

# **Geronmetrics: A Discipline Whose Time Has Come?**

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**Visit of Dr. Richard Hodes**  
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# Introduction

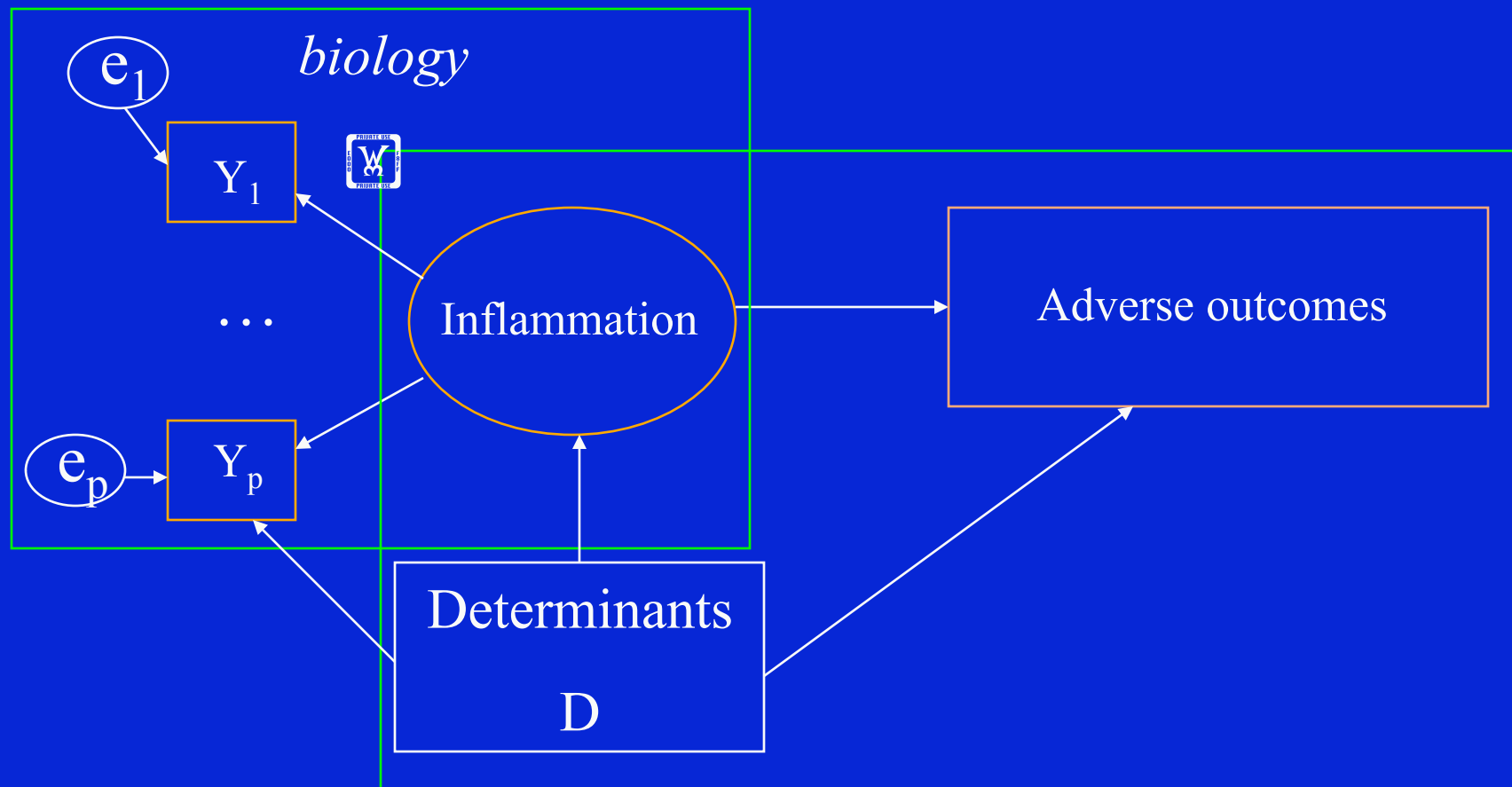
## Whither “geronmetrics”?

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- “Measurement of constructs in aging”
  - a.k.a.: econometrics, psychometrics, **biometrics**
  - e.g.: generalized inflammation; frailty; aging
- Boring, no?
  - **NO!**
- Rather: essential to
  - Sensitivity for genetic, other discovery
  - Theory operationalization, testing
  - Specificity for genetic, other discovery
  - **Correctly targeted, evaluated interventions**

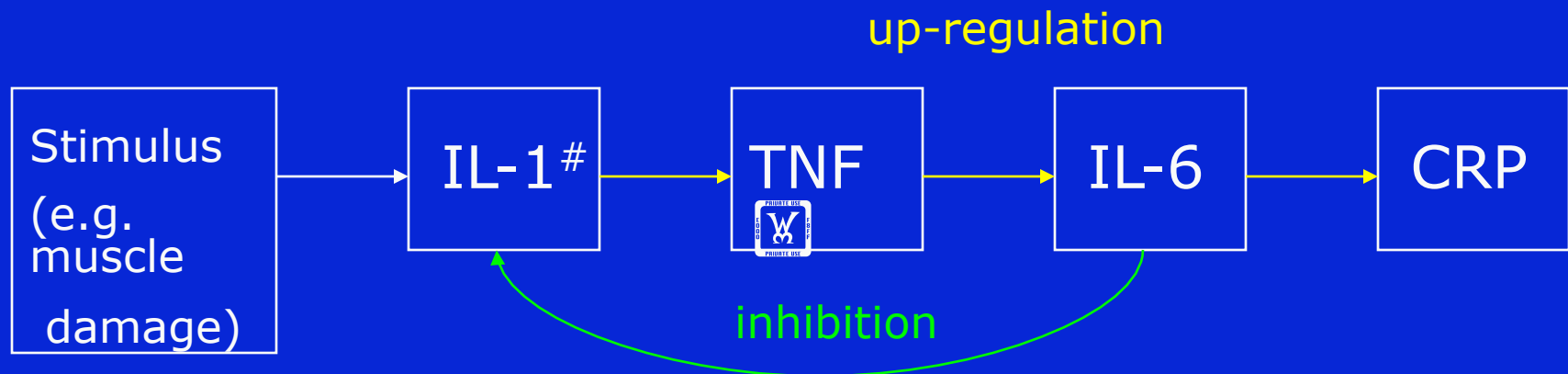
# Measurement Paradigm Inflammatory Dysregulation

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# Inflammation & Adverse Aging

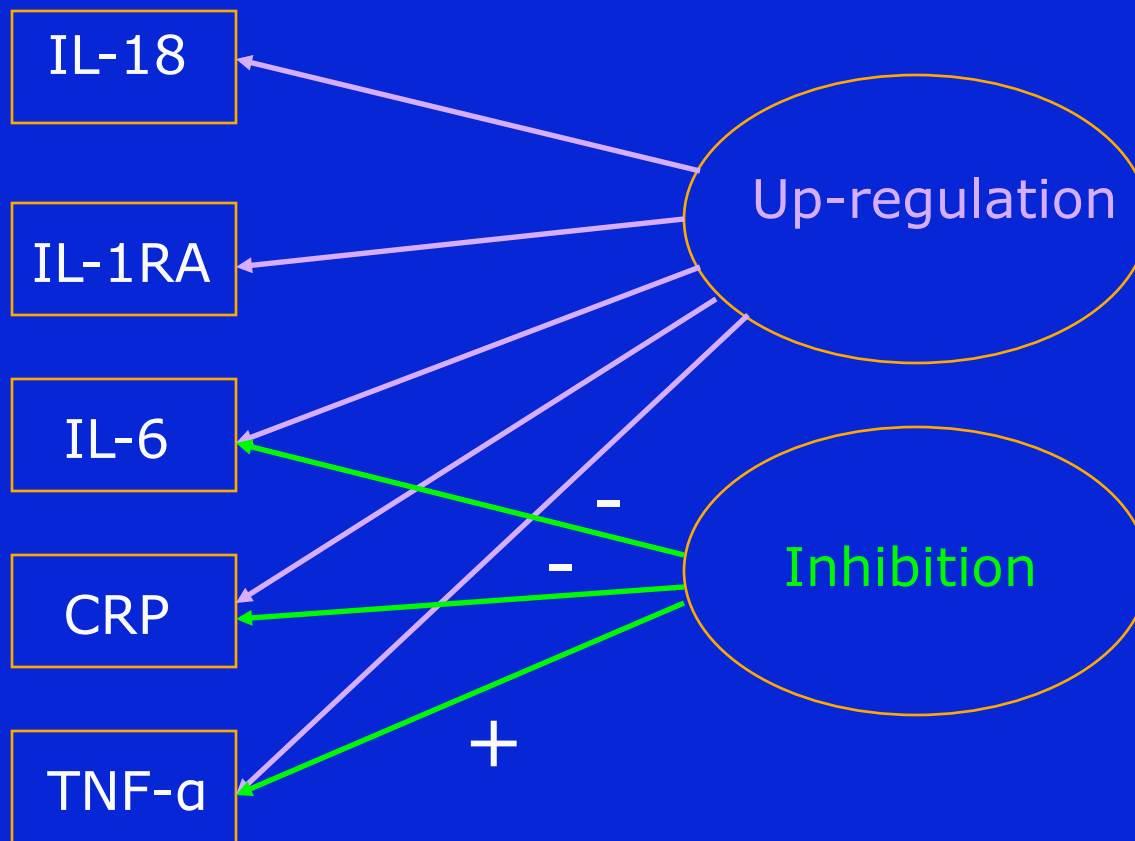
- Central role: cellular repair
- A hypothesis: dysregulation key in adverse aging
  - Muscle wasting (*Ferrucci et al., JAGS 50:1947-54; Cappola et al, J Clin Endocrinol Metab 88:2019-25*)
  - Receptor inhibition: erythropoietin production / anemia (*Ershler, JAGS 51:S18-21*)



# Difficult to measure. IL-1RA = proxy

# Measurement: In CHIANTI finding

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# Is there Value Added? In CHIANTI findings

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- *YES!*
- Independent of age, sex, smoking, diseases:  
Up-regulation associated with
  - Worse mobility functioning [ $\sim -.1$  effect size]
  - Heightened frailty prevalence [by  $\sim 30\%$ ]
- “Up-regulation” is specific, sensitive
  - No individual cytokine adds to prediction
  - Up-regulation affords superior prediction over individual cytokines
- Next: 2 R01 applications; AOA Initiative (KBR, PI)

# Translation and Training

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## Research funding

Women's Health and Aging Study III – Merit Award  
Johns Hopkins Older Americans Independence Center

## Publications


Cappola et al., *J Clin Endocrinol Metab*, 2001  
Ferrucci et al., *JAGS*, 2002  
Leng et al., *J Gerontol Med Sci*, 2005  
Bandeem-Roche et al., *J Gerontol Med Sci*, in press  
Bandeem-Roche et al., *JASA*, 1997  
Bandeem-Roche et al., *AJE*, 1999  
Xue & Bandeem-Roche, *Biometrics*, 2002  
Huang & Bandeem-Roche, *Psychometrika*, 2004

## Education

Training Program in the Epidemiology & Biostatistics of Aging

# Future Goals

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- Extension across biological systems
- Cross-validation across populations
- Assessment of extent to which  
“associations”  “mechanisms”
- Translation into interventions