter, Science Technology Engineering and Math Education Conference. Virginia Military Instititute, Lexington, Virginia, October 2, 2012.

51. Collaborating with your spouse in transplantation: a personal perspective. The Transplantation Society Congress, Berlin, July 17, 2012.

52. Faster, Safer, Healthier with Operations Research. Guest lecture at Mathematical Association of America Michigan Sectional Meeting, Saginaw, Michigan, May 4, 2012.

53. Matching algorithms for living paired exchange. Thailand Transplant Society Living Paired Donor Exchange Roundtable, Bangkok, Thailand, April 24, 2012.

54. Rational Rationing in Healthcare: Observations from Organ Allocation. Institute for Operations Research and Management Sciences (INFORMS) Maryland chapter talk, Annapolis Junction, Maryland, April 10, 2012.

55. Faster, Safer, Healthier with Operations Research. Mathematics department seminar, Georgia College State University, Milledgeville, Georgia, April 4, 2012.

56. Rational Rationing in Healthcare: Observations from Organ Allocation. Operations Research Center seminar, Massachusetts Institite of Technology, Boston, Massachusetts, March 28, 2012.

57. Operations Research: Math that makes smarter decisions, from credit cards to nuclear nonproliferation. Women in Science Forum, Towson University, March 3, 2012.

58. Rational rationing in healthcare: Examples from organ allocation. Industrial Engineering and Management Sciences department seminar, Northwestern University, Chicago, Illinois, January 10, 2012.

59. Rational rationing in healthcare: Observations from organ allocation.* **BIG SIGMAA (Business, Industry, and Government Special Interest Group of the MAA) Invited Speaker**, Joint Mathematics Meetings, Boston, MA, 2012.

60. Designing geographic allocation regions for equitable access to liver transplant. University of California San Francisco Transplant seminar, San Francisco, CA, December 22, 2011.

61. Designing geographic allocation regions for equitable access to liver transplant. Mayo Clinic Department of Surgery seminar, Rochester, Minnesota, November 28, 2011.

62. Faster, Safer, Healthier with Operations Research. Careers in Mathematics lecture series, Brigham Young University, Provo, Utah, October 12, 2011.

63. Maximum weighted matchings on graphs make more kidney transplants. Industrial and Systems Engineering department seminar, State University of New York Buffalo, September 8, 2011.

64. Using Biomechanical Optimization to Interpret Dancers' Pose Selection for a Partnered Spin. American Control Conference session on Controls and Art, San Francisco, CA, June 29, 2011.

65. Optimal geographic region design for organ allocation. Institute for Operations Research and Management Sciences Healthcare meeting, Montreal, Canada, June 21, 2011.

66. Reading and writing about derivatives. Project MOSAIC (Modeling, Statistics, Computation and Calculus), web presentation in the M-Cast series, May 6, 2011.

67. Mathematical Tools for Designing Optimal Regions.* Plenary talk in the session, “Geographic Disparities in Liver Transplantation and Novel Approaches for Addressing Them”, American Society for Transplantation, Philadelphia, Pennsylvania, May 1, 2011.

68. Faster, Safer, Healthier with Operations Research. Invited evening speaker at MAA MD-DC-VA Sectional Meeting, Ashland, Virginia, April 15, 2011.

69. Faster, Safer, Healthier: Adventures in Operations Research.* Moravian University Student Mathematics Conference keynote, February 26, 2011.

70. Math and Medicine. School assembly, St. Paul’s School for Girls, Baltimore Maryland, November 2010.

71. Math club interactive session, and lecture in the Natural Sciences and Mathematics interdisciplinary seminar. St. Mary’s University, September 22, 2010.

72. Faster, Safer, Healthier with Operations Research.* **Mathematical Association of America’s Lecture for Students**, Mathfest, Pittsburgh, August 7, 2010.

73. CAPABLE (Calculus Acquisition through a Problem and Activity Based Learning Experience). Joint Mathematics Meetings, San Francisco, January 13, 2009.

74. Mathematical aspects of organ transplantation. Mathematics Department Faculty-Student Colloquium, Longwood University, Farmville, VA, January 28, 2009.

75. Maximum matching on weighted graphs for increasing live donor kidney transplantation. Control systems and biomedical engineering joint seminar, Georgia Tech, Atlanta, GA, September 18, 2009.

76. Computing for kidney paired donation, and vice versa. Advanced Scientific Computing Advisory Council meeting, American Geophysical Union, Washington D.C., August 11, 2009.

77. Math that matters. Alder Award recipients session talk, Mathfest, Portland, OR, August 7, 2009.

78. Graphs for increasing organ transplantation. Pi Day Lecture, University of Maryland Baltimore County, March 13, 2009.

79. Influencing policy with simulation and increasing transplantation with optimization. Society of Industrial and Applied Mathematicians Conference on Computational Science and Engineering, March 2, 2009.

80. Role of dominos and neverending altruistic donor chains in kidney paired donation. American Society of Transplant Surgeons Winter Symposium, ***Top Ten Abstracts award*** – this was the top-rated abstract of the meeting, January 16, 2009.

81. Operations Management in Healthcare Seminar guest speaker. Wharton School of Business, Philadelphia, April 24 and November 20, 2008.

82. Optimizing kidney paired donations. Invited speaker, New York Organ Donor Network meeting at the New York Academy of Medicine, December 13, 2007.

83. Two results about the size of weighted matchings, with applications to kidney paired donation. Institute for Operations Research and Management Science annual meeting, November 4, 2007.

84. Models, algorithms and information technology requirements for a national kidney paired donation matching system. United Network for Organ Sharing, Richmond Virginia, September 12, 2007.

85. Optimal weighted and stable matchings on graphs for increasing live donor kidney transplantation. Mathematical Association of America, Mathfest, San Jose, CA, August 5, 2007.

86. Canada's stake in kidney paired donation. Science panel speaker, Kidney Foundation of Canada, Halifax, Canada, June 8, 2007.

87. Optimization and impact of kidney paired donation in Canada.* Plenary presentation, Canadian Society for Transplantation's annual meeting, Banff, Canada, March 17, 2007.

88. Network optimization in medicine: the case of kidney paired donation. University of Maryland College Park Smith School of Business, March 6, 2007.

89. Combinatorial optimization in medicine: the case of kidney paired donation. U.S. Naval Academy Computer Science departmental seminar, February 14, 2007.

90. Optimizing kidney paired donation. Naval Postgraduate Dental School Faculty Retreat, Annapolis, MD, January 17, 2007.

91. Maximum matchings on graphs for kidney paired donation. INFORMS annual meeting, Pittsburgh, November 2007.

92. Matching on graphs for making the most of living kidney donors. Stanford University Management Science and Engineering departmental seminar on decision-making in medicine, October 23, 2006.

93. Science of swing dancing, children's program, West County Library, August 2006.

94. Maximum matchings on graphs for kidney paired donation. Johns Hopkins University Applied Mathematics and Statistics departmental seminar, Baltimore, April 6, 2006.

95. Maximum matching inequalities for kidney paired donation. INFORMS Conference on Optimization and Health Care, San Antonio, February 3, 2006.

96. Mathematical optimization for physicians and transplant professionals. Invited lecture, Institute for the Study of Health, University of Cincinnati School of Medicine, September 26, 2005.

97. Maximizing kidney paired donation. Computational Research in Boston seminar, Massachusetts Institute of Technology, September 2, 2005.

98. Maximizing paired kidney exchange: algorithm and simulations. UNOS Thirteenth Annual Transplant Management Forum, April 12, 2005.

99. Maximal matching to optimize and customize paired kidney exchange. Plenary talk, Live Donor Paired Kidney Donation Consensus Meeting, March 2, 2005.

100. Supercomputing 2004, Student Days Young Researcher Panel, November 9, 2004.

101. Haptic dancing. New England chapter of the Human Factors and Ergonomics Society Student Conference, Tufts University, November 12, 2003.

102. Identifying constrained receding horizon controllers. Society for Industrial and Applied Mathematicians Annual Meeting and Conference on Control, July 2001.

**Grants and Funding:**

1. NIH/NIDDK R01 DK 111233. (PI: Dorry Segev) Reducing geographic disparities in kidney and liver allocation. 2016-2020.

2. HHS 250201500009C Scientific Registry of Transplant Recipients, 2015-2020. Senior Staff for Allocation Simulation Models.

3. Optimizing geographic boundaries to reduce disparity in liver allocation. HHS 250201000018C: Task 19. Scientific Registry Transplant Recipients 2011-2014.

4. Senior Staff for Allocation Simulation Models. HHS 250201000018C Scientific Registry of Transplant Recipients, 2010-2015.

5. Modeling the impact of merging organ procurement organizations on kidney transplant centers and waiting times. Sponsored work for LifeCenter OPO. 2013-2014.

6. NIH/NIDDK RC1 DK 086450-01 (PI: K. Lentine) 10/01/2009 – 8/31/2011 Reducing geographic disparity in transplant access: Clinical and economic impact.

7. National Kidney Foundation of Maryland Scientific Research Grant, 2010. Decreasing waits for kidney paired donation: realtime matching strategies.

8. Johns Hopkins Hospital Comprehensive Transplant Center, 2009. Clinical tools for kidney paired donation.

9. United States Naval Academy Research Council grant, 2006 - 2008. Almost every kidney: near-maximum-cardinality solutions of maximum-edge-weight matching problems.

Industry Experience:

1. Sandia National Labs visiting researcher, 2003
2. Lawrence Livermore National Labs Systems Sciences Engineer, 1998-1999
3. Internships: Microsoft Corporation, Providian Bancorp, Trilogy Development Group.

Service:

1. Founded the Middle School Math Teachers' Circle for Anne Arundel County teachers.
2. Developed and donated software for optimized kidney paired donation matching which is used for national registries in Canada and the United States.
3. Representative to United Network for Organ Sharing's Kidney-Pancreas Committee and Kidney Paired Donation working group
4. Mathematical Association of America, Committee for the Undergraduate Program in Mathematics, 2015 Program Guide, area leader for Operations Research
5. Chair, Mathematical Association of America Alder Awards Committee
6. Department of Energy Computational Science Graduate Fellowship Selection Committee, 2007-present
7. Senior Academic Advisor, Operations Research major

Professional Memberships:

1. American Society of Transplant Surgeons (ASTS, non-physician scientist)
2. Institute for Operations Research and Management Science (INFORMS)
3. Mathematical Association of America (MAA)
4. Association for Women in Mathematics (AWM)