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Cellular models for fundamental and applied biomedical research

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Stellingen behorend bij het proefschrift

Cellular models for fundamental and applied biomedical research

1. HP1 α is the critical link between prelaminaA accumulation and the delayed DNA damage response and premature aging phenotype of *Zmpste24*^{-/-} cells. (*this thesis*)
2. iAM-1 is a line of conditionally immortalized atrial myocytes allowing their massive amplification and synchronous differentiation into fully functional cells resembling primary atrial myocytes. (*this thesis*)
3. Conditionally immortalized mouse brown preadipocytes display long-term proliferation capacity and can differentiate into adipocytes with multilocular lipid droplets, high uncoupling protein 1 expression and the response to adrenergic stimulation. (*this thesis*)
4. Allosteric modulation of the K_v11.1 channel efficiently suppresses the proarrhythmic risk of unintended K_v11.1 blockers, raising the possibility to resume the use of medicines previously recalled from the market because of their K_v11.1-related cardiotoxicity and to approve new compounds with fortuitous *I*_{Kr} blockade effects. (*this thesis*)
5. Cultures of cardiomyocytes can mimic physiological or pathological conditions, making them well-suited for proof-of-concept studies and for developing novel therapeutic interventions for specific cardiac diseases. [*Parameswaran S. et al. Can J Physiol Pharmacol. 2013;91:985-998*]
6. Currently, generating cardiomyocytes by inducing proliferation of existing cardiomyocytes or by reprogramming of non-myocytes in the heart is vastly inefficient. Thus, to enhance cardiac regeneration, it will be important to develop procedures that increase the yield and efficiency of generating new cardiomyocytes. [*Xin M. et al. Nat Rev Mol Cell Biol. 2013;14:529-541*]
7. Doxycycline-induced immortalization (Tet-on system) works as a kind of ‘yin and yang’ switch, enabling cells to engage in opposite processes: proliferation and differentiation.
8. The development of fully controllable transgenes has enabled the creation of conditionally immortalized cells that can be expanded to clinical quantities in a stable and consistent fashion, yet can be returned to a normal, non-dividing state for therapeutic delivery to the patient. [*Wall IB. et al. Cell & Gene Therapy Insights 2016;2: 391-396*]
9. Thinking is a compulsory course for every PhD candidate to become an expert.
10. Stay Hungry. Stay Foolish. [*Steve Jobs (1955-2011)*] (Never be satisfied by what you have achieved in the past. Be ready to step out of your comfort zone and try new things.)