# 0403 - Microbiologist

This occupational series guide is for informational/developmental purposes only. Please note:

* This resource does not supersede any existing HHS policy;
* The information provided should not be used to evaluate individual job performance; and
* The attainment of the specified knowledge, skills, experiences and training does not automatically qualify you for promotion.

The guide is for the education of employees on available career opportunities available within the Agency. It provides a means for exploring your professional options and to identify a career path that best matches your specific needs and interests.

The Enterprise Workforce Development and Performance (EWDP) website at <http://www.ewdp.hhs.gov/> also provides guidance on the knowledge, skills, and work experience that will prepare you for progression within your chosen career path.

## INTRODUCTION

This series covers all classes of positions the duties of which involve the performance of scientific and professional work in the field of microbiology. Microbiology deals with the study of the characteristics and life processes of microorganisms, the interrelationships among microorganisms, their relationships to other living forms, and their reactions to the environment in which they are found. This includes: (1) work with the protozoa, bacteria, algae, fungi, viruses, rickettsiae, microscopic parasites and similar microscopic and submicroscopic forms; (2) work in such fields as immunology, medical parasitology, physiology, serology, genetics, taxonomy, and cytology as they relate to microorganisms; (3) studies of the form, structure, reproductive processes, genetics, taxonomy, and cytology as they relate to microorganisms and the products of their chemical activities; (4) studies of the distribution of microorganisms in natural and manmade environments (including agricultural and nonagricultural products and food processing establishments), their reaction to physical and chemical factors in the environment, their role as pathogenic and immunizing agents, and their isolation, cultivation, identification, and systematic classification; and (5) work that involves the development of scientific microbiological methods, procedures, and techniques, and the production and use of microorganisms in agricultural, industrial, medical, sanitary, and other practical applications.

## POSITION DESCRIPTIONS

The Microbiology Series performs a range of duties according to grade level:

### GS-0403, 11 Microbiologist:

* The incumbent serves as a Microbiologist performing scientific analysis and research to identify and isolate the microbiological agents, pathogenic bacteria and contaminants from food, drugs, animal drugs, animal feed and/or the microbiological and immunological basis of pathogens in the transmission and control of infectious disease that threaten public health. The incumbent performs the full range of microbiological analysis on a wide range of samples in connection with research and development and/or regulatory, enforcement, and control activities.
* Participates with other scientists and program officials in various aspects of the study or project design process, which may include reviewing existing literature and data and presenting summaries for a variety of purposes.
* Plans, develops, and modifies analytical methods or research projects to study the distribution of microorganisms in natural and manmade environments; analyzes their reaction to physical and chemical factors in the environment; and/or assesses their role as pathogenic and immunizing agents.
* Determines the approach, methods, and procedures to use in order to obtain the information requested, taking into consideration the requirements established by Agency regulations and Federal law.
* Participates in developing new methods and procedures, interprets and evaluates data, and prepares reports in such areas as bacteriology, virology, parasitology, mycology, serology, tissue culture, hematology and immunology.
* Assists in writing comprehensive statistical and analytical reports from major scientific investigations, studies and projects; identifies the sample or reports that identify the sample, show the methods and procedures used, any modifications with validation data, the results and their interpretation, and whether the sample appears to be in violation of any agency regulation.

### GS-0403, 12 Microbiologist:

* The incumbent serves as a Microbiologist performing scientific analysis and research to identify and isolate the microbiological agents, pathogenic bacteria and contaminants from food, drugs, animal drugs, animal feed and/or the microbiological and immunological basis of pathogens in the transmission and control of infectious disease that threaten public health. The incumbent performs the full range of microbiological analysis on a wide range of samples in connection with research and development and/or regulatory, enforcement, and control activities.
* Plans, coordinates, and conducts research to evaluate the microbiological, biochemical, biophysical and/or immunological pathogens basis of complex public health problems.
* Develops, modifies or adapts analytical methods or research projects to study the distribution of microorganisms in natural and manmade environments; analyzes their reaction to physical and chemical factors in the environment; and/or assesses their role as pathogenic and immunizing agents.
* Performs tests that require highly specialized methods; analyzes and validates unusual and novel samples and reports findings using officially collaborated methods.
* Determines the approach, methods, and procedures to use in order to obtain the information requested, taking into consideration the requirements established by Agency regulations and Federal law.
* Writes comprehensive statistical and analytical reports from major scientific investigations studies and projects; identifies the sample or reports; show the methods and procedures used, any modifications with validation data, the results and their interpretation, and whether the sample appears to be in violation of any agency regulation.
* Provides scientific advice to program staff and less experienced scientists on the precedents, analytical methods and instrumentation related to the particular scientific discipline of the position.

### GS-0403, 13 Microbiologist:

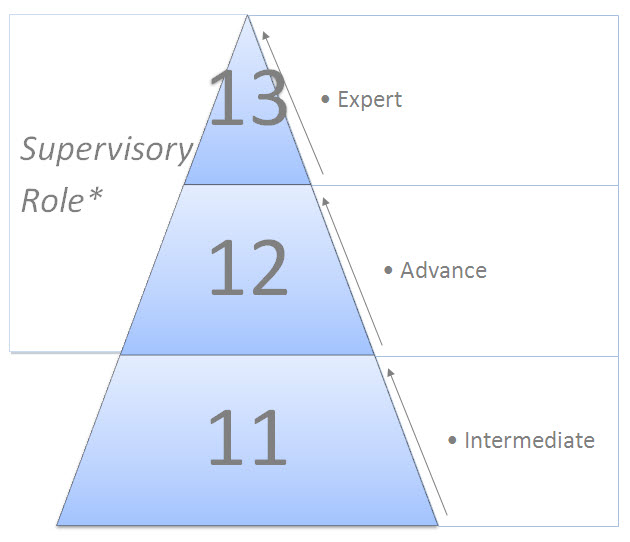
* The incumbent serves as a Microbiologist and recognized scientific expert in the isolation and identification of pathogenic bacteria and contaminants from food, drugs, animal drugs, animal feed and/or study the microbiological and immunological basis of pathogens in the transmission and control of infectious disease. The incumbent plans and directs the development and modification of analytical methods or research projects involving highly complex, unusual, and novel samples. Findings and research papers are considered to be authoritative scientific documents.
* The impact of the scientist’s expertise could result in changes in the microbiological aspects of the identification and isolation of pathogens and microbiological agents that threaten public health.
* Plans, coordinates, and conducts research to evaluate the microbiological, biochemical, biophysical and/or immunological basis of pathogens and understand the microbiological, biochemical, biophysical and/or immunological basis of complex public health issues studies and projects to address complex public health problems.
* Plans and directs the development and modification of analytical methods or research projects to study the distribution of microorganisms in natural and manmade environments; analyzes their reaction to physical and chemical factors in the environment; and/or assesses their role as pathogenic and immunizing agents.
* Develops new methods and validates them through collaborative studies the full range of microbiological analysis on a wide range of complex and unusual samples in connection with research and development and/or regulatory, enforcement, and control activities.
* Performs very complex tests that require highly specialized methods; analyzes and validates unusual and novel samples and reports findings using officially collaborated methods.
* Provides expert scientific advice to program staff and less experienced scientists on the precedents, analytical methods and instrumentation related to the particular scientific discipline of the position.

## POTENTIAL CAREER MAP

*The following pyramid graphic shows a bird’s eye view of how an individuals’ career path potentially progresses upward in grade and proficiency levels through stages in the Microbiologist, GS 0403. The GS Grade levels are 11, 12; 13 however, may vary in some OPDIVs. The Proficiency levels are Intermediate, Advance; Expert.*

*\*A supervisory role may start at a GS-12 or 13 grades. To determine if you are in a management or supervisor role review the position description.*

*GS Grade/Proficiency Levels Key: 11= Intermediate, 12 = Advance; 13=Expert*

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**Figure 1: Career Map for Microbiologist**

## SUCCESS FACTORS

Success factors provide guidance on how you may maximize performance and career success as you progress through career stages in Microbiology. These success factors represent advice from subject matter experts based on their experience in the Microbiology field. Note that many of the success factors indicated in this Guide do not tie to any particular specialty area or grade level. Also, these statements do not tie to any specific competency or developmental experience. After reading through the success factors, you should seek clarification from your supervisor on how best to implement some of the suggestions:

* Actively participate on a team.
* Volunteer to participate in a highly visible project.
* Learn about the agency where you work.
* Learn new technologies (e.g., through self-study, seminars).
* Study technical writing as it applies to your work role.
* Attend conferences, meetings, or seminars.
* Join an industry or professional association.
* Read technical publications to keep up-to-date on new development in your field (e.g., books, professional newsletters, trade journals).
* Build an informal network of peers through which you can exchange ideas and discuss issues relevant to technical advances in your field.
* Learn from others on the job (e.g., obtain on-the-job training, ask others for guidance).
* Find a mentor for technical and/or career guidance.
* Study lessons learned from reviews of failed and successful projects.
* Work with your supervisor and assist with the development of an Individual Development Plan.
* Actively participate on a team such as with other co-workers or internal focus groups, to assist in accomplishing projects or in ensuring the success of the projects goals.

## PROFICIENCY LEVEL DISTINCTIONS FOR BASELINE COMPETENCIES

| **Proficiency Level** | **Baseline Competencies** |
| --- | --- |
| 5 = Expert | * Applies the competency in exceptionally difficult situations. * Serves as a key resource and advises others |
| 4 = Advanced | * Applies the competency in considerably difficult situations. * Generally requires little or no guidance |
| 3 = Intermediate | * Applies the competency in difficult situations. * Requires occasional guidance. |
| 2 = Basic | * Applies the competency in somewhat difficult situations. * Requires frequent guidance. |
| 1 = Awareness | * Applies the competency in the simplest situations. * Requires close and extensive guidance. |

Table 1: Proficiency Levels Distinctions for Baseline Competencies

## BASELINE COMPETENCIES BY GRADE LEVEL

| **BASELINE COMPETENCIES** | **GS-7** | **GS-9** | **GS-11** | **GS-12** | **GS-13** |
| --- | --- | --- | --- | --- | --- |
| Microbiology Proficiency | 2 | 3 | 3-4 | 4 | 5 |
| Information Gathering | 2 | 3 | 3-4 | 4 | 5 |
| Data Analysis and Interpretation | 2 | 3 | 3-4 | 4 | 5 |
| Scientific & Regulatory Advisement | 2 | 3 | 3-4 | 4 | 5 |
| Research | 2 | 3 | 3-4 | 4 | 5 |
| Public Health Knowledge | 2 | 3 | 3-4 | 4 | 5 |
| Laboratory Practices | 2 | 3 | 3-4 | 4 | 5 |
| Laboratory Management | 2 | 3 | 3-4 | 4 | 5 |
| Microbiological Science | 2 | 3 | 3-4 | 4 | 5 |
| Mentoring | 2 | 3 | 3-4 | 4 | 5 |
| Technical Training and Advising | 2 | 3 | 3-4 | 4 | 5 |
| Networking and Partnership Development | 2 | 3 | 3-4 | 4 | 5 |
| Collaboration and Partnering | 2 | 3 | 3-4 | 4 | 5 |
| Honesty | 5 | 5 | 5 | 5 | 5 |
| Scientific Ethics | 5 | 5 | 5 | 5 | 5 |
| Translation of Science | 2 | 3 | 3-4 | 4 | 5 |
| Communication | 2 | 3 | 3-4 | 4 | 5 |

Table 2: Proficiency Levels by Grade

1. **Microbiology Proficiency** - Maintains and applies a comprehensive set of scientific knowledge of microbiology and related fields.

| **Professional Levels** | **Key Behaviors** |
| --- | --- |
| All Levels | * Serves as a resource to CVM staff and others (e.g., other government agencies, general public) in one or more scientific areas related to microbiology (e.g., veterinary and human microbiology, virology, bacteriology, parasitology). * Serves as a resource to CVM staff in one or more specialized areas within microbiology (e.g., sterilization processes, antimicrobial resistance, molecular analysis, diagnostic microbiology). * Gains a comprehensive understanding of microbiology-related issues associated with products under review. * Keeps abreast of crucial and precedent-setting issues under review within the Office, Center, Agency, regulated industry, and in the field of microbiology. * Participates in meetings with Federal agencies, industry, academia, and Center staff to discuss issues pertaining to microbiology and related fields. * Prepares reports and/or manuscripts for publication in scientific literature and the Agency. |
| 1=Awareness | Occasionally demonstrates microbiology proficiency, but may avoid or miss opportunities. |
| 2=Basic | Sometimes uses microbiology proficiency to excel at the job. |
| 3=Intermediate | Usually applies a comprehensive set of scientific knowledge and skills of microbiology related fields to tackle day to day responsibilities and problems. |
| 4=Advanced | Even in the most difficult situations, ensures that microbiology proficiency is utilized to achieve success. |
| 5=Expert | Models, leads, trains, and motivates multiple levels of personnel to be excellent in microbiology proficiency. |

Table 3: Microbiology Proficiency

**Proficiency Levels by Grade**

| Grade Level | GS-7 | GS-9 | GS-11 | GS-12 | GS-13 |
| --- | --- | --- | --- | --- | --- |
| Proficiency Scale | 2 | 3 | 3-4 | 4 | 5 |

Table 4: Proficiency Levels by Grade

1. **Information Gathering** - Locates appropriate sources of data and information; Obtains and stores this information in support of approval process and research activities and goals.

| **Professional Levels** | **Key Behaviors** |
| --- | --- |
| All Levels | * Reviews scientific literature, methodology, and other information available to the Center (e.g., manuals, journal articles, other technical references) for information pertinent to the issue under investigation. * Coordinates with scientists within the Center, other government agencies, international entities, academia, and industry to exchange information and research findings. * Identifies and obtains pertinent sources of information such as journal articles and technical references (e.g., methods manuals, standard operating procedures, protocols). * Gathers information on complex, long-range, and emerging issues and conflicts in the scientific/regulatory field. * Identifies and obtains scientific information which will support the drug approval process. * Searches for pertinent information using applicable internal and external (e.g., PubMed, AGRICOLA, USPTO) computer-based databases. * Uses discretion with sensitive information. * Inputs data into appropriate computer tracking systems and databases. * Requests additional information, tests, and data when a submission is not adequate. |
| 1=Awareness | Occasionally gathers information effectively; may avoid or miss opportunities. |
| 2=Basic | Sometimes demonstrates ability to gather the information needed to clarify a situation or make a decision, and seeks help from knowledgeable people when information is difficult to obtain. |
| 3=Intermediate | Usually identifies sources of information for a wide variety of needs, probes skillfully to get implied and indirect information as well as its context, and develops systems to improve the quality of information gathering. |
| 4=Advanced | Even in the most difficult situations, identifies sources of information for a wide variety of needs, probes skillfully to get implied and indirect information as well as its context, and develops systems to improve the quality of information gathering. |
| 5=Expert | Models, leads, trains, and motivates multiple levels of personnel to be excellent in information gathering. |

Table 5: Information Gathering

**Proficiency Levels by Grade**

| Grade Level | GS-7 | GS-9 | GS-11 | GS-12 | GS-13 |
| --- | --- | --- | --- | --- | --- |
| Proficiency Scale | 2 | 3 | 3-4 | 4 | 5 |

Table 6: Proficiency Levels by Grade

1. **Data Analysis and Interpretation** - Data analysis and management include a basic knowledge of principles and techniques related to the analysis, presentation, and exchange of data.

| **Professional Levels** | **Key Behaviors** |
| --- | --- |
| All Levels | * Analyze data using appropriate analytical procedures, techniques, or software. * Use basic descriptive or statistical techniques (e.g., mean, standard deviation, correlation) while conducting research. * Interpret results of analyses to reach understandable conclusions and recommendations. * Use appropriate information technology for data exchange. * Store and archive data at secure sites to ensure data integrity. * Collaborate with statisticians to analyze data. |
| 1=Awareness | Occasionally analyzes data effectively; may avoid or miss opportunities. |
| 2=Basic | Sometimes demonstrates ability to analyze data needed to clarify a situation or make a decision, and seeks help from knowledgeable people when information is difficult to obtain. |
| 3=Intermediate | Usually identifies sources of data for a wide variety of needs, probes skillfully to get implied and indirect information as well as its context, and develops systems to improve the quality of data analysis. |
| 4=Advanced | Even in the most difficult situations, identifies sources of data for a wide variety of needs, probes skillfully to get implied and indirect information as well as its context, and develops systems to improve the quality of data analysis. |
| 5=Expert | Models, leads, trains, and motivates multiple levels of personnel to be excellent in data analysis. |

Table 5: Data Analysis and Interpretation

**Proficiency Levels by Grade**

| Grade Level | GS-7 | GS-9 | GS-11 | GS-12 | GS-13 |
| --- | --- | --- | --- | --- | --- |
| Proficiency Scale | 2 | 3 | 3-4 | 4 | 5 |

Table 6: Proficiency Levels by Grade

1. **Scientific & Regulatory Advisement** - Serves as an authoritative source of information and guidance on microbiology issues related to animal drugs, foods, laws, regulations, and policies.

| **Professional Levels** | **Key Behaviors** |
| --- | --- |
| All Levels | * Provides recommendations for the solution of a variety of microbiology-related issues. * Participates in meetings with industry and government officials as a representative of CVM. * Participates in the development of policy documents regarding microbiological issues. * Collaborates with colleagues in FDA and other Federal agencies on interrelated programs. * Briefs staff and the Division Director on scientific/regulatory interpretations and analyses. * Provides advice and guidance regarding compliance with policies, decisions, and regulations to officials in the regulated industry and State, local, and international entities. * Serves as an authoritative source of information and advice on the research of animal drugs and feed. * Assists other FDA and CVM scientists in completion of their tasks by providing expert knowledge with respect to microbiology. * Alerts appropriate authority of potential microbiology-related problems which may have an impact on the Center and the stakeholders. * Delivers outreach messages on microbiological topics through a variety of media (e.g., conferences, workshops, seminars, publications) in order to promote Center mission. * Serves as an authoritative source of information and advice on the manufacture of animal drugs and feed. * Recommends field investigations be conducted by FDA District personnel of applicants' facilities to assure compliance with pertinent regulations. * Participates in the development of microbiology-related guidance and policy documents for the manufacturing and control of animal drug and feed products. * Collaborates with colleagues in academia on interrelated programs. * Serves as an expert in national and international organizations on microbiological issues (e.g., VICH). |
| 1=Awareness | Occasionally employs scientific and regulatory advisement techniques and knowledge, sometimes missing or avoiding opportunities. |
| 2=Basic | Sometimes demonstrates ability to perform scientific and regulatory advisement. |
| 3=Intermediate | Usually performs scientific and regulatory advisement. |
| 4=Advanced | Even in the most difficult situations, employs ability to perform scientific and regulatory advisement, effectively serving as an authoritative source of information and guidance on microbiology issues related to animal drugs, foods, laws, regulations, and policies. |
| 5=Expert | Models, leads, trains, and motivates multiple levels of personnel to be excellent in scientific and regulatory advisement. |

Table 7: Scientific & Regulatory Advisement

**Proficiency Levels by Grade**

| Grade Level | GS-7 | GS-9 | GS-11 | GS-12 | GS-13 |
| --- | --- | --- | --- | --- | --- |
| Proficiency Scale | 2 | 3 | 3-4 | 4 | 5 |

Table 8: Proficiency Levels by Grade

1. **Research** – Research includes an ability to apply scientific principles and techniques to develop or enrich knowledge of a topic and advance the state of the science.

| **Professional Levels** | **Key Behaviors** |
| --- | --- |
| All Levels | * Conduct biomedical research literature searches and reviews. * Develop and implement a research plan that incorporates relevant scientific principles, techniques, and methods. * Develop protocols and data-collection methods based on the research plan. * Assess the appropriateness of research approaches for the target population, project goals, and agency mission. * Ensure completion of relevant administrative review processes in the completion of research projects (e.g., clearance, IRB, OMB). * Seek current knowledge of the status of ongoing biologic sciences research, including goals, principles, methodologies, and evaluations. * Perform research procedures in conformance with the research plan. * Strive to maintain the high scientific standards of the agency. * Document research procedures and results to enhance reproducibility and scientific integrity. * Develop novel or innovative scientific programs to address emerging public health needs. |
| 1=Awareness | Occasionally performs research, but may avoid or miss opportunities to deliver data based on sound research techniques. |
| 2=Basic | Sometimes uses correct research techniques to create reports and provide data. |
| 3=Intermediate | Usually ensures that regular research occurs based on the needs of the project or individual. |
| 4=Advanced | Even in the most difficult situations, ensures that regular research occurs based on the needs of the project. |
| 5=Expert | Models, leads, trains, and motivates multiple levels of personnel to be excellent in research. |

Table 9: Research

**Proficiency Levels by Grade**

| Grade Level | GS-7 | GS-9 | GS-11 | GS-12 | GS-13 |
| --- | --- | --- | --- | --- | --- |
| Proficiency Scale | 2 | 3 | 3-4 | 4 | 5 |

Table 10: Proficiency Levels by Grade

1. **Public Health Knowledge** - Public health knowledge includes knowledge of different approaches to improving population and individual based health.

| **Professional Levels** | **Key Behaviors** |
| --- | --- |
| All Levels | * Describe types of health promotion, disease and injury prevention, and control programs. * Describe relevant partners among government (federal, state, local, tribal, territorial) and non-government (private, non-profit, academic) entities used to implement intervention policies. * Describe how laboratory activities translate into public health practices and interventions. * Maintain awareness of global public health trends. * Maintain a basic knowledge of the principles and techniques of population-based health. * Describe the role of the agency in maintaining public health. |
| 1=Awareness | Occasionally displays sound public health knowledge; may avoid or miss opportunities. |
| 2=Basic | Sometimes demonstrates strong public health knowledge to clarify a situation or make a decision, and seeks help from knowledgeable people when information is difficult to obtain. |
| 3=Intermediate | Usually displays public health knowledge for a wide variety of needs, probes skillfully to get implied and indirect information as well as its context, and develops systems to improve the quality of public health knowledge. |
| 4=Advanced | Even in the most difficult situations, exhibits strong sense of knowledge pertaining to improving population and individual-based health. |
| 5=Expert | Models, leads, trains, and motivates multiple levels of personnel to be excellent in public health knowledge. |

Table 11: Public Health Knowledge

**Proficiency Levels by Grade**

| Grade Level | GS-7 | GS-9 | GS-11 | GS-12 | GS-13 |
| --- | --- | --- | --- | --- | --- |
| Proficiency Scale | 2 | 3 | 3-4 | 4 | 5 |

Table 12: Proficiency Levels by Grade

1. **Laboratory Practices** - Laboratory practices include the knowledge and application of laboratory procedures and techniques.

| **Professional Levels** | **Key Behaviors** |
| --- | --- |
| All Levels | * Demonstrate knowledge of a wide range of laboratory procedures (e.g., pipetting; dilution; measuring and weighing chemical compounds; preparing solutions, reagents, and buffers; microscopy). * Operate laboratory instruments and appropriate software. * Conduct and record preventive maintenance on laboratory equipment to ensure compliance with biosafety, occupational, and manufacturer guidelines and regulations. * Develop and optimize protocols for standard operating procedures. * Maintain laboratory competency to ensure quality. * Ship and store biological materials according to established guidelines and regulations. * Maintain accurate reagents and supply inventories. * Maintain accurate database records (e.g., specimen records, sample records, test results) * Develop a risk-assessment analysis using current scientific knowledge. |
| 1=Awareness | Occasionally demonstrates knowledge of laboratory practices; may avoid or miss opportunities. |
| 2=Basic | Sometimes demonstrates knowledge of laboratory practices, and exhibits knowledge of lab procedures. |
| 3=Intermediate | Usually performs work with solid understanding of laboratory practices, exhibiting knowledge and firm application of lab procedures and techniques. |
| 4=Advanced | Even in the most difficult situations, employs laboratory practices in day-to-day functions and tasks. |
| 5=Expert | Models, leads, trains, and motivates multiple levels of personnel to be excellent in laboratory practices. |

Table 13: Laboratory Practices

**Proficiency Levels by Grade**

| Grade Level | GS-7 | GS-9 | GS-11 | GS-12 | GS-13 |
| --- | --- | --- | --- | --- | --- |
| Proficiency Scale | 2 | 3 | 3-4 | 4 | 5 |

Table 14: Proficiency Levels by Grade

1. **Laboratory Management** - Laboratory management includes knowledge of management and administrative techniques designed to ensure effective laboratory operations.

| **Professional Levels** | **Key Behaviors** |
| --- | --- |
| All Levels | * Demonstrate knowledge of laboratory management and administrative techniques. * Plan and implement efficient, technologically advanced, and scientifically appropriate laboratory projects. * Demonstrate knowledge of CDC’s and other national and international laboratory standards, regulations, and guidelines (e.g., pathogen testing, processing, quality control, biosafety, long-term specimen storage, bio-hazardous shipping, related records management). * Develop and ensure compliance with quality-control and quality-assurance standards. * Demonstrate knowledge of laboratory biosafety levels (e.g., BSL 1-4). * Demonstrate knowledge of chemical safety. * Demonstrate knowledge of planning, programming, and budgeting regulations, guidelines, and processes to develop, justify, and manage laboratory resources and CDC property. * Adhere to CDC technology-transfer guidelines. * Consider the environmental impact of laboratory resource decisions  (e.g., sustainability). * Develop validation criteria for new laboratory procedures used in research or diagnosis. |
| 1=Awareness | Occasionally exercises laboratory management; may avoid or miss opportunities. |
| 2=Basic | Sometimes demonstrates laboratory management skills needed effectively oversee lab operations. |
| 3=Intermediate | Usually employs sound laboratory management skills. |
| 4=Advanced | Even in the most difficult situations employs laboratory management skills skillfully to get implied and indirect information as well as its context, and develops systems to improve the quality of the work environment. |
| 5=Expert | Models, leads, trains, and motivates multiple levels of personnel to be excellent in laboratory management. |

Table 15: Laboratory Management

**Proficiency Levels by Grade**

| Grade Level | GS-7 | GS-9 | GS-11 | GS-12 | GS-13 |
| --- | --- | --- | --- | --- | --- |
| Proficiency Scale | 2 | 3 | 3-4 | 4 | 5 |

Table 16: Proficiency Levels by Grade

1. **Microbiological Science** - Microbiological science includes knowledge of different microbiologic methodologies, theories, and practices in bacteriology, immunology, molecular biology, mycology, parasitology, or virology.

| **Professional Levels** | **Key Behaviors** |
| --- | --- |
| All Levels | * Describe different microbiologic methodologies, theories, and practices that can be applied to laboratory research or diagnosis. * Demonstrate knowledge of the capacities and limitations of microbiological methodologies used in research. * Interpret and apply current microbiological concepts to research and diagnostic procedures. * Demonstrate knowledge of the procedures used in bacteriology, immunology, molecular biology, mycology, parasitology, or virology. * Integrate applicable and relevant techniques in laboratory procedures. * Apply current knowledge for integrating chemical or biochemical and genetic techniques as these techniques apply to microbiology. |
| 1=Awareness | Occasionally microbiology knowledge; may avoid or miss opportunities. |
| 2=Basic | Sometimes demonstrates microbiology knowledge, exhibits some knowledge over different microbiological therories, gathers the information needed to clarify a situation or make a decision, and seeks help from knowledgeable people when information is difficult to obtain. |
| 3=Intermediate | Usually performs work with solid understanding of microbiology, effectively breaking down and comprehending various methodologies. |
| 4=Advanced | Even in the most difficult situations, employs microbiology knowledge. |
| 5=Expert | Models, leads, trains, and motivates multiple levels of personnel to be excellent in microbiology knowledge. |

Table 17: Microbiological Science

**Proficiency Levels by Grade**

| Grade Level | GS-7 | GS-9 | GS-11 | GS-12 | GS-13 |
| --- | --- | --- | --- | --- | --- |
| Proficiency Scale | 2 | 3 | 3-4 | 4 | 5 |

Table 18: Proficiency Levels by Grade

1. **Mentoring** - Helps others, regardless of reporting relationship, to acquire the awareness, confidence, and resources necessary to fulfill their potential.

| **Professional Levels** | **Key Behaviors** |
| --- | --- |
| All Levels | * Acts as a role model and example to others. * Maintains a genuine interest in facilitating the personal and professional growth of others, regardless of reporting relationship. * Provides informal developmental feedback. * Listens actively to what is said and not said, and to support others' self expression. * Shares expertise and provides informal advice. * Assists protégé in navigating organizational landscape to achieve objectives. * Assists, supports, and encourages others in identifying difficulties, prioritizing tasks, defining goals (e.g., creating an IDP), and producing positive results. |
| 1=Awareness | Occasionally mentors developing employees; may avoid or miss opportunities. |
| 2=Basic | Sometimes demonstrates ability to mentor effectively and assist with directing others in proper career direction. |
| 3=Intermediate | Usually mentors individuals and looks for opportunities to mentor. |
| 4=Advanced | Even in the most difficult situations, identifies mentoring candidates and looks for ways to assist others. |
| 5=Expert | Models, leads, trains, and motivates multiple levels of personnel to be excellent in mentorship. |

Table 19: Mentoring

**Proficiency Levels by Grade**

| Grade Level | GS-7 | GS-9 | GS-11 | GS-12 | GS-13 |
| --- | --- | --- | --- | --- | --- |
| Proficiency Scale | 2 | 3 | 3-4 | 4 | 5 |

Table 20: Proficiency Levels by Grade

1. **Technical Training and Advising** - Technical training and advising include providing training, consultation, or other guidance to others inside and outside HHS.

| **Professional Levels** | **Key Behaviors** |
| --- | --- |
| All Levels | * Develop and present training content in workshops, classrooms, or laboratory settings. * Develop and present training content using alternative methods (e.g., social media, blogs, and webinars). * Provide one-on-one laboratory training. * Conduct demonstrations of new processes or techniques. * Provide technical or scientific advice to others inside and outside HHS. * Mentor new or visiting laboratory staff in current laboratory. |
| 1=Awareness | Occasionally performs technical training and advising; may avoid or miss opportunities. |
| 2=Basic | Sometimes demonstrates ability to perform technical training and advising. |
| 3=Intermediate | Usually provides technical training and advising when necessary, effectively providing training, consulting, or other guidance when the need occurs. |
| 4=Advanced | Even in the most difficult situations, looks for opportunities to perform technical training and advising to assist colleagues. |
| 5=Expert | Models, leads, trains, and motivates multiple levels of personnel to be excellent in technical training and advising. |

Table 21: Technical Training and Advising

**Proficiency Levels by Grade**

| Grade Level | GS-7 | GS-9 | GS-11 | GS-12 | GS-13 |
| --- | --- | --- | --- | --- | --- |
| Proficiency Scale | 2 | 3 | 3-4 | 4 | 5 |

Table 22: Proficiency Levels by Grade

1. **Network and Partnership Development** - Networking and partnership development include working with team members and colleagues (e.g., public- and private-sector representatives and their staff, government officials) to achieve a common goal.

| **Professional Levels** | **Key Behaviors** |
| --- | --- |
| All Levels | * Develop partnerships and collaborations with team members and colleagues, including domestic and international public- and private-sector representatives and their staff, and government officials. * Work with multidisciplinary project teams to develop, implement, and evaluate research projects and programs. * Develop partnerships that connect laboratory- and population-based practices to improve public health outcomes. * Develop partnerships to advance innovation in science and technology, following appropriate HHS guidelines. * Establish partnerships to complement technology, skills, and knowledge not readily available at HHS. |
| 1=Awareness | Occasionally networks and partners effectively; may avoid or miss opportunities. |
| 2=Basic | Sometimes demonstrates ability to network and partner. |
| 3=Intermediate | Usually networks and partners effectively, achieving common goals together. |
| 4=Advanced | Even in the most difficult situations, prioritizes network and partnership development to achieve common goals and success at the work place. |
| 5=Expert | Models, leads, trains, and motivates multiple levels of personnel to be excellent in network and partnership development. |

Table 23: Network and Partnership Development

**Proficiency Levels by Grade**

| Grade Level | GS-7 | GS-9 | GS-11 | GS-12 | GS-13 |
| --- | --- | --- | --- | --- | --- |
| Proficiency Scale | 2 | 3 | 3-4 | 4 | 5 |

Table 24: Proficiency Levels by Grade

1. **Collaboration and Partnering** - Makes sound decisions in a timely manner. Works well with others.

| **Professional Levels** | **Key Behaviors** |
| --- | --- |
| All Levels | * Bases decisions on an analysis of short-range consequences or simple options, including people’s reactions and potential problems * Makes decisions in a timely manner when the options are clear and there is little pressure or risk * Solicits the input of the appropriate people to improve the quality and timing of a decision * Gathers sufficient information to identify gaps and variances before making a decision * Focuses on objectives and results when considering the various alternatives to a decision * Foresees the long-range consequences or implications of different options * Takes charge of a group when it is necessary to facilitate either an action or a decision * Makes decisions at the right time when there is ambiguity or considerable personal or organizational risk |
| 1=Awareness | Occasionally collaborates, networks and partners effectively; may avoid or miss opportunities. |
| 2=Basic | Sometimes demonstrates ability to collaborate, network and partner. |
| 3=Intermediate | Usually networks and partners effectively. |
| 4=Advanced | Even in the most difficult situations, prioritizes collaboration as a key tool to achieve success. |
| 5=Expert | Models, leads, trains, and motivates multiple levels of personnel to be excellent in collaboration. |

Table 25: Collaboration and Partnering

**Proficiency Levels by Grade**

| Grade Level | GS-7 | GS-9 | GS-11 | GS-12 | GS-13 |
| --- | --- | --- | --- | --- | --- |
| Proficiency Scale | 2 | 3 | 3-4 | 4 | 5 |

Table 26: Proficiency Levels by Grade

1. **Honesty** - Gains the trust of others by taking responsibility for own actions and telling the truth.

| **Professional Levels** | **Key Behaviors** |
| --- | --- |
| All Levels | * Follows through on commitments and agreements. * Respects confidentiality. * Admits mistakes when in low risk situations. * Consistently tells the truth. * Maintains confidentiality regardless of pressure from others. * Admits mistakes in spite of the potential for negative consequences. * Takes stands based on principles and values despite personal or professional risk. * Challenges others who are not acting with integrity or telling the truth. |
| 1=Awareness | Occasionally exhibits honesty; may avoid or miss opportunities. |
| 2=Basic | Sometimes demonstrates strong sense of honesty. |
| 3=Intermediate | Usually is honest and open. |
| 4=Advanced | Even in the most difficult situations, prioritizes honesty and integrity as a vital component of workplace success. |
| 5=Expert | Models, leads, trains, and motivates multiple levels of personnel to be excellent in honesty and integrity. |

Table 27: Honesty

**Proficiency Levels by Grade**

| Grade Level | GS-7 | GS-9 | GS-11 | GS-12 | GS-13 |
| --- | --- | --- | --- | --- | --- |
| Proficiency Scale | 5 | 5 | 5 | 4 | 5 |

Table 28: Proficiency Levels by Grade

1. **Scientific Ethics** - Scientific ethics includes the application of standards of research and integrity to the responsible conduct of science.

| **Professional Levels** | **Key Behaviors** |
| --- | --- |
| All Levels | * Apply knowledge of the standards and ethics of research, including human subjects’ research, animal research, and legal concerns, to the responsible conduct of science. * Promote scientific ethics in the conduct of research and communicate expectations of scientific ethics to team members. * Protect confidentiality of data and test results. * Ensure appropriate authorship and acknowledgements in scientific publications, patents, and other communications. |
| 1=Awareness | Occasionally employs scientific ethics effectively; may avoid or miss opportunities. |
| 2=Basic | Sometimes demonstrates ability to employ scientific ethics to make proper decisions that are ethical. |
| 3=Intermediate | Usually employs scientific ethics to regularly complete tasks and projects with integrity. |
| 4=Advanced | Even in the most difficult situations, employs scientific ethics in most situations. |
| 5=Expert | Models, leads, trains, and motivates multiple levels of personnel to be excellent in scientific ethics. |

Table 29: Scientific Ethics

**Proficiency Levels by Grade**

| Grade Level | GS-7 | GS-9 | GS-11 | GS-12 | GS-13 |
| --- | --- | --- | --- | --- | --- |
| Proficiency Scale | 5 | 5 | 5 | 5 | 5 |

Table 30: Proficiency Levels by Grade

1. **Translation of Science** - Translation of science includes the ability to prepare, present, teach, and publish reports and manuscripts of laboratory research.

| **Professional Levels** | **Key Behaviors** |
| --- | --- |
| All Levels | * Translate scientific findings into understandable conclusions and actionable recommendations that are targeted to the audience. * Interpret and present data for scientific presentations. * Prepare and publish reports and manuscripts of biological research findings for local, national, and international conferences, and other peer-reviewed outlets. * Review and edit scientific publications of peer colleagues. * Translate scientific findings into public health practice. * Consider and use alternative ways to communicate scientific findings to the public and the broader scientific community (e.g., podcasts, blogs, interactive social media) |
| 1=Awareness | Occasionally translates science effectively; may avoid or miss opportunities. |
| 2=Basic | Sometimes demonstrates ability to translate science effectively, being able to publish reports of lab research. |
| 3=Intermediate | Usually translates science effectively by preparing, presenting, teaching, and publishing reports and manuscripts of lab research. |
| 4=Advanced | Even in the most difficult situations, employs the translation of science effectively and soundly to convey vital scientific information to the community . |
| 5=Expert | Models, leads, trains, and motivates multiple levels of personnel to be excellent in the translation of science. |

Table 31: Translation of Science

**Proficiency Levels by Grade**

| Grade Level | GS-7 | GS-9 | GS-11 | GS-12 | GS-13 |
| --- | --- | --- | --- | --- | --- |
| Proficiency Scale | 2 | 3 | 3-4 | 4 | 5 |

Table 32: Proficiency Levels by Grade

1. **Communication** - Delivers clear, effective communication and takes responsibility for understanding others.

| **Professional Levels** | **Key Behaviors** |
| --- | --- |
| All Levels | * Clearly and effectively conveys information verbally. * Asks appropriate questions. * Organizes, expresses, and communicates ideas clearly in writing. * Listens actively; asks clarifying questions and summarizes or paraphrases what others have said to verify understanding. * Ensures that regular communication occurs based on the needs of the work, the individual, management or the situation. * Uses analogies, visuals, and other techniques to tailor communications to specific audiences. * Identifies and uses effective communication channels and methods (e.g., presentations, electronic dissemination, and social media). * Utilizes skill in presenting information, analysis, ideas and positions in a clear, succinct, accurate, convincing manner, as is appropriate with the audience. |
| 1=Awareness | Occasionally is attentive to communication, but may avoid or miss opportunities to deliver effective communication or take responsibility to understand others. |
| 2=Basic | Sometimes uses appropriate grammar and choice of words, organizes and expresses ideas clearly, and keeps others informed of the status of projects. |
| 3=Intermediate | Usually ensures that regular communication occurs based on the needs of the project or individual, listens well, clarifies the intent of others’ communication, tailors communication to the level of the audience, and utilizes creative methods such as analogies and visuals to communicate complex ideas. |
| 4=Advanced | Even in the most difficult situations, ensures that regular communication occurs based on the needs of the project or individual, listens well, clarifies the intent of others’ communication, tailors communication to the level of the audience, and identifies creative methods such as analogies and visuals to communicate complex ideas. |
| 5=Expert | Models, leads, trains, and motivates multiple levels of personnel to be excellent in attention to communication. |

Table 33: Communication

**Proficiency Levels by Grade**

| Grade Level | GS-7 | GS-9 | GS-11 | GS-12 | GS-13 |
| --- | --- | --- | --- | --- | --- |
| Proficiency Scale | 2 | 3 | 3-4 | 4 | 5 |

Table 34: Proficiency Levels by Grade

## BASELINE JOB REQUIREMENTS AND PROFICIENCY DEMONSTRATIONS, BY GRADE LEVEL

### GS-0403-07 Microbiology

#### Baseline Job Requirements

Professional knowledge of the principles, theories, and methods of biology as acquired through appropriate training and experience. Such knowledge is necessary to carry out the microbiological methods and procedures in providing laboratory support to a research program.

Knowledge of and skill in applying: concepts, principles, practices, and methodology of Microbiology; the organization’s programs and their governing laws and regulations; related biological disciplines; recognized reference standards; and regulatory agency requirements sufficient to: independently perform recurring, well-precedent projects using standard methods and techniques; identify and resolve problems; prepare routine reports and make presentations; and/or to: set up and implement new procedures; establish quality controls; ensure proper collection and preservation of specimens; perform and monitor the full range of specialized tests and non-routine procedures for which there are standard methods and techniques; calculate and correlate test results; and verify results.

#### Proficiency Demonstrations

Work involves performing research functions and duties that require unrelated steps, processes, methods, or procedures. To decide what needs to be done, the employee analyzes, evaluates, and selects an appropriate course of action from many known alternatives that concern, impact, or involve: biological or other scientific properties of substances or items; test instrument performance; acceptability of control samples; and assessing the effectiveness of known control measures. The employee identifies, interprets, analyzes, and applies a range of established approaches and solutions to tests, problems, or issues.

#### Education Requirements

**Degree:** microbiology; or biology, chemistry, or basic medical science that included at least 20 semester hours in microbiology and other subjects related to the study of microorganisms, and 20 semester hours in the physical and mathematical sciences combining course work in organic chemistry or biochemistry, physics, and college algebra, or their equivalent. OR,

**Combination of education and experience:** courses equivalent to a major in microbiology, biology, chemistry, or basic medical science that included courses as shown in A above, plus appropriate experience or additional education.

### GS-0403-09 Microbiology

#### Baseline Job Requirements

Professional knowledge of the principles, theories, and methods of biology as acquired through appropriate training and experience. Such knowledge is necessary to carry out the microbiological methods and procedures in providing laboratory support to a research program.

Knowledge of and skill in applying: concepts, principles, practices, and methodology of Microbiology; the organization’s programs and their governing laws and regulations; related biological disciplines; recognized reference standards; and regulatory agency requirements sufficient to: independently perform recurring, well-precedent projects using standard methods and techniques; identify and resolve problems; prepare routine reports and make presentations; and/or to: set up and implement new procedures; establish quality controls; ensure proper collection and preservation of specimens; perform and monitor the full range of specialized tests and non-routine procedures for which there are standard methods and techniques; calculate and correlate test results; and verify results.

#### Proficiency Demonstrations

The work involves various tasks that are technical in nature and occasionally require applying different and unrelated processes. The incumbent must plan, initiate, negotiate, evaluate, analyze, and research grant issues, monitor the grant process, and ensure that grants are in compliance with terms and conditions that certify reliability of costs. Incumbent negotiates sensitive relationships between grantee and program officials to reach workable agreements on the problems of grant obligations and determines what action should be taken to comply with the terms of obligations.

#### Proficiency Level Information

Work involves performing research functions and duties that require unrelated steps, processes, methods, or procedures. To decide what needs to be done, the employee analyzes, evaluates, and selects an appropriate course of action from many known alternatives that concern, impact, or involve: biological or other scientific properties of substances or items; test instrument performance; acceptability of control samples; and assessing the effectiveness of known control measures. The employee identifies, interprets, analyzes, and applies a range of established approaches and solutions to tests, problems, or issues.

#### Education Requirements

**Degree:** microbiology; or biology, chemistry, or basic medical science that included at least 20 semester hours in microbiology and other subjects related to the study of microorganisms, and 20 semester hours in the physical and mathematical sciences combining course work in organic chemistry or biochemistry, physics, and college algebra, or their equivalent. OR,

**Combination of education and experience:** courses equivalent to a major in microbiology, biology, chemistry, or basic medical science that included courses as shown in A above, plus appropriate experience or additional education.

### GS-0403-11 Microbiology

#### Baseline Job Requirements

Knowledge of and skill in applying: a wide range of concepts, principles, practices, and methodology of microbiology; agency regulations, policies, and procedures; and related disciplines; sufficient to: perform complex tests and/or procedures that require using highly specialized methods or techniques; recognize and identify unusual and diverse entities, occurrences, or investigative outcomes relevant to the program area; modify or adapt established protocols and procedures in response to test or study findings; plan studies that require making significant departures from previous approaches; revise standard methods to improve or extend test and study systems; and prepare and present scientific and technical reports.

* Comprehensive knowledge of the full range of laboratory procedures.
* Skill in calibrating and operating sophisticated laboratory instruments.
* Knowledge of the sources of pertinent research information to conduct literature searches and reviews.
* Skill in determining the specific data needed and the best approach and methods to obtain these data.
* Ability to deviate from, adapt, and modify accepted approaches and methods when the standard methods prove ineffective. Skill in evaluating and interpreting the significance of the data to a particular project or assignment.
* Skill in the collection, arrangement, and organization of data to prepare tables, charts, graphs, summaries, and other materials for effective presentation of experimental results and for inclusion in publications.
* Knowledge of computer systems, methods and applications, including application of commercial statistical and data management software packages for compiling and processing experimental data, and performing statistical analysis of data.
* Knowledge of statistical methods and procedures such as analysis of variance, correlation and regression analysis and frequency distribution to collect and present data and to analyze experimental data.
* Ability to collaborate with scientists and to provide a general leadership role in the management of the laboratory.
* Ability to provide training and guidance to others in the use of equipment and in the conduct of laboratory methods and procedures, to oversee/supervise students and others, and to maintain quality control of all research efforts.
* Ability to work effectively with others to ensure the successful and timely completion of the research goals of the organization.
* Skill in written communications to prepare and present information regarding laboratory experiments.
* Ability to oversee the day-to-day operations of the laboratory to include ordering of supplies and equipment and assisting with managing the budget.
* Skill in the handling of microbiological or microbiological samples to assure accurate transfer of materials and to avoid contamination.
* Knowledge of the methods and procedures for safe handling and disposal of radioisotopes, carcinogens, and other hazardous materials used in laboratory experiments.

#### Proficiency Demonstrations

Work involves performing a variety of research duties that require many different and unrelated processes, methods, and problem solving techniques common to the discipline. To decide what needs to be done, the employee: conducts special studies; evaluates unusual circumstances; works with incomplete and conflicting data; contends with the absence of criteria; and contends with new methods and equipment. The employee uses considerable judgment to: plan the sequence, direction, and progress of work; interpret voluminous data or data that are incomplete or conflicting, or of questionable accuracy; modify standard methods, practices, or techniques or existing guides to address current and evolving problems or issues; identify, evaluate, and project risks based on scarce, non-existent, or conflicting data; and assess the interrelationships of physiological and technological information.

#### Education Requirements

**Degree:** microbiology; or biology, chemistry, or basic medical science that included at least 20 semester hours in microbiology and other subjects related to the study of microorganisms, and 20 semester hours in the physical and mathematical sciences combining course work in organic chemistry or biochemistry, physics, and college algebra, or their equivalent. OR,

**Combination of education and experience:** courses equivalent to a major in microbiology, biology, chemistry, or basic medical science that included courses as shown in A above, plus appropriate experience or additional education.

### GS-0403-12 Microbiology

#### Baseline Job Requirements

Knowledge of and skill in applying: a wide range of concepts, principles, practices, and methodology of microbiology; agency regulations, policies, and procedures; and related disciplines; sufficient to: perform complex tests and/or procedures that require using highly specialized methods or techniques; recognize and identify unusual and diverse entities, occurrences, or investigative outcomes relevant to the program area; modify or adapt established protocols and procedures in response to test or study findings; plan studies that require making significant departures from previous approaches; revise standard methods to improve or extend test and study systems; and prepare and present scientific and technical reports.

* Comprehensive knowledge of the full range of laboratory procedures.
* Skill in calibrating and operating sophisticated laboratory instruments.
* Knowledge of the sources of pertinent research information to conduct literature searches and reviews.
* Skill in determining the specific data needed and the best approach and methods to obtain these data.
* Ability to deviate from, adapt, and modify accepted approaches and methods when the standard methods prove ineffective. Skill in evaluating and interpreting the significance of the data to a particular project or assignment.
* Skill in the collection, arrangement, and organization of data to prepare tables, charts, graphs, summaries, and other materials for effective presentation of experimental results and for inclusion in publications.
* Knowledge of computer systems, methods and applications, including application of commercial statistical and data management software packages for compiling and processing experimental data, and performing statistical analysis of data.
* Knowledge of statistical methods and procedures such as analysis of variance, correlation and regression analysis and frequency distribution to collect and present data and to analyze experimental data.
* Ability to collaborate with scientists and to provide a general leadership role in the management of the laboratory.
* Ability to provide training and guidance to others in the use of equipment and in the conduct of laboratory methods and procedures, to oversee/supervise students and others, and to maintain quality control of all research efforts.
* Ability to work effectively with others to ensure the successful and timely completion of the research goals of the organization.
* Skill in written communications to prepare and present information regarding laboratory experiments.
* Ability to oversee the day-to-day operations of the laboratory to include ordering of supplies and equipment and assisting with managing the budget.
* Skill in the handling of microbiological or microbiological samples to assure accurate transfer of materials and to avoid contamination.
* Knowledge of the methods and procedures for safe handling and disposal of radioisotopes, carcinogens, and other hazardous materials used in laboratory experiments.

#### Proficiency Demonstrations

Work involves performing a variety of research duties that require many different and unrelated processes, methods, and problem solving techniques common to the discipline. To decide what needs to be done, the employee: conducts special studies; evaluates unusual circumstances; works with incomplete and conflicting data; contends with the absence of criteria; and contends with new methods and equipment. The employee uses considerable judgment to: plan the sequence, direction, and progress of work; interpret voluminous data or data that are incomplete or conflicting, or of questionable accuracy; modify standard methods, practices, or techniques or existing guides to address current and evolving problems or issues; identify, evaluate, and project risks based on scarce, non-existent, or conflicting data; and assess the interrelationships of physiological and technological information.

#### Education Requirements

**Degree:** microbiology; or biology, chemistry, or basic medical science that included at least 20 semester hours in microbiology and other subjects related to the study of microorganisms, and 20 semester hours in the physical and mathematical sciences combining course work in organic chemistry or biochemistry, physics, and college algebra, or their equivalent. OR,

**Combination of education and experience:** courses equivalent to a major in microbiology, biology, chemistry, or basic medical science that included courses as shown in A above, plus appropriate experience or additional education.

### GS-0403-13 Microbiology

#### Baseline Job Requirements

The Microbiologist maintains and applies a mastery of, and skill in applying the following:

* principles and practices related to disciplines of microbiology (e.g., veterinary and human microbiology, virology, bacteriology, parasitology)
* sources of applicable data and information (e.g., software, search engines, and scientific databases, directives, scientific and trade publications)
* applicable laws (e.g., Food, Drug and Cosmetic Act; National Environmental Policy Act [NEPA] regulations, and policies
* principles and practices of microbiology – related methods and study designs (e.g., protocols, analytical method development)
* previous microbiology-related decisions and precedent actions made within the Center, Agency, and regulated industry
* acceptable practices in the development of scientific data and information for animal drugs, foods, and devices
* laws and regulations regarding the content of labeling
* the process to withdraw a previously approved product
* standards related to Good Manufacturing/Laboratory Practice requirements
* the needs, priorities, and concerns of stakeholders
* current products, manufacturing practices, and related issues associated with CVM-regulated industries
* the steps involved in the animal drug and feed review and approval process
* interrelated activities in the Division, Office, and Center
* industry standards for quality assurance and quality control principles and practices
* techniques to persuasively present decisions and ideas to stakeholders with differing views and backgrounds

#### Proficiency Demonstrations

Assignments primarily consist of developing and executing a wide range of sophisticated analysis techniques to resolve unique problems and questions, which requires a high degree of regulatory and scientific judgment. The work is considered to be difficult because of the scientific and/or regulatory complexity associated with variables being studied. The Microbiologist is required to integrate methods from several scientific disciplines related to microbiology.

#### Education Requirements

**Degree:** microbiology; or biology, chemistry, or basic medical science that included at least 20 semester hours in microbiology and other subjects related to the study of microorganisms, and 20 semester hours in the physical and mathematical sciences combining course work in organic chemistry or biochemistry, physics, and college algebra, or their equivalent. OR,

**Combination of education and experience:** courses equivalent to a major in microbiology, biology, chemistry, or basic medical science that included courses as shown in A above, plus appropriate experience or additional education.

## RECOMMENDED TRAINING FOR QUALITATIVE / QUANTITATIVE ANALYSIS

| **Proficiency Levels** | **Recommended Training** | **Potential Vendor(s)** |
| --- | --- | --- |
| Entry (1) or Intermediate (2) | * Basic Mathematics * Practical Statistics * Customer Service * Communication and Listening Skills * Group Processes and Teamwork * Microsoft Office Training * Presentations and Briefings | USDA Grad School  HHS Learning Portal |
| Intermediate (2) or Intermediate to Advanced (3) | * Introductory Statistics I * Team Building * Technical Writing * Project Management * Management Theories and Practices (TQM, Six Sigma, Balance Scorecard) * Introduction to MS Project 2003 | HHS Learning Portal  OPDIV Training Center  USDA Grad School |
| Intermediate to Advanced (3) | * Evaluation under OMB Program Assessment Rating Tool (PART): An Introduction * Survey Design and Collection * COTR Training * Regulatory Training * Food and Drug Law * Biologics Law * New Reviewers Training | HHS Learning Portal  OPDIV Training Center  USDA Grad School |
| Intermediate to Advanced(3) or Advanced (4) | * Introductory Statistics II * Scientific Course Seminars and Workshops * Decision Support: Building New Analytical Skills * Communicating Analysis Results * Data Collection and Analysis * Intermediate MS Excel 2003 | Management Concepts  USDA Grad School  OPDIV Universities  HHS Learning Portal |
| Advanced (4) | * Advanced Data Analysis Techniques and Strategies   Analytic Techniques – Advanced  Budget Fundamentals  Budget Formulation and Execution   * Business Systems | Management Concepts  OPDIV Universities  HHS Learning Portal |

Table 35: Recommended Training for Qualitative/ Quantitative Analysis

## DEVELOPMENTAL OPPORTUNITIES

### To Strengthen Your General Competencies:

* Actively participate on teams
* Seek or self-nominate for detail assignments
* Seek shadowing opportunities through your supervisor
* Develop mentoring relationships
* Self-assign targeted literature reviews
* Gain collaborative workgroup assignments
* Seek assignment to Special Projects (e.g. process flow chart development; benchmark reports, etc)
* Volunteer to participate in a high-visibility project.
* Take advantage of the wide variety of written and intranet materials that provide information about HHS and the scope of its mission and operations
* Learn new technologies (e.g., through self-study, seminars)
* Study technical writing as it applies to your work role
* Attend conferences, meetings, or seminars
* Join an industry or professional associations
* Read technical publications to keep up-to-date on developments in your field (e.g., books, professional newsletters, trade journals)
* Build an informal network of peers through which you can exchange ideas and discuss issues relevant to technical advances in your field.
* Learn from others on the job (e.g., obtain on-the-job training, ask others for guidance).
* Find a mentor for technical and/or career guidance
* Study lessons learned from reviews of failed and successful projects.

### To Strengthen Technical Competencies:

* Work with your supervisor and assist with the development of an Individual Development Plan.
* Conduct interviews or informational sessions with senior analysts to gain insight into the skills critical for success.
* Actively participate on a team with co-workers or internal focus groups, to assist in accomplishing projects or to enhance the success of the projects goals.

## DEVELOPMENTAL ACTIVITIES

Training is only one option, other developmental ideas include:

* Reading/Studying
* Developing SOPs
* Specific assignments/On the job training
* Rotations with customers
* Completing/Leading special project(s)
* Membership in professional organizations
* Participating in committees
* Shadowing
* Mentoring (Become a mentor!)
* Volunteering
* Peer coaching
* Cross-Training (Also Intramural vs. Extramural)
* Leading Teams

## ADDITIONAL TRAINING OPPORTUNITIES AND RESOURCES:

### SkillSoft Training Courses in the HHS Learning Management System (LMS)

The Learning Management System has thousands of free online training courses for all HHS employees on topics such as IT programming and certifications, MS Office Programs, Business, Live learning, Legal information, and Federal programs:

<https://lms.learning.hhs.gov/Saba/Web/Main>

### Microsoft Office Training

The official training site of the Microsoft Office suite covers many topics and has separate pages for 2003, 2007 and 2010 versions.

<http://office.microsoft.com/en-us/support/training-FX101782702.aspx>

### OPDIV IT Training

Free training programs taught by IT Specialists focused on basic IT programs and data tracking systems:

<http://training.cit.nih.gov/courselisting.aspx?Sort=Month>

### OPDIV Training Centers

Provides training for Administrative Professionals at the OPDIV level who are responsible for providing comprehensive administrative support. Such incumberts may serve as principal advisors to important agency organizations. They may participate in the development and implementation of management policies, the planning of organizational needs, and the preparation of plans, goals, objectives, or criteria for management processes. These positions require knowledge of a wide range of qualitative and/or quantitative methods for the development and management of major administrative programs, demonstrated analytical ability, and strong written and verbal communications skills.

<http://trainingcenter.nih.gov/audience-admin.html>

### OPDIV Library Resource Training

OPDIV Libraries offers training on how to effectively find, appraise and manage information using an array of electronic library resources. Topics include: how to search the biomedical literature, access online journals, order and receive articles via email, set up a research update service, use bibliographic management software to manage a personal library collection, and format bibliographies.

<http://nihlibrary.nih.gov/ResourceTraining/Pages/default.aspx>

### Pathways Program

The Management Intern Program offers outstanding HHS employees the opportunity to explore different administrative career fields, gain invaluable insight into the DHHS, and to prepare for future administrative or leadership positions.

<http://www.opm.gov>

### HHS Mentoring Program

The HHS mentoring program was created to help federal employees develop their knowledge, skills, and abilities. Build a year-long relationship as either a mentor or a mentee, and participate in HHS and NIH program events, activities, and resources to facilitate personal and professional growth.

<http://trainingcenter.nih.gov/hhs_mentoring.html>

### OPDIV Videocasting and Podcasts

Watch OPDIV Conferences and Seminars that are recorded live and then archived within:

* The HHS Learning Portal
* The Leadership Development Channel

### Free Classes and Lectures

#### Excel is Fun

YouTube has over 1600 instructional videos about Microsoft Excel. There are playlists dealing with Excel basics, pivot tables, finance and statistical functions, and much more. <http://www.youtube.com/user/ExcelIsFun>

#### Leadership Resources

Twenty-five free online leadership resources can be found at:

<http://people-equation.com/25-free-leadership-resources/>

#### iTunes University

A powerful distribution system for everything from lectures to language lessons, films to labs, audiobooks to tours — this is an innovative way to get educational content into everyone’s hands. More than 350,000 free lectures, videos, films, and other resources — from all over the world.

<http://www.apple.com/education/itunes-u/>

#### Open Courseware Consortium

**The Open CourseWare Consortium is a worldwide collaboration of higher education institutions and associated organizations creating a broad and deep body of open educational content using a shared model. You can search for courses based on keywords, language, and source, or visit university homepages to find more courses.**

<http://www.ocwconsortium.org/>

#### TED

**TED is a clearinghouse that offers free knowledge and inspiration from the world's most inspired and articulate thinkers. The site houses free lectures by scientists, physicians, philosophers, professors and more. Topics include: Science, Technology, Business, Design and Global Issues.**

<http://www.ted.com/talks>

#### OPDIV Acquisition Management Training Resource Center

The site contains information about NIH/HHS acquisition certification requirements, training options, FAQs, and additional acquisitions resources:

<http://trainingcenter.nih.gov/acquisition_mgmt_resource_ctr.html>

#### Language Development

##### American Sign Language Online

ASL University is an online American Sign Language curriculum resource center. ASLU provides free self-study materials, lessons, and information.

<http://www.lifeprint.com/index.htm>

##### Free Language Lessons

Learning a language can sharpen your mind and broaden your horizons. This page has sites that will help you get started learning any of 40 different languages.

<http://www.openculture.com/freelanguagelessons>

#### Free Books

##### Books 24x7

Thousands of Free online books, concise summaries of today's foremost business books, live and on demand videos of preeminent thought leaders and business gurus, best practices from leading senior executives of Fortune 5000 companies. Available in the HHS LMS:

<https://lms.learning.hhs.gov/Saba/Web/Main>

##### Learn Out Loud

Learn Out Loud offers a wide selection of free audio books, lectures, speeches, and interviews on different subjects.

<http://www.learnoutloud.com/Free-Audio-Video>

##### PubMed

PubMed comprises more than 21 million citations for biomedical literature from MEDLINE, life science journals, and online books. Citations may include links to full-text content from PubMed Central and publisher web sites.

<http://www.ncbi.nlm.nih.gov/pubmed/>

##### The National Library of Medicine

Bookshelf provides free access to over 700 texts in life science and healthcare. A vital node in the data-rich resource network at NCBI, Bookshelf enables users to easily browse, retrieve, and read content, and spurs discovery of related information.

<http://www.ncbi.nlm.nih.gov/books/>

##### Your Public Library

#### Free Conferences and Seminars

##### DDM Seminar Series

The DDM Seminar Series offers the NIH community engaging presentations that provide meaningful insights into leadership and management concepts, challenges, and solutions. The seminars provide NIH employees with the opportunity to advance their knowledge of best practices in a variety of leadership and management areas.

<http://www.ddmseries.od.nih.gov/>

##### Management Seminar Series

The Management Seminar Series (MSS) provides an opportunity for administrative and scientific staff to obtain or enhance management skills through discussions and presentations addressing core management issues and NIH-related matters.

<http://trainingcenter.nih.gov/management_seminar_series.html>

Introduction Source: [OPM](http://www.opm.gov/classapp/fedclass/gshbkocc.pdf), <http://www.opm.gov/classapp/fedclass/gshbkocc.pdf>