
BIOGRAPHICAL SKETCH

NAME Iglesias, Pablo Alberto	POSITION TITLE Edward J. Schaefer Professor of Electrical Eng., Professor of Cell Biology, Applied Mathematics & Statistics, and Biomedical Engineering		
eRA COMMONS USER NAME (credential, e.g., agency login) piglesi1			
EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)			
INSTITUTION AND LOCATION	DEGREE (if applicable)	MM/YY	FIELD OF STUDY
University of Toronto	B.A.Sc.	1987	Engineering Science
Cambridge University	Ph.D.	1991	Control Engineering

A. Personal Statement

I was attracted to the field of control engineering for two reasons. First, I captivated by the way that systems could be designed to regulate other systems, even those that are inherently unstable. Second, I found that the field required a high level of mathematical rigor and sophistication. In one step I found that I could put my interest in mathematics into use. I first got interested in biological signaling about twelve years ago when, on sabbatical, I started attending some lectures in biology. At the time, the topic of robustness (the topic of my doctoral dissertation) was being “discovered” by biologists. Taking advantage of the strengths in biomedical research at Johns Hopkins, and also of its environment which encourages interdisciplinary research, I have been able to establish a robust research effort in computational systems biology. I now actively collaborate with a number of cell biologists in a wide range of computational and modeling efforts including eukaryotic chemotaxis, pheromone sensing in yeast, mitotic spindle formation and cytokinesis.

B. Positions and Honors

1990-1991 Research Associate, Engineering Department, Cambridge University
1991-1997 Assistant Professor, Electrical and Computer Engineering, Johns Hopkins University
1997-2001 Associate Professor, Electrical and Computer Engineering, Johns Hopkins University
1998 Visiting Associate Professor, Theoretical Mathematics, Weizmann Institute Science, Rehovot, Israel
1998-1999 Visiting Associate, Control and Dynamical Systems, Caltech
2001- Professor, Electrical and Computer Engineering, Johns Hopkins University
2001- Professor, Applied Math & Statistics, Johns Hopkins University (secondary appointment)
2002- Professor, Biomedical Eng, Johns Hopkins School of Medicine (joint appointment)
2013- Professor, Cell Biology, Johns Hopkins School of Medicine (joint appointment)
2005-2006 Sabbatical leave at Department of Cell Biology, Johns Hopkins School of Medicine
2012-2013 Sabbatical leave at Max Planck Institute for the Physics of Complex Systems, Dresden
2012- Edward J. Schaefer Professor of Electrical Engineering, The Johns Hopkins University

Other Experience and Professional Memberships

Institute of Electrical and Electronic Engineers, Senior Member
Member: Biophysical Soc., Soc. for Mathematical Biology, American Soc. for Cell Biology
Editorial Board, *J Franklin Institute*; *IET Systems Biology*, *BMC Systems Biology*, *BMC Research Notes* (2008-), *Mathematics of Control, Signals and Systems*
Associate Editor, *IEEE Trans. Automatic Control*, *IEEE Trans. Network Control Systems*, *IEEE Control Systems Magazine*
Co-chair for 1995 and 2001 Conf. on Information Sci. and Systems, Baltimore, MD
Co-chair for 2004 Workshop on Genetic Signal Processing and Statistics, Baltimore, MD
BRT-A Study Section (2005-2009),

BRT-B Study Section (2009-11; Chair during both these years)

Honors and Awards

1987-1991 NSERC (Canada) 1967 Science and Engineering Scholarship
1987-1990 Commonwealth Trust Fellowship (Cambridge University)
1990 Int Fed Automatic Control, World Congress, Tallinn USSR. Best Young Author Prize finalist
1992 Society for Imaging and Technology. Charles E. Ives Best Paper award (*J Imaging Tech*)
1997 George E. Owen Teaching Award, Johns Hopkins University
2003 Plenary speaker, *European Control Conference*
2006 Distinguished lecturer – *IEEE Control Systems Society*
2006 Named Science Spectrum Trailblazer by *Science Spectrum Magazine*

C. Selected Peer-reviewed Publications

- Levchenko A and Iglesias PA. Models of eukaryotic gradient sensing: application to chemotaxis of amoebae and neutrophils. *Biophys J*. 2002 Jan;82(1 Pt 1):50-63. (PMID: 11751295)
- Janetopoulos C, Ma L, Devreotes PN, Iglesias PA. Chemoattractant-induced phosphatidylinositol 3,4,5-trisphosphate accumulation is spatially amplified and adapts, independent of the actin cytoskeleton. *Proc Natl Acad Sci U S A*. 2004 Jun 15;101(24):8951-6. (PMID:15184679)
- Prill RJ, Iglesias PA, Levchenko A. Dynamic properties of network motifs contribute to biological network organization. *PLoS Biol*. 2005 Nov;3(11):e343. Epub 2005 Oct 4. (PMID:16187794)
- Vong, Q.P., K. Cao, H.Y. Li, Iglesias PA and Y. Zheng. Chromosome alignment and segregation regulated by ubiquitination of survivin. *Science*, 310:1499-1504, 2005. (PMID: 16322459)
- Effler JC, Kee YS, Berk JM, Tran MN, Iglesias PA, Robinson DN. Mitosis-specific mechanosensing and contractile-protein redistribution control cell shape. *Current Biology*. 16:1962-7, 2006. PMC2474462.
- Paliwal, S., Iglesias PA, J.K. Campbell, Z. Hilioti, MAPK-mediated bimodal gene expression and adaptive gradient sensing in yeast. *Nature*, 446:46-51, 2007. PMID: 17310144.
- Andrews BW, Iglesias PA. An information-theoretic characterization of the optimal gradient sensing response of cells. *PLoS Comput Biol*. 2007 Aug;3(8):e153. PMC1937015
- Reichl EM, Ren Y, Morphew MK, Delannoy M, Effler JC, Girard KD, Divi S, Iglesias PA, Kuo SC, Robinson DN. Interactions between myosin and actin crosslinkers control cytokinesis contractility dynamics and mechanics. *Current Biology*. 18:471-80, 2008. PMC2361134.
- Yang L, Effler JC, Kutscher BL, S.E. Sullivan, D.N. Robinson and Iglesias PA. Modeling cellular deformations using the level set formalism. *BMC Systems Biology*, 2:68, Jul 24, 2008. PMC2518819.
- Ren, Y, J.C. Effler, M. Norstrom, T. Luo, R.A. Firtel, Iglesias PA, R.S. Rock, and D.N. Robinson. Mechanosensing through cooperative interactions between myosin II and the actin crosslinker cortexillin I. *Current Biology*. 19:1421-1428, 2009. PMC2763054.
- Xiong Y, Huang CH, Iglesias PA, Devreotes PN. Cells navigate with a local-excitation, global-inhibition-biased excitable network. *Proc Natl Acad Sci U S A*. 107:17079-86, 2010. PMC2951443.
- Poirier CC, Zheng Y, Iglesias PA. Mitotic membrane helps to focus and stabilize the mitotic spindle. *Biophys J* 99:3182-90, 2010. PMC2980710.
- Zhou Q, Kee YS, Poirier CC, Jelinek C, Osborne J, Divi S, Surcel A, Will ME, Eggert US, Müller-Taubenberger A, Iglesias PA, Cotter RJ, Robinson DN. 14-3-3 coordinates microtubules, Rac, and myosin II to control cell mechanics and cytokinesis. *Current Biology*. 2010, 20:1881-9. PMC2975807

- Luo T, Mohan K, Srivastava V, Ren Y, Iglesias PA, Robinson DN. Understanding the cooperative interactions between myosin II and actin crosslinkers mediated by actin filaments during mechanosensation. *Biophys. J.* 2012; 102(2): 238-247. PMC3260782
- Poirier CC, Ng WP, Robinson DN, Iglesias PA. Deconvolution of the cellular force-generating subsystems that govern cytokinesis furrow ingression. *PLoS Comp. Biol.* 2012; 8(4): e1002467. PMC3343096
- Porter JR, Lee CY, Espenshade PJ, Iglesias PA. Regulation of SREBP during hypoxia requires Ofd1-mediated control of both DNA binding and degradation. *Mol Biol Cell.* 2012 Sep;23(18):3764-74. PMC3442422
- Shi C, Huang CH, Devreotes PN, Iglesias PA. Interaction of motility, directional sensing, and polarity modules recreates the behaviors of chemotaxing cells. *PLoS Comput Biol.* 2013; 9(7):e1003122. PMC3701696
- Huang CH, Tang M, Shi C, Iglesias PA, Devreotes. An excitable signal integrator couples to an idling cytoskeletal oscillator to drive cell migration. *Nature Cell Biol.* 2013. 15:1307-16. PMC3838899
- Luo T, Mohan K, Ren Y, Iglesias PA, Robinson DN. Molecular mechanisms of cellular mechanosensing. *Nature Materials*, 2013. 12: 1064-1071. PMC3838893