RESEARCH AND HEALTH SCIENCES COMMITTEE MEETING
ARIZONA BOARD OF REGENTS

THIS IS A VIRTUAL MEETING

Friday, March 25, 2022
9:00 a.m. - 10:30 a.m.

Members of the public may attend the public portion of the virtual meeting by viewing the livestream of the meeting.

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  https://www.youtube.com/user/abornews
- Click the top video for the livestream of the meeting.
  If the above link does not work, open a browser, go to www.youtube.com or search YouTube
- Once in YouTube, use the search bar to search for ABOR News
- Click the video that says Live

If livestream fails a call-in option will be available for public access and will be posted on the ABOR website at http://www.azregents.edu/about/abor-live.

For technical assistance, click the link here ABOR Tech Support or email Tom.Merriam@azregents.edu and John.Murnane@asu.edu.

Committee Members:
Regent Fred DuVal, Chair
Regent Ron Shoopman, Vice Chair
Regent Bill Ridenour
Regent Jessica Pacheco
Regent Larry Penley
Regent Nikhil Dave
Regent Lyndel Manson (ex-officio)

9:00 a.m. CALL TO ORDER, GREETINGS, AND ANNOUNCEMENTS FROM THE COMMITTEE CHAIR

9:01 a.m. 1. Approval of Minutes

The board office asks the committee to review and approve the January 27, 2022 Research and Health Sciences Committee Meeting Minutes.
9:05 a.m. 2. Update on Process for Regents’ Grants Proposals

The board office will provide an update on the TRIF funded Regents’ Grant Proposals.

9:10 a.m. 3. Approval of Regents’ Grants Proposal #1 – Better Predictive Method to Establish the Independent and Reasonably Controllable Variables Influencing Ozone in Arizona

The universities and the board office ask the committee to review and forward to the board for approval of its Regents’ Grants Proposal for a Better Predictive Method to Establish the Independent and Reasonably Controllable Variables Influencing Ozone in Arizona.

9:15 a.m. 4. Approval of Regents’ Grants Proposal #2 – Arizona’s Need for a Cost-Effective Solution to Identify an Optimal Fallow Field Plan that Minimizes the Health Impact of Wind-Blown Dust (PM10) and Valley Fever

The universities and the board office ask the committee to review and forward to the board for approval of its Regents’ Grants Proposal for Arizona’s need for a cost-effective solution to identify an optimal fallow field plan that minimizes the health impact of wind-blown dust (PM10) and Valley Fever.

9:30 a.m. 5. Approval of Regents’ Grants Proposal #3 — Arizona’s Need for a Cost-effective Technology to Remediate PFAS (“Forever Chemicals”) Contaminated Water

The universities and the board office ask the committee to review and forward to the board for approval of its Regents’ Grants Proposal for Arizona’s need for a cost-effective technology to remediate PFAS (“Forever Chemicals”) contaminated water.

9:35 a.m. 6. Approval of Regents’ Grants Proposal #4 – Arizona’s Need of a Comprehensive Assessment Identifying Potentially Hazardous Abandoned Mine Features Impacting Surface and Groundwater

The universities and the board office ask the committee to review and forward to the board for approval of its Regents’ Grants Proposal for Arizona’s need of a comprehensive assessment identifying potentially hazardous abandoned mine features impacting surface and groundwater.
9:55 a.m.  7. Approval of Regents’ Grants Proposal #5 – An Economic Feasibility Study to Manage Recycling by Municipality Size with Detailed Recycling Options for Arizona and Highlight Pros and Cons for Each Community Size

The universities and the board office ask the committee to review and forward to the board for approval of its Regents’ Grants Proposal for an economic feasibility study to manage recycling by municipality size with detailed recycling options for Arizona and highlight pros and cons for each community size.

9:50 a.m.  8. Phoenix Biomedical Campus Update and Discussion

The committee will receive an update and engage in a discussion regarding the Phoenix Biomedical Campus.

10:00 a.m.  9. Update on the University of Arizona Health Sciences (UAHS) and Banner Health Affiliation

The committee will receive an update on the UAHS Banner Health affiliation.

10:30 a.m.  Adjourn

PLEASE NOTE: This agenda may be amended at any time prior to 24 hours before the committee meeting. Estimated starting times for the agenda items are indicated; however, discussions may commence, or action may be taken, before or after the suggested times. Any item on the agenda may be considered at any time out of order at the discretion of the committee chair. The committee may discuss, consider, or take action regarding any item on the agenda. During the meeting, the committee may convene in executive session pursuant to A.R.S. § 38-431.03(A)(3) for legal advice regarding any item on the agenda.
A hybrid meeting of the Research and Health Sciences Committee was held on January 27, 2022.

Committee Members present: Regent Shoopman, Vice Chair, Regent Ridenour, Regent Pacheco, Regent Penley, Regent Dave, Regent Manson,

Committee Members present via video: Regent DuVal, Chair

Other Regents present: Regent Mata, Regent Herbold, Regent Kanyur

From Arizona State University: President Crow, Christine Wilkinson, Provost Nancy Gonzales, Sally Morton
In attendance via video: Rich Stanley, Bayan Wahid, Jesus Antonio Diaz, Rick Naimark

From Northern Arizona University: President Cruz Rivera, Provost Pugliesi, Laurie Dickson, Christy Farley
In attendance via video: Jason Wilder, Andrew Koppisch, Gayla Stoner

From the University of Arizona via video: President Robbins, Jon Dudas, Kody Kelleher, Art Lee
In attendance via video: Provost Liesl Folks, Betsy Cantwell, John O’Neil

From Phoenix Biomedical Campus: David Krietor

From the Board Office: Executive Director, John Arnold, Chad Sampson, Jennifer Pollock, Samantha Blevins, Page Gonzales, Larry Sandigo, Tom Merriam, Rachel Malefors, Suzanne Templin, and Debbie Sale
In attendance via video: Ken Polasko

Chair DuVal called the meeting to order at 3:02 p.m.
Regent Dave declared a conflict on Items 2, 3 and 4.

APPROVAL OF MINUTES (Item 1)

Upon motion by Regent DuVal, and seconded by Regent Shoopman, the committee approved the October 22, 2021 Research and Health Sciences Committee Meeting Minutes.

Regents DuVal, Shoopman, Ridenour, Pacheco, Penley, Dave and Manson, voted in favor.
None opposed and none abstained. Motion passed.

APPROVAL OF REVISED TRIF 3-YEAR BUDGET (Item 2)

Regent Dave recused himself and was not present this item. He exited the meeting at 3:04 p.m.
Chad Sampson, ABOR, presented this item to the committee. He also introduced Larry Sandigo, ABOR, who presented the budget portion pertaining to Attainment and Work Force Initiatives. He described the work and ongoing activities in these areas. Regent Mata asked him to describe ways that he is engaging with the Hispanic parents of high school students. Mr. Sandigo answered that direct conversation is very effective. Another example of parent engagement is an ASU eight-week program for parents to learn about the college going process, offered in both English and Spanish.

Director Arnold added that TRIF dollars are being used to leverage communication and collaboration with other statewide partners, such as Medicaid, and possibly DES.

Upon motion by Regent DuVal and seconded by Regent Shoopman, approved that the committee reports to the full board for approval the Revised TRIF 3-Year Budget.

Regents DuVal, Shoopman, Ridenour, Pacheco, Penley, and Manson voted in favor. None opposed. Motion passed. Regent Dave recused himself from this action.

REQUEST TO AMEND TRIF 3-YEAR PLAN FOR ARIZONA STATE UNIVERSITY (Item 3)

Regent Dave recused himself and was not present for this item.

Dr. Sally Morton, Arizona State University, presented to the committee and included information for both agenda items three and four.

Regent Penley added that he appreciated that the allocated funds are being leveraged in a substantial way and that ASU is focusing on the impact on Arizona as well as the return on investment.

Regent Manson asked if the amount of money allocated to energy and sustainability is large enough to make a significant leap forward.

Dr. Morton explained that through a series of seed grants, ASU will be able to effectively compete for the large monies that are forthcoming on the federal stage.

Upon motion by Regent DuVal and seconded by Regent Shoopman, the committee approved forwarding to the full board for approval the Arizona State University’s amendment to its TRIF 3-Year Plan.

Regents DuVal, Shoopman, Ridenour, Pacheco, Penley, and Manson voted in favor. None opposed. Motion passed. Regent Dave recused himself from this action.

REQUEST TO APPROVE ARIZONA STATE UNIVERSITY’S PROPOSAL FOR THE USE OF TRIF SUPPORTED OPPORTUNITY INITIATIVE FUNDS (Item 4)

Regent Dave recused himself and was not present for this item.
Upon motion by Regent DuVal seconded by Regent Ridenour, the committee approved forwarding to the full board for approval Arizona State University’s Proposal to expend $10 million in TRIF Opportunity Initiative Funds.

Regents DuVal, Shoopman, Ridenour, Pacheco, Penley, and Manson voted in favor. None opposed. Motion passed. Regent Dave recused himself from this action.

Regent Dave re-entered the meeting at 3:39 p.m.

REQUEST TO AMEND TRIF 3-YEAR PLAN FOR NORTHERN ARIZONA UNIVERSITY (Item 5)

Provost Pugliesi, Northern Arizona University, presented to the committee.

Regent DuVal asked if President Cruz-Rivera would present the next agenda item. At that point he would open it up for questions and discussion for both items.

Upon motion by Regent DuVal, and seconded by Regent Ridenour, the committee approved forwarding to the full board for approval Northern Arizona University’s amendment to its TRIF 3-Year Plans.

Regents DuVal, Shoopman, Ridenour, Pacheco, Penley, Dave and Manson voted in favor. None opposed. Motion passed.

REQUEST TO APPROVE NORTHERN ARIZONA UNIVERSITY’S PROPOSAL FOR THE USE OF TRIF SUPPORTED OPPORTUNITY INITIATIVE FUNDS (Item 6)

President Cruz-Rivera presented this item to the committee.

Regent DuVal indicated that he views this presentation as a draft that is evolving over the next few weeks as NAU continues to engage with other partners. He suggested that in his motion, he will refer to this version as a draft to signify that it will come back to the board in a more mature form.

Regent Shoopman added that he thought this was an evolving process that could possibly take months. He suggested that the committee would agree to allow NAU flexibility to go forward in this unique way. Regent DuVal agreed and wanted to capture in the motion that there will be more specific information when this item goes before the full board.

Regent Penley appreciated that President Cruz-Rivera outlined what the specific impact to the community would be. He looks forward to seeing the extended development of this plan.

Regent Manson stated that the committee seems to be in concurrence that the president presented the appropriate areas for NAU to be pursuing with TRIF funds. She suggested the committee forward to the board with the understanding that the specific allocations will be identified. Further, Regent Manson suggested that future metrics of success should be associated with the specific dollar values.
President Cruz-Rivera agreed that NAU would be able to provide specific outcomes with measurable metrics. He is hoping that the board will approve the framework and the direction as they continue to work on the metrics.

Upon motion by Regent DuVal, and seconded by Regent Ridenour, the committee approved forwarding to the full board for approval Northern Arizona University’s proposal to expend $20 million in TRIF Opportunity Initiative Funds, anticipating NAU’s providing the board with an additional detailed proposal at the board meeting in February.

Regents DuVal, Shoopman, Ridenour, Pacheco, Penley, Dave and Manson voted in favor. None opposed. Motion passed.

REQUEST TO AMEND TRIF 3-YEAR PLAN FOR THE UNIVERSITY OF ARIZONA (Item 7)

Dr. Betsy Cantwell, the University of Arizona, presented to the committee and included information for both agenda items seven and eight.

Regent DuVal expressed that the underlying presentation and process elevated his understanding relative to the material that was previously sent to the regents. He is looking for UArizona to evolve the vocabulary and design of the material going to the board particularly around a clear understanding of public benefit and tools of measurement.

Dr. Cantwell said they are prepared, and it will be sent to regents soon.

Regent Ridenour asked about how the Institute for the Future of Data and Computing ties into the quantum networking group and would like to know if the universities are ahead of the curve in developing these areas.

Dr. Cantwell said the quantum networking funding is a ten-year track of funding to develop the tools and equipment that will deliver quantum scale, internet protocol. They have ten years to deliver producible commercial units. There is a workforce component that hopefully will be growing and available for companies that begin to pop up in eight years.

Regent Herbold asked where the institute will sit in the organization? Dr. Cantwell said that since it does not deliver academic programs it will be under her responsibility. It is a research workforce and economic, integrator.

Regent Penley asked about putting into context the university’s overall research and development expenditures, specifically with the incremental funding, in terms of reaching overall goals.

Dr. Cantwell mentioned unit goals called Path to a Billion Challenge. She touched on the college of engineering and the college of applied science and technology that have upward trajectory and research aspirations, along with health sciences. The materials that UArizona sends to the board will show pathways around the five initiatives.
Upon motion by Regent DuVal, and seconded by Regent Ridenour, the committee approved forwarding to the full board for review and consideration the University of Arizona’s amendment to its TRIF 3-Year Plan anticipating that the board will have an amended plan.

Regents DuVal, Shoopman, Ridenour, Pacheco, Penley, Dave and Manson voted in favor. None opposed. Motion passed.

REQUEST TO APPROVE THE UNIVERSITY OF ARIZONA’S PROPOSAL FOR THE USE OF TRIF SUPPORTED OPPORTUNITY INITIATIVE FUNDS (Item 8)

Upon motion by Regent DuVal, and second by Regent Ridenour the committee approved forwarding to the full board for review and consideration of the University of Arizona’s proposal to expend $10 million in TRIF Opportunity Initiative Funds with the understanding that the board will receive additional material.

Regents DuVal, Shoopman, Ridenour, Pacheco, Penley, Dave and Manson voted in favor. None opposed. Motion passed.

UPDATE ON PROCESS FOR REGENTS GRANT PROPOSALS (Item 9)

Regent DuVal tabled this interest of time. No discussion took place.

PHOENIX BIOMEDICAL CAMPUS UPDATE AND DISCUSSION (Item 10)

Regent DuVal tabled this interest of time. No discussion took place.

AJOURNMENT

The meeting adjourned at 4:34 p.m.

Submitted by:

______________________________
Debbie Sale
Committee Secretary
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Item Name  Update on Process for Regents’ Grant Proposals

☐ Action Item

**Requested Action:** The board office will provide an update on the TRIF funded Regents’ Grant Proposals.

**Background/History of Previous Board Action**

Arizona law established TRIF from Proposition 301 state sales tax revenue and gives ABOR the authority to administer the fund on the universities’ behalf. The board manages and administers the TRIF revenues through awarding and allocating revenues.

One of the options the board has is to award TRIF revenues to the universities through the recently developed Regents’ Grant process.

**Discussion**

The purpose of Regents’ Grants is to address and deliver solutions to critical issues facing the State of Arizona and its citizens. The regents may award TRIF funding to Arizona public universities in the form of Regents’ Grants.

The Regents’ Grants are designed to address and deliver solutions through academic research to critical issues facing the State of Arizona and its citizens by:

- Accelerating and delivering solutions to crucial unmet needs for the State of Arizona;
- Bringing together and leveraging synergistic skill sets resident at multiple Arizona public universities; and
- Establishing centers of excellence that will generate sustainable future research funding.

In collaboration with the Arizona Governors’ Office, state agencies, and key state experts, the board office assembled a listing of prioritized problem statements impacting the State of Arizona and these served as the basis for solicitation for multi-university research proposals.

This grant program is not intended to be an end unto itself, but a strategy for working

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Ken Polasko, ABOR  ken.polasko@azregents.edu  602-229-2591
EXECUTIVE SUMMARY

with the State of Arizona to improve Arizona by addressing and solving critical problems and issues facing the state.

The first set of multi-university proposals were submitted to the Arizona Department of Environmental Quality in response to a list of problem statements developed by the agency. The agency evaluated the proposals and worked with the board office to submit six proposals to be awarded Regents’ Grant Funding.

The committee is asked to review and recommend for board approval each of the suggested Regents’ Grants proposals contained in the committee materials.

Statutory/Policy Requirements

A.R.S. § 15-1648 “Technology and Research Initiative Fund”

ABOR Policy 3-412 “Administration of Technology and Research Initiative Fund”
Item Name: Approval of Regents’ Grants Proposal #1 – Better Predictive Method to Establish the Independent and Reasonably Controllable Variables Influencing Ozone in Arizona

☑️ Action Item

Requested Action: The universities and the board office ask the committee to review and forward to the board for approval of its Regents’ Grants Proposal for a Better Predictive Method to Establish the Independent and Reasonably Controllable Variables Influencing Ozone in Arizona.

Background/History of Previous Board Action

Arizona law established TRIF from Proposition 301 state sales tax revenue and gives ABOR the authority to administer the fund on the universities’ behalf. The board manages and administers the TRIF revenues through awarding and allocating revenues.

One of the options the board has is to award TRIF revenues to the universities through the recently developed Regents’ Grant process.

The purpose of Regents’ Grants is to address and deliver solutions to critical issues facing the State of Arizona and its citizens.

The board office engaged with Governor’s Office, the Department of Administration, and the Department of Environmental Quality (AzDEQ), Department of Health Services (AzDHS) and Department of Water Resources (AzDWR) to develop a list of problem statements.

The universities received ADEQ’s initial problem statements in November of 2021 and engaged in a Q&A session held in January to answer faculty questions regarding the problem statements. ADEQ’s problems statements are:

1. Currently we do not understand how the unique southwest natural environment and potential ozone precursor sources in Arizona—nitrogen oxides (NOx), volatile organic compounds (VOCs), and biogenic volatile organic compounds (BVOCs) impact or assist in the production of ozone in Arizona. Thus, it is not clear which types of controls can be put in place or voluntary actions Arizonans can take to reduce ozone and improve air quality. Beyond the existing photochemical air modeling and analysis, Arizona needs a better predictive method to establish the independent and reasonably controllable variables influencing ozone in Arizona.

Contact Information:
Chad Sampson, ABOR  chad.sampson@azregents.edu  602-229-2512
Ken Polasko, ABOR  ken.polasko@azregents.edu  602-229-2591
2. Arizona would benefit from a cost-effective solution and/or options to identify an optimal fallow field plan that minimizes wind-blown PM10 (~dust) emissions and Valley Fever spores.

3. Need cost effective technology to remediate PFAS contaminated water and need a cost-effective means to replace current AFFF supplies with a more benign but effective fire suppressant.

4. Arizona needs a comprehensive assessment identifying potentially hazardous mine features impacting surface and groundwater. Arizona needs a cost-effective solution or mitigation technology that can limit the spread of contaminants via water and air.

5. Arizona would benefit from an economic feasibility study to manage recycling by municipality size. The study should detail recycling options for Arizona and highlight pros and cons for each community size.

The universities submitted their proposals in response to the State’s problem statements in February and ADEQ, AzDHS and ABOR reviewed the proposals.

Discussion

Based on the reviews of the multi-university proposals submitted in response to Problem Statement #1 regarding a better predictive method to establish the independent and reasonably controllable variables influencing ozone in Arizona, the committee is asked to review and recommend for Regents’ Grant Funding the following proposal:

Context:

Maricopa County air quality was not sufficient to meet the EPA National Ambient Air Quality Standards for 2020. Currently Arizona does not understand how the unique southwest natural environment and potential ozone sources/precursors impact or assist in the production of ozone in Arizona. As ozone is almost never emitted directly into the atmosphere but formed from chemical reactions driven by sunlight from precursors including the nitrogen oxides and volatile organic compounds, any effective control strategy must be based on accurate precursor emission inventories. Beyond corroborating emission inventories, lowering concentrations of ozone will require reductions in emissions. However, many important emission sources are either uncontrollable (i.e. emissions from natural vegetation) or outside local regulatory control (i.e. emissions from mobile sources which are regulated at the Federal level). Thus, it is not clear which types of controls will be most efficient or voluntary actions Arizonans can take to reduce ozone and improve air quality.

Team:
Arizona State University: Drs. Matthew P. Fraser and Pierre Herckes
University of Arizona: Drs. Avelino Arellano and Armin Sorooshian,

Proposal Summary

Integrate measurements of ozone producing chemical compounds with a state-of-the-art regional air quality model and satellite products of ozone and its associated compounds to better understand, model and predict Arizona ozone concentrations. The research team will use a numerical weather prediction system with chemistry to simulate key interactive processes influencing the production and loss of ozone. A novel solutions-focused effort along addressing two key components relevant to advancing ozone mitigation: emission inventory verification and novel programs to incentivize emissions reductions from sources outside local regulatory control.

Why it Matters to Arizona

Ozone nonattainment in the area of Maricopa and Yuma Counties is affecting human health. Continued non-attainment of the health-based National Ambient Air Quality Standard (NAAQS) for ozone means that local residents are exposed to elevated pollutant levels that impact their health, including induction of respiratory symptoms, decrements in lung function, inflammation of airways. Evidence from observational studies strongly indicates that higher daily ozone concentrations are associated with increased asthma attacks, increased hospital admissions, increased daily mortality, and other markers of morbidity.

Ozone nonattainment will also create a chilling effect on economic growth if not addressed because federal standards serve to increasingly limit new emissions sources and expansion of existing sources in nonattainment areas.

Budget

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Project Length

Three years.

Statutory/Policy Requirements

A.R.S. § 15-1648 “Technology and Research Initiative Fund"

ABOR Policy 3-412 “Administration of Technology and Research Initiative Fund”
Item Name: Approval of Regents’ Grants Proposal #2 – Arizona’s Need for a Cost-Effective Solution to Identify an Optimal Fallow Field Plan that Minimizes the Health Impact of Wind-Blown Dust (PM10) and Valley Fever

☑️ Action Item

**Requested Action:** The universities and the board office ask the committee to review and forward to the board for approval of its Regents’ Grants Proposal for Arizona’s Need for a Cost-Effective Solution to Identify an Optimal Fallow Field Plan that Minimizes the Health Impact of Wind-Blown Dust (PM10) and Valley Fever.

**Background/History of Previous Board Action**

Arizona law established TRIF from Proposition 301 state sales tax revenue and gives ABOR the authority to administer the fund on the universities’ behalf. The board manages and administers the TRIF revenues through awarding and allocating revenues.

One of the options the board has to award TRIF revenues to the universities is through the recently developed Regents’ Grant process.

The purpose of Regents’ Grants is to address and deliver solutions to critical issues facing the State of Arizona and its citizens.

The board office engaged with Governor’s Office, the Department of Administration, and the Department of Environmental Quality (AzDEQ), Department of Health Services (AzDHS) and Department of Water Resources (AzDWR) to develop a list of problem statements.

The universities received ADEQ’s initial problem statements in November of 2021 and engaged in a Q&A session held in January to answer faculty questions regarding the problem statements. ADEQ’s problems statements are:

1. Currently we do not understand how the unique southwest natural environment and potential ozone precursor sources in Arizona—nitrogen oxides (NOx), volatile organic compounds (VOCs), and biogenic volatile organic compounds (BVOCs) impact or assist in the production of ozone in Arizona. Thus, it is not clear which types of controls can be put in place or voluntary actions Arizonans can take to reduce ozone and improve air quality. Beyond the existing photochemical air modeling and analysis, Arizona needs a better predictive method to establish the
independent and reasonably controllable variables influencing ozone in Arizona.

2. Arizona would benefit from a cost-effective solution and/or options to identify an optimal fallow field plan that minimizes wind-blown PM10 (~dust) emissions and Valley Fever spores.

3. Need cost effective technology to remediate PFAS contaminated water and need a cost-effective means to replace current AFFF supplies with a more benign but effective fire suppressant.

4. Arizona needs a comprehensive assessment identifying potentially hazardous mine features impacting surface and groundwater. Arizona needs a cost-effective solution or mitigation technology that can limit the spread of contaminants via water and air.

5. Arizona would benefit from an economic feasibility study to manage recycling by municipality size. The study should detail recycling options for Arizona and highlight pros and cons for each community size.

The universities submitted their proposals in response to the State’s problem statements in February and ADEQ, AzDHS and ABOR reviewed the proposals.

Discussion

Based on the reviews of the multi-university proposals submitted in response to Problem Statement #2 regarding Arizona’s need for a cost-effective solution to identify an optimal fallow field plan that minimizes the health impact of wind-blown dust (PM10) and Valley Fever.

The committee is asked to review and recommend for Regents’ Grant Funding the following proposal in response to this problem statement:

Context:

Fallow fields, especially in arid Central Arizona, are a growing air quality concern due to an anticipated increase in water restrictions in Pinal County. West Pinal County currently has a serious issue for particles with a diameter less than 10 micrometers (PM10), commonly referred to as “dust”. These small particles can get deep into lungs, and some may even get into your bloodstream. Exposure to such particles can affect both lung and heart function. Numerous scientific studies have linked particle pollution exposure to a variety of problems, including premature death in people with heart or lung disease, nonfatal heart attacks, irregular heartbeat, aggravated asthma, and Valley Fever (one of the most commonly reported infectious diseases in Arizona).
EXECUTIVE SUMMARY

Team:
Arizona State University: Drs. Matthew Fraser, Pierre Herckes, Jon Miller, Sean Dudley, Ferran Garcia-Pichel, Ed Kavazanjian
Northern Arizona University: Drs. Paul Keim, David Wagner, Bridget Barker
University of Arizona: Drs. Jon Chorover, John Galgiani

Proposal Summary

To deploy sustainable, bio-mediated and bio-inspired technologies in fallow fields to suppress fugitive dust formation and simultaneously maintain or improve soil fertility in a manner that is simple and eventually actionable for land managers.

Also, the three Arizona Public Universities have the key people and infrastructure needed to collect and analyze the physical, molecular, and clinical data required for a much deeper understanding of the source and transmission of Valley fever. In addition, a tangible end product of this work will be a geospatial modeling and visualization system that will serve as a prototype of a decision-making tool that will bring together a wide variety of current data on the sources of the Valley fever pathogen and its clinical impact in the state.

Why it Matters to Arizona

Blowing dust is a significant underrated hazard in Arizona with impacts across many disciplines and sectors of the economy including transportation, public health, and air quality. Exposure to such particles can affect both lung and heart function. Numerous scientific studies have linked particle pollution exposure to a variety of problems, including premature death in people with heart or lung disease, nonfatal heart attacks, irregular heartbeat, aggravated asthma, and Valley Fever (one of the most commonly reported infectious diseases in Arizona).

Budget

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Project Length

Three years.

Statutory/Policy Requirements

A.R.S. § 15-1648 “Technology and Research Initiative Fund”
ABOR Policy 3-412 “Administration of Technology and Research Initiative Fund”
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Regents Research Proposals
Environmental Sources of Valley Fever and Dust Mitigation

Arizona Board of Regents
Research and Health Sciences Committee Meeting
March 25, 2022
Valley Fever: An Economic and Public Health Problem For Arizona

- Valley fever is a fungal infection. The fungus lives in the Sonoran desert and produces spores. Inhaled spores cause 20,000 U.S. cases/yr.
  - Maricopa County the source of half of U.S. infections.
  - Valley fever cost Arizona $750 M in 2019.
  - There is no preventative vaccine or cure.
- The state-wide “VF Collaborative” was created as part of ABOR’s New Economy Initiative.
Controlling Valley Fever Before Infection

**WHAT WE KNOW:**
- The fungus is in only very small parts of the desert.
- Locations are stable, not changing for decades.
- Genetic signatures are different in different locations.

**WHAT TO LEARN:**
- Do some patients’ infection have the same genetics (come from the same location)?
- What soil characteristics does the fungus like?
- Can we keep spores out of the air?
Study Overview

Materials to Study
- Clinical Isolates
  - UA
- Soil Samples
  - NAU
- Air Samples
  - ASU

Analyses
- DNA Sequencing
- Genome Assembly
  - NAU
- Physical and Chemical Analyses
  - UA

Expected Results
- Patients/Soil with the same genetic signature
- Soil characteristics linked to fungal hotspots
- Applicable dust mitigation strategies
ENRICHMENT OF ENVIRONMENTAL STRAINS

% of sample that is Francisella DNA

# of Francisella probes covered
WHOLE GENOME SEQUENCING

Sequence data

Genome assembly

Read mapping
Predicting *Coccidioides* Hot Spots and Hot Moments on the Arizona Landscape (*soils to aerosols*)

**Objectives**

Identify soil characteristics most frequently associated with high prevalence of *Cocci* spores.

Determine soil and ambient atmospheric conditions that promote the aerosolized suspension and off-site transport of *Cocci* spores from those locations.
Soil and Aerosol Characterization: Research Approach

Soil and size-selective (PM$_{10}$) aerosol sampling at replicated locations for each site coupled with laboratory geochemical, mineralogical, and physical analyses.

- Organic matter content and chemistry (thermo-optic carbon analysis)
- Mineral (XRD) and metals composition (ICP-MS)
- Nutrient and ion concentrations (ion chromatography)
- Particle size distributions, soils only (laser diffractometry)

Installation of an in-situ sensor/sampler array at each site time-integrated sampling and sensing

- Hydrometeorological data
- Soil moisture
- Soil temperature
- Aerosol (PM$_{10}$) composition

- What physico-chemical soil characteristics and conditions promote Cocci spore release?
- Use data to inform geospatial risk model.
Problems associated with dust are multiple

- Impacts on public health.
  Airborne particulates promote respiratory ailments.
  Dust as a vehicle for pathogens, allergens.
- Impairment of transportation.
- Topsoil loss: decrease of fertility, increased desertification.

“The known unknowns”
Keeping dust from forming at the source: soils

- Pristine desert is not a significant source of fugitive dust.
- But, some 100,000 ha of impacted soils in central AZ are.
- Fallow ag land is a prime target for intervention.

DEPLOYING SUSTAINABLE TECHNOLOGIES FOR SUPPRESSION OF FUGITIVE DUST AND MAINTENANCE OF FERTILITY IN FALLOW AGRICULTURAL FIELDS
DEPLOYING SUSTAINABLE TECHNOLOGIES FOR SUPPRESSION OF FUGITIVE DUST AND MAINTENANCE OF FERTILITY IN FALLOW AGRICULTURAL FIELDS

**EICP (Kavazanjian)**

- Bio-inspired formation of a carbonate crust

\[
\text{CO}(\text{NH}_2)_2 + \text{CaCl}_2 + \text{H}_2\text{O} \rightarrow 2\text{NH}_4\text{Cl} + \text{CaCO}_3
\]

- urea  \(\text{UREASE}\)  carbonate

- Immediate results
- Releases fertilizer

- Ready for deployment: field tested in landfills
DEPLOYING SUSTAINABLE TECHNOLOGIES FOR SUPPRESSION OF FUGITIVE DUST AND MAINTENANCE OF FERTILITY IN FALLOW AGRICULTURAL FIELDS

BR (Garcia-Pichel)

- Restore and accelerate natural biocrust development
- Cultivate and sow local biocrust forming microbes to accelerate formation of natural biocrusts
  - Approach takes longer (1-2 years)
  - Biocrust are self-sustaining, self-healing
  - Biocrust contribute to further trap dust
  - Biocrusts contribute to soil fertility
- Ready for deployment: field tested in solar farms

ASU
NAU Northern Arizona University
The University of Arizona
Monitor crust formation / stability

Demonstrations to Stakeholders

Install dust monitoring systems (Fraser / Herckes)

Monitor dust production
Monitor soil fertility

Analyses & comparisons

Deployment at W Pinal Co. fallow ag fields (with PCAQC)
THANK-YOU TO THE ARIZONA BOARD OF REGENTS

QUESTIONS AND DISCUSSION
EXECUTIVE SUMMARY

Item Name: Approval of Regents’ Grants Proposal #3 – Arizona’s Need for a Cost-effective Technology to Remediate PFAS (“Forever Chemicals”) Contaminated Water

Action Item

Requested Action: The universities and the board office ask the committee to review and forward to the board for approval of its Regents’ Grants Proposal for Arizona’s Need for a Cost-effective Technology to Remediate PFAS (“Forever Chemicals”) Contaminated Water.

Background/History of Previous Board Action

Arizona law established TRIF from Proposition 301 state sales tax revenue and gives ABOR the authority to administer the fund on the universities’ behalf. The board manages and administers the TRIF revenues through awarding and allocating revenues.

One of the options the board has is to award TRIF revenues to the universities through the recently developed Regents’ Grant process.

The purpose of Regents’ Grants is to address and deliver solutions to critical issues facing the State of Arizona and its citizens.

The board office engaged with Governor’s Office, the Department of Administration, and the Department of Environmental Quality (AzDEQ), Department of Health Services (AzDHS) and Department of Water Resources (AzDWR) to develop a list of problem statements.

The universities received ADEQ’s initial problem statements in November of 2021 and engaged in a Q&A session held in January to answer faculty questions regarding the problem statements. ADEQ's problems statements are:

1. Currently we do not understand how the unique southwest natural environment and potential ozone precursor sources in Arizona—nitrogen oxides (NOx), volatile organic compounds (VOCs), and biogenic volatile organic compounds (BVOCs) impact or assist in the production of ozone in Arizona. Thus, it is not clear which types of controls can be put in place or voluntary actions Arizonans can take to reduce ozone and improve air quality. Beyond the existing photochemical air modeling and analysis, Arizona needs a better predictive method to establish the independent and reasonably controllable variables influencing ozone in Arizona.

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Chad Sampson, ABOR  chad.sampson@azregents.edu  602-229-2512
Ken Polasko, ABOR  ken.polasko@azregents.edu  602-229-2591
2. Arizona would benefit from a cost-effective solution and/or options to identify an optimal fallow field plan that minimizes wind-blown PM10 (~dust) emissions and Valley Fever spores.

3. Need cost effective technology to remEDIATE PFAS contaminated water and need a cost-effective means to replace current AFFF supplies with a more benign but effective fire suppressant.

4. Arizona needs a comprehensive assessment identifying potentially hazardous mine features impacting surface and groundwater. Arizona needs a cost-effective solution or mitigation technology that can limit the spread of contaminants via water and air.

5. Arizona would benefit from an economic feasibility study to manage recycling by municipality size. The study should detail recycling options for Arizona and highlight pros and cons for each community size.

The universities submitted their proposals in response to the state’s problem statements in February and ADEQ, AzDHS and ABOR reviewed the proposals.

Discussion

Based on the reviews of the multi-university proposals submitted in response to Problem Statement #3 regarding Arizona’s need for a cost-effective technology to remEDIATE PFAS (“Forever Chemicals”) contaminated water.

The committee is asked to review and recommend for Regents’ Grant Funding the following proposal in response to this problem statement:

Context:

One drop of poly- and perfluoroalkyl substances (PFAS or “Forever Chemicals”), can contaminate 18 million gallons of drinking water. States Environmental Protection Agency (US EPA) established the health advisory levels at 70 parts per trillion (ppt, or ng/L), but widespread using of PFAS fire retardants has meant that unhealthy levels of this compound have found their way into important water resources. Standard PFAS sorbents like granulated activated charcoal require high/expensive energy for regeneration. As a result, PFAS-loaded carbon is often incinerated at high cost. Readings above EPA Health Advisory Levels are impacting large volumes of groundwater near military installation, airports and in drinking water systems.
Team:

Northern Arizona University
University of Arizona:

Proposal Summary

The goal of this project is to create a cost-effective technology to remediate different types of PFAS in water. The approach uses advanced sorbents ("sponges") that can be modified to remove all types of PFAS from water under a wide range of conditions. These sponges are constructed from low-cost, environmentally friendly materials (cellulose) and are regenerable. Advanced sensors are employed to provide real-time monitoring of PFAS concentrations during operation, which allows rapid adjustments to optimize the treatment system. The universities expect that the unique properties of the new sorbents, in combination with real-time monitoring, will provide an innovative, cost-effective method for treating PFAS-contaminated waters.

Why it Matters to Arizona

At the time of this writing, there are multiple sites in Arizona that the EPA has identified as having PFAS contamination.

Budget

<table>
<thead>
<tr>
<th>Annual</th>
<th>Three-Year</th>
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</thead>
<tbody>
<tr>
<td>$500,000</td>
<td>$1,500,000</td>
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</tbody>
</table>

Project Length

Three years.

Statutory/Policy Requirements

A.R.S. § 15-1648 “Technology and Research Initiative Fund”

ABOR Policy 3-412 “Administration of Technology and Research Initiative Fund”
Item Name: Approval of Regents’ Grants Proposal #4 – Arizona's Need of a Comprehensive Assessment Identifying Potentially Hazardous Abandoned Mine Features Impacting Surface and Groundwater

Action Item

Requested Action: The universities and the board office ask the committee to review and forward to the board for approval of its Regents' Grants Proposal for Arizona's Need of a Comprehensive Assessment Identifying Potentially Hazardous Abandoned Mine Features Impacting Surface and Groundwater.

Background/History of Previous Board Action

Arizona law established TRIF from Proposition 301 state sales tax revenue and gives ABOR the authority to administer the fund on the universities’ behalf. The board manages and administers the TRIF revenues through awarding and allocating revenues.

One of the options the board has is to award TRIF revenues to the universities through the recently developed Regents' Grant process.

The purpose of Regents' Grants is to address and deliver solutions to critical issues facing the State of Arizona and its citizens.

The board office engaged with Governor’s Office, the Department of Administration, and the Department of Environmental Quality (AzDEQ), Department of Health Services (AzDHS) and Department of Water Resources (AzDWR) to develop a list of problem statements.

The universities received ADEQ’s initial problem statements in November of 2021 and engaged in a Q&A session held in January to answer faculty questions regarding the problem statements. ADEQ’s problems statements are:

1. Currently we do not understand how the unique southwest natural environment and potential ozone precursor sources in Arizona—nitrogen oxides (NOx), volatile organic compounds (VOCs), and biogenic volatile organic compounds (BVOCs) impact or assist in the production of ozone in Arizona. Thus, it is not clear which types of controls can be put in place or voluntary actions Arizonans can take to reduce ozone and improve air quality. Beyond the existing photochemical air modeling and analysis, Arizona needs a better predictive method to establish the

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independent and reasonably controllable variables influencing ozone in Arizona.

2. Arizona would benefit from a cost-effective solution and/or options to identify an optimal fallow field plan that minimizes wind-blown PM10 (~dust) emissions and Valley Fever spores.

3. Need cost effective technology to remediate PFAS contaminated water and need a cost-effective means to replace current AFFF supplies with a more benign but effective fire suppressant.

4. Arizona needs a comprehensive assessment identifying potentially hazardous mine features impacting surface and groundwater. Arizona needs a cost-effective solution or mitigation technology that can limit the spread of contaminants via water and air.

5. Arizona would benefit from an economic feasibility study to manage recycling by municipality size. The study should detail recycling options for Arizona and highlight pros and cons for each community size.

The universities submitted their proposals in response to the state’s problem statements in February and ADEQ, AzDHS and ABOR reviewed the proposals.

Discussion

Based on the reviews of the multi-university proposals submitted in response to Problem Statement #4 regarding Arizona’s need of a comprehensive assessment identifying potentially hazardous abandoned mine features impacting surface and groundwater.

The committee is asked to review and recommend for Regents’ Grant Funding the following proposal in response to this problem statement:

Context:

There are an estimated 200,000 potentially hazardous abandoned mine features such as tailing piles in Arizona discharging pollutants to surface and groundwater. Storm water in Arizona mobilizes both natural and contaminants into Arizona waters and is a major contributor to impairment of Arizona waters. Abandoned mines can produce acidic (low pH) water rich in heavy metals, which impacts aquatic life and the people and animals that eat fish from these waters and drinking water for both municipal systems, private well owners, livestock and wildlife.
Team:

Arizona State University: Drs. Rolf Halden, Rebecca Muenich, Erin Driver, Otakuye Conroy-Ben, Kerry Hamilton
University of Arizona: Dr. Mark Barton

Proposal Summary

A three-year study is being proposed by a multi-disciplinary team of engineers, biologists, geologists and risk assessors, to (i) inventory abandoned mining sites in Arizona, (ii) identify potential risks posed, (iii) rank hazardous sites using a risk assessment framework, and (iv) create multiple work products to support the successful near- and long-term management

Why it Matters to Arizona

Despite the greater than 150 years history of development of Arizona’s mineral wealth, there is no comprehensive dataset that provides the needed basic information about mining-related features such as openings, waste, and contaminated water or soil.

Budget

<table>
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Project Length

Three years.

Statutory/Policy Requirements

A.R.S. § 15-1648 “Technology and Research Initiative Fund"

ABOR Policy 3-412 “Administration of Technology and Research Initiative Fund”
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EXECUTIVE SUMMARY

Item Name: Approval of Regents’ Grants Proposal #5 – An Economic Feasibility Study to Manage Recycling by Municipality Size with Detailed Recycling Options for Arizona and Highlight Pros and Cons for Each Community Size

☑️ Action Item

Requested Action: The universities and the board office ask the committee to review and forward to the board for approval of its Regents' Grants Proposal for An Economic Feasibility Study to Manage Recycling by Municipality Size with Detailed Recycling Options for Arizona and Highlight Pros and Cons for Each Community Size.

Background/History of Previous Board Action

Arizona law established TRIF from Proposition 301 state sales tax revenue and gives ABOR the authority to administer the fund on the universities’ behalf. The board manages and administers the TRIF revenues through awarding and allocating revenues.

One of the options the board has to award TRIF revenues to the universities is through the recently developed Regents Grant process.

The purpose of Regents Grants is to address and deliver solutions to critical issues facing the State of Arizona and its citizens.

The board office engaged with Governor’s Office, the Department of Administration, and the Department of Environmental Quality (AzDEQ), Department of Health Services (AzDHS) and Department of Water Resources (AzDWR) to develop a list of problem statements.

The universities received ADEQ's initial problem statements in November of 2021 and engaged in a Q&A session held in January to answer faculty questions regarding the problem statements. ADEQ’s problems statements are:

1. Currently we do not understand how the unique southwest natural environment and potential ozone precursor sources in Arizona—nitrogen oxides (NOx), volatile organic compounds (VOCs), and biogenic volatile organic compounds (BVOCs) impact or assist in the production of ozone in Arizona. Thus, it is not clear which types of controls can be put in place or voluntary actions Arizonans can take to reduce ozone and improve air quality. Beyond the existing photochemical air

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modeling and analysis, Arizona needs a better predictive method to establish the independent and reasonably controllable variables influencing ozone in Arizona.

2. Arizona would benefit from a cost-effective solution and/or options to identify an optimal fallow field plan that minimizes wind-blown PM10 (~dust) emissions and Valley Fever spores.

3. Need cost effective technology to remediate PFAS contaminated water and need a cost-effective means to replace current AFFF supplies with a more benign but effective fire suppressant.

4. Arizona needs a comprehensive assessment identifying potentially hazardous mine features impacting surface and groundwater. Arizona needs a cost-effective solution or mitigation technology that can limit the spread of contaminants via water and air.

5. Arizona would benefit from an economic feasibility study to manage recycling by municipality size. The study should detail recycling options for Arizona and highlight pros and cons for each community size.

The universities submitted their proposals in response to the State’s problem statements in February and ADEQ, AzDHS and ABOR reviewed the proposals.

Discussion

Based on the reviews of the multiuniversity proposals submitted in response to Problem Statement #5 regarding an economic feasibility study to manage recycling by municipality Size with detail recycling options for Arizona and highlight pros and cons for each community size.

The committee is asked to review and recommend for Regent Grant Funding the following proposal in response to this problem statement:

Context:

As a result of China’s decision to end global recycling imports in 2018, larger Arizona municipalities have invested millions of dollars on infrastructure to avoid siting new landfills. Smaller municipalities, however, have few viable solutions. Many municipalities are skeptical of the investment required and the risks associated with new approaches.

Team:

Arizona State University [Dr. Rajesh Buch] and Northern Arizona University [Dr. Richard Rushforth]

Proposal Summary

The proposed collaborative project will pilot test hub and spoke recycling systems in Arizona communities validated with four scalable and adaptable computer models/tools
to evaluate the economic impact of recycling in Arizona counties and communities and provide viable financial scenarios for implementing regional recycling systems around Arizona. The models/tools are: An Arizona Recycling Potential model to estimate the amount of recyclable material available in communities based on size and demographics, The Arizona Recycling Economics Information model to assess the economic impact of recycling for the State of Arizona, and then scaled down to county-level, A Cost Benefit Analysis model to evaluate the viability of recycling services for communities based on size, logistics and financial considerations and A data visualization system summarizing project findings that allows users to generate customized reports on the challenges to and opportunities for further developing the recycling industry in their community.

Why it Matters to Arizona

Many smaller municipalities are skeptical of the investment, returns and risks associated with recycling approaches. This study will compare, contrast and help validate different recycling strategies.

Budget

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Project Length

Three years.

Statutory/Policy Requirements

A.R.S. § 15-1648 “Technology and Research Initiative Fund”

ABOR Policy 3-412 “Administration of Technology and Research Initiative Fund”
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EXECUTIVE SUMMARY

Item Name: Phoenix Biomedical Campus Update and Discussion

☑ Action Item

Requested Action: The committee will receive an update and engage in a discussion regarding the Phoenix Biomedical Campus.

Background/History of Previous Board Action

- The PBC was a bold vision initiated in 2004 by ABOR, the University of Arizona, Arizona State University and the City of Phoenix that facilitated the establishment of the College of Medicine Phoenix.

- Northern Arizona University College of Health and Human Services joined the PBC in 2012.

- The PBC has 2 million square feet of built space housing education, research, clinical and entrepreneurial uses and is master planned for 6 million square feet at full buildout.

- There are now eight colleges among the state universities on the PBC.

- ABOR established a PBC office that began operation in July 2020 reporting to the Enterprise Executive Committee and on a more regular basis to a PBC Coordinating Council.

Discussion

- The PBC was planned as a 30 acre site but has evolved as a “center of gravity” for a much larger and robust central Phoenix Health/Bio/Education/Research/Business Core. The Phoenix Bio Core now includes 12 colleges among the three state universities, additional medical and allied health education through Creighton and Tufts Universities, Gateway Community College, five major hospital systems four of which are on or adjacent to the original PBC and both the Phoenix Bio Science High School and ASU Prep Academy.

- Phoenix, which did not have a four-year medical school in 2000, now is home to three allopathic and two osteopathic colleges. According to CBRE Phoenix is the fifth most significant emerging bio science market in the U S and in 2020 had the largest percentage employment growth in life sciences among major cities at 8%.

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Chad Sampson, ABOR  chad.sampson@azregents.edu  602-229-2512
EXECUTIVE SUMMARY

• Downtown Phoenix has transformed into a dense, amenity rich urban environment. Today there are five residential high rises totaling more than 1,200 units in construction within two blocks of the PBC.

• While the PBC has traditionally focused on medical/health education, translational research and clinical activity we are now adding a significant entrepreneurial eco system through the ASU Wexford partnership.

• The establishment of the ABOR/PBC Office has created connective tissue between the three universities, the city and our other stakeholders. We know from our original research the PBC was very siloed in terms of marketing, programming and research. We now have much more robust and collaborative marketing, communications and programming activities.

• We are implementing two important research related initiatives that we believe will foster more collaboration and allow us to more strategically plan for future growth. With support from ASU Knowledge Enterprise we completed a core research services audit that identified a series of “Research Opportunity Accelerators” targeted to fostering collaboration across universities. We are also initiating an Innovation Assessment focused on identifying university related research that would benefit from connectivity to the PBC.

Major Policy Issues

• Transition the PBC from a collection of individual research initiatives to a connected research community the fosters collaboration between the state universities and other stakeholders.

• Grow the innovation district element of the PBC by establishing a robust entrepreneurial eco system.

• Continue to refine our physical and strategic master planning.

• Working closely with the city, clinical providers and philanthropic community to promote and support the central Phoenix Bio Core.

Statutory/Policy Requirements

ABOR Policy 3-412 “Administration of Technology and Research Initiative Fund”
Research and Health Committee

Arizona Board of Regents

David Krietor
Executive Director, Phoenix Bioscience Core
dkrietor.pbc@azregents.edu
Overview of the PBC

- (2004) - PBC is established between city, ASU, UA and ABOR
- (2007) - UA College of Medicine - Phoenix opens as four-year medical school
- (2012) - NAU launches Physician Assistant and Doctor of Physical Therapy programs at PBC.
- (2012) - The Health Sciences Education Partnership Building opens.
- (2017) - The Biomedical Sciences Partnership Building opens.
- (2021) - Wexford Science + Technology's 850 PBC Building opens. ASU becomes anchor tenant.
Eleven colleges from the state’s three universities

Arizona State University
- College of Health Solutions
- Edson College of Nursing and Health Innovation
- Walter Cronkite School of Journalism and Mass Communication*
- Thunderbird School of Global Management*
- Watts College of Public Service and Community*
- Sandra Day O’Connor College of Law*

Northern Arizona University
- College of Health and Human Services
  - Physician Assistant
  - Physical Therapy
  - Occupational Therapy
  - Sports Therapy

University of Arizona
- College of Medicine - Phoenix
- Eller College of Management
- College of Pharmacy
- College of Public Health
- James E. Rogers College of Law*

Other medical & allied health education
- Creighton University Medical School
- Tufts University Doctor of P.T.

* - Located in the Phoenix Bioscience Core
The "core" of Phoenix’s life sciences industry
Tear down the silos

Goal of PBC office to develop connective tissue between universities, city and stakeholders

HOW:

- Events, marketing and communications strategy
- Core Research Services Audit
- Innovation Assessment

Photo: CultivEAT, October 2021
Core Research Services Audit

Designed to build a collaborative research community on the PBC

- **Three components:** qualitative review, quantitative analysis, solution recommendations
- **Goal:** Identify gaps in research collaboration and research services, and enhance existing research services and equipment.
- **Research Opportunity Accelerators**
  - Two dozen recommendations including advance computing and biostatistics services, fundamental community building through events and social events.
  - Examples include seed grants to encourage collaboration, additional PBC-driven signage and advisory committee.

Innovation Assessment

Answer strategic questions and identify magnetic University programs, research efforts and collaboration initiatives that could be catalytic for an innovation.

- **Includes:** 40-50 interviews with leadership, researchers, faculty and staff; as well as industry experts and government officials
- **Goal:** Map university research priorities, commercialization pathways, key investigators, sponsored relationships and innovation ecosystem dynamics
- **Expected completion:** Fall 2022
Item Name: Update on the University of Arizona Health Sciences (UAHS) and Banner Health Affiliation

☐ Action Item

Requested Action: The committee will receive an update on the UAHS Banner Health affiliation.

Background/History of Previous Board Action

From time-to-time the Research and Health Sciences Committee receives an update on the affiliation between the University of Arizona Health Sciences and Banner Health.

The Committee will receive an update on the affiliation from UArizona President Dr. Robert C. Robbins and UAHS Senior Vice President Dr. Michael Dake.

This is a discussion item only. No action in required.
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University of Arizona —
Banner Health Collaborations
What We’ve Accomplished

• Research
• Education
• Clinical Service
University of Arizona – Banner Health *All of Us* Program

Partnership since 2018, recently surpassing 50,000 participants in Arizona, the most of any program in the United States
University of Arizona – Banner Health *All of Us* Program

More than 50% of Arizona participants are from communities underrepresented in biomedical research

More than 40 research teams conducting studies with datasets
Banner Health Discover Tool

Provides access to de-identified data going back to 2014

Banner and Health Sciences research teams are using the tool for studies on Long COVID, cancer, Alzheimer’s, heart disease and others
Login in the life of a Researcher

**Banner Employee (BAI, Sun Health, BMDA)**

*Discover Access Controlled by Banner AD groups:*
- Access to **All** de-identified data
- **Can** export de-identified data

**Medical Resident**

*Discover Access Controlled by Banner AD groups:*
- Access to **Limited Data Set**
- **Can** export de-identified data

**UA Faculty**

*Discover Access Controlled by Banner AD groups:*
- Access to **All** de-identified data
- **Limited** export capability based on approval

---

*Improved Data Request: Researcher has identified patients and specific data needs. Cohort is shared within Discover avoiding transfer of data.
Health Sciences Sensor Lab

Housed on University of Arizona Health Sciences campus, open to all university researchers as well as clinical research partners.
Health Sciences Sensor Lab

Ideal environment for interprofessional research collaboration, enabling real-time data gathering using sensor technologies and human study participants
What We’ve Accomplished

• Education
Hermosillo, Sonora

New international nursing program at University of Sonora – Hermosillo
University of Sonora – Hermosillo

Initial cohort of 25 students to create career pathway for international nurses and to address bilingual and clinical partner needs
What We’ve Accomplished

• Clinical Service
University of Arizona Cancer Center in Tucson

• Extending partnership with Banner Health with establishment of Clinical Trials Network across Arizona

• Successful site visit as part of renewal process for NCI designation as comprehensive cancer center
Community Engagement Alliance Against COVID Disparities (CEAL)

Arizona-CEAL

https://ceal.arizona.edu

Arizona CEAL OT2-HL156812 and OT2-HL-158287
Community Engagement Alliance

Arizona CEAL includes University of Arizona Health Sciences – Banner Health, Arizona State University, Northern Arizona University and Mayo Clinic
Community Engagement Alliance

Active community outreach and engagement with communities hardest-hit by COVID-19, including African Americans, Hispanics and American Indians/Alaska Natives to build long-lasting partnerships.
Age-adjusted COVID-19-associated hospitalization rates by race and ethnicity

COVID-NET, MARCH 1 - AUGUST 8, 2020

COVID-19-associated hospitalization rates are highest among people who are non-Hispanic American Indian/Alaska Native, non-Hispanic Black, and Hispanic/Latino.

Rates are statistically adjusted to account for differences in age distributions within race/ethnicity strata in the COVID-NET catchment area. Rates are based on available race and ethnicity data which is now complete in 94.3% of cases from COVID-NET sites. COVID-19-associated hospitalization rates for American Indian and Alaska Natives may be impacted by recent outbreaks among specific communities within this population and the small numbers of American Indian and Alaska Natives cases included in COVID-NET.
To provide trustworthy, science-based information through active community engagement and outreach to the people hardest-hit by the COVID-19 pandemic, with the goal of building long-lasting partnerships as well as improving diversity and inclusion in the research response to COVID-19.

Needs assessment
- Disseminate and promote COVID prevention practices in a culturally appropriate manner
- Address vaccine hesitancy and promote vaccine uptake
- Facilitate inclusion of diverse racial and ethnic populations in COVID-19 clinical trials.
Community Engagement Alliance (CEAL) Against COVID-19 Disparities partnerships

Mobile Health Units (MHUs): Vaccination, listening sessions, AC3COVIDTXT, (844) 844-3004

Tribal Nations

OT2-HL156812 and OT2-HL-158287; OT2-HL 161847-01; Office of Minority Health - Dept. HHS CT-HD-22-089; CDC

Some exceptions to the general trends were observed in this study. Although vaccination coverage was nearly universally higher in urban than rural counties, Arizona was the only state where coverage in rural counties was higher than that in urban counties; the reasons for this finding are not well understood.
# Arizona’s Vaccination Distinction

<table>
<thead>
<tr>
<th>Vaccination Coverage</th>
<th>United States</th>
<th>Arizona</th>
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<tbody>
<tr>
<td>Urban</td>
<td>75.4%</td>
<td>69.3%</td>
</tr>
<tr>
<td>Rural</td>
<td>58.5%</td>
<td>86.1%</td>
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</tbody>
</table>
University of Arizona rural initiatives and collaborative rural outreach

• Created MOVE UP: Mobile Outreach Vaccination and Education for Underserved Populations (Cecilia Rosales MD) to reach out to rural and underserved communities, businesses, and populations.

• Spearheaded the NIH Arizona Community Engaged Alliance (AzCEAL) against COVID Disparities (Sai Parthasarathy MD) in collaboration with Mayo, NAU, ASU, Banner Health, etc., providing education and research to mitigate the disproportionate impact of COVID on Hispanic/Latino, American Indian, African American, rural and elderly Arizonans.

• Collaborated via CDC-ADHS-University of Arizona COVID Disparities Initiative working with the Arizona Dept of Health Services, county health departments, rural and critical access hospitals, community health centers, Indian Health Service.

• Leveraged partnerships via the AzAHEC Program and AzAHEC Regional Centers - engaged health professions students (nursing, medicine, public health, pharmacy) and faculty members in vaccination campaigns

• Provided thousands of vaccinations (>250,000) on the Tucson campus and in collaboration with Pima County.

• Convened frequent town hall meetings, webinars and education via the Arizona Telemedicine Program platform to inform and update the public and health providers about COVID-19 testing, vaccination, treatment and risk mitigation.
What We’re Working On:

• Research
• Education
• Clinical Service
What We’re Working On:

• Education
Perth, Australia

Global MD partnership with University of Western Australia
University of Western Australia

Students to study on both campuses in research and clinical capacities to ultimately fill shortages of physicians and care delivery
What We’re Working On:

• Clinical Service
  Cancer
  Sports Medicine
  Transplant