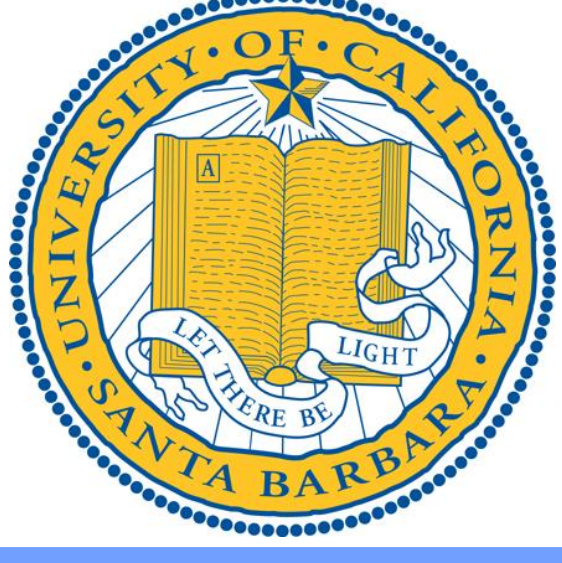


# Characterizing Peptide-Antibody Interactions for Disease Detection



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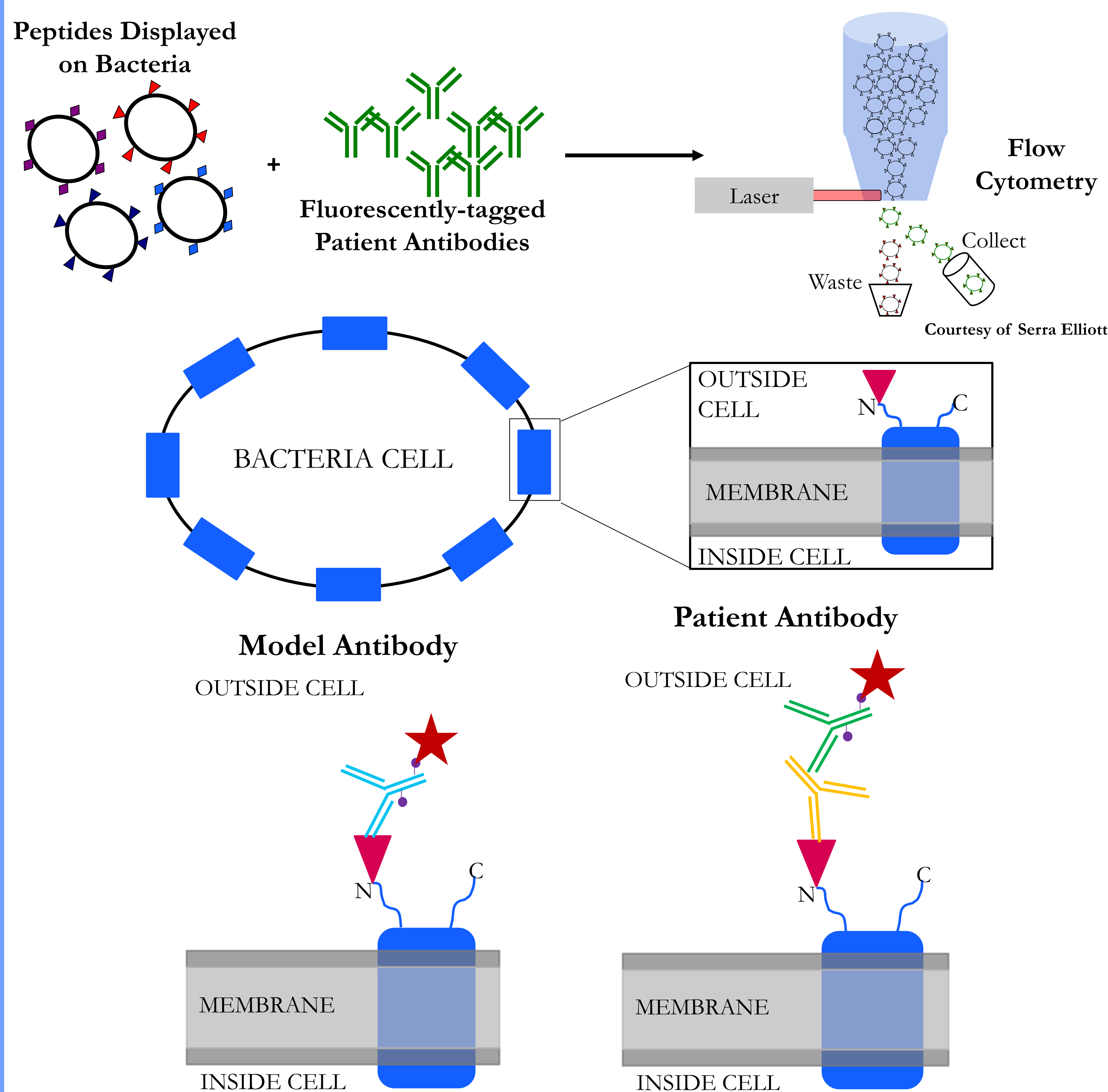
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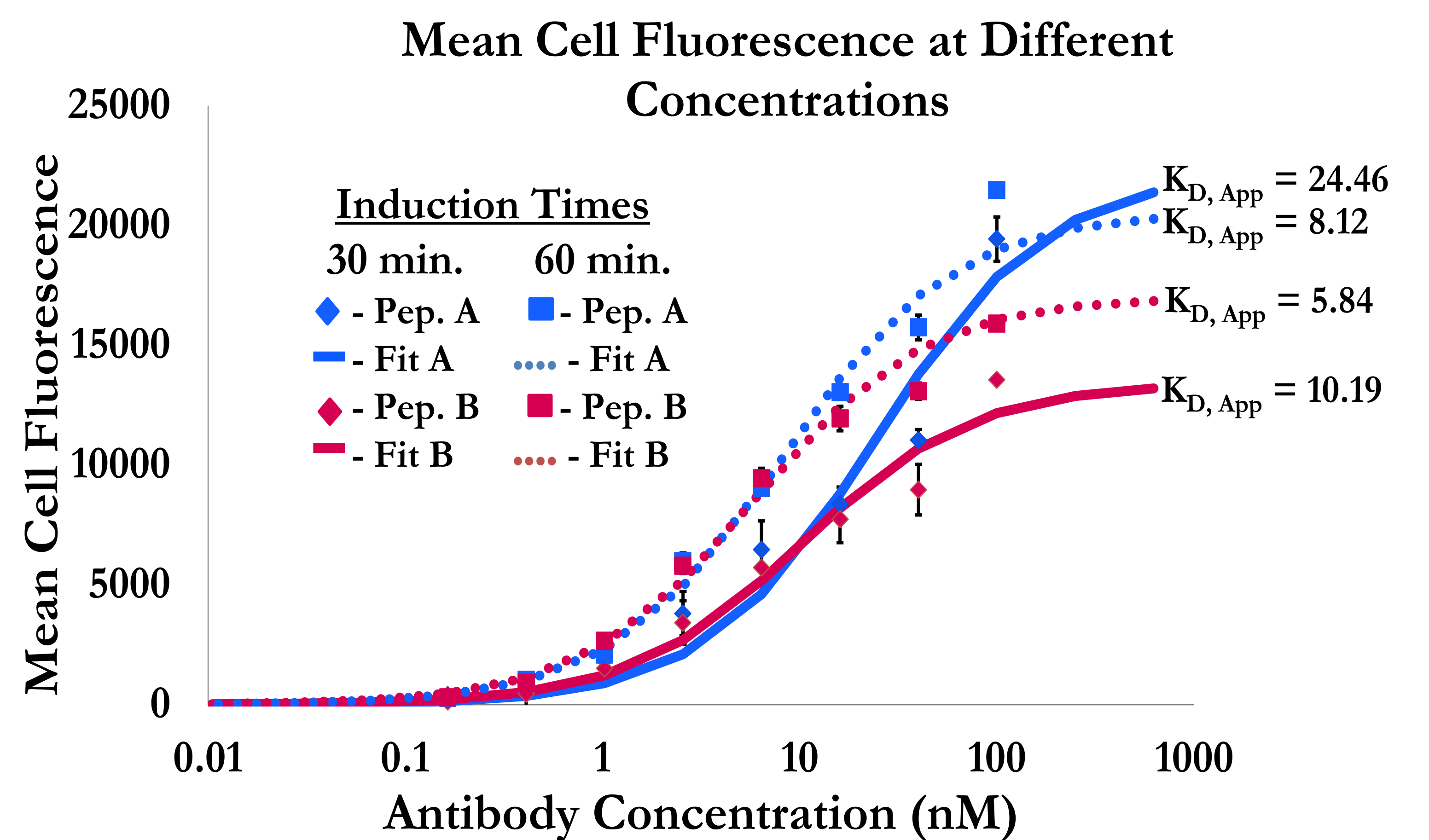
## Introduction

- Pre-eclampsia (PE) - a pregnancy-related disease that affects 5-8% of women and is responsible for 18% of maternal deaths in the US [1]
  - Clinical diagnosis: hypertension and excess protein in the urine (proteinuria) after the 20<sup>th</sup> week of gestation
- Unknown pathology but potential immunological component
  - Antibodies against human protein angiotensin II AT<sub>1</sub> receptor (AT<sub>1</sub>-AAs) [2]
    - Ineffective diagnostic tool for PE – non-specific to PE and complicated assay for detection [3]
- **Hypothesis:** There are other antibodies specific to PE patients that may be used as an effective diagnostic tool by using bacteria displayed peptide reagents to detect these PE specific antibodies
  - Evaluated the effects of peptide density and antibody concentration on fluorescent signal
  - Tested the accuracy of a PE specific antibody detecting peptide to differentiate between PE patients and normal-outcome pregnancies

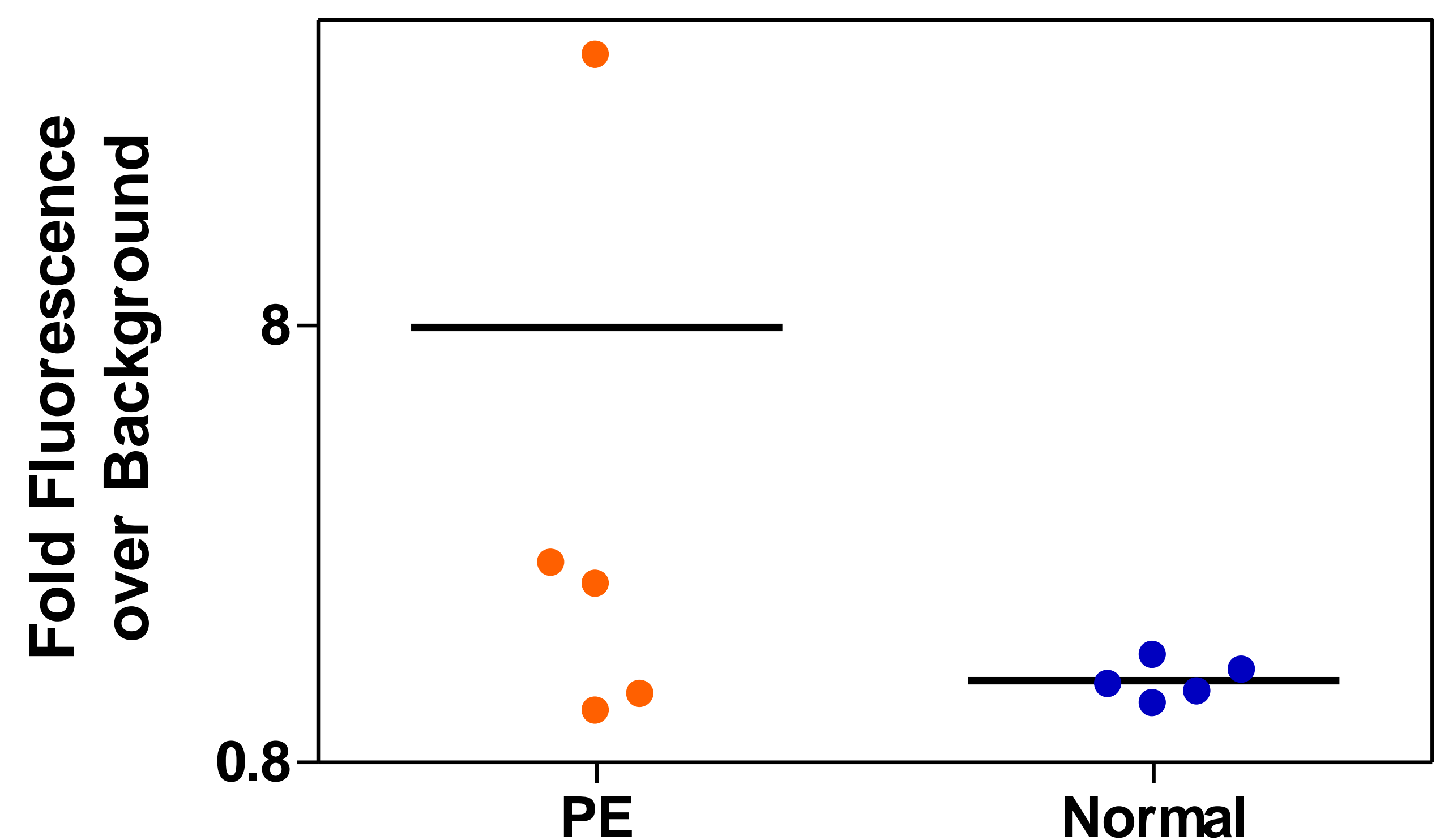
## Methods



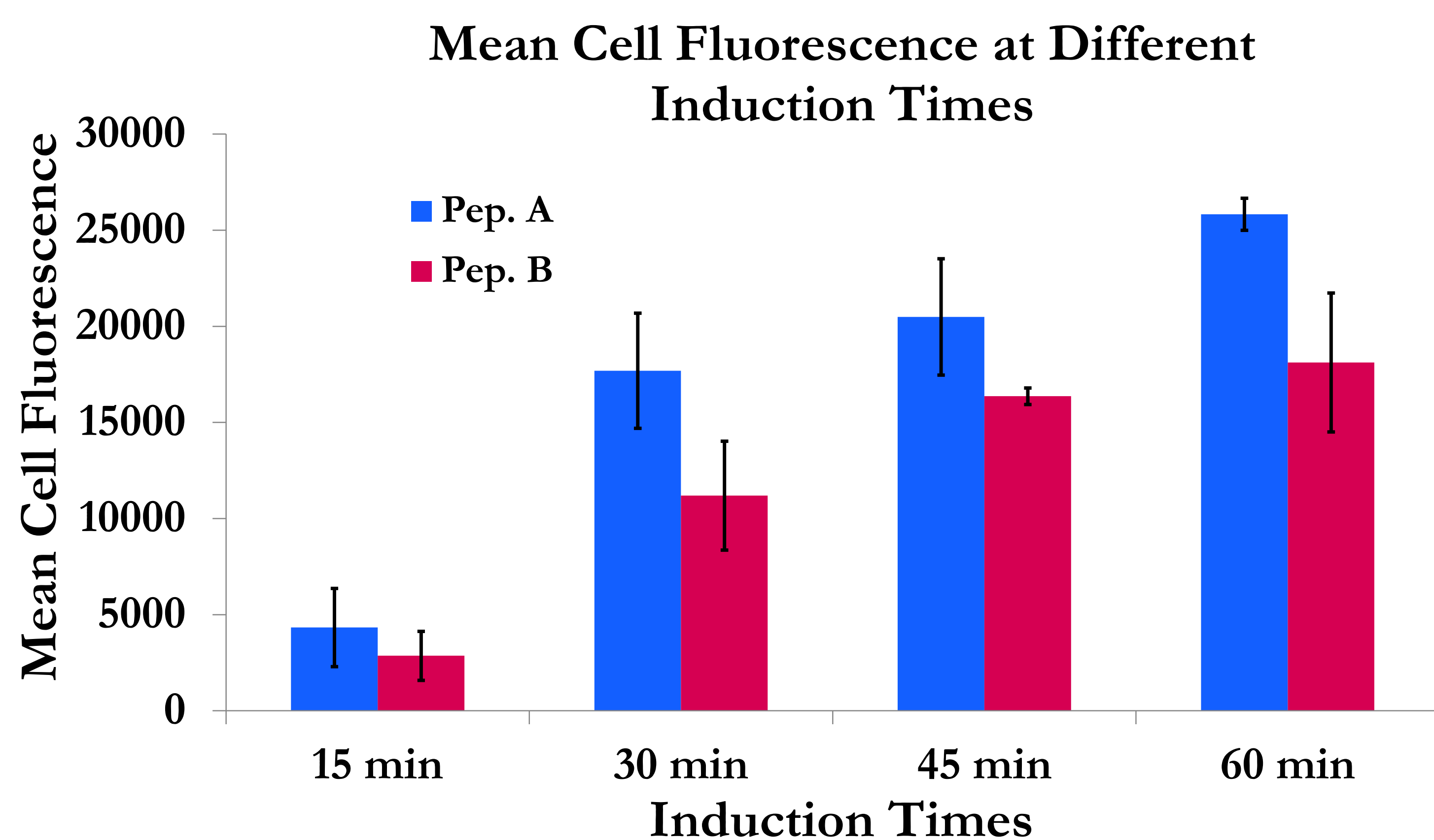
## Results



## Peptide Binding Activity



## Results



## Conclusions

- Direct correlation between peptide density and observed maximum fluorescence
- Peptide density affects cell-surface binding affinity
- Some levels of reactivity with PE specific antibody binding peptide
  - Still requires testing with more PE patient and normal-outcome pregnancy samples to determine accuracy of peptide's ability to differentiate between PE and normal-outcome pregnancies

## Literature Cited

- [1] Preeclampsia Foundation. "Preeclampsia Fact Sheet". <http://www.preeclampsia.org/pdf/Preeclampsia%20Fact%20sheet%20v2.pdf>.
- [2] Herse F, et al. "Prevalence of Agonistic Autoantibodies Against the Angiotensin II Type I Receptor and Soluble fms-Like Tyrosine Kinase 1 in a Gestational Age-Matched Case Study". *Hypertension* 53 (2009) : 393 – 398.
- [3] Xia, Y. & Kellems, R. E. "Receptor-Activating Autoantibodies and Disease: Preeclampsia and Beyond". *Reproductive Immunology* 7 (2011): 659 – 674.

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