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**Carboxyl Proteinase from *Pseudomonas* Defines a Novel Family of Subtilisin-like Enzymes**

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The crystal structure of a pepstatin-insensitive carboxyl proteinase from *Pseudomonas* sp. 101 (PSCP) has been solved by single-wavelength anomalous diffraction using the absorption peak of bromide anions. Structures of the uninhibited enzyme and of complexes with an inhibitor that was either covalently or noncovalently bound were refined at 1.0 – 1.4 Å resolution. The structure of PSCP comprises a single compact domain with a diameter of ca. 55 Å, consisting of a seven-stranded parallel β-sheet flanked on both sides by a number of helices. The fold of PSCP is a superset of the subtilisin fold, and the covalently bound inhibitor is linked to the enzyme through a serine residue. Thus, the structure of PSCP defines a novel family of serine-carboxyl proteinases (defined as MEROPS S53) with a unique catalytic triad consisting of Glu80, Asp84 and Ser287.