



TEXAS A&M UNIVERSITY
College of Agriculture
& Life Sciences

Department of Plant Pathology and Microbiology

Strategic Plan 2025 - 2030



This Texas A&M University (TAMU) Department of Plant Pathology and Microbiology (PLPM) Strategic Plan 2025-2030 was developed through a deliberative process and stakeholder engagement. Faculty, staff, and graduate students were among stakeholders directly engaged in this process with the goal of positively impacting the broader group of PLPM stakeholders including key grower organizations, industry, and citizens of Texas.

College of Agriculture and Life Sciences Vision

Positive impacts of The College of Agriculture and Life Sciences (COALS) teaching, research and service in agriculture and biological sciences will be seen, felt, and heard around the state of Texas, the Nation, and the World. Equitable opportunities and efforts will be provided to members of the COALS community, leading higher education and society into a more inclusive future. COALS students, faculty and staff members will be among the most highly desired and recruited discoverers, thinkers, teachers, and problem solvers; their immense success, opportunities, satisfaction, and holistic support will continue to retain them in the COALS community. The COALS community will continually improve and adapt to meet new societal challenges and provide relevant knowledge and expertise to our stakeholders.

College of Agriculture and Life Sciences Mission

The College of Agriculture and Life Sciences impacts our students and society both locally and globally through an inclusive modern land-grant mission; generating new frontiers of knowledge through research, discovery, and innovation integrated with exceptional opportunities in education, and service to address pressing needs of a changing world.

- Objective 1: Enhance Transformational Education and Student Success
- Objective 2: Elevate Graduate and Professional Education
- Objective 3: Strengthen and Harness our Research Enterprise
- Objective 4: Grow and Support Our World-Class Faculty and Staff
- Objective 5: Be A Best Place to Live, Work, and Learn
- Objective 6: Engage Texas and the World to Enhance Our Impact
- Objective 7: RECOGNIZE COALS as Unique

Department of Plant Pathology and Microbiology Vision

Plant Pathology and Microbiology will positively impact our ability to “*Feed the World, Protect Our Environment, and Improve Our Health*” by excelling in the education and preparation of students in the field of Plant Health and Disease, Plant-Microbe Interactions and the Bioenvironmental Sciences.

Department of Plant Pathology and Microbiology Mission

- Conduct leading edge research on biotic and abiotic factors that directly and indirectly impact i) plant growth, development, yield and stress resilience, ii) farmers’ ability to produce sufficient food to feed the world, iii) plant, human, animal and environmental health, iv) sustainable and environmentally responsible crop production.
- Educate and prepare leaders in the STEM fields of plant and environment health through a creative and challenging educational environment that integrates scholarship. Advance fundamental knowledge and experiential learning in the fields of plant pathology, plant microbiology, and bioenvironmental sciences.
- Convey knowledge and information relevant to plant health, food safety, and environmental health to the citizens of Texas, the US and the world through teaching and outreach.

2024 PLPM Strengths, Opportunities, Aspirations and Results (SOAR) Analysis

<p><i>Strengths within PLPM</i> <i>What We Can Build On</i></p>
<ul style="list-style-type: none"> • Diverse faculty expertise and geography lends itself to diverse funding opportunities and training • Strong undergraduate programs • Ideal department size allows for open and positive cooperation and collaboration
<p><i>Opportunities within PLPM</i> <i>What Stakeholders Are Asking For</i></p>
<ul style="list-style-type: none"> • Faculty with skills, knowledge and experience working with big data, environmental quality, microbes, food safety, nutritional enhancement engineering, and AI/machine learning. • Classes involving the topics listed above that are experiential, as well as workshops and demonstrations for UG and GR students • Translating research into practical solutions via bridging the gap between extension and research faculty through community engagement and student engagement for future problems like climate change
<p><i>Aspirations within PLPM</i> <i>What We Deeply Care About</i></p>
<ul style="list-style-type: none"> • Strategic excellence in research - align initiatives, expertise, and stakeholder needs • International reputation with strong foundation and strong specialties • Enhanced student experiences with classroom-practice connections and continued curricular relevance
<p><i>Results within PLPM</i> <i>How We Will Know We Succeed</i></p>
<ul style="list-style-type: none"> • High-quality grants and publications recognized by peers. • A stable stream of quality students, ultimately successful in diverse careers. • Effective engagement with stakeholders

SOAR from the Department of Plant Pathology & Microbiology Strategic Planning Retreat April 2024.

This aspirational plan with *four strategic priorities focusing on research, Extension, and PLPA graduate program* was designed to be adaptive and to align with the existing goals of Texas A&M University College of Agriculture and Life Sciences (COALS), Texas A&M AgriLife Research, and Texas A&M AgriLife Extension strategic plans.

- **Strategic Priority 1: Embolden Our Impactful Research and Extension Programs**
- **Strategic Priority 2: Readiness for Emerging Challenges in Research, Extension, and Education**
- **Strategic Priority 3: National and International Distinction**
- **Strategic Priority 4: Graduate Program Excellence**

Strategic Priority 1: Embolden Our Impactful Research and Extension Programs

Foster dynamic research, education, and Extension innovations to strengthen existing programs and deliver impactful solutions.

ALIGNS with COALS STRATEGIC OBJECTIVES 1, 3 AND 4

Specific Strategic Aims

- 1.1. Expand and diversify research portfolio within department to address new and emerging issues in the rapidly evolving research landscape in plant pathology, host-pathogen interactions, and plant and environmental microbiome.
- 1.2. Improve and expand avenues of engagement and information for new and existing Extension programs by strengthening visibility and accessibility.
- 1.3. Promote research and education environment for adept critical thinking and problem-solving skills to graduate students and early-career scholars. Providing high value experiential educational experiences that promote career-ready skills.

Tactical Strategies

- Attract and retain high-quality faculty through continued investment in equipment and facilities support.
- Assess the number and quality of applicants for open faculty positions, monitoring our faculty and staff retention numbers, and conduct anonymous satisfaction surveys.
- Analyze research, Extension, and/or teaching performance as indicators of faculty excellence. Indicators will include research staff and graduate student performance evaluations to monitor progress and success.
- Study Extension program effectiveness and impact by measuring web traffic and engagement data, participation and attendance at in person and virtual events, and monitoring the number of programs conducted to track increases over time. Measure participant satisfaction, course value, and technology adoption rate via survey.
- Enhance the graduate program by providing relevant and experiential educational experiences, thoroughly analyzing the curriculum and learning outcomes, and incorporating training for students to advance their career options.
- Embed educational experiences that intentionally develop problem solving and critical thinking skills throughout the curriculum and regularly assess their effectiveness.

Milestones

- Elevate faculty grantsmanship in quality and innovation, funding rates, and scope of work that leads to successful faculty tenure and/or promotion
- Improve collaborative and integrative research opportunities and grantsmanship in the field of systems and synthetic microbiology within our department or discipline
- Immediate action for the enhancement of Extension program includes implementation of a stronger online presence by elevating the quality and quantity of Extension produced digital resources.
- Assess initiatives of the Institute for Advancing Health through Agriculture (IHA) for value-in connection to a PLPM position and research area priority. Respond with a targeted effort to achieve goals of enhancing nutritional value of foods through microbiomes research.
- PLPM assisting faculty in equipment and facilities by investment through seed or matching funds when opportunities are pursued at the state and federal levels.

Strategic Priority 2: Readiness for Emerging Challenges in Research, Extension, and Education

Be prepared to address emerging challenges through research, Extension and training of next-generation skilled professionals.

ALIGNS with COALS STRATEGIC OBJECTIVES 2, 3 AND 4

Specific Strategic Aims

- 2.1 Develop an initiative to attract and organize expertise in next-generation data-intensive research, potentially involving a portfolio of deep learning, artificial intelligence, and data science, with plant health- and disease-specific applications supported by domain expertise in relevant systems.
- 2.2 Articulate research foci that address the consequences of environmental change on plant disease management. Climate change, water use change, land use change, and agricultural intensification are all causes of environmental change to be considered in these foci.
- 2.3 Enhance synthetic and systems microbiology research and promote collaboration on and off-campus
- 2.4 Accentuate the impacts of plant and environmental microbiome research on the nutritional and therapeutic value of food and feed, with anticipated challenges precipitated by environmental change.
- 2.5 Empower public-private partnerships to enlighten innovative research and entrepreneurship spearheaded in industry and production agriculture, especially those that involve emerging technologies and next-generation approaches, such as genome editing, data science, computational analysis and machine learning, and automation.

Tactical Strategies

- Spearhead innovative research and Extension programs through new faculty hires. Accomplishing this goal will result in a strong connection between PLPM domain expertise and the rapidly expanding field in plant pathology, plant microbiome, and environmental microbiology applications.
- An objective associated with the above tactical strategy is aligned with agency (USDA, NSF, DOE, other) priorities for securing funding and supporting research and training. Key contributors toward this strategy include faculty who can build synergistic collaborations.
- Strengthen public-private partnerships to increase student opportunities for internships and collaborations with external organizations and to increase visibility and support for our graduate program.

Milestones

- Successfully recruit new faculty who are spearheading innovative research in host-pathogen interactions, synthetic/systems environmental microbiology, AI applications in plant disease, and other rapidly emerging topics. Effectiveness of hired faculty will secondarily indicate the PLPM departmental priorities align with those of funding agencies and affected sectors.
- Engage with targeted stakeholder groups regarding our new initiatives to identify potential applications that are needed and to anticipate challenges of implementation in real-world settings. Develop cooperation plans with stakeholders to accelerate the start of research associated with this strategy and to enhance the value proposition for the most competitive applicants to related positions.
- Synthesize, from multiple agencies' science funding portfolios, shared/major research priorities in these domains. For example, communicate with personnel involved in "Climate-Smart Agriculture" projects in COALS to coordinate and reduce potential redundancy.
- Assess upcoming College and AgriLife initiatives for alignment to PLPM emerging research area priorities, such as Agricultural Biosecurity and Cross-Border Tactical Surveillance Network initiatives.
- Pilot postgraduate network maintenance in collaboration with PLPA Graduate Student Club alumni networking efforts.

- Develop purpose-driven database protocols and begin ad-hoc interviewing of alumni to collect information and reflections on career trajectories and experiences.

Strategic Priority 3: National and International Distinction

Recognized by our academic peers and the wider public as the preeminent department for excellence in research, teaching, Extension, and service in plant pathology, host-pathogen interactions, and plant and environmental microbiome.

ALIGNS with COALS STRATEGIC OBJECTIVES 4, 6 AND 7

Specific Strategic Aims

- 3.1. Elevate our research, education, and Extension reputation through strong foundation in specialty and innovation.
- 3.2. Faculty leading national, high-impact collaborative research and Extension projects in innovative plant pathology topic areas
- 3.3. Increase faculty and graduate fellowships and awards at regional, national, and international levels.
- 3.4. Enhance communication and information exchange with key Texas and US commodity groups.
- 3.5. Play a focal role in establishing Texas Biosecurity Network focusing on plant pathogens in foods and products imported and produced in Texas.

Tactical Strategies

- Obtain grants and awards from diverse funding sources, especially from new and untapped agencies. The aim is a 19.5% increase in funding by 2030.
- Regional and national projects initiated/led and awarded by Texas A&M PLPM faculty, with the aim of a 25% increase in award recognitions compared to the previous five years
- Submit applications, nominations for awards, fellowships, scholarships for recognition of faculty, staff, and graduate student excellence as measured by a 20% increase in awards received compared to the previous five years
- Strengthen and broaden interactions with our stakeholder groups in Texas and the US and mediate engagement amongst our stakeholder groups to broaden the impact of our outreach.
- Elevate networking and training opportunities for PLPM faculty, researchers, and graduate students.

Milestones

- PLPM and AgriLife Research supporting a preplanning workshop or seed funding to help faculty spearhead Regional and national projects.
- Initiate quarterly faculty brown bag lunches to brainstorming collaborative and innovative ideas for funding opportunities in research, Extension, and integrated projects
- Extension programs facilitate the interaction with grower/commodity groups, specifically documenting meeting interactions in terms of problems, researchable interests, and funding opportunities. We will track this engagement of effort, engagement frequency, and letters of support for grants.
- Structure planning or organization plans for how our faculty find these meetings for strategic attendance and improve our distinction and reputation.
- Expand our networking capacity to improve gaps in our research and Extension efforts, such as organization for plant biosecurity. This could develop a framework for an actionable plan for emerging plant disease or food safety issues.
- Writing and career preparation workshops for postdoctoral scholars and graduate students

Strategic Priority 4: Graduate Program Excellence

The graduate program will produce a marketable and competitive workforce with diverse skill sets prepared for their future careers.

ALIGNS with COALS STRATEGIC OBJECTIVES 1, 2, AND 5

Specific Strategic Aims

- 4.1. Further enhance PLPM graduate curriculum to improve student experience and training
- 4.2. Improve graduate student recruitment and retention. competitive students who will be able to successfully complete our graduate program and contribute to the research, teaching and extension excellence of PLPM. Improve the acceptance rate of students who are invited into the PLPM graduate program by 10%.
- 4.3. Graduate student training enhancement – regional, national, international conferences presentations and recognitions, research and Extension publications
- 4.4. Formalize processes for continuity of collaboration involving trainees i) to study past student career trajectories and optimize training to support present and future students, and ii) to strengthen collaboration networks for research and Extension.

Tactical Strategies

- Engage with curriculum and assessment committee, with potential graduate steering working group, work with TAMU CTE for curriculum (re)design process before 2027-2028 academic year.
- Gather feedback from our graduate students about their experience in the graduate program at the end of each academic year. This anonymous survey could be filled out at the end of a Seminar class as the end of the academic career.
- Track our graduate students after graduation through a survey added to the DH annual Department Update letter.
- For PLPA graduate program recruitment, tracking application rate of acceptable students and the percentage of invited students that accept vs. decline offers. Invite students who declined to complete a survey to gather data on why they didn't accept an invitation to join PLPM.

Milestones

- Curriculum and Assessment Committee (or an ad-hoc PLPA curriculum taskforce) work on PLPM graduate curriculum redesign ready for 2027-2028 academic year and assess the impact of the redesign by 2030 academic year for future strategic planning consideration.
- Formulate "Graduate Exit Survey" with assistance from TAMU Career Center. Students complete a KISS Evaluation (Keep, Improve, Start, and Stop) about the graduate program.
- Strengthen PLPA former student network in collaboration with PLPA GSC's alumni networking efforts.
- Create an anonymous survey for graduate recruits to ask 1) why chose to apply to Texas A&M PLPA program, 2) potential items that influenced the decision making such as location, research topics, stipend or culture
- Collect employment data for recent graduates for 5 years post-graduation, including qualitative data regarding the nature of employment, position search methods, and preparation.
- Collect data regarding award recognition of students at various meetings, professional associations, and grants. Analyze our performance against our peer institutions to measure progress.
- Develop partnership ideas through which students can interact with private sector and agency organizations. Assist graduate students establish professional relationships with external organizations for future career opportunities
- Invite seminar speakers from industry and production agriculture to have a broader impact of learning for faculty, staff, and graduate students.

- Provide logistical support to graduate students who secure internship opportunities in industry and production agriculture.