State of the Arizona Health Sciences Center (AHSC)
Enhancing Excellence in a Changing Academic Landscape

Joe G.N. “Skip” Garcia, MD
Senior Vice President for Health Sciences
Under the direction of Allan Hamilton, MD, ASTEC achieved national accreditation as one of only 32 nationwide simulation centers by the Society for Simulation in Healthcare.

Mindy Fain, MD, is the PI on a prestigious grant from Donald W. Reynolds Foundation to provide much-needed support to train Arizona’s physicians in geriatric care, with an emphasis on hospitalists and surgical and medical specialists.

Leslie Boyer, MD, Director of the VIPER Institute, named 2013 Arizona Bioscience Researcher of the Year by the Arizona Bioindustry Association (AZBio).
Ron Weinstein MD, and the Arizona Telemedicine Program received a $1.31 million federal grant to expand its Southwest Telehealth Resource Center.

C. Kent Kwoh MD, an internationally recognized expert in osteoarthritis and rheumatoid arthritis, was named head of Arthritis Center and chief of the Division of Rheumatology.

Nancy K. Sweitzer MD, PhD, will become director of the University of Arizona Sarver Heart Center and chief of the Division of Cardiology in the UA College of Medicine, Department of Medicine, effective March 2014.
Stuart Flynn MD, College of Medicine Dean, announced that an exclusive collaboration between the College and SynDaver Labs, a national leader among elite medical schools in simulation technology.

Robert Arceci MD, a faculty member of the College of Medicine and medical director of the Center for Cancer and Blood Disorders at Phoenix Children’s Hospital, received a $1 million grant to study new treatments for childhood cancer.

Gholam A. Peyman MD, faculty member at COM-Phoenix and inventor of LASIK surgery, received the National Medal of Technology and Innovation from President Obama and named Fellow of the National Academy of Inventors.
College of Medicine – Phoenix Highlights

- **Eric Reiman MD, PhD**, Professor of Psychiatry, awarded an NIH $33.2 million grant to study Alzheimer therapies.

- **Frederic Zenhausern PhD**, Director of the Center for Applied Nanobioscience and Medicine at the UA College of Medicine – Phoenix was named Fellow of the National Academy of Inventors.

- **Dan Spaite MD**, Research Director for the Arizona Emergency Medicine Research Center, is PI for a $3.7M award to study first-responders’ impact on outcomes and recovery.
College of Nursing Highlights

- Dean Joan Shaver, RN PhD, leads the College of Nursing which is ranked 7th in Nation by the National Research Council and ranked in the Top 6% Graduate Nursing Programs in the Nation by US News & World Report.

- Cheryl Lacasse, MS, RN, strengthening nursing workforce with newly launched online RN to MS in Nursing program (Clinical Systems Leadership).

- Terry A. Badger, PhD, RN, inducted into the inaugural class 2013 of American Psychosocial Oncology Society. Support for Latinas with Breast Cancer & Their Intimate and Family Partners, $1.3M funded by American Cancer Society.
College of Nursing Highlights

- **Ki Moore, DNSC RN**, 2013 Henry & Phyllis Koffler Prize for scholarly accomplishments focused on pediatric cancer patients, brain effects of chemotherapy & cognitive performance.

- **Barbara B. Brewer, PhD RN**, received a $1.3M NIH grant to map & measure communication patterns in 26 nationwide nursing units to improve patient safety & quality outcomes.

- **Sally J. Reel, PhD RN**, 2013 University Award Distinguished Outreach Faculty, HRSA $1.5M grant (PC practice). HRSA $1.0M grant (Advanced Nurse Education - rural outreach).
College of Pharmacy Highlights

- **Dean Lyle Bootman, PhD**, leads the College of Pharmacy ranked 10th in Nation among Graduate Pharmacy Programs by US News & World Report.

- **Todd Camenisch PhD** successfully launched Arizona Cancer Therapeutics to drive trials utilizing therapies designed to stop cancer progression.

- **Brian Erstad, PharmD**, head of the Department of Pharmacy Practice and Science, selected as a Master of Critical Care Medicine by the Council of the Society of Critical Care Medicine (SCCM).
Ivo Abraham, PhD, is implementing UA’s largest international agreement for clinical training and fellowship contracts with Saudi Arabia.

Christopher Hulme, PhD, co-leader of BIO5 drug discovery program, has guided a new, first-in-class drug candidate into Phase 2 trials.

Kevin Boesen, PharmD and the Medication Management Center licensed software and business model to Sinfonía.
Dean Iman Hakim, MD, PhD, MPH leads the College of Mel & Enid Zuckerman College of Public Health ranked 23rd in Nation among Graduate Programs by US News & World Report.

Daniel Derksen MD, has been appointed to the Walter H. Pearce Endowed Chair and Director of the Center for Rural Health. He was also named the Chair of AAFP Commission on Governmental Advocacy.
College of Public Health Highlights

- **Francisco Garcia, MD**, Distinguished Professor in the College, with the Center for Excellence in Women’s Health, awarded $878,000 to provide health information to Hispanic women in Pima County.

- **Nicolette Teufel-Shone, PhD**, $2.6M of $6M across-university NIH grant to study American Indian Resilience: Why some communities facing high rates of chronic disease and poverty seem to thrive despite adversity.

- **Jeff Burgess, MD, MPH**, Principal Investigator of the Mountain West Preparedness and Emergency Response Learning Center, received a $600,000 CDC grant for emergency preparedness.
# NSF Expenditures 2003-2012

## UA vs All Universities

<table>
<thead>
<tr>
<th>Year</th>
<th>Rank</th>
<th>Expenditures</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>29</td>
<td>$625,365</td>
</tr>
<tr>
<td>2011</td>
<td>30</td>
<td>$610,565</td>
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<tr>
<td>2010</td>
<td>29</td>
<td>$586,647</td>
</tr>
<tr>
<td>2009</td>
<td>26</td>
<td>$566,334</td>
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<tr>
<td>2008</td>
<td>25</td>
<td>$547,197</td>
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<tr>
<td>2007</td>
<td>23</td>
<td>$533,450</td>
</tr>
<tr>
<td>2006</td>
<td>20</td>
<td>$538,086</td>
</tr>
<tr>
<td>2005</td>
<td>21</td>
<td>$531,898</td>
</tr>
</tbody>
</table>

## UA vs Public Universities

<table>
<thead>
<tr>
<th>Year</th>
<th>Rank</th>
<th>Expenditures</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>21</td>
<td>$625,365</td>
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<tr>
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<tr>
<td>2008</td>
<td>16</td>
<td>$547,197</td>
</tr>
<tr>
<td>2007</td>
<td>14</td>
<td>$533,450</td>
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<tr>
<td>2006</td>
<td>12</td>
<td>$538,086</td>
</tr>
<tr>
<td>2005</td>
<td>12</td>
<td>$531,898</td>
</tr>
</tbody>
</table>

UA has *slipped* in National Science Foundation Rankings.
Research Expenditures Plan

- **Goal**
- **Plan**
- **Actual**
- **ABOR Peer Median**

**ENHANCING EXCELLENCE**

**NEVER SETTLE**

**2008**

**2009**

**2010**

**2011**

**2012**

**2013**

**2014**

**2015**

**2016**

**2017**

**2018**

**2019**

**2020**

**2021**

**2022**

**2023**
UA Research Portfolio

FY13 Awards by Source

- HHS/NIH
- NASA
- Foundation
- Industry
- NSF
- Defense
- Other

Approximately 75% of AHSC Research Funding
EA Research Portfolio

- Defense
- Energy
- HHS/NIH
- NASA
- NSF
- USDA

FY13 Estimated Available Agency Budget ($B)

% of Peer Median at UA

UA is underperforming in NIH funded research
Total Research Expenditures by AHSC College

- College of Nursing – 81 faculty
- College of Pharmacy – 42
- College of Public Health – 49
- College of Medicine – Phoenix 27
- College of Medicine – Tucson 633

COM-Tucson: Major component of the AHSC research portfolio driving the comparison with ABOR peers
ABOR Peer Institutions with Medical Schools

- University of California-Davis
- University of California-Los Angeles
- University of Florida
- University of Iowa
- Michigan State University
- University of Minnesota-Twin Cities
- University of North Carolina at Chapel Hill
- Ohio State University-Main Campus
- Texas A&M University
- University of Washington-Seattle Campus
- University of Wisconsin, Madison
UA College of Medicine and Department of Medicine are significantly smaller than ABOR peers (Peer ABOR DOM = average 325 faculty, COM-Tucson = 100 faculty).
What is the landscape for increasing funding for biomedical research?
## Higher Education Federally Funded R&D

<table>
<thead>
<tr>
<th>Agency</th>
<th>FY 2010</th>
<th>FY 2011</th>
<th>FY 2012</th>
<th>% change 2011-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Federal R&amp;D</td>
<td>37,477</td>
<td>40,771</td>
<td>40,130</td>
<td>-1.6</td>
</tr>
<tr>
<td>Department of Health and Human Services</td>
<td>21,096</td>
<td>22,984</td>
<td>21,895</td>
<td>-4.7</td>
</tr>
<tr>
<td>National Science Foundation</td>
<td>4,733</td>
<td>5,138</td>
<td>5,271</td>
<td>2.6</td>
</tr>
<tr>
<td>Department of Defense</td>
<td>4,493</td>
<td>4,826</td>
<td>4,924</td>
<td>2.0</td>
</tr>
<tr>
<td>Department of Energy</td>
<td>1,555</td>
<td>1,867</td>
<td>1,953</td>
<td>4.6</td>
</tr>
<tr>
<td>National Aeronautics &amp; Space Administration</td>
<td>1,474</td>
<td>1,423</td>
<td>1,331</td>
<td>-6.5</td>
</tr>
<tr>
<td>Department of Agriculture</td>
<td>954</td>
<td>1,006</td>
<td>1,094</td>
<td>8.7</td>
</tr>
<tr>
<td>Other</td>
<td>3,172</td>
<td>3,527</td>
<td>3,664</td>
<td>3.9</td>
</tr>
</tbody>
</table>

### National Institutes of Health Budget

- **NIH remains a substantial pool of resources for growing the biomedical research enterprise**

![Graph showing NIH budget growth from 1995 to 2013](data:image/png;base64,iVBORw0KGgoAAAANSUhEUgAAAuAAAAHgCAYAAAAQ39JAAAABGd7eTQAAAAJ3k+7QAAAAHdUTQcAABT0AAAgAABAbahuAAAABJRU5ErkJggg==)
High-Priority Research Areas for Funding

- Healthcare reform
- Healthcare disparities
- Comparative effectiveness research
- Translating research into personalized medicine
- BRAIN (Brain Research through Advancing Innovative Neurotechnologies)

AHSC biomedical initiatives are perfectly aligned with areas of NIH emphasis.
AHSC Advisory Councils

Health Disparities

Population Health & Health Outcomes

Precision Health

Neuroscience

Task-Perform a SWOT analysis of these thematic areas and deliver a white paper which outlines the investment priorities for growth in research and in national recognition.
Population Health & Health Outcomes

Tammie Bassford, MD
Department Head
Family & Community Medicine
UA College of Medicine – Tucson

Iman Hakim, MD, PhD, MPH
Dean
UA Mel & Enid Zuckerman College of Public Health

- Aging population
- Rural populations
- Underserved communities
- Healthcare delivery models
Health Disparities

David Armstrong, DPM, MD, PhD
Director, Southern Arizona Limb Salvage Alliance (SALSA)
Professor of Surgery
UA College of Medicine – Tucson

Chelsea Kidwell, MD
Vice Chair of Research
Department of Neurology
UA College of Medicine – Tucson

- Diabetes
- Hispanic health disparities
- Native American women, Cancer
Precision Health

J. Lyle Bootman, PhD, ScD
Dean, UA College of Pharmacy
Professor: Pharmacy, Medicine & Public Health
Founding Executive Director, Center for Health Outcomes & PharmacoEconomic Research

Michael Hammer, PhD
Research Scientist
Arizona Research Laboratories, Division of Biotechnology
UA BIO5 Institute
Steele Children's Research Center

- Cancer genetics
- Genomic signatures
- Pharmacogenetics
- Rare disease clinic
- Nanobiotechnology
Neuroscience

Carol Barnes, PhD
Regents' Professor, Psychology and Neurology
Director, Evelyn F. McKnight Brain Institute
UA College of Science

Leslie Tolbert, PhD
Regents' Professor, Neuroscience
UA College of Science

Todd Vanderah, PhD
Professor and Head
Department of Pharmacology
UA College of Medicine - Tucson

- Strengths in multi-disciplinary involvement across many departments
- Basic research all the way through the translational pipeline
- Aging and cognition, Alzheimer’s, Stroke, Neuromuscular, Pain
AHSC 1 & 5 Year Goals
1-Year Goals

- Increase Integration across the ASHC Colleges
  - AHSC working groups across: research, HR, IT, space

- Recruitment of UA Cancer Center Director
  - Five AZCC Finalists interviewing through January
    - Frank Sinicrope MD, Mayo Clinic, Rochester, Minnesota
    - Robert Figlin MD, Cedars Sinai, Los Angeles, CA
    - Howard Bailey MD, University of Wisconsin, Madison
    - Eric Small MD, University of California San Francisco
    - Andrew Kraft MD, University of South Carolina
1-Year Goals

- Increase Integration across the ASHC Colleges
  - AHSC working groups across: research, HR, IT, space
- Recruitment of UA Cancer Center Director
  - Five AZCC Finalists interviewing through January
- Recruitment of Chair, Department of Surgery
  - Search committee launched December, CVs rolling in
- Recruitment of Chair, Department of Medicine
  - Search Committee formed, launch in January
- Strengthen Relationship with UA Health Network
Inter-Dependence of AHSC and Health Network

- The AHSC depends upon the annual flow of funds from UAHN for sustaining its academic mission.

- UAHN benefits from AHSC due to:
  - Improved stature/reputation of the clinical enterprise
  - High US NWR rankings increases leverage with 3rd party payors
  - Drive improvements in clinical quality, safety and delivery models
  - Attracts highest quality of health profession trainees
  - “Thought leader” status of specific programs increases patient referrals and clinical revenue while reducing delivery costs
  - Improved margin position allows strategic investment in clinical practice innovation and the academic enterprise
Investment of clinical practice and health system income in academic enterprise.

Increased research productivity, technology transfer, leverage to external support.

Increase patient referrals, clinical faculty quality, and overall success for the clinical enterprise.

Improved stature and visibility for clinical and research enterprises and for the university as a whole.
US Healthcare Reform: An Opportunity for Academic Health Centers to Lead

The Affordable Care Act significantly increases the need for a greater number of healthcare providers.

Academic health centers will lead development of new models of healthcare delivery and quality.

Health care reform will reduce AMC resources thus risking viability of the academic mission.
Inter-Dependence of AHSC and Health Network

- AHSC depends upon the annual flow of funds from UAHN for sustaining its academic mission
- UAHN benefits from AHSC
- Expanding translational research is not an unwanted AMC expense, it is the business for greater marketshare and financial sustainability
- AHSC is working closely with UAHN to improve integration and to maximize funds flow
5-Year Goals

- Increase AHSC Biomedical Research Revenue (+$220M)
- Successfully compete for a NIH Clinical Translational Science Award
- Improve National Ranking in Research for each College
- Increase US News & World Report Clinical Ranking
- Increase AHSC Student, Trainee and Faculty Diversity
- Increase the Titer of Physician Scientists in the AHSC
- Establish National Leadership in Interdisciplinary Education & Practice
- Increase AHSC Biomedical Research Revenue (+$220M)
  - Target the recruitment of research-active personnel (≈160 recruits)
    - Program builders with strong portfolios
    - Translational researchers
  - Increase clinical trials revenue
- Focus on large NIH grants
  - Big Data in the biomedical sciences
  - UA Cancer Center grant renewal
  - Clinical Translational Sciences Award (CTSA) (≈$4-5M per year)
- Increase AHSC Biomedical Research Revenue (+$220M)
- Successfully compete for a NIH Clinical Translational Science Award

<table>
<thead>
<tr>
<th>ABOR Peer Group</th>
<th>Medical School</th>
<th>CTSA</th>
<th>CTSA-Related NIH Funding 2006–2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of North Carolina-Chapel Hill</td>
<td>X</td>
<td>X</td>
<td>$119,480,071</td>
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<tr>
<td>University of Iowa</td>
<td>X</td>
<td>X</td>
<td>$71,936,688</td>
</tr>
<tr>
<td>University of Washington</td>
<td>X</td>
<td>X</td>
<td>$65,796,618</td>
</tr>
<tr>
<td>University of California-Davis</td>
<td>X</td>
<td>X</td>
<td>$63,628,576</td>
</tr>
<tr>
<td>University of California-Los Angeles</td>
<td>X</td>
<td>X</td>
<td>$46,916,761</td>
</tr>
<tr>
<td>University of Florida</td>
<td>X</td>
<td>X</td>
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</tr>
<tr>
<td>University of Wisconsin-Madison</td>
<td>X</td>
<td>X</td>
<td>$29,925,312</td>
</tr>
<tr>
<td>University of Minnesota</td>
<td>X</td>
<td>X</td>
<td>$28,724,998</td>
</tr>
<tr>
<td>The Ohio State University</td>
<td>X</td>
<td>X</td>
<td>$19,821,003</td>
</tr>
<tr>
<td>Penn State University—All Campuses</td>
<td>X</td>
<td>X</td>
<td>$15,050,947</td>
</tr>
<tr>
<td><strong>University of Arizona</strong></td>
<td><strong>X</strong></td>
<td><strong>-</strong></td>
<td><strong>$0</strong></td>
</tr>
</tbody>
</table>
Clinical and Translational Science Award

Yves Lussier, MD
Chief Knowledge Officer
Director of BIOS Biomedical Informatics
UA Cancer Center Director- Bioinformatics & Precision Health
- Increase AHSC Biomedical Research Revenue (+$220M)
- Successfully compete for a NIH Clinical Translational Science Award
- Improve National Ranking in Research for each College

<table>
<thead>
<tr>
<th>College</th>
<th>Current Rankings</th>
<th>2018 Goals</th>
<th>Funding Increase</th>
</tr>
</thead>
</table>
| College of Pharmacy            | • 17th nationally in NIH funding  
                                 |              | Top 5           | $4 million       |
|                                | • 10th nationally by U.S. News                                                | Top 5        |                  |
| College of Nursing             | • 32nd nationally in NIH funding                                               | Top 10       | $3 million       |
| College of Public Health       | • 32nd nationally in NIH funding                                               | Top 10       | $20 million      |
| College of Medicine - Phoenix  | • 126th in NIH research funding awards                                         | Top 75       | $37 million      |
| College of Medicine-Tucson     | • 62nd nationally in NIH funding  
                                 |              | Top 45          | $40 million      |
|                                | • 70th by U.S. News & World Report                                            | Top 50       |                  |
- Increase AHSC Biomedical Research Revenue (+$220M)
- Successfully compete for a NIH Clinical Translational Science Award
- Improve National Ranking in Research for each College
- Increase US News & World Report Clinical Ranking (i.e., number of subspecialties in top 50)
AHSC & The University of Arizona Medical Center

Nationally Ranked
- Ear, Nose & Throat
- Geriatrics

High-Performing
- Cancer
- Cardiology & Heart Surgery
- Diabetes & Endocrinology
- Gastroenterology & GI Surgery
- Gynecology
- Nephrology
- Neurology & Neurosurgery
- Orthopedics
- Pulmonology
- Urology

2018 GOAL- 6 programs nationally ranked in the top 50, 3 in top 25
Increase AHSC Biomedical Research Revenue (+$220M)
Successfully compete for a NIH Clinical Translational Science Award
Improve National Ranking in Research for each College
Increase US News & World Report Clinical Ranking
Increase AHSC Student, Trainee and Faculty Diversity
  - Less than 10% of AHSC faculty are under-represented minorities (Latinos, African Americans or Native Americans)
  - Few AHSC house staff trainees are URM: Family Medicine-18%, Surgery-16%, Neurology-10%, Internal Medicine-10%, others at 0-6%
  - Past 5 years: COM-T <12% URM in medical school, COM-P ~18%, Pharmacy ~10%, Nursing ~12% incoming students, and COPH~22% URM students.
- Increase AHSC Biomedical Research Revenue (+$220M)
- Successfully compete for a NIH Clinical Translational Science Award
- Improve National Ranking in Research for each College
- Increase US News & World Report Clinical Ranking
- Increase AHSC Student, Trainee and Faculty Diversity
- Increase the Titer of Physician Scientists in the AHSC
  - There are currently only three K-funded physician scientists in AHSC
  - We will never get a CTSA unless we do better in this area
  - We need to prioritize nurturing of these individuals in our fellowship programs and faculty
- Increase AHSC Biomedical Research Revenue (+$220M)
- Successfully compete for a NIH Clinical Translational Science Award
- Improve National Ranking in Research for each College
- Increase US News & World Report Clinical Ranking
- Increase AHSC Student, Trainee and Faculty Diversity
- Increase the Titer of Physician Scientists in the AHSC
- Establish National Leadership in Interdisciplinary Education & Practice
Interprofessional practice represents a key area in future healthcare delivery models and an excellent opportunity for national distinction.
The path forward?

..... is not without challenges or risk

Don’t be afraid to take a big step if one is indicated. You can’t cross a big chasm in two small jumps.

D. Lloyd George
British PM 1916-1921

We are a strong Health Sciences Center and destined to become stronger and more impactful
Thank You