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## Epigenetic editing using programmable zinc finger proteins

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## STELLINGEN

1. One positive result is incredibly elevating and can carry one over months of scientific frustration. (*This thesis*)
2. Genes can be up- and down-regulated at will using ZF-based artificial transcription factors. (*This thesis*)
3. The success of regulating the expression of a gene using ZF proteins does not only depend on the ZF itself, but also on the delivery method. (*Chapter 3*)
4. *SOX2* is an important driver of breast cancer and targeted repression decreases cell proliferation and tumorigenesis *in vitro* and *in vivo*. (*Chapter 4*)
5. Targeted CpG methylation in gene promoters inhibits gene expression, which leads to a subsequent change of the cells phenotype depending on the regular function of the target gene. (*Chapter 5*)
6. Targeting of a DNA methyltransferase to silence gene expression has a more lasting effect on gene expression than conventionally used repressors. (*Chapter 5 and 6*)
7. Induced artificial DNA methylation is maintained during cell divisions *in vivo*. (*Chapter 6*)
8. Editing the epigenetic signature at will is possible; however the specificity of the DNA targeting device requires further improvement. (*Chapter 6*)
9. A PhD trajectory can lead to unknown places.
10. "I'm not sure what I'm doing, to be honest! I knew I wanted to do something interesting, but I was just playing around more than anything else." *Sir Adrian Bird in an interview in 2009, referring to the time when he found out that HpaII wouldn't cut methylated DNA, which led later to the identification of CpG islands.*