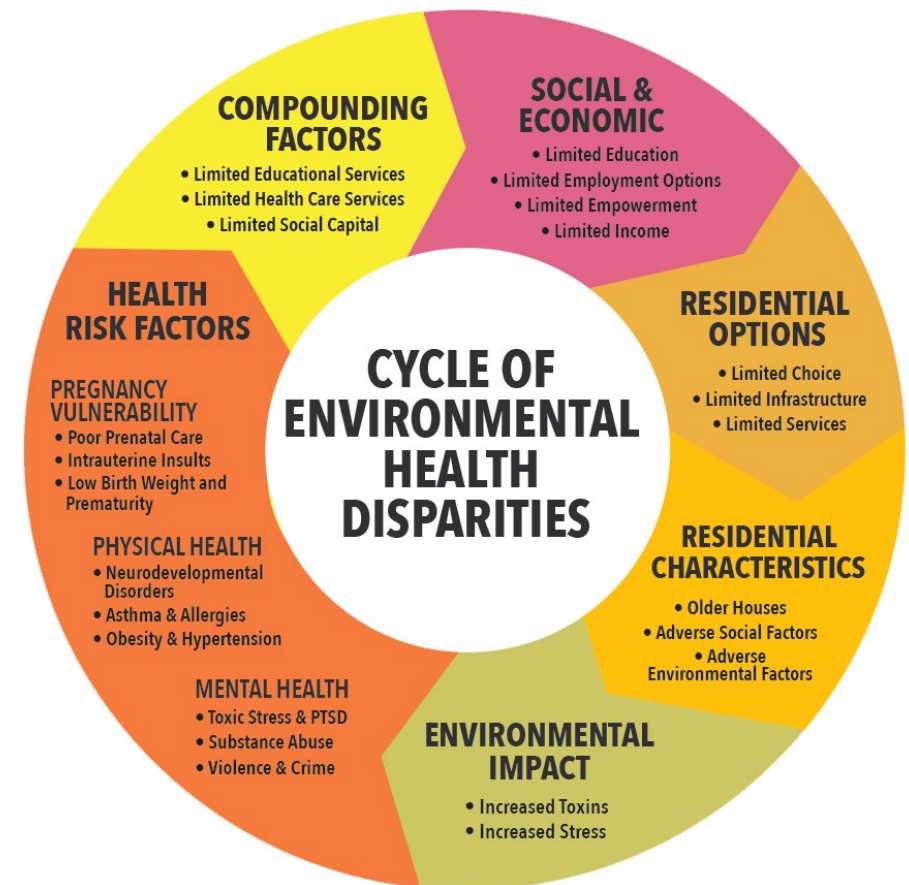

HOUSING, HEALTH INEQUITIES, & THE EXPOSOME

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TODAY'S PRESENTATION

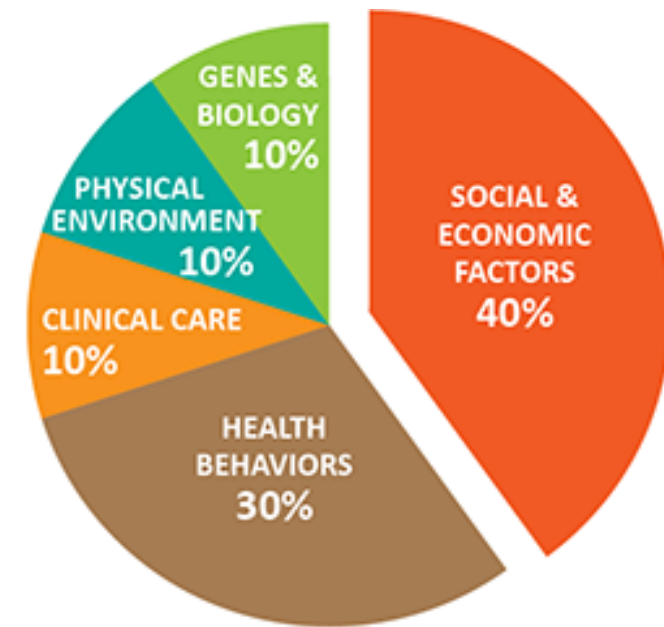
1. Health Disparities & Health Equity
2. Exposome & the Causes of Health Disparities
3. Causal Pathways of Disease & Disparities
4. Exposome
5. Effects of Housing
6. Challenges & Strategies
7. Implications for Health Equity



I have not conflicts to declare

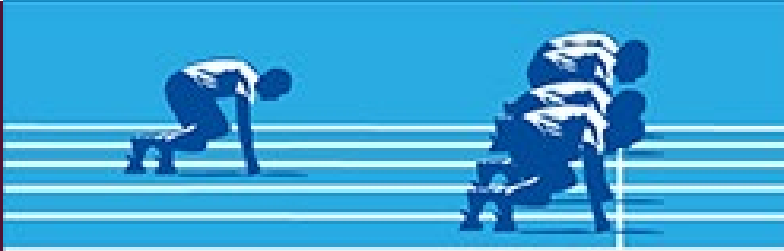
HEALTH DISPARITIES

- Definition: Health disparities occur when some population groups do not benefit from the same health status as other groups
 - Race/ethnicity, gender, age, disability
 - Also include measures of SES, rural/urban, and place
- Population measures of health disparities
 - Compared to an index group (healthiest group)
 - Health status, outcomes, and behaviors
 - Incidence and prevalence of behaviors and disease
 - Mortality/morbidity rates (per 100,000)
 - Odds ratios
 - Life Expectancy
 - Years of Person Life Lost (YPLL)
 - Disability Adjusted Life Years (DALY)



DETERMINANTS OF HEALTH

HEALTH EQUITY



- Goal of public health is to achieve health equity by eliminating health disparities and achieving optimal health for all
- Health equity is achieved when:
 - Every person has the opportunity to “attain his or her full health potential”
 - No one is “disadvantaged from achieving this potential because of social position or other socially determined circumstances”
- Health equity means increasing opportunities for everyone to live the healthiest life possible, no matter who we are, where we live, or how much money we make
- Health equity requires addressing environmental exposures and behaviors that affect health

CAUSES OF HEALTH DISPARITIES

- Causes of health disparities are multiple and complex
- Genetics and access to care each account for about 10% of causes of death
- Environmental and behavioral factors account for about 80% of deaths
 - Exposures to chemical and non-chemical exposures where you live, work, play, pray and learn
 - Chemical exposures
 - Measures of both the amount of, and frequency with which a person comes into contact with a chemical substance
 - Non-chemical exposures (also referred to as social determinants of health)
 - Poverty
 - Housing conditions
 - Limited English proficiency
 - Lack of insurance
 - Community violence
 - Lack of access to fresh fruits and vegetables
 - Lack of exercise



EXPOSOME

- Biological mechanisms and pathways through which environmental exposures lead to the onset and progression of disease
- The measure of all the exposures of an individual in a lifetime and how those exposures relate to health. (Cumulative)
- An individual's exposure begins before birth and includes insults from environmental and occupational sources. (Across the life course)
- Exposome is comprised of three broad domains:
 - General external environment
 - Individual external environment
 - Internal environment (genetic/multi-omics biomarkers)

GENERAL EXTERNAL ENVIRONMENT

- General External Environment
 - Natural
 - Air, water, and land
 - Built
 - Places you live, work, play, pray, and learn
 - Social
 - Demographic, social, political, and economic factors
 - Policy
 - Federal, state, and local laws and regulations
 - Health and Health Care
 - Population Health: rates per 100,000. Odds ratios. morbidity, mortality, longevity, YPLL, DALY
 - Health Care: # Facilities, providers, services, shortage areas, cost, service eligibility
- Spatial dimension
- Temporal dimension



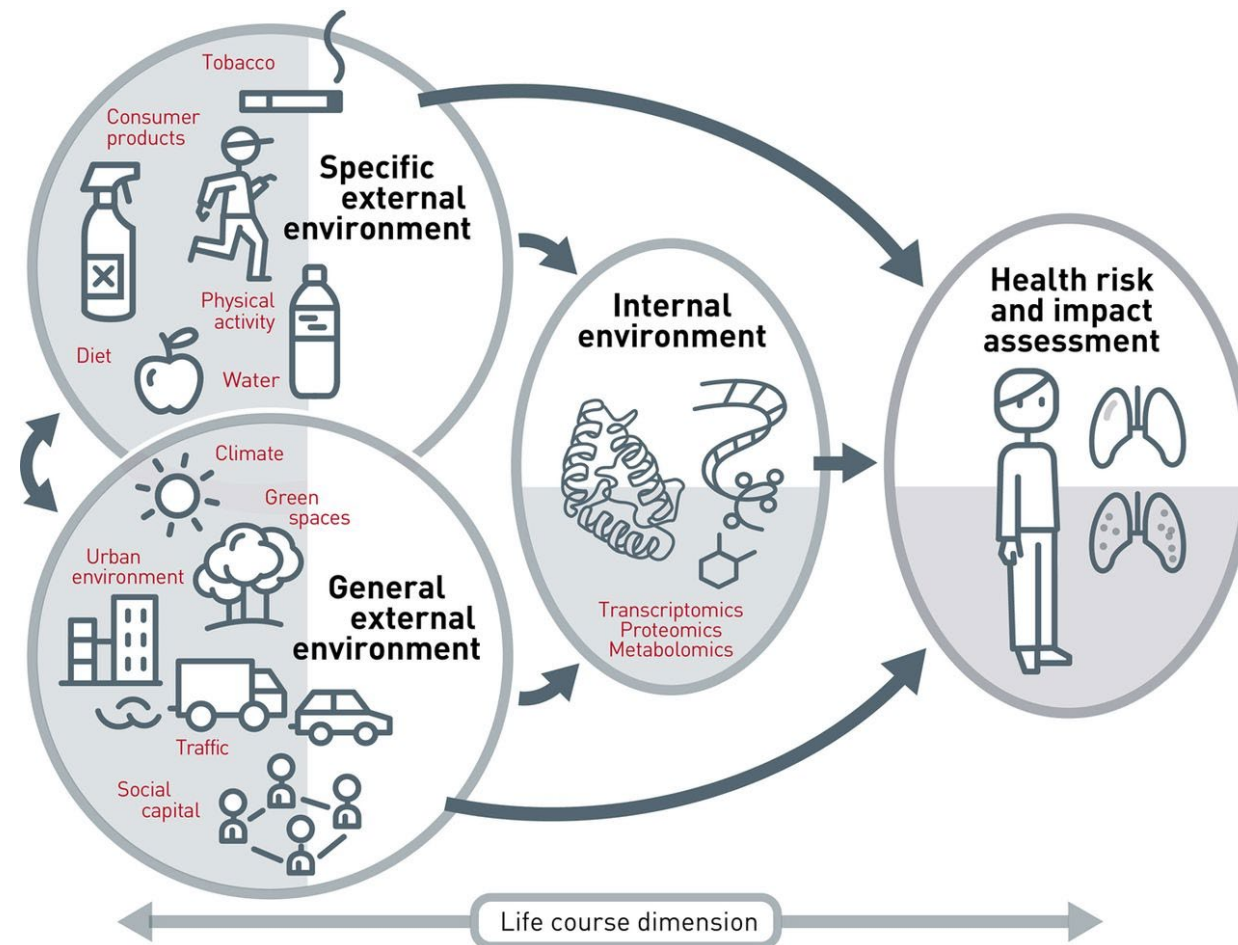
INDIVIDUAL EXTERNAL ENVIRONMENT

■ Lifestyle

- Sleep
- Diet
- Exercise
- Smoking
- Alcohol use
- Drug use

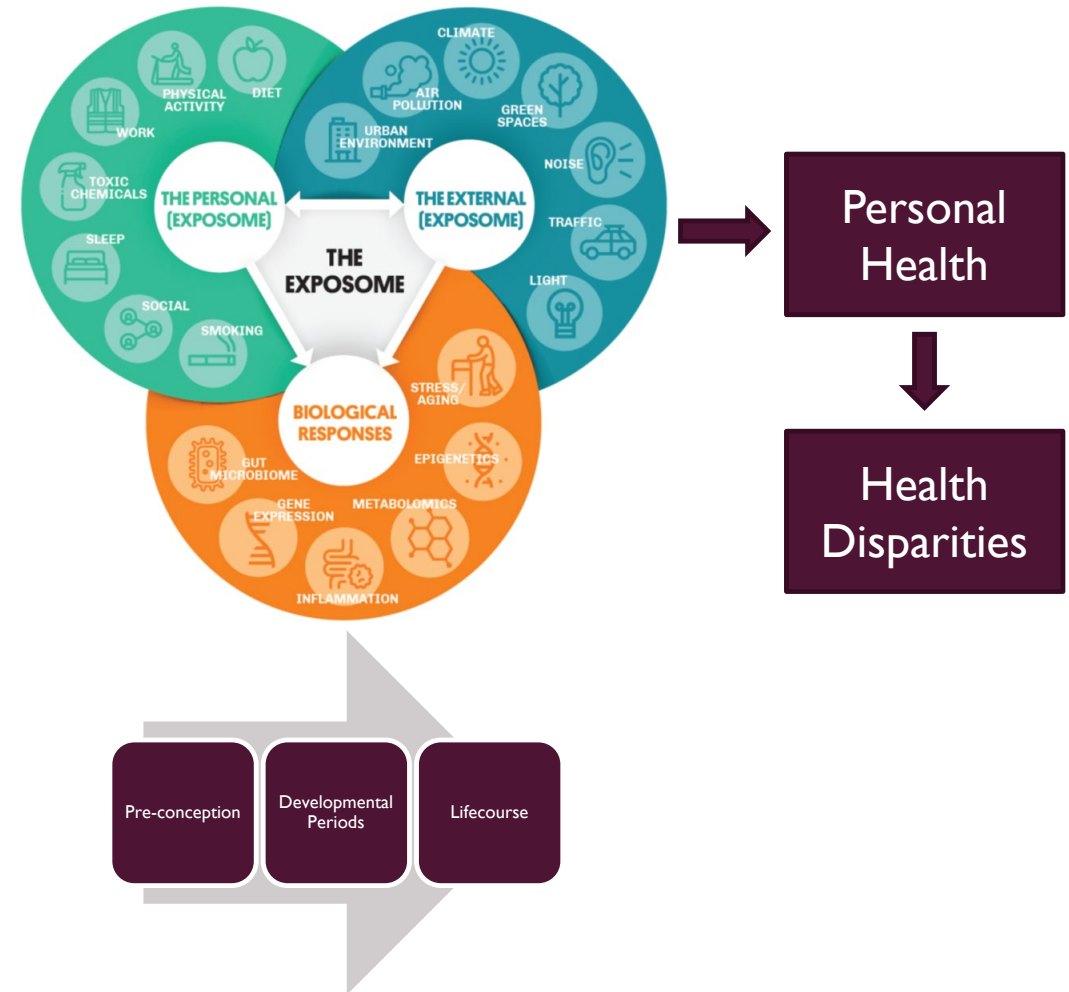
■ Unique external exposures

- Consumer products
- External environment

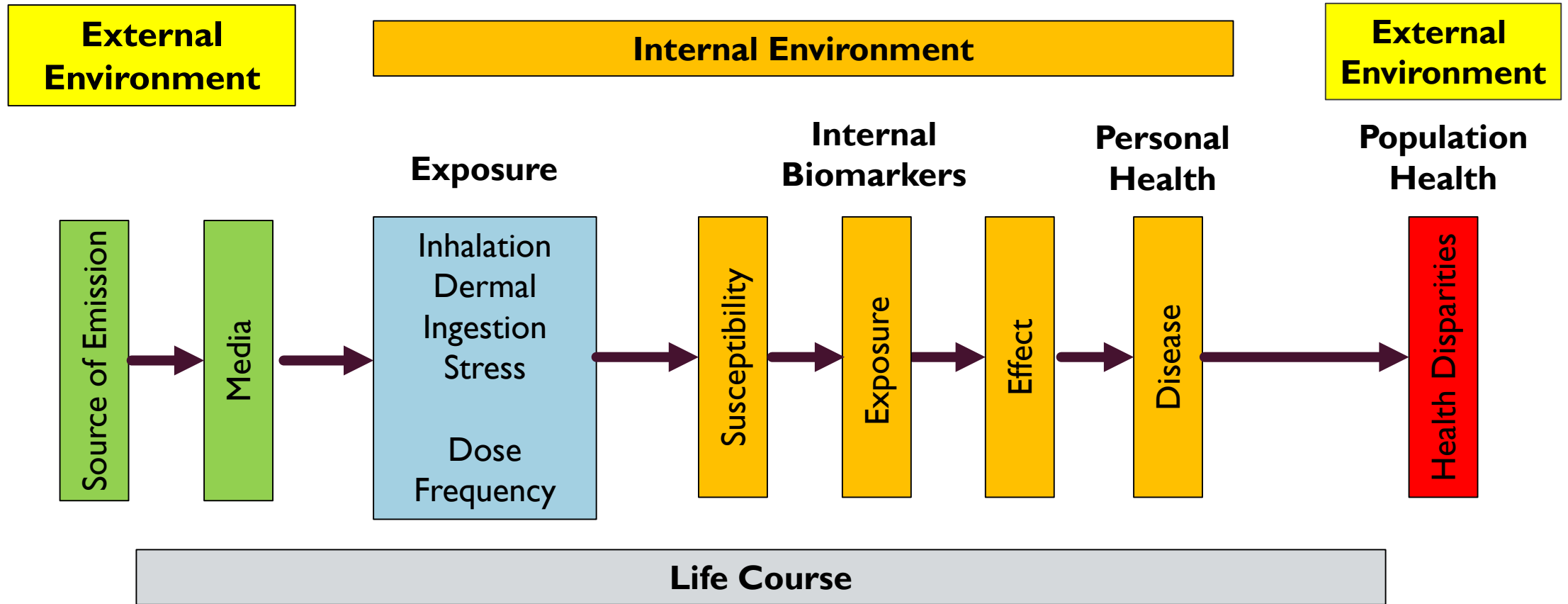


CAUSAL PATHWAYS OF HEALTH DISPARITIES ASSOCIATED WITH HOUSING

- **Exposome**: the measure of all the environmental exposures an individual has in a lifetime and how those exposures relate to personal health and population level disparities
 - Chemical exposures
 - Location of house (pollution: air, water, soil)
 - Construction materials (asbestos, formaldehyde, etc)
 - Indoor pollutants (second hand smoke, gas stove,
 - Social stressors exposures
 - Exposure to crime
 - Neighborhood conditions (broken windows)
 - Access to fresh foods and vegetables, green space
 - Transportation



EXPOSOME ASSESSMENT



Health Disparities Pathway

ZIP CODE HEALTH

- Zip code is a greater predictor of health status than genetic code
- Health disparities exist between different zip codes
 - Homicide
 - Chronic diseases
 - Infant mortality
 - Life expectancy
- Environmental justice
 - Redlining / publicly sanctioned discrimination
 - Marginalized populations exposed to greater level of environmental pollutants
 - Persons experiencing social inequities have more sickness and disease
 - Persons living in low income communities have less access to quality housing, education, health care, etc.

IMPLICATIONS OF AN EXPOSOME APPROACH FOR UNDERSTANDING HOUSING AND HEALTH EQUITY

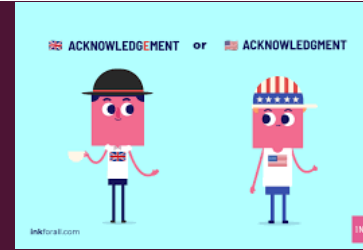
- Causes of diseases are complex
- Exposome provides a conceptual model for understanding health equity
 - Housing factors affect health
 - Biological pathways of how housing is associated with health
- Health equity is achieved by understanding how environmental exposures lead to poor health outcomes and population level disparities
 - Natural environment
 - Built environment
 - Social environment
 - Policy environment

SOLUTION: ACADEMIC / COMMUNITY PARTNERSHIPS

Research Informs Action



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