BV-BRC

Bacterial and Viral (BV) -
Bioinformatics Resource Center (BRC)

Test Report

BV-BRC Beta Integrated Data and Tools Testing

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Purpose

This Test Report documents the results of testing of the BV-BRC Beta website and components **assess correct integration and operation of PATRIC and IRD/ViPR data, tools, and visualizations into the BV-BRC system (Beta version)**, which is based on the PATRIC system framework.

Description

Beta Testing is performed by representative and real users of the system to assess its functionality, usability, reliability and compatibility. It also ensures that there are no major failures in the system, and that it satisfies requirements and representative use cases from an end-user perspective. Beta Testing is performed by BV-BRC team members, external collaborators, and users who are early adopters of the new BV-BRC. To fully assess the accuracy and performance of the various components, former primarily PATRIC team members performed the bacteria-oriented test cases, and primarily JCVI team members will perform the virus-oriented test cases since each group is most familiar with the legacy systems, data, and tools.

Since the BV-BRC is implemented using components of the constituent PATRIC and IRD/ViPR systems, both of which have long performance histories and validated performance, **the critical aspect of this testing is to ensure that data and tools are correctly integrated and producing results comparable with the validated legacy systems.** To do so, the test cases are composed of representative use cases, with results compared with validated results, typically from the legacy systems, modified if needed to account for updated backend data or presentation style. Where appropriate, links to test data sets, system documentation, and reference information is provided.

Test results are summarized below and triaged as follows:

- “Passed” - Test results meet all expected criteria.
- “Partial Success” - Test results meet key expected criteria with minor issues or suggestions for future enhancements. Issues and suggestions are recorded and tracked in the BV-BRC GitHub repository. These are used for implementation in the next version of the component.
- “Failed” - Test results do not meet key expected criteria due to a critical issue or software bug. These issues are recorded and tracked in the BV-BRC GitHub repository. These are queued for prompt remediation, then fixed, tested, and re-deployed in the system.

Organization

The Test Plan is organized into logical sections based on the types of components: Organism Data (menu), Searches, Data Pages, Tools & Services, and Workspace. Each Item to Test has a Test Description with a basic description, test parameters and/or data, and criteria for success. Where appropriate, links to reference material are provided. Finally, each Item to Test is assigned a person(s) with Responsibility for performing the test and evaluating the results.

Detailed Test Reports for each component are attached to this document.

Searches, Global and Advanced

ID	Component	Test Description	Tester	Date	Result
S1	Global Search	URL: • https://www.bv-brc.org/, top right on any page Procedure: • Test the Global Search using representative search criteria for bacterial and viral data. • Test using example Keywords. • Test using combinations Data Type and Keywords. • Inspect search results to verify that they match search criteria. • For viral data, test using representative criteria and verify that returned genome counts are comparable with IRD/ViPR. References: https://www.bv-brc.org/docs/quick_references/global_search.html	ARW, CZ, AN, RK	4-Jan-22 4-Feb-22 7-May-22	Passed
S2	Taxa Search	URL: • https://www.bv-brc.org/searches/TaxaSearch Procedure: • Test the Taxa Search using representative search criteria for bacterial and viral data. • Test using example Keywords. • Test using Taxon ID, Genetic Code, and Taxon Name. • Inspect search results to verify that they match search criteria. References: • https://www.bv-brc.org/docs/quick_references/searches_menu.html • https://www.bv-brc.org/docs/quick_references/organisms_taxon/taxonomy.html	RW, EL, DD, RK	5-Jan-22 10-Feb-22 20-Apr-22	Passed
S3	Genomes Search	URL: • https://www.bv-brc.org/searches/GenomeSearch Procedure: • Test the Genome Search using representative search criteria for bacterial and viral data. • Test using example Keywords • Test using combinations of Pathogen Group, Host Name, Host Group, Taxon Name, and Geographic Group.	ARW, CZ, GT, RK	22-Feb-22 21-Apr-22	Passed

		• Inspect search results to verify that they match search criteria. • For viral data, test using representative criteria and verify that returned genome counts are comparable. References: • https://www.bv-brc.org/docs/quick_references/searches_menu.html • https://www.bv-brc.org/docs/quick_references/organisms_taxon/genome_table.html			
S4	Strains Search	URL: • https://www.bv-brc.org/searches/StrainSearch Procedure • Test Strains search and results page for segmented viruses: (Influenza, Arenaviridae, Lassa). • Inspect search results to verify that they match search criteria. • Test using representative criteria and verify that returned genome counts are comparable with IRD/ViPR. References: • https://www.bv-brc.org/docs/quick_references/searches_menu.html	CZ, GT, ARW, RK	02-Feb-22 29-Apr-22	Passed
S5	Proteins Search	URL: • https://www.bv-brc.org/searches/GenomicFeatureSearch Procedure: • Test the Proteins Search using representative search criteria for bacterial and viral data. • Test using example Keywords. • Test using BRC ID, Product Name, and Taxon Name. • Inspect search results to verify that they match search criteria. • For viral data, test using representative criteria and verify that returned protein counts are comparable with IRD/ViPR. References: • https://www.bv-brc.org/docs/quick_references/searches_menu.html	ARW, CZ, RK	4-Feb-22 10-Feb22 21-Apr-22	Passed

		• https://www.bv-brc.org/docs/quick_references/organisms_taxon/proteins.html			
S6	Speciality Genes Search	URL: • https://www.bv-brc.org/searches/SpecialtyGeneSearch Procedure: • Test the Specialty Genes Search using representative search criteria. • Test using example Keyword, Pathogen Group, and Taxon Name. • Test using Keyword and Pathogen Group only. • Inspect search results to verify that they match search criteria. References: • https://www.bv-brc.org/docs/quick_references/searches_menu.html • https://www.bv-brc.org/docs/quick_references/organisms_taxon/specialty_genes.html	ARW, RK	8-Jan-22 6-May-22	Passed
S7	Domains and Motifs Search	URL: • https://www.bv-brc.org/searches/SpecialtyGeneSearch Procedure: • Test the Domains and Motifs Search using representative search criteria. • Test using example Keyword • Test using example Taxonomic Name. • Inspect search results to verify that they match search criteria. References: • https://www.bv-brc.org/docs/quick_references/searches_menu.html	ARW, RK	5-Jan-22 6-May-22	Passed
S8	Epitopes Search	URL: • https://www.bv-brc.org/searches/EpitopeSearch Procedure: • Test the Domains and Motifs Search using representative search criteria. • Test using example Pathogen Group and Protein Name. • Test using example Keyword • Inspect search results to verify that they match search criteria. References:	RK	6-May-22	Passed

		• https://www.bv-brc.org/docs/quick_references/searches_menu.html			
S9	Protein Structures Search	URL: • https://www.bv-brc.org/searches/ProteinStructureSearch Procedure: • Test the Protein Structures Search using representative search criteria. • Test using example Taxon Name and PDB ID. • Test using example Keyword • Inspect search results to verify that they match search criteria. References: • https://www.bv-brc.org/docs/quick_references/searches_menu.html • https://www.bv-brc.org/docs/quick_references/organisms_taxon/protein_structures.html	ARW, RK	8-Jan-22 6-May-22	Passed
S10	Pathways Search	URL: • https://www.bv-brc.org/searches/PathwaySearch Procedure: • Test the Pathways Search using representative search criteria. • Test using example Pathway Name and Genome ID. • Test using example Keyword • Inspect search results to verify that they match search criteria. References: • https://www.bv-brc.org/docs/quick_references/searches_menu.html • https://www.bv-brc.org/docs/quick_references/organisms_taxon/pathways.html	ARW, RK	7-Jan-22 6-May-22	Passed
S11	Subsystems Search	URL: • https://www.bv-brc.org/searches/SubsystemSearch Procedure: • Test the Subsystems Search using representative search criteria. • Test using example Keyword and Taxonomy Name.	ARW, RK	7-Jan-22 6-May-22	Passed

		• Inspect search results to verify that they match search criteria. References: • https://www.bv-brc.org/docs/quick_references/searches_menu.html • https://www.bv-brc.org/docs/quick_references/organisms_taxon/subsystems_tab.html			
S12	Surveillance Search	URL: • https://www.bv-brc.org/searches/SurveillanceSearch Procedure: • Test the Surveillance Search using representative search criteria. • Test using example Pathogen Test Type and Collection Year range. • Test using example Host Common Name and Collection Country. • Inspect search results to verify that they match search criteria. References: • https://www.bv-brc.org/docs/quick_references/searches_menu.html • https://www.bv-brc.org/docs/quick_references/organisms_taxon/surveillance_data.html	YZ, GT, RK	4-Feb-22 7-May-22	Passed
S13	Serology Search	URL: • https://www.bv-brc.org/searches/SerologySearch Procedure: • Test the Serology Search using representative search criteria. • Test using example Test Type and Host Type. • Test using example Host Species and Geographic Group. • Inspect search results to verify that they match search criteria. References: • https://www.bv-brc.org/docs/quick_references/searches_menu.html • https://www.bv-brc.org/docs/quick_references/organisms_taxon/serology_data.html	ZW, RK	10-Feb-22 7-May-22	Passed

Data Pages

ID	Component	Test Description	Tester	Date	Result
D1	Overview Tab (Bacteria Landing Page)	URL: ● https://www.bv-brc.org/view/Bacteria/2 Procedure: ● Test the bacterial data Overview Tabs. ● Verify that links from each group go to the correct location. ● Check other links to verify correct operation. References: ● https://www.bv-brc.org/docs/quick_references/organisms_taxon/overview.html	ARW, RK	6-Jan-22 8-May-22	Passed (1 minor issue) Issue: From top menu, the link from Borreliella did not go to correct page. Resolution: The link was fixed and now working as expected.
D2	Overview Tab (Viruses Landing Page)	URL: ● https://www.bv-brc.org/view/Virus/10239 Procedure: ● Test the viral data Overview Tabs. ● Verify that links from each group go to the correct location. ● Check other links to verify correct operation. References: ● https://www.bv-brc.org/docs/quick_references/organisms_taxon/overview.html	AN, RK	10-Feb-22 8-May-22	Passed
D3	Phylogeny Tab	URL: ● https://www.bv-brc.org/view/Taxonomy/662#view_tab=phylogeny Procedure: ● Test the Phylogeny Tab. ● Test the data tab with example bacterial genus. ● Test phylogram and cladogram view. ● Test node selection. ● Test Genome Group and Genome View action buttons. References: ● https://www.bv-brc.org/docs/quick_references/organisms_taxon/overview.html	ARW, RK	6-Jan-22 8-May-22	Passed
D4	Taxonomy Tab	URL:	ARW, RS, RK	6-Jan-22 4-Feb-22 8-May-22	Passed

		• https://www.bv-brc.org/view/Taxonomy/629#view_tab=taxontree Procedure: • Test the Taxonomy Tab with example bacterial and viral data. • Verify the correct Taxonomy. • Test branch expansion and collapse • Test Taxon Overview action button. • Test Genomes and Features action buttons. References: • https://www.bv-brc.org/docs/quick_references/organisms_taxon/taxonomy.html			
D5	Strains Tab	URL: • https://www.bv-brc.org/view/Taxonomy/11320#view_tab=strains_orthomyxoviridae Procedure: • Test the Strains Tab with example viral data. • Verify the correct strains. • Test no strains reported for non-segmented viruses References: • https://www.bv-brc.org/docs/quick_references/organisms_menu.html#browsing-bv-brc-by-taxon	CZ, AN, RK	4-Feb-22 8-May-22	Passed
D6	Genomes Tab	URL: • https://www.bv-brc.org/view/Taxonomy/1301#view_tab=genomes Procedure: • Test the Genomes Tab with example bacterial and viral data. • Verify the correct genomes. • Test Keyword Filter • Test Advanced Search • Test Filters • Test Genome, Genomes, and Genome Group action buttons References: • https://www.bv-brc.org/docs/quick_references/organisms_taxon/genomes.html	ARW, CZ, AN, RK	6-Jan-22 4-Feb-22 8-May-22	Passed

D7	AMR Phenotypes Tab	URL: ● https://www.bv-brc.org/view/Taxonomy/1301#view_tab=amr Procedure: ● Test the AMR Phenotypes Tab with example bacterial data. ● Verify display of Antibiotic, Resistant Phenotype, Evidence, Laboratory Typing Method ● Test Antibiotic action button including Overview, AMR Phenotypes, AMR Genes, and AMR Regions displays. References: ● https://www.bv-brc.org/docs/quick_references/organisms_taxon/amr_phenotypes.html	ARW, RK	6-Jan-22 8-May-22	Passed
D8	Sequences Tab	URL: ● https://www.bv-brc.org/view/Taxonomy/194#view_tab=sequences Procedure: ● Test the Sequences Tab with example bacterial data. ● Verify appropriate genomes ● Test FASTA and Genome Browser action buttons. References: ● https://www.bv-brc.org/docs/quick_references/organisms_taxon/sequences.html	ARW, RK	6-Jan-22 9-May-22	Passed (1 minor issue) Issue: Received RequestError, when downloading FASTA sequence. Resolution: Fixed the bug. Download is now working as expected.
D9	Proteins Tab	URL: ● https://www.bv-brc.org/view/Taxonomy/194#view_tab=features Procedure: ● Test the Proteins Tab with example bacterial and viral data. ● Verify appropriate genomes. ● Test Genome action button. ● Test FASTA action buttons. ● Test ID Map. ● Test MSA. References: ● https://www.bv-brc.org/docs/quick_references/organisms_taxon/proteins.html	ARW, CZ, AN, RK	6-Jan-22 4-Feb-22 9-May-22	Passed (1 minor issue) Issue: ID Mapping button from action bar not working. Resolution: The bug has been identified and being fixed. It will be deployed to production in the next release.

D10	Protein Structures Tab	URL: ● https://www.bv-brc.org/view/Taxonomy/194#view_tab=features Procedure: ● Test the Protein Structures Tab with example bacterial and viral data. ● Verify structures exist. ● Test Structure action button. ● Test example structure operations. References: ● https://www.bv-brc.org/docs/quick_references/organisms_taxon/protein_structures.html	ARW, RS, RK	6-Jan-22 4-Feb-22 9-May-22	Passed (1 enhance-ment planned) Issue: Parse gene names and resolution from PDB metadata. Resolution: Updated the data loader to populate gene names and resolution from PDB metadata.
D11	Specialty Genes Tab	URL: ● https://www.bv-brc.org/view/Taxonomy/32008#view_tab=specialtyGenes&filter=false Procedure: ● Test the Specialty Genes Tab with example bacterial data. ● Verify display of Specialty Genes category ● Test Pathway action button. References: ● https://www.bv-brc.org/docs/quick_references/organisms_taxon/specialty_genes.html	RWK, RK	6-Jan-22 9-May-22	Passed
D12	Domains and Motifs Tab	URL: ● https://www.bv-brc.org/view/Taxonomy/234#view_tab=proteinFeatures&filter=false Procedure: ● Test the Specialty Genes Tab with example bacterial data. ● Verify display of Domain Source categories ● Test filtering by a Source. References: ● https://www.bv-brc.org/docs/quick_references/organisms_menu.html#browsing-bv-brc-by-taxon	ARW, RK	6-Jan-22 9-May-22	Passed
D13	Epitopes Tab	URL: ● https://www.bv-brc.org/view/Taxonomy/11320#view_tab=epitope&filter=false Procedure:	ARW, RS, RK	6-Jan-22 4-Feb-22 9-May-22	Passed

		• Test the Epitopes Tab with example bacterial and viral data. • Verify appropriate genomes. • Test Filter. • Test Epitope action button. References: • https://www.bv-brc.org/docs/quick_references/organisms_menu.html#browsing-bv-brc-by-taxon			
D14	Surveillance Tab	URL: • https://www.bv-brc.org/view/Taxonomy/11320#view_tab=surveillance Procedure: • Test the Epitopes Tab with example bacterial and viral data. • Verify appropriate genomes. • Test Filter. • Test Epitope action button. References: • https://www.bv-brc.org/docs/quick_references/organisms_taxon/surveillance_data.html	YZ, GT, RK	4-Feb-22 9-May-22	Passed (1 minor issue) Issue: Select and download button did not work. Resolution: The bug has been identified and being fixed. It will be deployed to production in the next release.
D15	Serology Tab	URL: • https://www.bv-brc.org/view/Taxonomy/11320#view_tab=serology Procedure: • Test the Serology Tab with example viral data. • Test Filters. • Test Serology Record. References: • https://www.bv-brc.org/docs/quick_references/organisms_taxon/serology_data.html	ZW, RK	10-Feb-22 9-May-22	Passed (1 minor issue) Issue: Select and download button did not work. Resolution: The bug has been identified and being fixed. It will be deployed to production in the next release.
D16	Experiments Tab	URL: • https://www.bv-brc.org/view/Taxonomy/1763#view_tab=experiments • https://www.bv-brc.org/view/Genome/10090.24#view_tab=experiments Procedure:	ARW, ZW, RK	10-Feb-22, 9-May-2022	Passed

		• Test the Experiment Data Tab with example bacterial and mouse host response datasets. • Test Filters / facets on the experiment page. • Select single experiment and review experiment details. • Test interactive gene list, heatmap viewer, and clustering tool. References: • https://www.bv-brc.org/docs/quick_references/organisms_taxon/experiments.html			
D17	Interactions Tab	URL: • https://www.bv-brc.org/view/Taxonomy/209#view_tab=interactions Procedure: • Test the Interactions Tab with example bacterial data. • Test Filters. • Test Graph View. • Test Graph functions. References: • https://www.bv-brc.org/docs/quick_references/organisms_taxon/interactions.html	ARW, RK	6-Jan-22 9-May-22	Passed

Analysis Tools and Services

Preparation for testing of the BV-BRC Tools and Services consists of identifying exemplar use cases, including input data and parameters, and creating validated test result(s) using established instances of the tool(s) either in legacy systems or standalone versions. The test itself is then performed in the BV-BRC system using the specified input data and parameters, and the results are compared using key output content and metrics to verify that the tool or service is operating properly.

ID	Component	Test Description	Tester	Date	Result
A1	Genome Assembly Service - Bacteria	URL: • https://www.bv-brc.org/app/Assembly Procedure: • Test the Genome Assembly Service using exemplar reads sets for bacterial genomes. • Test input options, i.e., single-end and paired-end read sets using files uploaded to the workspace and using an SRA run accession as input.	ARW, MS	22-Dec-21 21-Apr-22	Passed

		● Test the assembly strategies, i.e., Auto, Unicycler, SPAdes, Canu, MetaSPAdes, PlasmidSPAdes, and MDA. ● For each job submitted, verify successful completion of the job, presence of output files, and quality of the assembled contigs by comparing them with the same or closely related public genome. References: ● https://www.bv-brc.org/docs/quick_references/services/genome_assembly_service.html ● https://www.bv-brc.org/docs/tutorial/genome_assembly/assembly.html			
A2	Genome Annotation Service - Bacteria	URL: ● https://www.bv-brc.org/app/Annotation Procedure: ● Test the Genome Annotation Service using exemplar genome sequences for bacterial genomes. ● Test input options, i.e., contig file from the user's machine or from the user's workspace. ● For each job submitted, verify successful completion of the job, availability of the output files in the workspace, and quality of the annotations by comparing them with the same, or closely related, public genome. ● Verify successful integration of the genome in BV-BRC by reviewing the genome overview pages and other genome-level tabs. References: ● https://www.bv-brc.org/docs/quick_references/services/genome_annotation_service.html ● https://www.bv-brc.org/docs/tutorial/genome_annotation/genome_annotation.html	ARW, MS	21-Dec-21 21-Apr-22	Passed
A3	Genome Annotation Service - Phages	URL: ● https://www.bv-brc.org/app/Annotation Procedure: ● Test the Genome Annotation Service using exemplar genome sequences for phage genomes. ● Test input options, i.e., contig file from the user's machine or from the user's workspace.	MS	21-Apr-22	Passed

		• For each job submitted, verify successful completion of the job, availability of the output files in the workspace, and quality of the annotations by comparing them with the same, or closely related, public genome. • Verify successful integration of the genome in BV-BRC by reviewing the genome overview pages and other genome-level tabs. References: • https://www.bv-brc.org/docs/quick_references/services/genome_annotation_service.html • https://www.bv-brc.org/docs/tutorial/genome_annotation/genome_annotation.html			
A4	Genome Annotation Service - Viruses	URL: • https://www.bv-brc.org/app/Annotation Procedure: • Test the Genome Annotation Service using exemplar genome sequences for viral genomes. • Test input options, i.e., contig file from the user's machine or from the user's workspace. • For each job submitted, verify successful completion of the job, availability of the output files in the workspace, and quality of the annotations by comparing them with the same, or closely related, public genome. • Verify successful integration of the genome in BV-BRC by reviewing the genome overview pages and other genome-level tabs. References: • https://www.bv-brc.org/docs/quick_references/services/genome_annotation_service.html • https://www.bv-brc.org/docs/tutorial/genome_annotation/genome_annotation.html	MS	21-Apr-22	Passed
A5	Comprehensive Genome Analysis Service (Bacteria)	URL: • https://www.bv-brc.org/app/ComprehensiveGenomeAnalysis Procedure: • Test the Comprehensive Genome Analysis service using exemplar bacterial datasets. • Test input options, i.e., single end or paired end read files from workspace, sear sets using	ARW, MS	20-Dec-21 21-Apr-22	Passed

		SRA accessions, or assembled contigs from workspace. ● Test assembly strategies, i.e., Auto, Unicycler, SPAdes, Canu, MetaSPAdes, and PlasmidSPAdes. ● For each job submitted, verify successful completion of the job, availability of the output files in the workspace, and quality of the assembly and annotations by comparing them to the same or similar public genome. ● Verify successful integration of the genome in BV-BRC by reviewing genome overview pages and other genome level tabs. ● Review the quality and accuracy of the comprehensive genome report by comparing the summary stats with those available on the genome overview page. References: ● https://www.bv-brc.org/docs/quick_references/services/comprehensive_genome_analysis_service.html ● https://www.bv-brc.org/docs/tutorial/comprehensive_genome_analysis/comprehensive_genome_analysis.html			
A6	BLAST (Homology) Service	URL: ● https://www.bv-brc.org/app/Homology Procedure: ● Test the Homology / BLAST service using exemplar queries for both bacteria and viruses. ● Test input options, i.e. various BLAST programs, nucleotide and protein query sequences. ● Test various BLAST databases, i.e. reference genome databases, taxon level databases, and genome specific databases for both bacterial and viruses. ● For each job submitted, verify successful completion of the job, availability of the output files in the workspace, and quality of the results. ● Test result selection and action from the result table. References:	ARW, MS	20-Dec-21 6-May-22	Passed

		• https://www.bv-brc.org/docs/quick_references/services/blast.html • https://www.bv-brc.org/docs/tutorial/blast/blast.html			
A7	BLAST (Homology) Service - Short Peptide Search	URL: • https://www.bv-brc.org/app/Homology Procedure: • Test the Homology / BLAST service using exemplar short peptide query. • Test various BLAST databases, i.e. reference genome databases, taxon level databases, and genome group databases. • For each job submitted, verify successful completion of the job, availability of the output files in the workspace, and quality of the results. • Test result selection and action from the result table, including MSA to visualize variations. References: • https://www.bv-brc.org/docs/quick_references/services/blast.html • https://www.bv-brc.org/docs/tutorial/blast/blast.html	ZW, MS	10-Feb-22 6-May-22	Passed
A8	Similar Genome Finder Service	URL: • https://www.bv-brc.org/app/GenomeDistance Procedure: • Test the Similar Genome Finder Service using exemplar bacterial genome. • Test input options, i.e., genome id / genome name, fasta contig file, and fastq file as input. • Test different databases, i.e., reference / representative genomes and all public genomes. • For each job submitted, verify successful completion of the job and the quality of the search results. • Test the selection and actions from the search result References: • https://www.bv-brc.org/docs/quick_references/services/similar_genome_finder_service.html	ARW, MS	7-Jan-22 7-May-22	Passed

		• https://www.bv-brc.org/docs/tutorial/similar_genome_finder/similar_genome_finder.html			
A9	Meta-CATS Service	URL: • https://www.bv-brc.org/app/MetaCATS Procedure: • Test the service using exemplar datasets • Test input options, i.e. feature groups and alignment files. • Test auto grouping using various metadata attributes • For each job submitted, verify successful completion of the job, availability of the output files in the workspace, and quality of the results. References: • https://www.bv-brc.org/docs/quick_references/services/metacats.html • https://www.bv-brc.org/docs/tutorial/metacats/metacats.html	YZ, MS	4-Feb-22 21-Apr-22	Passed (1 minor issue) Issue: The jobs failed when using user supplied alignment and group files as input. Resolution: The bug has been identified and being fixed. It will be deployed to production in the next release.
A10	Phylogenetic Tree Service	URL: • https://www.bv-brc.org/app/PhylogeneticTree Procedure: • Test the Phylogenetic Tree Service using exemplar bacterial genome groups. • Test input options, i.e. selecting genomes one by one or using genome groups. • Test the tree parameters, i.e. building trees with 10, 50, or 100 conserved genes. • For each job submitted, verify successful completion of the job, presence of output files, and quality of the phylogenetic tree. • Review the interactive tree viewer and verify all functions are working as expected. References: • https://www.bv-brc.org/docs/quick_references/services/phylogenetic_tree_building_service.html • https://www.bv-brc.org/docs/tutorial/phylogenetic_tree/phylogenetic_tree.html	ARW, MS	20-Dec-22 8-May-22	Passed

A11	Genome Alignment Service	URL: ● https://www.bv-brc.org/app/GenomeAlignment Procedure: ● Test the Genome Alignment Service using exemplar bacterial genomes. ● Test input options, i.e., adding one genome at a time and using a genome group. ● For each job submitted, verify successful completion of the job and presence of output files. ● Review the interactive genome alignment viewer and ensure the quality of the results. References: ● https://www.bv-brc.org/docs/quick_references/services/genome_alignment_service.html	ARW, MS	18-Dec-21 8-May-22	Passed
A12	Primer Design Service	URL: ● https://www.bv-brc.org/app/PrimerDesign Procedure: ● Test the Primer Design Service using exemplar bacterial and viral genes. ● Test input options, i.e., using FASTA sequence as query or a FASTA sequence file from the workspace. ● For each job submitted, verify successful completion of the job, presence of output files, and quality of the results. References: ● https://www.bv-brc.org/docs/quick_references/services/primer_design_service.html ● https://www.bv-brc.org/docs/tutorial/primer_design/primer_design.html	ARW, YZ, RHS, MS	4-Feb-22 6-Feb-22 7-Feb-22 8-May-22	Passed
A13	Variation Analysis Service	URL: ● https://www.bv-brc.org/app/Variation Procedure: ● Test the Variation Analysis Service using exemplar bacterial datasets. ● Test input options, i.e., read files in FASTQ format and SRA accessions. ● Test different alignment strategies, i.e. BWA-mem, BWA-mem-strict, Bowtie2 and LAST. Test different SNP callers, such as FreeBayes and SAMtools.	YZ, MS	18-Dec-21 8-May-22	Passed

		• For each job submitted, verify successful completion of the job, presence of output files, and the quality of results. • Review SNPs and alignment files in interactive genome browser. • References: • https://www.bv-brc.org/docs/quick_references/services/variation_analysis_service.html • https://www.bv-brc.org/docs/tutorial/variation_analysis/variation_analysis.html			
A14	Tn-Seq Analysis Service	URL: • https://www.bv-brc.org/app/Tnseq Procedure: • Test the Tn-seq Analysis Service using exemplar reads sets for bacterial genomes. • Test different strategies, i.e., essential genes and conditionally essential genes. • For each job submitted, verify successful completion of the job, presence of output files, including bam, wig, counts, transit stats files. Verify the quality of the results. • Review the results in the genome browser. References: • https://www.bv-brc.org/docs/quick_references/services/tn_seq_analysis_service.html • https://www.bv-brc.org/docs/tutorial/tn-seq/tn-seq.html	ARW, MS	7-Jan-22 8-May-22	Passed
A15	MSA and SNP Service	URL: • https://www.bv-brc.org/app/MSA Procedure: • Test the MSA and SNP Service using exemplar bacterial and viral gene and protein sequences. • Test input options, i.e., feature groups, fasta sequence files, and sequence input box. • Test different MSA algorithms, MAFFT and Muscle. • For each job submitted, verify successful completion of the job, presence of output files in various formats, review resulting MSA and SNPs.	YZ, CZ, MS	4-Feb-22 8-May-22	Passed

		• View MSA using interactive MSA viewer and verify all functionality. References: • https://www.bv-brc.org/docs/quick_references/services/msa_snp_variation_service.html • https://www.bv-brc.org/docs/tutorial/msa_snp_variation/msa_snp_variation.html			
A16	Phylogenetic Tree (Gene Tree) Service and Viewer	URL: • https://www.bv-brc.org/app/GeneTree Procedure: • Test the Gene Tree Service using exemplar bacterial and viral gene and protein sequences. • Test input options, i.e., genome group, feature group, and fasta sequence files. • Test different tree algorithms, i.e. RAXML, PHYML, and FASTTREE. • For each job submitted, verify successful completion of the job, presence of output files in various formats, review resulting gene trees. • View tree using interactive phylogenetic tree viewer and verify all functionality. References: • https://www.bv-brc.org/docs/quick_references/services/genetree.html • https://www.bv-brc.org/docs/tutorial/genetree/genetree.html	CZ, MS	7-Feb-22 8-May-22	Passed
A17	Proteome Comparison Service	URL: • https://www.bv-brc.org/app/SeqComparison Procedure: • Test the Proteome Comparison Service using exemplar bacterial genomes. • Test input options, i.e., selecting genomes one by one, using genome group, and protein fasta file. • For each job submitted, verify successful completion of the job, presence of output files, and quality of results. • Review interactive proteome comparison viewer and it functions as expected. • References:	ARW, MS	20-Dec-22 8-May-22	Passed

		• https://www.bv-brc.org/docs/quick_references/services/proteome_comparison_service.html • https://www.bv-brc.org/docs/tutorial/proteome_comparison/proteome_comparison.html			
A18	Metagenomic Read Mapping Service	URL: • https://www.bv-brc.org/app/MetagenomicReadMapping Procedure: • Test the Metagenomic Read Mapping Service using exemplar bacterial and metagenomic reads sets. • Test input options, i.e., single-end / paired-end read files and SRA accessions. • Search against antimicrobial resistance gene database (CARD) and virulence factor database (VFDB). • For each job submitted, verify successful completion of the job and presence of output files. • Review the list of AMR and virulence genes detected. References: • https://www.bv-brc.org/docs/quick_references/services/metagenomic_read_mapping_service.html • https://www.bv-brc.org/docs/tutorial/metagenomic_read_mapping/metagenomic_read_mapping.html Test using PATRIC Workshop / Metagenome Binning / ICU Metagenome	ARW, MS	20-Dec-21 8-May-22	Passed
A19	Taxonomic Classification Service	URL: • https://www.bv-brc.org/app/TaxonomicClassification Procedure: • Test the Taxonomic Classification Service using exemplar metagenomic reads sets. • Test input options, i.e., single-end / paired-end read files and SRA accessions. • For each job submitted, verify successful completion of the job, presence of output files and their format.	ARW, MS	20-Dec-21 8-May-22	Passed

		• Review and verify the taxonomic classification results using tabular reports. • Review and verify the results using interactive taxonomic classification viewer, Krona. References: • https://www.bv-brc.org/docs/quick_references/services/taxonomic_classification_service.html • https://www.bv-brc.org/docs/tutorial/taxonomic_classification/taxonomic_classification.html			
A20	Metagenomic Binning Service	URL: • https://www.bv-brc.org/app/MetagenomicBinning Procedure: • Test the Metagenomic Binning Service using exemplar metagenomic reads sets. • Test input options, i.e., single-end / paired-end read files and SRA accessions. • For each job submitted, verify successful completion of the job and presence of output files. • Review the resulting metagenomic bins and their quality, including completeness and contamination. References: • https://www.bv-brc.org/docs/quick_references/services/metagenomic_binning_service.html • https://www.bv-brc.org/docs/tutorial/metagenomic_binning/metagenomic_binning.html	ARW, MS	20-Dec-21 8-May-22	
A21	Expression Import Service	URL: • https://www.bv-brc.org/app/Expression Procedure: • Test the Expression Import Service using exemplar bacterial gene expression datasets. • For each job submitted, verify successful completion of the job and presence of output files. • Review the dataset using interactive gene list. Test filters to identify differentially expressed genes.	ARW, MS	7-Jan-22, 10-May-22	Passed

		• Test interactive heatmap viewer and clustering tool to identify genes with similar expression patterns across one or more samples. References: • https://www.bv-brc.org/docs/quick_references/services/expression_data_import_service.html https://www.bv-brc.org/docs/tutorial/expression_import/expression_import.html			
A22	RNA-Seq Analysis Service	URL: • https://www.bv-brc.org/app/Rnaseq Procedure: • Test the RNA-seq Analysis using exemplar transcriptomic reads sets. • Test input options, i.e., single-end / paired-end read files. • Test different strategies, i.e. Tuxedo and HTSeq. • Test differential and non-differential analysis options. • For each job submitted, verify successful completion of the job, presence of output files, their content and format. • Review differential expression results using interactive gene list and heatmap viewer. References: • https://www.bv-brc.org/docs/quick_references/services/rna_seq_analysis_service.html • https://www.bv-brc.org/docs/tutorial/rna_seq/rna_seq.html	ARW, MS	9-Nov-22 8-May-22	Partial Success (issues reported) Issue: When Tuxedo – No DE recipe is selected, the service produces expected results. However, job is marked as failed. Resolution: The bug has been identified and being fixed. It will be deployed to production in the next release.
A23	ID Mapper Service	URL: • https://www.bv-brc.org/app/IDMapper Procedure: • Test the ID Mapper Service using exemplar BVBRC and RefSeq gene identifiers. • Test input options, i.e mapping BVBRC identifiers to external identifiers and reverse. • For each job submitted, review and verify mapped identifiers. • Select mapped records and test various actions available in the action bar, i.e.	ARW, MS	6-Jan-22, 10-May-22	Passed

		download results as table or fasta, view corresponding features or genomes, and create genome or feature groups. References: • https://www.bv-brc.org/docs/quick_references/services/id_mapper.html • https://www.bv-brc.org/docs/tutorial/id_mapper/id_mapper.html			
A24	Fastq Utilities Service	URL: • https://www.bv-brc.org/app/FastqUtil Procedure: • Test FASTQ Utilities service using exemplar reads sets. • Test input options, i.e. read files and SRA accession as input. • Test different processing options, i.e. trim, fastqc, and real alignment to a reference genome. • For each job submitted, verify successful completion of the job, presence of output files, and quality of the results from various processing steps. References: • https://www.bv-brc.org/docs/quick_references/services/fastq_utilities_service.html • https://www.bv-brc.org/docs/tutorial/fastq_utilities/fastq_utilities.html	ARW, MS	7-Jan-22, 10-May-22	Passed
V1	Genome Browser (JBrowse) Tool	URL: • https://www.bv-brc.org/view/Genome/224914.11#view_tab=browser&loc=NC_003317%3A1..242400&tracks=refseqs%2CPATRICGenes%2CRefSeqGenes&highlight= Procedure: • Test the linear Genome Browser using an example bacterial and viral genome. • Test genome display. • Test zoom and pan. • Test feature flyovers/links. • Show track show/hide References:	ARW, ZW	6-Jan-22 10-Feb-22 10-May-22	Passed

		• https://www.bv-brc.org/docs/quick_references/organisms_genome/genome_browser.html			
V2	Circular Genome Browser	URL: • https://www.bv-brc.org/view/Genome/224914.11#view_tab=circular Procedure: • Test the circular Genome Browser using an example bacterial genome. • Test genome display. • Turn off tracks • Change track colors • Add custom track • Upload your own data • Test feature flyovers/links. • Show track show/hide References: • https://www.bv-brc.org/docs/quick_references/organisms_genome/genome_browser.html Test exemplar bacterial genome display, flyovers, links, and track show/hide. Tested with 224914.11	ARW	7-Feb-22 10-May-22	Passed
V3	Proteome Comparison Viewer	URL: • https://www.bv-brc.org/workspace/public/BVBRC@patricbrc.org/BVBRC%20Tests/Proteome%20Comparison/Brucella%20Representative%20Genomes%20Comparison Procedure: • Test the Proteome Comparison Viewer using an example set of bacterial genomes. • Test proteome viewer. • Test sequence identity colors. • Test links. • Test download. References: • https://www.bv-brc.org/docs/quick_references/services/proteome_comparison_service.html	ARW	7-Feb-22 10-May-22	Passed
V4	Genome Alignment Viewer	URL: • https://www.bv-brc.org/view/TranscriptomicsExperiment/?&wsExpId=/BVBRC@patricbrc.org/BVBRC%20Tests/RNA-seq%20Analysis/.Abaumannii%20-	ARW	7-Feb-22 10-May-22	Passed

		%20Tuxedo%20-%20DE2/Abaumannii%20-%20Tuxedo%20-%20DE2_diffexp Procedure: ● Test the Genome Alignment Viewer using an example set of bacterial genomes. ● Test zoom. ● Test ordering. ● Test flyovers and links References: ● https://www.bv-brc.org/docs/quick_references/services/proteome_comparison_service.html			
V5	Heatmap	URL: ● https://www.bv-brc.org/view/GenomeAlignment/ARWattam@patricbrc.org/BV-BRC%20Workshop/Genome%20Alignment/Brucella/.Brucella%20genome%20group%20alignment%20alpha%20test/alignment.json\ Procedure: ● Test the Heatmap using an example expression data set. ● Test zoom. ● Test filter (genome, keyword, log ratio, z-score). ● Test row/column rearrangement. ● Test clustering. ● Test show significant/all genes. ● Test flyovers and links. ● Test area selection and corresponding data access References: ● https://www.bv-brc.org/docs/quick_references/services/rna_seq_analysis_service.html	ARW	7-Feb-22 10-May-22	Passed

Workspace

	Component	Test Description	Tester	Date	Result
W1	Workspace	URL: ● https://www.bv-brc.org/, then login using the “Sign In” button on the top right of the page. ● Choose the Workspaces/Home menu option ● (URL to personal workspace is dependent on username)	IS, RW	6-Jan-22 10-May-22	Passed

		Procedure: ● Test storing, retrieval, and access of datasets ● Test creation and usage of folders ● Test upload of sequence data and associated meta-data using test files ● Test creation, deletion, copy, move and set operations (union, intersect, subtract) ● Test sharing with other users and making public ● Test if public workspaces are available to public References: ● https://www.bv-brc.org/docs/quick_references/workspace_groups_upload.html			