Candida rongomai-pounamu
Candida rongomai-pounamu Padamsee, B.S. Weir, Petterson & P.K. Buchanan, sp. nov.

Etymology. The specific epithet ‘rongomai-pounamu’ (Māori), referring to the ‘treasure of Rongomai’. The students who discovered this new species and chose the name are in a Science, Technology, Engineering and Maths (STEM) education immersion class at Rongomai School, Otara, Auckland, New Zealand. Pounamu is the Māori word for the treasured greenstone (or jade), representing the students as the school’s precious treasure and also the future.

Classification — Debaryomycesaceae, Saccharomyces, Saccharomycetes, Saccharomycotina.

On Yeast extract Malt agar (YM), after 9 d at 22 °C, colony is white, somewhat glistening, apically-hirsute, with a raised undulating, membranous margin. After 6 d growth at 22 °C in YM broth, cells are ellipsoidal and cylindrical, 7–9(–11) × 3–5(–5.5) μm (av. 8.5 × 4 μm), occurring singly, in clusters, as pseudohyphae, and proliferating by budding. Dalmau plate culture after 10 d was white with pseudohyphae and the margin was also fringed with pseudohyphae. Fermentation and assimilation of carbon compounds — see MycoBank MB819344.


Notes — This study began as a project to raise awareness of fungal diversity and function among New Zealand school students and teachers. Mycologists at Landcare Research assisted 20 students (9–11 yr) at Rongomai Primary School, Otara, Auckland to collect and identify fungi in a native forest at Totara Park, 5 km from the school. The students’ challenge was to discover and describe a fungal species new to science. Students prepared cultures from swabs of the surface of collected specimens; colonies arising were subcultured and sequenced. Students then observed the process to differentiate and publish a new species, and collectively chose the name for the species epithet. The students involved in this project are as follows: Fotu Holikimafua, Serenity Iako, Gina Kavemanu, Michaela Langdon, Julius Marino, Te Rangihaum Matthews, Carlos Mccabe Davis, Janine Mulipola, James Nansen, Matarri Nichollos, Daychelle Paniani-Tietie, Daize Puaha, Sam Ratahi, Ula Sefo, Micheal Simona, Harlyn Teau-Rewa, Florence Tafaoga, Sheribyn Tiatia, Vanisha Vaeteru, Watson Wilson.

Phylogenetic analyses using an alignment of concatenated sequences of the nuclear large subunit and the internal transcribed spacer regions show that the three conspecific strains, ICMP 22125, 22126, and 22128, represent a novel yeast species and are sister to the Candida tanzawaensis clade, which is mainly composed of yeasts isolated from the digestive tract of basidiocarp-feeding beetles (Suh et al. 2004). Physiological profiles further support the separation of the new species as distinct from C. tanzawaensis and C. panamericana. The new species can be distinguished from C. tanzawaensis by its ability to grow in 50 % glucose. The new species can be distinguished from C. panamericana by its ability to assimilate arbutin and its inability to ferment either D-xylose or galactose. The new species can be distinguished both from C. tanzawaensis and C. panamericana by its inability to grow at 30 °C. All supplementary data including assimilation tests and sequence alignments are available at doi:10.7931/J2XW4GQT, specimen and strain data is available at https://scd.landcareresearch.co.nz.

Bayesian inference phylogenetic tree of concatenated ITS and LSU sequences using MrBayes v. 3.2.6, showing the relationship of Candida rongomai-pounamu to closely related species. The novel species is printed in bold. All strains are ex-type.

Colour illustrations. Rongomai School students and teacher collecting fungi in Totara Park, Auckland, New Zealand; light micrographs of Candida rongomai-pounamu budding cells in YM broth. Scale bar = 10 μm.
Candida vespimorsuum
Candida vespimorsuum Padamsee, B.S. Weir, Petterson, P.K. Buchanan, sp. nov.

Etymology. The specific epithet 'vespimorsuum', referring to 'wasp stings'. Five students from the class of 32 at Karamu High School, Hastings, New Zealand who discovered this new species and chose the name were stung by invasive wasps during the fungal collecting trip. Hence ‘the Candida of the wasp-stings’.

Classification — Incertae sedis, Saccharomycetales, Saccharomycetes, Saccharomyctina.

On Yeast extract Malt agar (YM), after 9 d at 22 °C, colony is white, with a slightly raised, lobed, membranous margin. After 5 d growth at 22 °C in YM broth, cells are subglobose to globose, ellipsoidal and cylindrical, (3–)4.5–7.5(–8) × (2.5–)3.5–6(–7.5) µm (av. 5.6 × 4.6 µm), occurring singly, in clusters or chains, as pseudohyphae, and proliferating by budding. Dalmau plate culture after 10 d was white with an undulating to entire margin. Fermentation and assimilation of carbon compounds – see MycoBank MB819395.


Notes — This study began as a project to raise awareness of fungal diversity and function among New Zealand school students and teachers. Mycologists at Landcare Research assisted 32 students (15–17 yr) at Karamu High School, Hastings, Hawke’s Bay to collect and identify fungi in a native forest at White Pine Bush Scenic Reserve, 45 km north of the school. The students’ challenge was to discover and describe a fungal species new to science. Students prepared cultures from swabs of the surface of collected specimens; colonies arising were subcultured and sequenced. Students then observed the process to differentiate and publish a new species, and collectively chose the name for the species epithet. The students involved in this project are as follows: Keegan Beets, Gurkamal Bhangal, Tom Black, Zara Blake, Emma Bone, Georgia Boyes, Mia Braddock, Jesca-Lee Bron, Caleb Brothers, Shayne Brown, Isla Christensen, Niels Clayton, Holly Davison, Holly Foulkes, Yvaan Hapuku-Lambert, Dominique Harmer-Higgins, Hannah Hemi-Robinson, Kate Jacobs, Kate Jones, Kevin Kambach, Ana Marks, Kirsten Rutten, Cerys Sanders-Jones, Bailey Seymour, Reece Sullivan, Mason Templeton, Felix Thornton, Camryn Toki, Liam Urquhart, Sophie Wells, Jaymie Wright, Cameron Young.

Phylogenetic analyses using an alignment of concatenated sequences of the nuclear large subunit and the internal transcribed spacer regions show that the two conspecific strains, ICMP 22110 and 22115, represent a novel yeast species and are sister to Candida sake. Physiological profiles further support the separation of the new species as distinct from C. sake and C. parapsilosis. The new species can be distinguished from C. sake by its inability to assimilate L-sorbose or to ferment sucrose. The new species can be distinguished both from C. sake and C. parapsilosis by its ability to assimilate D-glucosamine and D-arabinose and inability to assimilate D-melezitose. All supplementary data including assimilation tests and sequence alignments are available at doi:10.7931/J2XW4GQT, specimen and strain data is available at https://scd.landcareresearch.co.nz.

Bayesian inference phylogenetic tree of concatenated ITS and LSU sequences using MrBayes v. 3.2.6, showing the relationship of Candida vespimorsuum to closely related species. The novel species is indicated in bold. All strains are ex-type.

Colour illustrations. White Pine Bush Scenic Reserve, Hawke’s Bay, New Zealand; Karamu High School students examining a mushroom; light micrographs of Candida vespimorsuum budding cells and pseudohyphae in YM broth. Scale bar = 10 µm.
*Rhodotorula ngohengohe*
**Rhodotorula ngohengohe** Padamsee, B.S. Weir, Petterson & P.K. Buchanan, sp. nov.

*Etymology.* The specific epithet *‘ngohengohe’* (Māori), referring to *‘be humble, agreeable’*. Students who discovered this new species are from Te Kura Kaupapa Māori o Kaikohe, and chose *ngohengohe* for this species from their school motto E rere, Kia koi, Kia ngohengohe = Fly. Be on to it. Be humble in your successes (pronounced ngohe-ngoe).

*Classification.* — *Sporidiobolaceae*, *Sporidiobolales*, *Microbotryomycetes*, *Pucciniomycotina*.

On Yeast extract Malt agar (YM), after 9 d at 22 °C, colony is flat, pink, moist and glistening, with a curved margin. After 5 d growth at 22 °C in YM broth, cells are mostly ellipsoidal and occasionally oval, (4.5–)6.5–8(–9) × 3–4.5(–5.5) µm (av. 7 × 3.8 µm), occurring singly, in clusters, and proliferating by budding. Dalmau plate culture after 10 d was pink with an entire margin. Fermentation and assimilation of carbon compounds – see MycoBank MB819394.

*Typus.* NEW ZEALAND, Northland, Kaikohe water catchment, on bird feather surface, 12 Feb. 2016 (holotype PDD 105305, culture ex-type ICMP 22106, ITS and LSU sequences GenBank KY285005 and KY285006, MycoBank MB819394).

*Notes.* — This study began as a project to raise awareness of fungal diversity and function among New Zealand school students and teachers. Mycologists at Landcare Research assisted 18 students (13–14 yr) at Te Kura Kaupapa Māori o Kaikohe, Northland to collect and identify fungi in a native forest of the nearby water catchment. The students’ challenge was to discover and describe a fungal species new to science. Students prepared cultures from swabs of the surface of collected specimens; colonies arising were subcultured and sequenced. Students then observed the process to differentiate and publish a new species, and collectively chose the name for the species epithet. The students involved in this project are as follows: Jayson Gotz-Edmonds, Kahurangi Hauraki, Awhina Herewini Hona, Temepara Hita, Sean Kaka, Sione Kata, Te Ao Kohatu Kaukau-Troughton, Niki Lawrence, Shaden Marsh, Kaurangi Maxwell, Te Painga Osborne, Reiata Phillips Heihei, Tawauwau Rakete, Tasha Richards, Romeo Tau-Ashby, Vincent Tau-Roberts, Mikaira Te Haara, Monique Terei.

Phylogenetic analyses using an alignment of concatenated sequences of the nuclear large subunit and the internal transcribed spacer regions show that ICMP 22106 represents a novel yeast species and is sister to *Rhodotorula evergladiensis*. Physiological profiles further support the separation of the new species as distinct from *R. evergladiensis* and *R. kratochvilovae*. The new species can be distinguished from *R. evergladiensis* by its ability to assimilate D-arabinose, L-arabinose, and D-ribose as well as its ability to use nitrate as a nitrogen source. The new species can be distinguished from *R. kratochvilovae* by its inability to assimilate D-raffinose, its ability to assimilate xylitol, and its weak growth in 10 % NaCl. All supplementary data including assimilation tests and sequence alignments are available at doi:10.7931/J2XW4GQT, specimen and strain data are available at https://scd.landcareresearch.co.nz.

Bayesian inference phylogenetic tree of concatenated ITS and LSU sequences using MrBayes v. 3.2.6, showing the relationship of *Rhodotorula ngohengohe* to closely related species. The novel species is indicated in bold. All strains are ex-type.

*Colour illustrations.* Students from Te Kura Kaupapa Māori o Kaikohe returning from fungal collecting in Kaikohe water catchment forest, Kaikohe, New Zealand; overlooking town of Kaikohe; light micrographs of *Rhodotorula ngohengohe* budding cells in YM broth. Scale bar = 10 µm.