Draft Genome of *Streptomyces tsukubaensis* NRRL 18488, the Producer of the Clinically Important Immunosuppressant Tacrolimus (FK506)

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The macrocyclic polyketide tacrolimus (FK506) is a potent immunosuppressant that prevents T-cell proliferation produced solely by *Streptomyces* species. We report here the first draft genome sequence of a true FK506 producer, *Streptomyces tsukubaensis* NRRL 18488, the first tacrolimus-producing strain that was isolated and that contains the full tacrolimus biosynthesis gene cluster.

The genome mining showed, in addition to the tacrolimus gene cluster that is fully sequenced and publicly available for the first time, several secondary metabolite gene clusters, including four type I PKS (polypeptide synthase), two type II PKS, one type III PKS, three NRPS (non-ribosomal peptide synthetase), three hybrid PKS/NRPS, eight terpene, six lantibiotic, and three siderophore gene clusters. They were identified and annotated by means of antiSMASH and NRPSp servers (6, 8). This vast arsenal of secondary metabolite genes points to *S. tsukubaensis* as a highly profitable industrial microorganism, even beyond its use in tacrolimus production.

**Nucleotide sequence accession numbers.** This Whole Genome Shotgun project (chromosome and both plasmids) has been deposited at DDBJ/EMBL/GenBank under the accession numbers AJSZ00000000. The version described in this paper is the first version, AJSZ01000000.

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REFERENCES


Genome Announcement