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AMPK signaling in dendritic cells: a metabolic sensor controlling the balance between immunity and tolerance

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Stellingen behorend bij het proefschrift

AMPK Signaling in Dendritic Cells

A Metabolic Sensor Controlling the Balance between Immunity and Tolerance

1. AMPK activation in dendritic cells favors the induction of a tolerogenic rather than an immunogenic response (this thesis).
2. Metabolic rewiring underpins AMPK-induced changes in dendritic cell function (this thesis).
3. AMPK activation in dendritic cells *in vivo* is not static or tissue intrinsic, but rather dynamically regulated by the constantly changing local (metabolic) conditions within a tissue (this thesis).
4. In conditions of nutrient excess, as in obesity, or limitation, as seen in the tumor micro-environment, the LKB1/AMPK signaling axis aligns nutrient availability to dendritic cell metabolism and thereby function, with detrimental consequences for T cell responses and whole body homeostasis (this thesis).
5. AMPK is best known for promoting catabolic and inhibiting anabolic metabolism, but also acts on a wide range of seemingly unrelated other cellular processes such as autophagy, mitochondrial and lysosomal homeostasis, and DNA repair. However, the rationale of most of these mechanisms remains to restore energy homeostasis (adapted from Steinberg and Hardie, Nat. Rev. Mol. Cell Biol. 2022).
6. Supporting the energy demands of immune cells for their activation, differentiation, and function is only one of the many mechanisms through which metabolism controls immune cell biology (adapted from Mogilenko et al., Annu. Rev. Immunol. 2023).
7. An integrative understanding of intracellular metabolism, metabolic cell-cell interactions, and the effects of metabolism-associated environmental cues on cells promises to reveal new biology and pave the way for novel disease therapies (adapted from Chi, Cell Mol Immunol, 2022).
8. A key characteristic of excellent research is the ability to integrate sophisticated *in vitro* systems, relevant animal models, and human-derived data, and to exploit the respective strengths of each approach while also being aware of their limitations (adapted from Lercher et al., Immunity 2020).
9. The well-being of PhD candidates can be improved by providing a contract until the doctoral thesis is submitted to the Thesis Committee.
10. In the long term, symbiosis is more useful than parasitism. More fun too, if you ask mitochondria (adapted from Larry Wall).
11. Great colleagues are like good culture conditions, creating an optimal environment for development and growth.