was no difference based on nationality and between first and second year students.

Conclusion: The lack of insight of low performing, especially female students is cause for concern and may indicate that additional training is required. It remains to be determined whether this lack of insight also extends to written examinations in this and other disciplines as well as clinical skills. It is unclear whether poor performers over-estimate their performance because their relative incompetence deprives them of the skills needed to recognise their deficits.

P15.23

Attitudes of medical students in Malta to the teaching of embryology and histology

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Introduction: Embryology and histology are two aspects of basic biomedical sciences. The aim of this study is to investigate the attitudes of pre-clinical students, who are undergoing tuition in the basic biomedical sciences, towards these two subjects.

Methods: The data was collected by means of a survey. Apart from filling in their gender, age, nationality, year of study, participants ticked statements regarding embryology and histology that they completely agreed with.

Results: 50.9% of the students participated in this survey. Some interesting findings from the data collected were either regarding both histology and embryology combined, such as the fact that only 3.2% believe that embryology is one of the most clinically relevant basic sciences, while 4.3% believe that histology is one of the most clinically relevant basic sciences. Furthermore, only 25.9% of the participants believe that a doctor would be of limited effectiveness without embryology, while 37.8% believe the same for histology. Interestingly, 3.8% of the students believe that Western medicine can do without embryology, like Eastern or alternative medicine, while 4.3% believe the same for histology. The study also discovered some differences between the students' regard for embryology and that of histology. For example, 45.9% of the students believe that although embryology is interesting, it needs selective understanding in the clinic, while only 31.9% believe the same thing for histology.

Conclusion: In conclusion, the study has shed further light on how medical students regard histology and embryology with the rest of their medical curriculum.

P16.01

Implementation of pre-emptive pharmacogenomics in the Maltese population

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Introduction: Genetic variation between individuals provides predictive information on treatment effectiveness and risk of toxicity in commonly used pharmaceuticals. Pharmacogenomic approaches are increasingly being used to assist in the rationalization of drug use, and hence improving the quality of personalized health care and reducing the costs of the overall healthcare expenditure.

Methods: 45 DNA samples from healthy volunteers residing in Malta were analyzed with the DMET+ platform (Affymetrix, Santa Clara, CA, USA), including a broad coverage of 1,936pharmacogenomic markers in 231 relevant pharmacogenes on a single GeneChip platform. Data analysis included principal component analysis, ancestry analysis and shortlisting of the most relevant actionable pharmacogenomic biomarkers.

Results: Although the Maltese population clusters together with the Caucasian population, as expected, the allele frequencies for several pharmacogenomic markers, in the Maltese population are significantly different compared to those observed in the Caucasian population. For example, the allele frequencies observed for several CYP2D6 alleles in the Maltese population are different compared to those observed in Caucasians, while although the TPMT*3C allele frequency is 3% in the Caucasian population, this allele is completely absent in the Maltese population.

Conclusion: These findings warrant further investigation during the Phase II of the project that will soon commence. Overall, individualization of drug therapy is the ultimate goal, providing the rationale for implementing pre-emptive pharmacogenomics in healthcare provision in developing countries in Europe and worldwide.

Disclosure: The DMET+ funding was provided by Affymetrix through the PGENI initiative.

P16.02

Design of novel inhibitors of *Mycobacterium tuberculosis* replication using azole antifungals as leads

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Introduction: Mycobacterium tuberculosis (Mtb) continues to be a source of significant morbidity and mortality due to the constant emergence of resistant strains. Azole antifungals have been found to exert an inhibitory activity on Mtb CYP121 enzymes, compromising its viability; and were used in this study as leads for the *in silico* design of novel agents capable of superior inhibitory activity at this locus.

Methods: Protein Data Bank (PDB) crystallographic deposition 2IJ7 describing the coordinates of the Mtb CYP121 enzyme: fluconazole complex was selected as a template. Fluconazole was extracted computationally from the Mtb Ligand Binding Pocket (LBP), and its affinity for its cognate receptor was calculated *in silico*. The two triazole rings and the hydroxyl group inherent to azoles constituted the pharmacophoric scaffolds onto which novel moieties could be added for the construction of novel structures.

Results: Novel high affinity structures capable of binding to the Mtb LBP with high affinity were designed and segregated into families according to pharmacophoric structure and Lipinski rule compliance.

Conclusion: The designed molecules exhibiting the optimal combination of affinity and Lipinski rule compliance are suitable for further optimisation and *in vitro* validation studies. The entire molecular cohort may be included into chemical libraries for high throughput screening.

P16.03

Design and optimisation of novel lead carbonic anhydrase inhibitors for the management of neoplastic disease.

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Introduction: Neoplastic disease progression results in a scenario in which tumour cell vasculature is not sufficient to maintain homeostasis. Compensatory mechanisms have consequently evolved, an example of which is the over-expression of Carbonic Anhydrase IX (CA (IX)) which, through reduction of intracellular CO_2, reduces hypoxia and promotes metastasis. This study uses CA (IX) as a target for the design of novel inhibitors.

Methods: Protein Data Bank crystallographic deposition 3IAI describing the holo acetazolamide: CA (IX) complex was used as a template. The affinity of the complex components was