
Annual Report on Programs and Activities to the

Joint Legislative Commission on Governmental Operations;
Joint Legislative Economic Development and Global Engagement Oversight Committee; and
Fiscal Research Division

by NCInnovation, Inc.

As Required by G.S. 143-728(d)(2)a.

September 2024

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## Statutory Requirements

The North Carolina General Statutes G.S. 143-728(d)(2)a lists seven requirements that must be reported on or before September 15 of each year and submitted to the Joint Legislative Commission on Governmental Operations, the Joint Legislative Economic Development and Global Engagement Oversight Committee, and the Fiscal Research Division.

This document serves as that report and contains all materials to satisfy the seven requirements outlined below.

### §143-728(d)(2)a. Requirements of NCInnovation

(d) Requirements. – In order to receive the endowment and retain State funds, all of the following requirements must be met:

...

(2) NCInnovation shall amend its articles of incorporation to enable NCInnovation to carry out the purposes and requirements of this Article. The articles of incorporation, as amended, shall provide for the following:

a. Consultation; reporting. - NCInnovation shall consult with the Joint Legislative Commission on Governmental Operations prior to the board of directors adopting bylaws or any amendment to its bylaws. NCInnovation shall also report on its programs and activities to the Joint Legislative Commission on Governmental Operations, the Joint Legislative Economic Development and Global Engagement Oversight Committee, and the Fiscal Research Division on or before September 15 of each fiscal year and more frequently as requested by any of these entities. The report shall include all of the following information:

1. Every expenditure for establishing and supporting a network of regional innovation hubs and every award of grants, funds, or other support by NCInnovation in the prior fiscal year. This information shall include, at a minimum, the recipient, amount, term, and purpose of the award.
2. Outcome data collected by NCInnovation, including the number of jobs created.
3. Cumulative regional innovation hub network expenditure and funding award data by program and by county.
4. An unaudited report, itemized by category, of overhead and administrative costs for the previous fiscal year.
5. Current fiscal year budget, planned activities, and goals for the current fiscal year.
6. Developed performance metrics for recipients of funding and support by NCInnovation.
7. A detailed explanation of how annual salaries are determined, including base pay schedules and any additional salary amounts or bonuses that may be earned as a result of job performance. The explanation shall include the means used by NCInnovation to foster employee efforts in rural and low-income areas in the State.

## Programs and Activities

**REQUIREMENT 1. Every expenditure for establishing and supporting a network of regional innovation hubs and every award of grants, funds, or other support by NCInnovation in the prior fiscal year. This information shall include, at a minimum, the recipient, amount, term, and purpose of the award.**

**AND**

**REQUIREMENT 6. Developed performance metrics for recipients of funding and support by NCInnovation.**

NCInnovation (NCI) currently has four regional innovation networks to cover the East, West, Piedmont, and Charlotte areas to connect our public research universities, industry partners, and business leaders together to drive more effective commercialization strategies regionally, and across North Carolina.

Each regional innovation network includes the public research universities within that region and is anchored by a "hub" institution.

The **East Regional Innovation Network** is anchored by East Carolina University and includes UNC Wilmington, UNC Pembroke, Elizabeth City State University, and Fayetteville State University.

The **West Regional Innovation Network** is anchored by Western Carolina University and includes UNC Asheville and Appalachian State University.

The **Piedmont Regional Innovation Network** is anchored by N.C. A&T State University and includes UNC Greensboro, North Carolina Central, and Winston-Salem State University.

The **Charlotte Regional Innovation Network** is anchored by UNC Charlotte and includes the North Carolina Research Campus.

As part of NCI's support for the four regional innovation networks and each hub institution, NCI has four Regional Innovation Network Directors to lead regional operations. An explanation of every expenditure for establishing and supporting a network of regional innovation hubs, including grant funds, is shown in *Table 1.1: Program Expenditures for the Fiscal Year Ended June 30, 2024*.

At the start of implementing its grant program, NCI conducted an early pilot process featuring eight (8) grant awards across all four of its initial regional innovation networks. Following external review and validation of these applications, management presented a slate of eight recommended projects totaling more than $5 million in awards to the NCI Board at its meeting on May 15, 2024. The NCI Board approved those eight pilot grants.

A summary of the total funding awarded for the entire pilot grant program is shown in *Table 1.2: Pilot Grants Summary of Awardee Budgets*. The funding for each of the eight pilot grant awards, including the recipient, amount, term, and purpose of the award can be found in *Table 1.3.1, Table 1.3.2, Table 1.3.3, Table 1.3.4, Table 1.3.5, Table 1.3.6, Table 1.3.7, and Table 1.3.8*. The individual grant tables are grouped by region and are either a one- or two-year grant. The recipient university and name of the principal investigator are listed at the top of each grant table.

The individual grant tables also include the performance milestones and metrics that will be used for each grant project as requested in REQUIREMENT 6. See *Table 1.3.1, Table 1.3.2, Table 1.3.3, Table 1.3.4, Table 1.3.5, Table 1.3.6, Table 1.3.7, and Table 1.3.8*. The milestones are unique to each grant based on the research project to be funded.

TABLE 1.1: Program Expenditures for the Fiscal Year Ended June 30, 2024

# Program Expenditures for the Fiscal Year Ended June 30, 2024

Preliminary draft and unaudited – update to be provided when NCI's external audit is completed.

| | Total Expenditures by Detail | | |
|---|---|---|---|
| **Grant Awards** | | | |
| Pilot Grants | | $ | 3,225,010 |
| **Salaries & Benefits** | | | |
| Regional Hub Directors | 487,564 | | |
| University & Ecosystem Support to Hubs | 152,939 | | |
| ***Total Salaries & Benefits*** | | | 640,503 |
| ***Regional Hub Expenses*** | | | |
| Contract Research Services | 432,686 | | |
| University & Ecosystem Support Programs | 72,675 | | |
| Travel Expenses, Excludes out of State travel & travel to NC | 30,452 | | |
| Meetings Expenses, Including program related meals | 2,092 | | |
| Supplies, Printing & Postage | 4,383 | | |
| Computer Equipment, Communications & Tech Services | 640 | | |
| ***Total Regional Hub Expenses*** | | | 542,927 |
| **Total Program Expenses** | | $ | 4,408,440 |

Note: The above program expenditures comply with all state law requirements listed on pages 21-22 of this report, including the following:

*G.S. 143-728(d)(1)e. The amount of State funds that may be used for the annual salary of any one officer or employee of NCInnovation shall not exceed the greater of (i) one hundred forty thousand dollars ($140,000) or (ii) the amount most recently set by the General Assembly in a Current Operations Appropriations Act.*

*G.S. 143-728(d)(5). NCInnovation may draw from, distribute, and otherwise expend investment income, including, without limitation, to make funding awards and establish or support a network of regional innovation hubs, in accordance with this Article, and such activities are subject to the reporting requirements of this Article.*

## TABLE 1.2: Pilot Grants Summary of Awardee Budgets

Preliminary draft and unaudited – update to be provided when NCI's external audit is completed.

### Pilot Grants Summary of Awardee Budgets

| *CATEGORY* | *DESCRIPTION* | *BUDGET SPEND* | |
|---|---|---|---|
| **PERSONNEL** | ***Researcher time/effort, course-buyout, admininstration and oversight of grant management and reporting*** | **Year 1** | **Year 2** |
| Faculty | | $ 319,395 | $ 232,445 |
| Non-faculty research staff (e.g., technicians, staff scientists) | | $ 408,238 | $ 211,986 |
| Trainees (undergraduate, graduate, and postdoctoral researchers) | | $ 218,191 | $ 90,566 |
| Grants administration (post-award support) | | | |
| Project managers | | $ 65,550 | $ 58,872 |
| Administrative support | | $ - | $ - |
| Programmatic support (e.g., innovation and entrepreneurship staff) | | $ - | $ - |
| Fringe Benefits expense | | $ 50,169 | $ 9,182 |
| *TOTAL* | | $ 1,061,543 | $ 603,051 |
| **MATERIALS, SUPPLIES & EQUIPMENT** | ***Equipment, rent, utilities, and materials to conduct research*** | | |
| Equipment | | $ 206,340 | $ - |
| Materials & Supplies | | $ 212,700 | $ 71,500 |
| *TOTAL* | | $ 419,040 | $ 71,500 |
| **TRAVEL** | ***Travel to meetings with partners, conferences, etc.*** | | |
| *TOTAL* | | $ 40,950 | $ 18,950 |
| **SERVICES, SUBCONTRACTS, CONSULTING FEES** | ***Market fit research, patent landscaping, technical validation, legal fees, etc.*** | | |
| Market research | Ongoing market research | $ 97,500 | $ 35,000 |
| Tech and business development | Support tech development, startup, and licensing (travel to conferences for customer development) | $ 61,900 | $ 17,500 |
| Intellectual property | Manage IP/technology development | $ 167,000 | $ 102,000 |
| Legal fees | Direct support for initial patent portfolio development | $ 165,000 | $ 110,000 |
| Industry Fellows and Consultants | develop expanded network of industry advisors to assess plans for projects | $ 592,800 | $ 517,000 |
| Executives in residence (EIRs) | Scout, support, advise and mentor opportunities | $ 200,000 | $ 125,000 |
| *TOTAL* | | $ 1,284,200 | $ 906,500 |
| **OTHER EXPENSES** | | | |
| *Contract research organization regulatory testing expenses* | | $ 419,277 | $ 403,200 |
| **TOTAL ANNUAL SPEND** | | **$ 3,225,010** | **$ 2,003,201** |
| **TOTAL FUNDING AWARDED** | | | **$ 5,228,211** |

Summary of the above is for the 8 grants awarded in the NCI Pilot Grant program and approved by its Board of Directors on May 15, 2024.

Confidential

# Rukiyah Van Dross-Anderson – Milestones & Funding

| | YEAR 1 | | | YEAR 2 | |
|---|---|---|---|---|---|
| | *Months 1-6* | *Months 7-12* | | *Months 13-18* | *Months 19-24* |
| **Focus/Aim** | **Route Scouting and Synthesis:**<br>• Develop a scalable, reproducible manufacturing process to synthesize the drug substance in suitable quality and purity (generally greater than 98.0% chromatographic purity).<br>• Perform synthesis to generate 1-2 grams of GLP quality 15dPMJ2. | **Characterization and Validation of 15dPMJ2 (CMC):**<br>• Obtain comprehensive report composed of findings from 12 drug substance and product studies.<br>• This report will be reviewed by project regulatory consultant and be a critical part of the CMC component or our pre-IND meeting/IND submission package. | End of year 1 Evaluation | **Metabolite identification and profiling of hepatocytes in the relevant species of human, mouse, dog, and monkey:**<br>• Report that provides evidence of any disproportionate drug metabolism, including novel drug metabolites that may require additional toxicology studies. | **Genotoxicity Study (Ames Test):**<br>Identification of any potential genotoxicity resulting from exposure to 15dPMJ2 or metabolites of 15dPMJs. |
| **Commercialization Activities** | • Engage established companies and industry leaders in the cancer field to confirm development strategy related to orphan disease and fast track status.<br>• Explore regulatory strategy that consists of a Fast-Track Designation combined with an Orphan Drug Designation to help decrease the time to market and make the potential return on investment more attractive to investors. | • Develop an investor ready pitch presentation.<br>• Attract an experienced CEO to step in and license the technology from ECU. | | • Business slide deck that can be used for investor meetings, including valuation and due diligence package.<br>• Valuation and freedom to operate analysis by industry expert.<br>• Preliminary due diligence gap analysis completed. | • Prepared and submit SBIR/STTR grant application.<br>• Re-engage large pharma companies that have checkpoint inhibitors currently on the market<br>• Explore Series A raise to cover costs through IND and Phase 1 clinical trials. |
| **Milestones Achieved** | • Develop a scalable, reproducible manufacturing process to synthesize the drug substance in suitable quality and purity (generally greater than 98.0% chromatographic purity). | • Perform synthesis to generate 1-2 grams of GLP quality 15dPMJ2.<br>• Quantify and define drug substance and drug product studies including stability and physiochemical interactions (CMC). | | • Identification of any disproportionate drug metabolism, including novel drug metabolites that may require additional toxicology studies.<br>• Characterization of any potential genotoxicity resulting from exposure to 15dPMJ2 or metabolites of 15dPMJs. | • Characterization of any remaining drug substance and product studies.<br>• Draft of preclinical package submission. |
| **Funding Request** | **$442,000** | | | **$532,000** | |

NCINNOVATION

AREA OF RESEARCH: Oncology – Melanoma
**TOTAL GRANT AWARD: $974,000**

Confidential

# Ying Wang – Milestones & Funding

| | YEAR 1 | | | YEAR 2 | |
|---|---|---|---|---|---|
| | *Months 1-6* | *Months 7-12* | | *Months 13-18* | *Months 19-24* |
| **Focus/Aim 1:** Pre-clinical Efficacy Studies | • Production & Formulation: Small batches of 33 vaccine antigens, including proteins and mRNAs, will be synthesized and purified by a CRO. | • Immunogenicity Study: Immunogenicity of the antigens will be tested in mice.<br>• Protection Study (Efficacy): Selected vaccine candidates will be tested in ferrets to evaluate protection against multi-clade viruses. | | • N/A | • N/A |
| **Focus/Aim 2:** Safety | • N/A | • N/A | | • Dose-ranging study: The selected vaccine at four different dosages, from high to low, will be tested in ferret for protection against multi-clade viruses, | • Toxicity study: The selected vaccine will be administrated in ferret at three dosages, from low to high, to test toxicity, allergic reactions, or signs of other adverse effects. |
| **Commercialization Activities** | • File two provisional patent applications.<br>• Onboard vaccine development and FDA consultants. | • Form a C-Corp for commercialization activities.<br>• Develop business plan & VC pitch decks.<br>• Conduct customer discovery through NSF I-Corps National Teams . | | • GLP toxicity study plan & CMC development plan.<br>• Begin process of obtaining venture capital funding | • Complete FDA INTERACT Meeting<br>• File two utility patent applications for human and animal influenza vaccines. |
| **Milestones Achieved** | • Demonstrated that 2-3 vaccine leads at high dose generate high cross train antibody titers in mice (over 40 with at least a 2.5-fold increase post-vaccination), reduce virus shedding in ferrets and protect against lethal challenges.<br>• UNCW plans to complete the NSF I-Corps national teams during the NCI project to gather additional customer feedback.<br>• UNCW plans to seek co-development agreements with multiple large pharmaceutical companies with interests in universal flu vaccines.<br>• To avoid delay, 6-12 months into the NCI project, UNCW will start seeking Venture Capital investment (through equity or convertible debt) to support the GLP NHP toxicology study and clinical batch production shortly after completion of the NCI project. | | | • Demonstrated that the vaccine at optimal dosages do not cause significant organ-specific and systemic toxicity, autoimmunity, and allergic reactions in ferrets.<br>• Upon completion , UNCW researchers will have all the data necessary for the pre-IND meeting with FDA, including non-GLP efficacy and toxicity data in ferrets (the gold standard for influenza vaccine development), and concrete plans for the GLP-compliant Non-human Primate (NHP) toxicology study as well as the clinical batch manufacturing.<br>• In the pre-IND meeting, we will obtain FDA's feedback on the designs of the GLP-compliant NHP toxicology study and clinical batch production.<br>• UNCW anticipates that it will submit the IND application in 12-18 months after completion of the NCI project. | |
| **Funding Request** | **$550,049** | | | **$532,647** | |

End of year 1 Evaluation

NCINNOVATION

AREA OF RESEARCH: Vaccine Development
**TOTAL GRANT AWARD: $1,082,696**

Confidential

# Dr. Brian Byrd – Milestones & Funding

| | YEAR 1 | | | YEAR 2 | |
|---|---|---|---|---|---|
| | *Months 1-6* | *Months 7-12* | | *Months 13-18* | *Months 19-24* |
| **Aim/Milestone 1:** Staffing and networking | • Hire, onboard/train scientists, technicians, and project coordinator. | • Attend American Mosquito Control Association Annual Meeting to present the application of MIR technologies for La Crosse virus vector identification and characterization. | | • Obtain spectra from field collected (Summer/Early Fall 2025) mosquitoes in WNC for "head-to-head" analysis of species, infection, and age. | • Attend American Mosquito Control Association Annual meeting to demonstrate the benchtop applic ation of MIR technologies for La Crosse virus vector identification and characterization. |
| **Aim/Milestone 2:** Contracts and demonstration | • Execute subcontract for LACV infections. | • Submit manuscript describing prior work (research grade instrument) characterizing the age and gonotrophic status of Ae. triseriatus. | | • Field demonstration of technology during 2025 mosquito season. Parallel comparisons of MIR and traditional methods. | • Host a "rapid identification of La Crosse virus vectors" workshop (demonstration) at WCU for regional stakeholders. |
| **Aim/Milestone 3:** Equipment and sample collection | • Order benchtop MIR systems (procurement). | • Generate time course samples (known ages) of Ae. triseriatus, Ae. albopictus, and Ae. japonicus for benchtop MIR analysis. | | • Finalize analysis pipeline and beta test with blinded samples and multiple users to characterize the validity (sensitivity/specificity) and reliability of our approaches. | • Additional field validation (Summer 2026).<br>• Finalize SOP/operation manual.<br>• Finalize spectral libryar bundling.<br>• LACV spectral bundles (License Agreements). |
| **Aim/Milestone 4:** Vector library development | • Obtain, confirm identity, and freeze store a minimum of 200 field-collected primary and secondary LACV vectors from WNC. | • Begin MIR work on material from ECU (LACV infected mosquitoes). Obtain spectra from field collected (Summer 2025) mosquitoes in WNC for "head-to-head" analysis of species, infection, and age. | | | |
| **Commercialization Activities** | • IP Protection Review.<br>• Consultation with WCU Legal /ORA Compliance Office and NCI to develop commercialization roadmap.<br>• Industry Fellow contract. | • Execute contract with EIR.<br>• EIR to attend AMCA Annual Meeting (Above).<br>• Annual IPP review and patent protection. | | • Initiate "startup/spin off" entity.<br>• Invited (early) demonstrations for Clarke/VDCI/VecTech/NCI. | • Marketing push.<br>• Other activities as recommended. |
| **Funding Request** | **$587,412** | | | **$412,551** | |

End of year 1 Evaluation

NCINNOVATION

AREA OF RESEARCH: Mosquito-borne Infectious Disease
**TOTAL GRANT AWARD: $999,963**

Confidential

# Rahman Tashakkori – Milestones & Funding

| | YEAR 1 | | | YEAR 2 | |
|---|---|---|---|---|---|
| | *Months 1-6* | *Months 7-12* | | *Months 13-18* | *Months 19-24* |
| **Milestone/Aim 1:** Landing platforms | • Finalize design and testing of half- and full-length landing platforms.<br>• 3D print prototypes. | • Explore mass production of the landing platforms and mass produce. | | • Test the new scale and research the AI/ML-based alert system for the hives. | • Mass produce scales.<br>• Explore licensing of software products and further enhance. |
| **Milestone/Aim 2:** Entrance reducers | • Finalize design of the solid and screened entrance reducers<br>• 3D print prototypes.<br>• Test solid and screened entrance reducers. | • Explore mass production of entrance reducers.<br>• Mass produce entrance reducers. | | • Develop plan with Entrepreneur Coach, Marketing and Innovation team.<br>• Work with beekeepers forum to get input on the products. | • Market exploration and inclusion.<br>• Patent application for Beemon.<br>• Complete evaluation of the product usage for enhancement. |
| **Milestone/Aim 3:** Marketing research & AI development | • Develop plan for market research.<br>• Work with Industry Partnership Fellow and Consultant to investigate customer discovery, market fit, and needs validation.<br>• Establish a forum for beekeepers to expand industry relationships.<br>• Plan surveys for the beekeepers. | • Market exploration and inclusion.<br>• Applications for patents.<br>• Initial use-case and testing.<br>• Evaluation of the product and incorporate enhancements.<br>• Research AI/ML models. | | • Research the AI/ML models for the alert system.<br>• Develop the AI/ML models for data analysis and visualization on the stand-alone software applications. | • Test AI/ML models for the alert system.<br>• Test the AI/ML software applications for the stand-alone system. |
| **Milestone/Aim 4:** Technology components | • Research the design of the Beemon's stand-alone software for Windows and other operating systems.<br>• Research the design of Beemon's stand-alone weight-only software for Windows and other operating systems.<br>• Enhance the design of the scale. | • Design and implement the Beemon's stand-alone software for Windows and other systems.<br>• Design and implement the weight-only Beemon system for Windows and other systems.<br>• Build the new scale. | | • Develop AI/ML models for alert system.<br>• Finalize testing of the Beemon stand-alone software for different systems.<br>• Finalize the testing of the Beemon's stand-alone weight only software for different operating systems.<br>• Complete evaluation of the landing platforms and entrance reducers. | • Deploy the AI/ML application for the alert application for the stand-alone-system.<br>• Deploy the AI/ML application for analysis and visualization for the stand-alone system. |
| **Commercialization Activities** | • Market Research and Customer Discovery<br>• Investigate IP landscape.<br>• Develop a patent portfolio for two products.<br>• Investigate legal and insurance need.<br>• Establish an industry external advisory board<br>• Work with EIR for support, advice, and mentoring in developing the technology-based software packages. | • Complete commercialization research.<br>• Define IPs for landing platforms and entrance reducers.<br>• Market discovery and analysis for the stand-alone Beemon and stand-alone Beemon Weight-only systems. | | • Work with our Industry Partnership Fellow to investigate customer discovery, market fit, and needs validation.<br>• Investigate IP, legal and insurance needs.<br>• Develop a patent portfolio.<br>• Recruit industry partners. | • Define IPs for the Beemon system.<br>• Develop terms of service. |
| **Funding Request** | **$300,460** | | | **$341,491** | |

End of year 1 Evaluation

NCINNOVATION

**Aims 1 & 2: Turnkey products for commercial beekeepers (analog products)**
**Aims 3 & 4: Accessible products for industry and mass market amateur beekeepers**

AREA OF RESEARCH: Beehive Improvement and Monitoring System
**TOTAL GRANT AWARD: $641,951**

Confidential

# Kristen Dellinger – Milestones & Funding

| | YEAR 1 | | | YEAR 2 | |
|---|---|---|---|---|---|
| | *Months 1-6* | *Months 7-12* | | *Months 13-18* | *Months 19-24* |
| **Specific Aim 1:** Biopolymer-Based Isolation of Bovine Milk *sEVs | • Validate a protocol to create sEV porous separation media with reproducible biopolymer dissolution efficiency of > 95% within different ionic liquid solutions. | | | • *N/A* | |
| **Specific Aim 2:** Click Chemistry Mediated Surface Engineering of sEVs | • Functionalize the surface sEVs with various ligands using click chemistry (e.g., copper-catalyzed azide-alkyne cycloaddition and strain-promoted azide-alkyne cycloaddition). | | | • Compare the efficacy of functionalization methods/ligands to modify EV surfaces. Efficiency will be measured by flow cytometry, fluorescence/electron microscopy, and functional assays to confirm the presence and distribution of the ligands on the sEV surface. | |
| **Specific Aim 3:** In Vitro Evaluation of Bovine Milk Extracellular Vesicles to Cross the Blood-Brain Barrier (BBB) | • *N/A* | | | • Develop a simulated BBB to assess the permeability of sEVs. Human brain microvascular endothelial cells and astrocytes will be cultured to form a tight monolayer; integrity will be monitored. Functionalized sEVs will be tracked using fluorescence microscopy to assess translocation efficacy. | |
| **Commercialization Activities** | • Identify and hire a technology consultant. | • Participate in I-Corps™. | | • Submit provisional patents with results from Specific Aims 1 and 2. | • Found startup company and submit for SBIR/STTR. |
| **Milestones Achieved** | • Aim 1: Achieve a reproducible porosity and surface area deviation of ±5%, purity (based on sEV size) of more than 95%, and yield/recovery of more than 90%. The engineered biopolymers will have a target pore size (~200 nm) and a strong affinity for bovine milk EV surface proteins.<br>• Aim 2: Validate click chemistry methods to modify sEV surfaces. | | | • Aim 2: Optimize of the conjugation protocols.<br>• Aim 3: Maintain a tight monolayer of cells and translocation of sEVs across the BBB model. | |
| **Funding Request** | **$184,512** | | | **$184,512** | |

End of year 1 Evaluation

NCINNOVATION

*Small Extracellular Vesicles (sEVs)

AREA OF RESEARCH: Drug delivery mechanism
**TOTAL GRANT AWARD: $369,024**

Confidential

# Hemali Rathnayake – Milestones & Funding

| | YEAR 1 | | | |
|---|---|---|---|---|
| | *Months 1-3* | *Months 4-6* | *Months 7-9* | *Months 10-12* |
| **Aim 1:** Testing | • Assemble one flow unit and connect to unrefined lithium reservoir (minimum 1000 gal/day), connected to a flow rate and pressure-controlled system.<br>• Evaluate the performance of the unit for the flow rate of 25 L/min, internal pressure (1.08 psi), chemical stability towards different salinity levels, and clogging, by running one unit at least a week prior to evaluating its lithium recovery efficiency.<br>• Further optimize the cartridge's dimensions, sorbent bed height, and conditioning parameters to address the initial technical problems that will encounter with the unit design.<br>• Research and development activities for the optimization of the flow process will be conducted to achieve the targeted metrics. | | | |
| **Aim 2:** Validation | | | • Depending on the initial success metrics, we will re-design the flow unit system by introducing 2-3 consecutive cartridge units connecting for continuous recovery process to recover as much as lithium from brine sample.<br>• Validate the SPE flow process for lithium refining using sorbent technology. | |
| **Commercialization Activities** | • Develop a communication and distribution channel and plan to engage with investors, stakeholders, and local lithium (mining, refining, and battery) companies (E.g. Albemarle, Toyota, Soelect Inc. and Minerva Lithium).<br>• Identify partners for product commercialization by building new partnerships and strengthening existing partnership (E.g. Minerva Lithium, Alpha-En) . | | • Enter industry sponsored and partner agreements to enter the market with LCE products. | |
| **Milestones Achieved** | • Establish the Sorbent based SPE flow process for lithium recovery from lithium concentrates.<br>• >80% conversion efficiency of lithium concentrates to LCE with 99.99% purity. | • Nano Mosaic SPE flow unit with flow rate of 10 gal/hour (bench-scale). | • Lithium adsorption efficiency of Nano Mosaic SPE flow unit >80%.<br>• Industry contract in place. | Lithium conversion efficiency to LiCl or Lithium carbonate >80%. |
| **Funding Request** | **$404,999** | | | |

NCINNOVATION

AREA OF RESEARCH: Lithium Purification
**TOTAL GRANT AWARD: $404,999**

Confidential

# Jordan Poler – Milestones & Funding

| | YEAR 1 | | | |
|---|---|---|---|---|
| | ***Months 1-3*** | ***Months 4-6*** | ***Months 7-9*** | ***Months 10-12*** |
| **Focus/Aim 1:** Procurement & Production Readiness | • Purchase flow-sonication reactor and required reagents and assemblies.**<br>• Develop flow sonication reactor and scale CNR material from 1L/batch to 1L per day continuous process**<br>• Scale ZNR synthesis from 1 kg/batch to 10 kg/batch *** | • Complete ANSI/NSF certification of ZNR materials and modules Q2Y1:<br>• Complete field tests and pilot skid testing of ZNR resin bed materials with B2B partners AqueoUS VETS and AquaNinja | • Complete optimization of the regeneration process of ZNR and CNR materials and module to minimize the waste stream.<br>• Complete ANSI/NSF certification of CNR materials and wound membrane modules.*** | • Determine Go/NoGo on PFAS destruction B2B partner/technology for ZNR and CNR waste streams.<br>• Scale ZNR synthesis from 10 kg/batch to 50 kg/batch<br>• Scale CNR synthesis from 1L per day to 10L per day continuous process.<br>• Transfer process to manufacturing partner for commercial scale-up |
| **Focus/Aim 2**: Production | 10 kg ZNR/batch | 1L CNR per day continuous process | 5 batches/week 50 regeneration cycles with <1% loss in performance | 10 L CNR/day 50 kg ZNR/batch<br>Go/NoGo on destruction B2B partner |
| **Commercialization Activities** | • Detailed competitive landscape of other companies in the IX production, sales, distribution market<br>• Detailed feature/benefit comparison of competitive IX competitors' materials their characteristics, advantages/disadvantages vs NaneXPure, estimated manufactured cost, market selling price, current sales channels, and other key commercial intel. | • Determine NaneXPure-C MVP and target market(s) for early adopters<br>• Identify and pre-qualify a list of attractive early adopter prospects for the NaneXPure-C material.<br>• Identify key decision makers at each pre-qualified prospect and make initial contact to introduce NaneXPure LLC, materials and other applications | • Develop NaneXPure key selling points vs alternative materials such as GAC, existing IX manufacturers<br>• Develop and implement a Contact Relationship Mgt - CRM system to track and advance leads, prospects, proposals, and sales opportunities<br>• Attend key conferences, trade shows, or industry events to generate new contacts and sales leads, update competitive intel | • Continue ongoing Voice of the Customer (VOC) market validation interviews to confirm the Nanexpure-C MVP has product/market fit<br>• Identify and pre-qualify water/wastewater treatment industry veterans, who may be able and willing to be on NaneXPure Board of Advisors (Board of Advisors will be an important development step for NaneXPure LLC |
| **Milestones Achieved** | • Hire MS level chemistry/chemical engineer research technician<br>• Hire BS level chemistry/chemical engineer research technician<br>• Recruit two BS level students for summer research experience | • NSF.org certification of our ZNR drinking water products | • NSF.org certification of our CNR drinking water products | |
| **Funding Request** | **$400,971** | | | |

NCINNOVATION

**Depends on supply chain lead time at time of purchase of sonicator pilot reaction.
***Depends on successful recruitment of technician

AREA OF RESEARCH: Drinking Water Purification
**TOTAL GRANT AWARD: $400,971**

Confidential

# Sukumar Kamalasadan – Milestones & Funding

| | YEAR 1 | | | |
|---|---|---|---|---|
| | ***Months 1-3*** | ***Months 4-6*** | ***Months 7-9*** | ***Months 10-12*** |
| **Focus/Aim 1:** Planning | Equipment selection system engineering and planning | Development of testing protocols, data collection, and discussions with Duke Energy | Testing, analysis, and tech enhancement resulting from the demonstration at Duke Energy's industry-leading Mt. Holly microgrid facility | |
| **Focus/Aim 2:** Modeling and Simulation | Modeling of equipment and system | Controller design and analysis | Evaluation of the controller using simulations | Evaluation of the controller using hardware with real-time simulations |
| **Focus/Aim 3:** Testing and Analysis | Equipment procurement | *Equipment delivery, installation and commissioning | Testing using equipment | Development of reports and final document and assessment from Duke Energy |
| **Commercialization Activities** | Market research, project management, procurement, scheduling, and coordinating with the technical objectives and the engineering team. | Engineering technical consultin g support for testing and analysis | Developing a network for the beachhead market and developing use-case brochures for specific customers | Evaluation of the proposed architecture based on Mt. Holly testing and interactions with the customer for the next phase |
| **Milestones Achieved** | Equipment ordered and in place for demonstration project | Modeling and simulation completed successfully | Demonstration at Duke Energy's industry-leading Mt. Holly microgrid facility that can showcase larger Grid Ancillary (GA) services to support the power grid. | Typical use case evaluation for potential customer demonstration successful |
| **Funding Request** | | | **$354,607** | |

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***The timeline is based on Duke Energy procurement and can go beyond one year based on Duke equipment delivery. However, the project's progress will not be affected.**

AREA OF RESEARCH: Power-grid Efficiency
**TOTAL GRANT AWARD: $354,607**

**REQUIREMENT 2. Outcome data collected by NCInnovation, including the number of jobs created.**

NCI's Board approved the first round of pilot grants in its May 2024 meeting. Having also finalized a Master Services Agreement with the North Carolina Collaboratory for distribution of those awards, NCInnovation anticipates releasing the first round of grant funds in September 2024. As no researchers received NCInnovation funding or began work under an NCI grant in FY2024, there is no job creation data to report for the prior fiscal year. NCI is currently developing for NCI Board approval impact metrics in line with both the legislative requirements and NCI's longstanding goals, see *Figure 2.1*. A well-developed innovation ecosystem delivers both tangible and intangible returns. Of course, successful homegrown companies create jobs, enlarge the tax base, and offer capital returns for any state investments. But a more sophisticated culture of applied research, innovation, and commercialization also brings more touch points between academia, industry, and finance. Over time, this culture and activity hardens into a durable network that attracts attention, capital, and people.

NCI looks forward to providing the General Assembly with the outcome driven data that is generated from the generous State funds the Legislature appropriated to the NCInnovation Endowment Fund for programs and grants to North Carolina public university researchers.

FIGURE 2.1: Tangible and Intangible Returns of a Well-Developed Innovation Ecosystem

**REQUIREMENT 3. Cumulative regional innovation hub network expenditure and funding award data by program and by county.**

This section builds on the information and financial data requested and provided under REQUIREMENT 1 and REQUIREMENT 6 (pages 5-15 of this report) relative to NCI's four regional innovation networks and four Regional Innovation Network Directors hired to lead regional operations; as well as the eight pilot grants. A cumulative look at the regional innovation hub network expenditures can be found in *Table 3.1: Regional Hub Cumulative Program Expenditures by County*.

Additionally, the pilot grant funding award data by program and by county can be found in *Table 3.2: Pilot Grant Cumulative Funding by Year* as well as in *Table 3.3: Pilot Grants Cumulative Funding by Region and County*.

Current NCI Regional Innovation Networks consist of:

### East Regional Innovation Network
Hub University: East Carolina University
Regional Universities: Elizabeth City State University, UNC Wilmington, UNC Pembroke, Fayetteville State University

### West Regional Innovation Network
Hub University: Western Carolina University
Regional Universities: Appalachian State University and UNC Asheville

### Piedmont Regional Innovation Network
Hub University: North Carolina A&T State University
Regional Universities: UNC Greensboro, Winston-Salem State University and North Carolina Central University

### Charlotte Regional Innovation Network
Hub University: UNC Charlotte
Regional Campus: North Carolina Research Campus

FIGURE 3.1: Map of Current NCI Regional Innovation Networks

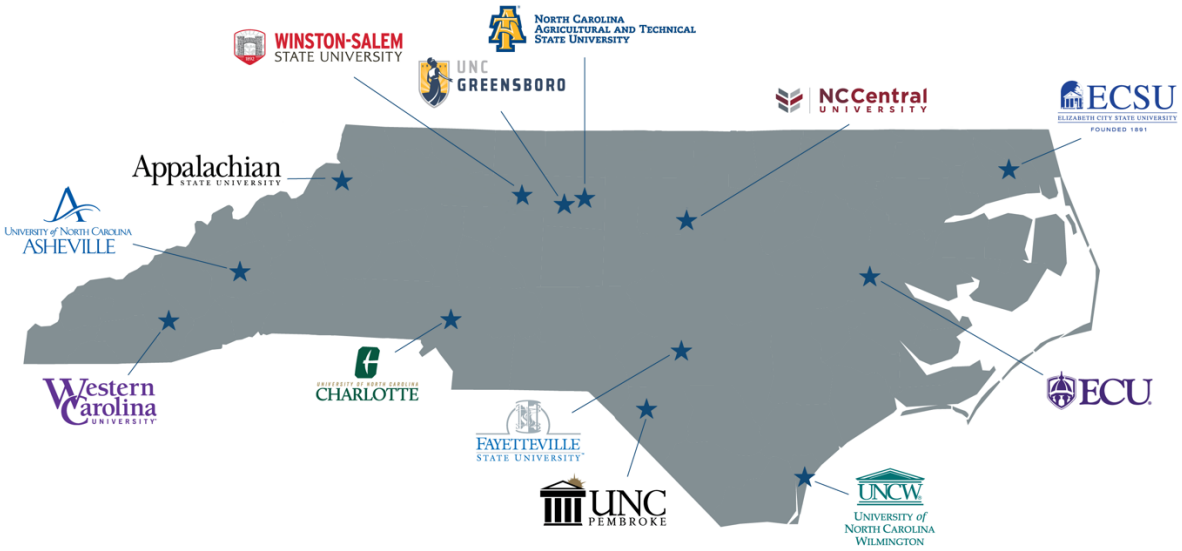

TABLE 3.1: Regional Hub Cumulative Program Expenditures by County

**Regional Hub Cumulative Program Expenditures by County**

Preliminary draft and unaudited – update to be provided when NCI's external audit is completed.

| | Region & County | | | | | | |
|---|---|---|---|---|---|---|---|
| | Charlotte | East | | West | | Piedmont | |
| Cumulative Expenditures | Mecklenburg County | Pitt County | New Hanover County | Jackson County | Watauga County | Guilford County | Total |
| Salaries & Benefits | $142,040 | $25,490 | $160,717 | $150,788 | $25,490 | $135,978 | $640,503 |
| Hub Expenditures | $89,057 | $84,227 | $96,827 | $95,960 | $84,227 | $92,630 | $542,927 |
| **County Total** | **$231,097** | **$109,717** | **$257,544** | **$246,748** | **$109,717** | **$228,607** | **$1,183,430** |
| **Region Total** | **$231,097** | **$367,260** | | **$356,465** | | **$228,607** | **$1,183,430** |

TABLE 3.2: Pilot Grant Cumulative Funding by Year

Preliminary draft and unaudited – update to be provided when NCI's external audit is completed.

## Pilot Grants Cumulative Funding by Year*

| Principal Investigator | Area of Research | Region | University | Year 1 (June 2024) | Year 2 (June 2025) | Cumulative Total |
|---|---|---|---|---|---|---|
| Jordan Poler | Drinking Water Purification | Charlotte | UNC Charlotte | $400,971 | N/A | $400,971 |
| Sukumar Kamalasadan | Power-grid Efficiency | Charlotte | UNC Charlotte | $354,607 | N/A | $354,607 |
| Rukiyah Van Dross-Anderson | Oncology – Melanoma | East | ECU | $442,000 | $532,000 | $974,000 |
| Ying Wang | Vaccine Development | East | UNCW | $550,049 | $532,647 | $1,082,696 |
| Brian Byrd | Mosquito-borne Infectious Disease | West | WCU | $587,412 | $412,551 | $999,963 |
| Rahman Tashakkori | Beehive Improvement and Monitoring System | West | App State | $300,460 | $341,491 | $641,951 |
| Kristen Dellinger | Drug delivery mechanism | Piedmont | NC A&T | $184,512 | $184,512 | $369,024 |
| Hemali Rathnayake | Lithium Purification | Piedmont | UNCG | $404,999 | N/A | $404,999 |
| | | | **Total** | **$3,225,010** | **$2,003,201** | **$5,228,211** |

*NOTE: Funding for the pilot grants was approved by the NCI Board in May 2024 and committed for FY2024, but is anticipated to be distributed in September 2024.

## TABLE 3.3: Pilot Grants Cumulative Funding by Region and County

Preliminary draft and unaudited – update to be provided when NCI's external audit is completed.

**Pilot Grants Cumulative Funding by Region and County**

| | | | Region & County | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Charlotte | East | | West | | Piedmont |
| Principal Investigator | Area of Research | University | Mecklenburg County | Pitt County | New Hanover County | Jackson County | Watauga County | Guilford County |
| Jordan Poler | Drinking Water Purification | UNC Charlotte | $400,971 | | | | | |
| Sukumar Kamalasadan | Power-grid Efficiency | UNC Charlotte | $354,607 | | | | | |
| Rukiyah Van Dross-Anderson | Oncology – Melanoma | ECU | | $974,000 | | | | |
| Ying Wang | Vaccine Development | UNCW | | | $1,082,696 | | | |
| Brian Byrd | Mosquito-borne Infectious Disease | WCU | | | | $999,963 | | |
| Rahman Tashakkori | Beehive Improvement and Monitoring System | App State | | | | | $641,951 | |
| Kristen Dellinger | Drug delivery mechanism | NC A&T | | | | | | $369,024 |
| Hemali Rathnayake | Lithium Purification | UNCG | | | | | | $404,999 |
| | | **County Total** | **$755,578** | **$974,000** | **$1,082,696** | **$999,963** | **$641,951** | **$774,023** |
| | | **Region Total** | **$755,578** | **$2,056,696** | | **$1,641,914** | | **$774,023** |

## REQUIREMENT 4. An unaudited report, itemized by category, of overhead and administrative costs for the previous fiscal year.

NCI is in full compliance with statutory requirements that govern expenditures and usage of State funds. For reference those statutory requirements in both G.S. 143-728(d) and S.L. 2023-134, Section 11.9.(b) are listed below. The unaudited financial data for the previous fiscal year (FY2024) requested in REQUIREMENT 4 spans four separate pages. See *Table 4.1: FY2024 Unaudited Financial Statements*.

### Statutory Requirements

### §143-728(d). Requirements of NCInnovation

(d) Requirements. – In order to receive the endowment and retain State funds, all of the following requirements must be met:

...

(1) NCInnovation shall adhere to the following governance provisions related to its governing board:

...

e. The amount of State funds that may be used for the annual salary of any one officer or employee of NCInnovation shall not exceed the greater of (i) one hundred forty thousand dollars ($140,000) or (ii) the amount most recently set by the General Assembly in a Current Operations Appropriations Act.

...

(5) NCInnovation may draw from, distribute, and otherwise expend investment income, including, without limitation, to make funding awards and establish or support a network of regional innovation hubs, in accordance with this Article, and such activities are subject to the reporting requirements of this Article.

...

(9) NCInnovation shall maintain separate accounting records for and separate accounts for State funds and excluded amounts and shall not commingle State funds and excluded amounts. NCInnovation shall maintain records and accounts according to generally accepted accounting principles.

...

(11) NCInnovation shall limit the use of State funds for the severance pay of the chief executive officer and other officers of the nonprofit corporation to no more than the salary limitation contained in subdivision (1) of this subsection.

...

(12) NCInnovation complies with the following:

a. State funds shall not be used to hire a lobbyist.

b. No State funds may be used for overhead and administrative costs. It is the intent of the General Assembly (i) to make a determination of the appropriate maximum amount of investment income that may be used for overhead and administrative costs based on observed costs occurring within the first three years of receipt of the endowment, (ii) to allow for that maximum amount to be used for those purposes in subsequent years, and (iii), at that time, to require NCInnovation to prioritize the use of excluded amounts for overhead and administrative costs to the extent practicable.

c. Only excluded amounts may be used for any of the following: (i) alcohol, (ii) first-class airfare, (iii) charter flights, (iv) holiday parties or similar social gatherings, and (v) any meeting, whether a formal public meeting or an informal retreat, located outside of the State.

...

(f) Use of Funds. - NCInnovation shall comply with the following:

(1) Endowment. - The endowment may be used solely to produce investment income by an independent investment manager, as provided in this Article.

(2) Investment income. - Investment income may be used for the following:

a. Establishing and supporting a network of regional innovation hubs.
b. Awarding grants, funds, and other resources to advance duties owed by NCInnovation under this Article.
c. Any other purpose expressly and specifically allowed for investment income in this Article.

(3) State funds. - State funds may not be used for lobbying purposes.

(4) Excluded amounts. - Excluded amounts may not be invested with the endowment.

**S.L. 2023-134, Section 11.9.(b)**

Notwithstanding the provisions of Article 76B of Chapter 143 of the General Statutes, NCInnovation may use up to fifty million dollars ($50,000,000) of the endowment as investment income in the 2023-2024 fiscal year and ninety million dollars ($90,000,000) of the endowment as investment income in the 2024-2025 fiscal year, as those terms are defined in G.S. 143-728, as enacted by subsection (a) of this section. Funds not used for purposes allowed in this section at the end of the fiscal year for which the allowance is made shall be returned to and used in conformity with the endowment, as provided in Article 76B of Chapter 143 of the General Statutes.

Notwithstanding the provisions of Article 76B of Chapter 143 of the General Statutes, investment income earned on the endowment during the 2023-2025 fiscal biennium shall be retained and invested with the endowment. To the extent that funds are used from the endowment in accordance with this section, NCInnovation shall replenish such funds in the future from investment income to the extent practicable in the reasonable discretion of the board, balancing the amount of investment income and NCInnovation's performance of the purposes of this section.

TABLE 4.1: FY2024 Unaudited Financial Statements

## Statements of Financial Position
**As of June 30, 2024 and 2023**

***Unaudited for Interim Reporting Purposes Only - Preliminary Draft***

| | 6/30/24 | 6/30/23 |
|---|---|---|
| **ASSETS** | | |
| Current Assets | | |
| Cash & Cash Equivalents | | |
| Checking Accounts | $ 234,111 | $ 727,055 |
| Private Investment MM Account | 976,531 | 3,041,510 |
| Cash and Cash Equivalents | $ 1,210,643 | $ 3,768,565 |
| Private Investment Account | 1,974,955 | 727,628 |
| Current Portion of Pledges Receivable, Net | 5,516,667 | 3,480,000 |
| Prepaid Expenses | 99,215 | - |
| Total Current Assets | $ 7,590,837 | $ 7,976,193 |
| Other Assets | | |
| Investments - State Funds (Endowment) | $ 255,706,285 | $ - |
| Long-Term Portion of Pledges Receivable, Net | 8,440,597 | 10,424,696 |
| Security Deposits Asset | 14,666 | 7,943 |
| Fixed Assets | 22,728 | - |
| Total Other Assets | $ 264,184,277 | $ 10,432,639 |
| TOTAL ASSETS | $ 272,985,756 | $ 18,408,832 |
| **LIABILITIES AND EQUITY** | | |
| Liabilities | | |
| Current Liabilities | | |
| Grants Payable | $ 3,225,010 | $ - |
| Accounts Payable | 186,115 | 18,553 |
| Payroll Liabilities | 137,140 | - |
| Total Current Liabilities | $ 3,548,264 | $ 18,553 |
| Total Liabilities | $ 3,548,264 | $ 18,553 |
| Net Assets | | |
| Without Donor Restrictions | $ 2,998,953 | $ 4,485,583 |
| With Donor Restrictions - Private Funds | 13,957,264 | 13,904,696 |
| With Donor Restrictions - State Endowment | 252,481,275 | - |
| Total Net Assets | $ 269,437,492 | $ 18,390,279 |
| TOTAL LIABILITIES AND NET ASSETS | $ 272,985,756 | $ 18,408,832 |

TABLE 4.1: (Continued)

## Statements of Financial Activities

**For the Periods Ending June 30, 2024 and 2023**

*Unaudited for Interim Reporting Purposes Only - Preliminary Draft*

| | 6/30/24 | 6/30/23 | Year over Year Variance |
|---|---|---|---|
| **Public & Private Revenue** | | | |
| State Endowment Revenue | $ 250,000,000 | $ - | $ 250,000,000 |
| Private Pledge Contributions | 3,602,568 | 9,711,775 | (6,109,207) |
| **Total Public & Private Revenue** | $ 253,602,568 | $ 9,711,775 | $ (3,180,000) |
| **Investment Income** | | | |
| Interest - Private Investment | $ 193,510 | $ 68,622 | $ 124,889 |
| Interest - State Investment | 5,706,285 | - | 5,706,285 |
| **Total Investment Income** | $ 5,899,796 | $ 68,622 | $ 17,833,515 |
| **Other Income** | - | 6,557 | (6,557) |
| **Total Revenue & Income** | $ 259,502,364 | $ 9,786,954 | $ 249,715,410 |
| **Operational Expenses** | | | |
| **Program Expenses** | | | |
| Pilot Grants | $ 3,225,010 | $ - | $ 3,225,010 |
| Salaries & Benefits | 640,503 | - | 640,503 |
| Contract Research Services | 432,686 | - | 432,686 |
| University & Ecosystem Support | 72,675 | | |
| Operational Expenses | 37,566 | | |
| **Total Program Expenses** | $ 4,408,440 | $ - | $ 4,408,440 |
| **Salaries & Benefits** | | | |
| Total Salaries & Benefits | $ 2,640,903 | $ 1,060,474 | $ 1,580,428 |
| Allocation to Program Expense | (640,503) | - | (640,503) |
| **Total Salaries & Benefits, Administrative** | $ 2,000,400 | $ 1,060,474 | $ 939,925 |
| **General & Administrative Expenses** | | | |
| Accounting Fees | $ 162,720 | $ 8,520 | $ 154,200 |
| Investment Fees | 26,786 | - | 26,786 |
| Regional Sponsorships | 10,000 | - | 10,000 |
| Research & Consulting Fees | 364,110 | 403,415 | (39,305) |
| Legal Fees | 381,330 | 94,188 | 287,142 |
| Public Relations Expenses | 228,624 | 103,970 | 124,655 |
| Lobbying Expenses | 443,612 | 227,268 | 216,344 |
| Bank Service Fees | 11,439 | 4,898 | 6,541 |
| Business Registration Fees | 402 | 200 | 202 |
| Computer Expenses | 96,245 | 70,544 | 25,701 |
| Insurance | 20,640 | 15,045 | 5,595 |
| Postage, Mailing Service | 1,320 | 248 | 1,072 |
| Printing and Copying | 10,295 | 12,573 | (2,278) |
| Professional Development | 11,445 | - | 11,445 |
| Fundraising Expenses | - | 3,500 | (3,500) |
| Staff Recruiting Fees | 101,119 | - | 101,119 |
| Rent & Utilities | 104,378 | 63,544 | 40,834 |
| Supplies | 25,259 | 60,536 | (35,278) |
| Telephone, Telecommunications | 5,425 | 9,278 | (3,852) |
| Travel, Conferences & Meetings | 36,856 | 15,166 | 21,690 |
| **Total General & Administrative Expenses** | $ 2,042,004 | $ 1,092,892 | $ 949,112 |
| Other Expenses | | | |
| Moving Expenses | $ 4,307 | $ - | $ (4,307) |
| **Total Other Expenses** | $ 4,307 | $ - | $ (4,307) |
| **Total Expenses** | $ 8,455,151 | $ 2,153,367 | $ 6,301,784 |
| **Increase to Net Assets** | 251,047,213 | 7,633,587 | 243,413,626 |
| **Net Beginning of the Year** | 18,390,279 | 10,756,692 | 7,633,587 |
| **Net Assets End of the Year** | $ 269,437,492 | $ 18,390,279 | $ 251,047,213 |

## REQUIREMENT 5. Current fiscal year budget, planned activities, and goals for the current fiscal year.

The NCI Board approved the FY2025 Budget at its meeting on August 14, 2024; see both pages of *Table 5.1: FY2025 Budget* for details. At that same meeting, the NCI Board did a comprehensive program review, planned activities, and discussed goals for the organization.

### Technology Development Strategy

In October of 2022, NCInnovation released a report prepared by TEConomy Partners[i] that incorporated findings from the *Blueprint*[ii] and identified four key challenges that North Carolina faces in its efforts to commercialize university research: 1) uneven success outside of larger metro areas; 2) lack of applied research that addresses marketplace problems; 3) an underdeveloped capital landscape that does not sufficiently fund university innovation; and 4) a lack of regional innovation networks that would allow effective collaboration among universities, industry, and capital formation organizations.

Based on these new insights, NCI undertook a deeper, statewide analysis of North Carolina's innovation assets in close partnership with RTI International (RTI). RTI inventoried regional innovation assets and identified existing and emerging technology focus areas across the state. RTI analyzed massive quantities of data from public and non-public sources. The findings were contextualized by qualitative data from university site visits and nearly 200 conversations with university and industry stakeholders and ecosystem players. The analysis included cross-cutting infrastructure recommendations and outlined regional innovation assets for each technology focus area.

From this research, NCI published the Statewide Technology Development Plan which was delivered to the North Carolina General Assembly as an Appendix to NCI's June 2024 Semiannual Reporting to Gov Ops. The role of NCI is to serve as a conduit of data, analysis, and information without being prescriptive about how other organizations might use those outputs. Guided by the findings in the report, NCI will continue to work with its NCI Board, university partners, and innovation stakeholders to strengthen university applied research portfolios and deepen relationships between academia and industry. NCI is now in the planning stages of Phase 3, which is anticipated to include the following:

- Prioritize Recommendations Based on Decision Criteria
- Test Prioritized Recommendations with Regional Advisory Boards
- Down-select and Develop Recommended Implementation Plans
- Share Findings

### Regional Network Expansion

NCI is building out its regional innovation network and ecosystems to strengthen collaboration and pipeline development with expansion centered around the NC Commerce Economic Development Zones. See *Figure 5.1: Regional Network Expansion*.

Highlights of the network expansion strategy include:

- Launch three additional hubs across the east and west that align with economic development zones. Leverage established NC Commerce/EDPNC Economic Zones in order to optimize existing networks and partnerships, increase impact and accelerate process without duplicating efforts. Increase regional footprints and accessibility to stakeholders, as well as visibility and engagement level in the local ecosystems. Allow greater focus on each university and reduce travel time and expense.
- Populate three new hubs with full time employees to address immediate work on the ground and jobs to be done. Focus on coastal programs (UNC Wilmington). Increase military innovation collaboration (Fayetteville State & UNC Pembroke). Catalyze industry/business momentum in west backed by General Assembly support (App State Hickory Campus). Foster collaboration from Triangle-based universities with NC Central and other state universities.

NCI is working to increase defense innovation sponsored research by increasing collaboration between academia, the Department of Defense (DOD), and private defense innovation firms.

- Regional, defense innovation sponsored research allows research and development (R&D) to occur near the primary base of operations, with local researchers and DOD end users who are vested in the success of the project.
- NCI is working with existing industry partners and pairing their needs with regional university faculty, thereby reducing the export of R&D funding to universities outside of North Carolina.
- NCI is mapping and interviewing key stakeholders currently in the defense innovation space in order to identify gaps inhibiting the expansion of the academia to industry pipeline.
- NCI also provides non-financial support to strategic partnerships that will grow the defense innovation pipeline, aligning strategies with key partners such as the UNC System Office, JSOC, XVIII Airborne, National Security Innovation Network (NSIN), and NC Commerce Office of Science, Technology, and Innovation (OSTI).

Our goal is to grow the pipeline of defense innovation Intellectual Property (IP) development through new partnership opportunities, identification of targeted seed funds for IP development, and strategic submission of university responses to DOD statements of need.

### Statewide RFP

NCI is incorporating lessons learned and best practices from our pilot grant program into a statewide RFP. The foundations of the NCI's Grant Program are:

- Merit-based: NCI evaluates each project independently and objectively.
- Technology agnostic: NCI accepts applications from all technology sectors. The overall strategy is informed by the statewide asset mapping and technology development plan.
- Equitable: NCI seeks to distribute grant funding across the regions and state.
- Engaged: NCI's processes emphasize frequent and meaningful interaction with faculty, substantial due diligence and extensive feedback.
- Continued success: NCI is committed to application development through resources and partnerships with existing providers and programs to strengthen a project's competitiveness.
- Sustainable: NCI only uses the interest generated from the endowment for grant funding to ensure the longevity in perpetuity of NCI funding.

Building off the pilot grant program, NCI will launch a two-phased statewide RFP that is open to all faculty within the UNC System. See *Figure 5.2: Statewide RFP Draft Grant Application Cycle*.

## Strategic Partnerships

NCI is building its entrepreneur in residence, or executive in residence (EIR) and faculty education programs. Partnering with **NC IDEA** an independent private, 501(c)(3) foundation that fosters equitable economic development with competitive grants and programs for entrepreneurs and funding to strengthen the North Carolina entrepreneurial ecosystem. Through this partnership, initial focus placed on NCI's eight pilot grant projects to maintain a high level of oversight and build the infrastructure with flexibility and opportunity to expand the EIR program alongside the growth of NCI's grants program.

Role of NC IDEA:

- Recruitment: Collaborate with NCI to scout and recruit Regional EIRs to serve each NCI region. Support and coordinate with universities for recruitment of Project EIRs.
- Infrastructure: Develop clear contracts and scopes of work with objective activities, goals, and impact metrics to be measured and reported across the program.
- Systems: Develop systems to support EIRs in their work with project teams and companies, including relationship management systems, reporting protocols, best practices, partner networks, etc.
- Operations: Explore tools such as MIT Venture Mentoring Services (VMS), Traction5, and others to license across EIRs and support data administration and tracking.
- Regional Network Development: Support each Regional EIR in building a regional network of entrepreneurial and private sector connections, alongside the full NC IDEA team.
- Collaboration: Support collaboration between NCI Regional Innovation Network Directors and regional ecosystem partners.

Additional Partnership Conversations Underway:

- **NC BioTech Center:** Leveraging network of regional representatives for local ecosystem knowledge. Working with statewide leads to explore opportunities for co-hosted educational offerings.
- **SBTDC:** Leveraging network of regional representatives for local ecosystem knowledge and individual project support.
- **First Flight:** Working with RTP leads to explore opportunities for co-hosted educational offerings.
- **BSTI:** Collaborating on tracking and supporting the technology based, university led consortia that include industry and ecosystem partners to win NSF Engines funding and EDA Tech Hubs funding.

TABLE 5.1: FY2025 Budget

## Fiscal Year ending June 30, 2025 Budget

**As approved by the Board of Directors on August 14, 2024**

| | | |
|---|---|---|
| **Public & Private Revenue** | | |
| State Endowment Revenue | $ | 250,000,000 |
| Private Pledge Contributions | | - |
| **Total Public & Private Revenue** | $ | 250,000,000 |
| | | |
| **Investment Income** | | |
| Interest - Private Investment | $ | 144,815 |
| Interest - State Investment | | 23,588,496 |
| **Total Investment Income** | $ | 23,733,311 |
| | | |
| **Other Income** | $ | - |
| Miscellaneous Income | $ | - |
| **Total Other Income** | $ | - |
| **Total Revenue & Income** | $ | 273,733,311 |
| | | |
| **Operational Expenses** | | |
| **Program Expenses** | | |
| Pilot Grants - Year 2 Funding | $ | 2,003,201 |
| Statewide RFP Grants | | 10,000,000 |
| Salaries & Benefits | | 1,605,986 |
| Grant Management & Operations | | 86,183 |
| Contract Research Services | | 150,000 |
| *Regional Hub Expenses* | | |
| Network & Ecosystems | | 625,500 |
| University Support | | 819,000 |
| Operational Expenses | | 120,750 |
| **Total Program Expenses** | $ | 15,410,621 |
| | | |
| **Salaries & Benefits** | | |
| Salaries & Incentive Expense | $ | 4,123,550 |
| Payroll Tax Expense | | 231,872 |
| Medical & Health Benefits | | 474,624 |
| Employer 401K Contributions | | 184,565 |
| Payroll Administration Fees | | 77,774 |
| Worker's Compensation | | 4,000 |
| Merit Increase Pool | | 91,500 |
| **Total Salaries & Benefits** | $ | 5,187,885 |
| **Allocation to Program Expense** | | (1,605,986) |
| **Total Salaries & Benefits, Administrative** | $ | 3,581,899 |

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## Fiscal Year ending June 30, 2025 Budget

**As approved by the Board of Directors on August 14, 2024**

| | | |
|---|---|---|
| **General & Administrative Expenses** | | |
| Accounting Fees | $ | 178,000 |
| Investment Fees | | 423,214 |
| Research & Consulting Fees | | 50,000 |
| Legal Fees | | 150,000 |
| Public Relations Expenses | | 258,000 |
| Lobbying Expenses | | 212,500 |
| Bank Service Fees | | 9,600 |
| Business Registration Fees | | 2,000 |
| Computer Expenses | | 83,200 |
| Insurance | | 25,000 |
| Postage, Mailing Service | | 1,800 |
| Printing and Copying | | 12,000 |
| Professional Development | | 15,000 |
| Regional Sponsorships | | 20,000 |
| Staff Recruiting Fees | | 5,000 |
| Rent & Utilities | | 222,122 |
| Supplies | | 27,501 |
| Telephone, Telecommunications | | 6,000 |
| Travel, Conferences & Meetings | | 94,900 |
| **Total General & Administrative Expenses** | $ | 1,795,837 |
| | | |
| **Total Expenses** | $ | 20,788,357 |
| **Increase to Net Assets** | $ | 252,944,954 |

| **Summary of Expenses Less Grants** | | |
|---|---|---|
| **Program Expense** | | |
| Regional Hubs | $ | 1,801,433 |
| Salaries & Benefits | | 1,605,986 |
| **Total Program Expense** | $ | 3,407,420 |
| | | |
| **General & Administrative** | | |
| Salaries & Benefits | $ | 3,581,899 |
| Other G & A Expenses | | 1,795,837 |
| **Total General & Administrative** | $ | 5,377,736 |
| **Total Expenses** | $ | 8,785,156 |

FIGURE 5.1: Regional Network Expansion

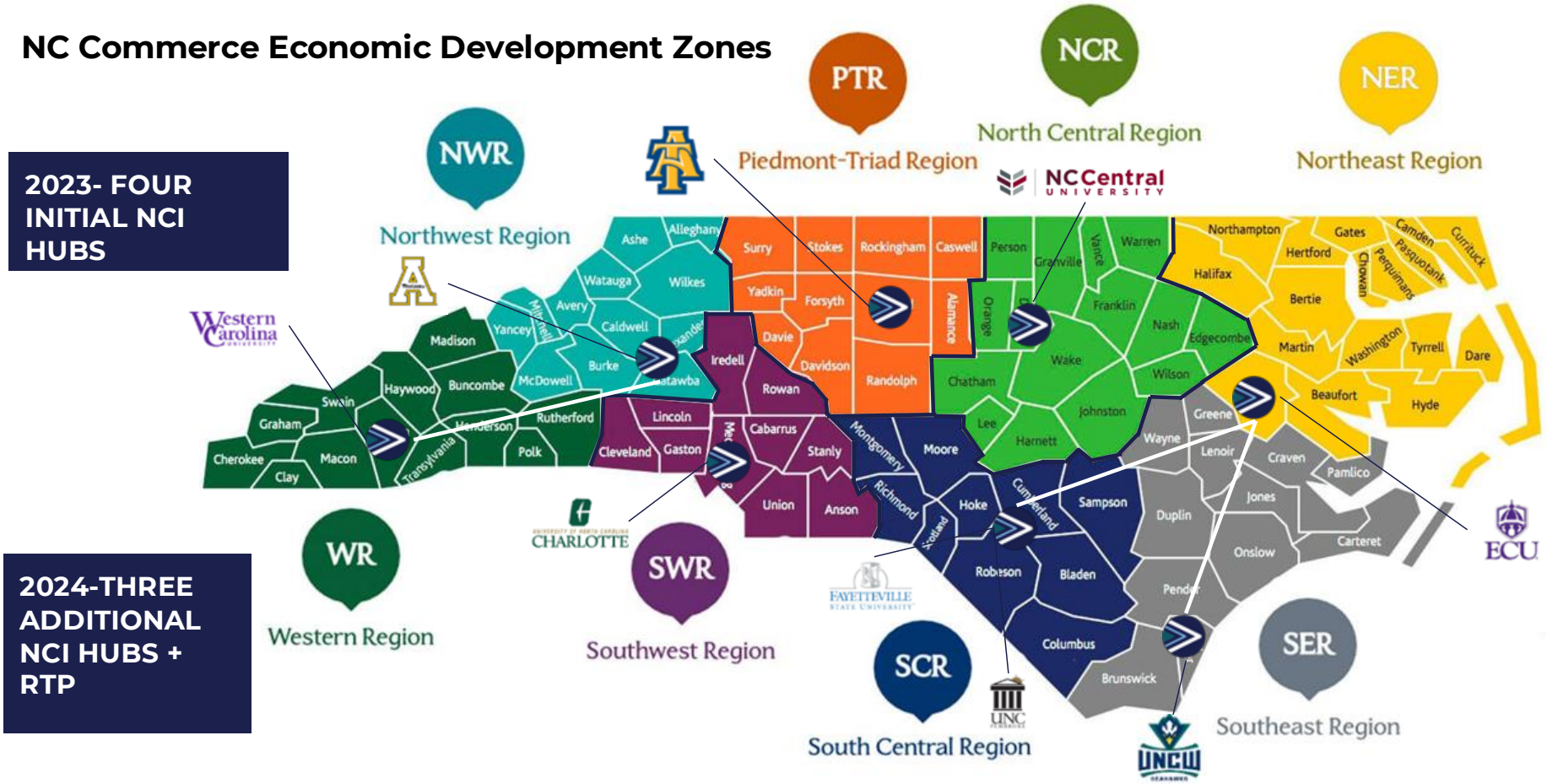


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FIGURE 5.2: Statewide RFP Draft Grant Application Cycle

Confidential

# DRAFT Grants Application Cycle*

## Rolling Submission with Quarterly Review

| DRAFT DOCUMENT CONTINUOUS QUARTERLY CYCLE | | | Open call for February BOD meeting & March relesae of funds | | | | Open call for May BOD meeting and June release of funds | | | | | | | | Off Cycle for Reporting and Adjustments | | | | | | | | Open call for Nov BOD meeting and December release of funds | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TASK | LEAD | TIME | SEPT | | | | OCT | | | | NOV | | | | DEC | | | | JAN | | | | FEB | | | | MARCH | | | | APRIL | | | | MAY | | | | JUNE | | | | JULY | | | | AUGUST | | | |
| RECURRING SCHEDULE | | | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| **Pre proposals submitted** | Faculty | 3 mos | | | | | first statewide RFP | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Projects screened** | NCI | 2 wks | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Full application submitted** | University | 6 wks | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Regional review gathered** | NCI | 3 wks | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Projects assessed by RTI** | RTI | 3 wks | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Projects reviewed by core panel**<br>*week 0: assign projects to reviewers*<br>*week 1: prep information and begin review*<br>*week 2: complete independent reviews* | Review Chair | 3 wks | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Reviews compiled & finalists selected** | NCI | 2 wks | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Gov Ops notified** | NCI | 1 wk | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Board Review** | NCI BOD | 2 wks | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Announcements & Communications** | NCI | 2 wks | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Execute contracts & transfer funds** | NCI & Collab | 1 mo | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Launch beta peformance** | NCI | ongoin | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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*Subject to modification and pending NCI Board of Director feedback

**REQUIREMENT 7. A detailed explanation of how annual salaries are determined, including base pay schedules and any additional salary amounts or bonuses that may be earned as a result of job performance. The explanation shall include the means used by NCInnovation to foster employee efforts in rural and low-income areas in the State.**

In September 2022, NCI entered into a co-employment relationship with Insperity, Inc. (NYSE: NSP; www.insperity.com), a national professional employer organization (PEO). Through this relationship, Insperity provides comprehensive human resource and employment services to NCI. In addition to human resource compliance, training, and employee benefits, Insperity's services include a suite of services to support all phases of employee recruitment and retention, such as: identifying organizational requirements and drafting position descriptions; recruiting, interviewing, background checks, and onboarding; salary & compensation benchmarking; and employee performance management.

Every employee at NCI works within a specific position description. Those descriptions include a Summary of Responsibilities and reporting structure; Job Duties; and Skills and Qualifications. Prior to posting a position, NCI provides Insperity with a copy of the job description for that position and requests an independent compensation benchmark report. Insperity provides base, bonus, and total compensation benchmarks curated against similar duties/responsibilities in similar organizations, and which reflect any relevant geographical factors. NCI uses this information and a particular candidate's relevant knowledge, skills, abilities, and experience to determine competitive base and any bonus compensation amounts. All employment offers are conveyed in writing, include a copy of the relevant position description, and summarize base and, if applicable, discretionary bonus opportunities. Candidates are required to sign and return their written offers, which stipulate any employment arrangement is "at will."

Using Insperity's online performance evaluation tools, each employee receives an annual performance appraisal, and the payment of any discretionary bonuses, if applicable, are tied to such appraisals and the metrics established between each employee and their supervisor within the first year of employment.

NCI uses this information to foster employee efforts in rural and low-income areas in the State by ensuring its wages (base and performance bonuses) and employee benefits (medical, dental, vision, retirement, and other Insperity-sponsored employee benefits) are competitive both within their local markets and across the State. Further, NCI has assigned and co-located regional directors at each of its hub locations, which both provides a physical presence for the company and creates jobs in the regions the organization serves.

**NOTE:** For REQUIREMENT 7 the following **Appendix: State Funded Positions** includes salary data for the employees of NCI that are directly involved in our two programs and have salaries paid for, whole or in part, with State funds that are accrued in our FY2024 financials.

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[i] TEConomy Partners, LLC. (2022). *Optimizing North Carolina's Innovation Ecosystem: Recommendations to Accelerate Commercialization of University-Based Innovations through Public-Private Partnerships*. Prepared for NCInnovation.
[ii] Lawrence, S., Hogan, M. Q., VanLear, S., & Rieth, K. T. (2020). *A blueprint for building an innovation corridor*. RTI International.

**Appendix: State Funded Positions**

# NCInnovation, Inc.

**FY24 Employee Compensation - Allocated to State Funds 10/9/2023 - June 30, 2024**

| Staff by Department | Title | Date of Hire | FY24 Compensation - State Funds Only | | |
|---|---|---|---|---|---|
| | | | Base Pay | Incentive Pay | Total |
| | | | $ - | $ - | $ - |
| **Regional Hubs** | | | | | |
| Mary Lou Bourne | Regional Director, Charlotte (UNCC) | 10/9/2023 | $ 90,052 | $ - | $ 90,052 |
| Meagan Coneybeer | Regional Director, West (WCU) | 10/9/2023 | $ 90,052 | $ - | $ 90,052 |
| Derrick Welch | Regional Director, East (ECU) | 10/9/2023 | $ 90,052 | $ - | $ 90,052 |
| Louis Judge | Regional Director, Piedmont (NCA&T) | 10/9/2023 | $ 90,052 | $ - | $ 90,052 |
| | | | $ 360,208 | $ - | $ 360,208 |
| **Program Parterships** | | | | | |
| Erin Hopper | Director, Research Development & Partnerships | 10/9/2023 | $ 61,979 | | $ 61,979 |
| Carly Hemminger | Assoc. Dir, Univeristy & Ecosystem Partners | 1/10/2023 | $ 56,875 | $ 7,313 | $ 64,188 |
| | | | $ 118,854 | $ 7,313 | $ 126,167 |
| | **Total** | | **$ 479,062** | **$ 7,313** | **$ 486,375** |

*Total annual compensation and FY24 compensation differ based on hire/onboarding date within the fiscal year. In compliance with Sec. 143-728(d)(2)(a)(7), NCInnovation is reporting base pay schedules and additional bonus opportunities and FY24 total compensation for transparency.*