



# K-State 2025 Strategic Action and Alignment Plan

College or Major Unit: Arts & Sciences

Department: Division of Biology

1. What are your Department's mission and vision and how does your organization contribute to achieving the University's and your College's/Major Unit's vision for K-State 2025?

*Mission: To generate and disseminate new and existing high-quality biological scientific knowledge, in a supportive and diverse environment, to students, professional colleagues, and the public through teaching, research and outreach.* The Division of Biology is a core academic and research unit in the University, and contributes to K-State 2025 Themes I, II, III, IV, V and VI (Research, Scholarship, and Creative Activities and Discovery; Undergraduate Educational Experience; Graduate Scholarly Experience; Engagement, Extension, Outreach and Service; Faculty and Staff; Facilities and Infrastructure, respectively). By providing quality education to undergraduate and graduate students, we contribute to Themes II and III, respectively. With active research programs and extramural grants, we contribute to Themes I, III and IV. We actively participate in the goals of Theme V by promoting diversity and collegiality in our faculty, staff and student populations, and in Theme VI by generating funds (either directly or through grant overhead) that are used to maintain and upgrade research facilities and classrooms.

2. What are your Department's key strategic activities and outcomes?

3. Identify [in brackets] which of your Department's strategic outcomes are directly linked to your College's/Major Unit's outcomes. *(If your Department or similar unit is not in a College or Major Unit, skip this question.)*

Key Activities	Short Term (2013 - 2015) Key Outcomes	Intermediate (2016 - 2020) Key Outcomes	Long Term (2021 - 2025) Key Outcomes
<i>What we plan to do...</i>	<i>What we expect to happen...</i>	<i>What we expect to happen...</i>	<i>What we expect to happen...</i>
1) Fill 4 empty faculty lines, hire 5 new faculty members in tenure-track positions, hire 2 new instructors, all in a background where faculty salaries rise to the average of our peers.  2) Increase graduate student numbers by 30 (to achieve a total of 100) while increasing stipend levels. Some of these graduate students will be funded by the increase in extramural funding expected as a result of Activity 1 above. Continue and expand our graduate student recruitment activities.  3) Renovate, construct, consolidate and increase research and office space, storage space, and secure parking space for research	Increased annual number of peer-reviewed publications (from 125 to 130), increased funding from extramural grants (to \$8M annually), increased visibility for our Division as measured by national awards and high-profile positions in national and international scientific societies. [Theme I, II, III and X in the College plan]  Increase in annual number (+10) of high-quality graduate student applicants and admittees should lead to increased numbers of peer-reviewed publications and extramural grants and higher visibility for the Division. Increase in number of doctoral degrees awarded annually (from n=6 to n=8) and MS degrees (from n=8 to n=10). [Themes I, II, III, VI and X in the College plan]	Increased annual number of peer-reviewed publications (from 130-145), increased funding from extramural grants (to \$10M annually), increased visibility for our Division as measured by national awards and high-profile positions in national and international scientific societies. [Theme I, II, III and X in the College plan]  Increase in annual number (+ 10 more) of high-quality graduate student applicants and admittees should lead to increased numbers of peer-reviewed publications and extramural grants and higher visibility for the Division. Increase in number of doctoral degrees awarded annually (from n=8 to n=10) and MS degrees (from n=10 to n=12). [Themes I, II, III, VI and X in the College plan]	Increased annual number of peer-reviewed publications (from 145-175), increased funding from extramural grants (to \$15M annually), increased visibility for our Division as measured by national awards and high-profile positions in national and international scientific societies. [Theme I, II, III and X in the College plan]  Increase in annual number (+ 10 more) of high-quality graduate student applicants and admittees should lead to increased numbers of peer-reviewed publications and extramural grants and higher visibility for the Division. Increase in number of doctoral degrees awarded annually (from n=10 to n=15) and MS degrees (from n=12 to n=14). [Themes I, II, III, VI and X in the College plan]
	The increase in faculty and graduate	The increase in faculty and graduate	The increase in faculty and graduate

<p>vehicles. This will require both university and private funding. See item 4b (below) for detailed information about this activity.</p> <p>4) Continue to evaluate and improve our three undergraduate curricula to deliver courses in a modern pedagogical manner. Increase our long-standing support for faculty-mentored undergraduate research. Enhance our advising staff to accommodate increased number of majors. This will require university funding (course or lab fees), extramural funding, and private funding.</p>	<p>student numbers, who will be working in these enhanced facilities, should lead to increased numbers of peer-reviewed publications and extramural grants. [Themes I, II, III, IV and VI in the College plan]</p> <p>Increase of majors from 800 to 850, increase in undergraduate research participation as measured by undergraduate authorship on publications, enhancement of the reputation of the Division as a premier site for undergraduate education and research. [Themes I, IV, V, VIII, IX and X in the College plan]</p>	<p>student numbers, who will be working in these enhanced facilities, should lead to increased numbers of peer-reviewed publications and extramural grants. [Themes I, II, III, IV and VI in the College plan]</p> <p>Increase of majors from 850 to 900, increase in undergraduate research participation as measured by undergraduate authorship on publications, enhancement of the reputation of the Division as a premier site for undergraduate education and research. [Themes I, IV, V, VIII, IX and X in the College plan]</p>	<p>student numbers, who will be working in these enhanced facilities, should lead to increased numbers of peer-reviewed publications and extramural grants. [Themes I, II, III, IV and VI in the College plan]</p> <p>Increase of majors from 900 to 1000, increase in undergraduate research participation as measured by undergraduate authorship on publications, enhancement of the reputation of the Division as a premier site for undergraduate education and research. [Themes I, IV, V, VIII, IX and X in the College plan]</p>
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**4a. What resources and/or opportunities exist for your Department to achieve its vision and outcomes?**

The Division was ranked in the 7-17<sup>th</sup> percentile (in a pool of 394 Biology departments) in the latest National Research Council rankings of Ph.D. Programs. Our current high ranking is a resource to be used in helping us attain our goals. Additionally, the incredible diversity of biological disciplines found in the research programs of our faculty members is a tremendous resource for fostering interdisciplinary research, and for training students for a future that will be increasingly interdisciplinary. We are in a good position already, and poised to attain an even better position if the 2025 plan is realized.

The number of students majoring in Biology has increased significantly in recent years; hopefully this will continue and will generate additional tuition income to be applied to these initiatives. If the per-credit-hour fee for courses in the College of Arts and Sciences is approved by the Board of Regents this year, additional resources will be available for our additional instructional needs.

Research grants to support graduate and undergraduate students in research labs are currently in place in the Division, and will continue to be sought by junior and senior faculty.

IGERT, GAANN, and GK-12 training grants, for which the Division has successfully competed in the past, are available for funding graduate student education. Current and new senior faculty will be competitive applicants for these awards.

HHMI support for undergraduate research, which are invitation-only, and for which the Division has successfully competed in the past, are available. Current and new senior faculty will be competitive applicants for these awards if/when we are invited again.

**4b. What resources and/or opportunities are needed for your Department to achieve its vision and outcomes?**

In order to achieve Key Activity 1 (above) additional resources totaling \$6.9M will be needed, broken down as follows:

- Increase salaries of current faculty (~\$150K base compression correction, plus reinstitute merit and targeted increases), and retain quality faculty;
- Fill 4 faculty positions that are currently empty/previously committed (requires internal salaries + FB of ~\$465K + ~\$2.5M start-ups;

- Increase tenure track faculty by 5 to create synergies and fill discipline and rank gaps (2 professor/1 associate/2 assistant, requiring base budget internal salaries + FB of ~\$645K and start-ups of ~\$3.0M). 1 full prof should be NAS actual or caliber. Add 2 new instructor level faculty (~\$130K), to maintain quality teaching and to release faculty time for research achievement.

In order to achieve Key Activity 2 (above) additional resources totaling \$1.26M will be needed. We propose to increase graduate student numbers, and funding for stipends, per student and in total, so that we can support 30 more students at competitive higher stipends (by ~\$6K each). We will also continue and expand our recruitment efforts, including campus visits for outstanding applicants to meet with current faculty and grad students as part of a 2-day recruiting event, which is being funded by our SRO and Foundation funds. We will also continue to seek extramural training grants (IGERT, GAANN, NIH) through current and new senior faculty. Funding of grad students at 50 GTA and 50 GRA at \$26K/year each will require

- A GTA base increase of \$538K (\$400K for 20 new 20K/AY stipends, + \$138K for \$4.6K/AY increases on 30 AY stipends).
- Increased grant funding of \$161.4K for summer stipends (\$120K for 20 new GTAs, \$6K each/summer + \$41.4K, 30 x \$1380/summer).
- Increased grant funding to support 50 GRAs; net increase totaling \$560K above current levels (\$260K for 10 new GRAs + \$240K for \$6K increases on 40 GRAs, + \$60K in tuition costs for 10 new GRAs).

In order to achieve Key Activity 3 (above), additional resources for new facilities, totaling \$27-37M, will be needed. A \$2M need for renovation, construction, and consolidation of existing facilities will also be needed. This activity will increase research and office space for faculty and grad students, and includes

- Completion of Ackert Phase II construction or construction of a mirror image of Chalmers to add ~30,000 NASF to Biology (and vacate Bushnell and Leasure Halls). Either Ackert Phase II or a new building will need fundraising and donations of \$25-35M).
- Construction of additional lab research space at Konza Prairie Biological Station (~\$2M).

In order to achieve Key Activity 4 (above), additional resources totaling \$1.5-2.5M will be needed. We continue to evaluate and improve curricula, and revise and deliver courses in modern ways to serve an increasing number of majors (approaching 1,000 students). We need dedicated fees for lab and field courses, and we need to expand, and renovate, space, for studio and other more interactive delivery styles (~\$1-2M), and involve the additional faculty and instructors described above. We plan to continue and expand our long tradition of undergraduate involvement in faculty-mentored research. We provide research opportunities to about 100 students per year, resulting in 20-30 co-authorships on journal publications, and ~100 oral and/or poster presentations at regional/national meetings. We continually seek grant funding for student stipends, and have had 2 HHMI awards and current KINBRE and NSF-URM support for students *across campus*, as well as mentoring students with DSP, McNair, and Cancer Center funding. We need a stable internal \$50K/year funding base for student stipends and research supplies to maintain a program base, with expansions and contractions from and to that base, driven by faculty-led extramural grant funding.

**5. How do you propose to acquire the resources needed for your Department to accomplish its vision and outcomes?**

Some of the funding will come from extramural grants, which have been and will continue to be a mainstay for the success of the Division of Biology. Developmental efforts will hopefully provide additional resources. Implementation of a per-credit-hour fee in the College of Arts and Sciences will provide additional resources. But there is no doubt that the bulk of the funding (for faculty salary increases, for faculty number increases, and for infrastructure initiatives), will need to come from either increased state funding or tuition increases. Both of those are beyond the control of the faculty and administration of the Division of Biology.

**6. How does your plan link to the K-State 2025 University Benchmark Metrics, Common Elements, and Thematic Goals, Outcomes, and Metrics? (See below)**

**6. Departmental Links to K-State 2025 University Benchmark Metrics, Common Elements, and Thematic Goals, Outcomes, and Metrics**

Links to Benchmark Metrics
B-1 - Total research and development expenditures B-2 - Endowment pool B-3 - Number of national academy members B-4 - Number of faculty awards B-5 - Number of doctorates granted annually B-8 - Percent of undergraduate students involved in research

Links to Common Elements
CE-4 - External Constituents CE-5 - Funding CE-6 - International CE-7 - Sustainability CE-8 - Technology

Links to University Thematic Goals, Outcomes, and Metrics			
Links to 2025 Thematic Goals and Metrics	Links to Short Term Outcomes (2011 – 2015)	Links to Intermediate Outcomes (2016 – 2020)	Links to Long Term Outcomes (2021 – 2025)
<p><b>T1 - Research, Scholarly and Creative Activities, and Discovery (RSCAD)</b></p> <p><b>Theme 1 Metrics:</b></p> <p>T1-1 - # of interdisciplinary research projects, institutes, and centers</p> <p>T1-2 - Total sponsored extramural funding expenditures</p> <p>T1-4 - # of refereed scholarly publications per academic year and allocated faculty member</p> <p>T1-5 - Total international research and development expenditures</p>	<p>T1-A - Increased intellectual and financial capital to support RSCAD</p> <p>T1-B - More clusters/centers of collaborative RSCAD focus</p> <p>T1-C - Increased funding for investigator-based research, research centers, and graduate training grants</p> <p>T1-D - Tuition waivers for all GRAs</p> <p>T1-E - Competitive compensation and support available to GRAs, GTAs, and GAs</p> <p>T1-F - Enhanced and systematic approach for UG research</p> <p>T1-G - Successful recruitment, retention, evaluation, compensation, and rewards strategies in place to support RSCAD needs</p>	<p>T1-I - Intellectual and financial capital in place for expanded RSCAD efforts</p> <p>T1-J - Greater proportion of nationally and internationally recognized award-winning faculty in RSCAD programs</p> <p>T1-K - Nationally and internationally recognized research centers</p> <p>T1-L - Recognized for prominent and productive placement of our graduates</p> <p>T1-M - Increased participation by undergraduates in expanded opportunities in research</p>	<p>T1-N - Fifty nationally recognized K-State researchers, a high proportion of which are members of their national academies</p> <p>T1-O - Extramural funding competitive with our benchmark institutions</p> <p>T1-P - Research and development expenditures competitive with benchmark institutions</p> <p>T1-Q - Competitive amongst our peers in the percentage of undergraduates involved in research</p>
<p><b>T2 - Undergraduate Educational Experience (UEE)</b></p> <p><b>Theme 2 Metrics:</b></p>	<p>T2-A - Excellent, customized academic advising and services available to all students to support their success and degree completion</p>	<p>T2-J - Excellent reputation for high quality teaching and advising that prepares students for their professional, community, social, and personal lives</p>	<p>T2-O - An undergraduate educational experience recognized as one of the best among the nation's Top 50 Public Research Universities</p>

Links to University Thematic Goals, Outcomes, and Metrics			
Links to 2025 Thematic Goals and Metrics	Links to Short Term Outcomes (2011 – 2015)	Links to Intermediate Outcomes (2016 – 2020)	Links to Long Term Outcomes (2021 – 2025)
<p>T2-1 - # and % of undergraduate students participating in a meaningful international experience</p> <p>T2-2 - # and % of undergraduate students completing an experiential learning experience</p> <p>T2-3 - Total funding awarded for undergraduate scholarship support</p> <p>T2-4 - # and % of students participating in an undergraduate student success program</p> <p>T2-5 - # of students awarded national and international prestigious scholarships</p> <p>T2-6 - % of undergraduate enrollment by demographic group</p> <p>T2-7 - Student satisfaction and utilization rates</p>	<p>T2-B - Engaged students benefitting from high impact educational practices used by excellent faculty and staff across the university</p> <p>T2-C - Increased participation by undergraduates in expanded opportunities for meaningful research</p> <p>T2-D - Successful integration of undergraduate education and meaningful research is standard practice</p> <p>T2-E - Effective evaluation practices that recognize and reward teaching, advising, and life-long learning/professional development</p> <p>T2-F - Effective system in place that supports and promotes teaching excellence</p> <p>T2-G - Successful recruitment and retention strategies that address our entire student population</p> <p>T2-H - Improved six-year graduation rates and retention ratios</p>	<p>T2-K - Superior and diverse faculty recognized for teaching excellence</p> <p>T2-L - All UG students engaged in a diversity of experiences that expand their viewpoint</p> <p>T2-M - Increased undergraduate contributions in the creation of scholarship through research</p> <p>T2-N - Ongoing improvement of six-year graduation rates and retention ratios</p>	<p>T2-P - Faculty teaching and advising awards comparable to our benchmark institutions</p> <p>T2-Q - Freshman to Sophomore retention ratios comparable to benchmark institutions</p> <p>T2-R - Six-Year graduation rates comparable to benchmark institutions</p>
<p><b>T3 - Graduate Scholarly Experience</b></p> <p><b>Theme 3 Metrics:</b></p> <p>T3-1 - # and % of graduate students with assistantships, endowed scholarships, and fellowships</p> <p>T3-2 - Total funds awarded for graduate assistantships, endowed scholarships, and fellowships</p> <p>T3-3 - # and % of graduate programs</p>	<p>T3-A - Competitive compensation and support available for GRAs, GTAs, and GAs</p> <p>T3-B - Tuition waivers for all GRAs</p> <p>T3-C - Engaged graduate students integrated in university life with enhanced visibility and appreciation</p> <p>T3-D - Outstanding mentoring for our graduate students</p>	<p>T3-I - Increased participation by our graduate students in unique high level learning and experiential training</p> <p>T3-J - Expanded reputation for outstanding graduates with the critical skill sets needed to excel in their careers in a global environment</p> <p>T3-K - Increased funding for graduate research and teaching</p>	<p>T3-N - National and international reputation for outstanding graduates with demonstrable career success</p> <p>T3-O - World-class reputation as a preferred destination for outstanding graduate students</p> <p>T3-P - Stable funding for graduate research and teaching competitive with benchmark institutions</p>

Links to University Thematic Goals, Outcomes, and Metrics			
Links to 2025 Thematic Goals and Metrics	Links to Short Term Outcomes (2011 – 2015)	Links to Intermediate Outcomes (2016 – 2020)	Links to Long Term Outcomes (2021 – 2025)
<p>offering competitive compensation and support packages</p> <p>T3-4 - # of private/public sector partnerships supporting graduate experiential training opportunities</p> <p>T3-5 - # of graduate students participating in a unique high level learning and experiential training</p> <p>T3-6 - # of graduate terminal degrees awarded</p> <p>T3-7 - Total graduate students enrolled by demographic group and degree type</p> <p>T3-8 - Graduate student satisfaction and utilization rates</p>	<p>T3-E - Expectation of excellence for the graduate scholarly experience</p> <p>T3-F - Increased capacity to secure funding for graduate research and teaching</p> <p>T3-G - Broader spectrum and greater overall number of courses offered at the graduate, and especially at the PhD level</p> <p>T3-H - Expanded partnerships with industry and government to provide high level learning and experiential training opportunities for graduate students</p>	<p>T3-L - Increased number of nationally and internationally recognized award-winning graduate faculty</p> <p>T3-M - Increased number of Doctorates Awarded</p>	<p>T3-Q - Doctorates Awarded comparable with benchmark institutions</p>
<p><b>T4 - Engagement, Extension, Outreach and Service</b></p> <p><b>Theme 4 Metrics:</b></p> <p>T4-2 - Total extramural-funded expenditures for Engagement initiatives at the local, state, national, and international level</p> <p>T4-5 - # of participants involved in community-based research and outreach projects</p> <p>T4-6 - Economic impacts on rural and urban communities in Kansas</p>	<p>T4-C - Increased recognition of our services as a source of expertise, information, and tools for disciplines worldwide</p> <p>T4-D - Increased numbers and diversity of faculty and staff participating in Engagement</p> <p>T4-E - Increased extramural funding for Engagement initiatives at the local, state, national, and international level</p> <p>T4-G - Enhanced visibility and appreciation for Engagement and its interconnectedness with research and education within our university community</p>	<p>T4-J - Increased number of graduate students involved in Engagement</p> <p>T4-K - Increased appreciation by K-State graduates for lifelong involvement in engagement and service</p>	



Links to University Thematic Goals, Outcomes, and Metrics			
Links to 2025 Thematic Goals and Metrics	Links to Short Term Outcomes (2011 – 2015)	Links to Intermediate Outcomes (2016 – 2020)	Links to Long Term Outcomes (2021 – 2025)
<p><b>T5 - Faculty and Staff</b></p> <p><b>Theme 5 Metrics:</b></p> <p>T5-1 - # of national and international faculty awards</p> <p>T5-2 - # and % of faculty with endowed chairs, professorships, and fellowships</p> <p>T5-3 - Competitive compensation packages for faculty and staff</p> <p>T5-4 - # and % of faculty and staff participating in international experiences</p> <p>T5-5 - % of tenure/tenure-track faculty by demographic group</p> <p>T5-6 - % of fulltime staff by demographic group</p> <p>T5-7 - % of faculty and staff reporting satisfaction in the work environment</p>	<p>T5-A - Total compensation competitive with aspirant university and regional employers for faculty and staff in high priority areas</p> <p>T5-B - Efficient, effective, and integrated university HR processes and services that place employees in the right positions with the right skill sets at the right time</p> <p>T5-C - Career-long learning recognized by the university and its employees as a shared value and responsibility</p> <p>T5-D - Effective evaluation processes that result in accountable faculty and staff with a clear understanding of their job expectations and how they contribute to the University's mission</p>	<p>T5-E - Total compensation competitive with aspirant university and regional employers for all employees</p> <p>T5-F - Faculty and staff current with developments in their fields and the skills needed to achieve excellence in performing their jobs</p> <p>T5-G - Successful recruitment and retention of a talented and high performing, diverse workforce</p>	<p>T5-H - Talented and high performing, diverse workforce recognized for excellence and award-winning faculty and researchers</p> <p>T5-I - Stable funding available for recruitment and retention of top level faculty and staff</p> <p>T5-J - Optimal number of faculty and staff comparable with our benchmark institutions</p>
<p><b>T6 - Facilities and Infrastructure</b></p> <p><b>Theme 6 Metrics:</b></p> <p>T6-1 - # and % of technology enabled classrooms</p> <p>T6-2 - Total expenditures for physical facilities and infrastructure projects</p> <p>T6-3 - Total annual expenditures for deferred maintenance</p> <p>T6-4 - Total funding available to support facilities and infrastructure needs</p> <p>T6-5 - % of faculty, staff, and students reporting satisfaction with facilities and infrastructure</p>	<p>T6-B - Adequate temporary space to house programs and staff impacted by renovations of existing facilities</p>	<p>T6-D - Adequate office space for all K-State employees equipped to support their work and productivity</p> <p>T6-F - Efficient, reliable, and cost-effective central and building utilities with the capacity for expansion as needed to support campus needs and guarantee the safety, comfort, and integrity of our research, animal, and human environments</p>	<p>T6-G - High quality, technology enabled, flexible and adaptable classroom space appropriate to the evolving needs of the learning environment and readily available to K-State faculty and students</p> <p>T6-H - High-quality research laboratories and specialty spaces that enhance research and scholarly activities</p> <p>T6-I - Well-maintained buildings, utilities, IT infrastructure, and grounds consistent with the expectations and image of a highly ranked land grant research and teaching institution</p>

<b>Links to University Thematic Goals, Outcomes, and Metrics</b>			
<b>Links to 2025 Thematic Goals and Metrics</b>	<b>Links to Short Term Outcomes (2011 – 2015)</b>	<b>Links to Intermediate Outcomes (2016 – 2020)</b>	<b>Links to Long Term Outcomes (2021 – 2025)</b>
			T6-K - Signature facilities that promote collaborative learning and working environments, multidisciplinary work, and integrated interaction between students, faculty, researchers, staff, and administrators