

BC BIOTECH SKILL NEEDS SURVEY

PART II: PRE-CLINICAL TECHNICAL SKILLS

COMPANY NAME:

Technical Skill	Skill Utilized	Skill Hard to Find
Animal Handling		
Mice	☐	☐
Rabbits	☐	☐
Dogs	☐	☐
Monkeys	☐	☐
Immunization	☐	☐
Bleeding	☐	☐
Surgery	☐	☐
Pharmaco-kinetics	☐	☐
Histology	☐	☐
Analytical Instrumentation		
FTIR	☐	☐
HPLC	☐	☐
Spectrophotometric analysis	☐	☐
GC/MS	☐	☐
Microscopy	☐	☐
Cell Culture		
Mammalian cell culture	☐	☐
Bacterial cell culture	☐	☐
Viral culture	☐	☐
Non-mammalian, eukaryotic cell culture	☐	☐
Microbial fermentation	☐	☐
Yeast fermentation	☐	☐
Natural extraction	☐	☐
Hybridoma	☐	☐
Bioassay	☐	☐
Cell sorting	☐	☐
DNA Technology		
DNA purification	☐	☐
DNA fingerprinting	☐	☐
Genotyping	☐	☐
Sequencing	☐	☐
Vector design	☐	☐
Vector construction	☐	☐
PCR	☐	☐
Mammalian expression system	☐	☐
Bacterial expression system	☐	☐
Baculovirus expression system	☐	☐
Protein Separation		
Size exclusion	☐	☐
Ion exchange	☐	☐

Technical Skill	Skill Utilized	Skill Hard to Find
Reverse phase	☐	☐
Thin layer	☐	☐
Expanded bed	☐	☐
Affinity/ligand	☐	☐
Protein Analysis		
Electrophoresis	☐	☐
AA analysis	☐	☐
Protein-sequencing	☐	☐
Western blot	☐	☐
Immuno-assay	☐	☐
Proteomics	☐	☐
Protein-protein interaction	☐	☐
Peptide mapping	☐	☐
Protein modification	☐	☐
Bioinformatics		
Database similarity searching	☐	☐
Multiple sequence alignments & phylogenetics	☐	☐
Sequence feature prediction	☐	☐
Bioinformatics programming	☐	☐
Microarray analysis	☐	☐
Chemi-informatics	☐	☐
Statistical analysis	☐	☐
Database management	☐	☐
Regulatory Requirements/ Safety		
GLP	☐	☐
HAACP	☐	☐
WHMIS	☐	☐
ICH/TPP/FDA/ISO regulations	☐	☐
Regulatory submittal writing (CTA, IND, BLA, CTD, etc)	☐	☐
PLEASE FILL IN ANY OTHER SKILLS YOU FEEL YOUR COMPANY NEEDS:		
	☐	☐
	☐	☐
	☐	☐
	☐	☐
	☐	☐
	☐	☐
	☐	☐
ADDITIONAL COMMENTS:		

PART III: BIOMANUFACTURING TECHNICAL SKILLS

COMPANY NAME:

Technical Skill	Skill Utilized	Skill Hard to Find
Extraction / Isolation / Purification		
Ultrafiltration	☐	☐
Diafiltration	☐	☐
Precipitation	☐	☐
Dialysis	☐	☐
Mechanical cell disruption	☐	☐
Sonication	☐	☐
Chemical extraction	☐	☐
Detergent-based extraction	☐	☐
Hydrophobic Interaction (HIC)	☐	☐
Pathogen Reduction		
Heat inactivation	☐	☐
Chemical inactivation	☐	☐
UV inactivation	☐	☐
Ultrafiltration	☐	☐
Process partitioning	☐	☐
Bioreactor Configurations, Operation and Monitoring		
Stirred tank	☐	☐
Bubble columns/airlift	☐	☐
Fixed film/immobilized cells	☐	☐
Mammalian cell bioreactor	☐	☐
Cell cube	☐	☐
Roller bottle/shake flask	☐	☐
Batch	☐	☐
Fed-batch	☐	☐
Continuous perfusion	☐	☐
Inoculum preparation	☐	☐
Medium preparation	☐	☐
Sterilization	☐	☐
Sampling	☐	☐
Principles of control systems (e.g. feedback)	☐	☐
Control of temperature/pH/oxygen	☐	☐
Disposable culture bags	☐	☐
Bioreactor shutdown and clean-up	☐	☐
Biomanufacturing Process		
Heat transfer	☐	☐
Oxygen transfer/aeration	☐	☐
Scale-up considerations (upstream)	☐	☐
Scale-up considerations (downstream)	☐	☐
Specifying unit operations	☐	☐
Identification of bottlenecks	☐	☐
Optimization strategies	☐	☐
Design of processes (software)	☐	☐
Trouble shooting processes	☐	☐

Technical Skill	Skill Utilized	Skill Hard to Find
Optimization of processes	☐	☐
Costing of processes	☐	☐
Operations		
Clean room set-up and flows	☐	☐
Clean room procedures/regulations	☐	☐
Inspection/certification of clean rooms	☐	☐
Inspection/certification of clean room equipment	☐	☐
Clean room accident management	☐	☐
Data reporting	☐	☐
Data recording	☐	☐
Regulatory Requirements/ Safety/ Validation		
cGMP	☐	☐
Monitoring, inspections audits	☐	☐
SOP and BPR writing	☐	☐
Equipment and facility validation	☐	☐
Process validation	☐	☐
Cleaning validation	☐	☐
Change Over and campaigning	☐	☐
ICH/TPP/FDA/ISO rules	☐	☐
Fundamentals of QA	☐	☐
Regulatory submittal writing (CTA, IND, BLA, CTD, etc)	☐	☐
Facility/process layout and flows	☐	☐
Fundamentals of QC	☐	☐
Incident reports, out of spec reports, etc.	☐	☐
PLEASE FILL IN ANY OTHER SKILLS YOU FEEL YOUR COMPANY NEEDS:		
	☐	☐
	☐	☐
	☐	☐
	☐	☐
	☐	☐
	☐	☐
	☐	☐
	☐	☐
	☐	☐
ADDITIONAL COMMENTS:		