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## Genera and species in acetic acid bacteria: The past, present and future

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The genus Acetobacter Beijerinck 1898 was first introduced for acetic acid bacteria. The genus Gluconobacter Asai 1935 was described for the strains that had the intense capability of oxidizing glucose to gluconic acid rather than ethanol to acetic acid and the lack of oxidizing acetic acid to carbon dioxide and water. The genus Acetobacter was divided into two subgenera based on the difference of the ubiquinone system. One was the type subgenus Acetobacter, which was characterized by Q-9, and the other was the subgenus *Gluconacetobacter* Yamada and Kondo 1984, which was by Q-10. The latter was later elevated to the genus *Gluconacetobacter* Yamada et al. 1998. In the latter genus, however, two groups were found. One was mainly of the so-called peritrichously flagellated intermediate strains, which were once named as A. liquefaciens, and the other was mainly of A. xylinus strains. For the latter group, the name of Komagataeibacter Yamada et al. 2013 was given. In the former, 10 species have been recognized, and 15 species have been in the latter. At the present time, 17 genera are described in acetic acid bacteria: *Acetobacter, Gluconobacter, Acidomonas, Gluconacetobacter, Asaia, Kozakia, Swaminathania, Saccharibacter, Neoasaia, Granulibacter, Tanticharoenia, Ameyamaea, Neokomagataea, Komagataeibacter, Endobacter, Nguyenibacter and <i>Swingsia.* Of the several genera, taxonomic discussions will be made.

## **Biography**

Yuzo Yamada was Associate Professor for nine years, then Full Professor for 17 years and retired from Shizuoka University at the age of 63 in 1995. He has published about 250 original papers in the fields of the biochemistry of acetic acid bacteria, the microbial diversity, especially of acetic acid bacteria and the microbial systematics, especially of acetic acid bacteria and yeasts and yeast-like fungi.

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