



REGION 2: INNOVATION ECOSYSTEM REVIEW

BY VERGE | 2021-2022





GO VIRGINIA REGION 2

Region 2 consists of the cities of Covington, Lynchburg, Radford, Roanoke, and Salem; and the counties of Alleghany, Amherst, Appomattox, Bedford, Botetourt, Campbell, Craig, Floyd, Franklin, Giles, Montgomery, Pulaski, and Roanoke.

TARGETED INDUSTRY CLUSTERS

- Manufacturing
- Life Science & Health Care
- Food & Beverage Processing
- Emerging Technology & IT

POPULATION



Total Population: 779,876

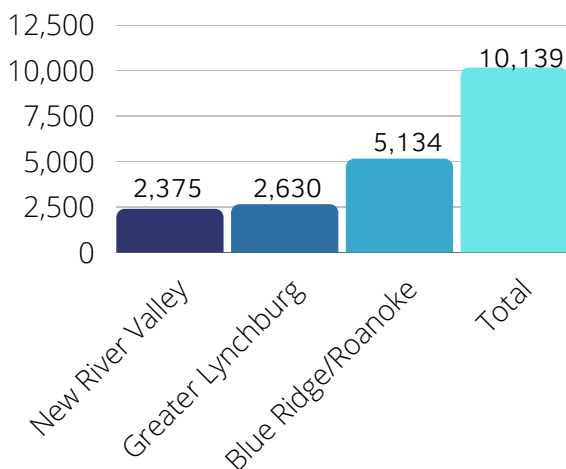
Population Summary by Region 2 Sub Regions:

New River Valley:	182,967
Blue Ridge/Roanoke Valley:	333,972
Greater Lynchburg/Central VA:	262,937

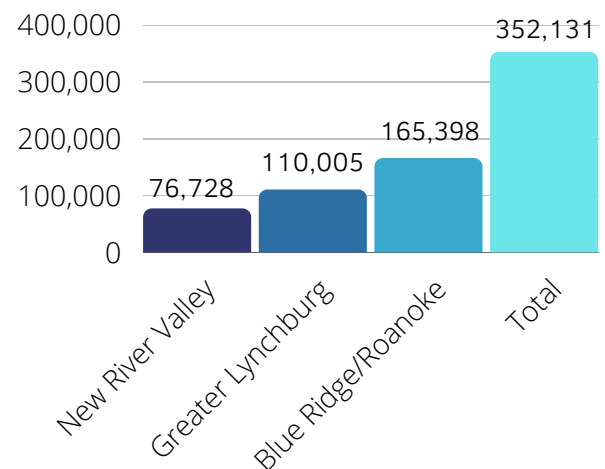
Source: U.S Census Bureau. Former I&E reports included Mt. Rogers in the NRV, but not included in 2022 figures.

Region 2 Employment and Mean Wages (3rd Quarter 2022)

IT & Software Employment



All Regional Employment



Annual Mean Wages: IT & Software Development

New River Valley:	\$94,300
Blue Ridge/Roanoke Valley:	\$91,900
Greater Lynchburg:	\$93,700



Annual Mean Wages: All Occupations

New River Valley:	\$55,100
Blue Ridge/Roanoke Valley:	\$54,000
Greater Lynchburg:	\$52,700

Source: Virginia Employment Commission, JobsEQ (2022)



RAMP COHORTS

RAMP 2022 Cohorts - Through a 3-year federal EDA grant, which was awarded to Verge, RAMP was able to offer 2 cohorts per year, starting in calendar year 2021. In 2022, 7 startups graduated from RAMP, 4 of them being health & life science-focused startups, and 3 startups were technology-based. Cumulatively, they were supported with \$140,000 of non-dilutive funding, of which \$100,000 was funded by partner VIPC. Axon Acuity, CytoRecovery, Kenkashi Microbes, and Qentoros, Inc. (health & life sciences startups), as well as Dot Solutions, Enabled Engineering, and Fermi Energy (tech-based startups), participated in the RAMP program to include 12-weeks curriculum, mentorship support, free office space with high-speed internet, and exposure to venture capital in 2022. Two "Demo Days" were offered, giving these startups an opportunity to pitch their businesses before a regional audience of 350 attendees combined. Through Exit RAMP programming which includes mentorship and coaching support, as well as networking opportunities, RAMP supported 65 alumni and affiliates in 2022.

INNOVATION COMMERCIALIZATION ASSISTANCE PROGRAM (ICAP)



ICAP Virtual Cohort - The Innovation Commercialization Assistance Program (ICAP) assists Virginia-based technology and innovation-driven startups on their path to success. ICAP supports startups from ideation, all the way through seeking a Series A level of funding and beyond. ICAP services are offered at no cost to participants and all advising is strictly confidential. Josh Green, with ICAP, works closely in partnership with RAMP to help build out the Virginia entrepreneurship pipeline by supporting early-stage startups with OnRAMP. ICAP has also supported the coordination of mentors for some RAMP startups.

PITCH PLUS & POLISH



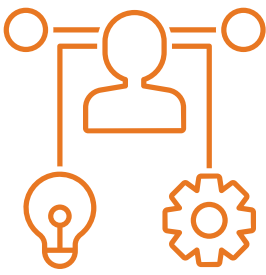
Verge PitchPlus Clinics - PitchPlus Clinics are designed for later-stage, post-acceleration startups and other early-stage companies seeking knowledge about the venture capital markets, capital fundraising process, and the transaction closing process from term sheets through due diligence to closing. Truist Foundation awarded Verge with a \$200,000 grant to expand its PitchPlus program, allowing Verge to offer 6 hybrid PitchPlus Clinics both virtually and in-person, in GO Virginia Regions 1, 2, and 3, as well as a 7th clinic made available to RAMP cohort members and to a regional audience on September 23, 2022.

RAMP Pitch & Polish Clinics - RAMP offered 5 Pitch & Polish sessions in 2022, supporting 7 startups with one-on-one presentation feedback, as they pitched their business ideas to a private team of regional mentors. Feedback is offered to the startup on their business model helping them better connect to financial and other resources.



SHARED LABS

Virginia Tech's Corporate Research Center (VTCRC) received a state grant of nearly \$100,000 in December 2021, with Johnson & Johnson Innovations (JLABS) to expand lab space and facilities, as well as to support the region's growing life science industry. Qentoros, a 2022 RAMP cohort member, was the first company to be selected into the VTCRC-JLABS virtual cohort in 2022. Qentoros develops a novel biologic derived from platelet-rich plasma, termed BIO-PLY, that combats bacterial biofilms and dampens inflammation. Through this GO Virginia Region 2 grant, this initiative will grow the region's life sciences and health sector with leadership support from the VTCRC, JLABS, EDC, and SMBW.

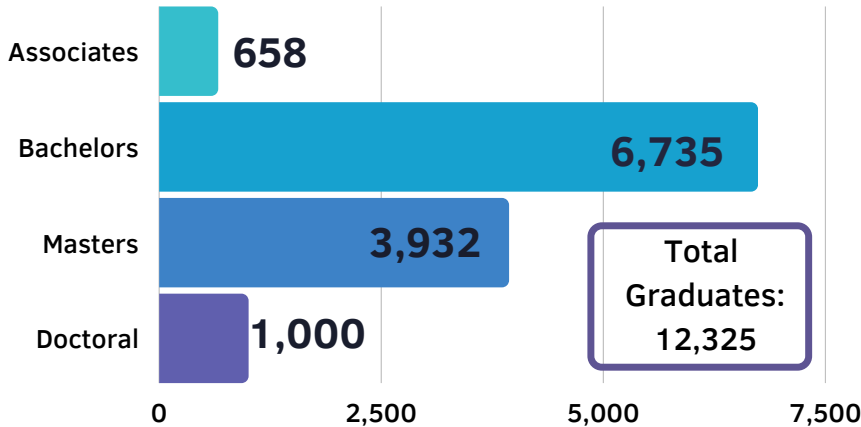


TALENT PIPELINE

Regional STEM-H Talent Pipeline

REGION 2 STEM-H GRADUATES 2021

Increase of 220 More Graduates in 2021 than in 2020



Source: The Integrated Postsecondary Education Data System (IPEDS), 2020-21
Data current as of August 2022

HEALTH GRADUATES

6,835



+634
from 2020

SCIENCE GRADUATES

1,763



-629
from 2020

MATHEMATICS GRADUATES

326



-8
from 2020

COMPUTER SCIENCE GRADUATES

1,069



+163 from 2020

ENGINEERING GRADUATES

2,332



+60 from 2020

Region 2 Higher Education Institutions

Doctoral-Granting Public Institutions: Radford University; Virginia Tech

Doctoral-Granting Private Institutions: Edward Via School of Osteopathic Medicine (VCOM); Liberty University; University of Lynchburg

4-Year Private Institutions: Ferrum College; Hollins University; Roanoke College; Sweet Briar College

Community Colleges: Central Virginia Community College; Mountain Gateway Community College; New River Community College; Virginia Western Community College

Regional Internship Programs

Experiential Learning in Tech Employment (ELITE): A Roanoke-Blacksburg Technology Council (RBTC) GO Virginia grant offers a talent development program to address the regional need for tech talent through internships. There were 9 new interns in 2022 through Elite grant funding, and cumulatively 13 students held internships at 3 different Region 2 companies.

Onward NRV Experience Internship: The NRV Experience by OnwardNRV is a seven-week-long summer curriculum designed to support employer internship programs by helping their interns grow professionally while increasing the number of young professionals living and working in the NRV post-graduation. There were 13 participating employers in 2022, with 23 interns who completed this program. Since, 2020, 12 interns have stayed in the NRV!

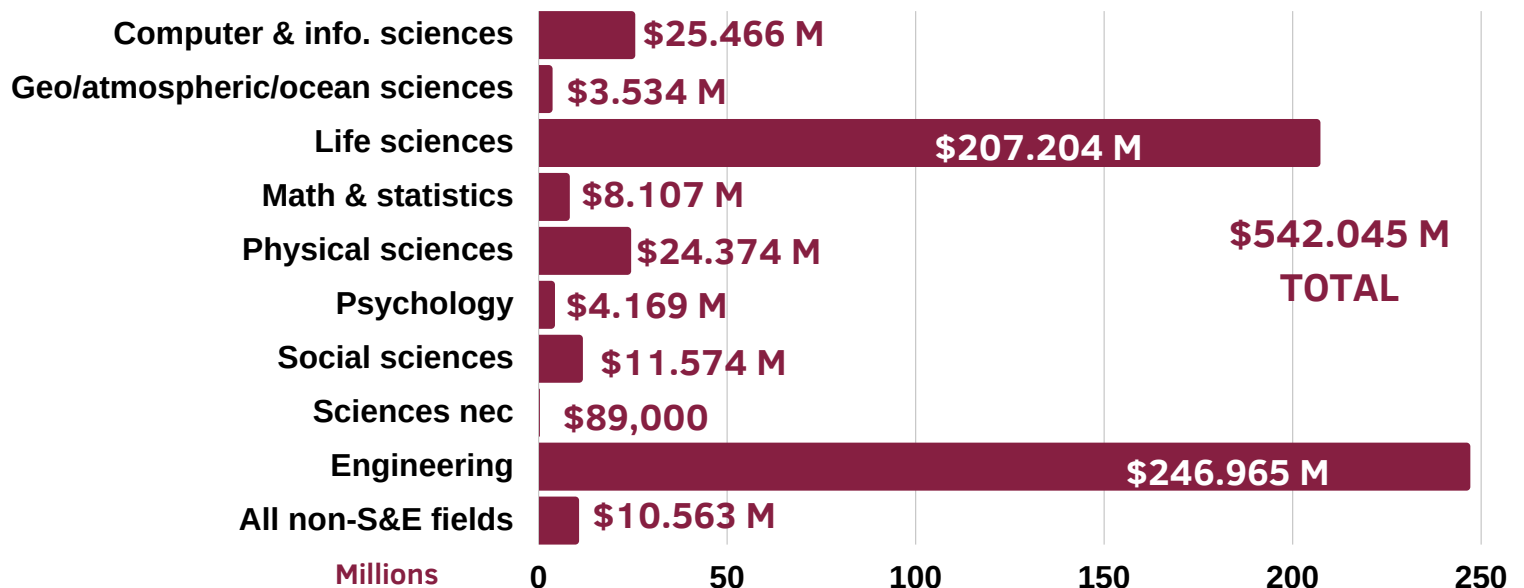
Virginia Tech Regional Internship Collaborative & Directory: The Region 2 Internship Collaborative is an initiative of the Virginia Talent + Opportunity Partnership, connecting secondary and higher education institutions, their students, and businesses to build capacity for work-based learning opportunities in the NRV, the Roanoke-Alleghany, and greater Lynchburg regions. Local employers can receive support through employer resources, a best practices toolkit, individual coaching/mentoring, and access to an education and workforce directory, updated as of Nov. 2021.

INNOVATION PIPELINE



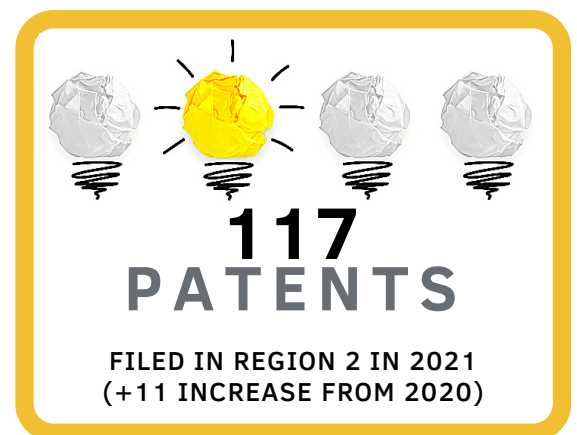
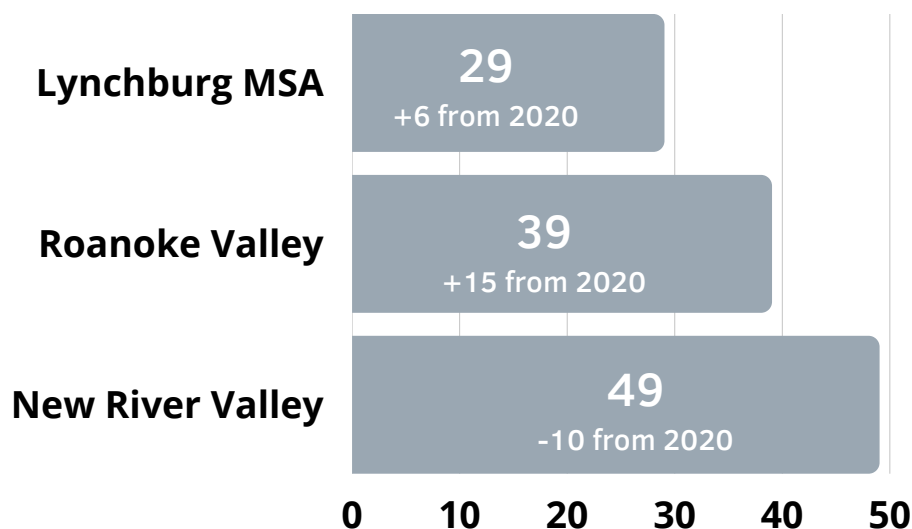
R&D expenditures and patents filed are assets to be leveraged and commercialized in a region's innovation pipeline. Virginia Tech's research & development expenditures in FY 2021 was roughly \$542 M. It ranked second only to the University of Virginia (\$611.3 M), among universities and institutions in the Commonwealth of Virginia. For a more in-depth exploration of the data, please visit <https://www.valleysinnovation.org/innovation-dashboard>.

VIRGINIA TECH TOTAL R&D EXPENDITURES PER FIELD (FY 2021) = \$542,045,000
ABOUT \$14.296 M LESS THAN FY 2020 CUMMULATIVE TOTAL, PREDOMINATELY IN ENGINEERING



Source: National Center for Science and Engineering Statistics, Higher Education Research and Development Survey, FY 2021

Patents by Region (2021)



Source: U.S Patent and Trademark Office
(Data current as of August 2022)

Carilion Clinic Innovation (CCI) continues to support innovation and the development of novel technologies conceptualized by Carilion Clinic employees. Since their launch in 2021, the Innovance and Workshop funds have supported 12 active projects with the development of new technologies to address diverse problems faced by health care providers from lymphedema to PICC line security. Two devices will be entering initial safety trials shortly. Since CCI's inception in 2020, 31 patent applications have been filed, including 7 non-provisional patents, and over 65 inventors have worked with CCI.

Virginia Tech's (VT) LAUNCH Center for New Ventures created new programs to help commercialize technologies emerging from VT research and scaled-up others. All of these programs are designed to inspire and support research faculty, postdocs and PhD student interest in creating university spin-offs. The 7-week LAUNCH Startup Labs incubator workshop introduces researchers to topics like business modeling, customer discovery activities, and market analysis and segmentation, which was offered in the 2022 spring and fall with more than 40 researchers participating. The LAUNCH Proof-of-Concept (POC) grant program attracted a new group of entrepreneurially-minded researchers with support that accelerated technology prototyping and market analysis across a broad spectrum of research domains, with several POC project teams also completing the NSF I-Corps regional training program and pursuing RAMP.



SBIR/STTR Awards (2021)

Capital Invested (2022)

In Region 2 Companies of Virginia



REGION 2 COMPANIES WON

21.5%

OF VIRGINIA'S SBIR/STTR
GRANTS AWARDED IN 2021

\$40.66 M

84 SBIR/STTR GRANTS WON BY 16
REGION 2 COMPANIES (2021)
(ONLY \$2.54 M LESS THAN IN 2020)

**Nearly \$2.5 M in VIPC CCF grants were awarded to 19
Region 2 Companies/Insitutions in FY 2022 & 2023**

\$7.2 M

IN VC INVESTMENTS

\$11.4 M

IN ANGEL/SEED INVESTMENTS

\$23 M

OTHER EQUITY RAISED

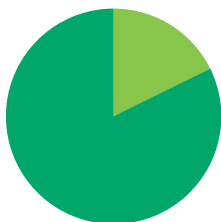
\$29.3 M

REPORTED IN MERGERS/ACQUISITIONS
(MINIMUM FIGURE; WITH 3 OF THE 10
RECORDED DEALS IN THE
INNOVATION SECTOR)

Source: known capital raised in 2022 based on
PitchBook and other data sources.

View comparative data on the Region 2 Capital
Landscape since 2011 @

www.valleysinnovation.org/capeco-data-dashboards



ECOSYSTEM NEWS

END OF YEAR 2022 RECAP



The Virginia Department of Housing and Community Development (DHCD) approved the release of \$15.7 million in funds awarded to the City of Roanoke to create 40,000 square feet of shared lab space and a biotechnology incubator in Roanoke, in partnership with Carilion Clinic, Virginia Tech Corporate Research Center, Verge, Fralin Biomedical Research Institute at VTC, and Virginia Western Community College. The Roanoke Biotech project includes renovation of a Carilion Clinic building in Roanoke with a \$25 million (\$15.7 million state funded request with a \$10 million local match) infrastructure request for renovations and adding lab space. The goal of this project is to leverage existing infrastructure, programming, and diverse talent to create a self-sustaining integrated set of regional capabilities that will foster growth of existing biotech companies, as well as enrich the pipeline of new startups, entrepreneurs, and regional talent.



Virginia Innovation Partnership Corporation (VIPC) announced new grant funding of roughly \$1.75M in January 2022. This funding went to 24 Virginia small businesses through its Commonwealth Commercialization Fund (CCF), in Q3 2022. CCF seeks to fund Virginia-based, high-potential, for-profit technology companies at the pre-seed stage of commercialization and provides grants up to \$75,000, which is matched by the company at a one-to-one minimum. Since the relaunch of the CCF program in January 2022, through VIPC's fiscal year (June 30), more than \$2.7 million was awarded to 39 companies across the state.

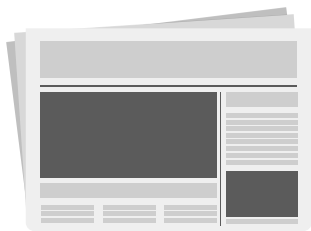
Governor Glenn Youngkin announced Virginia has been approved for up to \$230 million by the federal U.S. Department of the Treasury under the State Small Business Credit Initiative (SSBCI) program in December 2022. The purpose of this program is to accelerate the growth of Virginia-based entrepreneurial businesses, which includes credit lending and early-stage equity financing programs. About \$57 million of SSBCI funding will go towards VSBFA through three loan programs, and roughly \$173 million is for VIPC and two of its co-investment equity/venture capital programs.

Innovate Lynchburg Technology Council is implementing strategic partnerships to enhance their support of the greater Lynchburg technology community: partnering with Roanoke-Blacksburg Technology Council (RBTC) to implement specialized programming; support the VERGE PitchPlus program; and partnering with Vector Space to enhance innovation and entrepreneurship in the region.

GO Virginia Region 2 advanced entrepreneurship and business development initiatives in 2022 in conjunction with the Workforce and Entrepreneurship Initiatives supporting Vector Space, a regional makerspace working to expand programming and equipment centered around workforce development and entrepreneurship for underserved populations. They will be partnering with HireLynchburg and Virginia Career Works to deliver a 12-week Women in Machining Program. Also, the Regional Talent Strategy initiative in the Roanoke Valley and Alleghany Highlands focused on talent development, talent attraction and retention through the creation of a web-based talent portal, toolkits, and a talent ambassador volunteer program.



Over 10,000 Montgomery County homes and businesses will soon connect to high-speed fiber internet thanks to roughly \$28.5 million from the Virginia Telecommunication Initiative (VATI) grant funding and a partnership with GigaBeam Networks and Appalachian Power Company. Including matching funds from Montgomery County and the two service providers, the project will result in over \$50 million of fiber broadband improvements, with construction starting in Eastern Montgomery County in spring 2023. In late 2021, Botetourt County and LUMOS received another Virginia Telecommunications Initiative (VATI) grant to make universal broadband coverage and connectivity a reality for 1,901 addresses in the county, with project completion slated for March 2024. The approximately \$7.9 million project includes \$3,084,796 in VATI grant funding, which will be matched with approximately \$4,824,937 from Botetourt County and Lumos (of which \$2,602,514 is from Botetourt County recovery act funds). Also, GO Virginia awarded Botetourt County grant funding of \$167,667 for the installation of ten new welding booths at the Botetourt Technical Education Center Welding Lab to expand opportunities for students and to build their community's workforce.



INDUSTRY NEWS



August 2022--A private equity firm, Pharos Capital Group, LLC sold its stake in portfolio company TechLab, Inc. to SSI Diagnostica, a portfolio company of the private investment firm Adelis Equity. TechLab is a global leading developer and manufacturer of infectious disease diagnostics products and will continue to operate in Blacksburg, VA, while retaining its workforce and management team, post transaction. SSI Diagnostica will complement TechLab's global operations as they continue to grow their diagnostics business. (source: PRNewswire, Pharos Capital Group, LLC)



October 2022--Torc Robotics and Daimler Truck AG continue into their fourth year of partnership, under the new leadership of Torc CEO, Dr. Peter Vaughan Schmidt. In 2022, Torc launched two new facilities, including a 21,000 square-foot engineering-focused product development center in Austin, Texas (in January), and a 30,000 square-foot tech center in Stuttgart, Germany (in April). Since 2021, Torc doubled its headcount to more than 600 people, highlighting just a few of its annual updates. (source: Oct. 6, 2022 TORC press release)



December 2022-- KlariVis, an enterprise dashboard and analytics solution for bankers, has partnered with nine new financial institutions. KlariVis compiles and aggregates data into an interactive dashboard to deliver insights to financial institutions. The newest banks to select KlariVis include: Community Financial Services Bank (CFSB) in Kentucky, First National Bank of Bastrop in Texas, Merchants Bank in Minnesota, New Washington State Bank in Indiana, North American Banking Company in Minnesota, Pioneer Bank in New Mexico, Shore United Bank in Maryland, State Bank of Toulon in Illinois, and Wayne Bank in Pennsylvania.



October 2022--Ticket Spicket, a Virginia-based digital ticketing platform focused on the K-12 market, and a RAMP alumni, was acquired by HomeTown Ticketing Inc., a leading provider of digital ticketing for schools, districts, conferences, and associations. The combined company will serve more than 300,000 events annually and 40 million fans in all 50 states. (source: PRNewswire)



December 2022--Danville's The Launch Place, which supports entrepreneurs as they raise capital, announced December 1st, a \$250,000 investment in RAMP alumni, CytoRecovery. CytoRecovery develops a microfluidic technology which is less invasive for cell separation, and is now able to bring its cell research platform to market. CytoRecovery has raised a total funding of \$4.22M over 6 rounds, inclusive of this last seed round of \$250k. (source: Cardinal News, Tracxn Technologies Limited)



January 2023--Electronic Products announced winners of the 2022 Product of the Year Awards, which is now in its 47th year of recognizing exceptional products. There were 100+ products evaluated across 13 categories, and RAMP alumni, Micro Harmonics Corp., was among the 2022 award recipients for its patent-pending, hybrid circulator. Micro Harmonics was named in Inc. Magazine's annual Inc. 5000 list as one of the fastest growing and most successful private companies in the country. This ranking was determined based on their three-year revenue growth of 162%, placing them at the 66th position in the region. (source: Electronic Products, Inc. Magazine)

Founded in 2017, RAMP (Regional Accelerator and Mentoring Program) has accelerated 38 companies to date. RAMP is an affiliate of Verge, a collaborative strategic alliance that includes the Roanoke-Blacksburg Technology Council established to grow the region's innovation economy. In September 2020, RAMP received a major endorsement by the U.S. Economic Development Administration to double RAMP's output, which awarded a nearly \$1 million grant to Verge (formerly Valleys Innovation Council).



RAMP Highlights Over the Past Five Years

- 38 companies accelerated through 8 RAMP cohorts.
- Of the 38 companies accelerated, more than 600 people are employed, who sell products and services to all 50 U.S. states, as well as internationally.
- 19 RAMP alumni companies have received VIPC CCF grants, totaling \$1,544,390, including Acomhal, Altede, ArchiveCore Inc., Autonomous Flight Technologies Inc., BEAM, Chorda Pharma Inc., Corvus Labs, LLC, Cowden Technologies, CytoRecovery, Inc., Dot Solutions, LLC, Enabled Engineering, Fermi Energy, Itus Digital, Jeeva, Kenkashi Microbes, Leone Bioventures, MicroHarmonics, Qentoros, and The Tiny Cargo Company.
- 4 RAMP alumni companies, including BEAM, CytoRecovery, Inc., Acomhal, and MicroHarmonics, have received \$3,730,878 in SBIR/STTR grants to date.
- \$14 million plus of capital has been raised by RAMP alumni through grants, investments, and loans.



2022 Recap

Special acknowledgement to the RAMP cohort and alumni community, in the second year of Verge's EDA Build to Scale grant (Oct. 2021-Sep. 2022) for their collective efforts and successes, including:

- 2 RAMP cohorts launched and executed.
- 2 "Meet the Cohort" events, 2 "Demo Days," and countless networking events, like RAMP VIP Reception highlights at RBTC's Technite, and many RAMP-related sessions at Game Changer Week.
- 2 VT Health Sciences and Tech Commercialization fellows participated in the spring RAMP bootcamp.
- 5 Pitch & Polish clinics offered, supporting 7 companies.
- 6 RAMP alumni awarded VIPC Commonwealth Commercialization Funds (CCF) at \$75,000 each. VIPC CCF also funded all five 2022 fall RAMP cohort companies in the amount of \$20,000 each.
- 7 companies graduated from RAMP, 4 of which are health and life sciences-focused.
- 35 RAMP alumni companies supported through meetings, contract review, resource referrals, and proposal prep.
- 100 plus mentoring and coaching sessions offered to support cohort members.
- 19 product launches, 47 jobs created, 13 SBIR/STTR applications submitted with 9 awarded.
- \$8,237,600 raised collectively from state/federal/other grants awarded, as well as private investment/equity raised.

Verge (formerly Valleys Innovation Council), including alliance members Roanoke-Blacksburg Technology Council (RBTC) and the Regional Accelerator and Mentoring Program (RAMP), helps facilitate regional connection, communication, and collaboration by identifying regional priorities and funding to advance tech and biotech projects and solutions across the Roanoke and New River Valleys, and Lynchburg.

Growing our Innovation Ecosystem--In the second year of Verge's EDA Build to Scale, 3-year grant project, 2 RAMP cohorts were offered in 2022, serving 7 startups and 2 VT Health Sciences and Tech Commercialization fellows with countless mentorship, educational curriculum, and networking events and sessions. See page 9 for more RAMP highlights in 2022, related to this grant.

PitchPlus Program Expansion--Verge received a \$200,000 grant from Truist Foundation to offer new educational programming and advance access to startup capital through its PitchPlus program, serving Southside, Southwest, and West Central Virginia. A robust 9-part video series was produced with Blue Ridge PBS to educate startups on the capital raising/finance process and a web resource was created and launched at <https://vergeva.org/accesstocapital> to help entrepreneurs connect with additional resources. In addition, numerous educational and networking events were hosted that supported 188 participants and \$50k in microgrants were awarded to 15 startups to provide technical assistance with their federal and state grant writing proposals. Thanks to partners, RAMP, The Launch Place, Appalachian Council for Innovation, Eddy Alexander, and Blue Ridge PBS!

Regional Entrepreneurship Initiative (REI)--Verge concluded its roughly two-year, REI GO Virginia, grant, on March 30. In Q1 2022, a "2021 Innovation Ecosystem Review Report" was released, as part of Verge's ongoing, Region 2 data tracking effort of the innovation economy. Verge also launched an entrepreneur resource platform (<https://startupregion2.com>) to support entrepreneurs with critical resources, regional assets, and capabilities across the Region 2 ecosystem. GO Virginia grant dollars in the amount of \$295,014, allowed Verge to formalize and prioritize resourcing plans with Region 2 stakeholders to support and drive innovation/entrepreneurship projects forward, and build capacity in Region 2's identified industry clusters.

Other Ecosystem Building Efforts--Thanks to partner, VIPC, Verge was the recipient of a \$200k Regional Innovation Fund (RIF) grant that was utilized partially into 2022 to support ecosystem building efforts, events, and Verge operations. Second, Verge is a proud partner on the Roanoke Biotech Project, helping to collaborate in 2022 with other regional partners to bring a future biotechnology incubator to Roanoke (see top left of page 7 for more). Third, the entire Verge alliance was a co-host of the 2nd Annual VTCRC Game Changer Week, September 13-15, which included 50+ tech and biotech events, 50+ speakers, and over 400 attendees.

Verge Financial Supporters

