Generic Drug User Fee Amendments (GDUFA) Science and Research Priority Initiatives for Fiscal Year (FY) 2026

Consistent with FDA's commitment reflected in the GDUFA Reauthorization Performance Goals And Program Enhancements Fiscal Years 2023-2027 (GDUFA III Commitment Letter), FDA held a public workshop on June 3rd and 4th, 2025, to obtain input on GDUFA science and research priorities.

FDA relies, in part, upon this public input to identify science and research priorities that can help expand and accelerate patient access to generic drug products. FDA considered the public input, along with comments provided in the workshop discussions, and comments submitted to the docket. This feedback, collectively, supported the advancement of research in eight priority areas for the GDUFA science and research program.

These eight areas encompass scientific challenges that the generic industry and FDA's generic drug program identify as being significant over the coming years, and they also represent opportunities for scientific advances to accelerate access to generic versions of complex products and make the development of generic drugs more efficient and globally harmonized. Scientific advancements in these areas would maximize the use of the generic drug process to supply needed medications, modernizing the generic drug program to use advances in data science and models in application assessments.

Specific research priorities for FY 2026 were identified within each of the eight research areas enumerated below. The numbering of the eight research areas does not reflect any relative prioritization among the research areas.

1. Develop Methods for Generics to Address Impurities such as Nitrosamines:

This research area focuses on understanding how ingredients in drug products may either contribute to or mitigate the formation of potentially harmful impurities such as nitrosamine adducts (e.g., nitrosamine drug substance related impurities (NDSRIs)), evaluating the risk of human exposure to these impurities, and developing methods for abbreviated new drug application (ANDA) applicants to efficiently address the potential risks. FY 2026 science and research priorities specifically include:

A. Exploring approaches, including modeling and simulation, for the efficient and economically feasible reformulation of biopharmaceutics classification system (BCS) Class IV drugs to reduce nitrosamine impurities.
B. Developing analytical methods, and approaches using orthogonal methods, for the identification and quantitation of nitrosamines and precursors in ingredients, including

considerations for the distribution of nitrosamines and their corresponding precursors in an ingredient or drug product.

C. Understanding the mechanisms of nitrosamine formation in APIs and drug products, such as the reactivity of different functional groups in APIs (e.g., tertiary amines beyond secondary amines), the role of impurities in excipients,) or other factors that may help to predict the formation of nitrosamines and the risks of their formation under relevant conditions for pharmaceuticals.
D. Developing acceptable intake limits for impurities such as nitrosamines, including NDSRIs, using risk assessment paradigms that consider mutagenicity evaluations (in vitro or in vivo), metabolism, in silico evaluations (such as quantitative structure activity relationship modeling), and carcinogenic potency assessments.

2. Enhance the Efficiency of Equivalence Approaches for Complex Active Ingredients:

This research area focuses on improving advanced orthogonal methods for the characterization of chemical compositions, molecular structures, and distributions of complex active ingredients and associated impurity profiles so as to elucidate attributes of complex active ingredients and support immunogenicity risk assessments that may be critical to their performance and, thereby, support the development of efficient characterization-based bioequivalence (BE) and pharmaceutical equivalence (PE) approaches. FY 2026 science and research priorities specifically include:

A. Developing novel analytical methods, as well as improving and standardizing existing methods, to characterize components (including impurities) that can support a demonstration of sameness for oligonucleotides.
B. Improving and standardizing in vitro methods for assessing the immunogenicity risk of peptide and oligonucleotide products manufactured with active ingredients sourced synthetically or recombinantly, including associated impurities.

3. Enhance the Efficiency of BE Approaches for Complex Dosage Forms and Formulations:

This research area focuses on improving efficient characterization-based (in vitro) BE approaches for complex dosage forms by identifying relevant critical quality attributes (CQAs) to characterize and suitable test methods for doing so. FY 2026 science and research priorities specifically include:

A. Elucidating drug release mechanisms, CQAs, and characterization test methods for long-acting injectable, insertable, or implantable (collectively, LAI) products with the goal of predicting in vivo performance.
B. Improving characterization tools for polymeric ingredients and related complex formulations to support assessments of compositional sameness and acceptable formulation design space.

4. Enhance the Efficiency of BE Approaches for Complex Routes of Delivery:

This research area focuses on understanding of how ingredients and other aspects of a formulation influence drug absorption via complex routes of delivery, building in vivo predictive models and identifying corresponding failure modes for BE, to support the development of efficient BE approaches for these products. FY 2026 science and research priorities specifically include:

A. Implementing characterization-based (in vitro) methods, potentially together with improved in vivo PK study designs and modeling methods, as alternatives to the use of comparative clinical endpoint BE studies and for understanding the formulation and device design space for nasal and inhaled drug products.
B. Developing efficient BE methods for topical drug products (applied to the skin, eye, or other areas for local action) that may contain compositional differences relative to the reference standard.
C. Improving comparative in vitro permeation test (IVPT) study designs and data analysis techniques that help to resolve practical challenges with implementing these methodologies to support a demonstration of BE for topical drug products.

5. Enhance the Efficiency of Equivalence Approaches for Complex Drug-Device Combination Products:

This research area focuses on evaluating the impact of identified design differences in the user-interfaces, hardware, software, or propellants between a prospective generic and the reference listed drug. The research is intended to elucidate how such design differences may cause medication errors if the product was dispensed to a patient, or impact the BE, therapeutic equivalence, or post-marketing safety of generic drug-device combination products. FY 2026 science and research priorities specifically include:

A. Improving approaches for comparative analyses and risk assessments, exploring alternatives to the current design or analysis of comparative use human factors studies, and assessing additional approaches to justify the acceptability of “other” design differences.
B. Developing improved criteria for comparative device performance assessments that would support a demonstration of BE by in vitro methods (e.g., predictive adhesion performance of transdermal delivery systems or anthropometric evaluation of device design changes for injectable and inhaled drug products) to eliminate the need for certain in vivo studies.
C. Developing efficient and economically feasible approaches to support transitions by generic products to utilize more environmentally friendly propellants.

6. Improve the Efficiency of BE Approaches for Oral and Parenteral Generic Products:

This research area focuses on understanding of how ingredients in non-complex drug products may modulate bioavailability, and on improving bio-predictive dissolution methods, in vitro-in vivo correlations (IVIVCs), as well as in silico models to support the expansion of

biowaivers and support global harmonization[1]. This includes expanding the eligibility for BCS-based biowaivers and efficient methods for the evaluation of additional strengths of oral drug products. It also includes establishing approaches to manage potential risks related to subject safety more consistently when developing in vivo BE study recommendations and elucidating potential failure modes for BE with special populations (e.g., pediatric, or geriatric patients). FY 2026 science and research priorities specifically include:

A. Utilizing in vitro dissolution tools and oral physiologically based PK (PBPK) modeling to identify product risk factors for food effects and formulation-dependent drug interactions to support global harmonization of the most efficient BE approaches for these products.
B. Elucidating how formulation designs and ingredients commonly used to modulate bioavailability in orally administered complex or high-risk IR (e.g., amorphous solid dispersions) and modified release (MR) products function, to facilitate risk-based approaches that can support a demonstration of BE, and to inform BE considerations for special patient populations.
C. Developing evidence and tools to support the feasibility of efficient BE methods for parenteral and ophthalmic solution drug products that may contain compositional differences relative to the reference listed drug, and to support global harmonization of the most efficient BE approaches for these products.

7. Facilitate the Utility of Model-Integrated Evidence (MIE) to Support Demonstrations of BE:

This research area focuses on developing tools and advancing approaches to integrate complementary in silico (modeling), in vivo, and in vitro evidence in ways that collectively mitigate the risk of failure modes for BE and support a framework for virtual BE studies. For example, while it may not be feasible to adequately characterize the long-term bioavailability of drugs from LAI products using in vivo or in vitro methods alone, it may be feasible to integrate limited in vivo and in vitro data with PBPK models that generate the remaining evidence needed to support a demonstration of BE. This area includes research on the use of MIE to evaluate failure modes for BE and to optimize the design of BE studies. FY 2026 science and research priorities specifically include:

A. Advancing complementary approaches using MIE to support an efficient demonstration of BE specifically for drugs with complex routes of delivery (e.g., inhalation and topical routes of delivery) as well as for LAI products.
B. Establishing best practices for model standardization, validation, acceptance, and sharing (e.g., using model master files) that improve the reproducibility and reusability of quantitative pharmacology information used in BE study simulations.
C. Developing innovative study designs for PK BE studies in patients, such as those with reduced or sparse sampling for oncology products, and adaptive designs.

[1] Currently the International Council for Harmonisation of Technical Requirements for Pharmaceuticals for Human Use (ICH) Guideline M13A: Bioequivalence for Immediate-Release Solid Oral Dosage Forms has been published and the implementation of its recommendations has initiated.

8. Expand the Use of Artificial Intelligence (AI) and Machine Learning (ML) Tools:

This research area focuses on building systems and infrastructure that support the functionality of AI/ML tools which FDA can use to improve the efficiency and consistency of scientific assessments and advice. This includes using AI/ML tools such as natural language processing (NLP) that automate the assembly of key information routinely assessed during the development of recommendations in Product-Specific Guidances (PSGs), or during the assessment of ANDAs, as well as AI/ML tools that facilitate planning and resource allocation to support GDUFA commitments. FY 2026 science and research priorities specifically include:

A. Improving the use of real-world evidence for post-market surveillance of generic drug substitution and for evaluating the impact of generic drugs on public health
B. Integrating AI/ML tools with FDA information and data to support quantitative analyses and modeling approaches that facilitate regulatory assessments and identifying strategies to optimize the reliability of outcomes produced by these tools.
C. Exploring the capability of AI/ML tools for a prospective applicant to be able to efficiently assess the completeness of its ANDA prior to submission, and to enhance the efficiency, consistency, and quality of regulatory assessments once ANDAs are submitted.