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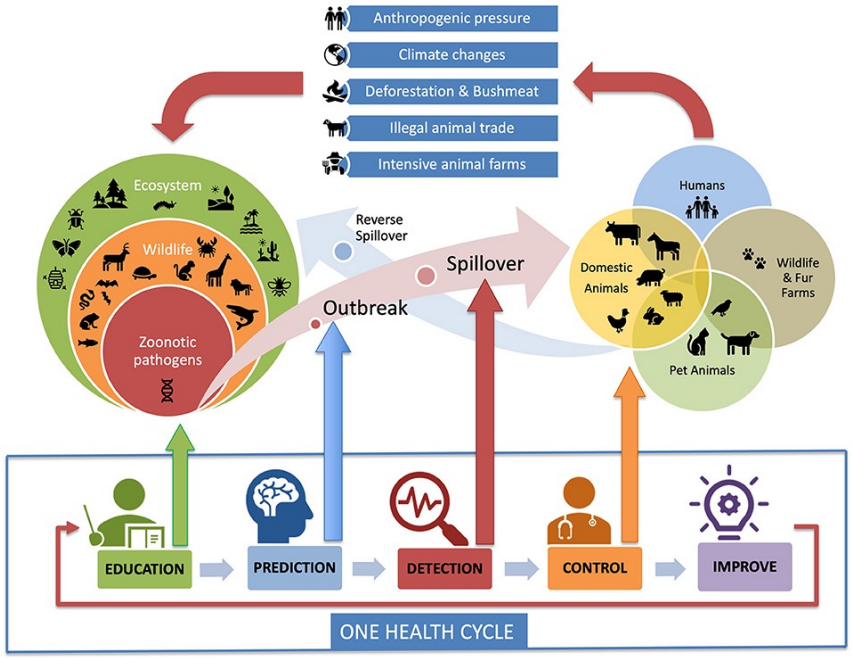
Online event
14th of December 2022

World Organisation for Animal Health
Founded as OIE

WILDLIFE DISEASE EDUCATION AND PREDICTION AT THE HUMAN-ANIMAL INTERFACE

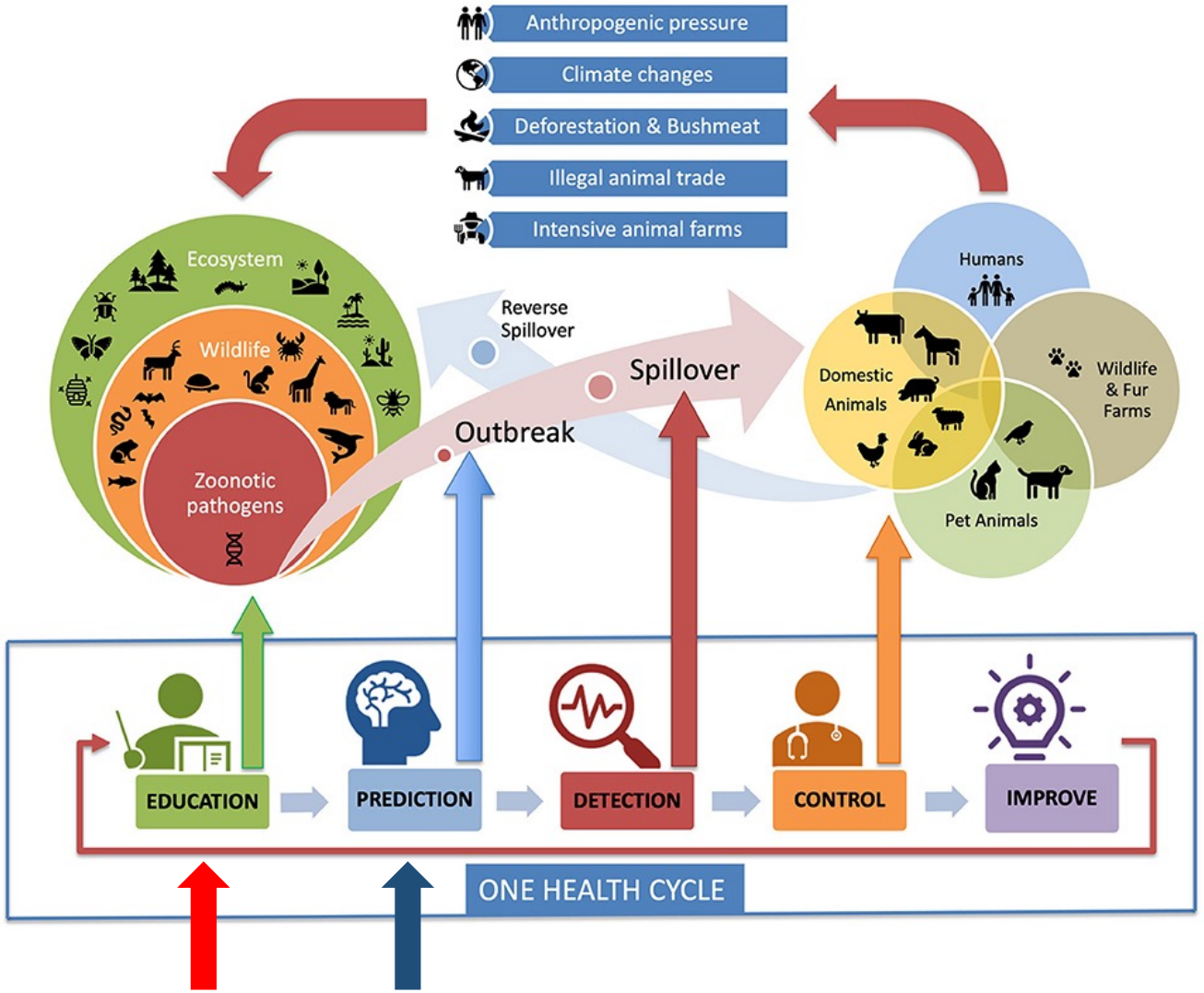


EARLY EDUCATION AND EARLY PREDICTION AT THE HUMAN-WILDLIFE DISEASES INTERFACE

Dr. Paolo Zucca, D.V.M. Ph.D. B.Sc. Psychology

Dr. Paolo Zucca
DVM PhD BSc Psychol

Zucca, P. et al. (2021), 'What Do Adolescents Know About One-Health and Zoonotic Risks? A School-Based Survey in Italy, Austria, Germany, Slovenia, Mauritius, and Japan', *Frontiers in Public Health* **9**. DOI: https://doi.org/10.3389/fpubh.2021.658876



Dr. Paolo Zucca
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WHY WE NEED AN EARLY EDUCATION APPROACH AT THE HUMAN-WILDLIFE DISEASE INTERFACE

Wolf Science Center, Cumberland Game Park, Grünau, Austria

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HUMAN-WILDLIFE DISEASE INTERFACE

Dr. Paolo Zucca
DVM PhD BSc Psychol

Zucca P (2020) The Zoonosecene: the new geological epoch of intensive breeding, of wildlife trade, of antibiotic resistance and of pandemic diseases, following the Anthropocene. Platinum, Sole 24OreDEnVglMish EPdihtioDn.BSc Psychol
DOI: 10.13140/RG.2.2.16949.50408/1

>1.700 pathogens affect humans

60% of existing human infectious diseases are zoonoses

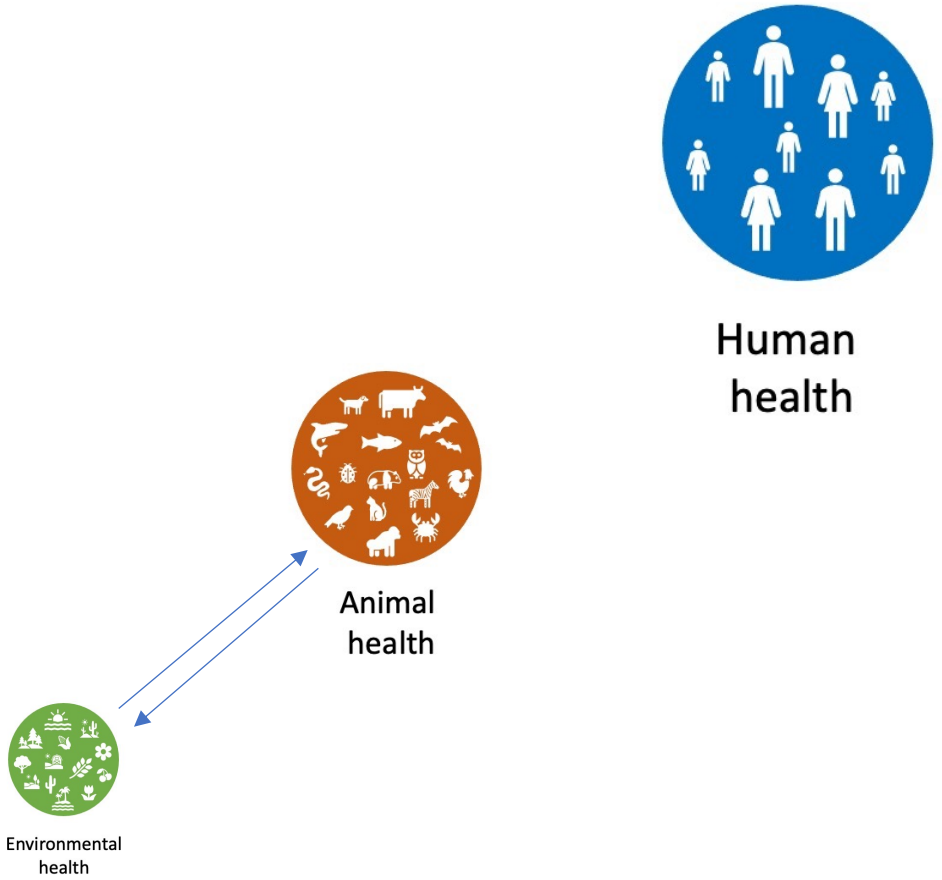
72% of zoonoses originate from wildlife or exotic

THE ZOONOSECENE

The new geological epoch of intensive breeding, of wildlife trade, of antibiotic resistance and of pandemic diseases, following the Anthropocene.

ONE HEALTH AND BIOLOGICAL RISKS PERCEPTION

Dr. Paolo Zucca
DVM PhD BSc Psychol



ZUCCA P. 2021 The One Health Triangle Method · ResearchGate
Biocrime Lab, http://dx.doi.org/10.13140/RG.2.2.15974.14401

ONE HEALTH AND BIOLOGICAL RISKS PERCEPTION

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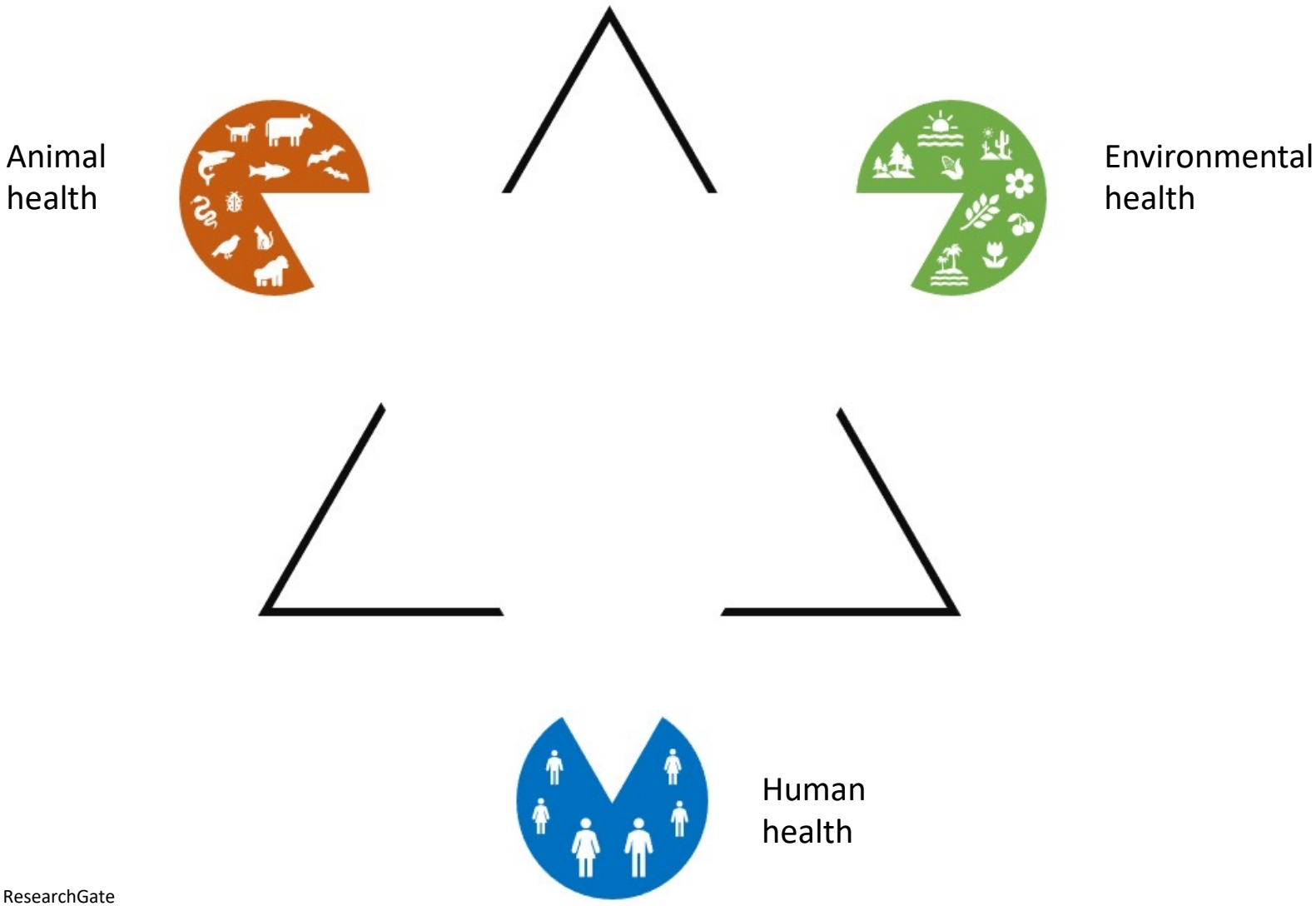


ZUCCA P. 2021 The One Health Triangle Method · ResearchGate
Biocrime Lab, http://dx.doi.org/10.13140/RG.2.2.15974.14401

MODERN SKULLS HOST A STONE AGE MIND

Dr. Paolo Zucca
DVM PhD BSc Psychol

NATURAL RISKS, INCLUDING BIOLOGICAL RISKS AND ZOONOTIC DISEASES, ARE ALWAYS UNDERESTIMATED.

Man considers himself the most intelligent living species but forgets that **intelligence is a secondary effect of evolution** and our evolutionary adaptations do not necessarily generate adaptive behaviours in contemporary environments ➔ **Cognitive biases**.

COGNITIVE-ECOLOGICAL BIAS

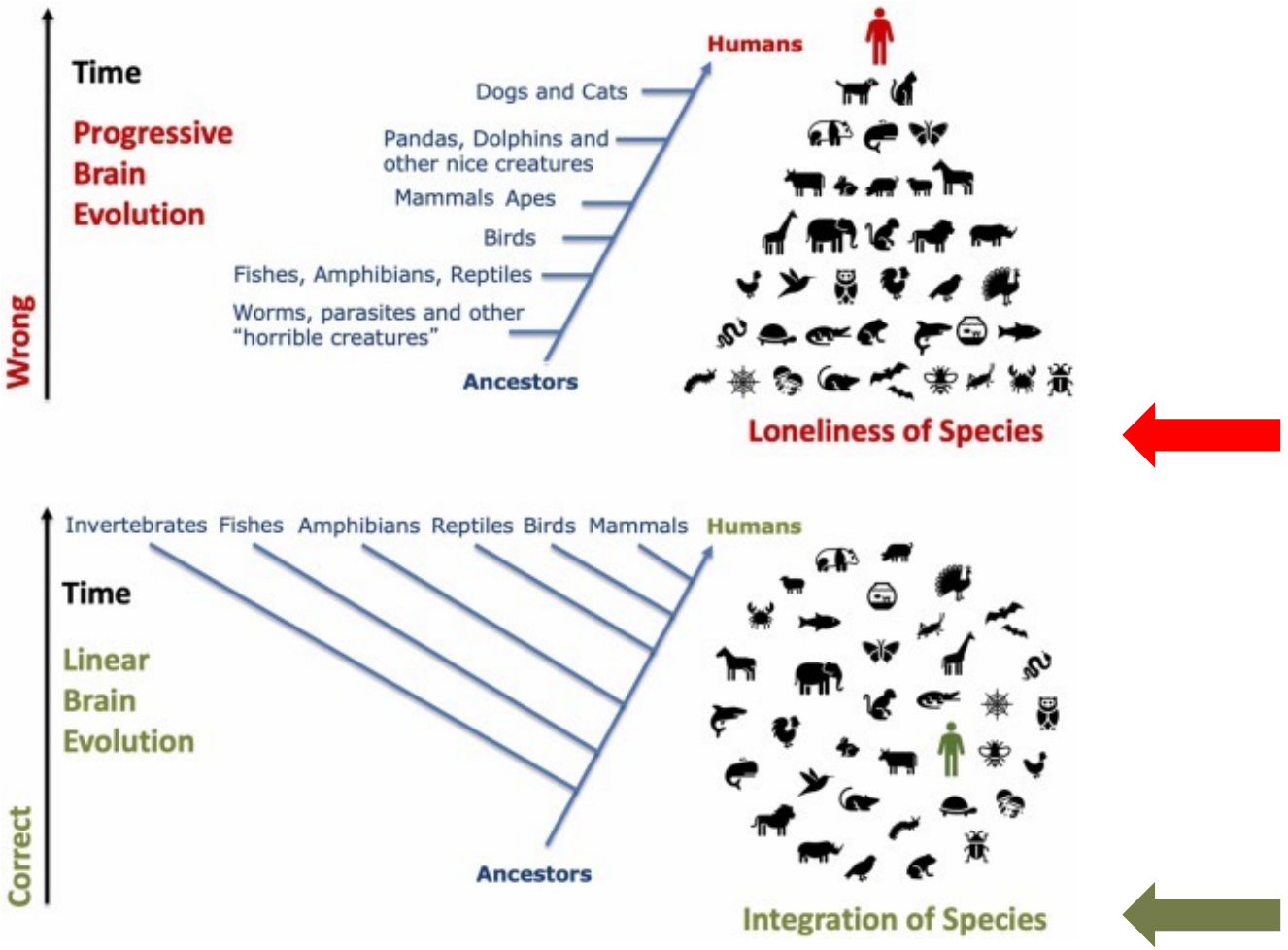
Dr. Paolo Zucca
DVM PhD BSc Psychol

Cognitive biases are **mental errors** caused by the simplification of our information processing strategies.

The **spread** of these systematic errors is practically **ubiquitous** since it is a generalized **phenomenon not related to intelligence** or other specific **cognitive abilities** of the single individual.

The only way to **prevent** these errors and avoid our extinction is **to know them → EARLY EDUCATION.**

The loneliness of species bias



Zucca P., Four cognitive-ecological biases that reduce integration between medical and cyber intelligence and represent a threat to cybersecurity. 2022, DOI: 10.1016/j.fsiae.2022.100046

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EARLY EDUCATION

Dr. Paolo Zucca
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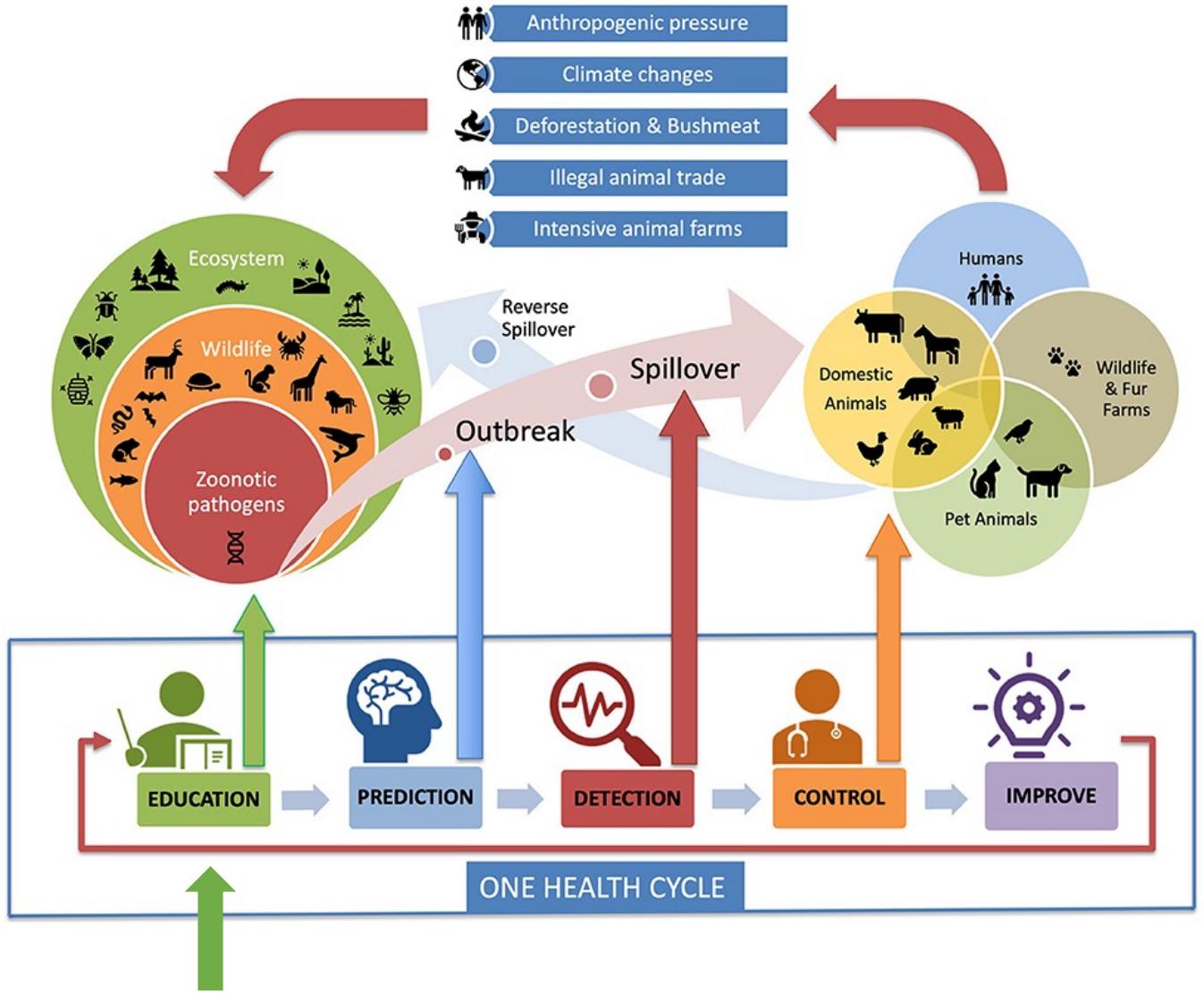
Zucca, P. et al. (2021), 'What Do Adolescents Know About One-Health and Zoonotic Risks? A School-Based Survey in Italy, Austria, Germany, Slovenia, Mauritius, and Japan', *Frontiers in Public Health* **9**. DOI: https://doi.org/10.3389/fpubh.2021.658876



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ADOLESCENTS KNOWLEDGE ASSESSMENT

Dr. Paolo Zucca
DVM PhD BSc Psychol

frontiers in Public Health | Planetary Health

SECTION ABOUT ARTICLES RESEARCH TOPICS FOR AUTHORS EDITORIAL BOARD ARTICLE ALERTS

‹ Articles

THIS ARTICLE IS PART OF THE RESEARCH TOPIC
Taking a Fresh Look at Old Zoonoses: What Have We Been Missing in O
View all 3 Articles ›

ORIGINAL RESEARCH ARTICLE
Front. Public Health, 30 March 2021 | https://doi.org/10.3389/fpubh.2021.658876

What Do Adolescents Know About One-Health and Zoonotic Risks? A School-Based Survey in Italy, Austria, Germany, Slovenia, Mauritius, and Japan

Paolo Zucca[1,2*], Marie-Christin Rossmann[2,3], Mitja Dodic[4], Yashwantrao Ramma[5], Toshiya Matsushima[6], Steven Seet[7], Susanne Holtze[7], Alessandro Bremini[1,2], Ingrid Fischinger[2,3], Giulia Morosetti[8], Marcello Sitzia[9], Roberto Furlani[9], Oronzo Greco[9], Giulio Meddi[10], Paolo Zambotto[11], Fabiola Meo[12], Serena Pulcini[12], Manlio Palei[1] and Gianna Zamaro[1]






1. ITALY
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4. GERMANY
5. MAURITIUS
6. JAPAN

Leibniz-Institut für Zoo- und Wildtierforschung
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GUARDIA di FINANZA

Mauritius Institute of Educati

HOKKAIDO UNIVERSITY

REGIONE AUTONOMA FRIULI VENEZIA GIULIA

LAND KÄRNTEN

Zoonotic risks and One Health Understanding

6 Countries - 656 Adolescents

A. Anonymous questionnaire (countries 1-6)
B. Theoretical lectures + practical classroom (countries 1-4)
C. Anonymous questionnaire (countries 1-4)

“Without data, you're just another person with an opinion” W. Edwards Deming

Zucca, P. et al. (2021), 'What Do Adolescents Know About One-Health and Zoonotic Risks? A School-Based Survey in Italy, Austria, Germany, Slovenia, Mauritius, and Japan', *Frontiers in Public Health* **9**. DOI: https://doi.org/10.3389/fpubh.2021.658876

ADOLESCENTS KNOWLEDGE ASSESSMENT

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ZOONOTIC RISK &
ONE HEALTH UNDERSTANDING

18-42% of adolescents lack knowledge

AVERAGE VALUE FOR 6 COUNTRIES

31% WRONG RESPONSES

Assessment of program efficacy: 2 lectures of 45 minutes each increase correct responses up to 95-98%.

Zucca, P. et al. (2021), 'What Do Adolescents Know About One-Health and Zoonotic Risks? A School-Based Survey in Italy, Austria, Germany, Slovenia, Mauritius, and Japan', *Frontiers in Public Health* **9**. DOI: https://doi.org/10.3389/fpubh.2021.658876

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ADOLESCENTS KNOWLEDGE ASSESSMENT

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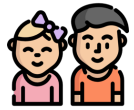


FVG (I)

KNT (A)

BZ ()I

SLO

DE

M

J

NAÏVE KNOWLEDGE correct answers before any lesson 1st questionnaire, all regions or countries, n= 656			LEARNING ⬆correct answers after two lessons, 2nd questionnaire, DE, SLO, FVG, KNT, n=338	
Q.22: "Many diseases that affect humans come from animals?"				
71.04% correct	28.96% wrong	☹	+ 8.49% Learning	☺
Q.23: "Zoonoses are diseases transmitted from animals to humans?"				
67.84% correct	32.16% wrong	☹	+ 16.98% Learning	☺
Q.25: "Can humans transmit diseases to animals?"				
40.09% correct	59.91% wrong	☹	+ 16.39% Learning	☺
Q.26: "Is rabies a disease that is dangerous to humans?"				
76.98% correct	23.02% wrong	☹	+ 18.07% Learning	☺

FVG (I)

KNT (A)

SLO

DE

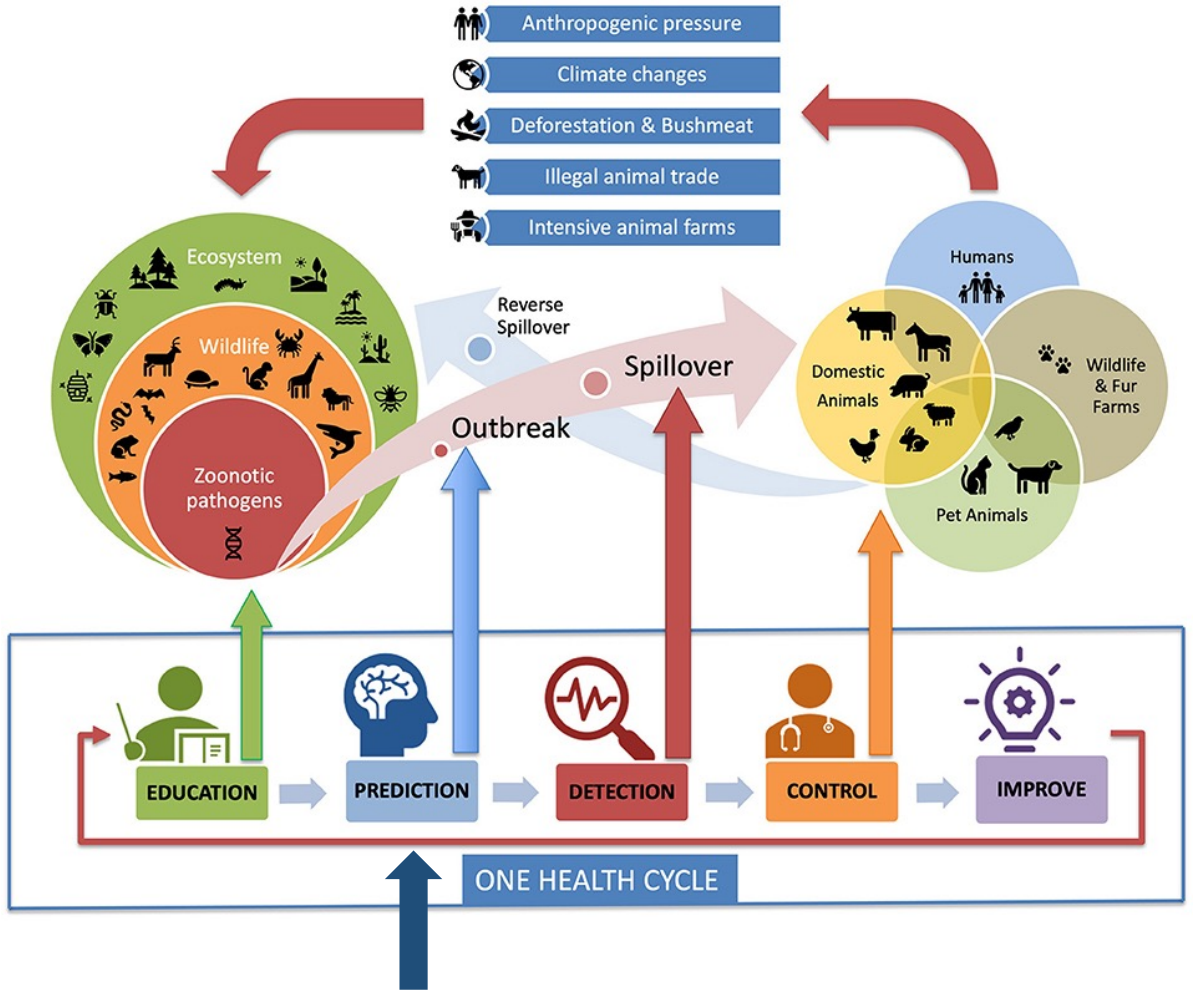
5 4 3 2 1

RABIES: ZERO BY 30
www.rabiesalliance.org/world-rabies-day

False consensus bias: we believe more people agree with us than is actually the case. "Everybody thinks that!".

Zucca, P. et al. (2021), 'What Do Adolescents Know About One-Health and Zoonotic Risks? A School-Based Survey in Italy, Austria, Germany, Slovenia, Mauritius, and Japan', *Frontiers in Public Health* **9**. DOI: https://doi.org/10.3389/fpubh.2021.658876

EARLY PREDICTION AT THE HUMAN-WILDLIFE DISEASE INTERFACE



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EARLY PREDICTION

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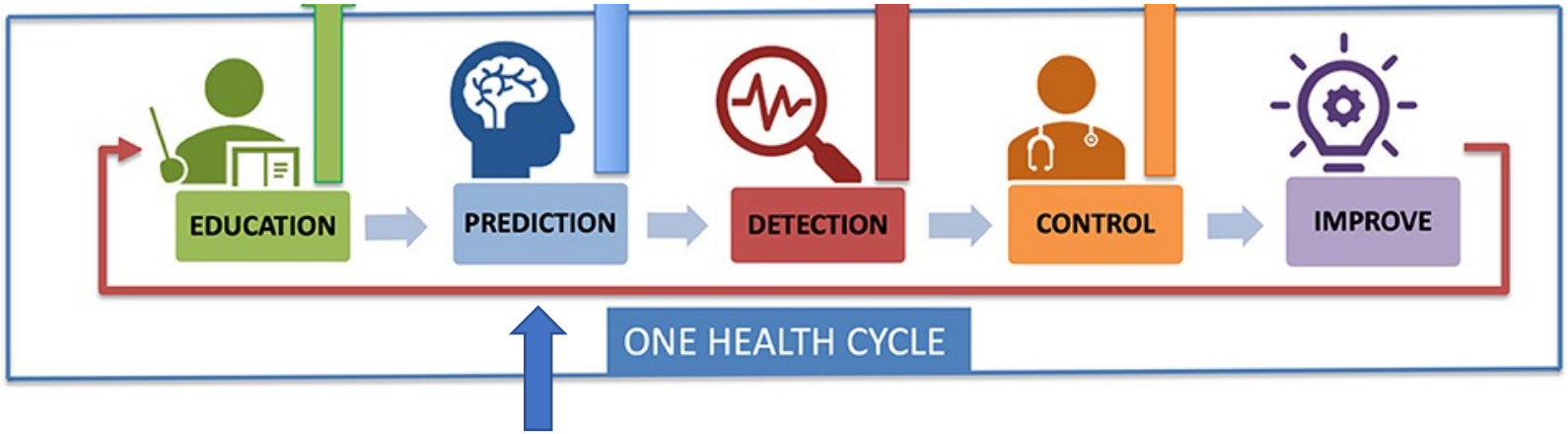
With the development of **information technology** and the **Internet**, with the creation of large **databases** and with the development of advanced **machine learning, computational linguistic and artificial intelligence** technologies, we are able to go beyond disease prevention.

Medical intelligence, thanks to the work of computer scientists, statisticians, epidemiologists, veterinarians, physicians, psychologists, and other professionals with transversal skills provides **predictions** fairly accurately on the times and places of onset of possible **future outbreaks and spillovers**.



LIMITS OF EARLY PREDICTION

Dr. Paolo Zucca
DVM PhD BSc Psychol

Most of the **algorithms** that are the basis of the **current disease prediction** frameworks are fed with a **data input** represented by **open source news** scanned in real time in a multilingual manner on the **Internet**. The limit of this system is not given by the scarcity of information but by its opposite. It is increasingly difficult to identify and isolate **true and useful news** from the sea of often useless, incorrect or fake news that generates an **infodemic**.

An infodemic is too much information including **false or misleading information** in digital and physical environments **during a disease outbreak**. It causes confusion and risk-taking behaviours that can harm health. It also leads to mistrust in health authorities and **undermines the public health response** (WHO).

"Prediction is very difficult, especially it's about the future". Niels Bohr

WILDLIFE HEALTH EMERGENCY MANAGEMENT

Dr. Paolo Zucca
DVM PhD BSc Psychol

Optimising a **wildlife health emergency management** also passes through:

1. **assessment of the data sources** for avoiding infodemic;
2. **monitoring, analysis and understanding** of the **psychological impact** that the emergency generates on the **human population**.

TOOLS?

Several - Computational linguistic techniques have been developed for analysing huge quantities of text, extracting from them a broad spectrum of **subjective and emotional information from the authors** of the texts like:

- **author's attitude towards certain topics** (his judgment or evaluation, the emotional state (i.e., the author's emotional state when writing) or the **desired emotional communication** (i.e., the emotional effect the author wants have on the reader).
- the **overall contextual polarity of a document**.

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CORPUS DATA

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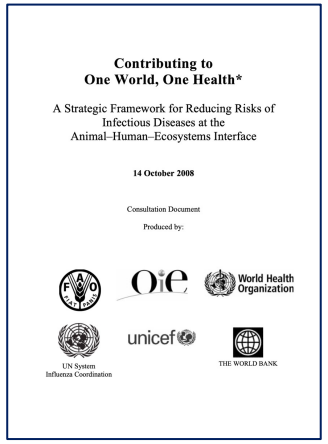
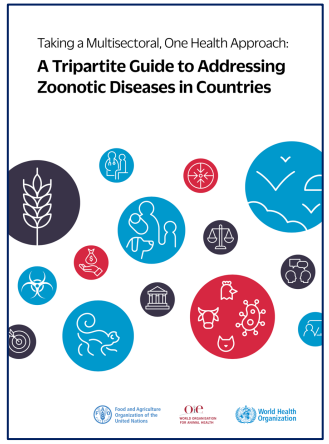
HUMAN-WILDLIFE DISEASES INTERFACE

1



2008

2

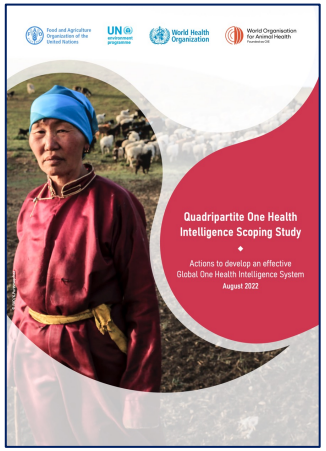


2019

3

2021

4

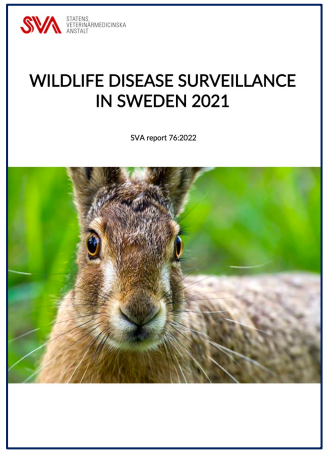


2022

5

2022

6



2021

7

Mean values

UN System Influenza Coordination · unicef · THE WORLD BANK · Food and Agriculture Organization of the United Nations · UN environment programme · World Health Organization · World Organisation for Animal Health Founded as OIE

SVA STATENS VETERINÄRMEDICINSKA ANSTALT · The New York Times

SUMMARY OF RESULTS

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In comparison to mean reference values (6, 7):

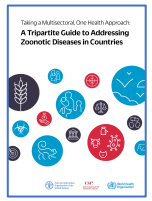
- Reports are more complex from the semantic point of view, the most complex is n. 5;
- Reports use a very analitycal language;
- Report 5 is very self-referential with a high prevalence of the pronoun “I”;
- Report 4 is unbalanced from the emotional point of view with a peak of positive emotions;
- Among negative emotions, reports 3 and 5 show abnormal peaks in anxiety;
- Report 4 shows an abnormal focus on the present time with less vision on the future;
- Only report 1 focus properly on the economic aspects while 2, 3, 4, 5 focus less on money;

Custom dictionary:

- From report 1 to 5 the importance of the environmental aspect is growing;
- In report 1 the most cited Agency is WOAH (OIE), this ratio reverse in report 5 where WHO is the most cited;

1

2



3

4

5

6

7

CUSTOM DICTIONARY

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HUMANS ANIMALS ENVIRONMENT

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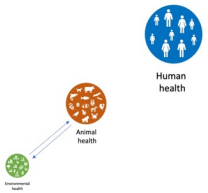

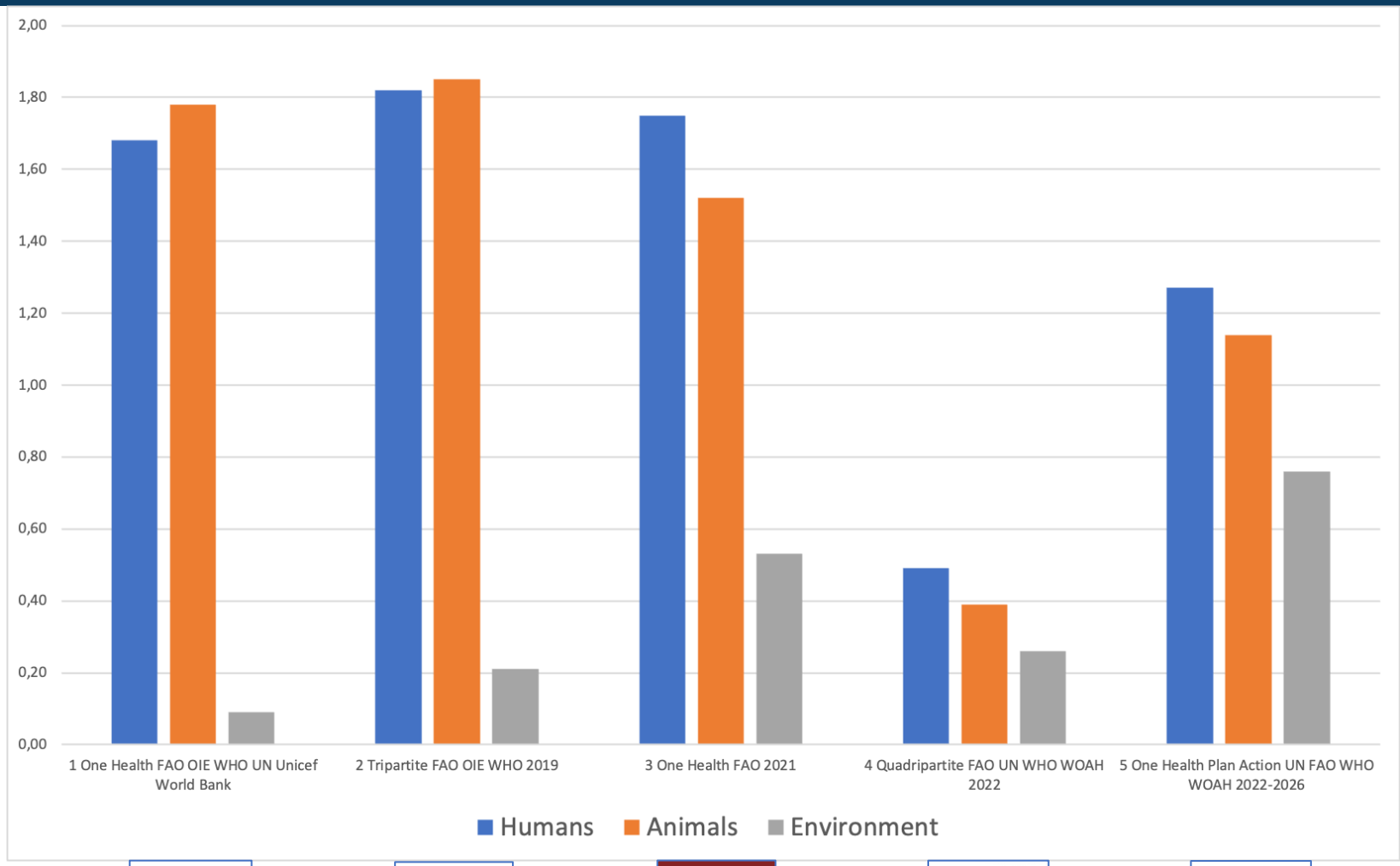

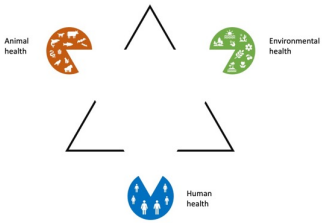

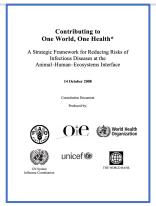

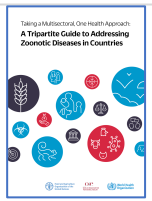

WHO FAO WOAH (OIE) UNEP

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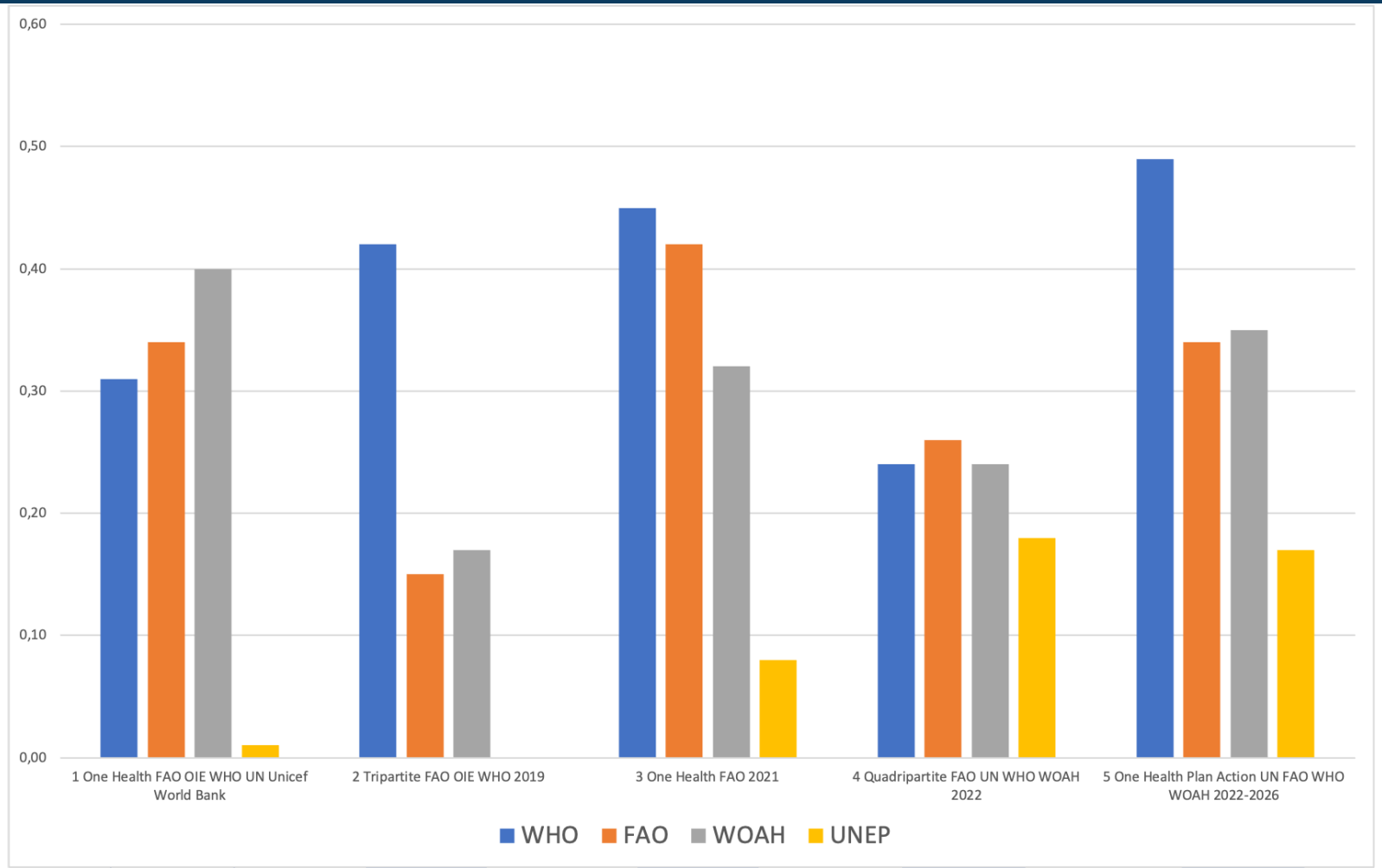

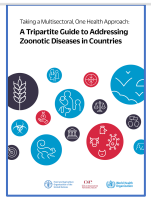

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WHAT CAN WE DO FOR EARLY EDUCATION?

Dr. Paolo Zucca
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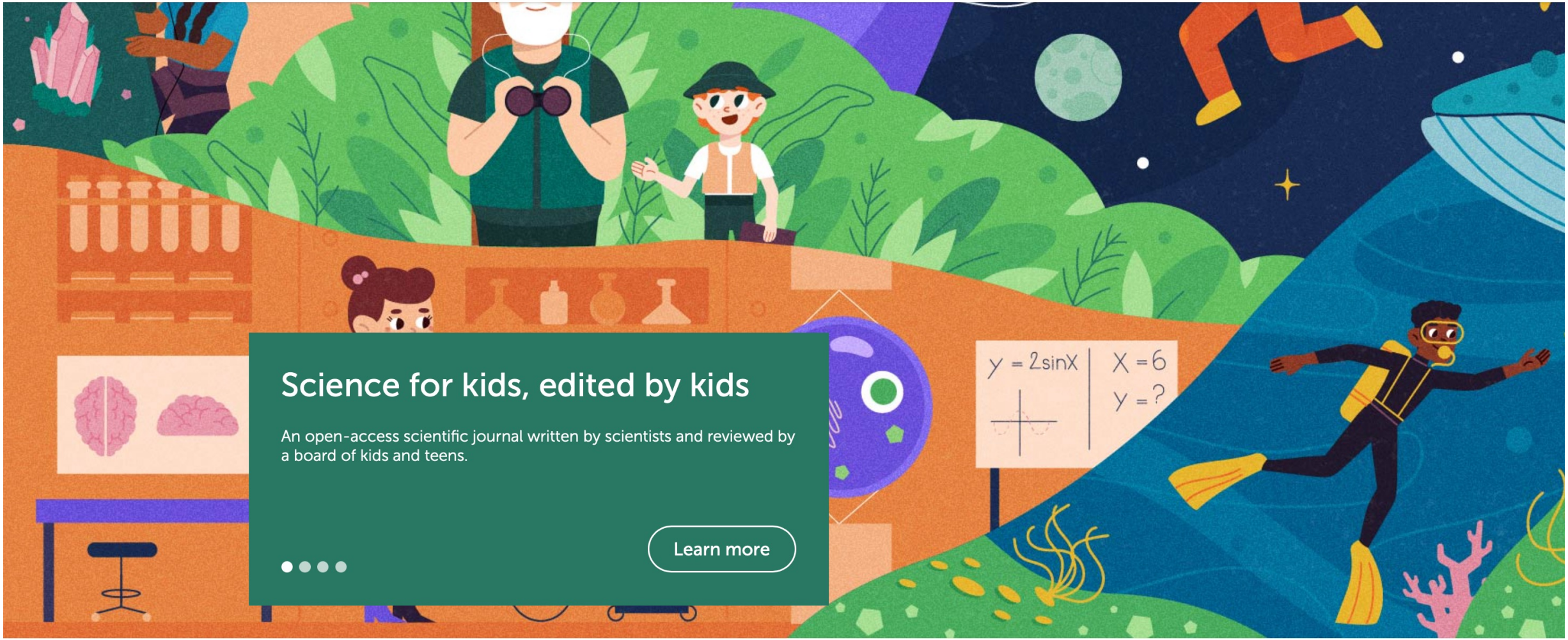
frontiers | Frontiers for Young Minds

Articles Collections Participate Sections Ab



HOW CAN WE DO IT?

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frontiers | Frontiers for Young Minds

Zoonoses—Diseases Naturally Transmitted From Animals to Humans

Authors
Paolo Zucca Alessandra Scagliarini Yashwantrao Ramma Ali S. Khan

Young Reviewers
Benjamin Breanna Erin

Abstract
Diseases that are naturally transmitted from animals to humans are called zoonoses or zoonotic diseases. More than 70% of all human infectious diseases came from animals, including Ebola, human immunodeficiency virus (HIV/AIDS), avian influenza and Monkeypox. The COVID-19 pandemic is also a

Writing for Children and Adolescents.

The teaching of health prevention with a One Health approach should be included in every school curriculum.

Teaching One Health with a Constructivist psychological approach: Less Digital, more action
because “**The principal goal of education in the schools should be creating men and women who are capable of doing new things, not simply repeating what other generations have done**”, Jean Piaget

Zucca P, Scagliarini A, Ramma Y, Khan Ali S (2022) Zoonoses - Diseases Naturally Transmitted From Animals to Humans. Frontiers for Young Minds, http://dx.doi.org/10.3389/frym.2022.833893

WHAT CAN WE DO FOR EARLY PREDICTION?

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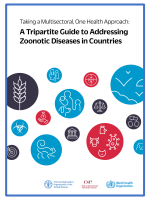
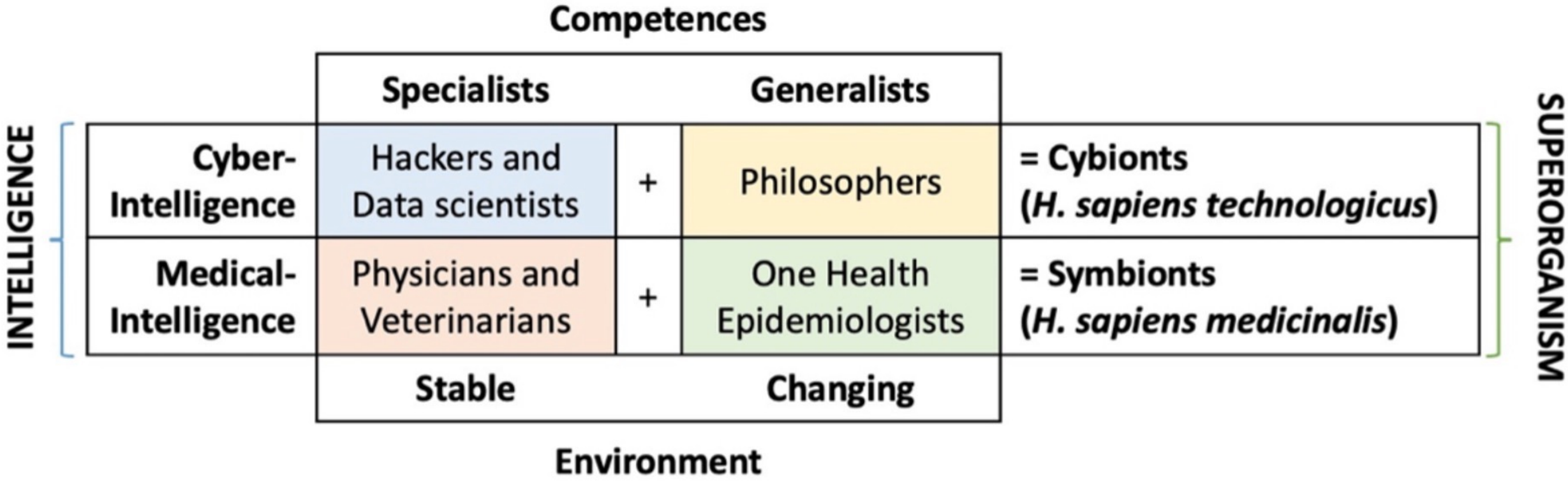


- Optimize and customize our **desired emotional communication** and the **overall contextual polarity of our reports;**
- Improve our **ability to capture and analyze** useful **news** from the infodemic sea.

HOW CAN WE DO IT?

Dr. Paolo Zucca
DVM PhD BSc Psychol



Improve the “biodiversity” and the integration of our team’s competences.

Zucca P. Four cognitive-ecological biases that reduce integration between medical and cyber intelligence and represent a threat to cybersecurity, April 2022, DOI: 10.1016/j.fsiae.2022.100046

"In all men it is the mind which directs the body towards health or disease, as towards everything else"
Antiphon
(Greek philosopher of the 5th century BC.)