Curriculum Vitae – Erik Kristiansson

Personal

Name: Erik Kristiansson, 780616-2512
Place of birth: Jönköping, Sweden
Contact: erik.kristiansson@chalmers.se, +46-70-5259751
Current institution: Department of Mathematical Statistics, Chalmers University of
                        Technology, Sweden

Positions and employment

Current position
2011-2014   Assistant Professor, Mathematical Statistics, Chalmers University of
                Technology.

Post-doctoral visits
2010-2011   Post-doctoral stipend funded by the Swedish Society of Medical Research
                (www.ssmf.se). The name of the project is *"Environmental antibiotic
                contamination – comprehensive screening strategies for the identification
                of multiresistance".*
2009   Post-doctoral training at the Department of Physiology and
                Endocrinology, University of Gothenburg
2008   Post-doctoral training at the Department of Zoology, University of
                Gothenburg.

Doctoral degree
2007   Degree of Doctor of Philosophy in Mathematical Statistics received
                at Department of Mathematical Sciences, Chalmers University of
                Technology. Thesis title: *Statistical Analysis of Gene Expression Data*.
                Supervisor: Professor Olle Nerman. Dissertation held December 7 2007.

Previous employment
2003-2007   PhD student at Mathematical Statistics, Chalmers University of
                Technology.

Other education and academic degrees
2012   Docent in mathematical statistics and bioinformatics at the Chalmers
                University of Technology. Docent lecture held April 26 2012.

2002   Master of Science in Electrical Engineering at Luleå University of
                Technology. Topics studied included signal processing and applied
                mathematics. The title of my master thesis was Decreasing Rearrangement
                and Lorentz L(p,q) Spaces.
1998-2002   Student at Luleå University of Technology.

Supervised students

Supervised post-docs

2012-	Anders Sjögren	post-doc	supervisor

Supervised PhD students

2012-	Mariana Pereira	PhD student	co-supervisor
2011-	Kemal Sanli	PhD student	co-supervisor
2011-	Annica Wilzén	PhD student	co-supervisor
2011-	Viktor Jonsson	PhD student	supervisor
2011-	Johan Bengtsson	PhD student	co-supervisor

"Antibiotic resistance in the external environment and the human microflora – application of next generation sequencing technologies"

2011-	Anna Larsson	PhD student	supervisor
2011-	Fredrik Boulund	PhD student	supervisor
2010-	Anna Johnning	PhD student	co-supervisor

"Resistance in environmental bacteria evolving under extreme antibiotic selection pressure – characterization of the resistance genes we may face tomorrow"

2008-2009	Kristina Lagerstedt	PhD student	co-supervisor

"Genetic Analysis of Tumor Progression in Colorectal Cancer"

Supervised master/bachelor students

2012-	Babak Alaei Mahabadi	candidate project	supervisor
2012-	Paula Andrea Martinez	master project	supervisor
2011	Paula Andrea Martinez	candidate project	supervisor
2011-	Sebastian Lindfors	masters project	supervisor
2011	Mariana Pereira	candidate project	supervisor
2010	Fredrik Boulund	masters project	supervisor
2010	Fredrik Boulund	candidate project	supervisor
2008-2009	Tobias Österlund	masters project	supervisor
2007	Anna Johnning	candidate project	supervisor
2007	Tobias Österlund	candidate project	supervisor
2007	Stefan Karlsson	candidate project	supervisor

Scientific assignments and personal awards

Scientific Awards

2009	My paper *"Evolutonary forces act on promoter length: identification of enriched of cis-regulatory elements"* was selected for Faculty of 1000 Biology (http://www.f1000biology.com/article/id/1165517).
2009	My paper *"Intraspecific ITS Variability in the Kingdom Fungi as Expressed in the International Sequence Databases and its Implications for Molecular Species Identification."* published in Evolutionary Bioinformatics becomes the most downloaded paper in the history of the journal.

2009	Two-year postdoctoral scholarship from the Swedish Society for Medical Research (Svenska Sällskapet för Medicinsk Forskning, 628.000 SEK).
2009	My paper "Evolutionary Conservation of Human Drug Targets in Organisms used for Environmental Risk Assessments" was given the AstraZeneca Award for Best Paper in Theoretical Modeling and Risk Assessment (received by the first authors L Gunnarsson and A Jauhiainen).
2009	Best poster award, Swedish Bioinformatics Workshop 2009.
2007	Best poster award, Bioinformatics 2007.

Scientific assignments

2012-	Steering group member of NICE (a FORMAS Strong Research Environment)
2010-2011	Coordinator for Data Exploration in the Chalmers eScience Centre
2010	Member of the organizing committee for the workshop *Deep Sequencing Techniques: Bioscience Applications, Statistical and Computational Practice and Challenges*.
2005	Member of the organizing committee for the 6th Swedish Bioinformatics Workshop
2003-2007	Member of the Swedish Research School in Genomics and Bioinformatics

Computer skills

Programming languages	*Experience*
C/C++	more than 10 years
Python	5 to 10 years
Perl	3 to 5 years
R/Splus	5 to 10 years
MATLAB	5 to 10 years
VisualBasic/BASIC	5 to 10 years
Fortran	1 to 3 years
Assembler (68k)	1 to 3 years
Java	1 to 3 years

Operating systems and applications	
Linux/Unix (client/server)	more than 10 years
MS Windows (NT/2k/2k3/XP)	more than 10 years
Database administration (MySQL)	3 to 5 years

I am also experienced with a large number of key applications in bioinformatics, including BLAST (NCBI/WU/AB), BLAT, ClustalW, mafft, HMMER, GeneSpring, etc. I have also 13 months of working experience as a Unix/Linux system administrator.

Publications

Peer-reviewed and submitted manuscripts

43   Boulund F, Johnning A, Pereira M, Larsson DGJ, **Kristiansson, E**. A method for identification of quinolone antibiotic resistance (qnr) genes in fragmented nucleotide sequence data. 2012. Submitted.

42   Asker N, Kristiansson E, Albertsson E, Larsson DGJ, Förlin L, Hepatic transcriptome profiling indicates altered expression of apoptosis and immune related genes in eelpout (Zoarces viviparus), caught at Gothenburg harbor. 2012. Submitted.

41   Nilsson RH, Tedersoo L, Abarenkov K, Ryberg M, **Kristiansson E**, Hartmann M, Nylander J, Bergsten J, Porter T, Jumpponen A, Vaishampayan P, Hallenberg N, Bengtsson J, Eriksson M, Larsson K-H, Larsson E, Kõljalg U, Five simple guidelines for establishing basic authenticity and reliability of newly generated fungal ITS sequences. 2012. Submitted.

40   **Kristiansson, E**, Österlund, T, Gunnarsson, L, Arne, G, Larsson, DGJ, Nerman O. A new method for cross-species analysis of gene expression. 2012. Submitted

39   Cuklev, F, Fick, J, Cvijovic, M, **Kristiansson, E**, Förlin, L, Larsson, DGJ. Is ketoprofen a better alternative than diclofenac from an environmental perspective? 2012. *To appear in Journal of Hazardous Materials.*

38   Gjertsson I, Lagerquist MK, **Kristiansson E**, Carlsten H, Lindholm C. Estrogen ameliorates arthritis and protects against systemic bone loss in Staphylococcus aureus infection in mice. *To appear in Arthritis Research & Therapy.* 2012.

37   Cuklev, F, Cvijovic, M, **Kristiansson, E**, Gunnarsson, L, Rutgersson, C, Björlenius, B, Larsson DGJ. Global hepatic gene expression in rainbow trout exposed to sewage effluents: A comparison of different sewage treatment technologies. 2012. *To appear in Science of the Total Environment.* 2012.

36   Cuklev, F, **Kristiansson, E,** Fick, J, Asker, N, Förlin, L, Larsson, DGJ. Diclofenac in fish - blood plasma levels similar to human therapeutic levels affect global hepatic gene expression. *Environmental Toxicology and Chemistry.* 2011.

35   Arne, G, Nilsson, B, Dahlmo, J, Forssell-Aronsson, E, Kristiansson, E, Ahlman, H, Nilsson, O. Gastrointestinal stromal tumors (GISTs) express somatostatin receptors and bind radiolabeled somatostatin analogs. *To appear in Acta Oncologica.* 2012.

34   Nilsson, RH, Ryberg, M, Veldre, V, Kõljalg, U, Abarenkov, K, **Kristiansson, E.** A software solution to correlate fungal soil communitites accross time and space. 2011. *Submitted.*

33   Janzon, A, **Kristiansson, E**, Larsson, DGJ. Environmental microbial communities living under very high antibiotic selection pressure. 2011. Book Chapter. In press.

32   Lennquist, A, Asker, N, **Kristiansson, E,** Brenthel, A, Thrandur Björnsson, B, Kling, P, Hultman, M, Larsson, DJG, Förlin, L. Physiology and mRNA expression in rainbow trout (Oncorhynchus mykiss) after long-term exposure to the new antifoulant medetomidine. *Comparative Biochemistry and Physiology*. 2011. In press.

31   Rutgetsson, C, Gunnarsson, L, **Kristiansson, E**, Larsson, DGJ. Effluent from bulk drug production is not acutely toxic to rat. 2012. *Submitted*

30   **Kristiansson, E**, Fick, J, Janzon, A, Gabric, R, Rutgersson, C, Weidegård, B, Söderström, H, Larsson, DGJ. Pyrosequencing of antibiotic-contaminated river sediments reveals high levels of resistance and gene transfer elements. *PLoS ONE*. 2011.

29   Lagerstedt, KK, **Kristiansson, E**, Lönnroth, C, Andersson, M, Hansson, E, Enlund, Lundholm, K. Copy number variation in normal colon mucosa from patients with colorectal cancer. Manuscript 2010. *Submitted.*

28   Gunnarsson, L, **Kristiansson, E**, Larsson, DGJ. Environmental Comparative Pharmacology: Theory and Application. Human Pharmaceuticals in the Environment: Current and Future Perspectives. Eds: B Brooks, D Huggett. Springer Verlag. 2010.

27   Kourtchenko, O, **Kristiansson, E,** Czihal, A Bäumlein, H, Ellerström, M. Transcriptional control of plant responses to a pathogenic effector protein. Manuscript 2010. *Submitted.*

26   Lennquist, A, Mårtensson, LGE, Hedberg, D, **Kristiansson, E**, Förlin, L. Colour and melanophore function in rainbow trout after long term exposure to the new antifoulant medetomidine. *Chemosphere* 2010:80(9):1050-5.

25   Nilsson, HR, Veldre, V, Hartmann, M, Unterseher, M, Amend, A, Bergsten, J, **Kristiansson, E**, Ryberg, M, Jumpponen, A, Abarenkov, K. An open source software package for rapid, automated extraction of ITS1 and ITS2 from fungal ITS sequences for use in high-throughput community assays and molecular ecology. *Fungal Ecology* 2010. In press.

24   Arne, G, **Kristiansson, E**, Nerman, O, Kindblom, LG, Ahlman H, Nilsson, B and Nilsson, O. Expression profiling of GIST demonstrates CD133 in tumors associated with poor survival. *International Journal of Cancer* 2011. In press.

23   Lagerstedt, KK, **Kristiansson, E**, Lönnroth, C, Andersson, M, Gustafsson, A, Hansson, E, Kressner, U, Nordgren, S, Lundholm, K. Genes with Relevance for Early to Late Progression of Colon Carcinoma Based on Combined Genomic and Transcriptomic Information from the Same Patients. *Cancer Informatics* 2010:9 79-91.

22   Nilsson, HR, Abarenkov, K, Veldre, V, Nylinder, S, De Wit, P, Broché, S, Alfredsson, JF, Ryberg, M, **Kristiansson, E.** An open source chimera checker for the fungal ITS region. *Molecular Ecology Resources* 2010. In press.

21   Arvidsson, Y, Bergström, A, Arvidsson, L, **Kristiansson, E**, Ahlman, H, Nilsson, O. Hypoxia stimulates CXCR4 signalling in ileal carcinoids. *Endocrine-related cancer* 2010:17(2):303-16.

20   Selpi, S, Bryant, CH, Kemp, GJ, Sarv, J, **Kristiansson, E**, Sunnerhagen, P. Predicting functional upstream open reading frames in *Saccharomyces cerevisiae*. *BMC Bioinformatics* 2010:40(451).

19   **Kristiansson, E**, Hugenholtz, P, Dalevi, D. ShotgunFunctionalizeR: An R-package for functional comparison of metagenomes. *Bioinformatics* 2009:**25(**20).

18   **Kristiansson, E**, Asker, N, Förlin, L, Larsson, DGJ. Charaterization of the *Zoarces viviparus* liver transcriptome using massivly parallel pyrosequencing. *BMC Genomics* 2009:**10**(345).

17   Gunnarsson, L, **Kristiansson, E**, Rutgersson, C, Larsson, DGJ (2009). Pharmaceutical industry effluent diluted 1:500 affect global gene expression, CYP1A activity and plasma phosphate in fish. *Environmental Toxicology and Chemistry*. 2009:28(12):2639-47.

16   Thorsen, M, Perrone, G, **Kristiansson, E**, Traini, M, Sohrman, M, Dawes, IW, Peter, M, Nerman, O, Tamás, M. Genetic basis of arsenite and cadmium tolerance in yeast. *BMC Genomics* 2009:**10**(105).

15   **Kristiansson, E**, Thorsen, M, Tamas, M, Nerman, O. Evolutonary forces act on promoter length: identification of enriched of cis-regulatory elements. *Molecular Biology and Evolution* 2009:**26**(6):1299-307.

14   Nilsson, HR, Ryberg, M, Abarenkov, K, Sjökvist, E, **Kristiansson, E.** The ITS region as a target for characterization of fungal communities using emerging sequencing technologies. *FEMS Letters in Ecology* 2009:**296**(1).

13   Nilsson, HR, Bok, G, Ryberg, M, **Kristiansson, E**, Hallenberg, N. A software pipeline for processing and identification of fungal ITS sequences. *Source Code for Biology and Medicine* 2009:**4**(1).

12   Ryberg, M, **Kristiansson, E**, Sjökvist, E, Nilsson, HR. An outlook on the fungal ITS sequences in GenBank and the introduction of a web-based tool for the exploration of fungal diversity. *New Phytologist* 2009:**181**(2): 471-7.

11   Gunnarsson, L, Jauhiainen, A, **Kristiansson, E**, Nerman, O, Larsson, DGJ. Evolutionary Conservation of Human Drug Targets in Organisms used for Environmental Risk Assessments. *Environmental Science and Technology* 2008:**42**(15)**.**

10   Nilsson, RH, **Kristiansson, E,** Ryberg, M, Hallenberg, N, Larsson, KH. Intraspecific ITS Variability in the Kingdom Fungi as Expressed in the International Sequence Databases and its Implications for Molecular Species Identification. *Evolutionary Bioinformatics* 2008:4.

9   Ryberg, M, Nilsson, HR, **Kristiansson, E**, Töpel, M, Jacobsson, S, Larsson, E. Mining metadata from unidentified ITS sequences in GenBank: a case study of *Inocybe (Basidiomycota)*. *BMC Evolutionary Biology* 2008:**8**(50).

8   Sjögren, A, **Kristiansson, E**, Rudemo, M, Nerman, O. Weighted Analysis of General Microarray Experiments. *BMC Bioinformatics* 2007:**8**(387).

7   Thorsen, M, Lagniel, G, **Kristiansson, E,** Junot, C, Nerman, O, Labarre, J, Tamas, M. Quantitative transcriptome, proteome and sulfur metabolite profiling of the Saccharomyces cerevisiae response to arsenite. *Physiological Genomics* 2007:**30** (1).

6   Gunnarsson, L, **Kristiansson, E,** Förlin, L, Nerman, O, Larsson, DGJ. Sensitive and robust gene expression changes in fish exposed to estrogen - a microarray approach. *BMC Genomics* 2007:**8**(132).

5   Nilsson, RH, Ryberg, M, **Kristiansson, E,** Abarenkov, K, Larsson, K, Kõljalg, U. Taxonomic Reliability of DNA Sequences in Public Sequence Databases: A Fungal Perspective. *PLoS ONE* 2006:**1**(1): e59.

4   **Kristiansson, E,** Sjögren, A, Rudemo, M, Nerman, O. Quality Optimised Analysis of General Paired Microarray Experiments. *Statistical Applications in Genetics and Molecular Biology* 2006:**5**(1).

3   **Kristiansson, E,** Sjögren, A, Rudemo, M, Nerman, O. Weighted Analysis of Paired Microarray Experiments. *Statistical Applications in Genetics and Molecular Biology* 2005:**4**(1).

2   Nilsson, RH, **Kristiansson, E,** Ryberg, M, Larsson, KH. Approaching the taxonomic affiliation of unidentified sequences in public databases - an example from the mycorrhizal fungi. *BMC Bioinformatics* 2005:**6**(88).

1 Nelander, S, Larsson, E, **Kristiansson, E**, Månsson, R, Nerman, O, Sigvardsson, M, Mostad, P, Lindahl, P. Predictive screening for regulators of conserved functional gene modules (gene batteries) in mammals. *BMC Genomics* 2005:**6** (68).

Developed and co-developed generally accessible computer programs

12 **Qnr pipeline:** A method for identification of quinolone antibiotic resistance (qnr) genes in fragmented sequence data. Available at http://bioinformatics.math.chalmers.se/qnr/

11 **BEAT:** The BactErial Abundance esTimator. Available at http://shotgun.math.chalmers.se/BEAT/

10 **Xspecies:** An R-package for cross-species meta-analysis of gene expression profiles. Available at http://bioinformatics.math.chalmers.se/Xspecies/

9 **troofusco:** A software solution to correlate fungal soil communitites accross time and space.

8 **ShotgunAnnotor:** A highly parallelized pipeline for functional annotation of metagenomic data. (http://shotgun.math.chalmers.se/AnnotatorR/)

7 **Fungal ITS extractor:** An open source software package for rapid, automated extraction 1 of ITS1 and ITS2 from fungal ITS sequences for use in high-throughput community assays and molecular ecology (http://www.emerencia.org/FungalITSextractor.html

6 **Chimera Checker:** An open source chimera checker for the ITS region (http://www.emerencia.org/chimerachecker.html).

5 **ShotgunFunctionalizeR**: An R-package for functional comparison of metagenomes. (http://shotgun.math.chalmers.se).

4 **A software pipeline for processing and identification of fungal ITS sequences** (http://andromeda.botany.gu.se/fungalitspipeline.html).

3 **Emerencia.** A database for species identification and data mining of fungal barcode regions (http://www.emerencia.org).

2 **Enricher.** A tool for identification of transcription factor binding sites in yeast (http://enricher.zool.gu.se).

1 **Weighted Analysis of Microarray Experiments (WAME).** An R-package for quality assessment and analysis of microarray data (http://bioinformatics.math.chalmers.se/wame).

Manuscripts in preparation
Falkbring, S, Hasselberg-Frank, L, Alm Rosenblad, M, Asker, N, **Kristiansson, E**,
Pettersson, E, Östling, J, Mårtensson Lindblad, L, Larsson, DGJ and Blomberg, A.
Studies of barnacle cyprid larvae toxicology from a molecular point of view. 2012.
Manuscript.

Johnning, A, Shouche, Y S, Rutgersson, C, Moore, E, Larsson, DGJ, **Kristiansson, E**.
Whole-genome sequencing of a multiresistant bacteria isolated from a waste water
treatment plant receiving effluent from antibiotic drug manufacturing. 2011. *Manuscript.*

Arne, G, **Kristiansson, E**, Nilsson, B, Ahlman, H, Nilsson, O. Comparative analysis of
biomarkers as prognosticators for survival in GIST patients. 2012. *Manuscript.*

Almroth, BC, Cuklev, F, Fick, J, Gunnarsson, L, **Kristiansson, E**, Förlin, L, Larsson,
DGJ. Waterborne beclomethasone diproprionate affects fish while its metabolite
beclomethasone is not taken up. 2012. *Manuscript.*

Other publications
Kristiansson, E. (2007). Statistical Analysis of Gene Expression Data. PhD Thesis.
Available at http://www.math.chalmers.se/Stat/Research/Preprints/Doctoral/2007/6.pdf.

Kristiansson, E. (2005). A New Method for Analysis of Microarray Gene Expression
Assays. Licentiate Thesis. Available at http://www.math.chalmers.se/~erikkr/Lic.pdf.

Kristiansson, E. (2002). Decreasing Rearrangement and Lorentz L(p,q) Spaces. Master