

**ORGANISM PROFILES**  
**October 2011 EMPAT SAMPLE SHIPMENT**

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FUNGI  
Round 46

003F1-2011

Procedure	<i>Aspergillus brasiliensis</i> Varga, Frisvad, and Samson 2007/ <i>Aspergillus niger</i> Tiegh. 1867 sensu lato
Isolation conditions	Grows well on common laboratory media like 2% Malt Extract agar (MEA) and Czapek Yeast Autolysate (CYA) at 25°C for 7 days. Good growth and sporulation at 37°C.
Macroscopic morphology	Colony diameters at 7 days on CYA at 25 and 37°C 71-76 mm; MEA 52-70 mm. Maximum growth temperature is 40°C with no growth at 15°C (the latter condition differentiating this species from <i>A. niger</i> sensu stricto). Colony first white then dark brown to black. Exudates absent, reverse cream-colored to light brown.
Microscopic morphology	Conidial heads globose at first and later radiate occasionally developing into several conidial columns; stipes 700-1700 x 8-13 µm, walls thick, smooth, pale brown; vesicles 30-45 µm, nearly globose; biseriate; metulae covering virtually the entire surface of the vesicle, measuring 22 – 30 x 3 – 6 µm; phialides flask – shaped, 7 – 9 x 3 – 4 µm; conidia subglobose, 3.5 – 4.5 µm in diameter, echinulate. No sclerotia observed in the ex-type culture.
Environmental sources and notable properties	Common in soil. This species, along with a few other taxa were previously treated in <i>A. niger</i> sensu lato. <i>Aspergillus brasiliensis</i> was delimited in 2007 by Varga et al. primarily on the basis of molecular characters (see citation below).

Reference:

1. Samson, R.A., et al. 2007. 'Diagnostic tools to identify black aspergilli'. Stud Mycol, 59, 129-145.
2. Varga, J., et al. 2007. '*Aspergillus brasiliensis* sp. nov., a biseriate black *Aspergillus* species with world-wide distribution'. Int J Sys Evol Micro, 57, 1925-1932.
3. Varga, J., et al. 2011. New and revisited species in *Aspergillus* section *NigrI*. Stud Mycol, 69, 1-17.

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FUNGI  
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003F2-2011

Procedure	<i>Penicillium brevicompactum</i> Dierckx 1901 also accepted as <i>Penicillium bialowiezense</i> K.M. Zalesky 1927 and <i>Penicillium stoloniferum</i> Thom 1910
Isolation conditions	Grows well on common laboratory media like 2% Malt Extract agar (MEA) and Czapek Yeast Autolysate (CYA) at 25°C for 7 days. No growth at 37°C.
Macroscopic morphology	Colonies on MEA at 25°C 12-22 mm in diameter, plane or less commonly radially sulcate, usually velutinous; mycelium white; conidiogenesis moderate to heavy, dull green to dark green in color, rarely paler or more bluish; exudates occasionally present, clear to reddish brown; reverse pale or brown. On G25N at 5°C, micro-colonies to colonies up to 4 mm in diameter are produced.
Microscopic morphology	Conidiophores born from surface mycelium, stipes usually broad, 500-800 µm long, smooth walled, characteristically bearing compact, broad terverticillate penicilli, usually less than 40 µm long and 40-50 µm wide, with quaterverticillate and biverticillate penicilli usually evident also; rami borne singly, short and broad, 15-20 µm long, strongly diverging from the stipe axis; metulae in divergent clusters, short and broad, 9-15 x 3.5 – 5.0 µm, typically apically inflated, up to 7 µm in diameter; phialides in divergent verticals, ampulliform, 6 – 9 µm long; conidia ellipsoidal, 2.5 – 3.5 µm long, with walls smooth to very finely roughened, borne in divergent and disordered chains.
Environmental sources and notable properties.	Widespread in nature, in soil and decaying vegetation. Common on damp walls and building materials such as gypsum board. Reported from floor, carpet, mattress and upholstered furniture dust. Also isolated from urea-formaldehyde foam insulation, lead paint; cotton yarn; hay, cereals; mushroom compost.  Please note: Since it is difficult to distinguish <i>P. brevicompactum</i> from the closely-related <i>P. bialowiezense</i> , both are acceptable responses. The latter species tends to occur predominantly on rotting mushroom fruiting bodies. <i>Penicillium stoloniferum</i> is synonymous with <i>P. brevicompactum</i> and is also an acceptable response.

References:

1. de Hoog, G.S. et. al. 2000. Atlas of Clinical Fungi. 2nd Edition. Centraalbureau voor Schimmelcultures, Netherlands.
2. Frisvad, J. and R.A. Samson. 2004. "Penicillium subgenus Penicillium: new taxonomic schemes, mycotoxins and other extrolites". Stud Mycol, 49, 64.
3. Raper, K.B. and C. Thom. 1949. A Manual of the Penicillia: 407.
4. Samson, R.A. and van Reenen-Hoekstra, E.S. eds. 2004. Introduction to Food- and Airborne Fungi, 7<sup>th</sup> ed. Baarn: Centraalbureau voor Schimmelcultures, The Netherlands.
5. Scott, J.A. et al. 2008. "A survey of *Penicillium brevicompactum* and *P. bialowiezense* from indoor environments, with commentary on the taxonomy of the *P. brevicompactum* group." Botany 86, 732-741.

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FUNGI  
Round 46

003F3-2011

Procedure	<i>Lichtheimia corymbifera</i> (Cohn) Vuill. 1903 also accepted as <i>Absidia corymbifera</i> (Cohn) Sacc. et Trotter 1912 and <i>Mycocladius corymbifer</i> (Cohn) Vánová 1991
Isolation conditions	Grows well on common laboratory media including 2% Malt Extract Agar (MEA) at 30°C in 7-10 days. Does not grow in the presence of cycloheximide. Excellent growth and sporulation at 37°C; good growth and sporulation at 42 °C; maximum temperature is 48-52 °C.
Macroscopic morphology	High, rapidly growing colonies; light gray to grayish brown; reverse uncolored to very slightly yellow to buff with age.
Microscopic morphology	Broad (often 10 µm or more) sparsely septate hyphae with stolons and internodal rhizoids. Sporangiphores are hyaline to light gray, subterminally slightly brownish, and branched simply or in corymbiform pattern. Sporangia are pyriform, 100-120 (-150) µm in diameter, and hyaline when young, but become grayish brown to greenish beige with age. A swollen apophysis is seen at the point where the sporangiophore merges with the sporangium. Sporangia are 20-80 µm in diameter, erect, hyaline to slightly brownish, pyriform, and fragile. Columellae are hemispherical to short ovoidal. Sporangiospores have a greenish yellow tinge and are variable in shape and size, with dimensions varying between 3.2 to 3.9 by 3.1 to 3.5 µm and a long, ellipsoidal shape, 4.1 to 4.9 by 2.3 to 2.9 µm.
Environmental sources and notable properties	World-wide distribution in soil, stored grain, decaying vegetables and fruit, air, compost, animals and man. The genus <i>Absidia</i> in the broad sense consists of three separate biological genera: <i>Absidia sensu stricto</i> , <i>Lentamyces</i> and <i>Lichtheimia</i> (= <i>Mycocladius</i> ). Thermotolerant / thermophilic species are assigned to <i>Lichtheimia</i> , and this is the only genus of the three to contain opportunistic pathogens of vertebrates. Although the name <i>Mycocladius</i> predates <i>Lichtheimia</i> , according to Hoffman (2010) the latter must be accepted as correct because the genus <i>Mycocladius</i> was erroneously based on a type specimen that combined two different taxa. Thus, the correct name for this taxon is <i>Lichtheimia corymbifera</i> .

Reference:

1. Alastruey-Izquierdo, A. et al. 2010. J. Clin. Micro. 48(6):2154-2170.
2. Domsch, K.H. et al. 2007. Compendium of soil fungi, ed. 2:26.
3. Ellis, J.J. and C.W. Hesseltn. 1966. Sabouraudia 5 (1):66.
4. Hoffman K. 2010. Identification of the genus *Absidia* (Mucorales, Zygomycetes): A comprehensive taxonomic revision. In: Molecular Identification of Fungi. Berlin/Heidelberg, Gherbawy Y and Voigt K (Eds), DEU: Springer, pp 439-460.
5. Hoog, G.S. de. 2000. Atlas of clinical fungi, ed. 2:65.
6. Koneman, Elmer W. et. al. 1997. *Color Atlas and Textbook of Diagnostic Microbiology*. 5<sup>th</sup> Edition. J.B. Lippincott Co., Philadelphia, Pennsylvania

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**BACTERIA**  
**Round 46**

003B1-2011

Procedure	<i>Arcanobacterium haemolyticum</i> (ex Mac Lean et al. 1946) Collins et al. 1983, nom. rev., comb. nov.
Isolation Conditions	Grows sparsely on common laboratory media, but is enhanced by blood or serum, including 5% Sheep Blood Agar (SBA) at 37°C for 24-48 hours. Growth is considerably enhanced with addition of CO <sub>2</sub> .
Macroscopic Morphology	On SBA, colonies are small (0.75 mm dia.) after 24 hours, becoming larger (1.5 – 2.5 mm dia.) after extended incubation. Colonies are discoid, slightly raised, and β-haemolytic.
Microscopic Morphology	Gram-positive, slender, irregular rods predominate during the first 18 hours on blood agar; many cells exhibit V-formations. Upon extended incubation, organisms become granular and segmented, and resemble small irregular cocci.
Key Biochemical Tests	Catalase and nitrate negative. Acid is produced from glucose, lactose and maltose. Gelatin, esculin, urea and casein are not hydrolyzed. Shows CAMP inhibition reaction.
Environmental Sources	Humans are believed to be its main environmental reservoir.

References:

1. Holt, John G. et. al. 1994. *Bergey's Manual of Determinative Bacteriology*. 9<sup>th</sup> Edition. Williams and Wilkins, Baltimore, Maryland.
2. Forbes, Betty A. et. al. 2003. *Bailey and Scott's Diagnostic Microbiology*. 11<sup>th</sup> Edition. Mosby, Inc., St. Louis, Missouri.
3. Koneman, Elmer W. et. al. 1997. *Color Atlas and Textbook of Diagnostic Microbiology*. 5<sup>th</sup> Edition. J.B. Lippincott Co., Philadelphia, Pennsylvania.
4. Murray, Patrick R. et. al. 1999. *ASM Manual of Clinical Microbiology*. 7<sup>th</sup> Edition. ASM Press, Washington, D.C.

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**BACTERIA**  
Round 46

003B2-2011

procedure	<i>Chryseobacterium indoltheticum</i>
Isolation Conditions	Grows well on common laboratory media such as Trypticase Soy Agar and MacConkey Agar. Will grow in media containing up to 10% NaCl but does not require added salt.
Macroscopic Morphology	Colonies on nutrient agar, circular, smooth, entire, and opaque. Pigmentation is yellow to yellow-orange, no change in hue with cultural conditions. Growth in Nutrient broth turbid, slight pellicle and yellow sediment.
Microscopic Morphology	Gram negative rods, 0.5-1.0 µm occurring singly and in pairs.
Key Biochemical Tests	H <sub>2</sub> S production
Environmental Sources	Widely distributed in soil and water.

References:

1. Bergey, D.H. et. al. 1984. *Bergey's Manual of Systematic Bacteriology*, vol. 1, 1<sup>st</sup> Edition. Williams and Wilkins, Baltimore, Maryland.
2. Buchanan, R.E., and N.E. Gibbons (ed.) 1974. *Bergey's Manual of Determinative Bacteriology*, 8<sup>th</sup> Edition. Williams and Wilkins, Baltimore, Maryland.
3. Holt, John G. et. al. 1994. *Bergey's Manual of Determinative Bacteriology*. 9<sup>th</sup> Edition. Williams and Wilkins, Baltimore, Maryland.
4. Koneman, Elmer W. et. al. 1997. *Color Atlas and Textbook of Diagnostic Microbiology*. 5<sup>th</sup> Edition. J.B. Lippincott Co., Philadelphia, Pennsylvania.
5. Vandamme, P. et. al. 1994. New Perspectives in the Classification of the Flavobacteria: Description of *Chryseobacterium* gen. nov., *Bergeyella* gen. nov., and *Empedobacter* nom. Rev. Int. J. Syst. Bact., 44 (4): 827-831.

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**BACTERIA**  
Round 46

003B3-2011

Procedure	<i>Serratia marcescens</i>
Isolation Conditions	Grows well on common laboratory media including Trypticase Soy Agar, Blood Agar (5% Sheep), MacConkey Agar; 30-37°C optimum, in 24-48 hours.
Macroscopic Morphology	Small to medium, circular, convex, orangish colonies with pink centers and gray periphery. Many strains produce a pink, red, or magenta pigment.
Microscopic Morphology	Gram-negative rods (0.5-0.8 µm X 0.9-2.0 µm)
Key Biochemical Tests	Oxidase, Catalase, Indole, Motility, Glucose, Lactose Voges-Proskauer, Citrate, Acetate, Gelatin, DNase, Lysine, Arginine.
Environmental Sources	Commonly found in water, soil, food, plant surfaces, and contaminated indoor environments. Potential human pathogen.

References:

1. Murray, P. R., E.J. Baron, M. A. Pfaller, et al. 1999. *Manual of Clinical Microbiology*, 7<sup>th</sup> edition. American Society for Microbiology, Washington, D.C.