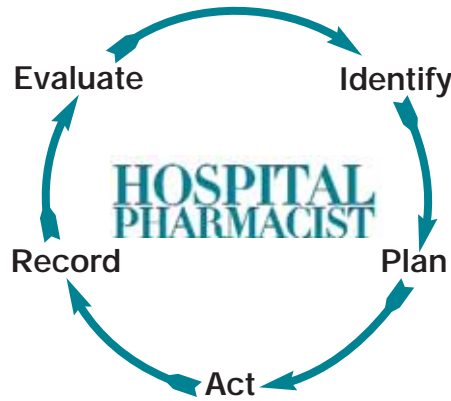


Pharmacogenetics

This issue's special feature, on which these questions are based, was commissioned from independent authors. The information in the box below should help readers to identify knowledge gaps and undertake continuing professional development. Readers are also invited to complete the questions overleaf to test their knowledge of the articles, and send their answers, together with a stamped and addressed C5 envelope, to:

Life-long Learning— Pharmacogenetics
Hospital Pharmacist
1 Lambeth High Street
London SE1 7JN



Entries must be received by 23 June 2008. Results will be returned with a certificate of completion.

Life-long Learning competition

Details of the next Life-long Learning competition are still being finalised.

In the meantime, readers are invited to continue to answer the Life-long Learning questions overleaf for continuous professional development purposes. Answers will be marked as usual and a certificate of completion will be sent in return. Accreditation by the College of Pharmacy Practice remains unchanged.

Do you receive your own copy of *Hospital Pharmacist*?

All hospital pharmacists in Great Britain and members of the Royal Pharmaceutical Society's Hospital Pharmacist Group are entitled to receive a free copy of *Hospital Pharmacist*. Owing to changes in postal charges, *Hospital Pharmacist* is now delivered in the same wrapper as *The Pharmaceutical Journal*. If you do not receive your own copy, please e-mail your name, address and Society registration number to jo.cook@rpsgb.org

Name: _____

RPSGB registration number: _____

Address: _____

Post code: _____

How to undertake continuing professional development

Identify knowledge gaps

- ◆ The principles on which pharmacogenetic technology is based
- ◆ The current and potential applications for pharmacogenetic technology

Act

- ◆ Read the articles in this issue
- ◆ Test your knowledge by answering the multiple-choice questions overleaf

Evaluate

- ◆ What have you learnt?
- ◆ How has it added value to your practice?

- ◆ What will you do now and how will this be achieved?

The feature on pharmacogenetics has been accredited by the College of Pharmacy Practice against the Royal Pharmaceutical Society's general and hospital practice areas of competence, which can be accessed via *Hospital Pharmacist* online (www.pjonline.com/hplinks)

Reading the feature and completing the questions will help readers to fulfil aspects of the following competency areas, depending on their area of practice and

application of learning: G1, G5, G8, G9, HP1, HP2, HP4, HP5, HP10.

Completion of the questions entitles undergraduates to one point towards the Professional Development Certificate, a joint initiative between the British Pharmaceutical Students' Association and the College.

The assistance of the College of Pharmacy Practice is acknowledged in producing the CPD elements of this month's **Special feature**.



To answer the questions, tick either the True or False column

	True	False		True	False
1. Single nucleotide polymorphisms (SNPs):					
a) Are small variations in the genetic code that can affect disease development					
b) Always cause an alteration to the amino acid sequence of a protein					
c) Can occur in tumour cell DNA					
d) Usually occur in the coding regions of genes					
e) Can alter a patient's ability to respond to a drug					
2. The Human Genome Project:					
a) Was completed in 1993					
b) Aimed to sequence all of the chemical base pairs that make up human DNA					
c) Identified over 1.4 million SNPs					
d) Identified fewer than 30,000 SNPs in the coding regions of genes					
e) Has driven forward research in pharmacogenetics					
3. Regarding the use of trastuzumab to treat breast cancer:					
a) It is only recommended for treating patients with tumours that express human epidermal growth factor receptor 2 (HER2)					
b) HER2 expression is determined from the DNA of healthy cells					
c) NHS hospital laboratories are unable to test a tumour for its level of HER2 expression					
d) The drug targets healthy DNA					
e) HER2 testing is currently paid for by the manufacturer					
4. Future roles for pharmacists in pharmacogenetics include:					
a) Obtaining patient consent for DNA testing					
b) Interpreting pharmacogenetic test results					
c) Prescribing treatment according to test results					
d) Replacing doctors as diagnosticians					
e) Counselling patients on the implications of test results					
5. Regarding thiopurines:					
a) 6-mercaptopurine is the prodrug of azathioprine					
b) Azathioprine is inactivated by thiopurine methyltransferase (TPMT)					
c) Low TPMT activity is associated with acute neutropenia					
d) About 90 per cent of the population is homozygous for the normal allele of the TPMT gene					
e) A patient's TPMT activity can currently only be determined by genotyping					
6. The development of a pharmacogenetic test is highly likely if:					
a) It can improve the treatment outcome for an expensive drug					
b) It can reduce the incidence of a mild, self-limiting side effect					
c) The result creates a significant difference to treatment outcomes					
d) It has a low probability of producing false positive results					
e) The result is easy to interpret					
7. Regarding irinotecan:					
a) It is used to treat colorectal cancer					
b) It can cause neutropenia that is potentially fatal					
c) Its toxicity is caused by the metabolite, SN-38 glucuronide					
d) It is inactivated by an enzyme encoded by the UGT1A1 gene					
e) Its use in clinical practice is routinely preceded by a genetic test that determines a patient's UGT1A1 genotype					
8. Human leucocyte antigen (HLA) B*5701 testing:					
a) Is a way of classifying patients by phenotype					
b) Is routinely carried out before a patient is prescribed warfarin					
c) Can identify patients more likely to be hypersensitive to abacavir					
d) Has been shown by some studies to be cost-effective					
e) Can reduce the incidence of diarrhoea, a common and potentially fatal side effect of abacavir					
9. Regarding pharmacogenetic testing:					
a) The first was performed in the 1950s					
b) Any results will not require special storage arrangements, according to the Nuffield Council on Bioethics					
c) It is likely to bring an end to "trial and error" prescribing					
d) It is expected to revolutionise all clinical specialties					
e) In the future, some results may be used to inform the prescribing of warfarin					
10. Polymorphisms in the 2D6 isoform of cytochrome P450:					
a) Are detected by the NicoTest					
b) Are detected by the Amplichip					
c) Are associated with variations in warfarin dose requirements					
d) Can affect the efficacy of standard doses of tamoxifen					
e) Only decrease or abolish the patient's metabolic capacity for certain drugs					

Answers will appear in the July/August issue

