U.S. FOOD & DRUG ADMINISTRATION

Office of Regulatory and Emerging Science (ORES)

Preparedness Research Staff (PRS)

BAA Overview and Priorities

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BAA Day

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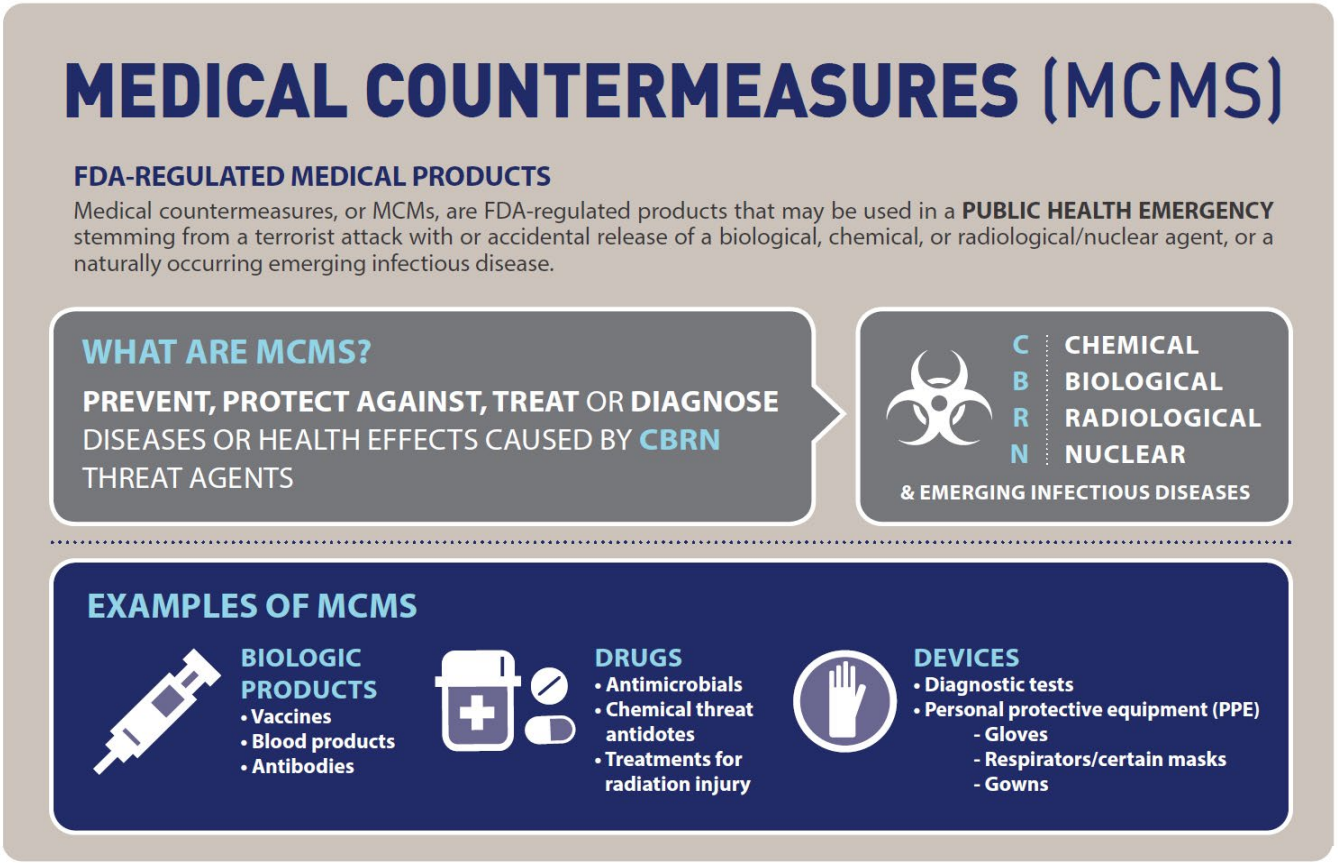
Office Updates

- Previously, the Medical Countermeasures Initiative (MCMi) was supported by the FDA Office of Counterterrorism and Emerging Threats (OCET)
- As of 10/1/2024, following the FDA re-organization, the program is administered by the Office of Regulatory and Emerging Science (ORES), Preparedness Research Staff (PRS)
- The MCMi scope is unchanged
- More focus on expanded preparedness

What Are Medical Countermeasures?



The MCMi Regulatory Science Program

Goals

- Developing the tools, standards, and approaches to assess MCM safety, efficacy, quality, and performance
- Translating cutting-edge science and technology into innovative, safe, and effective MCMs

Funding Activities

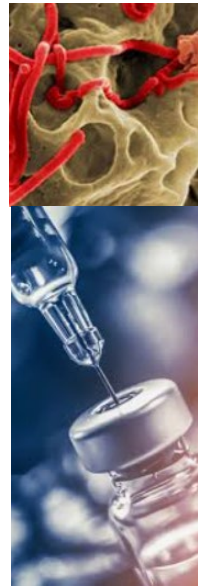
- Extramural research: Research Contracts, Grants
- Intramural research: Internal Funding
- Partnerships/Collaborations: IAAs

MCMi BAA Contracts

- BAA contracts are typically structured with a BASE period of performance and a variable number of OPTIONS
  - BASE is a minimum of 1 year
  - Option periods vary from 1 – 4 year
  - Overall period of performance cannot exceed 5 years
- Performers are advised to structure proposals accordingly
- Managed by subject matter experts that also serve as CORs
- Typically, monthly meetings and either monthly or quarterly progress reports

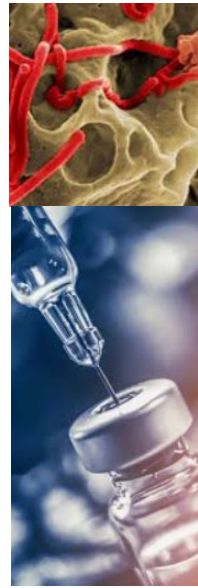
ORES BAA Contracts

- Considered “high complexity”; as defined in the Contractor Performance Assessment Rating System (CPARS)
- Contract Type: Cost Reimbursement (CR)
- What is *not* in scope: product development/post-market product surveillance
- Can be co-funded with other government agencies
  - FDA ORES utilizes interagency agreements
  - Co-funding may impact timelines for contract awards/modifications
- Deliverables are typically knowledge products (technical reports, data summaries or collections in databases)
- Publications and presentations are encouraged



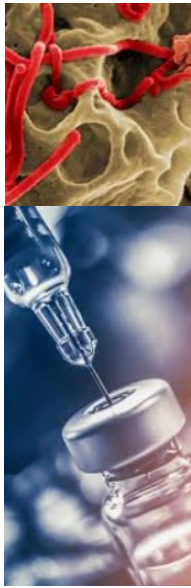
ORES BAA Contract Areas

- MCMi research areas of interest are listed in III, A: **Reinforce Medical Countermeasures Initiative (MCMi) to Increase Preparedness and Response for Emerging Public Health Threats**
- Primary research areas of interest are:
  1. Develop and fully characterize tools to support MCM development under the Animal Rule, Accelerated Approval, or Emergency Use Authorization (EUA)
  2. Enhance the agility, quality, and utility of diagnostics and diagnostic data
  3. Modernize tools to evaluate MCM product safety, efficacy, and quality; and secure the MCM supply chain
  4. Advance the development of tools to enable the rapid development and availability of investigational MCMs



Develop and characterize tools to support MCM Development

- Alternative methods to animal testing, including in vitro systems (e.g. microphysiological systems) for countermeasure development
- Characterization of disease progression, applied to regulatory framework, e.g. mechanisms of infection, morbidity/mortality, and virulence
- Biomarkers and correlates of protection to enhance understanding of the mechanism of action of MCMs
- Studies to address knowledge gaps and “bridging data” between animal models and clinical data from humans



Enhance the agility, quality, and utility of diagnostics and diagnostic data:

- Support enhanced regulatory science tools and data for novel diagnostics and diagnostic approaches, for example
  - next-generation sequencing
  - real-world evidence (RWE)
- Support regulatory science approaches toward diagnostics in the context of advanced manufacturing
- Enhanced data agility of data collection using medical devices
- Explore and develop data collection methods associated with medical products that could be harnessed during public health emergencies
  - This includes developing proof-of-concept via retrospective studies (e.g. medical claims data for observational studies of medical countermeasures)

Modernize tools to evaluate MCM product safety, efficacy, and quality; and secure the MCM supply chain

- Develop and validate reference materials and datasets to facilitate the development of medical products related to relevant CBRN threat agents and emerging infectious diseases
  - Focus on agile approaches that align to rapid MCM development efforts (e.g. project Warp Speed)
- Develop technologies and methods to monitor and predict disruptions in medical device/medical product supply chain security
- Explore novel approaches to increase the ability of suppliers' flexibility and ability to respond to supply disruptions

Advance the development of tools to enable the rapid development and availability of investigational MCMs

- Develop and validate rapid testing methods to speed characterization, in-process testing, and/or lot release for MCMs
- Develop technologies and methods to accelerate collection of MCM-relevant clinical safety and efficacy endpoints
- Develop methods using digital design and manufacturing data to increase efficiency of review;
- Develop technologies to support the adoption of advanced manufacturing technologies for MCMs
- Evaluate methods for facilitating and incentivizing the production and development of MCMs or MCM supply chain within the U.S

Advanced Manufacturing has cross-cutting areas of interest across the BAA

MCMi Advanced Manufacturing is managed by the Innovative Technologies Team (ITT), and seeks to:

- Facilitate development and evaluation of automated or semi-automated in-process monitoring and control systems and methods...
- Investigate the effect of advanced manufacturing on product quality…
- Investigate improvements in supply chain management, data sharing and resilience when implementing emerging technologies and systems
- Develop improved methods and tools to detect and measure the physical structure, chemical properties, and biological behavior in FDA-regulated products made using advanced manufacturing techniques.
- Investigate or develop methods to increase implementation and adoption of advanced manufacturing methods in areas that impact the production of vaccines, drugs, diagnostics, and devices in critical and potential shortage areas.

Ongoing Extramural Projects

Project Title	Performer	BAA Area
Development of a Parenteral Challenge Model of Systemic Botulinum Neurotoxin Intoxication	Battelle Memorial Institute	III.A.1
FDA and Global Partners to Analyze Coronavirus Samples	University of Liverpool	III.A.1,3
Cellular Signaling and Immune Correlates for SARS-CoV-2 Infection	Stanford University	III.A.1-3
Strengthening Coronavirus Models with Systems Biology and Machine Learning	Commonwealth Science and Industry Research Organization	III.A.1-3

Ongoing Extramural Projects, cont.

Project Title	Performer	BAA Area
Expanding Next-generation Sequencing Tools to Support Pandemic Preparedness	Embleema, Inc and George Washington University	III.A.2
Development of a Ferret Nerve Agent Exposure Model for Chemical Warfare Agent Countermeasure Evaluation	Battelle Memorial Institute	III.A.1
Development of a Model to Predict and Mitigate the Post-acute Sequelae of COVID-19	Children's Hospital of Los Angeles (CHLA)	III.A.1
Characterizing Immunity to Ebola and Marburg to Support MCM Development	University of California, Los Angeles School of Public Health	III.A.1,3

Completed Extramural Projects

Project Title	Performer	Date of Completion
Survivor Studies: Better Understanding Ebola's After-Effects to Help Find New Treatments	Stanford University	8/2022
Comparison of Host Responses to EBOV Disease	United Kingdom Health Security Agency (UK HSA)	10/2022
A New Approach for Understanding Ebola Virus Pathogenesis	The Broad Institute of MIT and Harvard	9/2021
Developing a Toolkit to Assess Efficacy and Safety of Ebola Vaccines and Therapeutics	UK HSA	3/2021
Meliodosis Modeling: Research to Support a Tricky Pathogen	Defense Science and Technology Laboratory	9/2019

Completed Extramural Projects

Project Title	Performer	Date of Completion
Investigating Decontamination and Reuse of Respirators in Public Health Emergencies	Battelle	7/2016
Supporting Field Laboratory Testing of Ebola Antibodies	National Institute for Infectious Diseases	9/2015
Ensuring Appropriate Public Use of Medical Countermeasures Through Effective Emergency Communication	University of Pittsburgh Medical Center	9/2021
Organ-on-Chip Countermeasures	The Wyss Institute at Harvard University	3/2015
Cross Species Immune Reference	Stanford University	6/2015

Completed Extramural Projects

Project Title	Performer	Date of Completion
Streamlining Countermeasure Data Collection During Public Health Emergencies	Discovery Critical Care Research Network	9/2019
Optimizing Respirator Decontamination to Ensure Supplies for Emergency Preparedness	Applied Research Associated (ARA)	7/2016
Human Organ Chips for Radiation Countermeasure Development	The Wyss Institute at Harvard University	3/2024

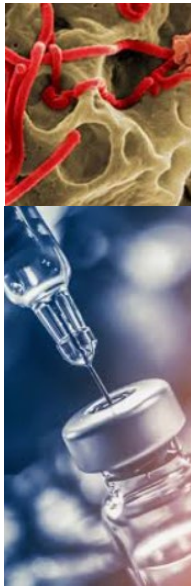
BAA Contracts have resulted in successes for the ORES Portfolio

Since 2012, the BAA has led to many of the successes of the MCMi:

- 19 contract awards, including domestic and international academic/industry
- Cutting-edge tools for development and evaluation of MCMs
- Extensive publications (115+ from the current program of MCMi performers)
- Partnerships:
  - NIAID has supported 3 FDA BAA contracts to advance Ebola, SARS-CoV-2, and development/qualification of Organs-on-Chips
  - Contract 75F40119C10128, “Using Vaccinated and Survivor Population of Filovirus Disease to Inform Regulatory Science” led to 2021 collaboration with DTRA for Marburg research
  - FDA/OMHHE, Contract 75F40120C00176, “Cellular Signaling and Immune Correlates for SARS-CoV-2 Infection ” is a collaboration to study COVID-19 illness in diverse populations

BAA Contract Award Summary

MCMi Regulatory Science Program Awards Under the BAA FY 12 - 24 ($ millions)			
	Total	**Average**	**Range**
Base Contract[1]	**$49.14**	**$2.34**	**$0.31 – $5.62**
Contract Option[2]	**$5.09**	**$0.73**	**$0.25 – $1.09**
Contract Modification[3]	**$22.83**	**$1.04**	**$0.25 – $3.51**
Total Award	**$73.81**	**$4.1**	**$0.31 – $8.91**



1. 19 base contracts
2. 7 contract options
3. 22 contract modifications

MCM Regulatory Science Applications

Respirator Decontamination for Emergency Reuse (2016)

- Applied Research Associates developed first consensus standard for UV surface decontamination (2018)
- Battelle Memorial Institute's hydrogen peroxide vapor decontamination method led to Critical Care Decontamination System (EUA March 2020)

Understanding Zika Distribution and Duration for Donor Screening (2016)

- UC Davis NHP studies supported FDA Guidance "Donor Screening Recommendations to Reduce the Risk of Transmission of Zika Virus from Human Cells, Tissues and Cellular-Based Products" (2017)

Assessing Ebola Host Response and MCM Efficacy (2018)

- Conducted bridging studies for FANG and WHO Ebola immune assays in collaboration with UCLA
- Early COVID-19 studies helped establish vital ferret and NHP models through collaboration with public private sector partners (March 2020)

Expanding NGS Tools to Support Pandemic Preparedness and Response (2021)

- Developing a quality tool to allow for accurate and rapid review of regulatory-grade sequences for product development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