

## **History of the Department of Biochemistry and Molecular Biology at Mississippi State University**

The Department of Biochemistry and Molecular Biology within the College of Agriculture and Life Sciences began as the Agricultural Chemistry Department of the Mississippi Agricultural Experiment Station which dates back to 1926. At that time the work of the Agricultural Chemistry Department was in the old chemistry building under the direction of Dr. W.F. Hand. The Department moved into the Experiment Station Building in 1931 and was quartered there until it was moved to Dorman Hall in 1966. Mr. B. K. Smith served briefly as Experiment Station Chemist in 1926, and in 1927 Mr. Marvin Geiger became Experiment Station Chemist under Dr. W.F. Hand. In 1931 Mr. Geiger was made head of the Agricultural Chemistry Department and served in that capacity until his retirement in 1958. In 1958 Dr. Benjamin F. Barrentine became Head of the Agricultural Chemistry Department. In the early years of its existence the Agricultural Chemistry Department functioned primarily as a service laboratory for the other departments of the School of Agriculture. The work consisted, largely, of plant and soil analysis, however over the years a research program was developed within the Department. The research program of the Agricultural Chemistry Department was concerned with the basic composition of plants and some of the influences of environment and fertility on their composition. Special emphasis was given to metabolic disorders of livestock, such as grass tetany and bloat, as related to plant composition. The Department also became involved in pesticide residue analysis in milk, vegetables, soils, soybeans, and forages.

The Department of Biochemistry at Mississippi State University was approved by the Board of Trustees May 19, 1966. However, no further action occurred until 1968. In the Fall of 1968 Dr. Louis N. Wise, Vice President for Agriculture, wrote a letter to Dr. William L. Giles, President, Mississippi State University, requesting that the Agricultural Chemistry Department be re-designated the Biochemistry Department in the College of Agriculture. Dr. Wise further requested that all courses in biochemistry being taught in the Chemistry Department and departments of the College of Agriculture be transferred to and taught by the proposed Department of Biochemistry. Dr. Giles approved the request and presented the proposal to the Board of Trustees at their December meeting in 1968. The Board of Trustees approved the proposal and the following is an excerpt from the agenda:

"After long and careful consideration of the matter it is recommended that the Department of Agricultural Chemistry in the Mississippi Agricultural Experiment Station be re-designated the Department of Biochemistry in the College of Agriculture and Agricultural Experiment Station and that Dr. Ben F. Barrentine, currently Head of the Department of Agricultural Chemistry, be appointed Head of this new Department, effective July 1, 1969."

Dr. Barrentine was instrumental not only in the creation of the Department of Biochemistry, but also in Biochemistry becoming a full-fledged degree program (Bachelors of Science) at Mississippi State University (effective July 1, 1973) - the only undergraduate Biochemistry degree program in the State of Mississippi at that time.

Important to graduate programs in the Department of Biochemistry, the Ph.D. program in Molecular Biology was created in 1997, and is the only designated Molecular Biology Ph.D. program in the State of Mississippi.

## **Selected Historical Documents and Articles about the Department of Biochemistry and Molecular Biology**

- **December 20, 1968** – [Letter from Dr. William Giles](#), then President of Mississippi State University, to Dr. Louis Wise, then Vice President of the Division of Agriculture and Forestry, regarding the Mississippi Board of Trustees approval for the creation of the Department of Biochemistry at Mississippi State University.
- **September 17, 1971** – [Letter from Dr. William Giles](#), then President of Mississippi State University, to Dr. J. McKee, then Vice President for Research and Dean of the Graduate School, regarding the approval to offer an M.S. degree in Biochemistry from the Department of Biochemistry at Mississippi State University.
- **July 19, 1973** – [Newspaper article from the Starkville Daily News](#) reporting the approval to offer a B.S. degree in Biochemistry from the Department of Biochemistry at Mississippi State University.
- [Newspaper article from The Clarksdale Press Register \(July 1973\)](#) highlighting the research conducted by Dr. Robert Wilson on catfish nutrition.

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D. Barenton

~~Dr. J. K. Betterworth~~  
~~Dr. J. C. McKee~~  
Dr. J. K. Betterworth  
Dr. J. C. McKee

MISSISSIPPI STATE UNIVERSITY  
STATE COLLEGE, MISSISSIPPI

OFFICE OF THE PRESIDENT

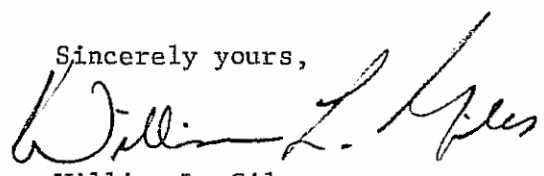
December 20, 1968

Dr. Louis N. Wise  
Vice President for Agriculture  
and Forestry  
Campus

Dear Dr. Wise:

At its meeting on December 19 the Board of Trustees approved our recommendation concerning the Department of Biochemistry in accordance with the attached excerpt from the Agenda.

Sincerely yours,



William L. Giles  
President

cc Dr. J. K. Betterworth, w/enclosure  
Dr. J. C. McKee, w/enclosure

WLG:lcc

Enclosure

2. Department of Biochemistry: The establishment of a Department of Biochemistry at Mississippi State University has been previously approved by the Board, and the position as Head of that Department was carried in the last two budgets. It was deleted from the current budget in line with the policy of not showing unfilled positions.

After long and careful consideration of the matter it is recommended that the Department of Agricultural Chemistry in the Mississippi Agricultural Experiment Station be redesignated the Department of Biochemistry in the College of Agriculture and Agricultural Experiment Station and that Dr. Ben F. Barrentine, currently Head of the Department of Agricultural Chemistry, be appointed Head of this new Department, effective July 1, 1969.<sup>11</sup>

Dr. Barrentine has a B.S. in Chemistry from Mississippi State University, an M.S. in Nutrition and Biochemistry from Cornell University, and a Ph.D. in Biochemistry and Nutrition also from Cornell. As Head of the Department of Agricultural Chemistry for the past ten years Dr. Barrentine has shown himself to be an outstanding research worker and research group leader in biochemistry as related to agriculture. Future emphasis will be placed on the development of the more basic and interdisciplinary aspects of biochemistry.

MISSISSIPPI STATE UNIVERSITY  
STATE COLLEGE, MISSISSIPPI

OFFICE OF THE PRESIDENT

September 17, 1971

Dr. J. C. McKee  
Vice President for Research  
and Dean of the Graduate School  
Campus

Dear Dr. McKee:

I am pleased to report to you that on September 16 the Board of Trustees acted to approve the granting of a Master of Science Degree in Biochemistry.

Sincerely yours,

William L. Giles  
President

cc B. F. Barrentine  
Dean C. E. Lindley  
Dr. L. N. Wise  
Dr. J. K. Battersworth  
all w/attachment

WLG:lcc

Enclosure

*From Board Agenda dated 9-16-71:*

2. Master of Science Degree in Biochemistry: The program of the Department of Biochemistry has been reviewed favorably by a committee of off-campus visitors and has been approved by the Graduate Council and the Academic Council for graduate work.

Accordingly, it is respectfully recommended that the Department of Biochemistry be approved for granting the Master of Science Degree.

Brochures of the examination of the program are being mailed with this agenda to members of the Board and to the Board office.

From Minutes of the Board of Trustees dated 9-16-71:

Report of the Instruction, Administration and Policy Committee

On motion by Mr. Hederman, seconded by Mr. Morgan, the following recommendations of the Instruction, Administration & Policy Committee were approved:

2. Approve request that the Department of Biochemistry grant the Master of Science degree.

# MSU OFFERS NEW DEGREE

Mississippi State University is the only institution in the State and one of three institutions in the southeastern portion of the United States to offer a Bachelor of Science degree in Biochemistry. The degree program became effective July 1.

Biochemistry, according to Dr. Ben F. Barrentine, head of the department and professor of biochemistry at MSU, is a study of the chemistry of living matter, which attempts to decipher the chemical nature of all living things, including microorganisms, plants, and animals.

"We decided to offer a B.S. in Biochemistry because of student request and because a recent survey of industrial companies which hire biochemists indicated that there were as many openings for the B.S. degree as were available for M.S. or Ph.D. degrees," said Dr. Barrentine.

Dr. Barrentine stated that MSU currently has a large number of graduate students in other departments minoring in Biochemistry.

"Biochemistry is playing a strong-supportive role because people recognize 'biology plus chemistry' is a vital link in all science-related disciplines," he said.

Dr. Barrentine said that the first students that this program will attract will probably be pre-professional students.

"For those students contemplating a career in medicine, dentistry, or veterinary medicine, the new program embodies strong requirements in calculus, physics, and physical chemistry, as well as sophisticated offerings in the biological sciences," said Dr. Barrentine.

He stated that another advantage for students in this

curriculum who are not accepted or decide not to enter professional school is that they will have an excellent preparation for other careers in the life sciences.

"Biochemists with a bachelor's degree are employed in a variety of industries concerned with human and animal nutrition, processing of foods, development of drugs and other medications, manufacture of chemicals for a wide range of uses, and also in the area of sales for these products," he said.

He added that they also participate in laboratory research universities and colleges, research institutes, hospitals, and governmental installations.

Dr. Barrentine explained many biochemists continue their education to the master's or doctoral levels.

"Advanced training makes available opportunities for teaching and independent research in colleges and universities," he said. "It also opens the way to research positions in industry and government laboratories."

According to Dr. Barrentine, the department, staffed with seven Ph.D. faculty members and associated with the Mississippi Agricultural and Forestry Experiment Station (MAFES), will give biochemistry majors an undergraduate degree enriched with research experience.

He said that all faculty members hold joint appointments with MAFES which is the principal funder of all Biochemical research.

"Biochemistry is in its infancy," said Dr. Barrentine. "We feel that the curriculum that MSU has instigated with a combined study-research approach, will open unlimited opportunities for our students."

To Increase Production

## Feeding Of Catfish Studied By Researchers

MISSISSIPPI STATE, Miss. — Mississippi's favorite meal of fried catfish and hush-puppies may one day be an answer to our high meat prices.

At Mississippi State University the Biochemistry Department is researching a diet for catfish which will increase their growth rate and decrease their "feed" cost.

According to Dr. Robert P. Wilson, associate professor of Biochemistry at MSU, our nation's problems in food prices harbor around the cost of protein for animal feeds.

### Ideal Sought

"Catfish producers are turning to plant protein to feed their fish because the animal protein food has 'skyrocketed'

in cost," he said.

He explained that since Mississippi has the largest acreage of catfish production in the U.S., his department is interested in determining the 'ideal' protein balance that a catfish requires to promote growth rate, conserve protein, and reduce pollution.

"Presently most catfish producers raising cage culture catfish have had to rely on the high protein feed of trout because no other feed was available," said Dr. Wilson. "We hope our feed, when perfected, will alleviate this problem and it should improve the catfish rations used in pond culture, as well."

He stated that their research was also conscious of what the

temperature and feed them on purified diets where we know feed would do to the environment.

"I feel we should find out what is going on inside the animal so we can determine the proper ratio of essential nutrients to feed the fish," Dr. Wilson said. "This ratio would reduce the waste produced by the fish — thus reduce the pollution of the ponds."

### Plan Acquaria

Dr. Wilson noted that MSU is constructing a new building where he and his graduate student, Don Garland of Dayton, Ohio, will be able to raise catfish in acquaria on a 12-month basis.

"The facilities being constructed on the South Farm for

the Fisheries and Wildlife Department will allow us to raise catfish in a aquaria on the exact ingredients in the feed," he explained.

Another advantage of the new building will be that Dr. Wilson and Don Garland will be able to keep up with the exact number of fish they are raising.

"In the past our small pond, stocked with hundreds of fish, was quite a temptation for some of Starkville's younger fishermen!" he said. "These kids did not think that a few catfish for their supper would interfere with our experiments!"

### Essential Ingredient

Even though Dr. Wilson has not discovered all of the

ingredients that should go in the feed, he has discovered an ingredient that he cannot leave out — vitamin C.

"A 'broken back' syndrome was observed in our cage-culture catfish which we proved experimentally to be due to a vitamin C deficiency," said Dr. Wilson. "An X-ray of a vitamin C-deficient-catfish sometimes showed spinal damage so severe that vertebrae were completely separated."

He said that he was motivated to research catfish when he joined the MSU Biochemistry staff and it was an on-going project.

"My training at the University of Missouri intrigued me to study different species on a comparative basis. Since there was little known information about the

proper feed of catfish — with catfish being an important industry to Mississippi — I felt there was a need to investigate this subject," he explained.

According to Dr. Wilson, the Biochemistry department's main objectives in the catfish experiments are to improve dietary requirements, reduce potential pollution and lower production costs.

"Our objectives in the five-year project may be idealistic — but we would like meat prices to be lowered, too!" he said.