

Our tour begins in front of the 1908, Tudor-style, **Stock Pavilion** (124), which seats 1,750 spectators for livestock shows, occasional concerts, and public events. **Theodore Roosevelt, Harry Truman, and William Howard Taft spoke at political rallies here.** The building has boasted the best acoustics in the city and has hosted the London, New York, and Chicago Philharmonic Orchestras.

*At the northeast entry to the Stock Pavilion is a plaque titled "Scientific Approach to Agriculture."*

Next door is **1645 Linden Drive** or informally called **Science House** (156), built in 1868 as the UW farm manager's home. In 1900 it was moved to its current location and used as the campus studio of the University Artist-in-Residence, Aaron Bohrod in 1962. It now houses the **Wisconsin Fast Plants Program.** Its educational biology outreach has taught more than 50,000 teachers and 5 million children each year. Paul Williams developed Fast Plants to improve crops and for their use in space to learn its effects on how the plants adapt to the loss of gravity and explore their use to astronauts for fresh food, water, and clean air.

On the southwest corner of Babcock and Linden Drives, is **Babcock Hall**, home of the **Babcock Dairy Store** and the University's famous ice cream and cheese. Biochemist **Stephen Moulton Babcock** invented the **first accurate, widely available method of measuring milk quality** through its butterfat content. His original equipment is in the lobby. The building houses the **Department of Food Science**, where researchers use chemistry, microbiology, engineering, and business to solve problems in food processing and distribution. Also affiliated is the **Food Research Institute**, which helped develop a test for toxins in cheese and perfected a rapid test for **Salmonella** detection. Babcock Hall also includes the **Wisconsin Center for Dairy Research**, one of the premier dairy research centers in the United States.

*At the northeast entry to the main entrance of Babcock Hall on Linden Dr. is a plaque titled "First Reliable Test of Milk Quality."*

Look to your left across Babcock Drive to **Russell Laboratories** (107), home to the **Department of Entomology** and the **William S. Marshall Insect Collection**, with about 2.5 million insects, most from Wisconsin and the Great Lakes Region. Russell Labs also houses the **Department of Forest and Wildlife Ecology**, which developed the first state-wide classification system for habitats, bred superior forest trees with improved growth, developed Dutch Elm disease-resistant elms, and is pioneering landscape ecology. **Aldo Leopold** provided the intellectual and philosophical foundation for the discipline. His 1948 book, *A Sand County Almanac*, gave voice to the **land ethic** that formed the basis for the **environmental movement.**

*In the plant bed southeast of Russell Labs at the corner of Babcock and Linden Drives is a plaque titled "The Land Ethic."*

Here also is the **Department of Plant Pathology.** In the late 1800s, plant pathologist **John C. Walker** developed a fungus-

resistant cabbage that led to disease-resistant onions, potatoes, beans, peas, and cucumbers.

*South of the main entrance of Russell Labs in the raised planter, is a plaque titled "Disease-Resistant Plants."*

Walk across Babcock Drive to the 10,000-square-foot **D.C. Smith Greenhouses** (114), which have won several architectural awards for design. They are used for instruction and experimentation in plant breeding and disease and insect control. Glancing east up Linden Drive, you can see the **Horticulture Building** (62), constructed in 1910. In 1980, the department was the **first to clone a plant gene.**

*At the edge of the plant bed, northwest of the Horticulture Building, is a plaque titled "Genetically Superior Crops."*

Horticulture connects the D.C. Smith Greenhouses to **Moore Hall - Agronomy** (85), home of the **Department of Agronomy**, named for **Ransom Asa Moore**, who established the **College's Farm and Industry Short Course** and **Wisconsin's first grain-breeding nursery.**

To your left and across Linden Dr., stands **Microbial Sciences** which houses the **Department of Medical Microbiology and Immunology, Department of Bacteriology, and Great Lakes BioEnergy Research Center.**

The **Department of Bacteriology**, was established in 1893, and developed innovative heat-processing procedures for canned foods and pasteurization techniques for dairy products. In 1893, bacteriologist **Harry Russell** proved the accuracy of a **tuberculosis test** for cattle, paving the way to control tuberculosis in animals and humans. The department also played a major role in the **mass production of penicillin**, the antibiotic that saved countless lives during World War II.

In front of main entrance to Microbial Sciences you can see the 100-year-old **Swamp White Oak**, which is appreciated by many and was especially protected during the construction of the 2007 Microbial Sciences Building. The tree also hosts occasional tree-climbing labs on how to safely climb trees for pruning, tree removal, and pest management.

*Southeast of Microbial Sciences, under the oak tree and at the edge of the mulch bed, is a plaque titled "Mass Production of Penicillin."*

Walk south toward University Avenue along Babcock Drive. As you turn the corner read the plaque about **Vitamin D** research.

*In the lawn south of the Biochemistry Building near University Ave., is a plaque titled "Vitamin D Production Ends Rickets."*

After the curve, enter the **1998 Biochemistry Addition** which houses labs, auditoriums, and the **Nuclear Magnetic Resonance Facility.** As you walk through, note the award-winning terrazzo floor mural, entitled **"Biochemistry Waltz."**

Come out the door at the other end to see the **Elm Tree Courtyard**, specifically designed to save the large elm tree appropriately named **"Elmer."** Across from the Biochemistry Addition is the **Biochemistry Building.** Look to your left to see the 2011 Bio-

chemical Science Building, home to interdisciplinary research and teaching.

After observing three more plaques in the courtyard, walk to University Avenue and turn left.

*In the plant bed northeast of the Biochemistry Building in the Elm Tree Courtyard, is a plaque titled "Discovery of Vitamins A and B."*

*In the adjoining plant bed, of the Elm Tree Courtyard, is a plaque titled "Eliminating Pellagra."*

*At the corner of the 1912 Biochemistry building is a plaque titled "Controlling Blood Clotting."*

You are now passing the 1912 Biochemistry building and another plaque.

*In the lawn southeast of Biochemistry near University Avenue, is a plaque titled "First Chemical Synthesis of a Gene."*

At the end of the building turn left onto Henry Mall and enter **Biochemistry.** Here in 1913, biochemist **Elmer V. McCollum** discovered **Vitamin A** in butterfat and cod liver oil. In 1917, his group discovered the **Vitamin B complex** in milk whey, opening the way to the identification of all vitamins.

Here also, **Harry Steenbock** discovered the process of creating **Vitamin D** by irradiation, ending rickets, a debilitating disease most common in children that leads to the softening or weakening of bones. It was his idea to use proceeds from his Vitamin D discovery to begin the **Wisconsin Alumni Research Foundation (WARF).** It patents discoveries and returns hundreds of millions of dollars in royalties to the University for new research.

**E.B. Hart** and **Steenbock** also developed **iodized salt** to prevent goiters.

And biochemists **Conrad Elvehjem** and **Frank Strong** isolated and identified the **B Vitamin, niacin, eliminating pellagra**, once widespread where the main diet was mostly corn. Pellagra could lead to delusions, diarrhea, dementia, and death.

**Karl Paul Link** discovered that **coumarin**, a substance in spoiled sweet clover, **prevented blood clotting.** It became the world's most successful rat poison, **Warfarin**, and is now a widely used blood thinner for heart patients. Additionally, Nobel Prize winning biochemist **Har Gobind Khorana** was the first person to **chemically synthesize a gene** in this building.

Go straight through the building to a stairwell and up a flight of stairs to view the 1942 murals by **John Stewart Curry** titled *The Social Benefits of Biochemical Research.* These canvases celebrate the many scientific successes during the early part of the 20<sup>th</sup> century and their power in solving basic agricultural and human nutrition problems.

After viewing the mural, return to the main entrance to read the plaque outside, describing the efforts of **Hart, Elvehjem, and Steenbock** who discovered the use of copper to **treat iron deficiency anemia.**

*Outside the main entrance of the 1912 Biochemistry building near Henry Mall, is a plaque titled "Treatment of Iron Defi-*

*ciency Anemia."*

Face **Henry Mall**, the grassy lawn, named for the College's first dean, **William Henry.** All of the buildings on Henry mall are in a National Historic District. Continuing up Henry Mall, the middle building has additional **Biochemistry** offices. While occupied by the Department of Genetics, the 1906 building housed **Joshua Lederberg** the first UW faculty member to receive the **Nobel Prize**, who discovered **sexual reproduction in bacteria**, pioneering the field of bacterial genetics.

*Outside the main entrance at the edge of the plant bed is a plaque titled "Pioneering Bacterial Genetics."*

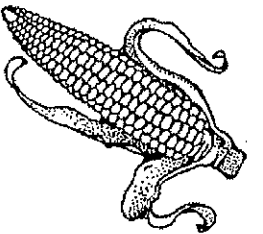
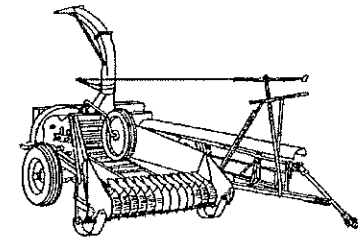
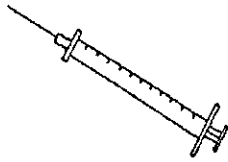
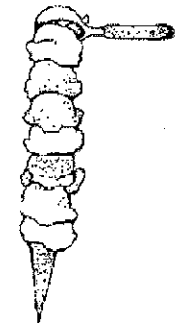
Across the mall is the 1995 **Genetics-Biotechnology Center Building** (49). This complex houses the **oldest genetics department in the country.** Begun in 1910, as the Department of Experimental Breeding, its history includes **R.A. Brink** who brought **hybrid corn** to Wisconsin, tripling yield per acre in eight years. He also developed **winter-resistant alfalfa** that became the **nation's leading variety.** **Ray Owen's** discovery of **immune tolerance** explained how an organism can tell its own cells from foreign ones, knowledge central to studies of organ transplantation and autoimmune diseases. The building also contains the **Center for Biology Education.**

*Outside the main entrance of the Genetics-Biotechnology Center is a plaque titled "Pioneering Human Genetics."*

Walk up the west side of **Henry Mall.** On the corner is the **Agricultural Engineering Building** (3), opened in 1905. Now called the **Department of Biological Systems Engineering**, it was first established in 1889. It organized the **American Society of Agricultural Engineers** and later developed the **modern forage harvester, the mechanical cherry harvester, the seed corn dryer, and perfected the first mechanical tree planter.** Engineers also discovered the causes of **spontaneous barn and silo fires.**

At the end of Henry Mall, is the statue of **William Hoard**, who encouraged widespread dairy farming in Wisconsin. Designed by Mount Rushmore sculptor **Gutzon Borglum**, it honors the former governor and founder of *Hoard's Dairyman* magazine.

Cross Linden Drive and turn right. Looking east down Linden Drive, the second building on the right is **Nutritional Sciences** (91), established in 1968. It has strong research and undergraduate programs and is widely recognized as **one of the top nutrition programs in the country.**



Behind Nutritional Sciences to the east is Taylor Hall (129), home of the Department of Agricultural and Applied Economics, where the creative work of agricultural economists helped guide and democratize agrarian and land-tenure policies around the world. These theories led to the creation of the Land Tenure Center in 1962, now a part of the Nelson Institute for Environmental Studies in Science Hall.

Read two more plaques and look up the steps to Agricultural Hall (5). Listed on the National Register of Historic Places, it houses administration and academic advising offices. Opening in 1903 as one of only four buildings in the College, planners gave it the largest lecture hall on campus, holding almost 750 students. Agricultural Hall also houses the only Department of Landscape Architecture in the state and the Department of Community and Environmental Sociology.

*Near Linden Dr. southwest at the foot of the Agriculture Hall main stairs, in a raised planter is a plaque titled "Wisconsin Alumni Research Foundation."*

*Near Linden Dr., southeast at the foot of the Agriculture Hall main stairs, in a raised planter is a plaque titled "Forging Agrarian Democracy."*

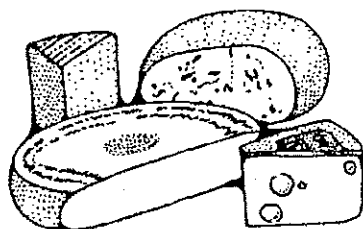
Climb the stairs to the front of Agricultural Hall and walk around the left side. In the back are two Indian Effigy Mounds, a bird and a two-tailed water spirit, these earthen monuments, often used for human burials, were likely built about 1,000 years ago. These two mounds have recently been listed on the National Register for Historic Places.

Retrace your steps and then go down the hill to your right and through a parking lot to see King Hall (66) and the Soils Building (177), home of the Department of Soil Sciences. Complete in 1896, King Hall honors Franklin Hiram King, the first professor of agricultural and soil physics, who popularized the round silo and invented barn ventilators and mechanical soil analysis.

At the southwest corner of Soils is a two-story building originally the College's heating plant, it is called the Agricultural Bulletin Building (2), but it currently houses the Center for Integrated Agricultural Systems and the Nutrient and Pest Management Program.

Across the driveway to the left is the Tudor-motif Hiram Smith Hall (154), finished in 1892 and named for a former Regent and leading Wisconsin dairyman. The 1890 dairy school was the first in the United States, and Hiram Smith Hall was the first dairy building in the western hemisphere. It now houses the Department of Life Sciences Communication, formerly Agricultural Journalism, established in 1908. Specializing in science communication, it is one of the highest-funded research journalism departments in the country.

Cross the intersection with Observatory Drive to the Allen Centennial Gardens. The old yellow-brick mansion (10) was



built in 1897 as a residence for the dean of the College. The creation of the 2.5-acre area began in 1980 as 20 horticultural teaching gardens, managed by the Department of Horticulture. Behind the house, in the northwest corner of the Gardens, is the largest known ponderosa pine tree in Wisconsin. Also in the Garden is a European larch tree planted in 1899 by the university's first professor of horticulture, Emmett S. Goff, which has the unique feature of downward pointing branches. Now look across Babcock Drive to Steenbock Memorial Library (122). This science learning center can accommodate more than 1,300 students and faculty.

Return to the intersection of Observatory and Babcock and walk west on Observatory Drive. Beyond Steenbock Library, on your left rises the 11-story Animal Science Building (8), housing the Departments of Dairy Science and the Department of Animal Sciences. To help finance the building, the legislature taxed colored oleomargarine to encourage people to consume untaxed butter.

The Department of Animal Sciences is a leader in the study of the reproductive biology of cattle. Reproductive biologist Lester E. Casida conducted the first embryo transfer that resulted in the birth of a calf, revolutionizing animal reproduction. This work laid the foundation for in-vitro embryo production, cloning, and transgenic production widely used today. Knowledge gained in animal research is often used to study human health problems.

Also in the Animal Science Building is the Department of Dairy Science, with historical roots to 1891, it identified the role of Vitamin D in milk-fever in cattle, invented programmed breeding to improve reproductive efficiency, and pioneered the use of molecular markers to identify superior bulls.

*In the lawn outside the main entrance of Animal Sciences is a plaque titled "Revolutionizing Animal Reproduction."*

Pass the Animal Science Building, and turn left onto Linden. Across Linden Drive is the Agricultural Engineering Laboratory (4), containing shops for work on farm power, livestock housing, animal waste disposal, soil erosion control, and mechanizing the extraction of enzymes from high protein alfalfa juice concentrate.

Beyond the Agricultural Engineering Laboratory is the low building along Observatory Drive is the Poultry Research Laboratory (97), housing poultry used in nutrition, genetics, and physiology research.

Nearby is the Seed Building (111) where the first high-protein oat in the United States was developed.

As you continue along Linden Drive, note the series of plaques highlighting scientific accomplishments from the surrounding departments.

*In the lawn outside of the west entrance to Animal Sciences, is a plaque titled "Understanding Immunity."*

*In the lawn southwest of Animal Health and Biomedical Sciences Building near the Linden Dr. curve, is a plaque titled "Preventing Endemic Goiter."*

*In the plant bed southwest of Animal Health and Biomedical Sciences, is a plaque titled "Discovering Vitamins and Trace Minerals."*

Walk south along Linden Drive. The red-roofed building on your right is the 1993 Livestock Laboratory (71), used for inten-

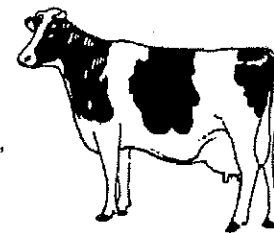
sive teaching and research with cattle, pigs, sheep, and goats. The Horse Barn (61) was constructed about 1908 for two, eight-horse teams of draft horses to work the test plots and is on the National Register of Historic Places. The Horse Barn is now used for research on embryo transplants in horses.

Veer off the sidewalk and stay to the right to go to the Dairy Cattle Research Center (31) to observe the University's campus dairy research and instructional herd being milked at 3:30 p.m. every day.

Behind and slightly to the east of the Dairy Cattle Research center is the Meat Science and Muscle Biology Lab (77). In the basement, biochemist Conrad Elvehjem, who later became UW President, discovered niacin. The 1930 building is currently undergoing a renovation to create a state-of-the-art laboratory to study muscle function and its role as food.

Associated with the Muscle Lab is Bucky's Butchery, a retail meat processing facility run by students.

Straight ahead is the Dairy Barn (30), built in 1897 and patterned after barns in Normandy, France. This was the site of pioneering research on vitamins and early engineering research on silos, silage, and barn ventilation which has earned it recognition as a National Historic Landmark making it the only barn in the U.S. to achieve this honor. It is currently used to teach classes in Horse Management and Reproduction.



Retrace your steps and walk east along Linden Drive. You are now back in front of the Stock Pavilion.

Come visit us again!

College of Agricultural and Life Sciences  
1450 Linden Drive, Madison, WI 53706  
www.cals.wisc.edu info@cals.wisc.edu

4/03/2013 by Emily McNally and Ellen Maurer

## College of Agricultural and Life Sciences



### Discovery Walk

## Welcome!

Come along on a Discovery Walk and explore some of the most important, exciting, historic, scientific discoveries made at UW-Madison since 1848. More detailed bronze plaques mark some of these special sites.