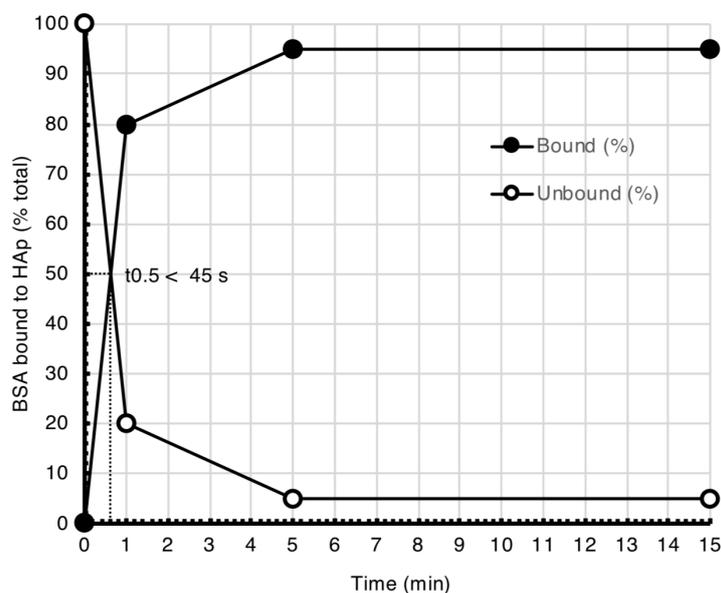
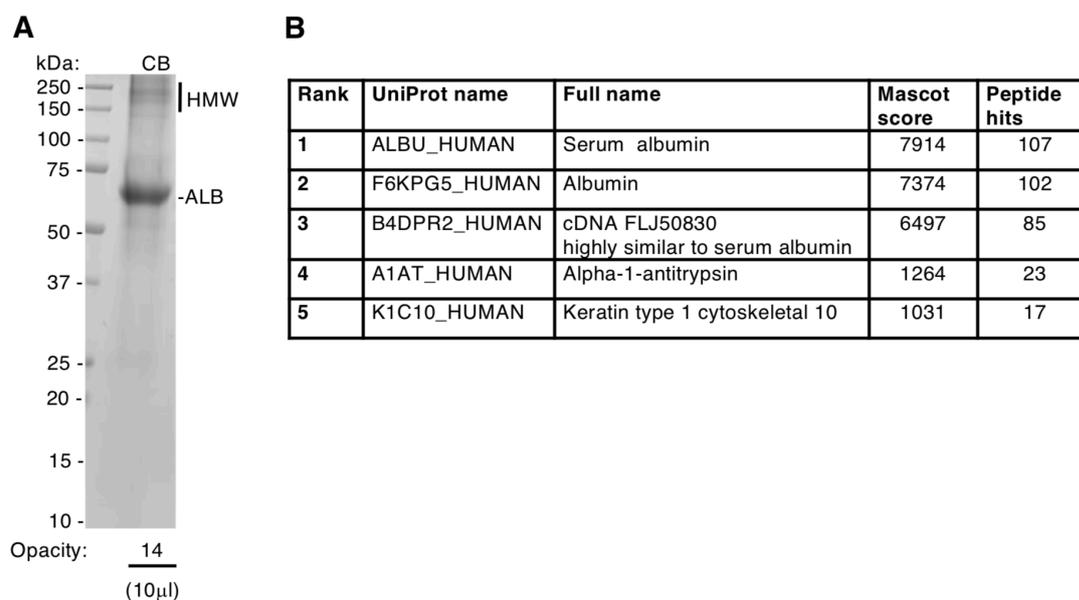


## SUPPLEMENTARY FIGS.

**Supplementary Figure S1: Albumin binds hydroxyapatite rapidly and near-quantitatively**

Bovine serum albumin (100  $\mu$ g, from Sigma) was incubated with powdered hydroxyapatite (10 mg, from Sigma; mortar ground) in 100  $\mu$ l Tris-buffered saline with constant mixing at 20 $^{\circ}$ C for various times as indicated. Following centrifugation (2,000 x g, 2 min), bound- and unbound fractions (volume matched) were analysed with reducing SDS-PAGE and Coomassie staining. Densitometric analysis showed that binding of albumin (BSA) to hydroxyapatite (HAp) was rapid ( $t_{0.5} < 45$  s) and saturable under these conditions.

**Supplementary Figure S2: Identification of albumin in the HMW band by mass spectrometry**

To verify identity of the high-molecular weight, albumin-immunopositive bands from chalky enamel (e.g. HMW, Fig. 3), the  $\approx$  200–300-kDa Coomassie-stained (CB) gel bands from opacity 14 (HMW) were excised and subjected to peptide mass fingerprinting as described under Methods.

Tandem mass spectrometry data were searched against a human database using the Mascot search engine (Matrix Science, UK) with standard settings.

**(A)** Coomassie-stained gel showing the HMW bands analysed by mass spectrometry.

**(B)** The tabulated search results show albumin in the top 3 positions, reflecting much higher Mascot scores and numbers of identified peptides (peptide hits) than the next 2 highest-ranked identifications. These data indicate the HMW bands in **A** are largely comprised of serum albumin.