

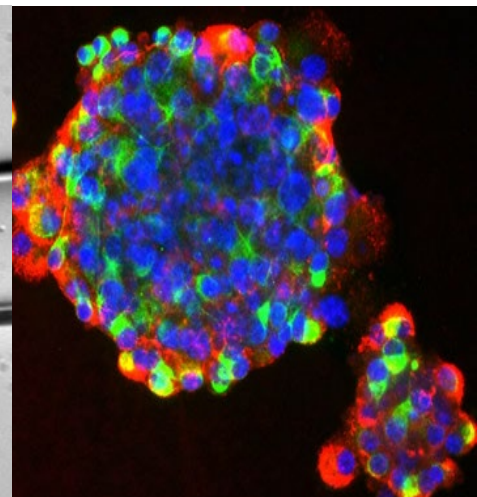
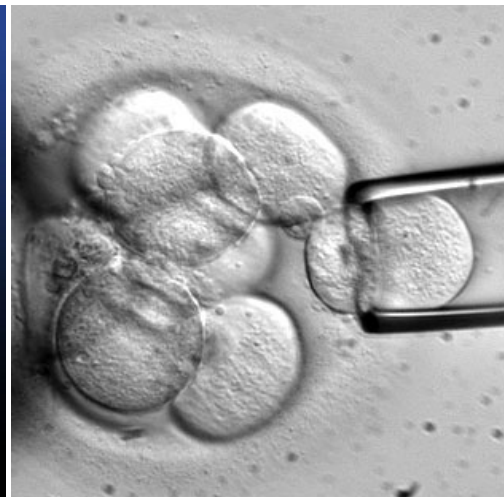
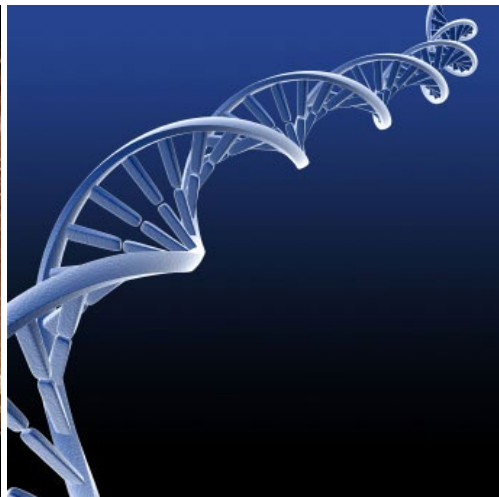
Individuals using assistive technology may not be able to fully access the information contained in this file. For assistance, please call 800-835-4709 or 240-402-8010, extension 1. CBER Consumer Affairs Branch or send an e-mail to: [ocod@fda.hhs.gov](mailto:ocod@fda.hhs.gov) and include 508 Accommodation and the title of the document in the subject line of your e-mail.

# Center for Biologics Evaluation and Research, FDA

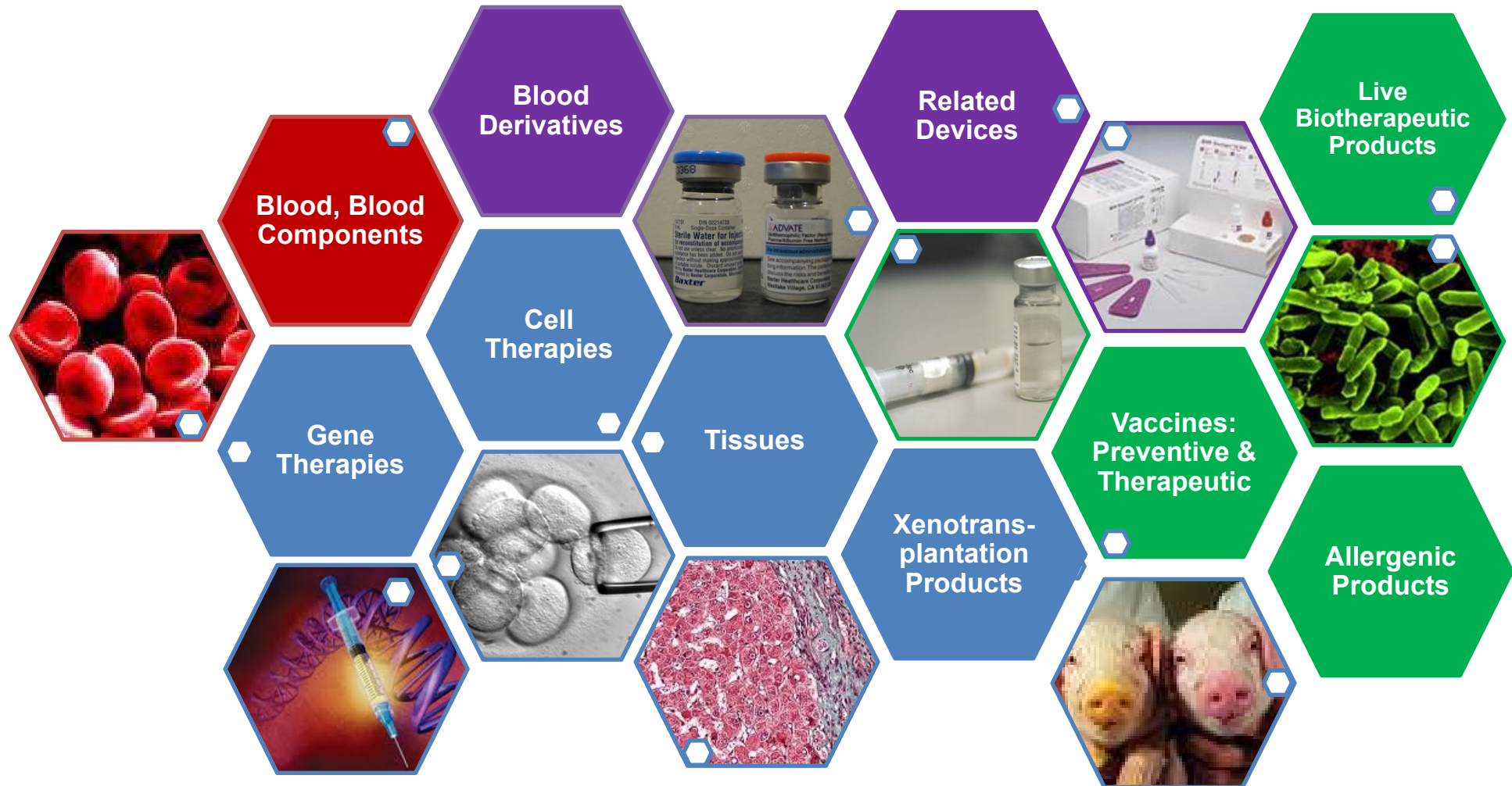
## Overview of CBER Research

Tod Merkel, Ph.D.

OVR, Associate Director for Research



# CDER Regulates Complex Biological Products



# CDER Strategic Plan Goals, 2021 – 2025



# White Oak Campus Laboratories and Facilities

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- 450,000 square feet for ~ 150 BSL-1 to BSL-3 laboratories and offices for ~ 450 research staff
- Core technologies:
  - Flow cytometry
  - Confocal microscopy
  - High-performance Integrated Virtual Environment (HIVE)
  - Biotechnology core facility:
    - Oligonucleotide, siRNA, PNA, and peptide synthesis
    - Peptide sequencing, DNA sequencing, RNASeq
    - HPLC; capillary electrophoresis
    - Mass spectrometry and proteomics
- State-of-the-art vivarium
  - Imaging facility with MRI, digital X-ray, IVIS, ultrasound
  - Transgenic derivation facility



# Funding

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- CBER operating funds distributed to Offices (Congressional appropriations)
- Competitive FDA funding opportunities:
  - Office of Women's Health
  - Office of Minority Health
  - Nanotechnology CORE Grants
  - MCMi Challenge Grants
  - Chief Scientist Challenge Grants
- External sources
  - Interagency Agreements with other government units
  - Competitive grants, with CRADAs
  - Not applicable to all programs



# CBER Laboratory Staffing

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- Lab staff are a mix of permanent employees (FTEs), staff scientists, and temporary ORISE fellows, contracts
  - FTEs are assigned by Division/Office, based on program needs
  - FTE staff fellows (temporary) and staff scientists (permanent) are subordinate to PIs
  - Funding for ORISE fellows, ranging from post-bac to post-doc, comes from division/lab budget and external funds; subject to annual budgets



# CBER's Research-Reviewers: The Approach to Regulating Biologics

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- Investigator-initiated research
- Topics of research include:
  - Basic to targeted studies, related to regulated products
  - Studies that develop data and tools that support development of classes of products
  - Studies to fill knowledge gaps that inform policy development and regulatory decision-making
- CBER's research and review are integrated



# CDER's Research-Reviewers: Role in Regulatory Review Teams

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- Chemistry, manufacturing, and control (CMC) product reviewer:
  - Scientific rationale, data for proof-of-concept
  - Production techniques and resulting product
  - Quality control testing
  - Clinical assays

## Other review team members:

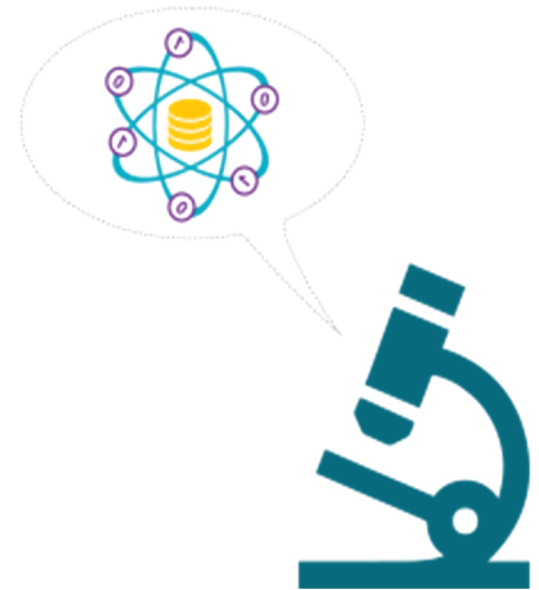
- Regulatory Project Manager: oversight
- Pharmacology/toxicology reviewer
- Clinical reviewer
- Statistical reviewer



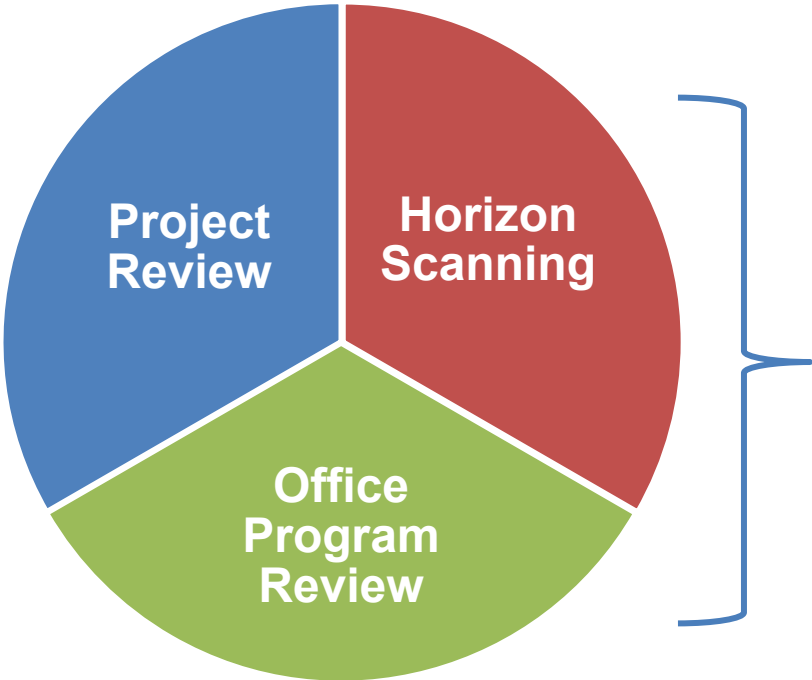
# Benefits of the CBER Research Program

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- Develops knowledge and tools focused on supporting product development
- Ensures understanding state-of-the-art techniques that are the source of data in regulatory decisions
- Facilitates recruitment and retention of highly trained scientists
- Prepares for review of future innovative products and public health challenges
- Ensures efficient, effective, credible review and decisions based on sound science



# CBER Research Evaluation Framework



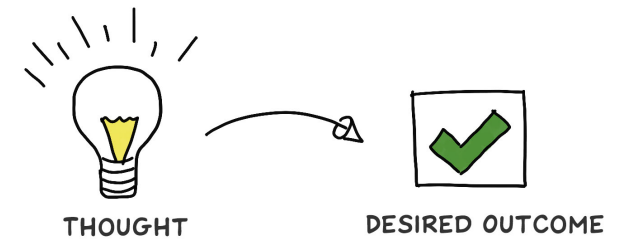
Evaluation	Frequency	By Whom
Project Review	Annually	Lab/Branch Chiefs, Division, and Office Management
Office Review of Projects	New projects	Office staff & Center (RSC)
Horizon Scanning	Every 4 years	Office staff & Center (RSC)
<i>Site Visits</i>	<i>Every 4 years</i>	<i>External SME committee</i>



# CBER Site Visits: Outcomes

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- Draft report will be reviewed by the Advisory Committee to:
  - Accept report as is
  - Amend report
  - Reject report and send back to Site Visit committee
- Report is final upon the Advisory Committee's approval
- Final report is used in many ways:
  - Internal review of individual scientists' progress
  - By PIs and staff, to improve research program
  - By management, to respond and consider resource allocation decisions (pending resource availability)



# Center for Biologics Evaluation and Research

## Office of the Director

Director: Peter Marks, MD, PhD

Deputy Director: Celia Witten, MD, PhD

### Office of Management (OM)

Director: Deirdre P. Hussey

Deputy Director: Mary Pat Leary

### Office of Communication, Outreach, and Development (OCOD)

Director: Lorrie H. McNeill

Deputy Director: Susan C. Frantz-Bohn

### Office of Therapeutic Products (OTP)

Director: Nicole Verdun, MD

Deputy Director: Rachael Anatol, PhD

### Office of Blood Research and Review (OBRR)

Director: Anne Eder, MD, PhD

Deputy Director: Vacant

### Office of Regulatory Operations (ORO)

Director: Christopher C. Joneckis, PhD

Deputy Director: Darlene Martin, MS

### Office of Compliance and Biologics Quality (OCBQ)

Director: Melissa Mendoza, JD

Deputy Director: Vincent Amatrudo, JD

### Office of Biostatistics and Pharmacovigilance (OBPV)

Director: Steven A. Anderson, PhD, MPP

Deputy Director: Richard A. Forshee, PhD

### Office of Vaccines Research and Review (OVRR)

Director: David C. Kaslow, MD

Deputy Director: Karin Bok, MS, PhD

# OVRP Regulates

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- Vaccines
- Allergenic products
- Live biotherapeutic products (probiotics, FMT)
- Phage

## OVRP Mission

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- To protect and enhance public health by assuring the availability of safe and effective vaccines, allergenic extracts, and other related products

# OVRP Core Activities



- **Review, evaluate, and take appropriate** actions on INDs, BLAs, amendments, and supplements for vaccines and related biological products and participation in inspections



- **Develop policies and procedures** governing the pre-market review of regulated products



- **Conduct research** related to the development, manufacture, and evaluation of vaccines and related products and to better understand pathological processes.

# Importance of Research In Regulation of Vaccines and Related Products

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## Emphasis on Safety

- Products for mass use (often universal)
- Recipients are healthy individuals, often children

## Keeping pace with technology

- New manufacturing technologies are rapidly evolving

## High level of Scrutiny by Public

- Regulatory decisions must be based on science
- Increasing number of anti-vaccine organization and groups

## Responding to Public Health Threats

- Antibiotic resistance
- Clostridium<sup>16</sup> difficile
- Emerging agents

## Generating results and placing them in the public domain

- Our research benefits not just individual companies but the entire industry sector, and therefore the American consumers

## Recruiting and retaining expert scientist to support Review

# OVRR's Research Is



## Broad

Although we can't cover everything, we need to cover as much as possible within the scope of our responsibilities

## Collaborative

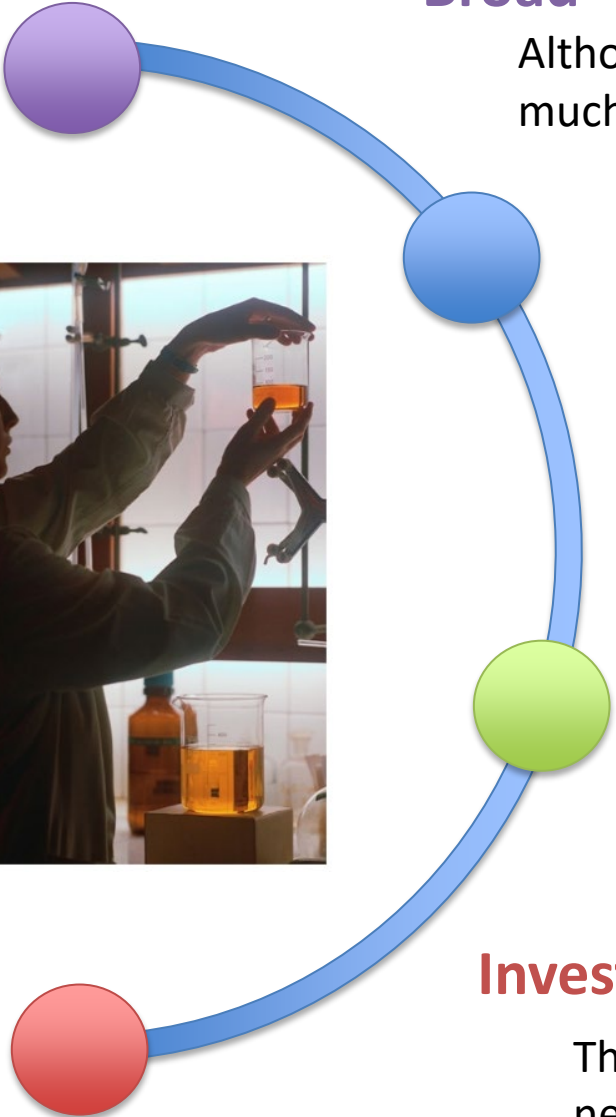
Collaboration with scientists around the country and the world allows us to leverage our investments in research

## Excellent

- Our research is published and broadly cited and used
- Our research scientists are members of the broader scientific community, and many are well-known experts in their fields

## Investigator-initiated and Flexible

This allows our researcher/reviewers to anticipate regulatory needs and proactively address important questions



# Office of Vaccines Research and Review

Director: David C. Kaslow, M.D.

Deputy Director: Karin Bok, M.S., Ph.D.

## Associate Director of Research

Tod Merkel, Ph.D.

## Associate Director for Regulatory Policy

Theresa Finn, Ph.D.

## Health Science Advisor

Maureen Hess, MPH, R.D.

## Associate Director for Novel Clinical Investigations

Hector Izurieta, MD, MPH, Ph.D.

## Associate Director of Office Regulatory Initiatives

Sudhakar Agnihothram, Ph.D.

## Associate Director for Medical Countermeasures and Scientific Affairs

Peter Weina, M.D., Ph.D.

## Associate Director for Medical Policy and Vaccine Safety

Karen Farizo, M.D.

## Division of Viral Products

Director: Jerry Weir, Ph.D.

Deputy: Robin Levis, Ph.D.

*15 Principal Investigators*

## Division of Bacterial, Parasitic, and Allergenic Products

Director: Jay Slater, M.D.

Deputy: *Selection made*

*16 Principal Investigators*

## Division of Review Management and Regulatory Review

Director: Loris McVittie, Ph.D.

Deputy: Kirk Prutzman, Ph.D.

## Division of Clinical and Toxicology Review

Director: Rebecca Reindel, M.D.

Deputy: R. Douglas Pratt, M.D., M.P.H.

# Division of Bacterial, Parasitic, and Allergenic Products

Director: Jay Slater, M.D.

Deputy: Vacant

## Laboratory of Respiratory and Special Pathogens

Chief: Michael Schmitt, Ph.D.

Tod Merkel, Ph.D.

Travis Kochan, Ph.D.

## Laboratory of Mucosal Pathogens and Cellular Immunology

Chief: Scott Stibitz, Ph.D.

Karen Elkins, Ph.D.

Paul Carlson, Ph.D.

Heather Painter, Ph.D.

## Laboratory of Immunobiochemistry

Chief: Ronald Rabin, M.D.

Jay Slater, M.D.

Alexander Zhovmer, Ph.D.

## Laboratory of Bacterial Polysaccharides

Chief: Willie Vann, Ph.D.

Mustafa Akkoyunlu, Ph.D.

Daron Freedberg, Ph.D.

Margaret Bash, M.D.

Florencia Haurat, Ph.D.

John Cipollo, Ph.D.

# DBPAP regulatory/research portfolio



## Mucosal Pathogens and Cellular Immunology (LMPCI)

### Non-invasive, toxin producers

- *Bacillus anthracis*
- *Bordetella pertussis*
- *Clostridium botulinum*
- *Clostridium tetani*
- *Corynebacterium diphtheriae*
- *Clostridioides difficile*

### Invasive, protective responses to polysaccharides

- *Haemophilus influenzae*
- *Neisseria meningitidis*
- *Streptococcus pneumoniae*

### Intracellular

- *Francisella tularensis*
- *Mycobacterium tuberculosis*
- *Mycobacterium bovis*

### Enteric

- *Campylobacter jejuni*
- *Salmonella Typhi*
- *Salmonella Typhimurium*
- *Shigella dysenteriae*

### Parasite

- *Plasmodium spp*

### Other/emerging

- *Staphylococcus aureus*
- Allergenic products
- Live biotherapeutic products (probiotics)
- Phage
- Microbiome-related products

***Thank you!***

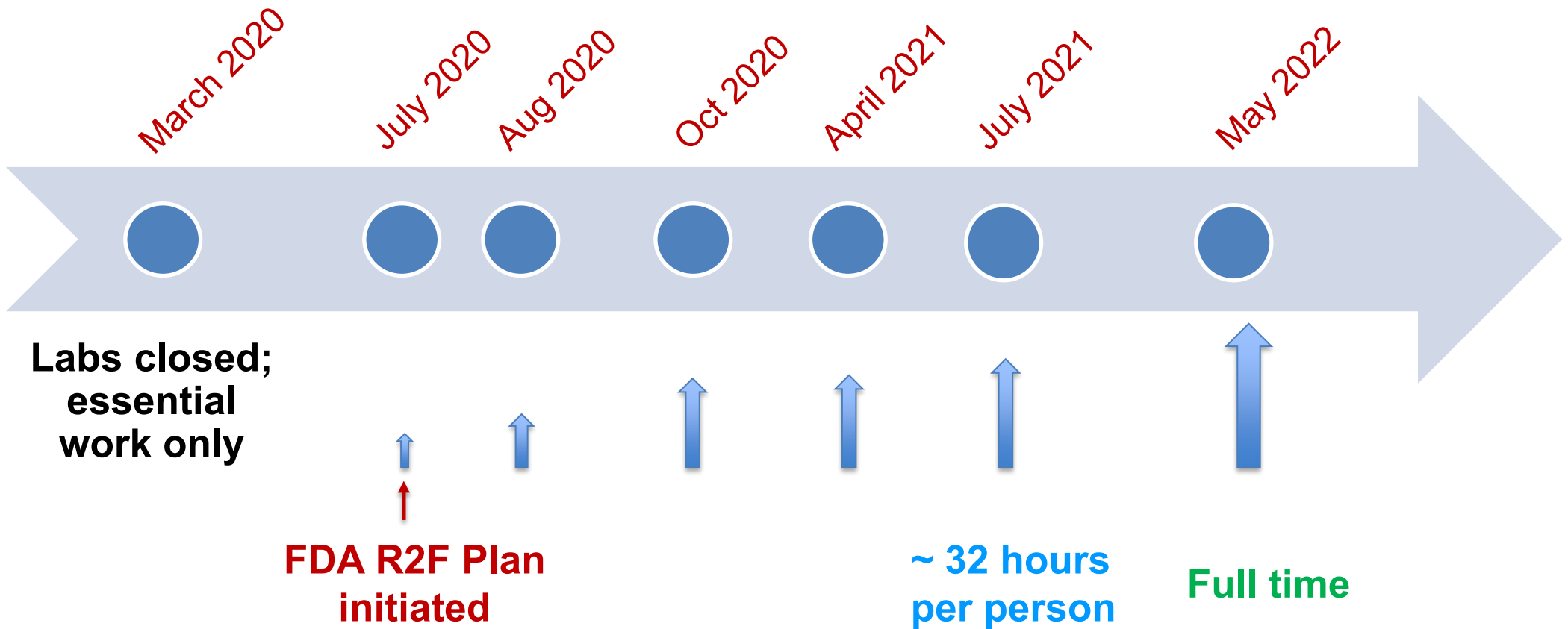


***Site visit input ensures CBER maintains  
high quality research programs***

**External review is critical to fulfilling CBER's  
regulatory mission!**

# COVID-19 Pandemic Impact on Laboratories

- *On-site work voluntary; FDA set policies on building occupancy*





# CBER Research Annual Reporting: Programs and Projects

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- Scientific rationale, background, expected outcome for investigator-initiated research
- Relevance to CBER/FDA goals and objectives
- Specific aims:
  - Experimental approach
  - Results and progress – previous year
  - Future plans – upcoming year
- Staff and budget
- Scientific and regulatory impact
- Accomplishments: publications, presentations, technology transfer

