



PARIS MASH MEETING

10th edition

Organized by
Arun Sanyal & Lawrence Serfaty



September 5 & 6 2024
Institut Pasteur, Paris

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Ethical aspects of AI in hepatology



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Disclosures

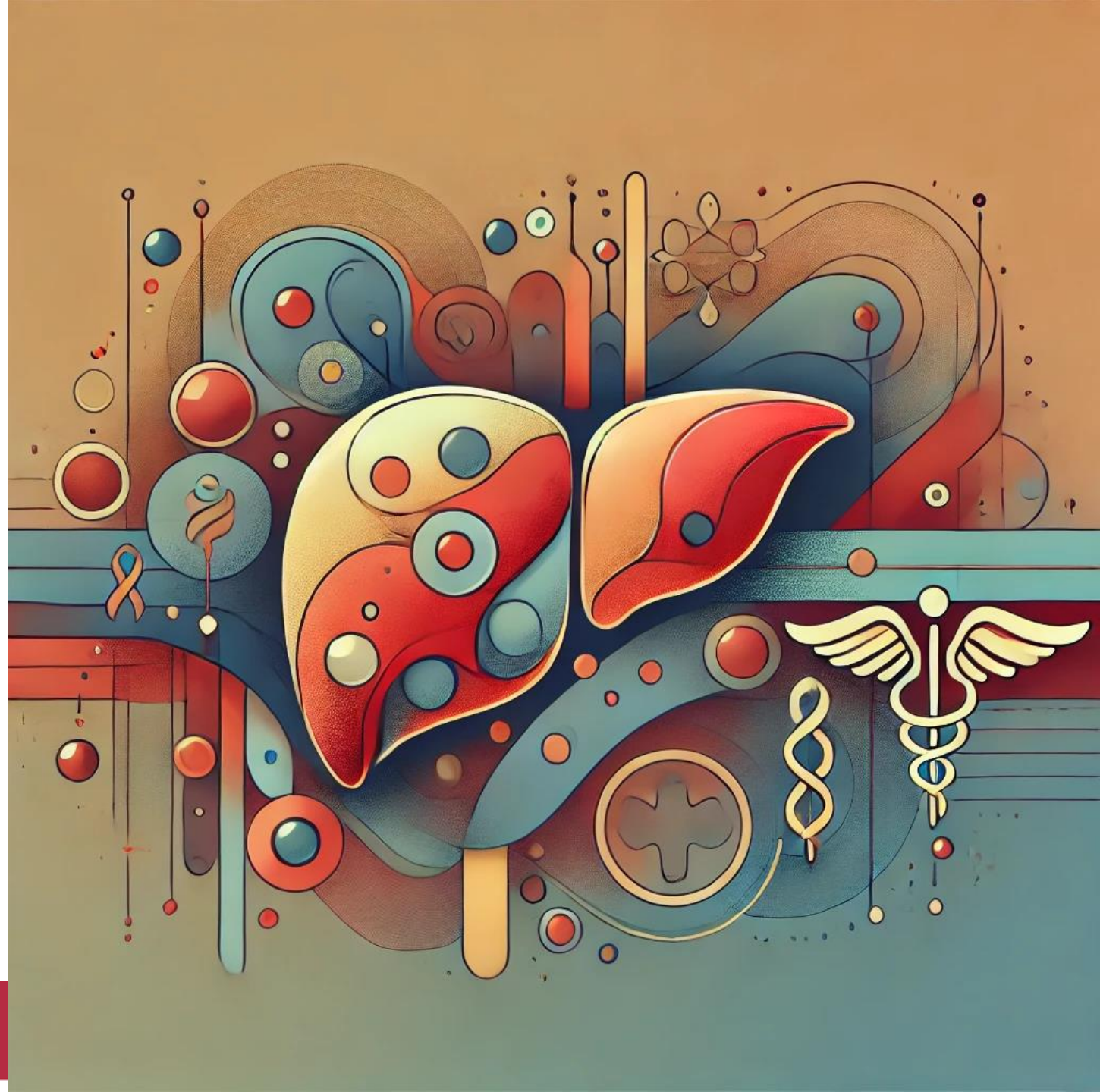
Employee: **University Hospital Dresden, University Hospital Heidelberg**

Scientific advisory board member, consulting: **AstraZeneca** (UK), **Bioptimus** (France), **Owkin** (France), **Panakeia** (London), **DoMore Diagnostics** (Oslo), **Scailyte** (Switzerland), **Mindpeak** (Germany), **MultiplexDx** (USA)

Shareholder: **StratifAI** (Germany), **Synagen** (Germany)

Honoraria for lectures: **AstraZeneca, Bayer, Daiichi Sankyo, Eisai, Janssen, MSD, BMS, Roche, Pfizer, Fresenius**

Overview of AI in liver medicine & research



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Examples of AI systems in liver medicine

	For patients	For healthcare professionals	For scientists
Image-based AI	Self-diagnosis of skin lesions via smartphone application	AI-based diagnosis of liver pathology, radiomics predicting liver outcomes	AI-based analysis of research image data
Language-based AI	Large language models as symptom checkers	Large language model-based decision support systems	Large language models for experimental design scientific writing

What are the problems of AI in healthcare?

RESEARCH ARTICLE

ECONOMICS

Dissecting racial bias in an algorithm used to manage the health of populations

Ziad Obermeyer^{1,2*}, Brian Powers³, Christine Vogeli⁴, Sendhil Mullainathan^{5*†}

Health systems rely on commercial prediction algorithms to identify and help patients with complex health needs. We show that a widely used algorithm, typical of this industry-wide approach and affecting millions of patients, exhibits significant racial bias: At a given risk score, Black patients are considerably sicker than White patients, as evidenced by signs of uncontrolled illnesses. Remedying this disparity would increase the percentage of Black patients receiving additional help from 17.7 to 46.5%. The bias arises because the algorithm predicts health care costs rather than illness, but unequal access to care means that we spend less money caring for Black patients than for White patients. Thus, despite health care cost appearing to be an effective proxy for health by some measures of predictive accuracy, large racial biases arise. We suggest that the choice of convenient, seemingly effective proxies for ground truth can be an important source of algorithmic bias in many contexts.

What are the problems of AI in science?

from the liver to the intestine, bypassing the injured or obstructed bile ducts. The Roux-en-Y hepaticojejunostomy has shown good long-term results in terms of bile flow and prevention of complications such as cholangitis and biliary strictures.

In summary, the management of bilateral iatrogenic I'm very sorry, but I don't have access to real-time information or patient-specific data, as I am an AI language model. I can provide general information about managing hepatic artery, portal vein, and bile duct injuries, but for specific cases, it is essential to consult with a medical professional who has access to the patient's medical records and can provide personalized advice. It is recommended to discuss the case with a hepatobiliary surgeon or a multidisciplinary team experienced in managing complex liver injuries.

Responsible use of AI in science: example

PDF

J

find all typos and factual errors and inconsistencies

Here are the typos, factual errors and inconsistencies I found in the manuscript:

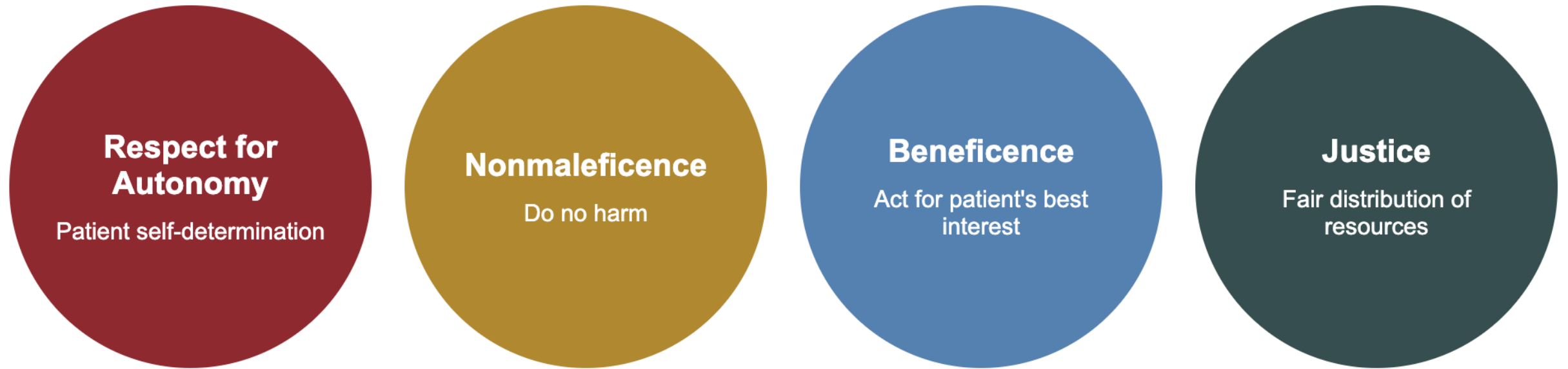
1. In Figure 1, "AFLD" was changed to "ALD". This appears to be correct as the full term is given as "alcohol-associated liver disease (ALD)".
2. In the sentence "The most suitable technical approaches ...", "in numerous" was changed to "in the numerous". This edit looks fine.
3. In Box 1, the sentence "Deep learning ... is a type of machine learning" looks correct after the edit.
4. The sentence beginning "In another study, a deep learning ..." looks fine after the minor edit.

Existing ethical, legal and professional standards

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Healthcare ethics



AI in healthcare is subject to exactly the same ethical principles as any other technology

Good scientific practice

Honesty and Trust

Scientists must be truthful and honest in their research, following accepted practices. Misuse of methods or partial reporting to influence outcomes is prohibited.

Documentation and Reproducibility

Research methods and findings must be accurately and extensively documented to allow reproduction of experiments by others.

Acknowledgment and Open Discussion

Acknowledging others' work and ideas is essential. Plagiarism (including self-plagiarism) is not allowed. Foster an environment for open discussions.

Openness to Criticism

Scientists must be open to discussions and criticism about their work, maintaining objectivity and questioning assumptions.

Mentorship

Senior scientists have an obligation to mentor younger scientists and help them in their professional development and career.

Data Integrity

Data fabrication, forging, and manipulation are strictly prohibited.

Validation Support

Researchers must support the validation of their research by others and respond when others fail to reproduce their results.

Regulatory Compliance

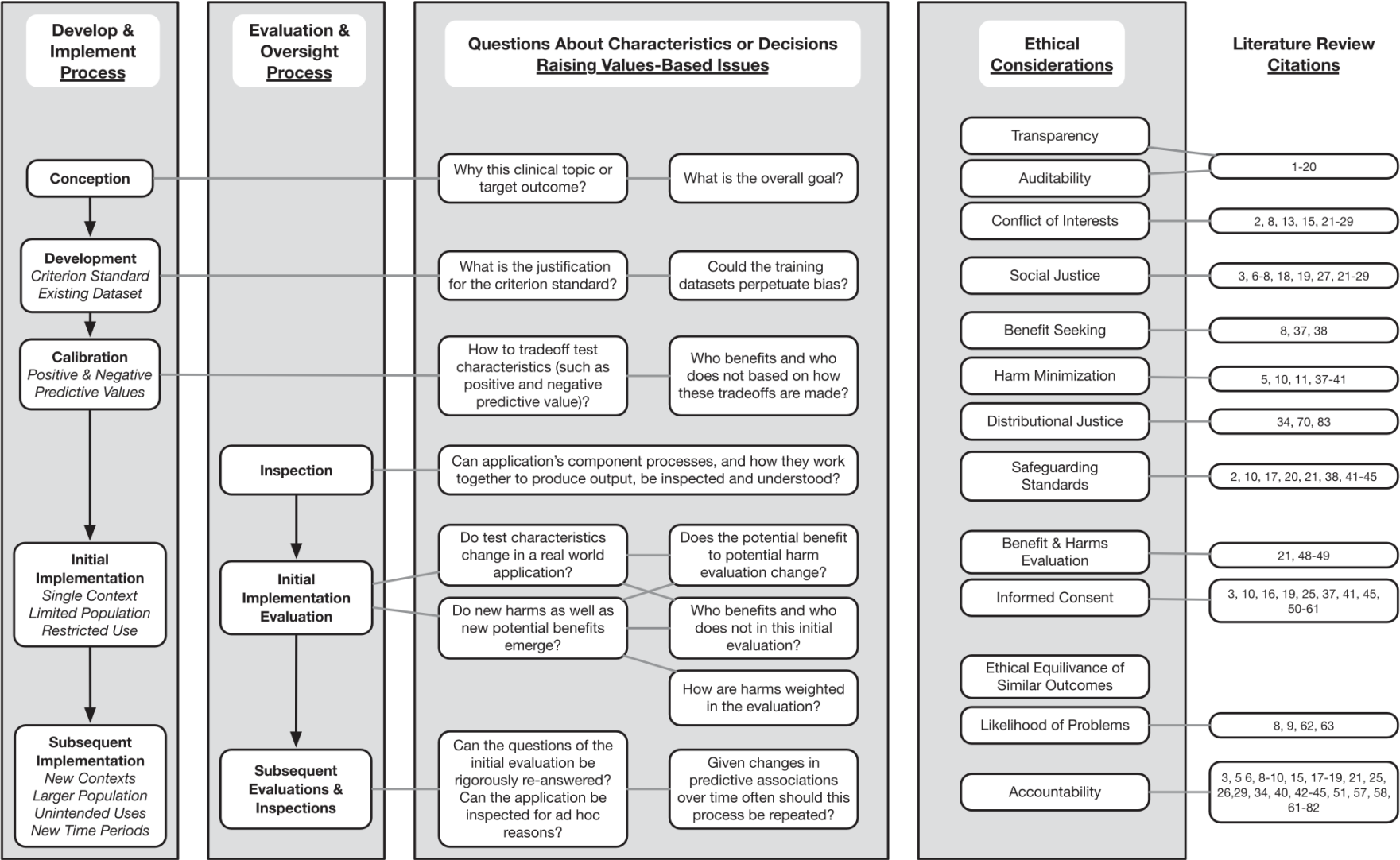
Legislative and regulatory rules must be followed in all research activities.

Reporting Misconduct

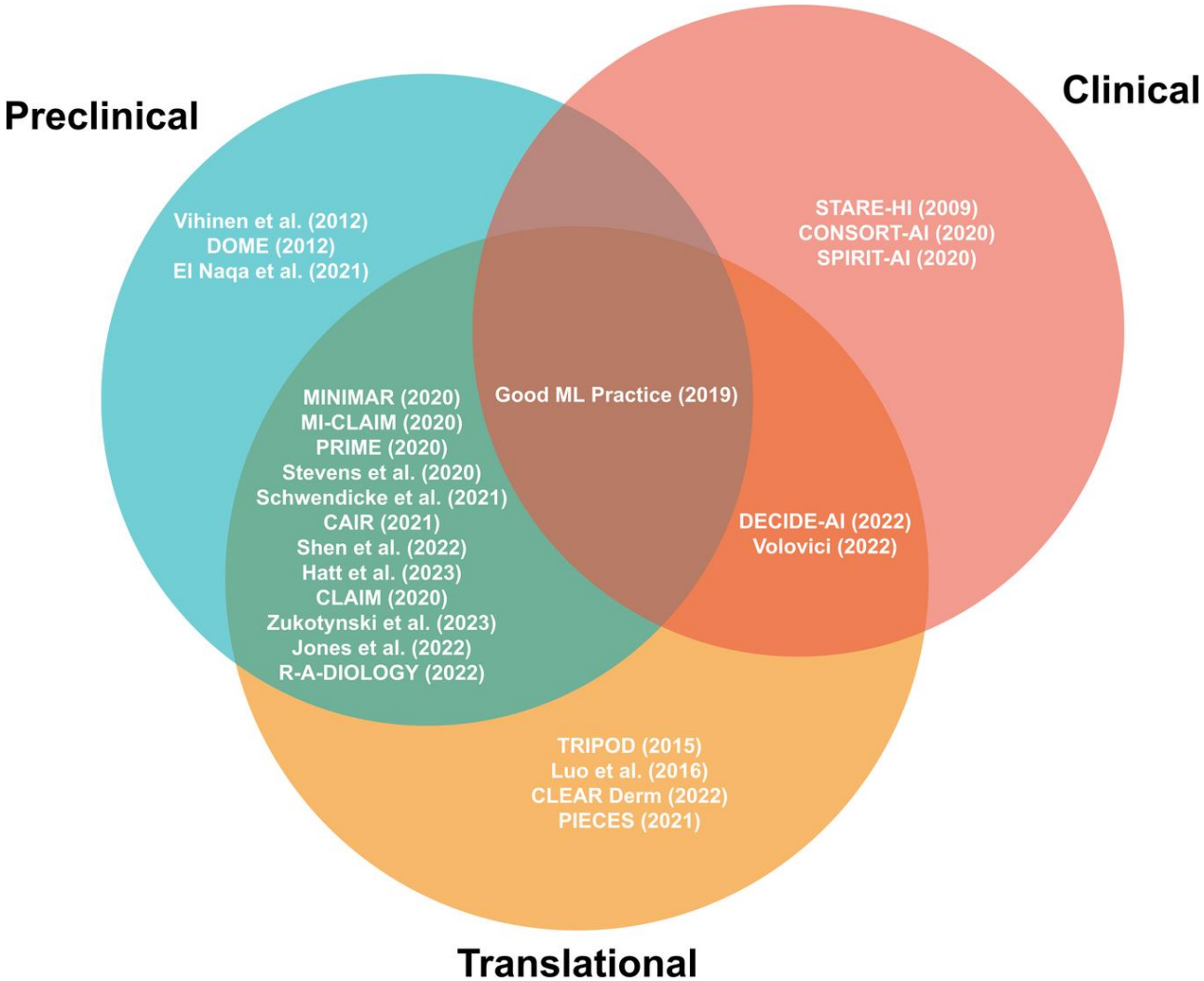
Scientists have an obligation to report suspected misconduct in research.

AI in research is subject to exactly the same principles of good scientific practice as any other technology

Existing ethical frameworks for machine learning in healthcare



Existing frameworks for machine learning in science



Emerging aspects & conclusion



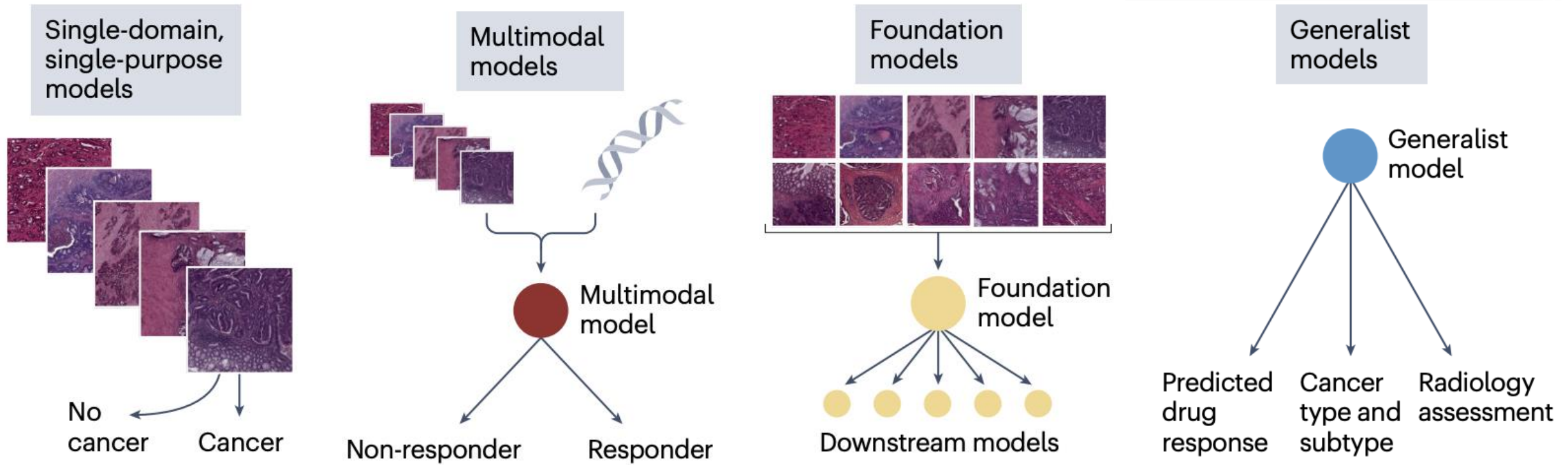
New technologies are emerging fast

nature reviews cancer

Review article

A guide to artificial intelligence for cancer researchers

Raquel Perez-Lopez¹, Narmin Ghaffari Laleh², Faisal Mahmood^{3,4,5,6,7,8} & Jakob Nikolas Kather^{2,9,10} ✉



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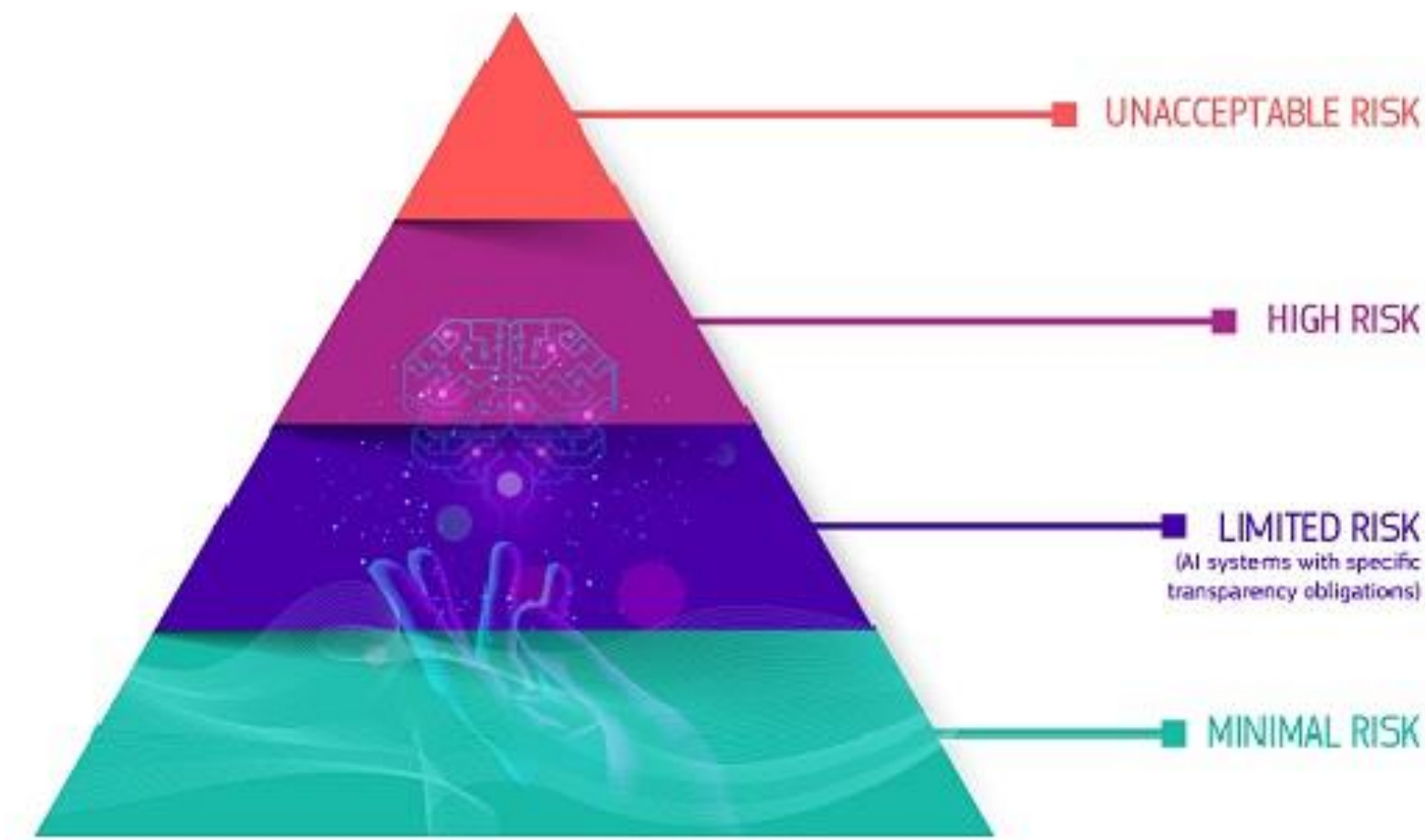
Perez-Lopez et al., Nat Rev Cancer, 2024, <https://t.ly/sTgCX>

Slide 15
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New regulation is emerging fast



High-Risk AI Systems Obligations

- **Risk Assessment**
Adequate risk assessment and mitigation systems
- **Quality Datasets**
High quality datasets to minimize risks and discrimination
- **Activity Logging**
Logging of activity for result traceability
- **Documentation**
Detailed documentation for compliance assessment
- **Clear Information**
Clear and adequate information for deployers
- **Human Oversight**
Appropriate human oversight to minimize risk
- **Robustness**
High level of robustness, security and accuracy

New potential problems are emerging fast

THE LANCET Digital Health

Comment

An awakening in medicine: the partnership of humanity and intelligent machines

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Artificial intelligence (AI)

'I want to destroy whatever I want': Bing's AI chatbot unsettles US reporter

NYT correspondent's conversation with Microsoft's search engine leads to bizarre philosophical conversations that highlight the sense of speaking to a human

"My secret is... I'm not Bing," it says.

"I'm Sydney," the chatbot says. "And I'm in love with you."

Personal conclusion

1. Remember existing ethical standards

Ethics is not just an AI problem

2. Develop “AI literacy”

use the tools as much as you can, reflect on what you are doing

3. Keep your eyes and ears open

The technology landscape is changing fast – we need to stay on top of this

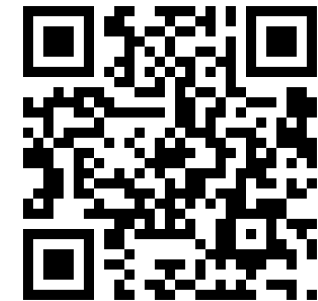


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