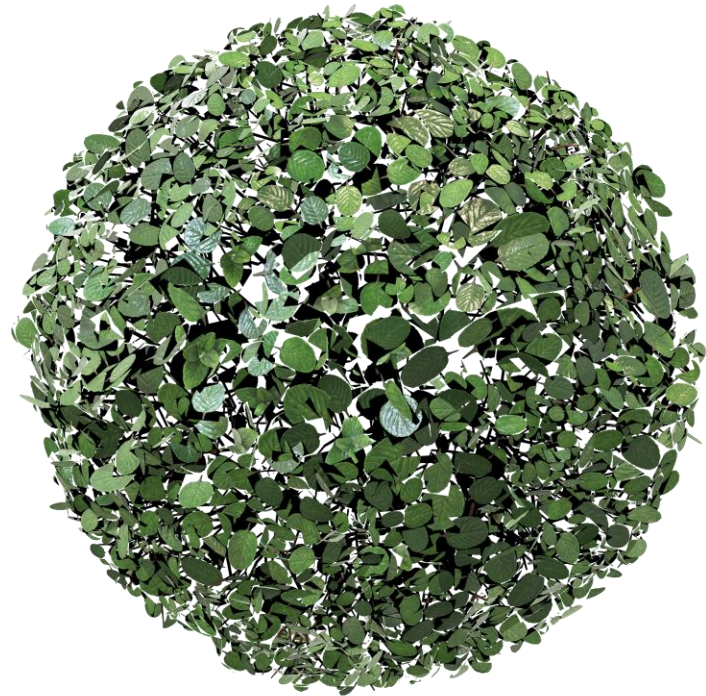




Celebrating the Environment **2021**

Reimagine, Recreate, Restore

- **Paraskevi Papadopoulos, PhD**
- Professor
- Cell Biologist, Biophysicist
- Head, Department of Science and Mathematics & Biomedical Sciences Program



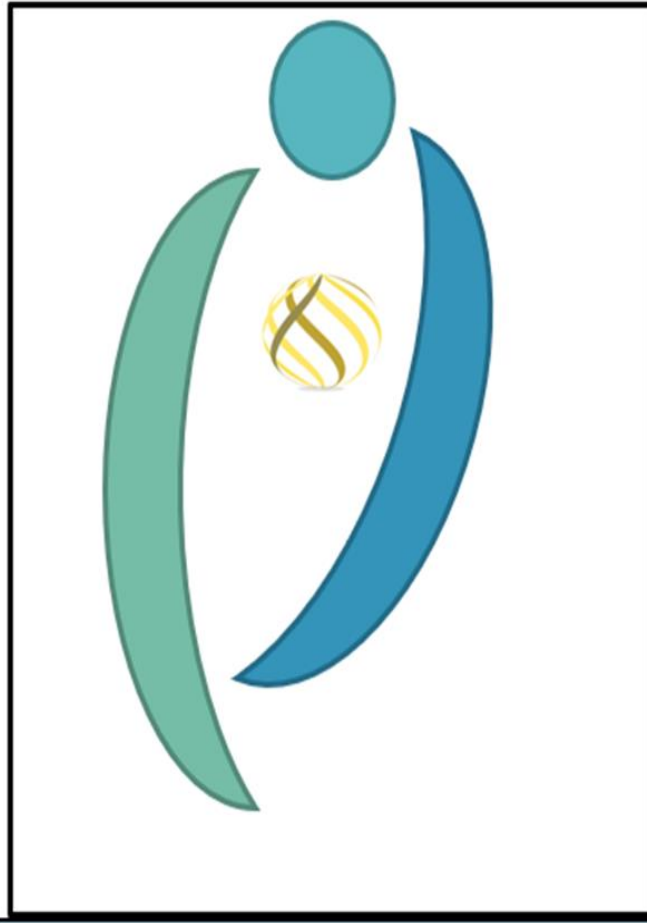
June 8, 2021



1000 Reasons plus 1 to Celebrate World Environment Day 2021

Why Celebrate?

- Because we Can Reimagine
- Because we Can Recreate
- Because we Can Restore



'celebrating nature
and amplify your
voice'

'unmute yourself and
engage'

'an open dialogue and
journey for action'

Dr. N. Karapagiotis



Department of Science and Mathematics

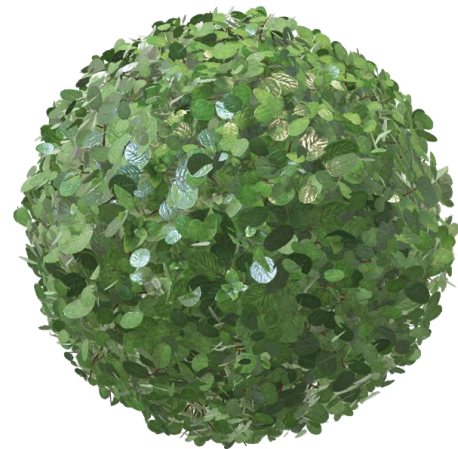
- The Department of Science and Mathematics at DEREЕ-The American College of Greece serves the College Community by offering
- a **BSc program in Environmental Studies**, launched in September 2010
- a **BSc program in Biomedical Sciences**, launched in January 2020
- **2+2 Joint programs in Sciences and Engineering** in collaboration with **Clarkson University**, launched in September 2020
- **Minors in Biology** and **Environmental Studies**.
- Interdisciplinary minors with the School of Business and Economics in **Environmental Management** and **Tourism and Sustainability Minor**
- The department supports the Liberal Education program and other programs by offering courses in **Mathematics, Statistics, and Natural/Physical Sciences** (biology, chemistry, environmental science, geology, oceanography and physics, providing both lectures and lab work).



Science Programs at Deree

Department of Science and Mathematics

- **Majors (Bachelor's degree programs)**
 - Biomedical Sciences Program
 - Environmental Studies Program
- **2+2 joint programs**
 - Engineering & Science (in collaboration with Clarkson University)
- **Minors**
 - Biology Minor
 - Environmental Studies Minor
- **Interdisciplinary minors**
 - Environmental Management Minor
 - Tourism and Sustainability Minor





Environmental Studies Program @ Deree

- **Environmental Studies - interdisciplinary academic field** that systematically studies, addresses and solves complex problems created by the human interaction with the environment.



Redesign

Reimagine

Environmental Studies Program @ Deree

First launched in fall 2010.

It leads to the awarding of two degrees:

- A Deree BSc degree, under The American College of Greece accreditation by NECHE (New England Commission of Higher Education)
- A UK BSc (Honors)

Validated by The Open University, UK

- The **first Environmental Studies program** offered by a private educational institution in Greece, based on the US educational system.
- the program aims to develop students' understanding of the root causes and multiple dimensions of environmental problems (ecological, social, economic and political) as well as options for effectively addressing these problems in an increasingly complex world.

The program provides students with the theoretical knowledge and skills to:

- enter the professional world and pursue careers related to environmental issues
- become environmentally informed and socially responsible citizens, and
- undertake graduate studies in environmental fields.
- <https://www.acg.edu/undergraduate/undergraduate-programs/school-of-liberal-arts-sciences/liberal-arts-sciences-majors/environmental-studies/>

Biomedical Sciences Program

- **The BMS program was launched in January 2020**
- It leads to the awarding of two degrees:
 - A Deree BSc degree, under The American College of Greece accreditation by NECHE (New England Commission of Higher Education)
 - A UK BSc (Honors)
- **Validated by The Open University, UK**
- **Creating future health scientists!**
- **Quick info**
- In our rapidly changing world in which the disciplines of medicine, biomedical research and healthcare are of increasing relevance, a Bachelor in Biomedical Sciences (BSc BMS) is exceptionally important and in high demand. This wide-ranging, **interdisciplinary and career-focused program**, is designed to satisfy all **pre-med requirements** of US medical schools. The BMS is an undergraduate degree that helps students acquire a strong foundation in the life sciences, especially in the biomedical and healthcare fields. The use of integrative approaches to health and wellness will guide students to understand key aspects of health care, and help them find solutions to some of the most crucial health issues of our time.
- <https://www.acg.edu/undergraduate/undergraduate-programs/school-of-liberal-arts-sciences/liberal-arts-sciences-majors/biomedical-sciences/>

Collaboration with the Center of Excellence in Sustainability (CES)

- Both ES and BMS programs are designed with a strong component in their Program and Courses Learning Outcomes related to sustainability and we work closely with CES
- CES is promoting Sustainability within ACG
- Highlight of Achievements: **STARS Gold Rating**, in recognition of its best practices in five categories: **Academics, Engagement, Operations, Planning & Administration and Innovation & Leadership** Awarded by the Association for the Advancement of Sustainability in Higher Education (AASHE)
- **Academic Advisory Board of CES**, formed Fall 2020, aims amongst other goals, to:
 - Provide advice on enhancing the sustainability element of the academic curriculum
 - Strengthen sustainability-related academic and research efforts within ACG

Department Research Areas (Recent Developments)

- The Biomedical Science & The STEM Education Research Area
- The Environmental Science and Sustainability Research Area
- The Biostatistics Research Area
- As part of the 150 year ACG strategic plan <https://www.acg.edu/about-acg/acg-strategic-plan/>
- and the Research Technology and Innovation Network (RTIN)
- Both faculty and students are involved in various research topics
- We expect that research will greatly expand in our department as research and innovation will be promoted by the ACG Research Center (ACG-RC) <https://www.acg.edu/about-acg/the-american-college-of-greece-research-center/> and RTIN



How can we live in Harmony with Nature?

- **Our event is intended as a call to action in support of the 2050 Vision for Biodiversity “Living in Harmony with Nature”**
- Societal actors
- **First Day:** Panel of Scientists together with Research Technology and Innovation Network (RTIN)- Directors of the Centers of Excellence
- **Second Day:** Students to talk about their Deree experience, introduce case studies, tell us about success stories and highlighting synergies
- Scientists and Educators to discuss various issues and propose solutions
- **Our goal**
- raise awareness on climate change and biodiversity challenges including health
- offer inspiration and positive examples for smart and wise solutions
- focus on specific themes and highlight options for actions and solutions

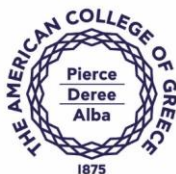
Topics and challenges to explore

- Top priorities-Top questions to address
- How do we deal with the impact on Human health and wellbeing due to climate change as it relates to heat waves, heavy storms, floods, desertification, biodiversity loss, pollutants, radiation, air, water and soil pollution, solid and hazardous waste, e-waste, noise pollution etc?
- What actions are necessary to combat climate change, to halt biodiversity loss, reverse ecosystem degradation, and secure human well being and prosperity?
- How does biodiversity affect food production?
- What is needed to address the food system through cultural and biological diversity?
- What kind of education should be provided to our youth?
- How can synergies be created to meet the climate change challenges and to achieve the UN SDGs and biodiversity goals?
- How collaborations and partnerships with governmental (state) and non-state actors be forged?
- How can we rethink finance and economics in connection to sustainability and biodiversity loss so we change the narrative and imagine instead a world of conservation and sustainable use of biodiversity for the generations to come?



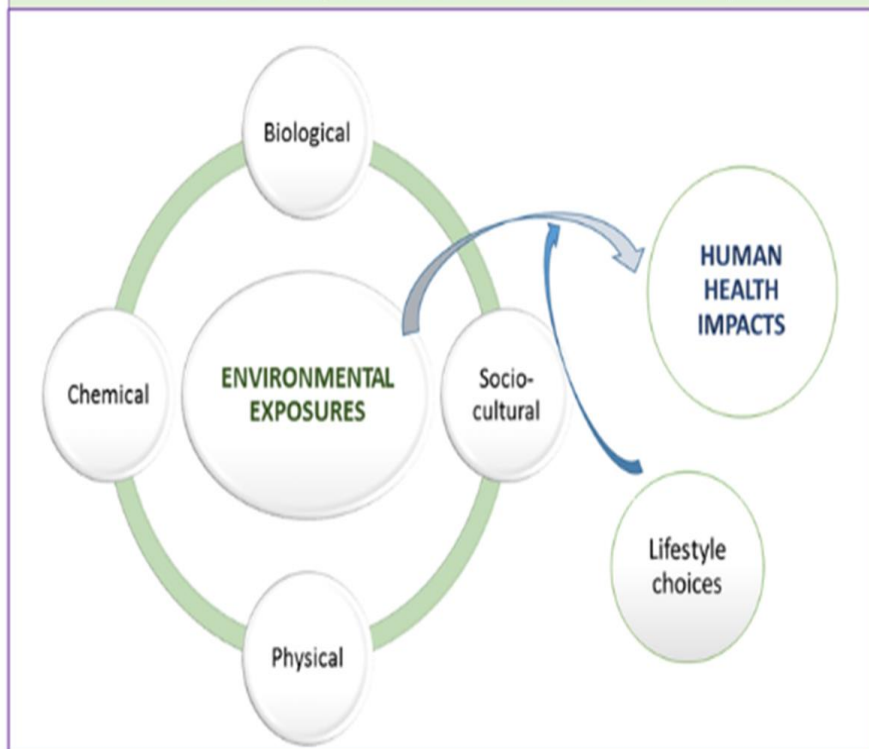
Universal overall objectives related to World Environment Day event

- A rallying call to **prevent, halt and reverse** ecosystem degradation.
- How ideas and proposals on global sustainability and implementation can bring action on **climate change and biodiversity loss**.
- How to help **communicate and disseminate through proper educational training in environmental science and in biomedical sciences, health and healthcare** the importance of establishing the biological discoveries in connection to environmental influences and exposures.
- How to **enhance human wellness** while at the same time we **preserve and protect natural ecosystems**



Sustaining STEM Education: Bridging Education with Environmental Issues, Health & Healthcare Challenges and Opportunities

Environmental Exposures and Human Health Impacts

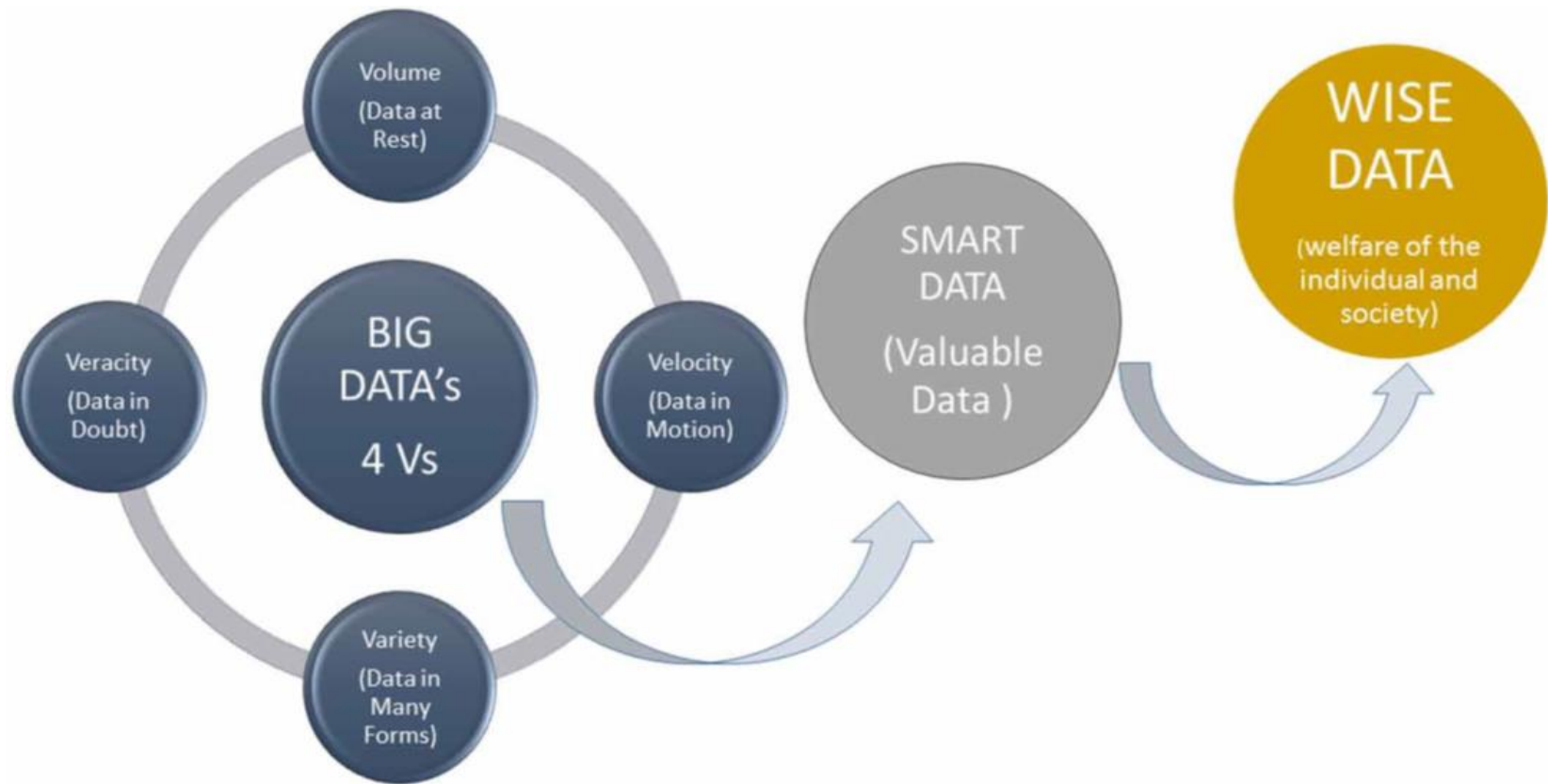


We need to:

- Leverage the best that science education can offer
- Invest on high quality life choices
- Improve understanding of climate impacts
- Raise awareness on Human Health impacts
- Focus on long-term planning and immediate action
- Help sustain habitats and biodiversity
- Help withstand rapid environmental change to feed today and tomorrow's global population

Source: Papadopoulou, Marouli, Misseyanni, 2020

Can interdisciplinary collaborations with the help of Technology pave the way to a new era of existence and why not in harmony with Nature?



*Figure 2. Going from big data to smart data to wise data
Source: Lytras & Papadopoulou, 2018*

Moving from Conventional Medicine to Personalized and Precision Medicine

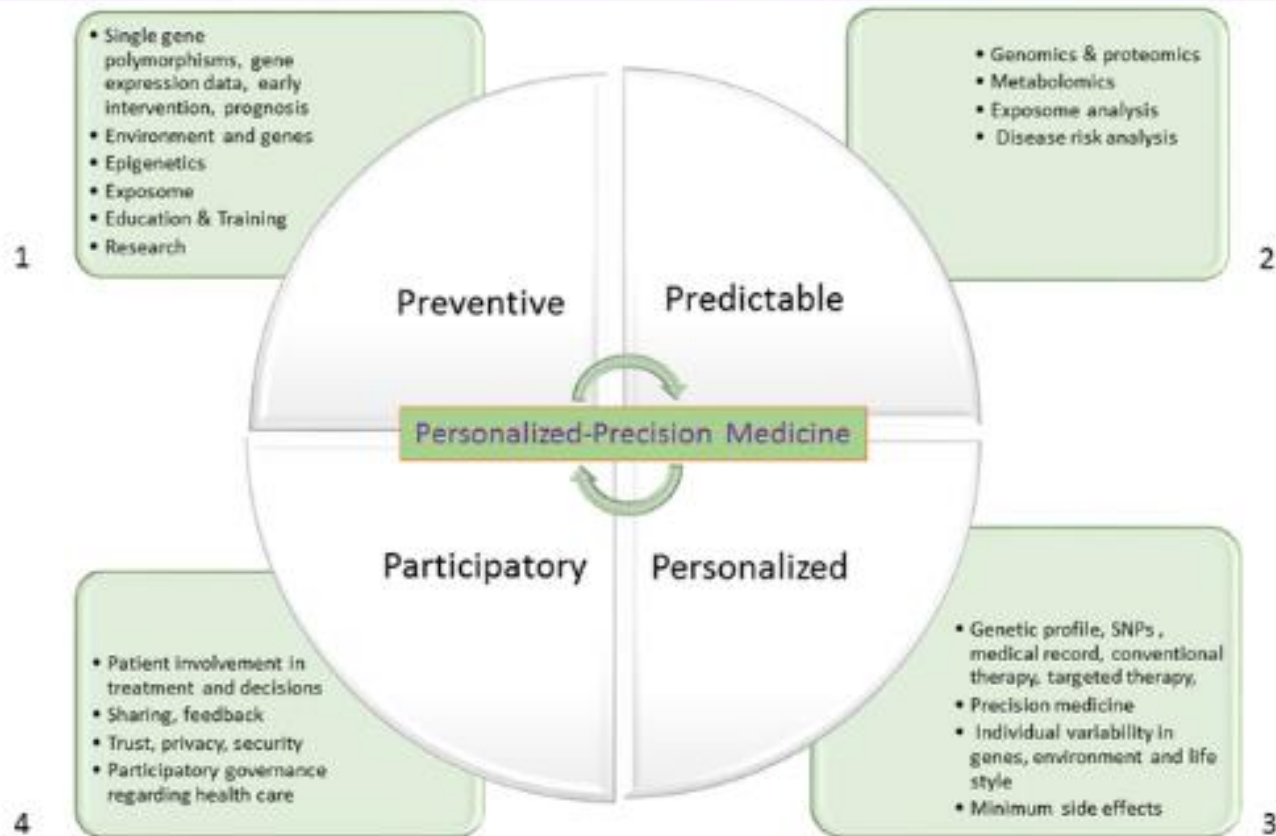
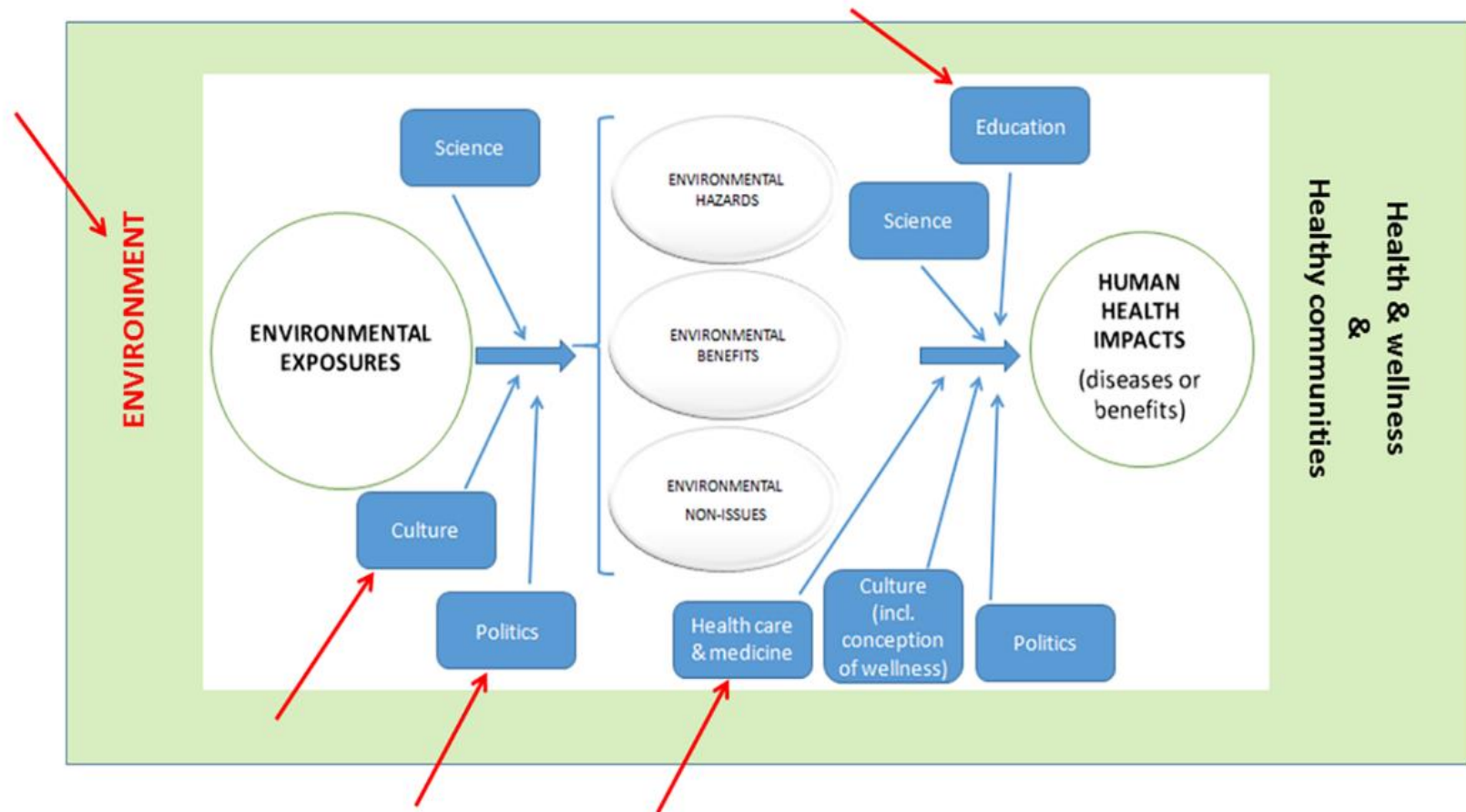


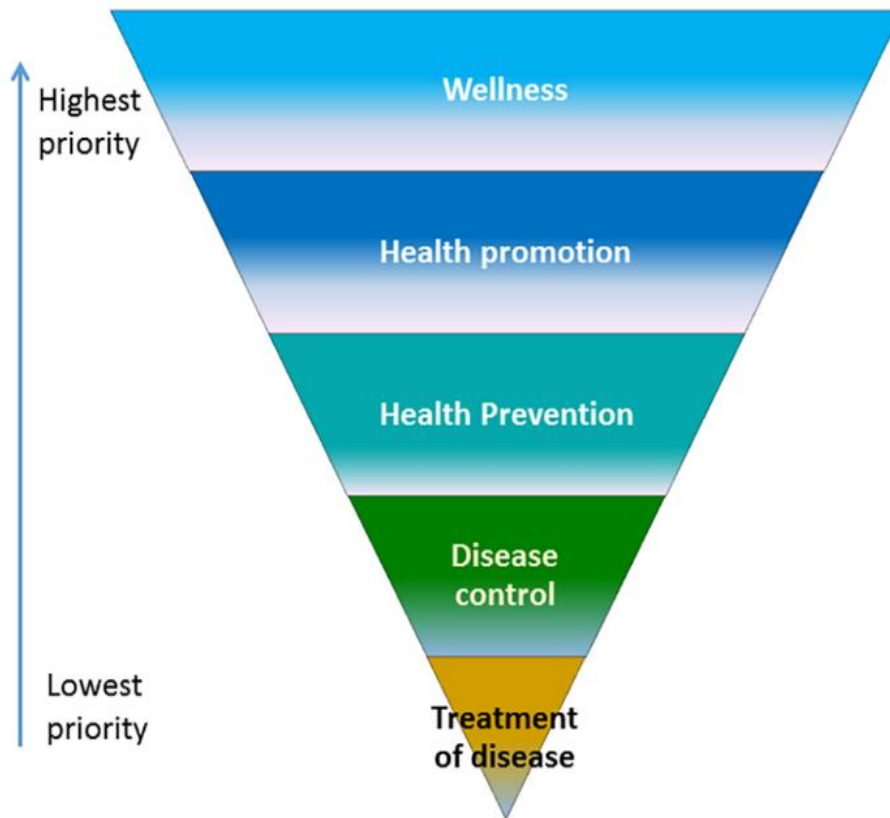
Figure 5B. Revised framework of personalized medicine
Source: Papadopoulou, Marouli, Misseyanni, 2020

Transitioning towards healthy and sustainable societies: Important points for interventions

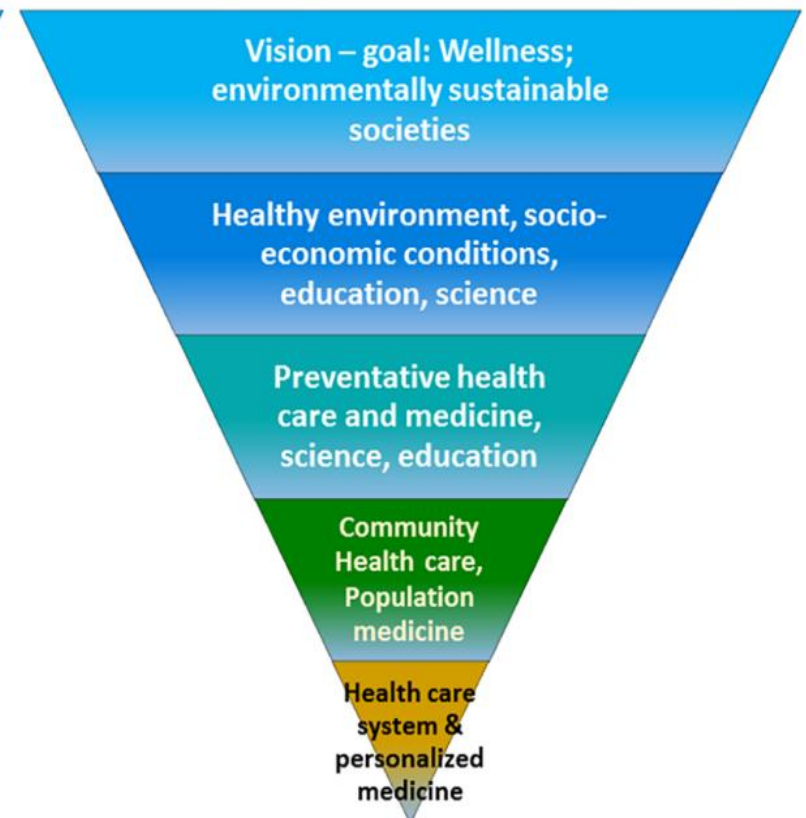


Source: Marouli, Papadopoulou, Misseyanni, 2020

Priorities for Healthy Communities



Strategies per priority



Source: Marouli, Papadopoulou, Misseyanni, 2020

COVID-19 pandemic

- Brought disruption of our every day life
- Deprived life itself from many individuals
- The time is right though to mount an ambitious effort worldwide to transform the understanding of factors contributing to the appearance of the virus, its transmission, disease progression, long term COVID-19 effects, and various therapeutic schemata including vaccination as a protective means.
- It is important to bridge medical knowledge, digital technologies with education and healthcare in an effective and transparent manner and already we have taken major steps toward that direction with the conviction that success in this effort will advance human societies.
- Individuals will then be healthier if *they live in a world where the patients are engaged participants trusting that medical systems and clinicians will closely collaborate in improving their health and with faith to the healthcare system and its practitioners that their main goal is the maintenance of individuals' health as a priority before treatment of disease* (Papadopoulou, Marouli, Misseyanni, 2019).

Biodiversity provides solutions **#ForNature**, for human health and for climate change.

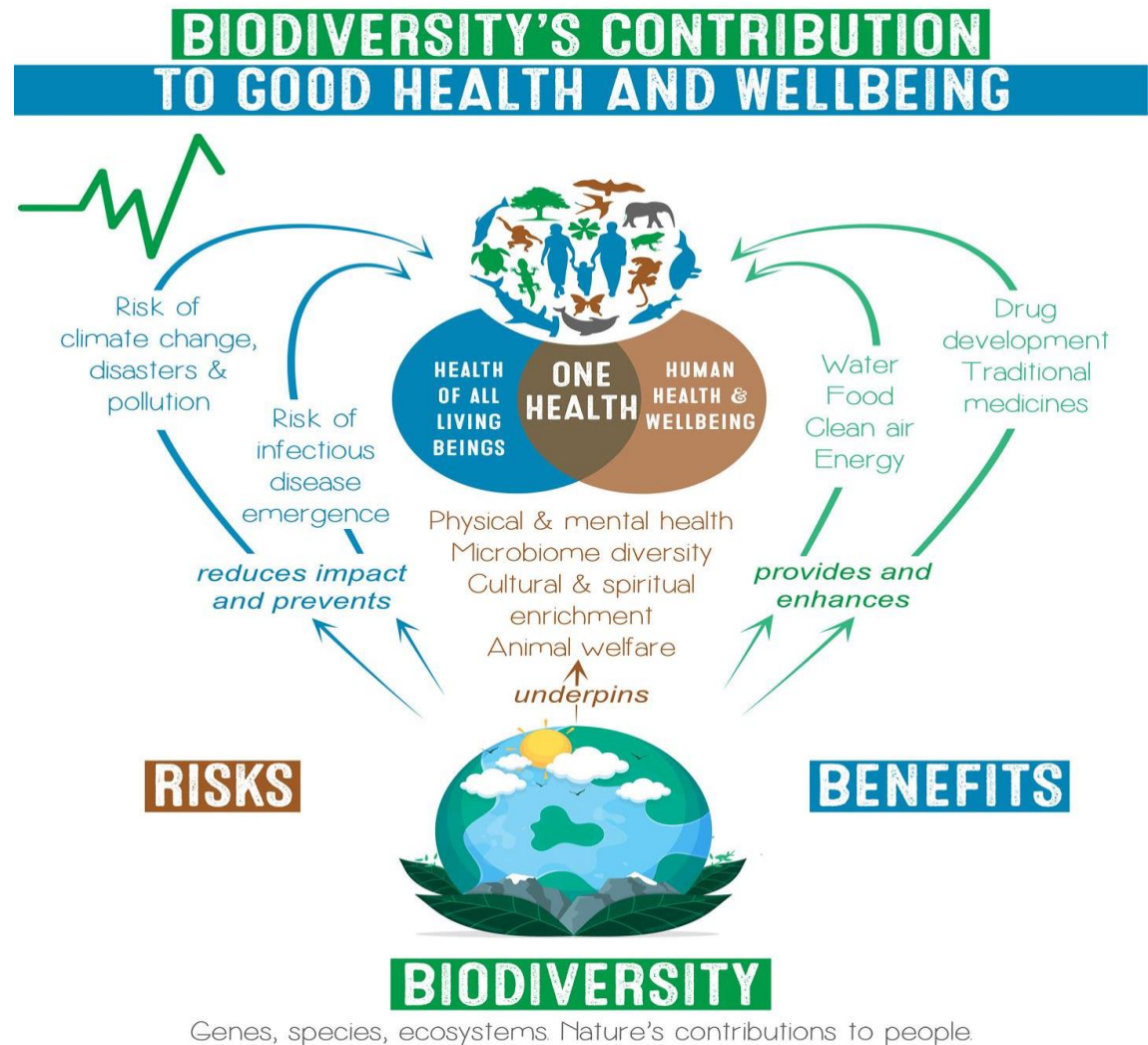
It underpins the achievement of the Sustainable Development Goals (#SDGs), including **#SDG3 — health and well-being for all**.

Ensuring the sustainable use and conservation of **#biodiversity** helps to mitigate risks posed to human health and provides benefits essential to the health of all living beings and a healthy environment. Learn more about the importance of implementing a biodiversity-inclusive **#OneHealth approach**.

→ cbd.int/health

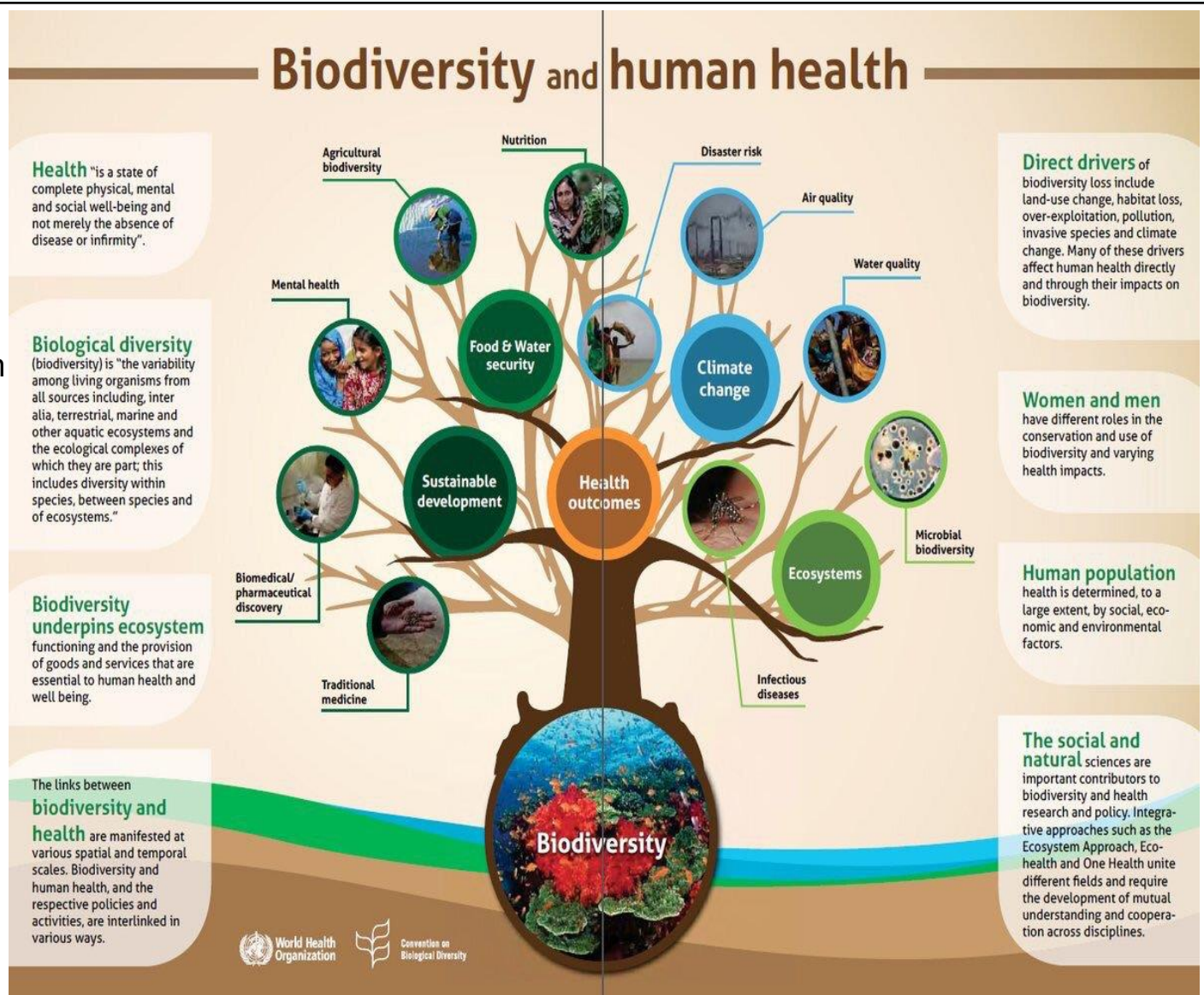
#BiodiversityDay #WHA74

Additional Resources



#**Biodiversity** is essentially interwoven with many of the factors that affect human health, including:

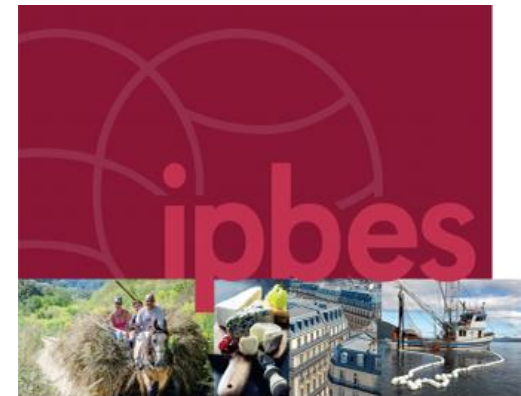
-  Nutrition
-  Mental health
-  #ClimateChange
-  Disease spread
-  Ecosystem health
-  And many more!



- https://www.cbd.int/health/?fbclid=IwAR1Ne66oX59W3jTW_7pjKyjzmG33ZKwvp588-UW3uNqaLrahGLsUWhHYpGs

The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES)

- The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) is the intergovernmental body which assesses the state of biodiversity and of the ecosystem services it provides to society, in response to requests from decision makers.
- <https://www.ipbes.net/>
- *How can ecosystems that provide ecosystem services, such as those underpinning ecosystem-based adaptation to climate change and nature-based solutions to sustainable development, be protected through investments, regulations and management regimes for terrestrial, freshwater, coastal and marine systems?*
- *What are the effects of production, consumption and economic development on biodiversity and ecosystem services and their contribution to human wellbeing? Major links with other regions will be assessed;*
- *How can sectoral policies and new policy instruments make use of opportunities arising from the contribution of biodiversity and ecosystem services to human wellbeing?*



The regional assessment report on
BIODIVERSITY AND
ECOSYSTEM SERVICES
**FOR EUROPE AND
CENTRAL ASIA**



Biodiversity Initiatives

- **THE CONVENTION ON BIOLOGICAL DIVERSITY**

- <https://www.cbd.int/convention/>

- The Convention on Biological Diversity (CBD) entered into force on 29 December 1993. It has 3 main objectives:

- **The conservation of biological diversity**

- **The sustainable use of the components of biological diversity**

- **The fair and equitable sharing of the benefits arising out of the utilization of genetic resources**

- <https://www.cbd.int/action-agenda/newsletter.shtml>

- <https://www.cbd.int/programmes/>

- The Top 10 Wildlife Conservation Organizations

- <https://www.treehugger.com/top-wildlife-conservation-organizations-4088567>

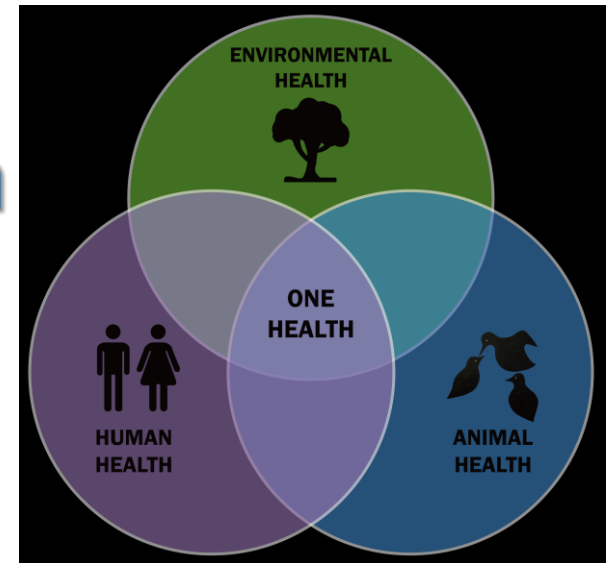
- <https://bioconservation.org/>

- <http://biodiversityinitiative.org/>

- <https://biodiversitygroup.org/>

One Health

- <https://www.onehealthcommission.org/>
- <https://onehealthinitiative.com/>
- <https://www.cdc.gov/onehealth/index.html>
- <https://www.who.int/news-room/q-a-detail/one-health>



- **One Health** is a collaborative, multisectoral, and transdisciplinary approach—working at the local, regional, national, and global levels—with the goal of achieving optimal health outcomes recognizing the interconnection between people, animals, plants, and their shared environment.

One Health is the idea that the health of people is connected to the health of animals and our shared environment.

When we protect **one**,
we help protect **all**.



One Health involves everyone.



Working together is key
to One Health.

www.cdc.gov/onehealth

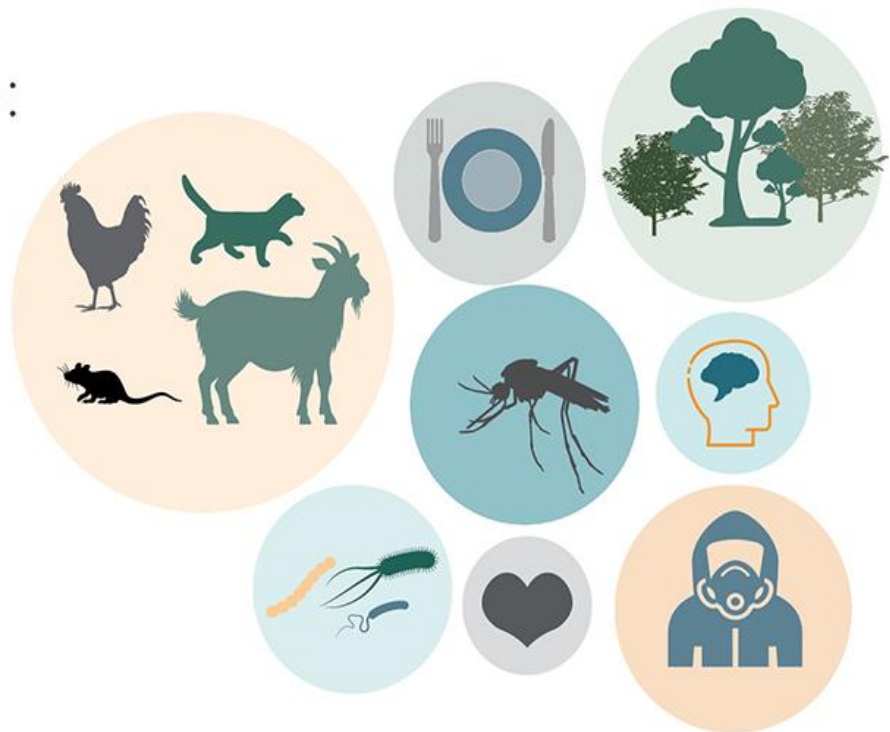


Did You Know?

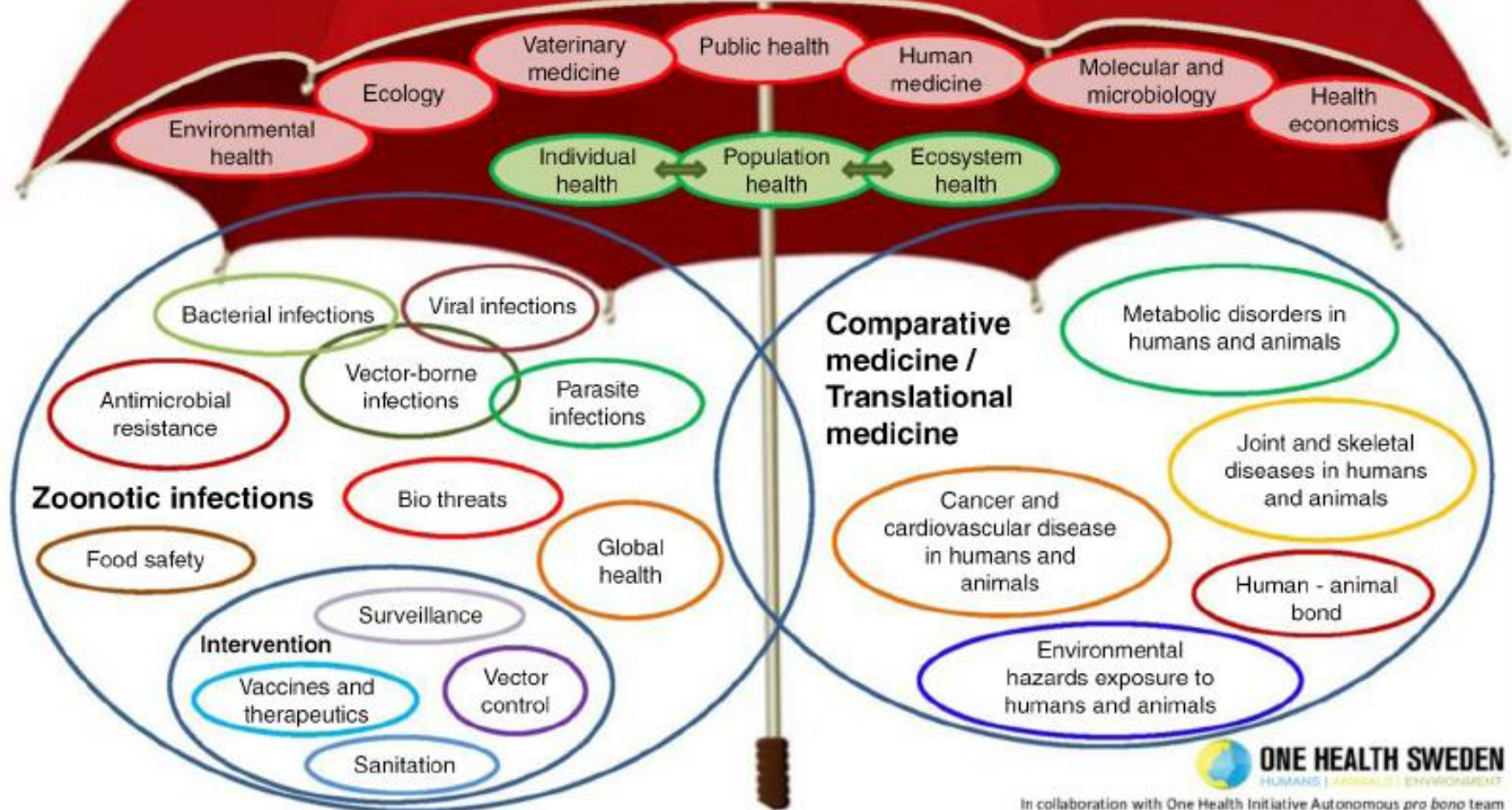
One Health issues include:

- Zoonotic diseases
- Antibiotic resistance
- Food safety and security
- Vector-borne diseases
- Environmental health
- Chronic diseases
- Mental health
- Occupational health

...And more!



One Health

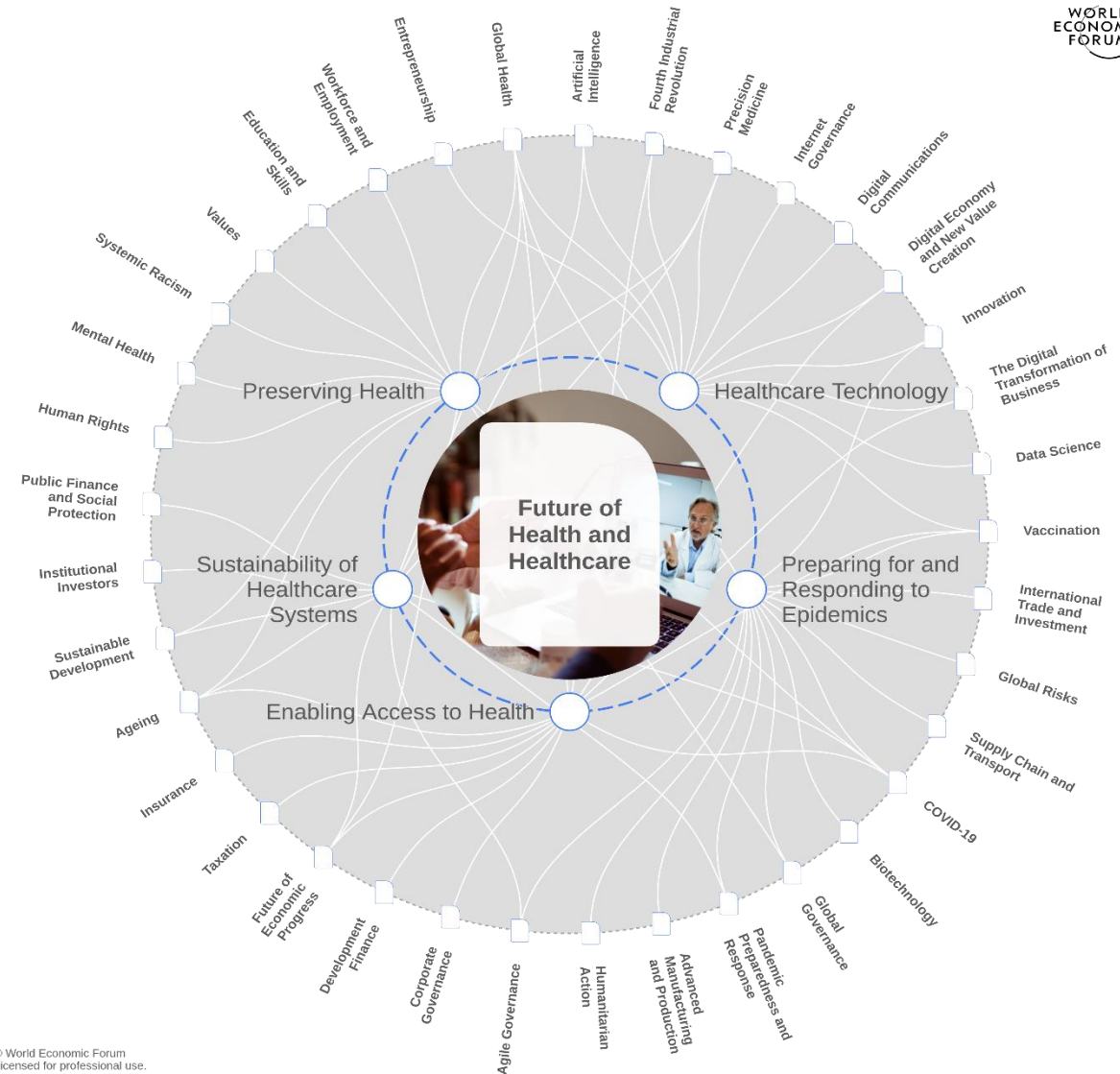


Shaping the Future of Health and Healthcare



The Platform for Shaping the Future of Health and Healthcare

serves the mission to ensure every person on earth has equal access to the highest standards of health and healthcare by keeping populations healthy and delivering the best care. In the next decade, healthcare delivery systems will transform radically. Our current capital intensive, hospital-centric model is unsustainable and ineffective. The Future of Health and Healthcare leverages a data-enabled delivery system and virtual care, integrated across the continuum of care from precision prevention to personalized care delivery, with most health services offered in appropriate settings.



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<https://www.weforum.org/platforms/shaping-the-future-of-health-and-healthcare>



Fig. 1 | Determinants of health systems resilience framework. The scheme illustrates the components of the resilient health systems framework we developed based on the WHO's health systems building blocks framework. The five elements of resilient health systems are centered around community engagement as core to all elements of health systems resilience.

Accelerating Climate Adaptation Action – a Transformational Decade of Action

- How to build resilience against future shocks
- 1. We need more action
- 2. We need more integration
- 3. We need more partnership
- 4. We need more innovation
- 5. We need more finance
- 6. We need more equity



<https://www.cas2021.com/climate-adaptation/documents/publications/2020/12/12/delivering-an-adaptation-action-agenda>

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Important links

- Convention on Biological Diversity

<https://www.cbd.int/>

- The Global Biodiversity Festival May 22-24, 2021

<https://www.globalbiofest.com/>

- The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES)

<https://www.ipbes.net/>

[UN Environment Programme](#)

- European Climate and Health Observatory

<https://climate-adapt.eea.europa.eu/observatory>

- The European Environment Agency (EEA)

<https://www.eea.europa.eu/about-us>

- ECCA 2021 - 5th European Climate Change Adaptation Conference

<https://www.ecca21.eu/>

- the 26th UN Climate Change Conference of the Parties (COP26)

<https://ukcop26.org/>

- IUCN World Conservation Congress

<https://www.iucncongress2020.org/>

- The World Economic Forum

<https://www.weforum.org/platforms/shaping-the-future-of-health-and-healthcare>

Videos

- Dr Jane Goodall's Thank You Message for Global Biodiversity Festival
- <https://www.youtube.com/watch?v=xEgQ3gu48hY>
- Protect Our One Home
- <https://www.youtube.com/watch?v=JKbWkxS5bDQ>
- What is biodiversity?
- <https://fb.watch/5KcBkxaZ-e/>
- <https://fb.watch/5KcGDIJVck/>

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**Thank you
for your
Attention!!!**