

*Propositions*

## **Mitochondria, Inflammation and Stem Cells in Gastrointestinal and Hepatic Disease**

1. In MYC transformed cells, it has been demonstrated that fusion promotes mitochondrial metabolism to enhance cell proliferation. We have performed genome-wide transcriptomic analysis and, consistently, the inhibition of fusion affects most predominantly the metabolic pathway. (This thesis)
2. Mitochondrial fusion is activated in liver cancer. This enhances mitochondrial metabolism and fuels tumour growth while concomitantly inducing resistance against cell apoptosis. (This thesis)
3. All the complex I and III inhibitors (ROT, Met, AMA and MYXO) limited the growth of both tumour organoids and untransformed organoids, but cancer organoids were more sensitive to such inhibition. (This thesis)
4. Liver cancer contains an LGR5+ compartment that has various hallmarks of TICs/CSCs, including an increased capacity for tumor organoid formation in culture and allograft formation in mice as well as resistance against conventional anti-cancer therapy. (This thesis)
5. We successfully established 3D co-culture systems of liver tumor organoids and CAFs of both mouse and human origins allowing study of the interactions between these two cell types. (This thesis)
6. Mutation and carcinogenic agent are not alternatives, but empty words, unless metabolically specified. (Otto Warburg)
7. Organoids open up new avenues for regenerative medicine and, in combination with editing technology, for gene therapy. (Hans Clevers)
8. Science is built of facts the way a house is built of bricks: but an accumulation of facts is no more science than a pile of bricks is a house. (Henri Poincaré)
9. Ever tried. Ever failed. No matter. Try again. Fail again. Fail better. (Samuel Beckett)
10. All truths are easy to understand once they are discovered. The point is to discover them. (Galileo)
11. 三人行必有我师焉。when three men meet together, the one of them who is anxious to learn, can always learn something of the other two. (孔子 Confucius)

**Meng Li**