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THE CONTRIBUTION OF AUGUSTO CHAVES BATISTA (1916-1967) TO MYCOLOGY IN BRAZIL

JADSON D.P. BEZERRA^{1*}, MARÍLIA H.C. MACIEL¹, JOSÉ L. BEZERRA¹, OLIANE M.C. MAGALHÃES¹, CRISTINA M. SOUZA-MOTTA^{1*}

¹Departamento de Micologia Prof. Chaves Batista, CB, Universidade Federal de Pernambuco, Av. Professor Nelson Chaves, s/no, Cidade Universitária, CEP: 50670-901, Recife, Pernambuco, Brazil.

*Correspondence: jadsondpb@gmail.com; cristina.motta@ufpe.br

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ABSTRACT - Augusto Chaves Batista was the Brazilian mycologist who established the Institute of Mycology at the University of Recife (IMUR) in 1954. During the 1950's the Institute became the home of two important mycological collections: the herbarium *Herbário Camille Torrend*, and the culture collection *Micoteca URM Profa. Maria Auxiliadora Cavalcanti*. Today the Herbarium and Culture Collection form part of the Department of Mycology Prof. Chaves Batista at the Federal University of Pernambuco. Over the past 60 years the activities of IMUR have been influenced by the contributions of several national and international researchers and by a variety of socio-economic and political events affecting the country as a whole. Several distinct lines of research have characterised the development of the IMUR. These include the taxonomic and systematic study of fungi; the diversity of fungi on and in various substrates; the ecology of fungal symbioses as lichens and mycorrhiza; the implications of fungi for the bioremediation and maintenance of soils; and the industrial uses of fungi. These specialities, combined with the study of medically important fungi, were important themes in its history, and they continue to be so in the twenty-first century. In addition to scientific research, the activities of Prof. Batista and collaborators contributed directly to the training and development of many mycologists. Professor Batista also established the need for continuous government investment in order to preserve the diversity of fungi *ex situ* and to contribute to programs that ensure the preservation of the many natural ecosystems that depend on them.

KEY WORDS: BRAZIL; BRAZILIAN FUNGI; HISTORY; INSTITUTE OF MYCOLOGY; MYCOLOGY.

A CONTRIBUIÇÃO DE AUGUSTO CHAVES BATISTA (1916-1967) PARA A MICOLOGIA NO BRASIL

RESUMO - Augusto Chaves Batista foi um micologista brasileiro que estabeleceu o Instituto de Micologia da Universidade do Recife (IMUR) em 1954. Durante os anos 1950 o Instituto abrigou duas importantes coleções micológicas: o Herbário Camille Torrend e a coleção de culturas Micoteca URM Profa. Maria Auxiliadora Cavalcanti. Hoje o Herbário e a Micoteca formam parte do Departamento de Micologia Prof. Chaves Batista da Universidade Federal de Pernambuco. Ao longo dos últimos 60 anos de atividades, os estudos têm sido influenciados pela contribuição de vários pesquisadores brasileiros e estrangeiros e por uma variedade de fatos econômicos e políticos que afetaram o país. Várias pesquisas têm caracterizado o desenvolvimento do Departamento de Micologia. Estas incluem o estudo taxonômico e sistemático dos fungos; o estudo da diversidade fúngica em vários substratos e hospedeiros; a ecologia da simbiose fúngica dos líquens e das micorrizas; o uso industrial dos fungos. Estas especialidades, combinadas com o estudo da importância médica dos fungos, foram importantes temas nessa história, e continuam a ser no século vinte e um. Em adição a pesquisa científica, as atividades do Prof. Batista e colaboradores contribuíram diretamente no treinamento de vários micologistas. Professor Batista também estabeleceu a necessidade de contínuo investimento governamental em ordem de preservar a diversidade de fungos *ex situ*, e contribuir com programas que garantam a preservação de muitos ecossistemas naturais que dependem dos fungos.

PALAVRAS-CHAVE: BRASIL; FUNGOS BRASILEIROS; HISTÓRIA; INSTITUTO DE MICOLOGIA; MICOLOGIA.

LA CONTRIBUCIÓN DE AUGUSTO CHAVES BATISTA (1916-1967) A LA MICOLOGÍA EN BRASIL

RESUMEN - Augusto Chaves Batista fundó el Instituto de Micología en la Universidad de Recife (IMUR) en 1954. Durante la década de 1950 el Instituto se convirtió en el hogar de dos colecciones micológicas muy importantes: el *Herbario Camille Torrend* y la colección de cultivos de hongos, *Micoteca URM Profa. Maria Auxiliadora Cavalcanti*. Actualmente el Herbario y la Micoteca forman parte del *Departamento de Micología Prof. Chaves Batista* de la Universidad Federal de Pernambuco. A lo largo de los últimos 60 años, las actividades del IMUR han sido influenciadas por las contribuciones de varios investigadores nacionales e internacionales y por la gran variedad de sucesos económico-sociales y políticos que han afectado a todo el país. El desarrollo del IMUR ha sido marcado por diferentes investigaciones acerca de los hongos, por ejemplo, su estudio taxonómico y sistemático; su diversidad en diferentes substratos; la ecología de la simbiosis fúngica de los líquenes y las micorrizas; su importancia en la biorremediación y mantenimiento de los suelos; y sus usos industriales. Estas especializaciones, aunadas al estudio de los hongos relevantes para la medicina, fueron temas importantes en la historia del Instituto y continúan siéndolo en el siglo XXI. Además de la investigación científica, la actividad del Prof. Batista y sus colaboradores, contribuyó directamente a la capacitación y desarrollo de numerosos micólogos. El profesor Batista también señaló la necesidad de una inversión económica constante por parte del gobierno para poder preservar la diversidad de los hongos *ex situ* y para contribuir a la creación de programas que aseguren la conservación de los diferentes ecosistemas naturales que dependen de ellos.

PALABRAS CLAVE: BRASIL; HISTORIA; HONGOS BRASILEÑOS; INSTITUTO DE MICOLOGIA; MICOLOGIA.

MYCOLOGY IN BRAZIL

The earliest report on fungi in Brazil may have come from the Spanish Jesuit priest José de Anchieta in 1560 who described a “flexible rock” in the Province of Saint Vincent. This was probably sclerotia of *Polyporus sapurema* Moell. (Viégas 1959, Fidalgo 1968). However, the first scientific report about fungi in Brazilian territory dates from around 1648 when the Dutch zoologist Wilhelm Pies described in his book “De Venenis corumque antidotis” seven species of fungi called “Carapacu” in the Tupi language (Fidalgo 1985).

The first documented fungal collection in Brazil was that of the French botanist Philibert Commerson in the state of Rio de Janeiro in 1767 (Fidalgo 1970). However, the first Brazilians known to be trained in mycology were Vicente Coelho de Seabra Silva Telles, Alexandre Rodrigues Ferreira (considered the first Brazilian naturalist) and the Franciscan friar José da Conceição Marianno Vellozo, who were introduced to mycology in Portugal in 1787 (Rheinboldt 1955). The French botanist and naturalist, Auguste de Saint-Hilaire, was responsible for the first phytopathological observations in Brazil when he wrote in his travel notes that some wheat fields in the states of Espírito Santo, Goiás, São Paulo, Rio de Janeiro, Minas Gerais, Santa Catarina and Rio Grande do Sul were infected by *Puccinia* sp. (Jenkins 1945, Fidalgo 1970). Foreign expeditions led to the first studies of the Brazilian mycota in 1821 (Martius 1821, Fries 1821, Fidalgo 1970). In 1877, European scientific expeditions led to the publication by Berkeley & Cooke of a review of the fungi then known from Brazilian territory, listing 437 species (Fidalgo 1968).

From the second half of the nineteenth century, researchers of various nationalities came to Brazil or analysed materials that had been collected here. Among them were Carlos Luiz Spegazzini (an Italian based in Argentina and considered the greatest mycologist in Latin America), Juan Inacio Puiggari, Pier Andrea Saccardo,

Paul Christoph Hennings, Fritz Noack and the Jesuit priests Johann Rick (considered the father of Brazilian Mycology), Ferdinand Theissen, and Camille Torrend.

The first Brazilian agronomy school was established in Cruz das Almas, Bahia in 1877. As a result the study of fungi intensified and led to the creation of fungal herbaria in institutions throughout the country. It was in Bahia that the French priest Camille Torrend, in cooperation with Saccardo, Bresadola, Patouillard and Boudier, began his studies with myxomycetes and basidiomycetes in 1914 (Fidalgo 1968).

In the early 1950s, Augusto Chaves Batista, an agronomy student at Cruz das Almas, Bahia, became a friend and disciple of the mycologist/priest Camille Torrend. Few years later, in 1954, Batista joined the University of Recife and created a unique research centre for the study of fungi: The Institute of Mycology of the University of Recife, the IMUR, currently the Department of Mycology at the Federal University of Pernambuco (UFPE). Since then Mycology became an important scientific landmark of UFPE.

The 60th anniversary of IMUR's foundation (1954-2014) was celebrated in the presence of a group of mycologists trained by Batista, who lived in favour of mycology in Brazil, until his death in 1967, such as: José Luiz Bezerra, Maria José dos Santos Fernandes, Laise de Holanda Cavalcanti Andrade, Débora Maria Massa Lima, Elza Aurea Luna Alves Lima and Maria Auxiliadora de Queiroz Cavalcanti.

Institute of Mycology of the University of Recife (IMUR)

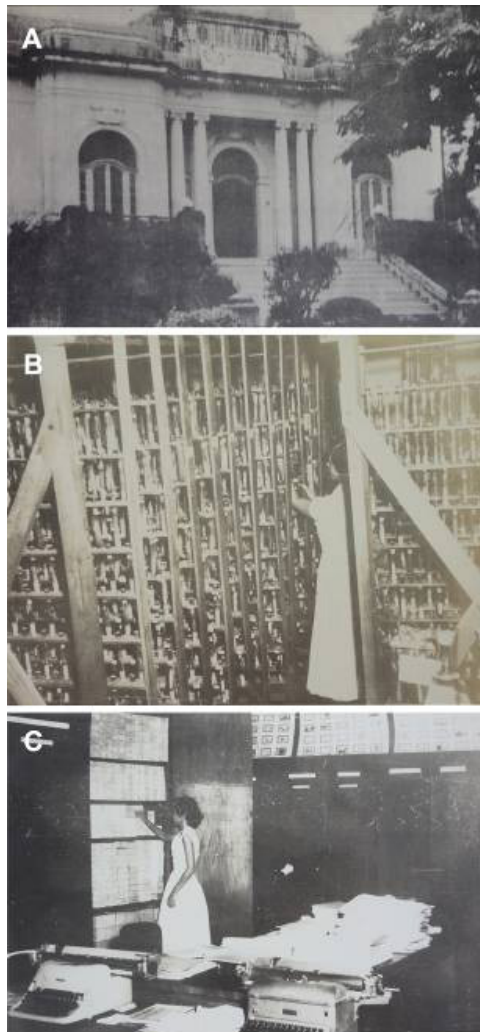
On April 15, 1954, the Rector of the University of Recife, currently the UFPE, Prof. Joaquim Inacio de Almeida Amazonas, entrusted Prof. Chaves Batista with the supervision of the creation of a new Department of Mycology, an annex to the *Escola de Química de Pernambuco*. On May 2nd of the same year a survey of fungi of medical interest began alongside studies on fungal taxonomy. The department was the first institution of its type in South America and its creation was mostly due to Batista's international connections with traditional European and American institutions (Batista 1954). He then followed the latest trend in scientific research, and in few years put together an efficient research and teaching staff. At the end of the first year of operation the IMUR's Herbarium contained 1141 exsiccates, all of which had been identified. The collection of specimens in the Culture Collection comprised 297 fungi kept in culture media. The first fungi deposited were human and plant pathogens, specimens of industrial value, producers of antibiotics or species of scientific interest due to their unusual physiology or characteristic morphology. A department library incorporated Batista's personal acquisitions, that included a complete set of Saccardo's *Sylloge Fungorum* (Batista 1954) (Figure 1).

In the report of the activities for 1954, Batista highlighted the dedication of the first members of staff in the preparation of a showcase of preserved fungi for permanent exhibition. His collaborators were then trained in the preparation of microscope slides, keeping the Herbarium records up to date, collecting materials for mycological study, photography and microphotography, cultivation of fungi in different media, preparation of spore prints for the studies of macro fungi, and research on edible fungi (Batista 1954).

In partnership with the Antibiotics Institute (University of Recife –UR), the mycologists showed that various species of the genus *Lepiota*, until then believed to be poisonous, did not show any toxicity to laboratory animals such as rats and mice. Taxonomic research on the identification of species of *Aspergillus* and *Penicillium* brought together species not previously reported in Brazil and identified others efficient in producing antibiotics. Within a year, the team identified two new genera, 17 new species and three new varieties of fungi, which

resulted in 13 papers published (Batista 1954).

Figure 1 - Institute of Mycology of the University of Recife (IMUR). A. First installations of IMUR. B. Micoteca URM (culture collection). C. Herbário URM (herbarium). Photos: Department of Mycology, UFPE.



Communication with other Brazilian institutions, such as the Biological Institute of Bahia and the Adolfo Lutz Institute of São Paulo, stimulated the exchange of fungal samples. Likewise, contact with international institutions began with the shipping of exsiccates or provision of technical-scientific information. In 1954, 292 samples of fungi were sent to Argentina, Austria, Canada, USA, Denmark, The Netherlands, Portugal and Switzerland (Batista 1954).

Batista's dedication facilitated the provision of funds to the department. The appreciation and encouragement of Batista helped the team to reach maximal efficiency. Following the example of European institutions, it was custom to work even on holidays. By the end of 1954 the Department was the most complete mycological research centre in the country, lacking only a few pieces of equipment. It was also able to increase the number of staff in order to meet the service demand and to begin the construction of a building suitable for mycological research (Batista 1954).

In the same year Batista began to publish the results of research conducted by the department. The difficulties faced by Brazilian researchers when trying to publish their studies in foreign journals motivated

the creation of a group dedicated to supporting the successful publication of the department works. The first publication was entitled “Adenda à Micoflora de Pernambuco” [Addendum to the Mycoflora of Pernambuco] authored by Augusto Chaves Batista and Albino Fernandes Vital. In this paper the two mycologists described six new taxa belonging to the genera *Aphanostigme* Syd., *Marssonina* Magnus and *Micropeltis* Mont. (Batista & Vital 1954). This was the first of almost 700 publications that subsequently formed part of the series intitled *Publicações do IMUR* [Publications of the IMUR] summarized in Silva & Minter (1995).

As early as 1955, the Institute of Botany of Lisbon, Portugal, requested Batista’s collaboration in a study of neotropical *Polyporaceae*; other collaborations were established with institutions from Argentina, Australia, Canada, Denmark, England, The Netherlands, Uruguay and USA (Batista 1955).

In 1956 the Department of Mycology changed its ‘department status’ becoming the Institute of Mycology of the University of Recife (IMUR). Batista, who until then had been the head of department (1954-1955), became the director of the Institute from 1956 until his death in 1967. Through IMUR, the University of Recife became known in Africa, America, Asia, Europe and Oceania, due to the constant exchange of scientific material, donations of cultures and identification of samples from these continents (Batista 1957).

By 1957 the Institute strengthened its ties with about fifteen international institutions. Of particular importance were the offers made by The Foreign Service of the United States of America to collaborate with the United States Army Quartermaster Corps and the invitation made by UNESCO for the Institute of Mycology to participate in the 1st Latin American Meeting of Mycology held in Montevideo (Uruguay). This early internationalization of IMUR attests to the quality of the scientific work developed by the Institute at the time (Batista 1957).

The encouragement of scientific research amongst the students was also one of the IMUR goals. Students and researchers from Brazil and other countries, such as Dr. Françoise Monnier (St. Antoine Hospital, Paris, France), were involved in research at IMUR. In 1958, the Institute had scientific exchanges with 174 institutions on five continents – 46 in Brazil and 36 in the USA (Batista 1958).

According to Batista (1958), IMUR was in charge of contributing to the systematics of several groups of fungi belonging to families *Polystomellaceae*, *Asterinaceae* and *Capnodiaceae*, receiving 2,996 specimens from 22 research institutions in Europe, Asia, Africa and America. In addition, the Institute conducted research on fossil fungi at the invitation of institutions from the USA, India and Poland. Another highlight was the request of collaboration by the USA National Fungus Collection, for the IMUR to study 318 specimens of fungi from the 1913 collection gathered by the famous mycologist Prof. F. L. Stevens, which had not yet been reviewed.

In 1958, the Institute was structured as follows: Directorship, Division of Experimental Mycology, Pure Mycology (including the Herbarium and the Culture Collection), Industrial Mycology and Agricultural Mycology.

In the Culture Collection and Herbarium species were deposited that were mostly collected in Brazil, but also materials from other parts of the world. Then the Culture Collection showed 1226 specimens of fungi from Brazil and abroad. That same year, following recommendations of UNESCO and Centraalbureau voor Schimmelcultures (CBS)-Baarn in the Netherlands, the Culture Collection prepared its first Catalogue. At the same time the Herbarium continued its growth by increasing the number of species, especially the number of type specimens, accumulating 15,300 exsiccates of fungi from different origins in the same year (Batista, 1958).

The Institute of Mycology was honoured with the presence of distinguished visitors. Important examples are Prof. Raffaele Ciferri (University of Pavia, Italy), Prof. Ricardo C. Artagaveytia-Allende (National University,

Uruguay - delegate of the IMUR for Uruguay and UNESCO scientific advisor), Prof. Rolf Singer, Prof. Corrado Capretti (Universidad de Los Andes, Venezuela), Prof. Guillermo Casas Rincón (Universidad del Zulia, Venezuela), Profs. Everest Smith Beneke and Alvin Lee Rogers (Michigan State University, USA), Prof. John D. Schneidau (Tulane University, USA), Dr. Frederich Staib (University of Würzburg, Germany) and Prof. Joseph Adolf von Arx of the University of Utrecht and of CBS.

Professor von Arx described his experience in the IMUR guestbook: *“My stay at the Instituto de Micologia was a very nice time for me. I have had the possibility to do full time research on interesting fungi and I learned more, especially about Lichens. I learned also to admire this Institute with its good organization and profound scientific work, which is of great importance for the advance of Mycology. It is very important that such an Institute could be founded in the tropics, where are growing such a lot of fungi as parasites and as saprophytes. I am very much obliged to Prof. Batista and all members of his staff for their friendship and their help and I hope that the result of my stay will be a long and useful co-operation in favour of our Mycology”* (Batista 1960) (Figure 2).

Figure 2 - A. C. Batista and collaborators with visitors to IMUR in the 1960s. A. J. A. von Arx and IMUR staff. B. E. S. Beneke and A. L. Rogers. C. R. Senghor. D. G. Wain. E. P. A. Senghor. F. J. R. F. Sobrinho. G. R. Singer. H. R. C. Artagaveytia-Allend. Photos: Department of Mycology, UFPE.



IMUR became a consultant group contributing to the solution of agricultural, animal, and human diseases; but with a major focus on taxonomy and diversity of Brazilian fungi including those from the Cerrado and the Amazon rainforest. All of this happened together with the training of young mycologists and scientific exchange with several national and foreign institutions (Batista 1961).

The pioneering research on soil microbiology in the Amazon should be emphasized. It was done with the support of the Brazilian National Institute for Amazonian Research (INPA), which provided resources for all the scientific needs, including the hiring of researchers and trainees. At INPA, other organizations helped in the research, including the Brazilian Air Force (FAB), which on several occasions provided its aircraft to transport materials and researchers.

These scientific expeditions contributed to an increase in the sizes of the Herbarium and Culture Collection (Batista 1961). In 1961 the Culture Collection of IMUR contained about 11,000 specimens of fungi and was ranked among the 30 largest collections of the world recognized by UNESCO. The Herbarium of IMUR had about 25,000 exsiccates and was a worldwide center of reference for tropical fungi (Batista 1961).

In 1961 scientific exchanges occurred with more than 800 foreign institutions. Important visitors as the chief of the Scientific Cooperation Centre of the UNESCO for Latin America, A. Stablier, expressed his appreciation after a visit to the Institute writing: “*Com el placer del haber visitado un Instituto que esta em pleno rendimento y con un personal lleno de entusiasmo, aprovecho esta ocasion para felicitar a su creador el Prof. Chaves Batista*”. In that same year the Institute of Mycology designated Prof. Ricardo C. Artagaveytia-Allende, as IMUR representative in the UNESCO office in Uruguay (Batista 1961).

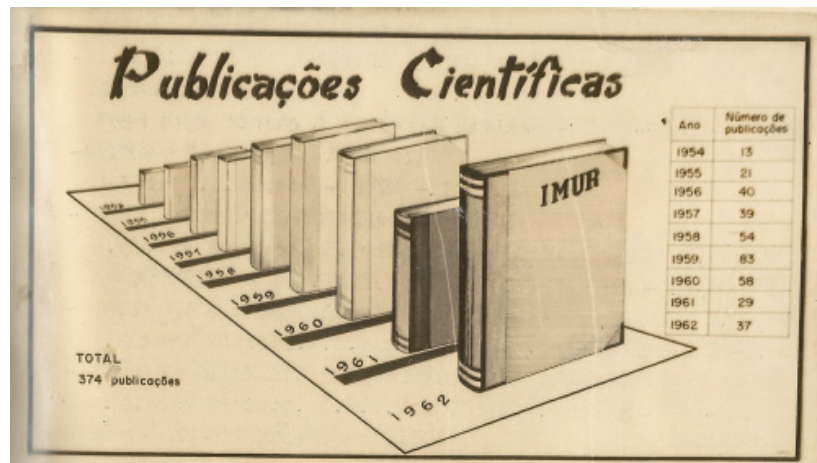
In 1962 Batista pointed out the great difficulties faced by IMUR. The country was going through a period of social conflict resulting in loss of highly trained employees and specialists without proper replacement, budget restraints, resulting in backlogs and overload of services. Despite this turbulent period, with the support of the Rector Prof. João Alfredo Gonçalves da Costa Lima, the Institute remained open and continued its research program. For example, it was still possible to expand research and conduct studies on *Paracoccidioides brasiliensis* (Splend.) F. P. Almeida, an important human parasite in tropical Brazil (Batista 1962).

IMUR still continued to receive researchers from other institutions such as Dr. Djalma Batista, Director of the National Institute for Amazon Research - INPA, who left the following statement during his visit to the Institute (12/05/1962): “*O IMUR constitui um padrão para todas as Instituições Científicas do País. Nasceu do idealismo e da coragem do Prof. A. Chaves Batista e vem se realizando graças ao reflexo desse idealismo e dessa coragem, sobre os pesquisadores que aqui vem trabalhando e se firmando.*”... “*Nesta primeira visita a sede do IMUR vim encontrar a confirmação do que eu já conhecia e sabia. Feliz estou de ver, com os meus olhos, e de sentir, com a alma em festa, esta catedral da ciência e da investigação científica*” (Batista 1962).

Despite of the 1962 crisis, the Institute expanded its facilities by building a pavillion to house the Herbarium, the Culture Collection, and a research laboratory; and in nine years (1954-1962) the IMUR team published 374 papers (Batista 1962) (Figure 3).

In February 2, 1962 the newspaper *Diário de Pernambuco* reported that “Fungi increase the rate of infant mortality in the State”, referring to research performed in IMUR. In May 9, 1962 another newspaper, the *Jornal do Commercio* reported that: “researches of Mycology Institute arouse international interest”. Two months later, on 30/11/1962, the same newspaper highlighted the fact that the Institute of Mycology was to study fungi of French Polynesia (Batista 1962).

Figure 3 - Original representation of the number of IMUR's publications from 1954 to 1962. Picture: Department of Mycology, UFPE.



In 1964 a military coup took over the country, and the government decreed cuts in hiring staff for universities. Despite this unfavourable situation, Herbarium Camille Torrend (Figure 4) and the Culture Collection kept expanding, with the donation of individual collections to IMUR. In addition, the expansion of the Culture Collection's premises guaranteed the preservation of soil fungi that would become standard cultures for UNESCO (Batista 1964).

Figure 4 - C. Torrend mentor of A. C. Batista. On the photo is written: "Ao meu caro amigo e discípulo Augusto Chaves Batista. Pe. Camilo Torrend S. J. Babia. 3-XI-1956" [To my dear friend and disciple A. C. Batista]. Photo: Herbário URM, UFPE.



Still, Prof. Chaves Batista's entrepreneurship led to several agreements with national institutions for studies of soil microbiology, industrial, agricultural, and medical mycology, which went beyond the investment in the IMUR. Commitments made by other Brazilian funding agencies guaranteed partnerships with scientific institutions in Argentina, England, Italy, Japan, and the USA. Besides these, the stratigraphic study of petroleum by mycological means secured investments and partnerships with Poland, India, and the USA (Batista 1964).

The commemoration of 10 year anniversary of the foundation of IMUR (1954-1964) resulted in the 1st Brazilian Colloquium of Mycology which was held in one of the most traditional cultural venues of Recife, the *Teatro do Parque* [Park Theater]. In addition to the scientific program, which brought together researchers from

all over Brazil and some countries in Latin America, a thematic exhibition of the work done at the Institute was included. This exhibition event attracted about 30 thousand visitors.

1965-1967: An innovative and tragic triennium for Mycology

In 1965 the University of Recife, was renamed the Federal University of Pernambuco (UFPE); when Prof. Chaves Batista officially became the Director of IMUR (Batista 1965).

In this year, the Institute intended to continue the microbiological prospecting of Amazonian soils, as well as to raise funds for IMUR so that its activities were not halted and the structure of the Institution was not damaged by the lack of financial resources. To this end Batista undertook an exhaustive fund-raising trip, visiting several Brazilian official institutions in order to secure funds for the implementation of his many research projects. This effort included his appearance for 45 min on the television show hosted by TV Continental in Rio de Janeiro (Batista 1965).

It was at this time that the IMUR was renamed Institute of Mycology of the Federal University of Pernambuco (IMUFP) (Batista 1965). In order to increase the number of qualified professionals, the IMUFP created a fundamental course in Mycology for training of technical staff at the middle and upper levels (Batista 1965). The course, which lasted eight months with a weekly workload of eight hours, was attended by 45 students of the Agronomy and Veterinary Medicine Schools and was conducted in partnership with the Federal Rural University of Pernambuco (UFRPE). A graduate course on soil microbiology was also founded. Its duration was 144 hours, and it was attended by 19 students from different fields (agronomy, natural history, pharmacy, odontology and veterinary medicine). At the end of the course, ten of the students went on to develop activities at IMUFP, with three working on the microbiological prospecting of the soils in the Amazon region and two undertaking a similar study in the semiarid region of the state of Pernambuco (Figure 5).

In 1965, the Institute also focused on soil microbiology, aiming to improve food production. These studies involved several aspects of this scientific area, but the main emphasis continued to be on fungal biodiversity and taxonomy. The publications of the IMUFP, mainly its "Atas" were internationally recognized as important contributions to the study of tropical fungi; strategically sent by mail by Batista to institutions in Brazil and worldwide. The publication was indexed in Biosciences Information Service (BIOSIS) of Biological Abstracts in the USA. The IMUFP then became a member of the Association for Tropical Biology from New York (Batista 1966).

In 1966, the Herbarium, which from this year on was headed by Dr. José Luiz Bezerra, already had about 60,000 fungal exsiccates. The Culture Collection was considered of international merit by UNESCO and maintained direct relations with culture collections in England, Switzerland, The Netherlands, and the USA (Batista 1966).

The national prominence of the work of IMUFP had repercussions not only in the scientific world, but also in the political and social environment. An example of this was the visit of Mr. José Sarney, then governor of the state of Maranhão (1966-1971) and later President of Brazil (1985-1990), who wrote down his comments in the guest book: "*O Instituto de Micologia é uma afirmação do talento brasileiro nesse setor. Penso em termos de futuro que esta nação deverá muito a esta equipe comandada pelo talento e sacrifício do Prof. Batista*".

Figure 5 - A. C. Batista and collaborators in scientific events. A. V National Congress of Agronomy, Recife, 1967. B. I Scientific Research Update Seminar, Recife, 1966. C. I Latin American Symposium of Soil Microbiology, Rio de Janeiro, Brazil, 1967. D-E. XXI National Congress of Botany, João Pessoa, Brazil, 1970. F. XXII National Congress of Botany, São Paulo, Brazil, 1971. G. XXIII National Congress of Botany, Garanhuns, Brazil, 1972. H. VI Brazilian Congress of Microbiology, Salvador, 1975.



Researchers from other countries continued to visit the headquarters of the Institute. Other examples were Prof. Ricardo C. Artagaveytia-Allende (Uruguay) who in 1967 visited IMUFP for the second time, and the Ambassador and the Ambassadors of Senegal in Brazil, Mr. Henri Senghor and Mrs. Renee Senghor (Batista 1967).

The death of Prof. Chaves Batista on 30 November 1967 was national news and several obituaries were published, including, e.g., Carneiro (1968a, b) and Singer (1968). Throughout thirteen years of intense activity and extreme dedication Prof. Augusto Chaves Batista, founder and first Director of IMUFP (Figure 6), guaranteed the historical and scientific presence of a mycological research centre that revolutionized Mycology in Brazil.

The funds raised by Batista before his death through a loan from the Inter-American Development Bank (IDB) were sufficient for the construction of the new IMUFP building. After Prof. Luiz Siqueira Carneiro, in 1971, Prof. José L. Bezerra became Director of IMUFP and his first act was to promote a course in general mycology for IMUFP staff members that later became a specialization course in mycology. In 1973, due to the reform of the Brazilian universities by the Federal Government, the IMUFP became part of Biosciences

Institute of the UFPE designated and treated as Department of Mycology and Biosystematics, and officially the Institute of Mycology ceased to exist.

Figure 6 - Directors and Heads of the Institute of Mycology and currently Department of Mycology, UFPE, Brazil. A. A. C. Batista (founder and first director). B. L. S. Carneiro. C. J. L. Bezerra (2014). D. E. Silva. E. H. S. Maia. F. J. A. Lima. G. W. A. Cavalcanti. H. D. M. M. Lima. I. E. A. L. A. Lima. J. F. C. Neto. L. C. M. Souza-Motta (current head). M. R. P. Neves. Photos: Department of Mycology, UFPE.



1968-2014: historical changes in the Institute of Mycology

In 1974, one of the most important mycologists of our time, Dr. Stanley J. Hughes – Fellow of the Royal Society of Canada and President of the Mycological Society of America – spent two months at Herbarium URM (UFPE) studying Batista's fungi description of sooty moulds. At that time he validated different genera established by Batista and his collaborators (Rossman & Denison 1974, Hughes 1974, J.C. Dianese – personal communication).

To provide continuity for the development and study of Mycology, the Departments of Mycology and Botany of the UFPE, founded a Master in Cryptogams in 1979, which began operating in 1980 under the coordination of Profs. Hasbansh P. Upadhyay (Mycology) and Geraldo Mariz (Botany). The first dissertations were completed in 1984 by Angela Coimbra dos Santos [Fungi in sugarcane soils], Zamir Vidal Negreiros

[Dermatophytes of soils and swimming pool water] and Marilene Ferreira da Silva [Sporulation and pathogenicity of *Cercospora* species]. In the same period, Prof. Maria Auxiliadora, curator of the Culture Collection, through projects funded by the *Financiadora de Estudos e Projetos (FINEP)* and by *Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq)*, managed to restructure some of the services of the Culture Collection. On November 21, 1991 the Department of Mycology was transferred to facilities on the campus of the UFPE (LC Maia in Cabral *et al.* 2006).

In 1995 the Ministry of Education (MEC) accredited the Master in Cryptogams. The following year the course was incorporated into the Master's Course on Fungal Biology linked to the Department of Mycology. Finally, in 1999 a doctoral course in Fungal Biology was created. The first students were selected in the year 2000, under the coordination of Profs. Neiva T. de Oliveira and Leonor C. Maia.

At that time the Department of Mycology moved to a new facility, and had seven research laboratories (Biological Control, Mycorrhizal Fungi, Entomopathogenic Fungi, Medical Mycology, Aquatic Fungi, Fungal Genetics and Cytology, Phytopathogenic Fungi). Professor Leonor C. Maia was appointed Curator of the Herbarium and responsible for the Mycorrhiza Laboratory. Prof. Cristina Maria de Souza Motta was designated curator of the Culture Collection - *Micoteca URM*, a situation that continues to the present day. A molecular biology Laboratory was created in 1997 to complete the departmental structure.

Since 1998 to 1999 several materials of foliicolous lichenized fungi previously studied by Batista and co-workers between 1960 and 1975, and deposited at URM herbarium, were taxonomic revised to verify the validity of several names mentioned as *nomina nuda*. This revision performed by Lücking *et al.* (1998) demonstrated 'that 36 of the 38 validly described genera (=95%) and 56 of the 68 validly published species and varieties (=82%) are either synonyms of previously known taxa. They also may represent non-lichenized or lichenicolous fungi, or they can not be readily identified and remain *nomina dubia*'. Another taxonomic revision performed by Lücking *et al.* (1999) studied '2,800 specimens identified by Batista and his group, belonging to 37 genera and 134 species of foliicolous lichens and/or lichenicolous fungi'. The most part of these materials were collected in the Amazon region in Brazil, totalizing about 9,000 collections, 18,000 specimens and 250 names belonging to 38 genera and 68 new species (Silva & Minter 1995, Lücking *et al.* 1998, 1999).

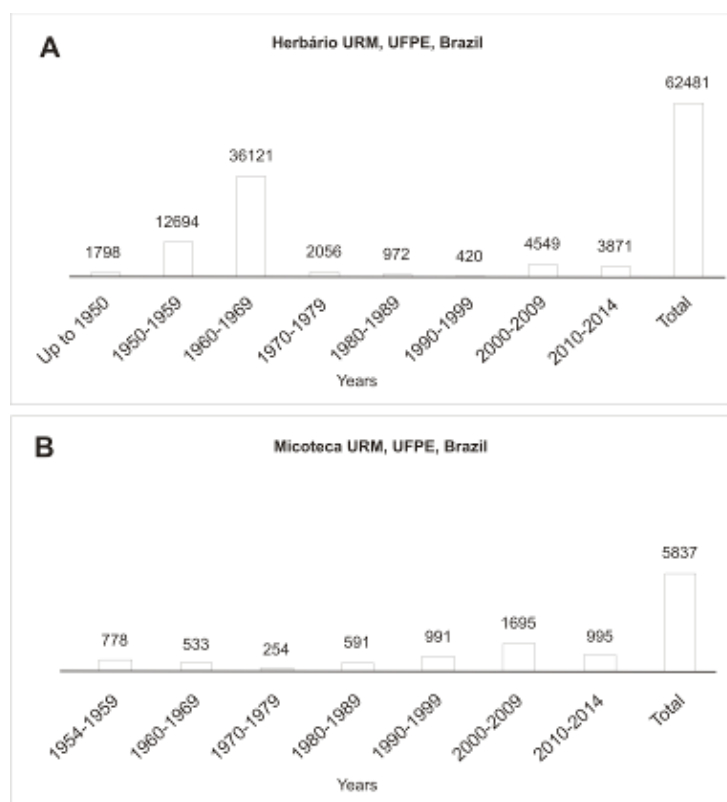
In 2004, under the leadership of Prof. Elza A. de L. A. Lima, the Department celebrated the 50th anniversary of the foundation of the IMUR. The event included the participation of professors and students. The following year, Prof. José L. Bezerra presented a brief history of Prof. Chaves Batista at the 38th Brazilian Congress of Plant Pathology in Brasília-DF, extolling his contribution to Mycology (Bezerra 2005). A similar event occurred in 2000 when Prof. Chaves Batista was honored at the National Week of Science and Technology in Pernambuco in the series *Notáveis Cientistas de Pernambuco* [Distinguished Scientists from Pernambuco].

In 2007, under the presidency of the Prof. Leonor da C. Maia, the Department organized the 5th Brazilian Mycological Congress which took place in Recife and which included the presence of leading mycologists from all over Brazil and other countries. Then, the *Prêmio Augusto Chaves Batista* [Augusto Chaves Batista Prize] for the best scientific work of graduate and post-graduate students was initiated at this event. The prize is still granted at each Brazilian Mycological Congresses.

In 60 years of service to Mycology, the Herbarium and Culture Collection as well as the research laboratories have made significant contributions to the scientific advancement of the country in the field of taxonomy and systematics of fungi (L.C Maia in Cabral *et al.*, 2006). The scientific and historical importance of the Herbarium

and Culture Collection was recognized in 2006 and in 2010, respectively, when the Ministry of Environment-SEPRO of the Brazilian Federal Government accredited as *Instituição Fiel Depositária de Amostras de Componentes do Patrimônio Genético* [National Repository of Standard Genetic Samples]. Currently, the URM Herbarium (<http://inct.florabrasil.net/participantes/herbarios-curadores/urm/>) has a collection of more than 80,000 fungal records and 46,000 exsiccates, and it is considered one of the largest collections of fungi in Latin America. It has contributed extensively to the realization of taxonomic studies by Brazilian and foreign researchers alike. The URM Culture Collection (<https://www.ufpe.br/micoteca/>) preserves about 25,000 specimens of fungi that serve as references for researchers in Brazil and abroad. As well as being a repository and supplier of cultures, it also serves to review and species identification, and to train specialized staff in taxonomy and biotechnology (Figure 7).

Figure 7 - A. Number of specimens collected and deposited in the *Herbário URM* (about 27,000 specimens were not included here). B. Number of cultures deposited in the *Micoteca URM*. UFPE, Brazil.



In 2005 the Post-Graduate Program in Fungal Biology (<https://www.ufpe.br/ppgbf/>) celebrated its 25th anniversary. The moment was marked by a simple commemoration and historical review. At that time the Program had produced 130 Masters and 10 Doctors in Fungal Biology. Besides the scientific contribution, the course stands out as unique in Brazil, considering the exclusivity in the study of the fungi and their relationships, interactions and applications (L.C. Maia in Maia & Yano-Melo, 2006). Currently the program has two major research areas: Basic Mycology (Taxonomy and Ecology of Fungi, Genetics and Cytology of Fungi) and Applied Mycology (Fungi of Medical Interest, Fungi of Industrial Interest and Fungi of Agronomic Interest). Until now about 277 Masters and 75 Doctors in Fungal Biology have graduated from the Program.

Currently, the extension events of the Department include visits from schools and universities to the Department of Mycology and to the Exhibition Room of the Project Reflora/INCT-Virtual Herbarium. In 2009, students of the Graduate Program in Fungal Biology held the First Mycological Meeting of Pernambuco

In 2012 the program was repeated and had an enrolment of nearly one thousand students and researchers from all over Brazil; a similar event was held in 2014. Following the example of Prof. Batista, the Department of Mycology continued celebrating partnerships with researchers from various national and international institutions, including: Marília Noronha Pereira (UNESP, Brazil), Bodo Wanke (Fiocruz, Brazil), Roman Türk (University of Salzburg, Austria), Olga Yano, Sandra Farto Botelho Trufem, Iracema Schoenlein, Jefferson Prado, Carmem Zotarelli, Carlos Bicudo (Institute of Botany of São Paulo, Brazil), James W. Kimbrough (University of Florida, USA), Emmanuël Sérusiaux (University of Liège, Belgium), Robert Lücking (Field Museum of Natural History, Chicago, USA), Eugênia Cristina Gonçalves Pereira (Federal University of Pernambuco, Brazil), Paul Kirk (CMI, U.K.), Leif Ryvardeen (University Oslo, Norway), Nelson Manuel Viana da Silva Lima (University of Minho, Portugal), Cledir Santos (Universidad de La Frontera, Chile), Kevin D. Hyde (School of Science, Thailand), Rafael F. Castañeda Ruiz (Fundamental Research Institute on Tropical Agriculture of Cuba), Clark Ovrebo (University of Central Oklahoma, USA), Mario Rajchenberg (National Scientific and Technical Research Council, Argentina), João Lúcio de Azevedo (University of São Paulo, Brazil), Fritz Oehl (Institute for Sustainability Sciences, Switzerland). These partnerships help to offer students a broader view of Mycology (Figure 8).

Figure 8 - Students and Professors of the Post-Graduate Program in Biology of Fungi (Department of Mycology, UFPE) with visitors in 2000s. A. M. Rajchenberg. B. K. D. Hyde. C. C. Bicudo. D. N. M. V. S. Lima and C. Santos. E. R. F. Castañeda-Ruiz. F. C. Ovrebo. G. F. Oehl. H. I. H. Schoenlein-Crusius. Photos: Department of Mycology, UFPE.



Most papers by Batista and collaborators are now available for free online at the site <http://batista.fungibrasil.net/index> as part of the Re flora Project funded by CNPq; whose main objective is to disseminate data and images of plants and fungi from Brazil kept in national and overseas herbaria. In 2014, besides the celebration of 60 years of Mycology in Pernambuco, it is important to highlight the certification of the *Micoteca URM* based on ISO 9001:2008 with support from the *Fundação de Amparo à Ciência e Tecnologia do Estado de Pernambuco (FACEPE)* which included upgrading its facilities to meet current standards and to increase the quality of services (identification, supply and preservation of fungal cultures) to national and foreign researchers.

On the occasion of the commemorative event special honour were made to those who have dedicated their lives to mycology at UFPE and to the inauguration of the new reformed and expanded facilities. The Culture Collection was named *Micoteca URM Prof. Maria Auxiliadora Cavalcanti* (Figure 9), in honour of somebody who dedicated her life to Brazilian mycology at IMUR (see Souza-Motta *et al.* 2014).

Figure 9. M. A. Q. Cavalcanti honoured by URM Culture Collection – *Micoteca URM Prof. Maria Auxiliadora Cavalcanti*. Photo: *Micoteca URM, UFPE*.



All of these examples, chosen from among many others that happened over six decades, are reflections of the contribution of Prof. Chaves Batista and his team to mycology as seen in the Department of Mycology of the Biological Sciences Centre of the Federal University of Pernambuco, Brazil (Figure 10).

Prof. Augusto Chaves Batista: the greatest Brazilian mycologist

Augusto Chaves Batista was born on June 15, 1916 in Bahia state, Brazil. He studied agronomy in the School of Agriculture, Cruz das Almas, Bahia, where he stood out as a student dedicated to botany and plant pathology. After graduating as a specialist in Plant Pathology and Mycology in December 1937. In 1938 Batista became Chief Agronomist of the *Corporación de Ventas de Salitre y Yodo de Chile* responsible for sales in Rio de Janeiro, Minas Gerais and Espírito Santo states. In 1939 he served as Chief of the Directorate of Production of the State of Mato Grosso (Brazil), and taught physics, chemistry, natural history and physical geography in Salvador, Brazil (1940-1942). He studied an advanced course at the A & M College of Texas (United States) where he was considered to be an excellent student. Returning to Brazil, he joined (1946) the College of Rural

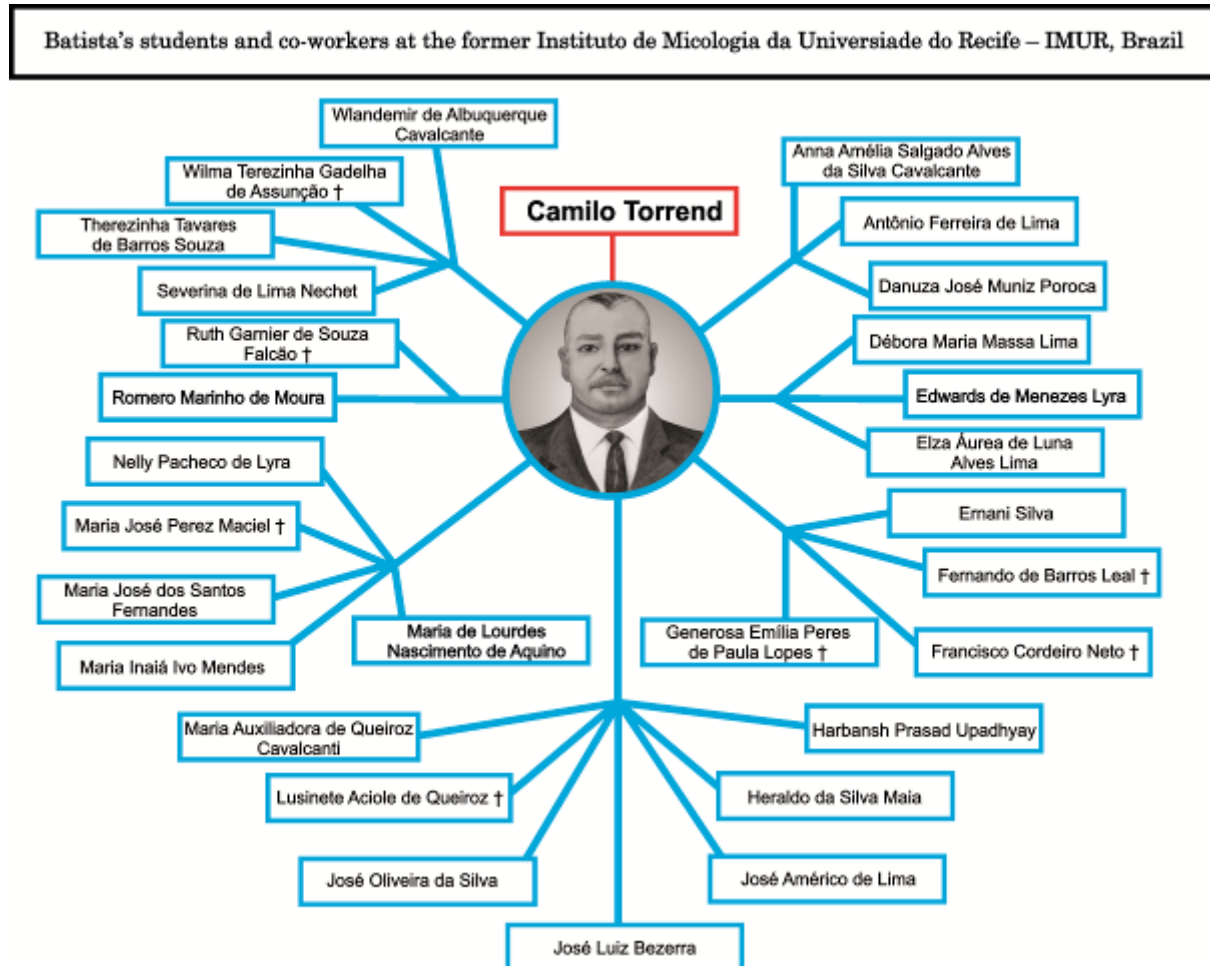
Agriculture at the University of Pernambuco as Professor of Phytopathology and Agricultural Microbiology (now Federal University of Pernambuco). There, he served as head of the Phytopathology Section of the Instituto de Pesquisa Agrônômica de Pernambuco (IPA) [Agricultural Research Institute of Pernambuco] (1946-1949). He studied at the Commonwealth Mycological Institute, London, UK (1950-1951) and as of March 1954 was in charge of supervising the installation and operation of the Department of Mycology, annex to School of Chemistry of Pernambuco at the University of Recife (now Federal University of Pernambuco). From 1956 the department became the Institute of Mycology of the University of Recife (IMUR) of which Batista was the first Director. He died there on November 30, 1967. In 2016 was the 100th anniversary of his birth, and 2017 was the memory of 50y of his death.

Figure 10. Students and Professors of the Post-Graduate Program in Biology of Fungi (Department of Mycology, UFPE) in scientific events, and illustration of the A. C. Batista for occasion of the 60th anniversary of Mycology in Pernambuco, UFPE, Brazil. A. Celebrating 50 years of Mycology in Pernambuco, Recife, 2004. B-H. V Brazilian Congress of Mycology, Recife, 2007. I. A. C. Batista honoured at the *Semana Nacional de Ciência e Tecnologia em Pernambuco* in the series “*Notáveis Cientistas de Pernambuco*” [Notable Scientists of Pernambuco], Recife, 2009. J. VI Brazilian Congress of Mycology, Brasília, 2010. K. 26th Brazilian Congress of Microbiology, Foz do Iguaçu, 2011. L. FERTBIO, Maceió, Brazil, 2012. M. XXI Latin American Congress of Microbiology, Santos, Brazil, 2012. N. 27th Brazilian Congress of Microbiology, Natal, 2013. O-P. VII Brazilian Congress of Mycology, Pará, 2013. Q. VIII Latin American Congress of Mycology, Colombia, 2014. R. 10th International Mycological Congress, Thailand, 2014. S. XIII Argentine Congress of Mycology, Buenos Aires, 2014. T. XXII Latin American Congress of Microbiology, Colombia, 2014. U-V. *Encontro Pernambucano de Micologia (EPEM)*, Recife, 2014. W-X. M. A. Q. Cavalcanti honoured as Professor Emeritus of the UFPE, Recife, 2015. Y. 60th anniversary of Mycology in Pernambuco, Recife, 2014. Z. Illustration of the A. C. Batista (by A. R. Silva). Photos: Department of Mycology, UFPE.



The Figure 11 shows some of Batista's students and/or co-workers at the former *Instituto de Micologia da Universidade do Recife (IMUR)*.

Figure 11. Some Batista's students and/or co-workers at the former *Instituto de Micologia da Universidade do Recife – IMUR* (between 1954 and 1967), Pernambuco state, Brazil.



As a researcher and entrepreneur, he acquired experience attending national and international conferences and made numerous visits to England, France, Switzerland, Italy, Portugal, the United States and almost all Latin American countries, where he had contacts and established partnerships.

By his work he demonstrated that it was possible to carry out high quality science, and overcome difficulties by being selective when setting objectives. Among the many distinctions he obtained the Doctorate *Honoris Causa* from the University of Recife (1954), the Medal of Honor of the University of Pavia, Italy (1956) and the *Prêmio Moimbo Recife* (1965) [Recife Mill Prize]. He was member of sixteen Scientific Societies, in addition to *Première Session Européenne de Mycologie* (Brussels), Brazilian Academy of Sciences and UNESCO.

The number of the Batista's publications is still uncertain to the mycological community. The estimations suggested that his scientific legacy is expressed in almost one thousand articles, but it is not easy to check because some publications are missing and, they have to be found and catalogued. For example, Singer (1967) listed 326 publications between 1937 and 1960, and he pointed that "the final list of his [Batista] achievements, of his publications, of the taxa named for him and the complete data on the work of others inspired by him, will occupy many pages". Twenty eight years later, Silva & Minter (1995) published an important paper named "Fungi from Brazil recorded by Batista and co-workers" and based on all available Batista's publications, they

listed about 5000 names distributed into more than 2500 novelties and more than 2000 other fungi reported in the Brazilian territory or other countries. More recently, Moura & Maia (2013) estimated that the contribution of Batista may be listed as five books and more than 700 papers, which have more than 4600 fungi descriptions, representing 3440 names distributed in more than 1160 genera and about 160 families. On the website <http://batista.fungibrasil.net/index> which has available several papers by Batista are listed 604 publications, and this platform is updated always when is found a known publication. Other databases, such as Index Fungorum and MycoBank, revealed an amount of 2731 names (19 families, 347 genera and 2365 species and varieties) and about 3000 names (20 families, 353 genera, 2447 species and 186 varieties), respectively. It is an example of why Batista is still recognized as the most prominent Brazilian mycologist.

ACKNOWLEDGEMENT

Special thanks to the Head of the Department of Mycology (UFPE) and its professors and functionaries for opening the archives and making available historical documents. Several professors and students have contributed with comments, photographs, histories, and these were essential for the construction of this manuscript. We extend our thanks to the Professors Laise H. C. Andrade, Maria A. Q. Cavalcanti, Elza A. L. Alves, Débora M. M. Lima, Maria J. S. Fernandes, Leonor C. Maia, and Gladstone A. Silva for the suggestions and/or review of the manuscript. We are also very grateful to Maria L. M. Lemos (secretary of the Department of Mycology), L. C. Maia (Curator of Herbário URM), João Oliveira (Herbário URM), Luan A. O. Penna (Micoteca URM) by informative search and/or making available files from the two collections, and to Franz de Assis (MSc.) for the help to organize the figures/graphics. Our thank to P. W. Crous and D. Hawksworth for the incentive to write this paper. We are very grateful to J. C. Dianese for the important suggestions and review of the manuscript, and also to P. Kirk (Index Fungorum) and R. Vincent (MycoBank) which sent some information from these databases. We also want to thank to Anton ten Klooster for the English review. Our gratitude to the Universidade Federal de Pernambuco (UFPE) by providing encouragement and indispensable support given to our activities, and the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES), Financiadora de Estudos e Projetos (FINEP), Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq), and Fundação de Amparo à Ciência e Tecnologia do Estado de Pernambuco (FACEPE) for financial support.

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SUPPLEMENTARY MATERIAL

Video 1: Documentary about the 60th anniversary of Mycology in Pernambuco, UFPE, Brazil (Portuguese). Link: [HTTPS://WWW.YOUTUBE.COM/WATCH?V=IRv5C-CBwKU](https://www.youtube.com/watch?v=IRv5C-CBwKU)

Video 2: Interview with J. L. Bezerra about A. C. Batista and the old Institute of Mycology, UFPE, Brazil (Portuguese). Link: [HTTPS://WWW.YOUTUBE.COM/WATCH?V=xZJAXKLCE9I](https://www.youtube.com/watch?v=xZJAXKLCE9I)

Photos: Celebrating 60 years of Mycology in Pernambuco, UFPE, Brazil (October 2014). Link: <https://www.flickr.com/photos/ascomufpe/sets/72157648132220078>

TIMELINE OF THE INSTITUTE OF MYCOLOGY, UFPE, BRAZIL

1954: Foundation of the Department of Mycology, annex to the Faculty of Chemistry of Pernambuco, University of Recife.

1955: First projects: medical and industrial mycology.

1956: Foundation of the Institute of Mycology of the University of Recife - IMUR.

1957: Internationalization of the scientific research of the IMUR.

1958: A. C. Batista had his photo published in the Gallery of Noted Mycologists (No. 17).

1959: J. L. Bezerra start his work on systematics and physiology of ascomycetes and basidiomycetes. Publication of first cultures catalog of the Micoteca of the IMUR.

1960: R. Singer (Argentina) and J. von Arx (The Netherlands), among other researchers, visit the IMUR.

1961: Microbiological prospecting project of fungi in the Brazilian Amazon soils with investment from INPA. IMUR expands research in areas of medical, agricultural, and economic interest and the training or improvement of technicians and researchers.

1962: Great difficulties faced by the Institute: reflections of social unrest. Investment in infrastructure of the IMUR. Special publication *Breve notícia sobre o Instituto de Micologia* [Brief news about the Institute of Mycology] during the visit of official of the *Escola de Estado Maior e Comando do Exército Brasileiro* [Brazilian Army Command].

1963: A. C. Batista receives the Medal of Merit “*Cidade do Recife*” from the Administration of Recife City.

1964: Special publication in celebration of 10 years of the IMUR.

1965: A. C. Batista receives the “*Prêmio Moinho Recife 1965*”. Effects of the financial crisis and the exhaustive marathon for resources. Approval of the 1st Internal Rules of the Institute. The acronym *IMUR* is replaced by *IMUFP*. Creation of the Fundamental Course in Mycology and of Post-Graduate in Soil Microbiology. M. A. Q. Cavalcanti start her work in the IMUFP.

1966: IMUFP studies issues of productivity of tropical agricultural soils. IMUFP is elected member of the Association for Tropical Biology (New York, USA). Implementation of agreements between several Brazilian institutions.

1967: A. C. Batista gets the title of “*Cidadão do Recife*”. M. A. Q. Cavalcanti is designated by Prof. Batista as head of the Fritz Noack Laboratory for studies of interest of Micoteca of the IMUFP. Death of Prof. A. C. Batista. L. S. Carneiro is appointed as Director *Pro Tempore* of the IMUFP.

1968: Publication of obituaries of the Prof. A. C. Batista in journals *Mycologia*, *Sydonia* and *Mycopathologia et Mycologica Applicata*. L. S. Carneiro is Director of the IMUFP. Physical facilities of Institute of Mycology are transferred to the Campus of UFPE, University City, in a building built with funds obtained by Prof. Batista.

- 1970:** M. A. Q. Cavalcanti is appointed curator of the Micoteca URM.
- 1971:** J. L. Bezerra is appointed as Director of the Institute of Mycology.
- 1972:** First Training Course in General Mycology promoted by IMUFP and coordinated by Prof. R. G. S. Falcão. E. Silva is appointed Director of the Institute of Mycology.
- 1973:** IMUFP IMUR becomes part of Biosciences Institute of UFPE under the name Department of Mycology and Biosystematics.
- 1975:** H. S. Maia becomes head of the Department of Mycology of UFPE. J. L. Bezerra requests resignation from UFPE because of the change to the CEPLAC (Bahia state, Brazil).
- 1977:** The Improvement Course in Mycology begins.
- 1978:** J. A. Lima is appointed Head of the Department of Mycology. Rute Garnier becomes vice head (first mandate).
- 1979:** Foundation of Master's Course in Cryptogams by the Departments of Botany and Mycology of the UFPE under the coordination of H. P. Upadhyay and G. Mariz.
- 1980:** The Master's Course in Cryptogams begins. J. A. Lima is appointed Head of the Department of Mycology (second mandate).
- 1982:** W. A. Cavalcanti is appointed Head of the Department of Mycology and Vice-Head D. M. M. Lima.
- 1983:** IV Improvement Course in Mycology. F. C. Neto, J. Luiz H. Alves and L. H. C. Andrade assume the coordination of the Master's Course in Cryptogams.
- 1984:** D. M. M. Lima is appointed Head of the Department of Mycology and Vice-Head S. T. Barros.
- 1986:** G. Mariz and L. H. C. Andrade assume the coordination of the Master's Course in Cryptogams.
- 1987:** Publication of the 2nd version of the cultures catalogue of the Micoteca URM.
- 1988:** Restructuring of the Micoteca URM with support from FINEP and CNPq. L. H. C. Andrade and D. M. Poroca assume the coordination of the Master's Course in Cryptogams.
- 1990:** E. A. L. A. Lima is appointed Head of the Department of Mycology. VI Improvement Course in Mycology.
- 1991:** Transfer of physical facilities of the Department of Mycology for the building of CCB/UFPE.
- 1992:** M. A. Q. Cavalcanti and C. B. C. B. Chamixaes assume the coordination of the Master's Course in Cryptogams. L. C. Maia is appointed curator of the Herbário URM. Installation of Laboratory of Mycorrhiza.
- 1994:** F. C. Neto is appointed Head of the Department of Mycology. Restart of the Improvement Course in Mycology as Specialization Course in Mycology.
- 1995:** Ministry of Education (MEC) accredits the Master's Course in Cryptogams.

1996: Master's Course in Cryptogams becomes Master's Course in Biology of Fungi. Publication of the 3rd version of cultures catalog of the Micoteca URM.

1997: First selection of candidates for the Master's Course in Biology of Fungi. Installation of Laboratory of Molecular Biology. M. A. Q. Cavalcanti and N. T. Oliveira assume the coordination of the Master's Course in Biology of Fungi.

1998: Request to CAPES for deployment of Doctoral level to the Master's Course in Biology of Fungi.

1999: CAPES approves the creation of Doctoral course that with the Master course come to be called the Post-Graduate Program in Biology of Fungi (PPG-BF). N. T. Oliveira and L. C. Maia are appointed to coordinate the PPG-BF.

2000: First selection of candidates for the Post-Graduate Program in Biology of Fungi. C. M. Souza-Motta is appointed curator of the Micoteca URM.

2003: Implementation of the project *Diversidade de fungos no Centro de Endemismo de Pernambuco* [Fungal Diversity in Endemism Center of Pernambuco]. Partnership with the University of Chiba (Japan) for morphological and molecular characterization of dermatophyte fungi deposited in Micoteca URM.

2004: Celebrating 50 years of creation of the Institute of Mycology.

2005: Partnerships for the implementation of *Rede de Coleções de Culturas de Micro-organismos do Norte e Nordeste do Brasil* (RENNEBRA) [Network of Microorganisms Culture Collections]. Partnerships in *Programa de Biodiversidade do Semiárido para estudo de fungos* (PPBIO) [Biodiversity Program of Semi-arid to the study of fungi]. J. L. Bezerra presents brief history of Prof. Chaves Batista at the 38th Brazilian Congress of Plant Pathology in Brasília. L. C. Maia and N. B. Gusmão assume the coordination of the PPG-BF.

2006: Herbário URM is accredited by the MMA-SEPRO [Brazilian Government] as *Fiel Depositário de Amostras de Componentes do Patrimônio Genético Nacional* [Depository of Components of the National Genetic Heritage].

2007: C. M. Souza-Motta and N. T. Oliveira assume the Headship of the Department of Mycology. Department of Mycology organizes the 5th Brazilian Congress of Mycology, under the presidency of L. C. Maia.

2008: Death of mycologist L. A. Queiroz. Online availability of information about Micoteca URM and publication of the 1st virtual catalog. Beginning of the project for creation of the *Instituto Nacional de Ciência e Tecnologia (INCT) Herbário Virtual de Plantas e Fungos do Brasil* [National Institute of Science and Technology (INCT) Virtual Herbarium of Plants and Fungi of Brazil], supported by CNPq. Partnerships to implement the *Espaço Biodiversidade: uma nova oportunidade para difusão e popularização das Ciências Biológicas* [Biodiversity Space: a new opportunity for dissemination and popularization of Biological Sciences]. Project for review and maintenance of the collection of the Herbário URM Pe. Camille Torrend.

2009: A. C. Batista is honored at the *Semana Nacional de Ciência e Tecnologia em Pernambuco* in the series "Notáveis Cientistas de Pernambuco" [Notable Scientists of Pernambuco]. Students of the Post-Graduate Program in Biology of Fungi perform the *I Encontro Pernambucano de Micologia* [First Meeting of Mycology]. Project to integrate

herbaria of Pernambuco state in *Herbário Virtual de Plantas e Fungos de Pernambuco: uma proposta integradora* [Virtual Herbarium of Plants and Fungi of Pernambuco], funded by FACEPE. Implementation of service of the Micoteca URM under management of *Fundação de Apoio ao Desenvolvimento da Universidade Federal de Pernambuco* (Fad-UFPE).

2010: Micoteca URM is accredited by the MMA-SEPRO [Brazilian Government] as *Fiel Depositária de Amostras de Componentes do Patrimônio Genético Nacional* [Depository of Components of the National Genetic Heritage]. Participation in the *Programa de Pesquisa em Biodiversidade do Semiárido (PPBIO/Semiárido)* [Research Program in Biodiversity Semi-arid]. Participation in the project *Ampliação do Conhecimento sobre as Plantas e Fungos do Brasil (Sisbiota)* [Knowledge Expansion about Plants and Fungi of Brazil]. Participation in the project for of staff in taxonomy and diversity of fungi Glomeromycota and “Zygomycota” (*Protax*). Participation in the project for *Ampliação, integração e disseminação digital de dados repatriados da flora brasileira (Reflora)* [Enhancing, integration and dissemination of digital data of Brazilian flora]. Signed exchange with the University of Minho (Portugal). R. P. Neves and N. T. Oliveira assume the Headship of the Department of Mycology.

2011: Participation in the Project *Diagnóstico micológico em áreas nativas e antropizadas no Parque Nacional do Catimbau, Pernambuco, Brasil* [Mycological diagnosis in native and disturbed areas in National Park].

2012: Students of the Post-Graduate Program in Biology of Fungi perform the *II Encontro Pernambucano de Micologia - Oxente, aqui se faz Micologia, visse?!* [Second Meeting of Mycology]. Extension Project *Micologia na escola: o grande reino dos fungos* to encourage visitation of Department by students from public and private schools and dissemination of Mycology. Signed project of scientific cooperation with the University of Torino (Italy).

2013: Inauguration of *Sala de Exposição dos Projetos Reflora/INCT – Herbário Virtual* [Virtual Herbarium]. Project to optimize the infrastructure of the Herbário URM. Start of implementation management system for *Centros de Recursos Biológicos (CRB)* [Biological Resource Centres] and associated standards in the Micoteca URM, with support from FINEP.

2014: C. M. Souza-Motta and N. T. Oliveira reassume the Headship of the Department of Mycology. Micoteca URM is certified according to ISO 9001:2008 from the project with support from FACEPE and has retrofitted facilities to meet current requirements, with support from UFPE. Celebrating 60 years of Mycology in Pernambuco. Students of the Post-Graduate Program in Biology of Fungi perform the *III Encontro Pernambucano de Micologia – Oxente, há 60 anos aqui se faz Micologia, visse?!* [Third Meeting of Mycology].