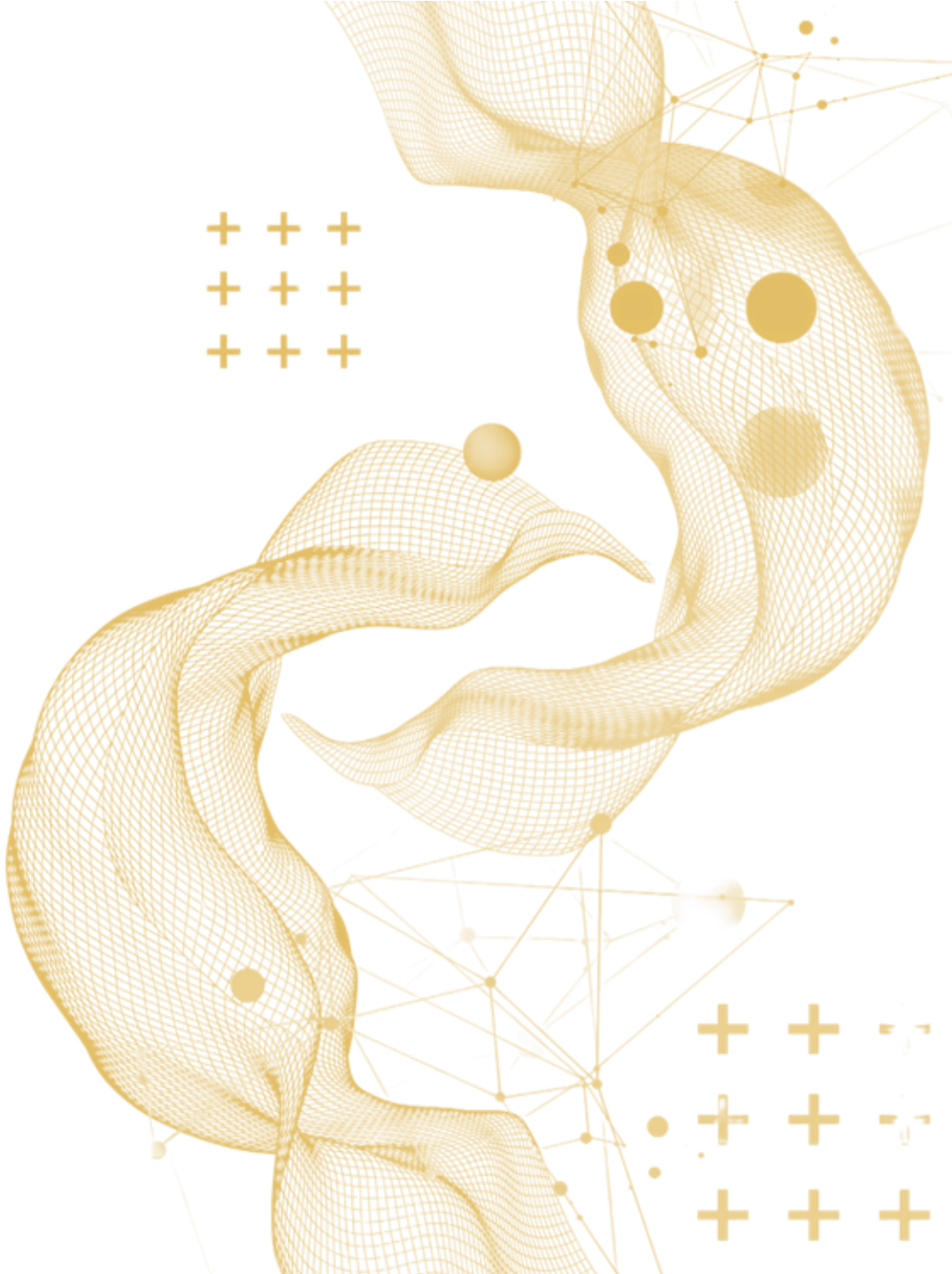
SYMPOSIUM 2026

WELCOME

JUNE 15 | BRUSSELS, BELGIUM



Stéphane Dhalluin

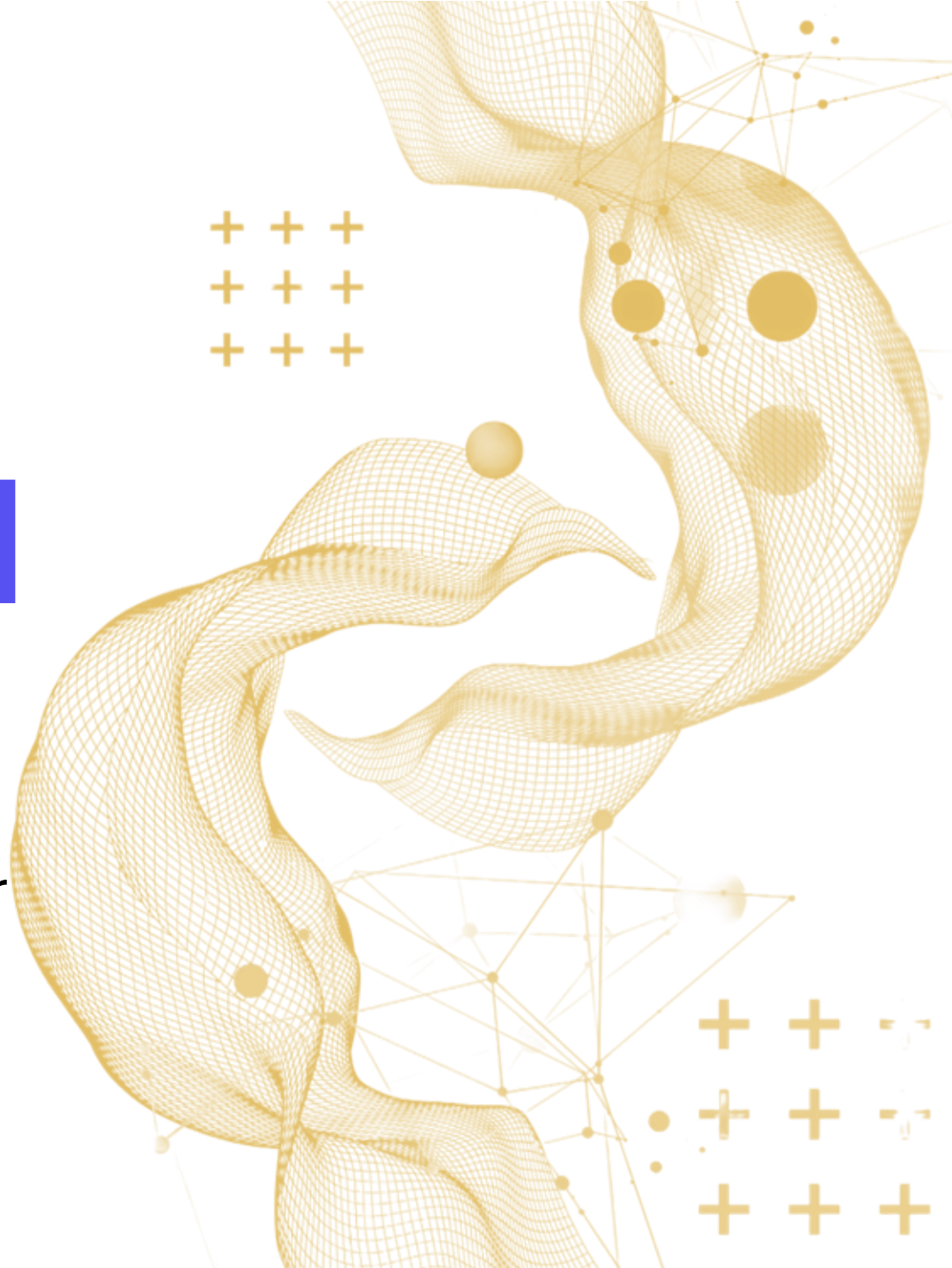
PhD, DABT

Global Head, Human & Environmental Safety Evaluation
L'Oréal

SYMPOSIUM 2026

FROM VISION TO REALITY:

Implementing the EU Roadmap Together



Vision to Reality: Implementing the EU Roadmap Together

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Policy Officer, REACH Unit
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Katia Lacasse, PhD
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Gavin Maxwell, PhD
Industry Co-Chair, EPAA;

Head of Regulatory Science – Strategy & Advocacy, Unilever

Julia Baines, PhD
Head of Science Policy
PETA UK

Moderator
Claire Fletcher
Director, Strategic Program Development
ICCS

Commission Roadmap towards phasing out animal testing for chemical safety assessment

Georg Streck

15 June 2026

Introduction

- The European Commission adopted on 1 June 2026 its **roadmap towards phasing out animal testing for chemical safety assessments** (Communication C(2026)3497 and Staff Working Document SWD(2026)144)
- The roadmap provides a plan how to reach the **long-term policy goal of phasing out animal testing**
- The roadmap is applicable to all **relevant pieces of EU chemical legislation** that might lead to animal testing for chemical safety assessments – 15 legislative areas identified
- Importance for legislative area with animal testing ban (e.g. cosmetics): **Increase method availability and acceptance**

Designed by Freepik

The Roadmap in two parts

Commission Communication

→ Policy document with limited space

Staff Working Document (SWD)

→ Contains details, larger document

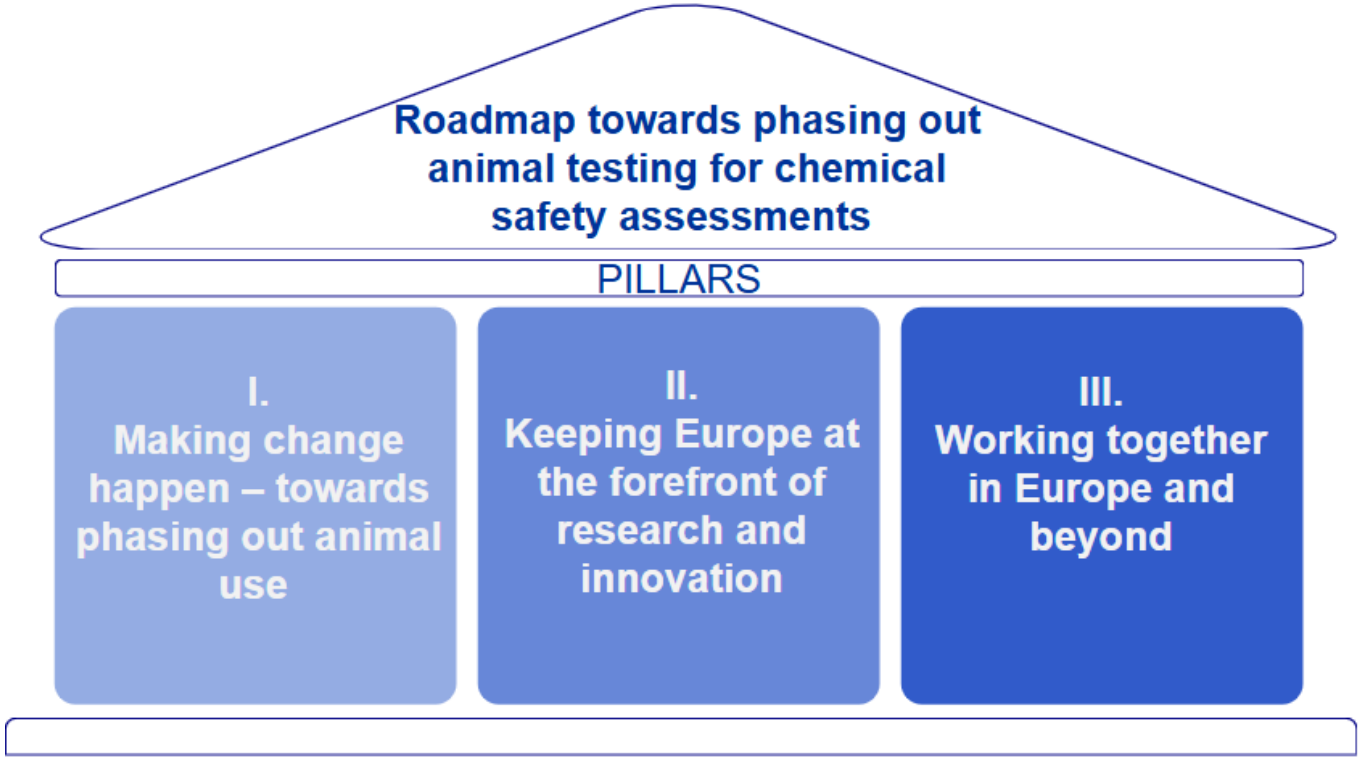
European Commission

The Roadmap in two parts

- 22 policy actions (= commitments with timings/milestones) organised under 3 pillars for paving the way towards phasing out animal testing for chemical safety assessments
- One action point divided into ~ 30 sub-actions explained in the SWD (**human health** or **environmental** safety assess.)

Commission Communication

→ Policy document with limited space



The Roadmap in two parts

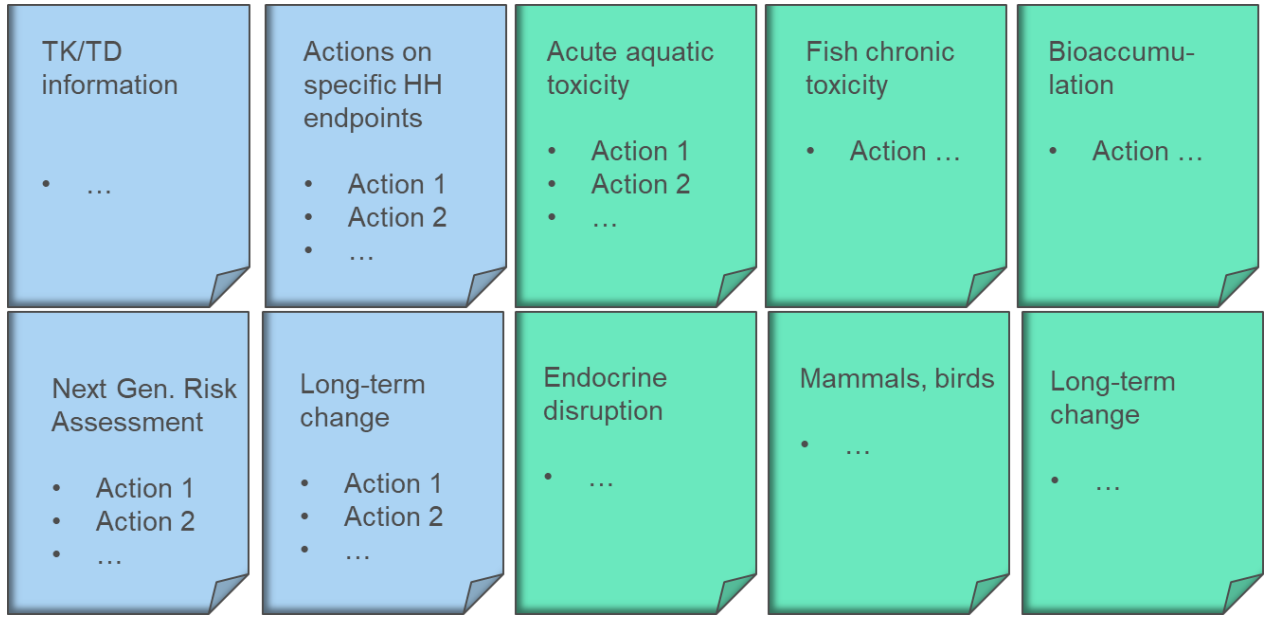
Commission Communication

Policy document with limited space

Staff Working Document (SWD)

Contains details, larger document

Ca. 30 sub-actions on **human health** or **environmental** safety assessments



Staff Working document

- Summary of consultation and collaboration efforts for roadmap development
- Recommendations and actions for environmental safety
  - Acute fish toxicity
  - Aquatic and terrestrial bioaccumulation
  - Fish chronic toxicity
  - Endocrine disruption
  - Birds and mammals
  - Ecological thresholds of toxicological concern and species sensitivity distributions
- Recommendations and actions for human health
  - Acute toxicity
  - Genotoxicity
  - Carcinogenicity
  - Repeated dose toxicity
  - Developmental neurotoxicity
  - Developmental and reproductive toxicity
  - Endocrine Disrupting Chemicals
- Working together to design and implement non-animal approaches in regulatory testing
  - Role and composition of the roadmap steering team
  - Roadmap steering team
  - Engaging Member-State and stakeholder experts in agency collaborative structures
  - EU Agency Network (EUAN) – working group on animal-free approaches
  - Translating innovative methods into regulatory applications – validation, standardisation, qualification
  - Safe spaces and regulatory exploration spaces for animal-free methodologies
- Indicators – managing change by measuring it
- Annex I – Chemical safety assessments under following legislations are in scope of the roadmap
- Annex II - Ongoing agency activities (ECHA, EFSA and EMA) that support the phasing out of animal testing for chemical safety assessments
- Annex III - Engaging with the general public

European Commission

30 sub-actions for human health and environmental assessment

SHORT TERM

Existing (combination) of methods that could be implemented in legislation already today.

MEDIUM TERM

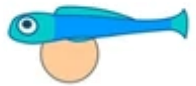
Further development of existing methods needed or expansion of domain of applicability or validation.

LONG TERM

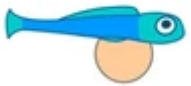
Paradigm shift: New regulatory assessment framework necessary to reach protection goals without animal use.

→ Non-animal approaches deliver different information than animal methods

→ E.g. classification criteria redefined

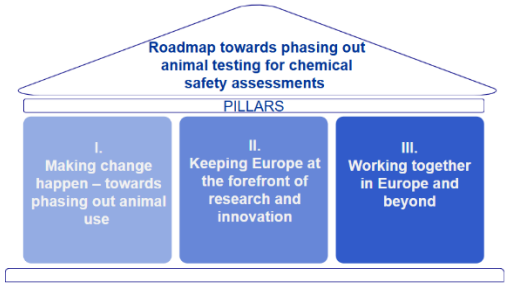


Use animal testing (eleutheroembryo testing, invertebrates) to reduce or refine animal testing.



In the long term: phase out all animal testing, including e.g. eleutheroembryo (fish/amphibian early life-stage) testing.

Pillar 1 – Making Change Happen (11 actions)



Replacing, reducing or refining animal testing in the short- to long-term (→~ 30 recommendations in SWD)

Access to JRC laboratories for testing, scaling, validating alternatives.

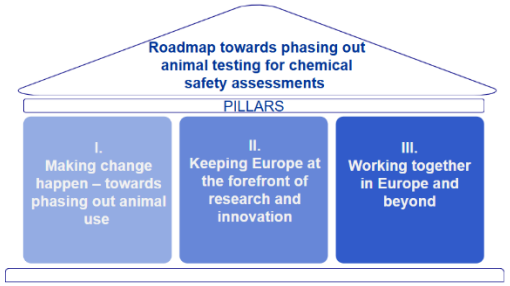
Safe Spaces (Confidential discussion regulators/company) and Regulatory Exploration Spaces (multistakeholder discussion platforms)

Identifying regulatory needs for prioritizing method development, validation, standardization - Report on key areas of regulatory needs

Funding + making validation, standardisation or qualification more efficient

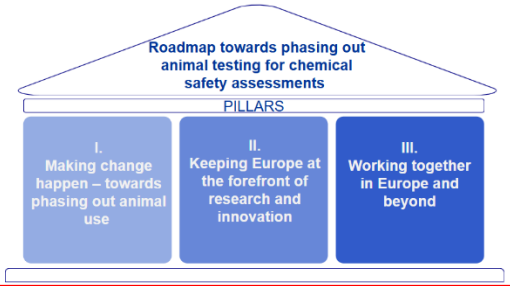
…

Pillar 2 - Research & Innovation



- Making use of Artificial Intelligence for chemical safety assessments and for implementing the roadmap
- Ensuring that the AI-powered interactive tool under the life sciences strategy supports development of non-animal approaches for chemical safety assessment
- A Horizon Europe call on generative AI in biomedical research
- Leveraging human-relevant data for developing non-animal approaches (European Health Data Space Regulation)
- Supporting research, method development and bringing methods onto the market (e.g. Horizon Europe calls)
- …

Pillar 2 – Working together in Europe and beyond



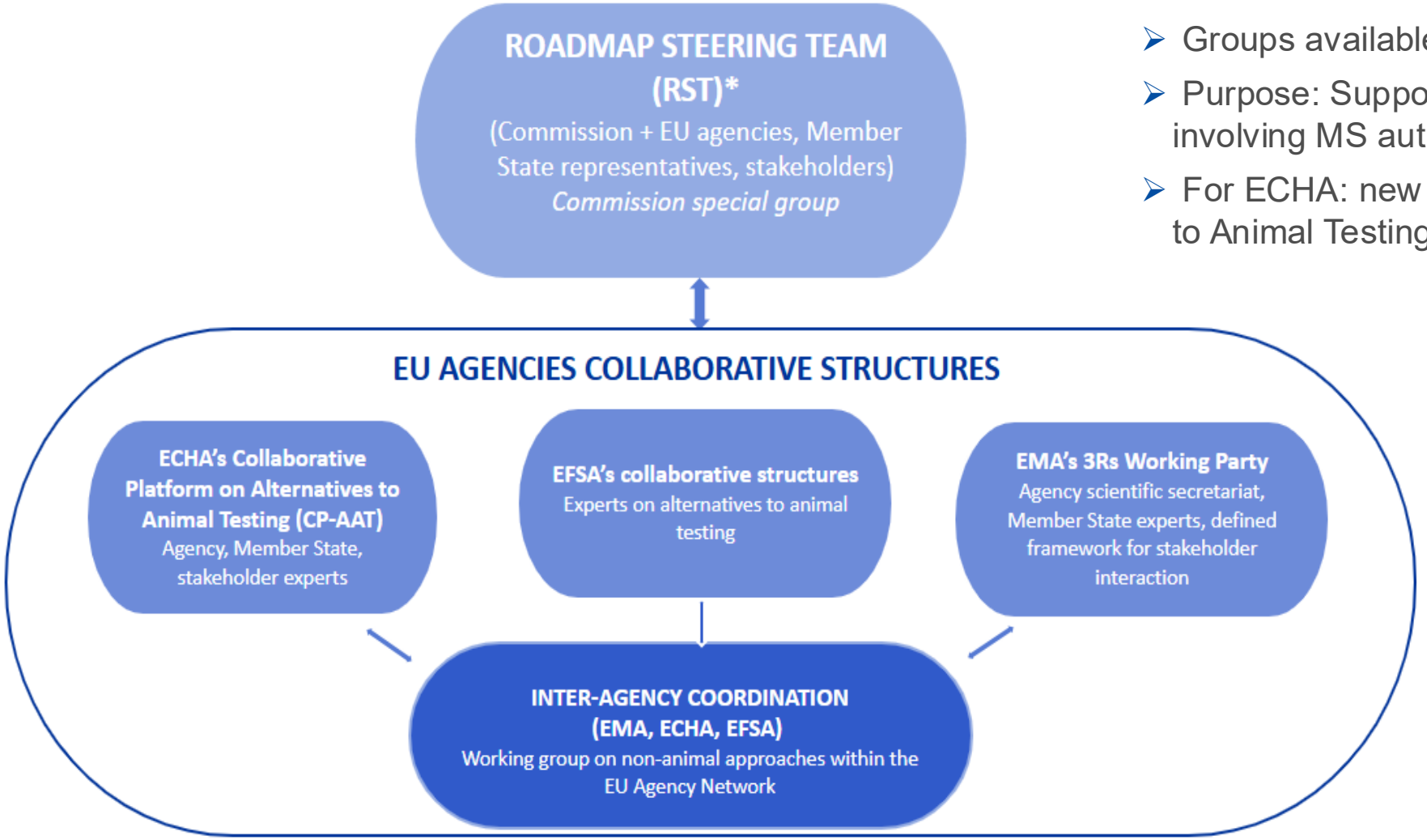
Organisational structures

- A Roadmap Steering Team
- Collaborative platforms at EU agencies (ECHA, EFSA, EMA)
- An inter-agency working group on non-animal approaches within the EU Agency Network – giving space to EU agencies to coordinate
- Strengthening international collaboration (alignment and regulatory acceptance for alternative approaches at international level)
- Creating an electronic information hub to promote engagement with stakeholders and the general public
- …

Organisational set-up supporting implementation

- Tasks of the Roadmap Steering Team
  - Overseeing / coordinating implementation of the roadmap
  - Exchanging / coordination with other initiatives
- Setting up the Roadmap Steering Team
  - Open call for stakeholder participation during next months
  - Selection of stakeholders by September 2026
  - Planned to be operational by end of Q3/2026
- RST action teams will be set up as sub-groups, as needed

Organisational set-up supporting implementation



- EU Agency collab. structures
  - Groups available/to be set up at every agency
  - Purpose: Supporting the roadmap implementation; involving MS authorities and stakeholders
  - For ECHA: new Collaborative Platform on Alternatives to Animal Testing (CP-AAT) → EPAA participating

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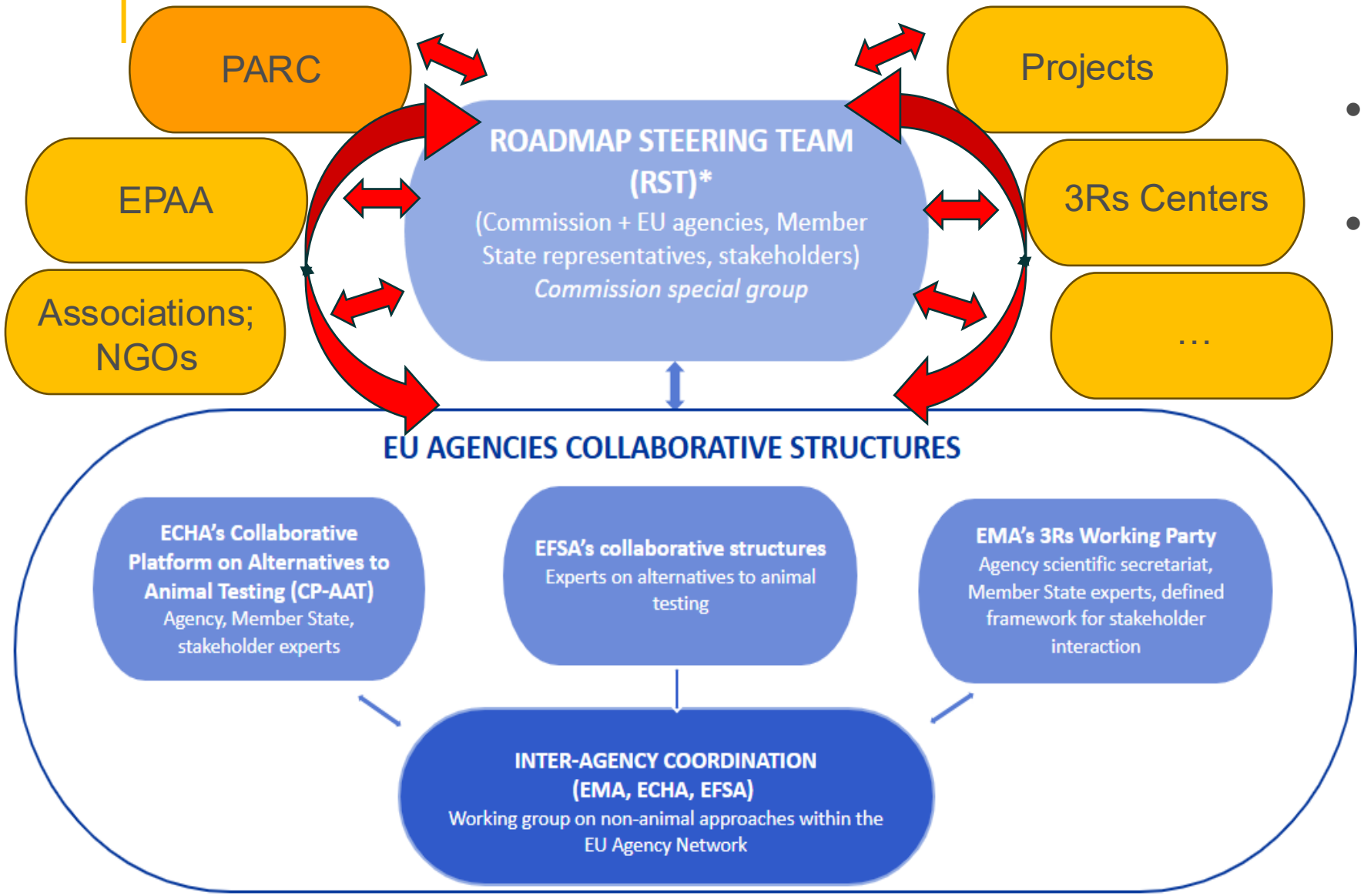
Collaboration, exchange, coordination



- Implementation will have to be a collaborative effort
- Exchange and coordination as key element of the organisational set-up

European Commission

Thank you

Georg.Streck@ec.europa.eu

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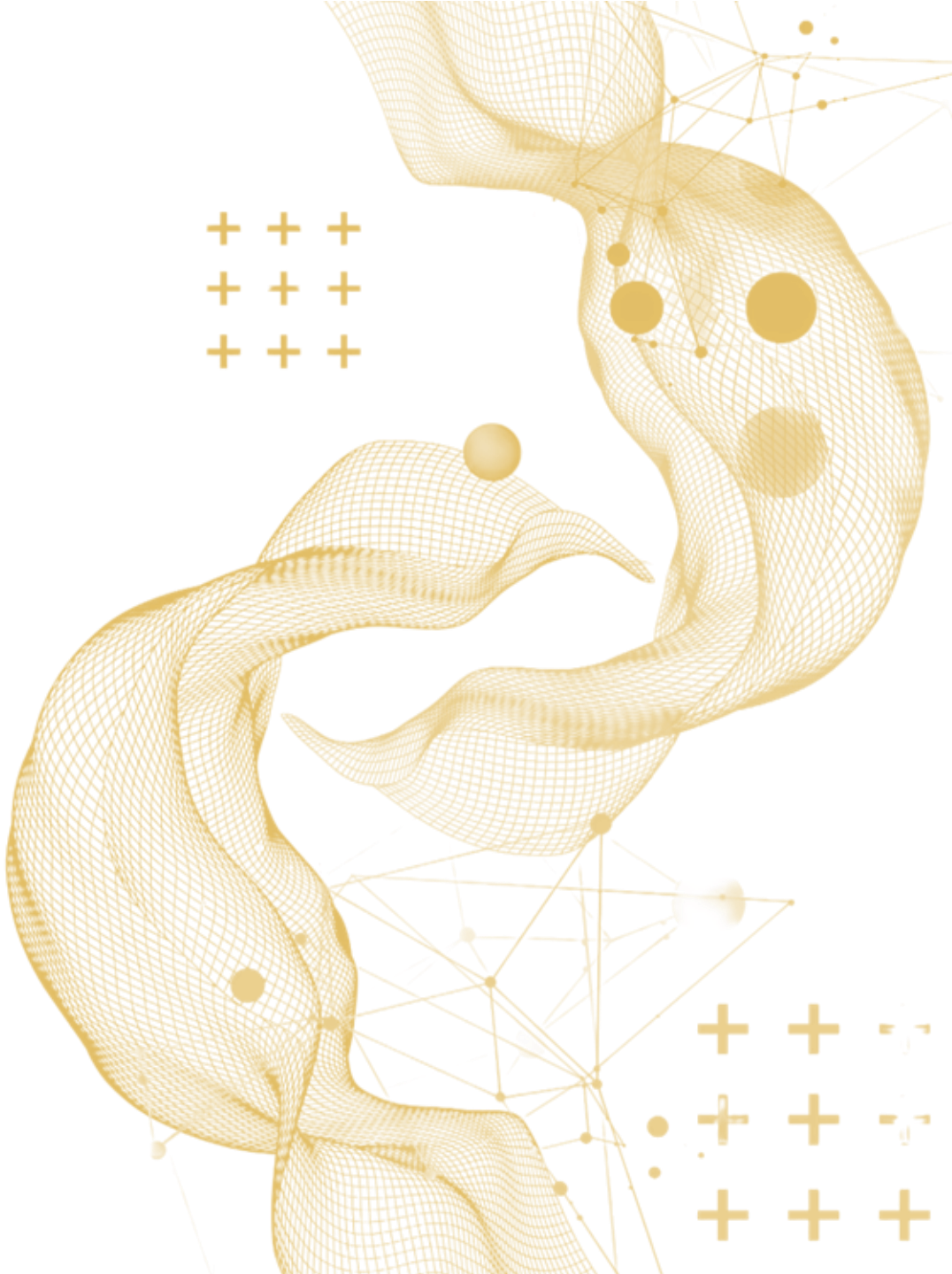
PANEL DISCUSSION

SYMPOSIUM 2026

QUESTIONS



SYMPOSIUM 2026

How can the various stakeholders, like EU and Member State agencies, academic researchers, NGOs, industry associations and ICCS, collaborate most effectively to implement the roadmap?

SYMPOSIUM 2026

What practical steps would you recommend be taken in the short term to help bridge the gap between science and regulatory acceptance and ultimately set the roadmap up for long-term success?

SYMPOSIUM 2026

QUESTIONS FROM THE AUDIENCE

SYMPOSIUM 2026

IDENTIFYING AND ADDRESSING

Capacity Needs for NAMs Implementation

Identifying and Addressing Capacity Needs for NAMs Implementation

Nicolas Fabre, PhD
Head of Chemical & Cosmetic Advocacy Expert Group - Scientific and Regulatory International Affairs, L'Oréal
- LATAM Survey Findings

Kristie Sullivan, MPH
Vice President, Education and Outreach
Institute for In Vitro Sciences
- OECD/NGOs Offerings

Francesca Rapolla, MS
Senior Affairs Manager, Cosmetic, Toiletry and Perfumery Association (CTPA)
- Role of Trade Associations

Beta Montemayor
Vice President and Director Science, Regulation and Market Access
Cosmetics Alliance Canada
- ICCR Community

Moderator
John Chave
Director General
Cosmetics Europe

ICCS | INTERNATIONAL COLLABORATION ON COSMETICS SAFETY

Identifying and Addressing Capacity Needs for NAMs Implementation

ICCS | INTERNATIONAL COLLABORATION ON COSMETICS SAFETY

OBJECTIVE

SET THE BASELINE FOR PROGRESS REVIEW

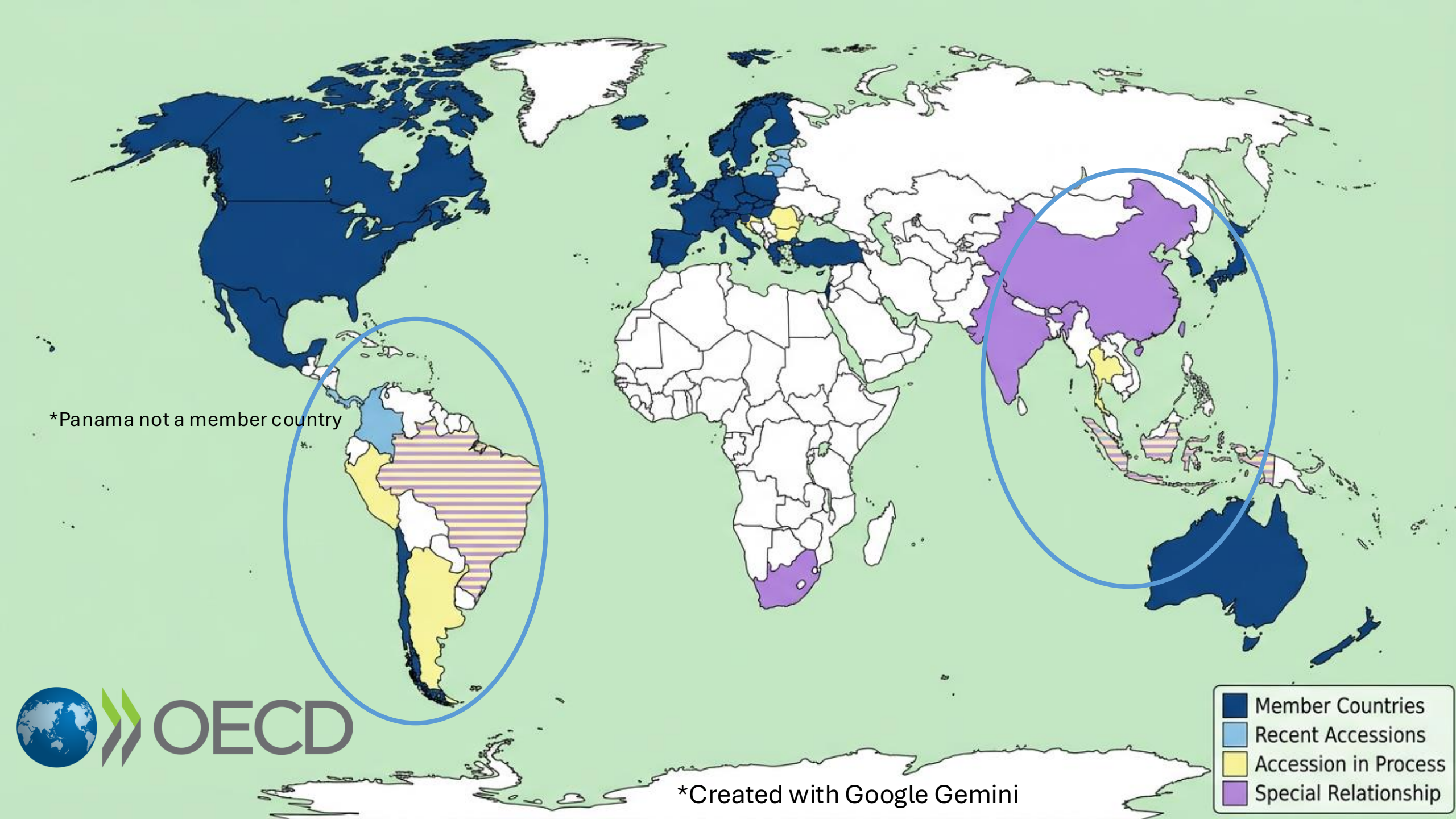
Methodology

- ONLINE QUESTIONNAIRE
  - Acceptance of NAMs
  - Hazard characterization and NAMs
  - Human Health and Environment

- QUESTIONNAIRE SETTINGS
  - Spanish, Portuguese, English
  - Aug. – Sept. 2025

Key Learnings

- Awareness and Knowledge of NAMs
- Identified Challenges and Barriers
- Regulatory Friction and Data Rejection


*Panama not a member country
OECD
Member Countries
Recent Accessions
Accession in Process
Special Relationship
*Created with Google Gemini

THE CONVENER: A TRADE ASSOCIATION'S ROLE IN ADVANCING ANIMAL-FREE SCIENCE FOR CHEMICALS SAFETY ASSESSMENT

Caroline Rainsford
Director of Science

Francesca Rapolla
Senior Affairs Manager - Science

Promoting education

CTPA practical training
Case-study centred training sessions

June 2023: NGRA workflow
September 2025: TTC and read across

Discussions are facilitated by NAMs and NGRA experts, sharing knowledge and expertise

Review data packages based on NGRA and NAMs approaches

Discuss data interpretation to help make safety decisions

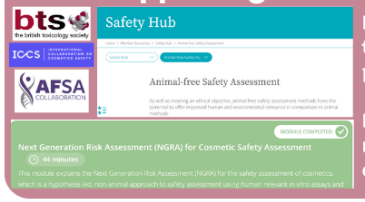
Discuss uncertainties and limitations

Build confidence in using animal-free for every day risk assessment of chemicals

CTPA and its role in NAMs

The Cosmetic, Toiletry and Perfumery Association (CTPA) acts as the voice of the UK cosmetics industry, representing more than 200 companies which make, supply and sell cosmetics and personal care products.

Supporting confidence building



Publicise key initiatives and training from relevant partners

Provide guidance to members via resources and e-learning

Leading stakeholders engagement

Frank and open dialogue between industry, regulators, NGOs, academia

Share ideas, monitor developments, foster collaboration, provide support

Cross-stakeholder workshops to promote dialogue

Coordinate regular meetings between Government and relevant partners

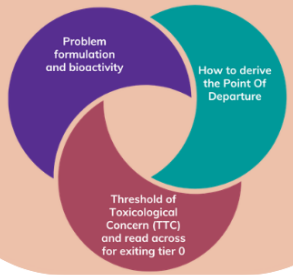
Joint chemicals industry position papers on NAMs transition

Championing a collaborative approach between industry and regulators on use and acceptance of NAMs in the UK

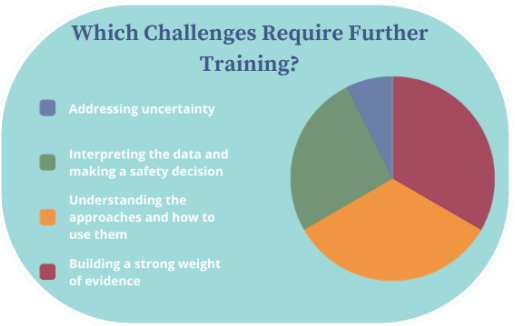
bts the british toxicology society
NC 3Rs National Centre for the Replacement Refinement & Reduction of Animals in Research
ICCS International Collaboration on Cosmetics Safety

CTPA participation in key partners' working groups and initiatives

Other Training Areas of Importance



Which Challenges Require Further Training?



What Safety Assessors Need from NAMS/NGRA Training

Transition to Animal-Free Science

Acknowledgements

CTPA would like to thank members of its NAMs Advisory Group; collaborating stakeholders at the International Collaboration on Cosmetic Safety (ICCS), Chemical Industries Association (CIA), UK National Centre for the 3Rs (NC3Rs), British Toxicology Society (BTS); representatives of the UK Government engaged in this topic.

International Cooperation on Cosmetics Regulation

https://www.iccr-cosmetics.org/

ICCR
International Cooperation on Cosmetics Regulation

Est. 2007

Founding	Full	Observers
• Canada • EU • Japan • US	• Brazil [2014] • Chinese Taipei (Taiwan) [2020] • South Korea [2020] • Israel [2022]	• Argentina • Cape Verde • Chile • China • Egypt • Saudia Arabia • Thailand • UK

Together Representing
> 65% of the global cosmetics market

Bridging Gaps and Bringing Global Regulators and Industry TOGETHER

- **REGULATOR** Lead
- 'Cosmetics' and Personal Care Products **DIALOGUE**
- Mission

  *"Multilateral framework to maintain and enable the highest level of **global consumer protection** by working towards and promoting **regulatory convergence**, while **minimizing barriers** to international trade."*

- Integrated Strategies for Safety Assessment Joint Working Group

  Advancing and promoting non-animal safety assessment and next-generation risk assessment approaches

Principles underpinning the use of new methodologies in the risk assessment of cosmetic ingredients

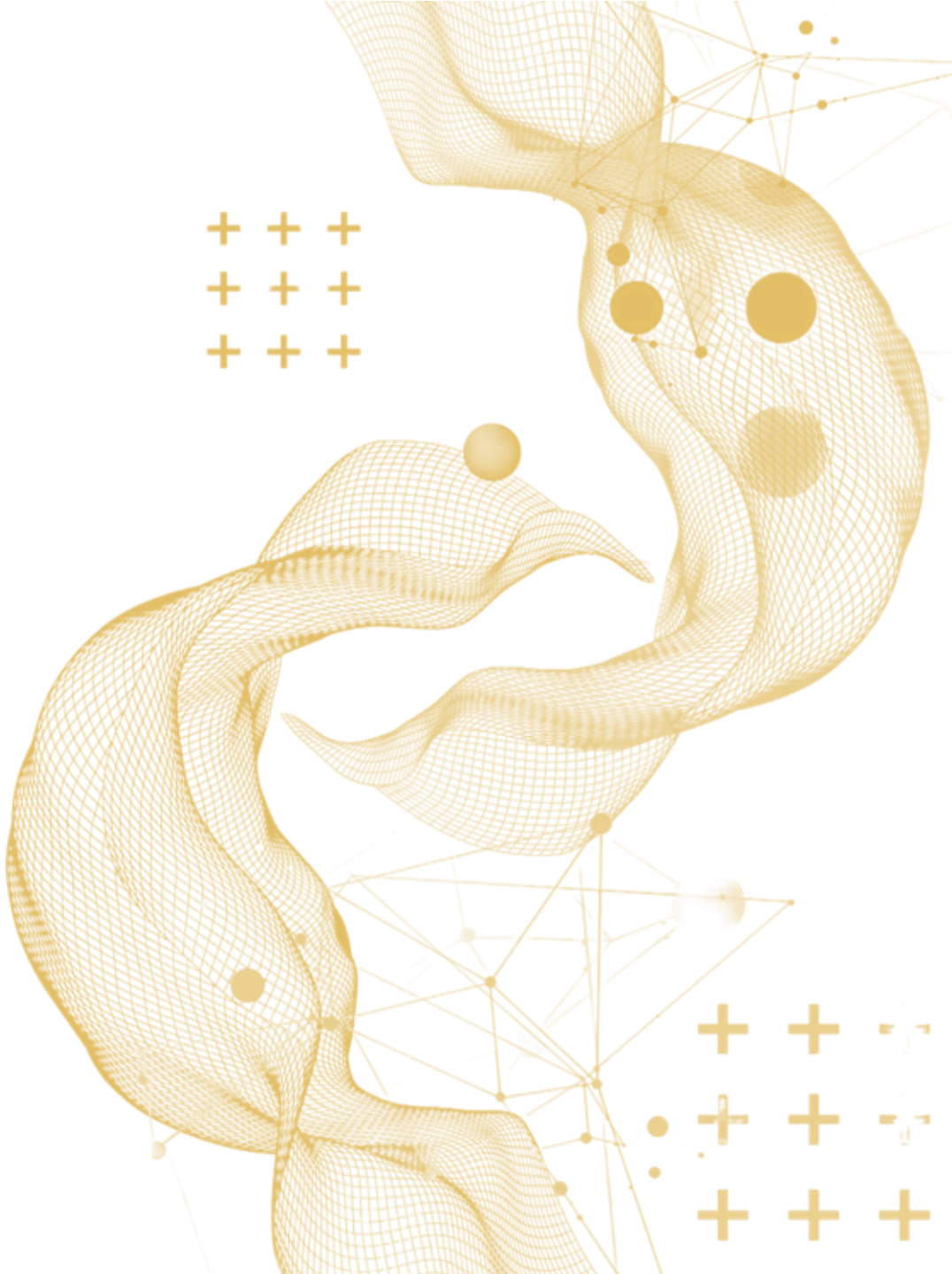
Dent *et al.*, 2018
Computational Toxicology, Vol 7:20-26

SYMPOSIUM 2026

PANEL DISCUSSION

SYMPOSIUM 2026

QUESTIONS



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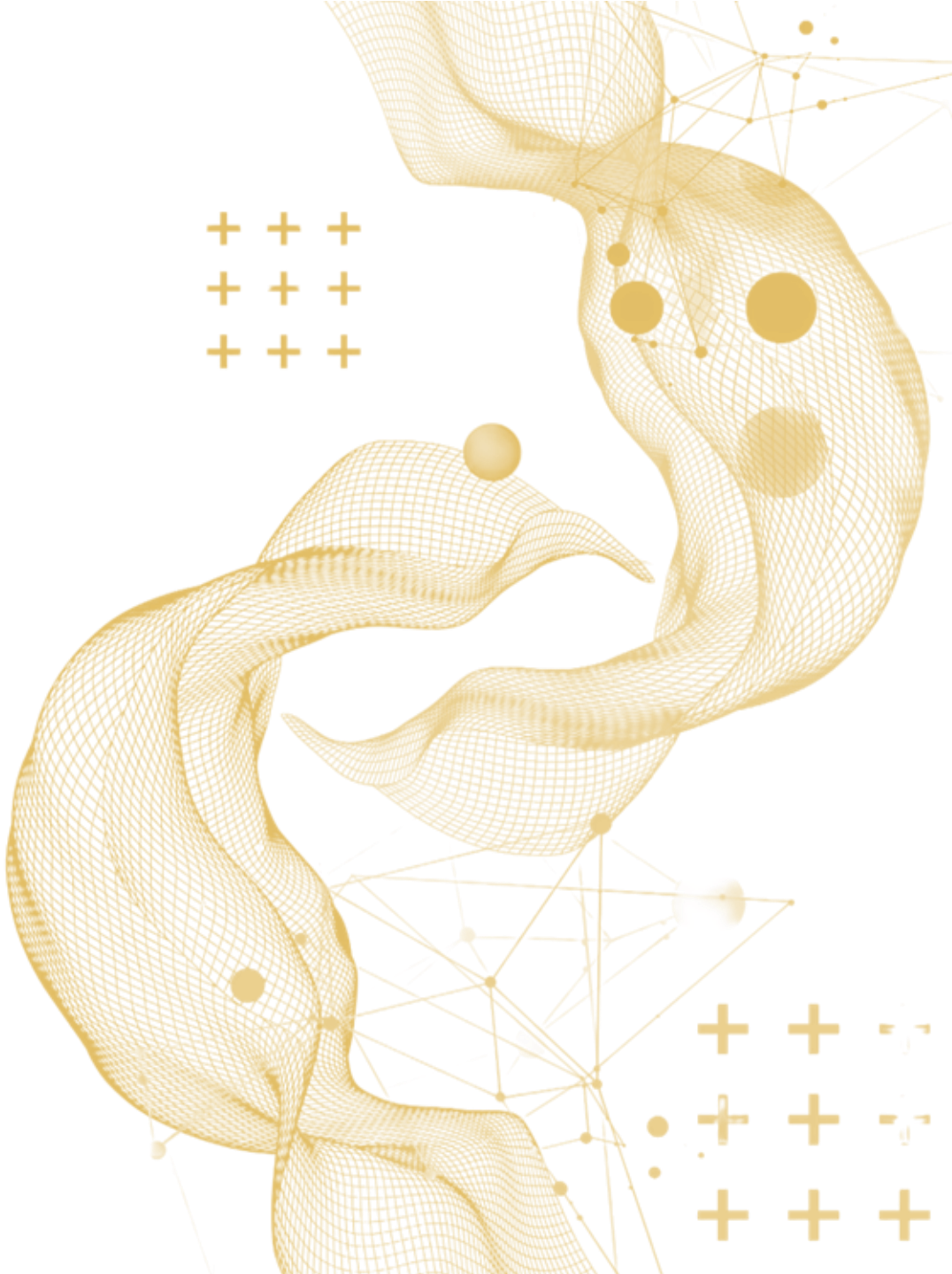

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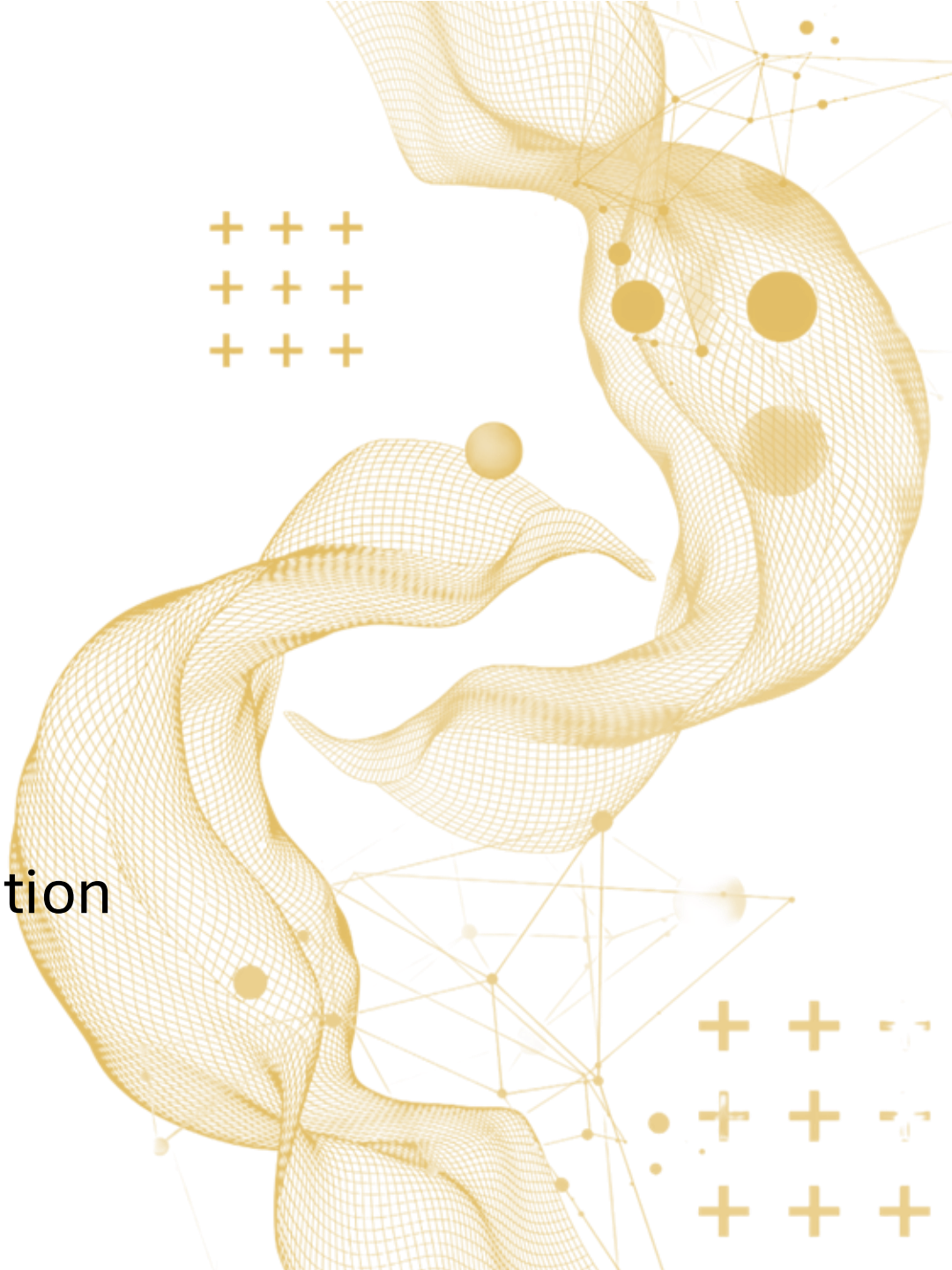
ACTIVITY VS ADVERSITY:

The Quest to Solve the Endocrine Disruption Challenge Without Animals



Activity vs Adversity: The Quest to Solve the Endocrine Disruption Challenge Without Animals

Karma Fussell, PhD, DABT
Senior Principal Toxicologist
Wella Company

Susanne Kolle, PhD, ERT
Research Coordinator
BASF SE

Moderator
Carol Courage, PhD
Global Head of Product Safety
Croda

Activity vs Adversity: The Quest to Solve the Endocrine Disruption Challenge Without Animals

Hazard assessment of endocrine disruption potential using new alternative methods: a proposal

ICCS Symposium
15. June, 2026

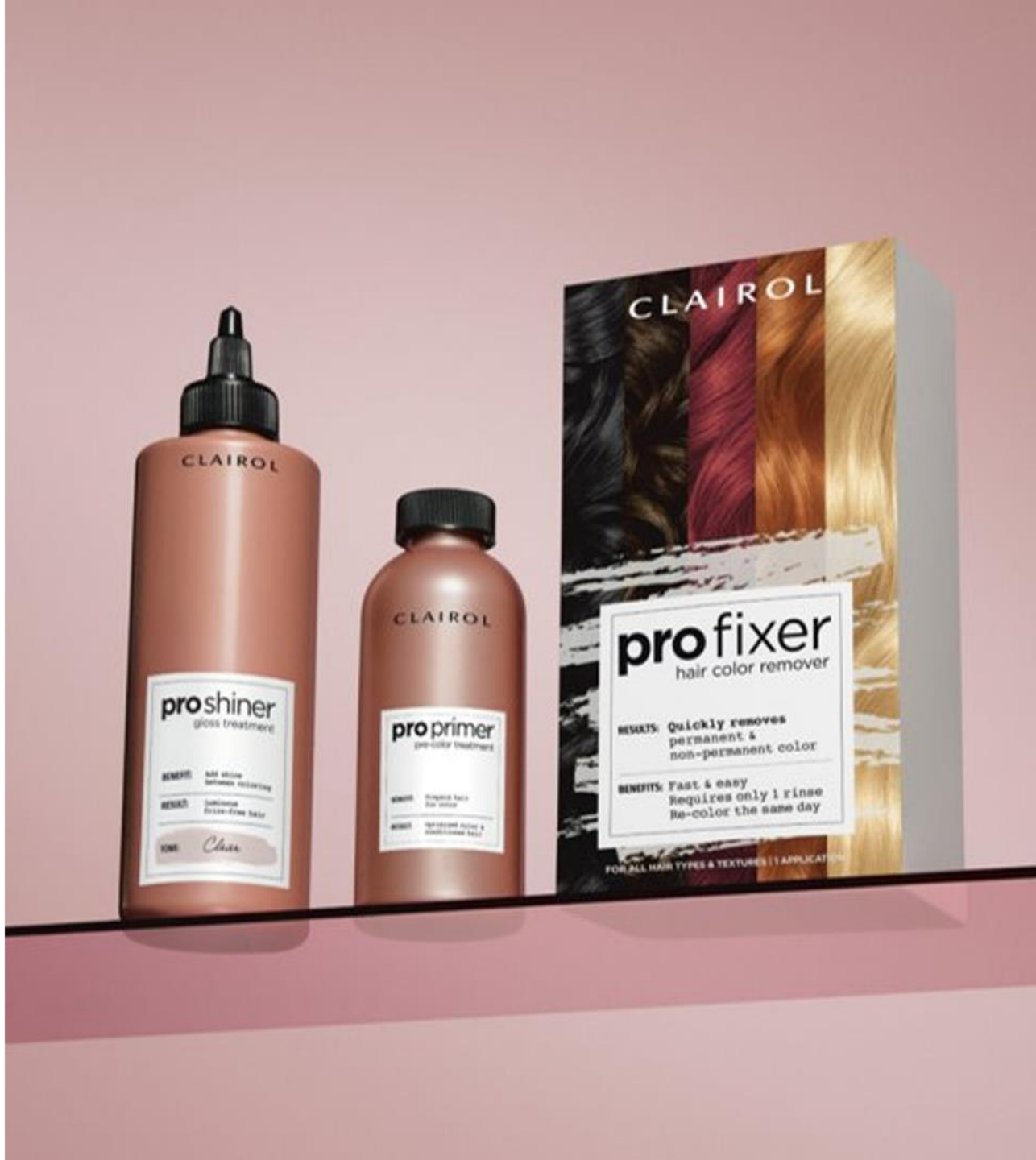
Karma Fussell
Senior Principal Toxicologist
Wella Company
Darmstadt, Germany
karma.fussell@wella.com

WELLA COMPANY

I am employed by Wella Company which markets products containing the test substances included in this study.

This potential conflict of interest is disclosed for transparency.

Also, there will be questions at the end



REGULATORY CONTEXT (EU)

COSMETICS REGULATION

CONSUMER EXPOSURE
STYLIST EXPOSURE

"The SCCS concurs with CEHOS (2012) and ECHA (2020a) that resorcinol exerts anti-thyroid effects. However, while a clear level of exposure needed for such an effect cannot be derived from the available studies in humans, most of **these studies point to a relatively much higher level of exposure than is the case from cosmetics.**" - *SCCS (Scientific Committee on Consumer Safety) 2020, Opinion on Resorcinol, SCCS/1619/20*

RISK-BASED

REACH CHEMICALS REGULATION

OCCUPATIONAL EXPOSURE (AS A CHEMICAL)
ENVIRONMENTAL EXPOSURE

"There is clear evidence on adversity on thyroid (enlarged thyroid and clinical signs of hypothyroidy) in human case reports and histological findings in thyroid when investigated. Although most of the severe hypothyroidy cases were consecutive on exposure via ulcerated skin, they provide direct information that resorcinol exposure results in serious adverse effects in humans." – *ANSES (French Agency for Food, Environmental and Occupational Health Safety) 2024, Proposal for Harmonised Classification and Labelling of Resorcinol, 04.01-MF-003.01*

HAZARD-BASED

REGULATORY CONTEXT (EU)

REGULATORY MILESTONES

ENDOCRINE DISRUPTION CRITERIA

Currently requires animal models

1. Endocrine mode of action

2. Adverse effects in intact organisms/ (sub)populations

3. Biologically plausible link

OECD in vivo ED Test Guidelines
408: 2018/2025
414: 2018
421: 2008/2025
422: 2015/2025
443: 2012/2018/2025

HAZARD IS A FUNCTION OF ACTIVITY AND TOXICOKINETICS
"THE [SYSTEMIC] DOSE MAKES THE POISON"

TRADITIONAL RISK ASSESSMENT

ANIMALS MODEL BOTH ACTIVITY AND TOXICOKINETICS

Test in an animal model at doses up to overt toxicity (or 1000 mg/kg bw/d)

- *Identify the toxicities that occur (hazard identification)*
- *Establish the relationship between dose and adverse effect (hazard characterization)*
- Derive maximum safe dose (DNEL, RfD, ADI/TDI) from point of departure and safety factors

Quantify human (systemic) exposure (exposure assessment)

Compare exposure and maximum safe dose (risk characterization)

NEXT-GEN RISK ASSESSMENT (NGRA)

NAM ASSAYS FOR BIOACTIVITY AND PBPK MODELING FOR TOXICOKINETICS

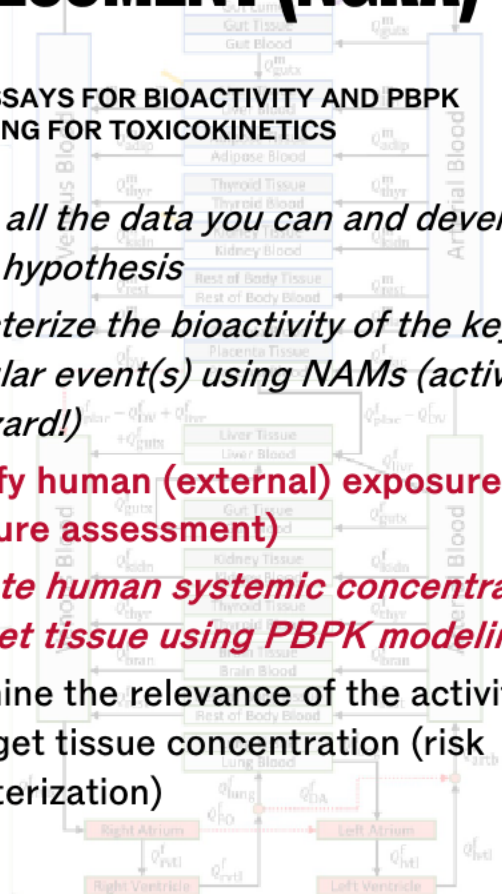
Gather all the data you can and develop a hazard hypothesis

Characterize the bioactivity of the key molecular event(s) using NAMs (activity not hazard!)

Quantify human (external) exposure (exposure assessment)

Estimate human systemic concentration at target tissue using PBPK modeling

Determine the relevance of the activity at the target tissue concentration (risk characterization)



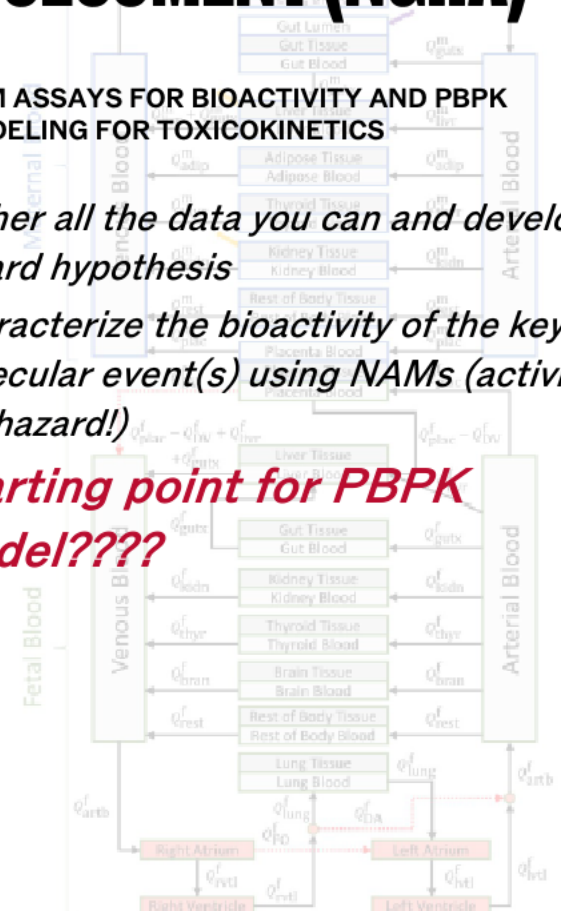
NEXT-GEN HAZARD ASSESSMENT (NGHA)

NAM ASSAYS FOR BIOACTIVITY AND PBPK MODELING FOR TOXICOKINETICS

Gather all the data you can and develop a hazard hypothesis

Characterize the bioactivity of the key molecular event(s) using NAMs (activity not hazard!)

Starting point for PBPK model????

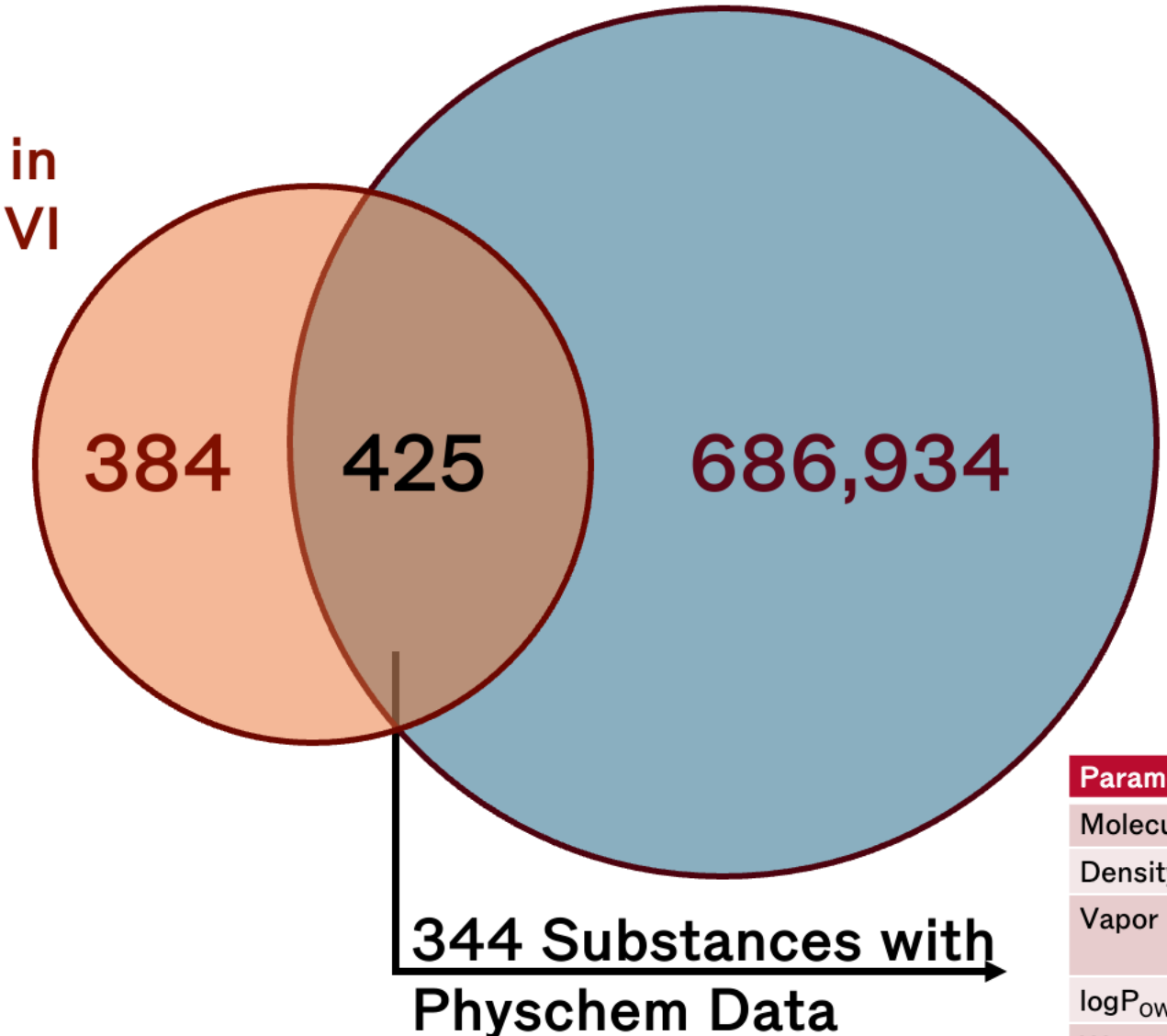


WHAT LEVEL OF EXPOSURE REVEALS THE RELEVANT HAZARD?

DETERMINING DEFAULT 'EXPOSURE' FOR COSMETIC CHEMICALS

Substances listed in Annexes III, IV, V, VI of Cosmetics Directive

- Subject to Restrictions
- Colorants
- Preservatives
- UV Filters



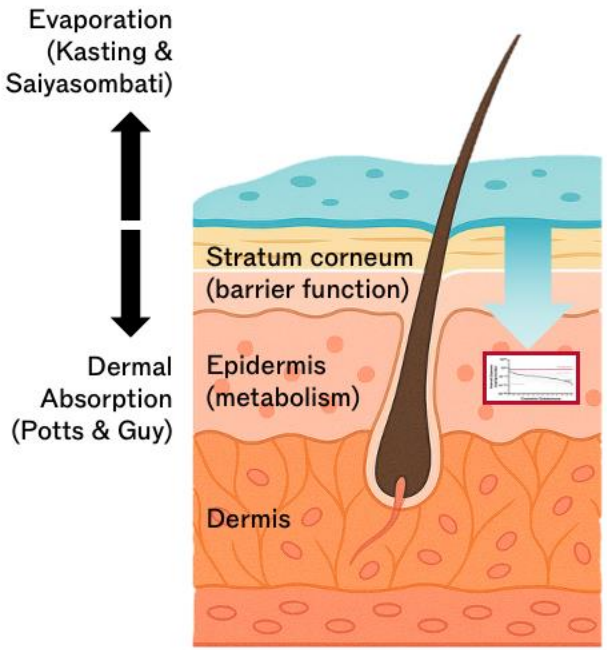
Substances with US-EPA SEEM3 probabilistic exposure model estimates

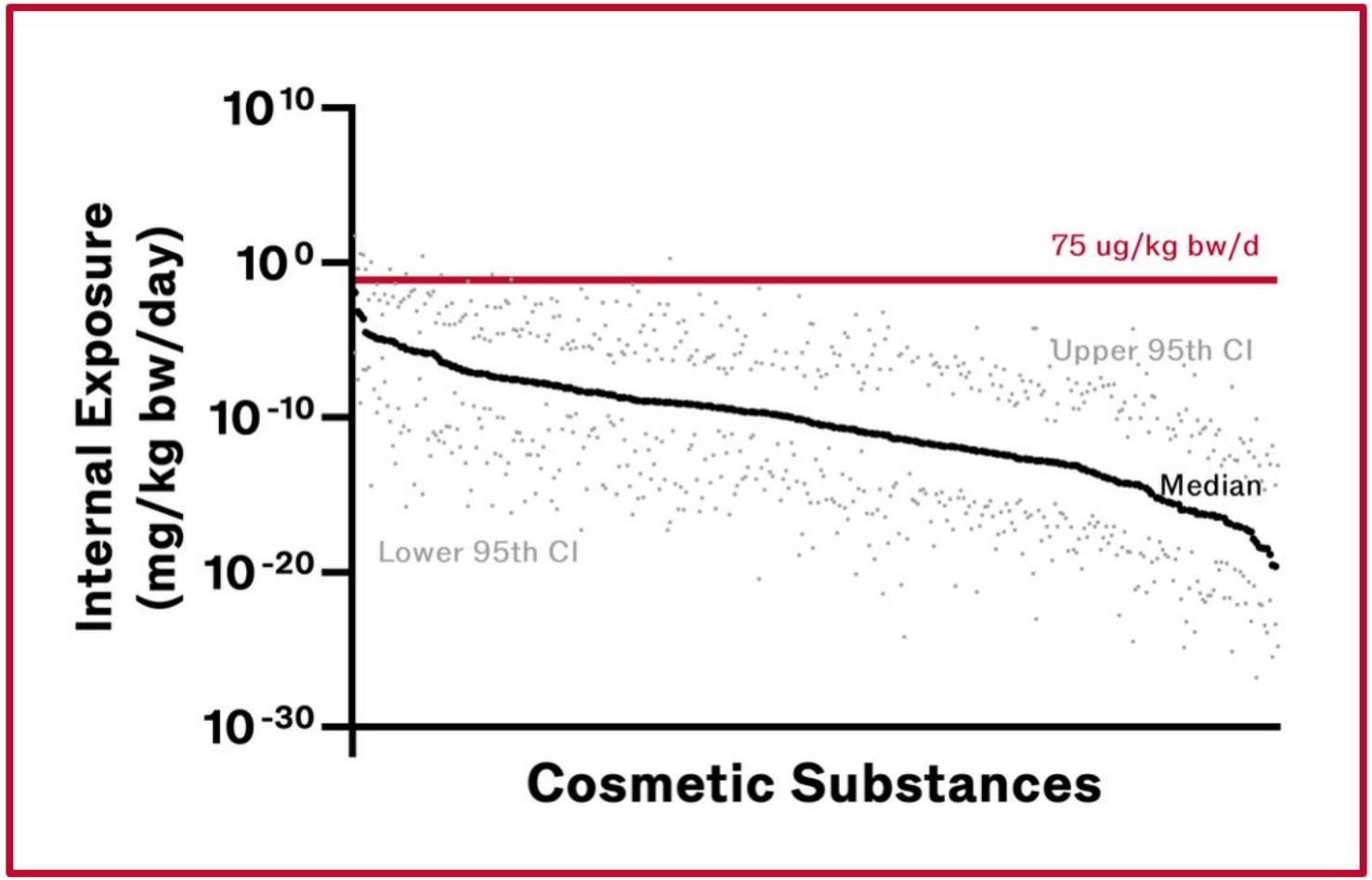
Parameter	Range for Dataset
Molecular Weight (g/mol)	12.01 - 985.54
Density (g/cm^2)	0.78 – 3.23
Vapor Pressure (mm Hg)	3.06×10^{-14} – 4.56×10^{5}
$\log P_{OW}$ (unitless)	-2.55 – 10.22
Water solubility (mol/L)	5.83×10^{-9} – 32.64

Systematic Empirical Evaluation of Models v.3 Ring et al. (2018) https://github.com/HumanExposure/SEEM3RPackage
Cosmetics Directive Annexes III, IV, V and VI (accessed Feb 2026) https://ec.europa.eu/growth/tools-databases/cosing/reference/annexes

WHAT LEVEL OF [INTERNAL] EXPOSURE REVEALS THE RELEVANT HAZARD?

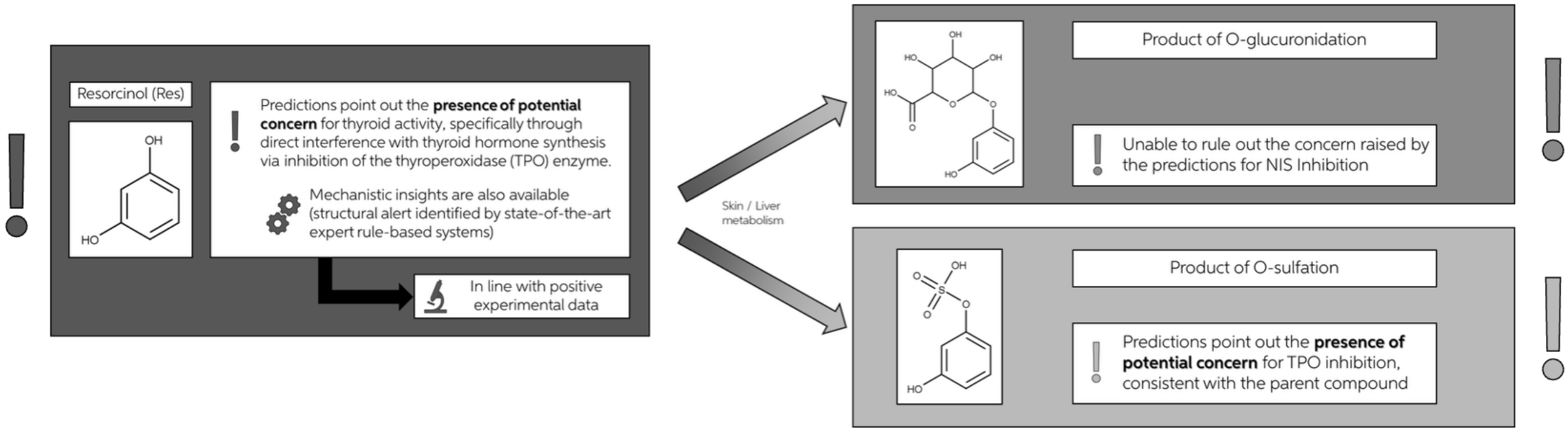
DETERMINING DEFAULT 'EXPOSURE' FOR COSMETIC CHEMICALS





Kasting et al. (2007) https://stacks.cdc.gov/view/cdc/191989/cdc_191989_DS1.pdf
Kasting and Saiyasombati (2001) https://doi.org/10.1046/j.1467-2494.2001.00079.x
Potts and Guy (1992) https://doi.org/10.1023/a:1015810312465

SURVEY OF RESORCINOL ENDOCRINE POTENTIAL
EXPERT QSAR ANALYSIS FOR 'EATS' ACTIVITIES

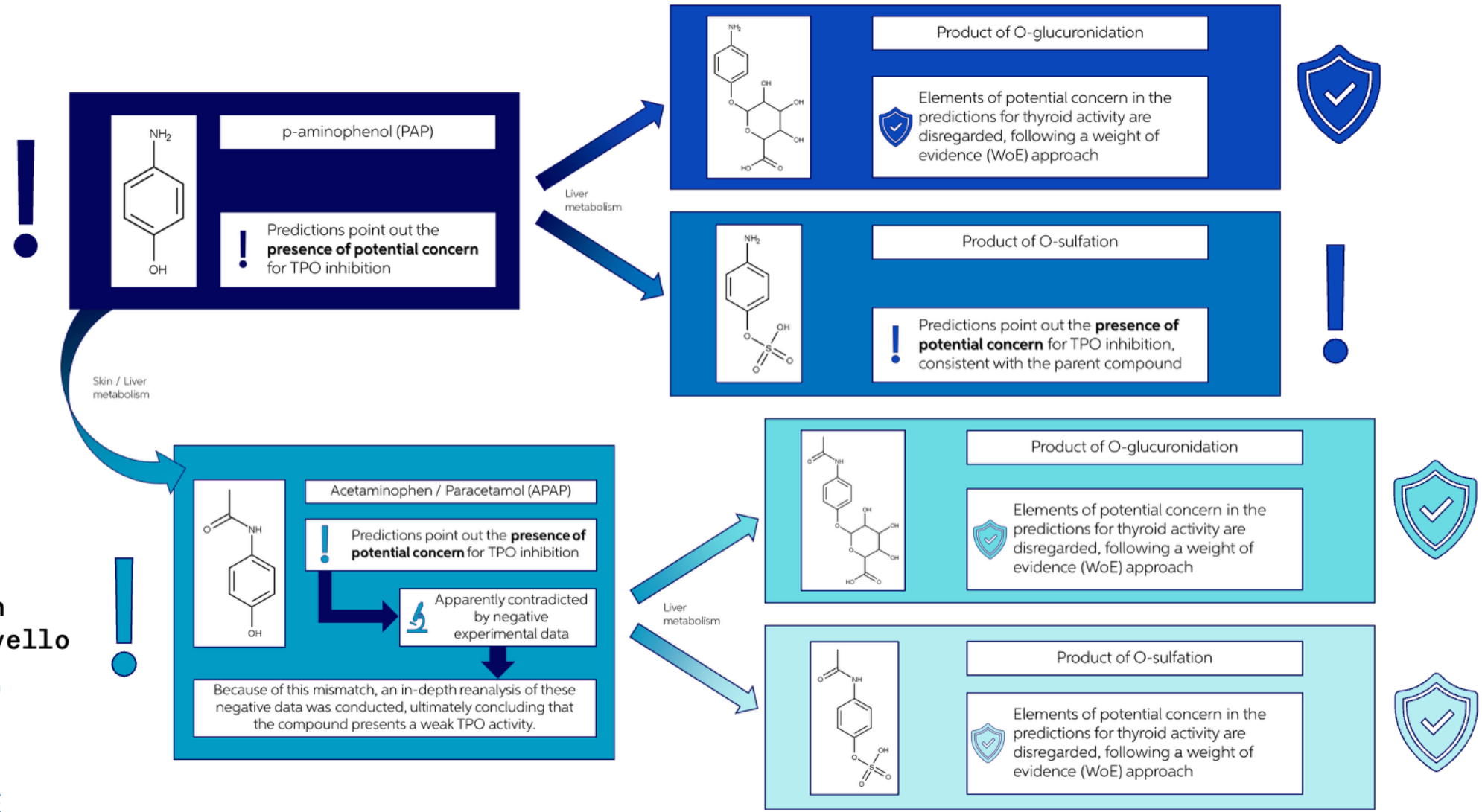


OPERA OPEn (q)saR App · QSAR TOOLBOX · Derek nexus · instem. Leadscope Model Applier · VEGA

INNOVATUNE

Manuela Pavan
Christian Novello

SURVEY OF PAP/APAP ENDOCRINE POTENTIAL
EXPERT QSAR ANALYSIS FOR 'EATS' ACTIVITIES

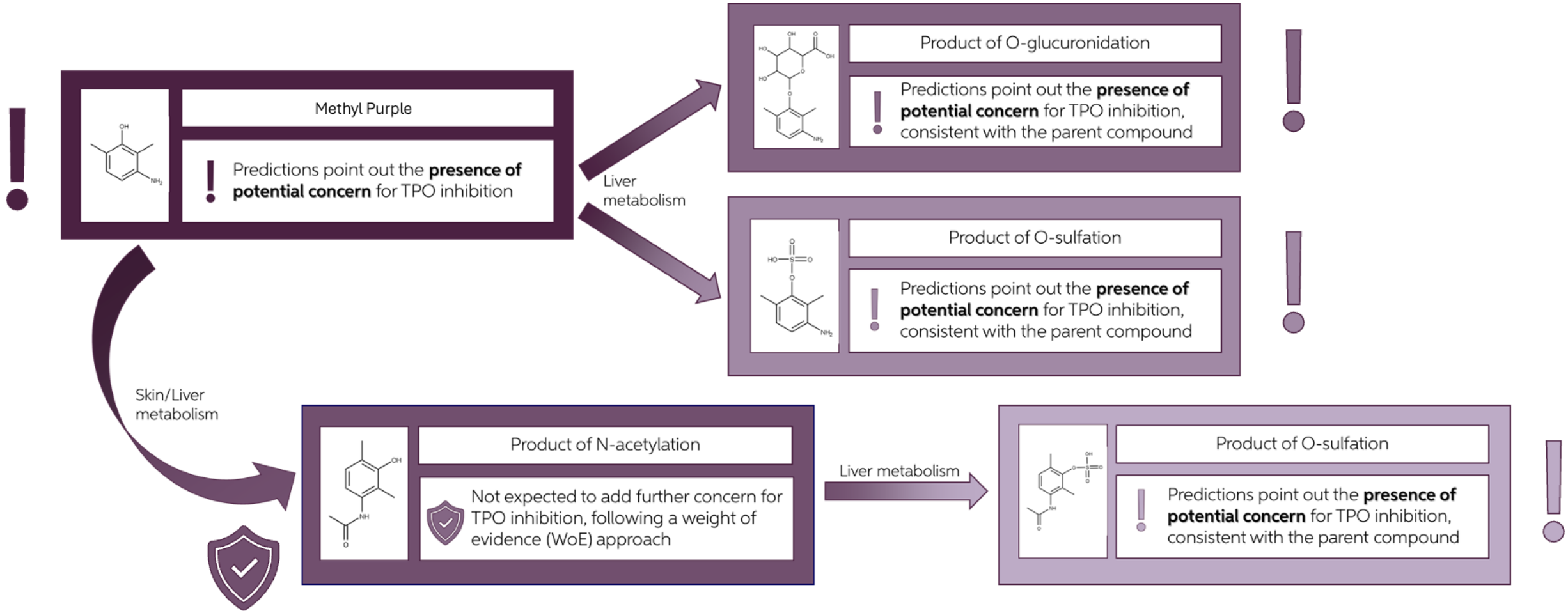


Manuela Pavan
Christian Novello

INNOVATUNE

SURVEY OF METHYL PURPLE ENDOCRINE POTENTIAL

EXPERT QSAR ANALYSIS FOR 'EATS' ACTIVITIES



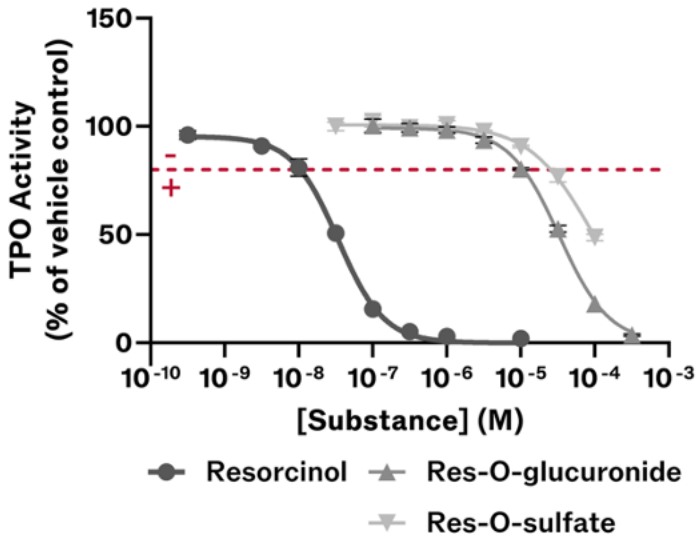
INNOVATUNE

Manuela Pavan
Christian Novello

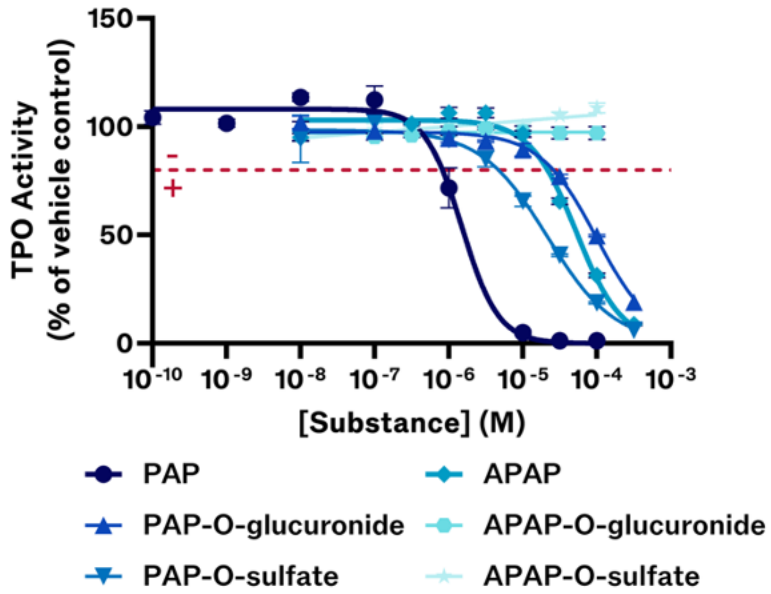
CHARACTERIZE BIOACTIVITY USING NAMS

THYROID PEROXIDASE (TYROSINE IODINATION) ACTIVITY

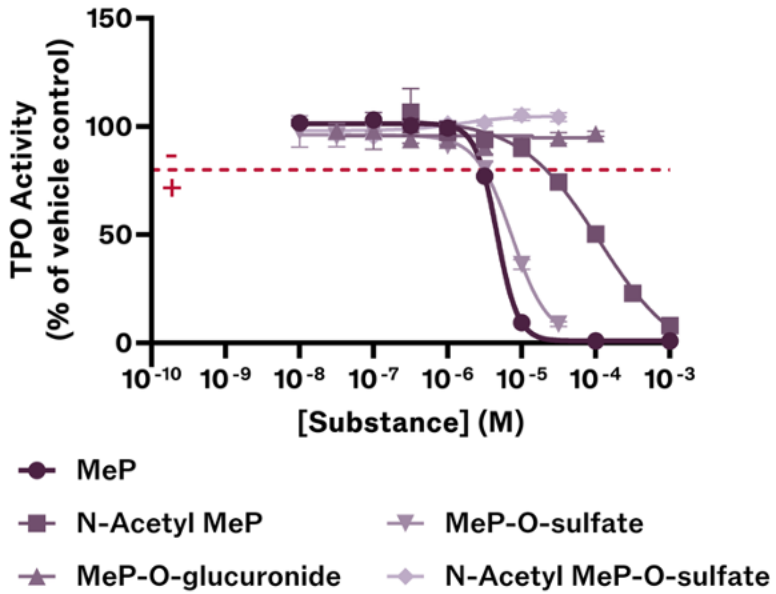
RESORCINOL



P-AMINOPHENOL



METHYL PURPLE



Joris van den Elzen

charles river | every step of the way.

QUANTIFY (EXTERNAL AND INTERNAL) EXPOSURE
"THE [SYSTEMIC] DOSE MAKES THE POISON"

RESORCINOL

75 µg/kg bw

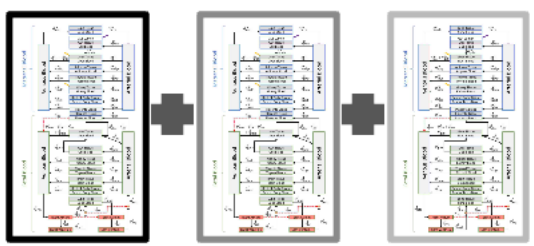
1st Pass Metabolism

- Res-O-sulfate 13.2 µg/kg bw
- Resorcinol 7.7 µg/kg bw
- Res-O-glucuronide 54.1 µg/kg bw

Systemic Metabolism

- Resorcinol 1.5 µg/kg bw
- Res-O-glucuronide 54.1 + 3.3 µg/kg bw
- Res-O-sulfate 13.2 + 1.5 µg/kg bw

Disposition & Excretion

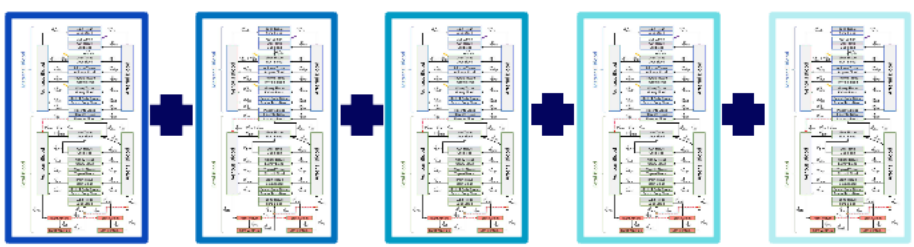


P-AMINOPHENOL

75 µg/kg bw

- PAP 3.7 µg/kg bw
- APAP 71.3 µg/kg bw

- PAP 0 µg/kg bw
- APAP 1.7 µg/kg bw
- APAP 14.2 µg/kg bw
- PAP-O-glucuronide 1.0 µg/kg bw
- APAP-O-glucuronide 21.7 µg/kg bw
- PAP-O-sulfate 1.2 µg/kg bw
- APAP-O-sulfate 35.4 µg/kg bw

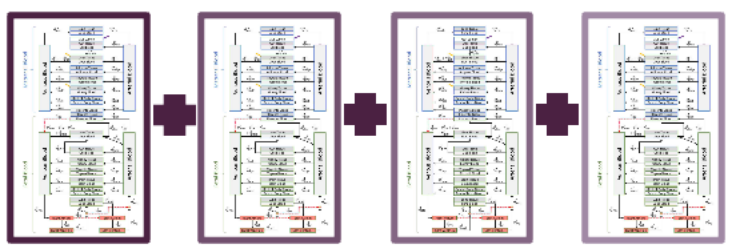


METHYL PURPLE

75 µg/kg bw

- MeP 64.6 µg/kg bw
- N-acetyl-MeP 10.4 µg/kg bw

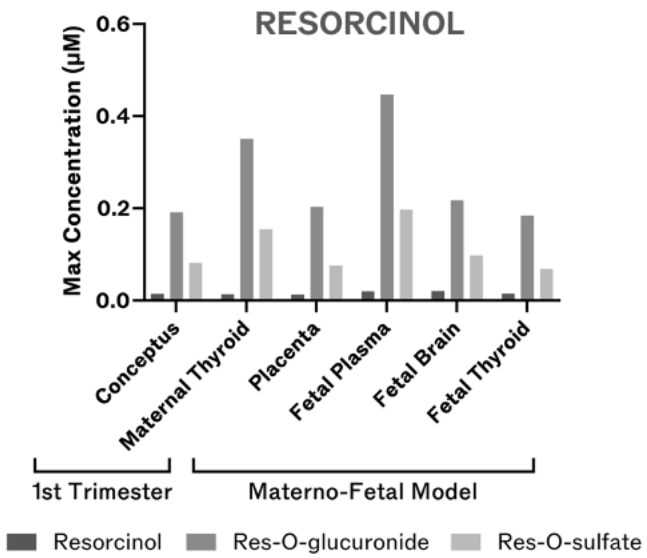
- MeP 3.9 µg/kg bw
- N-acetyl-MeP 50.3 µg/kg bw
- MeP-O-glucuronide 24.9 µg/kg bw
- MeP-O-sulfate 16.6 µg/kg bw

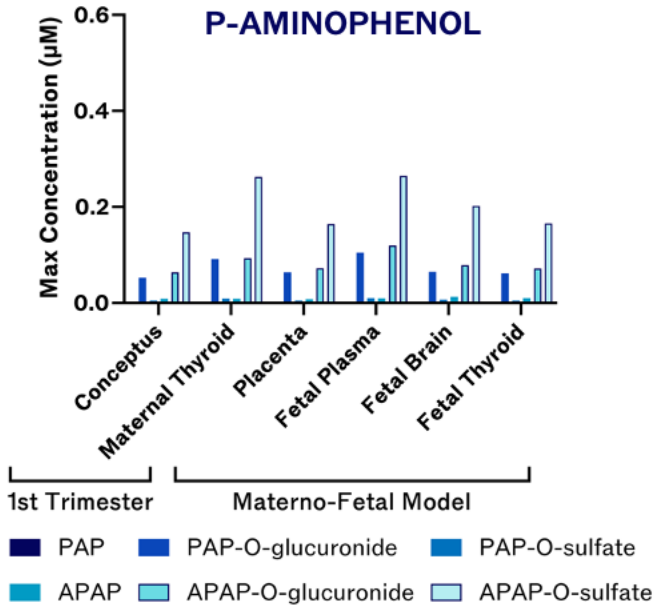


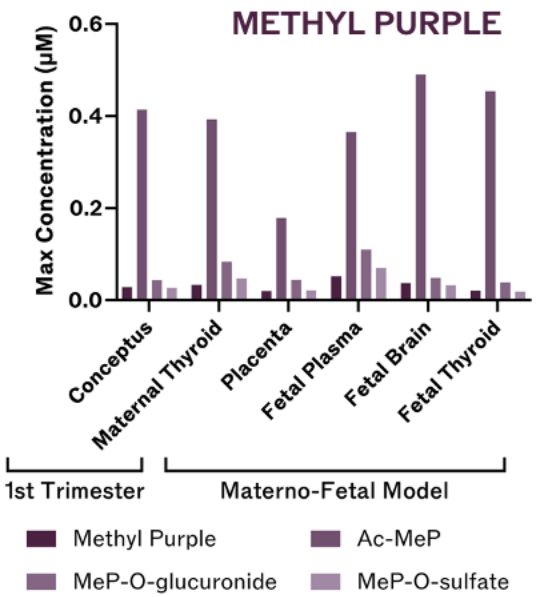
1st Trimester: Truong et al. (2025) https://doi.org/10.1016/j.tox.2025.154157
Materno-fetal: Kapraun et al. (2022) https://doi.org/10.1016/j.reprotox.2022.09.004

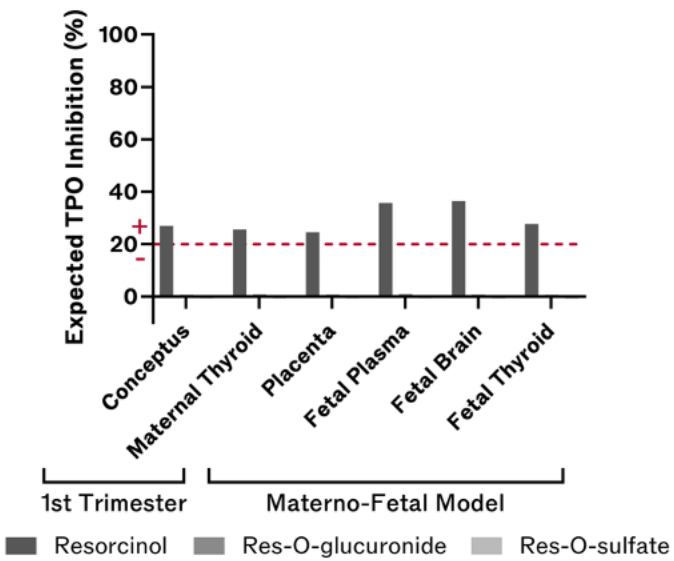
INTEGRATE EXPOSURE AND BIOACTIVITY

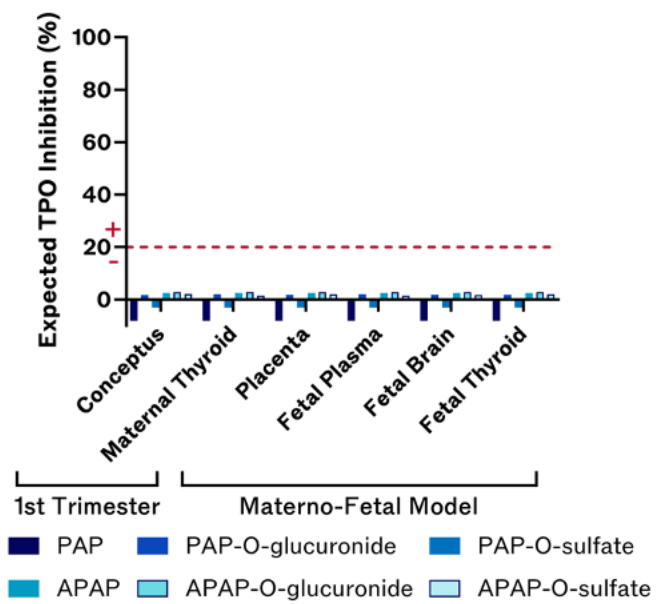
THYROID PEROXIDASE INHIBITION HAZARD POSED BY HAIR DYES

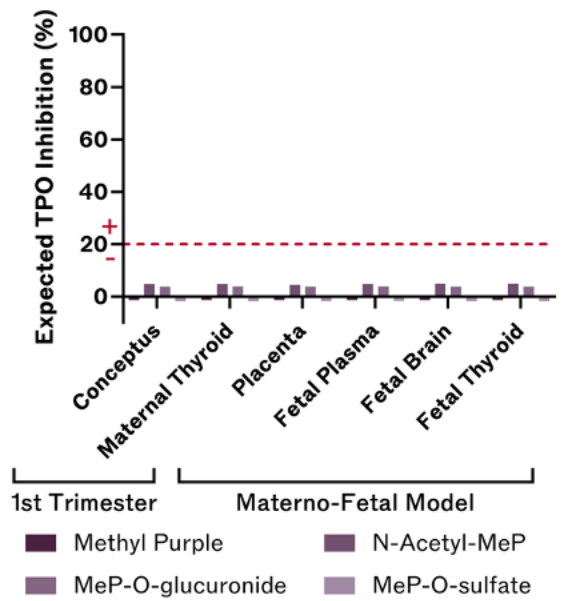








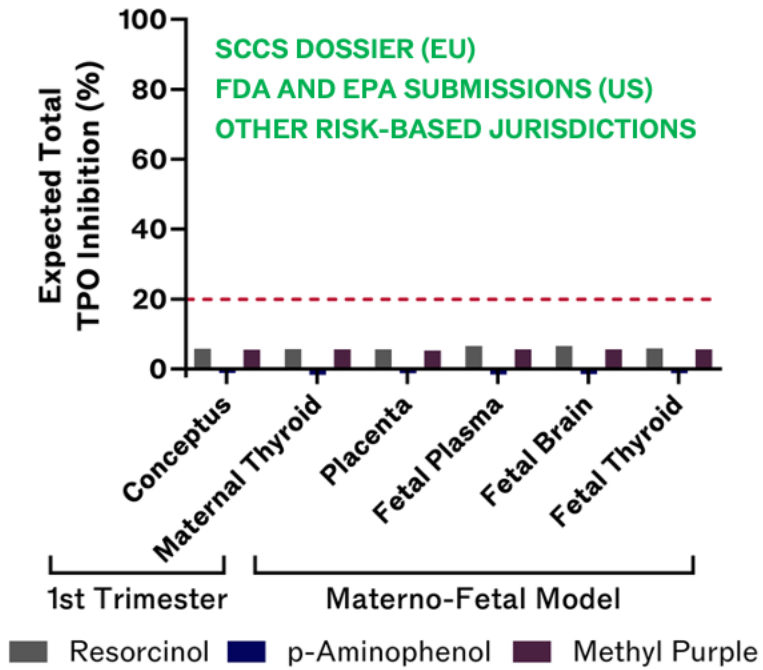




NEXT-GENERATION ASSESSMENTS

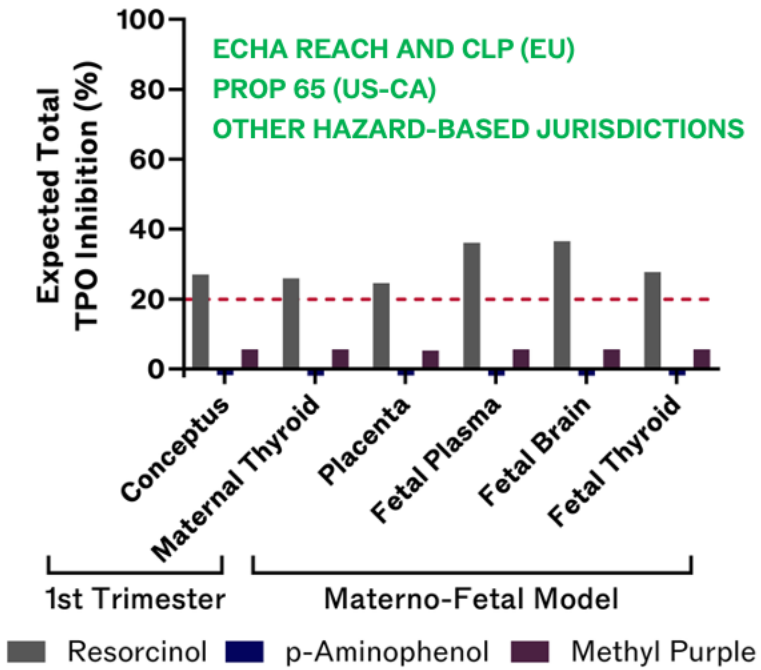
HAZARD OR RISK? DEPENDS ON REGULATORY ENVIRONMENT

NEXT-GENERATION RISK ASSESSMENT



versus

NEXT-GENERATION HAZARD ASSESSMENT



Proof of Concept Works! → Apply to data-poor substances

Suggested further refinements:

- Account for placenta metabolism, currently a barrier only
- Account for fetal metabolism
- Revise overly conservative endocrine activity thresholds to have in vivo toxicological relevance
- Additional case-studies (e.g. leave-on, full body applications)
- Propose levels for CLP Categories I and II

ICCS

Cosmetics Europe
the personal care association

THANK YOU

POWERED BY SCIENCE. CO-CREATED WITH PROS.

Questions or comments?
Please contact:

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Senior Principal Toxicologist
karma.fussell@wella.com

INNOVATUNE

Manuela Pavan
Christian Novello

Prof. Brunhilde Blömeke
Carsten Goebel
Nicky Hewitt

charles river | every step of the way.

WELLA PROFESSIONALS

Markus Speckbacher
Ingo Weber

Nuria Pineiro Costas
Joris van den Elzen
Sjoerd Verkaart

Join at slido.com

#3470586

What is your main affiliation?

In your opinion is the proposed next generation hazard assessment a scientifically valid approach?

If the toxicokinetic modeling was as simple as uploading an Excel file to a website, would you use the NGHA approach in your own work?

PHARMACEUTICAL EXPOSURES

"THE [SYSTEMIC] DOSE MAKES THE POISON"

RESORCINOL

~~Absorption~~

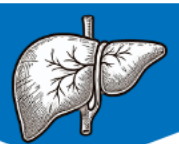
Resorcinol (pharma)
Up to 140,000 µg/kg bw

Skin  Ulcers

Up to 100% bioavailable

~~1st Pass Metabolism~~

Resorcinol
Up to 140,000 µg/kg bw



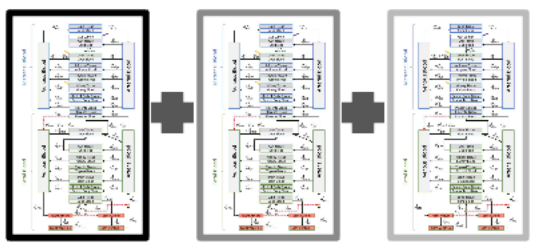
Systemic Metabolism

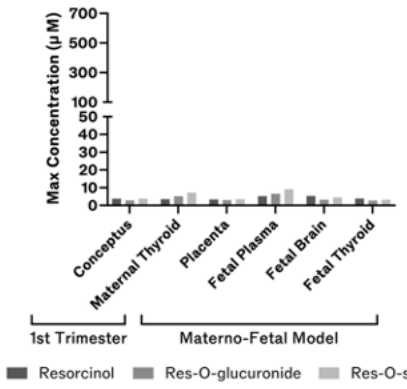
Resorcinol
Up to 1,820 µg/kg bw

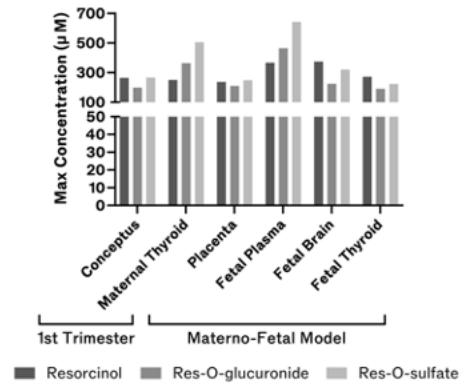
Res-O-glucuronide
Up to 106,400 µg/kg bw

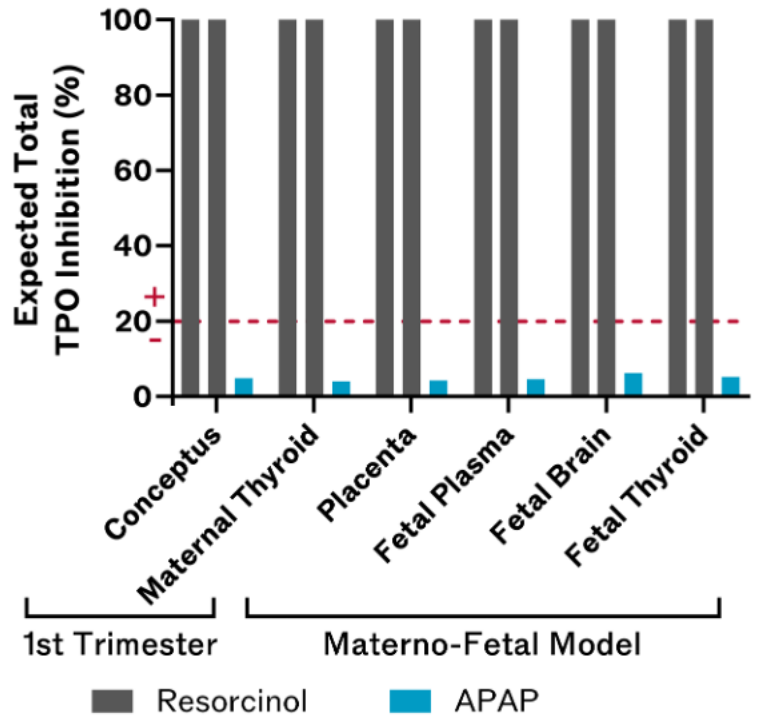
Res-O-sulfate
Up to 32,200 µg/kg bw

Disposition & Excretion







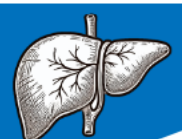


PARACETAMOL

APAP (pharma)
16,667 µg/kg bw

88% bioavailable

APAP
14,667 µg/kg bw

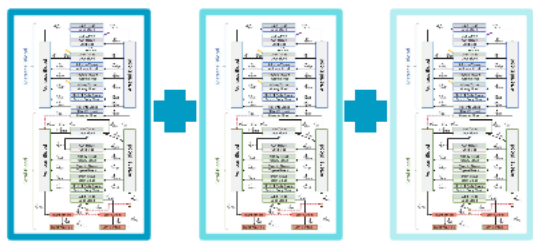


APAP
733 µg/kg bw

APAP-O-glucuronide
7,733 µg/kg bw

APAP-O-sulfate
5,133 µg/kg bw

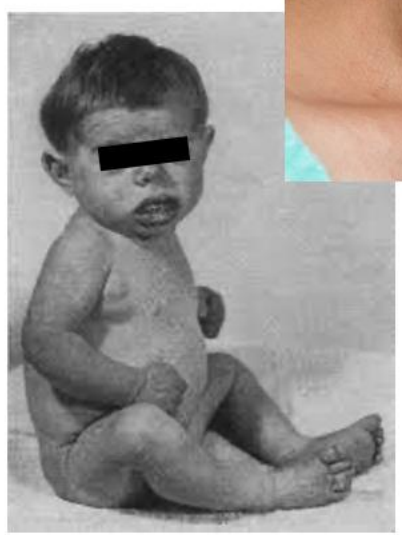
N-acetyl-p-benzoquinone imine
1,027 µg/kg bw

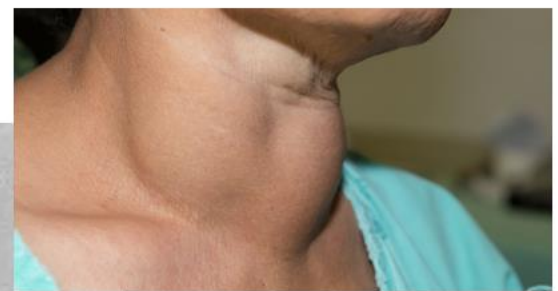


PRACTICAL STEPS TO A NEXT-GENERATION HAZARD ASSESSMENT

1. Gather and Evaluate All Existing Information
2. Develop a Hazard Hypothesis
   a) Possible adverse outcomes
   b) Affected biological pathways or key events
3. Quantify target tissue concentration for 75 µg/kg bw/d
4. Characterize bioactivity using NAMs
5. Assess relevance of bioactivity at tissue exposure

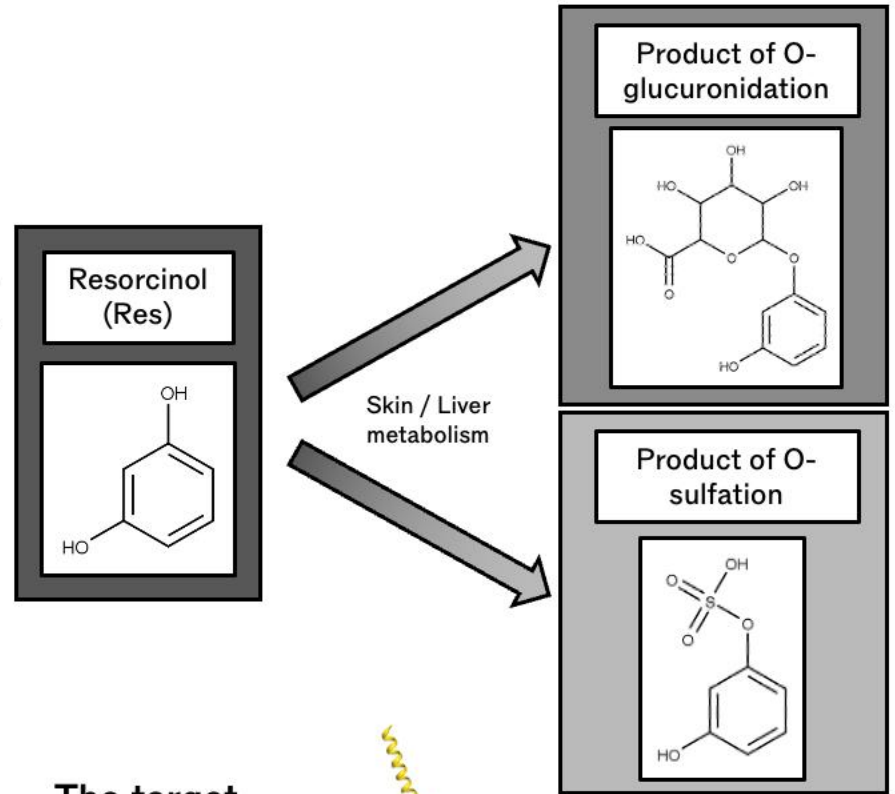
Drug Use: High Dose



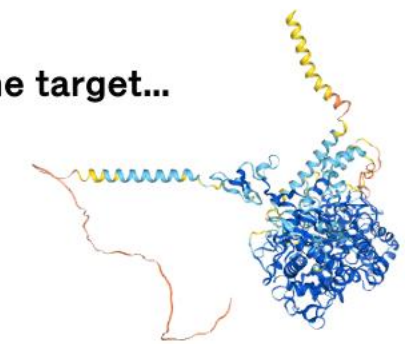


Neurological deficits/goiter in people

RESORCINOL



The target...

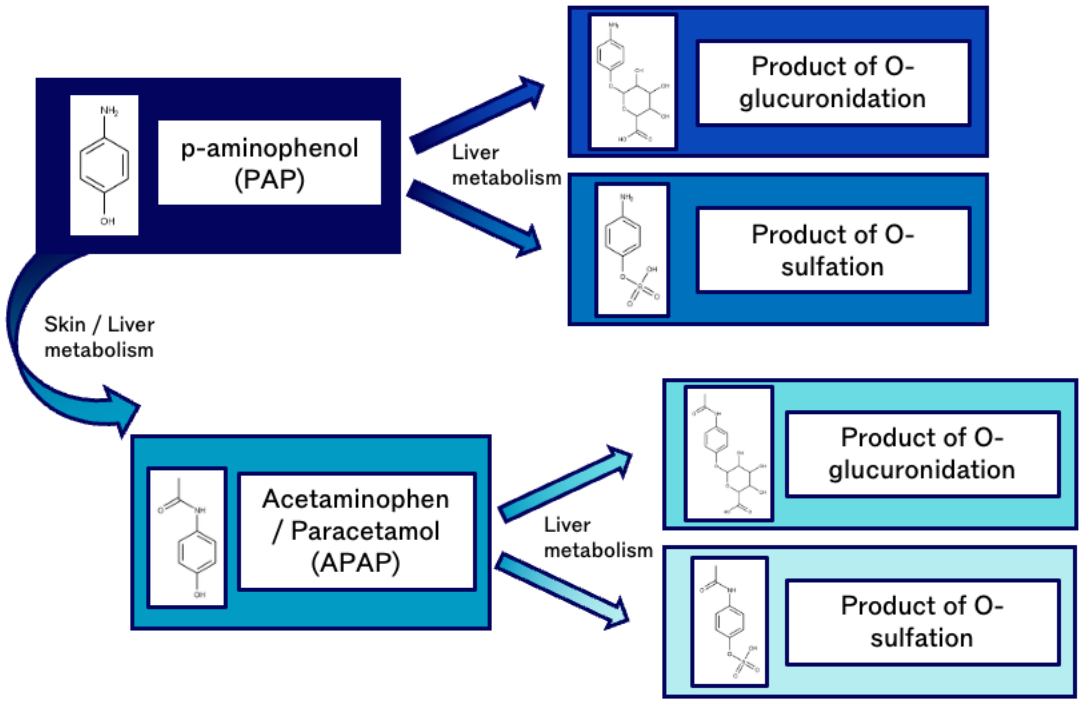


Thyroid Peroxidase (TPO)

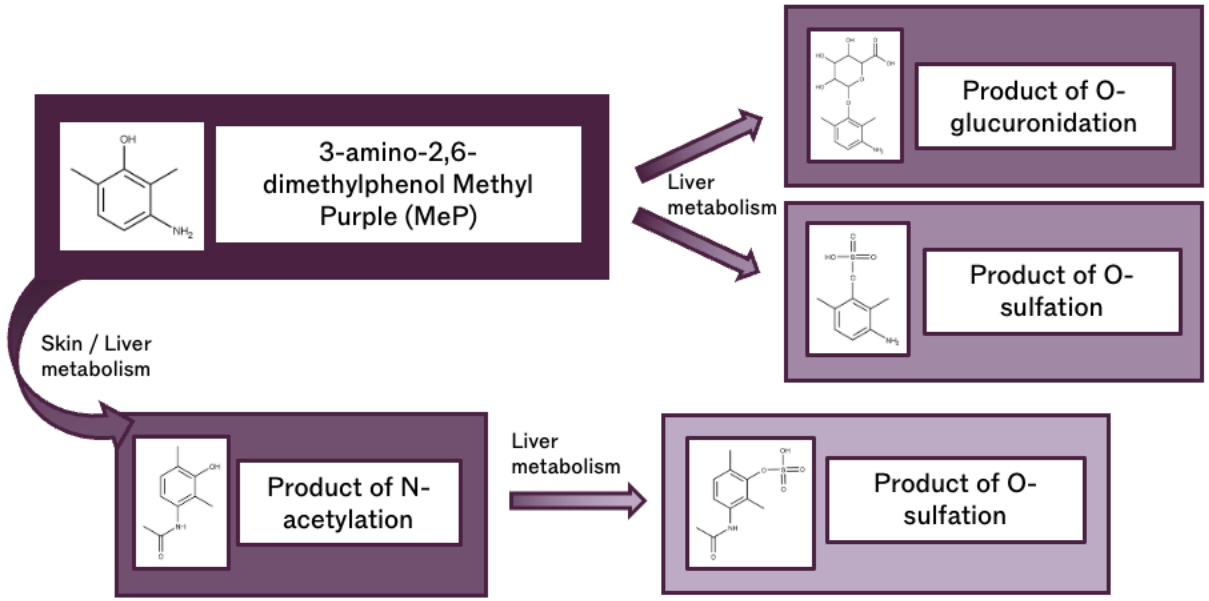
SCCS (Scientific Committee on Consumer Safety) (2021) https://health.ec.europa.eu/system/files/2022-08/sccs_o_241.pdf
Géniès C, et al. (2018) https://doi.org/10.1002/jat.3730

EXISTING INFORMATION

P-AMINOPHENOL/PARACETAMOL



METHYL PURPLE

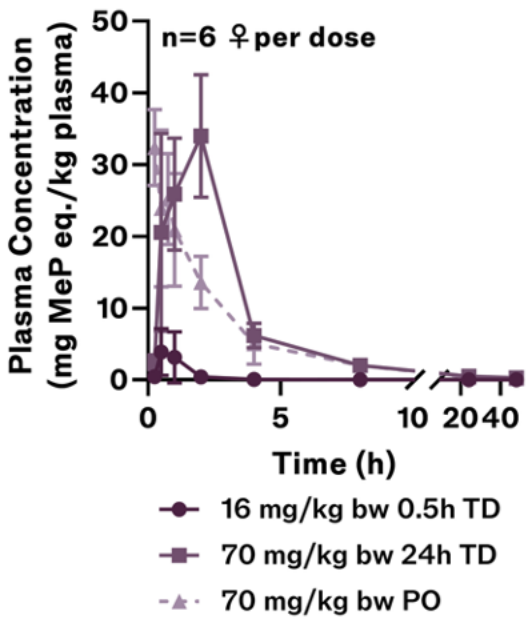


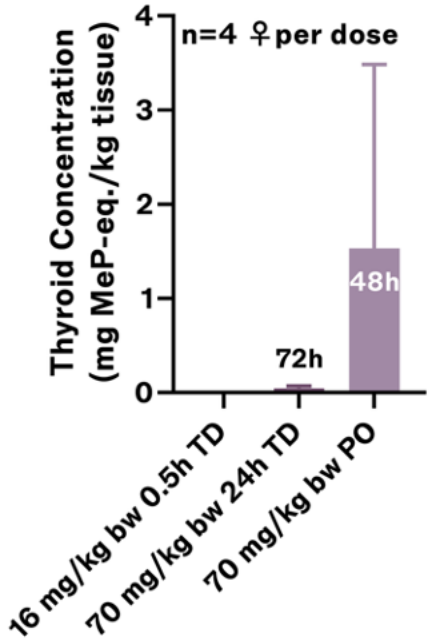
- **All are substituted monocyclic aromatic compounds.**
- **Resorcinol and paracetamol are pharmaceuticals with a dataset relating to their clinical use.**
- **Resorcinol, *p*-aminophenol and methyl purple are hair dyes with a dataset relating to their cosmetic use.**
- **Methyl purple is readily absorbed and reaches the thyroid yet causes no evidence of disruption in vivo.**
- **The relevant route of exposure for resorcinol, *p*-aminophenol and methyl purple is dermal.**

Mazaleuskaya et al. (2015) https://doi.org/10.1097/fpc.0000000000000150
SCCS (Scientific Committee on Consumer Safety) (2011) https://ec.europa.eu/health/scientific_committees/consumer_safety/docs/sccs_o_078.pdf
Nohynek GJ, et al. https://doi.org/10.1016/j.toxlet.2005.03.014
SCCS (Scientific Committee on Consumer Safety) (2014) https://health.ec.europa.eu/document/download/352683d0-ffb6-4adf-95ec-64cf79d25b9f_en?filename=sccs_o_151.pdf

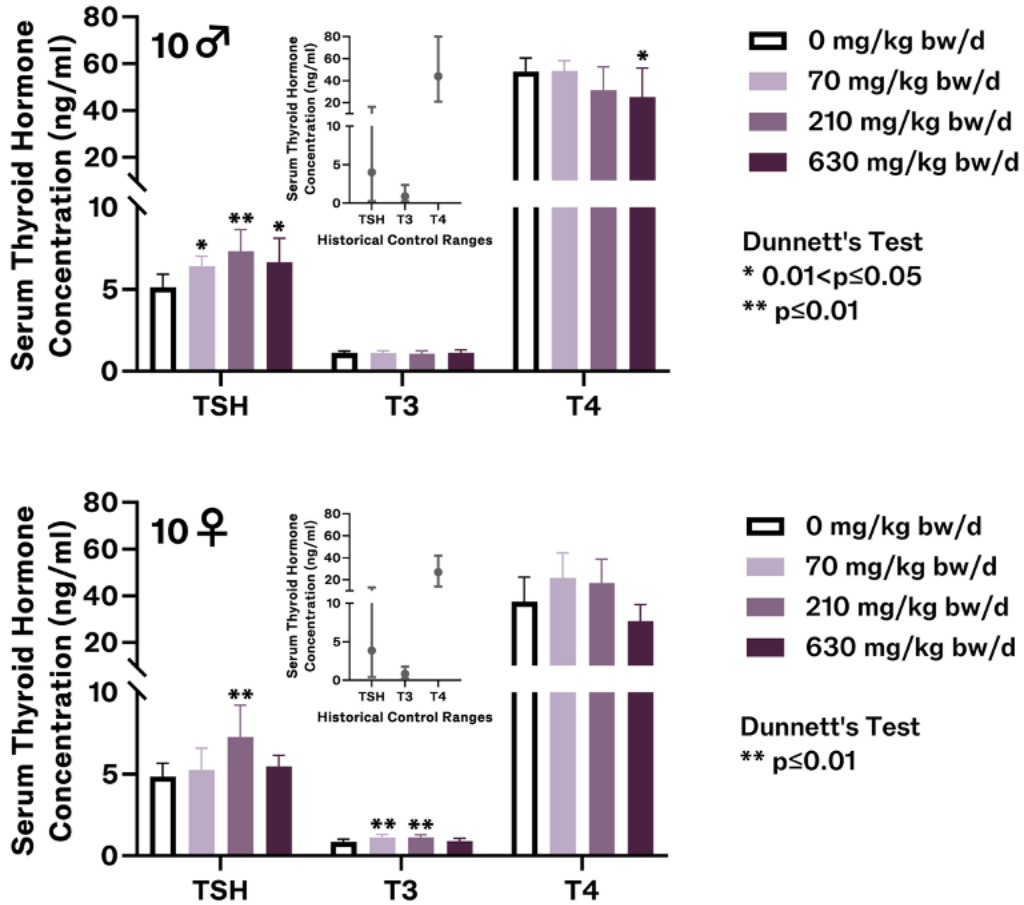
EXISTING IN VIVO DATA

METHYL PURPLE

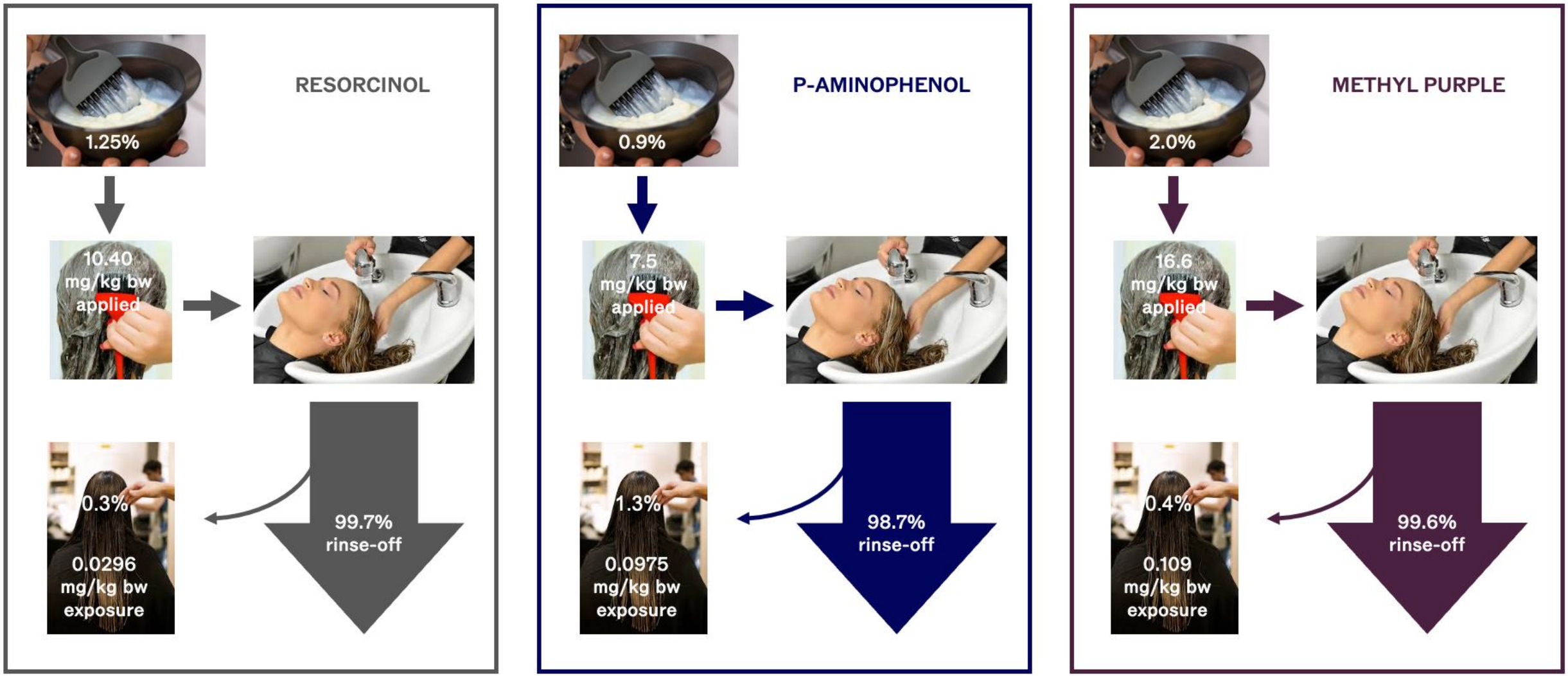




Dose Group	♂	♀
0 mg/kg bw/day	1/10	1/10
70 mg/kg bw/day	2/10	0/10
210 mg/kg bw/day	2/10	1/10
630 mg/kg bw/day	1/10	1/10



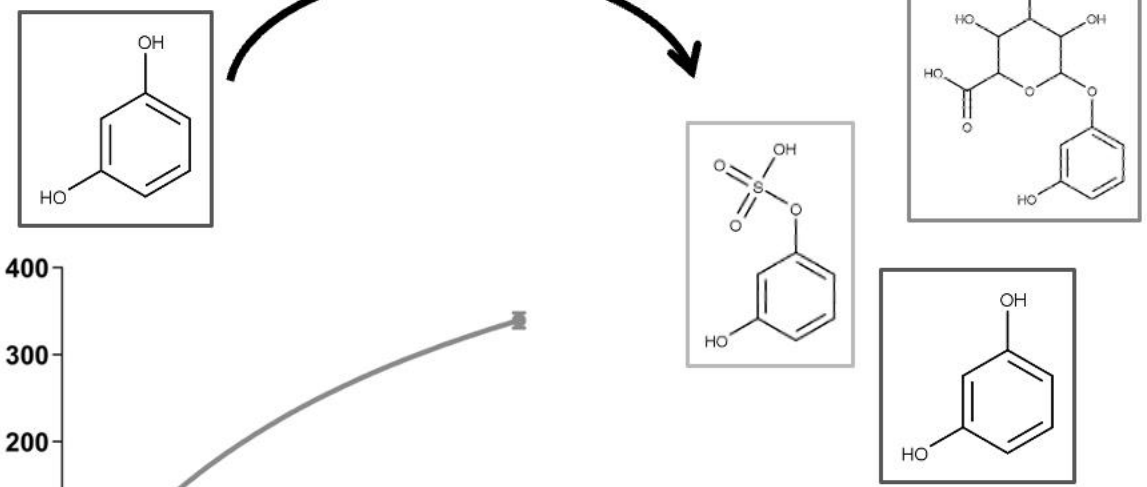
QUANTIFY [EXTERNAL] EXPOSURE
"THE [SYSTEMIC] DOSE MAKES THE POISON"

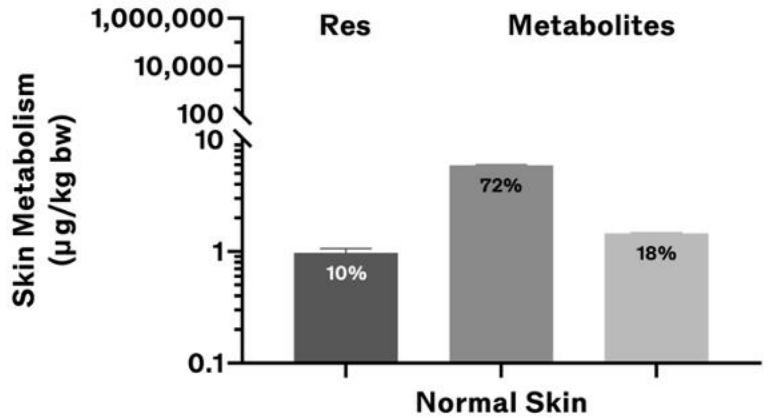


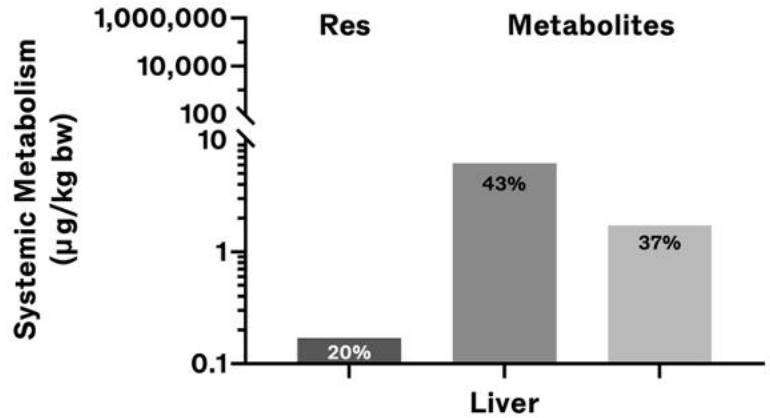
QUANTIFY [EXTERNAL AND INTERNAL] EXPOSURE
"THE [SYSTEMIC] DOSE MAKES THE POISON"

Literature Data +

Skin/Keratinocytes
Hepatocytes



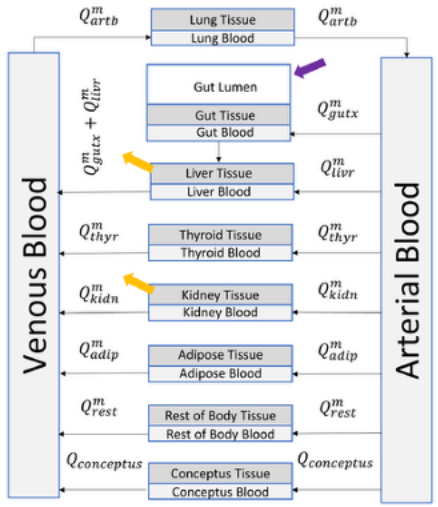


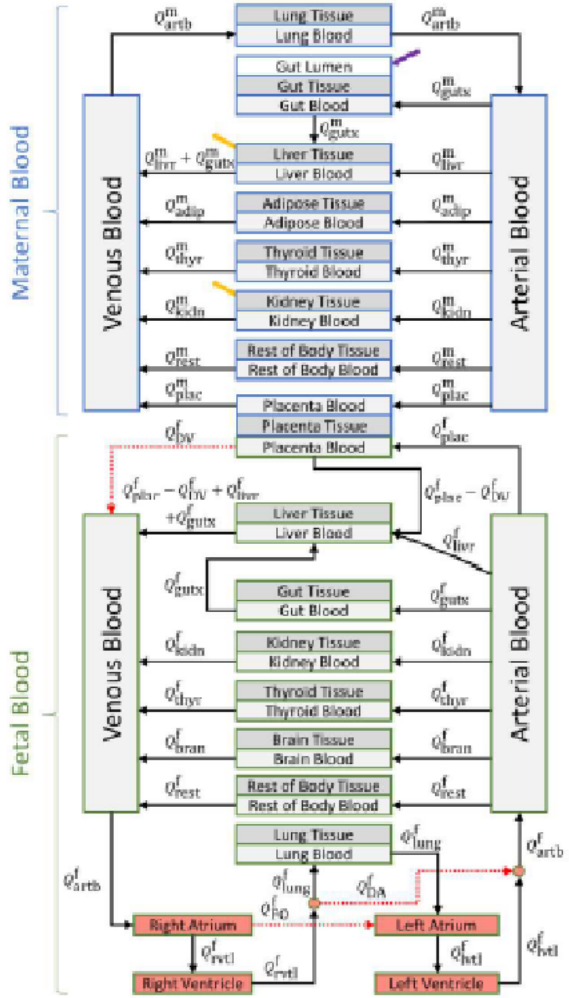


Nuria Pineiro Costas

charles river | every step of the way.

QUANTIFY (EXTERNAL AND INTERNAL) EXPOSURE
HIGH-THROUGHPUT TOXICOKINETIC MODELS





Both 1st Trimester (Preimplantation) and Materno-Fetal Toxicokinetic Models
Open-Source, Freely Available
Oral and Intravenous Exposure Models
No Dermal or Inhalational Exposure Routes
No Skin (1st Pass) Metabolism
Only Parent Substance Clearance, not Metabolite Formation

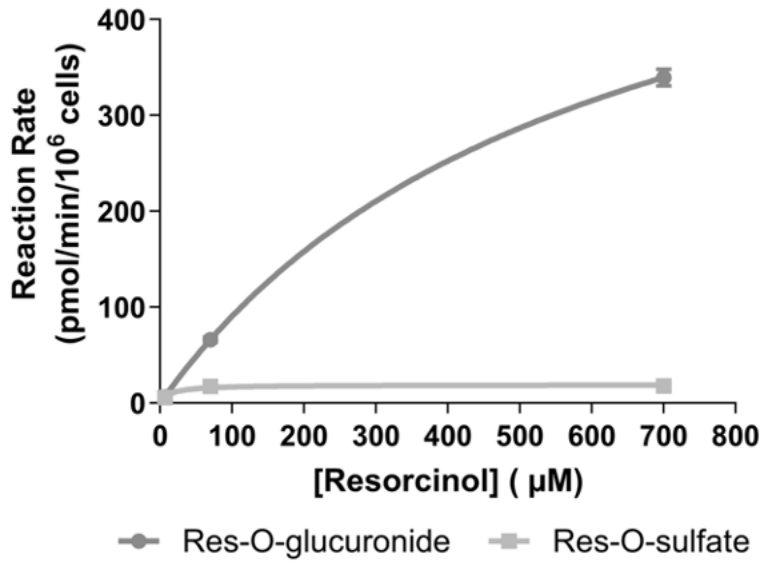
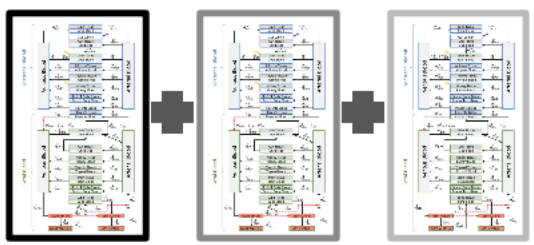
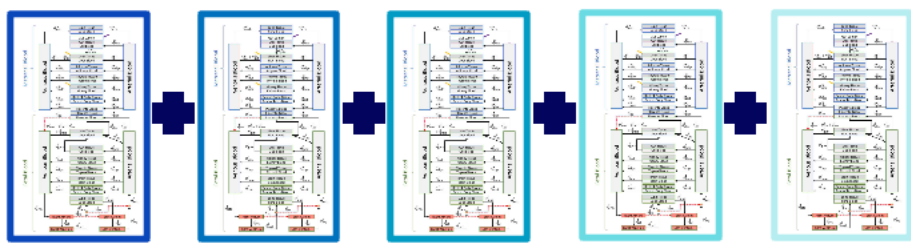
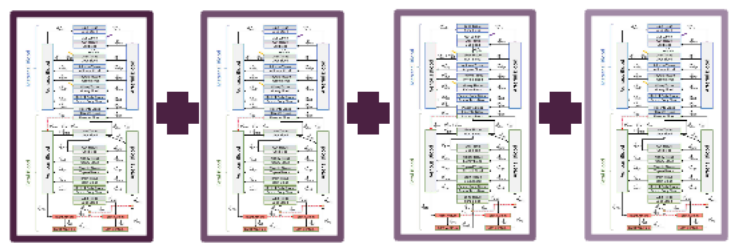


Figure 2, Truong et al. (2025) https://doi.org/10.1016/j.tox.2025.154157
Figure 1, Kapraun et al. (2022) https://doi.org/10.1016/j.reprotox.2022.09.004

QUANTIFY (EXTERNAL AND INTERNAL) EXPOSURE

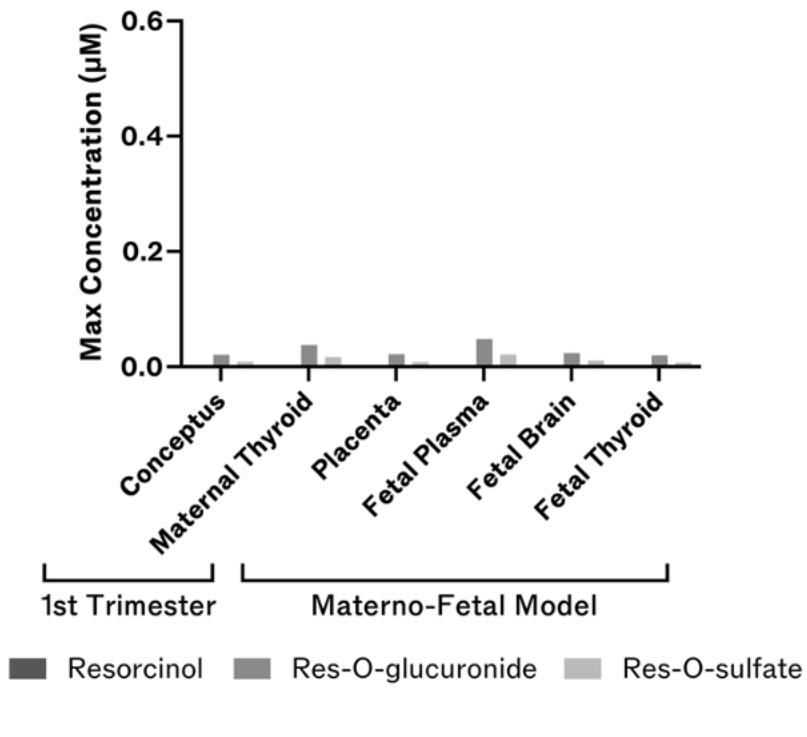
HAIR DYE EXPOSURES: "THE [SYSTEMIC] DOSE MAKES THE POISON"

	RESORCINOL	P-AMINOPHENOL	METHYL PURPLE
Absorption	Resorcinol (cosmetic) 29.5 µg/kg bw 28% bioavailable	PAP (cosmetic) 97.5 µg/kg bw 37% bioavailable	MeP (cosmetic) 109 µg/kg bw 67% bioavailable
1st Pass Metabolism	Res-O-sulfate 1.4 µg/kg bw Resorcinol 0.8 µg/kg bw Res-O-glucuronide 5.9 µg/kg bw	PAP 1.8 µg/kg bw APAP 34.5 µg/kg bw	MeP 62.6 µg/kg bw N-acetyl-MeP 10.0 µg/kg bw
Systemic Metabolism	Resorcinol 0.2 µg/kg bw Res-O-glucuronide 5.9 + 0.3 µg/kg bw Res-O-sulfate 1.4 + 0.3 µg/kg bw	PAP 0 µg/kg bw APAP 0.7 µg/kg bw APAP 7.0 µg/kg bw PAP-O-glucuronide 0.5 µg/kg bw APAP-O-glucuronide 10.5 µg/kg bw PAP-O-sulfate 0.6 µg/kg bw APAP-O-sulfate 17.1 µg/kg bw	MeP 3.7 µg/kg bw N-acetyl-MeP 49.3 µg/kg bw MeP-O-glucuronide 13.9 µg/kg bw MeP-O-sulfate 5.7 µg/kg bw
Disposition & Excretion			

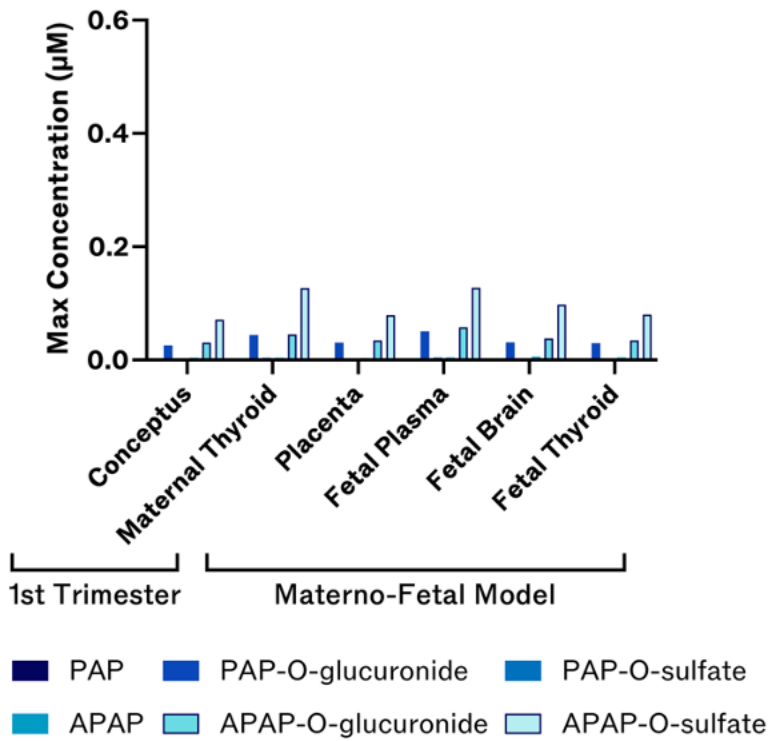
MAXIMUM CONCENTRATION IN TISSUES

HAIR DYE EXPOSURES: "THE [SYSTEMIC] DOSE MAKES THE POISON"

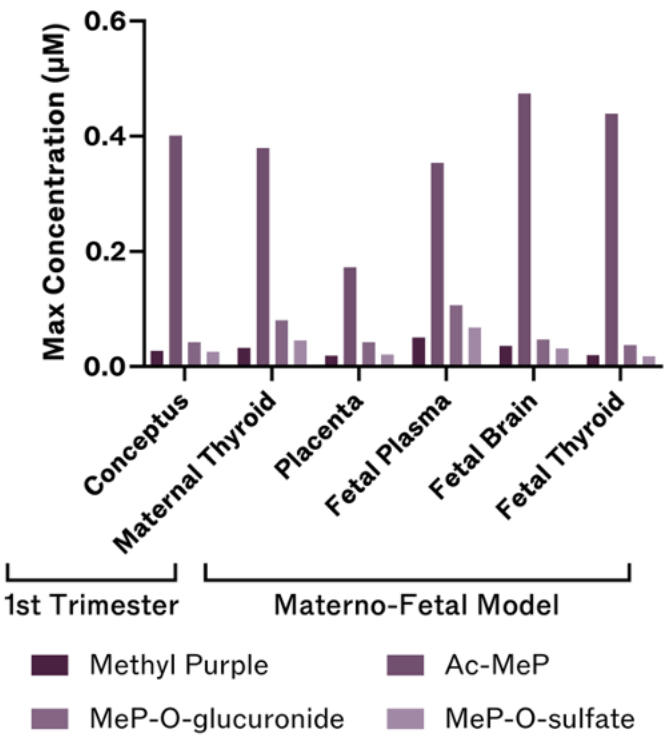
RESORCINOL



P-AMINOPHENOL



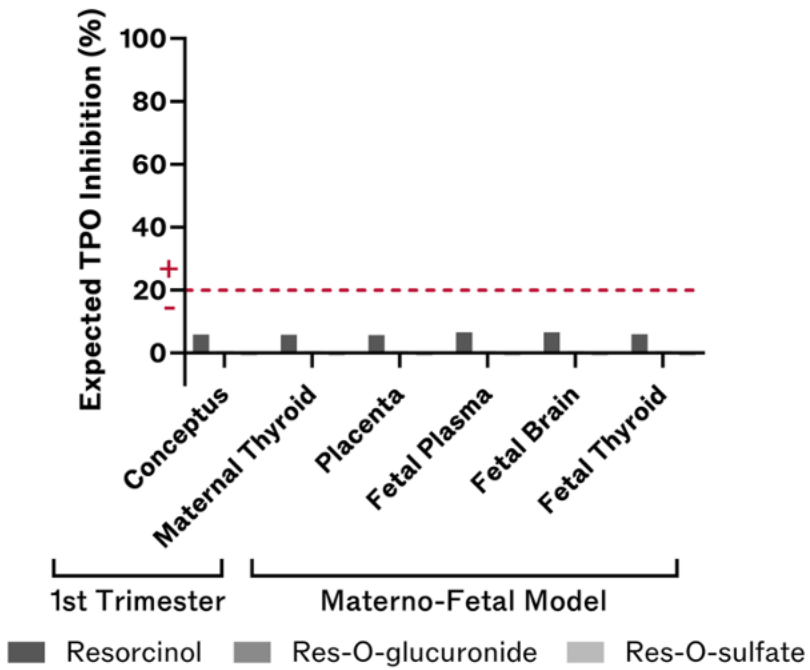
METHYL PURPLE



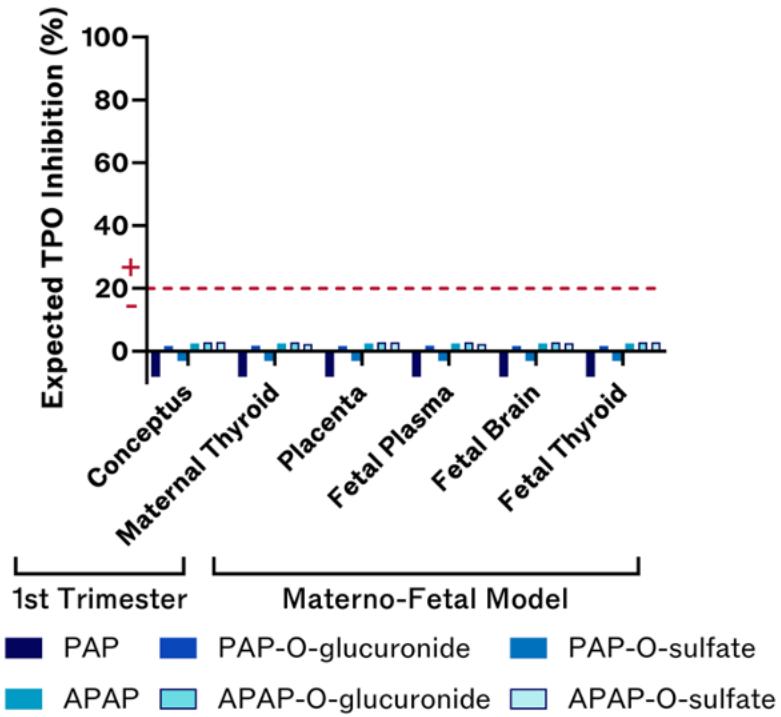
INTEGRATE EXPOSURE AND BIOACTIVITY

HAIR DYE EXPOSURES CANNOT INHIBIT THYROID HORMONE SYNTHESIS

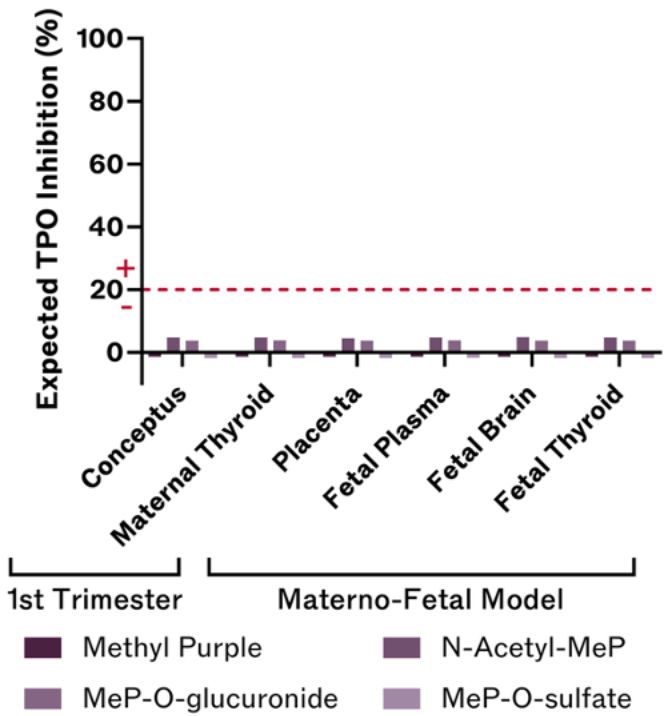
RESORCINOL



P-AMINOPHENOL



METHYL PURPLE



ICCS SYMPOSIUM 2026

June 15 | Brussels, Belgium

Advancing Animal-Free Science Through Innovation & Engagement

SYMPOSIUM 2026 ICCS JUNE 15 | Brussels Belgium

Hazard

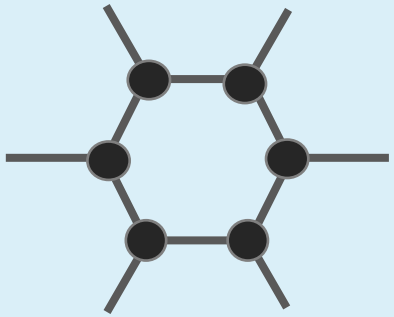
vs.

Risk

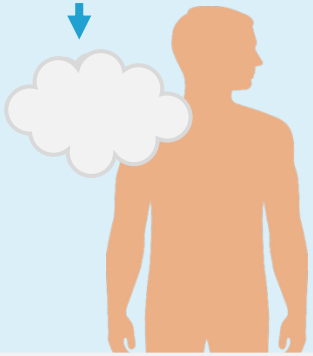
Susanne Kolle & Robert Landsiedel, BASF SE

BASF We create chemistry

Toxicological information to facilitate risk management of substances



exposure



risk assessment

hazard and exposure information for risk assessment; enabling risk management to **minimize risk**

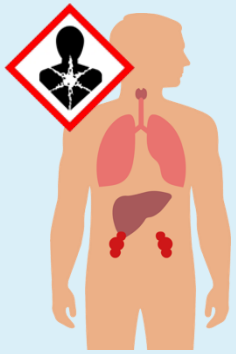
risk management

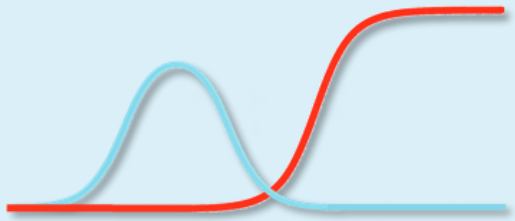
substance

(structure and properties)

hazard

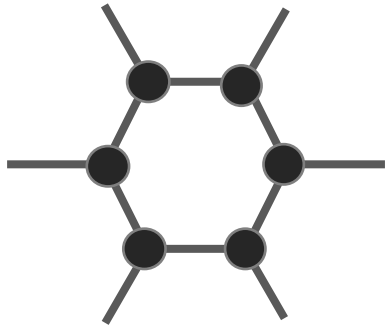
(toxicity endpoint and potency)

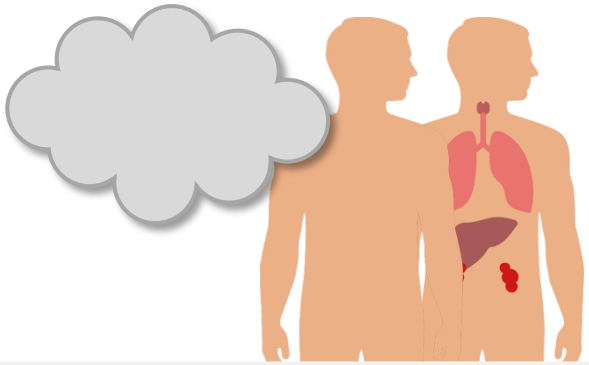




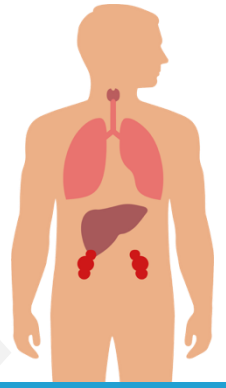
https://doi.org/10.1002/anie.202210651

Evidence of toxicity





early biological responses



substance

exposure

biokinetics

mechanism

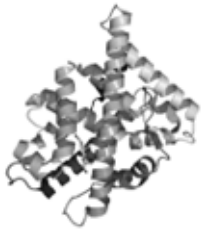
adverse effect

toxicity

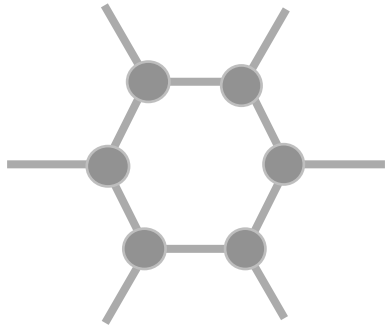
properties

external exposure

internal exposure



Hazard-based evidence of toxicity



early biological responses

substance

exposure

biokinetics

mechanism

adverse effect

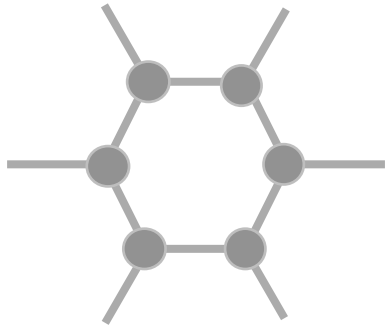
toxicity

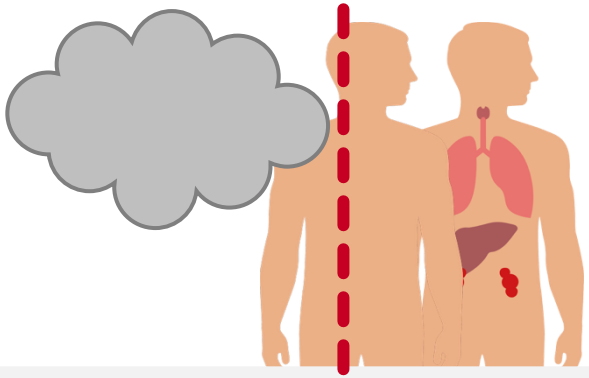
properties

external exposure

internal exposure

Exposure-based evidence of toxicity





substance

exposure

biokinetics

mechanism

adverse effect

early biological responses

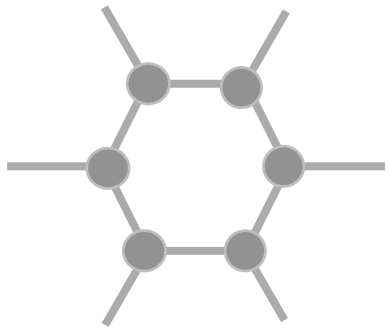
toxicity

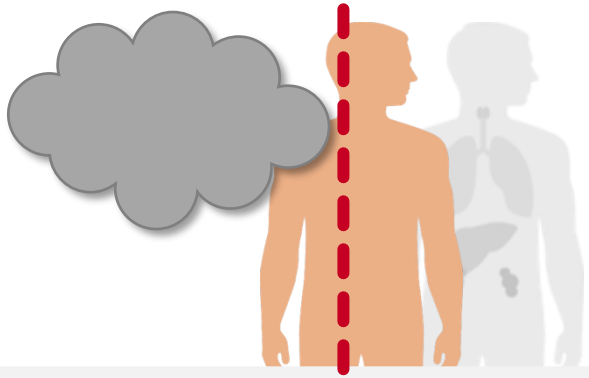
properties

external exposure

internal exposure

Risk-based evidence of toxicity





substance

exposure

biokinetics

mechanism

adverse effect

toxicity

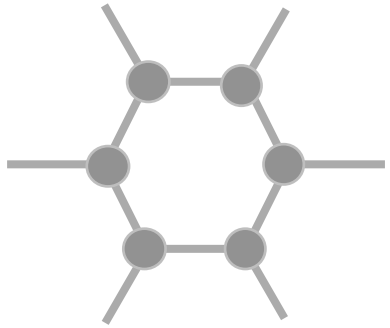
early biological responses

properties

external exposure

internal exposure

NAM- and NGRA-derived evidence of toxicity



early biological responses

substance

exposure

biokinetics

mechanism

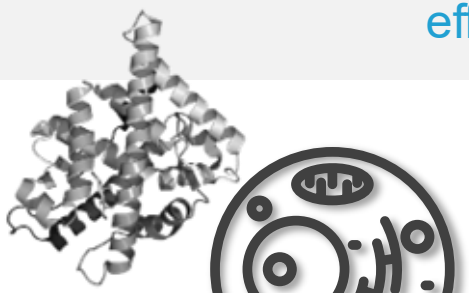
adverse effect

toxicity

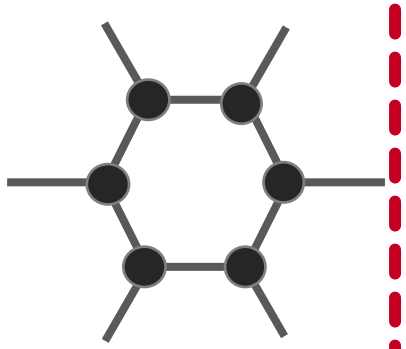
properties

external exposure

internal exposure



Substance structure and **properties** give evidence of toxicity



Evidence of toxicity -

substance

properties

exposure

external exposure

biokinetics

internal exposure

early biological responses

mechanism

adverse effect

toxicity

Hazards described by formerly Risk- or R-phrases

H300: Fatal if swallowed

H301: Toxic if swallowed

H302: Harmful if swallowed

H303: May be harmful if swallowed

H304: May be fatal if swallowed and enters airways

H305: May be harmful if swallowed and enters airways

H310: Fatal in contact with skin

H311: Toxic in contact with skin

H312: Harmful in contact with skin

H313: May be harmful in contact with skin

H330: Fatal if inhaled

H331: Toxic if inhaled

H332: Harmful if inhaled

H333: May be harmful if inhaled

H314: Causes severe skin burns and eye damage

H315: Causes skin irritation

H316: Causes mild skin irritation

H318: Causes serious eye damage

H319: Causes serious eye irritation

H320: Causes eye irritation

H335: May cause respiratory irritation

H317: May cause an allergic skin reaction

H334: May cause allergy or asthma if inhaled

H370: Causes damage to organs

H371: May cause damage to organs

H372: Causes damage to organs through repeated exposure

H373: May cause damage to organs through repeated exposure

H340: May cause genetic defects

H341: Suspected of causing genetic defects

H350: May cause cancer

H351: Suspected of causing cancer

H360: May damage fertility or the unborn child

H361: Suspected of damaging fertility or the unborn child

H362: May cause harm to breast-fed children

Hazard labelling considering potency categories

H300: Fatal if swallowed

H301: Toxic if swallowed

H302: Harmful if swallowed

H303: May be harmful if swallowed

H304: May be fatal if swallowed and enters airways

H305: May be harmful if swallowed and enters airways

H310: Fatal in contact with skin

H311: Toxic in contact with skin

H312: Harmful in contact with skin

H313: May be harmful in contact with skin

H330: Fatal if inhaled

H331: Toxic if inhaled

H332: Harmful if inhaled

H333: May be harmful if inhaled

Acute toxicity label elements

Classification	*Category 1*	*Category 2*	*Category 3*	*Category 4*
GHS Pictograms				
Signal Word	*Danger*	*Danger*	*Danger*	*Warning*
Hazard Statement: – *Oral*	*H300: Fatal if swallowed*	*H300: Fatal if swallowed*	*H301: Toxic if swallowed*	*H302: Harmful if swallowed*
– *Dermal*	*H310: Fatal in contact with skin*	*H310: Fatal in contact with skin*	*H311: Toxic in contact with skin*	*H312: Harmful in contact with skin*
– *Inhalation (see Note 1)*	*H330: Fatal if inhaled*	*H330: Fatal if inhaled*	*H331: Toxic if inhaled*	*H332: Harmful if inhaled*

H361: Suspected of damaging fertility or the unborn child

H362: May cause harm to breast-fed children

Hazard labelling considering potency categories

H300: Fatal if swallowed

H301: Toxic if swallowed

H302: Harmful if swallowed

H303: May be harmful if swallow

H304: May be fatal if swallowed and enters airways

H305: May be harmful if swallow and enters airways

H310: Fatal in contact with skin

H311: Toxic in contact with skin

H312: Harmful in contact with skin

H313: May be harmful in contact with skin

H330: Fatal if inhaled

H331: Toxic if inhaled

H332: Harmful if inhaled

H333: May be harmful if inhaled

Hazard category and sub-categories for skin sensitisers	
Category	*Criteria*
Category 1	*Substances shall be classified as skin sensitisers (Category 1) where data are not sufficient for sub-categorisation in accordance with the following criteria:* *(a) if there is evidence in humans that the substance can lead to sensitisation by skin contact in a substantial number of persons; or* *(b) if there are positive results from an appropriate animal test (see specific criteria in paragraph 3.4.2.2.4.1).*
Sub-category 1A:	*Substances showing a high frequency of occurrence in humans and/or a high potency in animals can be presumed to have the potential to produce significant sensitisation in humans. Severity of reaction may also be considered.*
Sub-category 1B:	*Substances showing a low to moderate frequency of occurrence in humans and/or a low to moderate potency in animals can be presumed to have the potential to produce sensitisation in humans. Severity of reaction may also be considered.*

H317: May cause an allergic skin reaction

H334: May cause allergy or asthma if inhaled

0: Causes damage to organs

1: May cause damage to organs

2: Causes damage to organs ugh repeated exposure

3: May cause damage to organs ugh repeated exposure

340: May cause genetic defects

341: Suspected of causing genetic ects

H350: May cause cancer

H351: Suspected of causing cancer

H360: May damage fertility or the unborn child

H361: Suspected of damaging fertility or the unborn child

H362: May cause harm to breast-fed children

Hazard labelling considering potency categories

Label elements for specific target organ toxicity after repeated exposure		
Classification	*Category 1*	*Category 2*
GHS Pictograms		
Signal word	*Danger*	*Warning*
Hazard statement	*H372: Causes damage to organs (state all organs affected, if known) through prolonged or repeated exposure (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)*	*H373: May cause damage to organs (state all organs affected, if known) through prolonged or repeated exposure (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)*

Study type	Species	Unit	Category 1 90-day	Category 1 28-day	Category 2 90-day	Category 2 28-day
Oral	Rat	mg/kg bw/d	≤ 10	≤ 30	≤ 100	≤ 300
Dermal	Rat	mg/kg bw/d	≤ 20	≤ 60	≤ 200	≤ 600
Inhalation, gas	Rat	ppmV/6 h/d	≤ 50	≤ 150	≤ 250	≤ 750
Inhalation, vapor	Rat	mg/l/6 h/d	≤ 0.2	≤ 0.6	≤ 1	≤ 3
Inhalation, dust/mist/fume	Rat	mg/l/6 h/d	≤ 0.02	≤ 0.06	≤ 0.2	≤ 0.6

also severity and reversibility of effects

H370: Causes damage to organs

H371: May cause damage to organs

H372: Causes damage to organs through repeated exposure

H373: May cause damage to organs through repeated exposure

H340: May cause genetic defects

H341: Suspected of causing genetic defects

H350: May cause cancer

H351: Suspected of causing cancer

H360: May damage fertility or the unborn child

H361: Suspected of damaging fertility or the unborn child

H362: May cause harm to breast-fed children

Hazard labelling preliminarily considering potency

Potency categories in reproductive toxicity classification

A preliminary potency evaluation applying the ED_{10} value is made at this stage.

ED_{10} values can be used to place substances classified as a reproductive toxicant into selected ranges that define potency groups. In this way, it is possible to identify reproductive toxicants of high, medium and low potency. For the purpose of determining the preliminary potency group, the boundaries in Table 3.13 are used.

Table 3.13 Boundaries of the potency groups[24].

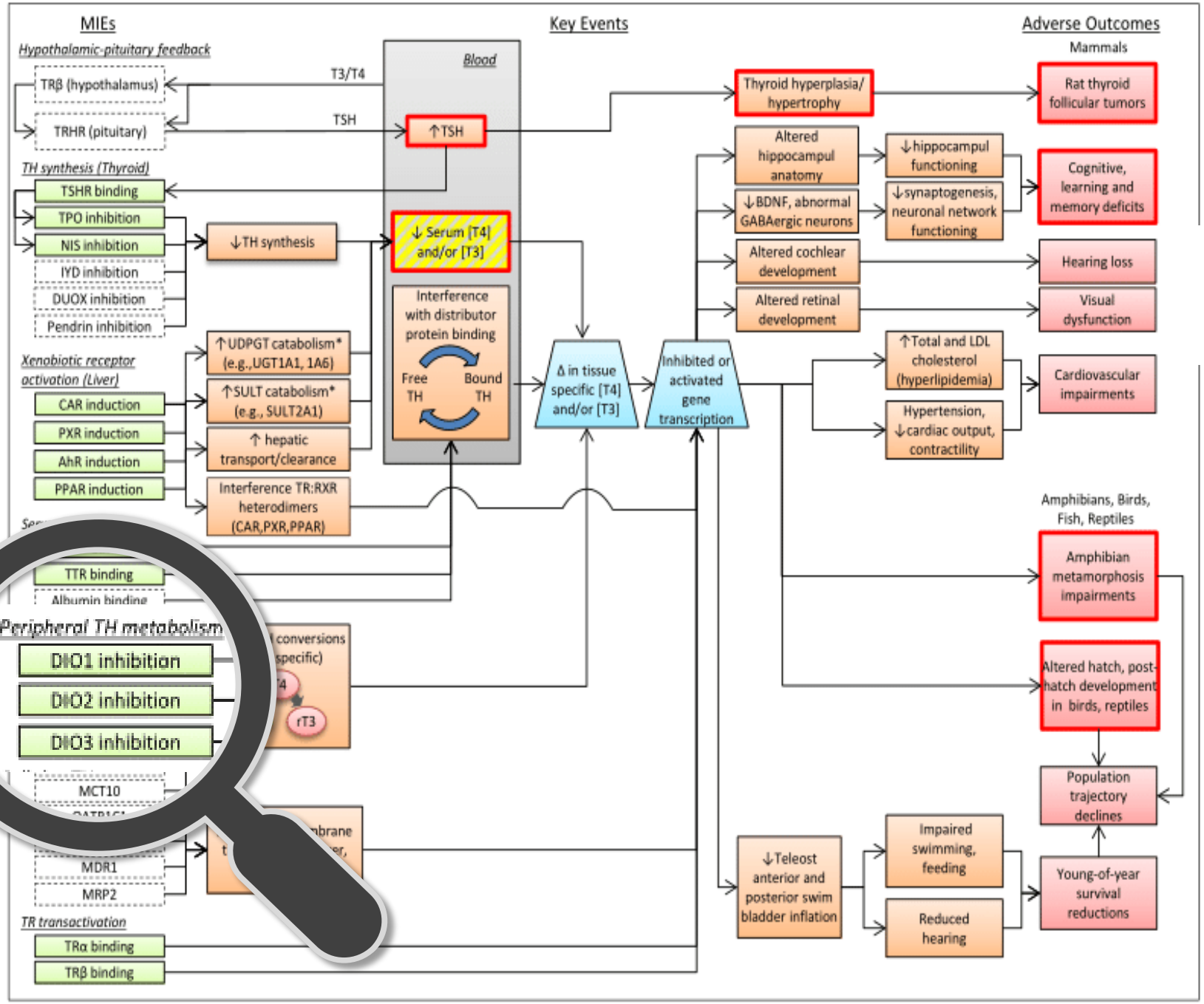
Potency group	Boundaries
High potency group	ED_{10} value ≤ 4 mg/kg bw/day
Medium potency group	4 mg/kg bw/day < ED_{10} value < 400 mg/kg bw/day
Low potency group	ED_{10} value ≥ 400 mg/kg bw/day.

Can and should we have the same for endocrine activity?

H360: May damage fertility or the unborn child

H361: Suspected of damaging fertility or the unborn child

H362: May cause harm to breast-fed children



Adverse effects

tered development & physiology

https://doi.org/10.1289/EHP5297

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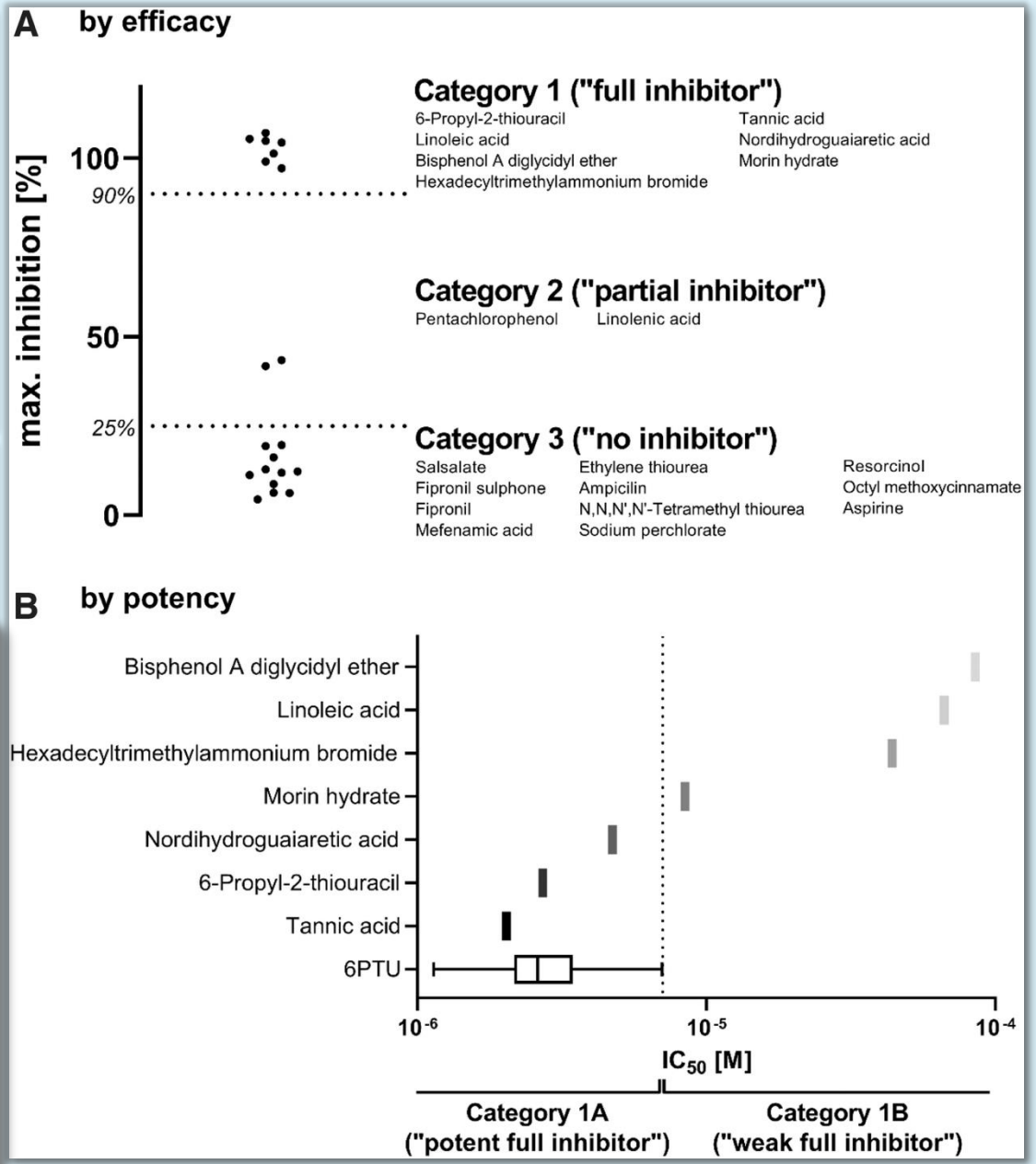
TPO Inhibition Method by Charles River

*„Criteria for classification: A chemical is considered positive, if **≤80%** activity of the the vehicle is observed at a minimum of two concentrations, which should show a dose dependent effect"*

OECD test guideline no. 456

H295R Steroidogenesis Assay

***1.5fold** threshold*



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Reproduction of the human relevant potency threshold (HRPT) for estrogen receptor alpha agonism in an inference performance screen for ICCVAM's regulatory scientific confidence framework

Jessica Ryman* and Richard A. Becker

American Chemistry Council, Washington, DC, United States

Scientific confidence frameworks (SCFs) are alternatives to traditional validation for new approach methodologies (NAMs). The SCFs adapted by the Interagency

Hazard labelling considering thresholds (of severity and reversibility)

H300: Fatal if swallowed

H301: Toxic if swallowed

H302: Harmful if swallowed

H303: May be harmful if swallowed

H304: May be fatal if swallowed and enters airways

H305: May be harmful if swallowed and enters airways

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H361: Suspected of damaging fertility or the unborn child

H362: May cause harm to breast-fed children

Other considerations of thresholds for CLP

A specific concentration limits, **SCL**,
may be assigned to a substance, based on its **potency**, to allow the fine tuning of its contribution to the classification of a **mixture**. The SCL concept is mainly applicable to health hazards.

negligible exposure

Commission Notice

Technical guidance on the interpretation of points 3.6.3. to 3.6.5, and 3.8.2 of Annex II to Regulation (EC) No 1107/2009, in particular regarding the assessment of negligible exposure to an active substance in a plant protection product under realistic conditions of use

DRAFT - May 2015

https://food.ec.europa.eu/system/files/2017-02/adv-grp_wg_20150625_tech-guidance.pdf

Test No. 413: Subchronic Inhalation Toxicity: 90-day Study

Limit Concentrations

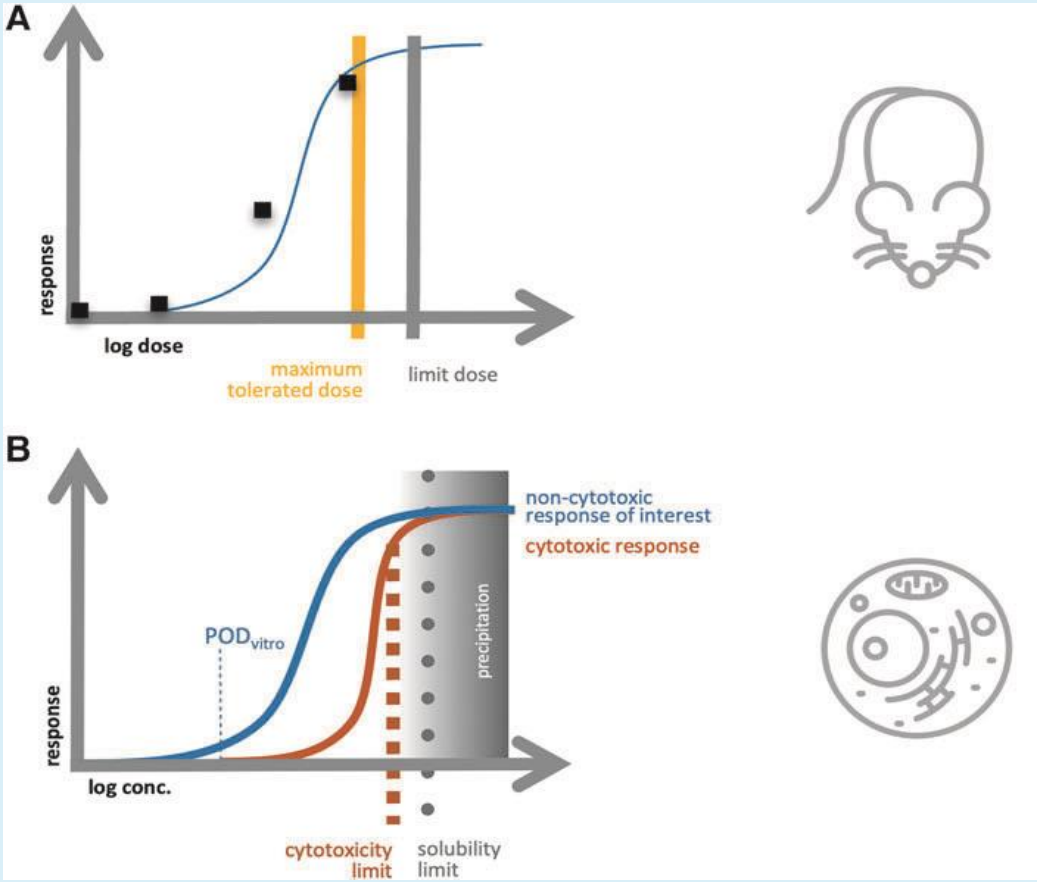
13. The maximum concentration tested should consider: 1) the maximum attainable concentration, 2) the need to maintain an adequate oxygen supply, and/or 3) animal welfare considerations. In the absence of data-based limits, the acute limits of the United Nations Globally Harmonized System of Classification and Labelling of Chemicals may be used (i.e., up to a maximum concentration of 5 mg/L for aerosols, 20 mg/L for vapours, and 20,000 ppm for gases). Justification should be provided if it is necessary to exceed these limits when testing gases or highly volatile test chemicals (e.g. refrigerants). For particles aerosol testing > 2 mg/L should only be attempted if a respirable particle size can be maintained/achieved (refer to GD 39).

Limit dose *in vitro*?

In vitro test methods adopted as OECD test guidelines for e.g.
local toxicity, mutagenicity, endocrine disruption,

These *in vitro* test methods
set test concentrations based on
limit concentration, solubility, cytotoxicity

But the selection of the highest *in vitro* concentration is not linked to *in vivo* dose settings



Landsiedel et al., 2024
https://doi.org/10.1089/aivt.2023.0018

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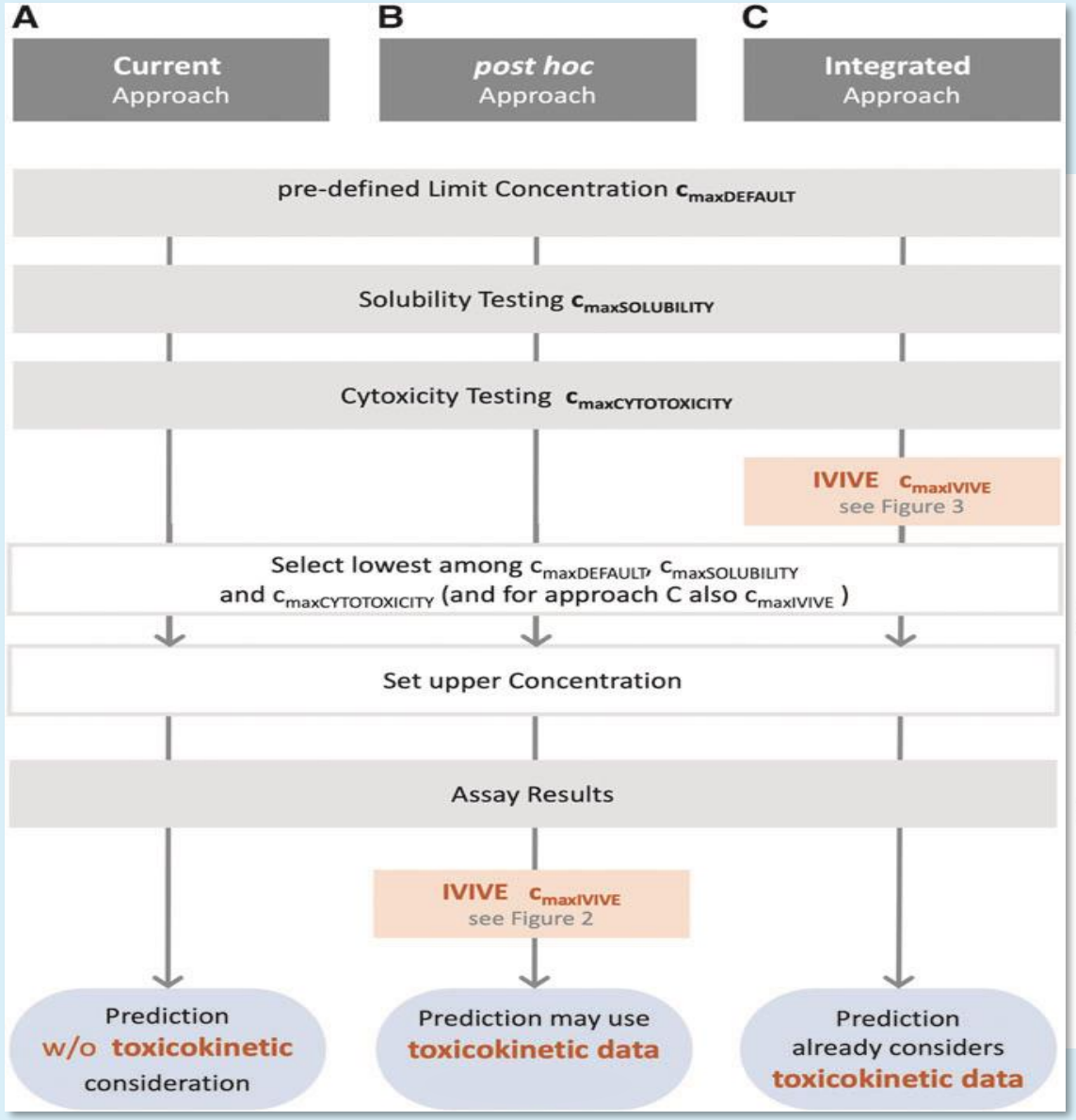
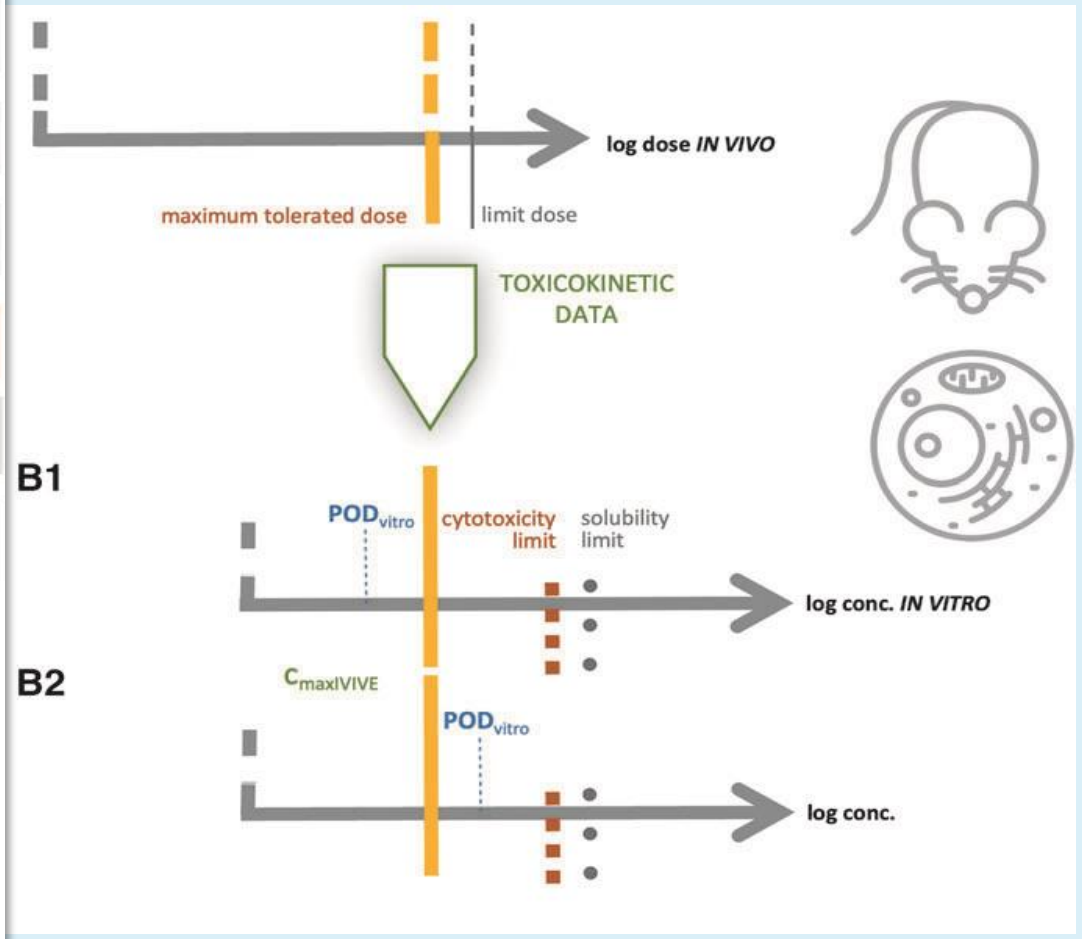
IVIVE approach and data assessment

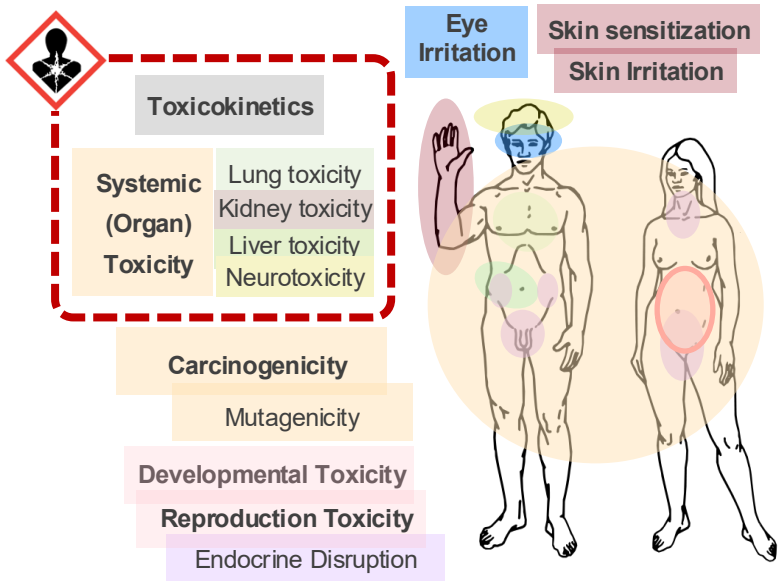




Landsiedel et al., 2024
https://doi.org/10.1089/aivt.2023.0018

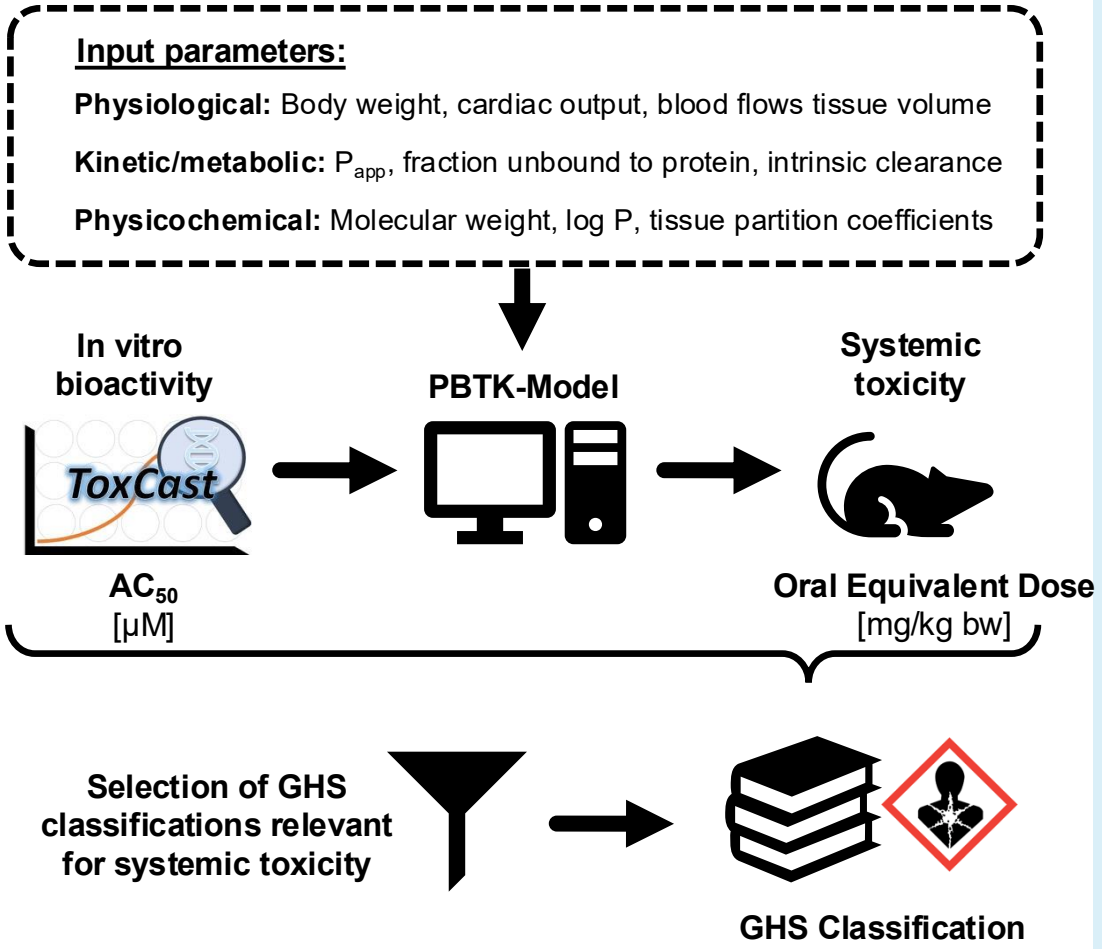
BASF
We create chemistry

NAM derived effect levels vs. GHS classifications



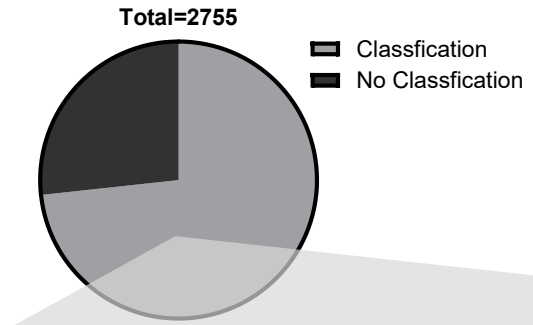
- Evaluation how **hazard classifications** (which are largely based on in vivo data) correlate with respective classifications derived from results of in vitro studies (**NAM-based assessments**).
- Usage of publicly available databases (ToxCast and harmonized CLP classification databases) and in vitro to in vivo extrapolation using a **generic PBTK model**

Overview of the QIVIVE approach applying a rat PBTK model to compare NAM bioactivity data with GHS classifications :



Demuth et al., in preparation

Selection of hazard statements and extrapolation of *in vitro* concentrations



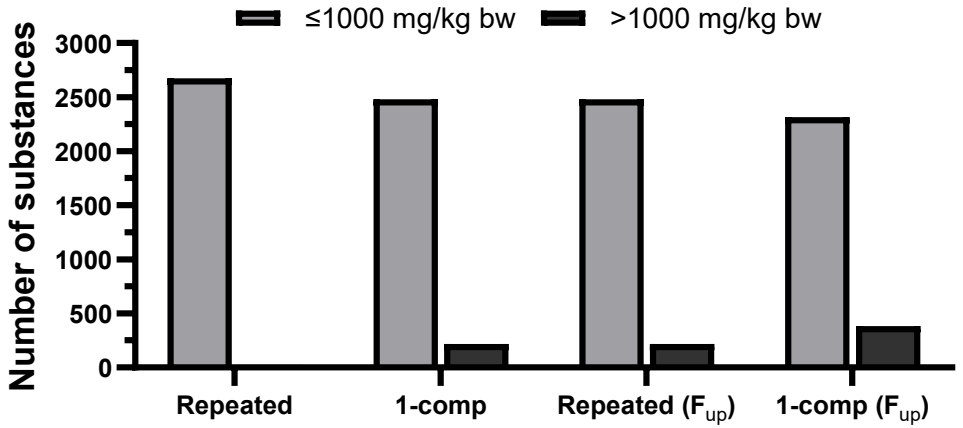
GHS Classification

Classification	Count	Hazard Statements	Assigned based on:
STOT SE 1	**116**	**H370**	potentially irreversible, life-threatening.
STOT SE 2	**81**	**H371**	less severe effects, transient
STOT RE 1	**152**	**H372**	<10 mg/kg bw/d
STOT RE 2	**257**	**H373**	10-100 mg/kg bw/d

► Selection of classification relevant for systemic toxicity:

Hazard Statements: 300-303, 310-313, 330-333, 340, 341, 350, 351, 360-362, 370-373

If none of the above apply: **No Classification**



Distribution of **oral equivalent doses (OEDs)**, stratified by values above or below 1000 mg/kg body weight (**limit dose**), based on substance-specific highest concentrations tested in ToxCast

► Extrapolation of the highest concentration tested for each substance to the corresponding OED:

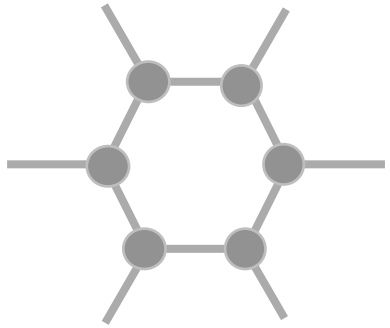
The **in vivo limit dose** of 1000 mg/kg bw is rarely exceeded (max. 14%)

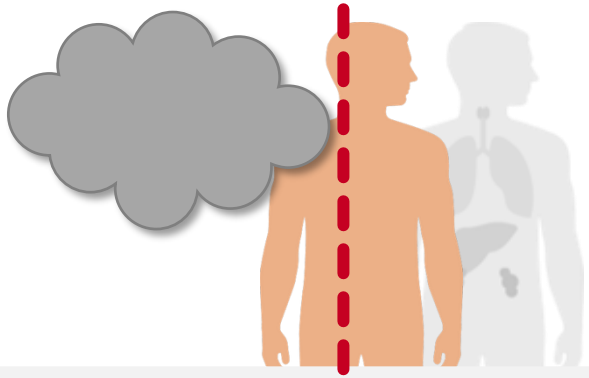
Demuth et al., in preparation

Hazard and risk in different regulatory instruments

Regulatory Instrument	Hazard	Potency	Threshold	Exposure	Risk Integr.	Key References
GHS (CLP) Classification						UN GHS Rev.9 (2021); EU Reg.1272/2008
SVHC identification (REACH Art.57)						REACH Art.57; ECHA R.11 (2023)
Cut-off criteria (PPP/BPR)						Reg.1107/2009 Art.4; Reg.528/2012 Art.5
Annex XIV (Authorisation)						REACH Title VII; ECHA PG15 (2020)
ADI, ARfD, TDI						WHO (1987); EFSA (2012)
OEL **DNEL, DMEL** (REACH)						ECHA R.8 (2023)
Exposure or control banding						ILO 2008; ECHA CSA Guide (2022)
TTC (Threshold of toxicological concern)						Kroes et al. 2004; EFSA (2019)

Risk-based evidence of toxicity





substance

exposure

biokinetics

mechanism

adverse effect

toxicity

early biological responses

properties

external exposure

internal exposure

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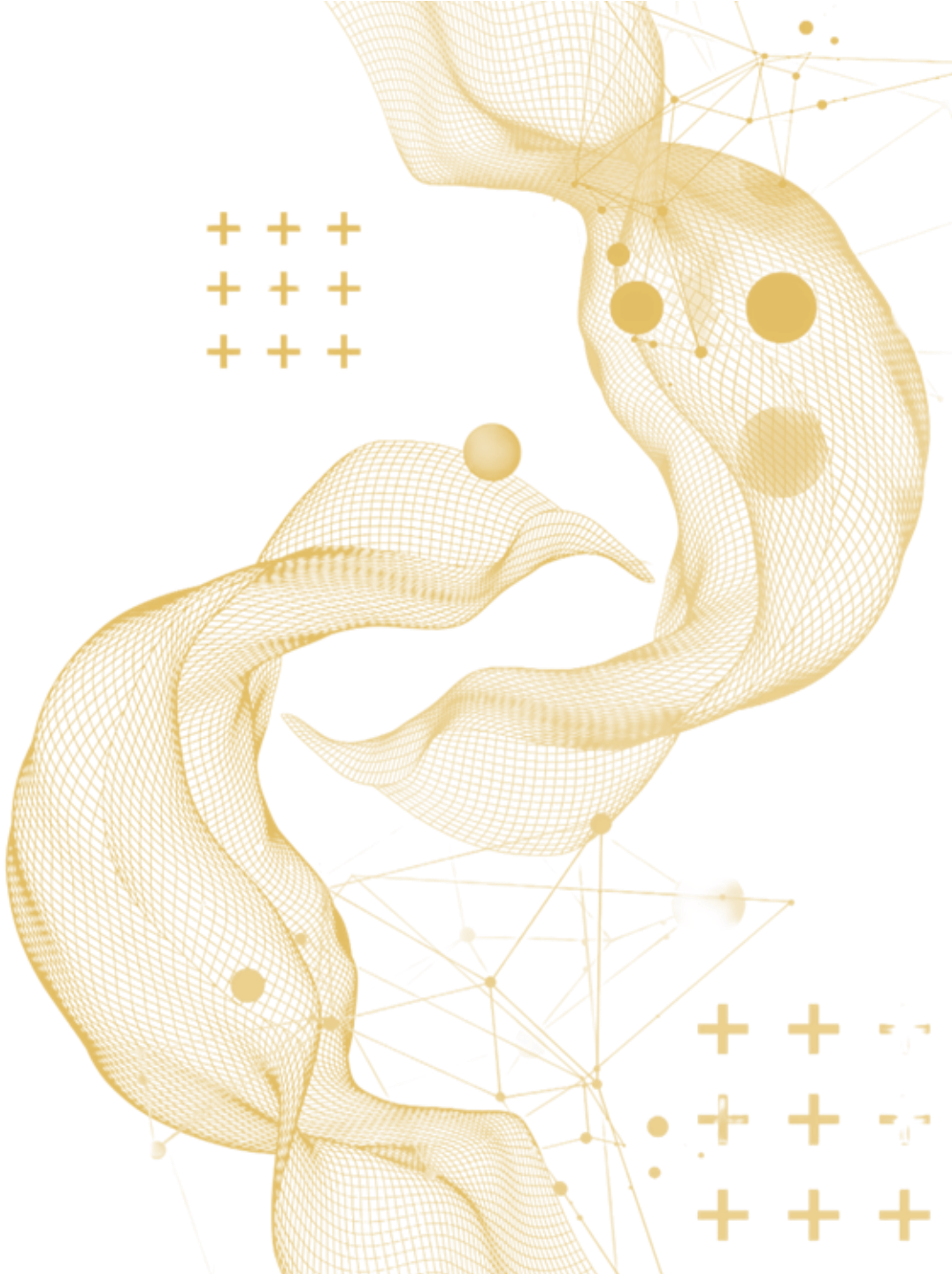
QUESTIONS



SYMPOSIUM 2026

ICCS PROGRAM HIGHLIGHTS

ICCS Program Highlights

Andreas Schepky, PhD
Head Department of Global Toxicology
Beiersdorf

Véronique Poulsen, PhD
Director of Environmental Safety
L'Oréal

Beta Montemayor
Vice President and Director Science,
Regulation and Market Access
Cosmetics Alliance Canada

SYMPOSIUM 2026

SCIENCE IN ACTION

ICCS Strategic Pillars

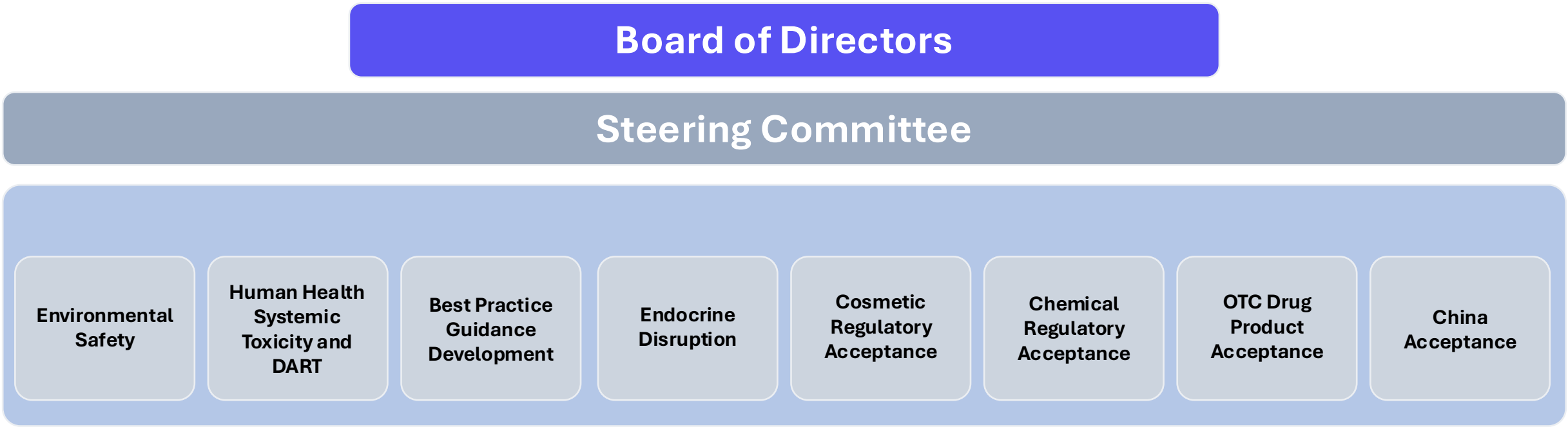
The Pillars That Power ICCS

- **Science**
  Develop NAMs and NGRA frameworks for cosmetics and ingredient safety assessments that will be protective of human and environmental health.

- **Capacity Building**
  Build a community to support continuous learning to establish confidence in, and application of, NAMs and NGRA for evaluating cosmetics.

- **Regulatory Engagement**
  Accelerate the acceptance of NAMs and NGRA frameworks through standardization and validation activities, engagement with regulators, and supporting the global alignment of cosmetic regulatory requirements.

Overview of ICCS & Updated Structure



Supported by approximately 30 Activity Teams

Overarching Priorities

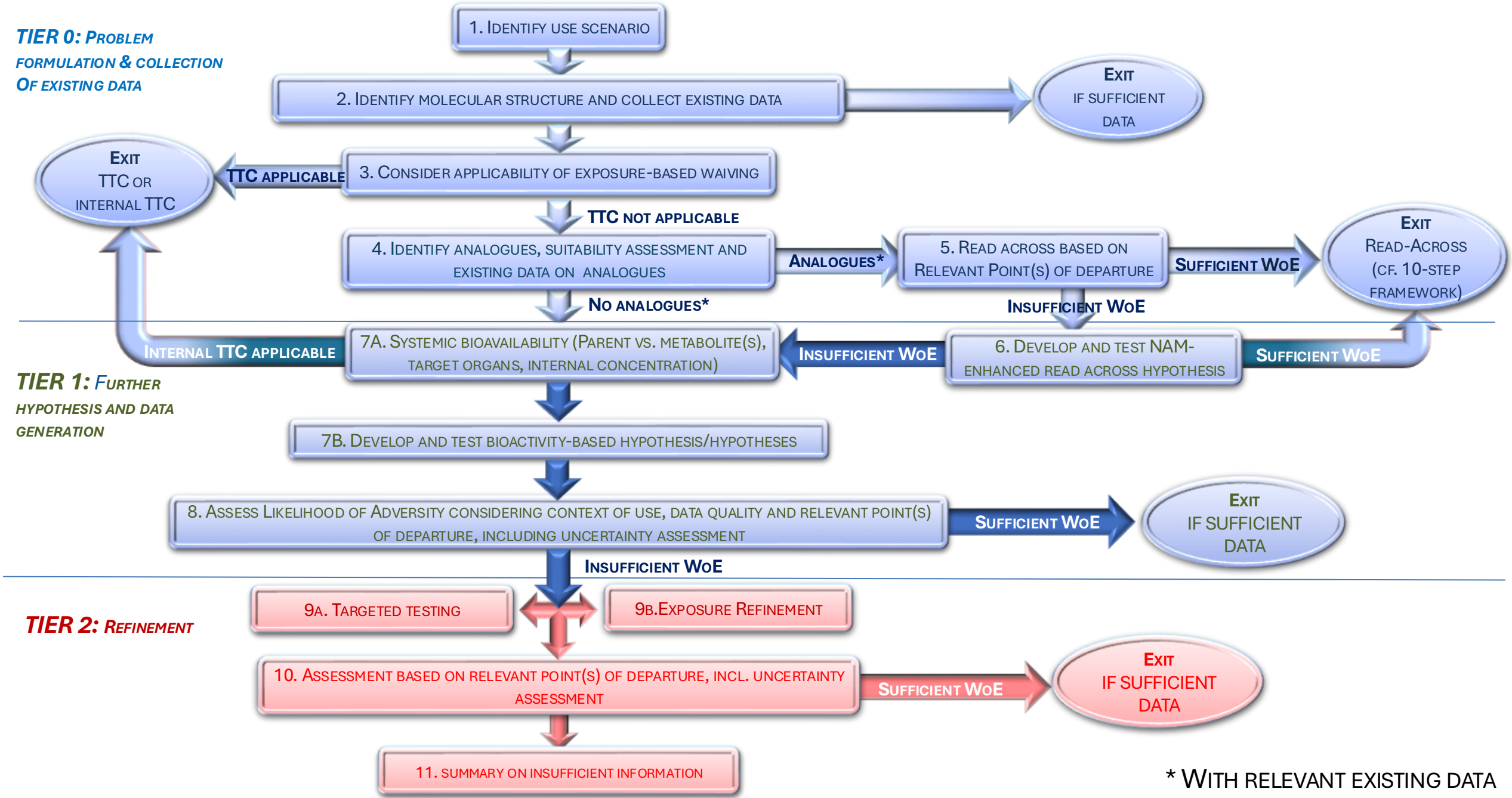
Our global scientific priorities:

- Systemic Toxicity (including DART & Carcinogenicity)
- Endocrine Disruptors (Human & Environmental Health)
- Environmental Safety: NGRA & Long-term Fish Toxicity, Biodegradation
- Over-the-counter Drugs/Quasi Drugs/Functional Ingredients

Our confidence building priorities:

- Human Health: Genotoxicity, Skin Sensitization, Eye Irritation, Skin Irritation, TTC
- Read-across
- Environmental: Direct External Exposure, Acute Fish Toxicity, Mobility & Bioaccumulation
- With active engagement with both regulators and industry in: Canada, China, USA, UK, EU, Japan, Korea, LATAM, and including OECD & ICCR

UPDATED WORKFLOW TO SUPPORT COSMETIC CHEMICAL SAFETY ASSESSMENT



* WITH RELEVANT EXISTING DATA

Public-Private Partnership
ICCS to Collaborate with NICEATM on Landscape Analysis

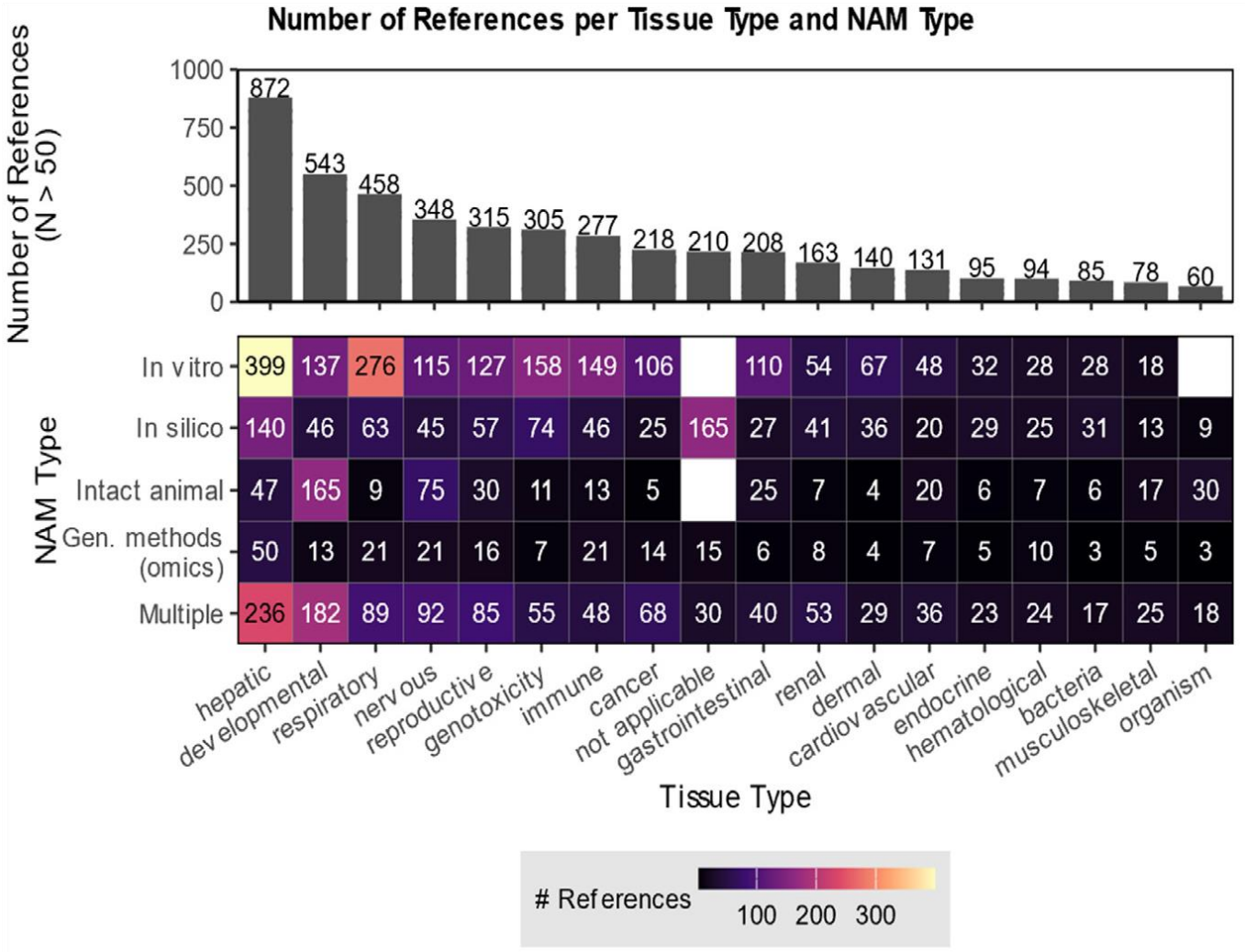
National Institute of Environmental Health Sciences

ICCS International Collaboration on Cosmetics Safety

Human Health – Key Projects

Surveying the Systemic Toxicity NAMs Landscape

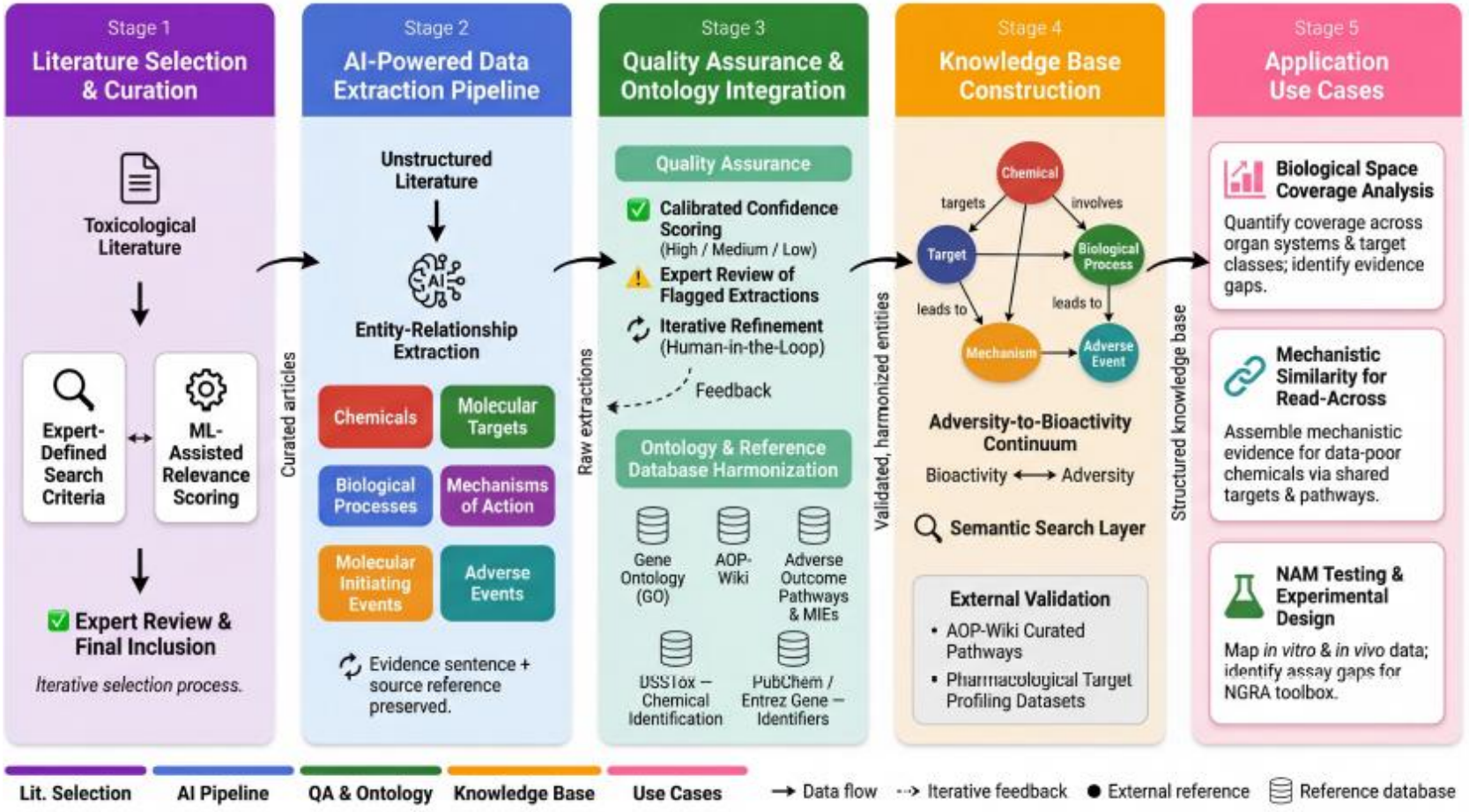
- Mapped the NAM landscape for systemic toxicity through ICCS–NIEHS–NICEATM collaboration
- Applied GenAI to accelerate review of thousands of articles
- Created a dashboard to identify gaps, guide priorities, and advance cosmetic safety assessment



Human Health

Mapping Biological Space Coverage & Mechanistic Connections

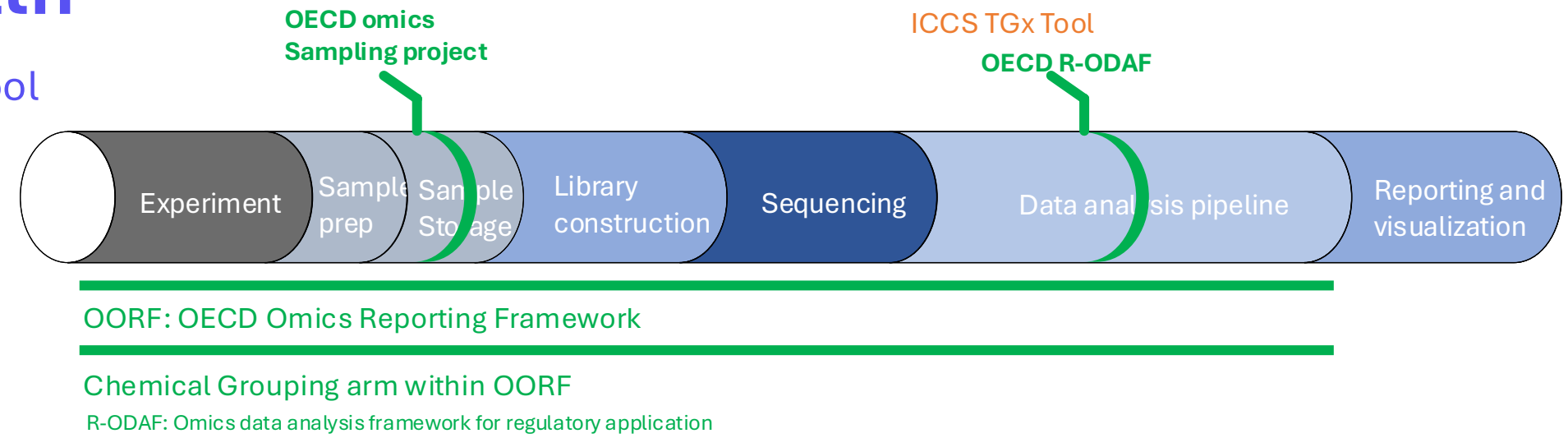
- Advanced NAM interpretation by connecting assay outputs to molecular targets, pathway perturbations, and biological processes
- Created a knowledgebase linking upstream mechanistic events to adverse outcome relationships for systemic toxicity
- Shared mechanistic pathways and profiles can support hypothesis-based hazard prediction for data-poor chemicals.

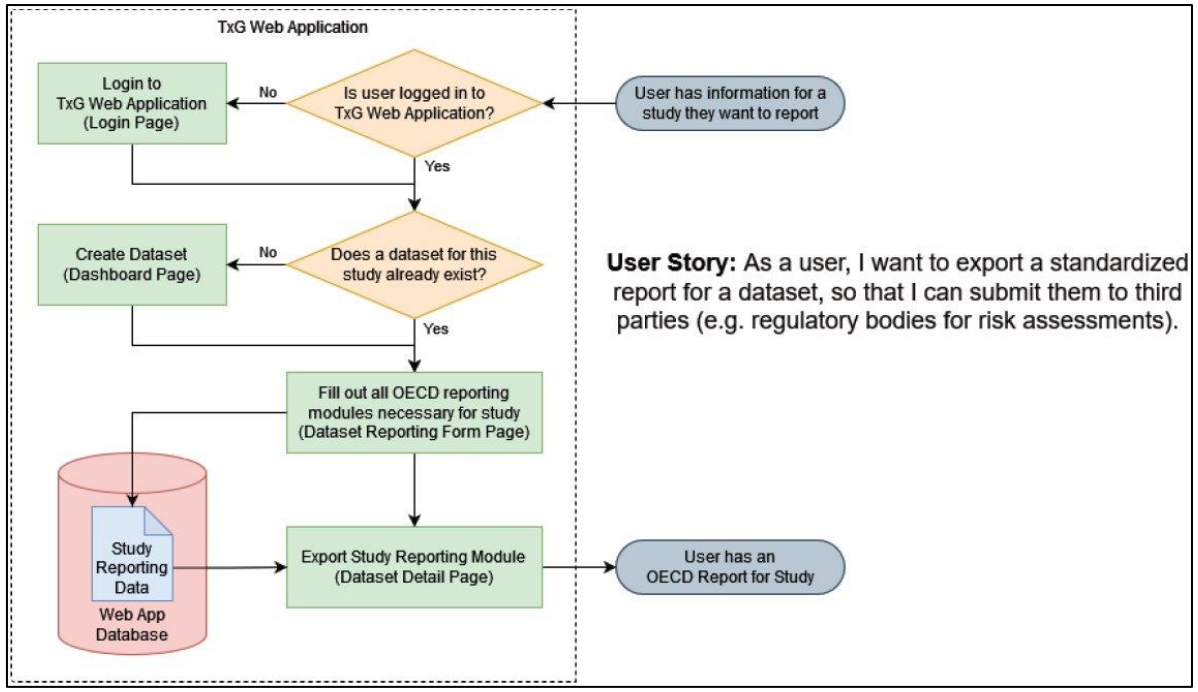


Human Health

Toxicogenomics Web Tool

OECD ICCS



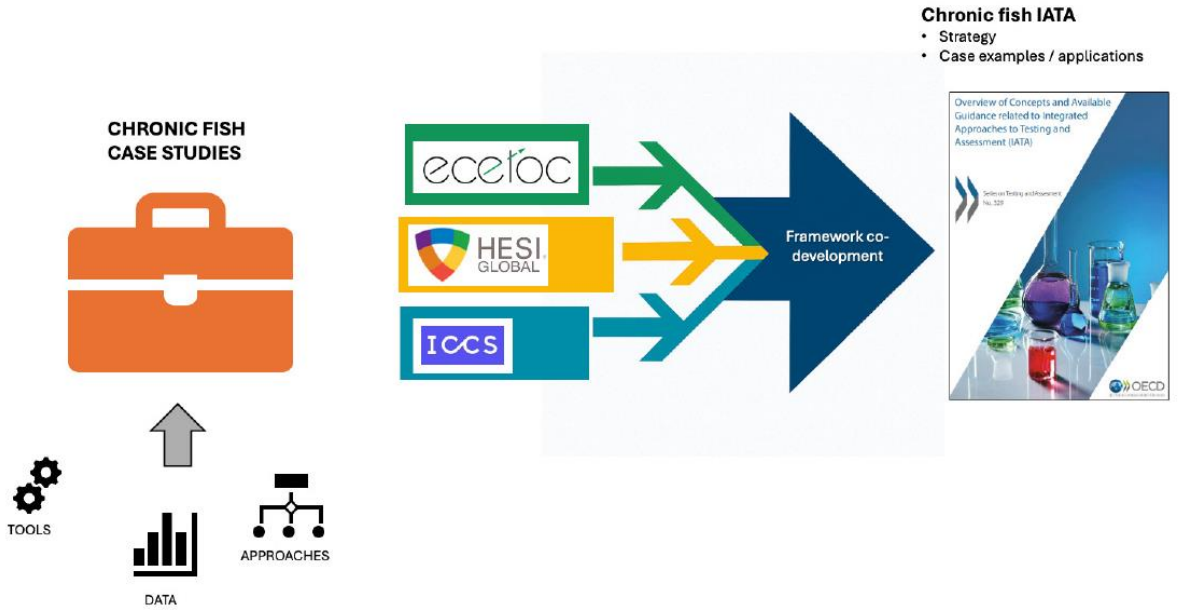


- Advanced a standardized TGx Web Tool to support chemical grouping, read-across, MoA evidence, and future POD calculations
- Aligned workflows with OECD reporting and CMap-based similarity methods to improve transparency, reproducibility, and regulatory confidence
- Building an extensible, open-source platform to help integrate toxicogenomics into NGRA and safety decision-making

Environmental Safety

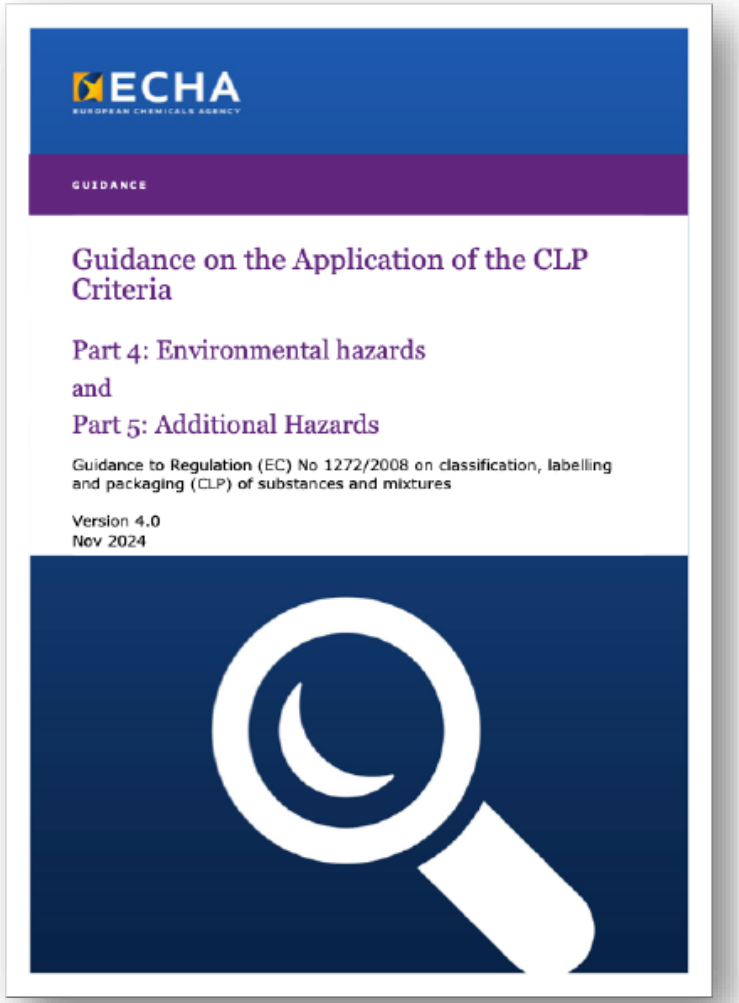
Chronic Fish Toxicity: Case Studies Toward Best Practice Guidance

- Launched cosmetic ingredient case studies to evaluate NAMs and NGRA for chronic fish toxicity towards an ICCS Best Practice Guidance
- Applying a tiered approach integrating mechanistic data, bioavailability, exposure context, and regulatory dossier needs
- Partnering with ECETOC, HESI and EPAA towards OECD IATAs



Environmental Safety
Advanced Biodegradation Assessments

- Secured regulatory validation for ICCS' Persistence Assessment Tool (PAT), now referenced in ECHA CLP guidance
- Expanded ICCS engagement with the ECHA PBT Expert Group and other regulators
- Advanced polymer biodegradation work through several projects incl. SETAC workshop 6-7 Oct 2026 in Brussels



Environmental Safety

ICCS Co-Leads Landmark 2025 Innovate EcoSafety Summit

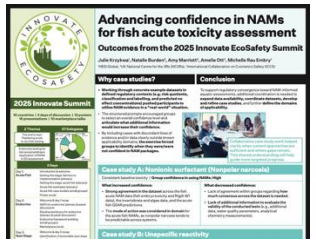
- Co-sponsored the inaugural Innovate EcoSafety Summit with HESI, U.S. EPA, and UK NC3Rs
- United nearly 60 experts from 10 countries to advance environmental NAMs
- Defined action priorities for animal-free fish toxicity and aquatic endocrine assessment
- Recurring global forum, convening every 2–3 years

HESI GLOBAL EPA NC 3Rs ICCS

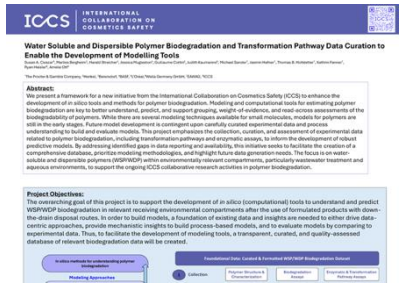
Environmental Safety

The Journey Continues — SETAC 2026

Advancing Confidence in NAMs for Fish Acute Toxicity Assessment: Outcomes from the 2025 Innovate EcoSafety Summit



Water Soluble and Dispersible Polymer Biodegradation and Transformation Pathway Data Curation to Enable the Development of Modelling Tools

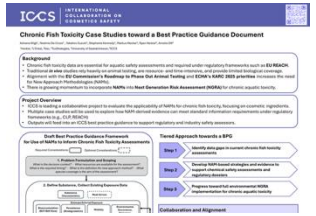


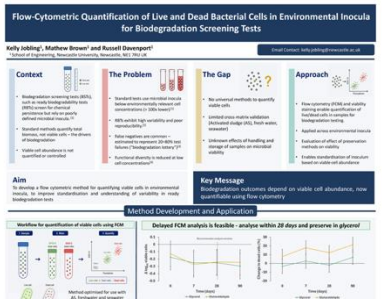
Innovate EcoSafety Summit: A Collaborative Model for Advancing Environmental Risk Assessment

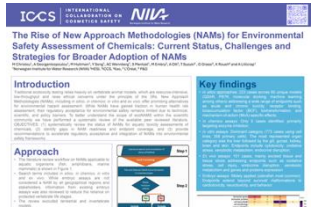
Assessing the State of Science and Developing Best Practices for Mobility Assessment of Difficult-to-Test Substances

New Training Course on Environmental Safety for Cosmetic Safety Assessors

Chronic Fish Toxicity Case Studies toward a Best Practice Guidance Document

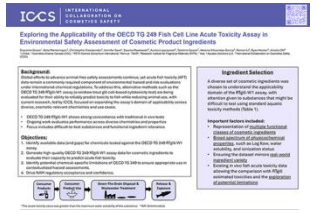






The Rise of New Approach Methodologies (NAMs) for Environmental Safety Assessment of Chemicals: Current Status, Challenges and Strategies for Broader Adoption of NAMs

Exploring the Applicability of the OECD TG 249 Fish Cell Line Acute Toxicity Assay in Environmental Hazard and Risk Assessment of Cosmetic Product Ingredients



Flow-Cytometric Quantification of Live and Dead Bacterial Cells in Environmental Inocula for Biodegradation Screening Tests

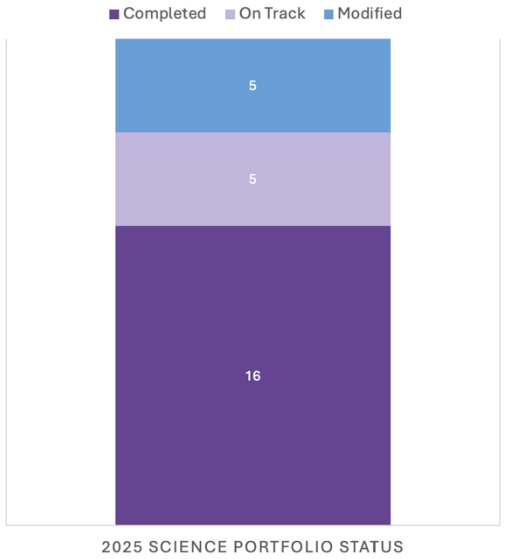
Towards NAM-based Frameworks for Assessing Endocrine Activity in Aquatic Vertebrates: Outcomes from the 2025 Innovate EcoSafety Summit

Science Portfolio

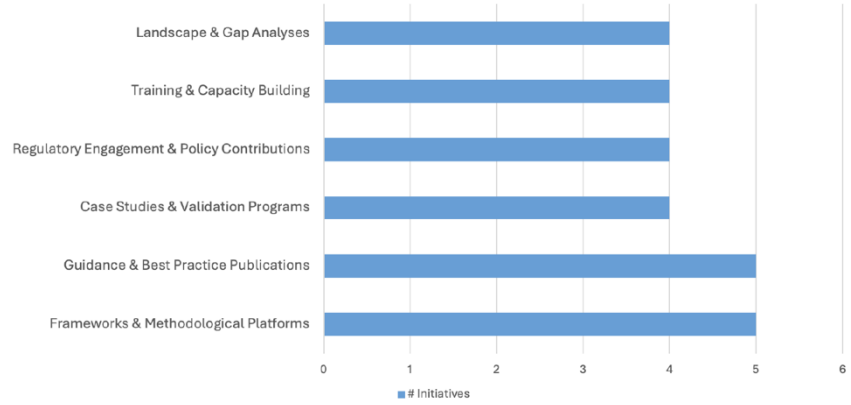
From Delivery Status to Scientific Outputs

- Advanced 26 science initiatives across Human Health and Environmental Safety
- Delivered 16 initiatives to completion/key applicability milestones,10 still progressing
- Demonstrated adaptive portfolio management aligned with scientific and regulatory priorities

Distribution of 2025 Science Initiatives by Delivery Status



Distribution of 2025 Science Initiatives by Output Category



Recent Regulatory Engagements

epaa
The European Partnership for Alternative Approaches to Animal Testing

cir Cosmetic Ingredient Review

Scientific Committees
on Consumer Safety
on Health, Environmental and Emerging Risks

BfR
Bundesinstitut für Risikobewertung

Santé Canada
Health Canada

OECD

ICCR
International Cooperation on Cosmetics Regulation

Environment and Climate Change Canada
Environnement et Changement climatique Canada

NIH National Institute of Environmental Health Sciences

NIFDC 中国药检

European Commission

FDA U.S. FOOD & DRUG ADMINISTRATION

NIH National Institutes of Health

ANVISA
Agência Nacional de Vigilância Sanitária

EPA

ECHA
EUROPEAN CHEMICALS AGENCY

JRC
EUROPEAN COMMISSION

NATIONAL MEDICAL PRODUCTS ADMINISTRATION
国家药品监督管理局

Umwelt Bundesamt

SOT 2026 Hot Topic Session

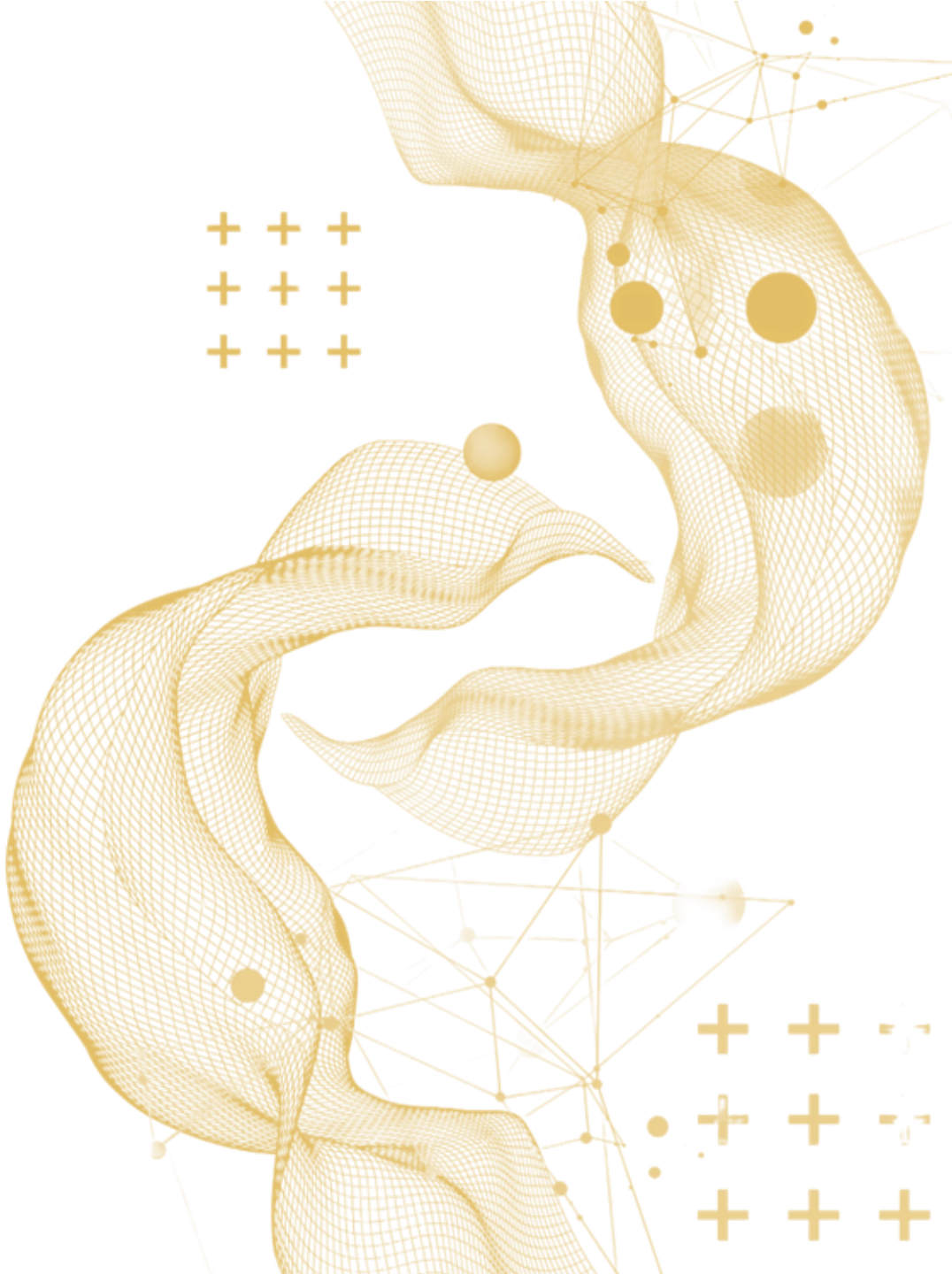
ICCS' Hot Topic Session was one of only two selected by the Society of Toxicology

> "Here Comes the Sun(screen): Bemotrizinol and Reshaping the Future of Sunscreen Safety Assessment."

Explored how NAMs & NGRAs expand access to safe, effective sunscreens while supporting regulatory progress

SYMPOSIUM 2026

QUESTIONS



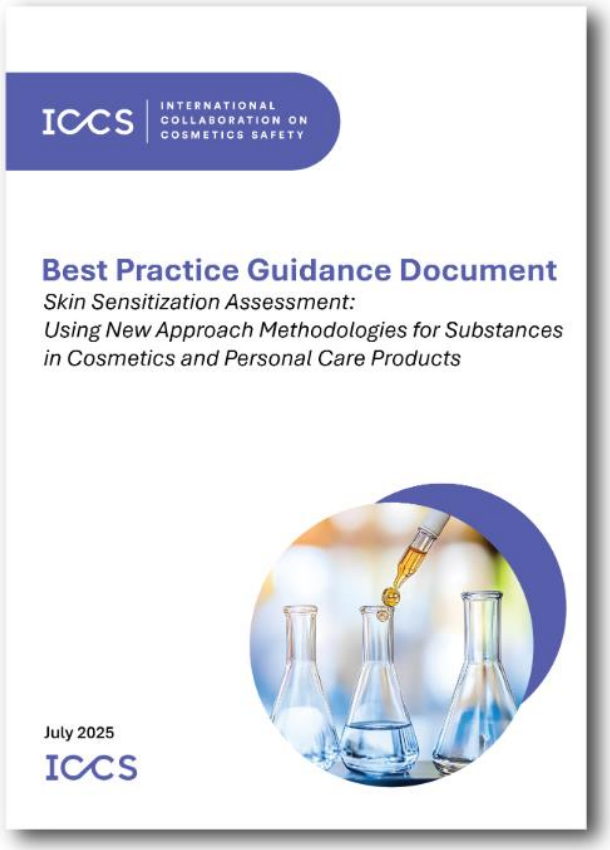
SYMPOSIUM 2026

BUILDING CAPACITY AND CONFIDENCE TOGETHER

ICCS Best Practice Guidance from Concept to Uptake

ICCS Best Practice Guidance (BPG) – Why?

ICCS BPG – What/How?



WHAT IS IT

- Step-by-step workflow to guide through skin sensitization hazard and safety assessments without new animal tests
- Designed for regulatory use

HOW DOES IT HELP

- Bridges the gap between advancing science and regulatory requirements
- Streamlines decision-making
- Supports consistency, transparency, and reproducibility enhancing global harmonization

HOW WAS IT DEVELOPED

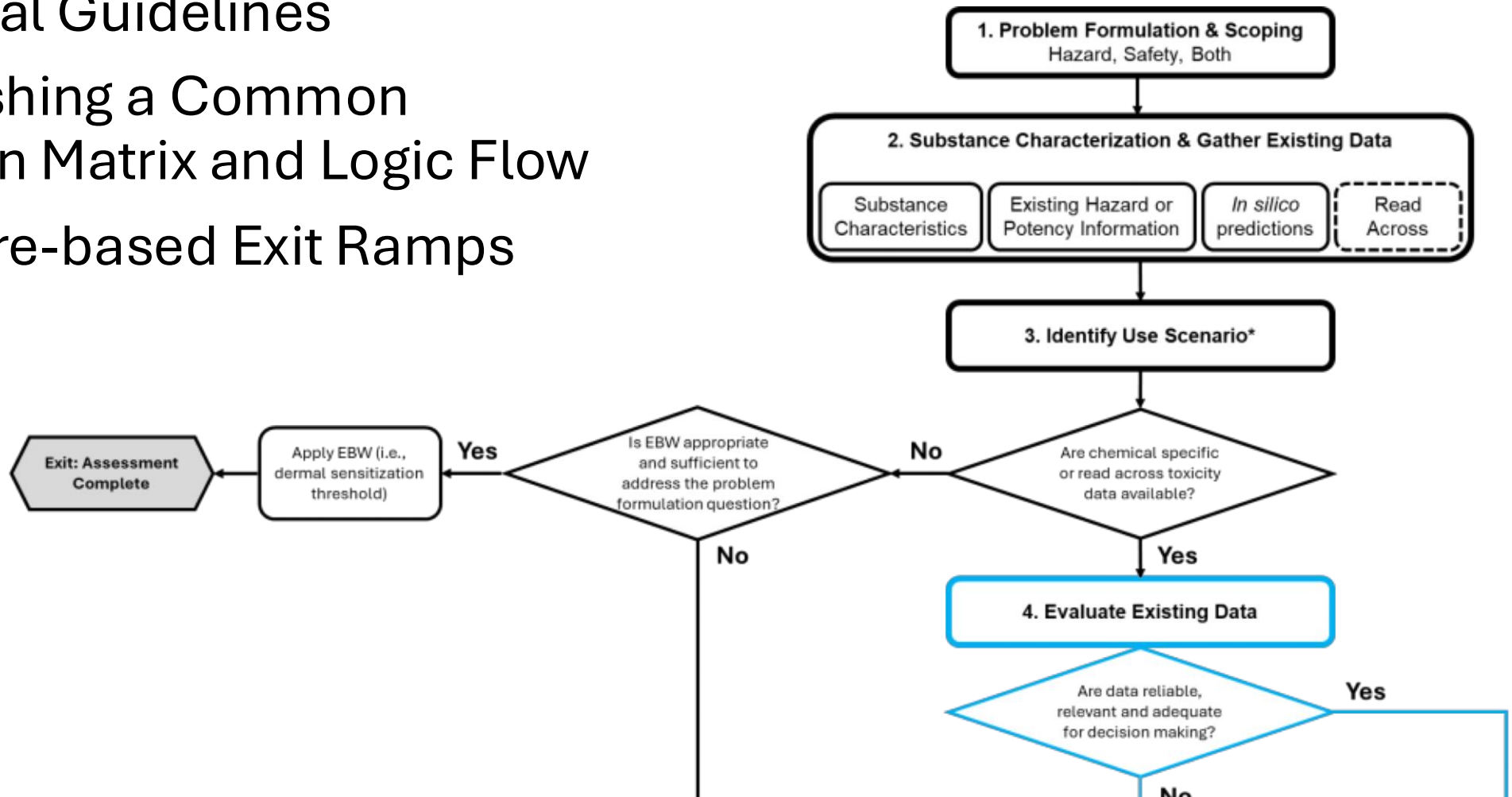
- Widely accepted based on current knowledge
- Incorporates insights from global subject matter experts

WHO IT'S FOR

- Safety assessors and regulatory scientists integrating NAMs into safety assessments
- NGOs and government agencies engaged in risk assessment and policy development

ICCS BPG – Example

- Connecting Test Methods and Technical Guidelines
- Establishing a Common Decision Matrix and Logic Flow
- Exposure-based Exit Ramps



ICCS BPG – Example

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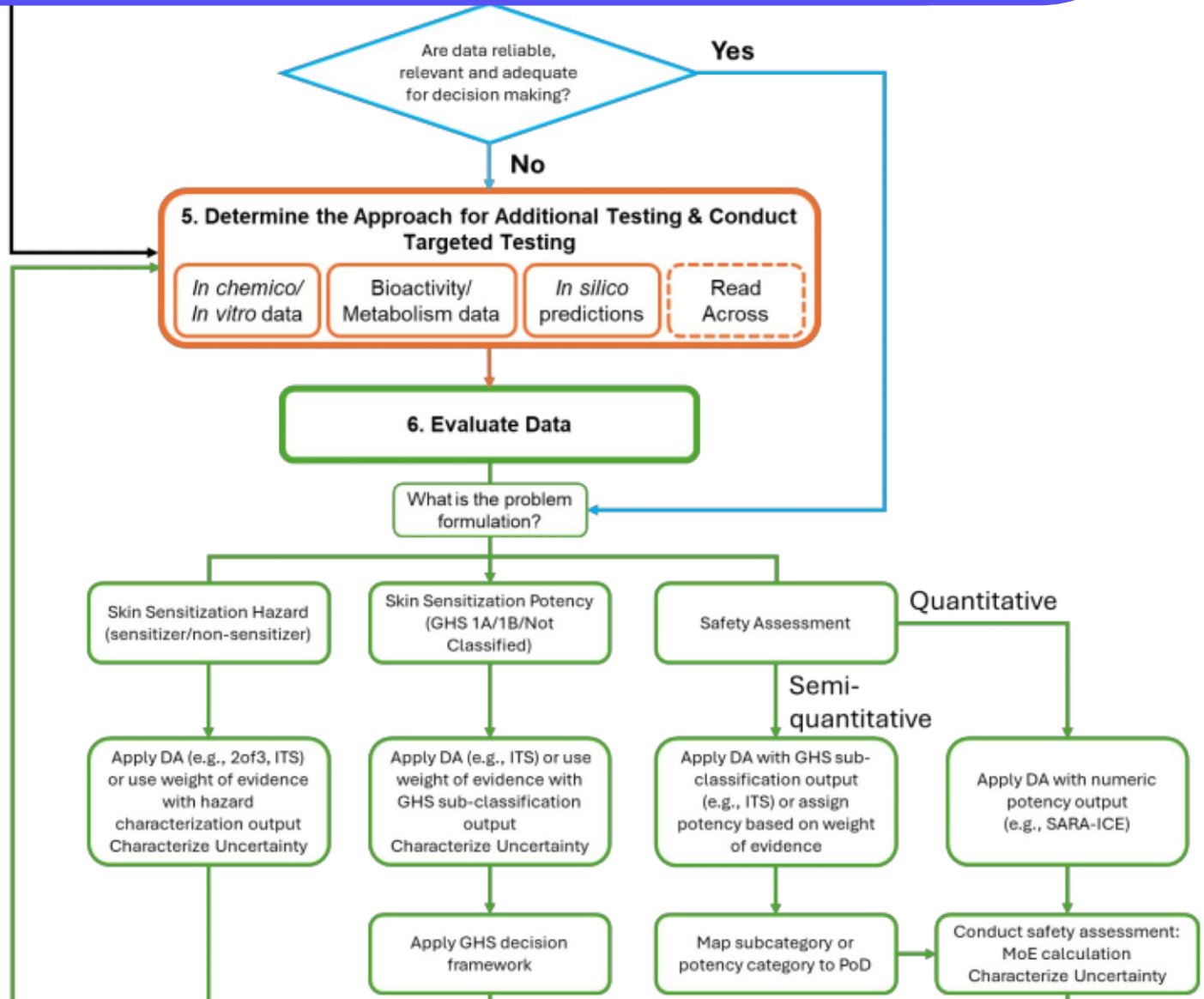

ICCS BPG – Example

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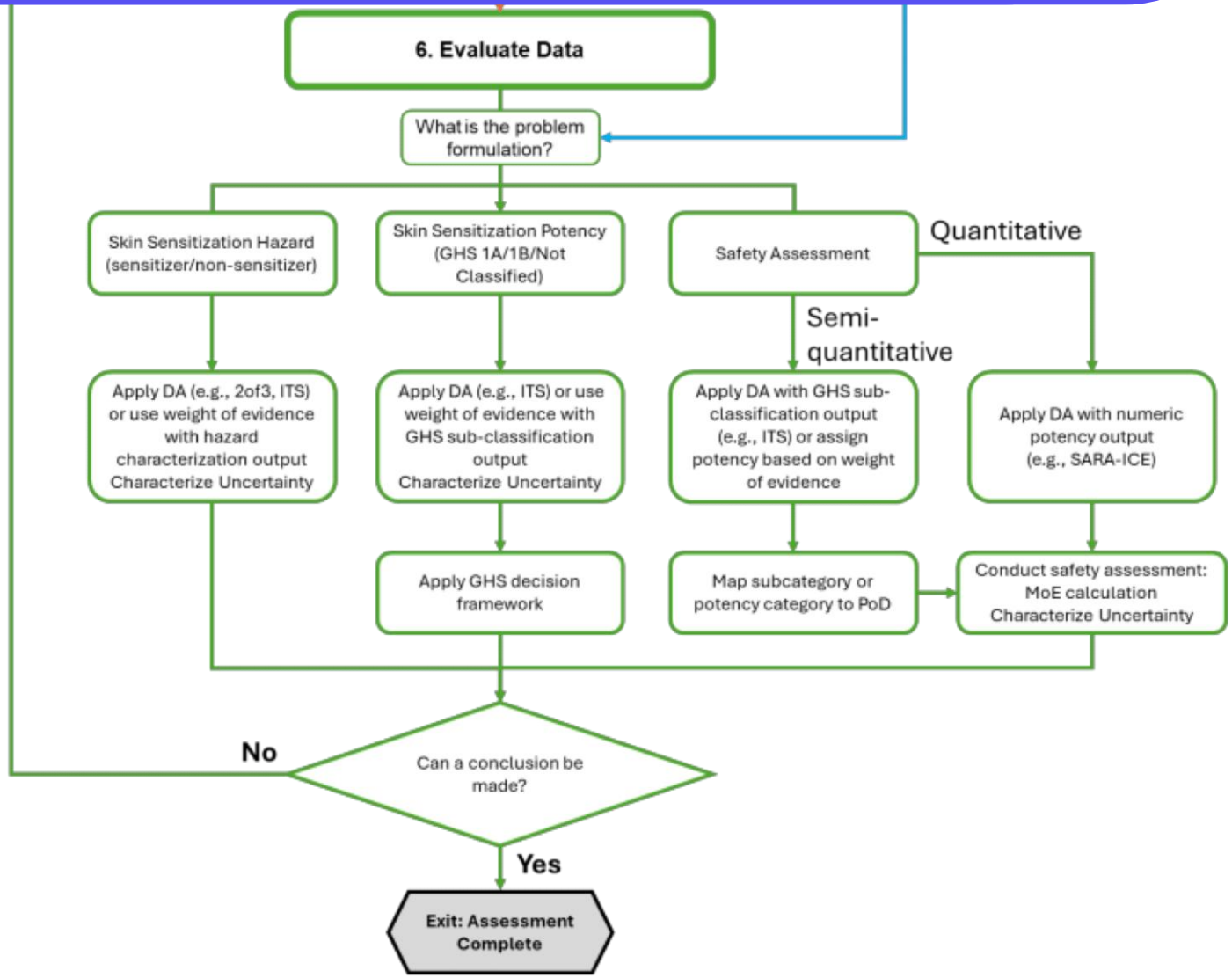
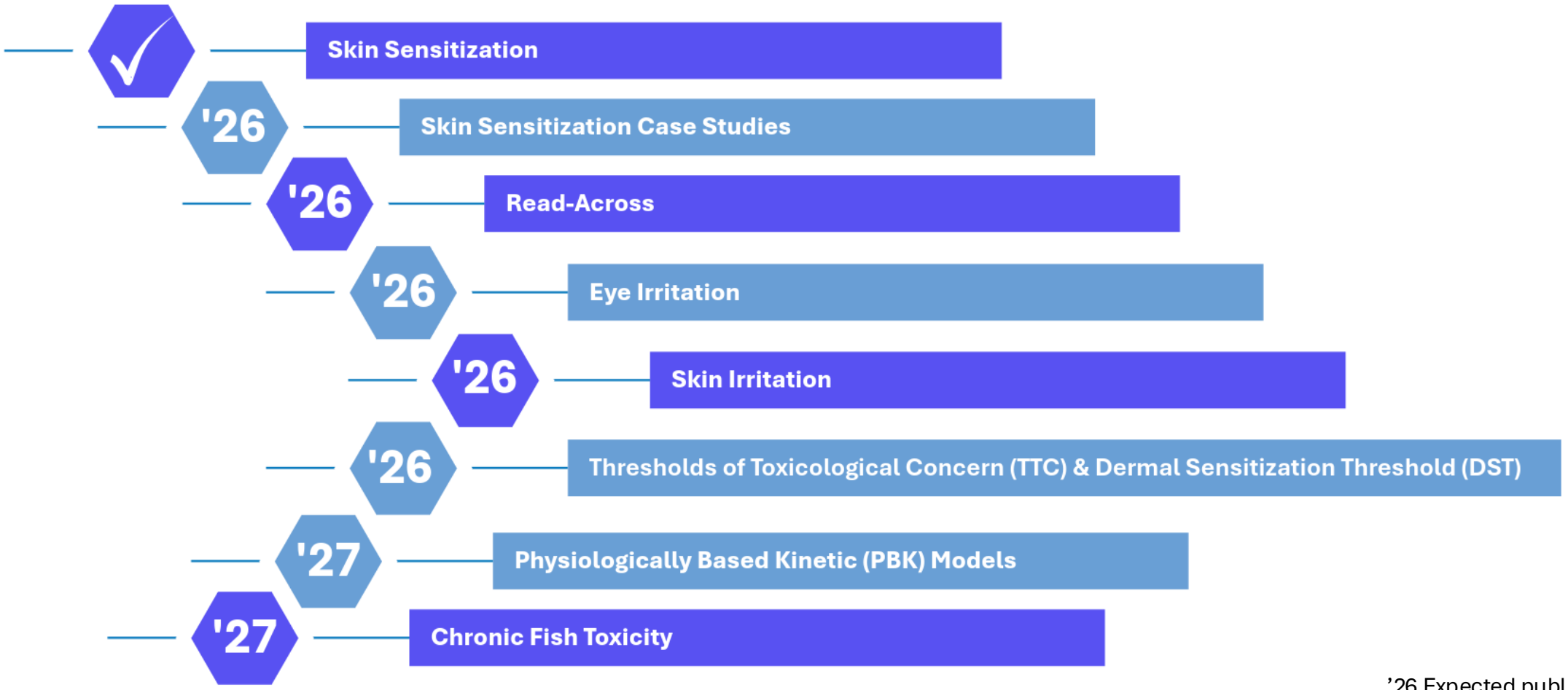


ICCS BPG – Example

- Connecting Test Methods and Technical Guidelines
- Establishing a Common Decision Matrix and Logic Flow
- Exposure-based Exit Ramps

Translating Theory into Practice
Standardized Approach
Enhanced Confidence

ICCS BPG – Pipeline



’26 Expected publication date = 2026
‘27 Expected publication date = 2027

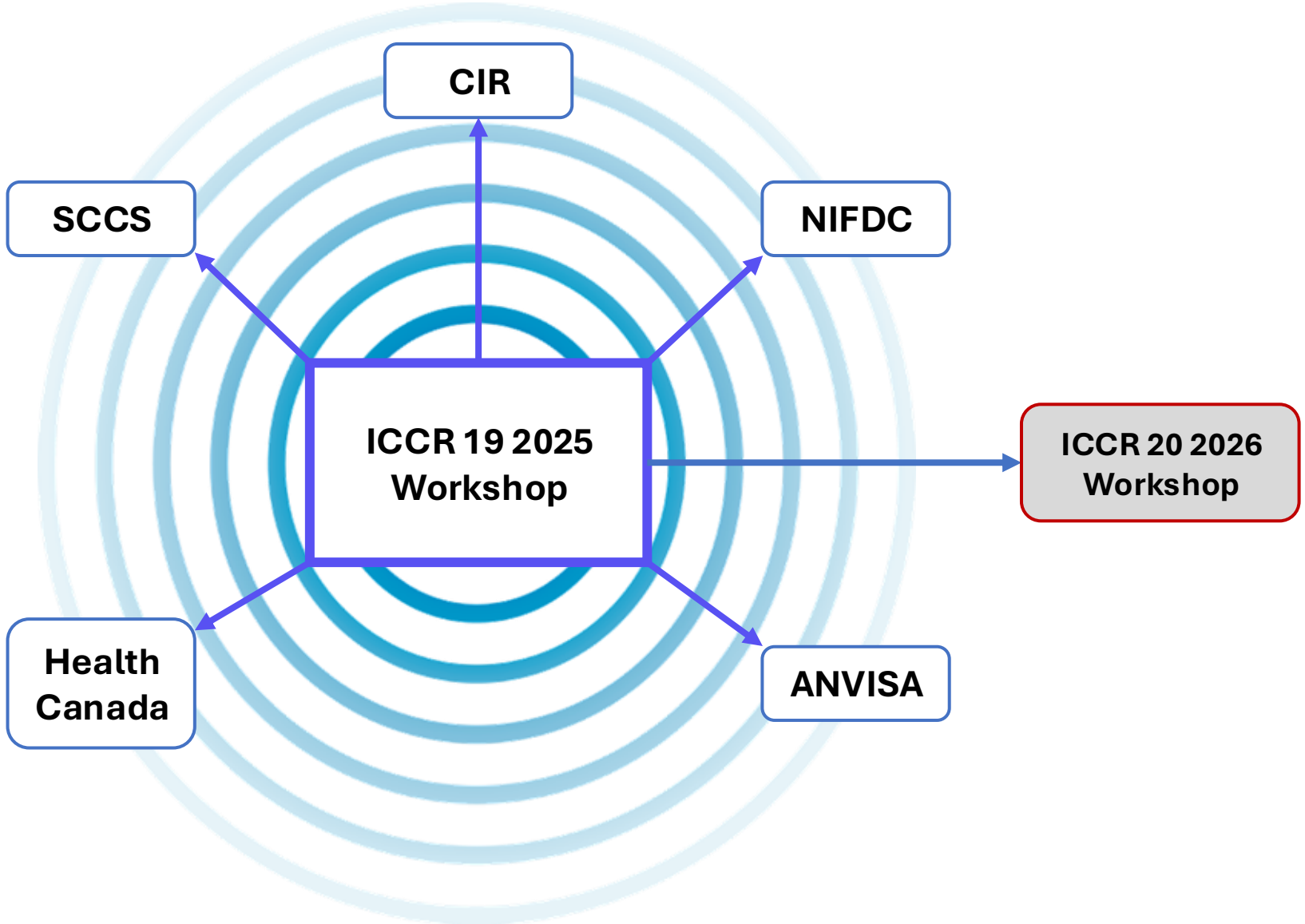
ICCS BPG – Keys to Success

- BPGs Build the Foundation
- Case Studies (BPGs in Practice)
- Technical Workshops
- Practitioner Training Seminars and Continuing Education
- Regulator Orientation Sessions
- ICCR Outreach and Joint Workshops

Learning Together

ICCS BPG – Uptake and Impact in Perspective

- Learning Together
- Refining Together
- Building Confidence Together
- Engaging Use Together



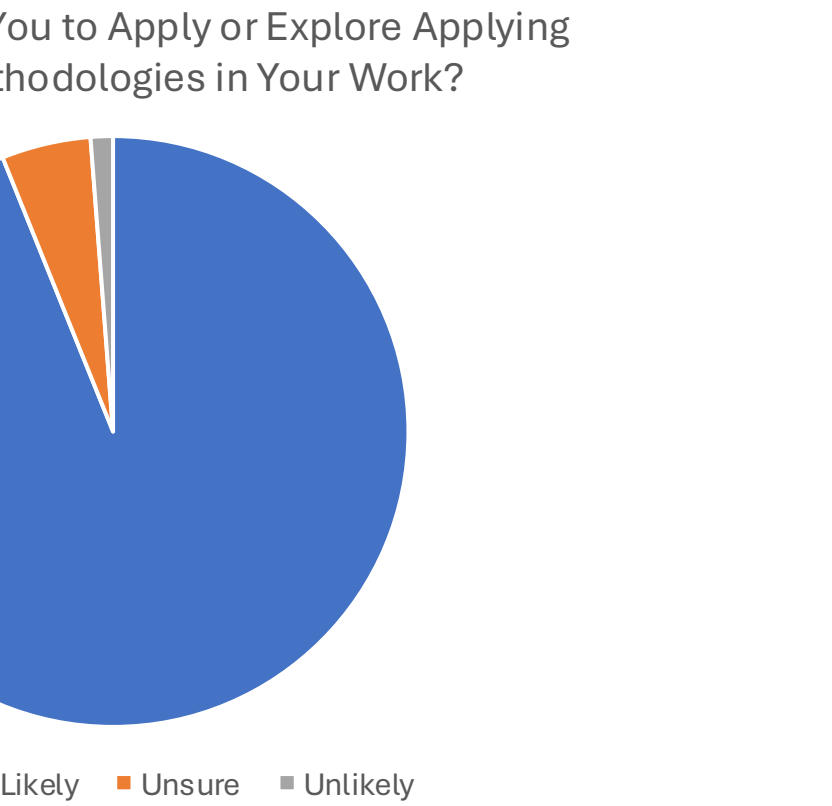
ICCS BPG – Making a Difference

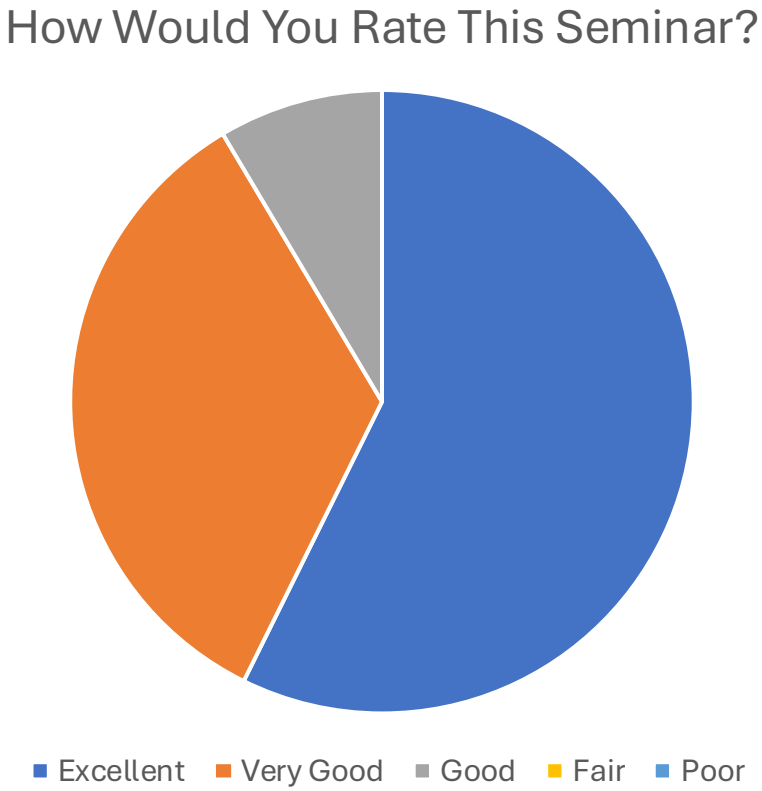
1000 Registered

572 Attended

14.3% Response Feedback

ICCS BPG – Making a Difference





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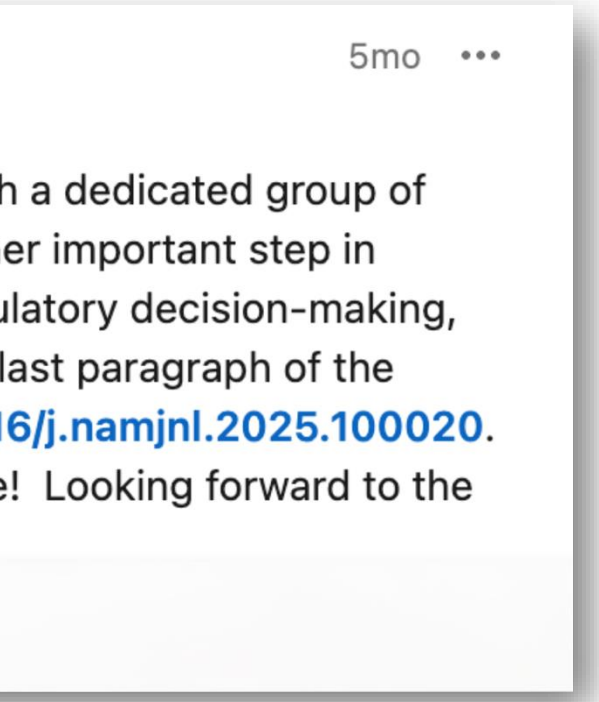
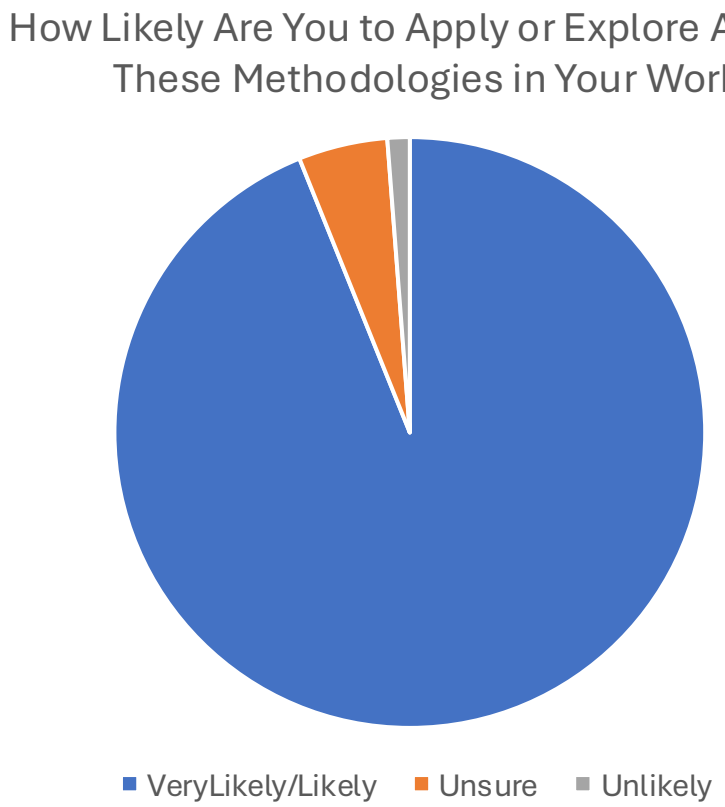
572 Attended

14.3% Response Feedback

ICCS BPG – Making a Difference





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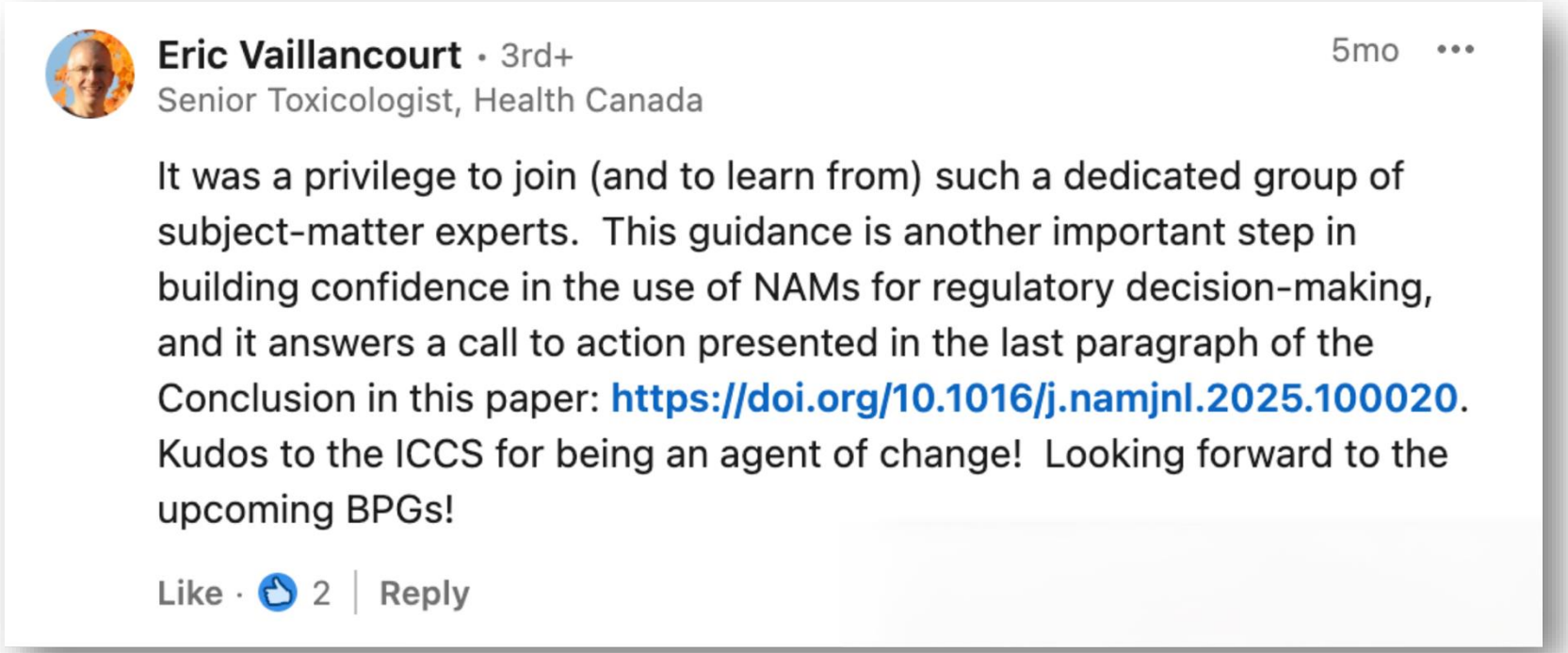
ICCS BPG – Making a Difference



Eric Vaillancourt • 3rd+
Senior Toxicologist, Health Canada
5mo •••

It was a privilege to join (and to learn from) such a dedicated group of subject-matter experts. This guidance is another important step in building confidence in the use of NAMs for regulatory decision-making, and it answers a call to action presented in the last paragraph of the Conclusion in this paper: https://doi.org/10.1016/j.namjnl.2025.100020. Kudos to the ICCS for being an agent of change! Looking forward to the upcoming BPGs!

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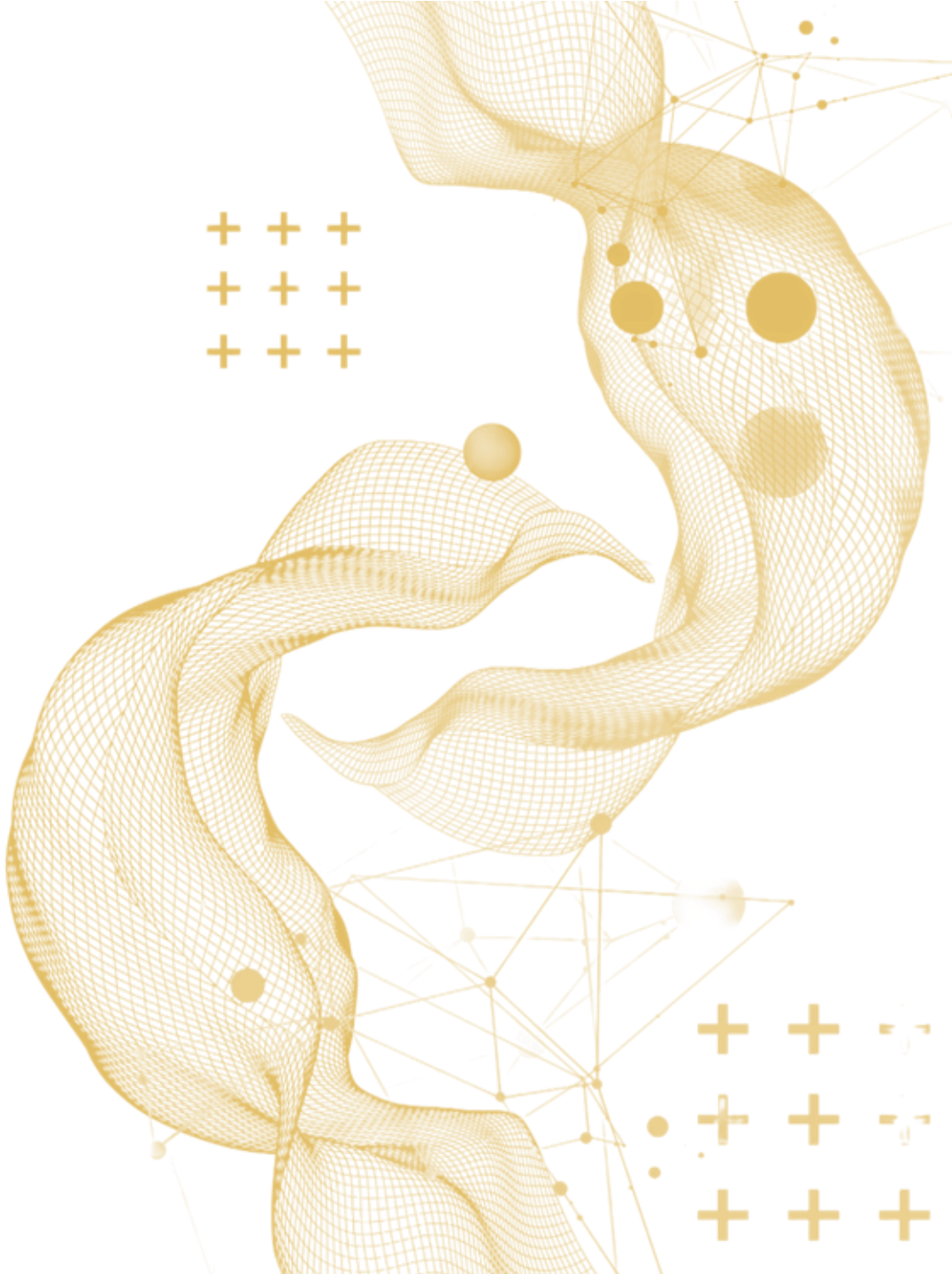

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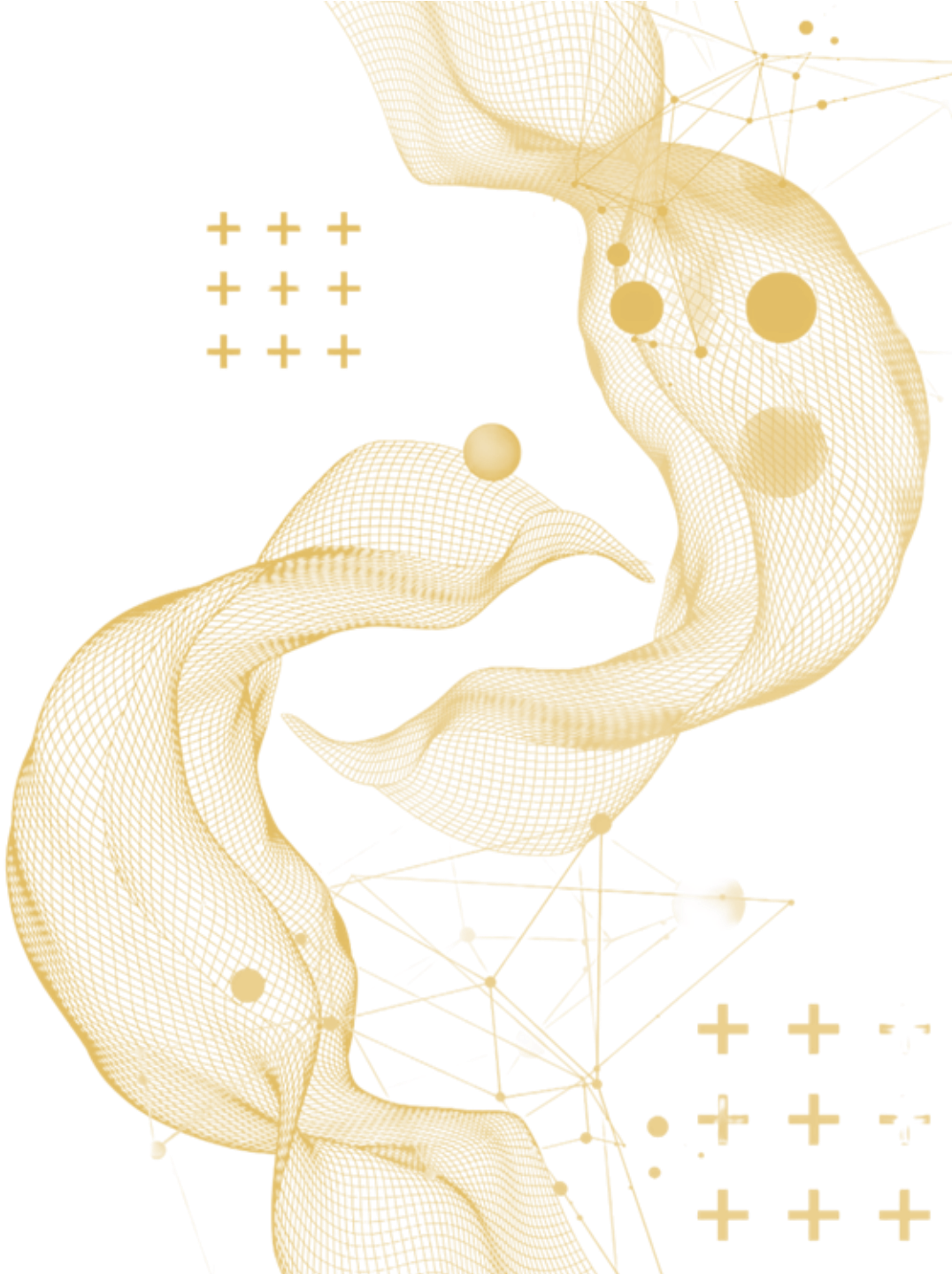
CLOSING REMARKS



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THANK YOU FOR JOINING US TODAY!