The Scientific Core of Texas A&M: A Vision of the College of Science

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0. Thanks to search committee!

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What kind of university are we?

- **2001–2002**: 125th anniversary as land grant university committed to Texas and US with multiple missions.
- **Until 1960's:** All-male, all-military emphasizing ag and engineering and science basically all service in teaching and applied research with some majors.
- **Aspirations Study of 1962**: Become coed, non-military research university. Chemistry to be program of excellence; Martell (1966), Cotton (1972).
- **Throughout 1970's**: Tenure system, huge growth, Biology, Chemistry, Math, Physics, Statistics became research units as well as service to rest of university.
- **Target 2000 Study of 1983**: Summarized goal of being true research university by 2000. Certainly met goal as we are in 15–20 range of public universities.
- **Vision 2020 of 1999**: Become consensus top 10 public by 2020.
  1. Elevate faculty research, teaching,
  2. Strengthen graduate programs,
  3. Enhance undergraduate experience,
  4. Build letters, arts, & sciences,
  5. Build on tradition of professional education,
  6. Diversify & globalize A&M community,
  7. Increase access to knowledege sources,
  8. Enrich our campus,
  9. Build community and metropolitan connections,
  10. Demand enlightened Governance & leadership,
  11. Attain resource parity with best public universities,
  12. Meet our commitment to Texas.

- **Fall 2001**: 44,618 [36,603 U (82.04); 7,518 G (16.85); 497 Prof (1.11)]

	Und	Mast	PhD		Und	Mast	PhD
Eng	7628	1246	728	Biol	1284	39	55
Lib Arts	6249	342	362	Chem	185	116	121
Ag	5320	647	502	Math	306	61	44
Bus	4939	802	73	Phys	79	46	64
Gen St	3674			Stat		50	47
Educ	3089	559	628				
Vet Med	1975	60	83				
Science	1854	312	331				
Arch	1419	329	88				
Geoscience	434	184	105				
Bush		63					

- 2/3 of undergraduates are engineering, liberal arts, agriculture, business.

- Land grant mission still very much in evidence, especially with existence of agencies, which provide many opportunities but can temper desire to excel in most basic research.

- **1993–NRC Report**: TAMU rated in 25 of 41 areas.

- One way to think of TAMU is like land grants in states with multiple flagships, e.g., Purdue, Arizona, UC Davis, NC State, TAMU, Michigan State, Iowa State, etc., as opposed to, e.g., Wisconsin, Minnesota, etc.

What kind of college are we?

- Scientific Core of Texas A&M.
- \$31.7M from provost (\$20M faculty, \$4.5M grads, \$5.7M staff, \$1.8 ops); around \$30M from external sources.
- 215 T/TT faculty (12% of TAMU), 1,850 undergrads, 650 grads, 20% of SCH's (80% of which service), 35% of TAMU indirect cost return.
- 18 of 40 DP's, 6 of 25 faculty fellows, 2 national academy members.
- In NRC rankings:
  - Chemistry 1st TAMU; top 10% nationally; 7th inorganic; tops nationally in PhD production, half again as many PhD's as any other dept at A&M, etc.
  - Statistics 3rd TAMU; top 15% nationally; recent NCI training grant, etc
  - Physics 8th TAMU; top 30% nationally;
  - Math 15th TAMU; top 40% nationally; VIGRE grant; large recent increase in NSF funding rank
  - Biology broken into 4 areas in rankings; top third molecular and genetics; molecular biology, genomics, circadian rhthyms, etc.
- Several institutes and centers, including cyclotron (important DOE funded center for nuclear chemistry and physics), Institute for quantum studies, \$10M NSF center for teaching and learning science (1st in nation), whole series of lab science research, equipment, and service laboratories.
- National leader in production of minority and female PhD's; 10% of T/TT faculty women; 8 Hispanic or African American.
- Local and national leaders in technology mediated instruction, K-12 teacher prep/cert.
- Extraordinarily strong recent hires; NYI's Career awards, Sloans, etc.

Challenges

- Recruiting, rewarding, retaining faculty
  - Salaries 91% of peers, lost 17 T/TT faculty to raids since 9/97, (money, partner placement, Bryan/College Station, lack of infrastructure), successfully countered 10 more, some very expensive.
  - Very little new money since 1985, small raise pools last 10 years.
  - Leads to salary compression, replacing T/TT with temporary faculty.
- Recruiting, rewarding, retaining graduate students
  - Desperately underfunded; stipends $2-4K low; no T&F waiver ($4.5K per yr); Bryan/CS; lack of faculty money puts more teaching pressure on TA's
- Space problems
  - **Biology:** Renovation money; location and nature of life science building ("complex") crucial to future, etc.
  - **Chemistry:** Laboratory space; room to expand, etc.
  - **Math:** Milner/Blocker; classrooms inconvenient, wrong size, etc.
  - **Physics:** Laboratory space; no expansion room, etc.
  - **Statistics:** Training grant; large grad student increase,etc.
- Startup funds and equipment matching
  - Junior lab scientist: $200–400K; full/chair holder: $1-2M; math scientists $15–50K.
  - Almost all federal grants require 25–35% match.
- Research infrastructure
  - College very successful at getting large equipment grants from local, state, federal govt; charges user fees for expendables; need funds for technicians; need space; many more to come; Research infrastructure oversight committee.

- Development
  - Notoriously difficult from science alumni; 8 Bright/AUF chair matches; seeking $200K in scholarship matching funds; seeking 1,000 doctors to give $1,000 each in Lifelines program.
- Diversity

Female/minority 9/2001

	Asst		Assoc		Prof		Total	
Biol	1	1	4	0	2	0	7	1
Chem	1	0	3	1	2	1	6	2
Math	2	2	1	2	1	1	4	5
Phys	0	0	0	0	1	0	1	0
Stat	3	0	0	0	1	0	4	0
Total	7	3	8	3	7	2	22	8

Approx # of PhD's per year

	AfrAm	Hisp	Female
Biol	100	300	2400
Chem	50	100	600
Math	10	30	275
Phys	8	30	160
Stat	<5	<5	50

  - Several surveys place our depts at or near top nationally in PhD production.
  - We've won 3 individual, 3 dept diversity awards.
  - Karan Watson and I are co-pi's on $1M NSF gender equity grant.

Goals

1. Maintain and grow strong basic science while playing important roles in collaborative projects.
2. Return tenure track faculty to full strength without compromising service teaching effectiveness.
3. Increase number and quality of graduate and undergraduate students.
4. Increase number of female, minority faculty.
5. Continue to find creative ways to address shortage of math and science teachers.
6. Provide tools and training for faculty wanting to use technology mediated instruction.
7. Continue to grow development activities.

Brief biography

PhD Buffalo 1975 $\Rightarrow$ A&M 1978 $\Rightarrow$ P&T 1983 $\Rightarrow$ Full 1988 $\Rightarrow$ Head 1990
$\Rightarrow$ Exec Assoc Dean 1/1998 $\Rightarrow$ Interim Dean 8/2000

- **Research:** 1) Time series analysis (book and software 1988), 2) Computational statistics (president of board of computer science/statistics interface board, editor of *Computational Statistics*)
- **Teaching:** College teaching award twice; 10 PhD students; taught two or three courses per year throughout administrative period.
- **Collaboration:** With researchers in meteorology, animal science, economics, oceanography, civil engineering, etc.
- **1995:** Fellow of ASA for time series, computational statistics, teaching, and administration.
- **Dept head:** 1998 US News named us top 10; external funding more than doubled
- **Exec Assoc Dean:** Dean Ewing delegated tremendous amount to me, e.g., most people reported through me, was able to push some of my ideas, e.g., NSF center for teaching and learning.
- **Interim Dean:** Tried to be very aggressive, e.g.,
    - Represented college in "Next Steps" competitions (got at least 1/4 of resources) and served on several ad hoc dean committees, including the one that so far has avoided cuts from last legislature.
    - Hired record number of faculty and lost only a few.
    - $200K toward grad student recruiting, $100K toward TMI, $70K toward research enhancement

My style and vision

- Hands on; consensus builder; open door, not afraid of difficult decisions and conversations; delegator.

- Assemble set of dept heads who strongly represent departments but act collegially and with other parts of university. Make them prioritize and get them resources for priorities.

- Assemble strong Dean's staff who can help departments while also pushing college agenda to university.

- **Basic vision:**

  - Have the world say: "Look at all those exciting things going on in science at Texas A&M".

  - Have the rest of the university say: 1) "Our students get a great education and better jobs because of the college of science." 2) "We do better research because of the college of science."

- How? Make all departments and institutes be the best they can be. In addition to crucial role of scholarship in their own fields, operate with an eye toward:

  - **Biology:** Be the core of A&M's life sciences aspirations.

  - **Chemistry:** Maintain overall strength plus encourage materials science, life science, etc.

  - **Math:** Can't have a great university without a first rate math department; be part of initiatives such as bioinformatics, computational science and engineering, etc.

  - **Physics:** Increasingly crucial to several areas of university (very large increase in enrollments); collaborations with chemistry, engineering, etc.

  - **Statistics:** Even larger increase in enrollments; crucial to life sciences initiatives, center for environmental rural health, NCI training grant, etc.

- How? The usual way; recruit, reward, retain high impact, extraordinary faculty and graduate students. How? Get more money! How?
  - There will be new resources from negotiations with provost.
  - Next round of Next Steps initiatives (faculty lines, startup funds, LSTF, TITF, faculty fellows, etc).
  - Increase research grants and contracts
  - Continue increase in development, both in chairs and in scholarships, etc.
- **Bottom Line:** We need a dean who can effectively lead the college in all of its multiple missions. I have shown I can do that.