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High-dimensional profiling of immunotherapy-responsive immune cells in cancer

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Citation

Beyrend, G. (2021, June 8). *High-dimensional profiling of immunotherapy-responsive immune cells in cancer*. Retrieved from <https://hdl.handle.net/1887/3185499>

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Issue Date: 2021-06-08

Stellingen behorend bij het proefschrift getiteld “High-dimensional profiling of immunotherapy-responsive immune cells in cancer” by Guillaume Beyrend

1. An inhibitory marker can hide a powerful activated cytotoxic cell, a T_{AI} cell, often co-expressing ICOS and PD-1. (this thesis)
2. Targeting PD-L1 and OX-40 as a combination therapy increases the number of cytotoxic and proliferative T cells, which correlates to tumor clearance, even of refractory tumors (this thesis).
3. Cancer immunotherapy outcome can be predicted by systemic immunity screening and specifically focusing on NK cell receptors (NKG2D), chemokines receptors (CXCR3), activating receptors (CD43), transcription regulator (Id2) or stemness cell markers (Sca-1) (this thesis)
4. Using traditional gating strategies prevents the researcher to discover new interesting immune subsets, in flow or mass cytometry (this thesis).
5. Timing of immune checkpoint blockade with agonistic antibodies to stimulatory receptors is critical to effective combination immunotherapy.
6. Cancer immune responses are systemic, including immunomodulation in the bone marrow, lymph nodes, blood and spleen and can be used as a prediction tool to advance immunotherapy.
7. CTLA-4 and PD-1, although implying different immune responses, leads to the expansion of ICOS⁺ tumor reactive lymphocytes
8. PD-1⁺ T cells are the most prominent tumor-reactive T cell pool but display a distinct immune phenotypic and genomic signature from exhausted T cells.
9. The best way to enhance communication between a bioinformatician and an immunologist is to gather those two in the same body.
10. A PhD thesis is almost like a marathon: we should run fast enough, always consistent and well supported. But the difficulty of a PhD relies on the finish line, often further than expected. From a runner and scientist experience.
11. "A river cuts through rock not because of its power but because of its persistence" James N. Watkins – squeezing Good out of Bad, 2011. Research and algorithms progress by small but powerful steps.
12. "A computer is a stupid machine with the ability to do incredibly smart things, while computer programmers are smart people with the ability to do incredibly stupid things" Bill Bryson, I'm a Stranger Here Myself: Notes on Returning to America After Twenty Years Away, 2000.