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Towards the development of synthetic vaccines against tuberculosis

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Propositions:

- 1) To end tuberculosis medical efforts must go hand-in-hand with efforts to reduce inequality, eliminate extreme poverty, and to ensure social protection.
- 2) Fully synthetic compounds represent a promising avenue to develop cost-efficient vaccines. *This thesis*
- 3) More fundamental research is required to enable the development of rationally-designed fully synthetic single molecule vaccines, composed of an antigen and adjuvant. *This thesis, Chapter 1*
- 4) To evaluate the efficacy of tuberculosis vaccines, the interplay between innate, cellular and humoral immunity in response to immunization has to be considered. *This thesis, Chapter 3*
- 5) The application of immune synergies to modulate the immune response is a powerful means to discover optimal adjuvants. *This thesis, Chapter 5*
- 6) A well-designed synthetic vaccine is not solely made by an organic chemist or an immunologist, but by both of them.
- 7) There is no such a thing as ground-breaking science, only incremental improvements.
- 8) Providing quantitative data on the physicochemical properties of given compounds is beneficial to the definition of structure-activity relationships in experiments employing antigen-presenting cells. *This thesis, Chapter 4*
- 9) The effort required to synthesise a target glycomimetic is not always proportional to the extent of its biological activity. *This thesis, Chapter 2*