

**SKILLS FRAMEWORK FOR BIOPHARMACEUTICALS MANUFACTURING  
TECHNICAL SKILLS & COMPETENCIES (TSC) REFERENCE DOCUMENT**

<b>TSC Category</b>	Quality Control					
<b>TSC</b>	Laboratory Data Analysis					
<b>TSC Description</b>	Analyse laboratory data					
<b>TSC Proficiency Description</b>	<b>Level 1</b>	<b>Level 2</b>	<b>Level 3</b>	<b>Level 4</b>	<b>Level 5</b>	<b>Level 6</b>
		<b>BPM-QUC-2002-1.1</b>	<b>BPM-QUC-3002-1.1</b>	<b>BPM-QUC-4002-1.1</b>		
		Support laboratory data analysis by collecting, performing calculations on, and reporting test data	Analyse test data and present laboratory data analysis reports	Review laboratory data analysis reports and recommend improvements		
<b>Knowledge</b>		<ul style="list-style-type: none"> <li>Types of data collection tools used in a laboratory setting</li> <li>Methods of organising data</li> <li>Principles of data integrity</li> <li>Types of scientific and technical terminologies</li> <li>Concepts of mathematics and statistics for laboratory data analysis</li> <li>Types of numerical analysis software for computer-aided calculations</li> <li>Units of measurement for different statistical parameters</li> <li>Standard procedures in data reporting</li> </ul>	<ul style="list-style-type: none"> <li>Principles of mathematical and statistical calculations</li> <li>Uses of scientific notation, and methods for converting units involving multiples and submultiples</li> <li>Methods of preparing and interpreting process control charts</li> <li>Methods of calculating and interpreting absolute and percentage uncertainties</li> <li>Methods of transposing and evaluating formulae</li> <li>Methods of preparing tables, graphs and charts</li> <li>Methods of interpreting data trends</li> <li>Procedures for communicating laboratory data</li> </ul>	<ul style="list-style-type: none"> <li>Principles of data integrity preservation and verification</li> <li>Procedures for reviewing laboratory data analyses</li> <li>New and emerging data analytics and statistical tools</li> <li>Techniques for presenting laboratory data to management and key stakeholders</li> </ul>		
<b>Abilities</b>		<ul style="list-style-type: none"> <li>Collect test data using applicable measuring and testing equipment</li> <li>Verify the integrity of test data collected</li> <li>Troubleshoot data anomalies</li> </ul>	<ul style="list-style-type: none"> <li>Store laboratory data using appropriate application software</li> <li>Verify the accuracy and integrity of laboratory data analysis reports</li> <li>Review calculations and results against</li> </ul>	<ul style="list-style-type: none"> <li>Provide technical expertise on laboratory data analysis</li> <li>Develop guidelines and best practices in preserving and verifying laboratory data integrity</li> </ul>		

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		<ul style="list-style-type: none"> <li>• Perform calculations on test data to obtain results</li> <li>• Apply specified formulae to calculate statistical values</li> <li>• Record calculation results using appropriate units and number of significant figures</li> <li>• Present test data and calculation results in standard templates or formats</li> </ul>	<p>estimations and expectations</p> <ul style="list-style-type: none"> <li>• Develop formulae to calculate statistical values, scientific quantities and associated uncertainties for relevant test data</li> <li>• Analyse trends in test data and calculation results to draw key insights</li> <li>• Present key data trends and findings in appropriate formats</li> </ul>	<ul style="list-style-type: none"> <li>• Introduce new and improved data analysis and statistical tools for generating insights from data</li> <li>• Review laboratory data analysis reports to provide recommendations for improvement</li> <li>• Identify implications of laboratory data results and analysis on manufactured product and manufacturing processes</li> <li>• Present business insights from laboratory data analyses to key stakeholders</li> </ul>		
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