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EDUCATION

- 2000 – 2004: **Ph.D. in Physics** at University of La Plata (Argentina). Thesis: *Propagation of High Energy Galactic Cosmic Rays*, passed with the maximum score (10).
- 1993 – 1999: Licenciado en Física (approx. equivalent to B.Sc. + M.Sc.) at University of La Plata (Argentina). Cumulative GPA 9.57 (out of 10 max.).

PROFESSIONAL SKILLS & EXPERTISE RELEVANT TO BIOMEDICAL INFORMATICS

- Ongoing collaborations with research labs from NIH, NIST, and School of Medicine (UMB).
- 2 yrs Technical Services Engineer with leading EHR vendor Epic Systems Corp.
- Sun Certified Programmer for Java 6 (2008); long programming experience with Fortran77, R, Perl, Python; familiar with Unix, Mac OS X, Windows, and many numerical applications.
- Extensive experience in computational and theoretical modeling: Monte Carlo method, partial differential equations, complex network theory, data mining, SVD/PCA/tSNE.
- Very strong problem solving skills, versatility, and ability to learn quickly.
- Excellent team working ability and strong communication and presentation skills developed in different research groups in the USA, Europe and South America.
- Highly productive and creative with **40+** peer-reviewed research articles (see list below).

RESEARCH INTERESTS

- Biomedical Informatics and Biocomputing applied to human immunology, cancer systems biology, single-cell biology, next-generation sequencing, high-multiplex proteomics.
- Statistical analysis and modeling, biomedical database integration, data mining, complex network science applied to systems biology.

CAREER HISTORY

- Since 9/2014: Staff Scientist at the Trans-NIH Center for Human Immunology, Autoimmunity and Inflammation, National Institutes of Health (Bethesda, MD).
- 2011- 2014: Research Associate at University of Maryland (College Park & Baltimore, MD).
- 2009 – 2011: EHR Technical Services Engineer at Epic Systems Corp (Verona, WI).
- 2008 – 2014: Research Scientist (Tenured Position) at CONICET (Argentina).
- 2006 – 2008: Postdoctoral Research Associate at the Center for Complex Network Research (Barabási Lab) at Notre Dame (South Bend, IN) and Northeastern University (Boston, MA)
- 2006: Visiting Scientist at University of New Mexico (Albuquerque, NM).
- 2004 - 2005: Postdoctoral Fellow at the ICTP (Trieste, Italy).
- 2004: Guest Scientist at the Theory Division of Fermilab (Chicago, IL).
- 2000 – 2003: Ph.D. Fellow of CONICET (Argentina).
- 1996 – 2003: Teaching Assistant at the Physics Dept, University of La Plata (Argentina).

PUBLICATIONS IN REFEREED JOURNALS (BIOMEDICAL INFORMATICS)

42) Dolatabadi S, Candia J, Akrap N, Vannas C, Tomic TT, Losert W, Landberg G, Åman P, Ståhlberg A (2017) *Cell cycle and cell size dependent gene expression reveals distinct subpopulations at single-cell level*. Frontiers in Genetics 8:1.
41) Lau WW, Sparks R, OMiCC Jamboree Working Group, Tsang JS (2016) *Meta-analysis of crowdsourced data compendia suggests pan-disease transcriptional signatures of autoimmunity [version 1; referees: 1 approved]*. F1000Research 5:2884.
40) Chen D, Sarkar S, Candia J, Florczyk SJ, Bodhak S, Driscoll MK, Simon Jr CG, Dunkers JP, Losert W (2016) *Machine learning based methodology to identify cell shape phenotypes associated with microenvironmental cues*. Biomaterials 104:104-118.
39) Candia J, Cherukuri S, Guo Y, Doshi KA, Banavar JR, Civin CI, Losert W (2015) *Uncovering low dimensional, miR-based signatures of acute myeloid and lymphoblastic leukemias with a machine-learning-driven network approach*. Convergent Science Physical Oncology 1:025002.
38) Goswami M, McGowan KS, Lu K, Jain N, Candia J, Hensel NF, Tang J, Calvo KR, Battiwalla M, Barrett AJ, Hourigan CS (2015) *A novel multi-gene array allows relapse risk stratification in acute myeloid leukemia patients undergoing stem cell transplantation*. Bone Marrow Transplantation 1-10.
37) Candia J, Banavar JR, Losert W (2014) *Understanding Health and Disease with Multidimensional Single-Cell Methods*. J Phys: Condens Matter 26:073102.
36) Candia J, Maunu R, Driscoll M, Biancotto A, Dagur P, McCoy Jr JP, Sen HN, Wei L, Maritan A, Cao K, Nussenblatt RB, Banavar JR, Losert W (2013) *From Cellular Characteristics to Disease Diagnosis: Uncovering Phenotypes with Supercells*. PLoS Computational Biology 9:e1003215.

OTHER PUBLICATIONS IN REFEREED JOURNALS

35) Mazzitello KI, Candia J, Albano EV (2015) *Far-from-equilibrium growth of magnetic thin films with Blume-Capel impurities*. Physical Review E 91:042118.
34) Baglietto G, Albano EV, Candia J (2014) *Complex network structure of flocks in the Vicsek Model with Vectorial Noise*. Int J Mod Phys C 25:1350095.
33) Baglietto G, Albano EV, Candia J (2013) *Complex network structure of flocks in the Standard Vicsek model*. J Stat Phys 153:270.
32) Baglietto G, Albano EV, Candia J (2013) *Gregarious vs Individualistic Behavior in Vicsek Swarms and the Onset of First-Order Phase Transitions*. Physica A 392:3240.
31) Loscar ES, Candia J (2013) *Stochastic Resonance and Dynamic First-Order Pseudo-Phase Transitions in the Irreversible Growth of Thin Films under Spatially Periodic Magnetic Fields*. Phys Rev E 88:042412.
30) Candia J, Albano EV (2012). *Nonequilibrium critical behavior of magnetic thin films grown in a temperature gradient*. J Stat Mech: Theor Exper P08006.
29) Baglietto G, Albano EV, Candia J (2012) *Criticality and the onset of ordering in the Standard Vicsek Model*. Interface Focus 2:708.
28) Mazzitello K, Candia J (2012) *Diffusion-based density-equalizing maps: an interdisciplinary approach to visualizing homicide rates and other georeferenced statistical data*. Braz J Phys 42: 365.
27) Candia J, Albano EV (2011) *Far-from-equilibrium growth of thin films in a temperature gradient*. Phys Rev E 84:050601 (R).
26) Candia J (2009) *Advertising and irreversible opinion spreading in complex social networks*. Int J Mod Phys C 20:799.
25) Candia J, Albano EV (2008) *The magnetic Eden model*. Int J Mod Phys C 19:1617.
24) Candia J, Mazzitello K (2008) *Mass media influence spreading in social networks with community structure*. J Stat Mech: Theor Exper P07007.

23) Parris PE, Candia J, Kenkre VM (2008) *Random walk access times on partially-disordered complex networks: an effective medium theory*. Phys Rev E 77:061113.
22) Candia J, M.C. González, P. Wang, T. Schoenharl, G. Madey, A.-L. Barabási (2008) *Uncovering individual and collective human dynamics from mobile phone records*. J Phys A 41:224015.
21) Candia J (2007) *Nonequilibrium opinion spreading on 2D small-world networks*. J Stat Mech: Theor Exper P09001.
20) Candia J, Parris PE, Kenkre VM (2007) *Transport properties of random walks on scale-free/regular-lattice hybrid networks*. J Stat Phys 129:323.
19) Mazzitello K, Candia J, Dossetti V (2007) *Effects of mass media and cultural drift in a model for social influence*. Int J Mod Phys C 18:1475.
18) Candia J (2007) *Irreversible opinion spreading on scale-free networks*. Phys Rev E 75:026110.
17) Candia J (2006) *Irreversible growth of binary mixtures on small-world networks*. Phys Rev E 74:031101.
16) Manías V, Candia J, Albano EV (2005) *Corner wetting in a far-from-equilibrium magnetic growth model*. Eur Phys J B 47:563.
15) Candia J (2005) *Detectable neutrino fluxes due to enhanced cosmic ray densities in the Galactic Centre region*. J Cosmol Astrop Phys 11:002.
14) Beacom JF, Candia J (2004) *Shower power: isolating the prompt atmospheric neutrino flux using electron neutrinos*. J Cosmol Astrop Phys 11:009.
13) Candia J, Roulet E (2004) *Diffusion and drift of cosmic rays in highly turbulent magnetic fields*. J Cosmol Astrop Phys 10:007.
12) Candia J, Roulet E (2003) *Rigidity dependent knee and cosmic ray induced high energy neutrino fluxes*. J Cosmol Astrop Phys 09:005.
11) Candia J, Mollerach S, Roulet E (2003) *Cosmic ray spectrum and anisotropies from the knee to the second knee*. J Cosmol Astrop Phys 05:003.
10) Candia J, Albano EV (2003) *Order-disorder criticality, wetting, and morphological phase transitions in the irreversible growth of far-from-equilibrium magnetic films*. J Magn Magn Mater 260:338.
9) Candia J, Roulet E, Epele LN (2002) *Turbulent diffusion and drift in galactic magnetic fields and the explanation of the knee in the cosmic ray spectrum*. J High Energy Phys 12:033.
8) Candia J, Mollerach S, Roulet E (2002) *Cosmic ray drift, the second knee and galactic anisotropies*. J High Energy Phys 12:032.
7) Candia J, Albano EV (2002) *Quasi-wetting and morphological phase transitions in confined far-from-equilibrium magnetic thin films*. J Chem Phys 117:6699.
6) Candia J, Albano EV (2002) *Interfacial phase transitions in a far-from-equilibrium magnetic growth model*. J Phys: Condens Matter 14:4927.
5) Candia J, Epele LN, Roulet E (2002) *Cosmic ray photodisintegration and the knee of the spectrum*. Astrop Phys 17:23.
4) Candia J, Albano EV (2001) I*rreversible growth of a binary mixture confined in a thin film geometry with competing walls*. Phys Rev Lett 88:016103.
3) Candia J, Albano EV (2001) *Monte Carlo simulation of the irreversible growth of magnetic thin films*. J Appl Phys 90:5395.
2) Candia J, Albano EV (2001) *Comparative study of an Eden model for the irreversible growth of spins and the equilibrium Ising model*. Phys Rev E 63:066127.
1) Candia J, Albano EV (2000) *Non-equilibrium wetting transition in a magnetic Eden model*. Eur Phys J B 16:531.

BOOK CHAPTERS

2) Candia J, Banavar J, Losert W (2015) *Uncovering Phenotypes with Supercells: Applications to Single-Cell Sequencing*. In: Wang X (Ed), *Single Cell Sequencing and Systems Immunology*, Translational Bioinformatics (Vol. 5), ISBN 978-94-017-9752-8, ISBN 978-94-017-9753-5 (eBook), Springer, Chapter 2.
1) Pawling A, Yan P, Candia J, Schoenharl T and Madey G (2010) *Anomaly detection in streaming sensor data*. In: Cuzzocrea A (Ed), *Intelligent Techniques for Warehousing and Mining Sensor Network Data*, DOI: 10.4018/978-1-60566-328-9 IGI Global – Hershey, PA.

INVITED AND CONTRIBUTED TALKS (2012 onwards)

- *Meta-Analysis of CHI's SOMAscan Data: Assessing Variability, Reproducibility, and Reusability*. 1st SOMAscan Users Workshop. Center for Human Immunology, NIH, 03/27/2017.
- Flow Cytometry Bioinformatics. Notable Labs, 01/11/2017.
- *Exploring Protein Biomarkers with the SOMAscan Assay: From Wet-Lab to Bioinformatics*. Icahn School of Medicine at Mt. Sinai, 8/24/2016.
- *SomaLogic SOMAscan proteomics assay* (co-presented with A. Biancotto) in the "Genomics and Immunology Science Brown Bag Series", Clinical Genomics Program, NIAID, NIH, 3/09/2016.
- *Machine learning algorithms for flow cytometry analysis of human disease*. Institute of Inflammation and Ageing Seminar, University of Birmingham (UK), 11/17/2015.
- *Unbiased Learning from Big Data: Multidimensional Approaches for Data-Driven Biomedical Research*. Division of Biostatistics and Bioinformatics, University of Maryland (Baltimore), 06/24/14.
- *Unbiased Learning from Big Data: Multidimensional Approaches for Data-Driven Biomedical Research*. "Applied Dynamics Seminar" series, University of Maryland (College Park), 04/24/14.
- *Uncovering Differential Multi-microRNA Signatures of Acute Myeloid and Lymphoblastic Leukemias with a Machine-Learning-Based Network Approach*. "2014 Joint Summits on Translational Science", American Medical Informatics Association (AMIA), 04/07-11/14, San Francisco.
- *A novel multi-gene expression array allows relapse risk stratification in acute myeloid leukemia patients undergoing allogeneic hematopoietic stem cell transplantation*. Invited talk, Leukemia Biology Section, Genetics Branch, NCI/NIH (Bethesda), 03/21/14.
- *Uncovering Multidimensional miR and Gene Expression Signatures of Acute Leukemias with Machine-Learning-Based Approaches*. T32 Cancer Biology Research in Progress Seminar, UMB School of Medicine, Baltimore, 01/28/2014.
- *Unbiased Learning from Big Data: Multidimensional Approaches for Data-Driven Biomedical Research*. Invited Talk at the Innovation Center for Biomedical Informatics, Georgetown University, 13/12/13.
- *From molecules to cells to organisms: understanding health and disease with multidimensional single-cell methods*. Invited Talk at the American Physical Society March Meeting, Baltimore, 03/21/2013.
- *Unbiased Learning from Big Data: Applications to Cancer Biology*. T32 Cancer Biology Research in Progress Seminar, UMB School of Medicine, Baltimore, 02/13/2013.
- *Solving the Puzzle of Cell Heterogeneity vs Disease Phenotype with Supercells*. Invited talk at the UMD-NCI Cancer Technology Workshop, UMD, College Park, 01/18/2013.
- *Cell Averaging and Classification of Multidimensional Single-Cell Data: Solving the Puzzle of Heterogeneity vs Disease Phenotype with Supercells*. Pacific Symposium on Biocomputing 2013, Kona (HI), 01/03/2013.
- *From Molecules to Cells to Organisms: Understanding Health and Disease with Multidimensional Single-Cell Methods*. 3rd Annual Cancer Biology Retreat, University of Maryland, Baltimore, 05/22/2012.
- *Uncovering Cell Subpopulations in Health and Disease: a Network Analysis of Multidimensional Single-Cell Data*. FOCIS-CHI Lecture Series "Bedside to Bench and Back", NIH, Bethesda, 03/21/2012.

CONFERENCES, MEETINGS AND SYMPOSIA ATTENDED (2012 onwards)

• 1st SOMAscan Users Workshop. Center for Human Immunology, NIH, 03/27/2017.
• 4th International Workshop on Systems approaches in immunology and infectious diseases, Santa Fe, NM, 9/27-28/2016.
• 30th NIH Research Festival, 9/14-16/2016.
• 2016 Symposium on Influenza Immunology: Data, Systems and Models, Yale University, New Haven, CT, 6/24/2016.
• Keystone Symposium on "Systems Immunology: From molecular networks to human biology", Big Sky, MT, 1/10-14/2016.
• 29th NIH Research Festival, 9/16-18/2015.
• 13th NHLBI's Division of Intramural Research Festival, 6/12/2015.
• 2015 Symposium on Immune Modeling in the Big Data Era, Center for Biodefense Immune Modeling, University of Rochester, 6/4-5/2015.
• 2014 Joint Summits on Translational Science, AMIA, San Francisco, 04/07-11/2014.
• 5th Annual Physical Sciences in Oncology Public Meeting, NIH, Bethesda, 04/02/2014.
• 2014 Cancer Technology & Epidemiology Symposium, UMD, College Park, 01/23/2014.
• 6th Annual Maryland Stem Cell Research Symposium, Johns Hopkins, 12/03/2013.
• Bioscience Day: From DNA to Cellular Function, UMD, College Park, 11/19/2013.
• 3rd Annual Stem Cell Retreat, University of Maryland School of Medicine, 10/18/2013.
• 2nd Annual Biomedical Informatics Symposium, Georgetown University, 10/11/2013.
• ACM Conference on Bioinformatics, Computational Biology and Biomedical Informatics, Bethesda, 09/22-25/2013.
• Annual Single Cell Analysis Investigators Meeting, Bethesda, 04/15-16/2013.
• American Physical Society's 2013 March Meeting, Baltimore, 03/18-22/2013.
• UMD-NCI Cancer Technology Workshop, UMD, College Park, 01/18/2013.
• Pacific Symposium on Biocomputing 2013, Kona (HI), 01/03-07/2013.
• New Frontiers in Physical Sciences and Oncology, N.I.H., Bethesda, 12/10/2012.
• 3rd Annual Cancer Biology Retreat, University of Maryland, Baltimore, 05/22/2012.
• The NIH Common Fund Single Cell Analysis Workshop, Bethesda, 04/17-18/2012.

COURSES ATTENDED (2012 onwards)

• Genomic Data Science Specialization (online) by Johns Hopkins University consisting of 7 online courses offered through www.coursera.org, passed 7/28-12/12/2016.
• Advanced Course in Basic & Clinical Immunology, Federation of Clinical Immunology Societies (FOCIS), Scottsdale, AZ, 2/03-06/2016.
• Genomics Workshop, Institute for Genome Sciences, University of Maryland (Baltimore), 06/03-07/2013.
• Advanced Cancer Biology (GPLS 790), Graduate Program in Life Sciences, University of Maryland (Baltimore), Spring Semester (01/23-05/17/2013).
• Scientific Leadership & Professional Development Symposium for Basic Science and Translational Researchers, University of Maryland (Baltimore), 04/24/2013.
• Research Ethics (CIPP 907), University of Maryland (Baltimore), 2012/2013.
• Responsible Conduct of Research training, University of Maryland (College Park), 12/13/2012.
• Conflicts of Interest (CIPP 909), University of Maryland (Baltimore), 2012.

OTHER SKILLS, ACHIEVEMENTS & INTERESTS

• Fluent in Spanish (mother tongue), English and Italian.
• Referee for PLoS One, J. Translational Medicine, Cytometry Part A, Journal of the Royal Society Interface and Nature Communications. Reviewer of candidate presentation submissions for AMIA Translational Bioinformatics and AMIA Joint Summits on Translational Science.
• Formerly, Referee for Phys. Rev. Lett., Phys. Rev. E , Int. J. Mod. Phys. B, Int. J. Mod. Phys. C, Physica A, Phys. Lett. A,
• Award "Dr. J.V. González" for highest GPA from the University of La Plata (2000).