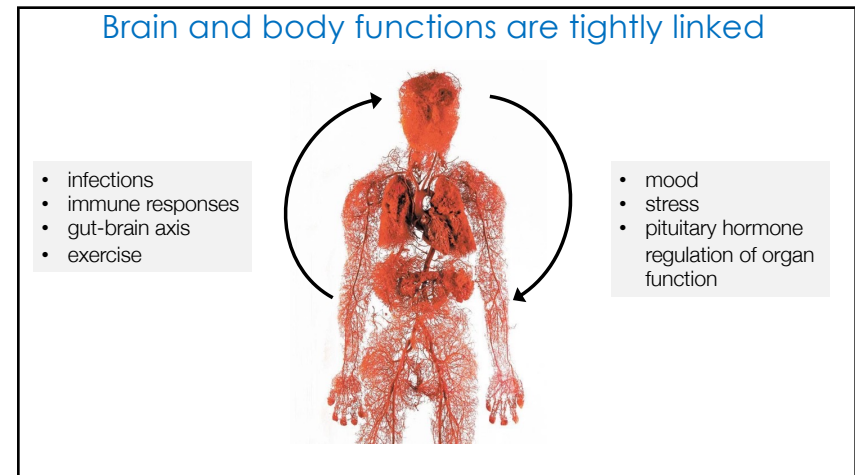
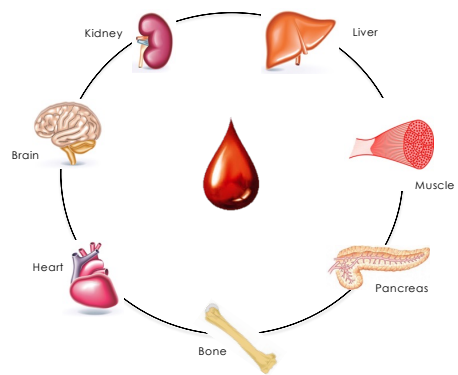


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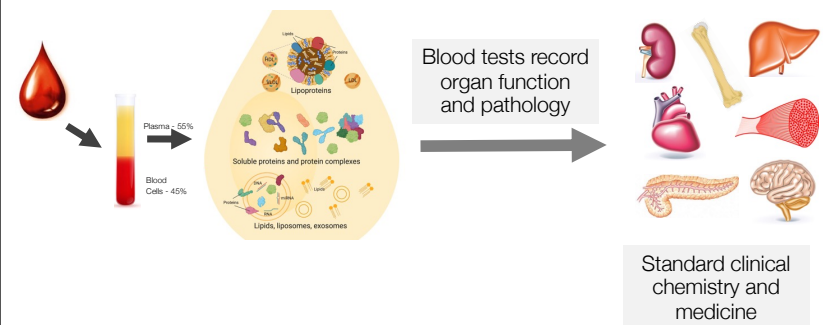
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### Blood connects all organs

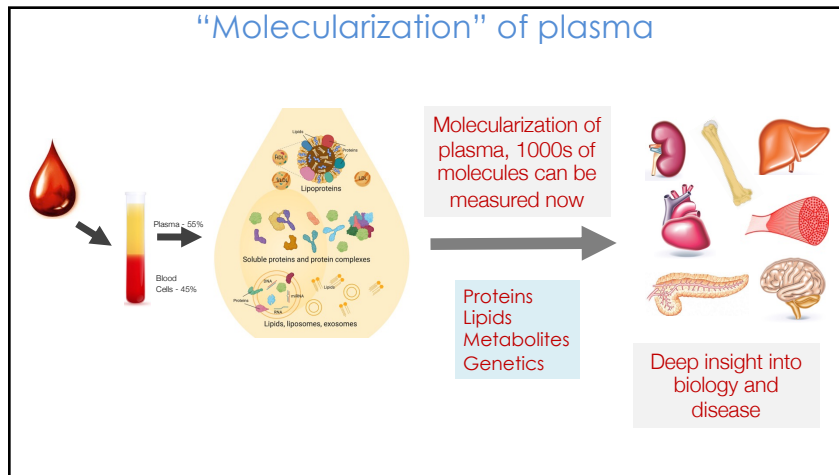


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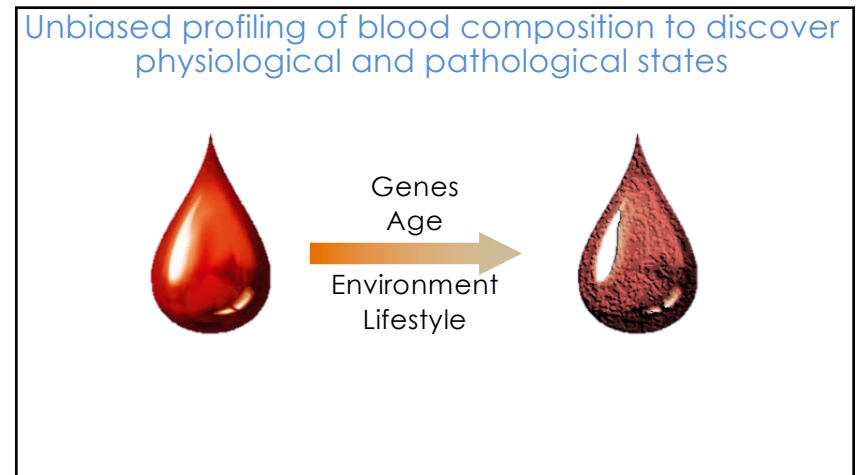
### What is in a drop of blood?



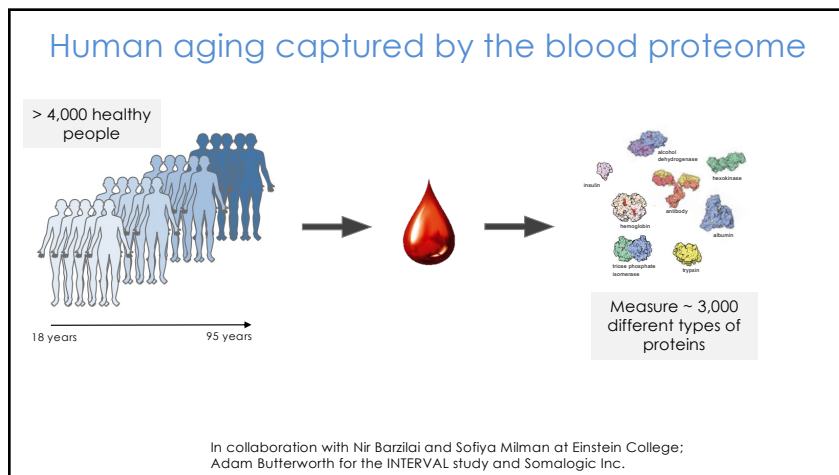
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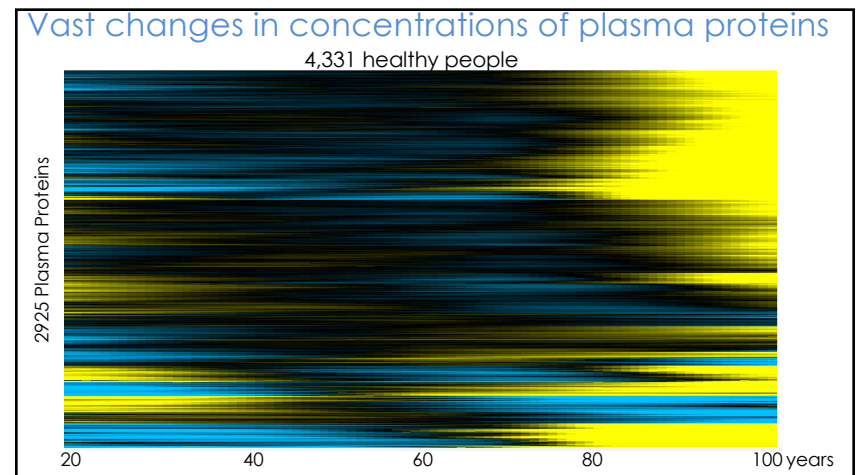
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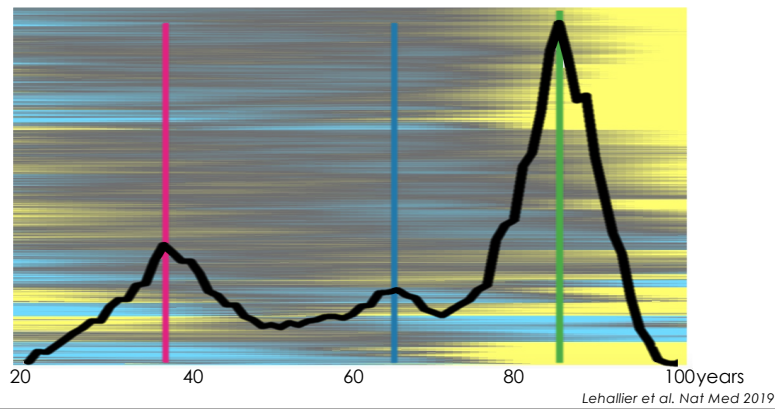


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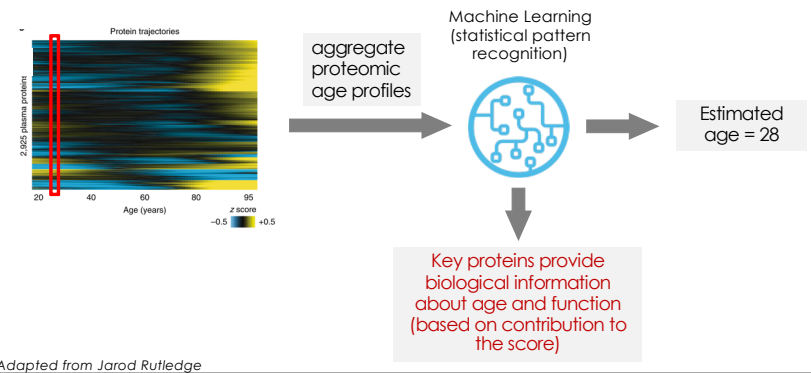
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### Plasma proteins change in 3 waves during aging



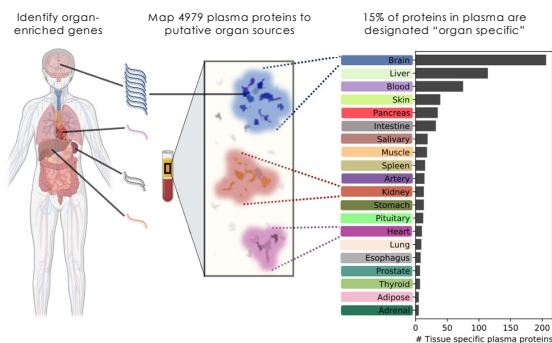
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### Link age-specific protein concentrations to biological age and function



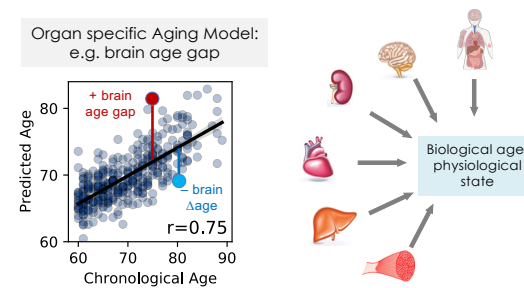
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## Find plasma proteins uniquely expressed in distinct cell types to estimate tissue age and physiology



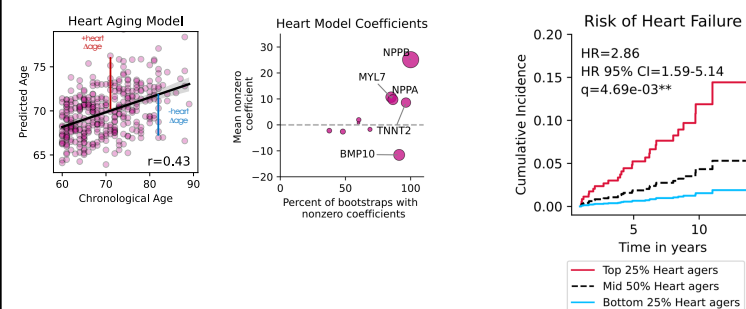
11

## Plasma protein-based clocks to measure organ age



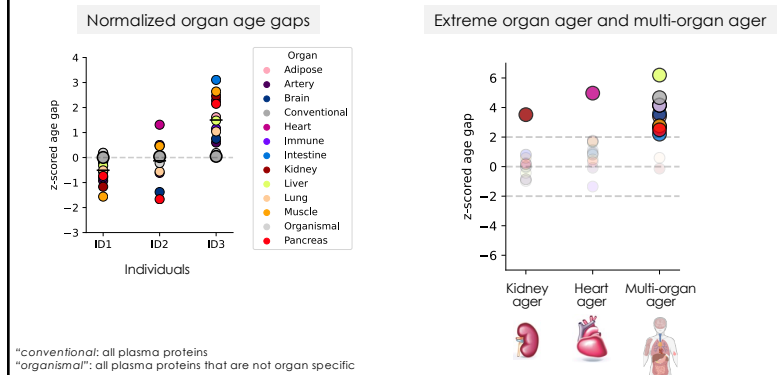
12

## Plasma protein-based estimation of heart age and prediction of heart failure



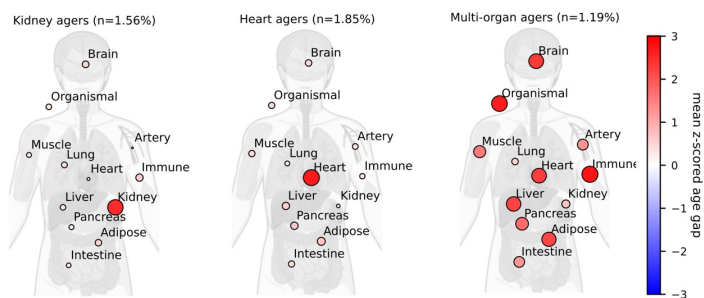
13

## Organs have different ages within the same person and some individuals are extreme organ agers



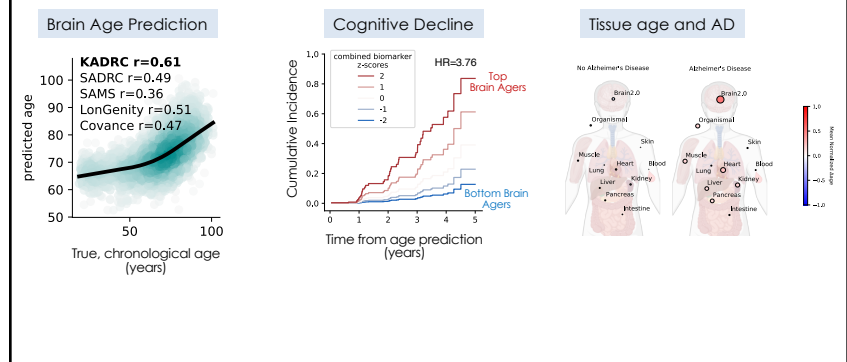
14

## Individuals with extreme organ age gaps separate into organ specific and multi-organ agers



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## Biological brain age predicts disease and cognitive decline



16



## Acknowledgments



TWC Lab



@wysscoray

### Stanford University:

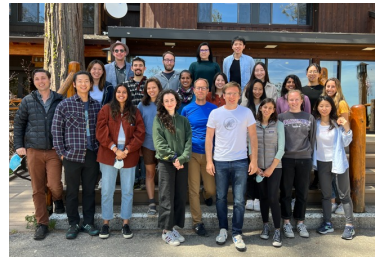
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