National Toxicology Program
U.S. Department of Health and Human Services

Exhibitor Hosted Session

Join the National Toxicology Program as Agency Representatives Discuss Ongoing Activities and the Program's New Vision.

Monday, March 20, 2023

3:00 – 4:00 p.m.

Music City Center
Room 101A

Rick Woychik, Ph.D.
Director, National Institute of Environmental Health Sciences and National Toxicology Program

Namandjé Bumpus, Ph.D.
Chief Scientist
Food and Drug Administration

Nigel Walker, Ph.D., D.A.B.T.
Acting Director, Office of NTP Scientific Operations and Coordination, National Institute of Environmental Health Sciences

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The National Toxicology Program

Rick Woychik, Ph.D.
Director, National Institute of Environmental Health Sciences and National Toxicology Program

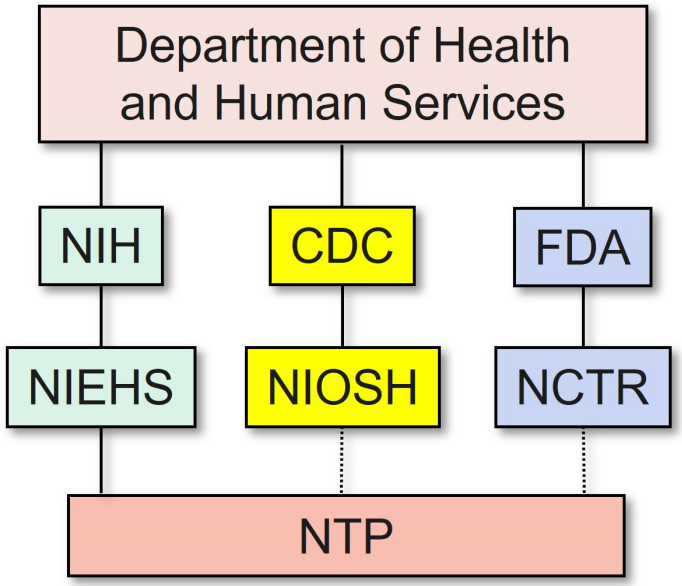
Agenda

- Welcome and Director's Remarks
  - Richard Woychik, Ph.D., National Institute of Environmental Health Sciences and National Toxicology Program
- NIOSH Perspectives
- FDA Perspectives
  - Namandjé Bumpus, Ph.D., Food and Drug Administration
- Ongoing NTP Activities
  - Nigel Walker, Ph.D., National Institute of Environmental Health Sciences, Division of Translational Toxicology (DTT)
- Q&A Session and Open Discussion
- Meet & Greet

US National Toxicology Program (NTP)

- An Interagency partnership of relevant toxicological research activities at NIEHS, NIOSH, and FDA
- Since 1978, the partnership has played a critical role in generating, interpreting, and sharing toxicological information about potentially hazardous substances in our environment
- Science is used for programs, activities, and policies that promote health or lead to the prevention of disease

"Science you can depend on for decisions that matter"

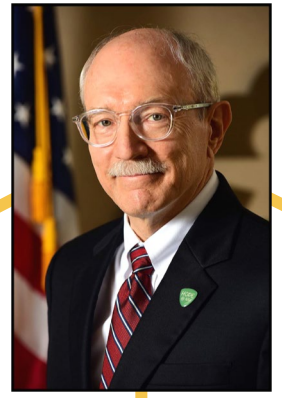


https://ntp.niehs.nih.gov

Key activities carried out under the NTP partnership

- Researching substances or issues of concern
  - Conducting short-term, long-term, and mechanistic studies to determine health-related effects including cancer, and reproductive and developmental disorders
- Developing better ways to predict what effect chemicals will have on people
  - Testing chemicals faster and more efficiently, through the implementation of NAMs
- Reducing reliance on the use of animals in toxicity testing
  - Coordination of federal and international efforts to advance the acceptance of scientifically valid non-animal alternative tests
- Informing Public health decision-making
  - Identifying substances that pose a cancer hazard to humans, through the Report on Carcinogens
- Enabling other scientists/public by making data and tools freely available
  - Integrating more than 9,000 toxicology and toxicogenomics study results and supporting information In NTP databases

NTP Leadership



Rick Woychik
Director, NIEHS and NTP

Namandjé Bumpus
Chief Scientist, FDA

Trevor Archer
Scientific Director
(acting), NIEHS/DTT

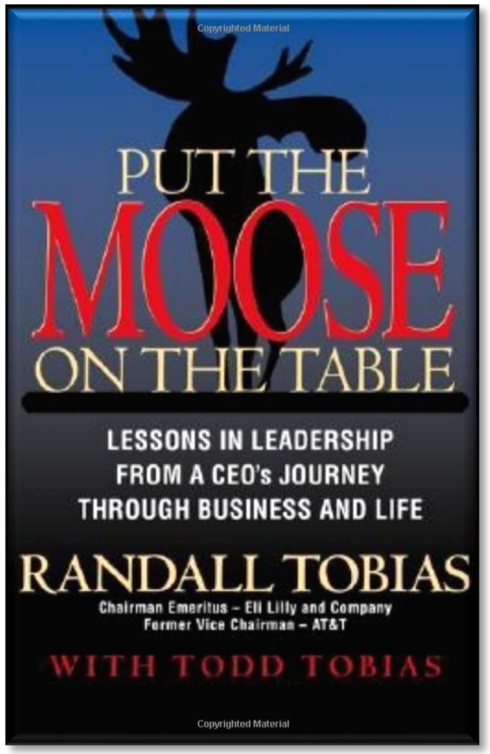
John Howard
Director, NIOSH

NTP Executive Committee

- Department of Defense
- Environmental Protection Agency
- National Cancer Institute
- National Center for Environmental Health/Agency for Toxic Substances and Disease Registry
- Consumer Product Safety Commission
- Occupational Safety and Health Administration

NTP has gone through some recent changes

- In 2020, the Director established a vision of an improved “interagency NTP” model
  - Intent for greater engagement, coordination, and communication over projects
- Crucial conversations on key goals and operations
  - Improve interagency coordination and communication
  - Engagement across partners around the scientific portfolio
  - Clarify partner resource commitments for funding of the NTP
  - Increase clarity over what are interagency “NTP” projects vs NIEHS intramural research



Some Key Changes

- New NTP Vision and Mission
  - Vision: Innovative and trusted toxicological science protecting human health
  - Mission: Partnering to build knowledge and advance toxicological sciences to protect and promote human health
- Revised Steering Committee composed of leadership from NIEHS, FDA, and NIOSH that meets regularly to discuss NTP business
- Established an Office of NTP Scientific Operations and Coordination (ONSOC)
  - Supports interagency coordination and engagement around NTP activities
  - Implements operational model and “NTP cascade”
- Changed name of the NIEHS’ intramural research “Division of the National Toxicology Program” to Division of Translational Toxicology (DTT)

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National Institute for Occupational Safety and Health

NIOSH Perspectives

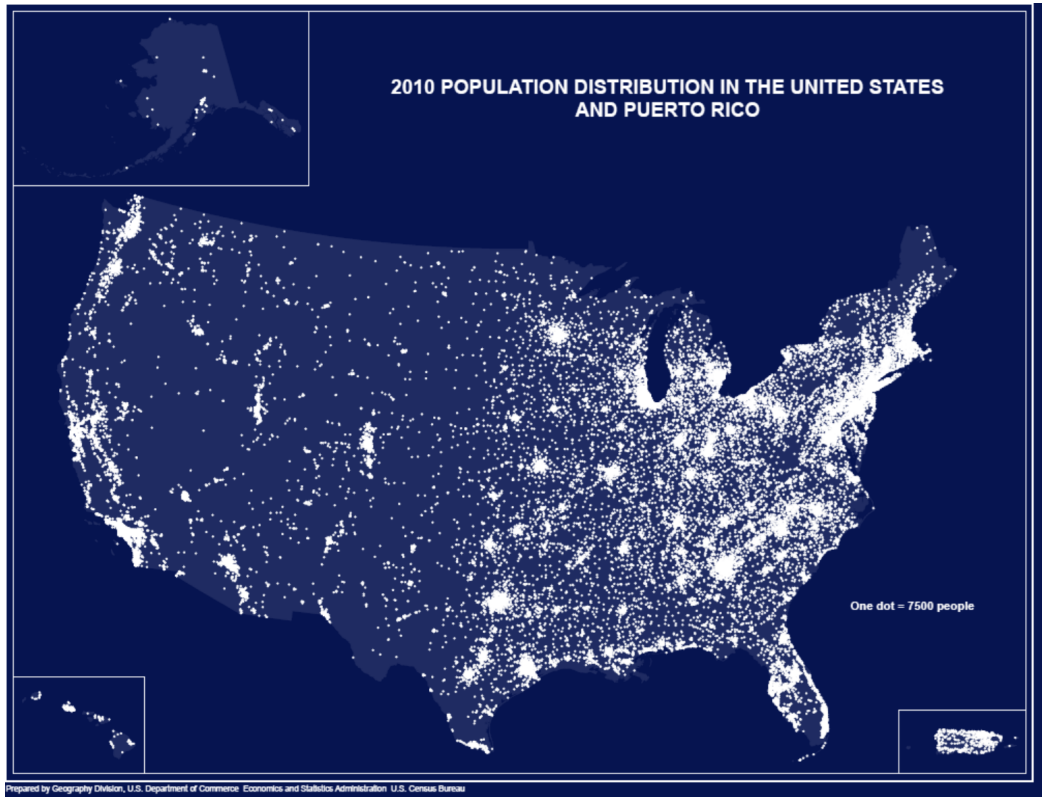
NIOSH Perspectives

The NIOSH mission is to develop new knowledge in the field of occupational safety and health, and to transfer that knowledge into practice.

US Workforce Statistics

Around 160 million workers in the United States[1]

$250 billion in medical costs and productivity losses[2]



1. U.S. Department of Labor, Bureau of Labor Statistics. Current Population Survey. 2017. http://www.bls.gov/cps/cpsaat01.pdf.
2. Leigh JP. Economic burden of occupational injury and illness in the United States. Millbank Q 2011;89:728-72.

Chemicals are one of the most significant occupational hazards

- 52.1 Million workers estimated exposed to chemicals in their work[1]
- From 2011-2015
  - 71,140 illnesses or injuries associated with chemical exposures[2]
  - 4,836 chemical-related fatalities[3]
- Difficult to estimate number of chronic diseases: cancer, pulmonary, cardiovascular, neurologic related to chemicals
  - 2–8% of cancers attributed to occupational exposures[4]
  - Severe underestimation has been identified

1. Calvert et al. 2013
2. BLS 2011-2015
3. BLS 2011-2015
4. Purdue et al. 2015

Features of the NIOSH NTP Partnership

- Characterize occupational exposure to agents of mutual interest to NTP and NIOSH and assess potential health effects
- Workers' exposure is greater than non-workers
- Capitalize on NIOSH access to worker populations and work sites to provide real-world context for toxicology studies
- Guide decision-making for NIOSH epidemiologic studies
- Provide toxicological and epidemiologic evidence for guidance documents





FDA Perspectives

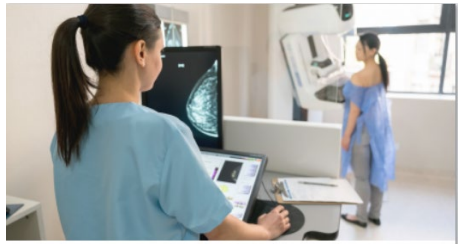
Namandjé N. Bumpus, Ph.D.
Chief Scientist
Food and Drug Administration

FDA Perspectives

The Food and Drug Administration is responsible for protecting the public health by ensuring the safety, efficacy, and security of human and veterinary drugs, biological products, and medical devices; and by ensuring the safety of our nation's food supply, cosmetics, and products that emit radiation.

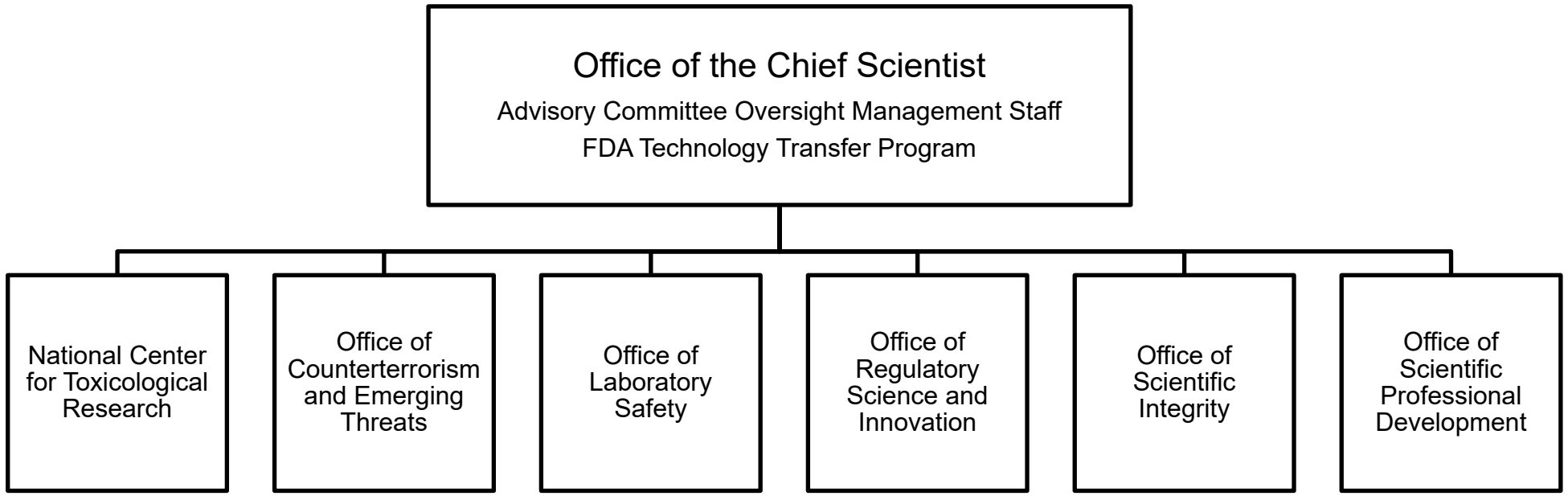
FDA also has responsibility for regulating the manufacturing, marketing, and distribution of tobacco products to protect the public health and to reduce tobacco use by minors.

As a science-based regulatory agency, the FDA relies on the best available science to inform its decision-making process to protect public health.



Office of the Chief Scientist Organization

Office of the Chief Scientist is part of the Office of the Commissioner



National Center for Toxicological Research (NCTR)

Established in January 1971 as a national resource to conduct integrated toxicological research and foster interagency, academic, and industrial collaboration in support of risk-assessment needs related to public health

Personnel resources

5 Offices

6 Research divisions

~500 employees

Infrastructure

1M+ sq. ft. − 30 buildings

100+ experimental laboratories

75+ AAALAC animal laboratories

State of the art laboratory instrumentation

NCTR Research and Focus Areas

Foundational Expertise

- In vivo and in vitro metabolism and PBPK modeling
- Animal models including chronic bioassays
- Bioinformatics and biostatistics
- Translational biomarker discovery
- Systems biology
- Genetic toxicology
- Developmental/reproductive/behavioral toxicology
- Antimicrobial drug resistance and virulence in pathogens
- Virology
- Human microbiome
- Neurochemistry, neuropathology, and behavioral studies
- Inhalation core facilities

Emerging Technologies

- Nanotechnology
- Advanced imaging capabilities
- Artificial Intelligence (AI)
- Innovative computational modeling
- MPS and stem cell systems

Advisory Functions & Expertise Support

- Global regulatory sciences research outreach
- Engagement in international public health bodies (*e.g.,* WHO, FAO)
- International standards methodologies

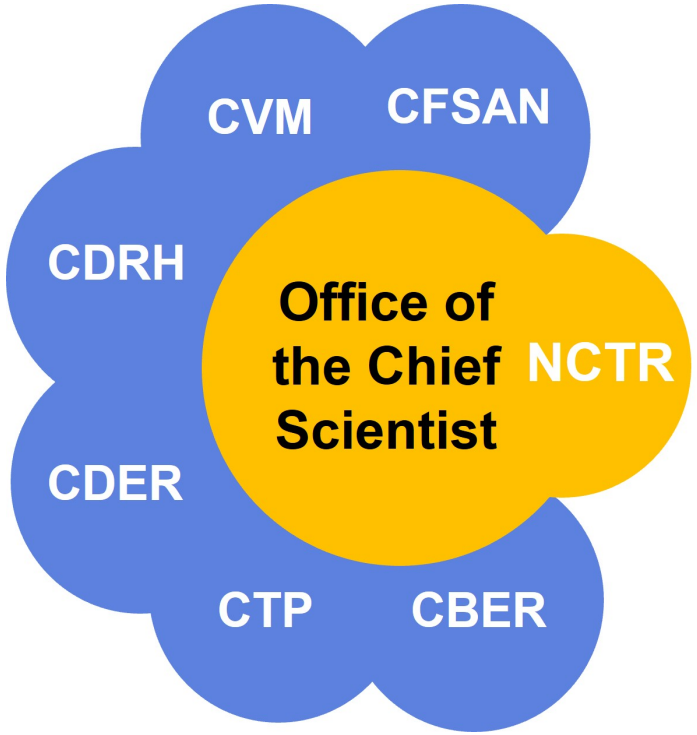
FDA as a core agency of the NTP: A timeline of the partnership

1978 - Secretary of Health, Education, and Welfare (current Department of Health and Human Services) establishes the National Toxicology Program

1979 - FDA Commissioner designates NCTR to implement FDA's part of the Program

2023 - NCTR remains a critical research asset of the FDA and the key interface between the agency and the NTP

FDA as a core agency of the NTP: Interfacing with FDA's regulatory mission



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FDA's participation in the NTP is coordinated through the Office of the Chief Scientist and NCTR in collaboration with the FDA product centers

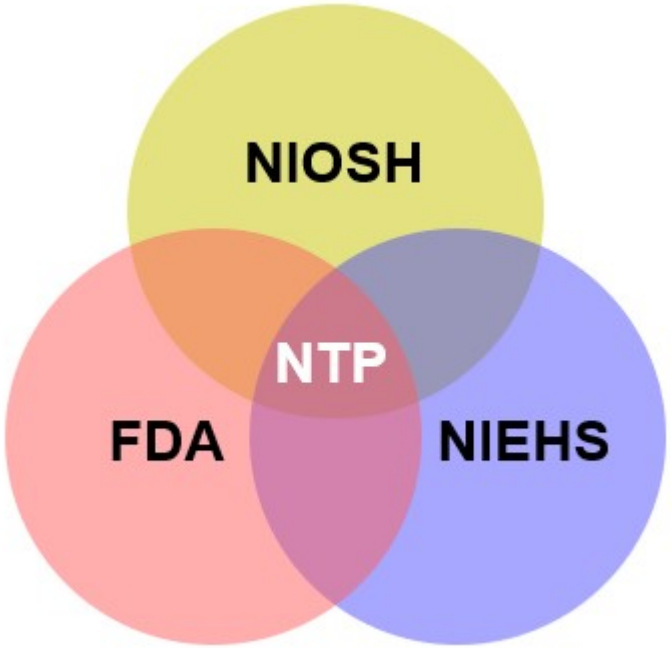
National Center for Toxicological Research

NCTR conducts research in close collaboration with NIEHS that addresses regulatory data gaps of the agency. The products of this research, reported primarily as peer reviewed manuscripts in the scientific literature, NTP Technical Reports and NTP Research Reports, routinely play a foundational role to inform the regulatory decision-making process of other national and international regulatory agencies and public health bodies

Looking forward into the partnership

Ongoing engagements with NIOSH and NIEHS under the NTP are strengthening the partnership and fostering enhanced collaborative models to ensure that the program remains a leading source of trusted science to protect public health.

As a core agency of the National Toxicology Program since its implementation, and as a regulatory user of its gold-standard research products, the FDA is committed to the future of this partnership.



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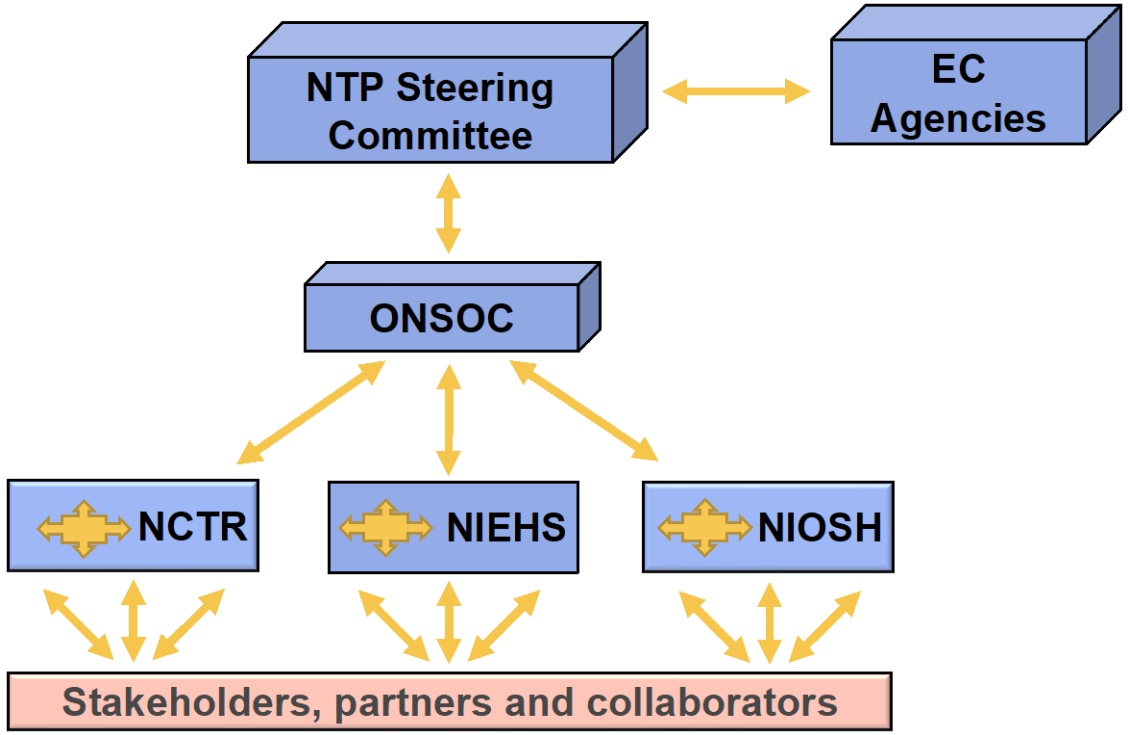
Office of NTP Scientific Operations and Coordination (ONSOC)

Nigel Walker, Ph.D., D.A.B.T.

Acting Director, Office of NTP Scientific Operations and Coordination,
National Institute of Environmental Health Sciences

Office of NTP Scientific Operations and Coordination (ONSOC)

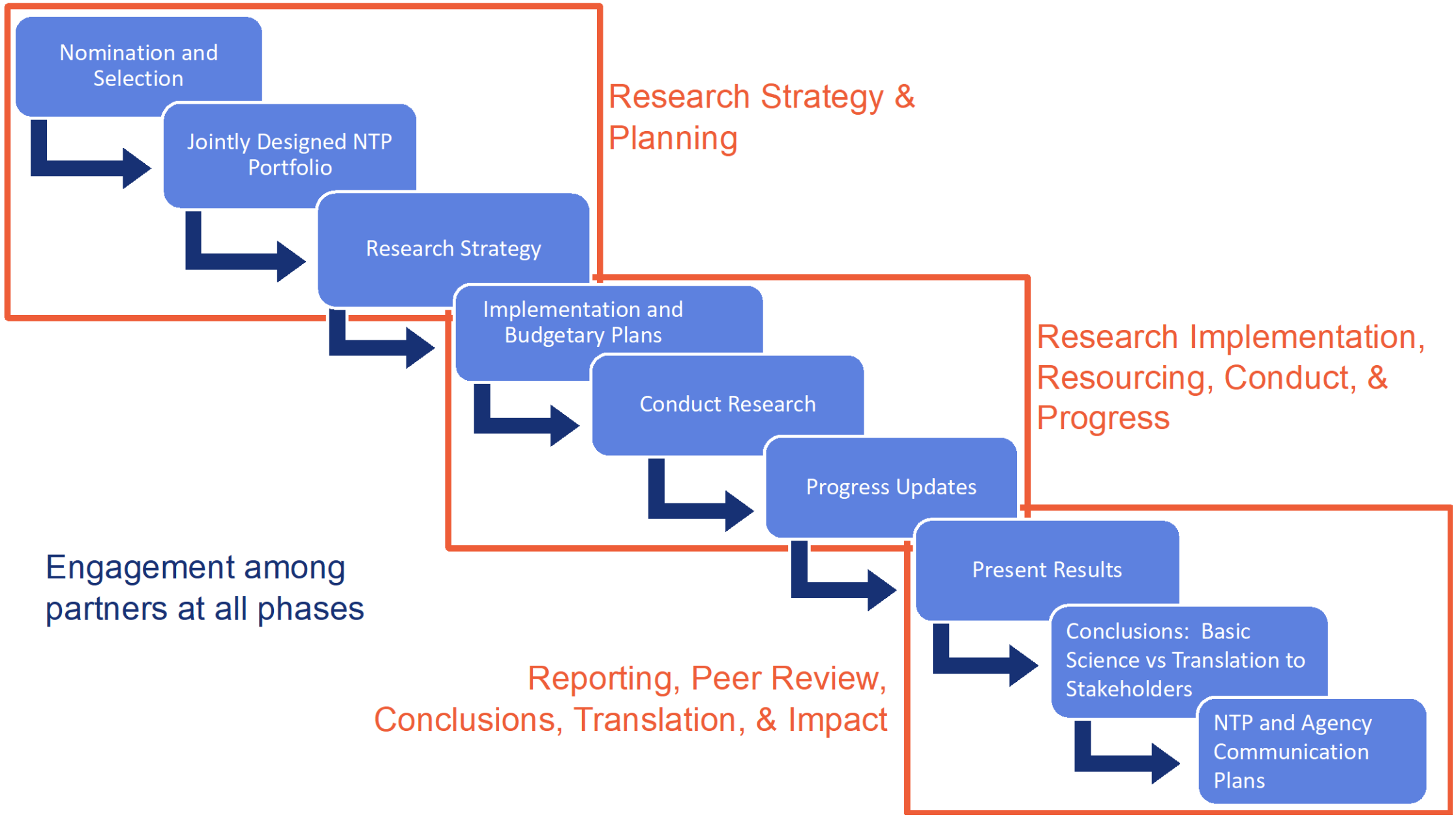
- Interagency implementation team with representatives from each NTP partner
  - Gonçalo Gamboa da Costa (NCTR/FDA)
  - Tina Lawson (NIOSH/CDC)
  - Tucker Patterson (NCTR/FDA)
  - John Piacentino (NIOSH/CDC)
  - Nigel Walker (NIEHS/NIH) (Director)
  - Mary Wolfe (NIEHS/NIH)



ONSOC Key Areas and High-Level Goals

- Research Strategy and Planning
  - Lead and foster identification of new impactful NTP initiatives
  - Ensure establishment of effective interagency research teams and development of research strategies
- Research Implementation, Resourcing, Conduct, and Progress
  - Conduct regular oversight/review of projects and partner-agency portfolios in support of the NTP
- Reporting, Review, Conclusions, Translation, and Impact
  - Ensure external scientific peer review of draft NTP reports is conducted and completed in a timely manner
  - Establish and foster external advice and input on the NTP research portfolio and its translation and impact
- NTP Communication and Interagency Coordination
  - Foster an interagency NTP model of transparent and inclusive communication and coordination
  - Ensure a contemporary and responsive public-facing NTP presence

NTP Research Cascade



Key Outcome

A shift in how we interact and coordinate on interagency NTP projects

“NTP Portfolio”

- Hazard characterization studies
  - GLP guideline-compliant in vivo studies
  - Mechanistic investigations supporting hazard characterizations
- Implementation of New Approach Methodologies (NAMs) in hazard assessments
  - Application of Air-Liquid Interface approaches to assessing pulmonary hazards in vitro
- Literature-based integrated human cancer hazard assessments
  - Report on Carcinogens

Some Highlighted Ongoing NTP Research Activities

- Literature-based integrated human cancer hazard assessments
  - Woodsmoke, PAH, Nitro-PAH, Halogenated flame retardants, PCTF
- Assessing chronic carcinogenic hazards in vivo
  - Alpha-pinene, multiwalled carbon nanotubes, xylenes, sulfolane
- Assessing in vivo toxicity of environmental exposures
  - 2-Ethyltoluene; 1,2,4-trimethyl benzene
  - NBBS
- Hazards of fungal exposures associated with water-damaged buildings
  - Subchronic studies of *Aspergillus versicolor* and *Stachybotrus chartarum*

NTP Reports

- NTP Toxicity Reports (short-term/specialty studies)
  - TOX-103 – Ionic liquids (NIEHS)
  - TOX-104 – Usnic acid (NCTR)
  - TOX-105 – Usnea lichen (NCTR)
  - TOX-106 – Sodium metavanadate and vanadyl sulfate
  - DART-08 – Bisphenol-AF (NIEHS)
- NTP Technical Reports (chronic carcinogenicity studies)
  - TR-602 – TCPP (NIEHS)
  - TR-603 – Black cohosh extract (NIEHS)
  - TR-604 – Triclosan (NCTR)

Recent Scientific Coordination

- Briefings for the Assistant Secretary for Health, Department of Health and Human Services
  - NTP Research Characterizing Pulmonary Hazards
  - NTP Partner-agency Efforts Under the Artificial Intelligence (AI) Umbrella
  - NTP and Data Sharing: Past, Present, and Future
- Liaison with the Office of Science and Technology Policy (OSTP) Joint Sub-Committee on Environment, Innovation, and Public Health (JEEP)
  - PFAS
  - Sustainable Chemistry
  - Contaminants of Emerging Concern

NTP Executive Committee

- Serves as a focal point for broader federal coordination around NTP activities
- Provides guidance, input, and oversight to the NTP
- Composed of the heads (or their designees) of federal health regulatory and research agencies
- Fall 2022 "virtual retreat" to coordinate over identifying topics/issues that would benefit from cross-federal coordination

Federal Agencies Represented

- Department of Defense
- Environmental Protection Agency
- National Cancer Institute
- National Center for Environmental Health/Agency for Toxic Substances and Disease Registry
- Consumer Product Safety Commission
- Occupational Safety and Health Administration

Developing New Signature “NTP Activities”

- Relevance and Impact
  - Address contemporary and emerging concerns or stakeholder issues of
  - Benefit from interagency communication, coordination, and collaboration
- Outcomes and conclusions will be rigorously peer reviewed
  - Data shared publicly in Chemical Effects in Biological Systems (CEBS) database
- NTP products are independent of any individual organization
  - Do not represent the position or policy of any of the contributing organizations

Expectations for the Future NTP's Portfolio

- Continue to address contemporary and emerging concerns or issues
  - Greater focus on a smaller number of defined NTP signature initiatives
- Greater coordination across NTP partners and Executive Committee agencies regarding what is the "NTP Portfolio"
  - Continued role for NIEHS' Division of Translational Toxicology in coordinating NTP activities
- Engage with other federal NTP partners and other stakeholders to carry out activities
  - Partner agencies voluntarily use their resources to support "NTP activities"
  - Recognition that some Executive Committee agencies have limited R&D resources

How can YOU help?

- Identify emerging issues of concern
  - Make us aware of exposures/substances/issues of concern
  - ntp.niehs.nih.gov/go/input
- Provide feedback on NTP's current research
  - Identify approaches we should consider
  - Submit public comments on NTP reports
- Facilitate translation of information and knowledge
  - Help bridge between scientists and general public
- Subscribe to listserv and receive NTP News updates

NIEHS-Scientific Director Vacancy

- NIH/NIEHS Division of Translational Toxicology (DTT) Scientific Director (SD)
- Please visit the NIH Executive Careers Page for vacancy announcement or scan the QR code
- Review of DTT SD applications will begin on March 27, 2023
- The DTT SD serves on the NTP Steering Committee and the Senior Leadership Committee at NIEHS
- The DTT has four strategic programmatic areas of focus:
  - Exposure-based Research
  - Health Effects Innovation
  - Responsive Research
  - Strengthening Capabilities

- All DTT research programs use a team-based operating model

U.S. National Toxicology Program (NTP)

NIH/NIEHS

FDA/NCTR

CDC/NIOSH