# BioReliance
# Biologics Safety Testing

## Lot Release Testing

Substrates and raw materials used for the manufacture of biological products can harbor adventitious agents such as viruses, bacteria, fungi, and mycoplasma. In addition, manufacturing processes and facilities are designed to minimize risk, but opportunities for the introduction of adventitious agents cannot be eliminated. While steps are taken to ensure bioprocess safety through adherence to current Good Manufacturing Practices (cGMP), it is critical that a manufacturing process is monitored through the implementation of a robust biosafety testing program. Therefore, the U.S. Food and Drug Administration (FDA), European Medicines Agency (EMA), and other regulatory agencies throughout the world require quality control testing for each production lot of a biopharmaceutical [1-7]. This testing, which must be performed on substrates and raw materials used in the manufacturing process, unprocessed bulk, purified bulk, and final drug product, helps to verify that the product is safe and suitable for human use.

### Lot release testing assays

BioReliance offers numerous lot release testing assays to suit your product type (e.g. antibody, recombinant protein) and phase of product development. Assay transfer and validation services are also available for products which may require non-standard test methods. Below is a list of many of the lot release assays offered at BioReliance; however, this list is by no means exhaustive. Please contact us to discuss the specific requirements of your lot release testing program.

| | Raw Materials | Unprocessed Bulk Harvest | Purified Bulk (Drug Substance) | Final Filled Product (Drug Product) |
|---|---|---|---|---|
| Sterility tests | ✓ | ✓ | ✓ | ✓ |
| Mycoplasma tests (culture and PCR based) | ✓ | ✓ | ✓ | ✓ |
| Analytical assays (e.g. HPLC, pH, SDS-PAGE, etc.) | ✓ | ✓ | ✓ | ✓ |
| LAL assay for Endotoxin | ✓ | ✓ | ✓ | ✓ |
| 9CFR and CHMP/CVMP/EP testing for bovine or porcine derived materials | ✓ | | | |
| Bioburden assay | | ✓ | ✓ | ✓ |
| *In vitro* assays for the detection of viral contaminants | | ✓ | | |
| *In vivo* test for the presence of viral contaminants | | ✓ | | |
| Transmission electron microscopy (TEM) | | ✓ | | |
| Molecular biology (e.g. PCR, RT-PCR, Q-PCR) tests for detection of viral contamination | ✓ | ✓ | | |
| Genomics-based methods for detecting unknown viruses (MP-Seq™) | ✓ | | | |
| Test for manufacturing process impurities (e.g. residual protein A) | | | ✓ | |
| Residual host cell DNA testing | | | ✓ | |
| Residual host cell protein testing | | | ✓ | |
| Rabbit pyrogen test | | | | ✓ |
| General safety test | | | | ✓ |

GMP compliant lot release testing assures the highest quality results

Industry leading quality systems and turn-around times

Proactive communication on testing progress allows clients to carefully plan their manufacturing timelines

Over 60 years of experience combined with continuous improvement and innovation assures the safety of each product tested

BioReliance® by SAFC

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## Lot Release Testing (continued)

### Why choose BioReliance?

As experts in the field of testing and analysis of biological products, BioReliance offers a comprehensive range of lot release tests for clinical and commercial products. We help to ensure the safety, purity and potency of a product, while understanding client production schedules and streamlining processes to offer industry leading turn-around times. All of this combines to give you results you can rely on to support your biological product manufacturing.

### A comprehensive, high quality testing program

Our services for clinical and commercial products cover the full spectrum of lot release testing including adventitious agents, identity, purity, potency, concentration, residuals and excipients, moisture and sterility (as specified by worldwide regulatory authorities). Nearly all assays for bulk, processed bulk and final product are offered to a GMP regulatory standard.

### Use of the latest scientific advances

As an innovation leader, BioReliance uses the latest techniques such as quantitative PCR (Q-PCR) testing and MP-Seq™ (massively parallel sequencing). Along with developing industry defining initiatives, our scientists continually monitor and evaluate emerging technologies to ensure that our services are performed to the very highest standards in the industry.

### Technical and regulatory support

In addition to your BioReliance Account Manager, our regulatory and scientific personnel work with you to define your specific lot release testing needs. The expertise of our regulatory group ensures you will have access to the most current regulatory information. We continually strive to provide advice consistent with the most current practices.

Our quality systems are designed to provide the most rapid turn-around times while still ensuring high quality results. BioReliance can also provide similar tests from two facilities - Rockville, USA and Glasgow, Scotland - which ensures continuity of services and strong risk mitigation.

### Project management with iNet℠

Once your needs are defined, BioReliance assigns a Project Manager to oversee your testing program. The project manager is your point of contact, coordinating your projects with the laboratory, monitoring status and ensuring timely reporting. Clients can also utilize our proprietary on-line project tracking system, iNet℠. This unique browser based tool allows you to submit samples for testing, track progress and receive electronic draft and final reports in real-time.

#### References


1. Code of Federal Regulations (CFR) Title 21—Food and Drugs, Part 210—Current good manufacturing practice in manufacturing, processing, packing, or holding of drugs, US Food and Drug Administration, Department of Health and Human Services, 01 April 2004.
2 Code of Federal Regulations (CFR) Title 21—Food and Drugs, Part 211— Current good manufacturing practice for finished pharmaceuticals, US Food and Drug Administration, Department of Health and Human Services, 01 April 2004.
3. Code of Federal Regulations (CFR) Title 21—Food and Drugs, Part 600—Biological products, general, US Food and Drug Administration, Department of Health and Human Services, 01 April 2004.
4. Commission Directive 2003/94/EC of 8 October 2003 laying down the principles and guidelines of good manufacturing practice in respect of medicinal products for human use and investigational medicinal products for human use.
5. The European Medicines Agency (EMEA), Committee for Medicinal Products For Human Use (CHMP). ICH Topic Q6B. Step 4 Note For Guidance on Specifications: Test Procedures and Acceptance Criteria for Biotechnological/Biological Products (CPMP/ICH/365/96), March 1999.
6. The European Medicines Agency (EMEA), Pre-Authorisation Evaluation of Medicines for Human Use. Committee for Medicinal Products For Human Use (CHMP). ICH Topic Q2A. Step 5 Note for Guidance on Validation of Analytical Methods: Definitions and Terminology (CPMP/ICH/381/95), November 1994.
7. The European Medicines Agency (EMEA), Pre-Authorisation Evaluation of Medicines for Human Use. Committee for Medicinal Products For Human Use (CHMP). ICH Topic Q2B. Step 4 Note for Guidance on Validation of Analytical Procedures: Methodology (CPMP/ICH/281/95), December 1996.



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