

# Simone Marini

University of Florida  
Department of Epidemiology  
2004 Mowry Rd,  
Gainesville, FL 32603  
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## Education

- 09/2008-11/2012 PhD., Bioengineering  
Thesis: "Qualitative and quantitative protein interaction prediction with machine learning". Division of Bioengineering, Hong Kong University of Science and Technology, Hong Kong
- 10/2004-12/2007 MS, Biomedical Engineering  
Thesis: "Design of a classifier by coevolution of genetic algorithms and genetic programming". Electrical, Computer and Biomedical Engineering department, University of Pavia, Italy
- 10/2000-03/2004 BS, Biomedical Engineering  
Thesis: "Bone tissue engineering, effects of mechanical shear stress on human osteoblast SAOS2". Electrical, Computer and Biomedical Engineering department, University of Pavia, Italy

## Professional Appointments

### Research Assistant Professor

06/01/2020-present Department of Epidemiology, and Emerging Pathogens Institute, University of Florida, Gainesville, FL, USA

### Artificial Intelligence Advisor

12/01/2016-present enGenome srl, Pavia, Italy

### Research Assistant Scientist

01/01/2019-05/31/2020 Department of Epidemiology, and Emerging Pathogens Institute, University of Florida, Gainesville, FL, USA

### Research Investigator

08/01/2017-12/31/2019 Department of Surgery, and Department of Computational Medicine and Bioinformatics, University of Michigan, Ann Arbor, MI, USA

### Postdoctoral Fellow

12/01/2016-07/31/2017 Laboratory of Biomedical Informatics, University of Pavia, Italy

26/11/2015-26/11/2016 Laboratory of Mathematical Bioinformatics, University of Kyoto, Japan

01/06/2013-25/11/2016 Laboratory of Biomedical Informatics, University of Pavia, Italy

## Publications

[\*] denotes equal contribution. [§] denotes corresponding (senior) authorship.

### Journals (peer reviewed)

- 2020
1. Small molecule inhibition of non-canonical (TAK1-mediated) BMP signaling results in reduced chondrogenic ossification and heterotopic ossification in a rat model of blast-associated combat-related lower limb trauma. Strong AL, Spreadborough PJ, Pagani CA, Haskins RM, Dey D, Grimm PD, Kaneko K, **Marini S**, Huber AK, Hwang C, Westover K, Mishina Y, Matthew JB, Levi B, Davis TA. *Bone*, p. 115517
  2. Immobilization after injury alters extracellular matrix and stem cell fate. Huber AK, Patel N, Pagani CA, **Marini S**, Padmanabhan K, Matera DL, Said M, Hwang C, Hsu GC, Poli AA, Strong AL. *The Journal of Clinical Investigation*.
  3. Sampling bias and incorrect rooting make phylogenetic network tracing of SARS-CoV-2 infections unreliable. Mavian C, Kosakovsky Pond SL, **Marini S**, Magalis BR, Vandamme AM, Dellincour S, Scarpino SV, Houldcroft CJ, Villabona-Arenas J, Paisie TK, Trovão NS, Boucher C, Zhang Y, Scheuermann RH, Gascuel O, Lam TTY, Suchard MA, Abecasis A, Wilkinson E, de Oliverira T, Bento A, Schmidt HA, Martin DP, Hadeffeld J, Faria N, Grubaugh N, Neher R, Beale G, Lemey P, Stadler T, Albert J, Crandall KA, Leitner T, Stamatakis A, Prosperi M, Salemi M. *PNAS*, 117(23)
  4. Beneath the surface: Hyper-connectivity between caudate and salience regions in ADHD fMRI at rest. Damiani S, Tarchi L, Scalabrini A, **Marini S**, Provenzano U, Rocchetti M, Oliva F, Politi P. *European Child & Adolescent Psychiatry*
  5. Tuning Macrophage Phenotype to Mitigate Skeletal Muscle Fibrosis Stepien DM, Hwang C, **Marini S**, Pagani CA, Sorkin M, Visser ND, Huber AK, Edwards MJ, Loder SJ, Vasquez K, Aguilar CA, Kumar R, Mascharak S, Longaker MT, Li J, Levi L. *The journal of immunology*, 204 (8)
  6. Comparative study of salivary, duodenal and fecal microbiota composition across adult celiac disease. Panelli S, Capelli E, Lupo G, Schieppati E, Betti E, Sauta E, **Marini S**, Bellazzi R, Vanoli A, Pasi A, Cacciatore R, Bacchi S, Balestra S, Pastoris O, Frulloni L, Corazza GR, Biagi F, Ciccocioppo E. *Journal of Clinical Medicine*, 9(4)
  7. A snapshot of SARS-CoV-2 genome availability up to April 2020 and its implications. **Marini S\***, Mavian C\*, Prosperi M, Salemi M, *JMIR Public Health and Surveillance*, 6(2)
  8. Endogenous CCN family member WISP1 inhibits trauma-induced heterotopic ossification. Ching-Yun HG, **Marini S**, Negri S, Wang Y, Xu J, Pagani C, Hwang C, Stepien D, Meyers CA, Miller S, McCarthy E, Lyons EK, Levi B, James AW. *JCI insight*, 5(13)
  9. Perivascular fibro-adipogenic progenitor tracing during post-traumatic osteoarthritis Sono T, Hsu CY, Wang Y, Xu J, Cherief M, **Marini S**, Huber AK, Miller S, Péault B, Levi B, and James AW. *The American Journal of Pathology*

10. Activin A does not drive post-traumatic heterotopic ossification. Hwang C, Das N, **Marini S**, Pagani CA, Huber AK, Xie LQ, Huang L, Wang L, Wen X, Nannuru K, Murphy A, Economides AN, Hatsell SJ, Levi B. *Bone*, 115473
11. Rempel D, **Members of the N95DECON Consortium**. Scientific Collaboration During the COVID-19 Pandemic: N95DECON.org. *Annals of Work Exposures and Health*
- 2019 12. MTGO-SC, a tool to explore gene modules in single cell RNA-seq data. Nazzicari N, Vella D, Coronello C, Di Silvestre D, Bellazzi R, **Marini S\***. *Frontiers in Genetics*, 10(953)
13. Protease target prediction via matrix factorization. **Marini S\***, Vitali F\*, Rampazzi S, Demartini A, Akutsu T. *Bioinformatics* bty746ù
14. Disruption of Neutrophil Extracellular Traps (NETs) Links Mechanical Strain to Post-traumatic Inflammation. Agarwal S, Shawn LJ, Cholok D, Li J, Bian J, Yalavarthi S, Li S, Carson WF, Hwang C, **Marini S**, Pagani C, Edwards N, Delano MJ, Standiford TJ, Knight JS, Kunkel SL, Mishina Y, Ward PA, Levi B. *Frontiers in Immunology*, 10
15. Mesenchymal VEGFA induces aberrant differentiation in heterotopic ossification Hwang C, **Marini S**, Huber AK, Stepien D, Sorkin M, Loder, S, Pagani C, Li J, Visser ND, Vasquez K, Garada MA, Li S, Xu J, Yu PB, James AW, Mishina Y, Agarwal S, Li J, Levi B. *Nature Bone Research*, 7(1)
- 2018 16. A comprehensive roadmap of murine spermatogenesis defined by single-cell RNA-seq. Green CD, Ma Q, Manske GL, Shami AN, Zheng X, **Marini S**, Moritiz L, Sultan C, Gurczynski SJ, Moore BB, Tallquist MD, Li JZ, Hammoud SS. *Developmental Cell*, 46(5)
17. MTGO: PPI network analysis via topological and functional module identification Vella D, **Marini S\***, Vitali F, Di Silvestre D, Mauri G, and Bellazzi R. *Nature Scientific Reports* 8(1)
18. Patient similarity by joint matrix tri-factorization to identify subgroups in precision oncology. **Marini S\***, Vitali F\*, Pala D, Demartini A, Montoli S, Zambelli A, Bellazzi R. *Jamia Open*, 1(1)
19. Towards more accurate prediction of caspase cleavage sites: a comprehensive review of current methods, tools and features. Bao Y., **Marini S**, Tamura T, Kamada M, Maegawa S, Hosokawa H, Song J Akutsu T. *Briefings in Bioinformatics*, bby041
20. Risk factors for the development of micro-vascular complications of type 2 diabetes in a single-centre cohort of patients. Chiovato L, Teliti M, Cogni G, Sacchi L, Dagliati A, **Marini S**, Tibollo V, De Cata P, Bellazzi R. *Diabetes and Vascular Disease Research*, 1479164118780808.
21. Patient similarity for precision medicine: A systematic review. Parimbelli E, **Marini S**, Sacchi L, Bellazzi R *Journal of Biomedical Informatics*, 83

22. A variant within the FTO confers susceptibility to diabetic nephropathy in Japanese patients with type 2 diabetes. Taira M, Imamura M, Takahashi A, Kamatani Y, Yamauchi T, Araki S, Tanaka N, van Zuydam NR, Ahlqvist E, Toyoda M, Umezono T, Kawai K, Imanishi M, Watada H, Suzuki D, Maegawa H, Babazono T, Kaku K, Kawamori R, **The SUMMIT Consortium**, Groop LC, McCarthy MI, Kadowaki T, Maeda S. *PloS one*, 13(12)
- 2017 23. Exploring Wound-Healing Genomic Machinery with a Network-Based Approach Vitali F, **Marini S**, Balli M, Grosemans H, Sampaolesi M, Lussier YA, Cusella De Angelis MG, Bellazzi R. *Pharmaceuticals*, 10(2)
24. Dscam1 Web Server: online prediction of Dscam1 self- and hetero-affinity. **Marini S**, Nazzicari N\*, Biscarini F, Wang GZ. *Bioinformatics*, 33(12)
25. Machine learning methods to predict Diabetes complications. **Marini S**, Dagliati A\*, Sacchi L, Bellazzi R. *Journal of Diabetes Science and Technology*, 1932296817706375
- 2016 26. A data fusion approach to enhance association study in epilepsy. **Marini S**, Limongelli I, Rizzo E, Errichiello E, Vetro A, Tan D, Zuffardi O, Bellazzi R. *Plos one*, 11(12)
27. "Noisy beets": impact of phenotyping errors on genomic predictions for binary traits in *Beta vulgaris*. Biscarini F, Nazzicari N, Broccanello C; Stevanato P, **Marini S**. *Plant Methods*, 12(36)
28. Trans-ethnic fine mapping highlights kidney-function genes linked to salt sensitivity Mahajan A, Rodan AR, Le TH, Gaulton KJ, Haessler J, Stilp AM, Kamatani Y, Zhu G, Sofer T, Puri S, Schellinger JN, Chu PL, Cechova S, van Zuydam N, Arnlov J, Flessner MF, Giedraitis V, Heath AC, Kubo M, Larsson A, Lindgren CM, Madden PAF, Montgomery GW, Papanicolaou GJ, Reiner AP, Sundström J, Thornton TA, Lind L, Ingelsson E, Cai J, Martin NG, Kooperberg C, Matsuda K, Whitfield JB, Okada Y, Laurie CC, Morris AP, Franceschini N, **The SUMMIT Consortium**, BioBank Japan Project. *The American Journal of Human Genetics*, 99(3)
- 2015 29. Dynamic Bayesian Network model for long-term simulation of clinical complications in type 1 diabetes. **Marini S**, Trifoglio E\*, Barbarini N, Sambo F, Di Camillo B, Malovino A, Manfrini M, Cobelli C, Bellazzi R. *Journal of Biomedical Informatics*, 57
30. PaPI: pseudo amino acid composition to score human coding variants. Limongelli I, **Marini S**, Bellazzi R. *BMC Bioinformatics* 16(123)
31. Developing a parsimonius predictor for binary traits in sugar beet (*Beta vulgaris*) Biscarini F, **Marini S**, Stevanato P, Broccanello C, Bellazzi R, Nazzicari N. *Molecular Breeding*, 35(10)

- 2014            32.    Improvement of Dscam homophilic binding affinity throughout Drosophila evolution. Wang GZ\*, **Marini S\***, Ma X, Yang Q, Zhang X, Zhu Y. *BMC Evolutionary Biology*, 14(186)
- 2013            33.    The role of SwrA, DegU and P(D3) in fla/che expression in B. subtilis. Mordini S, Osera C, **Marini S**, Scavone F, Bellazzi R, Galizzi A, Calvio C. *PLoS one*, 8(12)
- 2011            34.    In silico Protein-Protein Interaction prediction with sequence alignment and classifier stacking. **Marini S**, Xu Q, Yang Q. *Curr Protein Pept Sci*, 12(7)

#### **Conference Papers (peer reviewed)**

- 2019            1.    A semi-supervised learning approach for pan-cancer somatic genomic variant classification. Nicora G, **Marini S**, Limongelli I, Rizzo E, Montoli S, Tricomi FF, Bellazzi R. *19<sup>TH</sup> Conference of Artificial Intelligence in Medicine (AIME)*
- 2016            2.    Learning T2D evolving complexity from EMR and administrative data using Continuous Time Bayesian Networks. **Marini S**, Dagliati A, Sacchi L, Bellazzi R. *9<sup>th</sup> International Joint Conference on Biomedical Engineering System and Technology (HEALTHINF)*
- 2015            3.    A genomic data fusion framework to exploit rare and common variants for association discovery. **Marini S**, Limongelli I, Rizzo E, Da T, Bellazzi R. *15<sup>TH</sup> Conference of Artificial Intelligence in Medicine (AIME)*
4.    Matrix tri-factorization for miRNA-gene association discovery in acute myeloid leukemia. De Martini A, **Marini S**, Vitali F, Bellazzi R. *15<sup>th</sup> Conference of Artificial Intelligence in Medicine (AIME)*

#### **Conference Abstracts (peer reviewed)**

- 2020            1.    Identifying The Myeloid Subpopulation Responsible For Tissue Fibrosis Across Organ Systems Via Machine Learning Parameterization And Predictive Transcriptomics. Stepien DM, **Marini S**, Hwang C, Pagani CA, Sorkin M, Visser ND, Huber AK, Vasquez K, Li J, Hatsell S, Economides A. *Plastic and Reconstructive Surgery–Global Open*
2.    Post-Traumatic Limb Immobilization Alters Mesenchymal Stem Cell Fate. Patel N, Huber AK, Pagani C, **Marini S**, Hwang C, Loder S, Visser N, Greenstein JA, Vasquez K, Li J, Mishina Y. *Plastic and Reconstructive Surgery–Global Open*
3.    Nerve Growth Factor Derives From Pericytes And Smooth Muscle Cells After Extremity Trauma. Hwang C, **Marini S**, Huber AK, Lee S, Stepien DM, Kubiak CA, Meyers C, Sorkin M, Pagani CA, Rehse T, Visser ND. *Plastic and Reconstructive Surgery–Global Open*
4.    Learning antimicrobial resistance through secondary structure of protein variant. **Marini S**, Slizovskiy I, Noyes N, Boucher C, Prosperi M. *International Conference on Intelligent Systems for Molecular Biology (ISMB)*
5.    Dynamic identification of viral transmission epicenters. Rife Magalis B, **Marini S**, Salemi M, Prosperi M. *International Conference on Intelligent Systems for Molecular Biology (ISMB)*

- 2019
6. Estimating cancer stemness with single-cell RNA sequencing. **Marini S**, Brooks M, Wicha M, Li J. *2019 Keystone Symposia Conference (L1: Single Cell Biology)*
  7. Diverse mesenchymal stem cell populations contribute to VEGFA expression in post-traumatic heterotopic ossification. Pagani C, Hwang C, **Marini S**, Stepien DM, Sorkin M, Loder S, Visser ND, Vasquez K, Garada MA, James AW, Mishina Y, Agarwal S, Li J, Levi B. *American Society for Bone and Mineral Research Annual Meeting (ASMBR)*
- 2018
8. Gene-gene interaction module identification in single-cell RNA sequencing **Marini S**, Vella D, Nazzicari N, Bellazzi R. *7th International Conference on Complex Networks and Their Applications (Complex Networks)*
  9. Gene interaction discovery in myelodysplastic syndromes. **Marini S**, Vitali F, Demartini A, Bellazzi R. *European Conference of Human Genetics (ESHG)*
- 2016
10. Data Fusion for cleavage target prediction. **Marini S**, Demartini A, Vitali F, Bellazzi R, Akutsu T. *Bioinformatics Italian Society National Congress (BITS)*
  11. A continuous time, multivariate model to simulate Type 2 Diabetes patients trajectories. **Marini S**, Dagliati A, Bellazzi R. *American Medical Informatics Association joint Summits on Translational Science (AMIA)*
  12. Predicting Microvascular Complications from Type 2 Diabetes Retrospective Data Sacchi L, Colombo C, Dagliati D, **Marini S**, Cerra C, Chiovato L, Bellazzi R. *15<sup>th</sup> Annual Diabetes Technology Meetings (DTM)*
- 2014
13. A multivariate data-driven model to investigate the arising of complications in T2D patients. **Marini S**, Malavolti M, Dagliati A, Bellazzi R. *14<sup>th</sup> Annual Diabetes Technology Meeting (DTM)*
  14. PaPI: the Pseudo Amino acid variant Predictor. **Marini S**, Limongelli I, Bellazzi R. *Bioinformatics Italian Society National Congress (BITS)*
  15. A novel algorithm to predict the deleteriousness of genomic coding variants Limongelli I, **Marini S**, Bellazzi R. *NGS-ISCB 34(132)*
  16. Dynamic Bayesian Networks to simulate type 1 diabetes patients cohorts Barbarini N, Bellazzi R, Cobelli C, Di Camillo B, Manfrini F, Malovini A, **Marini S**, Sambo F, Trifoglio E, Economics, Modelling and Diabetes: Mount Hood Challenge
  17. PaPI: using pseudo amino acid composition to predict deleterious coding variants Limongelli I, **Marini S**, Bellazzi R. *Italian Bioengineering Group National Congress (GNB 2014)*

### **Book Chapters**

- 2017 1. Precision oncology: a data similarity challenge. Zambelli A, Demartini A, Pala D, Vitali F, **Marini S**, Bellazzi R. In: E-Health e Medicina Digitale, Quaglini S, Cesarelli M, Giacomini M, Pincioli F eds, *Patron*.

### **Preprints**

1. Regaining perspective on SARS-CoV-2 molecular tracing and its implications. Mavian, **Marini S**, Manes C, Capua I, Prosperi M, Salemi M. *medRxiv*

### **Awards and Fellowships**

- 02/2018 Elsevier Outstanding contribution in reviewing  
11/2015-11/2016 Japanese Society for the Promotion of Science Postdoctoral Fellowship  
06/2015 Elsevier Outstanding contribution in reviewing  
10/2011 Bioengineering Division Graduate Student Research Award, 1<sup>st</sup> ranked  
03/2010 HKUST Overseas Research Award for PhD Students

### **Invited Talks and Lectures (extramural)**

- 07/2020 Single-cell transcriptomics: General principles, databases and bioinformatic tools. Transversal Course on Big Data (postgraduate), University of Pavia
- 07/2020 Multi-sample, multi-condition analysis in scRNAseq data sets. ISMB 2020, BioinfoCore Workshop
- 06/2019 Enhancing data analysis by leveraging prior biomedical knowledge. Department of Epidemiology, University of Florida, Gainesville, FL, USA
- 06/2018 Data exploration of single-cell landscapes. Center for Health Technologies, Pavia, Italy
- 10/2017 Joint data integration for precision oncology. UFHCC Topics in Cancer seminar series, University of Florida, Gainesville, FL, USA
- 07/2017 miRNA Bioinformatics, sequence analysis and statistical processes. Training school "Omics technologies and bioinformatics application in ME/CFS research", University of Pavia, Pavia, Italy
- 01/2017 Investigating epileptogenesis with data fusion. University of Michigan, Ann Arbor, USA
- 09/2016 Mining heterogeneous data sources to enhance association studies. University of Arizona, Tucson, USA
- 06/2016 Leveraging on public databases for novel peptidase target discovery, University of Pavia, Pavia, Italy
- 05/2011 Motif search, sequence alignment and Support Vector Regression for Dscam protein self- and hetero-binding affinity prediction. Institute of Biophysics, the Chinese Academy of Science, Beijing, China

## **Funding**

### **Ongoing Research Support**

12/2018-present      University of Michigan, Mcubed Program (mini-cube).  
Title: Mapping diabetic foot ulcers at the single-cell level  
Role: PI

### **Completed Research Support**

NIH U01DA043098 (contact PI: Akil, MPI: Li)  
Title: Genetics of novelty seeking and propensity for drug abuse in outbred rats  
Role: Co-I

Kyoto University  
Japanese Society for the Promotion of Science funding  
Role: Postdoctoral fellow

## **Teaching and Supervising Experiences**

### **University of Florida, USA**

01/2020-present      Supervising 1 postdoc and 1 PhD student  
06/2020-present      Instructor of record: Computational Epidemiology (postgraduate)

### **University of Michigan, USA**

08/2017-12/2019      Supervised 1 postdoc, 2 postgraduates and 1 undergraduate students

### **Kyoto University, Japan**

06/2016-09/2016      Supervised 1 undergraduate student

### **University of Pavia, Italy**

12/2018      Lecturer: Introduction to Single cell RNA-seq data analysis (postgraduate)  
09/2013-09/2015      Instructor of record: Medical Informatics  
09/2013-09/2015      Instructor of record: Automatic Learning in Medicine  
01/2013-11/2015      Supervised 3 postgraduate and 2 undergraduate students  
12/2016-07/2017      Supervised 4 postgraduate and 3 undergraduate students

### **The Hong Kong University of Technology, China**

01/2010-06/2010      Teaching assistant: Introduction to Bioengineering

## **Service to Profession**

### **Journal Reviewer**

Bioinformatics, Molecules, Plos one, Journal of Biomedical Informatics, Computers in Biology and Medicine, Briefings in Bioinformatics, IEEE/ACM Transactions on Computational Biology and Bioinformatics

### **Conference Reviewer**

Artificial Intelligence in Medicine (AIME), AMIA joint Summits on Translational Science, IEEE International Conference on Healthcare Informatics (IHC)



### **Conference Program Committee Member**

IEEE International Symposium on Computer-Based Medical Systems (CBMS), IEEE ICTS4eHealth, ACM International Conference on Information and Knowledge Management (ACM-CIKM), ACM Conference on Bioinformatics, Computational Biology, and Health Informatics (ACM-BCB).

### **Non-Academic Work**

09/2013-06/2014 High school math teacher, EU program to fight against school dropout.  
Centro Servizi Formazione, Pavia, Italy

11/2007-06/2008 University tutor. Private one-to-one tutoring of undergraduate and graduate students. CESD, Pavia, Italy

### **Languages**

	(Reading)	(Speaking)
Italian	Native speaker	Native speaker
English	Fluent	Fluent
Spanish	Fluent	Fluent

### **Volunteering and community outreach**

#### **Translator**

06/2020 Revised the Italian translation of the N95decon documents. N95decon is a scientific consortium for data-driven study of N95 filtering facepiece respirator decontamination organized by volunteer scientists to face the COVID-19 crisis.

#### **Introducing machine learning in high school**

04/2017, 11/2015, 05/2014, 03/2013 Introduction to data science and artificial intelligence. G. Galilei high school, Voghera, Italy.

01/2013-03/2013 Introduction to data science and artificial intelligence. Settore Istruzione e Politiche Giovanili, Pavia. Italy.

#### **Software developer**

06/2014 VSO Poverty Alleviation, remote services. Development of a software to help managing dairy cooperatives. DCPUK, Bangladesh.

#### **Co-founder**

06/2007-12/2013 OMP, non-profit publishing house, the first copyleft (Creative Commons) publishing house in Italy.

#### **Editor in Chief**

08/2007-08/2008 Kronstadt, student-based local news magazine, Pavia, Italy. Monthly issued, city audience (2000 copies).

#### **Front desk volunteer**

01/2006-08/2008 City social services of Pavia, Italy. Helping immigrants to deal with local bureaucracy and CV writing.