

PROPOSITIONS – STELLINGEN

Airway Progenitor Cell Development and Function – Mimicking *In Vitro* Behavior *In Vivo*

1. Similar mechanisms can cause malfunctioning of airway progenitor cells during development as in adult life resulting in respiratory dysfunction, which may guide therapeutic targets in the future (*this thesis*).
2. The balance between maintenance, differentiation and proliferation of progenitor cells is essential for organ development, homeostasis and regeneration (*this thesis*).
3. Our current gap of knowledge regarding the function of neuroendocrine cells misses an opportunity in targeting and linking a wide variety of lung diseases at once (*this thesis*).
4. To study human diseases in vitro, it is essential to maintain patient-specific characteristics, since culturing artefacts may easily result in false conclusions (*this thesis*).
5. Understanding airway progenitor cell phenotype, function and niche during organogenesis and regeneration in vivo is critical to improve (human) airway modelling in a dish (*this thesis*).
6. Current reports on cellular plasticity often invoke artificial, non-physiological forms of injury, which may not reflect challenges of regeneration that occur during life (*Tata and Rajagopal., Development 2017 Mar 1; 144(5): 755–766*).
7. Single-cell RNA sequencing made it an enduring goal to catalog all our human cell types, try to understand how they develop, vary between individuals and fail in disease. The Human Cell Atlas consortium will confront the challenge of how to generate a reference organ map when the organ may look different in every person (*JG Camp, R Platt and B Treutlein Science 2019 Sep 27*).
8. When we are characterizing cells by looking at the transcription of genes, we should not forget that “life is an equilibrium state between synthesis and degradation of proteins” (*Based on the statement in Yoshinori Oshumi’s Nobel prize speech in 2016*).
9. “Science advances quickly and people will often accept statements before they gain a firm understanding of the evidence” (*BJ Mead and JM Karp Genome Biology 2019 20:66*).
10. “Science is wonderfully equipped to answer the question 'How?' but it gets terribly confused when you ask the question 'Why?'” (*Erwin Chargaff, Voices in the labyrinth: nature, man and science, 1977*).
11. “Niet aan de finish denken, stap voor stap gaan. Doorbijten. Pijn lijden nu, dan kun je er de rest van je leven van genieten.” (*Abdi Nageeye after National Record on Amsterdam Marathon 2017*).