

COMMONWEALTH OF PENNSYLVANIA
ANGEL INVESTMENT VENTURE CAPITAL PROGRAM
JULY 1, 2023 – JUNE 30, 2024
ANNUAL REPORT

Grantee: Baruch S. Blumberg Institute
Address: 3805 Old Easton Road
Doylestown, PA 18902
Contact: Lou Kassa, MPA, CEO
Lou.Kassa@bblumberg.org
215-589-6300

Qualified Business Ventures that received investment in first reporting period of July 1, 2022
– June 30, 2023:

Harlingene Life Sciences, LLC	OB-2023-06	\$300,000
Cirna Diagnostics, LLC	OB-2023-07	\$400,000
Pentavalent, LLC	OB-2023-08	\$250,000
Merlin Biotech, Inc.	OB-2023-09	\$650,000
RimmSting Life Sciences, LLC	OB-2023-10	\$400,000

July 1, 2023 – June 30, 2024 – Angel Investor Financial Statement

REVENUE	
PA Angel Investor Contract	0.00
Other Investor	0.00
Other Income	0.00
TOTAL REVENUE	0.00
TOTAL EXPENSES	0.00

July 1, 2022 – June 30, 2023 – Corrected Angel Investor Financial Statement

REVENUE	
PA Angel Investor Contract	2,000,000.00
Other Investor	0.00
Other Income	0.00
TOTAL REVENUE	2,000,000.00
TOTAL PAYOUT TO QBVs	2,000,000.00
EXPENSES INCURRED BY QBVS	
Personnel	428,310.68
Research supplies & CRO contracts	229,673.64
Equipment	5,299.00
Production	44,731.15
Admin & Legal	124,607.23
Rents, Overhead	35,250.00
TOTAL QBV EXPENSES	867,871.70
NET INCOME	1,132,128.30

Qualified Business Venture (QBV)

OB-2023-06

QBV Contact Information

Date: July 1, 2023 - June 30, 2024

QBV Name	HARLINGENE LIFE SCIENCES
Address	3805 Old Easton Road, Doylestown PA 18902-8400
Contact Person	Yanming Du, PhD
Phone	267-893-6579
Email	Yanming.du@bblumberg.org
Address	3805 Old Easton Road, Doylestown PA 18902-8400

Qualified Investment Contract Dates: 4/24/2023 – 6/30/2028

Total Amount of Qualified Investment:

\$300,000 from the Qualified investment from the Baruch S Blumberg Institute from the State of Pennsylvania Qualified Business Venture Angel Investment Program. \$600,000 non-dilutive funds to Harlingene from the US STTR program.

Detailed Description of QBV

Please describe how the QBV employed the qualified investment received from the Baruch S. Blumberg Institute during the reporting period to commercialize research and development, to commercialize technology transfers, or to commercialize new technology within Pennsylvania; and how the venture will use the grant funds received via this Program during the next 12 months including specific, measurable goals to be achieved during the next year.

Essential research and Business progress is being made.

Research: Funds are being used to enable optimization of the lead small molecule anti-HAV and anti-HBV compound, such that necessary preclinical ADME, efficacy, and tox studies can be done, allowing for filing an IND for eventual human trials

Business wise: Business plan and product plan drafts are being prepared with the assistance of professionals with necessary experience who are located at the PABC.

A strategy in which the compounds are brought to sufficient efficacy attractiveness and de-risking of toxicity for the purposes of appealing to big pharma in the Pennsylvania area is being pursued with Angel investment funds.

We have been able to enhance our proposals for the NIH STTR program and be even more competitive and have been awarded more than \$600,000 for two years. Angel funds are allowing us to apply for Phase II versions of these STTRs which will be in the millions of dollars.

QBV Employees

Total number of employees in Pennsylvania, including the number of new jobs created in Pennsylvania during the reporting period, as well as the median salary of those employees.

Total Employees	1	Median Salary	\$50,000
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Signature: _____

Date: 8/28/2024

Harlingene Life Sciences, LLC

Profit and Loss by Class

July 2023 - June 2024

	ANGEL GRANT	NOT SPECIFIED	TOTAL
Income			
Grant Income			\$0.00
STTR HAV 2023		253,355.00	\$253,355.00
STTR HBV 2022		123,502.00	\$123,502.00
Total Grant Income		376,857.00	\$376,857.00
Interest Income	1,421.46	1,255.10	\$2,676.56
Checking Account Interest Incom		24.16	\$24.16
Total Interest Income	1,421.46	1,279.26	\$2,700.72
Total Income	\$1,421.46	\$378,136.26	\$379,557.72
GROSS PROFIT	\$1,421.46	\$378,136.26	\$379,557.72
Expenses			
Admin & Facility Expenses			\$0.00
Admin Fee-Angel Grant	4,404.51		\$4,404.51
Dues & subscriptions-Angel Grant	652.91		\$652.91
Fringe Benefits	1,958.53		\$1,958.53
Office Supplies	381.60		\$381.60
Payroll Taxes	608.50		\$608.50
Salaries	8,199.69		\$8,199.69
Tax Return Preparation Fee		2,050.00	\$2,050.00
Total Admin & Facility Expenses	16,205.74	2,050.00	\$18,255.74
Indirect Cost Recover			\$0.00
STTR 2022 - Indirects		-38,596.00	\$ -38,596.00
STTR HAV 2023 - Indirects		-43,150.00	\$ -43,150.00
Total Indirect Cost Recover		-81,746.00	\$ -81,746.00
Lab Services	55,791.00		\$55,791.00
Meals and Entertainment		1,072.00	\$1,072.00
Office Supplies	410.75		\$410.75
Professional Fees		11,200.00	\$11,200.00
Professional Fees - Angel Grant	2,900.00		\$2,900.00
Total Professional Fees	2,900.00	11,200.00	\$14,100.00
State Taxes - PA		70.00	\$70.00
STTR 2022			\$0.00
Fringe Benefits		10,783.77	\$10,783.77
Indirect Costs		38,596.00	\$38,596.00
Lab Supplies		6,285.89	\$6,285.89
Payroll Taxes		2,436.92	\$2,436.92
Salaries		36,266.66	\$36,266.66
Services		30,388.00	\$30,388.00
Subawards		34,612.00	\$34,612.00
Testing		13,204.80	\$13,204.80
Total STTR 2022		172,574.04	\$172,574.04

Harlingene Life Sciences, LLC

Profit and Loss by Class

July 2023 - June 2024

	ANGEL GRANT	NOT SPECIFIED	TOTAL
STTR 2023 - HAV			\$0.00
Consultants - HAV		2,150.00	\$2,150.00
Fringe Benefits		13,707.97	\$13,707.97
Indirect Costs		43,150.00	\$43,150.00
Payroll Taxes		3,627.84	\$3,627.84
Salaries		44,527.31	\$44,527.31
Services		15,005.00	\$15,005.00
Subaward to UNC Chapel Hill		171,178.06	\$171,178.06
Supplies & Materials		3,857.00	\$3,857.00
Total STTR 2023 - HAV		297,203.18	\$297,203.18
Total Expenses	\$75,307.49	\$402,423.22	\$477,730.71
NET OPERATING INCOME	\$ -73,886.03	\$ -24,286.96	\$ -98,172.99
NET INCOME	\$ -73,886.03	\$ -24,286.96	\$ -98,172.99

Qualified Business Venture (QBV)

OB-2023-07

QBV Contact Information

Date: July 1, 2023 - June 30, 2024

QBV Name	Cirna Diagnostics LLC
Address	Pennsylvania Biotechnology Center 3805 Old Easton Road Doylestown, PA, 18902
Contact Person	Aejaz Sayeed, Ph.D.
Phone	215-589-6300
Email	Aejaz.sayeed@bblumberg.org
Address	3805 Old Easton Road, Doylestown, PA 18902

Qualified Investment Contract Dates: July 1, 2022 – July 1, 2028

Total Amount of Qualified Investment: \$400,000

Detailed Description of QBV

Please describe how the QBV employed the qualified investment received from the Baruch S. Blumberg Institute during the reporting period to commercialize research and development, to commercialize technology transfers, or to commercialize new technology within Pennsylvania; and how the venture will use the grant funds received via this Program during the next 12 months including specific, measurable goals to be achieved during the next year.

Funds from the Qualified Business Investment have allowed for identification and precise mutational profiling of a set of mutated mRNAs that are most prevalent in cancer samples, derived from a pool, from last year's work, and production of a useable prototype detection assay system. The assay system name: Mericle™ has been assigned. That work allows for the critical validation of the candidate biomarkers in larger cohort sets which will position Cirna for the raising of new investment and additional non-dilutive grant support. Funds have also been used to engage professionals who are providing business planning advice. In the following year the panel of candidate biomarkers identified in the previous year will be road tested for their ability to detect cancer accurately, using larger (n>100) patient sample sets. The business plan will also be refined.

Cirna Diagnostics LLC is a start-up company dedicated to commercializing an entirely new approach to the early, non-invasive detection of disease. Cirna is initially focused on detecting and profiling liver cancer using a method that does not require biopsy and is predicted to be superior to all other known non-invasive approaches. The significance of this is enormous, with liver cancer being one of the fastest growing malignancies in incidence in the United States, and one of the deadliest if not detected early. The Cirna method, called the "Mericle™" assay is a platform that can be adapted for detection of cancers other than that of the liver, adding to its value.

Cirna uses technology from the Baruch S Blumberg Institute that detects mutations in messenger RNA (mRNA) in the blood of a patient. Mutations and splice variations are characteristics of cancer cells. Methods to detect mutated DNA are being attempted by others, but has limitations that mRNA detection does not have. The mutated mRNA (Mericle™) approach is unique to Cirna.

The technology is exciting and reasonably robust and the path to practical use (commercialization) is reasonably short, compared to drug discovery. However, before it can be used commercially or in a CLIA lab, the assay must be optimized and validated using samples from cohorts of patients that were not used in the discovery and development of the prototype assay.

QBV Employees

Total number of employees in Pennsylvania, including the number of new jobs created in Pennsylvania during the reporting period, as well as the median salary of those employees.

Total Employees	2 (two)	Median Salary \$85,000	
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Signature: *Aejaz Sayeed, PhD*

Date: 9/1/2024

CIRNA DIAGNOSTICS, LLC

Profit and Loss

January - December 2023

	TOTAL
Income	
Grants	
Angel Grant	400,000.00
Total Grants	400,000.00
Total Income	\$400,000.00
GROSS PROFIT	\$400,000.00
Expenses	
Admin Fee	8,184.53
Bank Charges & Fees	729.85
Legal & Professional Services	36,507.53
Meals & Entertainment	191.02
Rent & Lease	21,499.98
Research & Development	
Contractors	4,000.00
Job Supplies	42,545.66
Total Research & Development	46,545.66
Salaries, Payroll Taxes, Fringe Benefits	
Fringe Benefits	18,007.68
Payroll Taxes	6,569.24
Salaries	92,568.27
Total Salaries, Payroll Taxes, Fringe Benefits	117,145.19
Total Expenses	\$230,803.76
NET OPERATING INCOME	\$169,196.24
Other Income	
Interest Income	1,448.40
Total Other Income	\$1,448.40
NET OTHER INCOME	\$1,448.40
NET INCOME	\$170,644.64

Qualified Business Venture (QBV)

OB-2023-08

QBV Contact Information

Date: July 1, 2023 - June 30, 2024

QBV Name	Pentrávalent, LLC
Address	3820 Comley Circle, Doylestown, PA 18902-1593
Contact Person	W. Scott Willett
Phone	267.614.8303
Email	w.scott.willett@outlook.com
Address	3820 Comley Circle, Doylestown, PA 18902-1593

Qualified Investment Contract Dates: 01 Jul 2023 – 30 Jun 2024

Total Amount of Qualified Investment: \$250,000

Detailed Description of QBV

Please describe how the QBV employed the qualified investment received from the Baruch S. Blumberg Institute during the reporting period to commercialize research and development, to commercialize technology transfers, or to commercialize new technology within Pennsylvania; and how the venture will use the grant funds received via this Program during the next 12 months including specific, measurable goals to be achieved during the next year.

Over this reporting period, Pentrávalent has used the qualified investment to establish research procedures resulting in the generation of pentraxin-based molecules representing each of the three applications of the platform technology: therapeutic, diagnostics, and vaccines. These research advances are initial steps demonstrating the potential commercial applications of Pentrávalent's technology.

1. A pentabody displaying a VHH domain specific to the Hepatitis B surface antigen (HBsAg) was made in CHO cells, purified, and testing in an ELISA format and in a cell-based HBV viral inhibition assay. This anti-HBV pentabody was shown to bind specifically with an ELISA assay to HBsAg with an EC50 of approximately 1 nM, while it was also shown to inhibit HBV in a cell-based assay at approximately 30 pM, more than 1000-fold more potent than the same VHH presented in monomeric form. These data support the design concept and suggest pentavalent presentation of VHH binding domains confer very high potency resulting from avidity to these molecules relative to monomeric presentations.
2. Several versions of heteropentameric pentraxin-based diagnostic molecules have been generated and shown to bind specifically to their targets (either HBsAg or SARS-CoV2 spike protein) yielding signals via fluorescent proteins contained in the heteropentameric pentraxins. These data support the feasibility of both making heteropentameric pentraxins, and their use as diagnostics.
3. Several pentraxin-based vaccine molecules have been generated displaying antigenic peptides from respiratory syncytial virus (RSV). Both homopentameric and heteropentameric RSV vaccine candidates have been produced, with testing scheduled for later this year.

The primary use of these data will be to enable a patent application to secure IP rights for the technology, thus creating value for the company. The current plan is to file a patent application in 3Q 2024. The molecules generated from these studies which demonstrate the most promising commercial application will be carried forward into a product development plan leading towards clinical testing.

In the 12 months, Pentrávalent's goals are to


1. File a patent application and continue to create data to amend the application
2. Demonstrate specific immune responses to pentraxin-based vaccines (Pentagens)
3. Partner with at least one other PABC-based company to demonstrate feasibility of using Pentrávalent's technology to create a diagnostic for Dengue Fever
4. Demonstrate Pentabody superiority for inhibition of H5N1 influenza virus, SARS-CoV-2, and RSV

- 5. Develop site-specific coupling to Pentraxin monomers using microbial transglutaminase to create highly sensitive diagnostics and Pentabody-Drug-Conjugates, or PDCs.

QBV Employees

Total number of employees in Pennsylvania, including the number of new jobs created in Pennsylvania during the reporting period, as well as the median salary of those employees.

Total Employees	2 (half-time)	Median Salary	\$50,000
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Signature: 

Date: 15 AUG 2024

Pentravalent, LLC

Profit and Loss

July 2023 - June 2024

	TOTAL
Income	
Total Income	
GROSS PROFIT	\$0.00
Expenses	
Building & property rent	12,000.00
General business expenses	
Admin Fee	6,498.55
Memberships & subscriptions	1,429.76
Total General business expenses	7,928.31
Office expenses	
Software & apps	792.35
Total Office expenses	792.35
Research & Development	
Supplies & materials	19,148.25
Total Research & Development	19,148.25
Salaries, Payroll Taxes & Fringe Benefits	
Fringe Benefits	14,998.54
Payroll taxes	
Payroll Taxes	6,275.60
Total Payroll taxes	6,275.60
Salaries	82,500.00
Total Salaries, Payroll Taxes & Fringe Benefits	103,774.14
Total Expenses	\$143,643.05
NET OPERATING INCOME	\$ -143,643.05
Other Income	
Interest Earned	1,798.02
Total Other Income	\$1,798.02
NET OTHER INCOME	\$1,798.02
NET INCOME	\$ -141,845.03

Qualified Business Venture (QBV)

QBV Contact Information

Date: July 1, 2023 - June 30, 2024

QBV Name	Merlin Biotech
Address	3805 Old Easton Rd Doylestown PA 18902
Contact Person	Randall Hyer
Phone	202-330-1160
Email	Randall.hyer@merlinbiotech.com
Address	3805 Old Easton Rd Doylestown PA 18902

Qualified Investment Contract Dates: 7/1/2022 - 6/30/2028

Total Amount of Qualified Investment:

\$650,000.00 received May 2023

Detailed Description of QBV

Please describe how the QBV employed the qualified investment received from the Baruch S. Blumberg Institute during the reporting period to commercialize research and development, to commercialize technology transfers, or to commercialize new technology within Pennsylvania; and how the venture will use the grant funds received via this Program during the next 12 months including specific, measurable goals to be achieved during the next year.

The funds provided significant support to the QBV, Merlin, and have allowed it to reach several critical milestones:

- Validation of core technology, MER-101, at an independent 3rd party laboratory
- Establishment of a physical lab space at B+Labs
- Demonstration that the new technology, MER-101 has broad activity against multiple cancers
- Type B meeting with the FDA to identify the key studies to enter clinical studies
- Filing Rare Pediatric Drug Designation and Orphan Drug Designation with the FDA

Outside of these milestones, the funds also supported QBV day-to-day operations:

- Fundraising efforts
- Collaborations with other local and US academic centers

The qualified investment funds have catalyzed QBV business development to attract private independent funds to move the technology forward.

QBV Employees

Total number of employees in Pennsylvania, including the number of new jobs created in Pennsylvania during the reporting period, as well as the median salary of those employees.

Total Employees	4	Median Salary	130,000
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Signature: *Randall Hyer*
Randall Hyer (Aug 20, 2024 10:29 EDT)

Date: 20/08/24

Merlin Biotech

Profit and Loss

July 2023 - June 2024

	TOTAL
Income	
AIZ Grant	100,000.00
Returned Funds	0.00
Services	0.00
Total Income	\$100,000.00
GROSS PROFIT	\$100,000.00
Expenses	
Ask My Accountant	0.00
Computer Equipment/Software	4,586.69
Contractors	1,005.25
Fundraising Consultant	11,555.30
Insurance	1,704.00
Interest Paid	3,033.50
Laboratory Fees	3,684.00
Legal & Professional Services	13,579.37
Marketing	-741.98
Meals & Entertainment	99.76
Meetings & Conferences	42,218.20
Payroll & Benefits	
Fringe Benefits	4,195.73
Payroll Taxes	2,031.14
Salaries	188,382.55
Total Payroll & Benefits	194,609.42
QuickBooks Payments Fees	1,794.32
Rent & Lease	19,740.58
Shipping	330.11
Supplies & Materials	52,305.23
Taxes & Licenses	904.92
Travel	9,958.16
Vendors-PreClinical	1,000.00
Website	35.16
Total Expenses	\$361,401.99
NET OPERATING INCOME	\$ -261,401.99
NET INCOME	\$ -261,401.99

Qualified Business Venture (QBV)

QBV Contact Information

Date: July 1, 2023 - June 30, 2024

QBV Name	Rimmsting Life Sciences
Address	3805 Old Easton Road, Doylestown PA 18902-8400
Contact Person	Jinhong Chang, MD, PhD
Phone	215-589-6325
Email	Jinhong.chang@bblumberg.org
Address	3805 Old Easton Road, Doylestown PA 18902-8400

Qualified Investment Contract Dates: April 11, 2023 – June 30, 2028

Total Amount of Qualified Investment: \$400,000

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Detailed Description of QBV

Please describe how the QBV employed the qualified investment received from the Baruch S. Blumberg Institute during the reporting period to commercialize research and development, to commercialize technology transfers, or to commercialize new technology within Pennsylvania; and how the venture will use the grant funds received via this Program during the next 12 months including specific, measurable goals to be achieved during the next year.

Research: Funds are being used to synthesize a new type of HBV capsid assembly modulators which have unique property to interfere with the capsid assembly and disassembly. The funds were also used to test ADME (absorption, distribution, excretion, and metabolism) and PK (pharmacokinetic) properties of another series of compounds from which a lead candidate, with nanomolar potency and PK profile supporting once-a-day dosing, has been nominated. Now the lead candidate is scaled up to support subsequent efficacy and tox studies, allowing for future filing an IND for eventual human trials.

Specifically, we have advanced the development of sulfamoylpyrrolamide (SPA) and tetrahydropyrazolo[1,5-a]pyrido[4,3-e]pyrimidine (THPPP) HBV capsid assembly modulators in this reporting period via following research activities.

1. Based on our extensive structure-activity relationship studies of SPA derivatives, we have selected five compounds with potent antiviral activity (EC_{50} values between 2.8 to 9.6 nM) and low cytotoxicity (CC_{50} higher than 50 μ M) in HBV replicating hepatoma cells (HepDES19) with a SPA compound (JNJ-6379) in phase 2 clinical trial by JNJ as a control to determine their ADME profile.
2. Based on the ADME profiling results, three SPA compounds, BSBI-65013, BSBI-72006 and BSBI-3-02), as well as control compound JNJ-6379) were selected for pharmacokinetic (PK) studies. The PK profile of BSBI-3-02 supports once daily dosing.
3. The scale-up synthesis Compound BSBI-3-02 is currently underway. In vivo antiviral efficacy of BSBI-3-02 will be evaluated in AAV-HBV transduced mice model.
4. We synthesized and tested more than 20 THPPP compounds and discovered one compound with potent antiviral activity ($EC_{50} = 49$ nM). Mechanistic analysis also demonstrated the compound have a typical CAM-A-like phenotype.

Research plans for next year

1. Determine the maximal tolerable dose of BSBI-3-02.
2. Evaluate the in vivo antiviral efficacy of BSBI-3-02
3. Evaluate the antiviral property of BSBI-3-02 and one of the selected THPPP CAM in HBV infected hepatoma cells.
4. Development of a novel, mechanistically distinct NS4B inhibitors of yellow fever virus.

Commercialization plan for next year.

Business plan and product development plan drafts are being prepared. A strategy in which the compounds are brought to sufficient and appealing in vivo efficacy for the purposes of appealing to other pharma in the HBV will be pursued with Angel investment funds.

QBV Employees

Total number of employees in Pennsylvania, including the number of new jobs created in Pennsylvania during the reporting period, as well as the median salary of those employees.

Total Employees	-0-	Median Salary	
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Signature: _____  _____

Date: 8/29/2024 _____