Accessing precious samples in Western blots by capillary electrophoresis interfaced to membrane via inkjet

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September 13, 2021

## **Diabetes & Islets of Langerhans**

#### Diabetes

>8% of adult population diagnosed

~1/3 of US adults are prediabetic

7<sup>th</sup> leading cause of death

Risk factors include: age, weight, race, family history, high blood pressure, other health factors

Can lead to: heart/kidney/dental disease, nerve damage, blindness, stroke, foot problems



#### **Conventional Western blot**



# Capillary electrophoresis with inkjetting (CEI)



## Stage speed



## **Field strength**



## **Separation repeatability**



#### Limit of detection





Actin LOD by CEI

#### Actin LOD by Conventional





### **Islets of Langerhans**



12 samples – 45 islets

14 samples – 4 islets

## **Islets of Langerhans**

#### **Islet Isolation**

- Surgery performed in-lab
- Islets picked by hand
- Multi-hour process
- ~200 islets extracted

#### Conventional

- $1 50 \mu g$  per sample (1-50 islets)
- 4 200 samples per mouse

- 100 ng per sample (0.1 islet)
- 2000 samples per mouse

## Acknowledgements

#### Kennedy Lab

- Dr. Natalie Arvin
- Megan Connolly
- Ashley Lenhart

#### **LI-COR Biosciences**

- Dr. Michael Furtaw
- Don Lamb
- John Eisenhart



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