

# X-chromosome Inactivation in American Mink iPSCs

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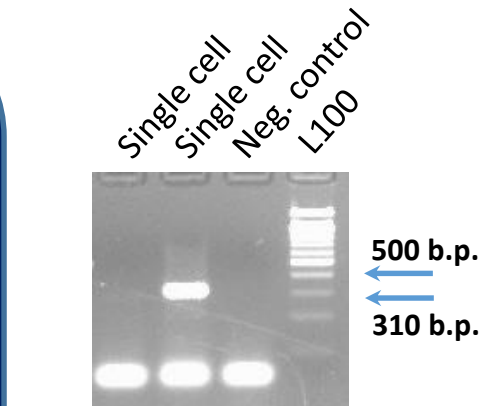
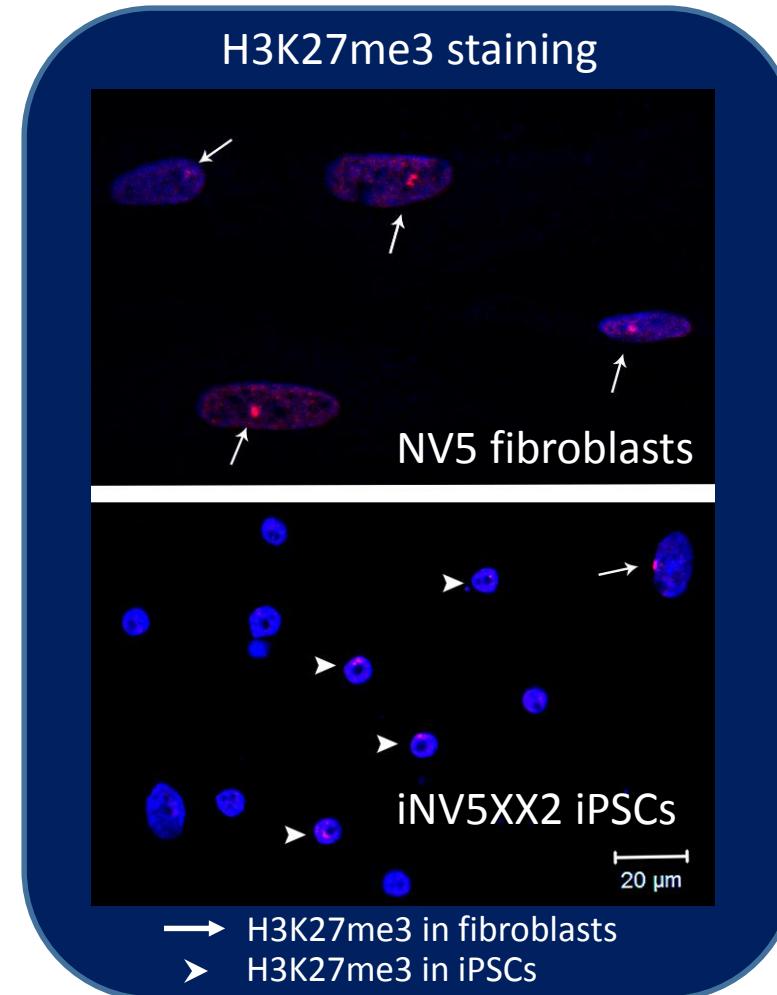
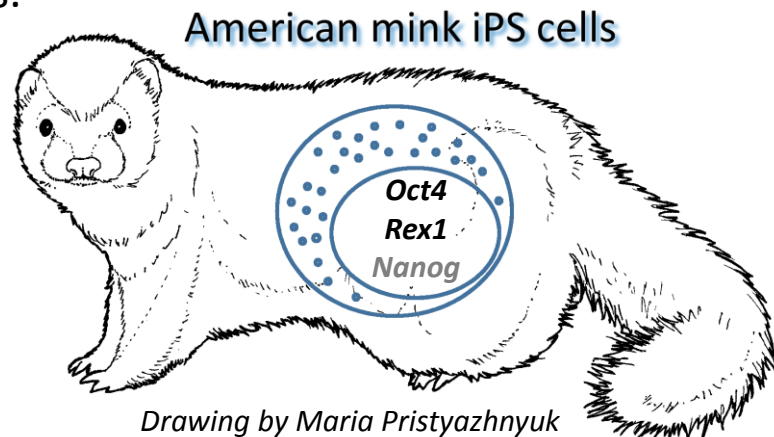
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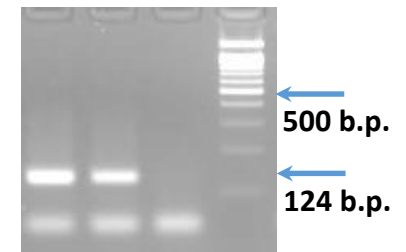
## INTRODUCTION

We have recently produced iPSCs from American mink (*Neovison vison*) fibroblasts [1]. One of the important pluripotency markers is X-chromosome status. Naïve pluripotent stem cells have both X-chromosome homologs active (XaXa) and primed – one inactivated (XaXi). American mink ES cells have both active X-chromosomes [1; 2].

In this study, we analyzed X-chromosome status in American mink iPSCs produced from XX embryonic fibroblasts.

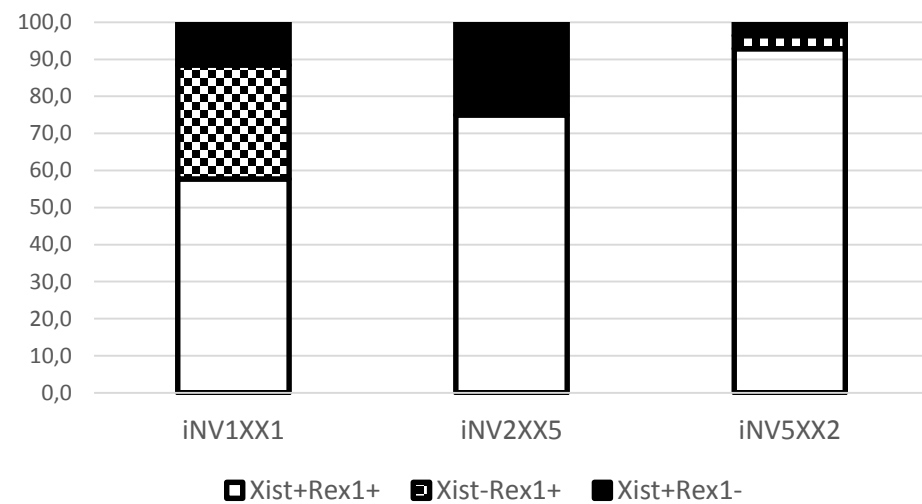


iNV2XX5 iPSCs,  
*Rex1* expression  
(pluripotency marker)



iNV2XX5 iPSCs,  
*Xist* expression

Percentage of cells with different *Xist/Rex1* expression patterns



We expected that iPSCs would have XaXa status, as ES cells. The immunochemical analysis was consistent with that; the RT-PCR analysis of single cells had given different results.

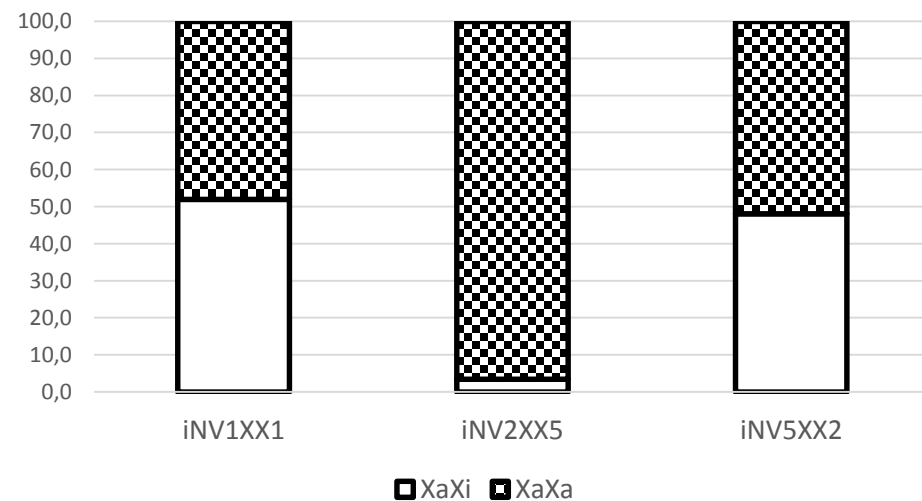
Why the discordance?

1. The iPSCs could have changed XaXa status to XaXi without morphological differentiation.
2. *Xist* expression is just one of the first steps of the X-chromosome inactivation process and takes place before H3K27me3 chromatin modification.
3. *Xist* may be expressed on a low level that does not lead to X-chromosome inactivation. We need to perform quantitative analysis of expression.

**Overall, we have produced American mink iPSCs from XX embryonic fibroblasts for the first time. Our data show that iPSCs could have XaXa state of X-chromosomes that is one of the naïve pluripotency markers or could have XaXi state that is either marker of primed pluripotency or a sign of differentiation.**

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Percentage of cells with different X-chromosome inactivation patterns



1. Menzorov et al., 2015 <https://doi.org/10.1186/1471-2164-16-s13-s6>

2. Sukoyan et al., 1993 <https://doi.org/10.1002/mrd.1080360205>