Fig. 3 Stereoview of a model containing the substrate, *N*-succinyl-L-Ala-L-Ala-L-Pro-L-Phe-*p*-nitroanilide (bold lines and filled atoms), bound to the active site of *B. amyloliquefaciens* subtilisin. Alpha carbons from important enzyme and substrate residues are labelled. In protease substrate nomenclature the substrate may be represented as

where the scissile peptide bond is between the P1 and P1' residues³⁰. The E·S model is based upon a preliminary 2.0 Å X-ray structure of a product bound to subtilisin and the succinyl and *p*-nitroanilide groups were introduced by modelling (R. Bott and M. Ultsch, unpublished data). This model is similar to a previously published complex³¹.

Of course this advantage would apply only to His P2 substrates but would be reasonable if the ancestral enzyme were involved in specific proteolytic processing, for example. Regardless of the exact order of evolutionary events, our mutagenic studies show that inserting catalytic triad residues in a stepwise fashion can produce enzyme intermediates with progressively increased turnover numbers.

In summary, when residues in the catalytic triad are altered separately or together there are large effects on turnover rate, consequent changes in the enzyme mechanism, and only minor effects on the Michaelis constant. The residues in the catalytic triad function in a strongly synergistic fashion and contribute a factor of about 2×10^6 to the total to the catalytic rate enhance-

ment of 10^9 to 10^{10} . The residual activity from complete replacement of the catalytic triad is not a contaminant or other artefact, but results from transition state stabilization from contacts outside the catalytic triad. Finally, despite the synergy between the catalytic triad residues, their sequential introduction is reasonable in terms of both evolution and function.

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Erratum Oxygen isotope dating of the Australian regolith

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IN this letter, Fig. 1 as printed is too small to allow the symbols to be properly differentiated. The figure is reprinted here with enlarged symbols. In addition, line 13 in the left-hand column on page 515 has become garbled by an error in a line correction. The first sentence in that paragraph should read: "Isotopic results obtained from residual clays (collected *in situ* from regolith profiles) of post-mid Tertiary age have $\delta^{18}\text{O}$ values between 17.5 and 21.3‰, with the exception of samples from field *d* (representing latitudes north of $\sim 20^\circ\text{S}$) which have anomalously low values." □