

Growing the UTHSC Research Portfolio

Steve Schwab, MD
Chancellor

UTHSC KEY MISSIONS

- EDUCATION
- CLINICAL CARE
- SERVICE
- **RESEARCH**

Background

- UTHSC Research strategic plan with metrics completed
- Next:

Plan \Rightarrow **Implementation or Approach** \Rightarrow Metrics

- “Approach” is key in a successful grant proposal

University of Tennessee Health Science Center
Strategic Map: 2014-2018

Position UTHSC as a National Leader in
Targeted Areas of Excellence Across
Missions, Campuses and Colleges

Grow the Research
Portfolio Focusing on
Targeted Areas

Provide Necessary
Facilities, Infrastructure
and Core Support for
Research and Scholarship

Develop Program to
Link Clinical and Basic
Science Researchers

Foster
Collaboration Across
Colleges and Campuses

Develop and Implement
Research Mentorship

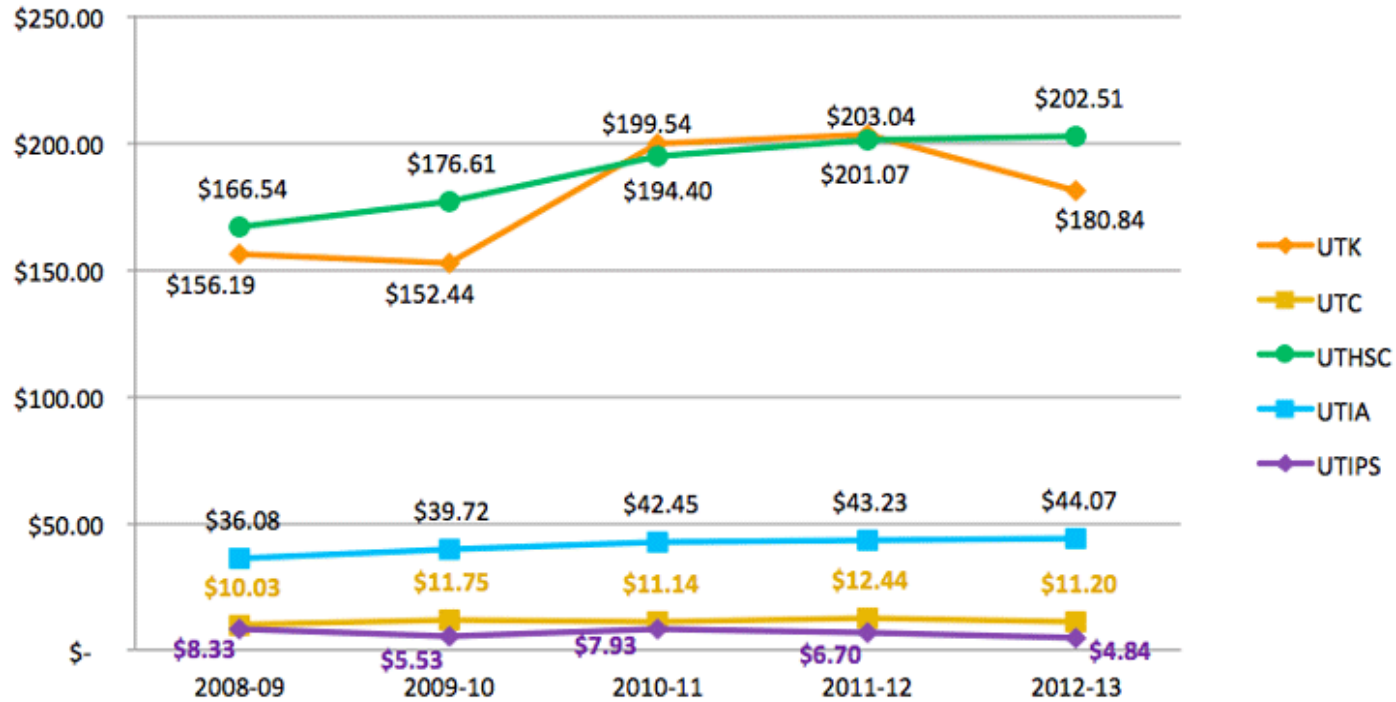
Recruit and retain Faculty and Staff through
Development, Support, and Mentorship

Continue to increase the diversity of
Faculty, Staff, Students and Administration

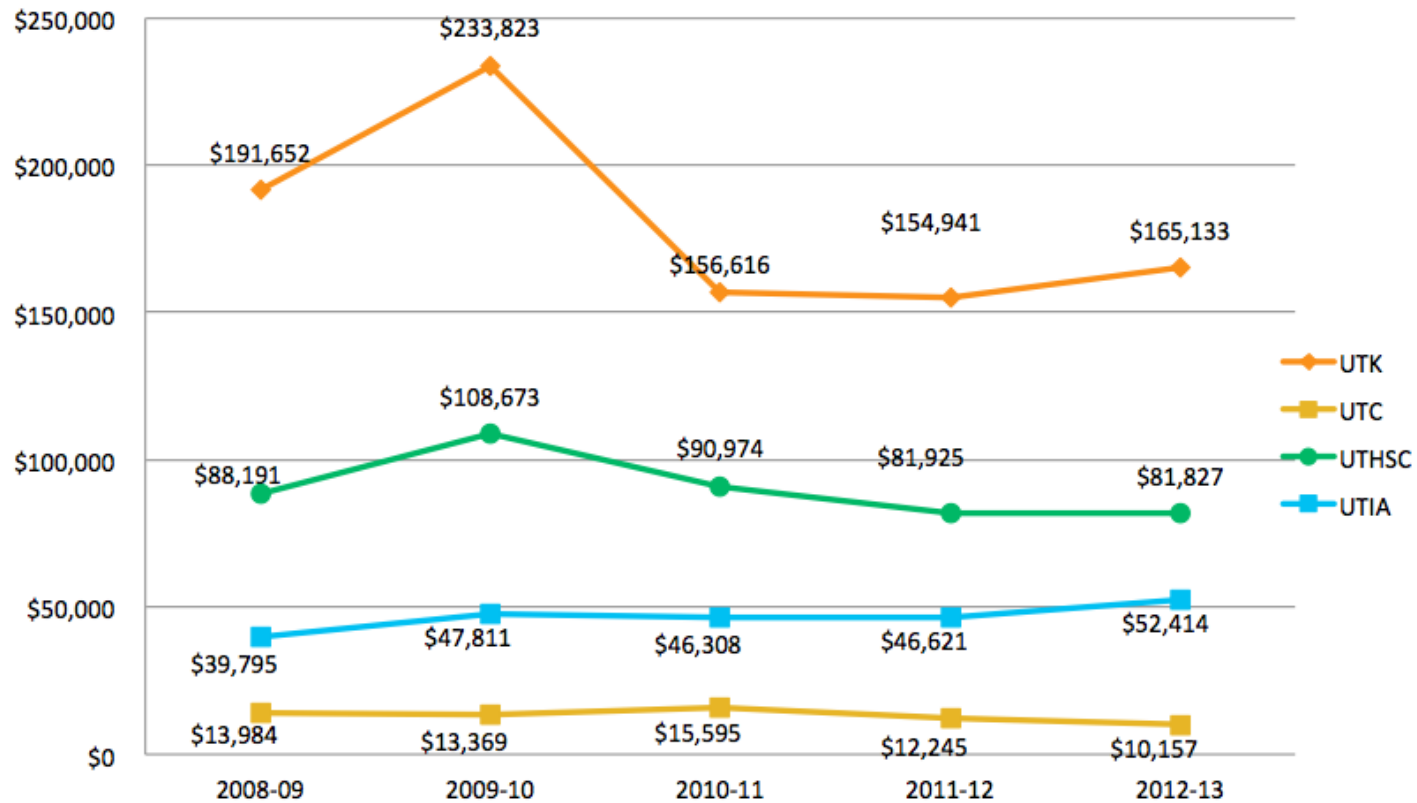
Increase Strategic Integration Across UTHSC

Strengthen Organizational Effectiveness and Adaptability

UT Sponsored Program Revenue



UT Independent Research Awards



Aims/Steps

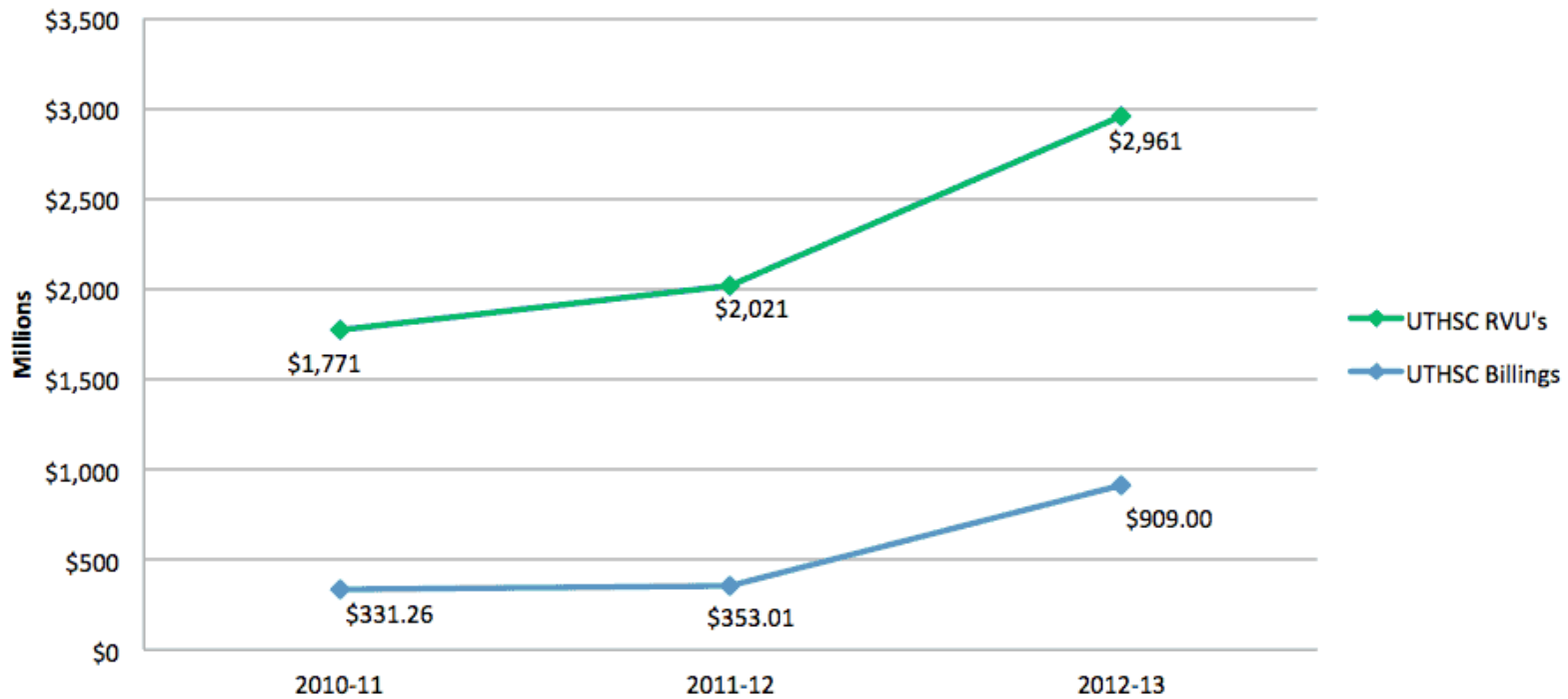
Aim 1. Focused Build in R01/U01 Base

Aim 2. Leverage Key Research Partners/Facilities

Aim 3. Recruit VC of Research: Rainmaker/Team Organizer

Aim 4. Build Clinical and Translational Research
(Leverage our large clinical enterprise and hospital partners.)

Clinical Activity



Aim 1: Focused Build in R01/U01 Base

Approach

- New Recruits in Targeted Areas
- Support Existing Investigators
- Build Infrastructure
- \$ to Support Faculty with Good Ideas
- Extramural Funding Support from Multiple Sources

Building the R01/U01 Base

- This Aim Under Way Now
- **Facilities for the R01/U01 Base**
 - Pharmacy Building, Translational Science Research Building
 - Nash Crowe Rebuild
 - Cancer Build Out
 - Renovations
- **Faculty for the R01/U01 Base:** The primary agents of this task are the Deans and the Chairs in the Research-Intensive Colleges
 - >50 recruits hired or are being recruited
 - Supporting Existing Investigators
 - Bridge Funding
 - New Grant Incentive program
 - New programs being reviewed

1. Focused Build in R01 Base

Targeted growth in areas of **existing research expertise** will

- facilitate synergy and discovery
- lead to building of infrastructure in target area and in general


Example 1: Cancer-Related Research Investigators

Existing	New Recruits
<ul style="list-style-type: none">• Larry Pfeffer, Pathology• Lee Schwartzberg, Int Med• Tiffany Seagroves, Pathology• Ronald Laribee, Pathology• Steve Behrman, Surgery• Ryan Yates, Pharm Sciences• Bob Klesges, Prev Med• Charles Handorf, Pathology• Zhaohui Wu, Pathology• Meiyun Fan, Pathology• Andrzej Slominski, Pathology• Duane Miller, Pharm Sciences• Wendy Likes, Nursing	<ul style="list-style-type: none">• Daruka Mahadevan, Int Med• Ari VanderWalde, Int Med• Ramesh Narayanan, Int Med• Gus Miranda-Carboni, Int Med• Benny Weksler, Surgery• Matt Ballo, Radiation Onc• Subhash Chauhan & Meena Jaggi, Pharm Sciences• Pat Matthews-Juarez, Prev Med• Paul Juarez, Prev Med

1. Focused Build in R01 Base

Example 2: Neurodegenerative Diseases, Inclusive of TBI and Stroke

Existing	New Recruits
<ul style="list-style-type: none">• Anton Reiner, Anat & Neuro• Scott Heldt, Anat & Neuro• Mike McDonald, Neurology• Ioannis Dragatsis, Physiology• Francesca Fang-Liao, Pharm• Steve Tavalin, Pharm• Marcia Honig, Anat & Neuro• Fu-Ming Zhou, Pharm• Michael Levine, Neurology• Jena Steinle, Ophthalmology• Mark LeDoux, Neurology• Thad Nowak, Neurology• Hitoshi Kita, Anat & Neuro• Detlef Heck, Anat & Neuro• Jim Wheless, Pediatrics/Neuro• Fred Boop, Neurosurgery• Ron Pfeiffer, Neurology	<ul style="list-style-type: none">• Andy Papanicolaou, Pediatrics• Catherine Kaczorowski, Anat & Neuro• Jack Tsao, Neurology• Andrei Alexandrov, Neurology• Victor Chizhikov, Anat & Neuro



UTHSC

Bridge Funding:
\$75,000
lapse grant with past support ≥ 3 years

Grant Incentive Funding:
\$25,000
critique $< 30^{\text{th}}$ percentile

Building the R01/U01 Base: Existing Investigators

Bridge Funding Program

- \$75K to any investigator who has lost funding on a renewable Federal Grant
- Any renewable Federal Grant
- 51 Awarded
- 45-50% average success conversion rate

New Grant Incentive Program

- \$25K to submitted Federal Grant that was reviewed/scored but not funded
- 13 Awarded (first year)
- ~40% success conversion rate

Building the R01/U01 Base: Existing Investigators

New Potential Program

- Pre-Bridge Funding
 - Investigators nearing end-of-grant cycle
 - Need boost to finish pre-award studies

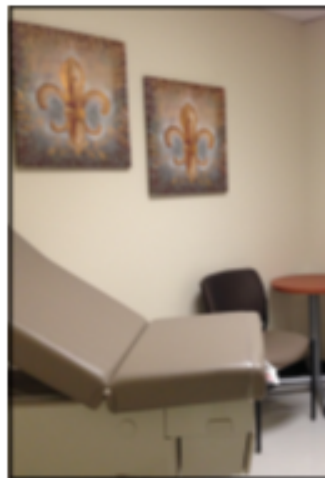
New Potential Program

- Established Investigator Retool Award
 - Multi-year funded investigators
 - New technique development to enhance competitiveness

Building the Base Infrastructure

Building Infrastructure for Clinical Trials

Office of Clinical Research, 66 N. Pauline, Suite 300



Exam Rooms



Laboratory



Pharmacy

Multiple Sources!



**American
Heart
Association®**

Learn and Live

**alzheimer's 
association™**



Aim 2: Leverage Key Research Partners/Facilities

- This Aim Under Way Now
- St. Jude/Le Bonheur/Children's Health Consortium
 - St. Jude/Le Bonheur/Memphis Research Consortium/Governor's Commitment ~\$40-50M over 5 years
 - Working group led by Dr. McCullers
 - CTSA Children's Health work group
 - Identified Key Areas
 - Obesity/Diabetes
 - Asthma
 - Neuroscience
 - Health Disparities/Disease Prevention in Children

2. Leverage Key Research Partners/Facilities

- This Aim Under Way Now
- Oak Ridge National Laboratory
 - Two current UT/ORNL Governor's Chairs at UTHSC
 - Commitment for two additional ORNL Chairs
 - Joint Institutes (UTHSC/ORNL)
 - Health Informatics
 - Computational Genomics
 - Drug Discovery

Working group formed

Dr. D. Millhorn, UT VP

Dr. J. Nichols, ORNL Associate Lab Director (computation)

Drs. Williams, Quarles, Davis, and Waters from UTHSC

2. Leverage Key Research Partners/Facilities

- Regional Bio-Containment Laboratory
 - One of 13 in the United States
 - Opportunity to do research that others cannot do
 - Commercialization
- Plough Center for Sterile Drug Delivery Systems
 - New drug discovery and manufacturing
 - Opportunity to pursue drug discovery and modeling that others cannot do
 - Commercialization

Aim 3: Recruit VC of Research: Rainmaker/Team Organizer

- Rainmaker/Team Organizer
 - Joint Institutes: UTHSC-ORNL
 - Children's Health Synergies
 - Leverage Unique Facilities
 - RBL
 - Plough Center
 - Federal Grants
 - Industry Contracts

RAINMAKER (noun): a person who brings in new business;
Also a person whose influence or abilities can initiate progress or ensure success



3. Recruit VC of Research: Rainmaker

Proposed: **UTHSC**-Oak Ridge National Laboratory Joint Institute

Example: UTK-ORNL Joint Institutes in

- Advanced Materials
- Biological Sciences
- Computational Sciences
- Neutron Sciences
- Nuclear Physics and Applications



3. Recruit VC of Research: Rainmaker

Pharma: Bayer Healthcare

Partner: Children's Hospital & Research Center Oakland

Date: May 2013

Focus: New therapies in hemoglobin disorders like Sickle Cell disease and thalassemia

PIs: Elliott Vichinsky, MD, and Frans Kuypers, PhD of Children's Hospital & Research Center

Pharma: Bayer Healthcare

Partner: Tsinghua University in Beijing, China

Date: March 2013

Focus: 3-D crystalline structure of various drug targets

PI: Dr. Shi Yigong, Professor Tsinghua University

Pharma: Bristol-Myers Squibb

Partner: Vanderbilt University Center for Neuroscience Drug Discovery

Date: September 2012

Focus: The Vanderbilt Center for Neuroscience Drug Discovery received an upfront sum and the promise of more money in the form of milestone payments and potential royalties from the drug giant to look for new treatments that target the mGluR4 receptor (Parkinson's).

Pharma: Sanofi

Partner: University of California, San Francisco, Diabetes Center

Date: January 2012

Focus: New \$3.1 million pact in which Sanofi researchers will work with UCSF scientists on new treatments for Type I and Type II diabetes; building on previous collaborations with the university concerning brain trauma and oncology.

Pharma: GlaxoSmithKline

Partner: Immune Disease Institute, Boston

Date: June 2008

Focus: Five year collaboration, worth \$25 million, to build a unique partnership in immunoinflammation research.

Excerpt of NIH Ranking by Funding of Medical Schools (Total Cost): FY 2010 vs 2013

Rank	FY 2013	Total	Rank	FY 2010	Total
64	UNIVERSITY OF CONN SCH OF MED/DNT	\$43,959,931	64	UNIVERSITY OF NEBRASKA MEDICAL CENTER	\$50,273,420
65	GEORGETOWN UNIVERSITY	\$43,552,481	65	WAYNE STATE UNIVERSITY	\$49,869,302
66	GEORGIA REGENTS UNIVERSITY	\$43,314,520	66	UNIVERSITY OF VERMONT & ST AGRIC COLLEGE	\$49,370,789
67	UNIVERSITY OF NEBRASKA MEDICAL CENTER	\$42,626,264	67	UNIVERSITY OF ARKANSAS MED SCIS LTL ROCK	\$48,291,297
68	UNIV OF MED/DENT OF NJ-NJ MEDICAL SCHOOL	\$41,108,664	68	UNIVERSITY OF ARIZONA	\$45,193,225
69	RUSH UNIVERSITY MEDICAL CENTER	\$40,545,567	69	UNIV OF MED/DENT NJ-R W JOHNSON MED SCH	\$45,049,994
70	TEMPLE UNIV OF THE COMMONWEALTH	\$40,289,118	70	MEDICAL COLLEGE OF GEORGIA (MCG)	\$43,654,047
71	UNIVERSITY OF NEW MEXICO HEALTH SCIS CTR	\$39,151,340	71	UNIVERSITY OF NEW MEXICO	\$41,970,355
72	TUFTS UNIVERSITY BOSTON	\$38,645,503	72	TEMPLE UNIVERSITY	\$38,091,737
73	UNIVERSITY OF LOUISVILLE RES FDN	\$37,997,938	73	UNIVERSITY OF OKLAHOMA HLTH SCIENCES CTR	\$37,665,512
74	WAYNE STATE UNIVERSITY	\$37,816,327	74	UNIVERSITY OF LOUISVILLE	\$37,447,985
75	UNIVERSITY OF OKLAHOMA HLTH SCIENCES CTR	\$37,750,960	75	UNIVERSITY OF CONN SCH OF MED/DNT	\$37,427,529
76	STATE UNIVERSITY NEW YORK STONY BROOK	\$35,228,103	76	TUFTS UNIVERSITY BOSTON	\$36,937,821
77	UNIV OF ARKANSAS FOR MED SCIS	\$33,258,069	77	STATE UNIVERSITY NEW YORK STONY BROOK	\$36,586,145
78	BROWN UNIVERSITY	\$31,051,590	78	UNIVERSITY OF TENNESSEE HEALTH SCI CTR	\$33,686,434
79	UNIVERSITY OF TENNESSEE HEALTH SCI CTR	\$29,502,118	79	RUSH UNIVERSITY MEDICAL CENTER	\$33,475,539
80	TULANE UNIVERSITY OF LOUISIANA	\$27,891,505	80	BROWN UNIVERSITY	\$33,314,392
81	STATE UNIVERSITY OF NEW YORK AT BUFFALO	\$23,540,529	81	TULANE UNIVERSITY OF LOUISIANA	\$32,901,825
82	MOREHOUSE SCHOOL OF MEDICINE	\$23,186,837	82	UNIVERSITY OF HAWAII AT MANOA	\$28,268,934
83	DREXEL UNIVERSITY	\$23,111,172	83	LOUISIANA STATE UNIV HSC NEW ORLEANS	\$27,353,278
84	UNIV OF MED/DENT NJ-R W JOHNSON MED SCH	\$22,370,695	84	MEHARRY MEDICAL COLLEGE	\$26,713,365
85	UNIVERSITY OF HAWAII AT MANOA	\$20,925,627	85	SUNY DOWNSTATE MEDICAL CENTER	\$26,598,503
86	UNIVERSITY OF MISSISSIPPI MEDICAL CENTER	\$20,623,187	86	UNIVERSITY OF MISSOURI-COLUMBIA	\$24,490,567
87	SUNY DOWNSTATE MEDICAL CENTER	\$20,557,902	87	DREXEL UNIVERSITY	\$23,741,498
88	UNIVERSITY OF SOUTH FLORIDA	\$20,411,666	88	STATE UNIVERSITY OF NEW YORK AT BUFFALO	\$23,132,283
89	LSU HEALTH SCIENCES CENTER	\$19,641,378	89	UPSTATE MEDICAL UNIVERSITY	\$21,990,853
90	LOYOLA UNIVERSITY CHICAGO	\$18,986,909	90	UNIVERSITY OF SOUTH FLORIDA	\$21,141,768
91	MEHARRY MEDICAL COLLEGE	\$18,912,471	91	UNIVERSITY OF PUERTO RICO MED SCIENCES	\$19,120,574
92	UNIVERSITY OF PUERTO RICO MED SCIENCES	\$18,856,172	92	UNIVERSITY OF MISSISSIPPI MEDICAL CENTER	\$17,974,674
93	UT MD ANDERSON CANCER CTR	\$18,815,605	93	MOREHOUSE SCHOOL OF MEDICINE	\$16,540,081
94	UNIVERSITY OF MISSOURI-COLUMBIA	\$17,081,401	94	TEXAS A&M UNIVERSITY HEALTH SCIENCE CTR	\$15,487,269
95	GEORGE WASHINGTON UNIVERSITY	\$15,691,359	95	WEST VIRGINIA UNIVERSITY	\$15,431,172
96	MICHIGAN STATE UNIVERSITY	\$15,439,339	96	LOYOLA UNIVERSITY CHICAGO	\$15,147,315
	GRAND TOTAL	\$961,842,247		GRAND TOTAL	\$1,054,339,482
	MEAN	\$29,146,735		MEAN	\$31,949,681
	MEDIAN	\$27,891,505		MEDIAN	\$33,314,392

3. Recruit VC of Research: Rainmaker

- Morehouse School of Medicine, Atlanta
 - Approach: focus on unique aspect
 - U54 Research Centers in Minority Institutions Program
- University of Mississippi Medical Center, Jackson
 - Approach: rainmaker hitting his stride
 - PI **xxxx xxxxxx**, PhD – \$5M/year
 - Clinical Exam Center – Prospective epidemiology study in bi-ethnic population of coronary disease and heart failure associated with demographics, behavioral, dietary, biological and genetic markers
 - U01 – Longitudinal study of bi-ethnic cohort on mild cognitive impairment and associated vascular factors using MRI scans and genetic information
- University of Connecticut School of Medicine, Farmington
 - Approach: mix of new rainmakers and grow R01 base
 - 3 new faculty with multimillions in grants
 - 6 existing faculty going from \$300K-800K/yr/faculty to \$1.1-2.5M/yr/faculty

3. Recruit VC of Research: Rainmaker

- BUT, what about managing our research infrastructure?
MTAs, IRB, IACUC, Grants Admin, Contracts, etc.
- Recruit a nationally recognized VC, then reassess need.
- Possible new position to troubleshoot and facilitate:
Director of Research Operations

3. Recruit VC of Research: Rainmaker

- Co-Chairs of Search
 - David Millhorn, PhD
 - 2005-Present: UT Executive Vice President of Research*
 - 2001-2005: Director of Genome Research Institute and Chair of Department of Genome Science, University of Cincinnati*
 - 1994-2001: Chair of Department of Mol & Cell Physiology, University of Cincinnati*
 - Gabor Tigyi, MD PhD
 - Harriet Van Vleet Professor and Chair Department of Physiology*
 - Among Top 5 Departments of Physiology*
- Potential Draw to UTHSC
 - Regional Bio-Containment Lab
 - Plough Center for Sterile Drug Delivery
 - Oak Ridge National Laboratory
 - Children's Health Partners
 - West Tennessee Forensic Center
 - Population We Serve
 - Resources and Facilities

Research Search Committee

- Chairs:
 - David Millhorn, VP for Research, UT System
 - Gabor Tigyi, Chair of Physiology, Van Vleet Chair, UTHSC
- Members
 - Jeff Nichols, Associate Lab Director, Oak Ridge National Lab
 - Elaine Tuomanen, Dept. Chair, St. Jude Children's Research Hospital
 - Robert Davis, ORNL-UTHSC Governor's Chair in Health Informatics
 - Sam Dagogo-Jack, Mullins Chair in Medicine
 - Jon McCullers, Dunavant Professor and Chair of Child Health
 - Gerry Byrne, Professor and Director, RBL
 - Teresa Waters, Professor and Chair, Preventive Medicine
 - Phyllis Richey, Associate Professor, Faculty Senate Representative
 - Bernd Meibohm, Professor, Pharmaceutical Research

Aim 4: Build Clinical and Translational Research

- UTHSC-ORNL Center in Biomedical Informatics
 - Director Dr. Bob Davis
 - Biomedical Informatics – the lesion on previous CTSA applications
- Clinical and Translational Science Institute and CTSA
 - PI Dr. Jon McCullers
 - Leveraging strength in Child Health
 - Le Bonheur/St. Jude
- Translational Science Research Building

4. Build Clinical and Translational Research

UTHSC-ORNL Center in Biomedical Informatics

- Director and ORNL Governor's Chair Bob Davis, MD, MPH
- *“A centralized place that will provide hardware, software, technical support for data extraction, data processing, standardized approaches to research and data management and institutional knowledge on how to get projects completed.”*
- To Date:
 - Established governance committee
 - Started \$1.3 million purchase for infrastructure needs
 - Beginning recruits for 5 faculty and 5-7 added staff
 - Funded consultant to build data repository for information from partner hospitals

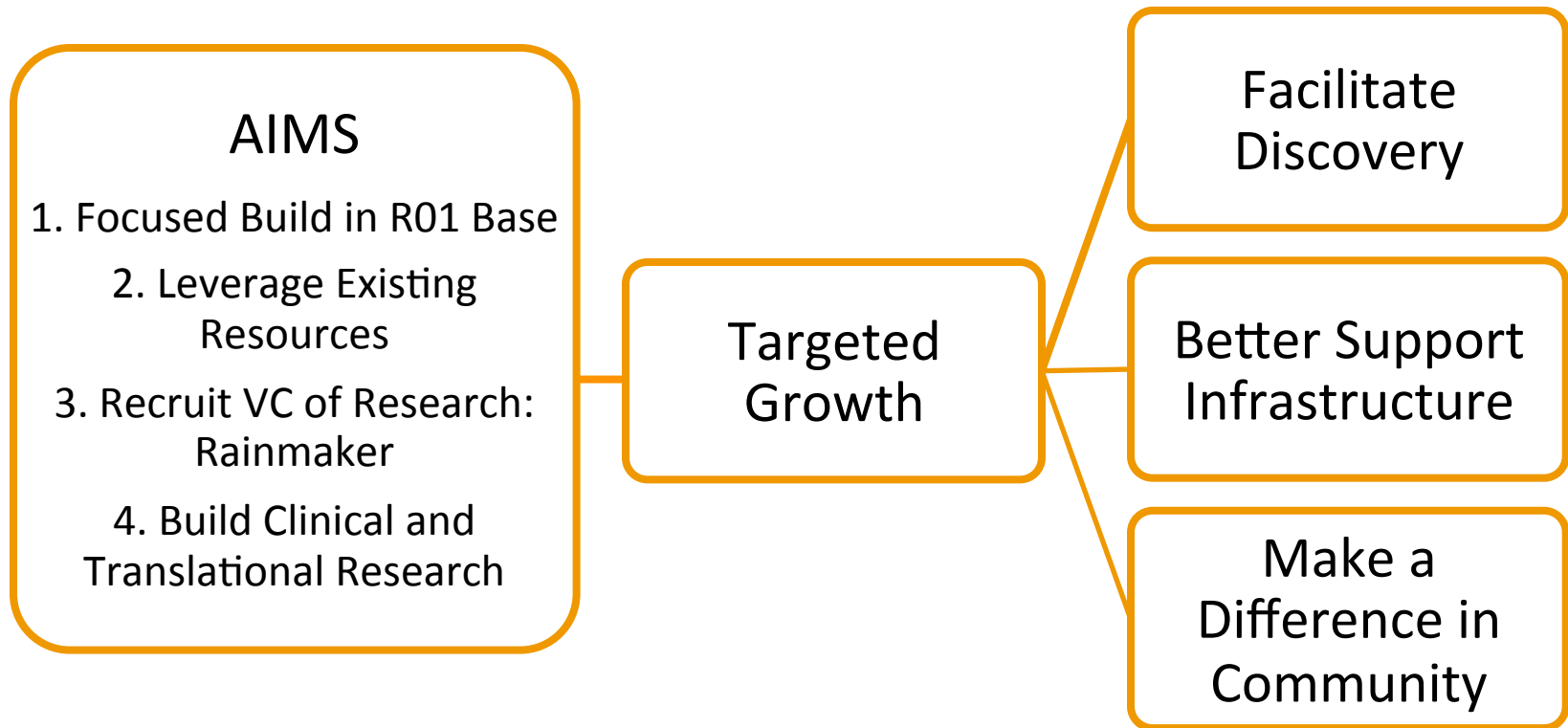
4. Build Clinical and Translational Research

Clinical and Translational Science Institute and CTSA grant application:

PI Jon McCullers and team of Teresa Waters, Rob Williams, Csaba Kovesdy, Bob Davis, Ari Vanderwalde, Paul Juarez and Dennis Black

- **iRISE:** Institute for Research, Innovation, Synergy, & Health Equity
 - Make use of our strength of an understudied population; patients with chronic diseases related to health disparities
 - Focus on translational and clinical research, “bench to bedside to community”
 - Makes us an attractive partner for other CTSIs and national research networks
 - Primarily acts as a “connectivity” interface and source of services to facilitate research and collaboration
- **Theme:** Health Equity
- **Approach/Narrative:** Using the existing Pediatrics “CTSI” structure (the CFRI) as a base to interweave resources at UTHSC in a new campuswide CTSI

Aims & Overarching Goal



Environment/Facilities

- Does the environment contribute to the likelihood of success?
 - New buildings/facilities
 - Financial resources
 - Chancellor and Deans pulling together
 - UTHSC faculty — R01/U01 base
 - RBL, Plough Drug Discovery — Unique
 - St. Jude/Le Bonheur axis — Leverage
 - Oak Ridge Joint Institutes — Leverage

University of Tennessee Health Science Center
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Metrics

Research

- Number of research grant proposals submitted to National Institutes of Health (NIH) and non-NIH federal funding agencies
- Number of research grant awards and overall level of NIH funding and non-NIH funding
- Number of research grant proposals submitted to non-federal funding sources
- Number of research grant awards and overall level of funding from non-federal sources
- Number of UTHSC faculty members who participate in either the UT Research Foundation seed grant initiatives or the Technology Transfer Accelerator program

Economic Development

- Number of executed license agreements between UTHSC and commercial ventures per \$100M in research and sponsored programs expenditures
- Number of start-up companies established by UTHSC researchers per \$100M in research and sponsored program expenditures

Related UT Executive Officer Performance & Retention Plan Goals

- Restricted research and sponsored program expenditures Goal FY15: \$221.17 million
- Total number of research and sponsored program proposals Goal FY15: 697
- Number of disclosures (inventions; 3-year average) Goal FY15: 29
- Revenue from executed license agreements (between UTHSC and commercial ventures; 3-year average) Goal FY15: \$469,000

Strategic Priority B: Grow the Research Portfolio Focusing on Targeted Areas

- Success rate of all research grant proposals submitted (compare to success rate of our peers)
- Level of research funding/expenditures by targeted areas of excellence
- Number of research grant proposals submitted by targeted areas of excellence
- Success rate of research grant proposals submitted by targeted areas of excellence (compared to success rate of peer institutions in targeted areas)

Metrics

Total # Proposals

- Major: >\$300K direct costs/year
- Mid-Level: \$100-300K direct costs/year
- Smaller: <\$100K direct costs/year
- Multi-Investigator proposals

Research Award Totals

NIH and Total Federal Ranking

Total # Inventions, Disclosures and Start Ups

Sponsored Program Totals

Summary

- Strategic Plan
- Implementation Steps/Aims
- Metrics