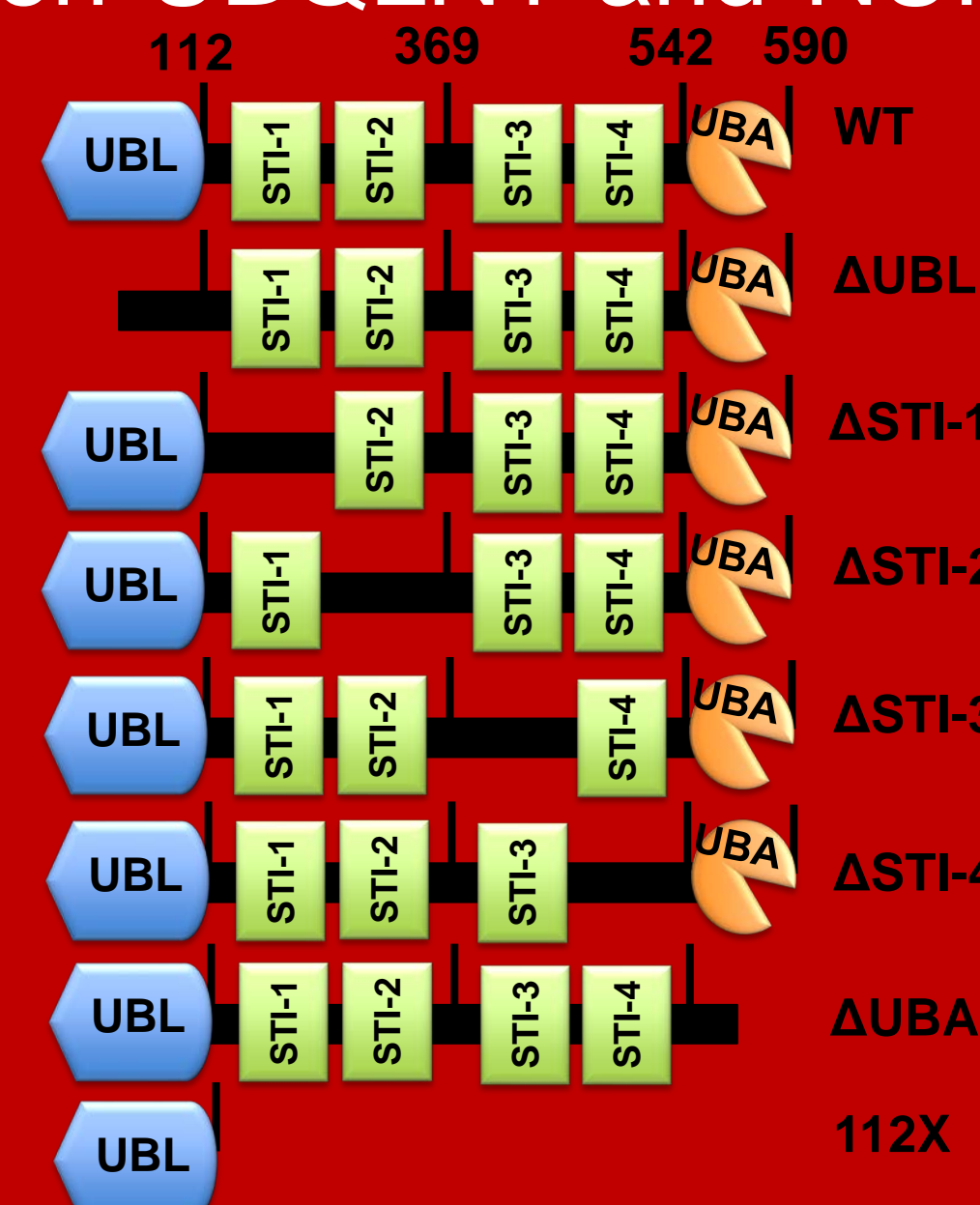
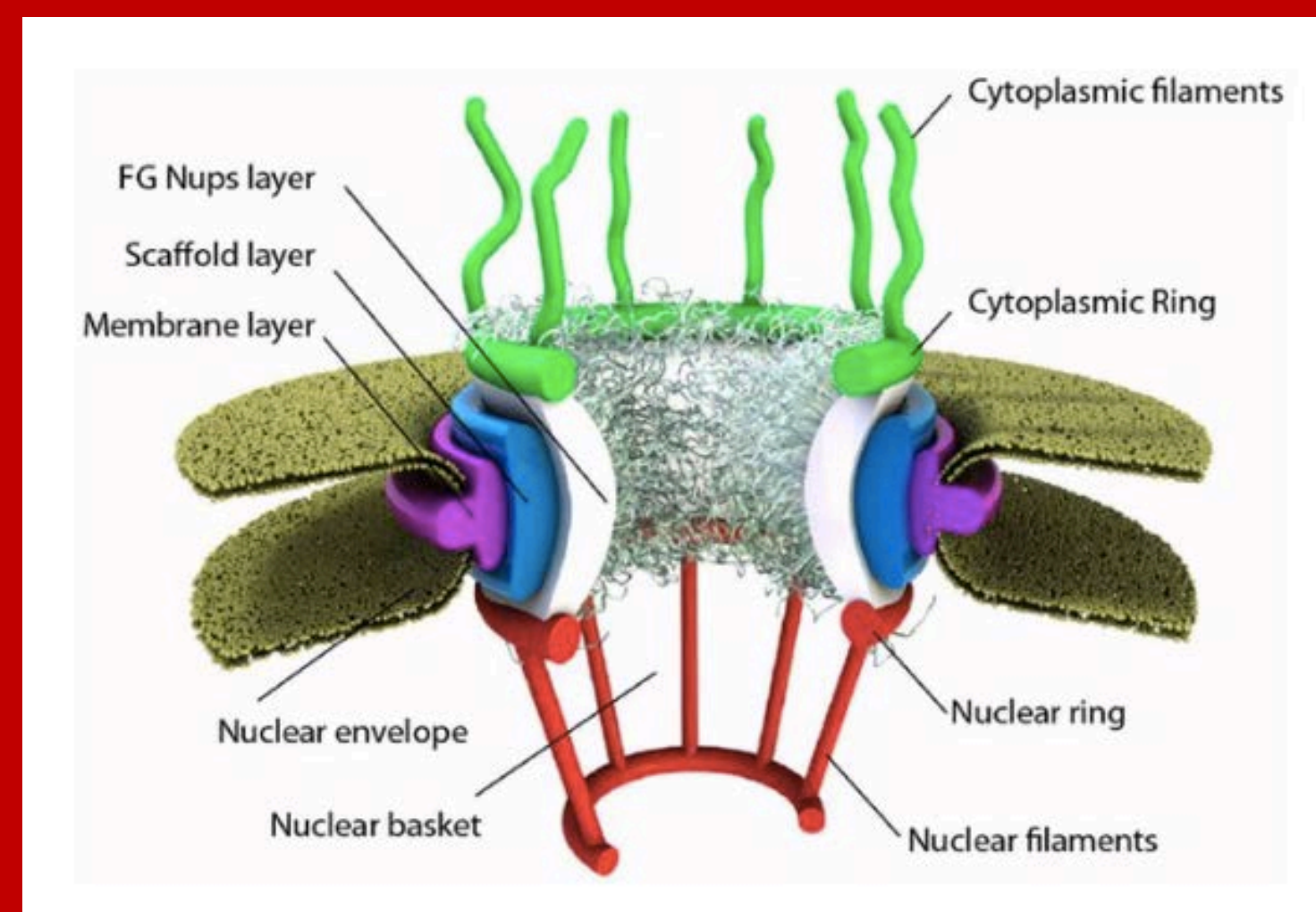
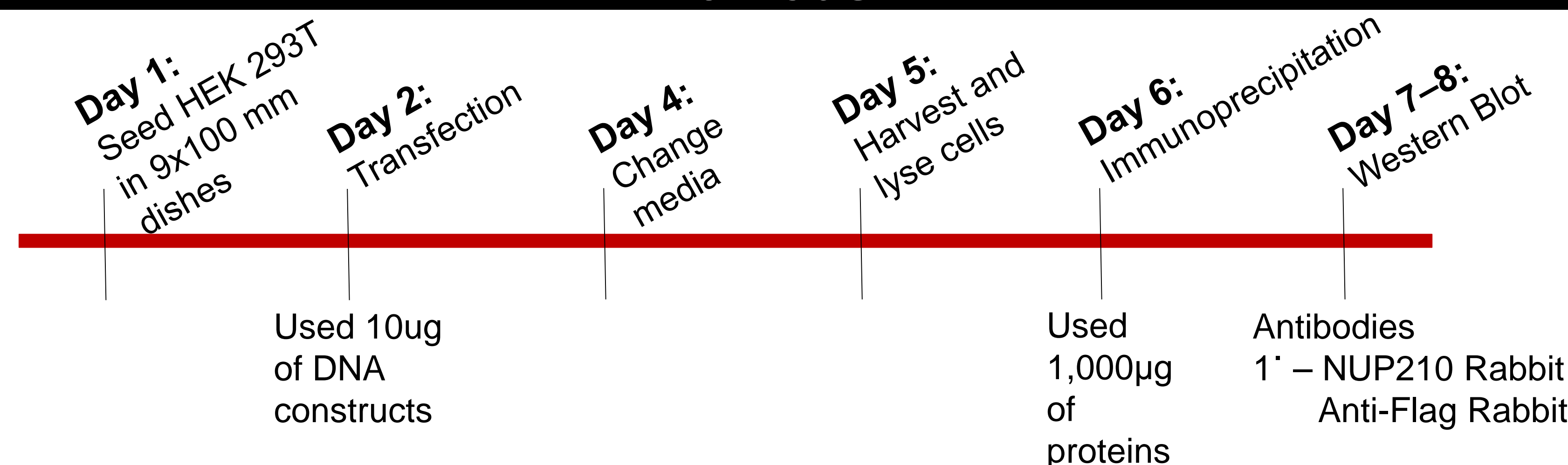


## Abstract

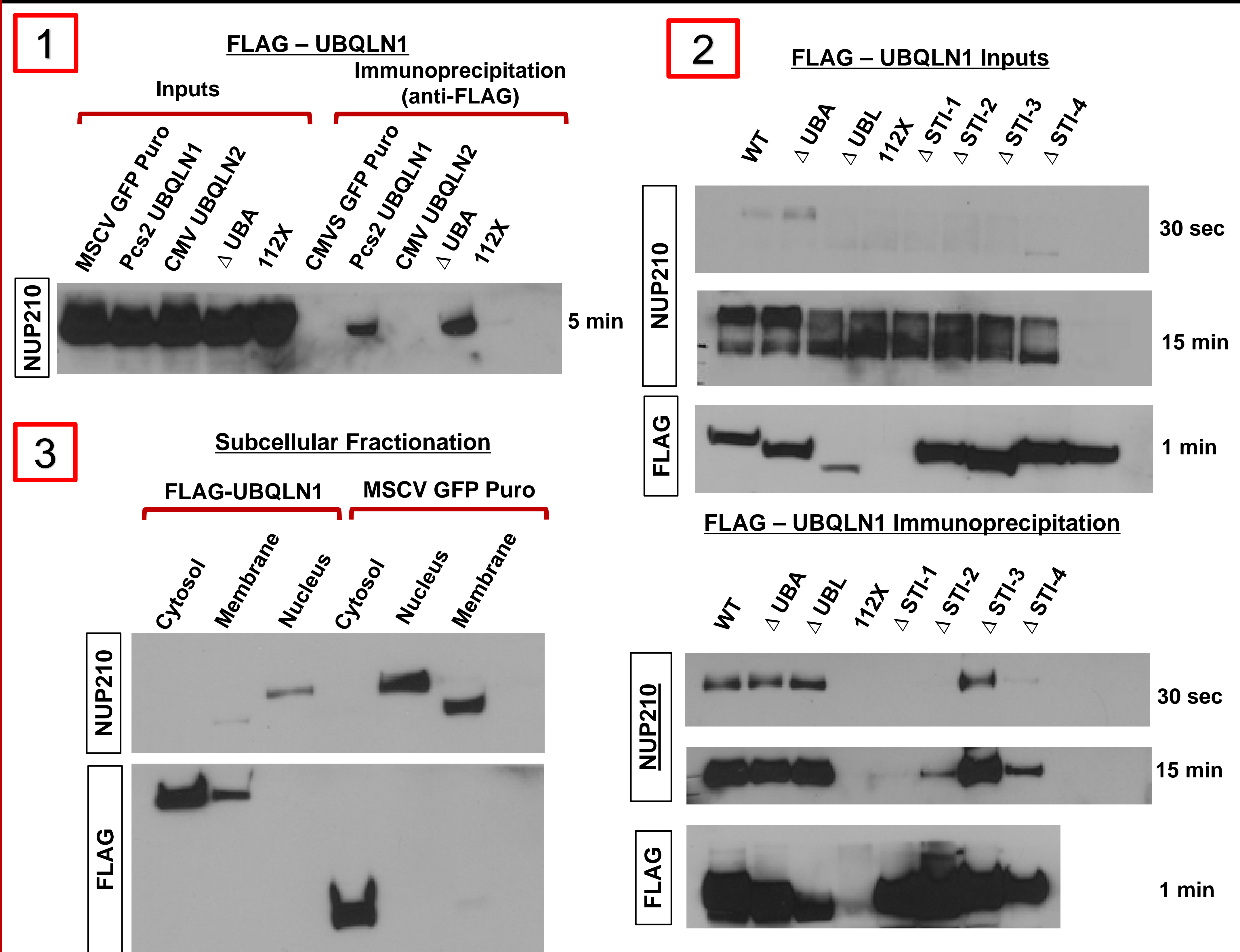
Ubiquilin, a family of proteins are associated with cellular degradation pathways, can be subdivided into 5 proteins (UBQLN1, 2, 3, 4 and L). Mutations which alter UBQLN1 protein expression are observed in 50% of lung cancer patients that have progressed to metastasis.<sup>1</sup> Over 700,000 patients diagnosed with lung adenocarcinoma, which died from metastasis had altered UBLQN functions.<sup>1</sup> Previous experiments indicated that the loss of UBQLN1 contribute to tumorigenesis and metastasis.<sup>1</sup> The Beverly lab utilized immunoprecipitation followed by mass spectrometry to identify UBQLN1 interacting proteins. Nucleoporin 210 (NUP210) was identified as a potential interacting protein. The role of NUP210 within tumorigenesis and metastasis is unclear, but its function as a trafficking regulator within the nuclear envelope may provide information about mechanisms in the progression of cancer. In addition to validating the interaction between UBQLN1 and NUP210, we investigated if the interaction between the two proteins was specific to an individual domain of UBQLN1 (UBA, UBL, STI 1-4). We performed the following in HEK293T cells: overexpression transfections, co-immunoprecipitation, subcellular protein fractionation, and Western Blot analysis which led to our conclusions that **NUP210 specifically binds to the STI-1 domain of UBQLN1** and NUP210 is expressed in the nuclear membrane as well as inside the nucleus. These data will help elucidate how the physical interaction between UBQLN1 and NUP210 contributes to UBQLN1-mediated cancer metastasis.



## Methods



## Results



## Conclusions

- NUP210 interacts with STI-1 domain of UBQLN1 in HEK293T cells.
- Future studies: Perform experiments in multiple cancer cell lines to investigate reciprocal regulation of NUP210 with UBQLN1 and its role in cancer progression.

## Acknowledgements

I would like to thank all Beverly Lab members for their time and guidance and the R25 CEP UofL for this research opportunity. This research was supported by the NIH National Cancer Institute Grant R25-CA134283.

## References

1. MS13.03 Ubiquilin as a Novel Mediator of Lung Cancer Invasion and Metastasis. Beverly, L. Journal of Thoracic Oncology, Volume 13, Issue 10, S268
2. Kurlawala, Zimple, "UBQLN1 : a multi-domain protein with multiple functions." (2017). Electronic Theses and Dissertations. Paper 2754.
3. Azimi M, Mofrad MRK (2013) Higher Nucleoporin-Importinβ Affinity at the Nuclear Basket Increases Nucleocytoplasmic Import. PLoS ONE 8(11): e81741. <https://doi.org/10.1371/journal.pone.0081741>