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NIH Centers for Population Health and Health Disparities (CPHHD)

Concept Review
Board of Scientific Advisors
June 23, 2008

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

National Institutes of Health

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Overview

- Purpose of the original RFA
- Examples of science from the centers
- Goals for next round of funding

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Health Disparities

- A longstanding public health problem
- A feature of many diseases
- Increasing disparities over time
- Causes are multi-level, complex, and their inter-relationships are poorly understood
- Usual models investigate a narrow range of topics or causes and involve single disciplines

→ New paradigms needed

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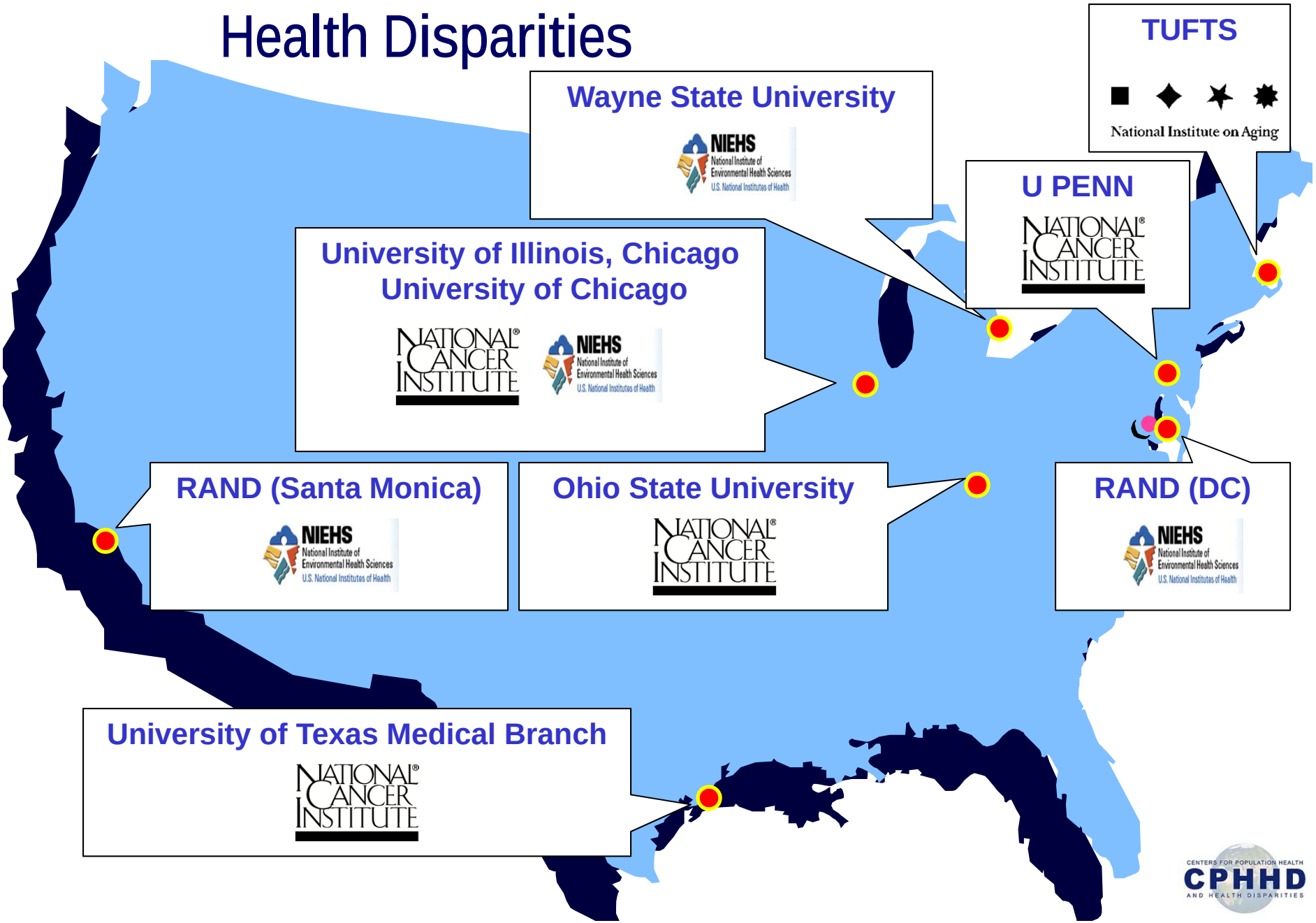
Mission of the Original CPHHD

- Integrate the biological, genetic, behavioral, and population sciences to provide novel insights about health disparities.
- Develop innovative new models & methods that can simultaneously account for multiple factors and multiple levels.
- Involve affected communities in addressing these disparities.

Centers for Population Health and Health Disparities



CENTERS FOR POPULATION HEALTH AND HEALTH DISPARITIES
CPHHD

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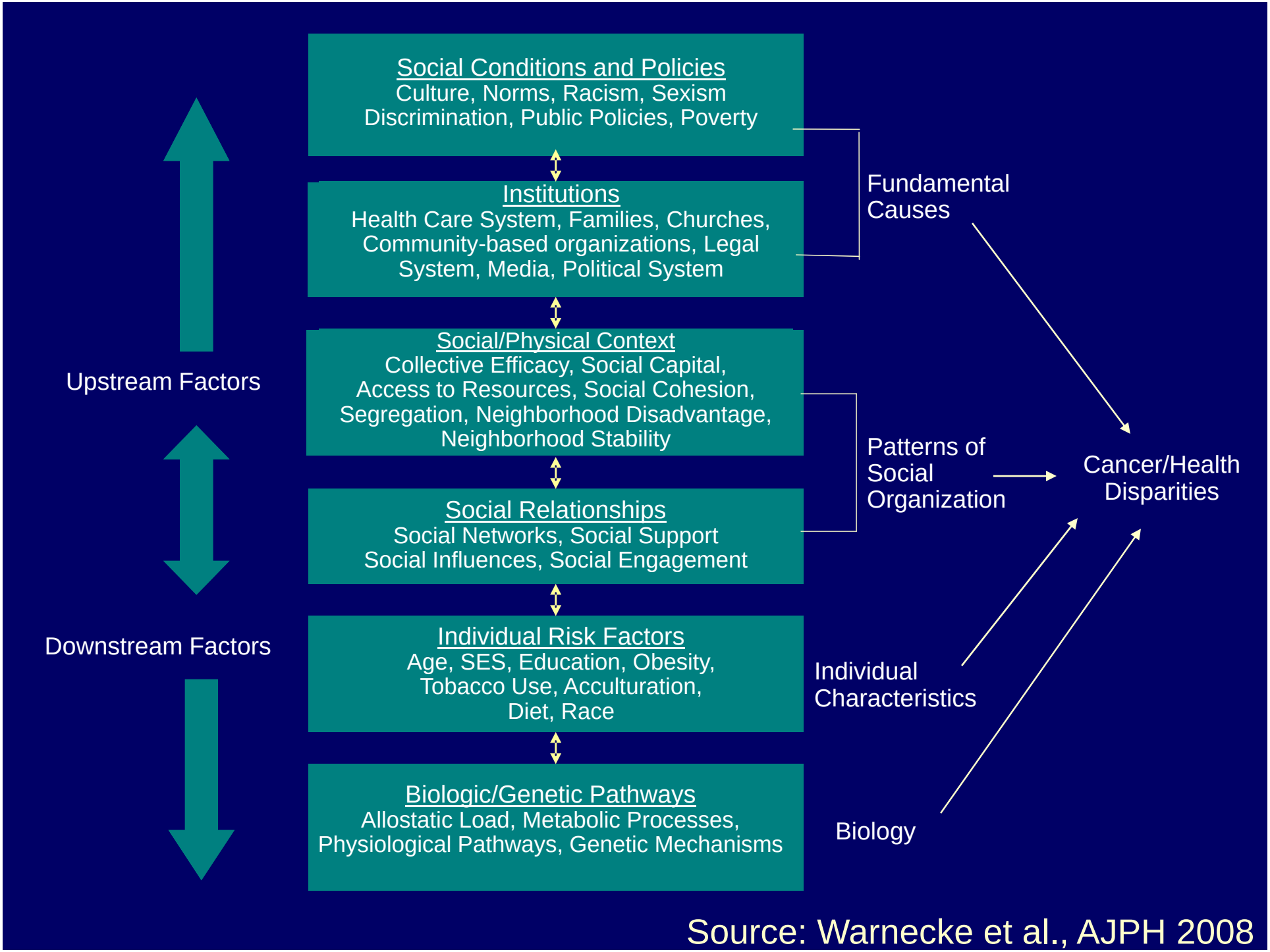
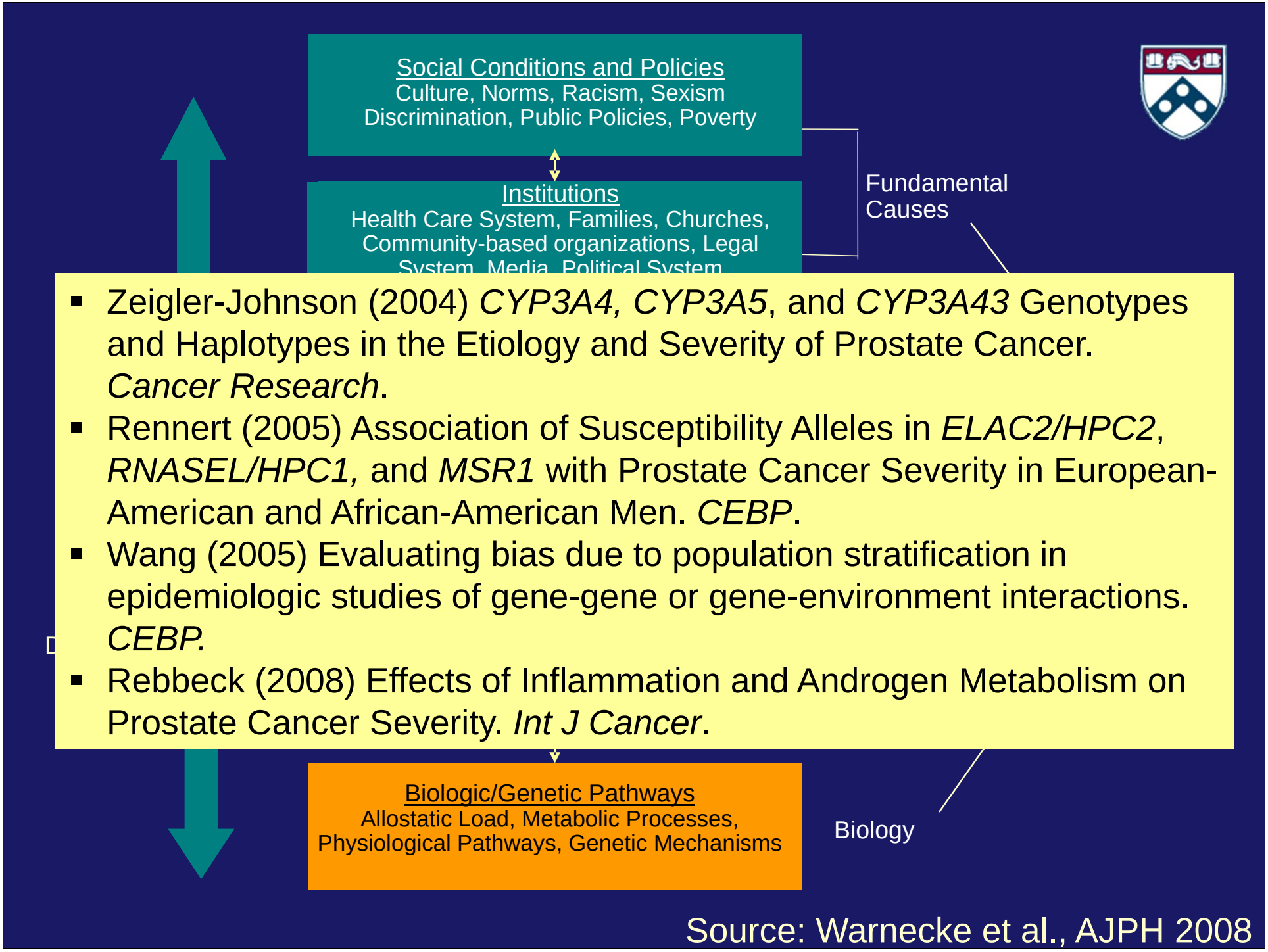
Centers by Sex, Race, Disease, & Social Factors

Center	Sex	Race/ Ethnicity	Social Factors	Disease/ Outcomes
UIC	F	AA/W/H	Inner city – Low	Breast Cancer
UC	F	AA/Africa	Inner city - Low	Breast Cancer
Penn	M	AA	Inner city	Prostate Cancer
OSU	F	White	Rural – Low	Cervical Cancer
Tufts	F/M	Hispanic	Inner city	Diab/MetSynd
UTMB	F/M	Hispanic	Border	Ca/MetSynd
WSU	F/M	AA	Inner city – Low	CVD/MetSynd
RAND	F/M	All	Inner city – Rural	Inflammatory markers

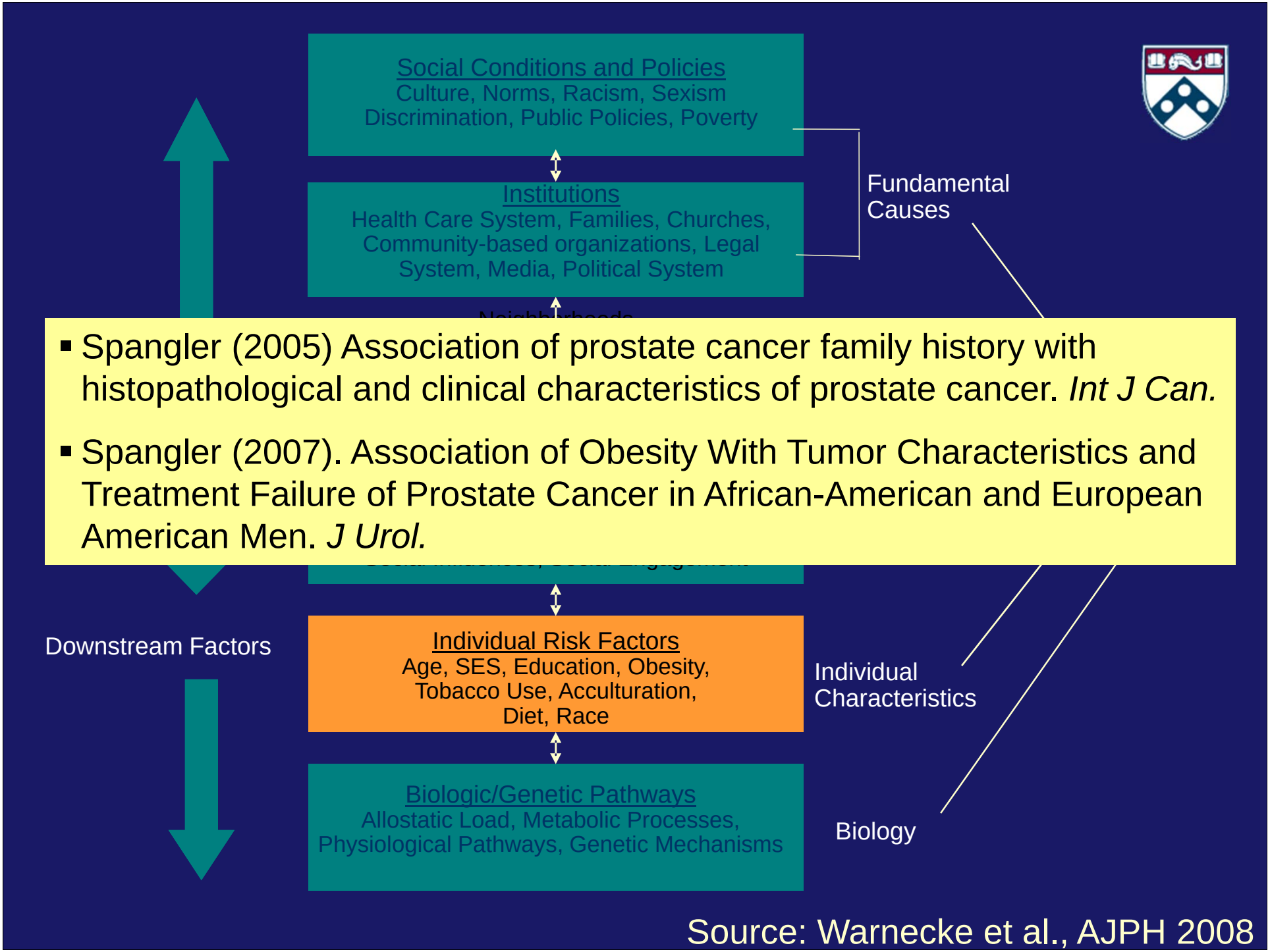
MetSynd=Metabolic Syndrome; Low = Low socioeconomic status


Social Conditions and Policies
Culture, Norms, Racism, Sexism
Discrimination, Public Policies, Poverty
Institutions
Health Care System, Families, Churches,
Community-based organizations, Legal
System, Media, Political System
Social/Physical Context
Collective Efficacy, Social Capital,
Access to Resources, Social Cohesion,
Segregation, Neighborhood Disadvantage,
Neighborhood Stability
Social Relationships
Social Networks, Social Support
Social Influences, Social Engagement
Individual Risk Factors
Age, SES, Education, Obesity,
Tobacco Use, Acculturation,
Diet, Race
Biologic/Genetic Pathways
Allostatic Load, Metabolic Processes,
Physiological Pathways, Genetic Mechanisms
Upstream Factors
Downstream Factors
Fundamental Causes
Patterns of Social Organization
Individual Characteristics
Biology
Cancer/Health Disparities
Source: Warnecke et al., AJPH 2008



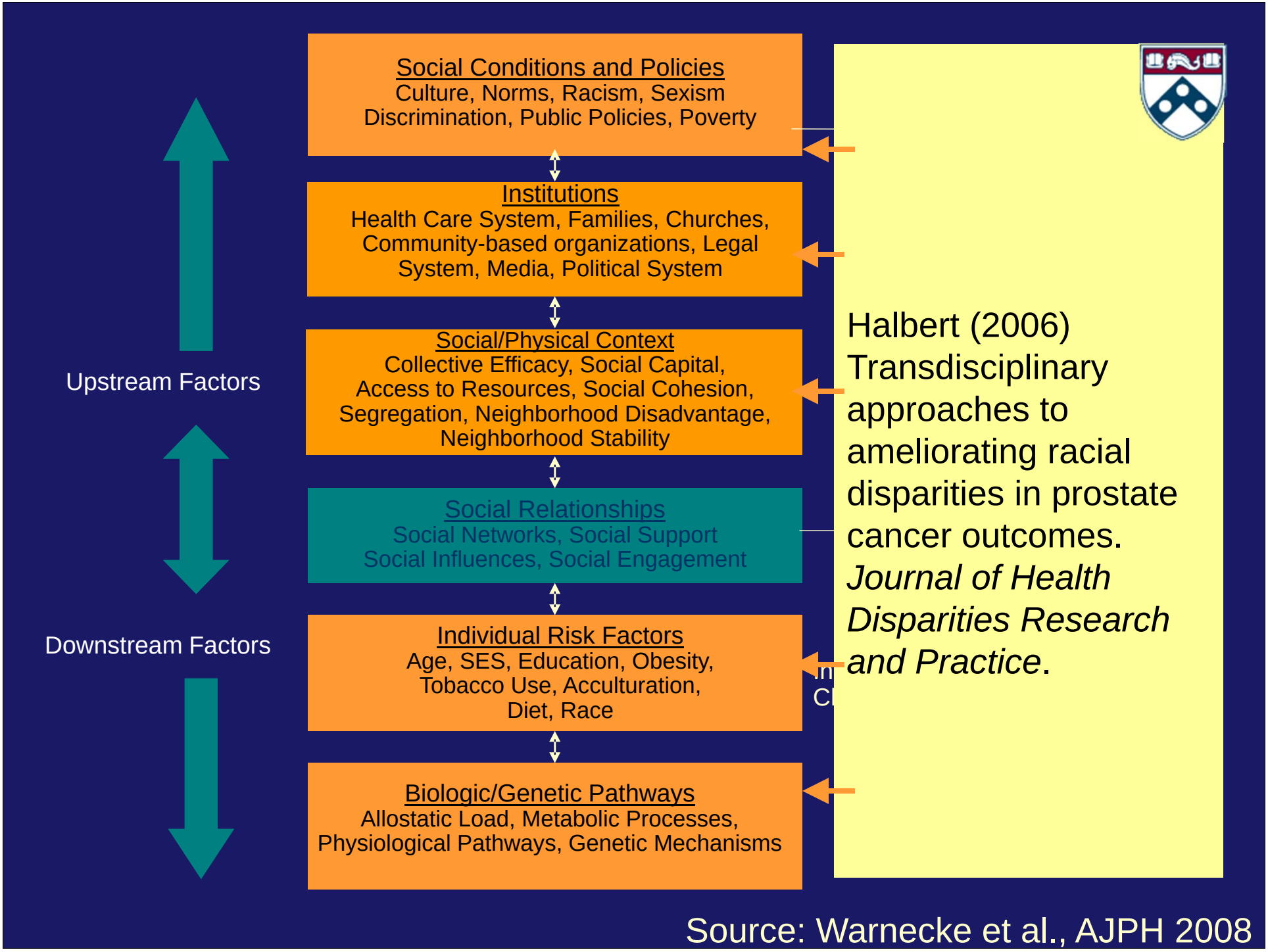
- Zeigler-Johnson (2004) *CYP3A4, CYP3A5*, and *CYP3A43* Genotypes and Haplotypes in the Etiology and Severity of Prostate Cancer. *Cancer Research*.
- Rennert (2005) Association of Susceptibility Alleles in *ELAC2/HPC2*, *RNASEL/HPC1,* and *MSR1* with Prostate Cancer Severity in European-American and African-American Men. *CEBP*.
- Wang (2005) Evaluating bias due to population stratification in epidemiologic studies of gene-gene or gene-environment interactions. *CEBP.*
- Rebbeck (2008) Effects of Inflammation and Androgen Metabolism on Prostate Cancer Severity. *Int J Cancer*.

Source: Warnecke et al., AJPH 2008



- Spangler (2005) Association of prostate cancer family history with histopathological and clinical characteristics of prostate cancer. *Int J Can.*
- Spangler (2007). Association of Obesity With Tumor Characteristics and Treatment Failure of Prostate Cancer in African-American and European American Men. *J Urol.*

Source: Warnecke et al., AJPH 2008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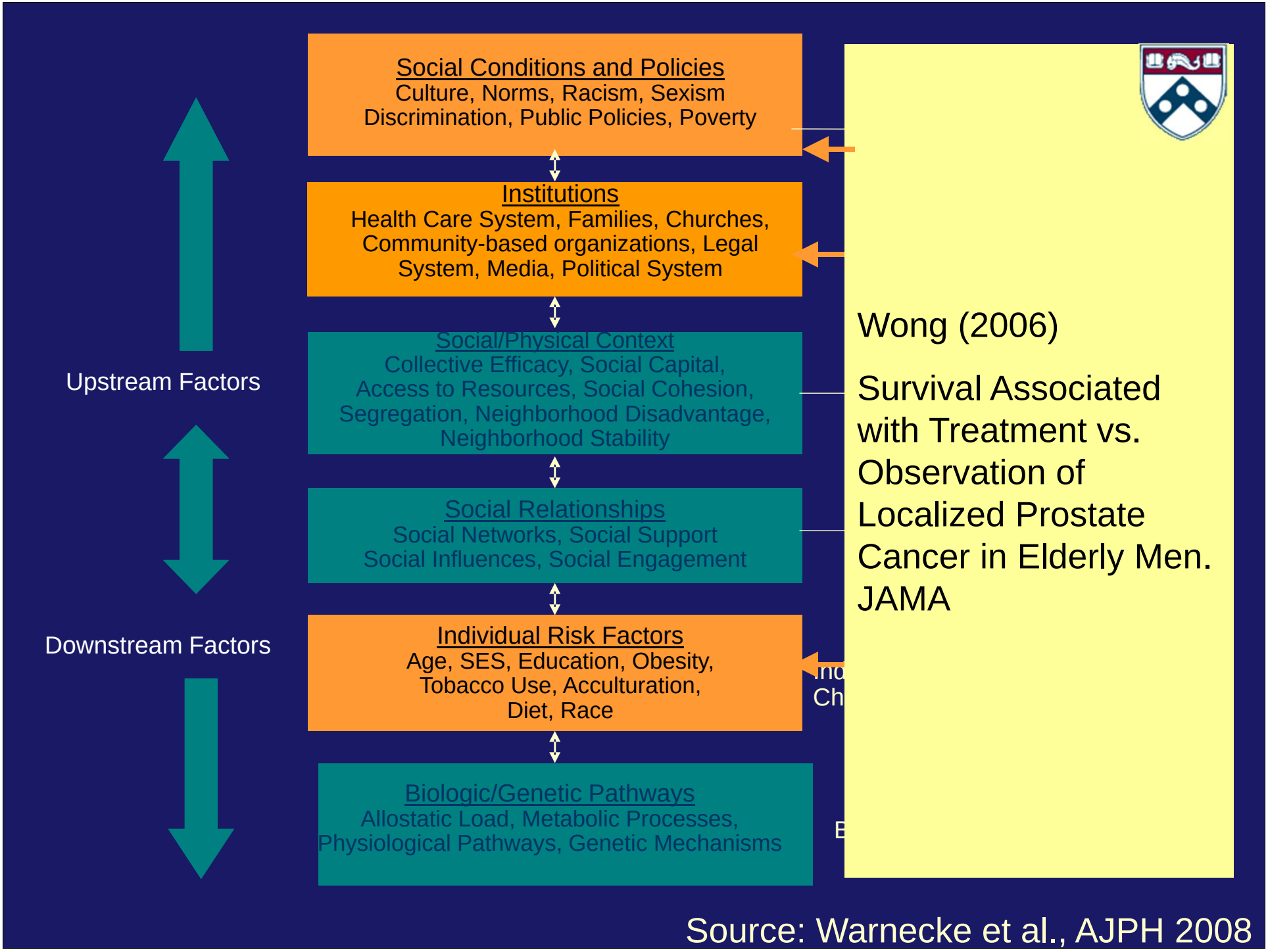
Downstream Factors
Halbert (2006) Transdisciplinary approaches to ameliorating racial disparities in prostate cancer outcomes. *Journal of Health Disparities Research and Practice*.
Source: Warnecke et al., AJPH 2008



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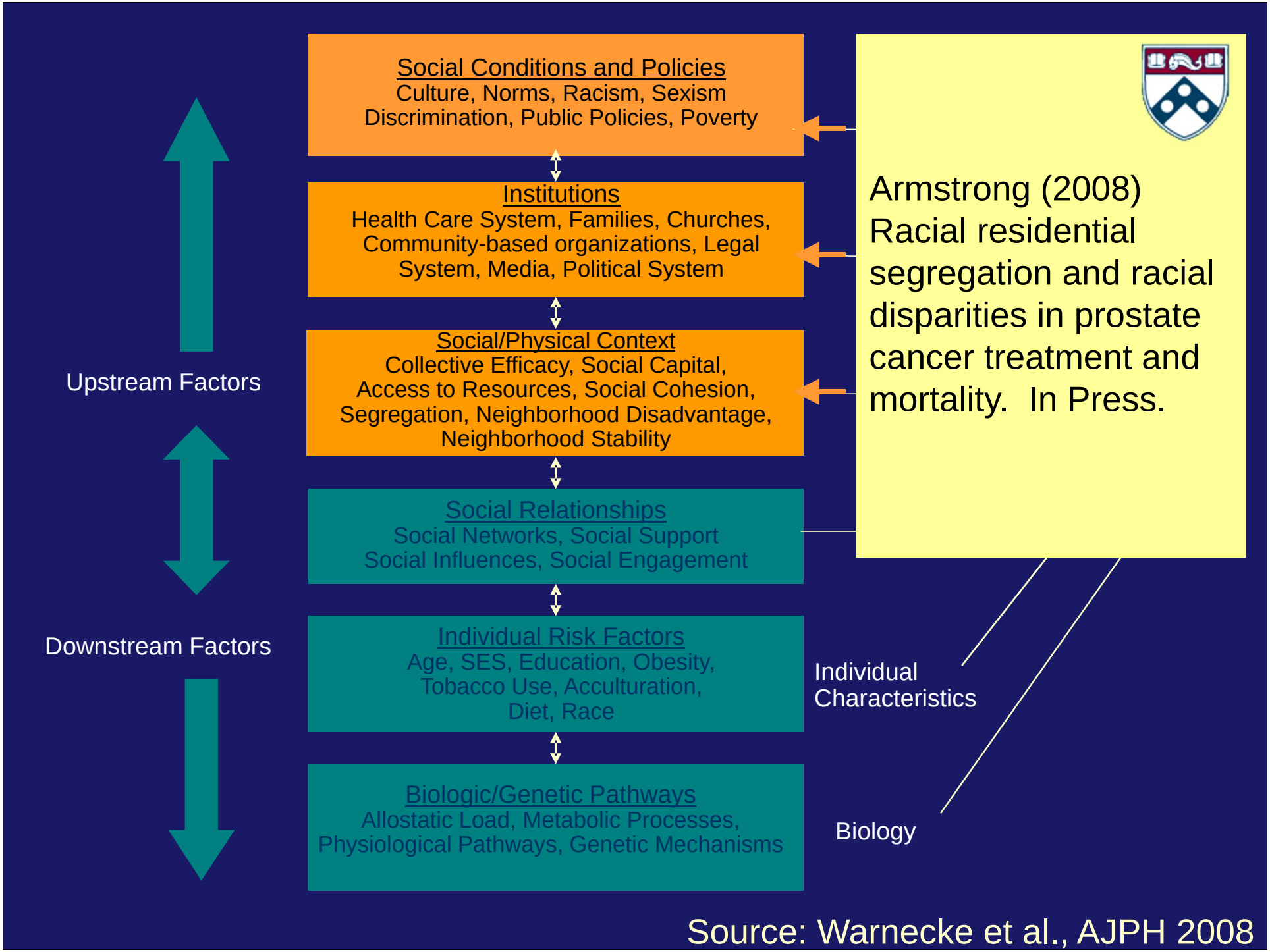
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Armstrong (2008)
Racial residential segregation and racial disparities in prostate cancer treatment and mortality. In Press.
Individual Characteristics
Biology
Source: Warnecke et al., AJPH 2008

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Penn
University of Pennsylvania

Prostate Cancer
African American and White

Joint Effects of Genotype and Neighborhood SES on BF

Neighborhood Characteristic	Neighborhood Value	Effect of *RNASEL* R462Q
% of Total Population Below Poverty Level	>10%	6.11 (1.41-26.56)
	≤10%	2.01 (0.79-5.13)
Per Capita Income in 1999	≤$30,000	7.12 (1.66-30.45)
	>$30,000	0.85 (0.26-2.75)
% High School Graduates	≤90%	4.17 (1.15-15.16)
	>90%	1.26 (0.38-4.14)

Source: Rebbeck, Spangler et al. In prep.

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UIC

Breast Cancer
African American Women – Low SES

Race = Poverty, Disruption, & Neighborhood Crime

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Isolation, Acquired Vigilance, & Depression

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Stress Hormone Dynamics

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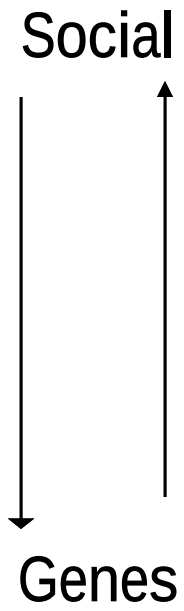
Cell Survival & Tumor Development



Source: Adapted from Gehlert et al. 2008

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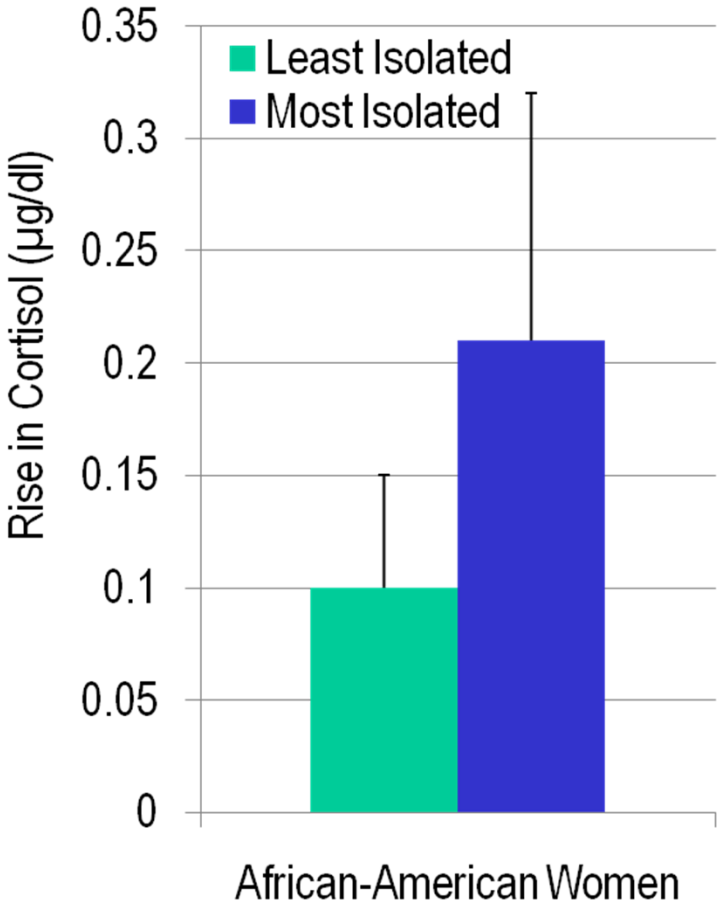
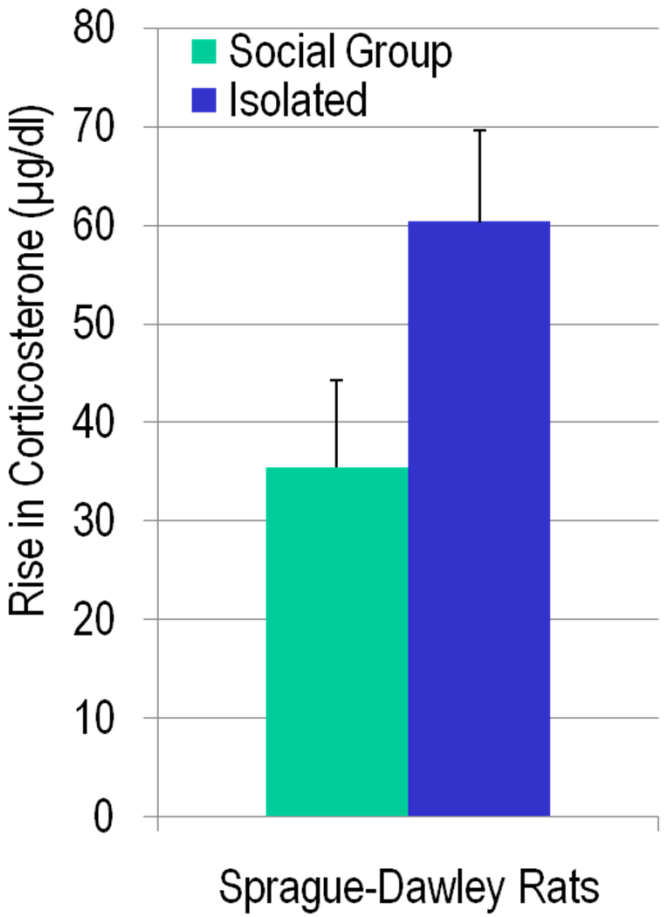
Social Isolation and Cortisol Response





Source: Gehlert, McClintock, Conzen, In Prep

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UIC

Model of Neighborhood Gentrification and Late Stage Breast Cancer-1994–2000

	Odds ratio	**95% CI**	***p* Value**
Low SES	1.23	(1.12, 1.36)	<0.001
High SES	0.86	(0.79, 0.93)	<0.001
Concentration of Immigrants	1.11	(1.02, 1.21)	0.020
Gentrification	1.09	(1.01, 1.18)	0.029
Age	1.01	(1.01, 1.02)	<0.001
African American	1.24	(1.03, 1.48)	0.022
Hispanic	0.71	(0.53, 0.95)	0.019

Source: Barret et al. Annals of Epi. 2008

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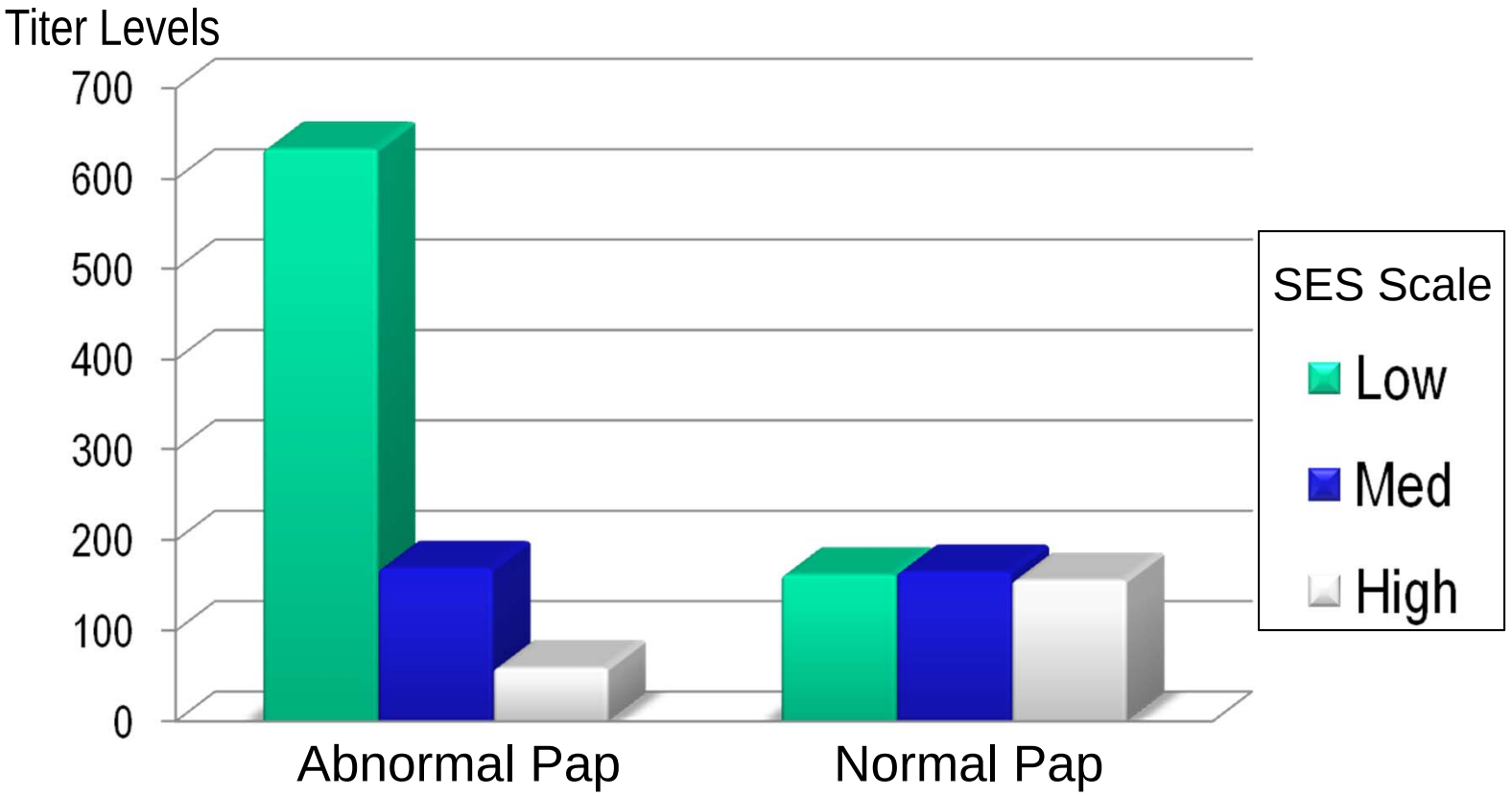
Cervical Cancer - White Women - Rural

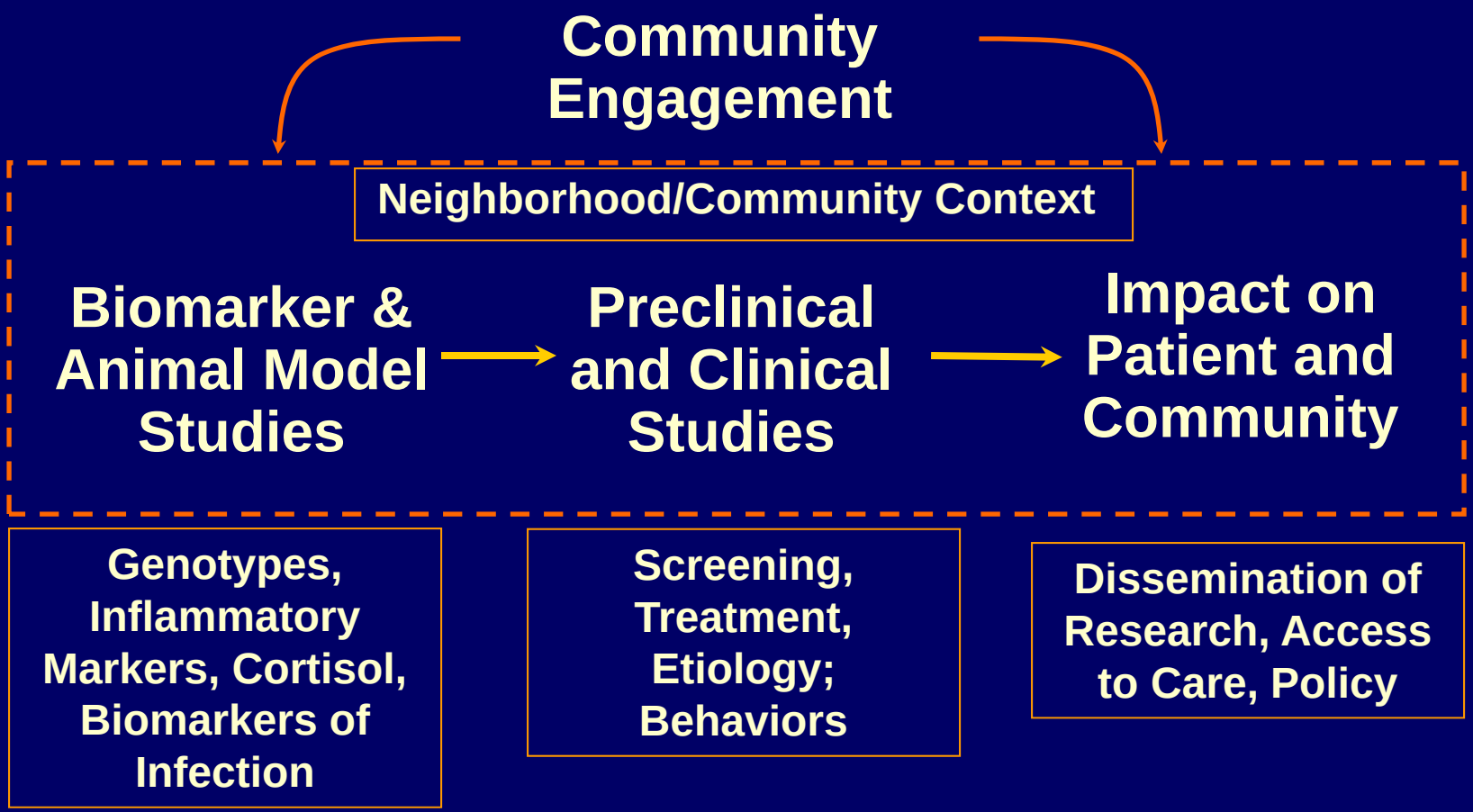
EBV VCA-IgG Titers*: Stratified Analyses - SES Scale



*Adjusted for age, region and HPV status; p<.05 for interaction

Source: Paskett et al In prep

CPHHD Transdisciplinary Research Framework: Emerging Cross-Center Themes



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Evaluation - Outcomes

- Number of Publications
- Leveraged Funding

- Transdisciplinary Team Science
- Dissemination of the Science
  - AACR/CRCHD Meeting - November 2007
  - Natcher Auditorium NIH-wide Symposium February 2008

- Internal Steering Committee

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Goals

- Focus on testing hypotheses that relate to further understanding the pathways and interactions among multiple social and physical environmental determinants and their physiological pathways

- Two new components
  - Include the training of the next generation
  - Develop interventions based on scientific evidence

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Scope

- Trans-NIH collaboration – NCI, NIA, NHLBI, OBSSR
- Unique scientific agenda to develop new models to
  - Understand pathways
  - Develop interventions
  - Inform other initiatives at NCI and NIH
- Each center will be required to incorporate
  - basic sciences (including biology and genetics),
  - social, behavioral, and population sciences, and
  - clinical sciences

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Advantages of P50 Centers

- Promote transdisciplinary team science
- Synergy of multiple disciplines
- Facilitate examination of complex multilevel research questions
- Train the next generation within the context of team health disparities research

- Ability of NCI to develop steering committees to enhance the science – across the divisions
- Coordinate activities across NIH

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NIH Centers for Population Health and Health Disparities (CPHHD)

Number of NCI Funded Centers: 5
Total NCI Budget: $10 million per year

Total Number of NIH Centers: 8-10
Total NIH Budget: $20 million per year

Total Number of years: 5

CENTERS FOR POPULATION HEALTH
CPHHD
AND HEALTH DISPARITIES

Cells to Society:
Overcoming Health Disparities