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# A new species of *Nannizziopsis* from New Jersey soil

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***Nannizziopsis mirabilis*, isolated from a soil sample collected from New Jersey, USA, is described as a new species. The ascomata are white to pale yellow, with a peridium of a network of loosely interwoven hyphae and simple, more or less straight, clavate appendages. The ascospores are hyaline, globose to subglobose, and ornamented with spiral bands or sometimes polygonal pits. The associated anamorph is assignable to the form genus *Chrysosporium*.**

Key Words——Ascomycete; *Nannizziopsis mirabilis*; Onygenaceae; soil-borne fungus.

The genus *Nannizziopsis* was erected by Currah in 1985 to accommodate a single species, *Rollandina vriesii* Apinis (Apinis, 1970). Apinis' concept of the genus *Rollandina* accommodated *Rollandina vriesii* primarily on the basis of the feature of hyphae found on a stalk (receptaculum) of Patouillard's collection named *Rollandina capitata*. Unfortunately, *Rollandina* has to be considered to be a nomen confusum since this collection appears to be based upon two fungi, the stalk that is the stipe of a small mushroom, and the ascoma of a *Nannizzia* and its *Microsporum* anamorph (von Arx, 1977). Currah (1985) has followed von Arx in rejecting the genus name, and proposed the new genus *Nannizziopsis* in the Onygenaceae and made the new combination, *N. vriesii* (Apinis) Currah. The genus is characterized by white ascomata, asperulate peridial hyphae constricted at septa, hyaline and globose ascospores, and a *Chrysosporium* anamorph. The fungus was reviewed by von Arx (1987), who did not accept Currah's proposal of the new genus, and considered it a synonym of *Arachnotheca* von Arx (1971). Guarro et al. (1991) claimed that *Arachnotheca* should be restricted to the type species, *A. glomerata* (Müller et Pacha-Aue) von Arx, because there are enough features for differentiating *Nannizziopsis* from *A. glomerata*. They thus retained the genus *Nannizziopsis* and transferred another species of *Arachnotheca* (Apinis, 1964; von Arx, 1974) to this genus as the new combination, *N. albicans* (Apinis) Guarro, Cano et de Vroey. In the same paper, they described a third species isolated from forest soil in Spain, *N. hispanica* Cano et Guarro.

During our recent survey of soil microfungi as producers of metabolites useful to the pharmaceutical industry, an interesting isolate of *Nannizziopsis* was obtained from a soil sample collected from New Jersey, USA, in 1993. Examination of the original descriptions of *Nannizziopsis* has indicated that this fungus cannot be assigned to any previously described species. It is therefore named and described herein.

***Nannizziopsis mirabilis*** Uchiyama, Kamiya et Udagawa, sp. nov. Figs. 1-11

Coloniae in agaro cum decocto tuberorum et carotarum (PCA) aliquanto restrictae, planae, tenues, ex mycelio vegetativo submerso constantes, ascomatibus abundantibus formantes, albae vel flavo-albae vel parum primulinae; conidiogenesis sparsa et inconspicua; reversum incoloratum vel dilute flavum vel plus minusve stramineum.

Ascomata superficialia, discreta vel confluentia, globosa vel subglobosa, appendiculis exclusis 145-250 $\mu$m diam, primum alba, ad maturitatem dilute flava; hyphae peridii hyalinae, tenues et leves, septatae, ad septum paulo constrictae, ramosae et anastomosantes, reticulum laxe formantes; appendices hyalinae, leves vel parum asperatae, vulgo rectae, non ramosae, septatae, ad septum saepe constrictae, (22-)35-100 × 2-5.5 $\mu$m, ad apicem clavatae. Asci 8-spori, subglobosi vel ovoidei vel plus minusve elongati, 9-12.5 × 7-9.5 $\mu$m, evanescentes. Ascosporae hyalinae, globosae vel subglobosae, 4-5 $\mu$m diam, spiratim porcatae vel interdum reticulatae. Status anamorphus: *Chrysosporium* sp.

Holotypus BF 49344: colonia exsiccata in cultura ex solo sylvae, New Jersey, USA, 17.x.1993, a S. Uchiyama et S. Kamiya isolata et ea collectione fungorum, Musei et Instituti Historiae Naturalis Chiba (CBM) conservata.

Etymology: Latin, *mirabilis* = extraordinary, referring to the unique ornamentation of ascospores.

Anamorph. *Chrysosporium* sp.

Mycelium ex hyphis hyalinis, ramosis, levibus, septatis, 1-2.5 $\mu$m diam compositum. Hyphae ad septum versus inflatae saepe adsunt. Conidia terminalia et lateralia, interdum intercalaria, sessilia vel brevipedicellata, unicellularia, hyalina, globosa vel subglobosa vel pyrifor-

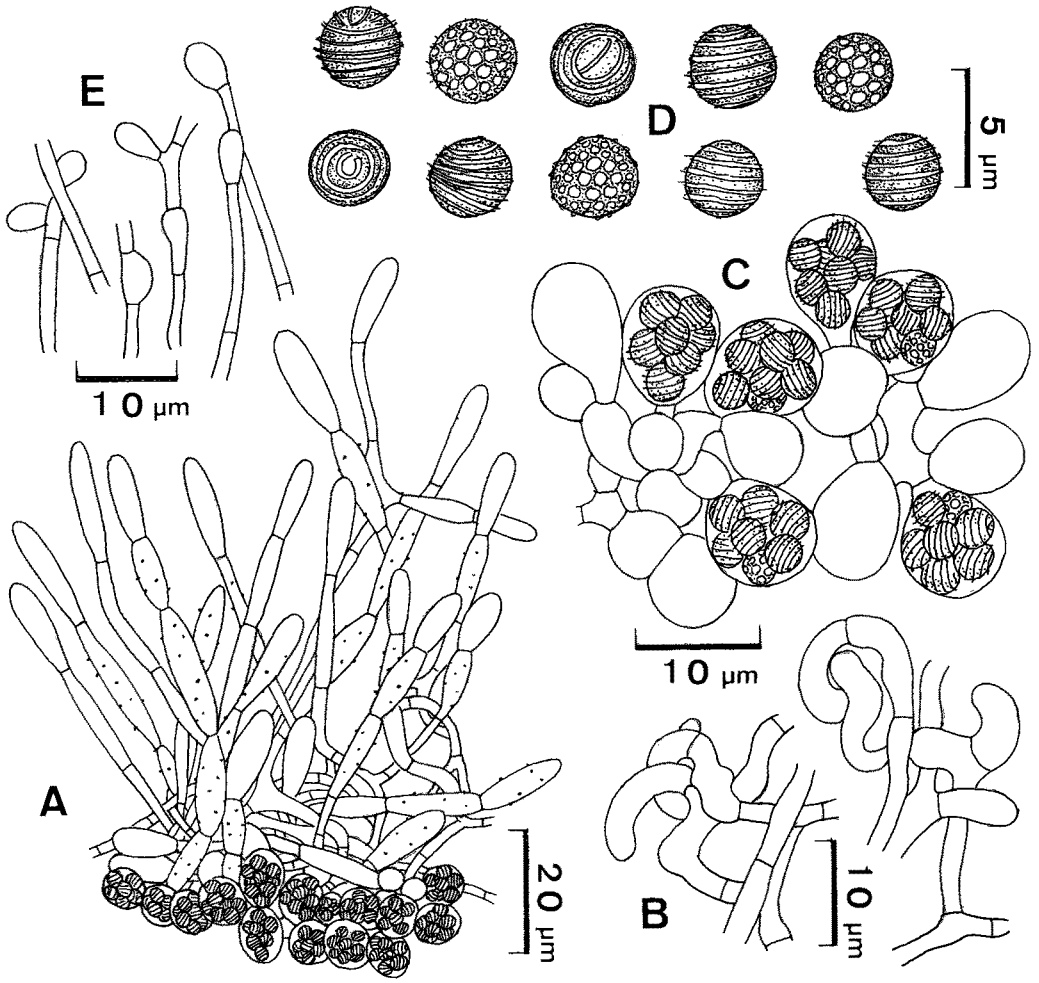


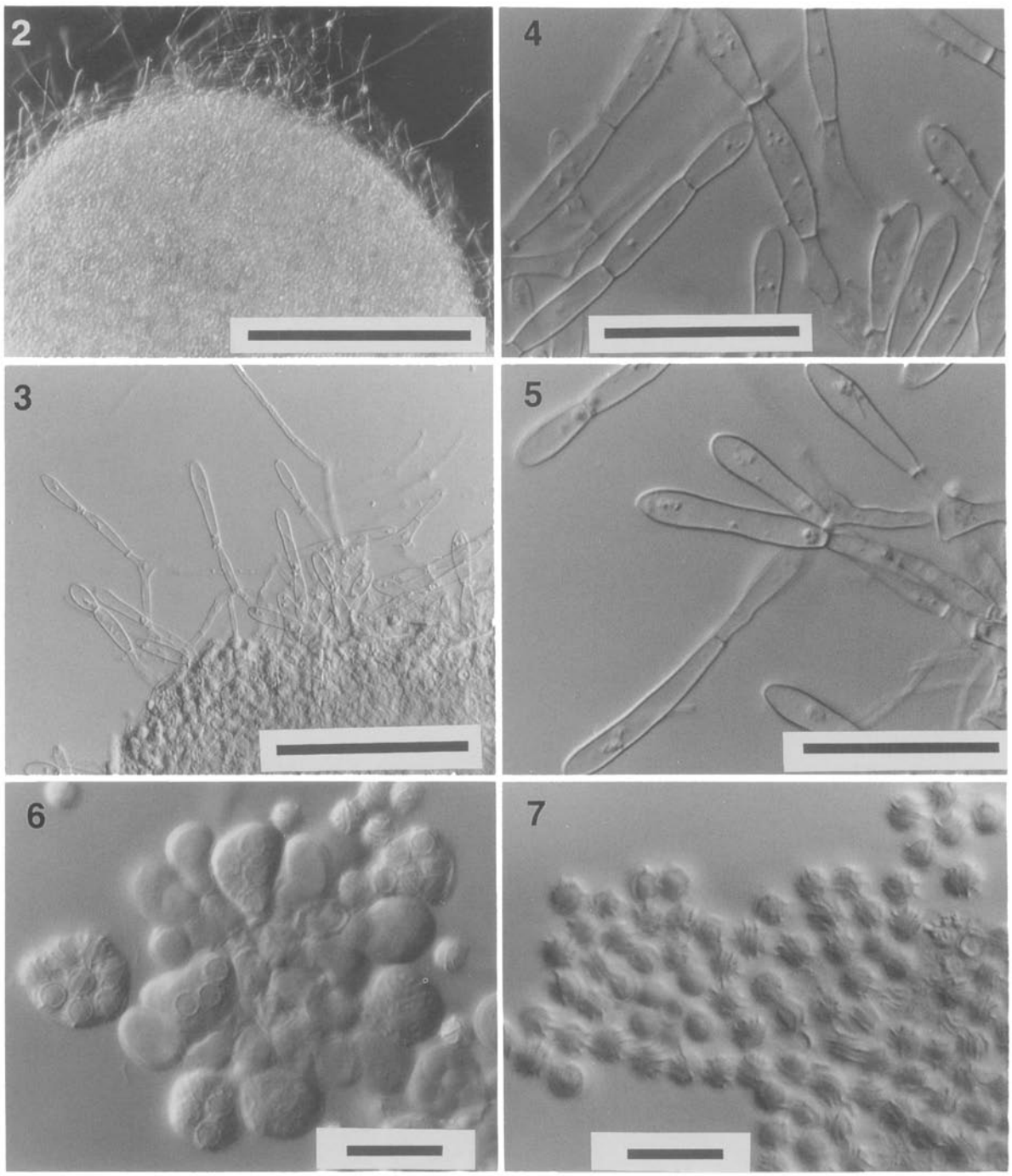

Fig. 1. *Nannizziopsis mirabilis* (BF 49344).
A. Margin of ascoma showing appendages. B. Ascomatal initials. C. Asci. D. Ascospores. E. Anamorph of intercalary and terminal conidia.

mia vel elongata, 4-6(-7.5) × 2.5-3 μm, basi saepe truncata, levia. Status teleomorphus: *Nannizziopsis mirabilis* Uchiyama, Kamiya et Udagawa.

Holotypus BF 49344, loc. cit.

Colonies on PCA growing rather restrictedly, attaining a diam of 32-34 mm in 21 days at 25°C, plane, thin, consisting of a submerged vegetative mycelium, producing abundant ascomata on the agar surface, overgrown by sparse flocculent aerial hyphae, White to Yellowish White (M. 3A2, after Kornerup and Wanscher, 1978) or somewhat Primrose (Rayner, 1970); margins thin, irregular; conidiogenesis sparse, inconspicuous; exudate small, clear; reverse uncolored to Pale Yellow (M. 4A3) or slightly Straw (R). Colonies on phytone yeast extract (PYE) growing rather restrictedly, attaining a diam of 34-36 mm in 21 days at 25°C, more or less floccose, centrally raised and convolute, consisting of a thin basal felt, White to Yellowish White (M. 1A2); ascomata absent; conidiogenesis absent or slight and not affecting the colony appearance; reverse Greyish Orange (M. 6B5) or Ochreous (R). Colonies on yeast-starch (YpSs) agar growing rapidly, attaining a diam of 42-47 mm in 21 days at 25°C, floccose, plane, consisting of a thin basal felt, White to Greyish Orange (M. 5B3) or Buff (R); ascomata absent; conidiogenesis absent or slight; reverse Pale Yellow (M. 4A3) or Buff (R). Colonies on oatmeal agar growing rapidly, attaining a diam of 45 mm in 21 days at 25°C, floccose, thin, zonate, consisting of submerged vegetative mycelium, producing abundant ascomata, in colors similar to those produced on PCA, with sparse aerial hyphae; conidiogenesis sparse, inconspicuous; exudate none; reverse Pale Orange (M. 5A3) or Buff (R).

Ascomata superficial, discrete or confluent in dense clusters, globose to subglobose, 145-250 μm in diam excluding the appendages, at first white, becoming pale yellow in age, maturing rather rapidly within 21 days; peridial hyphae hyaline, thin, smooth-walled, septate, somewhat constricted at the septum, 1-2.5 μm in diam, branched and anastomosed, forming a loose reticuloperidium, extending outwards to appendages; appendages rather numerously produced, hyaline, smooth-walled or slightly roughened, usually straight, unbranched, septate and often constricted at the septum, (22-)35-100 × 2-




Figs. 2–7. *Nannizziopsis mirabilis* (BF 49344).
2. A part of ascoma. 3. Margin of ascoma showing appendages. 4, 5. Appendages. 6. Asci. 7. Ascospores.
Scale bars: 2=100 μm; 3=50 μm; 4, 5=20 μm; 6, 7=10 μm.

5.5 μm, swollen above to clavate end. Asci 8-spored, singly borne on a short stipe, subglobose to ovoid, or somewhat elongate, 9–12.5×7–9.5 μm, evanescent. Ascospores hyaline, globose to subglobose, 4–5 μm in diam, consisting of a central body 2.8–3.2 μm in diam, with spiral bands which usually occur in six to seven coils, sometimes punctate-reticulate with coarse, rounded, polygonal pits.

Vegetative mycelium composed of hyaline, branched, smooth-walled, septate, 1–2.5 μm diam hyphae; racquet hyphae present; ascomatal initials first developed as long swollen branches from aerial hyphae, then several times rebranched and coiled around each other. Conidia terminal, lateral or sometimes intercalary, produced on undifferentiated hyphae, sessile or short-pedicellate, one-celled, globose to subglobose, or pyriform to elongate, 4-6(-7.5)×2.5–3 μm, often truncated at the base, smooth-walled.

Cellulolytic.

At 37°C, growth is nil.

Specimen examined: a dried culture isolated from forest soil, Lenape Park, New Jersey, USA, 17 October 1993, BF 49344, holotype. The type specimen is deposited in the Natural History Museum and Institute, Chiba, Japan (CBM).

The outstanding features of *Nannizziopsis mirabilis* are: (1) white to pale yellow ascomata, (2) hyaline peridial hyphae forming a loose reticuloperidium, (3) simple, straight, smooth to somewhat roughened, septate appendages which are constricted at septa and swollen to a clavate end, (4) hyaline, globose to subglobose ascospores ornamented with spiral bands or with coarse, rounded, polygonal pits, and (5) a *Chrysosporium* anamorph. Comparing the three known species of the genus, *N. mirabilis* differs from *N. vriesii, N. albicans* and *N. hispanica* primarily in producing characteristic ascospores with spiral bands which are distinctive from those with only polygonal pits in the other species.

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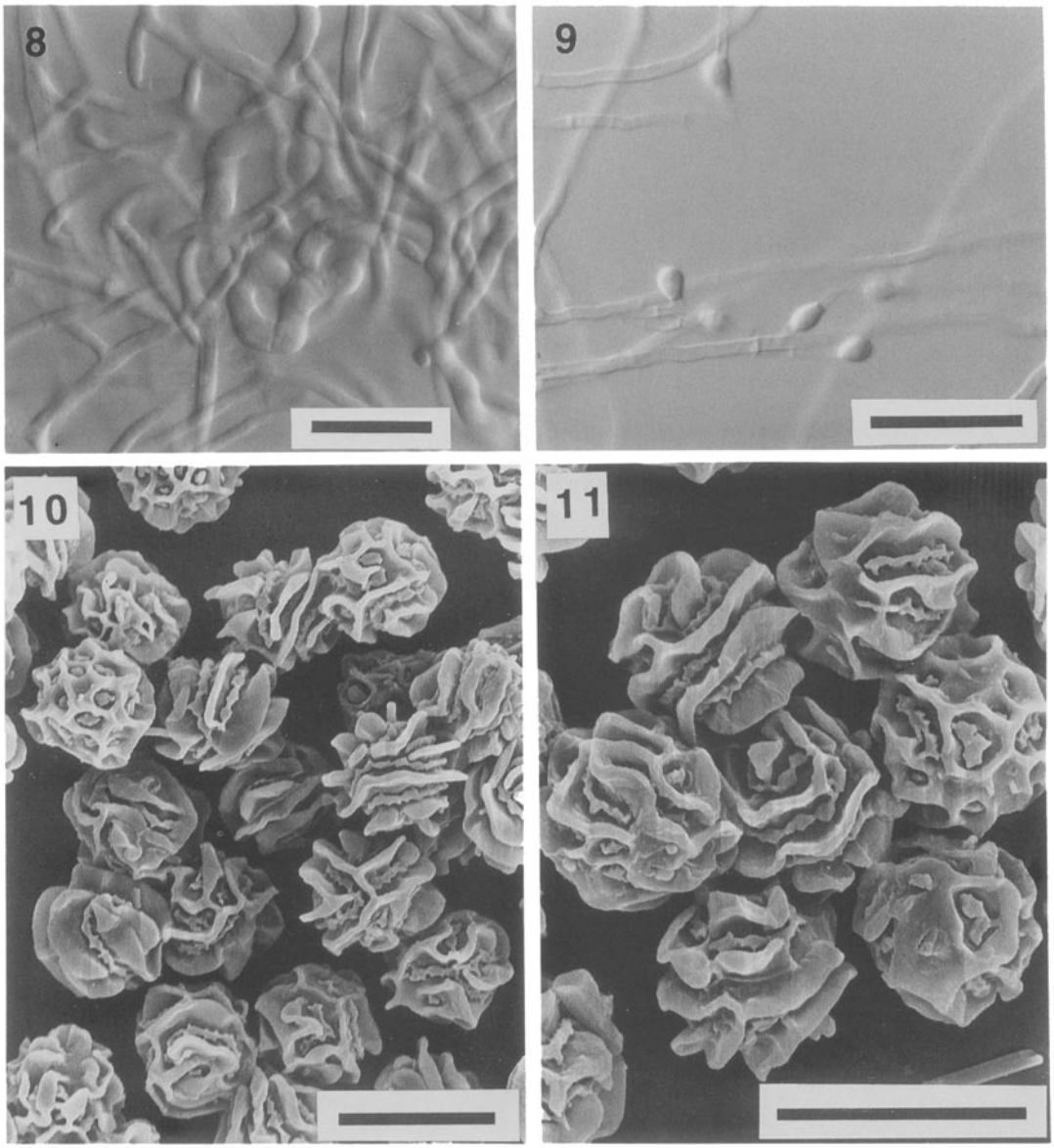


Figs. 8–11. *Nannizziopsis mirabilis* (BF 49344).

8. Ascomatal initial. 9. Anamorph of intercalary and terminal conidia. 10. Ascospores (SEM). 11. Ascospores originating from an ascus, showing two types of ornamentation (SEM).

Scale bars: 8=10 μm; 9=20 μm; 10, 11=5 μm.

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