**Potential Research & Outreach Collaborations:
Benefits of People and Plant/Nature Interactions**

From obesity and chronic disease to depression, social isolation, or increased exposure to environmental toxins and pollutants, communities around the world face pressing health challenges that are far different than those we’ve experienced in the past. Along with unprecedented rates of chronic disease (which affect half of all adults and include conditions such as heart disease, stroke, diabetes, and certain types of cancer), Americans are also facing tremendous mental health challenges today.

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| **Health outcomes from human and plant/nature interactions** |
| *Better sleep/mitigated sleep apnea* | *Reduced incidence of obesity* | *Slowing cognitive decline*  |
| *Healthier birthweights* | *Decreased atopy (allergies)* | *Improved self-esteem/socialization* |
| *Reduced incidence of diabetes* | *Increased physical activity* | *Decreased anxiety disorders* |
| *Protect against cancer* | *Enhanced cognitive development* | *Environmental equity* |
| *Decreased ocular discomfort* | *Reduced anxiety and stress* | *Disaster resilience* |
| *Decreased respiratory disease* | *Enhanced attention deficit recovery* | *Improved air quality* |
| *Decreased urinary tract infections* | *Decreased incidence of depression* | *Reduced urban heat islands* |
| *Better Circadian system functioning* | *Enhanced memory retention* | *Improved school performance* |
| *Autonomic nervous system benefits* | *Greater happiness / life satisfaction* | *Reduced crime rates* |
| *Faster hospital rehabilitation*  | *Mitigation of PTSD* | *Decreased recidivism* |
| *Lower cardiovascular disease risk* | *Increased creativity* | *Reduced noise pollution* |
| *Lower heart rate & blood pressure* | *Enhanced productivity & attention* | *Reduced absenteeism* |
| *Decreased migraines* | *Improved pain control* | *Enhanced immunity* |
| *Lower rates of all-cause mortality* | *Improved digestion* | *Enhanced civic pride* |

The interactions between people and plants offer promise both as prevention and as treatment of chronic physical and mental issues. Benefits summarized in the sidebar are backed by hundreds of peer-reviewed citations (<https://ellisonchair.tamu.edu/benefitsofplants>). Potential advantages include lower costs relative to conventional medical interventions, safety, practicality, and multiple co-benefits. Few medications can boast these attributes. **However, many questions regarding the health benefits of people-plant interactions remain unanswered.** For example, a robust program of scientific research is needed to generate evidence-based answers to these (and other critical) questions:

* What are the economic, environmental, and health and well-being benefits for students, staff, faculty, and visitors to green spaces on campus, particularly **Aggie Park** and **The Gardens**?
* What dose and duration (and associated metrics) of people and green space interactions is needed to optimize health benefits and how is that dosage most effectively delivered? These findings would be incorporated into the resources offered by the **University Health Services** to aid in student mental health awareness and stress mitigation strategies.
* What are the economic and health benefits of **AgriLife agency programs** such as *Get Outside*!, *Junior Master Gardener* (Learn, Eat, Grow, Go), the *Outdoor Learning Environment (OLE!) Texas* statewide initiative, *Better Living For Texans*, *Walk Across Texas*, *Texas Healthy Building Blocks*, and *Healthy [South] Texas*.
* How do plant and nature-based solutions help protect **Texas communities** from flooding and extreme heat? What is the effect of outdoor recreation (e.g., hunting, fishing, hiking) on human health and the economy?
* What is the monetary value of environmental and health and well-being benefits derived from **community beautification efforts** such as those provided by America in Bloom, Tree City USA, Keep Brazos Beautiful, and the College Station Parks Foundation?
* To what extent does **social connectedness** account for observed health benefits of nature contact both short-term and long-term? Which social arrangements or activities best optimize the benefits of nature contact through this pathway?
* To what extent does plant and nature contact improve **immune function** both short-term and long-term? Which natural elements are most associated with improved immune function? Which markers of immune function are most useful in studying this effect? What is the role of the human microbiome in mediating this effect?
* Which metrics of plants and nature contact best **predict health outcomes**? For each such metric, what is its accuracy? What is its precision? What is the role of subjective assessments, and of “nature connectedness,” in measuring nature contact? How do exposure metrics vary in their performance by population and other factors?
* How can specific forms of **virtual/technological exposure** to plants and nature increase and deepen the human experience? What forms of virtual nature contact provide health benefits, and what are those benefits? How do these findings vary by technology, context, and across age groups and other demographic factors?
* How do **preferences and perceptions** of people and green space interactions vary by socioeconomic status, ethnicity, and demographic factors and how do these differences affect choices regarding time spent in nature and aesthetically-improved landscapes? For each of these potential mechanisms, how do other factors—social, biomedical, and ecological—affect the associations between nature contact and health?
* What **messaging** regarding the benefits of people-plant interactions resonates most with clientele so they proactively engage in horticulturally-intensive greenscapes? What areas of the brain are being triggered prior to and during engagement in these interactions?

*Potential research and outreach partners include faculty and experts associated with the Department of Horticultural Sciences; the Ellison Endowed Chair in International Floriculture; the Benz School of Floral Design, the TAMU Human Behavior Lab; the Department of Hospitality, Hotel Management, & Tourism; the Department of Landscape Architecture and Urban Planning; the Center for Health Systems & Design; the Department of Agricultural Leadership, Education, and Communication; the Texas A&M Health Science Center; the Department of Psychological and Brain Sciences; the Master Gardener and Junior Master Gardener network; Healthy Texas; Better Living for Texans; the Center for Nature and Health; the Institute for Advancing Health Through Agriculture, the Aplin Center; and The Gardens and Aggie Park.*