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Supporting Technology Transfer and Catalyzing Economic Development at the University of New Mexico

Lisa Kuuttila 101 Broadway Blvd. NE, Suite 1100 Albuquerque, NM 87102 (505) 272-7900 kuuttila@innovations.unm.edu

July 7, 2022

UNM RAINFOREST INNOVATIONS



UNM Rainforest Innovations was formed in 1995

UNM Rainforest Innovations serves and supports all the of the University of New Mexico's academic programs, from science and medicine to fine arts and business management

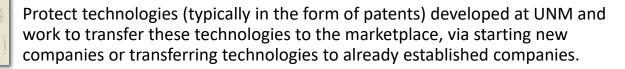




UNM RAINFOREST INNOVATIONS

Supporting Technology Transfer and Catalyzing Economic Development at The University of New Mexico

What does UNM Rainforest Innovations do?





Connect the business community to UNM for access to expertise, facilities and research activities, including corporate engagement.

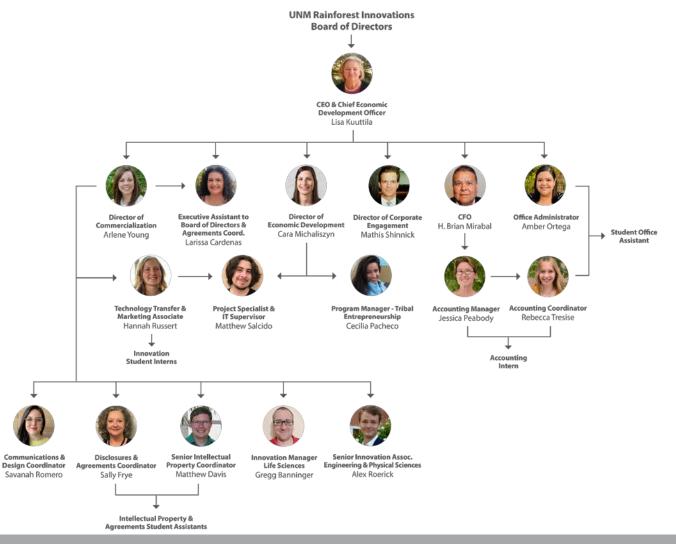


Facilitate UNM's role as a contributor to New Mexico's economic development.

UNM Rainforest Innovations is a 501(c)(3) non-profit corporation, owned by the UNM Board of Regents, with an independent board of directors.



STAFF ORGANIZATIONAL CHART





UNM RAINFOREST INNOVATIONS BOARD OF DIRECTORS



Ms. Sandra Begay Chair, UNM Rainforest Innovations Board of Directors



Ms. Terri L. Cole Vice Chair, UNM Rainforest Innovations Board of Directors



Dr. James P. Holloway Vice Chair, UNM Rainforest Innovations Board of Directors



Dr. John H. Stichman Secretary & Treasurer, UNM Rainforest Innovations Board of Directors



Ms. Elizabeth (Lisa) Kuuttila CEO & Chief Economic Development Officer, UNM Rainforest Innovations







Dr. Christos Christodoulou Dr. Julie Coonrod





Dr. Robert Fisher





Mr. David W. Gibson



Mr. Riis Gonzales







Ms. Maria Griego-Raby Dr. Kelly Hammett Dr. Richard Larson



Dr. Richard Luarkie

Dr. Gregg L. Mayer Dr. Mitzi M. Montoya













Ms. Kimberly Sanchez Rael Dr. Garnett S. Stokes







Mr. Charles Wellborn





Dr. John C. Stormont





5



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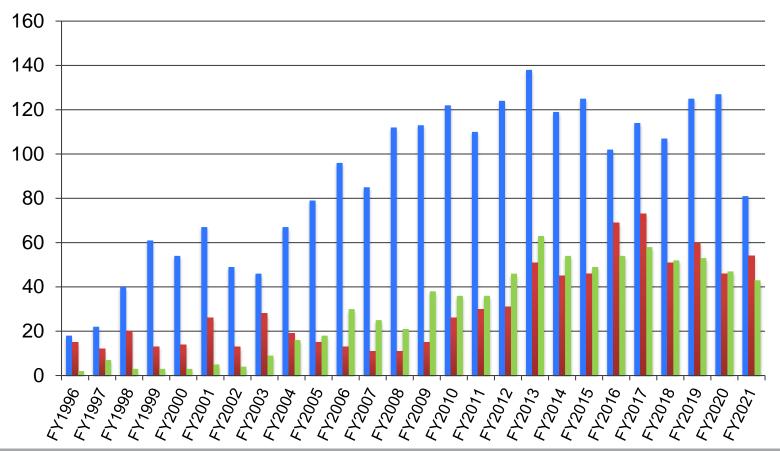
Supporting Technology Transfer and Catalyzing Economic Development at the University of New Mexico

COMMERCIALIZATION ACTIVITIES

UNM RAINFOREST INNOVATIONS

Technology Transfer Metrics – Disclosures, Patents, Agreements

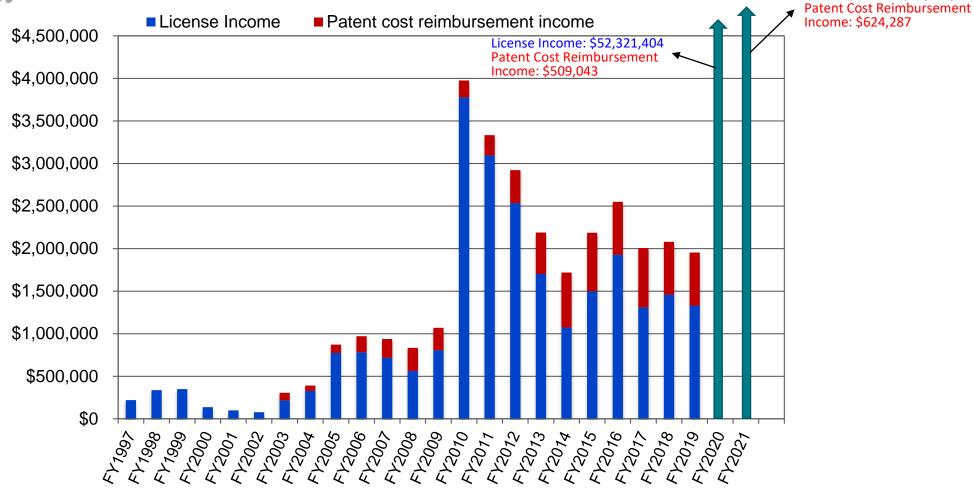
Invention Disclosures U.S. Issued Patents Option/License Agreements





UNM RAINFOREST INNOVATIONS

Technology Transfer Metrics – Income

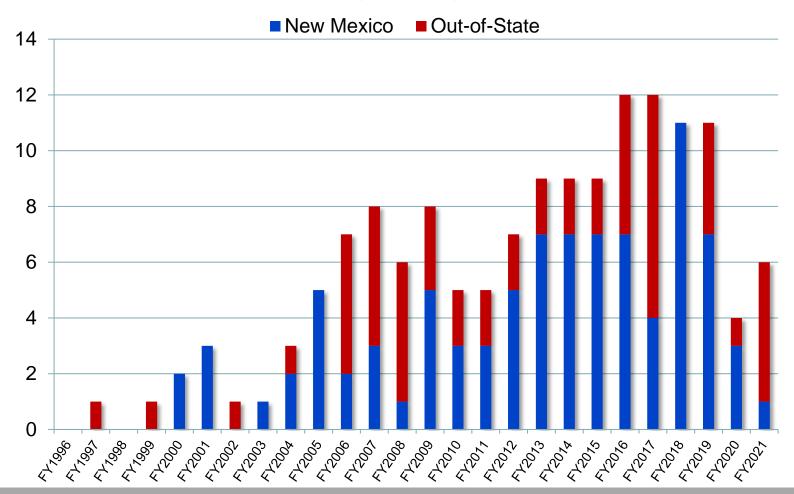




License Income: \$54,521,482

UNM RAINFOREST INNOVATIONS METRICS

Technology Transfer Metrics – Start-up Companies





NAI & IPO ACCOMPLISHMENTS

- UNM makes list of top 100 worldwide universities with largest number of issued US patents for the seventh year in a row (recognized by National Academy of Inventors (NAI) and the Intellectual Property Owners Association (IPO))
 - Ranked 86 in 2020
 - Ranked 61 in 2019
 - Ranked 51 in 2018
 - Ranked 32 in 2017
 - Ranked 33 in 2016
 - Ranked 47 in 2015
 - Ranked 42 in 2014
 - Ranked 56 in 2013





UNM RAINFOREST INNOVATIONS ACTIVE START-UPS

~50% of the 151 companies spun out from the University of New Mexico are still in business and active; 47 of these startups are active in New Mexico





PROGRAMS TO SUPPORT UNM START-UPS

Cecchi VentureLab

- Office space for newly forming companies
- Student intern support
- Conference rooms, high-speed internet, etc.
- Virtual program
- Introductions to investors/others
- Rainforest Accelerator Program
 - Market discovery and mentoring for UNM inventors
- UNM Rainforest Innovations/UNM Foundation Co-Investment Fund
 - \$100K Co-investment available for UNM start-up company
- Partnership with New Mexico Angels
 - Showcases/Presentations
- Regular presentations to entrepreneurs/companies/investment community
 - Highlighting UNM start-ups
- MOU with Osage University Partners
 - National Venture Fund



Joseph L. Cecchi V E N T U R E L A B





UNM RAINFOREST INNOVATION FELLOWS



Jeremy S. Edwards PhD (2022)



Eric Prossnitz, PhD (2021)



David G. Whitten, PhD (2020)



Angela Wandinger-Ness, PhD (2019)





Bryce Chackerian, PhD (2017)



Cheryl L. Willman, MD (2015)





Stephen D. Hersee, PhD (2012)



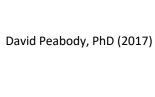
Larry A. Sklar, PhD (2011)



Steven R.J. Brueck, PhD (2010)

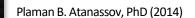


C. Jeffrey Brinker, PhD (2015)



Gabriel P. López, PhD (2016)





Graham S. Timmins, PhD (2013)







2021 Fellow

David G. Whitten, Ph.D. Distinguished Professor, Department of Chemical & Biological Engineering Associate Director, Center for Biomedical Engineering The University of New Mexico



2019 Fellow

Bryce Chackerian, Ph.D. Professor, Department of Molecular Genetics & Microbiology The University of New Mexico

2020 Fellow Larry A. Sklar, Ph.D. Emeritus Professor, Department of Pathology The University of New Mexico



2017 Fellow Cheryl L. Willman, M.D. Distinguished Professor of Pathology

The University of New Mexico Director & CEO of the UNM Comprehensive Cancer Center

2019 Fellow

David S. Peabody, Ph.D. Professor, Department of Molecular Genetics & Microbiology The University of New Mexico



2017 Fellow

Plamen B. Atanassov, Ph.D.

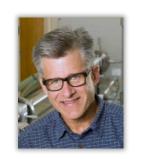
Distinguished Professor of Chemical and Biological Engineering Director of the UNM Center for Micro-Engineered Materials



2016 Fellow

Gabriel P. López, Ph.D.

Professor, Department of Chemical & Biological Engineering Founding Director and Member, Center for Biomedical Engineering The University of New Mexico



2015 Fellow C. Jeffrey Brinker, Ph.D.

Distinguished and Regents' Professor, Department of Chemical & Biological Engineering Professor, Department of Molecular Genetics & Microbiology Member, UNM Cancer Center The University of New Mexico

2015 Fellow

Steven R. J. Brueck, Ph.D.

Distinguished & Professor Emeritus Department of Electrical & Computer Engineering Department Physics & Astronomy Center for High Technology Materials The University of New Mexico



PEER INSTITUTION COMPARISON

Technology Transfer

Rainforest

Innovations

Among 18 peer institutions for every \$2 Million in research dollars, UNM Rainforest Innovations is:

- 1st in number of invention disclosures
- ✤ 3rd in number of licenses and options agreements signed
- 9th in licensing income
- 1st in number of start-up companies created

*Based on FY2019 preliminary AUTM data

R1 is a designation by the Carnegie Classification of Institutions of Higher Education and is reserved for doctoral universities with very high levels of research activity. The University of New Mexico is the only university in New Mexico with this prestigious designation.



START-UP SUPPORT

Top Universities in Start-up Creation 2008-2018 - AUTM Data

MIT - 244 1. Columbia Univ. - 194 2. 3. Purdue Research Fdn. - 174 4. Univ. of Utah - 163 Stanford Univ. - 160 5. Univ. of Florida - 155 6. 7. Univ. of Pennsylvania - 144 Univ. of Michigan - 140 8. Univ. of Washington - 140 9. California Inst. Of Technology - 128 Johns Hopkins Univ. - 128 10. Univ. of Illinois, Chicago, Urbana - 127 11. Univ. of Minnesota - 126 12. Univ. System of Maryland - 121 13. Harvard Univ. - 120 14. Cornell Research Fdn., Inc. - 112 15. Carnegie Mellon Univ. - 110 Arizona State Univ. - 109 16.

Rainforest

Innovations

MN

- 17. Brigham Young Univ. 103 Univ. of Arizona - 103
- 18. Ohio State Univ. 102
- 19. Univ. of Pittsburg 100
- 20. North Carolina State Univ. 98 Univ. of Colorado - 98
- 21. Univ. of Southern California 97
- 22. Georgia Inst. Of Technology 94New York Univ. 94
- 23. University of New Mexico 93
 - Northwestern Univ. 93
- 24. Univ. of South Florida 88
- 25. Duke Univ. 85
- 26. UNC, Chapel Hill 82
- 27. Indiana Univ. (ARTI) 81
- 28. UW-Madison/WARF 73
- 29. Texas A&M Univ. System 72
 - Univ. of Kentucky 72

- 29. Univ. of Nebraska -72
- 30. Penn State Univ. 67
- 31. Washington State Univ. Research Fdn. - 64
- 32. The General Hospital dba Massachusetts General Hospital - 63
- 33. Mayo Fdn. For Medical Education and Research 61
- 34. Univ. of Missouri all campuses 58 Case Western Reserve Univ. - 58
- 35. Univ. of Iowa Research Fdn. 56 Univ. of Massachusetts - 56
- 36. Emory Univ. 55Univ. of Virginia Patent Fdn. 55
- 37. Univ. of Central Florida 53
- 38. Colorado State Unv. 52
 Rutgers, The State Univ. of NJ 52
 Univ. of Miami 52
- 39. Louisiana State Univ. System 51
- 40. Washington Univ. of St. Louis 49

The University of California System with 785 startups and the University of Texas System with 277 startups was excluded from the data since those schools only report data that 16 includes the state's collective results and not individual university results.

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Supporting Technology Transfer and Catalyzing Economic Development at the University of New Mexico

ECONOMIC DEVELOPMENT

A RAINFOREST IN THE DESERT

What is a Rainforest?

- An environment with special characteristics
- Provide the right setting to foster serendipitous evolution
- As applied to innovation systems, we want to nurture the sprouts (startup companies) to grow
- Bottom-up model





UNM 2018 INNOVATION & ECONOMIC PROSPERITY UNIVERSITY AWARD WINNER

- APLU named University of New Mexico the 2018 Innovation & Economic Prosperity (IEP) University Award Winner
- UNM won the IEP Place award for exemplary initiatives resulting in social, cultural, or community development





STATEWIDE ECONOMIC IMPACT REPORT

- * Commissioned by UNM Rainforest Innovations and made possible by support from the Department of **Commerce Economic Development** Administration CARES Act Funding
- Comprised of data from fiscal year * 2020, the following highlights are derived from data from Albuquerque Main Campus, Health Sciences Center, Sandoval Regional Medical Center in Rio Rancho, and the four branch campuses in Taos, Valencia County, Los Alamos, and Gallup and UNM alumni.



UNM's annual operational expenditures for faculty

UNM's annual revenue that came from out-of-state

The additional amount UNM alumni residing in New Mexico earned than they would have with just a high

UNM's quantifiable economic impact has four major components: university operations, student expenditures, alumni productivity, and technology transfer. Together they account for 40,153 jobs, \$2.1 billion in annual labor income, and \$5.2 billion in economic output.





ABQ Ecosystem



U.S. ECONOMIC DEVELOPMENT ADMINISTRATION

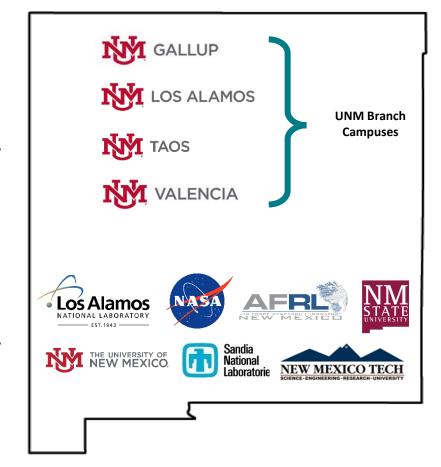
EDA New Mexico Rainforest University Center

Tribal Entrepreneurship Project

INNOVATE NEW MEXICO® Discover The State of Innovation

Technology Showcases

Statewide New Mexico Ecosystem





INNOVATE NEW MEXICO®

Discover The State of Innovation

- Front door for technology transfer and economic development in New Mexico
- Inaugural showcase held April 26, 2016

Showcase recently held virtually on March 1, 2022

- Links start-ups with large corporations and investors out-of-state
- Leverage the assets for the leading technology transfer organizations in the state of New Mexico: UNM Rainforest Innovations, New Mexico State University, New Mexico Tech, Sandia National Labs, Los Alamos National Labs, Air Force Research Labs, Technology Research Collaboration
- Promote New Mexico as the "The State of Innovation"
- Website: <u>http://www.innovatenewmexico.com/</u>



TRIBAL ENTREPRENEURSHIP PROJECT

- 3-year EDA Funded Grant looks to bridge gaps and seek solutions to Tribal Entrepreneurship in underserved communities in New Mexico with a primary focus on coal-impacted tribal communities
- UNMRI will provide mentoring entrepreneurial training opportunities and resources that are in urban parts of the state to rural communities
- Project Manager is Cecilia Pacheco: <u>cpacheco@innovations.unm.edu</u>





EDA UNIVERSITY CENTER

New Mexico Rainforest



- 2022 Seminars (recorded and available online):
 - **Prior Art Searching for your Technology & Startup** presented by Gregg Banninger
 - Seven Pillars of Entrepreneurial Success presented by A.J. Mirabedini
 - A Look at Insurance for the Entrepreneur presented by Michael Chesley
 - Basic Bookkeeping and Financial Literacy for Entrepreneurs presented by Mytegia Lee
 - Why Startups Fail presented by Mike Freeman
 - So you Want to Start a Startup? Susan Cornelius
 - **Product Development & Management** presented by Michael Hay
 - Sales Tips for Small Businesses presented by Stacy Sacco
 - How a Strong Brand Builds Value presented by Seth Gardenswartz (5/4)

Available at http://loborainforest.com/nmrainforest/videos/



MENTORING FOR ENTREPRENEURS

Rainforest Mentor Office Hours

(Now being held online)

- 1:1 mentoring to provide guidance, coaching, perspective, and connections to enhance entrepreneurship and connections to resources at UNM and in the community
- Hosted via Zoom by:
 - UNM Valencia Mentor, Susan Cornelius
 - UNM Los Alamos Mentor, John Chavez
 - UNM Taos Mentor Stacy Sacco
 - Hybrid, In-Person, or Via Zoom
 - UNM Gallup Mentor Mytegia Lee
- SCORE Office Hours
- Quarterly University Center Office Hours at UNM- Taos HIVE





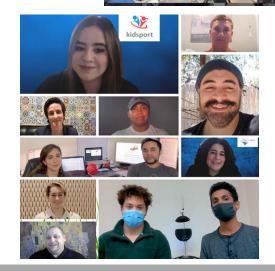


RAINFOREST STUDENT PITCH COMPETITION

This is a community initiative to help recognize our student entrepreneurs in the state!

- Inaugural competition held in March 2015
- Hosted by UNM Rainforest Innovations and the UNM Innovation Academy
- Student entrepreneurs present their innovative ideas for products, services or technologies in 60-90 second presentations before entrepreneurs, investors, and business professionals in the community
- Competition open to students from any university in the state of New Mexico
- Competition has moved virtual!
 - https://innovations.unm.edu/epc/
- Next Competition Deadline planned for Fall 2022

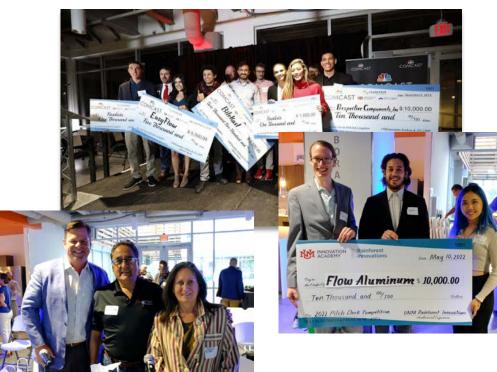






PITCH DECK COMPETITION

- Inaugural event held in 2019 The Pitch Deck Competition is an early-stage pitch competition bringing together university entrepreneurs from all over New Mexico.
- Hosted by the UNM Innovation Academy and UNM Rainforest Innovations, the competition seeks early-stage business models that demonstrate a market-tested ability to adapt to customers' needs.
- The competition is an experiential learning opportunity for would-be student entrepreneurs who are contemplating, starting, or operating an early-stage venture, and to improve their pitching skills, with the potential to earn seed funding for their business model.



- Winners of 2022 Competition:
 - First Place \$10,000 Prize Flow Aluminum Aluminum air battery for grid storage energy
 - Second Place \$5,000 Prize LEGARD Lower-Extremity Guided and Assisted Rehabilitation Device
 - Third Place \$2,500 Prize Ventusol Clean Energy Solutions
 - Finalist \$1,250 Prize ASH The Affordable Student Housing App
 - Finalist \$1,250 Prize Telluride Medical Solutions Mechanical Patient Controlled Analgesia device

INNOVATE **PABQ**



CENTRAL/BROADWAY SITE



UNM raises \$6.5M in external funding to support purchase of site in 2013



INNOVATE ABQ[®] > 7 ACRES

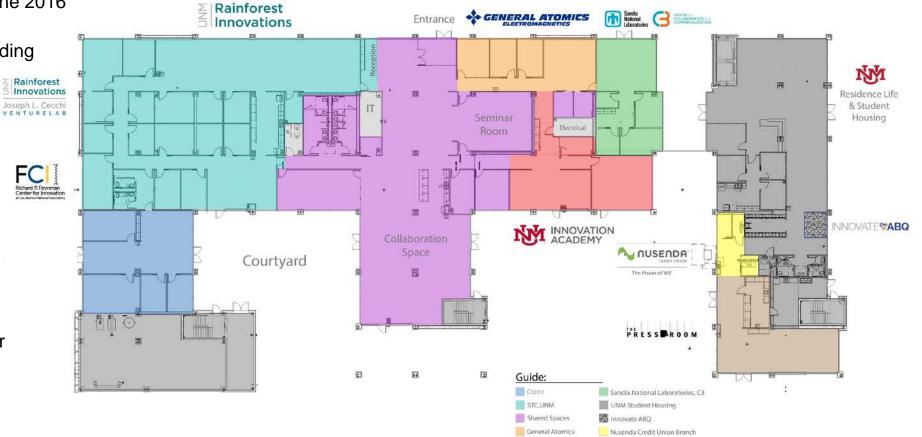
- The core site is the nucleus of Innovate ABQ and the heart of the Innovation District that will drive the revitalization of downtown Albuquerque.
- Innovation Corridor additions since 2013
 - FatPipe ABQ Coworking Space
 - ABQid moved to Fuse Makerspace
 - FreeRange Coworking Space
 - Titan Development mixed-use project with multifamily housing, retail and a hotel (Central north of Presbyterian Hospital)
 - Homewood Suites & Hilton Garden Inn (SW corner of Broadway and Central)
 - Vince DiGregory EDo Development mix-used/townhomes (Central between Arno and Broadway)
 - One Central Entertainment District
 - Marriott Springhill Suites Hotel at the Highlands
- Plans for the new development, that could take shape as early as next year, include up to five new buildings. With flexibility and adaptability in mind, the updated plan encompasses an area of approximately seven-acres and addresses COVID-19 related impacts, including accommodating more outdoor spaces, work areas, and amenities, remodel for a bioscience lab and related parking needs.
 - New partnership has also formed between the University of New Mexico and HatchSpaces, LLC to develop the bioscience lab project.
 - Feasibility study for use of corner of Central & Broadway for creative innovation activity





INNOVATE ABQ®

- First new building Lobo Rainforest building held groundbreaking ceremony June 2016
- 158,830 square foot, Six story building
- Ground Floor–29,485 square feet
 - UNM Rainforest Innovations
 - Cecchi VentureLab (CVL)
 - UNM Innovation Academy
 - Sandia National Labs
 - General Atomics
 - Los Alamos Lab
 - Nusenda Branch/Café
- Upper five floors
 - 155 apartments
 - o 2 bedroom/2 bath units
 - Small fitness center 2nd floor



Innovation Academy

The Press Room Cafe

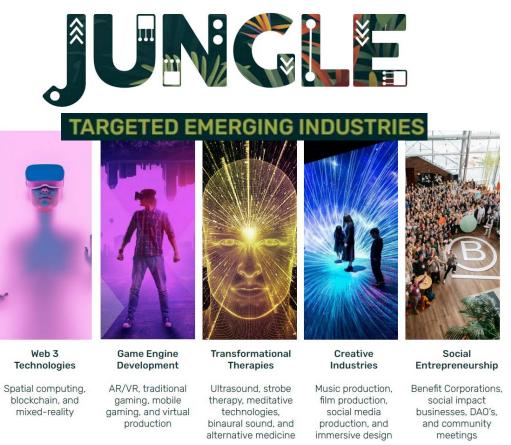
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BRAINFOREST

INNOVATE ABQ®

The Jungle

- A regional ecosystem to support and expand creative entrepreneurship in New Mexico.
 - Will provide the Innovation District with an unprecedented creative hub of social gathering, cultural expression, thought leadership, and business resources that centralizes entrepreneurial energy and helps build momentum for excellence in our state.
 - Groundbreaking, co-creating space of innovation that provides an elevated social environment which is simultaneously fun and wildly productive.



Jungle Programming

- Entrepreneurial Services convert an idea into action
- Social Gathering Spaces (XR live events)
- Exhibition Spaces for demos and prototypes
- Development Spaces specifically for targeted emerging industries

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Supporting Technology Transfer and Catalyzing Economic Development at the University of New Mexico

CORPORATE ENGAGEMENT

CORPORATE ENGAGEMENT

Introduction

Vision

Our vision situates UNM at the top of global corporate call lists for engaging talent, advancing research, establishing collaborations, and developing workforce.

Mission

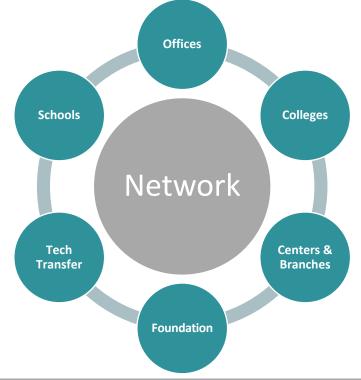
To identify, develop, and support the acquisition of new corporate research, strategic partnerships, educational partnerships, workforce development, philanthropic opportunities, and technology transfer for UNM, UNM Rainforest Innovations and the UNM Foundation.

Value Proposition

Through a Corporate Engagement focus on developing sustainable processes and the strategic management of global corporate partnerships, expand corporate funding into UNM's Schools, Colleges, and Centers that advances cutting-edge research, builds world-class facilities, and trains the best and brightest diverse workforce; all in support of UNM's long-term corporate business objectives. Partnerships thrive when Corporate and University goals align.

Corporate Engagement helps build lasting strategic connections.

Why Industry Partners? - important component of a research enterprise.



CORPORATE ENGAGEMENT

What are Key factors for Success?

- Proactive Role of University
- Collaborative Platform
- Entrepreneur Skills Drive Research Adoption
- Awareness about Product
- Education

Engage Alumni Association

- active role in commercialization of research leads to results.
 - a University strategy that connects people = shared ideas, working together, and networking
 - encourage entrepreneurial passion
 researchers that turn effort into applications.
 - awareness about applications = highlights focus on product and life cycle.
 - think beyond research outcome as a publication = leads to real-world application.
 - enlist the value of the greatest asset of a university: its people, especially alumni.

What does Industry want?

Companies want to engage with Faculty, Staff, and Students

- Advance Research
- Engage Student Talent
- License Technology
- Sponsor Classroom Projects
- Utilize Research Facilities
- Prep Students for the Workforce

How do we go about this?

Keys to Partnerships between University Departments and Companies

- Understand Variety of Interactions
- Identify the Stakeholders
- Understand motivation: Theirs/Ours
- Involve Leadership
- Establish Efficient Communication
- Focus on Social Capital Resources

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Supporting Technology Transfer and Catalyzing Economic Development at the University of New Mexico

NOTABLE ACCOMPLISHMENTS

THE UNIVERSITY OF NEW MEXICO RANKS 2ND ON INNOVATION IMPACT REPORT

A report released in June 2020 from the Bush Institute and Opus Faveo ranks the University of New Mexico 2nd among midsized research universities for innovation impact productivity.

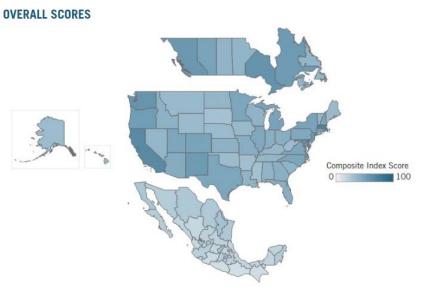
Table 3. University Rankings for Innovation Impact Productivity

Mid-Sized Research Universities:		Innovation Impact Productivity Score	Rank Based on Weighted Average
1	Drexel University	7.85	1
2	University of New Mexico	6.77	2
3	Princeton University	5.68	3
4	Carnegie Mellon University	5.42	4
5	University of Central Florida	4.78	5
6	University of New Hampshire	4.57	8
7	University of Houston	4.34	6
8	Washington State University	4.27	7
9	Rice University	4.12	9
10	Temple University	3.70	10
	Median of group:	2.81	



NORTH AMERICAN SUBNATIONAL INNOVATION COMPETITIVENESS INDEX

- In June 2022 Report by the Information Technology & Innovation Foundation (ITIF)
 - New Mexico ranks 8th among North American states in ITIF's index scoring subnational innovation competitiveness (measured by 13 indicators divided into 3 categories: knowledge-based workforce, globalization, and Innovation Capacity)
 - New Mexico leads North America in R&D intensity



Rank	State/Province	Country	Composite Score
1	Massachusetts	United States	91.5
2	California	United States	83.9
3	Ontario	Canada	75.2
4	Maryland	United States	75.0
5	Washington	United States	74.2
6	British Columba	Canada	70.4
7	New Jersey	United States	70.2
8	New Mexico	United States	68.3
9	Quebec	Canada	68.1
10	Oregon	United States	66.0

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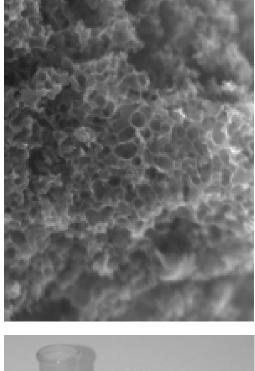
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STARTUP EXAMPLES



- Thomas J. Stephenson, CEO
- Albuquerque based start-up company focusing on non-platinum fuel cell catalysts
 - Commercializing next-generation catalysts and catalyst supports for the fuel cell and electrolyzer industries
 - Venture-backed startup, funded by the Verge Fund, Omphalos Venture Partners and other investors
- Raised several million and received several grants including a \$1M DOE grant
- Recently closed \$9.4 million investment in Series-B funding from Hyundai Motor Company
- https://pajaritopowder.com







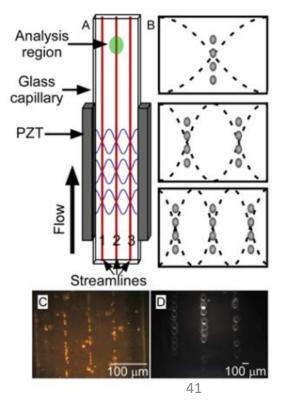




- Steve Graves, Ph.D., Founder, President & CEO
- Albuquerque-based startup moved from WESST into larger facility at 6610 Gulton Ct. NE.
 - Expanding commercialization efforts for their instrument, the Velocyt
- High-throughput technology that increases the cell analysis rate for flow cytometers by using parallel analysis streams
 - Provides early-stage detection of many forms of cancer
 - Excellent sensitivity and precision
 - Improves flow cytometry sample throughput by over 100x
 - Important role in personalized medicine, cancer, and immunotherapy research
- \$5 million Series B Raised in 2020 Led by Co-win Venture with Tramway Venture Partners, Cottonwood Technology Fund, and Sun Mountain Capital
- https://bennubio.com/



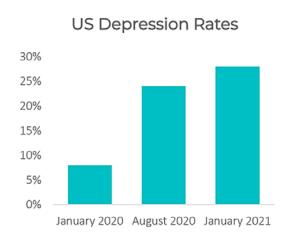








- Alexander Hafez, PhD, Co-Founder, President & CEO
- Nikolaos Mellios MD, PhD, Co-Founder, Lead Inventor
- Albuquerque based start-up developing the first RNA-based diagnostic assay to provide physicians with an optimal therapeutic course of action in treating major depressive disorder.
- Closed on a \$4.5M series seed investment round co-lead by Cottonwood Technology Fund III and Tramway Venture Partners and included Mountain Group Partners and other individual investors.
- https://www.circulargenomics.com/



The Need has Never Been Greater

Depression rates are 3-times higher than the beginning of the Covid-19 pandemic

- US Census Bureau, Household Survey, 2020-2021

