BII – Computational Biology & Omics Lab

*** (Selected Publications)*

1.	**Helmy M, Smith D, Selvarajoo K.** Systems biology approaches integrated with artificial intelligence for optimized metabolic engineering. Metab Eng Commun., 11: e00149 (2020).
2.	**Bui TT, Selvarajoo K.** Attractor Concepts to Evaluate the Transcriptome-wide Dynamics Guiding Anaerobic to Aerobic State Transition in Escherichia coli. Sci Rep., 10:5878 (2020).
3.	**Rheinbay E, Nielsen MM, Abascal F, Wala JA, Shapira O, Tiao G, Hornshøj H, Hess JM, Juul RI, Lin Z, Feuerbach L, Sabarinathan R, Madsen T, Kim J, Mularoni L, Shuai S, Lanzós A, Herrmann C, Maruvka YE, Shen C, Amin SB, Bandopadhayay P, Bertl J, Boroevich KA, Busanovich J, Carlevaro-Fita J, Chakravarty D, Chan CWY, Craft D, Dhingra P, Diamanti K, Fonseca NA, Gonzalez-Perez A, Guo Q, Hamilton MP, Haradhvala NJ, Hong C, Isaev K, Johnson TA, Juul M, Kahles A, Kahraman A, Kim Y, Komorowski J, Kumar K, Kumar S, Lee D, Lehmann KV, Li Y, Liu EM, Lochovsky L, Park K, Pich O, Roberts ND, Saksena G, Schumacher SE, Sidiropoulos N, Sieverling L, Sinnott-Armstrong N, Stewart C, Tamborero D, Tubio JMC, Umer HM, Uusküla-Reimand L, Wadelius C, Wadi L, Yao X, Zhang CZ, Zhang J, Haber JE, Hobolth A, Imielinski M, Kellis M, Lawrence MS, von Mering C, Nakagawa H, Raphael BJ, Rubin MA, Sander C, Stein LD, Stuart JM, Tsunoda T, Wheeler DA, Johnson R, Reimand J, Gerstein M, Khurana E, Campbell PJ, López-Bigas N; PCAWG Drivers and Functional Interpretation Working Group; PCAWG Structural Variation Working Group, Weischenfeldt J, Beroukhim R, Martincorena I, Pedersen JS, Getz G; PCAWG Consortium.** Analyses of non-coding somatic drivers in 2,658 cancer whole genomes. Nature 578.7793 (2020): 102-111.
4.	**Deveaux W, Hayashi K, Selvarajoo K.** Defining Rules for Cancer Cell Proliferation in TRAIL Stimulation. NPJ Syst Biol& Appl., 5:5 (2019).
5.	**Selvarajoo K.** Complexity of Biochemical and Genetic Responses Reduced Using Simple Theoretical Models. *Methods Mol Biol*., 1702:171-201 (2018).
6.	**Piras V & Selvarajoo K.** The Reduction of Gene Expression Variability from Single Cells to Populations follows Simple Statistical Laws. Genomics, 105(3):137-144 (2015).
7.	**Piras V, Tomita M, Selvarajoo K.** Transcriptome-wide Variability in Single Embryonic Development Cells. Sci. Rep., 4:7137 (2014).
8.	**Selvarajoo K, Tomita M .** Physical Laws Shape Biology. Science 339:646 (2013).
9.	**Selvarajoo K.** Immuno Systems Biology: A Macroscopic Approach for Immune Cell Signaling. Springer New York, ISBN: 978-1461474593 (2013).
10.	**Selvarajoo K.** Discovering Differential Activation Machinery of the Toll-Like Receptor (TLR) 4 Signaling Pathways in MyD88 Knockouts. FEBS Lett., 580:1457-1464 (2006).

BII – Computational Biology & Omics Lab Full Publication List

*** (Sorted according to publication type)*

Books

1.	**Selvarajoo K.** Immuno Systems Biology: A Macroscopic Approach for Immune Cell Signaling. Springer New York, ISBN: 978-1461474593 (2013).
2.	**Tomita M, Tsuchiya M, Selvarajoo K (editors)** . Advances in Systems Immunology and Cancer. Frontiers Research Topic Ebook, ISBN: 978-2-88919- 313-4 (2014).

Journals (* corresponding author)

1.	**Selvarajoo K*.** Searching for unifying laws of general adaptation syndrome: Comment on "Dynamic and thermodynamic models of adaptation" by Gorban et al. Phys Life Rev., ;37:97-99 (2021).
2.	**Helmy M, Smith D, Selvarajoo K*.** Systems biology approaches integrated with artificial intelligence for optimized metabolic engineering. Metab Eng Commun., 11: e00149 (2020).
3.	**Bui TT, Lee D, Selvarajoo K*.** ScatLay: utilizing transcriptome-wide noise for identifying and visualizing differentially expressed genes. Sci Rep., 10:17483 (2020).
4.	**Bui TT, Selvarajoo K*.** Attractor Concepts to Evaluate the Transcriptome-wide Dynamics Guiding Anaerobic to Aerobic State Transition in Escherichia coli. Sci Rep., 10:5878 (2020).
5.	**Deveaux W, Selvarajoo K*.** Searching for Simple Rules in Pseudomonas aeruginosa Biofilm Formation. BMC Res Notes, 12:763 (2019).
6.	**Selvarajoo K*.** Large-scale-free Network organisation is Likely Key for Biofilm Phase Transition. Engineering Biology, 3:67-71 (2019).
7.	**Deveaux W, Hayashi K, Selvarajoo K*.** Defining Rules for Cancer Cell Proliferation in TRAIL Stimulation. NPJ Syst Biol& Appl., 5:5 (2019).
8.	**Zou Y, Bui TT & Selvarajoo K*.** ABiotrans: A Biostatistical Tool for Transcriptomics Analysis. Front Genet., 10:499 (2019).
9.	**Piras V*, Chiow A, Selvarajoo K*.** Long Range Order and Short Range Disorder in Saccharomyces cerevisiae Biofilm. Engineering Biology, 3:12-19 (2019).
10.	**Selvarajoo K* .** Variability that causes Collective Behaviour. Organisms, 3:15 (2019).
11.	**Bui TT, Giuliani A, Selvarajoo K*.** Statistical Distribution as a Way for Lower Gene Expressions Threshold Cutoff. Organisms, 2:55-58 (2018).
12.	**Selvarajoo K*.** Order Parameter in Bacterial Biofilm Adaptive Response. Front. Microbiol., 9:1721 (2018).
13.	**Selvarajoo K*.** Complexity of Biochemical and Genetic Responses Reduced Using Simple Theoretical Models. Methods Mol Biol., 1702:171-201 (2018).
14.	**Selvarajoo K* .** A Systems Biology Approach to Overcome TRAIL Resistance in Cancer Treatment. Prog Biophys Mol Biol., 128:142-154 (2017).
15.	**Selvarajoo K*.** Can the Second Law of Thermodynamics Hold in Cell Cultures? Front. Genet., 6:262 (2015).
16.	**Simeoni O, Piras V, Tomita M, Selvarajoo K*.** Tracking Global Gene Expression Response in T Cell Differentiation. Gene, 569(2):259-266 (2015).
17.	**Piras V, Selvarajoo K*.** The Reduction of Gene Expression Variability from Single Cells to Populations follows Simple Statistical Laws. Genomics, 105(3):137-144 (2015).
18.	**Selvarajoo K*.** Measuring Merit: Take the Risk. Science, 347(6218):139-40 (2015).
19.	**Hayashi K, Tabata S, Piras V, Tomita M & Selvarajoo K*.** Systems Biology Strategy to Sensitize TRAIL-Resistant Cancers. Front. Immunol., 5:659 (2015).

20.	**Selvarajoo K*.** Conceptualising Cell Signaling and Transcriptome-wide Response for Targeted Experimentations. KEIO SFC J., 15(1):76-106 (2015).
21.	**Piras V, Tomita M, Selvarajoo K*.** Transcriptome-wide Variability in Single Embryonic Development Cells. Sci. Rep., 4:7137 (2014).
22.	**Selvarajoo K*.** Parameter-less Approaches for Interpreting Dynamic Cellular Response. J. Biol. Eng., 8:23 (2014).
23.	**Selvarajoo K*.** Advances in Systems Immunology and Cancer. Front. Physiol., 5:249 (2014).
24.	**Piras V, Selvarajoo K*.** Beyond MyD88 and TRIF in Toll-like Receptor Signaling. Front. Immunol., 5:70 (2014).
25.	**Selvarajoo K*.** Complex Bio-Dynamics and Networks: A Meeting Report. Adv. Sys. Biol., 3:1-2 (2014).
26.	**Selvarajoo K* .** Order among Organisms. International Innovation, 143:58-60 (2014).
27.	**Selvarajoo K*, Tomita M.** Physical Laws Shape Biology. Science 339:646 (2013).
28.	**Hayashi K, Piras V, Tabata S, Tomita M & Selvarajoo K*.** A Systems Biology Approach to Suppress TNF-induced Proinflammatory Gene Expressions. Cell Commun. Signal., 11:84 (2013).
29.	**Selvarajoo K*.** Non-Genetic Adaptive Dynamics for Cellular Robustness. Front. Genet., 4:287 (2013).
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31.	**Selvarajoo K*.** Interpreting the Dynamics and Patterns of Living Systems. Bioscience, 63:721-22 (2013).
32.	**Selvarajoo K*, Robert M.** Open Access and Individual Merits in Scientific Publishing. Adv. Sys. Biol., 2:4-5 (2013).
33.	**Piras V, Tomita M, & Selvarajoo K*.** Is Central Dogma a Global Property of Cellular Information Flow? Front. Physiol., 3:439 (2012).
34.	**Selvarajoo K*.** Understanding Multimodal Biological Decisions from Single Cell and Population Dynamics. WIREs Syst. Biol. Med., 4:385-399 (2012).
35.	**Selvarajoo K & Giuliani A*.** Finding Self-organization from the Dynamic Gene Expressions of Innate Immune Responses. Front. Physiol., 3:192 (2012).
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37.	**Selvarajoo K*.** Advances in Systems Biology. Adv. Sys. Biol., 1:4 (2012).
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39.	**Selvarajoo K*.** Macroscopic Law of Conservation Revealed in the Population Dynamics of Toll-like Receptor Signaling. Cell Commun. Signal., 9:9 (2011).
40.	**Tsuchiya M*, Piras V, Giuliani A, Tomita M & Selvarajoo K*.** Collective Dynamics of Specific Gene Ensembles Crucial for Neutrophil Differentiation: the Existence of Genome Vehicles Revealed. PLOS One, 5:e12116 (2010).
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43.	**Helmy M, Gohda J, Inoue J, Tomita M, Tsuchiya M*, Selvarajoo K*.** Predicting Novel Features of Toll-Like Receptor 3 Signaling in Macrophages. PLOS One, 4:e4661 (2009).
44.	**Tsuchiya M, Selvarajoo K, Piras V, Tomita M & Giuliani A*.** Local and Global Responses in Complex Gene Regulation Networks. Physica A, 388:1738-1746 (2009).
45.	**Selvarajoo K*, Takada Y, Godha J, Helmy M, Akira S, Tomita M, Tsuchiya M, Inoue J & Matsuo K*.** Signaling Flux Redistribution at Toll-like Receptor Pathway Junctions. PLOS One, 3:e3430 (2008).
46.	**Tsuchiya M, Wong ST, Yeo ZX, Colosimo A, Palumbo MC, Farina L, Crescenzi M, Mazzola A, Negri R, Bianchi MM, Selvarajoo K, Tomita M & Giuliani A*.** Gene Expression Waves: Cell Cycle Independent Collective Dynamics in Cultured Cells. FEBS J., 274:2878-2886 (2007).

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51.	**Selvarajoo K*.** Discovering Differential Activation Machinery of the Toll-Like Receptor (TLR) 4 Signaling Pathways in MyD88 Knockouts. FEBS Lett., 580:1457-1464 (2006).

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52.	**Selvarajoo K*.** Systems Biology Approaches for Understanding Biofilm Response. In Quorum Sensing - Microbial Rules of Life, Dhiman S (editor) ACS Publications, Washington (2020).
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55.	**Selvarajoo K*.** Decoding the Signaling Mechanism of Toll-like receptor 4 Pathways in Wildtype and Knockouts. In E-Cell System: Basic Concepts and Applications (guest edited by Ghosh S), Arjunan S, Dhar P & Tomita M (editors) Springer, New York, pp.157-167 (2013).
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57.	**Selvarajoo K*, Arjunan S, Tomita M.** In silico Models for Metabolic 'Systems' Engineering. In Handbook for Metabolic Pathway Engineering: Tools and Applications, Smolke CD, Palsson B & Lee SY (editors) CRC Press, San Diego, pp.17:1-23 (2009).
58.	**Selvarajoo K*, Tsuchiya M*.** Systematic Determination of Biological Network Topology: Non-Integral Connectivity Method (NICM). In Introduction to System Biology, Choi S (editor) The Humana Press Inc., New Jersey, pp.449-471 (2007).

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59.	**Deveaux W, Selvarajoo K*.** Searching for Simple Rules in Pseudomonas aeruginosa Biofilm Formation. Proc. of Non-linear Theory and its Application (NOLTA) (invited), KL, Malaysia (2019).
60.	**Piras V, Hayashi K, Tomita M, Selvarajoo K*.** Investigation of Stochasticity in TRAIL Signaling Cancer Model. Proc. IEEE/ICME Com. Med. Eng. pp.609-614, Japan (2012).
61.	**Hayashi K, Piras V, Tomita M, Tsuchiya, Selvarajoo K*.** Emergence of Macroscopic Simplicity from the Tumor Necrosis Factor-Alpha Signaling Dynamics. Proc. of Non-linear Theory and its Application (NOLTA) pp.68-71, Kobe, Japan (2011).

62.	**Tsuchiya M*, Piras V, Tomita M, Selvarajoo K.** Collective Fluctuations are Crucial for Global Biological Response. Proc. of Non-linear Theory and its Application (NOLTA) pp.72-75, Kobe, Japan (2011).
63.	**Selvarajoo K*, Helmy M, Tomita M, Tsuchiya M.** Inferring the Mechanistic Basis for the Dynamic Response of the MyD88-dependent and –independent Pathways. Proc. of 10th International Conference on Molecular Systems Biology, pp.110-113, Manila, Philippines (2008).
64.	**Helmy M, Tomita M, Tsuchiya M, Selvarajoo K*.** In silico Analysis of Toll-Like Receptor 3 pathways. Proc. of 1st International Symposium on Computational Biology & Bioinformatics, pp 14-18, Trivandrum, India (2008).