

Newsletter of the Mycological Society of America

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— Important Dates —

February 15 Deadline:
Inoculum 58(2)

February 15, 2007
Deadline date for nominations and applications for the MSA AWARDS of 2007

March 30, 2007
Deadline date for Abstracts and Registration for the MSA 2007 meeting

August 4-9, 2007:
MSA Meeting
Louisiana State University
Baton Rouge, Louisiana

Please send the editor notices about upcoming important events.

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Why Are Phytophthora and Other Oomycota Not True Fungi?

By Amy Y. Rossman and Mary E. Palm

Introduction. Plant diseases result in billions of dollars in damage to agricultural crops each year. One of the groups of organisms that cause many serious plant diseases has long been known as the Oomycota or oomycetes, traditionally classified in the phycomycetes or "lower fungi." The phycomycetes are an informal group that, in addition to the Oomycota, have historically included such diverse fungi as the slime molds, chytrids, zygomycetes or bread molds, and arbuscular mycorrhizae. The "higher fungi" have included the ascomycetes or sac fungi such as the discomycetes, (e.g. morels), pyrenomycetes, (including the cause of chestnut blight), deuteromycetes or imperfect fungi, and yeasts; and the basidiomycetes with the rust fungi, smut fungi, mushrooms, gasteromycetes, polypores, and jelly fungi. Over the past three decades knowledge about relationships among groups of fungi has increased greatly such that many of the traditional groupings based on morphology no longer reflect their phylogenetic relationships.

The Oomycota or Peronosporomycota consist of more than 800 species that may be saprobic or parasitic on terrestrial or aquatic plants

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Fig. 1. Oogonium with a solitary oospore of *Phytophthora kernoviae*.

and animals. One member of the Oomycota has greatly influenced history, namely *Phytophthora infestans*, the cause of late blight of potatoes. As a result of the famine in Ireland caused by this disease, about 1 million people died and another 1.5 million emigrated (Alexopoulos, *et al.* 1997). A number of other diseases are caused by species of *Phytophthora* including sudden oak death and ramorum blight caused by *P. ramorum*, and cacao black pod caused by *P. megakarya*. Other members of the group include species in the genus *Pythium*, such as *Pythium aphanidermatum*, cause of cottony blight of turf grasses, and downy mildews in the Peronosporales such as *Peronospora tabacina*, tobacco blue mold, *Plasmopara viticola*, downy mildew of grape, and *P. halstedii*, cause of sunflower downy mildew, and many others. Finally, a group traditionally placed in the oomycetes is the Saprolegniales or water moulds that cause diseases of fish and other aquatic vertebrates.

Characteristics of the Oomycota. The Oomycota have long been considered fungi because they obtain their nutrients via absorption and many of them produce the filamentous threads known as mycelium characteristic of many fungi. The Oomycota now are classified as a distinct group allied with the lower fungi based on a number of unique characteristics (Table 1). All members of the Oomycota undergo oogamous reproduction, meaning diploid oospores are produced as zygotes following fertilization of haploid oospheres by haploid gametes. These oospores may be large and solitary or smaller and numerous inside the oogonium (Fig. 1). None of the true Fungi produce oospores. Another distinction is the cell wall composition. In the Oomycota, the cell walls are composed of beta glucans and cellulose rather than chitin as in the true Fungi. In addition the Oomycota produce motile zoospores with two kinds of flagella, one of which is a whiplash flagellum oriented posteriorly while the other has a fibrous, ciliated structure and is oriented anteriorly. The occurrence of two kinds of flagella is referred to as being heterokont. Although some true Fungi, namely the Chytridiomycota, produce stages with motile zoospores, their flagella are only of one kind, the posterior whiplash type. A fourth major difference between the Oomycota and the true Fungi is that, in the Oomycota, the vegetative cells generally consist of hyphae without septa called coenocytic hyphae that contain diploid nuclei, i.e. the organism exists primarily in a diploid state. This is unlike the true Fungi in which most of the mycelium is septate and contains haploid nuclei or cells may be dikaryotic with two or more haploid nuclei. Some members of the

Table 1. Major distinctions between the Oomycota in the Chromista and the true Fungi (Chytridiomycota, Glomeromycota, Zygomycota, Ascomycota, Basidiomycota)		
Character	Oomycota	True Fungi
Sexual reproduction	Heterogametangia. Fertilization of oospheres by nuclei from antheridia forming oospores.	Oospores not produced; sexual reproduction results in zygospores, ascospores or basidiospores
Nuclear state of vegetative mycelium	Diploid	Haploid or dikaryotic
Cell wall composition	Beta glucans, cellulose	Chitin, cellulose rarely present
Type of flagella on zoospores, if produced	Heterokont, of two types, one whiplash directed posteriorly, the other fibrous, ciliated directed anteriorly	If flagellum produced, usually of only one posterior whiplash type
Mitochondria	With tubular cristae	With flattened cristae

Oomycota produce unicellular thalli, as do some kinds of true Fungi.

With the development of the transmission electron microscope (TEM) in the late '70s, differences in ultrastructural characteristics were noted between the Oomycota and true Fungi. Some of these include having mitochondria with tubular cristae and protoplasmic- and nuclear-associated microtubules in the Oomycota while the true Fungi have flattened mitochondrial cristae. As more groups of organisms were examined using the TEM a relationship was hypothesized between the Oomycota and the heterokont algae (Table 1). This was the first modern evidence that the Oomycota should be regarded as "colorless" algae rather than true Fungi. Interestingly, as noted in Alexopoulos *et al.*, 1997, about 150 years ago Pringsheim (1858) suggested, in reference to the Saprolegniales [water moulds], that the oomycetes "were allied with certain algae."

Relationships of the Oomycota based on Molecular Results. As new tools for determining phylogenetic relationships were developed, especially those using molecular sequence data, they have been applied to questions such as whether the Oomycota are more closely related to the heterokont algae or the true Fungi.

Determining relationships using DNA sequence data is based on comparing sequence similarities in gene regions such as small or large subunits of the nuclear ribosomal DNA. Each base pair is regarded as a character and the sequence of base pairs is aligned such that analogous characters are compared. Mathematical algorithms running on powerful computers are used to analyze changes among the thousands of base pairs of gene regions. By determining how many changes have occurred between different groups of organisms, it is possible to estimate relative distance among groups and to develop an evolutionary tree that reflects those relationships.

Results from a number of studies using molecular sequence data combined with the ultrastructural similarities

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confirm unequivocally that the Oomycota share a common ancestor with the other members of the heterokont algae or Chromista. In addition to the Oomycota, two smaller groups, the Hyphochytridiomycota and Labyrinthulomycota appear to be most closely related to the Chromista. The Chromista include several kinds of algae, namely the Phaeophyta or brown algae, Xanthophyta or yellow-green algae, Chrysophyta or golden algae, and Bacillariophyta or diatoms as well as several smaller groups. The heterokont algae are distinctive among the algae in having the same two kinds of flagella as occur in the Oomycota, tubular mitochondrial cristae and other ultrastructural similarities. The photosynthetic members of the Chromista possess chlorophyll c and other pigments that are not found in any other group. Some controversy still remains about exactly what to call this group of organisms. Most authors refer to the kingdom Chromista, phylum Heterokonta, while others place them in the kingdom Straminopila (Patterson & Sogin, 1992).

True Fungi or Eumycota. The true Fungi or Eumycota are now restricted to five major groups, each of which is regarded as a phylum in the Kingdom Fungi. One of these groups is the Chytridiomycota or chytrids. In some ways the chytrids are similar to the Saprolegniales in the Oomycota in that they are regarded as water moulds. They attack small-celled organisms and debris in aquatic environments. Another group of true Fungi is the Zygomycota or zygomycetes that include the bread moulds, Mucorales. The arbuscular mycorrhizae were once regarded as part of the Zygomycota because they produce what appear to be zygospores. Molecular data have shown that these root-associated fungi are quite distinct and should be regarded as their own phylum, the Glomeromycota. These fungi are ancient in origin known from the fossil record to be associated with primitive land plants from the Devonian (Remy *et al.*, 1994). The largest and most well known of the true Fungi are the Ascomycota or ascomycetes and the Basidiomycota or basidiomycetes. The Ascomycota include most of the lichenized fungi, yeast fungi, morels, cup fungi, and many kinds of microfungi such as pyrenomycetes and their asexual states, also referred to as mitotic or anamorphic states. In the past these have been variously referred to as asexual fungi, deuteromycetes or fungi imperfecti. These asexually reproducing ascomycetes include the hyphomycetes and coelomycetes many of which can now be placed among their relatives in the Ascomycota. The Basidiomycota or basidiomycetes include the rust and smut fungi most of which are obligate plant pathogens. Mushrooms, gasteromycetes, jelly fungi and polypores are also members of the Basidiomycota. A recent noteworthy discovery is that the true Fungi are more closely related to animals than to plants (Baldauf & Palmer, 1993; Wainright *et al.*, 1993), thus explaining why it is so difficult to

develop antibiotics that are effective against human fungal pathogens without deleterious effects on the humans.

The Remaining non-Fungi. A few other groups of organisms previously regarded as fungi are now known to belong outside the true Fungi. The Plasmodiophoromycota including *Plasmodiophora brassicae*, cause of cabbage club root, have proven difficult to place in the tree of life but they are not related to the true Fungi. Some evidence suggests that they too share a common ancestor with the Chromista but this is not conclusive. For some years it has been known that the Myxomycota or true slime molds, Dictyosteliomycota or dictyostelid cellular slime molds and Acrasiomycota or acrasid cellular slime molds are not related to the true Fungi. Recent studies suggest that the Myxomycota represent an independent evolutionary lineage that diverged prior to the "crown" groups of organisms that includes the Fungi, Animalia, Plantae, Chromista and Alveolates (Rhodophyta).

Conclusion. Most mycologists have not abandoned the study of the Oomycota and still define the organisms they study "as eukaryotic heterotrophic osmotrophs in which assimilation takes place through a cell wall" (Dick, 1997). Adaptions of these organisms to obtaining their nutrients by absorption has resulted in considerable morphological convergence among them as exemplified by the similarity of the oomycetous white rusts to the uredinia of the some true rust Fungi. Understanding the evolutionary relationships among these groups of organisms contributes greatly to our ability to develop strategies to control the diseases these organisms cause.

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MSA BUSINESS

From the President's Corner . . .

Dear colleagues,

The "Deep Hypha" issue of *Mycologia* should be in your hands soon! Congratulations to the editors and all the authors for creating this seminal compilation on fungal phylogeny.

Plans for our meeting at LSU (5-9 August; foray on 4 August) are developing well thanks to the hard work of Gerry Adams, the other members of the Program Committee, and Meredith Blackwell (Local Arrangements). Great ideas for symposia are coming from council members, MSA committees, and others. However, it is not too late for your input – so send your ideas to Gerry. The 2007 MSA Meeting is going to be a terrific venue to learn and interact with old friends and new colleagues. I hope that you are planning to participate in what should be an outstanding conference.

As has been amply documented, we live in a global society – the economy, world events, music, food, and sports, even MYCOLOGY. At last count, MSA's membership included scientists and students from over 40 countries! Over the past couple of years, we've had joint meetings with the British Mycological Association (Asilomar) and Japanese Mycological Society (Hilo), and we are hoping to attract a large contingent of mycologists from Latin America at this year's meeting. The MSA has also played important roles in helping sponsor activities at International Mycological Congresses. However, we need to continue to enhance our programs so that we attract and better serve international members as well as facilitate building



Gregory Mueller, President

mycological research and awareness throughout the world. New initiatives include investigating ways to facilitate participation by international members in our meetings and fostering better electronic communication through our website, special blast emails, and on-line publication of *Inoculum*. We are also increasing access to *Mycologia* by decreasing the time before making issues available to non-members via on-line journal stores and by participating in several international initiatives (*AGORA*, www.aginternetwork.org/en/about.php and *Cyberliber*, www.cybertruffle.org.uk/cyberliber/) which will make the content in *Mycologia* available to scientists in developing countries that can not afford subscriptions to MSA or to on-line journal stores like JSTOR. Please send your ideas on how we can increase our service to the international mycologi-

cal community and increase their participation in MSA to our International Committee members, Joanne Taylor (Chair), Julieta Carranza, David Minter, and Omon Isikhuemhen.

Lastly, we are going totally electronic with this issue of *Inoculum*. Paper copies are available for people who do not have email; all others will only receive the electronic version. There are a number of reasons for this change. First and foremost is that much of the data in *Inoculum* are time sensitive, so rapid communication is essential. Another reason is that the society will save a considerable amount of money that can be used for other initiatives by not paying for printing.

I wish you all a very happy and successful 2007!

MSA Secretary's Email Express

MSA Council has completed three email polls since my last report, approving the following:

- MSA Full Council poll 2006b-1: Editor-in-Chief Donald Natvig nominates **Peter Letcher** to serve as *Mycologia* Associate Editor for the term 2007-2009. *Approved.*
- MSA Full Council poll 2006b-2: Editor-in-Chief Donald Natvig nominates **Steve Harris** to serve as *Mycologia* Associate Editor for the term 2007-2009. *Approved.*
- MSA Full Council poll 2006b-3: Editor-in-Chief Donald Natvig nominates **Kerry O'Donnell** to serve on the Editorial Advisory Committee for 2006-2011. *Approved.*

New Members: It is my pleasure to extend a warm welcome to the following new (or returning) members. New memberships will be formally approved by the Society at the Annual Business Meeting in Baton Rouge in August 2007.

- *Australia:* **Anthony Francis**
- *United States:* **Rafael de la Vega**, and **Christopher Crabtree**

Emeritus candidates: There have been no applications for emeritus status. Emeritus status is conferred upon retired or retiring members who have at least 15 years good standing with the Society.

MSA Membership Renewal: If you have not yet renewed your membership, please do so as soon as possible. On-line renewal is fast and easy, and prompt renewal saves the Society money!

MSA Directory Update: Is your information up-to-date in the MSA directory? To ensure that you receive Society blast emails, and so that your colleagues can keep in touch, please check the accuracy of your email address and contact information in the online directory. This can be accessed via our web site at www.msafungi.org.

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MSA BUSINESS

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Ecology

Jon Polishook, *Chair* (2003-2007)
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Environmental Health & Medical Mycology

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Bradley R Kropp (2006-2010)
brkropp@cc.usu.edu
Tobin Peever, *ex-officio, Past-Chair*
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Annual Meeting Committees

MSA 2007 Local Arrangements

Meredith Blackwell
mblackwell@lsu.edu

MSA 2008 Local Arrangements

David Geiser
dgeiser@psu.edu

MSA 2009 Local Arrangements

Bradley R Kropp
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Foray Coordinator

Donald Ruch (2006-2007),
Annual Foray Coordinator
druch@bsu.edu

Continued on following page

MSA BUSINESS

Affiliates and Assignments – Representatives

American Association for the Advancement of Science (Committee of Section G: Biology)

Joseph F. Bischoff (2006-2009)
bischoff@ncbi.nlm.nih.gov

American Institute of Biological Sciences

Stephen A. Rehner (2006-2009)
rehners@ba.ars.usda.gov

American Mushroom Institute

Richard W Kerrigan (2006-2009)
rwk@sylvaninc.com

American Type Culture Collection

Priscilla Chaverri (2006-2009)
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International Mycological Association

John Taylor (2004-2007)
jtaylor@socrates.berkeley.edu

International Union of Microbiological Societies (US National Committee)

Linda Kohn (2006-2009)
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Natural Sciences Collections Alliance

Gerard Adams (2006-2009)
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Affiliated Mycological Societies – Regional

Boston Mycological Club (BMC)
Illinois Mycological Association (IMA)
Oregon Mycological Society (OMS)

Allied / Sister Mycological Societies – National & International

African Mycological Association
Australasian Mycological Society
British Mycological Society (BMS)
Latin American Mycological Society (ALM)
Mycological Society of China (MSC)
Mycological Society of Japan (MSJ)
North American Mycological Association (NAMA)

Honorary Societies & Institutes

British Mycological Society
Centraalbureau voor Schimmelcultures
(CBS) 2004
Mycological Society of Japan 2005

Special Assignments & Appointments

Awards Coordinator

Faye Murrin
fmurrin@mun.ca

Historian

Donald Pfister
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Joint Commission on Common Names

(msa+nama = JOINT appointments; msa =
MSA only; nama = NAMA only)
Scott Redhead, Chair (2001-2006)msa+nama
redheads@agr.gc.ca

Lorelei Norvell (2001-2006)msa+nama

LLNorvell@pnw-ms.com
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Liaison for Society Incorporation

Lafayette Frederick
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Memorials Publications Committee

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Donald Natvig, Mycologia Editor-in-Chief
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Richard Baird, ex officio, Inoculum Editor
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M Catherine Aime, ex officia, Secretary
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Public Policy Officers

Meredith Blackwell (2004-2007)
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George Carroll (2004-2007)
gcarroll@oregon.uoregon.edu

MSA Awards 2007 – Call for Awards and Applications (Deadline Feb. 15)

Please also visit the MSA website at www.msafungi.org and follow the link to Awards. For lists of members of the Awards Committees and further contact information see the Roster in this edition of Inoculum.

For over 20 years the **Mycological Society of America** has been recognizing excellence in research, teaching and service among its membership by celebrating **Students, Teachers and Researchers**. This is your chance to do something for that promising student or distinguished mycologist. If you don't nominate them, they will surely not receive an award!

MSA Awards Committees 2006-2007

Mycological Society Distinctions Committee

Awards administered: *Distinguished Mycologist Award, Alexopoulos Prize, Weston Award for Excellence in Teaching*

Chair: **Dr. Georgiana May**, Dept. Ecology, Evolution and Behavior, 1987 Upper Buford Circle, U. Minnesota, St. Paul, MN 55108; Phone: (612) 624-6737, Email: gmay@umn.edu Members: Mary Berbee, berbee@unixg.ubc.ca; James Kimbrough, jwk@mail.ifas.ufl.edu; Nick Read, nick.read@ed.ac.uk; Joseph W Spatafora, spatfoj@science.oregonstate.edu; Scott Redhead ex officio, Past Chair

Honorary Awards Committee

Awards administered: *MSA Fellows, Honorary Members*
Chair: **Dr. Carol A Shearer**, Rm 265 Morrill Hall, 505 S Goodwin, Dept of Plant Biology, University of Illinois, Urbana, IL 61801, US; Office Phone: (217) 333-2796; Fax : (217)244-7246, Email: carol-she@uiuc.edu Members: Dave McLaughlin, davem@tc.umn.edu; Martha J Powell, mpowell@biology.as.ua.edu; John W Taylor, ex officio, Past Chair

Student Awards Committee

Awards administered: *MSA Graduate Fellowships, Memorial NAMA Fellowship, Backus Award*

Chair: **Dr. Lori M. Carris**, Dept of Plant Pathology, Washington State Univ, PO Box 646430, Pullman, WA 99164-6430, United States. Office Phone: (509)335-3733, Fax: (509)335-9581, Email: carris@mail.wsu.edu Members: Jinx Campbell, jinx.campbell@usm.edu; Jean Marc Moncalvo, jeanmarc@rom.on.ca; Andrew Methven, as-methven@eiu.edu; François Lutzoni, ex officio, Past Chair

Mentor Student Travel Awards Committee

Awards administered: *Mentor Student Travel Awards*

Chair: **Dr. Steven Harris**, Plant Science Initiative, N234 Beadle Center, University of Nebraska, Lincoln, NE 68588-0660, USA; Office Phone: (402) 472-2938; Fax : (402)472-3139; Email: Sharril@unlnotes.unl.edu Members: Elizabeth Frieders, frieders@uwplatt.edu; Josef Geml, jgeml@iab.alaska.edu; Juan L Mata jmata@usouthal.edu; Andrea Gargas ex-officia, Past Chair

Research Awards Committee

Awards administered: *Martin-Baker Award, Clark T. Rogerson Student Research Award, Forest Fungal Ecology Research Award, Alexander H. and Helen V. Smith Research Award*

Chair: **Dr. Iris Charvat**, 250 Biological Sciences Center, Univ of Minnesota, 1445 Gortner Ave, St. Paul, MN 55108, USA; Office Phone: (612)625-3199; Fax : (612)625-1738; Email: charv001@tc.umn.edu Members: Terry Hill, hill@rhodes.edu; Gary Warren, gwarren@nrca.gc.ca; Michelle Seidl, seidl@comcast.net; Thorsten Lumbsch, tlumbsch@field-museum.org; Nancy Weber, ex officia, Past Chair

Continued on following page

MSA BUSINESS

Distinguished Mycologist Award

Awarded annually to an individual who has established an outstanding mycological career. This is one of the highest awards bestowed by the MSA and marks a distinguished career. Nominees for the award will be evaluated on the basis of quality, originality, and quantity of their published research, and on the basis of service to the MSA or to the field of mycology in general.

Application Deadline: 15th February

Requirements:

- (1) The nominee must be a current member of MSA or eligible for emeritus membership.
- (2) The nominee must have received his or her terminal degree at least twenty years prior to January 1 of the year in which the award is given. There is no requirement for a minimum age or impending or actual retirement. Honorary degrees shall not be considered in determining the time interval.
- (3) An individual may receive the Distinguished Mycologist Award only once.
- (4) Self nomination is not allowed.
- (5) Nominators must be members of the MSA.
- (6) Nominees who are not chosen for the award in the year in which they are nominated will be reconsidered for up to two additional years. The Distinctions Committee Chairperson will request updates of the nominee's materials.

Documents required: The nomination folder should contain:

- (1) A nominating letter, including a detailed evaluation of the nominee's outstanding contributions to Mycology.
- (2) A current curriculum vitae, including a list of the nominee's publications.
- (3) Up to five additional letters of support.

To Apply: The nominator should a) prepare a single electronic file, preferably in pdf format, containing all of the items listed above and email it as an attachment; or b) prepare as much as possible electronically in one email with attachments followed by FAX or hard copy of the non-electronic portions; and send all to the **Chair of the MSA Distinctions Committee**.

Note: The Chair of the Distinctions Committee will appoint ad hoc committee members in place of committee members whose major professor may be nominated for the award. The committee may choose to make more than one award or no award in a given year, if it is appropriate. Presentation of the award, a plaque, will take place at the awards ceremony at the annual meeting of the MSA. The recipient will be notified in time to plan to attend the presentation. The name of the winner of the award will be published in *Inoculum*.

Alexopoulos Prize

Awarded annually to an outstanding mycologist early in their career. The nominees will be evaluated primarily on the basis of quality, originality, and quantity of their published work.

Application deadline: 15th February

Requirements:

- (1) The nominee must be a current member of the MSA.
- (2) Nominees must have received their last degree within the ten year period immediately preceding January 1st of the year in which the award is given.
- (3) An individual may receive the Alexopoulos Award only once.
- (4) Self nomination is not allowed.
- (5) Nominators must be members of the MSA.
- (6) Nominees who are not chosen for the prize in the year in which they are nominated will be reconsidered for up to two additional years (within the 10-year limit). The Distinctions Committee Chairperson will request updates of the nominee's materials.

Documents required: The nomination folder should contain:

- (1) A nominating letter, including a detailed evaluation of the nomi-

nee's contributions to Mycology.

- (2) A current curriculum vitae, including a list of the nominee's publications.
- (3) Reprints of the nominee's 5 most significant papers.
- (4) Up to five additional letters of support.

Apply to: The nominator should a) prepare a single electronic file, preferably in pdf format, containing all of the items listed above and email it as an attachment; or b) prepare as much as possible electronically in one email with attachments followed by FAX or hard copy of the non-electronic portions; and send all to the **Chair of the MSA Distinctions Committee**. Reprints should be sent as separate attachments along with the pdf file or, if not available electronically, copies should be mailed separately to each of the five member of the Distinctions Committee.

Note: The award consists of a plaque and a monetary award derived from the annual interest on the principle deposited in the MSA Alexopoulos Fund. The committee may choose to make no award in a given year, if it is appropriate. Presentation of the award will take place at the awards ceremony at the annual meeting of the MSA. The recipient will be notified in time to plan to attend the presentation. The name of the winner of the award will be published in *Inoculum*.

William H. Weston Award for Excellence in Teaching

Awarded annually to an outstanding teacher of mycology at the undergraduate and or graduate levels.

Application deadline: 15th February

Requirements:

- (1) The nominee must be a current member of the MSA.
- (2) An individual may receive the Weston Award only once.
- (3) Self nomination is not allowed.
- (4) Nominators must be members of the MSA.
- (5) Nominees who are not chosen for the prize in the year in which they are nominated will be reconsidered for up to two additional years. The Distinctions Committee Chairperson will request updates of the nominee's materials.

Documents required: The nomination folder should contain:

- (1) A current curriculum vitae, including lists of a) courses taught in mycology, plant pathology or related areas, b) publications related to the teaching of mycology, c) teaching seminars, symposia or workshops given by the nominee to either lay or academic groups and, d) memberships on national, regional, state or local committees, panels, etc., on teaching.
- (2) A list of graduate students with thesis titles, degrees and dates, publications, and current addresses (where known), or explanation for the absence of such.
- (3) A statement from the nominee on teaching philosophy, i.e., what the nominee personally believes it takes to make an excellent teacher, what the nominee is trying to accomplish in teaching mycology, and how various teaching techniques and strategies help to accomplish this goal.
- (4) A list of previous awards or recognition for outstanding teaching.
- (5) Evaluation of the nominee's teaching, including a) solicited and unsolicited letters from students and colleagues who have taken or audited the nominee's courses, or been supervised by the nominee, b) course evaluation forms (or numerical summaries thereof) and c) any other information documenting teaching excellence.

Apply to: The nominator should a) prepare a single electronic file, preferably in pdf format, containing all of the items listed above and email it as an attachment; or b) prepare as much as possible electronically in one email with attachments followed by FAX or hard copy of the non-electronic portions; and send all to the **Chair of the MSA Distinctions Committee**. If not available electronically, supplemental material should be mailed separately to each member of the Distinctions Committee

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Note: The committee may choose to make no award in a given year, if it is appropriate. Presentation of the award, a plaque, will take place at the awards ceremony at the annual meeting of the MSA. The recipient will be notified in time to plan to attend the presentation. The name of the winner of the award will be published in *Inoculum*.

MSA Fellows

Nominations requested for the MSA Fellows Award.

Guidelines:

1) MSA Fellows are to be selected from members who have completed at least 11 years of service after their Ph.D., with no upper limit.
2) MSA Fellows are members who are outstanding mycologists on the basis of one or more criteria: a solid record of mycological research, and/or successful teaching and development of teaching materials for mycology, and/or significant service to the Society. This is meant to recognize a core group of mid-career mycological achievers and outstanding MSA volunteers.

Deadline: February 15th

To nominate a deserving mycologist for this Award, please submit a one-page overview preferably as a pdf email attachment to the **Chair of the Honorary Awards Committee**.

Honorary Members

Nominations are requested for the MSA Honorary Members.

Deadline: February 15th

Members of the MSA are encouraged to submit nominations for MSA Honorary Members to the Committee on Honorary Members.

Guidelines: (1) Honorary members are distinguished senior scientists with a long record of significant contributions to the science of fungal biology and who reside in and work in countries other than the U.S. and Canada. (2) To nominate a mycologist who resides outside of the U.S. and Canada for this Award, please submit a brief curriculum vitae and three letters of support, preferably in a single pdf file, to the **Chair of the Honorary Awards Committee**.

MSA Graduate Fellowships

Graduate Fellowships: **Two MSA Graduate Fellowships** (\$2,000 each), the **Memorial NAMA Fellowship** (\$2,000), and the **Backus Award** (\$1000) are awarded annually to promising graduate students in mycology. Applicants are evaluated on the basis of their scholastic merit, research ability and promise shown as a mycologist. These fellowships are intended as supplementary grants and may be used by the recipients in any way to further their graduate studies. They are awarded in addition to any fellowship or assistantship support from other sources.

Funds available: One award of \$1000 and three awards of \$2,000 each.

Application deadline: February 15th

Requirements for eligibility: Applicants must be (1) student members of the MSA, (2) candidates for the Ph.D., (3) resident during the tenure of the fellowship in a university in Canada or the United States, and (4) The NAMA Fellowship comes with the stipulation that the awardee prepare an article for *McIlvainea*. Previous recipients of these fellowships are not eligible to apply.

Documents required 1) A cover letter addressing your eligibility including a statement that you have passed your qualifying exams (comprehensive, oral, preliminary, or their equivalent). 2) A curriculum vitae that includes a paragraph describing your training for the proposed work. 3) A detailed plan of study. [The text of this plan of study must be no longer than five pages including tables and figures, but not including references. Applications that include proposals exceeding the 5-page limit will not be considered. The text of this proposal should be single-spaced and printed in a regular sized font (10 cpi or 12 point). Suggestions for preparing this plan of study are provided below.] 4)

Two letters of recommendation, one of which is from your supervisor or thesis advisor. We recommend that your supervisor's letter also address your eligibility based on candidacy. 5) Graduate school transcripts showing courses taken, grades received, student Social Security number and Student ID number. Photocopies are acceptable if signed by your supervisor, but at least one must be an official transcript obtained from your institution's Registrar.

Your plan of study should include the following: 1) a 200- or 250-word Abstract; 2) an Introduction that explains what you want to do and why it is interesting or important; 3) a Methods section that convinces the reader that the project is feasible and describes how the study will be conducted; and 4) a Discussion section that explains preliminary results of your study (if any) and their significance. Be concise. Use section headings and double spacing between paragraphs to make your proposal easier to read.

To apply: Send one copy of your completed application, including all items listed above, in electronic format and preferably as a single pdf file, to the Chair of the Student Awards Committee. Confidential letters of reference and transcripts that are not available electronically should be sent, in quadruplicate by regular mail to the **Chair of the Student Awards Committee**.

Note: The Chair will appoint an ad hoc member to replace any Committee member who has a student applying for a fellowship or who otherwise feels a conflict of interest. The successful applicants will be notified upon selection (usually within four weeks of the closing date for nominations) so that they may plan to attend the awards presentation at the annual meeting. Those applicants not notified within this time were not selected as awardees, but all applicants will be notified of their status. The stipends are awarded following confirmation that the applicants meet the requirements for eligibility.

Mentor Student Travel Awards

Mentor Travel Awards: For the 2007 meeting of MSA, Louisiana State University, Baton Rouge, LA, USA, Foray: 5 August; sessions: 6-9 August. The mentor awards are given in the names of some of our famous mycological forbearers: C. J. Alexopoulos, A. Barksdale, H. Bigelow, M. Bigelow, E. Butler, W. C. Denison, H. M. Fitzpatrick, M. S. Fuller, R. P. Korf, E. S. Luttrell, O.K. Miller Jr., J. R. Raper, H. D. Thiers, F. A. Uecker, and K. Wells.

Application deadline: February 15th

Requirements: Applicants (1) must be MSA student members or past student members who have been awarded the degree within one year of the annual meeting and (2) must be presenting a paper or poster at the meeting. Previous recipients may apply again; if applicant numbers are higher than the number of awards available, preference will be given to those who have won the award less than two times.

Documents required (four copies): 1) A cover letter requesting consideration for an MSA Mentor Student Travel Award. Provide telephone number and, if available, fax and email addresses, and include information on any past Mentor Travel Award(s). If matching funds are available from the applicant's institution, provide an address the committee can use to officially verify the receipt of an award. 2) Abstract of paper or poster (note which). 3) Curriculum vita. 4) A one page description of the research project including an explanation of how this award will further the applicant's research/study. 5) A letter of support from the applicant's major professor addressing the student's abilities and potential and briefly summarizing the student's current research. To assist the judging committee in making Mentor "assignments" to award winners, inclusion of comments regarding which Mentor(s) would be most appropriate for the student are welcome but not required.

To apply: Send your application as a single electronic file, preferably in pdf format, containing all documents listed above to the **Chair of the Mentor Travel Awards Committee**.

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MSA BUSINESS

Martin-Baker Award

The award honors two respected teachers of mycology, both of whom had long and distinguished careers in mycology, and both of whom have faithfully served the Mycological Society of America in several capacities.

George W. Martin (b. 1886- d. 1971) (M.S. Rutgers University, 1915; Ph.D. University of Chicago, 1922) was associated with the Botany Department of the University of Iowa (Iowa City) from 1923 until his death in 1971. He served there as Professor, Head of the Department (1953 to 1955), and Emeritus Professor. After retirement in 1955 he was Visiting Professor for two years at the University of Illinois (Urbana), but then returned to the University of Iowa. Dr. Martin was world-reknown for his phylogenetic concepts of the fungi and related organisms and for his authoritative research and taxonomic treatments of the Myxomycetes and the Tremellales. He served as an officer of various scientific societies, was President of the Mycological Society of America (1944), was Editor-In-Chief of *Mycologia* (1950-1957), and was among the initial group honored by the Botanical Society of America with a Certificate of Merit (1956). In 1970 he received the Henry Allan Gleason Award from the New York Botanic Garden. Dr. Martin's infectious enthusiasm in teaching and research inspired students and colleagues alike. Of the 47 or more students who have received graduate degrees under his direction, at least 30 have achieved their doctorates. As his students will undoubtedly attest, Dr. Martin was a scholar who remained a man of learning, generosity, culture and a good friend.

Gladys E. Baker (M.S. University of Iowa, 1932; Ph.D. Washington University, St. Louis, 1935) taught at Vassar College from 1941 to 1961, and served 13 years as Chair of the Plant Science Department where she directed 3 graduate students. She offered the first course in medical mycology at seven women's colleges. She is a charter member of the Medical Mycological Society of the Americas and a fellow of A.A.A.S. From 1961 to 1973 she taught at the University of Hawaii, Manoa. There she supervised 13 graduate students for advanced degrees in both general and medical mycology. Students remember her as an effective and enthusiastic teacher, a scientist with the highest integrity, and a warm and caring friend. Fellow mycologists still admire her memorable work; the 21 illustrated plates in MacBride & Martin, *THE MYXOMYCETES* (1934); the Antarctic Lichens (1938) with C.W. Dodge; the nuclear behavior and monographic studies of the genus *Helicogloea*; and the cytology and ecology of microfungi.

The Award: As an underlying philosophy, the initiators of this fund would give preference to 1) support for good research by an individual in a small department, who, because of heavy teaching schedules, may find it difficult to attract major grant support 2) a recent (within the past five years) PhD mycologist and 3) research in areas of expertise related to the works of Drs. Martin and Baker and which includes a field component.

Grants should not be given for indirect costs, but should be applied directly to research needs. Funds are not to be awarded for travel to meetings, although research related travel may be supported, for adequately justified. This award is made directly to the individual and is not an institutional award. Recipients of grant awards are expected to submit to the MSA Research Awards Committee a report of their use of grant funds and the results of their research efforts. The latter may be in the form of a reprint of a published work.

An award to a recent (within 5 years) Ph.D. mycologist for the support of new or ongoing research.

Funds available: approximately \$2000

Application deadline: February 15th

Documents required: (1) Cover letter (2) Curriculum vita, with publication list and alternative support sources; and (3) Research proposal not to exceed three single-spaced pages.

Apply to: Send all items listed above in a single electronic file, preferably in pdf format, to the **Chair of the MSA Research Awards Committee**. A CD with the PDF file and a hard copy of the application would be appreciated as they may be useful in case there are problems with the electronic file. The application will be considered to have arrived once all electronic files have been received in working order by the Chair.

Clark T. Rogerson Student Research Award

The purpose of this award shall be to support student travel to herbaria and/or field sites to conduct research. Grants are available to undergraduate or graduate students who are members of the Mycological Society of America.

Award Amount: \$1000.

Application deadline: February 15th

Documents required:

- (1) Cover letter.
- (2) Curriculum vitae.
- (3) A description not to exceed three single-spaced pages of the research project, including an explanation of how this award will further the applicant's research.

A letter of support from the applicant's major professor or mentor addressing the student's abilities and potential and briefly summarizing the student's research and the appropriateness of the award.

To apply: Send all of the items listed above in a single electronic file, preferably in electronic format to the **Chair of the Research Awards Committee**. Confidential letters of reference may be submitted separately and directly from the referee to the Chair. A CD with the PDF file and a hard copy of the application would be appreciated as they may be useful in case there are problems with the electronic file. The application will be considered to have arrived once all electronic files have been received in working order by the Chair.

Forest Fungal Ecology Research Award

This award supports ecological studies of fungal interactions in old growth forests or other unique or endangered ecosystems.

Award Amount: \$1000, approximately.

Proposals should address innovative approaches to examining fungal systems or interactions of individuals, or groups of fungi, with hosts or substrates in old growth forest or other sensitive ecosystems. Floristic and systematic studies will not be considered.

Eligibility: Applicants must be students working on their Masters or Ph.D. degrees or be recent recipients of a Ph.D. Honors theses for BA/BS degree students may be considered.

Documents required:

- (1) Cover letter
- (2) Proposal of not more than 6 single-spaced pages that includes the rationale for the study and the hypotheses to be tested, a detailed description of the site to be studied, methodologies to be used, description of the study design, including specifics on the time line to complete the proposal (generally one year), and a plan for dissemination of results.
- (3) A letter of support from the major professor.
- (4) Copy of the permit or letter requesting a permit if it is needed to work in a sensitive site.

Application deadline: February 15th

To apply: Send all items listed above in a single electronic file, preferably in pdf format to the **Chair of the Research Awards Committee**. Confidential letters of reference may be submitted separately and directly from the referee to the Chair. A CD with the PDF file and a hard copy of the application would be appreciated as they may be useful in case there are problems with the electronic file. The application will be

Continued on following page

considered to have arrived once all electronic files have been received in working order by the Chair.

Alexander H. and Helen V. Smith Research Award

Guidelines for applications for support from the Alexander H. and Helen V. Smith Research Fund

Purpose — The primary purpose of the fund shall be to encourage the study of specimens of macrofungi, fleshy Basidiomycetes and Ascomycetes, collected by Alexander H. Smith and his associates. These collections, and materials relating to them, are currently deposited at the University of Michigan Herbarium. The Fund will distribute grants-in-aid to cover all or a significant part of the expense of visiting the Herbarium and working with the collections and materials relating to them. Award Amount: approximately \$1000

Criteria for Awarding Grants — Grants may be made available to members of the Mycological Society of America who are working actively on the taxonomy or floristics of the fleshy fungi, with the main emphasis on supporting high quality research. Professional and trained “amateur” (i.e. para-professional) mycologists are eligible and are encouraged to submit proposals. The individual should be at a point in their studies where having full access to Alex’s material would advance the applicant’s work. These grants are not intended for preliminary studies of possible lines of investigations.

Documents required — 1) a proposal indicating how the study of Alex’s specimens and manuscripts would advance the applicant’s work, 2) an estimated budget to cover all or part of the anticipated expenses (e.g. travel, per diem, copying, etc.) and 3) a current curriculum vitae. Recipients will be chosen by an awards committee designated by the

President of the Mycological Society of America. In addition, the agreement of the Director of the University of Michigan Herbarium (or its successor as custodian for Alex’s specimens and materials relating to them) to have the potential recipient(s) work there must be obtained before the grant is awarded. In the event there are no suitable applications requesting the utilization of Alex’s collections for floristic or monographic studies, the Awards Committee, at its discretion, may award grants to support field work on the fleshy fungi of North America, or for other types of studies on the fleshy macrofungi of North America. If support for a field project is awarded to an applicant, duplicate/representative collections resulting from the field work are to be deposited at the University of Michigan Herbarium. Prior arrangement should be made with the Director of the Herbarium. Recipients of these grants-in-aid are asked to provide the University of Michigan Herbarium with copies of any publications that result from this support. A summary of activity should be forwarded to the Awards Committee in a timely manner. In compliance with Internal Revenue Service Regulations, the grant recipient must submit all original receipts of expenditures of grant funds to the Treasurer of the MSA. The receipt of documented expenditures by the Treasurer may be necessary before complete funding of the proposal will be made.

Application deadline: February 15th

To apply: Send all items listed above in a single electronic file, preferably in pdf format to the **Chair of the Research Awards Committee**. A CD with the PDF file and a hard copy of the application would be appreciated as they may be useful in case there are problems with the electronic file. The application will be considered to have arrived once all electronic files have been received in working order by the Chair.

MYCOLOGICAL SOCIETY OF AMERICA CALL for NOMINATIONS for COUNCIL

- FOR THE UPCOMING YEAR THE MSA MEMBERSHIP WILL ELECT SIX NEW COUNCIL MEMBERS INCLUDING VICE PRESIDENT, TREASURER AND FOUR COUNCILORS.
- PLEASE CONTRIBUTE BY NOMINATING A COLLEAGUE FOR ANY OR ALL OF THESE POSITIONS (LISTED BELOW) AS SOON AS POSSIBLE.

The candidate for each office who receives the greatest number of nominations from the membership will be contacted and, if willing to stand, placed on the spring ballot along with a candidate selected by the MSA Nominating Committee. The spring ballot will be made available to all members at least three months prior to the society annual meeting to be held at Louisiana State University from August 4-9, 2007, in Baton Rouge, Louisiana, USA.

**These nominations and elections are important to the Society,
and you are strongly encouraged to participate.**

Refer to the MSA home page at www.msafungi.org for a list of past and present Councilors and Officers.

Officers

VICE-PRESIDENT _____

TREASURER _____

Councilors (all two year terms)

CELL BIOLOGY/PHYSIOLOGY _____

GENETICS/MOLECULAR BIOLOGY _____

SYSTEMATICS/EVOLUTION _____

ECOLOGY/PATHOLOGY _____

Thank you for your participation!

Please return your nominations by **FEBRUARY 15, 2007**, to
MSA Vice-President Roy Halling by email, fax, or regular mail.

Dr. Roy E. Halling

Institute of Systematic Botany

The New York Botanical Garden

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Phone: (718) 817-8613, Fax: (718)-817-8648, Email: rhalling@nybg.org

MYCOLOGICAL NEWS

Searchable Database for TRTC Fungarium at Royal Ontario Museum

TRTC is one of the largest *Fungarium* in North America. It houses about half a million fungal specimens including about 1,000 types. While the vast majority of the collections have still to be electronically databased, a first searchable web site was created in November 2006 at bbc.botany.utoronto.ca/ROM/TRTCFungarium/home.php. Search results display specimen images, drawings, field notes and DNA sequences when available, and are linked to Google images, the Index of Fungi, and the NCBI sequence database. In future developments we plan to also link specimens to phylogenetic trees and geographic maps. TRTC data will eventually be integrated to the Global Biodiversity Information Facility (GBIF) and possibly also cross-referenced to other fungal and biodiversity databases. The web site also presents the history of the collection and gives instruction for loans, exchange, and submission of material.

TRTC was founded at the University of Toronto around 1887 to host the cryptogamic collections of William Hincks, then professor of Natural History. It then went under the successive direction of Drs. Joseph H. Faull (1902 – 1928), H.S. Jackson (1928 - 1952), Roy F. Cain (1952 - 1974), John C. Krug (1974 - 2002), and now Jean-Marc Moncalvo. In June 1996, the responsibility of the collection was transferred to the Royal Ontario Museum (ROM). Following this transfer, TRTC was restricted to Fungi. Mosses and liverworts were integrated to the ROM Vascular Plant Herbarium while algae remained with the University of Toronto Culture Collection.

The TRTC *Fungarium* is richest in North American material but has a worldwide representation. It holds many

unique and historically important research collections, such as those of T. Ahti, C.D. Bird, R.F. Cain, G. Darker, J.B. Ellis, J.H. Faull, R.W. Fisher, J.W. Groves, A. Henssen, O. Jaap, H.S. Jackson, J.C. Krug, P.A. Lemke, J. Macoun, D.W. Malloch, J.A. Parmelee, F. Petrak, H. Sydow, P. Sydow, S.C. Teng, G.E. Thompson, R.F. Warren, and J. White.

**—Jean-Marc Moncalvo,
Simona Margaritescu, and Justin Foong**
jeanmarcm@gmail.com

The screenshot shows the TRTC Fungarium website interface. At the top, there is a search bar with a dropdown menu set to 'All' and a search button. Below the search bar, there are navigation links: History, Staff, Loans, Exchange and Submission, About, Contact, and Random Fungi. The main content area displays the specimen details for *Suillus pictus*. On the left, there is a 'Data:' table with the following information:

Accession_No:	052241
Museum_Coll:	Fisher
Genus:	Suillus
Species:	pictus
Species_Auth:	(Peck) A.H. Sm. & Thiers
Collector:	Fisher, R.W. & Fisher, N.
Coll_Date:	1987/09/23
Id_Name:	Fisher, R.W.
Country:	Canada
Province:	Ontario
County:	Welland
Township:	Pelham
LatN:	430300 N
LongW:	0792100 W
Location:	Hurlburt's Woods
Loc_Description:	North Pelham
Habitat:	Under hemlock and white pine.

On the right side, there are sections for 'Internal Files: Images:' (with four small images of the fungus), 'Note Images:' (with one image of a document), and 'External Links:' (with links to Google Images, GenBank, and IndexFungorum). At the bottom of the page, there is a footer that reads: 'Please report search errors here. | CSS and XHTML'.

Fernando Earns Lifetime Achievement Award

Dr. Dilantha Fernando, Professor in the Department of Plant Science, University of Manitoba, Winnipeg, Manitoba, Canada was honored with two significant awards recently. Dilantha received the Life Time Achievement Award from the Sri Lanka Foundation of America in Los Angeles, California for his exemplary contributions to science. Dilantha also received a University of Manitoba 2006 Outreach Award from the President of the University of Manitoba for his significant contributions to outreach work locally, nationally and internationally. In May, Dilantha received the 2006 University of Manitoba Excellence in Graduate Teaching Award for teaching and research at the graduate level. The award is given only to one faculty member of the university and this is the first time a Plant Science professor has received this award. Dilantha is a plant pathologist working on fungal diseases of economic importance in canola, sunflower and wheat.



MYCOLOGICAL NEWS

Cornell Mushroom Blog

The Cornell Mushroom Blog is a new magazine-like website about fungi. Our articles are written mostly by an assortment of Cornell faculty, staff, and students. Last Fall, students in my classes submitted illustrated articles for course credit. Their stories cover fairy rings, medicinal fungi, the frog chytrid, *Pilobolus* as a lungworm vector, lichen dyeing, and other topics. You'll also find the memoir of a local survivor of *Amanita bisporigera* poisoning, a number of time lapse videos and interactive quicktime objects, and a series of articles from our correspondent, the Friday Afternoon My-

cologist. We're aiming for an "interested amateur" audience, but you might like it too. We plan to continue adding to the site, although winter post frequency may dip – it's too snowy around here for mushrooms.

Please visit, and leave us some comments at the blog. To receive word of new posts, just subscribe via your RSS reader or by email subscription: hosts.cce.cornell.edu/mushroom_blog/

– **Kathie T. Hodge**
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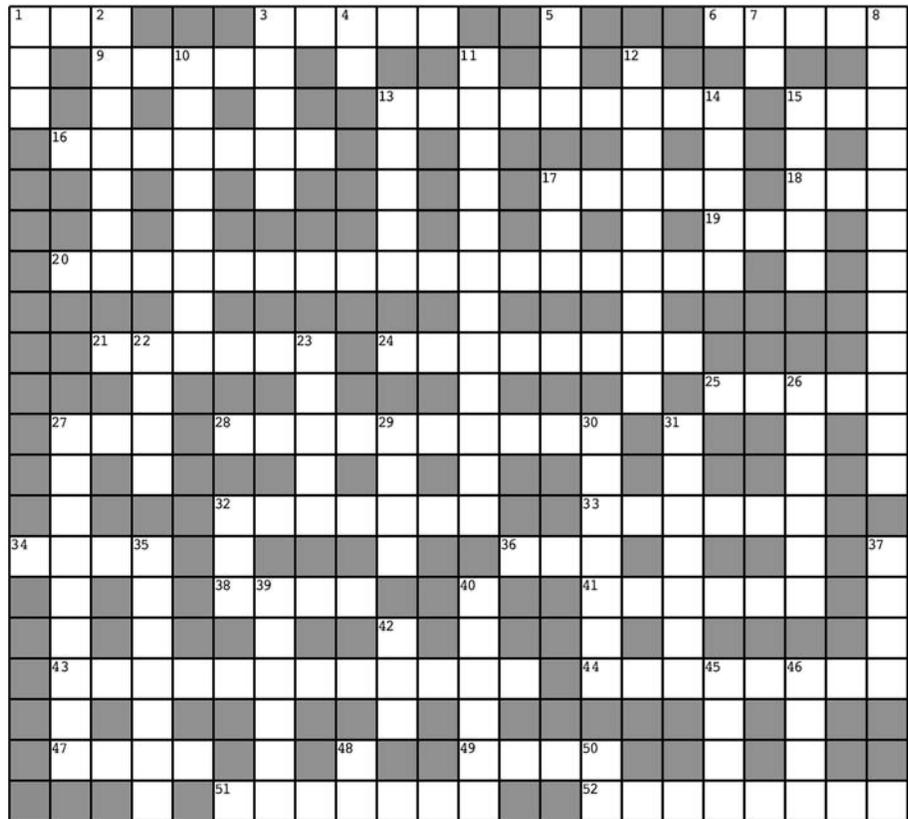
MYCOLOGICAL NEWS

Crossword Puzzle – Insects and Fungi

Juliet Pendray is a member of the Vancouver Mycological Society (www.vanmyco.com). She writes fungal crossword puzzles, primarily for the amusement of herself and also as a tool for her own education. Juliet has just completed a crossword dealing with insect/fungi relationships and wondered if this would be of interest to the *Inoculum* readership. If you enjoy doing this one and would like a similar crossword corner in each edition of *Inoculum* please let the Editor know at jinx.campbell@usm.edu.

ACROSS

1. Fungi pump scale insects to access this
3. Location of the infrabuccal pocket where the *Atta* queen keeps fungal inoculum
6. Oyster mushrooms kill nematodes and bacteria with secreted droplets of _____
9. Famous French mycologist Romagnesi
13. (genus) Has a fruiting body that bursts from a caterpillar's head
15. (abbr.) Polyoxometalate - a delignifying catalyst inspired by a protein in wood-digesting fungi
16. Where *Septobasidium* keeps an unattached scale insect or where the Queen and King termite live
17. Micro - _____ are captured and eaten or killed by predatory fungi
18. Amongst the Formicidae, or _____ family, only the Attine tribe are known to be fungicultural
19. Insect body part targetted by *Laboulbenia cristata* and *Rickia dentroiuli* fungi
20. Group of fungi known to parasitize insects
21. Cute name for a type of beetle
24. Some members of this Ambrosia beetle tribe cannot exist without fungal associates
25. A Termite _____ can grow to 14 mm long
27. Penetrating hyphal extrusion
28. *Septobasidium* inserts this into a scale insect 32. 60-90% of the microbial soil _____ is fungi
33. The queen ant carries fungi with her to found a new _____
34. The ant's fungal crop is kept _____, free of contamination by other species
36. Arguably fungi can be considered insects' ultimate _____



38. *Septobasidium* and scale insects are found on _____
41. Leaf cutting ant and Ambrosia beetle _____ depend upon fungi as their sole source of food
43. Fruiting bodies of the insect-farmed genus make a tasty dish for humans
44. A term for the asexual form of a fungi, usually bearing a different name from the sexual form
47. Term for either a termite hair, or an arrow-shaped fungal cystidial cell
49. *Ophistioma* fungi alter Elm tree emissions to _____ beetles
51. Tower builder and farmer insect
52. Where ambrosia beetles store fungi

Continued on following page

MYCOLOGIST'S BOOKSHELF

Two books are reviewed below. Six new books were received since the last *Mycologist's Bookshelf*. If you would like to review a book and a review is needed, just send me an email. I will send you the book, you write the review, and then you can keep the book. All requests for books to review should be sent to Amy Rossman at arossman@nt.ars-grin.gov.

MykoLibri. Die Bibliothek der Pilzbücher

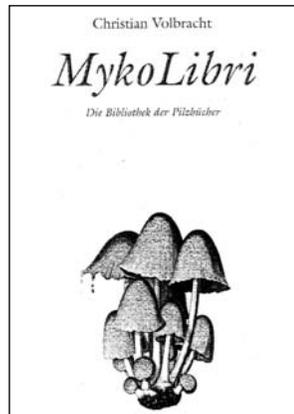
MykoLibri. Die Bibliothek der Pilzbücher. Christian Volbracht. Hamburg. Available from the author at: MykoLibri, Isestrasse 79, 20149 Hamburg, Germany (www.mykolibri.de). Prices as discussed below.

It may seem strange to write a book review about a bibliography. Usually, this would seem the case, but in a few outstanding cases (TL-II; Krieger's compilation of the mycological library of Howard A. Kelly; Lindau and Sydow's *Thesaurus Literaturae Mycologiae*) the contributions have been so fundamental and provide such invaluable data as to be candidates for wider audiences. Such is the case for *MykoLibri*.

The volume (xii + 525 pp) furnishes a correct summary of each included book, not only the mundane enumeration of pages, correct title, year of publication, publisher and other citational niceties, but also in many cases some notes (in German) on method of printing, type of illustrations (i.e. woodcut, lithograph, hand colored engraving, etc.) and, in Volbracht's experience, relative rarity of the publication (Volbracht also runs a mycological antiquarian bookseller's business under the same name (MykoLibri) at the same address, with periodic catalogs of sale items, often quite rare.

In an English introduction (the bound introduction is German, but for English-speaking buyers, the English translation is included loose), Volbracht writes: "Casual mushroom collectors, starting out with field guides, sometimes become nature lovers and bibliophiles. I belong to this category." Indeed, from items 1 (Charles Abbot, *Flora Bedfordiensis*) to item 2297 (Zukal, Hugo. *Vorläufige Mitteilung... Penicillium crustosum...*) hardly a stone is left unturned in listing not only standard, foundational works, but lesser-known publications and popular mushroom books in all languages and reprints of larger papers, often in obscure journals.

Occasionally, such coverage is spotty. The works of E.J.H. Corner, for instance, include reprints of several journal papers but of his larger works (cantharelloid fungi, *Trogia*,



marasmioid fungi, boletes, etc.), only the volumes on clavarioid fungi are included. The many reports of the State Botanist of New York by Charles Horton Peck are listed only by the date and report number appearing on the title page, not by their actual first dated appearance (but to offset this, a quarter-page reproduction of the cover of one of the reports is furnished, and a full-page color reproduction from his 1898 report also appears).

Illustrations, all in full and well-reproduced color, abound. I count 94 full-page reproductions from works by Bulliard, William Curtis, Fries, Holmskjold, Konrad, Micheli, Persoon (including a sample of handwriting) and J.C. Schäffer. The number of smaller full-color reproductions must be ten times this, and a listing of all illustrations appears at the end of the text.

Volbracht walks us through time with numerous tabular chronological lists of mycological works from past epochs (i.e. Pliny to Linnaeus; Linnaeus to Fries), various countries and regions (i.e. Germany, England, France, Scandinavia), popular mushrooms books and cookbooks, and publications about truffles, poisonous and hallucinogenic fungi.

The bibliography comes in three versions, all still available at this writing (November, 2006): 1) regular version, with everything mentioned above, at 140 Euros plus postage; 2) special version, everything above plus a tipped-in plate from either Bulliard or Schäffer (mine is of *Fistulina* from Bulliard), at 220 Euros plus postage; and 3) deluxe version, everything above, plus cloth-bound protective box and 22 mounted plates from classic mycological works in a separate folio, at 540 Euros plus postage. The volume itself is printed on archival, slick paper and securely bound.

This volume is not for the journeyman mycologist, but it should grace the shelf of (to paraphrase) those mushroom collectors who have become bibliophiles, and especially those institutions which advertise a mycology program as part of their strengths. Leafing through this bibliography is like strolling through a sumptuous compilation of illuminated herbals. It elicits a wonder at the shared past of our discipline and intrepid workers on whose shoulders we stand.

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MYCOLOGIST'S BOOKSHELF

Fungi of Australia. *Septoria*

Fungi of Australia. *Septoria*. 2006. Michael J. Priest. CSIRO Publishing, P.O. Box 1139, Collingwood, Victoria 3066, Australia, www.publish.csiro.au, ISBN: 0643093761. 259 pp. Hardback. Price: AU \$110.00.



The genus *Septoria* is one of those impossible groups of fungi that have literally never been monographed. More and more species are described in the genus based primarily on host plant without any comprehensive treatment as a whole. This book on the *Septoria* of Australia comes the closest thing to anything like a monograph that may ever exist!

This book resulting from the doctoral dissertation of Michael Priest represents a monumental accomplishment. Each of the 560 species of *Septoria* known to occur in Australia is described and many of them are illustrated with line drawings. Often there is a discussion of the record in Australia as well as extralimital species on the same host with which the Australian species might be confused. The species are arranged according to host family with a complete host

index in the back. Keys are provided to the species of *Septoria* that occur on hosts within one family. The most species of *Septoria* on one host family appears to be ten species on the Poaceae. Fortunately, most species of *Septoria* are host-specific at least to the genus level so that this approach is valid and will withstand molecular scrutiny.

If any sexual state is known, most species of *Septoria* are linked to *Mycosphaerella*, yet mention of a sexual state relationship for species in this book is minimal. In reality, the sexual state of the majority of species of *Septoria* is unknown. This group of fungi represents another example of fungi in which the morphological variability is expressed in the asexual state with the few known sexual states appearing relatively similar in morphology.

This book is essential for anyone who may have to identify a species of *Septoria* no matter where in the world it may exist. What other information resource is there? The book is hardbound and printed on high quality paper.

Congratulations to Michael Priest for a very fine contribution to mycology as well as to the government of Australia for recognizing the importance of knowing the biodiversity of fungi in their country.

— Amy Y. Rossman
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Recently Received Books

Since Inoculum 57(6)

- **Biodiversity of Fungi. Their Role in Human Life.** 2005. S.K. Deshmukh & M.K. Rai (Eds.). Science Publishers, Enfield, New Hampshire, info@enfieldbooks.com. ISBN: 1-57808-368-0.460 pp. Price: \$88.00. *Review needed.*
- **Checklist of Japanese lichens and allied fungi.** 2006. Syo Kurokawa and Hiroyuki Kashiwadani (Eds.). National Science Museum, Tokyo. National Science Museum Monographs No. 33. ISSN 1342-9574. *Review needed.*
- **Hypocrea and Trichoderma studies marking the 90th birthday of Joan M. Dingley.** 2006. Walter Gams (Ed.). Centraalbureau voor Schimmelcultures, P.O. Box 85167, Utrecht, The Netherlands, www.cbs.knaw.nl/publications/index.htm.

Studies in Mycology 56: 1-179. Price: €60.00. *Review needed.*

- **Les Oïdiums de Suisse (Erysiphacées).** 2005. Andrien Bolay. Schweizerische Mykologische Gesellschaft, www.rossolis.ch. Cryptogamica Helvetia 20: 1-176. *Review in progress.*
- **Les champignon lichénisés de Suisse.** 2004. Philippe Clerc. Schweizerische Mykologische Gesellschaft, www.rossolis.ch. Cryptogamica Helvetia 19: 1-320. *Review needed.*
- **Nuevo Diccionario Ilustrado de Micología.** 2006. Miguel Ulloa and Richard T. Hanlin. APS Press, 3340 Pilot Knob Road, St. Paul, MN 55121, aps@scisoc.org, www.shopapspress.org. ISBN: 0-89054-341-0. 684 pp. Price: \$99.00. *Review needed.*

Previously Listed Books

- **Aflatoxin and Food Safety.** 2005. H.K. Abbas (Ed). CRC Press, 6000 Broken Sound Parkway, NW, Suite 300, Boca Raton, FL 33487, orders@crcpress.com. ISBN 10: 0-8247-2303-1 (Hardcover). 587 pp. Price: \$178.95. *Review needed.*
- **British Fungus Flora 9 / Russulaceae: Lactarius.** 2005. R.W. Rayner, assisted by R. Watling & E. Turnbull. Print and Publications Section, Royal Botanic Garden Edinburgh, 20A Inverleith Row, Edinburgh EH3 5LR, United Kingdom, pps@rbge.org.uk. ISBN 1 872291 34 1 (Soft cover). 203 pp. Price: British pounds 12.50 (excluding postage). *Review in progress.*

Continued on following page

MYCOLOGIST'S BOOKSHELF

- **Common Mushrooms of the Talamanca Mountain, Costa Rica.** 2005. R.E. Halling & G.M. Mueller. The New York Botanical Garden, 200th St. & Kazimiroff Blvd., Bronx, New York 10458-5126, www.nybg.org/bcsi/spub, ISBN 0-89327-460-7. 195 pp. Price: \$19.95. *Review in progress.*
- **Fungi of Australia. *Septoria*.** 2006. Michael J. Priest. CSIRO Publishing, P.O. Box 1139, Collingwood, Victoria 3066, Australia, www.publish.csiro.au, ISBN: 0643093761. 259 pp. Hardback. Price: AU \$110.00. *Reviewed in this issue.*
- **Fungi: Experimental Methods in Biology.** 2005. R. Maheshwari. CRC Press, 6000 Broken Sound Parkway, NW, Suite 300, Boca Raton, FL 33487, orders@crcpress.com. ISBN 1-57444-468-9. 350 pp. Price: \$149.95. *Reviewed in Nov-Dec issue.*
- ***Fusarium* Mycotoxins: Chemistry, Genetics and Biology.** 2006. A.E. Desjardins. APS Press, 3340 Pilot Knob Road, St. Paul, MN 55121, aps@scisoc.org, www.shopapspress.org. ISBN: 09-89054-335-6. 268 pp. Price: \$89.00. *Review needed.*
- **Genera of Freshwater Fungi.** 2006. Lei Cai, Kevin D. Hyde and Clement K.M. Tsui. Fungal Diversity Research Series 18. Fungal Diversity Press, Pokfulam Road, Hong Kong, China, www.fungaldiversity.org/fdp/fdp.htm, ISBN 988 99320 08. 261 pp. Price: \$80.00. *Review needed.*
- **Growing Gourmet and Medicinal Mushrooms, Third Edition.** 2000. P. Stamets. Ten Speed Press, Box 7123, Berkeley, CA 94797, www.tenspeed.com. ISBN-10: 1-58008-175-4, 574 pp. Price: \$45.00. *Reviewed in Nov.-Dec issue.*
- ***Hypocreales* of the Southeastern United States: An Identification Guide.** 2006. G.J. Samuels, A.Y. Rossman, P. Chaverri, B.E. Overton & K. Poldmaa. CBS Biodiversity Series 4. Centraalbureau voor Schimmelcultures, P.O. Box 85167, Utrecht, The Netherlands. www.cbs.knaw.nl/publications/index.htm. ISBN-10: 90-70351-59-5, 144 pp including 102 color plates. Price: €70.00. *Reviewed in Nov-Dec issue.*
- **The Identification of Fungi: An Illustrated Introduction with Keys, Glossary, and Guide to Literature.** 2006. F. Dugan. APS Press, 3340 Pilot Knob Road, St. Paul, MN 55121, aps@scisoc.org, www.shopapspress.org. ISBN 0-89054-336-4, 182 pp. Price: \$65.00. *Review in progress.*
- **Insect-Fungal Associations: Ecology and Evolution.** 2005. F.E. Vega & M. Blackwell (Eds). Oxford University, Oxford, United Kingdom, www.oup.com/us, ISBN 0-19-516652-3, 333 pp. Price: \$49.50 (hardbound). *Review in progress.*
- **The Missing Lineages. Phylogeny and Ecology of Endophytic and Other Enigmatic Root-associated Fungi.** 2005. Centraalbureau voor Schimmelcultures, P.O. Box 85167, Utrecht, The Netherlands. www.cbs.knaw.nl/publications/index.htm. Studies in Mycology 53: 1-262. Price: €55.00. *Reviewed in Nov-Dec issue.*
- **Monograph of the Genus *Hemileia* (Uredinales).** 2005. A. Ritschel. Bibliotheca Mycologica 200: 1-132. www.schweizerbart.de/pubs/series/bibliotheca-mycologica-59.html. ISBN 3-443-59102-7. Price: €55.00. *Review in progress.*
- **Mycelium Running. How Mushrooms Can Help Save the World.** 2005. P. Stamets. Ten Speed Press, Box 7123, Berkeley, CA 94797, www.tenspeed.com. ISBN-13: 978-1-58008579-3 (Paperback). 339 pp. Price: \$35.00. *Reviewed in Sept.-Oct. issue.*
- **MycoAlbum CD Introductory Mycology Laboratory Review.** 2006. G. Barron. For availability, contact the author: www.uoguelph.ca/~gbarron/. Over 1,000 illustrations. 2 CDs. US \$25 plus shipping and handling for professional biologists, US \$15 plus S & H for students. An Instructor's Version US \$35 plus S & H includes an image folder with over 600 downloadable images at 800 x 600 pixels for power point presentations. *Review in progress.*
- **100 Years of Fungal Biodiversity in Southern Africa.** 2006. P.W. Crous, M.J. Wingfield, B. Slippers, I.H. Rong, & R.A. Samson (eds.) Centraalbureau voor Schimmelcultures, P.O. Box 85167, Utrecht, The Netherlands, www.cbs.knaw.nl/publications/index.htm. Studies in Mycology 55: 1-305. Price: €65.00. *Reviewed in Sept.-Oct. issue.*
- **Phyllachoraceae of Australia.** 2006. Ceridwen A. Pearce and Kevin D. Hyde. Fungal Diversity Research Series 17. Fungal Diversity Press, Pokfulam Road, Hong Kong, China, www.fungaldiversity.org/fdp/fdp.htm, ISBN 962 86765 04. 308 pp. Price: \$80.00. *Review needed.*
- **Taxonomy and Pathology of *Tognina* (Diaporthales) and its *Phaeoacremonium* anamorph.** 2006. L. Mostert, J.Z. Groenewald, R.C. Summerbell, W. Gams & P.W. Crous. Centraalbureau voor Schimmelcultures, P.O. Box 85167, Utrecht, The Netherlands, www.cbs.knaw.nl/publications/index.htm. Studies in Mycology 54: 1-115. Price: €55.00. *Reviewed in Sept.-Oct. issue.*
- **The Triumph of the Fungi. A Rotten History.** 2007. Nicholas P. Money. Oxford University Press, 2001 Evans Road, Cary, NC 27513, www.oup.com, ISBN 13-978-0-19-518971-1. 197 pp. Price: \$29.95. *Review in progress.*

MYCOLOGICAL CLASSIFIEDS

Graduate Student Assistantship at University of Arizona

A graduate student assistantship is available at the University of Arizona to work on a comprehensive study of fungal and bacterial communities within the pristine, mineralogically diverse environment of Kartchner Caverns, Arizona. This is an exceptional research opportunity to explore a very unique microbial world that is little known and rarely encountered, and provides a tremendous opportunity for discovery. The student will be part of a multidisciplinary NSF Microbial Observatory research project entitled "Kartchner Caverns: Habitat, Scale, Community Structure and Function in Carbonate Caves". This project is an opportunity to explore the world of cave microbiology and to participate in various aspects of developing of culturable and non-culturable fungal libraries, identification of novel taxa and novel natural products, analysis of fungal diversity and community structure, comparative metagenomics of microbial communities from diverse cave substrates, and examination of communi-

ty transitions along environmental gradients. Further, this position will interact with project experts in several Departments in areas including mycology, bacteriology, ecology, environmental chemistry, geology, physics, and bioinformatics.

The position is available starting January 2007 and will be open until filled. Applicants should have a B.S. or B.A. degree in a biological field, such as mycology, plant pathology, microbiology, or molecular and cellular biology. The position provides a graduate student stipend and benefits for up to 5 years. Admission to the University of Arizona graduate school and the Plant Sciences graduate program is required. Minorities and groups underrepresented in science are especially encouraged to apply. For more information, please contact Dr. Barry Pryor, Division of Plant Pathology and Microbiology, Department of Plant Sciences, University of Arizona, PO Box 210036, Tucson, AZ 85721. Email: bmpryor@u.arizona.edu. Phone: 520-626-5312.

University of Saskatchewan Seeks Graduate Student

The Opportunity: A M.Sc. or Ph.D. graduate student is sought to carry out a research project with financial support from the Natural Sciences Engineering Research Council of Canada (NSERC)-Discovery grant. The funded project will investigate Fungal Molecular Systematics and Mycoparasitic (Fungus-Fungus) Interactions.

Qualifications: The applicant should have a strong academic background in molecular biology, microbiology, biochemistry or one of the natural sciences. The candidate should have a minimum overall academic average of 80% before considering submission of an application. A strong commitment to pursue a research career, good communication and writing skills and the ability to work in a team environment are essential qualities. A successful application to the College of Graduate Studies at the University of Saskatchewan

will be required. Information on College admission requirements and application forms can be obtained at www.usask.ca/cgsr/.

Stipend: For the successful candidate, the standard rate for a University graduate stipend will be awarded.

How to Apply: *Curriculum vita*, contact information, along with covering letter stating how the applicant's background and qualifications match the position is required. **Mail your completed application to:** Dr. Vladimir Vujanovic at vladimir.vujanovic@usask.ca, ph. (306) 966-5048, fax (306) 966-8898.

Vladimir Vujanovic, Associate Professor
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MYCOLOGY ON-LINE

Below is an alphabetical list of websites featured in *Inoculum* during the past 12 months. Those wishing to add sites to this directory or to edit addresses should email <jinx.campbell@usm.edu>. **Unless otherwise notified**, listings will be automatically deleted after one year (at the editors discretion). * = New or Updated info (most recent *Inoculum* Volume-Number citation)

Ascomycota of Sweden
www.umu.se/myconet/asco/indexASCO.html

Australasian Mycological Society Website
for Introductory Fungal Biology (53-4)
bugs.bio.usyd.edu.au/mycology/default.htm

Authors of Fungal Names (54-2)
www.indexfungorum.org/AuthorsOfFungalNames.htm

Bibliography of Systematic Mycology
www.speciesfungorum.org/BSM/bsm.htm

British Mycological Society (54-1)
britmycolsoc.org.uk

Collection of 800 Pictures of Macro- and Micro-fungi
www.mycolog.com

Cordyceps Website
www.mushtech.org

Cornell Mushroom Blog, written by Cornell faculty and students, with stories, pictures, and videos about mushrooms and other fungi.
hosts.cce.cornell.edu/mushroom_blog/

Corticoid Nomenclatural Database (56-2)
phyloinformatics.org

Coverage in Ukraine of Higher Fungal Ranks (56-2)
www.cybertruffle.org.uk/lists/index.htm

Cyberliber Mycological Publications (57-4)
www.cybertruffle.org.uk/cyberliber/index.htm

Cybertruffle's Fungal Valhalla (56-2)
www.cybertruffle.org.uk/valhalla/index.htm

Dictionary of The Fungi Classification
www.indexfungorum.org/names/fundic.asp

Distribution Maps of Caribbean Fungi (56-2)
www.biodiversity.ac.psiweb.com/carimaps/index.htm

Distribution Maps of Georgian Fungi (56-2)
www.cybertruffle.org.uk/gruzmaps/index.htm

Distribution Maps of Ukrainian Fungi (56-2)
www.cybertruffle.org.uk/ukramaps/index.htm

Electronic Library for Mycology (56-2)
www.cybertruffle.org.uk/cyberliber/index.htm

Fun Facts About Fungi (55-1)
www.herbarium.usu.edu/fungi/funfacts/factindx.htm

Funga Veracruzana (53-6)
www.uv.mx/institutos/forest/hongos/fungavera/index.html

Index of Fungi
www.indexfungorum.org/names/names.asp

ING (Index Nominum Genericorum) Database (52-5)
ravenel.si.edu/botany/ing/ingForm.cfm

Interactive Key, Descriptions & Illustrations
for *Hypomyces* (52-6)
nt.ars-grin.gov/taxadescriptions/hypomyces/

Interactive Key to *Hypocreales* of Southeastern United States (57-2)
nt.ars-rin.gov/taxadescriptions/keys/HypocrealesSEIndex.cfm

ISHAM: the International Society for Human and Animal Mycology
www.isham.org

Libri Fungorum Mycological Publications (57-4)
194.203.77.76/LibriFungorum/Index.htm

Mycologia On-Line (53-3, page 18)
www.mycologia.org

Mycological Progress (52-3)
www.mycological-progress.com

The Myconet Classification of the Ascomycota
www.fieldmuseum.org/myconet

Mycosearch web directory/search engine (51-5)
www.mycosearch.com

Mushroom World [new Korean/English site in 2001] (51-6)
www.mushworld.com

NAMA Poison Case Registry (51-4)
www.sph.umich.edu/~kwcee/mpcr

Plant-associated Fungi of Brazil (54-2)
nt.ars-grin.gov
(Select Search Fungal Databases, option 3, Host-Fungus Distributions)

Pleurotus spp.
www.oystermushrooms.net

Rare, Endangered or Under-recorded Fungi in Ukraine (56-2)
www.cybertruffle.org.uk/redlists/index.htm

Registry of Mushrooms in Art Website
members.cox.net/mushroomsinart/

Searchable database of culture collection
of wood decay fungi (56-6, page 22)
www.fpl.fs.fed.us/rwu4501/index.html

Species of Glomeromycota Website (55-3)
www.amf-phylogeny.com

Systematics of the Saprolegniaceae (53-4)
www.ilumina-dlib.org

Tripartite Similarity Calculator (55-1)
www.amanitabear.com/similarity

TRTC is one of the largest *Fungarium* in North America. It houses about half a million fungal specimens including about 1,000 types.
bbc.botany.utoronto.ca/ROM/TRTCFungarium/home.php

U.S. National Fungus Collections (BPI)
Complete Mushroom Specimen Database (57-1, page 21)
www.ars.usda.gov/ba/psi/sbml

Website for the mycological journal *Mycena* (56-2)
www.mycena.org/index.htm

Wild Mushrooms From Tokyo
www.ne.jp/asahi/mushroom/tokyo/

CALENDAR OF EVENTS

Event dates and descriptions (**bold**) precede event locations (*italic*), contacts (plain font), and Email/Websites (**bold**, no brackets). Those wishing to list upcoming mycological courses, workshops, conventions, symposia, and forays in the Calendar should submit material formatted as shown below and include complete postal/electronic addresses.

2007 (August 4-9)

MSA Meeting

Baton Rouge, Louisiana
Louisiana State University

2007 (December 3-6)

Asian Mycology Congress (AMC) 10th International Marine and Freshwater Mycology Symposium (IMFMS)

Penang, Malaysia
Website: ippm.um.edu.my/amc2007

NOTE TO MEMBERS:

If you have events to announce, please notify *Inoculum* editor Jinx Campbell at jinx.campbell@usm.edu.

Change of Address

Send all corrections of directory information, including email addresses, directly to Allen Press

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or (785) 843-1221
Fax (785) 843-1274
Email kröse@allenpress.com

Note: Members may also submit directory corrections via the form included in the MSA directory via the MSA Home Page: www.msafungi.org

Mycological Society of America – Gift Membership Form

Sponsoring a gift membership in MSA offers tangible support both for the recipient of the membership as well as for mycology in general. Providing both *Mycologia* and *Inoculum*, a gift membership is an excellent way to further the efforts of our mycological colleagues, especially those who cannot afford an MSA membership. In addition to a feeling of great satisfaction, you also will receive a convenient reminder for renewal of the gift membership the following year.

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I agree to pay \$98* for this membership by check (payable to MSA, drawn on US bank) VISA Mastercard
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Send this form to: MSA Business Office, PO Box 1897, Lawrence KS 66044
or FAX to (785) 843-1274, Attn: Processing Department

*If this membership is given after June 1, please add \$10 to cover postage for past issues.

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