



# THE **GREEN HOUSE** **VENTURE**

IMPROVING SCIENCE  
EDUCATION AND  
CHILDHOOD NUTRITION

[www.GREENHOUSESTL.org](http://www.GREENHOUSESTL.org)

# A VENTURE INSPIRED BY REAL-WORLD CHALLENGES



Several years ago, a group of professors from Saint Louis University, as well as teachers, biologists, growers, designers and urban developers, came together to develop a plan for an innovative education center that would address major challenges facing much of urban America: poor childhood nutrition, the need for improved science education with special opportunities for disadvantaged children, and a shortage of students prepared for careers in science.

The evidence of these challenges is compelling:

- In science education, the United States ranks 27th in the world and even lower in math, ranking 35th.<sup>(1)</sup>
- More than a third of our nation's children are overweight or obese, and 70% of them already display one or more risk factors for cardiovascular disease.<sup>(2)</sup>
- Thousands of jobs in bioscience in the St. Louis region go unfilled each year for lack of qualified applicants. The region is the Midwest's largest agricultural hub, supporting nearly 180,000 jobs in research, cultivation, processing and distribution.<sup>(3)</sup>

*"The Venture points the way to the future when we will need to be increasingly resourceful and creative in growing the food to meet the dietary needs of a vastly larger world population."*

**SAM FIORELLO**

Chief Operating Officer, Danforth Plant Science Center

More than forty St. Louis area teachers, biologists, growers, designers, and urban developers have been working on a vision of an educational center to address these problems. Unique in the United States and innovative in its design and programming, the center has been incorporated as The Green House Venture.

(1) The Pew Research Center  
(2) Centers for Disease Control and Prevention  
(3) St. Louis Agriculture Club

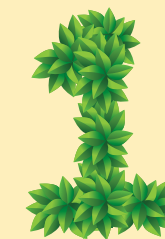
## THE VALUE OF GREEN EDUCATION

*"What every research and technology enterprise in St. Louis needs is a diverse local workforce with advanced skills in science, technology, engineering, and math."*

**THAD SIMONS**

Managing Director, Collegiate School of Bioscience and Medicine; Retired CEO of Novus International

## THE PRIMARY GOALS FOR THE GREEN HOUSE VENTURE ARE TO:



*Introduce children to a rich, hands-on learning experience that improves bioscience education.*



*Increase student knowledge of and appreciation for proper nutrition, and encourage children and their families to adopt healthier everyday eating habits.*



*Lead more students to potential careers in bioscience to meet the pressing need to fill emerging area jobs in science and agriculture.*





# A COMMUNITY INITIATIVE WITH REGIONAL IMPACT

*“This program can make a difference in the lives of young people throughout our region.”*

**FRED PESTELLO, Ph.D.**  
President, Saint Louis University



The Venture is unique in its scope and innovative in its structure as a resource for providing advanced science education to students throughout the St. Louis region. This initiative:

- Establishes an innovative Urban Education Alliance with four initial schools to ignite the imagination of over 2,000 highly diverse students from more than 50 zip codes who will use the center as a living classroom
- Aligns with major scientific, educational and business institutions in the rapidly growing Midtown core that have an interest in improving science education, fostering a healthier community, and cultivating future scientists
- Provides a replicable model for collaboration elsewhere in science education, community engagement and economic development
- Addresses childhood nutrition by providing fresh produce and fish to free and reduced lunch programs in the public schools, processed and distributed through Saint Louis University's Department of Nutrition and Dietetics
- Complements the sustainability strategies and priorities of the City of St. Louis and the East-West Gateway Council of Governments
- Enhances the growing national visibility of St. Louis as a center of innovation in the biosciences

## AN EDUCATIONAL ALLIANCE

The Venture brings together a group of elementary schools in a newly formed Urban Education Alliance. Collaborating with faculty in the School of Education, the College of Arts and Sciences, and the Doisy College of Health Sciences at Saint Louis University, teachers and principals at Alliance schools have played an integral part in designing the facility and its educational programs.

The schools in the Alliance are:

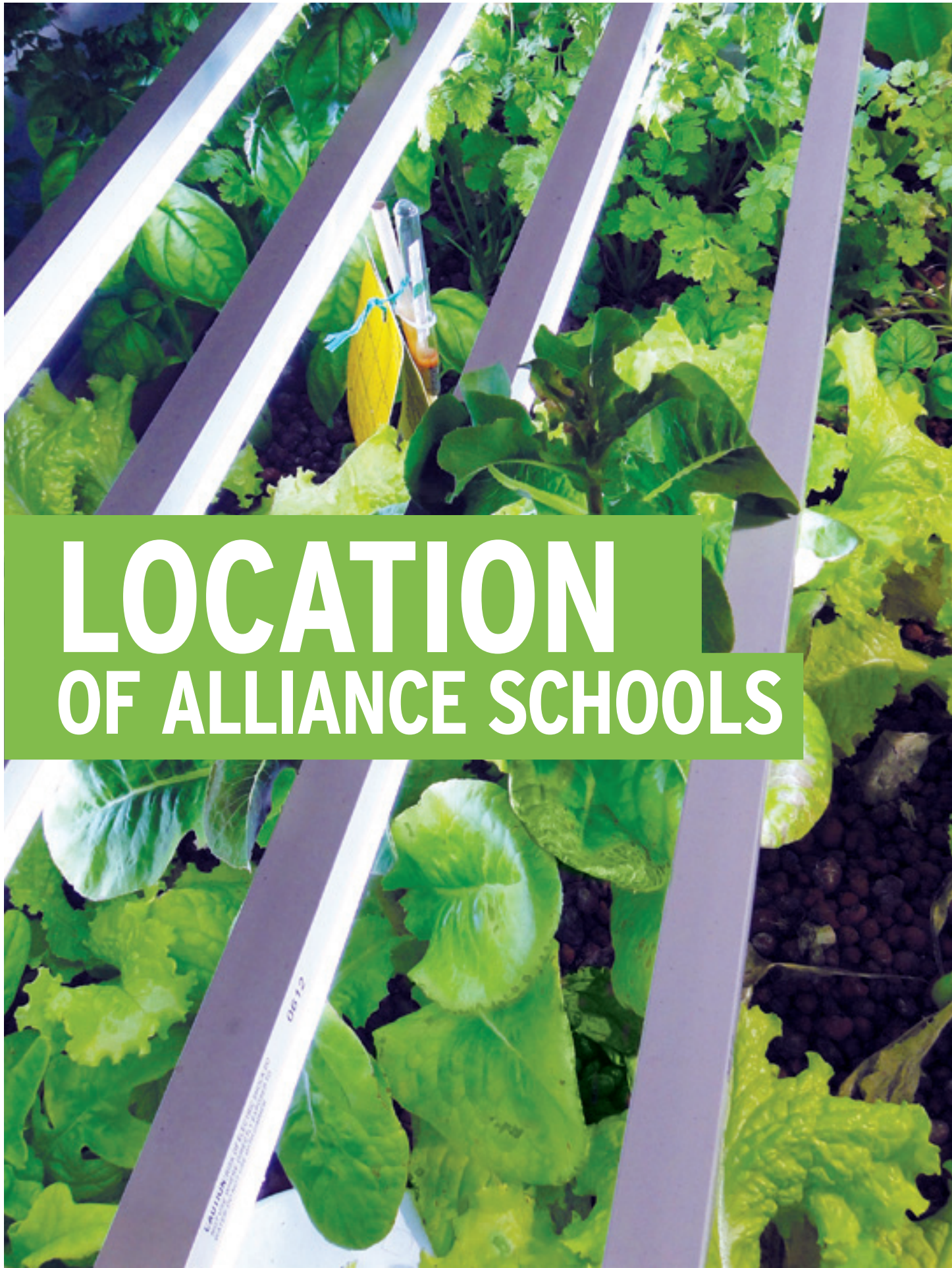
- **Mullanphy Investigative Learning Center**  
A St. Louis Public School, designated as a science magnet
- **Saint Louis Language Immersion School**  
A public charter network offering International Baccalaureate Education in Spanish, French, and Mandarin
- **Saint Margaret of Scotland School**  
A Catholic parish school in the Archdiocese of St. Louis, dedicated to faith in action and academic excellence
- **Tower Grove Christian Academy**  
A private school equipping students with excellence in academics, athletics, and character

In the future, plans also include working with the Collegiate School of Medicine and Bioscience, a magnet high school where students from Alliance schools can pursue more advanced science education to prepare for college.

*“The Venture is boldly pursuing a creative goal unseen elsewhere in St. Louis to serve as an educational resource that pulls together students from elementary schools with different traditions.”*

**REV. MATTHEW O'TOOLE**  
Pastor of St. Margaret of Scotland Church





# LOCATION OF ALLIANCE SCHOOLS







As an agricultural education center, the facility will enable students from around the region to experience ways to produce food year-round in the heart of the city.

- Inside, children will have access to their own growing gallery featuring fish-breeding tanks and soilless beds. In the main production greenhouse, they will encounter floating rafts, wicking troughs and growing towers, all using fish waste to nourish the plants, which in turn clean the water for the fish. A demonstration kitchen, multi-purpose classroom and lab will provide spaces for more advanced learning and exploration.
- Outside, students will work with seasonal crops growing in several distinctive garden areas including a climbing-fruit courtyard, a roof-top garden, raised beds, and terraces along Interstate Highway 44. They will maintain a Monarch butterfly and pollinator garden and help tend traditional planting beds in the already established Dragon's Garden along Shaw Avenue.

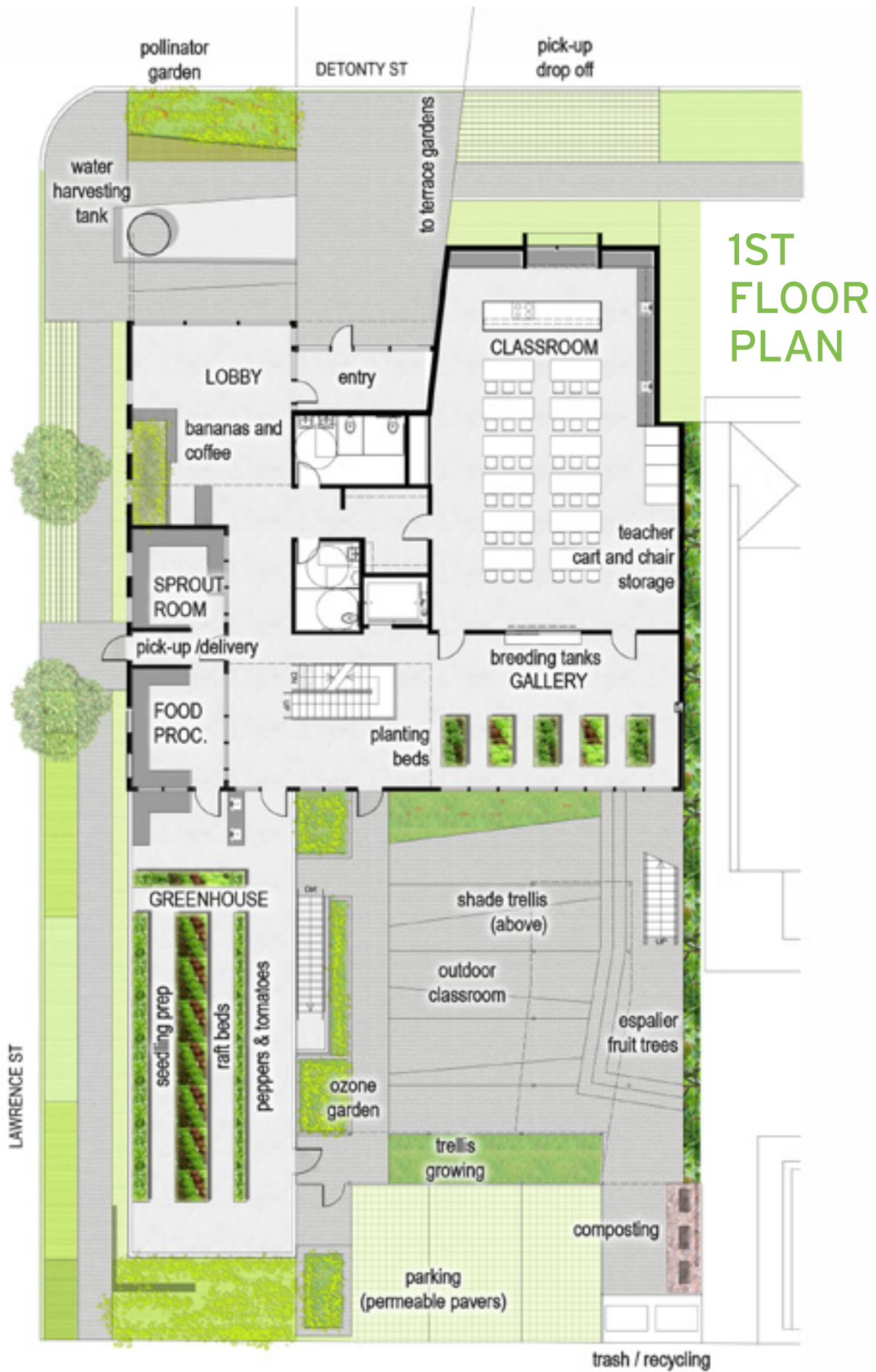
While at the greenhouse, students also will encounter advanced science and engineering technologies, including:

- Solar arrays and hydrogen cells
- An ozone garden
- A weather station
- Sustainable heating and cooling systems
- Rainwater collection systems for irrigating plants and minimizing runoff

*“Research shows that ‘true’ learning occurs best when those being taught have a hands-on experience that they can relate to their everyday life.”*

**DENNIS LOWER**  
President and CEO of Cortex









## FROM GREENHOUSE TO TABLE

*“School gardens, agricultural education, fruit and vegetable preparation, and tasting activities are concrete, hands-on experiences that can help students develop a personal connection to their food and a lasting relationship to healthy eating.”*

THE CENTERS FOR DISEASE CONTROL AND PREVENTION

Children attending Alliance schools will take home what they grow at the end of each eight-week growing session.

- In a demonstration kitchen, students will learn to cook what they have produced using tasty, nutritious recipes.
- Families will be introduced to new kinds of fresh foods grown and prepared by their own children.

Students at other local public schools will receive fresh produce and fish from the greenhouse, even in the middle of winter.

- Thousands of plants along with a substantial number of fish will be raised each year, most going to free and reduced lunch programs.
- Processing and distribution of food will be handled by Saint Louis University’s federally certified school lunch program, overseen by the Department of Nutrition and Dietetics.

Remaining produce from the facility will be sold monthly to the community at a Saturday morning market.

- By volunteering there, children from Alliance schools will be introduced to sales and marketing, customer relations, and simple accounting skills.



## LEARNING FOR ALL SEASONS

The greenhouse is a place where scientific and technological curiosity will be encouraged through year-round programs filled with children and visitors six days a week.

- Students from participating schools will come to the facility on a rotating schedule for classes and to plant, cultivate, harvest and cook fruits and vegetables.
- Field-trip experiences, bus transportation scholarships, aquaponics classroom kits, teaching materials, participation in live-streaming lessons, and use of video programs via the Venture’s website will be available to any school in the St. Louis region and beyond.
- The Micah Program at Saint Louis University, which mentors and tutors underserved children, will support after-school programs and Saturday classes in bioscience, sustainable technologies, and urban food production.
- ‘First Monday’ lectures for the public will feature experts from organizations such as Saint Louis University, Washington University, UMSL, Lincoln University, Cortex, the Danforth Plant Science Center, the Missouri Botanical Garden, Gateway Greening, Earth Dance Farm, and Urban Harvest.

- Workshops for teachers, environmental biologists and growers, as well as sustainability conferences and a variety of other events, will be scheduled in the facility during holidays and summer vacations.
- Older students will have opportunities to teach and mentor younger children. Serving in these leadership roles will reinforce their own learning and promote their interest in attending college and pursuing careers in bioscience.

*“The Green House Venture is a great example of innovation... to draw young people to the marvel of science. This will help shape the next generation of entrepreneurs, plant scientists and biomedical thought leaders.”*

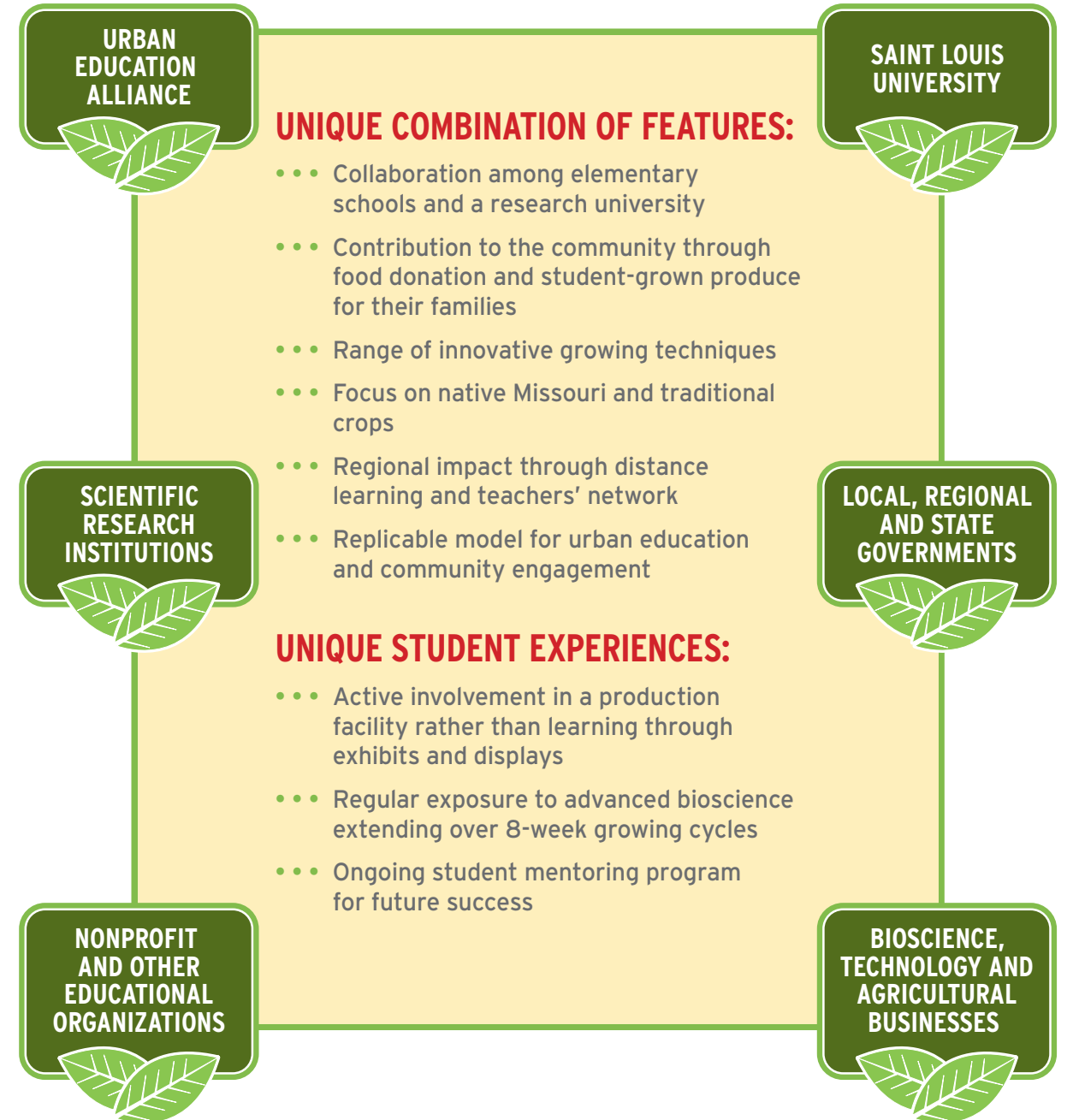
FRANCIS G. SLAY  
Mayor of St. Louis





# A VENTURE OF DISTINCTION

The **GREEN HOUSE VENTURE** is unique in its scope and innovative in its structure as a resource for providing bioscience education to students in the St. Louis region.





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