Finanziato dall'Unione europea NextGenerationEU
Ministero dell'Università e della Ricerca
Italiadomani PIANO NAZIONALE DI RIPRESA E RESILIENZA
Università di Pisa

# Teams and challenge

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# Holistic One-Health challenge

- **Tasks (page 1/4)**

1. Frame the problem as a Holistic One Health challenge, explicitly addressing impacts on:
   - human health and wellbeing
   - animal health and welfare
   - environmental and ecosystem health
2. Present a case study (real, ongoing, or well-documented) that illustrates the issue in a specific context (geographical, social, economic).

# Holistic One-Health challenge

- **Tasks (page 2/4)**

3. Identify benefits and limits of current or proposed solutions, including:
   - ethical tensions
   - unintended consequences
   - trade-offs between different forms of health
4. Critically examine anthropocentric assumptions, asking:
   - Who benefits most from current practices or technologies?
   - Who bears the costs (including non-human life and future generations)?

# Holistic One-Health challenge

- **Tasks (page 3/4)**

5. Discuss feasibility and context, recognising differences in:
   - resource availability
   - cultural practices
   - governance and equity
6. Propose at least one direction for improvement, without assuming a perfect or universal solution.

# Holistic One-Health challenge

- Tasks (page 4/4)

- Max 5 slides
  i) Problem,
  ii) Case framing,
  iii) Holistic One Health considerations,
  iv) Benefits and limitations,
  v) Ethical tensions and open questions.

The slides must be sent by email
to carmelo.demaria@unipi.it by Thursday at 19:00

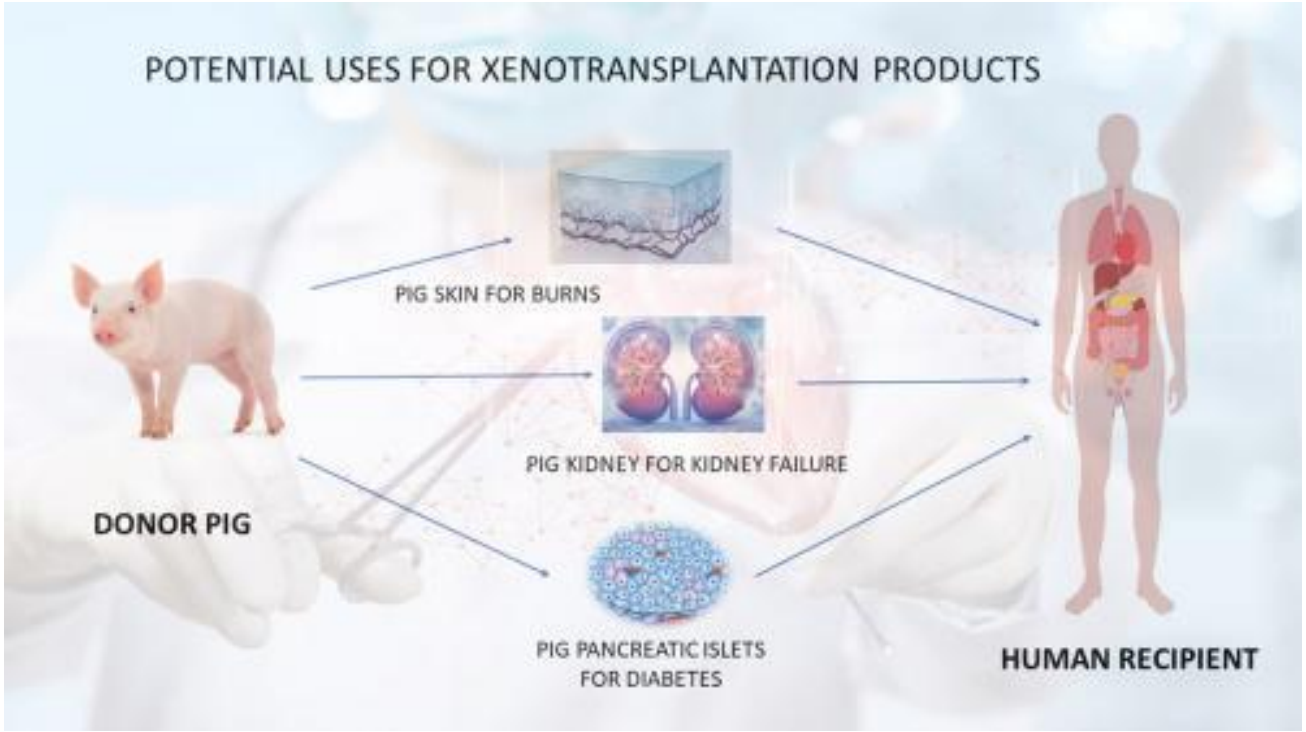
# Holistic One-Health challenge

## General tips

- Speak from **your lived experience**, reflecting on responsibility and limits
- **Think systemically and critically**, trying to go beyond your box.
- **Use Case Studies**: Provide examples of technology outcomes or industries that have successfully integrated One Health principles (e.g., sustainable farming initiatives, eco-friendly manufacturing).
- **Technology's Role in Change**: Highlight the potential of Holistic Design and new technologies to monitor, model, and optimize industrial practices in a way that benefits both human and non-human health.
- **Question Human-Centeredness**: Question whether technological innovations disproportionately benefit humans and explore ways to expand the ethical circle to include animals and ecosystems.
- **Cross-Disciplinary Thinking**: Exploit your different backgrounds to bring diverse insights and propose innovative solutions that tackle Holistic One Health challenges in your chosen topic.

# Holistic One-Health challeng – Topic 1

- **Xenotransplantation**



# Holistic One-Health challeng – Topic 1

- **Xenotransplantation**

- Discuss the ethical and practical implications of using animal organs in humans. Identify scientific, ethical, and societal limits that must be addressed
- Analyse xenotransplantation as a One Health issue, not only a medical one
- Discuss risks related to zoonoses, animal welfare, and ecosystem ethics
- Can we justify generating chimeras for the sole purpose of organ replacement? Should we treat chimeras as instruments or partners?

# Holistic One-Health challeng – Topic 2

- **Ethics of Transplantation and Organ Sourcing**

# Holistic One-Health challeng – Topic 2

- **Ethics of Transplantation and Organ Sourcing**

- Explain why transplantation is not a “cure” but a long-term medical and ethical commitment (e.g requiring lifelong immunosuppression)
- Compare current transplantation practices with emerging alternatives (bioengineered organs, stem-cell approaches). How far are we from engineering human organs?
- Discuss equity, access, and long-term sustainability
- Reflect on whether technological solutions address root causes or symptoms. Could the investment be better focused in alternative directions? What stops us from doing so?

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# Holistic One-Health challeng – Topic 3

- **Industrial Agriculture and Animal Health**

# Holistic One-Health challeng – Topic 3

- **Industrial Agriculture and Animal Health**

- Industrial farming practices—such as high-density livestock rearing—are a major contributor to antibiotic resistance, zoonotic diseases (e.g., avian flu, swine flu), and ecological damage from waste runoff. How can we balance human food demands with the ethical treatment of animals and the environmental footprint of livestock farming?
- Describe how industrial livestock systems affect animal welfare, human health, and ecosystems
- Analyse links to antimicrobial resistance and zoonotic risk
- Discuss ethical tensions between food demand, animal suffering, and environmental damage. Are farm animals treated ethically?
- Explore pathways toward more balanced systems (without assuming a single model)

# Holistic One-Health challeng – Topic 4

- **Industrial Waste Management and Ecosystem Health**

# Holistic One-Health challeng – Topic 4

- **Industrial Waste Management and Ecosystem Health**

- Industries are major producers of waste, much of which is hazardous to both human and environmental health (e.g., e-waste, chemical waste). Are technologies based on sensors and data modelling useful? How appropriate is minimal human intervention (eg radioactive wasteland) with respect to approaches such as rewilding
- Identify a form of industrial waste with long-term health implications.
- Discuss impacts on humans, animals, and ecosystems across time
- Examine the idea of “self-healing” or minimally managed ecosystems. Can self-healing landscapes, restoration of degraded soil, or wetland recovery be useful?
- Reflect on responsibility toward future generations and non-human life?

# Holistic One-Health challeng – Topic 5

- **Designing for Animal Wellbeing in Clinical Environments**

# Holistic One-Health challeng – Topic 5

- **Designing for Animal Wellbeing in Clinical Environments**

- Veterinary hospitals and shelters are often stressful for animals. Should we design spaces that minimizes fear, stress, and sensory overload for animals while improving diagnostics and care and how could we do this?
- Identify stressors experienced by animals in veterinary or shelter settings
- Discuss animal perception, behaviour, and wellbeing as design criteria
- Propose design or organisational changes
- Reflect on whether animals are treated as patients or objects of care

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# Holistic One-Health challeng – Topic 6

- **Cross-Species Disease Surveillance**


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# Holistic One-Health challeng – Topic 6

- **Cross-Species Disease Surveillance**

- Instead of treating animals as disease reservoirs, how could we design the system to protect animal and ecosystem health as primary goals, with human protection as an outcome?
- Reframe disease surveillance away from “animals as reservoirs”
- Explore systems that prioritise animal and ecosystem health first
- Discuss how prevention differs from reaction
- Identify ethical risks of surveillance, control, or culling practices

# Holistic One-Health challeng – Topic 7

- **The Sentient Field Hypothesis: who and what is consciousness?**

# Holistic One-Health challeng – Topic 7

- **The Sentient Field Hypothesis: who and what is consciousness?**

- If all living systems possess some level of awareness, how should we design agricultural or veterinary technologies? Can we establish rules for consent for use?
- This is a tricky topic, you must clearly distinguish evidence-based science from speculative ideas
- Explore how assumptions about sentience might affect design and practice
- Reflect on whether consent, respect, or restraint could (and/or should) apply beyond humans
- Discuss limits of human understanding and ethical humility

# Holistic One-Health challeng – Topic 8

- **Man versus machines. Who has the larger carbon footprint?**

- If we consider the global carbon footprint, is the problem technology itself — or how it's used, by whom, and for what purpose? Compare human and technological carbon footprints at a systems level
- In societies where resource use is already low, how can we design development that avoids the overconsumption seen elsewhere? Address global inequalities in responsibility and exposure.
- Distinguish basic needs from consumption-driven impacts
- Explore how technology could reduce, rather than amplify, harm

# Holistic One-Health challeng – Topic 8

- **Man versus machines. Who has the larger carbon footprint?**

# Holistic One-Health challeng – Topic 9

- **Food security and food engineering**

# Holistic One-Health challeng – Topic 9

- **Food security and food engineering**

- Frame food security as a One Health and equity issue
- Discuss and provide strategies which can facilitate food security in different contexts
- Compare engineered foods with local and traditional food systems. Are there contexts where engineered foods may complement—not replace—local systems, without undermining food sovereignty, biodiversity, or cultural practices?
- Discuss environmental, cultural, and governance implications
- How viable is food engineering in terms of its carbon footprint with respect to traditional or intensive farming? (think of the methane generated by cows).

## Evaluation criteria

- **Likert scale from 1 (estremely low) to 5 (extremely high) ➔ max 30 points**

- The problem is properly analysed in the context of One-Health
- The proposed solution is critically assessed in terms of impacts at different levels
- The timing of the presentation is appropriate
- The presentation is of high quality
- All the members of the group actively participated in the project activities

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# Thanks!