MOC MGP –General Molecular Genetics I (Mandatory 75-Question Module)	
• analytical measurement range; CLSI MM06-A2	• PCR assay performance and validation
• assay validation; sensitivity;	• PCR interpretation and troubleshooting
• CAP lab accreditation; phase II deficiency	• PCR; annealing temperature
• CFTR phenotype	• PCR; CFTR gene; cystic fibrosis
• CLIA proficiency testing; alternatives	• PCR; deletion
• coding sequences; percent of genome	• PCR; preanalytical errors
• DNA melting temperature	• PCR; viral CNS infections
• Down syndrome; cytogenetics	• pedigree; Huntington disease
• electropherograms showing mutations	• pharmacogenetics; warfarin response
• extraction controls	• point mutations, gel electrophoresis
• FISH interpretation	• positive predictive value
• FISH validation	• Prader-Willi
• fragile X	• primer preparation; calculations
• Friedreich ataxia; risk	• procedure manuals standards
• genetic imprinting	• pyrogram interpretation
• gestational trophoblastic diseases; ploidy	• pyrosequencing; nucleotide sequence
• Human Genome Organization nomenclature	• QA; calibration curve; degrading primer
• ICD coding	• QC; quantitative RT-PCR
• introns; dinucleotides	• quality control; causes of false negative results
• loss of heterozygosity	• quality control; restriction enzyme digestion
• mantle cell lymphoma	• quantitative PCR and RT-PCR
• maternal cell contamination studies	• ROC curves
• meiosis; nondisjunction	• RT-PCR for t(11;22)
• methylation; epigenetics	• RT-PCR; dynamic range
• mitochondrial disorders; neuromuscular	• single nucleotide polymorphisms
• mRNA sequence change; mutation effect	• single stranded nucleic acids composition
• multiplex ligation dependent probe amplification	• standard nomenclature, cDNA
• multiplex PCR vs Southern blot	• stop codons
• mutation effect; amino acid sequence	• Swyer syndrome
• next generation sequencing	• tissue identity testing
• nucleic acid hybridization reactions	• Tm; double stranded DNA
• oligodendroglioma, FISH	• viral load precision
• oncogenes; KRAS activation	• whole genome sequencing; inherited variants
• paternity testing	

MOC MGP –General Molecular Genetics II (Elective 75-Question Module)	
• APL; retinoic acid resistance	• HLA matching for transplantation
• assay validation; precision	• HPV molecular testing; HSIL
• BCR/ABL	• HPV types; head and neck cancers
• calculation of target concentration from internal standard	• HPV; cervical cancer risk
• CLIA proficiency testing; lab accreditation	• HSV PCR on CSF; indications
• comparative genomic hybridization interpretation	• ion channel defects
• CSF PCR assays for viral infections	• laboratory specimens for research; IRB
• DHCR7 gene analysis	• LOH; false positive results
• disease prevalence calculations	• method comparisons; precision
• DNA melting temperature	• method validation
• DNA methylation detection	• mismatch repair enzymes
• Duchenne muscular dystrophy	• mitochondrial DNA polymorphism analysis; indications
• effect of gene point mutations	• MLH1, HNPCC
• EGFR mutations in lung cancer	• mRNA sequence change effect
• engraftment testing; samples	• odds ratio calculations
• epigenetic silencing	• parentage index calculations
• ethics of notifying estranged family member of new dx	• paternity testing; interpretation of results
• etiologic diagnosis of intellectual disability; array CGH	• PCR amplification interference; specimen collection
• familial hypertrophic cardiomyopathies	• PCR; exonic vs. intronic primers
• fragile X; inheritance	• PCR; missed mutations
• fragile X; PCR interpretation	• pharmacogenetics; codeine metabolism
• gene mutation hot spots	• progressive multifocal leukoencephalopathy
• Genetic Information Nondiscrimination Act of 2008	• protective mutations
• gliomas; resistance to tyrosine kinase inhibitors	• Rett syndrome
• Hardy Weinberg	• risk calculations
• heavy chain gene rearrangements; clonality	• STR; molar pregnancies
• hemochromatosis; genetic testing of children	• STR profiles; forensics
• hereditary thrombophilia testing	• succinate dehydrogenase mutations in tumors
• histone acetylation	• TaqMan
• HCV types; response to therapy	• tyrosine kinase inhibitors; GIST
• HIV assays; interpretation	• validation; RT-PCR
• HIV viral load	• Wilson Disease; laboratory findings
• HLA alleles	• X inactivation

MOC MGP –Genetics I (Elective 25-Question Module)	
• Angelman syndrome genes	• mitochondrial inheritance
• CHARGE syndrome	• parentage index
• cleft palate; mode of inheritance	• pedigree; autosomal dominant inheritance
• congenital long QT syndrome mutations	• pedigree; autosomal recessive inheritance;
• cystic fibrosis reflex testing; 8 poly-T polymorphism	• pedigree; dominant inheritance
• cystic fibrosis; parent unexpected test results	• pedigree; incomplete penetrance
• familial cancer syndrome pedigree	• pedigree; modifier genes
• Fragile X; PCR vs. Southern blot	• pedigree; patterns of inheritance
• hemophilia A	• pedigree; risk of disease
• HLA determination; sequence specific PCR	• spinal muscular atrophy
• identity testing; twins	• Tay-Sachs incidence
• imprinting	• transplant donor identification; HLA testing
• maternal contamination of villous sample	

MOC MGP –Genetics II (Elective 25-Question Module)	
• analytic validation of new tests	• identity testing
• apolipoprotein E genotypes and genotyping	• linkage analysis
• CFTR mutations and CF treatment	• mitochondrial disorder testing; specimen types
• CLIA; performance characteristic of a new genetic test	• oculopharyngeal muscular distrophy
• cystic fibrosis mutation panel interpretation	• paternity index calculations
• functional testing of novel mutations detected by whole exome sequencing	• pedigrees; patterns of inheritance
• Gaucher disease	• pre-symptomatic genetic testing of minors; ethical considerations
• genetic exceptionalism	• pseudogenes and mutant alleles
• HLA nomenclature	• sibling HLA match; transplantation
• HLA; allele coding sequence	• trinucleotide repeat disorders
• HLA; parental and sibling haplotypes	• zygosity
• Huntington disease	

MOC MGP –Infectious Diseases I (Elective 25-Question Module)	
• antibiotic resistance genes	• mycobacteria; NAAT interpretation; CDC guidelines
• cat scratch disease	• pertussis; diagnostic molecular tests
• CSF viral testing	• positive predictive value calculations
• CSF; multiplex test for viruses	• post transplant CMV PCR
• enterovirus meningitis	• prevention of nosocomial MRSA
• hepatitis C	• QC; sample contamination
• HIV viral load informing patient management	• renal allograft recipients; viral testing
• HIV; acute phase viral load	• respiratory viruses; amplicons; mortality risk
• HIV; RT-PCR	• RT PCR, norovirus
• HIV-1 resistance testing	• RT-PCR, validation study
• molecular epidemiology; pulsed gel electrophoresis	• single stranded RNA viruses
• MRSA; multiplex PCR	• WHO international unit for HCV viral load reporting
• mycobacteria; isoniazid resistance; gene mutations	

MOC MGP –Infectious Diseases II (Elective 25-Question Module)	
• assay measurement range determination	• molecular respiratory virus testing panels
• BK virus testing	• molecular testing interpretation; latent infections
• CNS infections; sensitivity of molecular tests	• multiplex endpoint PCR interpretation
• false positive HIV tests	• positive predictive value
• HCV nucleic acid sequencing; interpretation	• pre-analytical specimen issues
• Hepatitis B virus mutations	• pulsed field gel electrophoresis
• HIV-1 mutations	• qualitative real-time PCR testing; interpretation
• HPV testing	• quality control charts; interpretation
• HPV types; cervical cancer	• real-time PCR interpretation
• human herpesvirus 6	• stool specimens for molecular testing
• laboratory acquired infections	

MOC MGP –Oncology/Hematology I (Elective 25-Question Module)	
• amino acid substitution	• Imatinib resistance
• ankyrin mutations	• immunoglobulin gene rearrangement sequence
• APL	• leukemia translocations; quality control
• B-lymphocyte development	• lymphoblastic leukemia; FISH
• BM engraftment analysis	• major molecular response; CML; qRT-PCR
• capillary electrophoresis; mantle cell lymphoma	• MALT lymphomas; translocation
• cDNA sequence; ABL kinase; CML	• mantle cell lymphoma; FISH; immunophenotype
• clonal T-cell gene rearrangements; PCR; capillary gel electrophoresis	• myelodysplastic syndromes; CGH array interpretation
• CML; cytogenetic evolution	• PCR, clonality, heavy chain gene rearrangement
• FISH, TEL/AML1	• PCR; BM post-transplant; engraftment
• FLT3 fragment analysis; interpretation	• RT- PCR; minimal residual disease; CML
• FR1/FR3 IGH variable region genes	• translocations, lymphoid neoplasms
• genetic abnormalities in myeloproliferative disorders	

MOC MGP –Oncology/Hematology II (Elective 25-Question Module)	
• acute promyelocyte leukemia	• *ETV6/RUNX1*
• *ALK*	• FISH interpretation
• AML with abnormal marrow eosinophils	• follicular lymphomas
• AML; SNP array interpretation	• PCR electropherogram interpretation
• anaplastic large cell lymphoma	• PCR; post-analytical considerations and interpretations
• B lymphoblastic leukemis/lymphoma	• post-transplant lymphoproliferative disorders
• *BCR-ABL1*	• pre-analytical errors
• chronic lymphocytic leukemia	• T-cell large granular lymphocytic leukemia
• chronic myelogenous leukemia	• TCR gamma; subtypes
• diffuse large B cell lymphoma; gene dysregulation	• types of mutations

MOC MGP –Oncology/Solid Tumors I (Elective 25-Question Module)	
• alveolar rhabdomyosarcoma; translocation	• identity testing; tissue floaters in histopathology
• BRCA 1 and 2; breast cancer risk	• inherited vs. somatic mutation
• BRCA2 familial cancer syndrome; pedigree	• liquid bead array method interpretation; KRAS mutations
• CNS tumors; prognostic genetic alterations	• lung cancer; EGFR mutations; response to therapy
• colon neoplasia; sequence of genetic lesions	• microsatellite instability
• colorectal cancer; MLH-1 IHC	• neuroblastoma; microarray analysis; FISH
• engraftment analysis; PCR	• oligodendroglioma; chemotherapy response
• familial polyposis; genetics	• retinoblastoma
• gene-syndrome associations	• STR genotype, colon cancer
• GIST; mutations	• synovial sarcoma; translocation
• glioma; FISH; loss of heterozygosity	• T-cell clonality; FFPE tissue
• gliomas; IDH1 mutations	

MOC MGP – Oncology/Solid Tumors II (Elective 25-Question Module)	
• adenomatous polyposis coli	• inherited oncogenes
• Birt-Hogg-Dube syndrome	• LOH studies; interpretation
• *BRAF* mutations	• lung cancer; molecular testing; mutations
• ClinVar	• melt curve analysis; interpretation
• CNS tumors	• most common somatic mutations
• *EGFR* mutation testing; indications	• non-cutaneous melanomas
• electropherograms; interpretation	• reverse transcription PCR; interpretation
• EWS-WT1	• ROC curves
• FISH interpretation	• *TERT*
• glioblastoma	• Wilms tumor