

GLAXOSMITHKLINE PLC
Form 6-K
August 29, 2008

FORM 6-K

**SECURITIES AND EXCHANGE COMMISSION
Washington D.C. 20549**

Report of Foreign Issuer

**Pursuant to Rule 13a-16 or 15d-16 of
the Securities Exchange Act of 1934**

For period ending August 29, 2008

GlaxoSmithKline plc
(Name of registrant)

980 Great West Road, Brentford, Middlesex, TW8 9GS
(Address of principal executive offices)

Indicate by check mark whether the registrant files or
will file annual reports under cover Form 20-F or Form 40-F

Form 20-F x Form 40-F

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Indicate by check mark whether the registrant by furnishing the
information contained in this Form is also thereby furnishing the
information to the Commission pursuant to Rule 12g3-2(b) under the

Securities Exchange Act of 1934.

Yes No x

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GlaxoSmithKline plc (the 'Company') announces that in accordance with the authority granted by shareholders at the Company's Annual General Meeting on 21 May 2008 it purchased 1,572,000 of its Ordinary shares of 25 pence each ('shares') on 29 August 2008 at a price of 1289.2918 pence per share.

The shares will be cancelled.

Following the cancellation of these shares, the Company holds 474,194,158 of its shares in Treasury, representing 9.06 % of the total voting rights in the Company.

The Company has 5,233,825,030 shares in issue (excluding Treasury shares). This number represents the total voting rights in the Company and may be used by shareholders as the denominator for the calculations by which they can determine if they are required to notify their interest in, or a change to their interest in the Company under the Financial Services Authority's Disclosure and Transparency Rules.

This announcement does not constitute, or form part of, an offer or any solicitation of an offer to purchase or subscribe for securities in any jurisdiction and is in conformity with the Financial Services Authority's Disclosure and Transparency Rules.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorised.

GlaxoSmithKline plc
(Registrant)

Date: August 29, 2008

By: VICTORIA WHYTE

Victoria Whyte
Authorised Signatory for and on
behalf of GlaxoSmithKline plc