Association of American Physicians Presidential Address

The American Physician-Scientist: 60 is the new 40

Serpil Erzurum, MD

Chair, Lerner Research Institute

Cleveland Clinic

Thank you

Linda Fried (past president), John Carethers (incoming president), Mitchell Lazar (secretery), Robert Brown (treasurer), and councilors Betty Diamond, Maurizio Fava, David Ginsburg, Todd Golub, Peter Igarashi, John Ioannidis, Daniel Kelly, Mary Klotman, Nancy Davidson, Warren Leonard, Elizabeth McNally, David Thomas.

Lori Ennis

‘To put on record the status of the doctor of our time,’ The Times March 17, 1891.

Golden Age of Medicine (1930 -)

Industrial Age 1900 - 1940

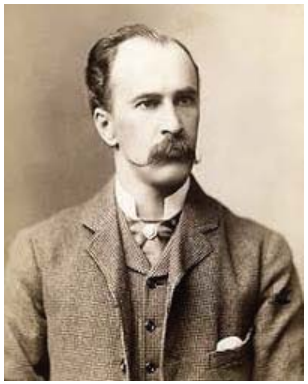
Atomic/Space Age 1940-1985

Digital Age 1985 - present

CONCEPTION OF THE AAP 1885

Francis Delafield − 44
Columbia

William Draper − 55
Columbia



William Osler − 36
U. Pennsylvania

James Tyson − 44
Columbia

Robert Edes − 47
NY Practitioner

William Pepper − 42
U. Pennsylvania

George Peabody − 35
New York Hospital

The Fundamental Goals of AAP (1886 and now)

- **"The advancement of scientific and practical medicine" (AAP Constitution 1886)**

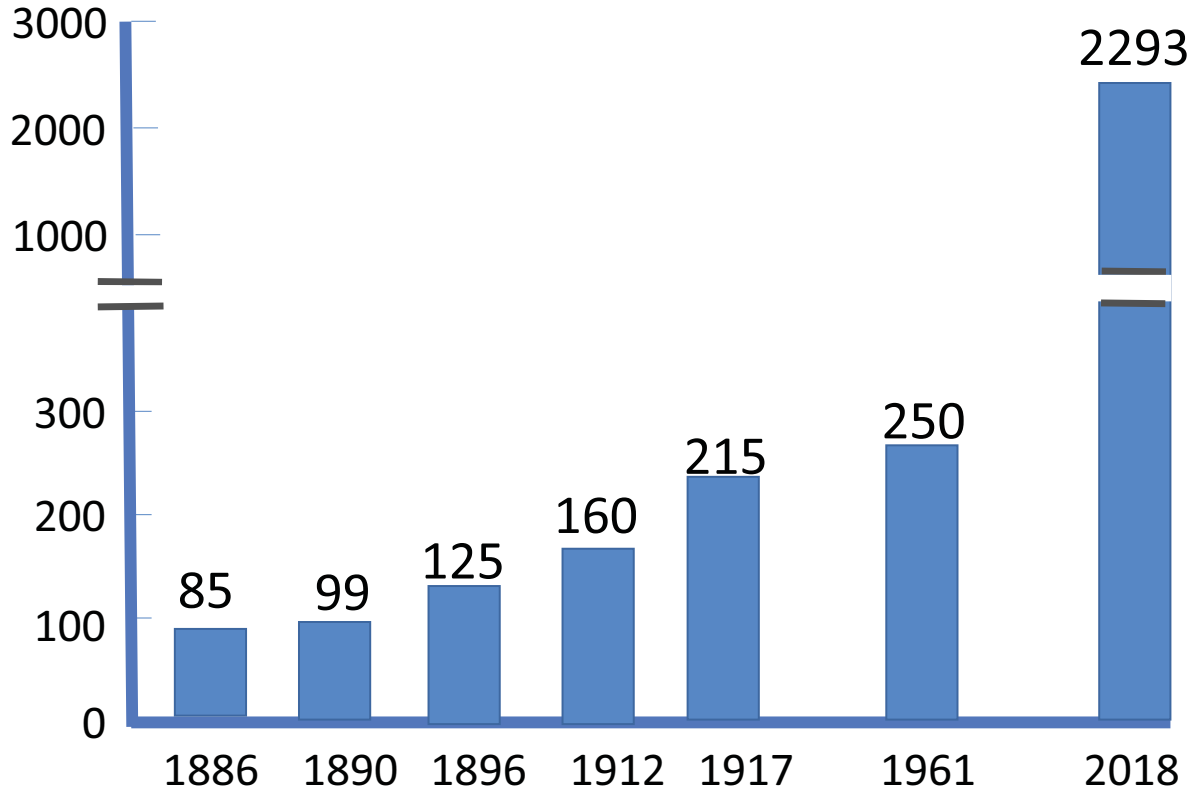
- **Election and honoring of physicians who have made outstanding and enduring contributions.**

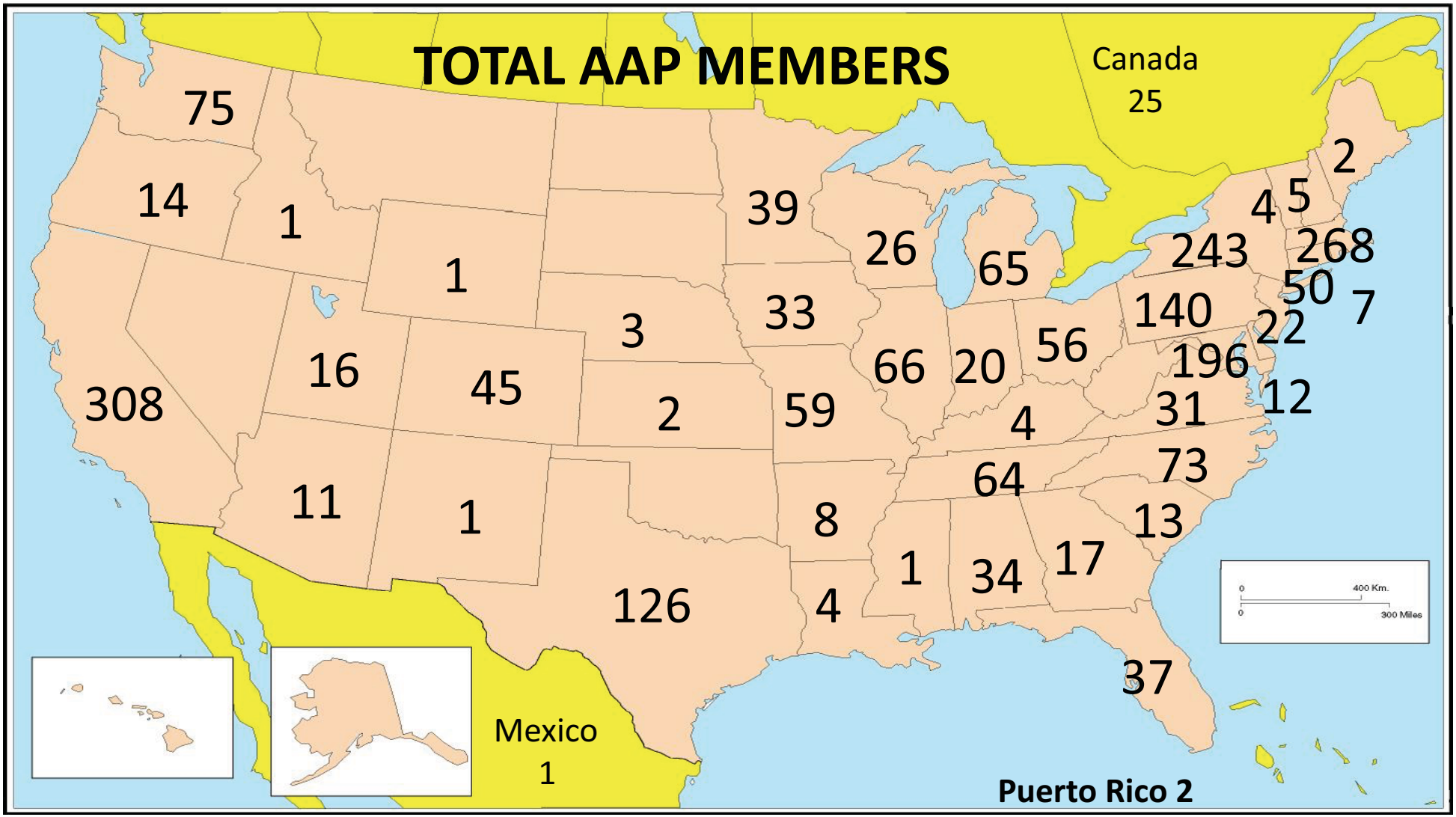
- **Annual meeting in which to meet and interact with our peers and exchange information.**

AAP Membership

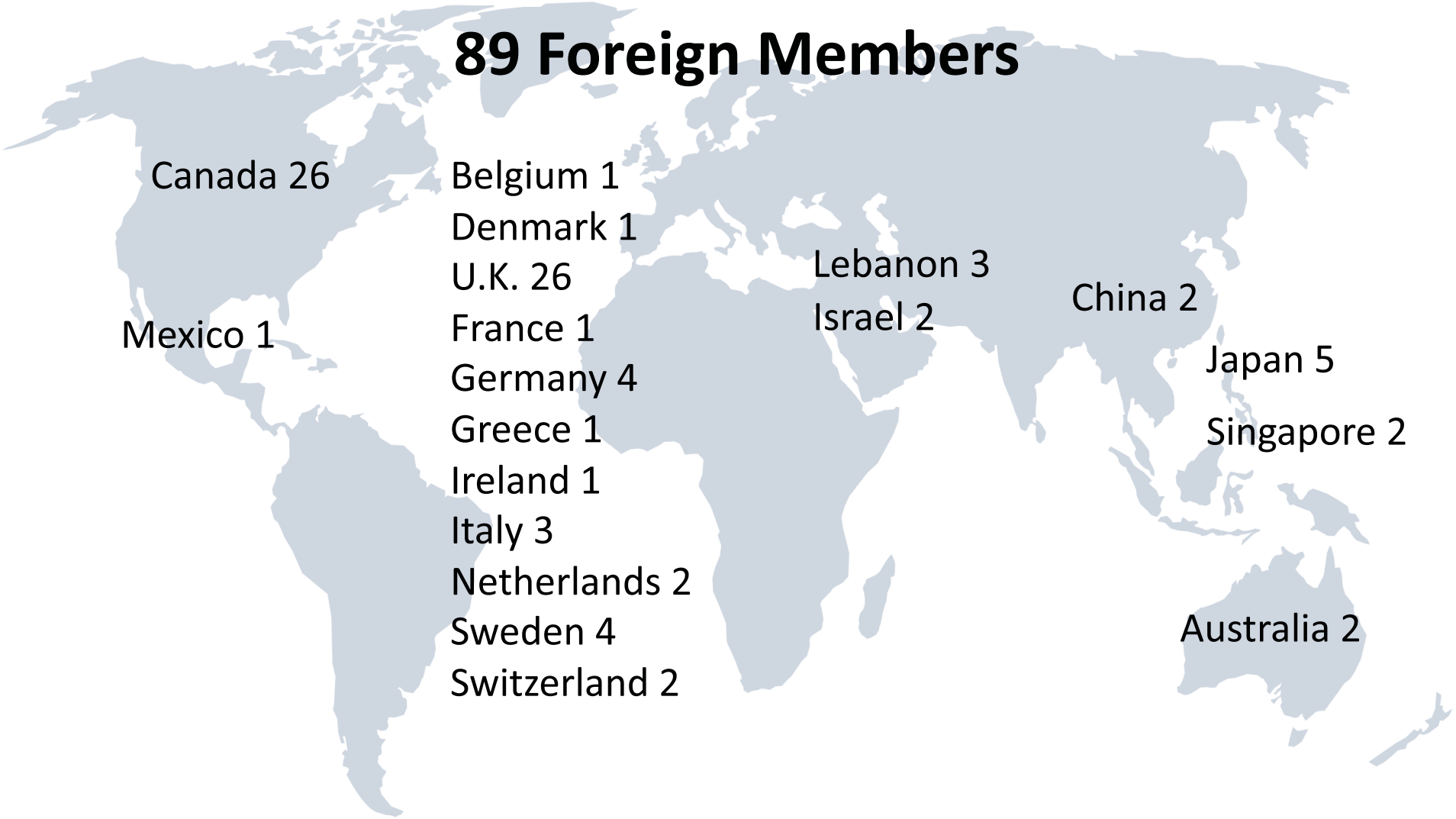
2293 members

60 new members inducted yearly

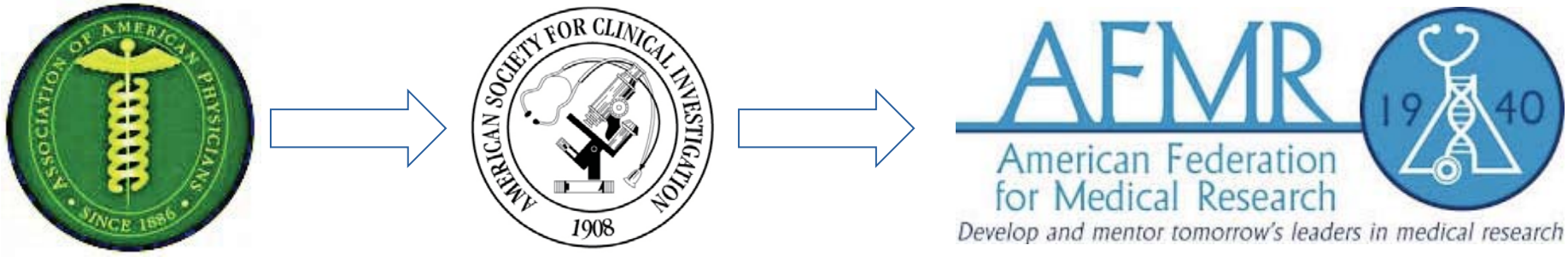



TOTAL AAP MEMBERS
Canada
25
75
14
1
1
39
26
65
243
2
4
5
268
50
7
33
3
140
22
16
45
66
20
56
196
308
2
59
4
31
12
11
1
8
64
73
13
1
34
17
126
4
37
0
400 Km.
0
300 Miles
Mexico
1
Puerto Rico 2

89 Foreign Members



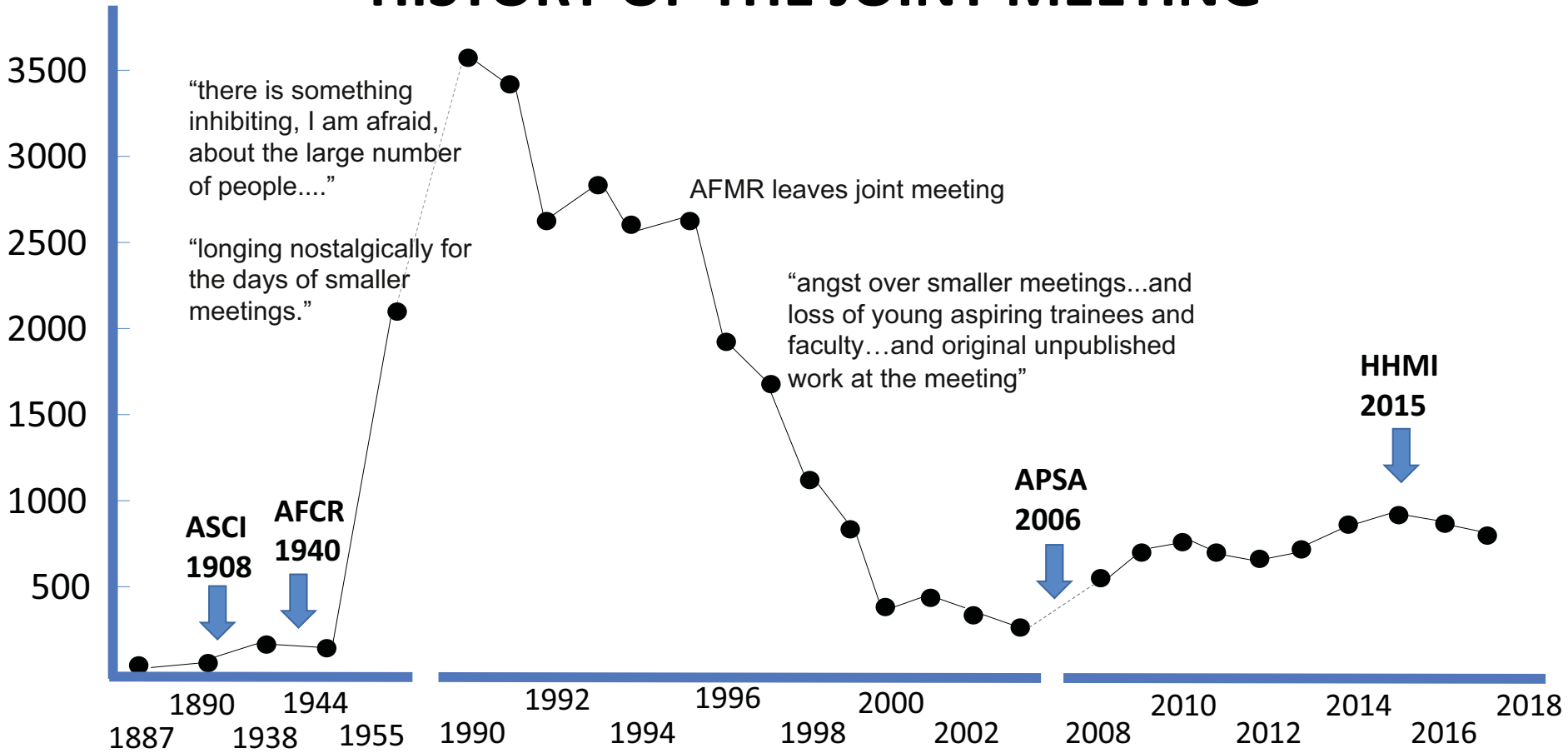
Daughter Society



- **American Society for Clinical Investigation (ASCI) 1907 – 'Young Turks'**
- **First ASCI meeting May 11 1908 in DC and AAP meeting followed on May 11 and 12th.**
- **Today 67% of AAP are dual members in ASCI**

- **"the Young Turks are getting rather old"**
- **American Federation for Clinical Research (AFCR) in 1940 -** <41 years and published was eligible.
- **After 1940, AFCR, AAP and ASCI meet annually until 1996 [Tri-society]**.

HISTORY OF THE JOINT MEETING



AAP

- Sustainable and enduring transformative contributions to medicine across all spectrums of specialties. Takes into account mentorship contributions. Accept 60/y

ASCI

- Individual early scientific accomplishment and attainment of first independent major grant. Traditionally mechanistic bench science, but recently broadened. Accept 80/y

AAP

- Average age of Inductees 57 years old
- Average age of Members 68 years old

ASCI

- Nominees <50 years old since 2013 (was <45 in 1981)
- Average Age of Inductees 45 years old
- Average Age of Members 50 years old
- Senior Members >55 years old*

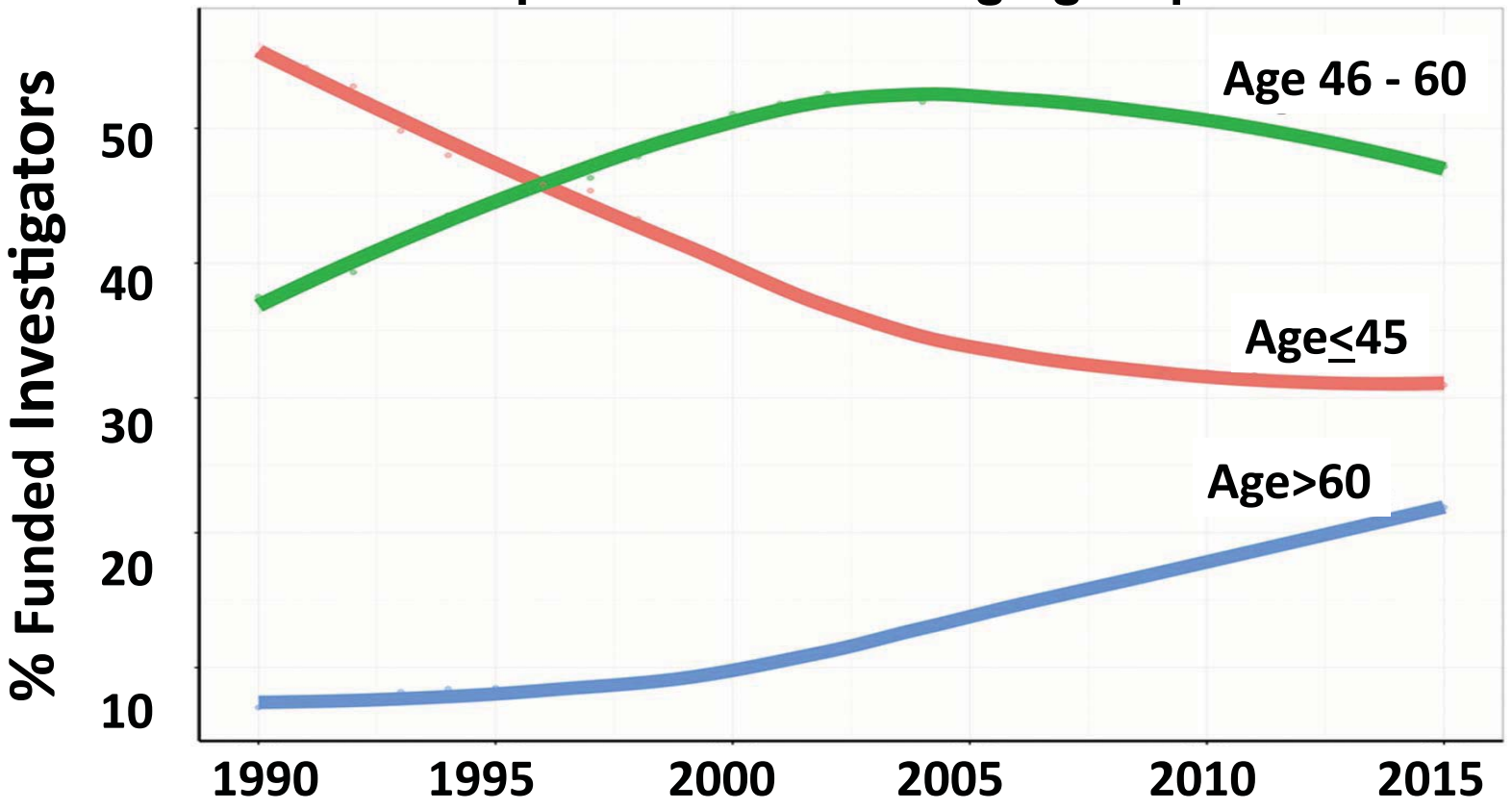
The Next Generation Researchers Initiative at NIH

Michael Lauer[a,1], Lawrence Tabak[a], and Francis Collins[a]

Michael Lauer et al. PNAS 2017;114:11801-11803

PNAS

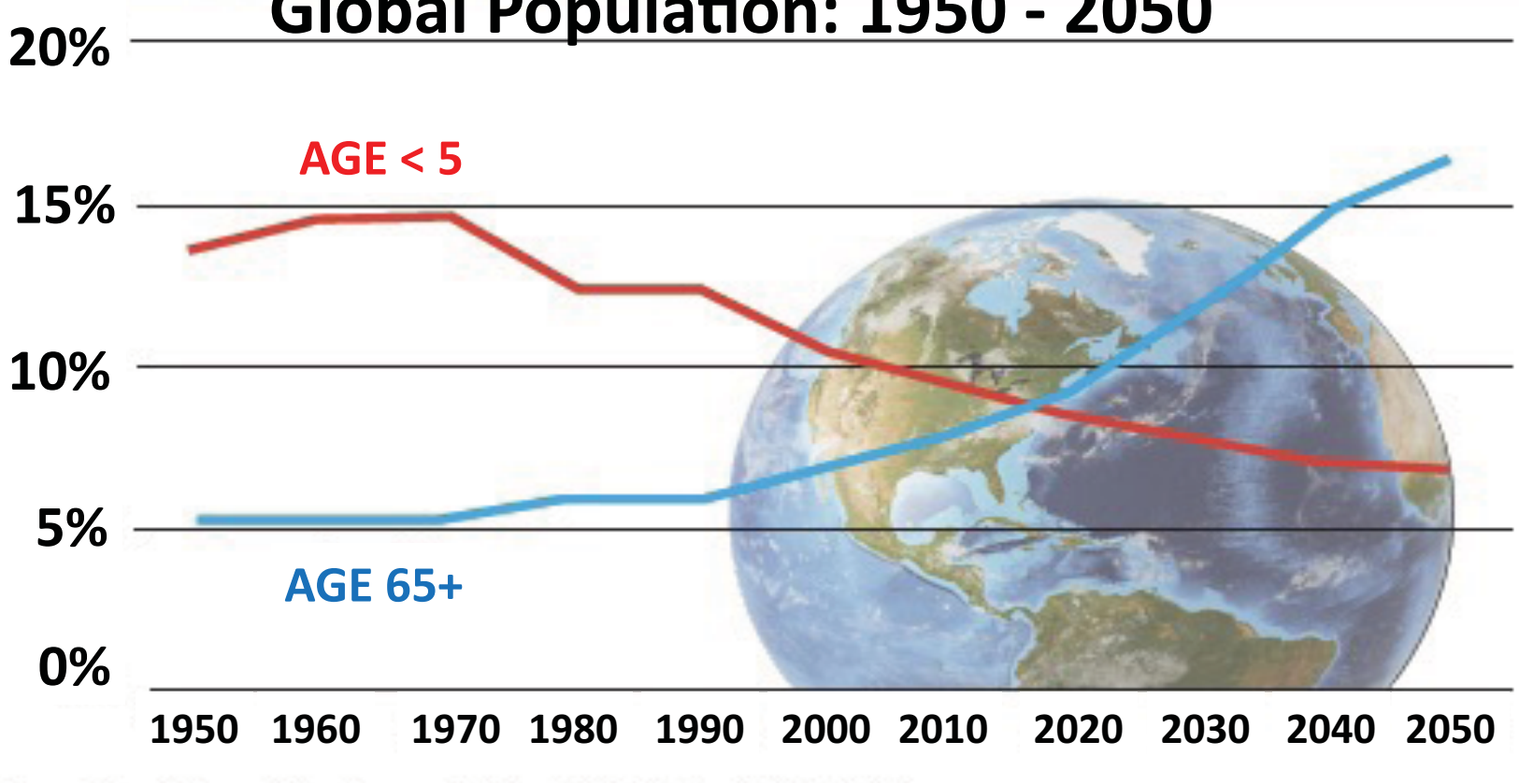
Since the late 1990s, % NIH-funded investigators >60 years has risen compared with other age groups.



Michael Lauer et al. PNAS 2017;114:11801-11803

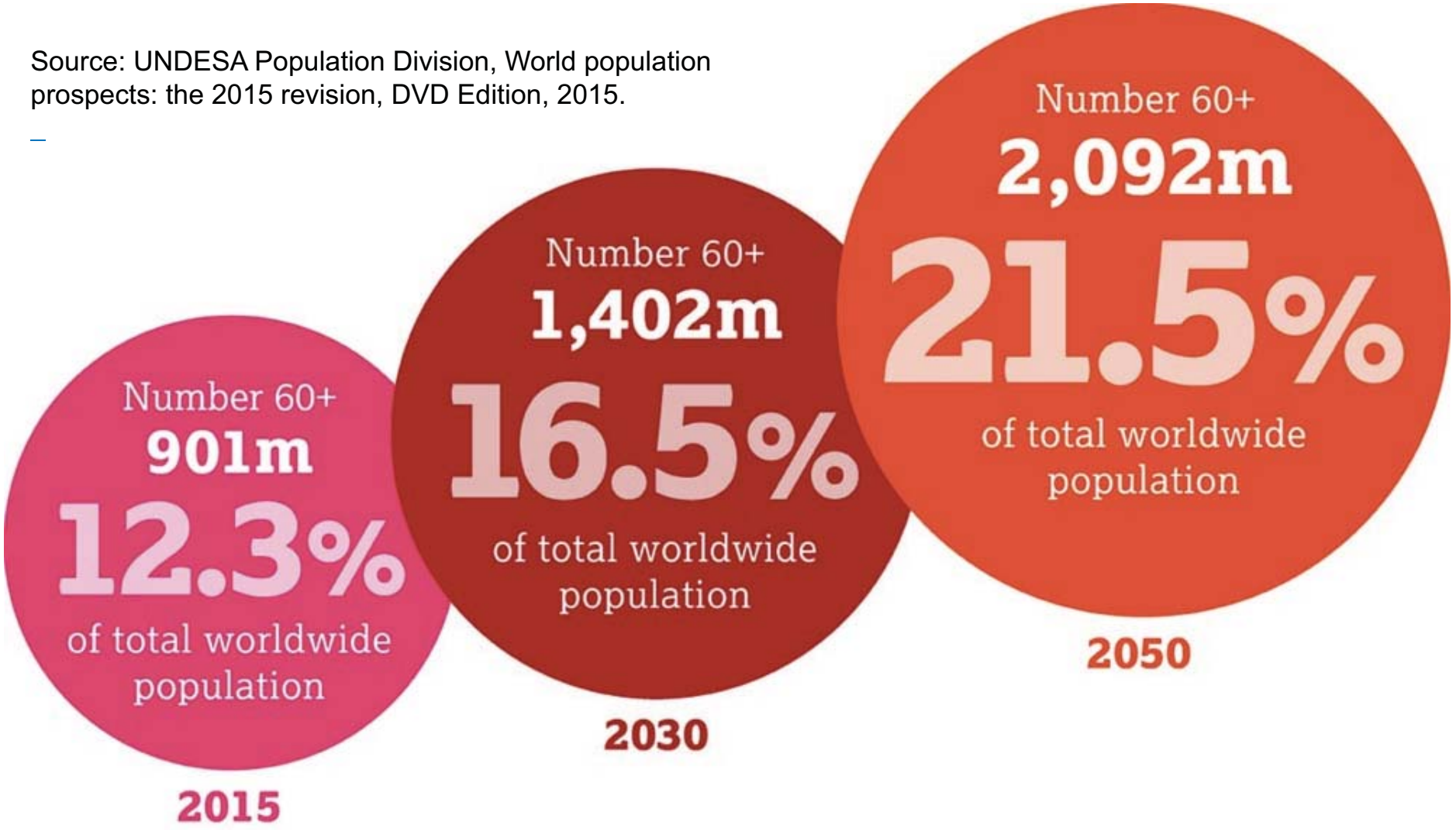
PNAS

Young Children and Older People as Percentage of the Global Population: 1950 - 2050



Source: World Population Prospects: The 2010 Revision, United Nations.
Adapted from Global Health & Aging, World Health Organization, 2011.

Source: UNDESA Population Division, World population prospects: the 2015 revision, DVD Edition, 2015.



RESEARCH ARTICLE

Faster Increases in Human Life Expectancy Could Lead to Slower Population Aging

Warren C. Sanderson[1,2,3☯]*, Sergei Scherbov[2,3☯]

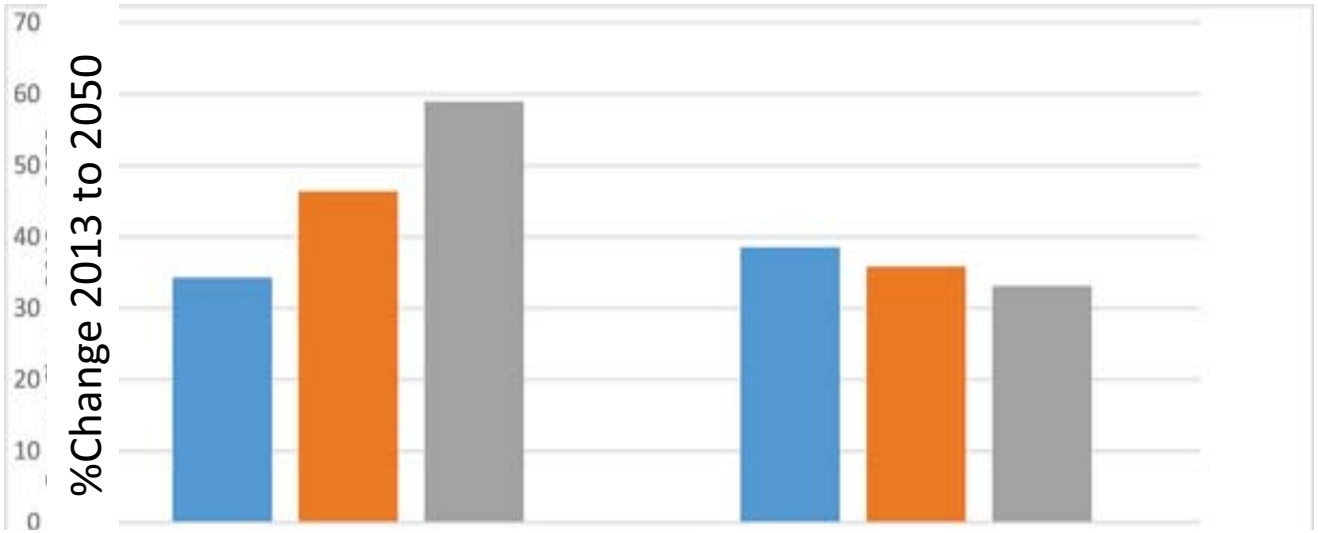
- Improvements in life expectancy and health mean that categorising someone as old because they've turned 65 no longer makes sense.

- Instead, look at how long a person may have left to live, based on average life expectancy, *PROSPECTIVE AGE*.

- Using the new definitions, middle age lasts longer, and the proportion of old people actually falls over time

PLOS | ONE

Percentage Increase in Proportions “Old” from 2013 to 2050, Using Measures Unadjusted and Adjusted for Longevity Change, Germany.



Sanderson WC, Scherbov S (2015) Faster Increases in Human Life Expectancy Could Lead to Slower Population Aging. PLOS ONE 10(4): e0121922. https://doi.org/10.1371/journal.pone.0121922
http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0121922

PLOS | ONE

Age *vs*. Old – It is Relative to Average Life Expectancy

Average Life Expectancy

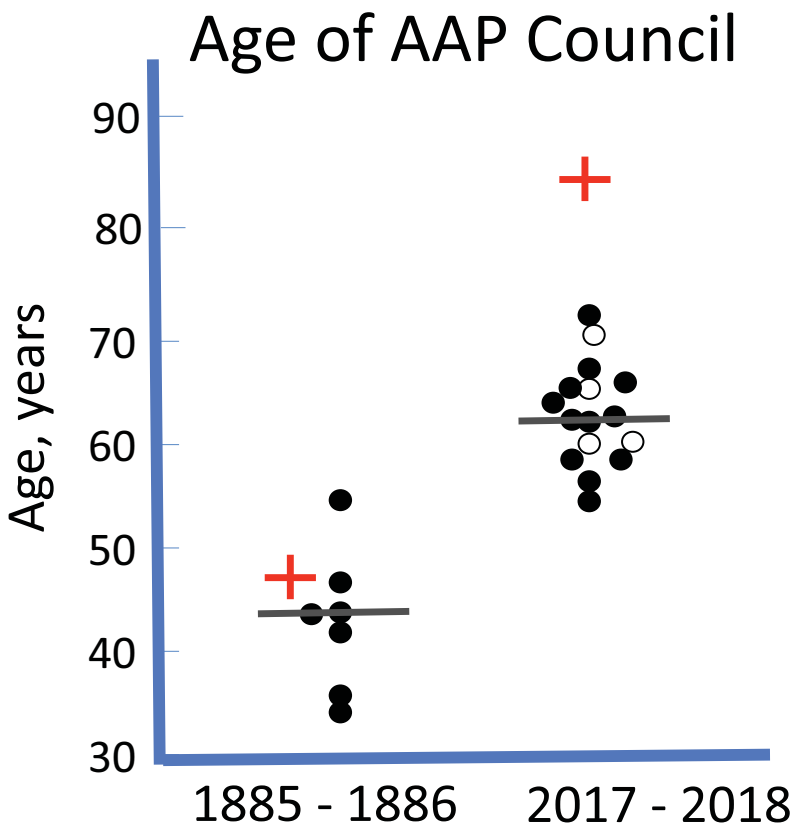
1800 - 1850: ~35 years

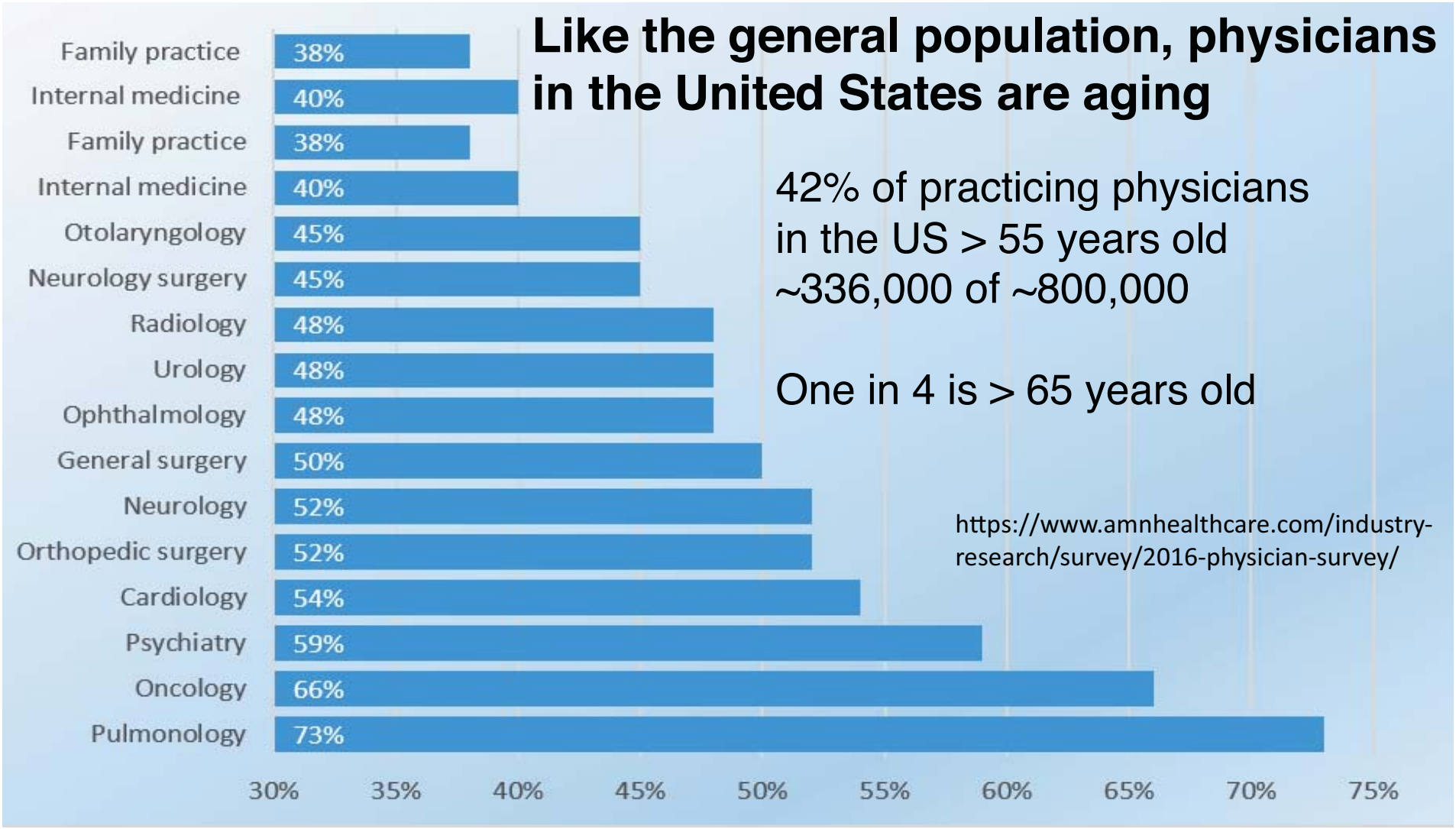
1900: men 46, women 48

1940: men 60, women 65

2018: men 81, women 86

By 2070: up to 120 years old




Like the general population, physicians in the United States are aging
42% of practicing physicians in the US > 55 years old
~336,000 of ~800,000
One in 4 is > 65 years old
https://www.amnhealthcare.com/industry-research/survey/2016-physician-survey/
Family practice 38%
Internal medicine 40%
Family practice 38%
Internal medicine 40%
Otolaryngology 45%
Neurology surgery 45%
Radiology 48%
Urology 48%
Ophthalmology 48%
General surgery 50%
Neurology 52%
Orthopedic surgery 52%
Cardiology 54%
Psychiatry 59%
Oncology 66%
Pulmonology 73%
30% 35% 40% 45% 50% 55% 60% 65% 70% 75%

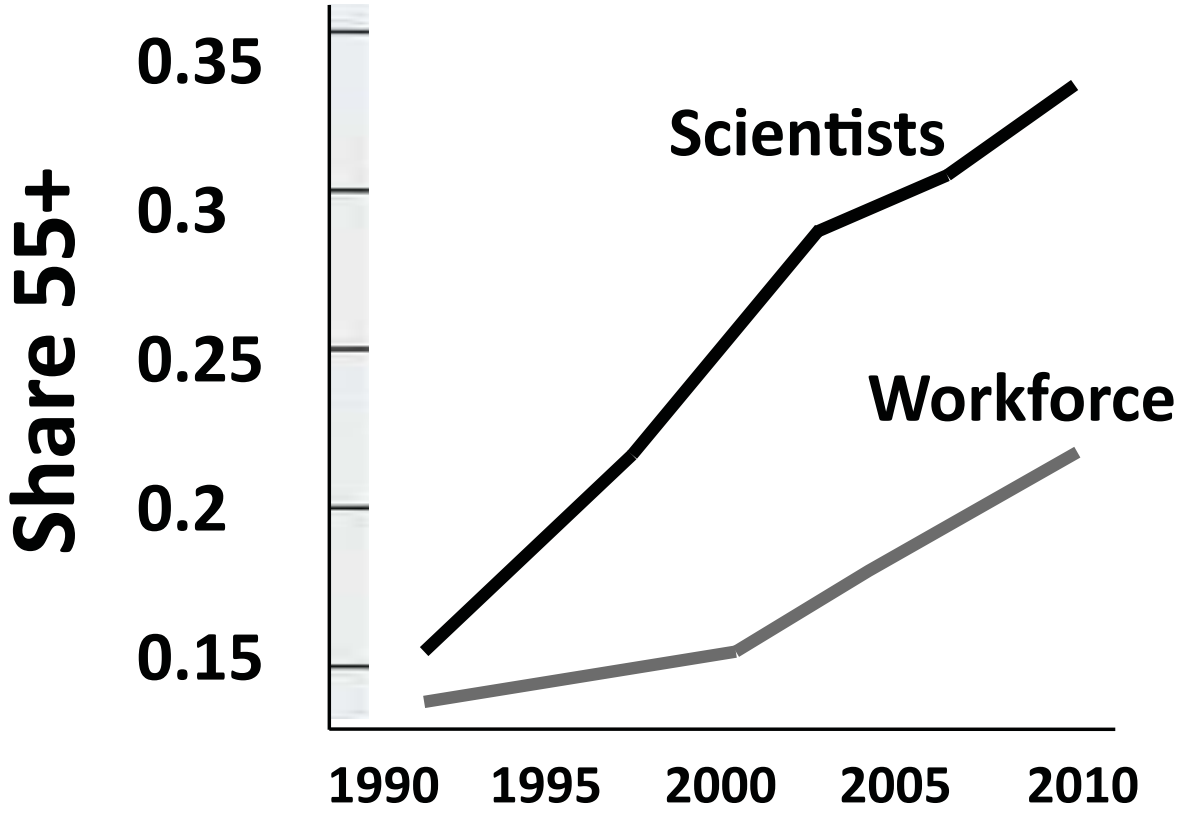
SUCCESSFUL AGING OF PHYSICIANS

Survey of 7288 US physicians on work lives, satisfaction and burnout showed that late career MDs were the most satisfied and had lowest rates of distress.

Dyrbye et al: Mayo Clin Proc 88:1358-1367, 2013

Satisfaction is dependent on psychological construct of optimism and purpose in life.

The scientific workforce has aged more rapidly in recent years relative to the workforce as a whole.



David M. Blau, and Bruce A. Weinberg PNAS doi:10.1073/pnas.1611748114 2017

Why the US science and engineering workforce is aging rapidly

David M. Blau, and Bruce A. Weinberg PNAS doi:10.1073/pnas.1611748114 2017

- The main causes have been a **decline in the retirement rate of older scientists,** which occurred after the elimination of mandatory retirement in universities, and a convergence to the steady-state distribution as the **baby boom cohort has aged**.

- Current trends imply a further substantial increase in the age of the scientific workforce in coming years.

Are you devoted to your work?
Do you aim for very high achievement?
To the exclusion of leisure activity?

When you think of retirement – do you wonder, what else would I do?

Goal-Oriented
independent
Baby boomers
hardworking
independent
passionate
resourceful
competitive
dedicated
Baby boomers
Work-Centric
golden generation
dedicated
independent
Goal-Oriented
competitive
Work-Centric
Baby boomers
passionate
resourceful
golden generation
Goal-Oriented
golden generation
WorKaholic
dedicated
hardworking
competitive
workaholic
Work-Centric
resourceful
independent

GENERATIONAL IMPACT ON BEHAVIOR AND LIFESPAN

Greatest Generation Pre - 1933	Silent Generation 1933 - 1945	Baby Boomers 1946 - 1964	Generation X 1965 - 1979	Millenials 1980 - 1995	Generation Z 1996 - present

Golden Age of Medicine (1930 -)

Baby Boomer Life

Radio Television

Slide rule Typewriter

1977 Calculator

1985 Personal Computer

1989 Microwave

1990 Internet

1992 Email

1996 Cell Phone

2004 Social Network

2007 iPhone

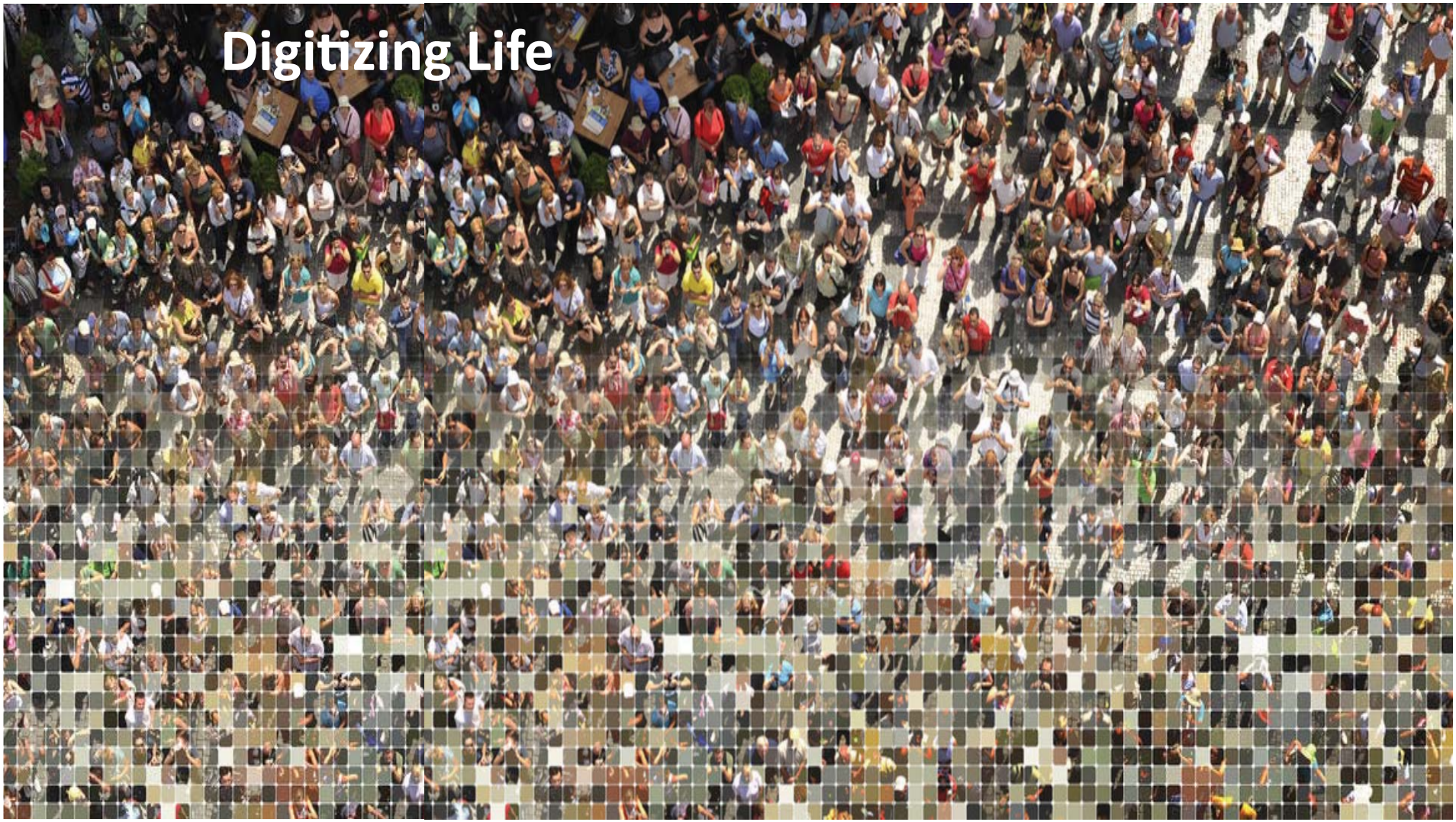
2008 Electronic Health Records

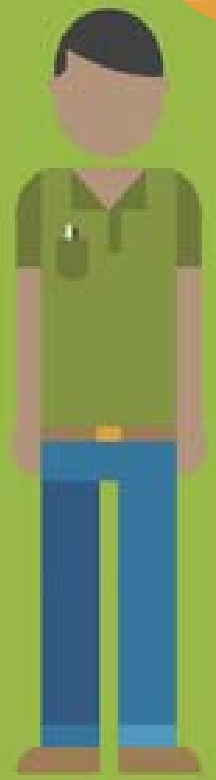
Big Data

Science

GENERATION Z: CONNECTED FROM BIRTH.

Born mid-1990s to 2010.


Digitizing Life



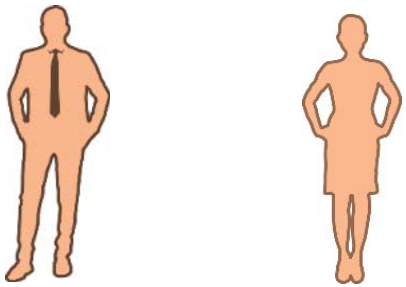
explorys

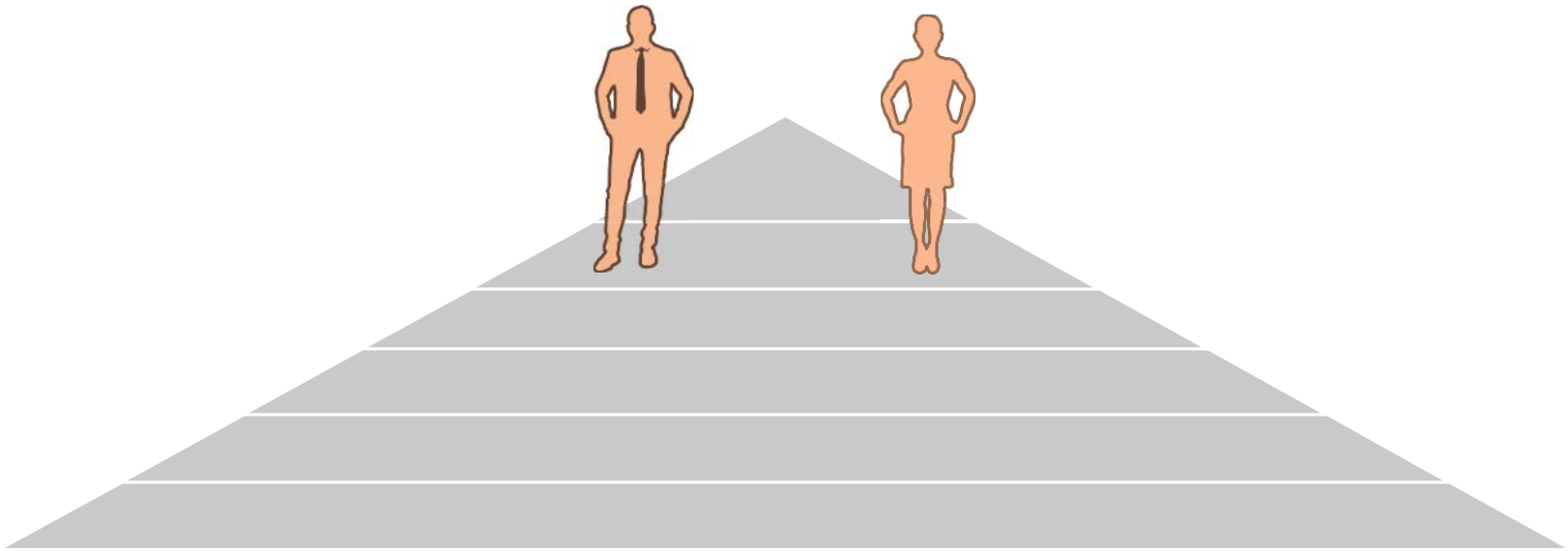
The average person is likely to generate more than one million gigabytes of health-related data in their lifetime. Equivalent to 300 million books.

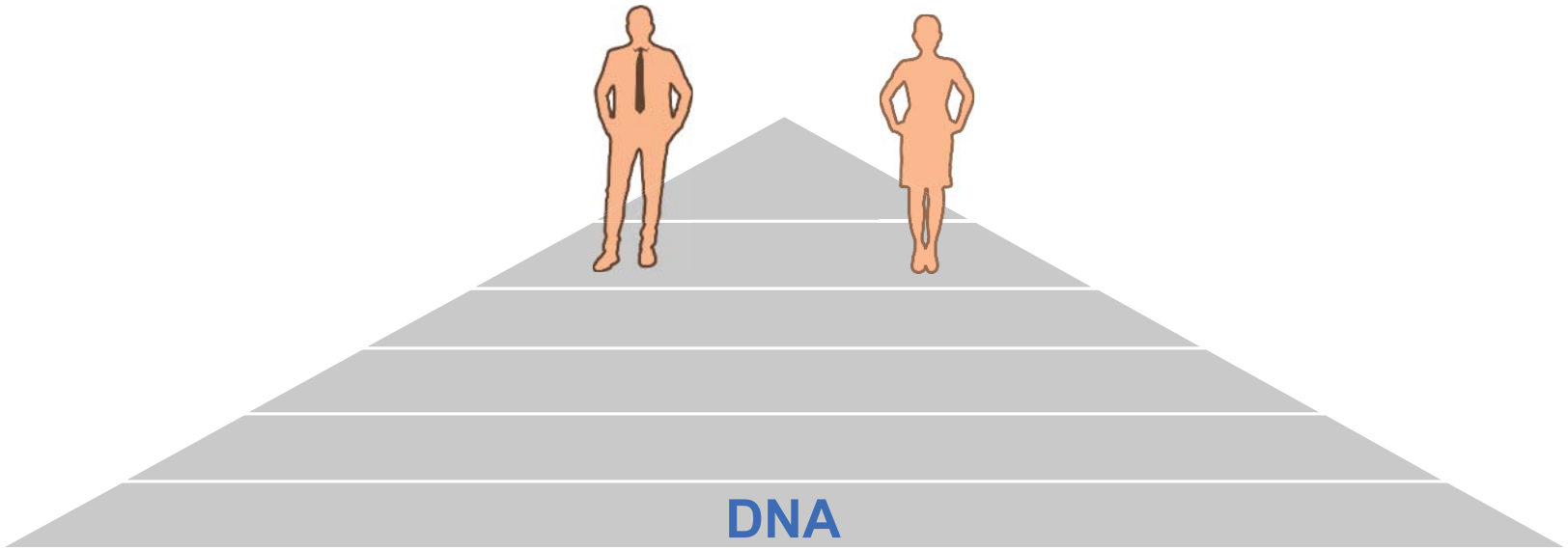
IBM **Watson Health**

The NIH Data Commons

Digital Ecosystems for using and sharing Data



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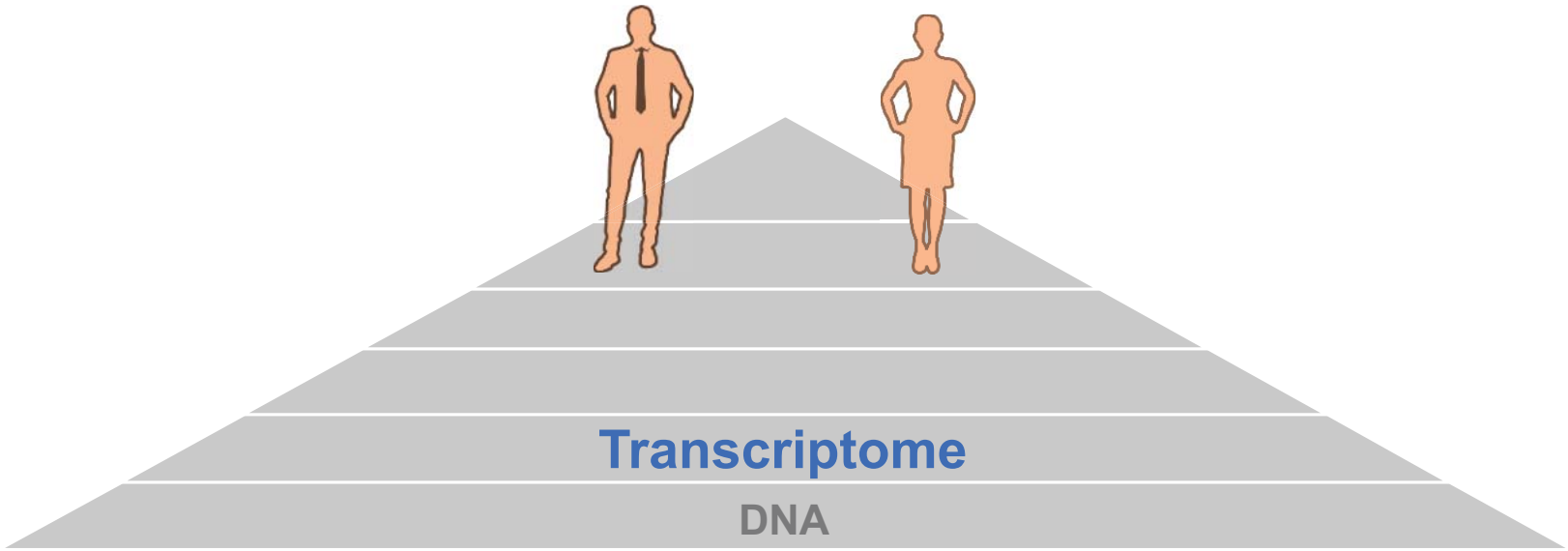
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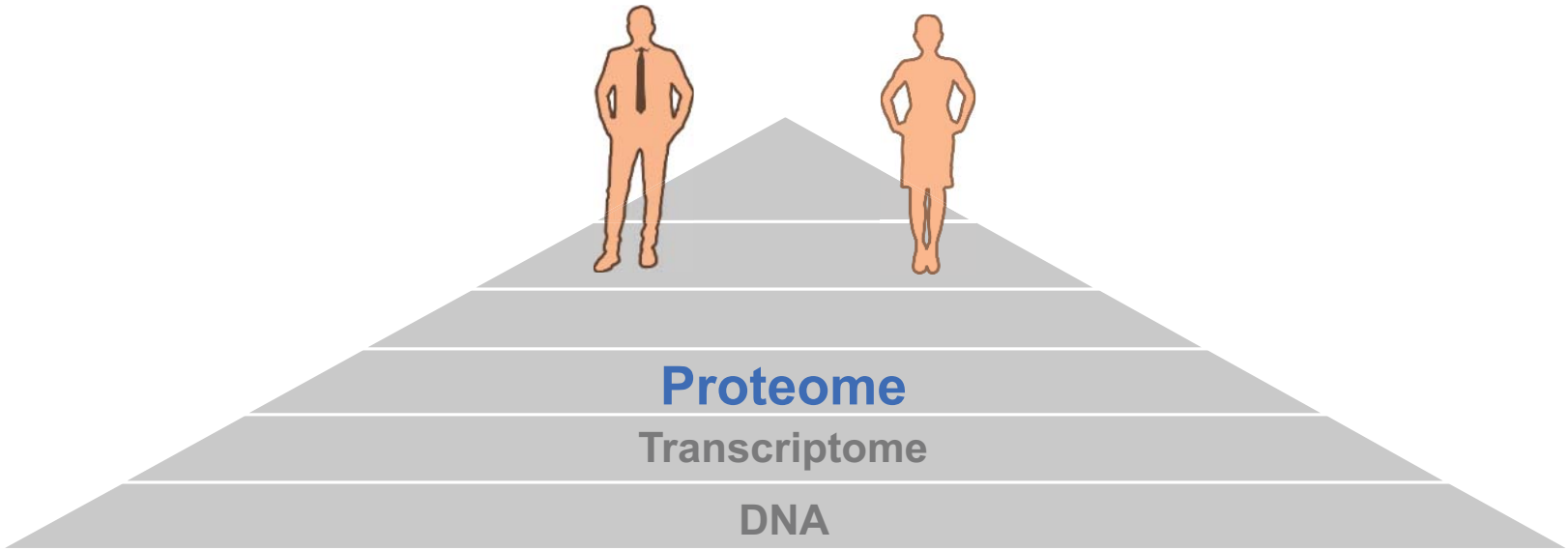
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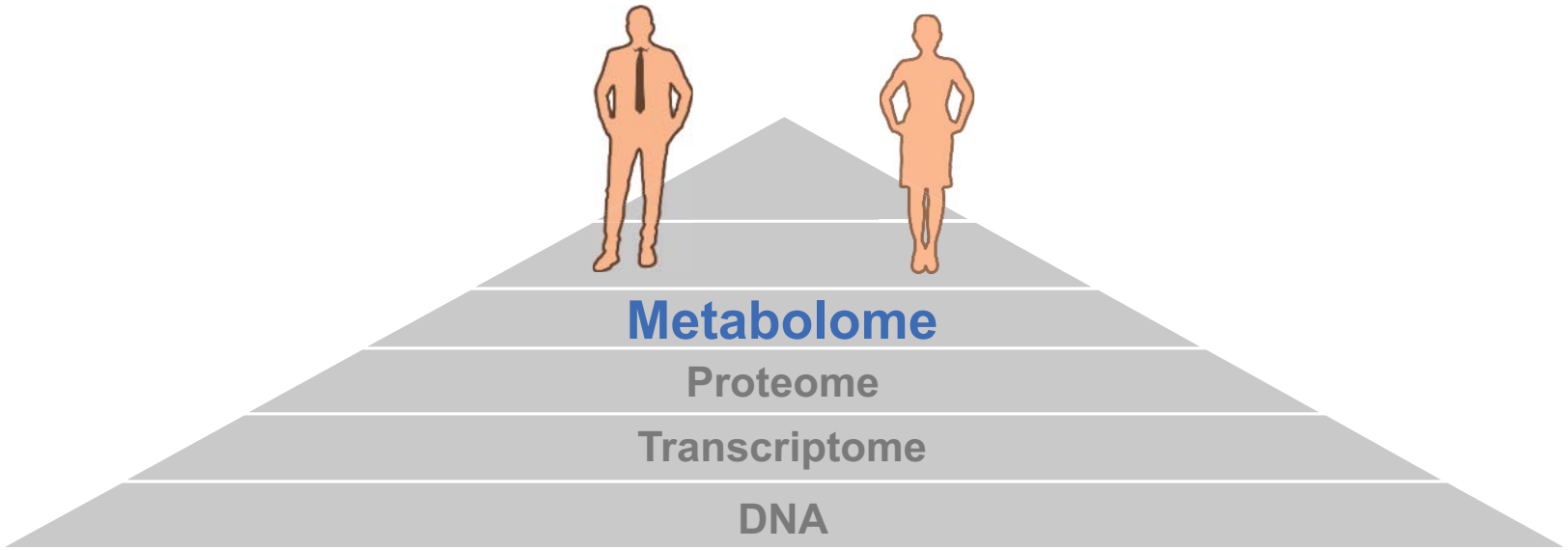
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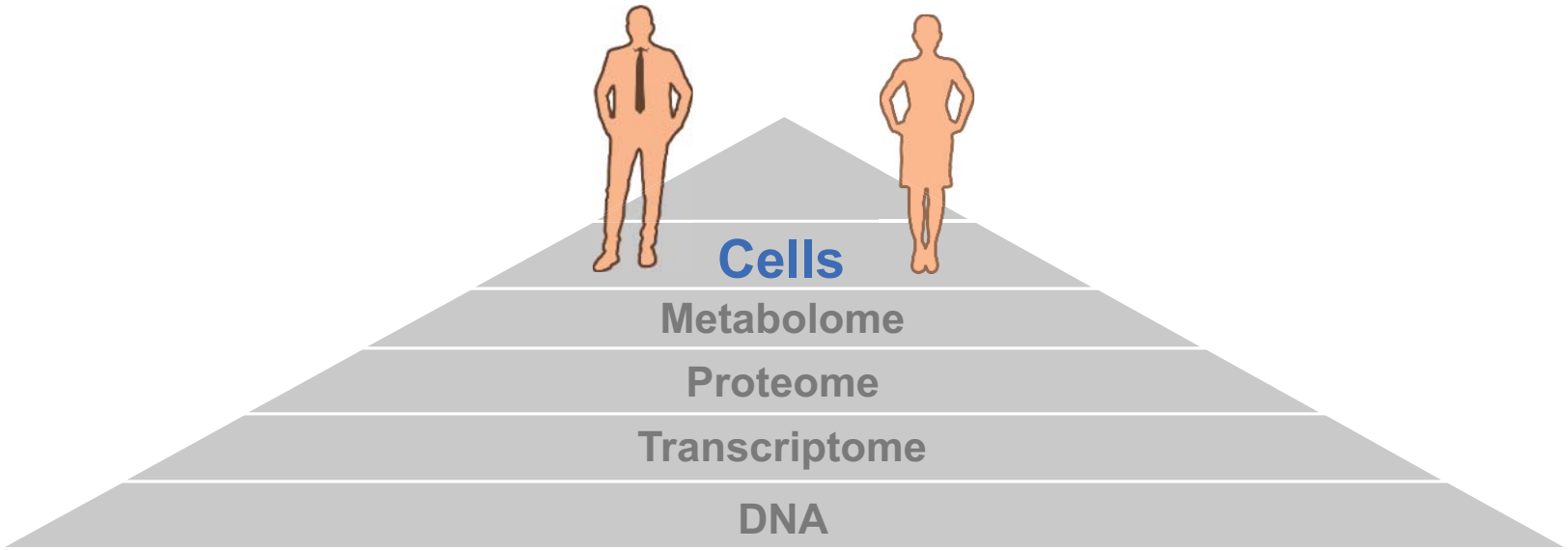
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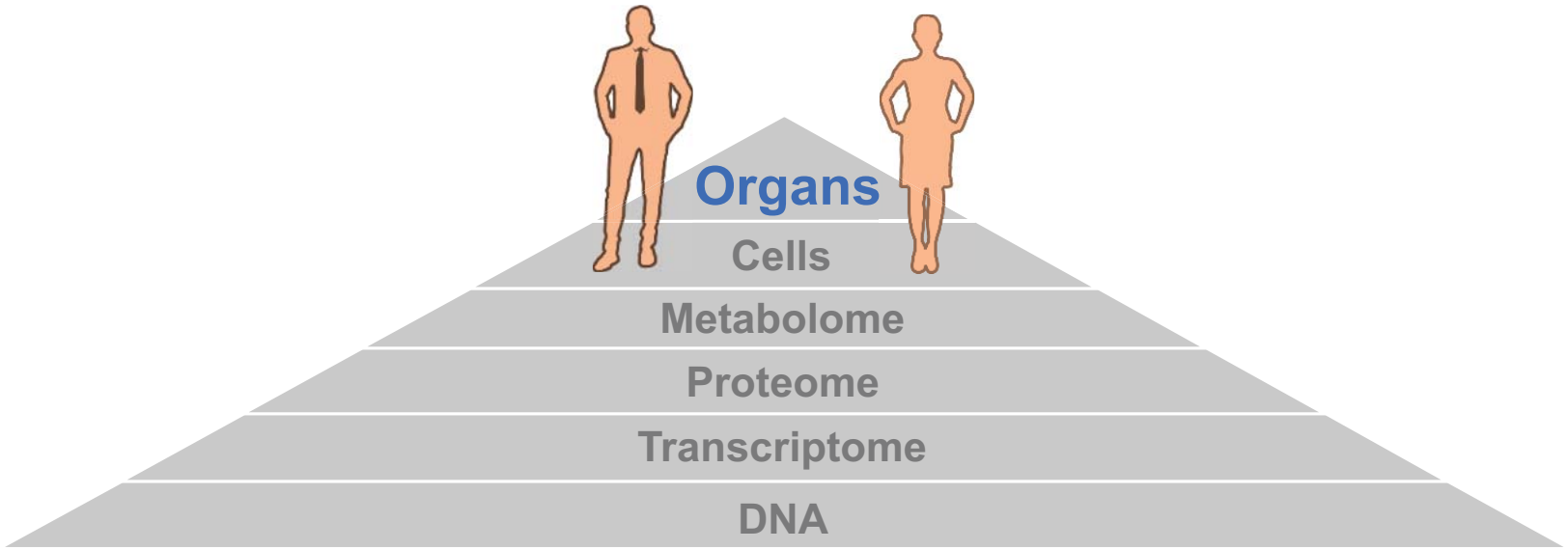
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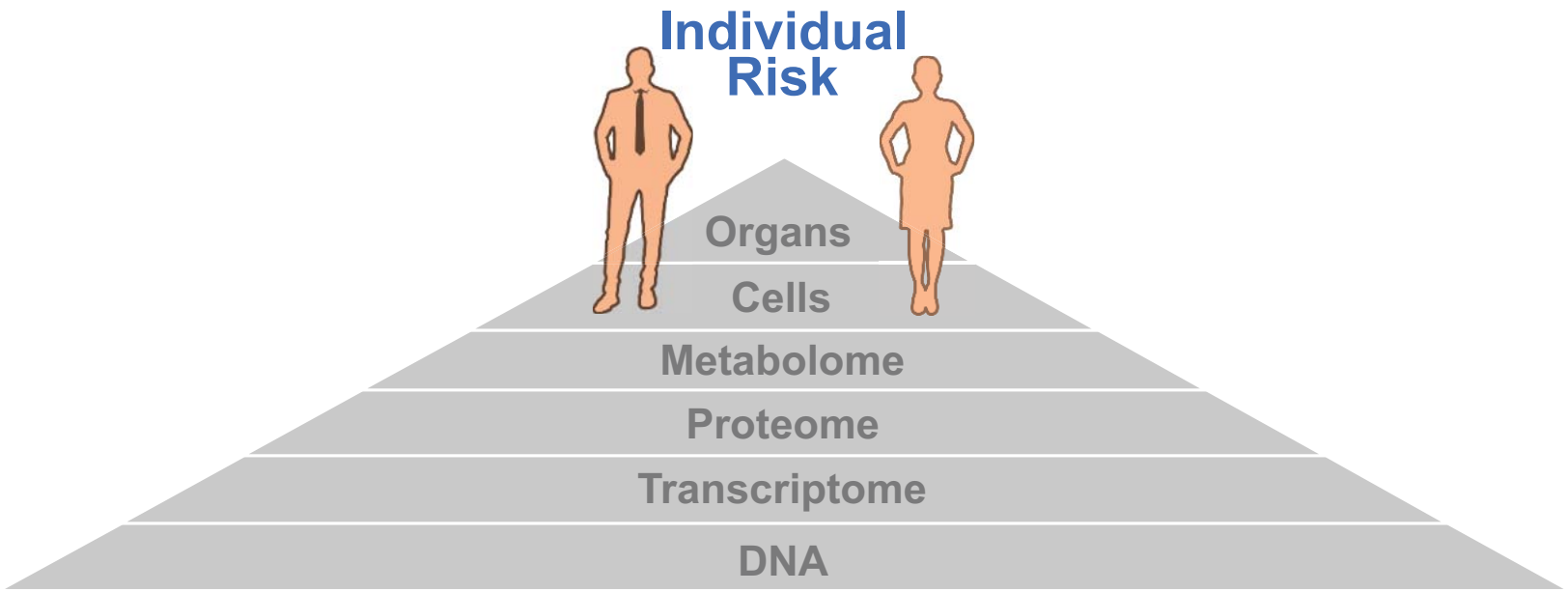
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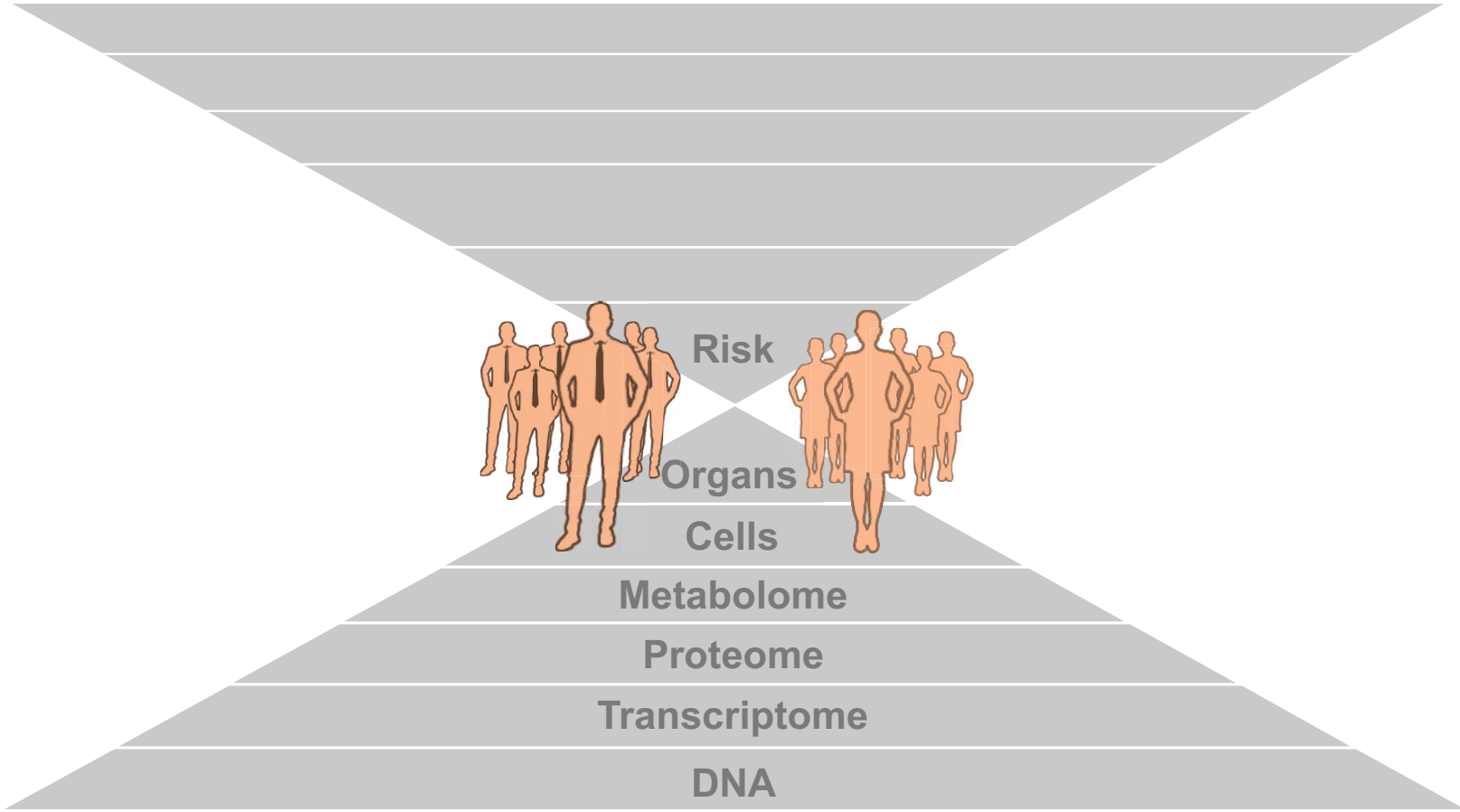
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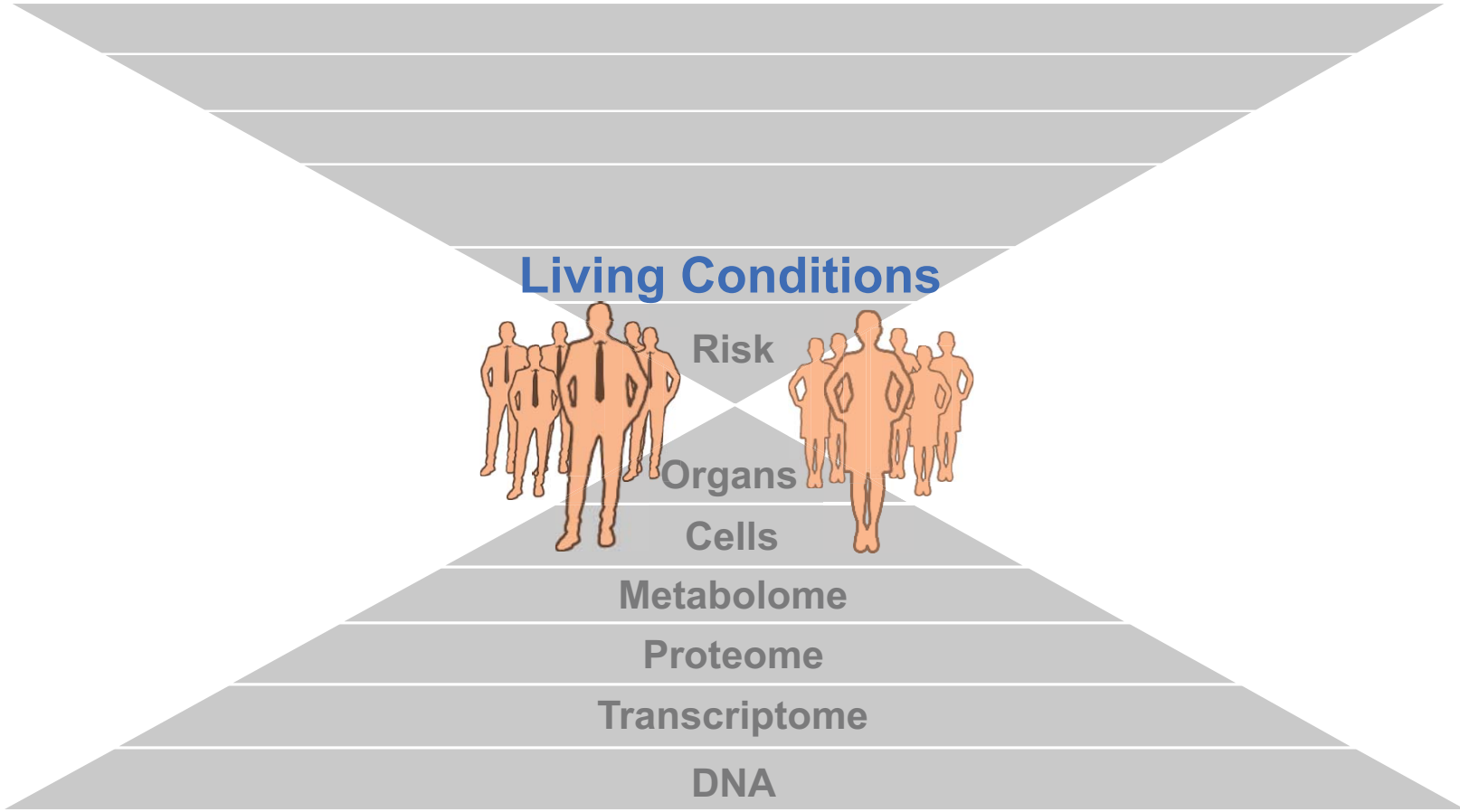
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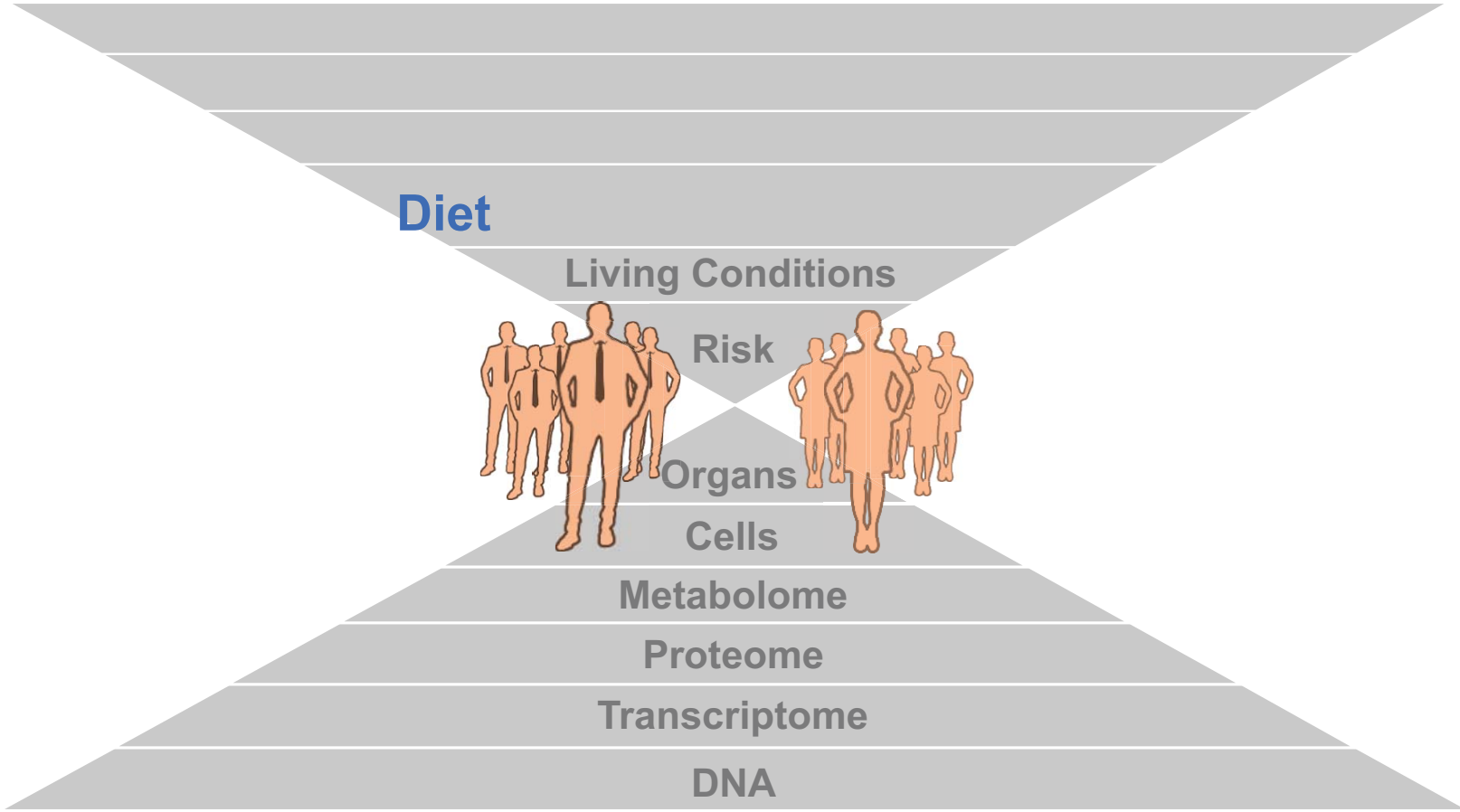
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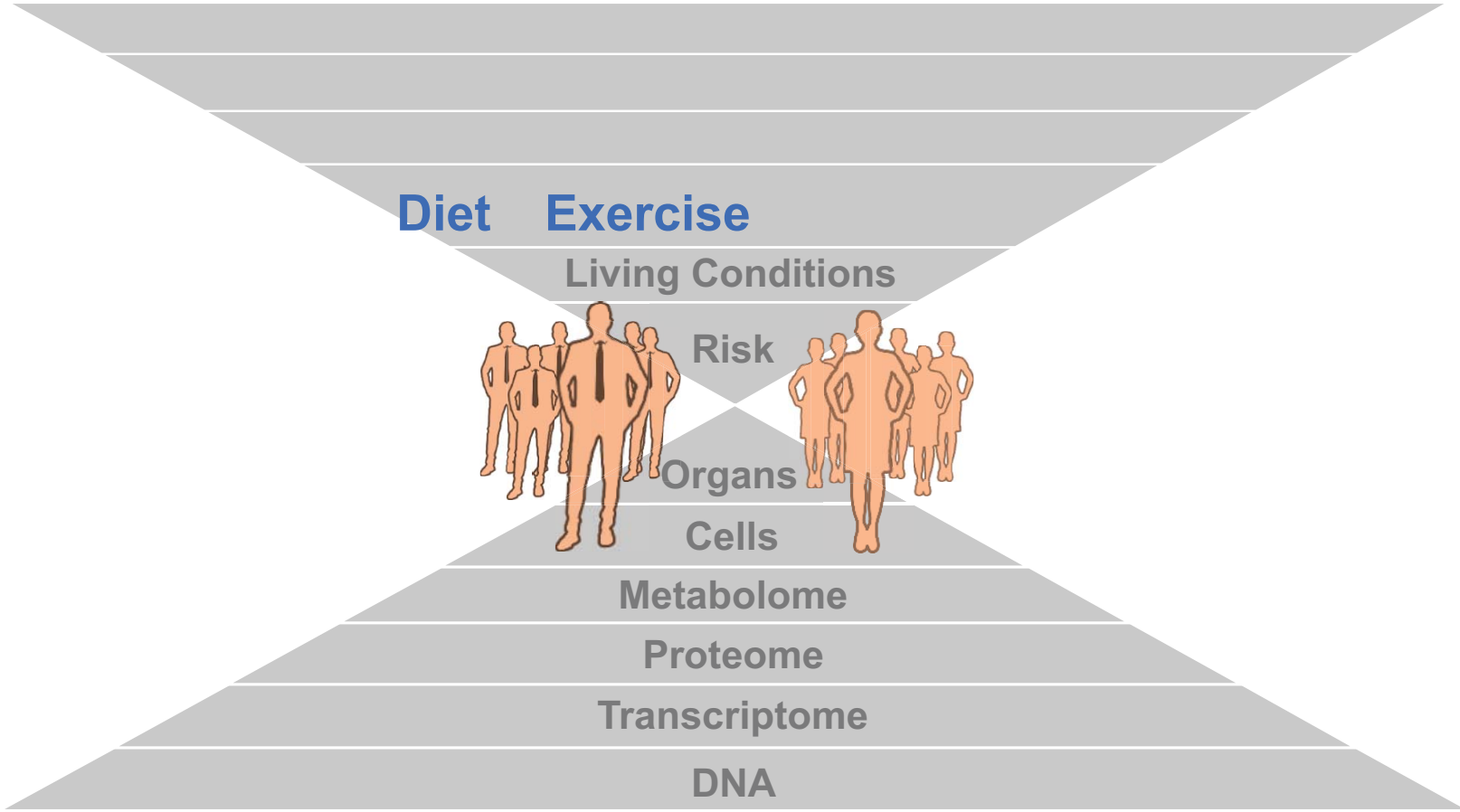
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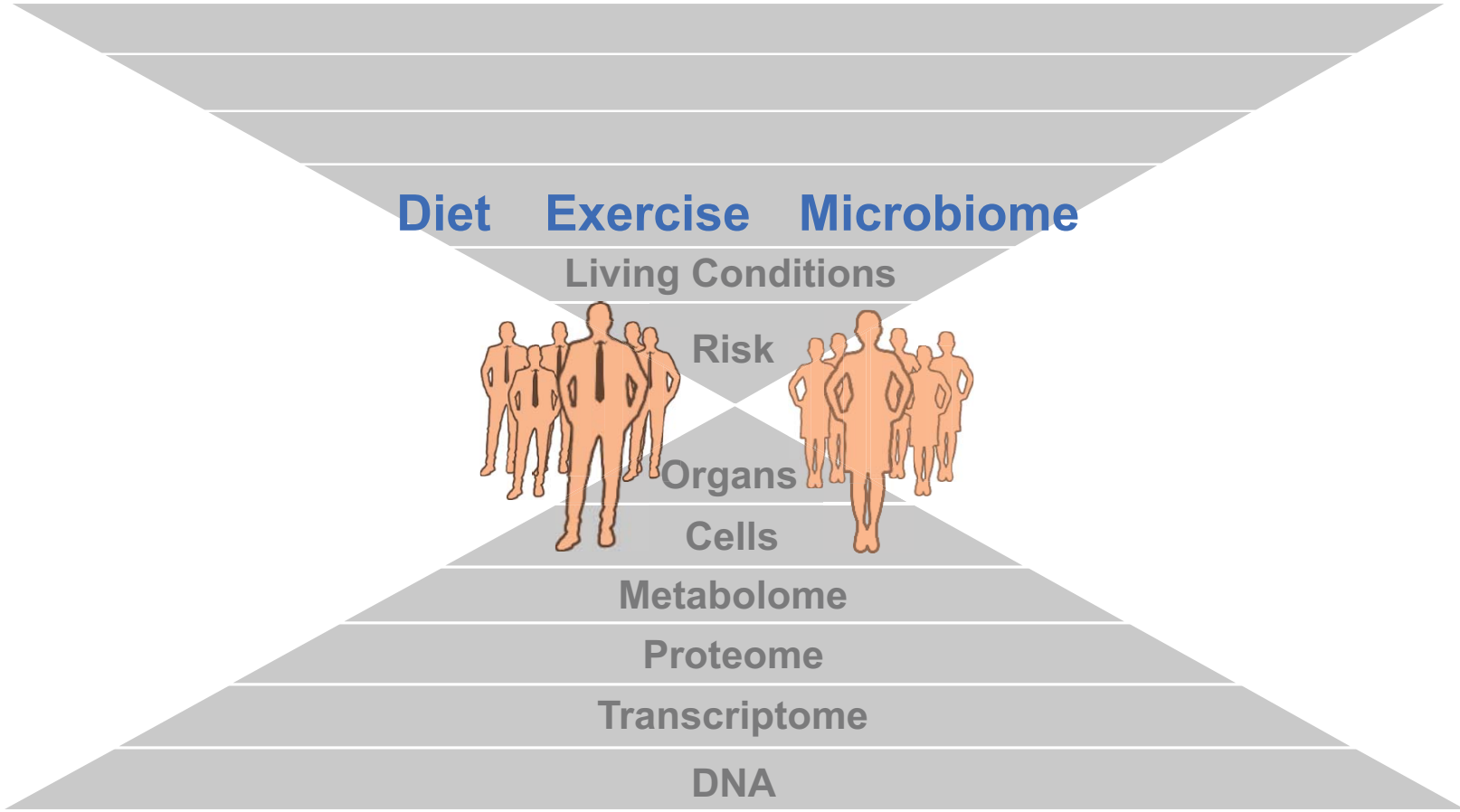
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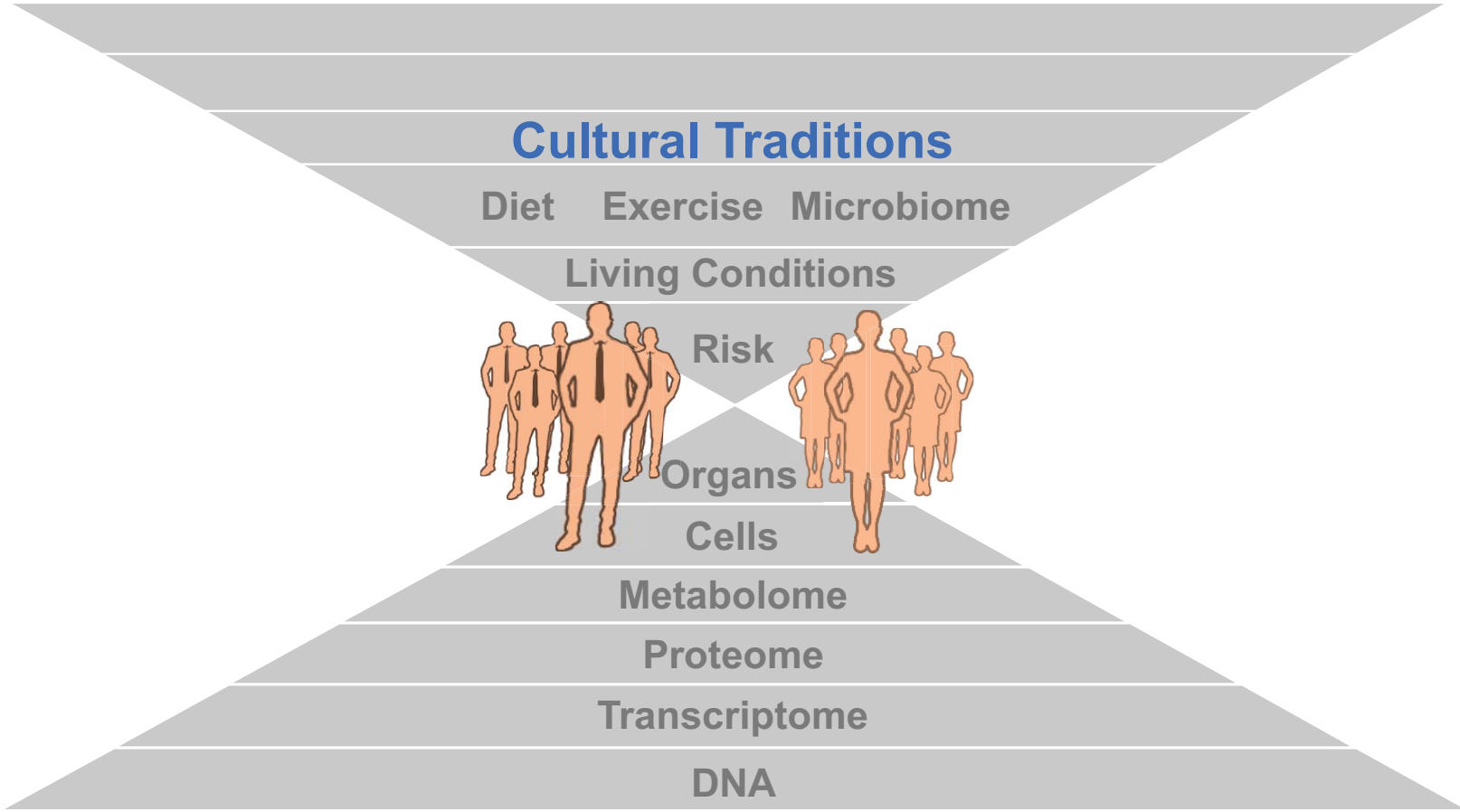
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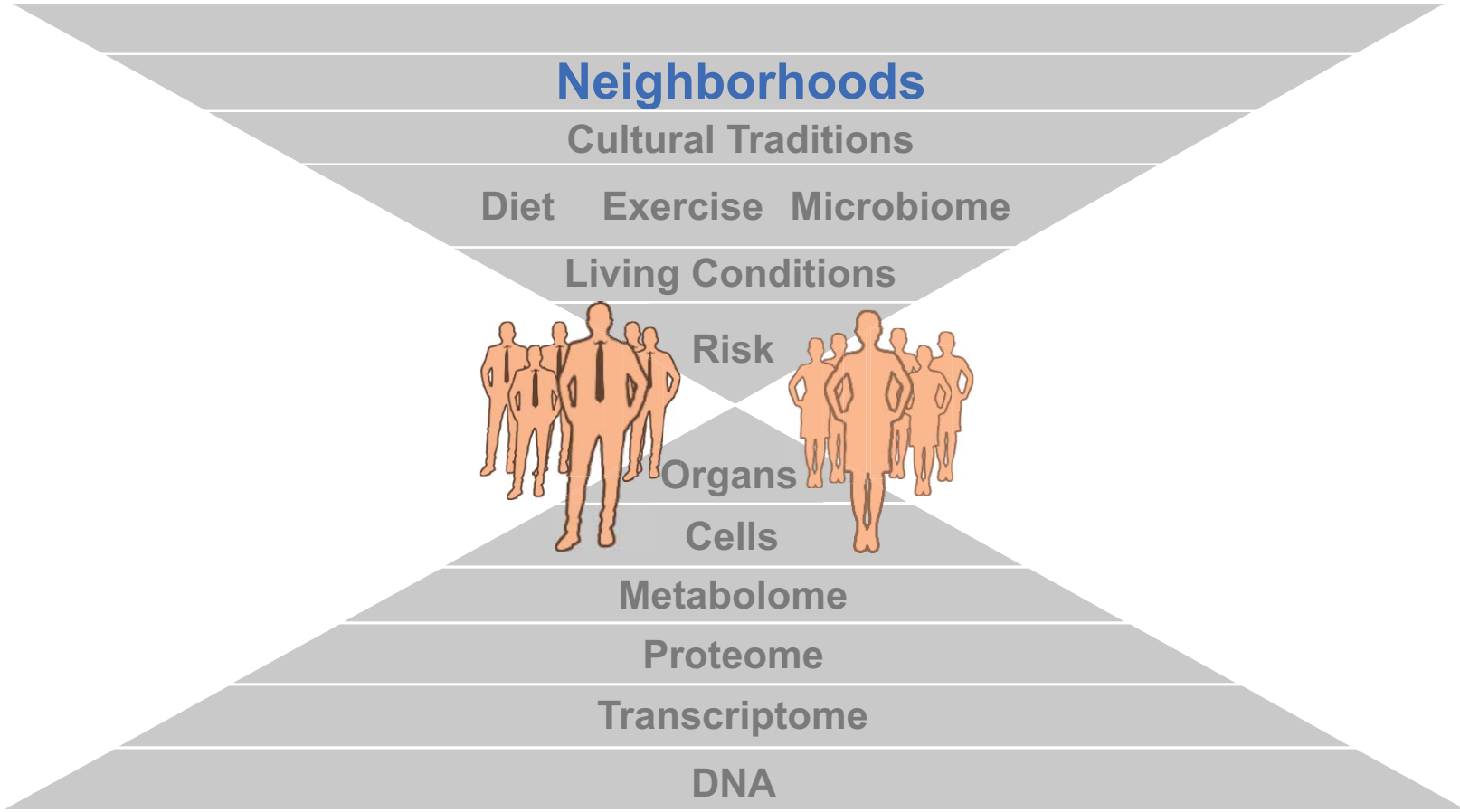
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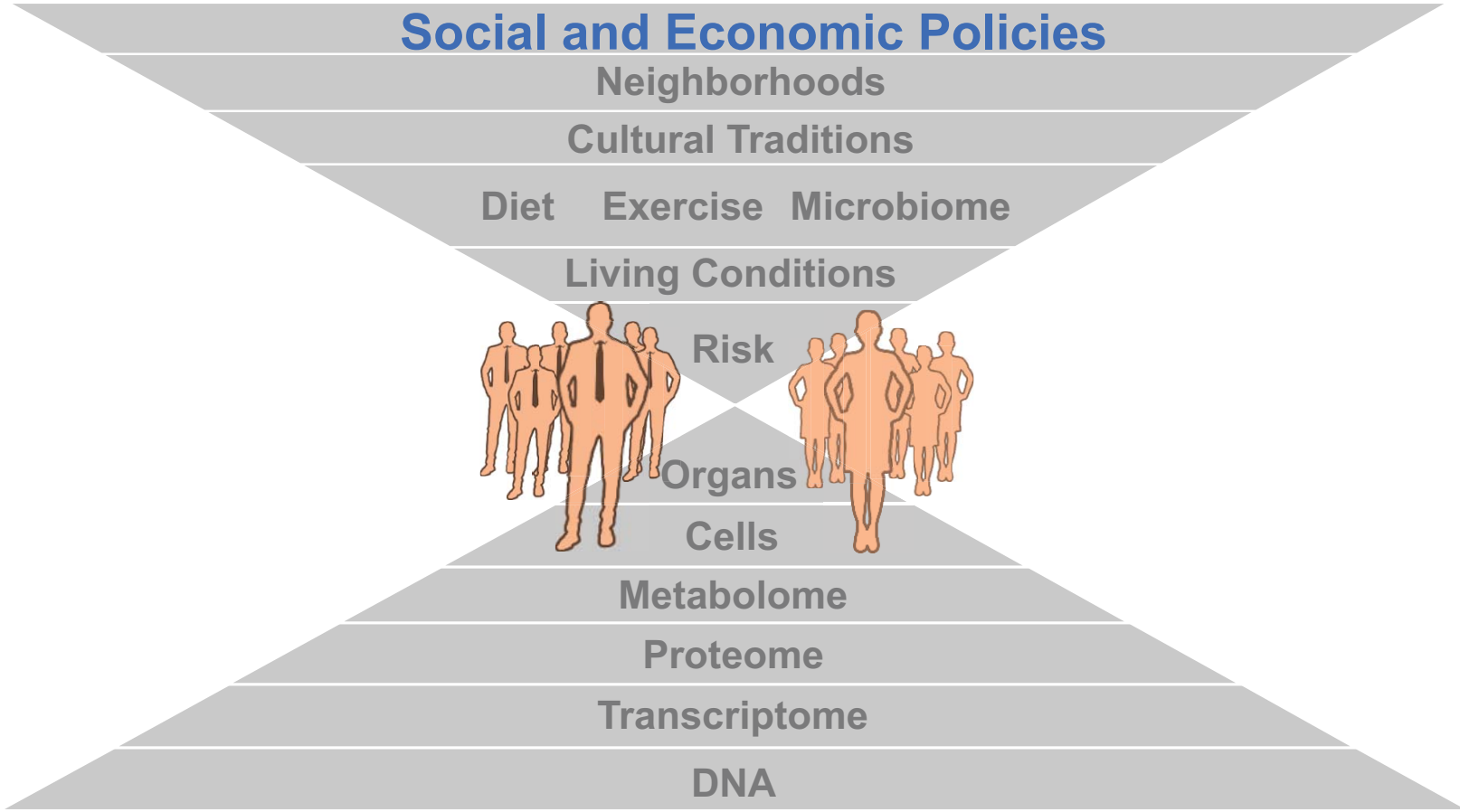
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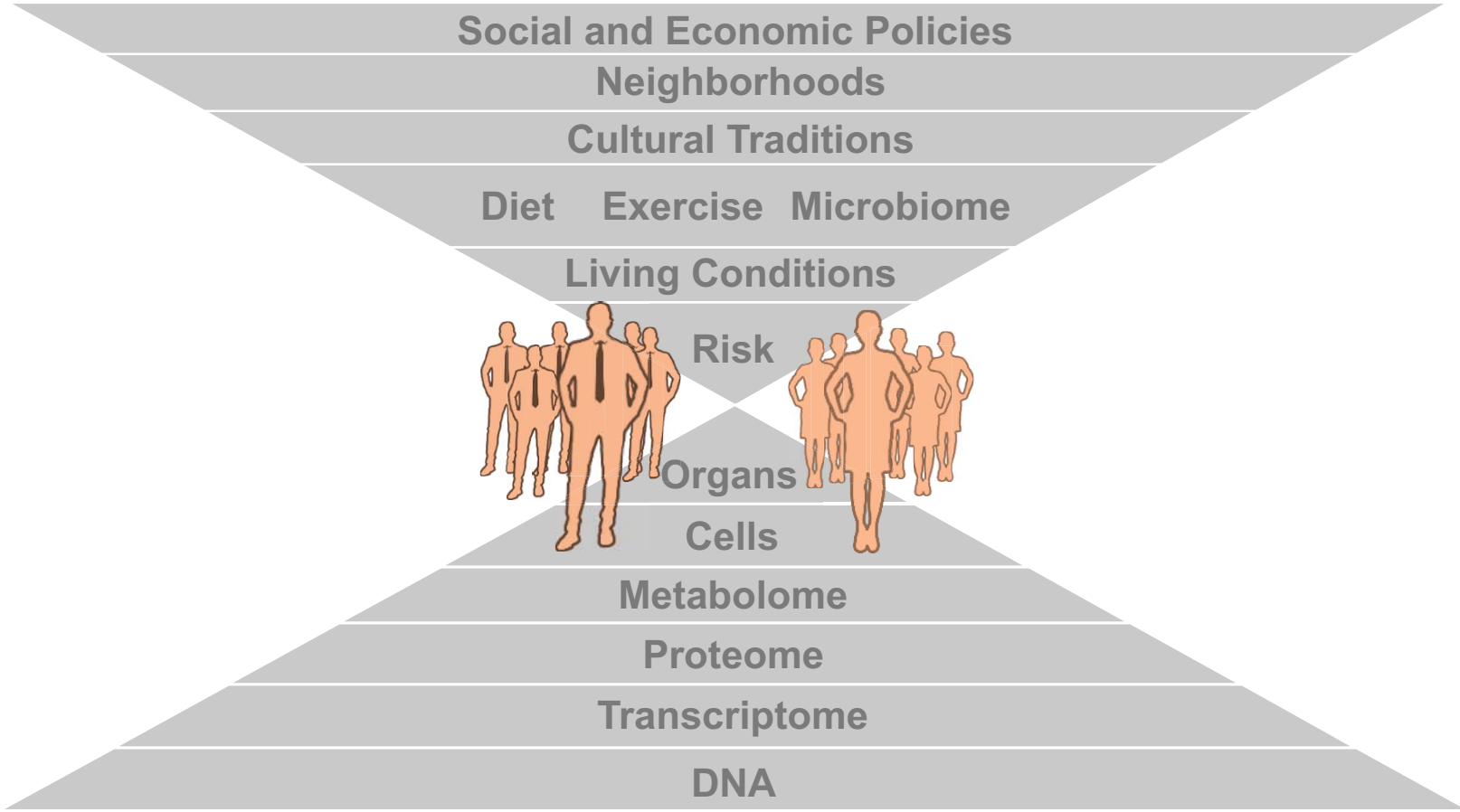
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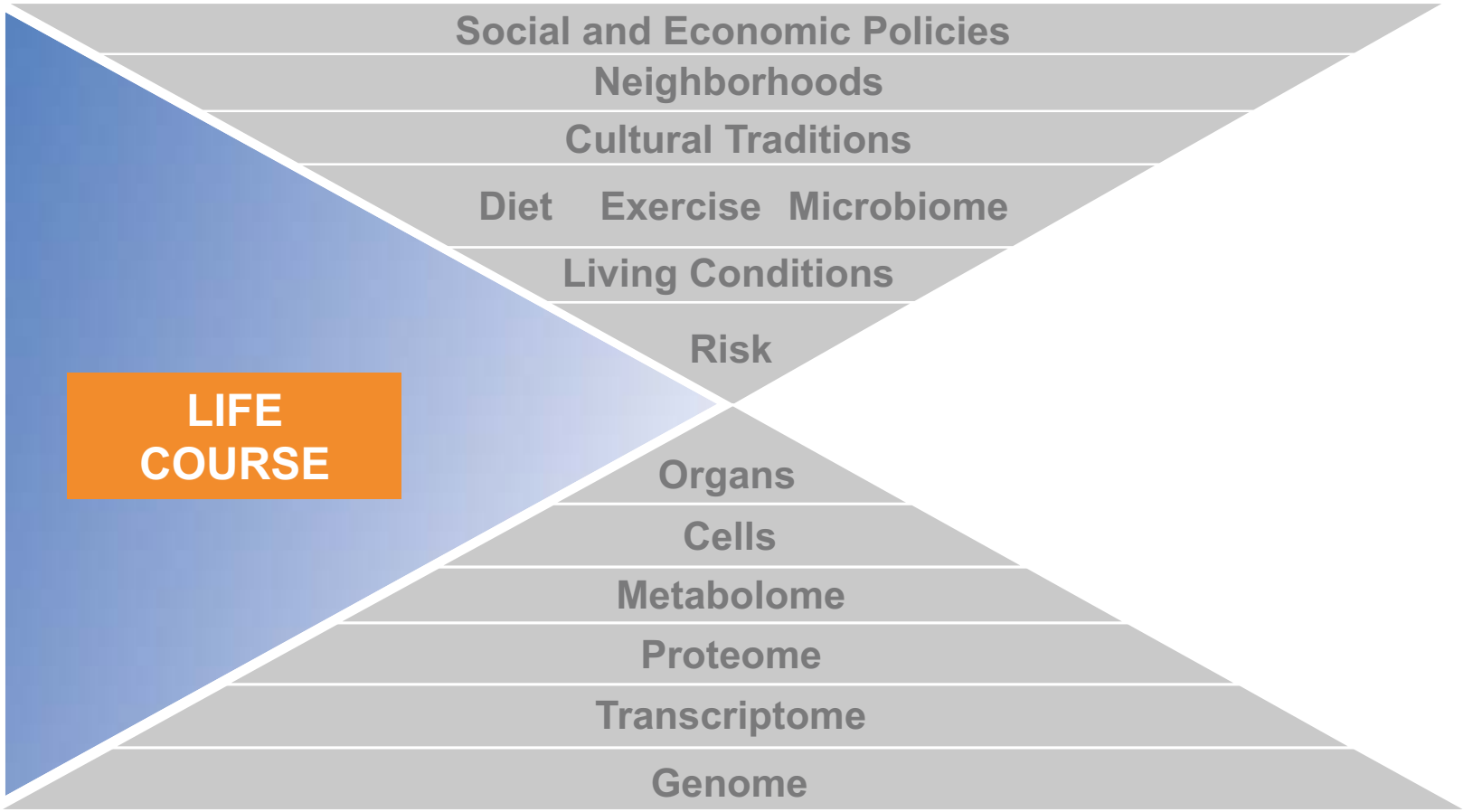
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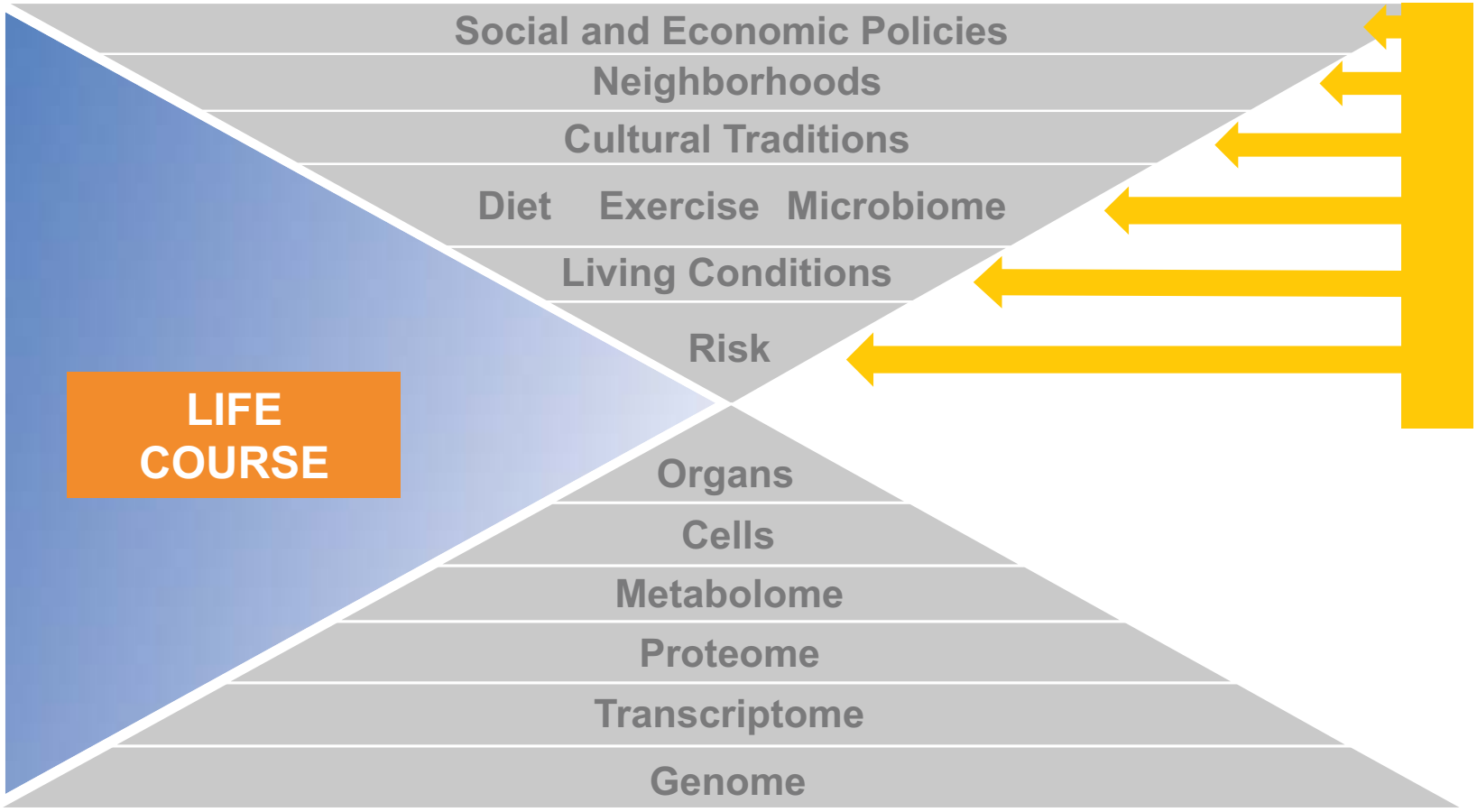
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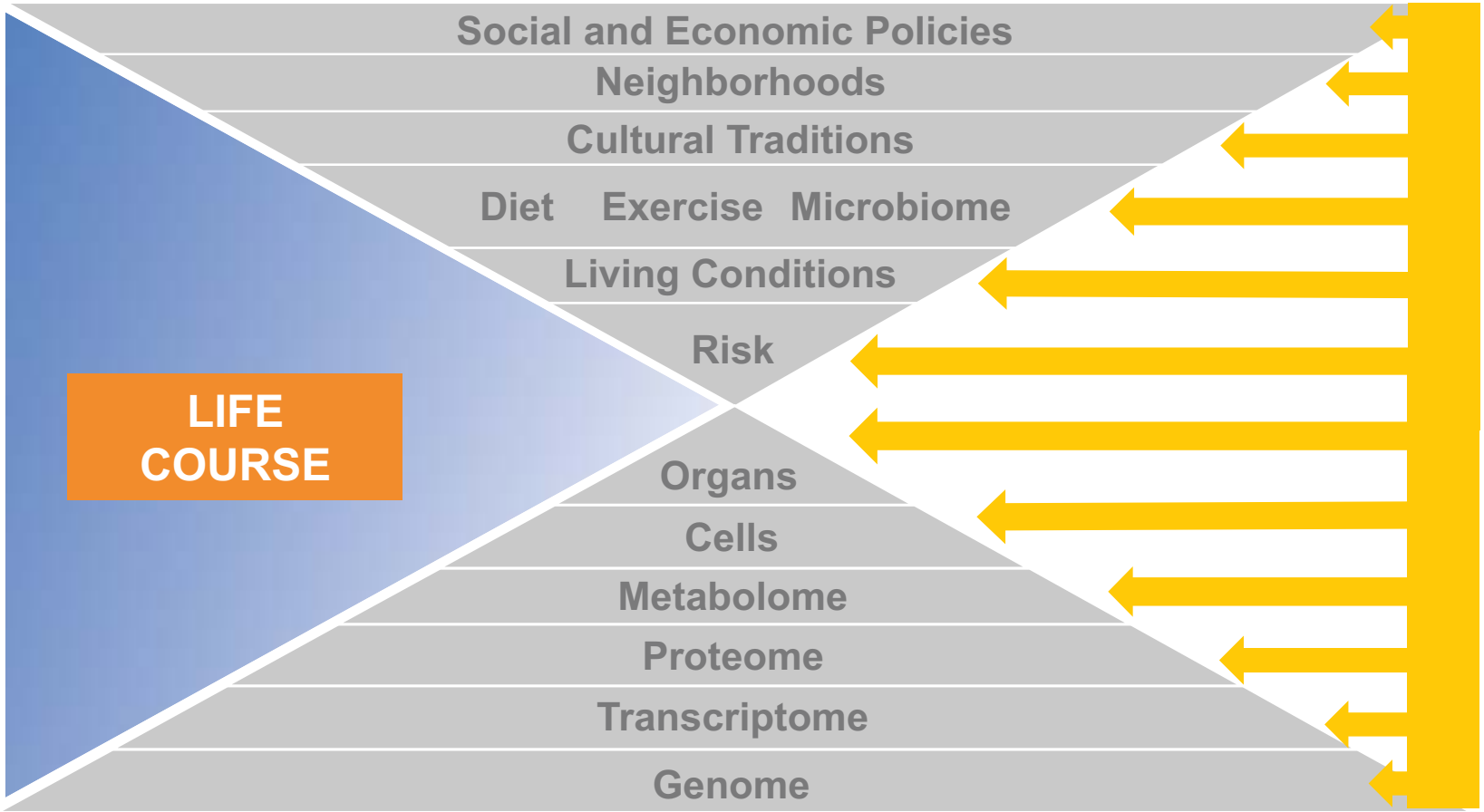
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Cultural Traditions
Diet Exercise Microbiome
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LIFE COURSE
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Metabolome
Proteome
Transcriptome
Genome

Gen Z Attributes

- True digital natives – born connected
- Can receive and send multiple sources of information rapidly
- Think and Communicate and Consume information with images
- Collaborative – teamwork
- Exceptionally resilient and realists

The Last Fully Human Generation?

Everything is Changing

Healthcare is changing.

Research is changing.

People are changing.

What will this meeting be like in 2050?

What will we be like in 2050?

AAP in the year 2050

There will be a joint meeting in April/May (probably in Chicago).

We will on average be older (like the rest of the world).*

We will (still) be passionate about science, and physician-led science.

AAP will (still) be inducting physicians who are leading the discoveries that are transformative to patient care, and looking to mentor and inspire young(er) scientists.

**We will be older but not old.*

The Meeting in 2050

We will be in the second wave of transformation in medicine related to the Digital Age, as great or greater than that experienced by the founders in late 1800's.

The increasing data, and ease and speed of analytics will revolutionize the science and practice of medicine.

Inductees with Clinical Informatics as their ABIM specialty, expertise in emerging data sciences for discovery, artificial intelligence, bioengineering (genetic editing and 3D printing).

The best thing about the future is that it comes only one day at a time.

Abraham Lincoln

AAP / ASCI / APSA Joint Meeting
THE PREMIER ANNUAL MEETING FOR PHYSICIAN-SCIENTISTS
Fairmont Chicago Millennium Park | Chicago, Illinois