LAYING THE GROUNDWORK FOR AAU MEMBERSHIP

Christopher T. Nomura, Ph.D.

Vice President for Research and Economic Development

Professor of Biological Sciences

University of Idaho

CHRISTOPHER "CHRIS" NOMURA, PH.D.

- UC Santa Cruz-undergraduate
  - BA-Biology with Honors
  - MBRS, MARC, MHIRT Fellow
- The Pennsylvania State University-Ph.D.
  - Cyanobacterial electron transport
- RIKEN Institute-Postdoc
  - JJSPS Postdoctoral Fellow
  - Metabolic and protein engineering for biodegradable plastic production
- SUNY College of Environmental Science and Forestry
  - Assistant, Associate, Full Professor
    - NIH, NSF, DOE, USDA, NYSDEC
  - Vice President for Research
- University of Idaho
  - Professor of Biological Sciences
  - Vice President for Research and Economic Development

SOME RECENT HIGHLIGHTS

- Currently lead the Office of Research and Economic Development at the University of Idaho with >$100M in research expenditures per year
- FY21-FY22 have increased new sponsored projects by 46% and expenditures by 20%
- FY20 - FY22, University of Idaho processed 91 invention disclosures, had 27 patent applications, 5 patents issued, and 24 licenses.
- Worked with congressional representative over the past two years to bring 2 community projects to U of Idaho for $2.5M

QUESTION:

- *UCF's strategic plan is focused on becoming a Top 50 Public Research University and building a University for the Future. -- What specific initiatives might an institution implement to support research and creative works to become a Top 50 Research University and lay groundwork to become eligible for membership in the AAU?*

ASSOCIATION OF AMERICAN UNIVERSITIES (AAU)

- AAU is an association of leading comprehensive universities distinguished by breadth and quality of their programs of research and graduate education. Membership is by invitation only.
- A standing Membership Committee periodically evaluates non-members for membership and current members for continued membership.
- No specific limit on number, but currently there are only 65 universities that are members.
- Evaluation is guided by Membership Principles and Membership Indicators

AAU MEMBERSHIP PRINCIPLES

1. The primary purpose of AAU should be to provide a forum for the development and implementation of institutional and national policies promoting strong programs of academic research and scholarship and undergraduate, graduate, and professional education.
2. The members of AAU should be comprehensive universities distinguished by the disciplinary breadth and quality of their programs of graduate education and research.
3. The members of AAU shall approve appropriate criteria for assessing the breadth and quality of these programs, and shall apply these criteria in making judgments about potential new members of the Association and in the assessment of current members.
4. All current members are subject to periodic review by the Membership Committee. In those instances in which there appears to be a significant and sustained disparity between the mission or accomplishments of a member institution and that of other members of the association, or that of non-members deemed deserving of membership, an in-depth review of that institution will be initiated by the Membership Committee. Discontinuation of membership will be one possible outcome of this in-depth review.

AAU MEMBERSHIP INDICATORS

- Indicators divided into two Phases and process in two Stages.
- Phase I Indicators: Primary indicators of institutional breadth and quality of research and education.
- Phase II Indicators: Provide additional input on research and education programs
- These two sets of criteria form the First Stage of the evaluation for potential membership to AAU.
- Second stage is more qualitative assessment about institutions and their trajectory.

AAU MEMBERSHIP INDICATORS PHASE I

1. **Competitively funded federal research support:** The Membership Committee uses National Science Foundation (NSF) research expenditure data, excluding formula-allocated USDA research expenditures and American Recovery Reinvestment Act (ARRA) expenditures. Funding for the Agriculture Food and Research Initiative (AFRI), a competitively funded USDA research support program, is included in the Phase I research support indicator.
2. **Membership in the National Academies (NAS, NAE, IOM):** The National Academies' membership database maintains the current institutional affiliation of its members.
3. **Faculty awards, fellowships, and memberships:** The Membership Committee gathers data on faculty awards, fellowships and memberships as an additional assessment of the distinction of an institution's faculty. Additional appropriate awards, fellowships, and memberships will be added to this list as they are identified.
4. **Citations:** Thomson Reuters InCitesTM citations database provides an annually updated measure of both research volume and quality and will provide a valuable complement to the first four indicators listed above.

AAU MEMBERSHIP INDICATORS PHASE II

1. **USDA, state, and industrial research funding:** Though these three sources of academic research support fund important, high-quality research, they are treated as Phase II indicators since they are generally not allocated through competitive, merit-review processes. Competitively funded USDA research programs, such as AFRI, that can be separately identified in reported data are included in Phase I data.
2. **Doctoral education:** The Committee uses number of research/scholarship Ph.D.s granted annually, using Department of Education IPEDS (Integrated Postsecondary Education Data System) data. These data are treated as Phase II indicators to de-emphasize the quantitative dimensions of Ph.D. programs and avoid sending an unintended signal to institutions to increase Ph.D. output.

AAU MEMBERSHIP INDICATORS PHASE II

3. **Number of postdoctoral appointees:** The Committee uses NSF-compiled data from institutions on postdoctoral appointees, most of whom are in the health sciences, physical sciences, and engineering. Postdoctoral education is an increasingly important component of university research and education activities that the committee believes should be tracked in AAU membership indicators. However, because postdoctoral activity is highly correlated with university research and because self-reported postdoctoral data are less uniform than data on federally funded research, postdoctoral appointees are treated as a Phase II indicator.
4. **Undergraduate education:** The Committee assesses the institution's undergraduate programs to determine that the institution is meeting its commitment to undergraduate education. Recognizing that differing institutional missions among research universities dictate different ways of providing undergraduate education, the committee will be flexible in this assessment. A number of measures have been suggested, including some that focus on input and others that look primarily at output variables. These are at this time imperfect, but may provide some guidance to the committee in making its judgments on this topic.

NSF HERD SURVEY DATA EXPENDITURES: TOP 1-10

Institution	Rank	total	Federal	State/local	Institution	Business	Nonprofit	Other
Johns Hopkins U.	1	3,181,385	2,774,643	4,677	147,355	103,162	145,027	6,521
U. California, San Francisco	2	1,710,036	683,179	33,056	418,589	128,370	254,406	192,436
U. Michigan, Ann Arbor	3	1,639,645	891,125	2,066	581,768	91,117	63,650	9,919
U. Pennsylvania	4	1,631,950	792,089	20,733	511,958	190,755	111,885	4,530
U. Washington, Seattle	5	1,488,645	1,046,377	21,877	105,070	54,751	212,584	47,986
U. California, Los Angeles	6	1,454,880	721,043	71,014	302,528	87,959	194,232	78,104
U. California, San Diego	7	1,425,499	801,117	51,346	250,863	85,003	87,380	149,790
U. Wisconsin-Madison	8	1,380,075	646,764	135,923	412,540	31,502	117,817	35,529
Stanford U.	9	1,274,483	811,183	17,802	136,444	113,691	186,565	8,798
Harvard U.	10	1,254,008	616,589	5,137	384,197	55,357	172,327	20,401

NSF HERD SURVEY DATA EXPENDITURES: 27(UF), 42-50

Institution	Rank	total	Federal	State/local	Institution	Business	Nonprofit	Other
U. Florida	27	959,965	423,154	161,448	266,197	31,394	46,582	31,190
Arizona State U.	42	677,303	274,541	43,390	258,139	23,580	56,958	20,695
Boston U.	43	652,096	402,443	501	160,347	20,071	45,146	23,588
U. Alabama, Birmingham	44	644,330	423,290	9,355	116,561	61,764	31,641	1,719
Rutgers, State U. New Jersey, New Brunswick	45	643,955	339,015	84,201	111,501	40,861	49,049	19,328
U. Texas Southwestern Medical Center	46	632,134	257,611	68,114	151,111	38,886	52,491	63,921
U. Utah	47	624,737	340,434	4,638	203,839	38,783	33,417	3,626
U. Virginia, Charlottesville	48	611,313	297,273	8,714	181,375	28,643	34,515	60,793
U. Colorado Anschutz Medical Campus[c]	49	562,855	363,999	25,162	69,836	48,309	45,580	9,969
U. Iowa	50	553,876	283,763	5,395	220,579	25,536	18,601	2

NSF HERD SURVEY DATA EXPENDITURES: LOWEST RANKED AAU UNIVERSITIES

Institution	Rank	total	Federal	State/local	Institution	Business	Nonprofit	Other
Dartmouth	82	330,226	152,335	1,446	144,008	4,723	19,660	8,054
Brown U.	96	276,331	198,574	28	50,127	4,925	19,410	3,267
SUNY, Stony Brook U.	98	274,516	162,972	10,323	84,647	5,135	9,416	2,023
U. California, Santa Barbara	104	248,961	122,168	5,213	54,569	20,480	28,768	17,763
Tufts U.	110	224,956	166,809	3,242	15,442	8,655	26,955	3,853
Rice U.	117	207,404	95,648	7,372	62,352	7,123	30,638	4,271
Tulane U.	119	205,206	113,819	4,442	49,660	8,279	15,569	13,437
U. California, Santa Cruz	142	160,615	86,263	4,943	31,668	7,273	16,325	14,143
U. Oregon	149	139,193	82,242	769	48,194	1,611	5,448	9,969
Brandeis U.	165	107,549	52,147	404	34,998	1,418	9,045	2

NSF HERD SURVEY DATA EXPENDITURES: FLORIDA UNIVERSITIES

Institution	Rank	total	Federal	State/local	Institution	Business	Nonprofit	Other
U. Florida	27	959,965	423,154	*161,448*	*266,197*	31,394	46,582	31,190
U. South Florida[d]	68	405,088	185,364	*23,254*	*161,442*	14,798	10,584	9,646
Florida State U.	83	328,604	150,108	*20,583*	*143,790*	3,033	3,764	7,326
Florida International U.	105	246,075	105,309	*19,445*	*111,950*	2,311	6,437	623
U. Central Florida	112	218,596	109,310	*11,703*	*76,091*	11,489	5,025	4,978
Rice U.	117	207,404	95,648	7,372	62,352	7,123	30,638	4,271
Tulane U.	119	205,206	113,819	4,442	49,660	8,279	15,569	13,437
U. California, Santa Cruz	142	160,615	86,263	4,943	31,668	7,273	16,325	14,143
U. Oregon	149	139,193	82,242	769	48,194	1,611	5,448	9,969
Brandeis U.	165	107,549	52,147	404	34,998	1,418	9,045	2

NATIONAL ACADEMY MEMBERS

Number of National Academy members	>100	50 to 99	20 to 49	1 to 19
AAU Institutions	14	12	24	15
avg ± stdev	176 ± 93	63 ± 11	32 ± 8	11 ± 5

NATIONAL ACADEMY MEMBERS

Institution	rank	Total	Federal	NAS	NAE	NAM	TOTAL	Nobel
Arizona State University	42	677,303	274,541	21	9	2	25	5
U. South Florida[d]	68	405,088	185,364	1	9	6	16	0
Florida State U.	83	328,604	150,108	3	1	3	7	6
Florida International U.	105	246,075	105,309	0	0	5	5	0
U. Central Florida	112	218,596	109,310	0	8	0	8	0
Rice U.	117	207,404	95,648	8	12	3	23	2
Tulane U.	119	205,206	113,819	1	0	1	2	2
U. California, Santa Cruz	142	160,615	86,263	14	1	1	16	1
U. Oregon	149	139,193	82,242	9	0	1	10	1(2)
Brandeis U.	165	107,549	52,147	8	0	2	10	2

AAU MEMBERSHIP INDICATORS

PHASE I

1. **Competitively funded federal research support**
2. **Membership in the National Academies (NAS, NAE, IOM)**
3. **Faculty awards, fellowships, and memberships**
4. **Citations**

PHASE II

1. **USDA, state, and industrial research funding**
2. **Doctoral education**
3. **Number of postdoctoral appointees**
4. **Undergraduate education**

INITIATIVES TO ACHIEVE AAU PHASE I INDICATORS

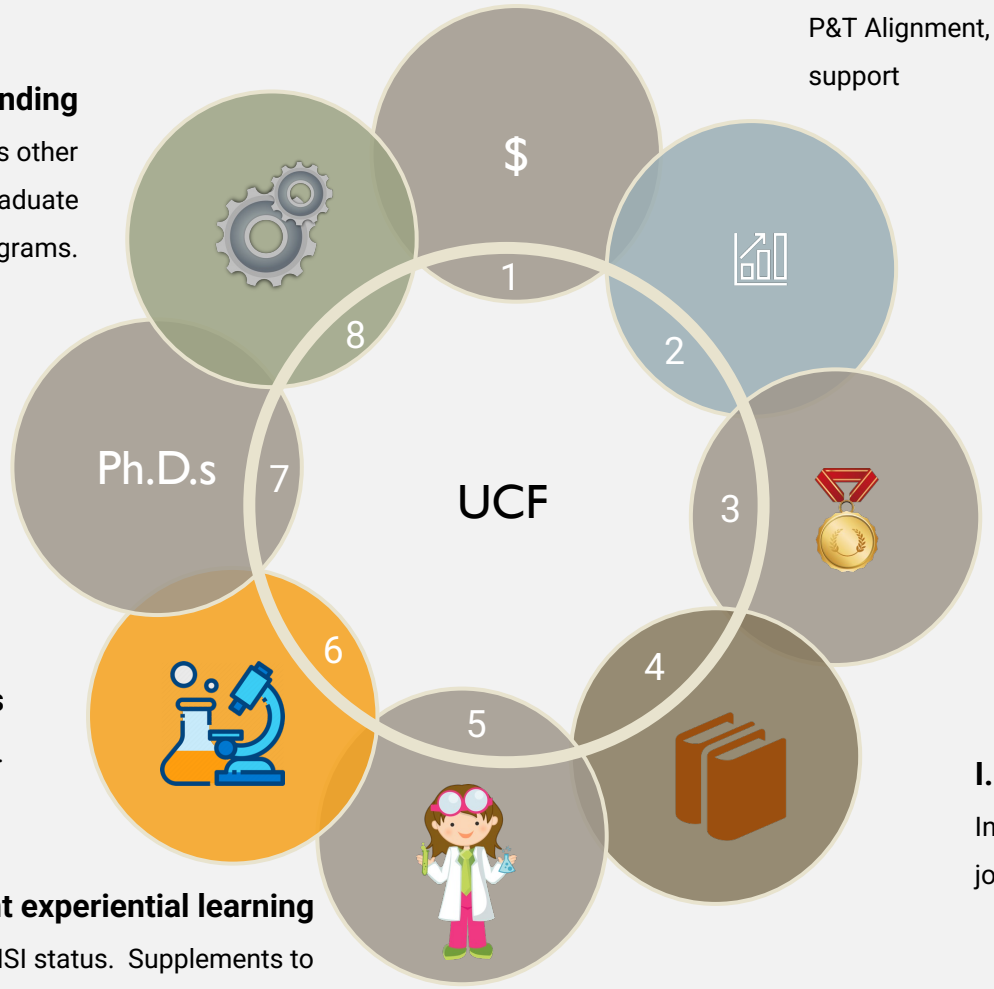
1. **Competitively funded federal research support**
   - Alignment of P&T policy to achieve goal
   - Reduce administrative burden to faculty through deployment of specific FTEs to help in grants administration support
   - Grants development programming (NSF CAREER, NIH, etc.)
2. **Membership in the National Academies (NAS, NAE, IOM)**
   - Create advisory group of current UCF NAE members to help develop roadmap
   - Promote and support participation of faculty in National Academies New Voices Program and Kavli Frontiers of Science
   - Recruit Academy members from each division related to the 5 areas of focus at UCF (Similar to EIP from SUNY)
3. **Faculty awards, fellowships, and memberships**
   - Promote, participate, and incentivize achievement/membership across a number of disciplines and award spaces- (MacArthur, Guggenheim, HHMI, Pulitzer, Nobel, AAAS, NEH, Fullbright, etc.)
4. **Citations**
   - Incentivize publication and high citation index articles

NSF HERD SURVEY DATA EXPENDITURES: FLORIDA UNIVERSITIES

Institution	Rank	total	Federal	State/local	Institution	Business	Nonprofit	Other
U. Florida	27	959,965	423,154	***161,448***	***266,197***	31,394	46,582	31,190
U. South Florida[d]	68	405,088	185,364	***23,254***	***161,442***	14,798	10,584	9,646
Florida State U.	83	328,604	150,108	***20,583***	***143,790***	3,033	3,764	7,326
Florida International U.	105	246,075	105,309	***19,445***	***111,950***	2,311	6,437	623
U. Central Florida	112	218,596	109,310	***11,703***	***76,091***	11,489	5,025	4,978
Rice U.	117	207,404	95,648	**7,372**	**62,352**	7,123	30,638	4,271
Tulane U.	119	205,206	113,819	4,442	49,660	8,279	15,569	13,437
U. California, Santa Cruz	142	160,615	86,263	4,943	31,668	7,273	16,325	14,143
U. Oregon	149	139,193	82,242	769	48,194	1,611	5,448	9,969
Brandeis U.	165	107,549	52,147	404	34,998	1,418	9,045	2

INITIATIVES TO ACHIEVE AAU PHASE II INDICATORS

1. **USDA, state, and industrial research funding**
   - Focused strategy to increase state support for sponsored research towards equivalency with other state institutions
   - Institutional investment to similar levels as other state institutions
   - Integrated graduate/industry education programs
2. **Doctoral education** (supports Phase I indicators)
   - Incentives to increase number of NSF GFRP or other fellowship recipients
   - NRT and other awards for training graduate students.
3. **Number of postdoctoral appointees** (supports Phase I indicators)
   - Incentivization via postdoctoral matching programs
4. **Undergraduate education** (supports Phase I indicators)
   - Expansion of sponsored awards to include undergraduate research (NIH MBRS, MARC, Beckman Scholars, etc.)
   - Development of programming for supplement application support



I.1 Increase Federal Competitive Funding

P&T Alignment, Administrative support, programming support

I. 2 Increase National Academy membership

Develop internal advisory working groups, specific recruitment, build pipelines, alignment with academy strategic plans

I. 3 Increase awards, fellowships,

Incentives and awards aligned with achievement of these outcomes

I. 4 Increased citations

Incentivize publication in high impact journals.

II. 1 Improve state and industry funding

Improve state level funding to equivalent levels as other state institutions. Industry partnerships for graduate programs.

II. 2 Targeted increases in doctoral programs

Improve NSF GFRP and NRT specific training programs. Leverage HSI status..

II. 3 Increase postdoctoral appointees

Postdoctoral matching programs.

II. 4 Increased undergraduate student experiential learning

Undergraduate training programs to leverage HSI status. Supplements to existing awards to enhance UG experience.