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| Course Title/Code: | Genes and Gene Functions in Diseases (MMPH6008) |
| Department: | School of Biomedical Sciences |
| Objective: | To provide fundamental knowledge of gene and gene function in normal/abnormal human body |
| Content: | <ul style="list-style-type: none"> • Complex genetic diseases • Reverse genetics and cloning of human diseases genes: the cystic fibrosis gene • Molecular basis of genetic disease • Molecular mechanisms of aging • Gene therapy: bioethics of molecular medicine • Oncogenes and tumour suppressor genes • Protein dysfunction and disease • Next generation sequencing • Epigenomics analysis • Introduction to protein structure and function • Protein post-translational modifications • Gene Function analysis: model organism and transgenic animals |
| Learning outcomes: | <p>On completion of the course, the students will be able to:</p> <ul style="list-style-type: none"> • Demonstrate an appreciation of genetic determination of human disorders • Explain functions of proteins and their contribution to diseases • Describe different methods for gene therapy • Explain underlying molecular mechanisms for some of the most important biological processes, such as aging and tumorigenesis. • Demonstrate an up to date knowledge of technologies for working with DNA and protein and be able to apply the knowledge in the study of genes and proteins • Describe the design and application of technologies for genome modification. • Apply the technologies for gene expression analysis and protein characterization |

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| Prerequisite: | None |
| Duration: | 1 semester; 2 hours/week; 24 contact hours |
| Continuous assessment/ examination ratio: | 30% / 70% |
| Examination method/ duration: | Written examination / 2 hours |
| Remarks: | Also offered to RPg from other Faculties at HKU |