

DEISY MORSELLI GYSI

🎓 EDUCATION

2021
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2020

2019
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2015

2017

2013
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2009

2012
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2008

Northeastern University
Experiential Ph.D. Leadership

📍 Boston, MA, United States

Leipzig University
Ph.D. Computer Science

📍 Leipzig, Germany

Thesis: Novel Methods For Constructing, Combining And Comparing Co-Expression Networks: Towards Uncovering The Molecular Basis Of Human Cognition. Comitee:
Prof. Dr. Peter F. Staedler, Prof. Dr. Katja Nowick, Prof. Dr. Martin Middendorf.

Norwegian University Of Science And Technology
Visiting Ph.D. Candidate

📍 Trondheim, Norway

Advisor: Prof. Dr. Eivind Almaas

Federal University Of Parana
B.Sc. Statistics

📍 Curitiba, PR, Brazil

Thesis: Survival Analysis For Long Term Survivors From Colon Cancer. Supervisor:
Prof. Dr. Suely Ruiz Giolo.

Pontifical Catholic University Of Parana
B.Sc. Biotechnology

📍 Curitiba, PR, Brazil



CONTACT INFO

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🐦 GysiDeisy

linkedin [deisy-morselli-gysi](https://in/deisy-morselli-gysi)

SKILLS

Programming Languages

R	★★★★★
Python	★★★★
Perl	★★★★
SQL	★★★★
SAS	★★★★
CSS	★★
C	★★

Languages

Portuguese	★★★★★
English	★★★★★
German	★★★★★
Spanish	★★★★

✍ RESEARCH EXPERIENCE

now
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2021

Northeastern University

Center for Complex Network Research
Associate Research Scientist

📍 Boston, MA, United States

- Curation of non-coding genes interactions for assembly of a high quality interactome.
- Development of personalised medicine ML tools for patients with autoimmune diseases.
- Training of graduate students and postdoctoral researchers.

2021
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2019

Northeastern University
Center for Complex Network Research
Postdoctoral Researcher Associated

 Boston, MA, United States

- Member of a team that tested and validated a computational drug-repurposing algorithm for identification of treatments for COVID-19.
- Member of the team that published the Nature cover for the 20th anniversary of the Human Genome Project.
- Curation of disease-gene association databases for assembly of a high quality database.
- Biomarker discovery for non-responders of first-line drugs in patients with autoimmune diseases.
- Training of graduate students and undergraduate students.

now
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2019

Brigham And Women's Hospital, Harvard Medical School
Channing Division of Network Medicine
Research Trainee

 Boston, MA, United States

- Development of methodologies for biomarker discovery for early disease diagnose.

now
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2021

Us. Department Of Veteran Affairs
MAVERIC
Bioinformatician

 Boston, MA, United States

- Development of methodologies for biomarker discovery for disease progression.

2012
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2010

Federal University Of Parana
Statistics Department
Undergraduate Research

 Curitiba, PR, Brazil

2011

Federal University Of Parana
Animal Breeding Institute
Undergraduate Research

 Curitiba, PR, Brazil

2011
|
2008

Federal University Of Parana
Laboratory of extra-cellular matrix protein biochemistry and poison biotechnology
Undergraduate Research

 Curitiba, PR, Brazil

2010
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2008

Pontifical Catholic University Of Parana
Genetics Department
Undergraduate Research

 Curitiba, PR, Brazil

PROFESSIONAL EXPERIENCE

2020
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2019

NomiX life sciences
Scientific Advisor

- Development of methodology for biomarkers in early disease detection.
- Guidance and support for biomarker discovery from omics.
- Training of younger bioinformaticians.

 Boston, MA, United States

2015
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2014

Hospital Israelita Albert Einstein
Senior Statistician

- Assistance to the research department of the hospital on the statistical analysis for researchers.
- Prepared publications for peer-reviewed journals.
- Statistics consultant for experiment design, descriptive analysis and inference analysis for studies related to the institution.

 Sao Paulo, SP, Brazil

2014 2013	Heart Institute Bioinformatician	 Sao Paulo, SP, Brazil
	<ul style="list-style-type: none"> • Development of methodologies for network comparison. • Pipeline and workflow construction for SNP analysis. • Analysis of transcriptome from different methodologies: RNAseq, microarray. • GWAS analysis for different phenotypes. 	
2013 2011	HSBC Multiple Bank Credit Analyst	 Curitiba, PR, Brazil
	<ul style="list-style-type: none"> • Development, validation and report of statistical models in the context of Basel II (Probability of Default , Loss of Given Default, Exposure at Default) and BAU (Business as usual). • Responsible for modeling Auto Finance portfolio 'Origination' and 'maintenance' models and related documentation. • Anaisis of behavioral variables used in the analysis of credit models, through studies of stability and performance, seeking improvements for new model redevelopments. • Approval of databases for modeling credit development. 	
2013 2010	Easy Stats Co-Founder	 Curitiba, PR, Brazil
	<ul style="list-style-type: none"> • Assistance to statistical analysis for researchers. • Prepared publications for peer-reviewed journals. • Statistics consultant for experiment design, descriptive analysis and inference analysis for academic studies. 	

TEACHING EXPERIENCE

now 2021	Mini Programming For Evolutionary Biology Free University of Berlin Network Analysis For Biological Systems	 Berlin, Germany
now 2021	Escuela De Verano En Bioinformática National Autonomous University of Mexico Network Science In Biological Systems	 Mexico City, Mexico
now 2018	Programing For Evolutionary Biology Course Free University of Berlin Statistics And Data Analysis	 Berlin, Germany
2020 2018	Programming For Evolutionary Biology Course Free University of Berlin Teaching Assistant	 Berlin, Germany
2017	Programming For Evolutionary Biology Course Leipzig University Statistics And Data Analysis	 Leipzig, Germany
2017 2016	Programming For Evolutionary Biology Course Leipzig University Teaching Assistant	 Leipzig, Germany

PUBLICATIONS

1. Gates, A.J., **Gysi, D.M.**, Kellis, M., Barabási, A.L. *A wealth of discovery built on the Human Genome Project - by the numbers*, **Nature**. vol. 590, no. 7845 (2021) doi:10.1038/d41586-021-00314-6
2. Kolora, S.R.R., **Gysi, D.M.**, Schaffer, S., Grimm-Seyfarth, A., Szabolcs, M., Faria, R., Henle, K., Stadler, P.F., Schlegel, M., Nowick, K. *Accelerated evolution of tissue-specific genes mediates divergence amidst gene flow in European green lizards*, **Genome Biology and Evolution**. vol. NA, no. NA (2021) doi:10.1093/gbe/evab109
3. **Gysi, D.M.**, do Valle, I., Zitnik, M., Ameli, A., Gan, X., Varol, O., Ghiassian, S.D., Patten, J. J., Davey, R.A., Loscalzo, J., Barabasi, A.L. *Network medicine framework for identifying drug-repurposing opportunities for COVID-19*, **Proceedings of the National Academy of Sciences**. vol. 118, no. 19 (2021) doi:10.1073/pnas.2025581118
4. **Gysi, D.M.**, Nowick, K. *Construction, comparison and evolution of networks in life sciences and other disciplines*, **Journal of The Royal Society Interface**. vol. 17, no. 166 (2020) doi:10.1098/rsif.2019.0610
5. Banos, S. , Gysi, D. M., Richter-Heitmann, T. , Glöckner, F. O., Boersma, M. , Wiltshire, K.H. , Gerdts, G. , Wichels, A. , Reich, M. *Seasonal Dynamics of Pelagic Mytoplanktonic Communities: Interplay of Taxon Abundance, Temporal Occurrence, Biotic Interactions*, **Frontiers in Microbiology**. vol. 11, no. NA (2020) doi:10.3389/fmicb.2020.01305
6. Geffre, A. C., Gernat, T., Harwood, G. P., Jones, B. M., **Gysi, D.M.**, Hamilton, A. R., Bonning, B. C., Toth, A. L., Robinson, G. E., Dolezal, A. G. *Honey bee virus causes context-dependent changes in host social behavior*, **Proceedings of the National Academy of Sciences**. vol. 116, no. 116 (2020) doi:10.1073/pnas.2002268117
7. **Gysi, D.M.**, de Miranda Fragoso, T., Zebardast, F., Bertoli, W., Busskamp, V., Almaas, E., Nowick, K. *Whole transcriptomic network analysis using Co-expression Differential Network Analysis (CoDiNA)*, **PLoS ONE**. vol. 15, no. 10 (2020) doi:10.1371/journal.pone.0240523
8. **Gysi, D.M.**, Voigt, A., Fragoso, T.M., Almaas, E. , Nowick, K. *wTO: an R package for computing weighted topological overlap and a consensus network with integrated visualization tool*, **BMC Bioinformatics**. vol. 19, no. 1 (2018) doi:10.1186/s12859-018-2351-7
9. Kutsche, L.K. , **Gysi, D.M.** , Fallmann, J. , Lenk, K. , Petri, R., Swiersy, A., Klapper, S.D. , Pircs, K. , Khattak, S. , Stadler, P. F. , Jakobsson, J. , Nowick, K. , Busskamp, V. *Combined Experimental , System-Level Analyses Reveal the Complex Regulatory Network of miR-124 during Human Neurogenesis*, **Cell Systems**. vol. 7, no. 4 (2018) doi:10.1016/j.cels.2018.08.011
10. Vaidotas, M., Yokota, P.K.O. and Marra, A.R., Sampaio Camargo, T.Z., Victor, E.D.S., **Gysi, D.M.**, Leal, F., Dos Santos, O.F.P., Edmond, M.B. *Measuring hand hygiene compliance rates at hospital entrances*, **American Journal of Infection Control**. vol. 43, no. 7 (2015) doi:10.1016/j.ajic.2015.03.008

SUBMITTED / IN PREPARATION PUBLICATIONS

1. **Gysi, D.M.**, Nowick, K. *Network Analysis Tutorial: From differential Expression to Differential co-expression network*. (2021).
2. **Gysi, D.M.**, Nowick, K. *Understanding human cognition using TF-networks: Identifying signature genes for psychotic and neurodevelopmental disorders through a gene-co-expression networks approach*. (2021).
3. Ahmed, O.S., Chatterjee, A., Walters, R., Shafi, Z., **Gysi, D.M.**, Yu, R., Eliassi-Rad, T., Barabasi, A.L., Menichetti, G *Improving Neural Network Binding Predictions for Novel Protein Targets*. (2021).
4. Vasan, K., **Gysi, D.M.**, Barabasi, A.L. *Maximizing drug target exploration in clinical trials*. (2021).
5. Pimpao, F., **Gysi, D.M.**, Castro, D., Ferreira, T.B. *The Nosographic Network Structure of Posttraumatic Stress Disorder*. (2021).
6. Dumack, K., Olga, F., Gysi, D. M., Jauss, R.T., Walden, S., Hüsna, O. , Wubet, T., Michael, B., Eisenhauer, N. *Effects of earthworm invasion on the diversity of protists (Cercozoa: Rhizaria) in North American*. (2021).
7. Patten, J.J., Keiser, P. T., **Gysi, D.M.**, Menichetti, G., Mori, H., Donahue, C. J., Gan, X., Do Valle, I., Geoghegan-Barek, K., Anantpadma, M., Berrigan, J. L., Jaliloh, S., Ayazika, T., Wagner, F., Zitnik, M., Ayehunie, S., Anderson, D., Loscalzo, J., Gummuluru, S., Namchuk, M. N., Barabasi, A. L., Davey, R. A. *Multidose evaluation of 6,710 drug repurposing library identifies potent SARS-CoV-2 infection inhibitors In Vitro and In Vivo*. (2021). ## Talks{{data-icon='commenting-o'}}
8. **Gysi, D.M.** *Network Medicine for Rheumatoid Arthritis EULAR*, Paris, France (2021).

9. Gysi, D.M. *Network Medicine Framework for Identifying Drug Repurposing Opportunities for COVID-19 ALERT*, Boston, United States (2020).
10. Gysi, D.M. *Network Medicine approaches for the study of SARS-CoV2 and drug repurposing Drug-Design - RSG-Brazil*, Sao Paulo, Brazil (2020).
11. Gysi, D.M., Valle, I. *Network Medicine Framework for Identifying Drug Repurposing Opportunities for COVID-19 PUB Boston*, Boston, United States (2020).
12. Gysi, D.M., Valle, I. *Network Medicine Framework for Identifying Drug Repurposing Opportunities for COVID-19 Statistics Department*, Curitiba, Brazil (2020).
13. Gysi, D.M. *Comparing multiple co-expression networks* 4th Summer School in Complex Networks, Como, Italy (2018).
14. Gysi, D.M. *Co-expression Differential Network Analysis* XXIX International Biometric Conference, Barcelona, Spain (2018).
15. Gysi, D.M. *wTO: an R package to calculate weighted topological overlap networks* XIV Herbstseminar der Bioinformatik, Doubice, czech republic (2016).
16. Gysi, D.M. *Evolution of gene co-expression networks implicated in cognitive functions in primates* XIII Herbstseminar der Bioinformatik, Doubice, czech republic (2015).

POSTER PRESENTATION

1. Wells, A., Gysi, D.M., Barabási, A.L. *Human Gene Expression and the Protein-Protein Interaction Network: Identification of Potential Disease Module Association to Differential Gene Expression for Patient-to-Drug Matching* American Physical Society, NA, United States (2020).
2. Gysi, D.M., Fragoso, T. M. , Almaas, E. , Nowick, K. *How to build and compare co-expression networks* BenGenDiv, Berlin, Germany (2018).
3. Gysi, D.M., Voigt, A. , Fragoso, T. M. , Almaas, E. , Nowick, K. *An R package for calculating the Weighted Topological Overlap Network with a visualization tool CompreNet'18*, Boston, United States (2018).
4. Kutsche, L. K., Gysi, D.M., Lenk, K., Petri, R., Jakobsson, J., Nowick, K., Busskamp, V. *A systems level view on miR-124 function during neuronal differentiation from human iPS cells* Gene regulatory mechanisms in neural fate decisions, San Juan de Alicante, Spain (2017).
5. Kutsche, L. K., Gysi, D.M., Lenk, K., Petri, R., Jakobsson, J., Nowick, K., Busskamp, V. *A systems level view on miR-124 function during neuronal differentiation from human iPS cells* Intelligent Systems for Molecular Biology, Prague, czech republic (2017).
6. Gysi, D.M., Voigt, A. , Fragoso, T. M. , Almaas, E. , Nowick, K. *wTO: an R package for computing the weighted Topological Overlap and Consensus Networks* NORBIS annual conference, Tromso, Norway (2017).
7. Bertoli, W., Gysi, D.M. *Bayesian Estimation of the Zero-Inflated quasi Poisson-Lindley Model* 4th Workshop on Probabilistic and Statistical Methods, Sao Carlos, Brazil (2016).
8. Gysi, D.M., Pilar, P. G., Giolo, S. R. *Modelo de Sobrevida com Fração de Cura Aplicado aos Dados de Pacientes com Câncer de Colo do Útero IV WASA – Workshop em Analise de Sobrevida e Aplicações*, Belo Horizonte, Brazil (2015).
9. Bertoli, W., Gysi, D.M. *Métodos Estatísticos na Análise de Dados Genômicos* Workshop on Probabilistic and Statistical Methods, Sao Carlos, Brazil (2013).
10. Gysi, D.M., Pilar, P. G., Giolo, S. R. *Análise da sobrevida de pacientes com câncer do colo do útero* XIII Escola de Modelos de Regressão, Maresias, Brazil (2013).
11. Bertoli, W., Gysi, D.M. *Análise de Componentes Principais Para Obtenção de Grupos de SNPs Informativos*. VI Bienal da Sociedade Brasileira de Matemática, Curitiba, Brazil (2012).
12. Gysi, D.M., Giolo, S. R. *Metodologias Estatísticas Aplicadas à Genética Quantitativa e Genômica*. Encontro de Iniciação Científica da UFPR, Curitiba, Brazil (2012).
13. Gysi, D.M., Giolo, S. R. *Estatística Computacional em Genética Quantitativa e Genômica*. Encontro de Iniciação Científica da UFPR, Curitiba, Brazil (2011).
14. Gysi, D.M., Rakin, S., Saez, R. *Elaboração de um banco de Dados de DNA de pacientes com fissura lábio palatina não sindrômica*. XVIII Seminário de Iniciação Científica – PUC-PR, Curitiba, Brazil (2010).

- Novelino, A., Rakin, S., **Gysi, D.M.**, Saez, R., Grabowski, M., Souza, J. *Elaboração de banco de DNA de pacientes com fissuras labiopalatais*. XVII Seminário de Iniciação Científica – PUC-PR, Curitiba, Brazil (2009).
16. Gysi, D.M., Rakin, S., Saez, R., Grabowski, M., Souza, J., Novelino, A. *Elaboração de banco de dados epidemiológico* XVII Seminário de Iniciação Científica – PUC-PR, Curitiba, Brazil (2009).

R-PACKAGES

1. **Gysi, D.M.** *NetSci: Tools for quantitative analysis in Network Science* (2021). [CRAN](#).
2. **Gysi, D.M.**, de Miranda Fragoso, T., Busskamp, V., Almaas, E., Nowick, K. *CoDiNA: Co-Expression Differential Network Analysis* (2019). [CRAN](#).
3. **Gysi, D.M.** *RichR: Enrichment for Diseases in a Set of Genes* (2019). [CRAN](#).
4. **Gysi, D.M.**, Voigt, A., Fragoso, T.M., Almaas, E., Nowick, K. *wTO: Computing Weighted Topological Overlaps (wTO) and Consensus wTO Network* (2018). [CRAN](#).

INTELLECTUAL PROPERTY

1. **Gysi, D.M.**, Barabasi, A.L. *COVID-19 Drug Repurposing Candidates* (2021).
2. **Gysi, D.M.**, Barabasi, A.L. *TULIP Transcriptome Profiling for Discovery of Biomarker* (2020).
3. **Gysi, D.M.**, Barabasi, A.L. *PEONY: Personalized Diagnostic Tool for Complex Phenotypes from RNA Biomarkers* (2020).

SERVICE

REVIEWER

- 2019 - now **Tree Genetics and Genomes**.
- 2020 - now **Genome Medicine**.
- 2020 - now **Molecular Biology and Evolution**.
- 2020 - now **PNAS**.
- 2020 - now **BMC Systems Biology**.
- 2020 - now **Plos Computational Biology**.
- 2020 - now **Genes**.
- 2020 - now **Viruses**.

SOCIETIES

- 2017 - 2019 **R-Ladies chapter Leader**: Leipzig.
- 2018 - 2019 **Representative of Caucus women in Statistics** - Germany.
- 2019 - now **Active member of Boston Area Pharmaceutical Statistics and Data Science Group**.
- 2019 - now **Active member of Boston R-Ladies**.
- 2021 - now **Women in Network Science**.