

# ISO 24479:2024-10 (E)

## Biotechnology - Cellular morphological analysis - General requirements and considerations for cell morphometry to quantify cell morphological features

---

<b>Contents</b>		<b>Page</b>
<b>Foreword</b>		<b>v</b>
<b>Introduction</b>		<b>vi</b>
<b>1</b>	<b>Scope</b>	<b>1</b>
<b>2</b>	<b>Normative references</b>	<b>1</b>
<b>3</b>	<b>Terms and definitions</b>	<b>1</b>
<b>4</b>	<b>Abbreviations</b>	<b>4</b>
<b>5</b>	<b>General Concept</b>	<b>5</b>
5.1	Cell morphometry	5
5.2	Steps for cell morphometry	5
<b>6</b>	<b>Target of interest (TOI)</b>	<b>5</b>
<b>7</b>	<b>Image capture</b>	<b>6</b>
7.1	Microscopic observation method	6
7.1.1	General	6
7.1.2	Cell properties to be observed	7
7.1.3	Sample preparation	7
7.2	Microscope system and its settings	9
7.2.1	General	9
7.2.2	Light source	11
7.2.3	Objective lens and condenser lens	11
7.2.4	Components in optical path	11
7.2.5	Image capture device	12
7.2.6	Image data	12
7.2.7	Environmental conditions	12
7.2.8	Observing position	12
7.2.9	Image capturing conditions	13
7.3	Execution of image capture	13
7.3.1	Single image capture	13
7.3.2	Multiple image capture	13
<b>8</b>	<b>Segmentation of the TOI</b>	<b>13</b>
<b>9</b>	<b>Quantification</b>	<b>14</b>
9.1	General	14
9.2	Procedure to quantify morphological features of segmented object	14
<b>10</b>	<b>Qualification of Measurement</b>	<b>14</b>
<b>11</b>	<b>Reporting</b>	<b>15</b>
11.1	General	15
11.2	Reporting of sample properties and sample preparation	15
11.3	Reporting of the microscopic observation method	15
11.4	Reporting of the image data, image pre-processing, and image analysis for morphometric analysis	16
11.5	Reporting of the morphological features for morphometric analysis	17
<b>Annex A (informative)</b>	<b>Check sheet regarding selection of contrast-enhancing techniques for optical microscopy</b>	<b>18</b>
<b>Annex B (informative)</b>	<b>Check sheet regarding selection of microscope system</b>	<b>20</b>

<b>Annex C (informative) List of cell morphological descriptors, definitions and formulae for cell shape, size</b> .....	<b>21</b>
<b>Annex D (informative) List of cell morphological descriptors, definitions and formulae for cell texture</b> .....	<b>29</b>
<b>Annex E (informative) Points to consider when acquiring phase-contrast images of cells suitable for image analysis</b> .....	<b>34</b>
<b>Bibliography</b> .....	<b>43</b>