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# Phasing-in “NAMs” in the pharmaceutical industry

Nicolas Dudoignon  
Chief Veterinary Officer,  
Corporate Social Responsibility



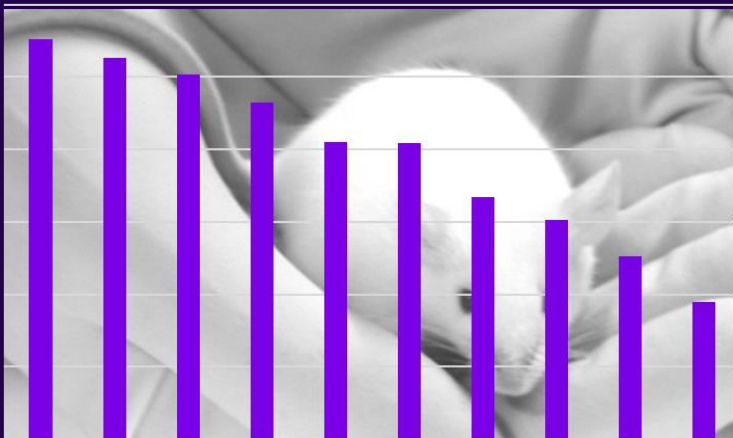
*EPAA Annual Conference  
Brussels, 15 November 2023*

# What are we aiming for?

Citizens



No Use of Animals in Research,  
Testing and Education



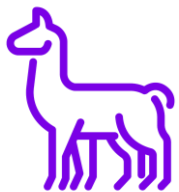
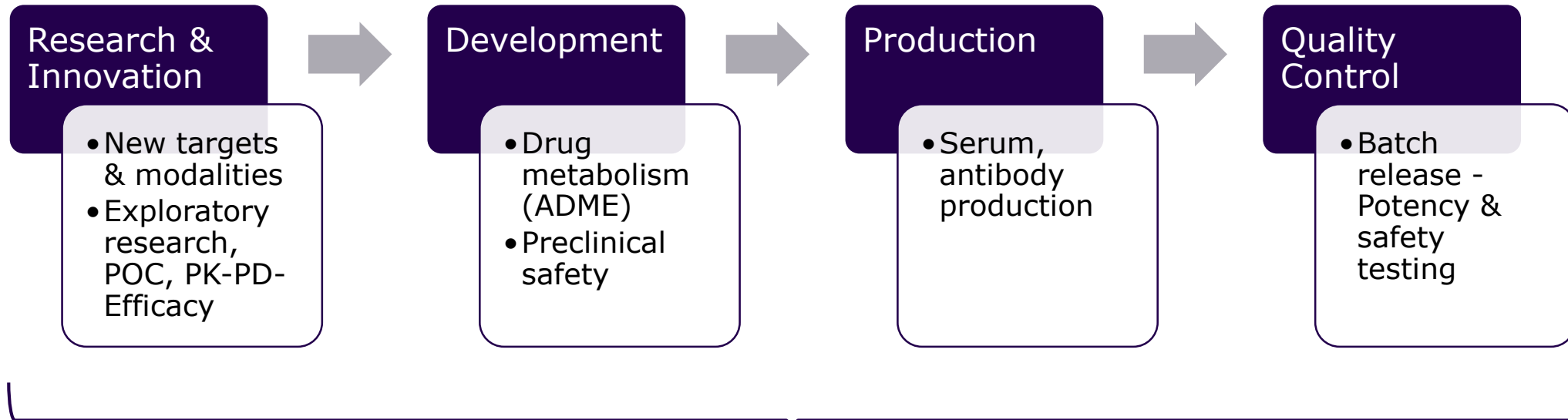
New drugs and vaccines  
for unmet needs



Pharmaceutical  
Company

# Life of a drug – from research to market

For biologically active substance (chemical compounds, biologics, and vaccines), animal use is still required for ethical, scientific and legal reasons



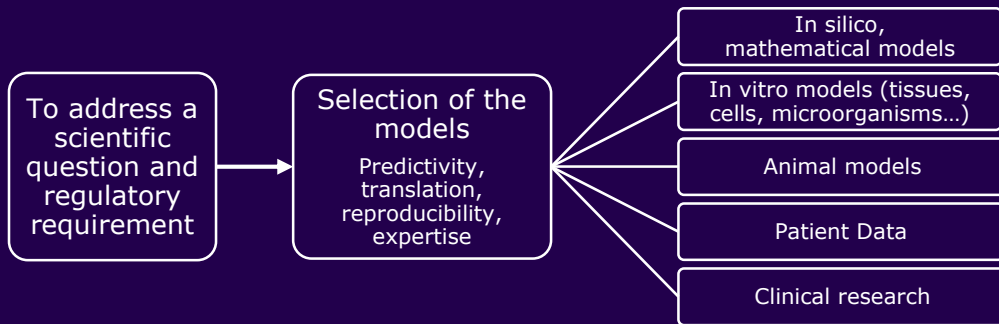
# Science-driven innovation for patients, 3Rs-driven Science for animals



Our Research and Testing activities are driven by Science. So is the development of new methodologies and the increasing knowledge on animal behavior, cognition and welfare.



Reliance on robust and proven models is essential to address **specific scientific questions** at each step of the processes.



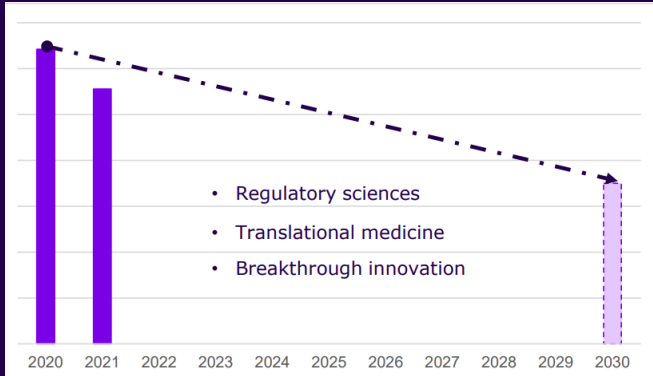
Animals are a small, but integral, part of a comprehensive approach

*Considering the intrinsic value of animal lives and the importance of preserving animal welfare as much as possible, although animal models cannot be rejected outright, their validity must systematically be challenged, and core animal protection principles are adhered to.*

# Beyond the 3Rs

I  
R  
T  
S

Integrated  
Research &  
Testing  
Strategy



NAMs (Novel Approach Methodologies) are developing rapidly in number and diversity. Their uptake by scientific teams offers an opportunity to call for a formal strategy to support an overall reduction of animal use, across all functions and geographies

*IRTS is Sanofi strategy that lays out our guidelines to affirm rigorous, state-of-the-art science as key criteria to select the best available, feasible, and translatable models to address scientific questions and adhere to regulatory requirements, most importantly with the primary aim to relieving Sanofi of toward reliance on live animals.*

01

Constant challenge over model selection

02

Breakthrough innovation for consistent translational research and testing

03

Regulatory acceptance of novel models and technologies

04

Awareness, education, training and communication

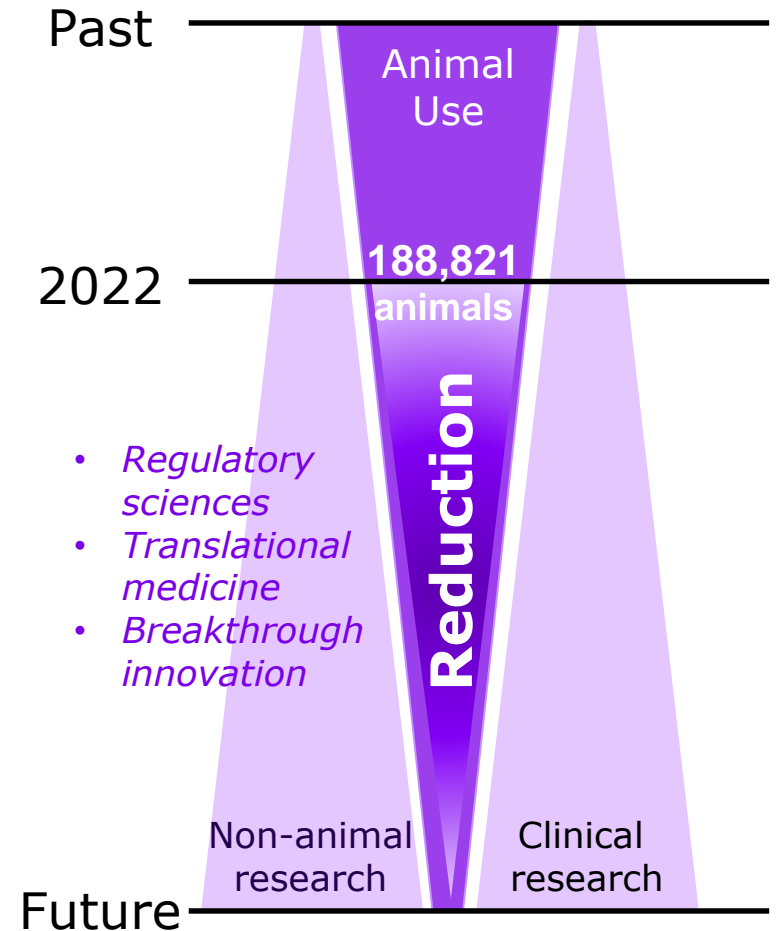
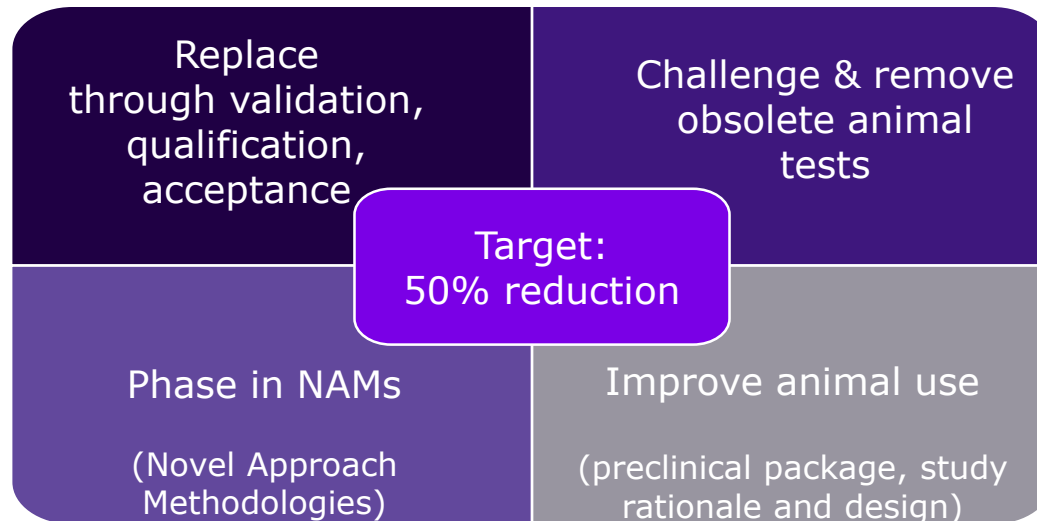
*IRTS's ultimate goal is a reduction of 50% of animal use in 10 years (2020-2030).*



# IRTS, how to?

**Each department** must set a clear and ambitious program, including:

- Governance
- Objectives, deliverables and Key Performance Indicators
- Programs to support scientific development of NAMs, technology scouts
- Regulatory science, advocacy, regulations change, weight of evidence
- Active participation in public-private partnerships and collaborations relating to the use of animals in research and testing
- Awareness and outreach programs
- Internal and external communication and reporting global progresses



# IRTS, in substance

## Virtual Control Groups (VCG)



- First idea to use **Virtual Control Groups instead of concurrent control animals** was developed by the IMI consortia eTOX and eTRANSDIFF
- Basis for VCG was the use of the shared non-confidential historical control data

- Concept for VCG published in ALTEX in March 2020

### Principles & concept for application of VCG

- **Collection** of study data from historical control groups
- **Data sharing** to build a large control data repository
- **Statistical analysis** with respect to data variability (strain, age, study duration, vehicle etc.)
- Compilation of **randomized VCG**
- **Replacement** of the **animal control** group by this **VCG** in toxicity studies

→ potential to reduce 25% of animal per toxicity study (3Rs)

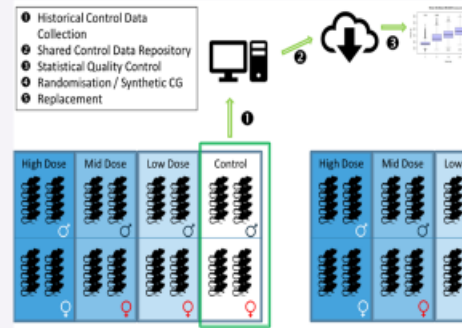


Food for Thought ... ALTEX 37(3), 343-349, 2020

### Introducing the Concept of Virtual Control Groups into Preclinical Toxicology Animal Testing

Thomas Steger-Hartmann<sup>1</sup>, Annika Kreschwig<sup>1</sup>, Lea Vinas<sup>1</sup>, Jörg Wichard<sup>1</sup>, Frank Bringezu<sup>1</sup>, Alexander Amberg<sup>1</sup>, Wolfgang Muster<sup>1</sup>, Francois Pognan<sup>1</sup> and Chris Barber<sup>6</sup>

<sup>1</sup>Boyer AG, Pharmaceuticals, Investigational Toxicology, Berlin, Germany; <sup>2</sup>Merck Healthcare KGaA, Chemical & Preclinical Safety, Darmstadt, Germany; <sup>3</sup>Sanofi, Preclinical Safety, Frankfurt, Germany; <sup>4</sup>Roche Pharmaceutical Research & Early Development, Pharmaceutical Sciences, Roche Innovation Center, Basel, Switzerland; <sup>5</sup>Novartis Institute for Biomedical Research, Basel Switzerland; <sup>6</sup>Lexon Ltd, Leeds, UK



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## Overall strategy for vaccine analytical testing

### 3Rs Achievements

- In vitro potency  
Hep A  
Hep B  
Act-HIB  
IPV  
DTaP potency refinement
- In vitro/removal safety tests  
Diphtheria  
ATT/GST (partial\*)  
Pyrogen (partial\*)  
Histamine (partial\*)
- Primary kidney cells replacement

\*partial = done for some products

### REMAINING CURRENT QC in vivo TESTING

- In vivo potency (DTaP, IPV, Rabies)
- Safety tests (Pyrogen, Abnormal and Specific Toxicity, Adventitious Agents, Tumorigenicity)

### PARTIAL REPLACEMENT, REMOVAL & REFINEMENT

- Rabies and polio Potency Tests replacement
- Legacy Safety Tests Removal and Replacement
- DTaP potency (Single Immunogenicity Assay for AcXim, serological assay Acel (Europe))

### FULL IN VITRO POTENCY and SAFETY TESTING (North America/Europe)

### FULL REPLACEMENT & REMOVAL Animal derived reagents / Characterization tests / Raw material testing

2023 current situation

2025 target

2030 target

2035



ZERO animals in QC

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# IRTS, in substance

## Improved experimental design

More integrated approach  
Optimized reuse of animals  
Challenge on (2<sup>nd</sup>) species  
Virtual control groups



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## Networking Knowledge sharing

3D / MPS models community  
Translational Sciences &  
Innovation  
Seminars, Workshops



## Collaboration

Scientific collaboration  
Advocacy partnership



# Conclusion

- Models and approaches are complex and complementary
- Science is the driver
  - For the development and uptake of NAMs
  - To choose model(s) according to each specific question and scientific purpose
- Collaboration and commitment are key
  - To foster science and bridge gaps
  - To achieve international regulatory acceptance
  - To develop a transparent approach on challenges and opportunities about NAMs

Acknowledgements:

all colleagues from R&D, Manufacturing and Supply fully committed to our Animal Protection Policy



Thank You



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