Understanding the human innate immune system

*In-silico studies*

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What do you see when you turn out the light?
I can’t tell you, but I know it’s mine.

Oh, I get by with a little help from my friends

~ The Beatles
Acknowledgments

I moved to Saint Petersburg, Russia in the heart of winter back in December 2015.

I remember having a full-course dinner at a café called "The Idiot" to celebrate my birthday, an empty seat in front of me. I remember looking out the window, mesmerized as I see, for the first time, snow, which I fondly call a slow-motion version of rain, lazily piling on the river embankment. I have not gotten used to the lack of sunshine yet, still confused at how swiftly the city gets devoured by darkness.

I’ve come a long way from home to pursue a PhD that, looking back from now, I was not even prepared for.

This is the corner in my thesis where I can fully express my deepest gratitude to the people who have shaped me as a researcher. I've come a long way, and I still have a long way to go. Indeed, it’s not always about the destination.

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Journal Publications


All authors have contributed substantially to the conception and design of the work. All authors have drafted and revised the work for intellectual content. All authors have equally provided the approval for plausible publication of the content. All authors have agreed to be accountable for all aspects of the work, which includes ensuring the accuracy and integrity of all parts of the work.

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A.P. conceived the idea. All authors contributed to developing the model. A.P. designed the coding work and performed the computational experiments. R.Q. and V.V.K. supervised the findings of this work. All authors have contributed to the writing of the article. All authors have read and approved the final version of the manuscript.


A.P. developed the model. A.P. designed the coding work and performed the computational experiments. C.P. supervised the findings of this work. All authors have contributed to the writing of the article.
Conference Proceedings


Prepared Manuscript

Presbitero, A., Quax, R., Mancini, E., Brands, R., Krzhizhanovskaya, V. V. & Sloot, P. M. A. Detecting Critical Transitions in the Human Innate Immune System Post-Cardiac Surgery

A.P. designed the coding work and performed the computational experiments. R.B. provided consultation for the biology behind the model assumptions. E.M. provided feedback on the manuscript. P.M.A.S. and V.V.K. supervised the findings of this work. All authors have contributed to the writing of the article.
18. Zbrozek, A. & Magee, G. Cost of Bleeding in Trauma and Complex Cardiac Surgery.
References


References


89. Presbitero, A., Mancini, E., Castiglione, F., Krzhizhanovskaya, V. V. & Quax, R. Evolutionary Game Theory Can Explain the Choice Between Apoptotic and Necrotic Pathways in Neutrophils. in *2018 IEEE International Conference on Bioinformatics and Biomedicine (BIBM)* 1401–1405 (IEEE, 2018). doi:10.1109/BIBM.2018.8621127
References

doi:10.1073/pnas.36.1.48

97. Francis, K. & Palsson, B. O. Effective intercellular communication distances are
determined by the relative time constants for cyto/chemokine secretion and diffusion. 
mechanisms of neutrophil recruitment across endothelium. Trends in Immunology 
(2011). doi:10.1016/j.it.2011.06.009
100. Sadik, C. D., Kim, N. D. & Luster, A. D. Neutrophils cascading their way to inflammation. 
102. Presbitero, A. & Monterola, C. Challenging the evolution of social cooperation in a 
doi:0195673441
(2010).
107. Challet, D. & Zhang, Y.-C. Emergence of cooperation and organization in an 
109. Nowak, M. A., Sasaki, A., Taylor, C. & Fudenberg, D. Emergence of cooperation and 
110. Xie, F., Cui, W. & Lin, J. Prisoner’s dilemma game on adaptive networks under limited 
112. Szolnoki, A. & Perc, M. Reward and cooperation in the spatial public goods game. EPL 
(Europhysics Lett. 92, 38003 (2010).
14, 93016 (2012).
114. Hauert, C., Traulsen, A., Brandt, H., Nowak, M. A. & Sigmund, K. Via Freedom to 
Coercion: The Emergence of Costly Punishment. Science (80 -. ). 316, 1905–1907 
(2007).
115. Ohtsuki, H., Iwasa, Y. & Nowak, M. A. Indirect reciprocity provides only a narrow margin 
116. Helbing, D., Szolnoki, A., Perc, M. & Szabó, G. Evolutionary establishment of moral and 
(2010).
118. Szolnoki, A., Szabó, G. & Perc, M. Phase diagrams for the spatial public goods game


References


181. Hashemzadeh, K., Dehdilani, M. & Dehdilani, M. Postoperative Atrial Fibrillation


