**Questionnaire: Bioreactor/Fermenter for Microbial and Mammalian (suspension) Cell Culture**

Please answer the following questions as completely as possible.

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| **I. Customer Information** |
| Contact Person |  |
| Designation |  |
| Department |  |
| Company Name |  |
| Contact Number |  |
| Email Address |  |

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| **II. Intended Application of Bioreactor/Fermenter** |
| 1. | Application | □ | Microbial Culture |
| □ | Suspension Cell Culture |
| □ | others |
| 2. | Type of microorganism/cells | □ | Bacteria |
| □ | Yeast |
| □ | Fungi |
| □ | Cell Line: |
| □ | Other: |
|  | \*Please indicate organism or cell line to be cultured |  |  |
| 3. | Product | □ | Secreted Protein |
| □ | Non-Secreted /Inclusion body (IB) Protein |
| □ | Biomass |
| □ | Secreted Virus |
| □ | Non-Secreted Virus |
| □ | Others: |
| 4.  | a. Current Culture System | □ | Spinner Flask (\_\_\_ mL x \_\_\_\_) |
| □ | Stirred Tank Bioreactor ( \_\_\_\_\_\_ mL or L) |
| □ | Other: |
|  | b. Current Culture Scale in liters (L): |  |  |

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| * **III. Bioprocess Parameters**
 |
| 1. | Current Process Mode | □ Batch□ Fed-Batch □ Continuous□ Repeated Batch□ Other: |
| 2. | Reactor Size | □ Minimum working volume: \_\_\_\_\_\_\_ L□ Maximum working volume: \_\_\_\_\_\_\_ L□ Working volume: \_\_\_\_\_\_\_\_ L |
| 3.  | Agitation Speed | Range: rpm |
| 4. | Measurements Required | □ Temperature |  oC to oC |
| □ pH |  to  |
| □ DO |  % to % |
| □ Redox |  mV to mV |
| □ Turbidity |
| □ Foaming |
| □ Level |
| □ pCO2 |
| □ O2/CO2 in Exhaust Gas |
| □ Others |

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| * **IV. Bioprocess Controls**
 |
| 1. | Sterilization | Temperature: oC to oC Period: |
| 2. | Temperature Control | * Double wall vessel
* Heating Jacket
* Heating Pad
* Heating/Cooling Pad
* Other:
 |
| 3. | pH Control | * Addition of Base
* Addition of Acid
* Addition of CO2
* Others:
 |
| 4. | Dissolved Oxygen Control | * Impeller Speed
* Addition of O2
* Gas Flow Rate
* Others:
 |
| 5. | Mixing Impeller | * Ruston Impeller
* Marine blade impeller
* Pitched blade impeller
* Others: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
 |
| 6. | Foaming | * High
* Low
* Not yet determined
 |
| 7. | Applied Gases for Aeration | * Air
* Air + O2
* Air + O2 + N2
* Air + O2 + N2 + CO2
* Gas Mixing System
	+ Yes
	+ No
 |
| 8. | Airflow | Range: vvm to vvm Control:* Regulator/ Rotameter (manual)
* Mass Flow Controller (Automatic)
* Others
 |
| 9. | Aeration Delivery | * Overlay
* Sparger,
	+ Sparger type:
		- Ring Sparger
		- Micro-sparger
* Overlay and Sparger
* Others
 |
| 10. | Pressure Control Requirements | * Manual Control
* Automatic Control
 |
| 11. | Other Special Requirements |  |

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| **V. Bioreactor/Fermenter Hardware Requirement** |
| 1. | Vessel Material | □ | Borosilicate Glass |
| □ | SS 316L |
| □ | Others: |
| 2. | Seeding/Inoculation | □ | Needleless Seeding Port |
| □ | Needle Injection Inoculation Port |
| □ | Others: |
| 3. | Fluid Addition | Number of ports-* 0
* 1
* 2
* 3
* 4
* 5
* 6
 |
| 4. | Number of sampling port | Number of ports-* 0
* 1
* 2
 |
| 5. | Air Filter Housing | Filter Size:□ 0.2µm* Others: Integrity Test Port:
* Yes
* No
 |
| 6. | Exhaust Filter Housing | Filter Size:□ 0.2µm* Others: Integrity Test Port:
* Yes
* No
 |

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| **VI. Software Requirement** |
| 1. | Software compatibility | □ | Non-GMP |
| □ | GMP (21 CFR Part 11) |
| □ | Others: |
| 2. | Other requirements |  | * Data-log
* Real-time trend
* Remote control
* Others

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