What comes to mind?

- Over the centuries, it was believed that Black people were impervious to pain and had weak lungs that could be strengthened through hard work.
- Black skin is thicker than white skin.
- A 2016 survey of 222 white medical students and residents published in PNAS showed that half of them believed black people's nerve endings are less sensitive than white people's.

In counties with more Black doctors, Black people live longer, 'astonishing' study finds

By Usha Lee McFarling April 14, 2023

Reprints

https://www.statnews.com/2023/04/14/black-doctors-primary-care-life-expectancy-mortality/

JAMA Network | Open

Original Investigation | Equity, Diversity, and Inclusion

Black Representation in the Primary Care Physician Workforce and Its Association With Population Life Expectancy and Mortality Rates in the US

John E. Snyder, MD, MS, MPH; Rachel D. Upton, PhD; Thomas C. Hassett, PhD; Hyunjung Lee, PhD, MS, MPP, MBA; Zakia Nouri, MA; Michael Dill, MAPP

A Deep Thought

"Of all the forms of inequality, injustice in health care is the most shocking and inhumane"

MLK, 1966

Families USA. Martin Luther King Jr.: A civil rights icon's thoughts on health care. Available at http://www.standupforhealthcare.org/blog/martin-luther-king-jr-a-civil-rights-icon-s-thoughts-on-health-care

Introduction to Pathology of Diseases

Disparity of Diseases

Antonio (Tony) Baines, Ph.D.
abaines@nccu.edu

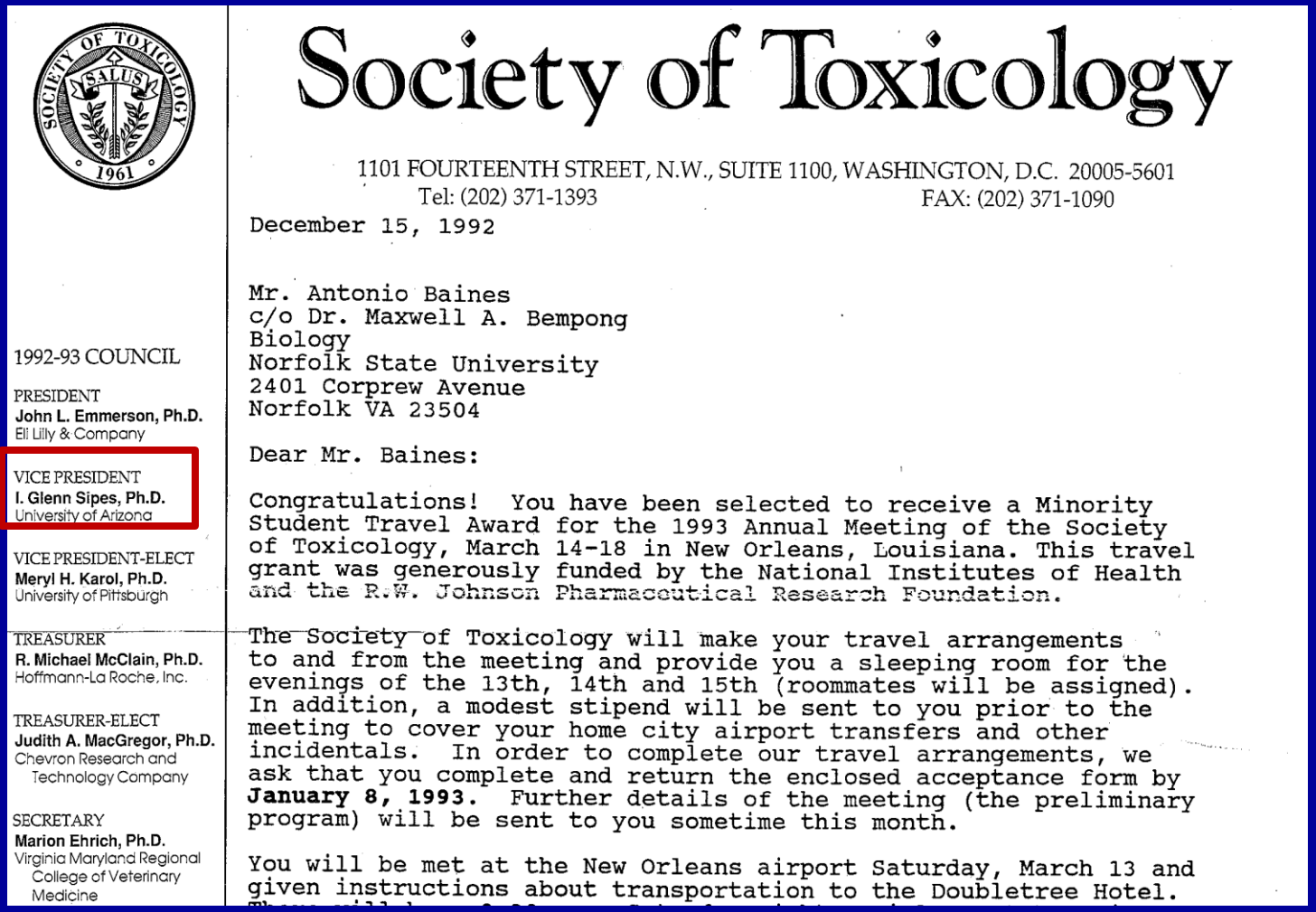
Associate Professor, Dept. of Biological & Biomedical Sciences
College of Health and Sciences
Cancer Research Program
North Carolina Central University

Adjunct Associate Professor, Dept. of Pharmacology
Member, Curriculum in Toxicology and Environmental Medicine
School of Medicine
UNC-Chapel Hill

My Education/Career Path in Academia

B.S. in Biology from Norfolk State University (4 years)

The trip that changed my life and allowed me to talk to you today!



Society of Toxicology

1101 FOURTEENTH STREET, N.W., SUITE 1100, WASHINGTON, D.C. 20005-5601
Tel: (202) 371-1393 FAX: (202) 371-1090

December 15, 1992

Mr. Antonio Baines
c/o Dr. Maxwell A. Bempong
Biology
Norfolk State University
2401 Corprew Avenue
Norfolk VA 23504

Dear Mr. Baines:

Congratulations! You have been selected to receive a Minority Student Travel Award for the 1993 Annual Meeting of the Society of Toxicology, March 14-18 in New Orleans, Louisiana. This travel grant was generously funded by the National Institutes of Health and the R.W. Johnson Pharmaceutical Research Foundation.

The Society of Toxicology will make your travel arrangements to and from the meeting and provide you a sleeping room for the evenings of the 13th, 14th and 15th (roommates will be assigned). In addition, a modest stipend will be sent to you prior to the meeting to cover your home city airport transfers and other incidentals. In order to complete our travel arrangements, we ask that you complete and return the enclosed acceptance form by **January 8, 1993.** Further details of the meeting (the preliminary program) will be sent to you sometime this month.

You will be met at the New Orleans airport Saturday, March 13 and given instructions about transportation to the Doubletree Hotel.

1992-93 COUNCIL

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Marion Ehrich, Ph.D.
Virginia Maryland Regional College of Veterinary Medicine

My Education/Career Path in Academia

B.S. in Biology from Norfolk State University (4 years)

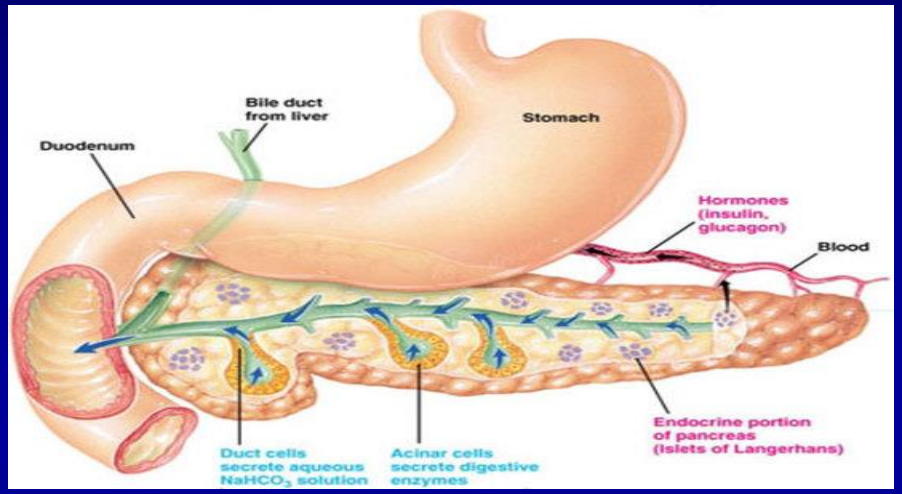
Ph.D. in Pharmacology and Toxicology from the University of Arizona (5.5 years)

Post-doctoral fellowship in Pharmacology at UNC-Chapel Hill (5 years)

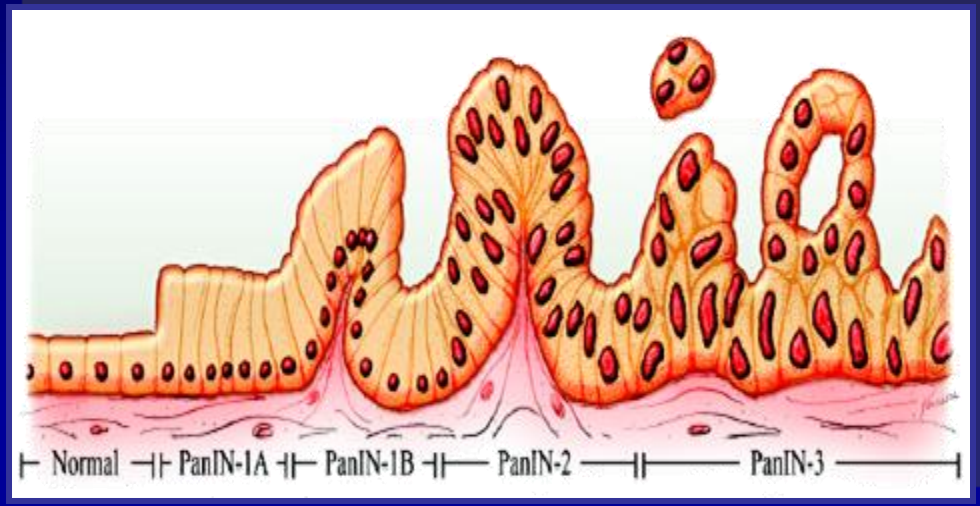
Associate Professor, Cancer Biologist at North Carolina Central University/UNC-Chapel Hill (18 years)

Cancer Biologist (Pharmacologist)

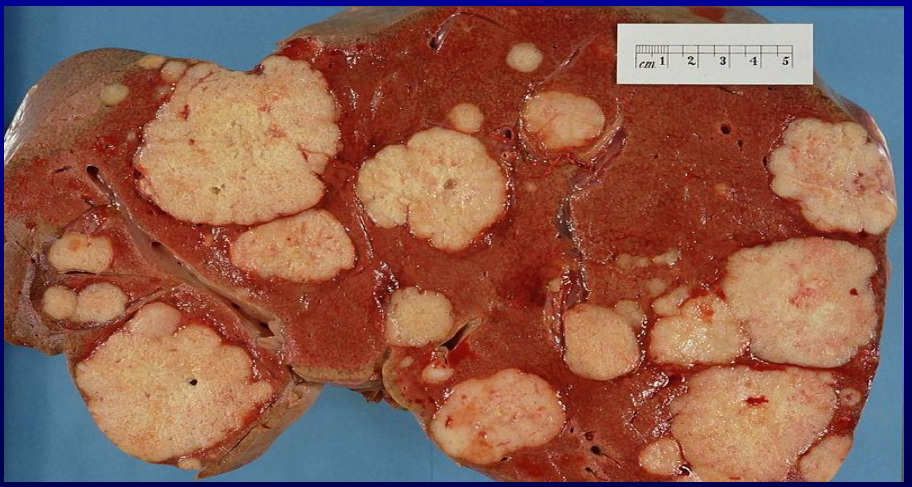
Trying to develop better drugs against pancreatic cancer



http://www.olivelab.org/the-pancreas-overview.html



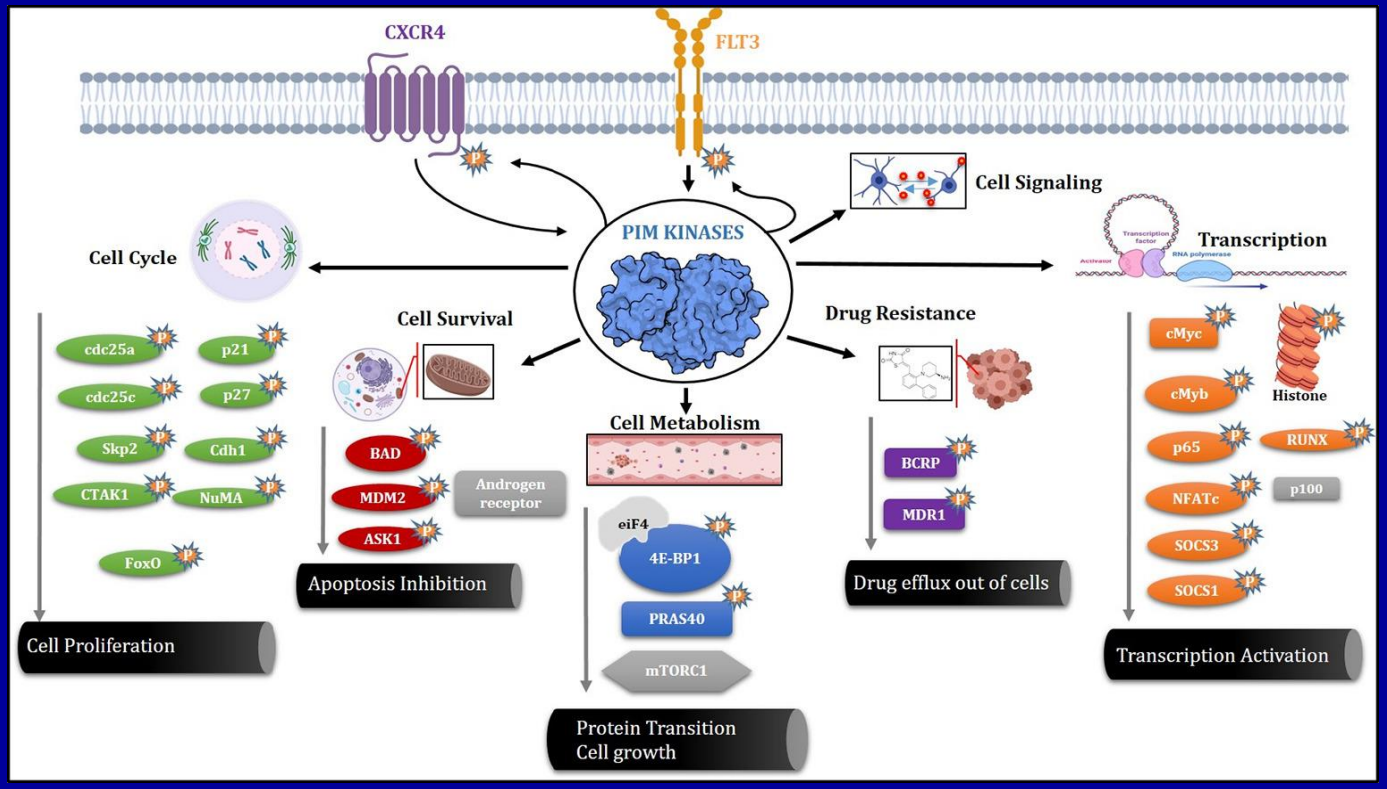
Modified from Hruban et al. (2000)



By Haymanj - Self-photographed, Public Domain, https://commons.wikimedia.org/w/index.php?curid=3662694

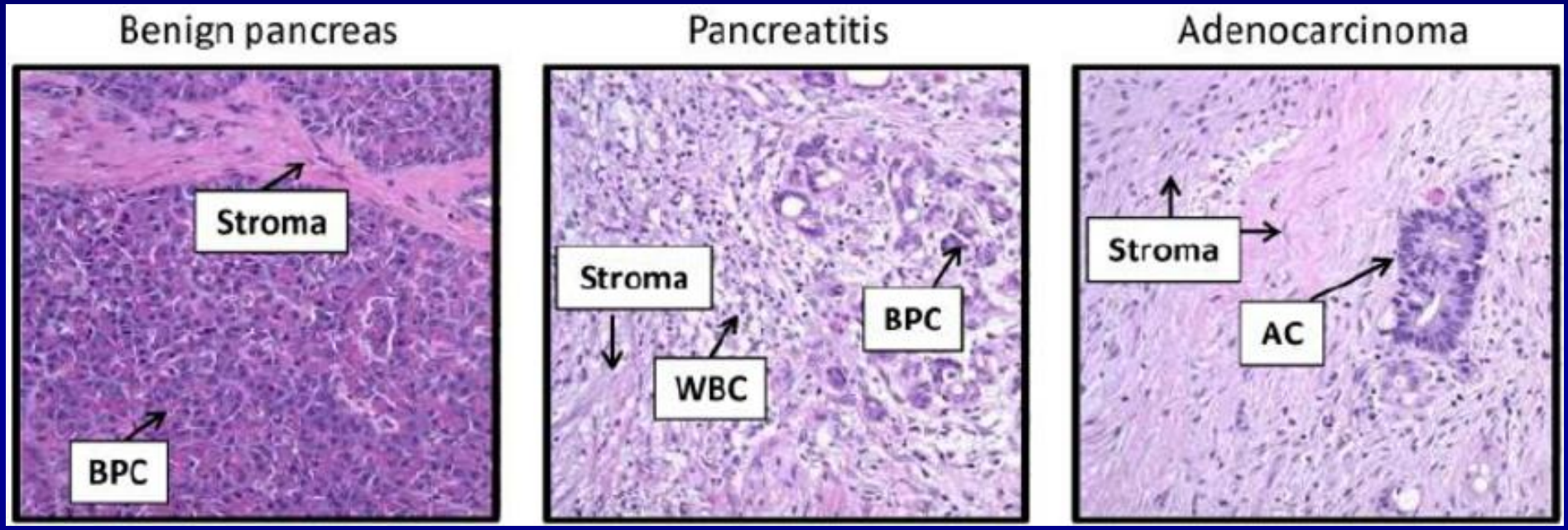
- **Will potentially be the 2nd in 2030**
- 66,440 diagnosed in 2024, 51,750 will die
- Lowest 5-yr survival rate of all major cancers - 13%
- Radioresistant and Chemoresistant
- **Health Disparity – African-American, Ashkenazi Jews**

PIM kinases and other potential molecular drug targets



https://ars.els-cdn.com/content/image/1-s2.0-S0024320520306160-ga1_lrg.jpg

Histology Images of a Benign Pancreas, Pancreatitis, and Adenocarcinoma



Representative histology images [11] of normal pancreatic tissue (BPC = benign pancreatic cells), pancreatitis (WBC = white blood cells), and pancreatic adenocarcinoma (AC = adenocarcinoma cells with enlarged nuclei). The nuclei and stroma have been stained purple (hematoxylin stain) and pink (eosin stain), respectively.

https://www.researchgate.net/figure/Representative-histology-images-11-of-normal-pancreatic-tissue-BPC-benign-pancreatic_fig1_38083991

Pancreatic cancer is not only lethal, but a health disparity

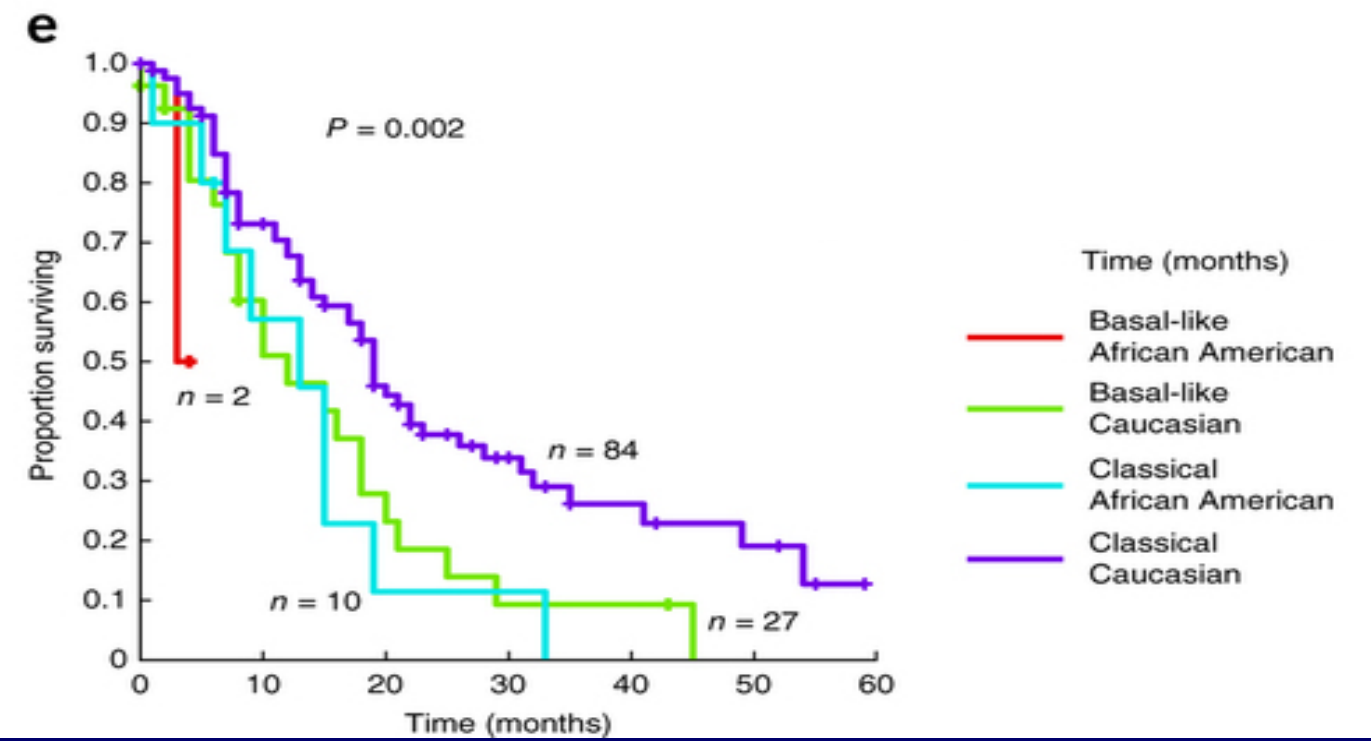
- The incidence of pancreatic cancer is **50-90%** higher in African-Americans than in any other ethnic group in the U.S
- African-Americans have the poorest prognosis of any ethnic group in the U.S.
- African-Americans are less likely to receive surgery than any other ethnic group in the U.S.

http://pathology.jhu.edu/pc/PartAfAm.php?area=pa

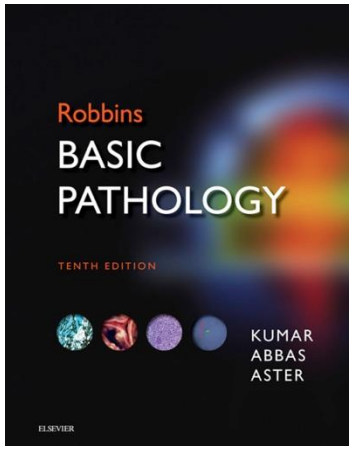
What is the definition of a health disparity?

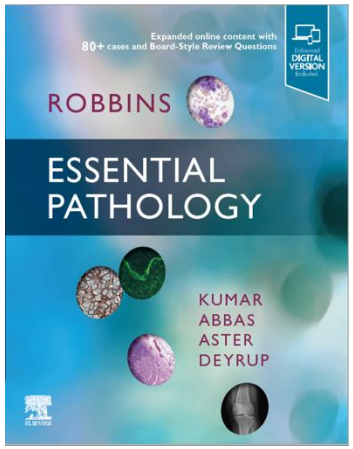
The National Cancer Institute (NCI) defines "cancer health disparities" as *adverse differences in cancer incidence (new cases), cancer prevalence (all existing cases), cancer death (mortality), cancer survivorship, and burden of cancer or related health conditions that exist among specific population groups in the United States.*

Overall survival for both basal-like and classical PDAC are less in African-Americans



Moffitt,R.A., *et al*., *Nature Genetics*, 2015





Disparities in Disease

Kawasaki disease

Nasopharyngeal carcinoma

Keloids

Sarcoidosis

Lactase deficiency

SLE

Hepatocellular carcinoma

SCID

Sudden infant death syndrome

Testicular germ cell tumors

Bladder carcinoma

Esophageal SCC

Cystic fibrosis

Hypertension

Breast cancer

Leiomyomas

H. pylori infection

Autoimmune hepatitis

Cardiac amyloidosis

Prostate cancer

Diabetes

Thalassemia

Ewing sarcoma

Hereditary spherocytosis

Factor V Leiden

Sickle cell anemia

Syphilis

Cholesterol gallstones

Acetaldehyde deficiency

G6PD deficiency

Pulmonary adenocarcinoma

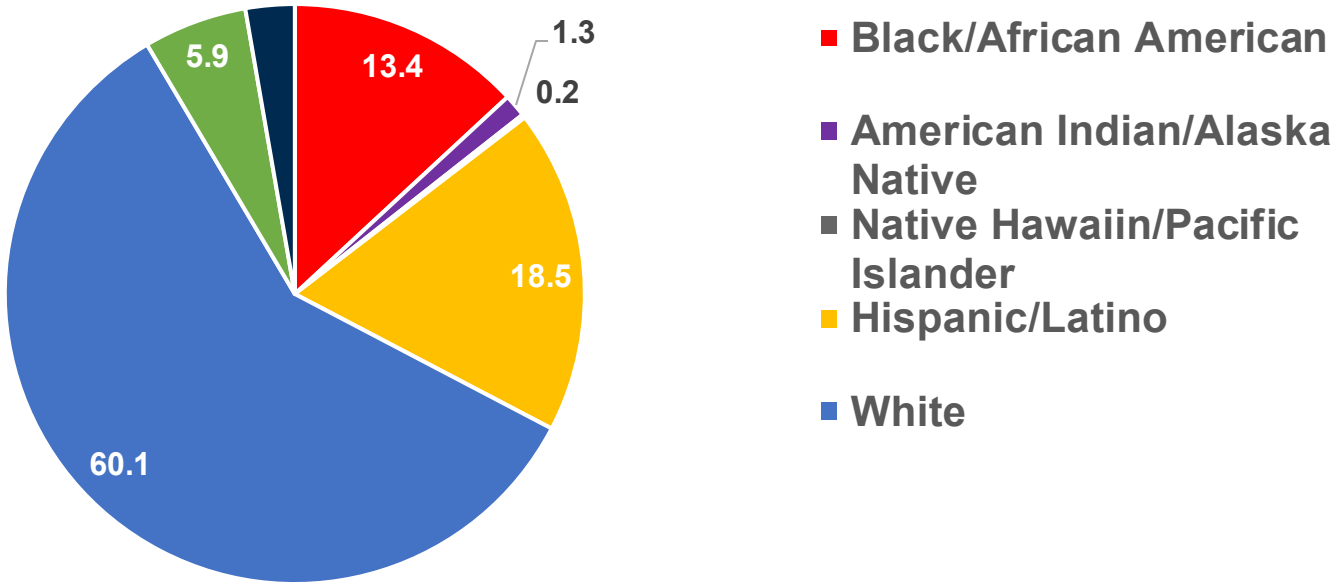
Nephrosclerosis

Tuberculosis

NIH Race Categories

- American Indian or Alaska Native
- Asian
- Black or African American
- Native Hawaiian or Other Pacific Islander
- White

Race and Hispanic Origin



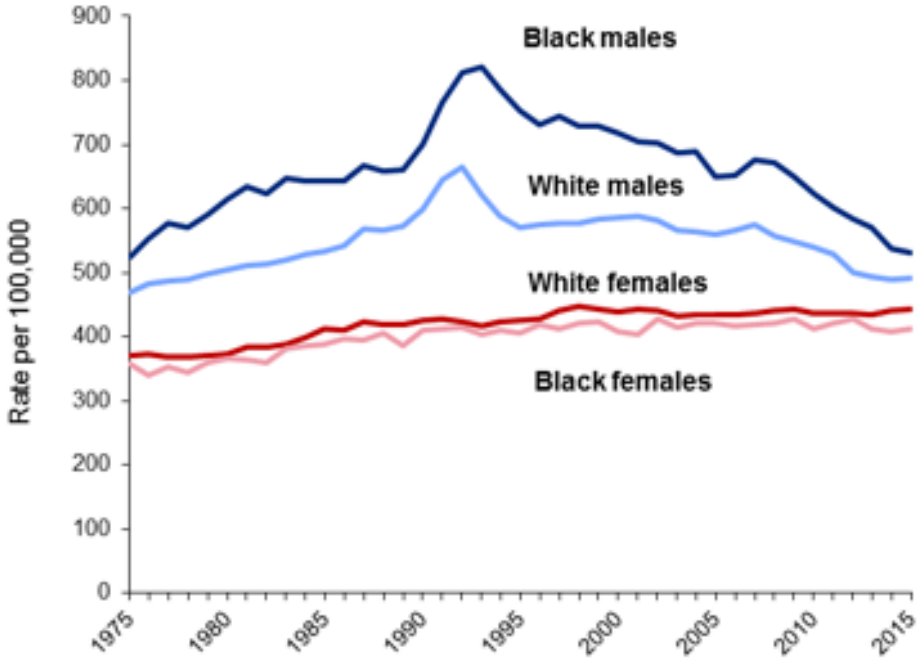
https://www.census.gov/quickfacts/fact/table/US/PST045219

Ground Rules

- Everything we are going to discuss pertains to groups “in general” and not meant to represent every individual within a group.

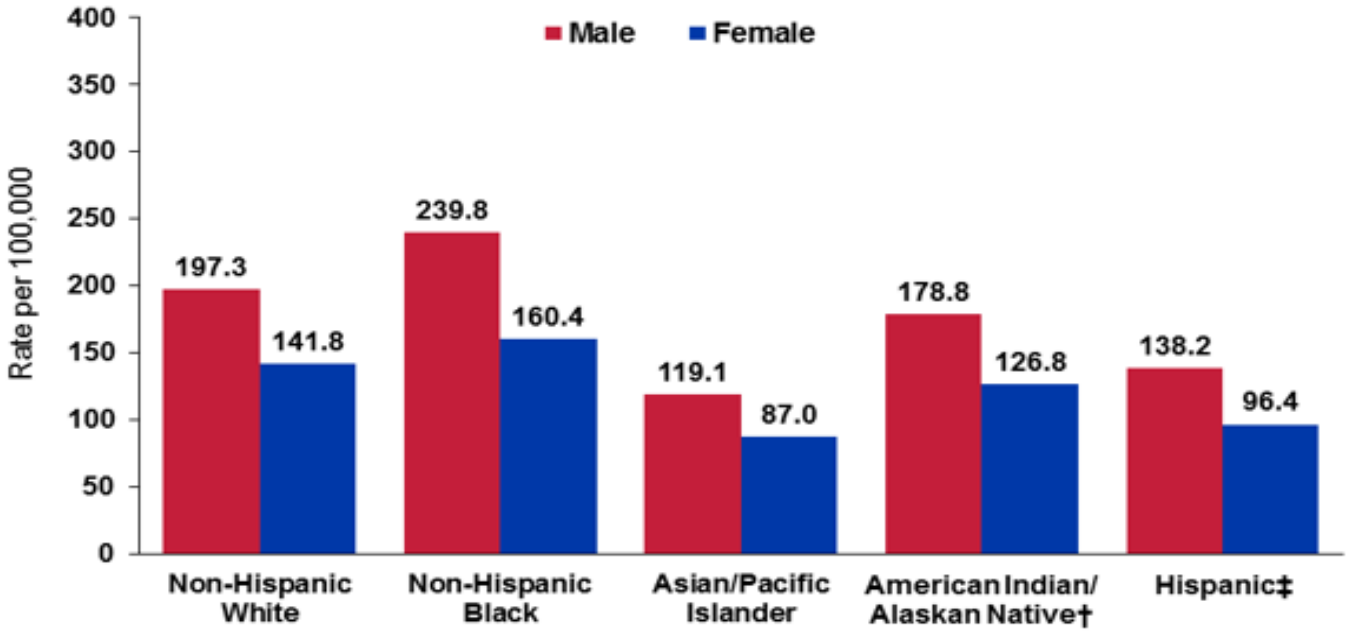
- Can’t make assumptions about how people identify themselves.

Trends in Cancer Incidence Rates* by Sex and Race, US, 1975-2015



*Age-adjusted to the 2000 US standard population. Incidence rates are adjusted for delays in reporting.
Source: Surveillance, Epidemiology, and End Results (SEER) Program, National Cancer Institute, 2018.

Cancer Death Rates* by Race and Ethnicity, US, 2012-2016



*Per 100,000, age-adjusted to the 2000 US standard population. †Data based on Indian Health Service Contract Health Service Delivery Area counties.
‡Persons of Hispanic origin may be of any race.
Sources: National Center for Health Statistics, Centers for Disease Control and Prevention, 2018.

WHICH U.S. POPULATION GROUPS EXPERIENCE CANCER HEALTH DISPARITIES?

According to the National Cancer Institute (NCI), cancer health disparities are adverse differences in cancer such as the number of new cases and deaths, cancer-related health complications, quality of life after cancer treatment, financial burden, screening rates, and stage at diagnosis that are shouldered by certain U.S. population groups (90) including:

Racial and ethnic minority groups

Individuals of different ancestry

Individuals of low socioeconomic status

Individuals with disabilities

Individuals who lack or have limited health insurance coverage

Residents in certain geographic locations, including rural areas

Refugees or asylum seekers

Immigrants

Members of the lesbian, gay, bisexual, and transgender community

Adolescents and young adults (AYA)

Elderly

https://cancerprogressreport.aacr.org/wp-content/uploads/sites/2/2021/10/AACR_CPR_2021.pdf

WHY DO U.S. CANCER HEALTH DISPARITIES EXIST?

Complex and interrelated factors contribute to cancer health disparities in the United States. For racial and ethnic minorities, adverse differences in many, if not all, of these factors are directly influenced by structural and systemic racism. The factors contributing to differences or inequalities include:

Social factors
- Education
- Income
- Employment
- Health literacy

Clinical factors
- Access to health care
- Quality of health care

Psychological factors
- Stress
- Mental health

Cultural factors
- Cultural beliefs
- Cultural health beliefs

Behavioral factors
- Tobacco use
- Diet
- Weight
- Physical activity
- Adherence to cancer screening and vaccination recommendations

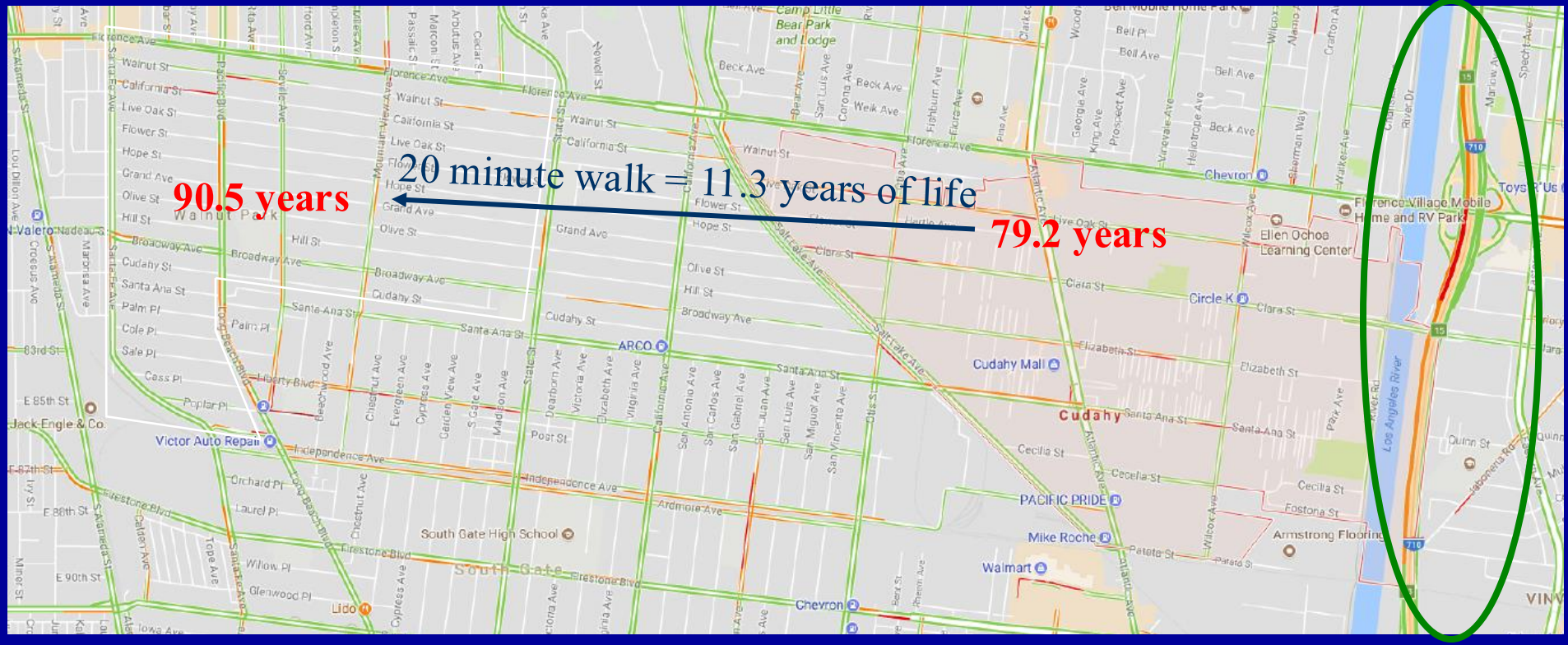
Environmental factors
- Air and water quality
- Transportation
- Housing
- Community safety
- Access to healthy food sources and spaces for physical activity

Genetic and biological factors

General health
- Infection with certain pathogens, such as human immunodeficiency virus (HIV)
- Having other health conditions, e.g., diabetes

https://cancerprogressreport.aacr.org/wp-content/uploads/sites/2/2021/10/AACR_CPR_2021.pdf

Next door neighbors with HUGE life expectancy differences



BOX 2 **Two Miles Away and Eleven Years Apart: Life Expectancy in Walnut Park and Cudahy**

Source: All estimates but life expectancy: US Census Bureau American Community Survey 5-Year Estimates 2011–2015. Life expectancy is calculated by Measure of America.

Images From: Highway to health: Life expectancy in Los Angeles County (2017). Burd-Shaprs S, Lewis K

Environmental Racism

Environmental Racism is an inequitable distribution of environmental hazards based on race.

Lead poisoning in children as a result of drinking water from aging plumbing or eating paint chips in older buildings is an example of this phenomenon.

At all income levels, black children are 2 to 3 times more likely to suffer lead poisoning in the U.S. than are white children.

Disparities in Diabetes Complications

Compared to non-Hispanic whites:

- Diabetic retinopathy is 46% higher in NHB
- Risk of visual impairment from retinopathy is 4 times higher in non-Hispanic blacks
- ESRD is 3.8x's higher for NHB
- NHB are 2.7 times as likely to suffer from lower-limb amputations.
- NHB are 2.3 times more likely to die from diabetes

http://www.diabetes.org/living-with-diabetes/treatment-and-care/high-risk-populations/treatment-african-americans.html#sthash.UQ5mlNJG.dpuf

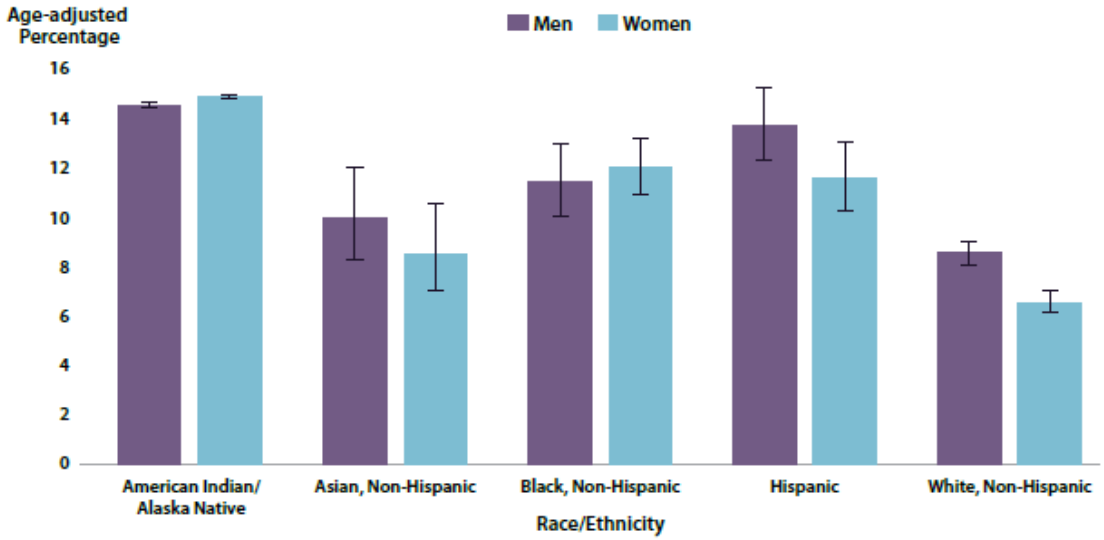
Golden et al, J Clin Enodcrinol 2012

Disparities in Prevalence: Type 2 Diabetes

Figure 2. Age-adjusted estimated prevalence of diagnosed diabetes by race/ethnicity group and sex for adults aged 18 years or older, United States, 2017–2018

Note: Error bars represent upper and lower bounds of the 95% confidence interval.

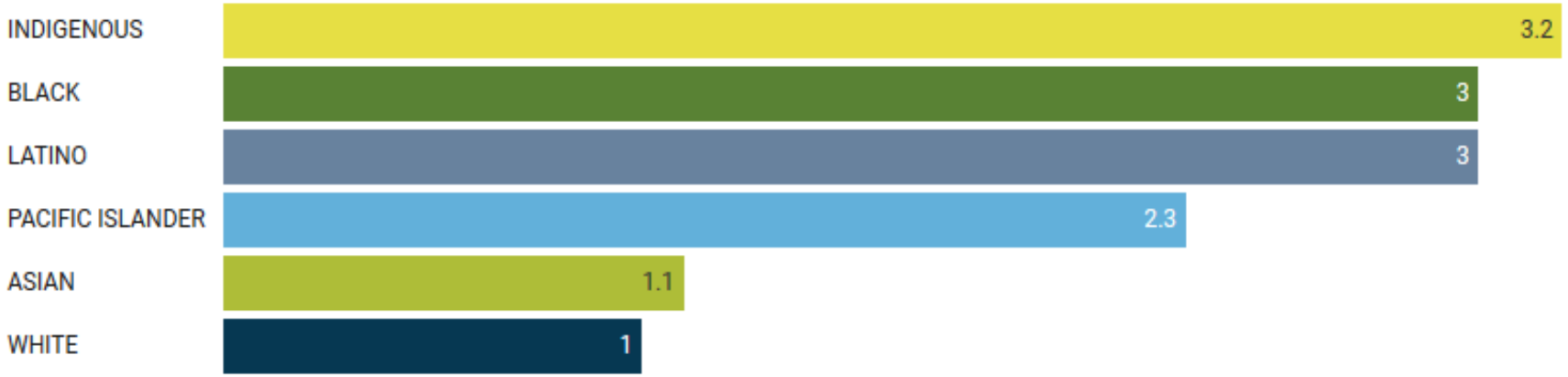
Data sources: 2017–2018 National Health Interview Survey; 2017 Indian Health Service National Data Warehouse (for American Indian/ Alaska Native group only).



Centers for Disease Control and Prevention. National Diabetes Statistics Report, 2020. Atlanta, GA: Centers for Disease Control and Prevention, U.S. Dept of Health and Human Services; 2020.

Adjusted for age, other racial groups are this many times more likely to have died of COVID-19 than White Americans

Reflects mortality rates calculated through Nov. 10.

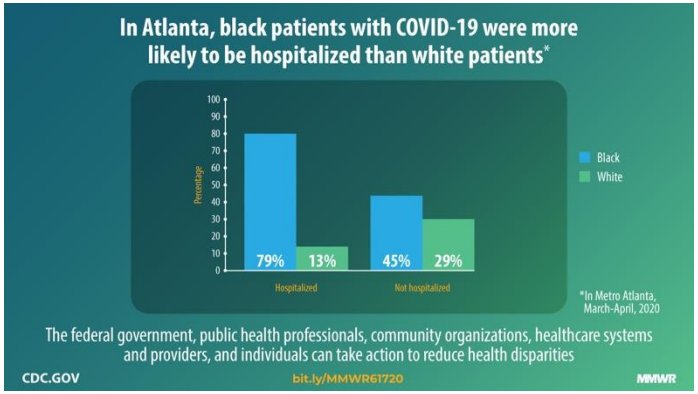


Indirect age-adjustment has been used.

Source: APM Research Lab • Get the data • Created with Datawrapper

Why are some racial and ethnic minority groups disproportionately affected by COVID-19?

- Risk of Exposure
  - Discrimination, neighborhood, housing, occupation, education, economic stability.
- Higher prevalence of co-morbidities with known disparities (DM)



African-American Health Disparities Compared to Non-Hispanic Whites

20% less likely to receive tx for **depression**

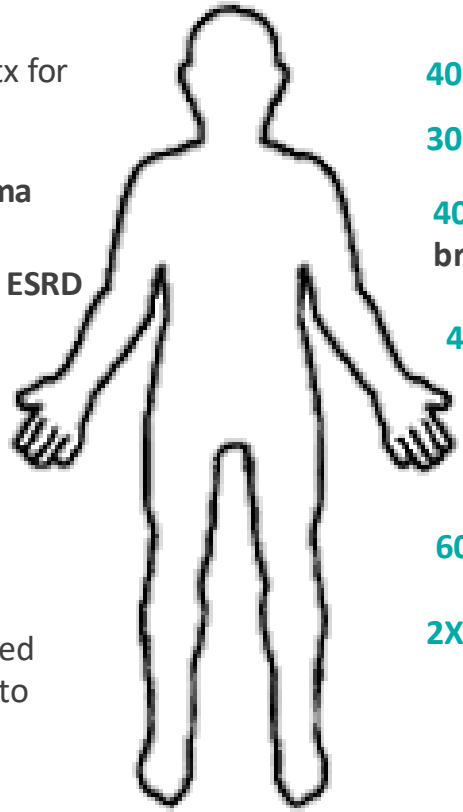
2X as likely to die of **asthma**

3X more likely to develop **ESRD**

2X as likely to die from **prostate cancer**

2X as likely to die from **cervical cancer**

9X as likely to be diagnosed with **HIV** and **8X** as likely to die



40% more likely to die from **CVA**

30% more likely to die of **CVD**

40% more likely to die from **breast cancer**

40% more likely to be **obese**

2.5X as likely to die during **pregnancy**

60% more likely to have **diabetes**

2X as likely to die as an **infant**

www.familiesusa.org/health-disparities

Latino Health Disparities Compared to Non-Hispanic Whites

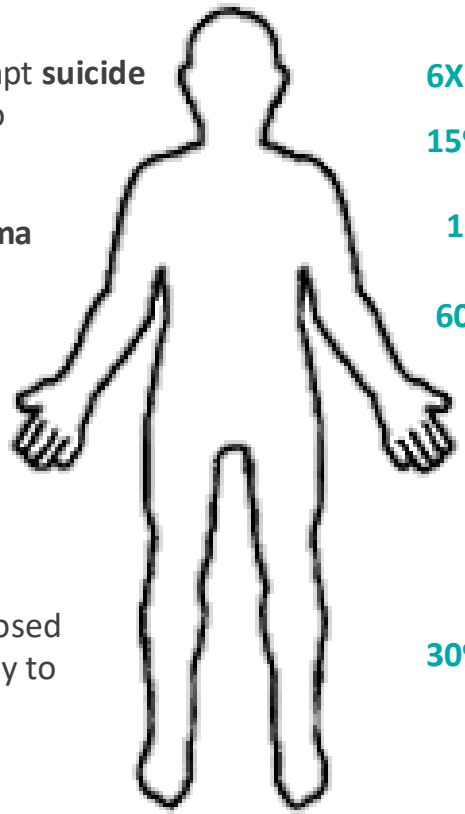
60% more likely to attempt **suicide** as a high-schooler due to **depression**

2X as likely to die of **asthma**

45% as likely to be newly diagnosed with **cervical cancer**

40% as likely to die from **cervical cancer**

2.5X as likely to be diagnosed with **HIV** and **2.5X** as likely to die



6X more likely to have **tuberculosis**

15% more likely to have **liver disease**

15% more likely to be **obese**

60% more likely to have **diabetes**

55% more likely to have **end-stage renal disease**

45% more likely to die from **diabetes**

30% as likely to die as an **infant**

www.familiesusa.org/health-disparities

Asian American and Pacific Islander Health Disparities Compared to Non-Hispanic Whites

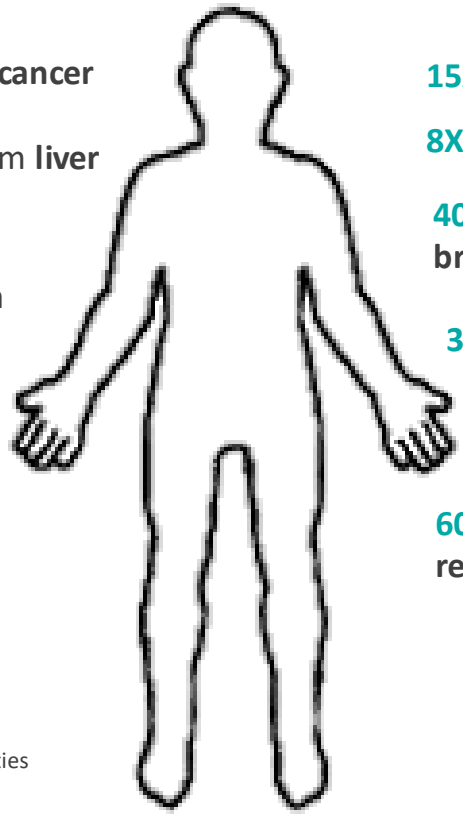
10% more likely to die of **cancer**

80% more likely to die from **liver cancer**

2X more likely to die from **stomach cancer**

3X as likely to suffer from **Hepatitis A**

4.5X as likely to suffer from **Hepatitis B**



15X more likely to suffer from **tuberculosis**

8X more likely to die from **tuberculosis**

40% more likely to die from **breast cancer**

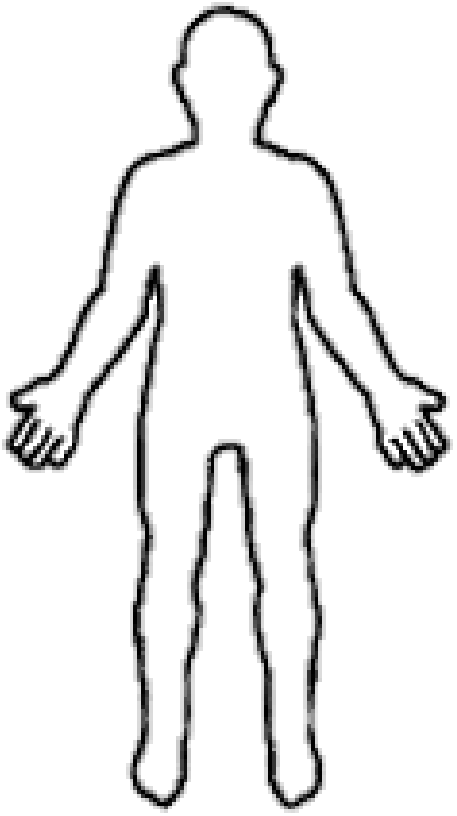
35% more likely to be **obese**

10% more likely to be **diabetic**

60% more likely to have **end-stage renal disease**

www.familiesusa.org/health-disparities

Non-Hispanic Whites Health Disparities Compared to African-Americans



3.6-4X more likely to develop **Barrett's Esophagus**

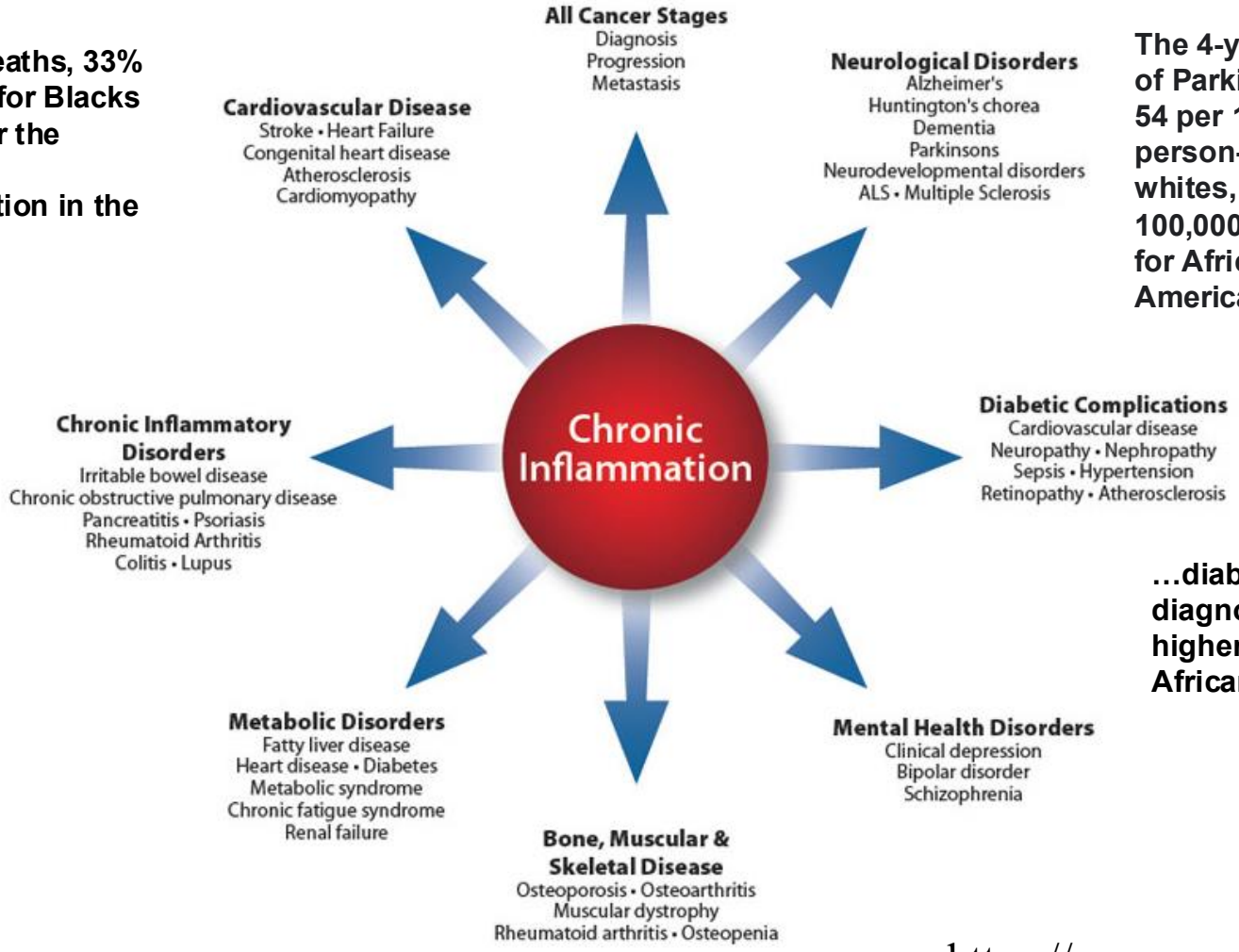
White women have the highest **incidence** rate for **breast cancer**, although African American/Black women are most likely to die from the disease.

White women living in Appalachia suffer a disproportionately higher risk for developing **cervical cancer** than other White women.

Alkaddou, A. et al,United European Gastroenterology Journal, 2018, Vol. 6(1) 22–28

https://www.cancer.gov/about-nci/organization/crchd/cancer-health-disparities-fact-sheet#q9

CVD Deaths, 33% higher for Blacks than for the overall population in the U.S.

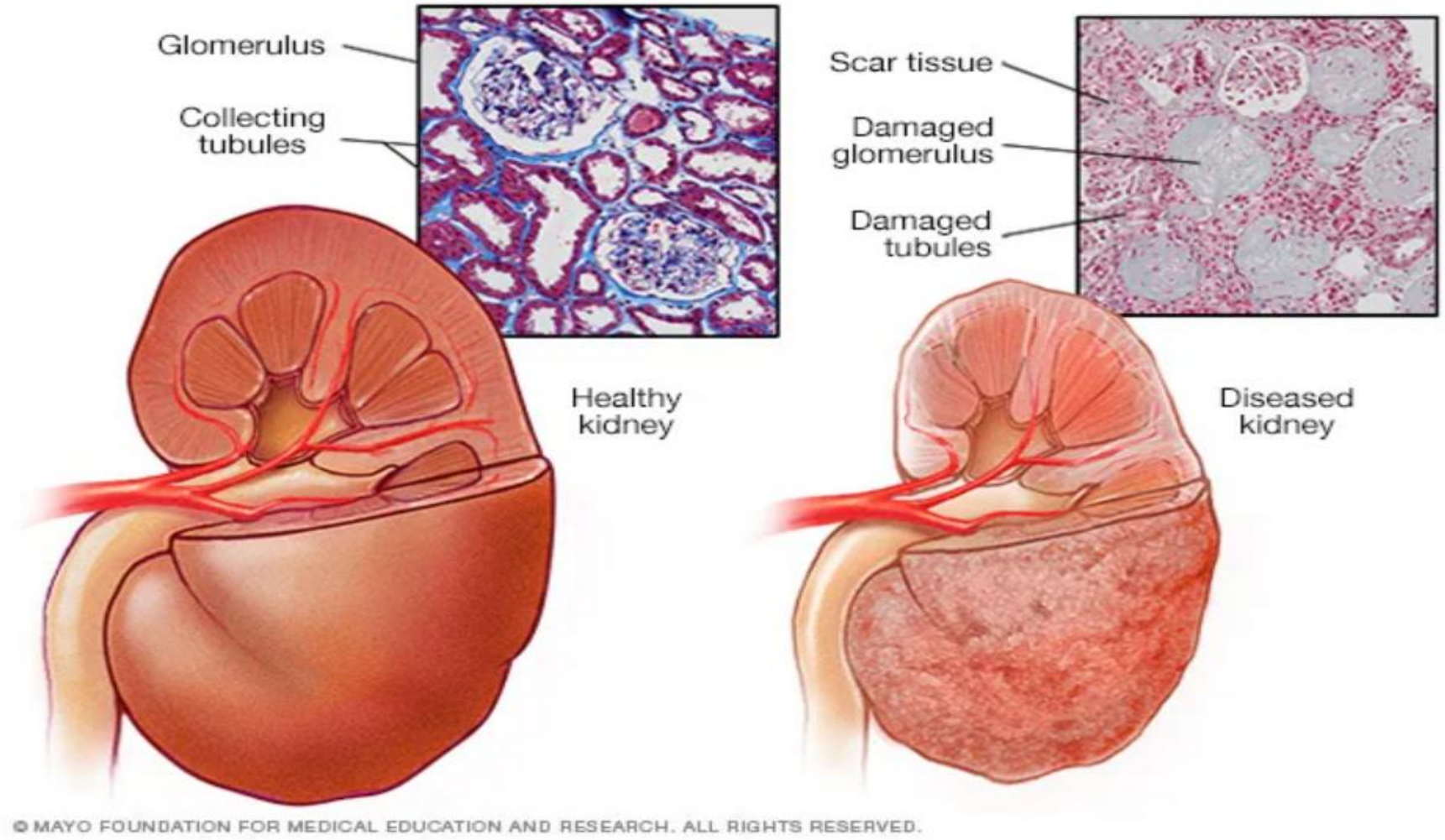


The 4-year incidence of Parkinson Dis. was 54 per 100,000 person-years for whites, 23 per 100,000 person-years for African-Americans

…diabetes diagnosis is 77% higher among African Americans

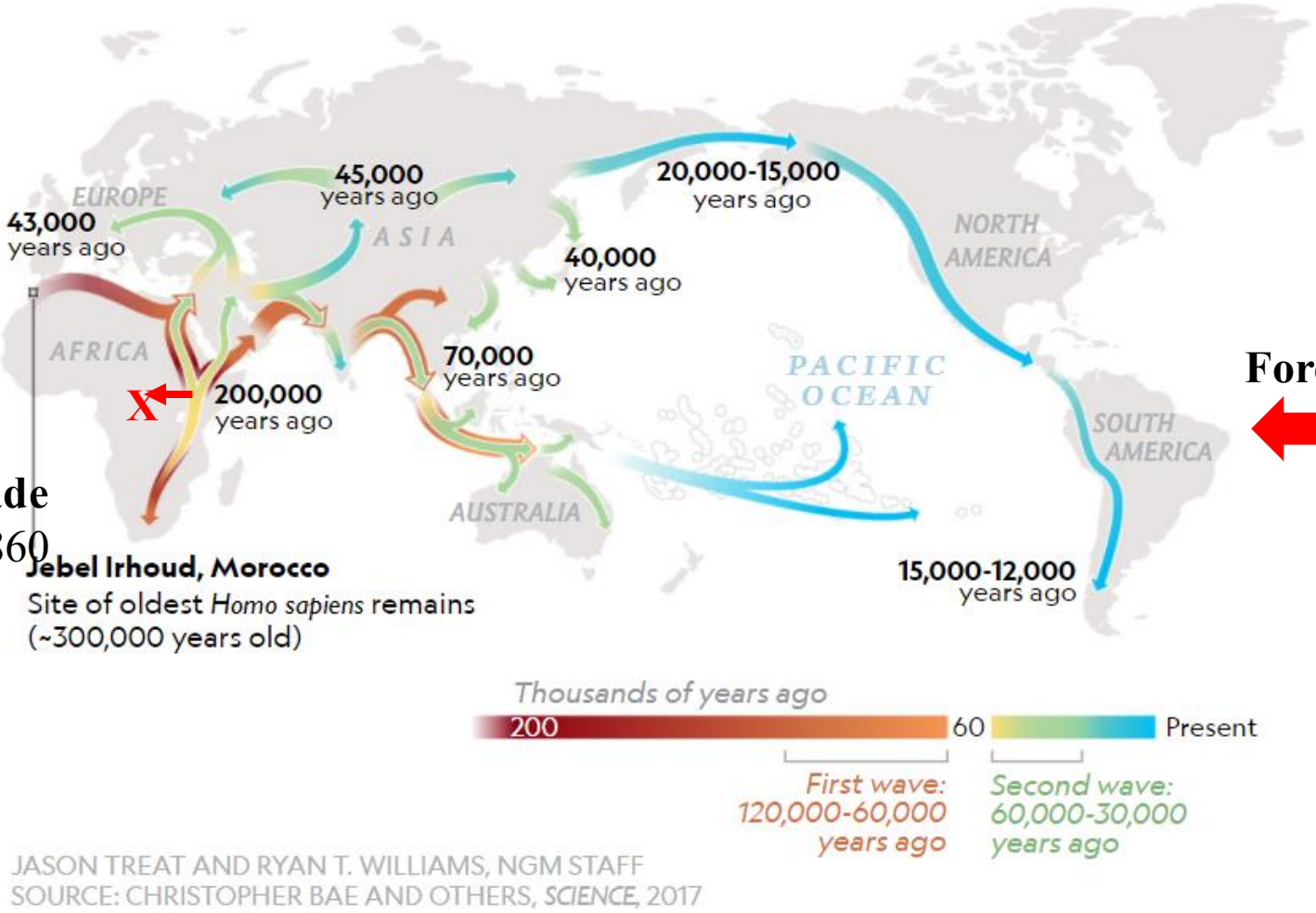
https://www.nurturahealth.com.au/

End-Stage Renal Disease



Healthy kidney vs. diseased kidney

https://www.mayoclinic.org/diseases-conditions/end-stage-renal-disease/symptoms-causes/syc-20354532#dialogId26764292



Slave trade
1650 - 1860

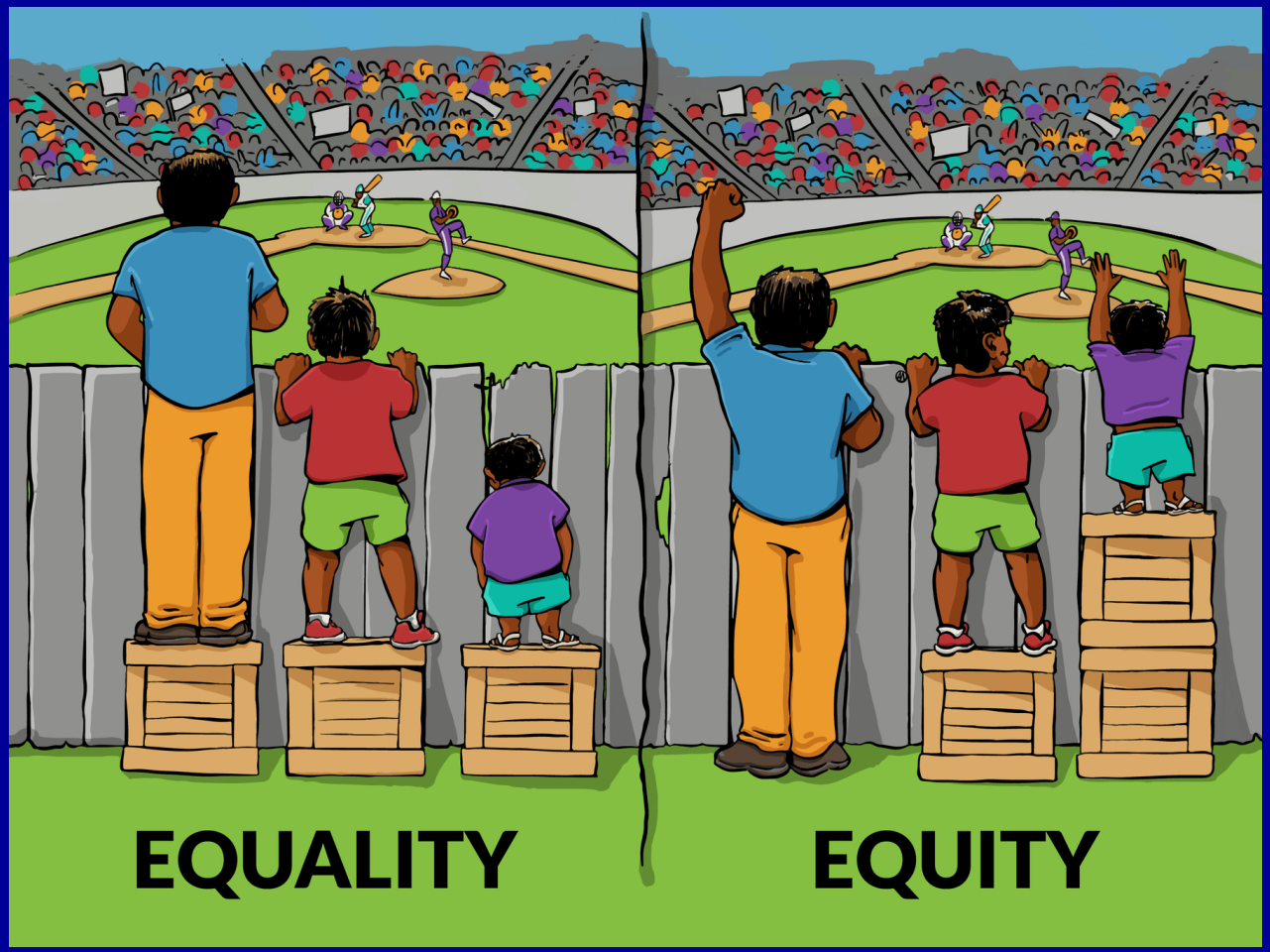
Forced migratio

What is the Definition of Health Equity?

The Human and Health Services Office of Minority Health states that "Health equity is attainment of the highest level of health for all *people*. Achieving health equity *requires valuing everyone equally* with focused and ongoing societal efforts to *address avoidable inequalities, historical and contemporary injustices, and the elimination of health and healthcare disparities*".

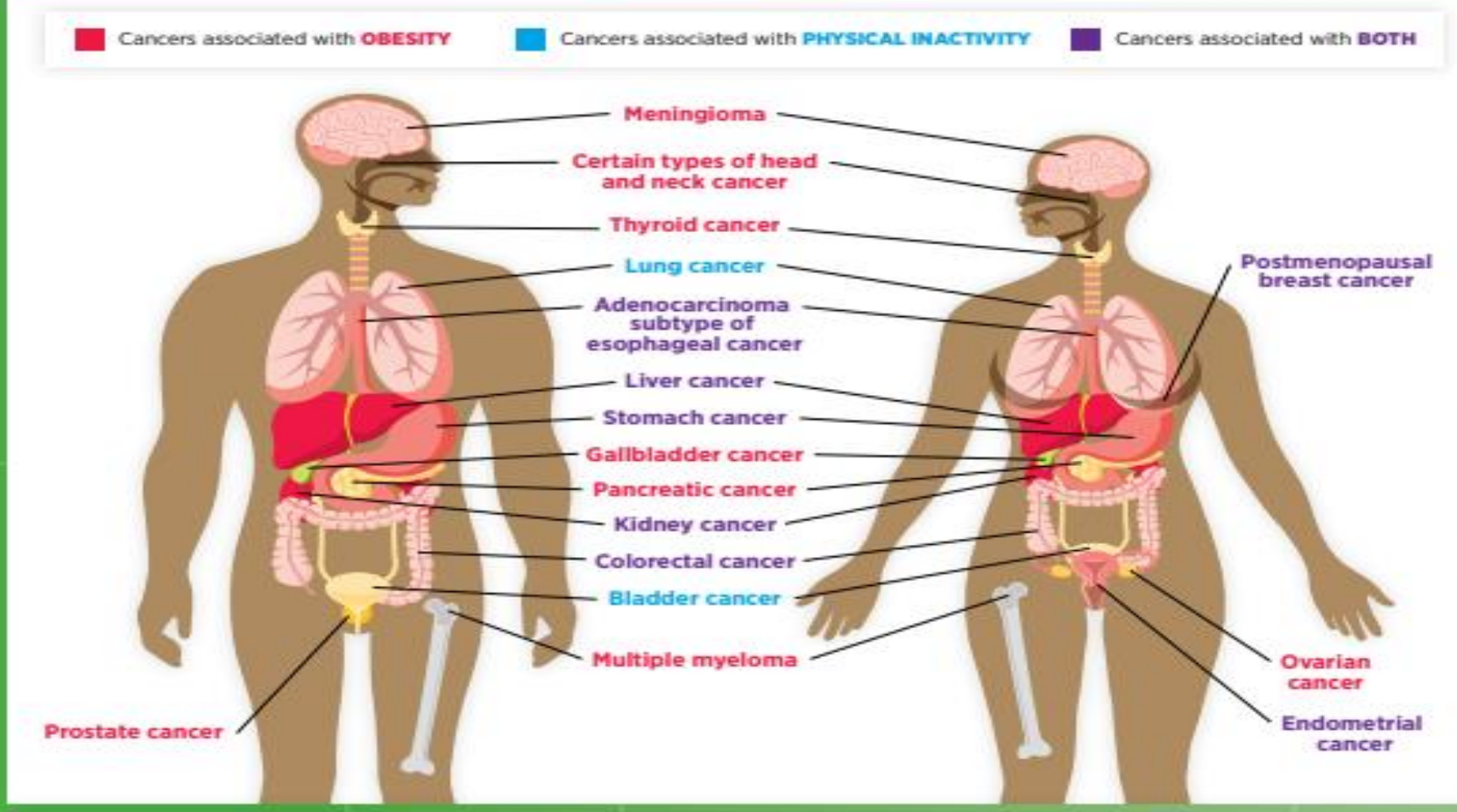
https://www.cancer.gov/about-nci/organization/crchd/about-health-disparities/definitions

If you want more Equity, Please get your professonial or graduate degrees!



https://www.google.com/search?q=images+of+health+equity&rlz=1C1GCEB_enUS918US918&oq=images+of+health+equity&aqs=chrome..69i57j0i22i30l2.4492j0j7&sourceid=chrome&ie=UTF-8#imgrc=mc78NR2dYfsYnM

REASONS TO MAINTAIN A HEALTHY WEIGHT AND STAY ACTIVE



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Medicine and Biomedical or Clinical Research
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