

Bjarni V. Halldórsson, Ph.D.

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Research Area: Algorithms in Bioinformatics. Algorithms; design, analysis, implementation and application. Computational Biology, Bioinformatics, Statistical Genetics, Combinatorics, Optimization.

Education: Ph.D. Algorithms Combinatorics and Optimization, 2001.
Carnegie Mellon University, Pittsburgh, Pennsylvania.
Interdepartmental program run by the Dept. of Mathematical Sciences, School of Computer Science and Graduate School of Industrial Administration.
Also part of the Merck Computational Biology and Chemistry Program.

Thesis Title Algorithms for Biological Sequence Problems.
Committee R. Ravi (chair), Alan M. Frieze, Jonathan S. Minden, Reha H. Tütüncü.

M.S. Algorithms, Combinatorics and Optimization, Carnegie Mellon University, 1998.

B.S. Mathematics, University of Iceland, 1996.

Employment:

- Reykjavík University, Reykjavík, Iceland, August 2006-
2007- Associate Professor, Dept. Biomedical Engineering, School of Engineering
2006-2007 Assistant Professor, Dept. Biomedical Engineering, School of Engineering.
Research in the fields of bioinformatics, statistical genetics, algorithms and algorithms in bioinformatics.

- Expeda, Reykjavík, Iceland, Dec. 2011 -
Director of technology and development. Start up company focused on developing clinical decision support systems focusing on osteoporosis and autoimmune diseases.

- deCODE Genetics, Reykjavík, Iceland, Nov. 2004- April 2010
Project statistician for inflammatory, infectious disease, osteoarthritis and osteoporosis. Chief responsible for the development of algorithms for detecting copy number variations.

- Celera Genomics/Applied Biosystems, Rockville, Maryland, July 2001-Oct. 2004 Informatics Research Scientist reporting to Sorin Istrail, Gene Myers.
Technical lead for SNPs, haplotypes and assays, leading a small team of researchers in the design of algorithms and analytical techniques for the study of genomic variation and assay design. Also involved in analyzing the sequence of the human genome, rational drug and vaccine design.

Teaching:

- Statistics I, Fall 2006, 2008, 2009, 2011, 2012 Reykjavík University.
- Statistics II, Stochastic Modelling, Spring 2007, 2009, 2010, 2011, 2012 Reykjavík University.
- Algorithms in Bioinformatics, Spring 2006, University of Iceland. Fall 2008, Spring 2011 Reykjavík University.
- Biostatistics, Spring 2010, Fall 2011, Reykjavík University.
- Coordinator of independent study course, 2009-.

- Calculus I/II, Discrete Mathematics, Operations Research, Teaching assistant, 1996-1999, Carnegie Mellon University.
- Linear Algebra, Teaching Assistant, 1995, University of Iceland.

Grants

- Algorithms and Software for Complex Genetic Variants, Icelandic Research Fund (RANNIS), Rannsóknarnámssjóður, for Jón Ingi Sveinbjörnsson, 2010, ISK 6.95 M. (Euro 45.000) Role: PI, Award number R-10-0008.
- Nýsköpunarsjóður Námsmanna, student summer project, 2010, Euro 3000, 2009, Euro 3000.
- EAGER: Haplotype Phasing Algorithms and Clark Consistency Graphs, U.S. National Science Foundation, 2010, USD 200K (share 50K), Role: Collaborator. In collaboration with Sorin Istrail, Brown University.
- RU development fund, Initiating an MS program in Bioinformatics, EURO 3000.
- RANNIS, Technology Fund, 2011, for compute cluster, ISK 11M, Role: coapplicant.
- RANNIS, Technology Fund, 2012, data storage for sequencing information, Role: coapplicant.

Students:

- Jón Ingi Sveinbjörnsson, Algorithms and software for the detection of complex genetic variants, supervisor Ph.D., Reykjavik University, School of Computer Science, 2013.
- Kristinn Karl Jónsson, *Automated update of football odds*, supervisor Masters project (30 ECTS), Reykjavik University, Decision Engineering, January 2011.
- Steinunn M. Stefánsdóttir, *Models for parsimony haplotype inference*, Supervisor Masters project (30 ECTS), Computer Science, 2007.
- Benjamin Sigurgeirsson, *Gene Expression of Zebrafish*, co-supervisor Masters thesis (60 ECTS), Bioinformatics, August 2011.
- Elena Losievskaja, *Approximation Algorithms for Independent Set Problems on Hypergraphs*, Ph.D. Thesis committee member, Reykjavik University, 2009.
- Derek Aguiar, Ph.D. Thesis committee member, Computer Science/Bioinformatics, Brown University, 2013.
- B.Sc. projects: Jón Ingi Sveinbjörnsson (2008), Eiríkur Fannar Torfason (2008), Stefanía Helga Stefánsdóttir (2009), Bergdís Sigurdardóttir (2009).

Publications: Refereed Journals

- Daniele Catanzaro, Martine Labbé, Bjarni V. Halldórsson *An Integer Programming Formulation of the Parsimonious Loss of Heterozygosity Problem*. IEEE/ACM Trans Comput Biol Bioinform. 2012 Nov 16.
- Derek Aguiar, Bjarni V. Halldórsson, Eric Morrow, Sorin Istrail, *DELISHUS: An Efficient and Exact Algorithm for Genome-Wide Detection of Deletion Polymorphism in Autism*, 2012, Bioinformatics, 28(12), i154-62.
- Jón Ingi Sveinbjörnsson, Bjarni V. Halldórsson, *PAIR: Polymorphic Alu Insertion Recognition*, BMC Bioinformatics, 2012, 13(Suppl 6):S7
- Kilpalainen, T. *et al. Genetic variation near IRS1 associates with reduced adiposity and an impaired metabolic profile* Nature Genetics, 2011, 43(8), 753-60.

- Bjarni V. Halldórsson, Daníel Guðbjartsson, *An algorithm for detecting high frequency copy number polymorphisms using SNP arrays* Journal of Computational Biology, 2011, 18(8), 955-66.
- Bjarni V. Halldórsson, Derek Aguiar, Ryan Tarpine, Sorin Istrail *The Clark Phaseable Sample Size Problem: Long-range Phasing and Loss of Heterozygosity in GWAS* Journal of Computational Biology, 2011, 18(3):323-33
- Panoutsopoulou K *et al.*, *Insights into the genetic architecture of osteoarthritis from stage 1 of the arcOGEN study.* Ann Rheum Dis. 2011, 70(7), 864-7.
- Evangelou E *et al.* *Meta-analysis of genome-wide association studies confirms a susceptibility locus for knee osteoarthritis on chromosome 7q22* Ann Rheum Dis. 2011 Feb;70(2):349-55
- A. Glen, B. Halldórsson, S. Kitaev, *Crucial abelian k-power-free words* DMTCS 2010, 12(5) 83-96
- U. Styrkarsdóttir, B.V. Halldórsson *et al.* European Bone Mineral Density Loci are also associated with BMD in East-Asian Populations PLoS One, 5(10):e13217.
- S.N. Stacey *et al.* Ancestry-Shift Refinement Mapping of the C6orf97-ESR1 Breast Cancer Susceptibility Locus PLoS Genetics 2010 Jul 22;6(7)
- S. Avgustinovich, A. Glen, B. V. Halldórsson, S. Kitaev, *On shortest crucial words avoiding abelian powers* Discrete Applied Mathematics 2010 March, 606-608.
- H.J. Kerkhof *et al.* *A genome-wide association study identifies an osteoarthritis susceptibility locus on chromosome 7q22.* Arthritis Rheum. 2010 Feb;62(2):499-510.
- A.M Kung *et al.*, *Association of JAG1 with Bone Mineral Density and Osteoporotic Fractures: A Genome-wide Association Study and Follow-up Replication Studies* Am J Hum Genet. 2010 Feb 12;86(2):229-239
- J.B. Richards *et al.* *Collaborative meta-analysis: associations of 150 candidate genes with osteoporosis and osteoporotic fracture* Ann Intern Med. 2009 Oct 20;151(8):528-37.
- F. Rivadeneira, U. Styrkarsdóttir, K. Estrada, B.V. Halldórsson, *et al.* *Twenty bone-mineral-density loci identified by large-scale meta-analysis of genome-wide association studies.* Nature Genetics 2009, 41(11):1199-206.
- G. Thorleifsson *et al.* *Sequence variants in the CLDN14 gene associate with kidney stones and bone mineral density* Nature Genetics 2009, 41(8):926-30.
- E. Evangelou *et al.* *Large-scale analysis of association between GDF5 and FRZB variants and osteoarthritis of the hip, knee, and hand.* Arthritis Rheum. 2009 Jun;60(6):1710-21.
- U. Styrkarsdóttir, B.V. Halldórsson *et al.* New sequence variants associated with bone mineral density. Nature Genetics 2009 Jan;41(1):15-7.
- H. Stefansson *et al.* *Large recurrent microdeletions associated with schizophrenia* Nature 2008, 455(7210):232-6.
- G. Sigurdsson, B.V. Halldórsson, U. Styrkarsdóttir, K. Kristjánsson, K. Stefansson *The Impact of Genetics on Low Bone Mass in Adults* J Bone Miner Res. 2008, 23(10):1584-90.
- U. Styrkarsdóttir, B.V. Halldórsson, *et al.* *Multiple genetic loci for bone mineral density and fractures* New England Journal of Medicine 2008 May 29;358(22):2355-65.

- D.F. Gudbjartsson, G.B. Walters, G. Thorleifsson, H. Stefansson, B.V. Halldorsson, *et al.* *Many sequence variants affecting diversity of adult human height* Nature Genetics 2008 May;40(5):609-15
- M. Gottfredsson, B.V. Halldórsson, S. Jónsson, M. Kristjánsson, K. Kristjánsson, K.G. Kristinsson, A. Löve, T. Blöndal, C. Viboud, S. Thorvaldsson, A. Helgason, J.R. Gulcher, K. Stefánsson, I. Jónsdóttir *Lessons from the past: familial aggregation analysis of fatal pandemic influenza (Spanish flu) in Iceland in 1918* Proceedings of the National Academy of Sciences 2008 Jan 29;105(4):1303-8
- Roded Sharan, Bjarni V. Halldórsson, Sorin Istrail, *Islands of tractability of parsimony haplotyping*, IEEE/ACM Transactions on Computational Biology and Bioinformatics, 2006, 3:303-311.
- Dannie Durand, Bjarni V. Halldórsson, Benjamin Vernot, *A hybrid Micro-Macroevoolutionary Approach to Gene Tree Reconstruction*, Journal of Computational Biology, 2006, 13:320-335.
- Bjarni V. Halldórsson, Sorin Istrail, Francisco M. De La Vega, *Optimal selection of SNP markers for disease association studies*, Human Heredity, 2004;58(3-4):190-202.
- F. M. De La Vega, H. Avi-Itzhak, A. Collins, C.R. Scafe, B. V. Halldórsson, X. Su, R. A. Lippert, Y. Wang, M. Laig-Webster, R. T. Koehler, J.S. Ziegler, L.T. Wogan, J.F. Stevens, K.M. Leinen, S.J. Olson, K.J. Guegler, X. You, L.H. Xu., H.G. Hemken, F. Kalush, A. G. Clark, S. Istrail, M. W. Hunkapiller, E. G. Spier, D. A. Gilbert, *The linkage disequilibrium maps of three human chromosomes across four populations reflect their demographic history and a common recombination pattern*, Genome Research, 2005, 15(4):454-62.
- Bert Gold, Francis Kalush, Julie Bergeron, Kevin Scott, Nandita Mitra, Kelly Wilson, Nathan Ellis, Helen Huang, Michael Chen, Ross Lippert, Bjarni V. Halldórson, Beth Woodworth, Thomas White, Andrew G. Clark, Fritz F. Parl, Samuel Broder, Michael Dean and Kenneth Offit *Estrogen Receptor Genotypes and Haplotypes Associated with Breast Cancer Risk*. Cancer Research, 2004, 64(24):8891-900.
- Sorin Istrail, Liliana Florea, Bjarni V. Halldórsson, Oliver Kohlbacher, Russell S. Schwartz, Von Bing Yap, Jonathan Yewdell, Stephen Hoffman, *Comparative Immunopeptidomics of Humans and their Pathogens* Proceedings of the National Academy of Sciences, 2004, 101(36):13268-72
- Bjarni V. Halldórsson, Vineet Bafna, Ross Lippert, Russell S. Schwartz, Francisco M. De La Vega, Andrew G. Clark, Sorin Istrail, *Optimal haplotype block free selection of tagging SNPs for genome-wide association studies* Genome Research, 2004, 14(8):1633-40.
- Sorin Istrail, Granger G. Sutton, Liliana Florea, Aaron L. Halpern, Clark M. Mobarry, Ross Lippert, Brian Walenz, Hagit Shatkay, Ian Dew, Jason R. Miller, Michael J. Flanagan, Nathan J. Edwards, Randall Bolanos, Daniel Fasulo, Bjarni V. Halldorsson, Sridhar Hannenhalli, Russell Turner, Shibu Yooseph, Fu Lu, Deborah R. Nusskern, Bixiong Chris Shue, Xiangqun Holly Zheng, Fei Zhong, Arthur L. Delcher, Daniel H. Huson, Saul A. Kravitz, Laurent Mouchard, Knut Reinert, Karin A. Remington, Andrew G. Clark, Michael S. Waterman, Evan E. Eichler, Mark D. Adams, Michael W. Hunkapiller, Eugene W. Myers, J. Craig Venter *Whole Genome Shotgun Assembly and Comparison of Human Genome Assemblies* Proceedings of the National Academy of Sciences, 2004, 101:1916-21.

- Russell S. Schwartz, Bjarni V. Halldórsson, Vineet Bafna, Andrew G. Clark, Sorin Istrail *Robustness of Inference of Haplotype Block Structure*. Journal of Computational Biology, 2003, 10:13-19.
- Koen M.J. De Bontridder, Bjarni V. Halldórsson, Magnús M. Halldórsson, Cor A.H. Hurkens, Jan K. Lenstra, R. Ravi, Leen Stougie, *Approximation algorithms for test cover problem*. Published as: Technical University Eindhoven SPOR-Report 2002-10. Mathematical Programming-B; (2003) 98(1-3):477 - 491.
- Alan M. Frieze, Bjarni V. Halldórsson *Optimal Sequencing by Hybridization in Rounds*, Journal of Computational Biology, (2002), 9:355-369.
- Bjarni V. Halldórsson, Reha Tütüncü, *An Interior-Point Method for a Class of Saddle-Point Problems*. Published as CMU Center for Nonlinear Analysis Research Report No. 00-CNA-006. Journal of Optimization Theory and Applications, (2003), 116(3):559-590.

Refereed Conference Proceedings With Full Papers

- Halldórsson, B.V, Blokh, D., Sharan, R., *Estimating population size via line graph reconstruction*, Proceedings WABI 2012, pp 69-80.
- Daniele Catanzaro, Martine Labbé, Bjarni V. Halldórsson *A Mixed Integer Programming Model for the Parsimonious Loss of Heterozygosity Problem*, ISBRA 2012, pp:24-35.
- Bjarni V. Halldórsson, Derek Aguiar, Sorin Istrail *Haplotype Phasing by Multi-Assembly of Shared Haplotypes: Phase-Dependent Interactions Between Rare Variant*, Pacific Symposium on Biocomputing, 2011, 88-99.
- Bjarni V. Halldórsson, Magnús M. Halldórsson, Elena Losievskaja, Mario Szegedy *Streaming algorithms for independent sets*, ICALP 2010, pp. 641-52.
- Bjarni V. Halldórsson, Derek Aguiar, Ryan Tarpine, Sorin Istrail *The Clark Phaseable Sample Size Problem: Long-range Phasing and Loss of Heterozygosity in GWAS* RECOMB 2010
- Kristin Bjarnadóttir, Bjarni V. Halldórsson *The norske treatise Algorismus*, Acta Mathematica Nitra 2010, 15-26.
- Amy Glen, Bjarni V. Halldórsson, Sergey Kitaev, *Crucial Words for Abelian Powers*, Developments in Language Theory, 2009, 264-275.
- Roded Sharan, Bjarni V. Halldórsson, Sorin Istrail, *Islands of tractability of parsimony haplotyping*, IEEE Computational Systems Biology (CSB), 2005, 65-72.
- Dannie Durand, Bjarni V. Halldórsson, Benjamin Vernot, *A Hybrid Micro-Macroevolutionary Approach to Gene Tree Reconstruction*, RECOMB 2005, LNBI 3500, Springer Verlag, 250-264.
- Bjarni V. Halldórsson, Vineet Bafna, Nathan Edwards, Ross Lippert, Shibu Yooseph, Sorin Istrail *A survey of computational methods for determining haplotypes*, In Computational Methods for SNPs and Haplotype Inference (LNCS 2983), pp. 26-47.
- Bjarni V. Halldórsson, Vineet Bafna, Nathan Edwards, Ross Lippert, Shibu Yooseph, Sorin Istrail *Combinatorial problems arising in SNP and haplotype analysis*, In Proceedings of the Fourth International Conference on Discrete Mathematics and Theoretical Computer Science, CDMTCS 2003, pp. 26-47.

- Liliana Florea, Bjarni V. Halldórsson, Oliver Kohlbacher, Russell S. Schwartz, Stephen Hoffman, Sorin Istrail, *Epitope prediction algorithms for peptide-based vaccine design* In Proceedings of the Second Annual IEEE Computer Society Bioinformatics Conference (CSB 2003), pp. 17-26.
- Vineet Bafna, Bjarni V. Halldórsson, Russell S. Schwartz, Andrew G. Clark, Sorin Istrail, *Haplotypes and Informative SNP Selection Algorithms: Don't Block Out Information*. Proceedings of the 7th Annual International Conference on Computational Molecular Biology (RECOMB-03), pp. 19-27.
- Bjarni V. Halldórsson, Magnús M. Halldórsson and R. Ravi, *On the approximability of the minimum test collection problem*. Proceedings of the 9th Annual European Symposium on Algorithms (ESA-01), pp. 158-169.
- Alan M. Frieze, Bjarni V. Halldórsson *Optimal Sequencing by Hybridization in Rounds*, Proceedings of the 5th Annual International Conference on Computational Molecular Biology (RECOMB-01), pp. 144-151.
- Numerous poster publications in conferences in bioinformatics, genetics, genomics and the medical sciences.

Technical Reports

- Bjarni V. Halldórsson, Erlendur S. Thorsteinsson and Bjarni Kristjánsson, *Modeling Interface to Non-Linear Programming Solvers, An Instance: xMPS - the extended MPS format*. Maximal Software white paper, 2000.
- Bjarni V. Halldórsson, Jonathan S. Minden, R. Ravi *Protein Identification by Epitope Recognition*. Currents in computational molecular biology, 2001. pp. 109-110.
- Bjarni V. Halldórsson, Magnús M. Halldórsson, *Empirical Study of some Clique Heuristics Motivated by Worst-Case Results*. University of Iceland Science Institute Technical Report RH-2000-21.
- Bjarni V. Halldórsson, *Component Software for Optimization: OOODL-Object Oriented Optimization Decomposition Library & LPSolver*, Argonne National Laboratories summer report 1999.

Patents Pending

- Bjarni V. Halldórsson, Vineet Bafna, Ross Lippert, Russell Schwartz, Andrew Clark, Sorin Istrail, Francisco M. De La Vega, *Identification of informative genetic markers*, USPTO Appl. No. 20060046256
- Jonathan S. Minden, R. Ravi, Alan Koretsky, Bjarni V. Halldórsson *Methods and systems for identifying proteins*, USPTO Appl. No. 20030054408.
- Sorin Istrail, Liliana Florea, Bjarni V. Halldórsson, Russell S. Schwartz, Oliver Kohlbacher, Stephen Hoffman *Methods for peptide protein binding prediction*, USPTO Appl. No. 20040072249.

Papers in Icelandic

- Bjarni V. Halldórsson, Oddgeir Á. Ottesen, Stefania H. Stefánsdóttir, *Mat a efra stigs stadgöngubjaga verdbogumaelingum á Íslandi* Tímarit um Vidskipti og Efnahagsmál, 2011.
- Bjarni V. Halldórsson, Kristín Bjarnadóttir, *Ritgerdin Algorismus - samanburður handrita* Afnaelisrit Thorsteins Vilhjálmssonar, 2010.

Other Publications

- Bjarni V. Halldórsson *Algorithmic Challenges in Disease Association Studies and DNA Sequencing*, Invited Talk, Proceedings ICCABS, 2012.

- International Conference Presentations:**
- Estimating population size via line graph reconstruction ,
WABI, Ljubljana, '12
 - *PAIR: Polymorphic Alu Insertion Recognition*,
RECOMB-seq, Barcelona, '12.
 - *Algorithmic Challenges in Disease Association Studies and DNA Sequencing*
International Conference Computational Advances in Bio and Medical Sciences (IC-CABS 2012), Las Vegas, '12.
 - *Haplotype Phasing by Multi-Assembly of Shared Haplotypes: Phase-Dependent Interactions Between Rare Variants*
Pacific Symposium on Biocomputing, Hawaii, '11.
 - *Tools for association and pedigree analysis*
Advances in genomic tool construction, Brown University, '06.
 - *Optimally selecting tagging SNPs*
SIAM Conference on Discrete Mathematics, Nashville, '04.
 - *A block free approach to SNP selection*
6th International Meeting On Single Nucleotide Polymorphism and Complex Genome Analysis, Chantilly, Virginia '03.
 - *Computational and Combinatorial Problems Arising in Haplotype Phase Estimation*
(Poster Presentation) 6th International Meeting On Single Nucleotide Polymorphism and Complex Genome Analysis, Chantilly, Virginia '03.
 - *Haplotypes and Informative SNP Selection Algorithms: Don't Block Out Information.*
7th Annual International Conference on Computational Molecular Biology (RECOMB), Berlin '03.
 - *Methods for inferring Haplotype Blocks and Informative SNP selection,*
Invited Presentation: 2003 Annual Meeting of the Population Association of America, Minneapolis '03.
 - *Methods for inferring Haplotype Blocks and Informative SNP selection,*
5th International Meeting On Single Nucleotide Polymorphism and Complex Genome Analysis, Reykjavik, Iceland '02.
 - *On the approximability of the minimum test collection problem.*
9th Annual European Symposium on Algorithms (ESA), Aarhus, Denmark '01.
 - *Optimal Sequencing by Hybridization in Rounds.*
Fifth Annual Conference on Computational Biology (RECOMB), Montreal '01.
 - *Protein Identification by Epitope Recognition.*
Poster presentation. Fifth Annual Conference on Computational Biology (RECOMB), Montreal '01.
 - *Optimal Sequencing by Hybridization in Rounds.*
Poster presentation. Intelligent Systems in Molecular Biology (ISMB), San Diego '00.

- *An Interior-Point Method for a Class of Saddle-Point Problems.*
INFORMS, Salt Lake City '00.
- *Modeling Interface to Non-Linear Programming Solvers, An Instance: xMPS - the extended MPS format.*
INFORMS, Seattle '99.
- Other presentations: U. Glasgow 2003, NCBI 2003, U. Iceland 1999, 2003, 2004, Reykjavik U. 2004, deCode Genetics 2004, Iceland Genomics 2001, 2004, ICE-TCS Symposium 2005, Icelandic Mathematical Society, 2005, CMU 2006, ICE-TCS 2006, Brown U 2008, U. Latvia 2010, Brown U. 2010, U. Iceland 2011, Icelandic Math Society Conference 2011. Numerous poster presentations and presentations made by co-authors.

Programming skills: Extensive knowledge of C++, C, R, Matlab, Python. Basic familiarity with Java, Awk, Perl, Fortran, Pascal.

- Professional Services:**
- Editorial Board Member, *Frontiers in Statistical Genetics and Methodology*, 2011-
 - Director, Bioinformatics MS program, Reykjavik University, 2010-
 - IFIP working group 12.8 on Intelligent Bioinformatics and Biomedical Systems, committee member 2012-2014.
 - International Mathematical Olympiad, Team Leader, Kazakstan, 2010.
 - International Mathematical Olympiad training of Icelandic team 2007,2008,2009, 2010, 2011.
 - Committee member for the Organization of Icelandic Mathematical Contests, 2010-.
 - ICALP 2008, satellite conference organizer.
 - Program Committee: ISMB 2012.
 - Program Committee: RECOMB 2012.
 - Program Committee: RECOMB 2011.
 - Program Committee: Third RECOMB Satellite Workshop on Computational Methods for SNPs and Haplotypes, Los Angeles, CA, 2007.
 - Program Committee, Session Chair: Second RECOMB Satellite Workshop on Computational Methods for SNPs and Haplotypes, Pittsburgh, PA, 2004.
 - Iceland Center of Excellence for Theoretical Computer Science (ICE-TCS) member 2004-.
 - EURO working group on computational biology, events organizer, 2006-.
 - Organized the weekly seminar in Algorithms, Combinatorics and Optimization 1998-1999.
 - CMU Algorithms,Combinatorics and Optimization web-page maintenance, 1997-2001.
 - Student representative to University of Iceland, Faculty of Sciences Board of Directors meetings and Faculty meetings, 1995-1996.
 - Student representative to University of Iceland, Dept. of Mathematics Faculty meetings, 1994-1995.

Reviewing • SIAM Journal of Computing, Discrete Mathematics (2), Discrete Applied Mathematics (4), Journal of Computational Biology (14), Bioinformatics (10), BMC Bioinformatics (4), BMC Genetics, Journal of Bioinformatics and Computational Biology (2), IEEE/ACM Transaction on Computational Biology and Bioinformatics (5), Frontiers in Statistical Genetics, American Journal of Human Genetics, Genome Research, Genomics, Algorithms, Journal of Computer and System Sciences, Communications in Information and Systems, Computer Methods and Programs in Biomedicine, PLoS One, IEEE TEC, Algorithms for Molecular Biology, RANNIS (6), LSH(5).

- Conferences: FOCS 2000, ESA 2000, SWAT 2000, COCOON 2001, RECOMB 2003, FCT 2003, FST-TCS 2003, PSB 2004, RECOMB 2004, SWAT 2004, BIOCONCUR 2004, PSB 2005, RECOMB 2005, SWAT 2006, ESA 2006, SODA 2006, ICALP 2006, FCT 2007, WABI 2007, ICALP 2010, ISAAC 2011, WABI 2012, RECOMB 2012.

Experience: • Center for Computational Molecular Biology, Department of Computer Science and Engineering, University of California San Diego, San Diego, fall 2010.

Visiting scholar

- Center for Computational Molecular Biology, Department of Computer Science, Brown University, Providence, Rhode Island, summer 2009, fall 2010.

Visiting scholar

- Argonne National Laboratory, Argonne Illinois, summer 1999.

Givens Fellowship. Worked on OOODL: Object Oriented Optimization Decomposition Library, with Dr. Jeffrey T. Linderoth and Dr. Stephen Wright.

- Maximal Software, Arlington Virginia, summer 1998- 1999.

Programing of MPL (Mathematical Programming Language), extending the language to express non-linear optimization problems.

- Research assistant to Dr. Magnús M. Halldórsson, University of Iceland, summer 1997.

Empirical evaluation of algorithms for the maximum clique problem.

- Programmer, Icelandic Marine Research Institute, summer 1996.

Testing and reviewing an internally developed package for graphical display of data in Splus.

- Research assistant to Drs. Kristján Jónasson and Sven Th. Sigurdsson, University of Iceland in cooperation with Icelandic Meteorological office, 1995-1996.

Programming and testing optimization algorithms in research related to global warming. Also research related to the prediction of avalanches.

Honors: • Graduate Student Research Award, Dept. Math. Sciences, Carnegie Mellon University, 2001 *Awarded to 1-2 students per year for research excellence.*

- Merck Computational Biology and Chemistry Program Graduate Fellowship from the Merck Company Foundation 2000-2001.

- Helga Jónsdóttir and Sigurlidi Kristjánsson memorial fund fellowship 2000.

- Thor Thors memorial fund fellowship 2000.

- Fulbright Fellowship 1996.

- International Mathematical Olympiad, Sweden 1991, Moscow 1992 (Honorable Mention), Istanbul 1993.

- Baltic-Way, Vilnius 1992.

- Nordic Mathematical Contest, 1993. 1st place, out of 120 finalists.
- Icelandic Mathematical Contest, 1991 (1st place in younger division), 1992 (1st place, older division and finals), 1993 (1st place, older division and finals).