



**Retrainee - Job Creation
Training Proposal for:
Twist Bioscience Corporation**

Small Business

ET16-0414

Approval Date: March 24, 2016

ETP Regional Office: San Francisco Bay Area

Analyst: V. Estrada

CONTRACTOR

- Type of Industry: Biotechnology/Life Sciences

- Priority Industry: Yes No

- Number of Full-Time Employees
 - California: 90
 - Worldwide: 92
 - Number to be trained: 46
 - Owner Yes No

- Out-of-State Competition: NAICS Code Eligible
- Special Employment Training (SET): Yes No
- High Unemployment Area (HUA): Yes No
- Turnover Rate: 1%
- Repeat Contractor: Yes No

FUNDING

- Requested Amount: \$57,200
- In-Kind Contribution: \$55,000

TRAINING PLAN TABLE

Job No.	Job Description	Type of Training	Estimated No. of Trainees	Range of Hours		Average Cost per Trainee	Post-Retention Wage
				Class / Lab	CBT		
1	Retrainee SB <100 Priority Rate	Mfg Skills, Mgmt Skills, Continuous Impr, Business Skills	28	8-60	0	\$1,040	\$18.00
				Weighted Avg: 40			
2	Job Creation SB<100 Priority Rate	Mfg Skills, Continuous Impr, Business Skills	18	8-60	0	\$1,560	\$17.00
				Weighted Avg: 60			

- Reimbursement Rate: Job #'s 1 and 2: \$26 SB Priority
- County: San Francisco
- Occupations to be Trained: Manager, Engineers, Research Associates, Control Specialist, DNA Specialist, Lab Technician, Lab Assistant, Production Leads
- Union Representation: Yes
 No
- Health Benefits: N/A

SUBCONTRACTORS

- Development Services: Twist Bioscience Corporation retained Manex in San Ramon to develop this proposal.

Note: Manex is eligible to receive 10% of the approved amount of funding for referrals such as this, under a marketing agreement with ETP, not to exceed \$15,000. In this proposal, the fee will be \$5,720. This fee does not affect the approved amount of funding.
- Administrative Services: N/A
- Training Vendors: To Be Determined

OVERVIEW

Founded in 2013, Twist Bioscience Corporation (www.twistbioscience.com) designs, develops, manufactures and sells a range of synthetic DNA. The Company caters to four main industries: agriculture, chemical production, drug development, and academic research. The Company is headquartered in San Francisco and has two adjacent facilities, both of which are participating in training.

Need for Training

This will be Twist's first ETP-funded training project as it advances from alpha phase to beta production. Training will enable the Company to train new and current employees in the manufacturing of synthetic DNA.

This proposal is driven by a burgeoning industry of manufacturing where DNA can be assembled in an automated fashion. Twist is using silicon chip technology with a proprietary system and process (currently seeking patents). Production employees and Quality Technicians must expand their knowledge with a variety of training in technical processes and equipment to produce high quality synthetic DNA (artificial genes produced in a laboratory where the producer does not have to begin with preexisting DNA sequences) faster and cheaper than any of its competitors. This process also allows the Company to more easily customize products towards customer requests.

Retrainee – Job Creation

The Panel is offering incentives to companies that commit to hiring new employees. Training for newly-hired employees will be reimbursed at a higher rate, and trainees will be subject to a lower post-retention wage.

Twist has expanded significantly in the past two years and may increase workspace in mid-2016. In 2015, the Company hired a total of 70 new employees. For this proposal, the Company will be moving into full production, adding new shifts to manufacture products around the clock (24 hours a day, 7 days a week). The Company has committed to hiring 18 new employees as shown in Job Number 2. The date-of-hire for all trainees in the Job Creation program will be within the three-month period before contract approval or within the term-of-contract. These trainees will be hired into "net new jobs" as a condition of contract.

Training Plan

All training will be delivered via Class/Lab in the following:

Business Skills - Training will be offered to all occupations. Topics include Conflict Management, Effective Meetings, Effective Writing, and Facilitation Skills. Training will improve interpersonal communication skills and job performance.

Management Skills - Training will be provided to Manager. Topics include leadership and management skills and will focus on the needed skills to manage highly technical, accuracy-driven work teams.

Manufacturing Skills - Training will be offered to all occupations. Trainees will be cross-trained on the usage of new and existing equipment such as the Brooks Sample Storage and the Lab Cyte Liquid Handler. Training will also cover production processes, which will be customized to meet customer demands as each product is unique.

Continuous Improvement - Training will be offered to all occupations with a focus on waste recognition to reduce expenses. Other topics include Lean Manufacturing, Monitoring The Process, and Process Control/Improvement.

RECOMMENDATION

Staff recommends approval of this proposal.

Exhibit B: Menu Curriculum**Class/Lab Hours**

8-60 Trainees may receive any of the following:

BUSINESS SKILLS

- Conflict Management
- Effective Meetings
- Effective Writing
- Facilitation Skills

CONTINUOUS IMPROVEMENT

- 5S: Sort, Set, Shine, Standardize, Sustain
- ISO Audit Principles
- Basic Quality Tools
- Building Teams
- Communication Skills
- Continuous Improvement Skills
- Creative Problem Solving Skills
- Cycle-time Reduction Techniques
- Decision Making Skills
- Interpreting & Analyzing Data
- ISO 9001 / 13485/ 14001
- Just-in-Time Production (JIT)
- Lean Manufacturing
- Monitoring The Process
- Performance Management
- Process Control / Process Improvement
- Process / Product Handling
- Production Scheduling
- Production Operations / Workflow
- Project Management
- Appraisal Skills
- Coaching/Feedback
- Decision Making/Problem Solving
- Developing Teams
- Leadership/ Management Development

MANAGEMENT SKILLS (Managers Only)

- Management Skills

MANUFACTURING SKILLS

- Basic Laboratory Skills
 - Clean Room Protocols
 - Trough Preparation
 - Mix Mating
 - Centrifuging
 - Sealing/Desealing
 - Proper Pipetting Technique

- Serological Pipetting
 - Multi-Channel
 - Single Channel
- Synthesis Processes
 - Change Dewers
 - Ink Prep
 - Writer Processes
 - Changing Reagents
 - Deprotection
 - Extraction – Centrifuge Operation
 - Extraction – Korvis Operation
- Gene Assembly Processes
 - Polymerase Cycling Assembly/Polymerase Chain Reaction (PCA/PCR)
 - Purification
 - Quantitation
 - Normalization
 - Fragment Analysis
 - Dry/Anneal
 - Error Correction Reaction/Polymerase Chain Reaction (ECR/PCR)
 - Quality Control Handoffs
- Cell Processes
 - Cloning
 - Transformation
 - Pick/Innoculate/Grow
 - Rolling Circle Amplification (RCA)
 - Mini Prep
 - Quantitation
 - Primer Removal
- Quality Control
 - Oligo Extraction Quantity Control
 - Post Error Correction Quality Control
 - Quantitation
 - Fragment Analysis
- Next Generation Sequencing (NGS)
 - Tagmentation
 - Barcoding
 - Pooling
 - Run Illumina MiSeq
- Oligo Pool Production
 - Phosphorylation
 - Ligation
 - Quality Control – Ligation
 - Exonu Clease
 - Rolling Circle Amplification (RCA)
 - Digestion
 - Quality Control – Digestion
 - High Performance Liquid Chromatography (HPLC) Prep/Setup
 - Purify
 - Desalt
 - Quality Control – High Performance Liquid Chromatography (HPLC)
 - Sample Dry

- Dilution
- Final QC
- Shipping
- Product Aliquoting
- Final Release
- Systems Training
 - Thermocyclers
 - BioAnalyzer
 - Qubit
 - Nanodrop
 - Hamilton
 - BioDot
 - Cybio
 - Frag Analyzer
 - General Lab Training (Science)
 - Media Prep
 - Qtray Prep
 - Safety

Safety Training will be limited to 10% of total training hours per-trainee.

Note: Reimbursement for retraining is capped at 60 total hours per-trainee, regardless of method of delivery.
