

# DEISY MORSELLI GYSI

## 🎓 EDUCATION

2021  
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2020

2019  
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2015

2017

2013  
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2009

2012  
|  
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

🌐 [deisygysi.github.io/](https://deisygysi.github.io/)

👤 [deisygysi/](https://deisygysi/)

🐦 [GysiDeisy](https://GysiDeisy)

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

## SKILLS

### Programming Languages

R	★★★★★
SQL	★★★★★
Python	★★★★
Perl	★★★★
SAS	★★★★

### Languages

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

## ✍ RESEARCH EXPERIENCE

now  
|  
2021

**Northeastern University**

Center for Complex Network Research  
Associate Research Scientist

📍 Boston, MA, United States

now  
|  
2019

**Brigham And Women's Hospital, Harvard Medical School**

Channing Division of Network Medicine  
Research Trainee

📍 Boston, MA, United States

now  
|  
2021

**Veteran Affairs**

MAVERIC  
Bioinformatician

📍 Boston, MA, United States

2020  
|  
2019

**Northeastern University**

Center for Complex Network Research  
Postdoctoral Researcher Associated

📍 Boston, MA, United States

Last updated on 2021-06-16.

2012   2010	<b>Federal University Of Parana</b> Statistics Department Undergraduate Research	 Curitiba, PR, Brazil
2011	<b>Federal University Of Parana</b> Animal Breeding Institute Undergraduate Research	 Curitiba, PR, Brazil
2011	<b>Federal University Of Parana</b> Laboratory of extra-cellular matrix protein biochemistry and poison biotechnology Undergraduate Research	 Curitiba, PR, Brazil
2010   2008	<b>Pontifical Catholic University Of Parana</b> Genetics Department Undergraduate Research	 Curitiba, PR, Brazil

## PROFESSIONAL EXPERIENCE

2020   2019	<b>NomiX life sciences</b> Scientific Advisor	 Boston, MA, United States
2015   2014	<b>Hospital Israelita Albert Einstein</b> Senior Statistician	 Sao Paulo, SP, Brazil
2014   2013	<b>Heart Institute</b> Bioinformatician	 Sao Paulo, SP, Brazil
2013   2011	<b>HSBC Multiple Bank</b> Credit Analyst	 Curitiba, PR, Brazil

## TEACHING EXPERIENCE

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

2017	<b>Programing For Evolutionary Biology Course</b> Leipzig University Statistics And Data Analysis	 Leipzig, Germany
2017   2016	<b>Programing For Evolutionary Biology Course</b> 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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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 Mycoplanktonic Communities: Interplay of Taxon Abundance, Temporal Occurrence, Biotic Interactions*, **Frontiers in Microbiology**. vol. 11, no. NA (2020) [doi:10.3389/fmicb.2020.01305](https://doi.org/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. 119, no. 116 (2020) [doi:10.1073/pnas.2002268117](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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., Jaloh, 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

1. **Gysi, D.M.** *Network Medicine for Rheumatoid Arthritis EULAR*, Paris, France (2021).
2. **Gysi, D.M.** *Network Medicine Framework for Identifying Drug Repurposing Opportunities for COVID-19 ALERT*, Boston, United States (2020).
3. **Gysi, D.M.** *Network Medicine approaches for the study of SARS-CoV2 and drug repurposing Drug-Design - RSG-Brazil*, Sao Paulo, Brazil (2020).
4. **Gysi, D.M.**, Valle, I. *Network Medicine Framework for Identifying Drug Repurposing Opportunities for COVID-19 PUB Boston*, Boston, United States (2020).
5. **Gysi, D.M.**, Valle, I. *Network Medicine Framework for Identifying Drug Repurposing Opportunities for COVID-19 Statistics Department*, Curitiba, Brazil (2020).
6. **Gysi, D.M.** *Comparing multiple co-expression networks 4th Summer School in Complex Networks*, Como, Italy (2018).
7. **Gysi, D.M.** *Co-expression Differential Network Analysis XXIX International Biometric Conference*, Barcelona, Spain (2018).
8. **Gysi, D.M.** *wTO: an R package to calculate weighted topological overlap networks XIV Herbstseminar der Bioinformatik*, Doubice, czech republic (2016).
9. **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 CompeNet'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 pacientes com fissura lábio palatina não sindrômica*. XVIII Seminário de Iniciação Científica – PUC-PR, Curitiba, Brazil (2010).
  15. 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.